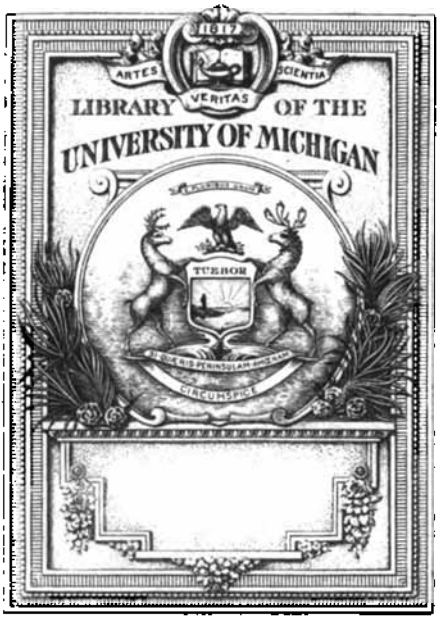

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Veterinary Medicine

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Editorial

THE FOUNDER OF THE PRESENT SYSTEM OF VETERINARY EDUCATION

CLAUDE BOURGELAT was born at Lyons, France, November 11, 1712. His father was a magistrate of Lyons and a noble by virtue of office.

He was educated by the Jesuits and studied law in the University of Toulouse and for a time served as advocate of the Parliament of Grenoble.

Surrounded with every need and comfort during his youth he spent much of his time in carefree idleness, and is described in a biological sketch in the HISTOIRE de l'Ecole d'Alfort as having been lazy, given to gambling and a seeker for pleasurable pastimes, devoting much of his time to horses. A glimpse into his true personality may be obtained from an anecdote that says, "He quit the law in disgust after having won a case in which a poor widow lost all her fortune but only after having reimbursed her in full for the loss she sustained."

CLAUDE BOURGELAT
1712-1779

Soon after quitting the law he joined the musketeers where through his scholarly attainments, knowledge of horsemanship and furor scribendi he gained national and then international renown as a hippologist of the first order, having been consulted by a no less personage than Frederick the Great.

His first work "A New Treatise on the Cavalry" and others were published incognito but later his name was connected with The Elements of Hippiatrics, which he published in three volumes. In these works, which appeared in 1750-1753, he already referred to the need of veterinary schools, and owing to the popularity of the books, the seeds of systematic veterinary education were implanted and they yielded fruit in the founding of the first school in 1762.

This determined the King, Louis XV, to grant a decree June 31, 1764, especially expressing his satisfaction by permitting it to assume the title of "Royal Veterinary School." At the same time his Majesty conferred on M. Bourgelat a grade of director and inspector general of the Royal Veterinary School of Lyons and all other similar schools to be hereafter established in the kingdom; and having given orders that several other schools should be formed upon the same plan as that of Lyons, and especially one in the neighborhood of Paris,

a building in Paris was obtained by purchase in December, 1765. Bourgelat immediately invited some of the students of Lyons who had made the best progress in the art and placed them for the winter in Paris, engaging them in dissecting and making anatomical preparations of various kinds. Thus was born the veterinary school of Alfort.

AMYLOLYSIS IN HERBIVORA

It has been a time-honored belief among nearly all of the domestic animal physiologists that the amylolytic properties of the saliva of herbivorous animals is feeble as compared with that of man.

That this should be the truth has always seemed remarkably strange in view of the need of an exactly reverse requirement. The large starch content of the feeds of these animals calls for a contrary condition; their saliva should for all intent and purposes be capable of starting the process of starch conversion toward entire completion before the food is delivered into the stomach.

Experiments with Collected Saliva

In experiments we have made with saliva dripping from an open Steno's duct we have always found that the liquid collected did not convert starch into sugar, in spite of the fact that when a well masticated bolus retrieved from the mouth of horses always showed complete conversion after proper incubation. From these findings we had long since concluded that the parotid gland did not secret much ptyalin and that its function was a physical rather than a chemical one, that ptyalin must therefore come from the other salivary glands and that much of the conversion was effected in the intestinal digestion by the enzyme of the pancreas—amylopsin.

Experiments Deceptive

How easily one may be deceived by experiments even when thought to be conclusive is shown by the investigations of Lieutenant-Colonel Watkins-Pritchard, R. A. V. C. (Vet. Jour. Sept., 1921), in which it was proved that the difference in the ptyalin content of saliva may be due to the method of collecting the sample. He has shown that saliva obtained after the administration of such sialagogues as pilocarpine and arecoline contains no such reagent as ptyalin, but when collected by placing a clean sponge in the well washed mouth of horses, starches were completely converted by the samples thus obtained. This simple experiment was made on ten different horses with the same general result.

These experiments seem to prove that there is a great difference in the ptyalin content of saliva flowing into the mouth under the stimulus of a palatable bolus and that obtained by unnatural means: sialagogues or duct fistulae. And they also show that the popular impression that starch conversion in the herbivora is effected chiefly in the intestinal digestion is erroneous.

The great care with which the herbivora reduce their feed into fine particles well mixed with saliva in the mouth before delivery to the lower digestive organs, in view of these facts, leaves little doubt that we have been mistaken about the relative importance of ptyalin and amylopsin.

Saliva Requirement Enormous

The student of this subject is also reminded that the amount of saliva required to convert starch into sugar is enormous and that experiments that do not take this into account will miscarry. A horse in eating hay incorporates it with four times its weight of saliva; oats and coarse grains with twice its weight; ground feeds with about equal parts and succulent food with one-half their weight.

SWAMP FEVER

Inquiries about swamp fever arrive with remarkable frequency, despite the fact it is much less prevalent than formerly. Northwest Canada and the Rocky Mountain states are the sources of most of them now; a few years ago they came chiefly from Minnesota and the Dakotas. Inquirers invariably request advice on the treatment, especially on the merits of the different drugs recommended from time to time by various practitioners and experimenters. It is remarkable how few seem to regard it as a disease that is incurable and one that should be dealt with as a dangerous infection.

Course Deceives

The truth is swamp fever deceives the therapist by its febrile phase, and by the invigorating influence of persistent tonic treatment. Positive recoveries have been reported, but in view of the facts the practitioner can hardly be blamed for having made them, yet no one, as Van Es has said, is justified in announcing a recovery when it is not substantiated by positive proof that the blood of the subject

is no longer virulent, together with evidence of complete restoration of health.

Very few cases, either of the anemic or the non-anemic forms, have ever been known to recover, and even among these few the element of doubt was never entirely removed, since none reported in current literature were confirmed by experimental evidence.

Among the drugs that have been given a good and sufficient trial are arsenic, quinin, mercury, atoxyl, sulphate of iron, antifebrin, potassium iodid, trypan-blue, sodium cacodylate, liquid cresolis and others. All of these have failed.

As little additional work has been done since Van Es, Harris, and Schalk made an extensive series of experiments in North Dakota, reported in detail in 1911, we may quote them with profit to the practitioner today.

An Extensive Experimentation Summarized

Summarizing the results of the investigation, the writers felt warranted in submitting the following conclusions:

1. Swamp fever is a disease of infection, transmissible by cutaneous and intravenous injection and by ingestion through the alimentary canal.

2. The virus producing the disease is contained in the blood and urine of affected animals, but it is absent from the feces.

3. The virus has thus far been demonstrated only in an ultra-microscopic form.

4. The virus is resistant to the severe freezing weather of our more northern climates.

5. While not denying the possible transmission of the disease to healthy animals by means of insects and parasites, animals contract the disease naturally by the ingestion of food and water, contaminated by the urine of an infected horse.

6. The disease is essentially a septicemia, anatomically marked by sub-serous and sub-endocardial hemorrhages in the more acute forms, by occasional involvement of the lymph nodes and spleen, by degenerative changes in the parenchyma of heart, liver, and kidneys, and probably also by certain alterations in the bone-marrow of the long bones of the limbs.

7. The chief and most constant manifestations of the disease are fever and albuminuria. The former is remittent or intermittent, not uncommonly at more or less regular intervals, while the latter is transitory and frequently synchronous with the febrile exacerbations.

8. Many cases of swamp-fever terminate fatally without a marked reduction in the red blood cells, a fact denying the popular conception of "swamp-fever" being primarily an anemia.

9. The blood of an animal may remain virulent for as long as thirty-five months after the initial infection, without the infected horse manifesting any clinical evidence of the fact.

10. Such non-clinical infection carriers probably play an important part in the establishment of more or less permanent centers of infection.

11. Both trypan-blue and atoxyl are worthless in the treatment of the disease.

12. In the light of our present knowledge we have to depend upon such prophylactic measures as the destruction of diseased animals, segregation of suspects, care in introducing new horses into the stable, the safeguarding of food and water supply from urine contamination, pasture drainage and stable disinfection.

POST-GRADUATE COURSE AT THE INDIANA VETERINARY COLLEGE

Veterinarians interested in post-graduate work are reminded that the Indiana Veterinary College, Indianapolis, Ind., will give a post-graduate course during the month of January, repeating with improvements the course given at that institution last year with such success and satisfaction to everyone who took advantage of it.

The need of taking post-graduate work by veterinarians is not questioned in view of the fact that such revolutionary changes have taken place in the realm of veterinary practice. An institution that will place a good short-course of instruction prolific with the many things that practitioners should know should be commended and is deserving of the support of the entire profession. The purpose of entry into this field is not to advertise a college, but to aid a principal and help to supply a need, the need of assisting the existing personnel of which the profession will be constituted for years to come, unassisted by very many replacements from the colleges now functioning.

The microscope has posed more questions than it has answered; more theories than it has demonstrated; more mysteries than it has cleared up; and more puzzles than it has solved. It still finds its best condonation in the great unexplored fields it has opened to the gaze of the inquisitive.

Editor's Personal Page

A Happy New Year!

Constructive criticism is useful only when destructive enough to remove harmful influences.

Financial independence is every one's goal, but be sure not to miss all of the nice scenery along the road while traveling to that end.

Before giving any thought to changing your occupation, be sure you have surveyed all the prospects of the one you have spent years to learn.

The telephone is the front door of your establishment. It should always be kept open and answered with a cheerful condescension that may calm the ruffled state of mind at the other end of the wire.

When business is bad don't growl about it; sit tight to your job so you do not miss anything that comes along; reduce your expenses to the minimum; and last, but not least, read lots of good literature to prepare for the better days ahead when you will be busy.

The farmer who complains about the price of oats raised with a tractor is to be pitied about as much as the idle veterinarian who buys filled milk and butterine for the family table, while his best clients are selling their dairy products below the cost of production.

Practitioners are neglecting dentistry almost everywhere; it is being forgotten; it is not practiced at all in many regions; the young veterinarian knows less about it than his predecessors; and its technique is passing to the lost arts, although it is as much needed as ever in all of the domestic animals.

That the annual expenditures are lowest and the salvage highest where it is the practice to call the veterinarian early and for trivial as well as for serious complaints, is a matter that we must drive into the minds of our clients. We must show that we can do other things than that of saying last rites to incurables.

As the practitioner is the "trouble man" of the live stock interests, and is always circulating among people who are in more or less abnormal state of mind, a display of good temper and a little diplomacy will often accomplish more toward straightening things out than medical skill.

The fact that lawyers always seem to be able to secure expert testimony to suit their side of the case, is no credit to the professional man.

A judge addressing two doctors (not veterinarians) recently, after they had given contradictory evidence, said: "One of you has said one thing and the other the direct opposite, compelling me to seek the facts elsewhere. You doctors, although we have placed confidence in you, seem to be willing to say anything that suits your side of the case, thinking, of course, that we are fools."

The World's Poultry Congress

We commend to our readers the contributions on the World's Poultry Congress by Dr. B. F. Kaupp appearing elsewhere in this issue. The magnitude of the convention, the interpretation of its importance all over the world, the high standing of its reporters and patrons, the scope of its deliberation on pathologic and hygienic subjects, and of the resolutions passed all presage the opening of a field for the veterinary practitioner that has heretofore been left for the husbandman to exploit unaided. Poultry husbandry is a field we can no longer afford to ignore and the veterinary profession in this country is fortunate in having such a profound student of the subject as Dr. Kaupp to inspire it and to have represented it so ably in foreign lands.

Original Contributions

The Lesions of Disease in Swine

By J. S. Koen, Bloomington, Ill.

Definition

Lesions may be defined as any change in structural texture of morbid organs. Lesions as we shall consider them in this paper are the gross macroscopic changes that indicate or characterize diseases of swine.

Complications the Cause of Confusion

It is often quite difficult to make a positive diagnosis of diseased conditions found in swine. Complications are more the rule than the exception and often obscure the primary cause of trouble and confuse the investigator. However it is my humble opinion that diseases in swine, as in other species, do produce definite lesions that are constantly or usually present and therefore deserve the designation typical or characteristic lesions of these diseases. In most instances these lesions will be accompanied by other lesions typical of any one disease and it devolves upon the investigator to recognize the true lesions in spite of complications. Experience, and experience alone, will teach them and their significance. This must be broad and extensive.

Co-operate With the Laboratory

Class room and laboratory training seldom qualify one as a diagnostician of field conditions, but rather years of investigations of diseases encountered on the farm coupled with the results of treatment, enables one the more accurately to arrive at successful conclusions. The ideal experience is the correlation of field and laboratory investigations and to this end the practitioner should utilize as much as possible the helpful services extended to him by the numerous laboratories if he would become proficient in recognizing lesions of diseases in swine.

Autopsy Training Helpful

The outline presented herewith is the result of an unusual opportunity for such experience covering a period of fourteen years. For five years it was my privilege to pass final inspection on retained carcasses at the large packing houses in Kansas City. Then came six years of intensive field experience as inspector in charge of hog cholera control work in Iowa, during a part of which time we were engaged in combating the most extensive and disastrous epidemic of hog cholera and swine diseases in the history of our country. The past three years have been given over largely to consultation work in trouble cases. If this experience has been of benefit to me I should like to share it with you. It has led me to accept certain lesions as characteristic in swine diseases.

Conflicting Opinions Embarrass the Practitioner

My sympathies are with the practitioner. My work has been largely similar to his and in most instances in co-operation with him. When I listen to or read the conflicting opinions of those who are accepted as experts and authorities I am most sorry for him. Indeed, as John Chinaman would say, "Me solly for meself." One thing has been settled if nothing more. A mixture of opinion exists. Almost sufficient to justify the conclusion that MIXED INFECTION is the only sure condition found in swine. This is the one condition that does not present typical lesions. Almost any lesion may be expected and encountered and in some cases apparently a conglomeration of all. The term is practically all-embracing, may cover a multitude of troubles (and sometimes too may cover a multitude of sins) and is most convenient when we do not care to admit, "I do not know," or when it is impossible to know by the gross lesions presented. That I use the term is proof I believe in it and find it helpful.

Lesions of Hog Cholera

The lesions of hog cholera will be considered first for the reason it is by far the most important disease of swine, if not more important than all other diseases combined.

From the standpoint of mortality and as an economic problem to be solved I believe it is more important than all other diseases combined. When we are able to recognize cholera and control it the one big question in swine practice will have been answered. And this is not impossible. That cholera produces definite lesions is my sincere belief. I have little patience with the theory that this is a lesionless disease. If this be true we are never justified in making a diagnosis of cholera excepting in such cases as present no lesions. Who would justify or be justified in such procedure? That we do not know the cause of cholera does not warrant such a conclusion. We do know its manifestations. Like electricity, we do not know just what it is, but we know what it does. I doubt if there is any one who is willing to go onto a farm, investigate a bunch of sick hogs, and make a positive diagnosis of cholera without the support of lesions. What then are the lesions of cholera?

Orthodox Notions Erroneous

To speak in general terms and state they consist of certain kinds of hemorrhages into the various organs of the body and are accompanied by certain symptoms and a history of exposure would not satisfy any one.

Two years ago at the mid-summer meeting of the Missouri Valley Veterinary Association, I undertook to answer this question by outlining "A Practical Method for Field Diagnosis of Swine Diseases." I have had no occasion since then to change my opinion that there are three lesions so constantly found as to justify their classification as characteristic. They are:

1. The peripheral congestion of the lymphatic glands especially the cervical and mesocolic glands in the early stage of the disease. The glands may later become quite or entirely congested, yet still the congestion of the periphery will be emphasized.

2. The ecchymotic hemorrhages in the lung. These are distinct and circumscribed, vary in size, but as a rule considerably larger than petechia found elsewhere. These do not wash nor rub off, nor do they run together as the knife is drawn across the surface of the lung. They are independent of any area of pneumonia. When I find evidence of pneumonia in a case of cholera I consider it a complication and not as evidence of cholera. These ecchymotic hemorrhages are bright red in color in the early stage of the disease, but later change to a darker shade. I consider them the safest lesion upon which to base a diagnosis if there be any other evidence to support it.

3. The spleen is usually involved in cholera. There may be only congested areas along the edges but more frequently it will be enlarged, friable and darkened in color. The bright red dots over the surface are not to be considered.

These three lesions will not always be found in the same hog, yet one or more of them will be found in nearly all cases where the filtrable virus is the primary cause of trouble. They will also be the predominating lesion and will be supported by sufficient other lesions to warrant a diagnosis of cholera. Other lesions will usually be found in the skin, eye, epiglottis, bones, pleura and peritoneum, kidney, bladder, liver, or the mucous membrane lining the stomach and intestines, especially in the region of the ileo-cecal valve.

The eyes will show marked congestion with a watery discharge at first which later becomes muco-purulent and causes gumming of the eye lids.

The skin lesions appear on the portions of the body where the skin is thin, as on the belly, the inside of the legs and the ears. They consist of well marked circumscribed hemorrhages varying in size, but usually the size of a navy bean. They do not show until the disease has made considerable progress therefore their significance as a diagnostic lesion is not so important as others. However, we know of no other disease that produces a like lesion.

The bones appear to lose much of the bright red color in pigs showing an early high temperature. Later they become quite dark and are often referred to as black. This is readily observed in the ribs and vertebrae.

Small, distinct, circumscribing, punctiform hemorrhages characterize the lesions to be found on the epiglottis, pleura and peritoneum, kidney and bladder. Instead of considering the petechia as pathognomic they should be considered simply as supportive evidence in connection with other lesions present. This lesion may be the result of cholera, necrobacillosis, an irritant or of glomerylar nephritis.

Lesions of the Mucous Intestinal Membrane

The mucous membranes lining the stomach and intestines may show only petechial hem-

orrhages but more frequently will show a more diffuse congestion. This usually shows first in the region of the ileo-cecal valve. The button ulcer that was formerly considered typical of chronic cholera is not so considered at the present time by a large number of investigators. Cholera may be a predisposing factor but not the cause.

Interpretation of the Lesions

Now as to the application of these lesions. Frequently it will be your lot to make a diagnosis where the evidence is not well marked, where the lesions are slight. In such cases, and I think in all cases, you should have at least three lesions, to warrant a diagnosis of cholera. The diagnosis should also be supported by the usual symptoms and where possible by history of exposure. Where less evidence is found and it is impossible to make a positive diagnosis, a guarded diagnosis of cholera is warranted with a recommendation that the herd be treated with serum and virus. Cholera should always be suspected and no other diagnosis is warranted until it has been absolutely excluded.

As stated in the beginning, complicated cholera is the rule under field or farm conditions. Serum and virus will combat the cholera, but not the complications. The additional use of bacterins in infected herds will be justified by the better results obtained. This line of treatment has been conclusively demonstrated during the epidemic of swine diseases this fall.

Swine Plague or Hemorrhagic Septicemia

Little need be said as regards other diseases of swine, swine plague or hemorrhagic septicemia. As a separate and distinct disease of swine it is rare. A few years ago our meetings and journals were full of discussions on this subject. Now it is made conspicuous by the silence regarding it. It is more serious as a complication of cholera than as a separate disease and as such it is more frequently found.

When found, the lesions differ from those of cholera. The lymph glands are congested throughout. Blotchy hemorrhages will be found over the lungs, heart, serous membranes, and throughout the carcass. Diffuse, extensive congestion over large surface of skin particularly over the belly. Lesions of the thoracic cavity predominate, and in advanced cases there will be much evidence of pneumonia usually with pleuritic adhesions. The spleen is not involved.

Necrobacillosis. Necrotic Enteritis

Necrobacillosis. The lesions of necrotic stomatitis and rhinitis are well known.

Necrotic enteritis. This is undoubtedly a mixed infection. It is characterized by diffuse necrosis of the mucous membrane lining, either the small or large intestine. The affected membranes may be either tough or granular and mealy. Frequently we find the necrosed membrane assuming the character of a false membrane lining the cecum. It is thin, dark colored, and on removal discloses a very acute inflammatory condition beneath.

Parasites

Ascaris infestation of the lung. When the young ascaris migrate to the lung they produce an ecchymotic lesion very much like that of cholera. Accompanying this infestation there is practically always edema of the lung. Edema is not present in cholera as a rule so there should be no confusion in this respect. Too, the other lesions, symptoms and history of cholera will be lacking.

Influenza

The lesions of this condition are enlarged and congested cervical lymph glands. The congestion extends throughout the glands. An area of inflammation surrounds the bronchi and bronchioles, together with some slight lobular pneumonia, although as a rule but little of the lung is involved. The bronchial glands are usually enlarged and congested. This condition will confuse one more than any of the others until one is familiar with it, particularly when the symptoms alone are considered. On account of the suddenness and severity of the attack, high temperatures, a herd disease, and with slight lesions many mistaken diagnoses of cholera have been made.

No damage is done when such a mistake is made on a susceptible herd and serum and virus used. On the other hand, the danger lies in calling the condition a "break" where the herd has been previously vaccinated. Experience with a few outbreaks usually enables one to differentiate these conditions.

The Problem of "Breaks" More Complicated

The outline is intended to be useful in making a diagnosis of swine disease in herds that have never been treated. I have purposely refrained from injecting the lesions of "breaks" as each one is a case unto itself. Endless discussion could be indulged in without settling the issue. We should look to the cause of the break, if possible, to determine it. Frequently this is found to be a mistaken diagnosis.

The First World's Poultry Congress

BY B. F. KAUPP, RALEIGH, NORTH CAROLINA OFFICIAL DELEGATE FOR THE NORTH CAROLINA EXPERIMENT STATION

Education is the greatest factor in the uplift of the world. Where there is ignorance there is darkness and slothfulness, and advancement is impossible. Education brings light and life, enthusiasm, energy and progress. Thus we hailed the First World's Poultry Congress, held September 4th to 15th, 1921, at The Hague, Holland.

Here were congregated the finest intellects of the poultry world, scientists as well as the men of practice. From more than twenty-five lands they came to contribute their quota of knowledge, much of which had been known only in their own countries. Thus, all engaged in spreading the light. From America, Australia, New Zealand, South Africa, England, Ireland, Scotland, Denmark, Holland, Austria, Belgium, Italy, France, Switzerland, Spain, Portugal, Egypt, Ceylon, India, and other countries were poured forth such a mass of men and educative matter the poultry world has never known.

Papers and discussions dealing with both the old and new phases of poultry husbandry that have puzzled and perplexed the breeders of the world will throw new light on much that is at present mysterious and confusing. From the World's Poultry Congress will emanate such strong rays of light that the pathways of the poultry breeders of all nations will be straightened and made plain. The greatest good that will come from this Congress is the meeting and mingling of the poultry workers of the world, and in the exchange of personal ideas.

Royalty Interested in the Congress.

The congress was divided into two parts, that of papers and discussions, and the exhibition. The exhibition consisted of educational booths and of the display of more than 2,000 birds typifying the various breeds of the world. The educational exhibit included two booths of disease; one from the state serum laboratory of Rotterdam, Holland, showing many scores of preserved specimens from fowls, including tuberculosis, roup, diphtheric enteritis, parasites, etc. The other exhibit was from the North Carolina Experiment Station poultry research laboratories and consisted of enlarged photographs of tumors, blackhead of turkeys, etc., as well as prepared specimens.

The exhibition at the zoological gardens was formally opened by Queen Wilhelmina of Holland and the Prince Consort at 2:00 P. M., Monday, September 5th. After which, the Queen and Prince were present at the formal opening of the convention at the Krerhaus.

An Excursion.

Recess relaxation from strenuous convention room labors were given on Monday the 12th, when an excursion was made to Rotterdam and Vlaardingen. At Rotterdam was visited the government serotherapeutic institute where are investigated animal diseases, including diseases of poultry and also the function carried on in America by the biological houses. It is in these laboratories that serums and vaccines are prepared for veterinarians in Holland. There are kept in these stables 150 horses, 60 cattle and 200 hogs for serum production. These laboratories also examine milk and water for health purposes. Seventeen different kinds of sera are prepared. These include sera for contagious pneumonia of horses, strangles of horses, tetanus, abortion of mares, anthrax, blackleg, foot and mouth disease, white scours of calves, septic pleuropneumonia of calves, abortion of cows, inflammation of the udder of cows due to streptococcus, pyogenes bacilli, coli bacilli and ovae bacilli, erysipelas of swine, infectious pneumonia of swine, swine fever, fowl cholera, serum and vaccine against fowl typhoid.

Recommendations of the Congress.

The congress passed a resolution recommending (1) the study in the different countries of the necessity or non-necessity of taking official measures against epiornithics (outbreaks of contagious diseases) of fowls; (2) to study, in the case of necessity above mentioned, which of the diseases ought to be combated by those measures; (3) to continue in the different countries researches in bird diseases and hygienic measures to be taken, especially in those covering the application of vaccines and serums by appropriated laboratories or bureaus; (4) that in every country where the raising of domesticated birds is developed as a precious means of existence and of economical production, the teaching of bird diseases ought to be organized in an adequate manner in veterinary and agricultural colleges.

Livestock Sanitation

By W. J. Butler, Helena, Montana, State Veterinarian

Many pages could be written upon livestock sanitation. This paper, however, is short. It is written with the hope it may bring some new thought to you and be the stimulus to a healthy discussion. It deals not with the prosaic routine of sanitation. The routine of sanitation may be found in any standard book on this subject.

With the advancement of mechanical engineering which has made possible our large cities and industrial centers, the need of livestock and human sanitation has become more apparent. Without sanitary measures large cities and market centers could not exist. Disease would take an unjust toll and wipe them from the face of the earth.

The Centers of Contamination

The mission of those interested in livestock sanitation must center itself mainly in our rural districts. Their work, however, also extends to our market centers. In fact, during outbreaks of dangerous diseases these centers may become the main foci of infection. For this reason there must always be maintained at central stockyards a competent corps of livestock sanitarians. Upon them falls the task of preventing the spread of livestock diseases from one rural district to another.

A few years ago the horse was an important live stock factor in our large industrial centers. Each year, however, he becomes, in these centers, a less important one. Mechanical motive power is displacing him, true as it is that on short hauls horse power is more economical than the other. Nevertheless, the horse seems doomed in large cities. Speed, adaptability, congestion and modern smooth slippery streets will be the deciding factors.

Horses Needed on the Farms

While this is true of cities the reverse must hold in the rural districts. To supply the ever-increasing needs of our industrial centers our livestock population must be increased. Livestock must be increased not only in numbers but in quality and in health. The animal of the future must be bred and fed to equal two animals of the past.

Appalling Death Rate

In addition to this our livestock death rate must be decreased fifty per cent and more. What an enormous economic loss occurs each year through our lack of knowledge and carelessness. Vital statistics are not kept of livestock, therefore our estimate of their death rate must be conjecture. In the old range days we figured our normal loss at 3 per cent. This was our loss of matured stock and did not take into consideration our calf loss. With the passing of the open range, we are confident we are not far amiss when we say the animal death rate in livestock is not less than 20 per cent. This, of course, takes into consideration our loss of young stock as well as matured stock. What a tremendous waste in foods and what an enormous economic loss this death rate represents.

More Livestock Needed

With our human population increasing by leaps and bounds we must starve or raise two animals where before we raised but one.

The slogan "better sires," "better stock," is commendable, but to this should be added the equally commendable slogan "more sanitation," "more stock."

Livestock not only produce animal foods and textures necessary to our industrials, but are essentials in diversified farming. Without livestock many of our farms could not exist. Animal matter contains the amino acids necessary for the healthy life-giving property of our grains. In addition to their being of food value they supply many life-saving remedies. Without animals there would be no serum or organo-therapy to save the lives of millions.

The New Conception of Etiology

Each year the belief grows that sickness, either infectious or otherwise, is due primarily to disturbances in nutrition. As one author has aptly said, "There are predisposing influences that cause an infection to eventuate in disease." We therefore feel justified in our belief that future medicinal treatment will be based not upon drugs, but upon nu-

trition, organo-therapy and serum therapy associated with vitaminic and enzymic therapy.

The Veterinarian Altruistic As Well As Scientific

What an important factor the veterinarian with his knowledge of nutrition and care of animals is to play in the future field of medicine! Not the veterinarian of the old school but the veterinarian versed in laboratory technic, pathology and comparative sanitary medicine.

It is indeed a wonderful heritage we of the younger generation have inherited from our predecessors; open air men, students of animal life, a truer or more unselfish or more sympathetic group of professional men never existed. Well may we be proud of their untiring, but oftimes unrewarded and unrecognized contributions to the field of medicine and surgery.

Healthy animals are necessary to mankind. Diseased animals are a menace to mankind. To the veterinarian and more particularly to the veterinary sanitarian is alloted the task of determining whether animals shall be a menace or a blessing to the human family. It is his task to eradicate animal diseases and thus prevent their transmission to mankind. In addition to this herculean task he must serve his fellow-men by furnishing to them through the livestock in his charge, the various organo-therapies and serum therapies.

The greater the advance in mechanical engineering, the greater the urban population. The greater the urban population, the greater the need for the sanitarian, be he engineer, medical or veterinary. The greater the need for the sanitarian the greater the use of vaccines and serums; and associated with vaccines and serums must necessarily be organo, enzymic and vitaminic therapy.

The Veterinary Sanitarian Must Be Well Qualified

Strange as it may seem, one of the most important factors is human nature. Without being fair and impartial and a judge of psychology the livestock sanitarian will not succeed.

Naturally, in addition to being a judge of human nature he must be versed in his profession. That is the fundamental principle that holds good in all walks of life. As doctors of veterinary medicine we must know comparative pathology and know it well. Postmortem examinations are most important. An autopsy should be made on all animals destroyed, or which die from an undiagnosed condition. Without an excellent working knowledge of pathology postmortems are next to useless. If a diagnosis cannot be made from allergic tests, clinical, or postmortem observation then the laboratory must be used to assist in making it.

Laboratory Diagnosis Required

In order that the laboratory may be able to render efficient service, tissues and specimens must be received by them in good condition. This is a matter very often overlooked by the field veterinarian. Tissues should be carefully selected; thoroughly packed and preserved in a proper manner. In addition to this a note giving the disease suspected and other data should accompany the tissues. The manner and care with which tissues and samples should be sent to a laboratory and the data which should accompany them is most important. If a veterinarian is careless in these matters he will be careless in his other work.

With respect to laboratory diagnosis it is to be remembered that the laboratory is not infallible. In many instances it can but corroborate the clinical or postmortem findings. A negative laboratory finding does not necessarily negative the postmortem findings. It is a wise plan, however, always to check our postmortem findings with laboratory diagnosis.

A Look Around the Premises Important

When once a correct diagnosis has been made it is essential to make a complete survey of all diseased and exposed animals and premises. This is a detail many times overlooked with serious results. It has been our observation, the more painstaking the veterinarian is in looking after these details and securing and making out complete and legible reports, the more efficient is his other work and the better he gets along with stockmen.

Regulations Should Be Uniform and Practical

In administrative work it may be said: regulations must not be promulgated which cannot be enforced impartially and fairly. Regulations in the different states should be as uniform as geographic and climatic conditions will permit; and all regulations should be as practical as possible.

Atmospheric Conditions and Veterinary Practice*

By A. A. Leibold, D. V. M., Chicago, Ill. Associate Director, Zell-Straub Laboratories, Inc.

We have listened at this meeting to discussions of infectious diseases, sterility work, poultry diseases and their economic significance, diseases of swine, etc. These are timely topics for all of us and very important from an economic standpoint and I am sure we have profited a great deal by listening to them.

The subject I am about to take up is a little different from those generally considered, but there are a number of interesting facts that have caused me to write this paper. During recent years a number of new relations between atmospheric conditions and diseases of animals have been advanced, which are not only interesting, but also important. I do not wish to give the impression that the things I say here are my personal views, but rather that many are facts and many others are views advanced by high authorities, and which have been given serious consideration by many others.

Oxygen

I shall take up oxygen first, because it is the all vital element in the atmosphere. In water-free air, we find twenty-one per cent of the gaseous elements to be oxygen, which is very constant at certain times and altitudes, in spite of the great quantities that are constantly being consumed by animal life and oxidation processes. City air shows no appreciable difference from country air. During quiet breathing, a horse will remove about two and seven-tenths per cent of oxygen and a man about five per cent of oxygen from the air. When the air contains less than eleven per cent oxygen, dyspnea develops, and if there is less than seven per cent, death results. It is extremely rare that such deficiencies in oxygen occur, but it is sometimes seen when animals are crowded in closed freight cars and when sheep are crowded in a stable after shearing.

Ozone and Hydrogen Peroxid

Ozone, which is also called active oxygen, has a marked oxidization action. So has hydrogen peroxid, which is also found in the air, but which is weaker. They are too highly diluted in the atmosphere to be effective disinfectants, such as we know them to be in concentrated form. They do not occur in large cities, inhabited rooms and stables.

Carbonic Acid

The carbonic acid gas content in the outside air varies very little; the average in the country is three-tenths percent and in the city .37 percent.

As sources of carbonic acid there are: 1, respirations of man and animals; 2, decay and decomposition processes (manure, flesh, etc.); 3, the burning of light and fuel materials; 4, subterranean accumulations of carbonic acid which are connected with the outside world (caverns near Pyrmont, France; volcanic craters, etc.).

This gas does not affect health from the standpoint of doing injury until the inspired air contains more than four per cent; even five per cent can be withstood temporarily without harm. When more than eighteen per cent of the gas is present, death can occur at any moment, provided that the carbonic acid has accumulated at the expense of the oxygen, in which case, however, it is then the deficiency in oxygen and not the accumulation of carbonic acid that is the injurious factor. Gaertner has shown that rabbits would remain alive one-half hour in an atmosphere consisting of eighty per cent carbonic acid gas, but which had twenty per cent oxygen. Acute cases of poisoning by this gas are very rare, but chronic cases occur more frequently, as for instance, where the stable is poorly ventilated, and great quantities of decomposing manure are allowed to remain in the stable, giving off volumes of the gas all the time. Seegert has shown that the efficiency of animals, their general condition and their milk production become lowered as a result of such circumstances.

Atmospheric Humidity

The humidity or moisture in the air also plays an important part in the health of animals. Air at a temperature of 68.° F. will take up 17.18 grams of water, a little over an ounce per cubic yard, and will then be saturated. Very dry air only contains about five grams of water per cubic yard at this temperature. Regions close to large bodies of water, such as here in Chicago, and for miles

*Read before the Ill. State Vet. Med. Ass'n, Dec. 2, 1921.

in each direction, have a very moist atmosphere.

The drying action of the atmosphere, which is dependent on the amount of moisture in the air and on the air movements, partly influences the formation of dust and also the destruction of pathogenic microorganisms. Moisture tends to maintain life, whereas dryness causes its destruction.

A humidity of forty to seventy per cent seems to be the most favorable when the temperature is at 65 to 70.° F. Stable air is frequently extremely moist, (90 per cent humidity), especially during cold weather, when many people interfere with proper ventilation by closing all fissures and holes with rags, etc., to prevent the entrance of cold drafts of air. A prolonged stay in such air causes the animals to become soft, debilitated and exposes them to an increased possibility to infection, since pathogenic bacteria, etc., remain alive and infective for a longer time in places containing moist air. Sick animals also do not recover as readily under such conditions.

Dust

Dust is also quite important. Tissandier found that in the streets of Paris, 1 c.m. or slightly more than 1 cubic yard of air contained 6.23 mg. of dust or 9.6942 grains. He also found that in the open, the dust consisted of from two-thirds and three-fourths inorganic matter and one-third to one-fourth organic matter; in living rooms and stables there is more organic matter than inorganic. Among the organic there are: plant fibrils, pieces of hair, desquamated epithelium, starch grains, horse manure, etc.; among the inorganic there are: quartz splinters, lime and coal particles, minute particles of iron, silicic acid combinations, soot, sodium chloride crystals, etc. From among the living things there are: pollen grains, which according to Dunbar cause hay fever in man and horses at the time grasses and other plants blossom. In horses it appears as a severe catarrh of the upper respiratory tract, a mild fever, and the animal holds his head in a drawn-in manner. Recovery takes place in one to three days. Dust also contains spores of cryptogams, small plant seeds, molds and yeasts, bacteria, minute flagellated animals, infusoria, eggs of worms, etc. The assumption of Zurn and Spinola that eggs of lung worms gain entrance to the respiratory tract by means of the dried and powdered slime from swamps and puddles and then cause disease, is not a proved fact.

Experiments conducted by Saito showed that not even one-fourth of the dust in the air inspired through the nose had reached the lungs. In cases where a heavy dust is inhaled for a continued length of time, diseases due to the dust may occur, as inflammations of the lungs or catarrh of the respiratory tract. This is seen in horses which must go into limestone mills, mortar works and on dusty highways containing much lime; also among sheep which graze on dusty meadows or have to go on dusty streets; also where dusty forage is fed. Beckmann reports an exceptional instance where poisoning occurred from the inhalation of a chemical poison. There were eighteen horses of one squadron, which suffered from roaring as a result of inhaling sand containing lead, the sand having been obtained from a nearby old lead works and which was found to contain large quantities of lead oxide.

No bacteria pass into the air with the evaporation of fluids or of moist surfaces. Quietly expired air is free from bacteria. Drops of fluid resulting from coughing, snorting, etc., remain floating in the air for quite some time and are transported for varying distances, even when the air currents are very weak, as in rooms and stables.

The average number of germs in 1 cubic yard varies from 500 to 1,000, 100 to 200 of which are bacteria and the remainder molds and fungi. City air contains more germs than country air and when out on the ocean about 450 miles from land the air is free from germs. The streets of Paris were found to contain 4,000 germs for every cubic yard of air. No germs are found at an altitude of one mile or higher in winter, or 1.8 to 2.5 miles in summer. Petri found upwards of 34,000 bacteria and 7,000 fungi spores in 1 cubic yard of stable air. Fortunately most of the bacteria found in the air are harmless saprophytes, which quickly die when they are breathed into the lungs.

Pathogenic bacteria, outside of pus producing ones, have as yet not been found in the open or outside atmosphere under ordinary conditions. Pus germs are widely distributed. Diseases are only exceptionally transmitted by the air out in the open since the pathogenic germs are present only to a limited amount, becoming enormously diluted by the ever

(Continued on Page 55)

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Ante-Partum Paralysis

Paraplegia in Pregnant Animals a Common Complaint

This is rather a common ailment in the cow and is said to occur occasionally in the sheep and goat. Simple, uncomplicated ante-partum paralysis, due to pressure by a large foetus upon the locomotory organs occurring but a short time prior to parturition is ordinarily simple to handle and usually terminates within a day or two after parturition, with no apparent serious harm to the mother; but the complications are so numerous that it requires the utmost skill and often considerable observation to either detect or eliminate such complications. So much so, that in treating a cow in advanced pregnancy that is unable to rise or stand alone if assisted to her feet, the many conditions that may be the primary cause are of more consequence than the simple name under which paraplegia masquerades.

Has Many Causes

Some of the complications or conditions to be considered are **parturient paralysis** "milk fever," occurring as it does sometimes prior to parturition. This, of course, can be eliminated if the history is that the animal has been down for several hours or a day or two and still maintains a normal posture, the eye bright, the muzzle moist, the appetite keen, etc. It will not, however, be so simple to differentiate what is styled **"digestive paralysis."** Here the history may be that the case has been down for a day or two, lying in a normal position, the muzzle moist and rumination fairly constant. Unless the bowels are decidedly normal or the excessive weight of the uterus very apparent, it is not well to neglect udder inflation in these cases in conjunction with any medication that may seem indicated.

Fractures must always be considered. Any part of the pelvis, and particularly fracture of the inschiopubic symphasis. Occasionally fractures of any of the bones of the legs will keep the cow from rising, as will also **dislocation** of the coxo-femoral or sacro-iliac articulations, which are always difficult of diagnosis, requiring a most careful examination with an assistant to move the leg while the hand and the ear of the surgeon are given a severe test in the case of a heavily muscled animal.

If occasioned by **excessive weight of the uterus** it is not always easy to differentiate hydrops amnii which may cost the life of the mother before parturition takes place, from an extremely large foetus or twin pregnancy which are more benign in case the mother is well nourished and the termination of pregnancy not too distant. Parturition, however, does not always relieve this condition. It will depend somewhat upon how long the animal has been compelled to lie and how seriously the locomotary powers of the posterior limb have been interfered with. Also the character of birth may influence the results materially. The delivery of a large foetus may complicate the situation so as to produce a post-partum paralysis and so continue decubitus.

Occurrence

Ante-partum paralysis usually occurs ten to twenty days prior to the end of gestation. It not infrequently, however, occurs as long as two to six weeks. While our experience has been that the condition prevails far more frequently in half-starved animals, still it may and does occur in cows of the most dissimilar types and condition. It has even been observed in certain sections under the most varied sanitary and feeding conditions, and we occasionally see it occurring so frequently in certain seasons as to suggest an enzöotic.

Pathology

It seems probable that the true nature of this ailment has never been entirely solved, but it is supposed to be due to either pressure of an unusually large and heavy uterus upon the nerves and vessels of the posterior ex-

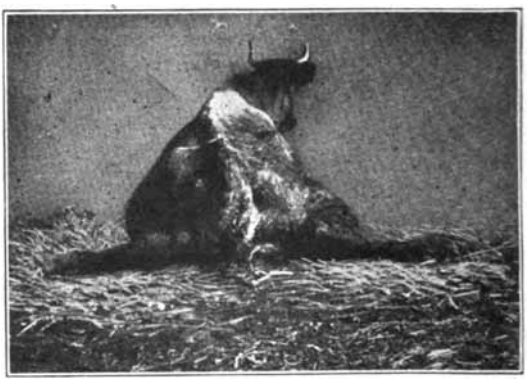
tremities, or muscle or nerve injury occasioned by a strain of these parts in the animal's effort to raise the unusual weight or to raise the normal weight under an unusual condition. Fleming states that in five or six cases there has been found on postmortem inspection infiltration of the dorso-lumbar and gluteal muscles and discoloration of the muscular fibres. The spinal canal has also contained a large quantity of serum and the membranes of the spinal cord are injected.

Symptoms

The symptoms are rather indefinite. The animal loses power of the posterior extremities either very suddenly or the gait may be unsteady for a day or two; in other cases the first manifestation is that the animal has great difficulty in rising, finally becoming unable to rise, with the result that the inability to rise is the only abnormal thing apparent. The animal lies on the sternum in an upright position with no apparent disturbance of any of the organs of digestion or elimination. Later, however, there is a serious tendency toward bloating and constipation.

Treatment

The treatment consists largely of good nursing and proper feeding. One of the first requisites is a comfortable large stall, either with a dirt floor or properly bedded, to lessen as much as possible the hazards of injury in case the animal struggles to regain her feet. Under good nursing, one of the important attentions is that the animal be frequently turned, but not as we would turn a horse by simply rolling her over on her back. A cow should never be turned this way as there are too many things that may go wrong in the abdominal cavity by such treatment. When there is help enough available all the animal's feet are to be tucked well under her and she should be shoved from side to side by pushing at the shoulder and raising on the hip, with one of the attendants placing his foot and knee against the opposite side well down under her so as to prevent her sliding as she is being pushed from the other side. Great care in her diet is very essential. Foods that ferment readily should be fed very sparingly. As to whether or not any drugs are indicated would depend upon the individual case. If the appetite is keen and the digestion not interfered with and all alimentary organs active, but little or no medication is necessary. The question of emptying the uterus naturally comes to one's mind, particularly if the animal is very uneasy and bed-sores are appearing or becoming severe enough in character to complicate conditions. It is not an easy matter to empty the uterus under these circumstances. In the first place, the ovary carrying the corpus luteum of pregnancy can rarely be reached, and if it can be, the removal of the corpus luteum does not always occasion dilation of the cervix at this period. Dilating the cervix and puncturing the membrane will usually excite uterine contraction; but the case must be carefully watched and the cervix dilated by force if need be so as to remove the foetus the first 24 or 48 hours before its death and decomposition results in metritis and defeats the intent. Consequently, if dilation of the cervix is practiced, if delivery of the foetus is not occasioned, or progressing after the first 24 hours, it is the duty of the veterinarian to give the case constant attention until the delivery is complete.



Attitude of a cow affected with bilateral sacro-iliac desmorrhexis. (Courtesy of Veterinary News.

DISLOCATION OF THE SACRO-ILIAC ARTICULATION
(Sacro-Iliac Desmorrhexis)

The practitioner meets with a no more perplexing situation than that of making a diagnosis in the recumbent position. While there are some characteristic attitudes such as that of milk fever and bilateral desmorrhexis of cows, in all other diseases in all of the species the "downer" is a veritable puzzle. All sick animals look very much alike in the recumbent position, whether it is a dog, horse, hog, sheep or cow. Brought into contact with a down patient the veterinarian is generally stumped completely until he can gather some incriminating information from the history or from

the struggles made in attempts to rise, and when these are unsuccessful he generally goes away disappointed. A very able teacher of general practice speaking on the subject of decumbency said "The first essential in a physical diagnosis is 'get 'em up'."

With these facts pretty well known we are pleased to reproduce the photograph of this pathognomonic freak which like the case of milk fever the veterinarian diagnoses at sight despite the recumbent position, and although this one is more rare than milk fever it is sometimes met in dairy districts where the balancing of feeds is ignored. When unilateral the clinical picture is less striking yet there is always the right angle position of the leg to incriminate the sacro-iliac articulation.

SOME VIRTUES OF MILK

1. Pellegra is caused by a diet deficient in certain elements. Milk added to such a diet cures this tropical disease.

2. Beri-beri is a disease of the nerves similar to pellegra. Milk cures it.

3. Inflammatory rheumatism has been cured by an entire milk diet. The milk washes away the poisons causing this ailment.

4. Milk cures sore eyes when same is caused by a deficient diet.

5. Milk adds actual inches to a man's stature. Japanese coolies were experimented upon and after being fed much milk, several inches were added to their height.

6. Milk plus fresh air and sunshine cures tuberculosis.

7. A milk diet exclusively will greatly reduce flesh.

8. A milk diet exclusively will add good solid flesh to a thin person.

9. Milk was one of the main foods upon which Jack Dempsey trained for his winning battle. It makes dependable brawn and muscle.

10. Milk is recognized as the greatest "protective food" known to man. The milk-eating man or woman has a resistance to disease not possessed by non-milk eaters.

11. The midshipmen at Annapolis are required to consume at least one quart of pure milk per day. No "sick days" are common here since milk has become the conditioner.

12. The Chinese, Japanese, and similar races who have never known the dairy cow are undersized and lack initiative and "pep." World leaders are invariably the milk-fed nations.

13. Miss Florence Busse of Iowa State College has divided milk into the following: For muscle, milk and cheese; for bones, milk, cottage cheese, and cheese; for energy, butter and cream; for body regulator, butterfat; for growth, milk, butter.

14. Milk prevents scurvy or cures it.

15. School children who are regular milk users complete the grades two years ahead of non-milk users, according to an experiment on 55,000 children in Los Angeles.

16. In all athletic competitions milk drinkers invariably win over non-milk drinkers.

17. Milk makes well developed tissues, smooth hair, bright eyes, and healthy color.

18. The lime in milk builds strong bones.

19. The vitamines in milk insure normal growth.

20. Children who do without milk are apt to be nervous, irritable, have indigestion, are restless at night, and take cold easily.

21. The old cow is the standard manufacturer of our all-important vitamines.

22. Stunted children or stunted men "come back" on a diet of milk.

23. Milk is beneficial in the treatment of boils, pimples, gastro-intestinal derangements, diseases of the respiratory passages, and as a preventive of bubonic plague. Its vitamines are the reason.

24. Milk prevents or cures rickets.

25. Artic explorers and sailors on long cruises who have run out of dairy foods and green stuff actually die of starvation, though other foods are to be had.

26. Mothers would not make much headway in feeding their babies and children large quantities of liver, kidneys, egg yolks and carrots. In milk we have the vitamine source as Nature intended it.

27. The best baker's bread to be bought today is now made with milk instead of water. This costs bakers thousands of dollars more a year, but it pays because the bread is tastier and keeps longer, as well as being better for us.

28. Milk makes fighters. Europe, in her turmoils of countless years ago, was always conquered by dairy-fed tribes. The weak races of the Far East and the South are examples of listless, easily conquered peoples who have never known the energy diets of the hardier northern peoples.

29. Babies die like flies every year because ignorant mothers attempt to improve upon

nature with milk substitutes. God made milk for babies.

30. Good cooks everywhere use milk instead of water in making their good dishes. Likewise they use butter instead of lard-like substitutes for the same reason. Nothing can compare with the milk taste.—Helen S. K. Willcox.

FIBROMYXOMA OF THE LIVER OF A COW

I am sending you a specimen of liver taken from a cow, showing symptoms of intestinal disorder before it died.

On postmortem examination, the liver showed sufficient lesions to practically cause the destruction of this organ. The lungs appeared normal.

Please inform me if any tubercle bacilli are present.—A. J. M., North Dakota.

Reply:—Although the gross appearance of the liver sent closely resembles that of tuberculosis, the tubercle bacilli was not found on microscopic examination, but the lesions clearly showed multiple fibromyxomata, which we believe was the cause of death in this case.

ENDOMETRITIS IN A COW

Under separate cover, I am sending you a section of liver and a tumor-like growth which I removed from the mesentery of a cow. I would like to have a bacteriological examination made of both. The animal, shortly before death, discharged several gallons of a dark, bloody, mucus from the rectum.

Upon postmortem examination, I found the liver was very soft and discolored and the gall bladder contained one and one-half quarts of thick, discolored bile. The postmortem lesions were about as follows:

The fore stomachs: Food was well digested and moist.

The abomasum showed a local congested area.

The small intestines as well as the large, showed a catarrhal inflammation.

The mesenteric lymph glands were normal. The mesentery contained several hard lumps with yellow centers. As there was no calcification I did not consider them tuberculous.

The cow had just freshened and retained afterbirth. The uterus, on postmortem examination, showed pronounced endometritis and some perimetritis. Personally, I do not believe that her death was due to the metritis but rather to a toxemia from some other source.

I would be glad to have your diagnosis if possible from my description.—E. A. S., Washington.

Reply:—Examination for tuberculosis proved negative, after keeping the cultures alive the six weeks necessary for tuberculosis investigation. These facts and the graphic symptoms presented in your letter would indicate that the subject died from the toxemia of endometritis.

HEMORRHAGIC SEPTICEMIA ORGANISMS FOUND

I will send you today the blood from a cow which died very suddenly this afternoon. She acted very nervous, ran right into objects, frothed at the mouth and soon fell to the ground, she would then strike with her feet, swing her head around and bellow as if in pain.

I held a postmortem examination, but found practically nothing. I looked at heart, bladder, trachea, etc., for petechia, but found only a few on bladder and heart.

Two weeks ago the owner of this cow lost two calves within 20 minutes of each other. They showed exactly the same symptoms.

The pastures are the same as they have been all summer.

Could this be hemorrhage septicemia?—C. J. H., Iowa.

REPLY—Your diagnosis is correct. There was no difficulty in finding many typical bipolar organisms of hemorrhagic septicemia in the blood samples.

In deliberating over cases of suspected foreign body in the rumen veterinarians should always think about binder twine accumulations which are sometimes found postmortem to be the offending agent. Ruminants ingest twine with straw and ensilage. The practice of allowing the twine to be cut up with the sheaves in filling silos is discontinued by many dairymen because of this fact.

The manual exploration of the internal genitalia by which the veterinarian is able to determine the cause of sterility in so many cases and through which he is so often able to execute corrective treatment, is often discredited because the diagnostician and not the method is at fault. In all of this so-called sterility work, heaps of practice and lots of patience are required before a very high degree of proficiency is attained.

Swine Practice

Edited by A. T. KINSLEY, M.S., D.V.S.

Goitre in Swine

Goitre, bronchiocele or struma, in swine, is a condition in which there is a non-inflammatory and non-neoplastic enlargement and improper functioning of the thyroid gland.

Geographic Influences

Goitre is more or less prevalent in the north central and north west portion of the United States and in Canada. The losses of pigs in Montana has been estimated at 100,000 annually. The disease has exacted a heavy toll from the swine industry in the Columbia river valley in the state of Washington. The losses of pigs due to goitre is apparently on the increase at least in some sections of the country. The areas, so-called "goitrous districts" in which this condition occurs is usually definitely defined. The drainage basin of the Yellowstone, the lower Missouri and the Musselshell with some of their tributaries are the areas in which the losses due to goitre are most extensive in Montana. In some instances sows that produced goitrogenous pigs have been moved less than a mile away from these districts and produced normal pigs at the next farrowing, and when the same sow is returned to the original premises, she would again produce goitrogenous pigs. As a rule, only a portion of the sows on a farm, will produce goitrogenous pigs, although in some extreme cases 95 per cent of the sows produce diseased pigs. In many instances sows will produce goitrogenous pigs in the spring and although the sows are maintained on the same farm and in the same lots they produce normal pigs in the fall farrowing.

In the majority and possibly in all cases the sow that produces affected pigs also has goitre.

The Etiology

The cause of goitre in pigs is a deficiency of iodin. The iodin deficiency is intimately associated with an increased size and altered function of the thyroid gland. The presence of iodin in the thyroid glands was recognized by Bauman in 1896. The iodin content of the thyroid is diminished by goitre in pigs. Goitre in swine is similar to simple goitre in the human and is characterized by a relatively uniform enlargement of the thyroid gland. Although the thyroid gland of a pig having goitre is larger than the normal thyroid, the total iodin content of the entire gland is less than that of a normal gland. The specific cause of goitre is a deficiency in iodin but the reason is problematic and goitre development under such surroundings is difficult to explain. Thus, according to Welch of Montana, "A rancher one year may lose 95 per cent of his pigs and the next year with the same breeding stock, the same ranch conditions, and feed and water from the same source, raise an entirely normal herd." It is not uncommon in goitrogenous areas for one-half of the sows kept in the same pen and given the same feed and water to produce normal pigs and the other half produce pigs affected with goitre. The nature and condition of feed appears to have little if any influence on the causation of goitre. Abortion in sows and goitre are distinct, although goitre in utero may cause abortion.

Symptoms

Symptoms of goitre in sows may not be observed because the thickness of the neck masks the swelling of enlarged thyroids. Goitre in pigs is characterized by hairlessness, more or less complete over the entire body, excepting around the nose, eyes and neck. Pigs affected with goitre are generally a little larger than normal. The head and neck are especially large. The skin is sleek and the region of the head and neck frequently wrinkled. Pigs affected with goitre are sometimes still-born. If farrowed alive, they seldom survive more than a few hours. In some instances a portion of a litter may be normal. The hoofs are undeveloped or thin and fragile. The thyroid glands are found to be from 2 to 4 times the normal size and they are dark in color. The

enlargement of the gland will be found proportional to the degree of hairlessness, fragility of hoofs and size of the head and neck.

Treatment

Treatment is of no value yet prevention is possible. Affected pigs are invariably born of affected sows. The iodin deficiency may be due to insufficient iodin in the food stuff or it may be a result of improper functioning of the thyroid gland. Dried normal thyroid gland tissue contains approximately 2 per cent of iodin and the dried thyroid gland tissue from a pig affected with goitre contains no iodin, or not more than a trace of it.

Experiments at various experiment stations indicate that most feeds contain sufficient iodin for normal metabolism, but that such feeds do not prevent goitre. By administering one ounce of potassium iodid in each 300 pounds of feed of the sow, goitre can be prevented, providing it is given during the entire gestation period.

The prevention of goitre in pigs is important, as the number of inquiries received shows it is very prevalent. We would suggest that veterinarians confer with breeders in their respective communities and arrange to prevent a malady that causes such great losses.

DELAYED PARTURITION

An interesting case was recently reported, concerning a valuable sow, in which the period of gestation was exceedingly long. The history of the case is as follows:

The sow was bred on May 28th. She was a valuable, big type Poland China and immediately after breeding she was so placed that future service would be absolutely impossible, according to the statement of the owner. One hundred days after breeding, this sow was placed in a farrowing pen as she had the appearance that on schedule time she would farrow. After keeping the sow in the farrowing pen for some three weeks, the owner believed that something irregular had happened and ceased his vigilance in the watch for farrowing. Forty-two days after the date for farrowing according to the breeding, the sow farrowed 10 living pigs, the period of gestation being 157 days.

Or, Was Fertilization Delayed

Is it possible that the male cells from the original breeding may have remained in the genital organs of the sow for a period of six weeks before fertilizing the ova? The length of time would indicate that the sow had passed through two heat periods after the first breeding. These periods were not observed by the owner, although he personally observed this animal every day.

The above is an interesting case and VETERINARY MEDICINE will be glad to hear whether practitioners have seen similar incidents.

PICA IN SWINE

Pica or depraved appetite is a condition characterized by a tendency of the affected animal to consume other substances than food. The condition may also be characterized in some animals by a desire to lick foreign substances, such as posts, boards, etc. Depraved appetite is probably not as common in swine as it is in some other animals. Some cases have recently been observed that were rather interesting. The following is quoted from a letter recently received:

Herd May Be Affected

"I have under my care a herd of hogs that have acquired the habit of eating wood and tearing fence posts. After administering tankage, minerals, wood ashes and coal, they did not stop this practice. Any suggestions from you will be greatly appreciated."

Cause Often Obscure

The usual causes of aberration of the appetite are improper rations or disease. The condition in the majority of instances is of dietary origin and is usually readily overcome when a proper diet is provided. In some cases, the cause of the condition is obscure. It may have its origin from indigestion, from a diseased condition of the teeth, catarrhal gastritis and perhaps some other disturbances may be associated with aberration of the appetite. A few cases of pica have been found in sows that were depleted by maintaining a large litter of pigs.

The Treatment

The treatment for depravity of appetite is not difficult in the majority of cases, providing the cause can be identified and removed. If the disturbance is due to an improper diet, the disease usually disappears within a few days by providing the proper rations. In those cases in which the disease is associated with dyspepsia, irregularity or diseased condition of the teeth, the correction of the disease or diseased condition will overcome the abnormal appetite.

Sows suckling large litters of pigs that become associated with an unnatural appetite can

usually be relieved by supplying excessive quantities of feeds, rich in protein, and minerals.

VETERINARY MEDICINE will be very glad to have suggestions from practitioners relative to this condition.

The "tyranny of environment" has always done a great deal of harm to the hog industry. Once this brute is housed, yarded and fed in obedience to the common laws of hygiene much of the hog-man's trouble will cease.

HOG CHOLERA

I have mailed to your laboratory a sample of blood from the ear of a Poland-China boar. These hogs were farrowed in February and March, 1921, and were vaccinated in May with serum and virus.

The herd went along fine and some of them were exhibited at the fairs where they became sick. On their return a boar and a sow died. The owner thought it was a serum break. At first they showed symptoms of thoracic mixed infection. I vaccinated them every three days until all symptoms had subsided and they were on feed and feeling fine.

A month later this client held a sale, a few days after which five boars that were sold were reported sick. They lay down a good deal, had no appetite, wabbled slightly in their gait, temperature from 104 to 106.° F. However, none of them died, and the rest of the herd in the sale that had been left on the owner's premises to be bred seem perfectly well. They eat, show no temperature and hustle alone as usual. One boar that was not called for at once appeared sick and a diagnosis of cholera made. One hundred cubic centimeters of serum and two of virus were given, but I have not heard particulars as to the outcome.

If this is a contagious disease, why should not some of those kept at home show it? They ran together before the sale and were penned in the same pavilion during the sale, sold in the same ring, and run on the same beautifully green fields. It is a nice clean swine farm. None of the animals have died.

If a blood test can be made, please report as soon as possible—J. R. C., Illinois.

REPLY:—Although the bacteriological examination did not show any pathogenic organisms, the description of this disease would seem to indicate that you are dealing with either hog cholera or hemorrhagic septicemia. We would advise an absolute change of environment and feed.

NECROTIC ENTERITIS (?)

I am sending, by separate mail specimens of the intestines and lung of a pig for microscopic examination.

This pig was one from a herd of about 80 head, weighing from 40 pounds to 125 pounds. For the past month some of them have been showing the following symptoms.

They lose flesh, thump, cough, eat with the herd until the last day or two before dying and sometimes never refuse feed. Some of them have a clay colored diarrhea and others do not show much diarrhea.

On postmortem examination, a few worms were found and the intestines were inflammed and thickened, especially the small ones. The large intestines show necrotic areas with a tough, black membrane that pulled off. The lungs were normal; lymph glands except those of mesentery, kidney, spleen and bladder were normal. These pigs were pastured on alfalfa and blue grass and were fed twice a day on slop made of fresh, ground barley, oats, corn, middlings, tankage and buttermilk. About seven or eight pigs have died during the last month.

They were treated with worm capsules followed by copper sulphate, charcoal, sodium hyposulphate and salt twice a day for a week. What treatment would you suggest?—G. S. P., Ohio.

Reply:—The bacteriological examination of the specimens sent showed streptococci. The intestinal lesions were produced by the combination of the bipolaris and paratyphoid organisms. We would recommend autogenous bacterins for this particular herd, good sanitation and very careful feeding.

It would be well to look into the source of the buttermilk that is being fed to this herd and to the care taken of it between its source and the slop trough.

"The cleaning and disinfection of all railroad yards and stock yards during the last outbreak of foot and mouth disease was, I believe, largely responsible for the small amount of hog-cholera that followed that period. Cleaning up of all public yards, pens and stock-cars would be of great value in the prevention of diseases of livestock."—Pres. T. J. Foster, Illinois State Vet. Med. Ass'n.

Purely Practical

There is no successful treatment for swamp fever.—Schalk.

Whenever a cow refuses to eat during convalescence turn her out.—DeVine.

The fact that a pig hung up by the hind legs does not squeal makes this form of restraint desirable for many surgical operations.

To cure flat warts not easily removed surgically try a saturated solution of potassium bichromate once daily for a few days.

When you fear the stomach tube has passed into the respiratory tract, shake the trachea at the upper third when the tube is buried eighteen inches. Its end will bump against the wall perceptibly as the trachea is shaken to and fro.—Anon.

Murphey's operation for bubonocele in boars that are wanted as breeders, has been performed with success by several veterinarians since preconized by the author and although not often indicated in a general practice, it is well to be reminded that such an operation is possible.

Veterinarians who have followed Stranaud's recommendation to give lots of enforced exercise to the laminitis cases find this a much less serious disease than formally. Jugular venesection, aconite internally, cold swabs to the feet, plenty of forced exercise and a good, well bedded box stall now cures cases that formerly died or became permanently worthless from foot deformations.

A fountain syringe is better for washing out the stomach of colic cases than the pump. A canvas bucket with a capacity of five gallons, entubed with a hose equipped with a slip-over end is filled with warm water and drawn to the ceiling with a small rope passed over a beam or held up by means of ice-tongs snapped to a beam. An ordinary rubber tube-snap is used to open and close the hose as required.—Crowe.

A stubborn epistaxis can always be helped and often promptly arrested by tracheotomy.

The stubborn cow that will not rise may generally be made to change her mind by jabbing her briskly, but not brutally, along the back with a fork.—DeVine.

Inoculation with live bacteria as virulent as possible now seems to be the rage in abortion control (a case of get it over with at once) just as the Europeans do with foot and mouth disease.

Cantharides ointment or cantharol are much better blisters for horses than biniodid of mercury ointments. The latter especially when spread over a considerable surface is very painful and possesses no compensatory virtue.

Resection of the ligament of the ergot underneath the ergot itself has often proved a cure for the lameness of ringbone despite the fact that in principle it is a quackish procedure of the lowest order.

A recent thoroughpin that is not too tense often responds to repeated aspirations, blisters and rest. Subcutaneous injections of Lugol's solution may hasten matters somewhat.

For ulcerative keratitis of dogs try potassium permanganate 1 to 2000. Warm the solution and instill it into the eye twice a day. In less than two weeks a complete cure may be expected.

Sixty-five feet of half-inch rope is the only casting apparatus needed in a veterinary practice. Light to carry about, always available, perfectly reliable for every possible purpose, never found wanting in any detail and very cheap, are only a few of the good things one can say about it.

The method should be demonstrated at every veterinary association clinic so that all harnesses, trappings and hopples may soon be thrown into the scrap heap, where they have always belonged.

Veterinary Surgery

Edited by L. A. MERILLAT, V.S.

A New Plantar Tenotomy

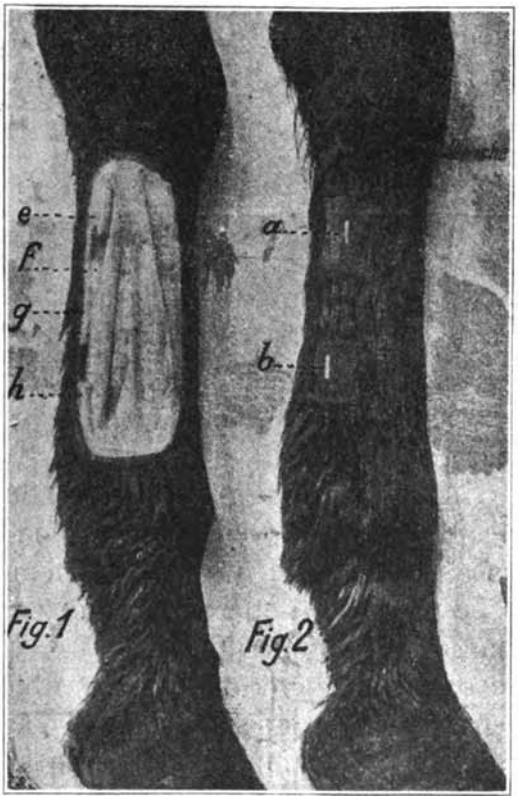
The division of the flexor tendons in the metacarpal region for volar flexions has not always given the good results the practitioner would desire. There has been some difficulty found in keeping the leg from breaking down while the tendons are healing and the resulting connecting medium always remained enlarged, and was sensitive for an indefinite period. Often it was found necessary to apply blisters and even actual cautery for months before the sensitiveness disappeared. Then no matter how carefully the operation and the complicated after-care were carried out the subject was often permanently and conspicuously blemished with a hardened condition of the region. The patient, in addition to the disease that caused the deformity, thereafter had a veritable "wooden leg." When performed upon colts the results were somewhat more encouraging but upon mature horses these ugly sequelae were almost sure to supervene. Then again the convalescent period was always too long in view of the value of the crippled subject.

History.

Already in 1913 and 1914 we had adopted a new method that was giving much better results but the war interrupted our experiments, and as a consequence no public report of them was ever made. The operation which we call "new" is the artifice of a Roumanian veterinarian, C. Podasca, who practiced it in the clinics of the Veterinary High School of Bucarest already in 1911. It was during this year that the author published a report of his procedure in Arhiva Veterinara (March and April 1911).

Technique

The operation varies from the old one in that the two tendons (the perforans and perforatus) are each severed at different points. The author divides the perforans at the middle of the upper third of the metatarsal region and the perforatus at the union of the middle and lower thirds. After following this method we found it expedient to reverse this order of things and at once had still better results than with the original Podasca operation, the chief advantage being that of more easily avoiding the synovials.



General Scheme of Operation

Fig. 1—Podasca's operation: (a) Proximal end of severed perforans; (h) Distal stump of perforatus.

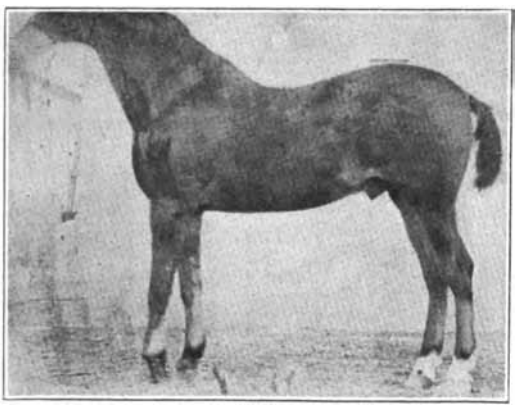
Fig. 2—(a) Location we select for division of perforatus and check ligament; (b) Place we divide perforans. (Courtesy of the Author.)

To do a neat and correct operation the patient should be under profound chloroform anaesthesia, otherwise the essential degree of immobilization is impossible to obtain. The

tenetome should have a slender and very sharp blade.

The leg is clipped and disinfected and the two seats are shaved and painted with iodine in addition. When the subject has been cast and anaesthetized and the seats re-disinfected with iodine, the sterilized tenetome is passed between the two tendons at the point above indicated and then turned against the perforatus. The division is effected by pulling on the foot with the carpus as a fulcrum. The tenetome is held in the closed hand as the thumb gauges its course and presses the tendon against it.

The perforans is then divided in much the same manner, but here care must be taken to pass the tenetome under the blood vessels and nerves and not over them. To avoid these the blade is kept close to the tendon and passed downward at an angle that will direct the point under the upper group of vessels and nerves and then before pushing it deep enough to sever the undermost group the tendon is cut partly off until the knife stands at a right angle. The remainder of the tendon is snapped off as above directed, that is by



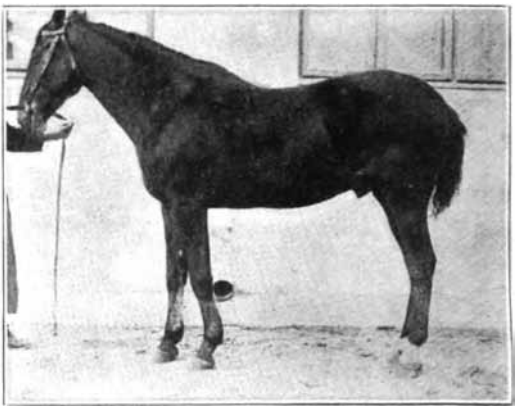
Patient before operation shows pronounced deformation.

stretching the tendon and directing the knife's course with the thumb. The adhesions are then broken down until the skeletal angles are normal.

Post-operative Dressing and Care

For a young colt a good stiff bandaging may be all the support required. The bandaging material must however be fortified with leather or similar material that will prevent the toe from turning upward and of these dressings must cover the whole carpal and digital region.

In adults a special shoe and leg brace is required to fortify the bandages, yet we have had good results by merely applying a bar shoe with a prong extending backward along the floor five to six inches. When the latter is used the horse can not be walked because the hind foot would catch the prong at each forward stride. These measures must always be previously provided for. Their use may be discontinued in ten days or two weeks after which time the patient will recover without further support.



....Patient six months after operation shows but slight abnormality.

It is, however, essential that an animal so operated upon be given a long period of rest, in order that the sensitiveness of the scar tissue be allowed to disappear in the shortest possible time. To this end it is advisable to shoe the horse with a shoe having high heel calks and no toe calk. In addition it is well to apply a good sharp cantharides blister covering the entire region of the tendon very soon after the support has been removed.

AMPUTATION OF SUPERNUMERARY TEATS

A client of mine has a valuable Holstein heifer, three years old, due to freshen for the first time in March. The animal has two extra teats growing out from the sides of the two anterior teats. The owner wishes me to remove them.

Will you kindly outline a satisfactory method for this procedure?—F. C. S., New York.

REPLY BY DR. FERGUSON: Operate at least two weeks before the glands start to secrete milk. Restrain the animal, preferably by casting and

stretching; wash the teats with soap and water, dry with 5% sol. tinct. iodine; apply a rubber band to the base of the large teat, tight enough to control the hemorrhage. Have an assistant stretch the main teat by pulling on its free end. With your left finger or a forcep fastened to the end of the small teat to be removed stretch it away from the main one and with a sharp pair of curved scissors cut it off at its base in such a manner as to leave as small a skin wound as possible and divide the duct close to the main teat duct. With the small point of your thermo-cautery, cherry red heat, cauterize the divided duct and balance of the wound lightly. Remove the other small teat in the same manner.

Release the animal, put her in a clean stall and remove the rubber bands in an hour by cutting them with the scissors.

If the wound becomes soiled apply 50% sol. of iodine daily, otherwise no after treatment is necessary. The results should be 100% satisfactory.

ANTI-BLEAT OPERATION

I would like very much to obtain information on the surgical procedure used for the purpose of preventing bleating of goats.—A. H. B., Iowa.

REPLY: The bleat of a goat may be modified very materially by excision of both vocal cords.

The subject is tied safely in the dorsal recumbent position, the laryngeal region shaved and disinfected, anesthetized with a four per cent solution of novocain, an incision made into the larynx as in the operation for roaring in horses, a retractor is inserted and the vocal cords, first one and then the other, picked up with the tumor forceps and resected from before backwards.

There is not much danger from complications.

Line firing is the best treatment for spavin we yet have. The affected hock should be fired all around except over a small space at the flexion surface. Puncture firing of the exostosis itself is generally a disappointment, while line firing the whole tarsal region, followed by a cantharides blister and at least five weeks of absolute rest often will cure the lameness. When this fails cunean tenotomy should be performed.

UNILATERAL THYROIDECTOMY IN LAMBS

Unilateral thyroidectomy is practiced in Italy to improve the quality of the fleece of sheep. Lambs from which one thyroid gland is removed develop a wool that is more silky, more supple, more elastic and less resistant, all of which are qualities the wool industry appreciates.

CANKER OF THE FOOT OF HORSES

This stubborn disease of the feet of horses responds best to pressure applied by means of a wadding of oakum arranged evenly in wads over the affected parts and then driven down tightly with a strong plate of bendible iron fixed beneath the wed of the shoe. Before applying the pressure the granulations are well exposed by carefully paring away all undermined horn and then smoothing them up with caustics of which pure formalin is thought by American veterinarians to be the best. It is also helpful to pepper the whole affected zone with boric acid to prevent putrefaction of the discharges and eschar before applying the pressure. The dressing should be changed once a day for the first week then once in two or three days thereafter. The one objection to the treatment is the pain it produces at first, each time the pressure is applied, and difficulty of securing the patient to reapply the dressing.

INTRAVENEOUS INJECTIONS

In the administration of intraveneous injections into the jugular vein Moussu recommends that the needle be of small caliber and always directed upward. The object of injecting liquids against the blood current and in a small stream is to assure a better dilution in the blood before the solution reached the endocardia. There is danger in delivering an unmixed concentrated solution direct to the heart.

The intraveneous injection of iodine dissolved in oil has been found to give better results than the administration of iodid of potassium per os. It causes no discomfort, is less likely to produce iodism and has a more lasting effect than the potassium salt Iodine thus given was still found in the blood of animals three weeks after it was injected into the jugular.

Origin of the Vinsot Operating Apparatus For Horses

COURTESY OF BULLETIN VETERINAIRE.

One morning in the year 1403, as the cruel sire Phraizodin was returning to his fortress, his horse was stricken with an injury that prevented it from advancing a single step. He sent for the veterinarian of the country, Jehan Tibrostosine, medicus veterinarus, reputed to be skillful in the treatment and care of sick animals. "Cure my horse" commanded the wicked Seignior, "if not, I will confine you with the oubliettes of my chateau."

Alas, the beast was severely wounded, necessitating that its body be turned on its back, a difficult thing to execute in the absence of a proper apparatus, but the good doctor, without losing any time, placed a long lance between its legs, tied them and the head securely to it and then gave the ends into the hands of eight of Phraizodin's most robust soldiers.

They then dexterously turned the horse over with this improvised pivot as easily as if it were a goslin to be dressed. Then Jehan Tibrostosine cut, recut, sewed, unsewed and resewed the flesh and skin and dressed the wound so well that the beast formerly ready to yield up its soul, now walked off gaily and with an expression of thankfulness to its benefactor.

The results were so satisfactory that the sire Phraizodin in spite of his wickedness, congratulated his veterinarian, besides he recompensed him for his good care with large brilliant pieces of gold. Jehan Tibrostosine made an extended report to his veterinary society on the form of the apparatus he improvised and named it Pattenlairum Equum for which the society presented him with a beautiful silver medal.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of formalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.
2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 percent formalin solution and sent to the laboratory whole and unopened.
3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per-cent formalin solution.
4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

Hemorrhagic Septicemia in a Flock of Seventeen Hundred Geese

I am sending you a goose for a laboratory diagnosis. The history of the outbreak is as follows:

The owner informed me that he was having serious losses in his flock, 200 having died during the week out of a total of 1,700. "They are dying faster than at first," the owner said.

As I had no experience with geese or any other fowl for that matter I suggested that after making an examination of the flock a carcass be sent to a laboratory for investigation. To this he consented, saying "There must be something done as the entire flock will soon be lost at the present death rate."

History

The geese had been bought from the farmers of the surrounding country as feeders for the holiday trade, and were being fed on hilly ground but without any shelter. The weather had, however, been perfectly dry, and there had never been any casualties during previous years in flocks handled in the same manner. The flock had been moved to another field a day or two before the time of my examination, but this had made no change for the better in the death rate.

Antemortem Examination

On examination I found the following situation: Water was supplied in troughs to which it was brought from an adjacent pond. The feed consisted principally of corn to which bran was added later. Both seemed to be of good quality. In walking among them I found one dead and two squatting down with the heads to the ground, dying. They made no effort to escape nor struggle when handled. All of those that fell sick showed the same symptoms, and all those not showing this serious condition were lively, moving rapidly about when approached, showing no signs of weakness, no drooping, no trailing of the wings nor any inclination to lag behind. In short they were all either apparently well or else seriously sick. While holding an autopsy on two of them, four more sickened and died.

Postmortem Lesions Found

The crop was empty and the esophagus slimy with mucous. A few grains of corn and a greenish substance was found in the gizzard. The rest of the content was grit and a dry material. The mucous membrane, of the intestines, especially that of the ceca and cloaca,

was more or less inflamed, peppered with petechial hemorrhages, and studded here and there with reddened, swollen areas. The contents of the duodenum were greenish in color and that of the other intestines frothy and mucoid. The ceca was full of a green, pulpy material. The feathers around the vent were clean, showing no signs of diarrhea.

The pericardium and heart were spotted with petechial and ecchymotic hemorrhages, including the endocardium. The kidneys were dark and probably enlarged. The liver was mottled and somewhat larger than normal.

Treatment

I gave them permanganate of potash and phenol-sulphonates in the drinking water without, however, expecting to accomplish much by the treatment.

Please wire me treatment at once.—H. W. S., Illinois.

Reply:—Your client is in the trouble that one invites by agglomerating into one flock geese gathered together from so many different sources. It is doubtful if such an enterprise will ever be permanently successful. While several years might by chance pass without any calamity, sooner or later an outbreak of some contagion is inevitable. If your client is bent on feeding geese he does not himself raise, as an occupation, we would advise vaccination with hemorrhagic septicemia bacterins but especially the strict quarantining for a considerable time before newly purchased geese are placed in the feeding flock. The only hope of saving this flock is through isolation of the sick, proper disposition of the carcasses, disinfection of everything contaminated and inoculation with hemorrhagic septicemia bacterins, since in the bacteriological examination typical bipolar organisms were found in exceptionally large numbers.

We thank the querist for the completeness of the description, as well as for bringing so important a matter before our readers.

A FATAL GOSLING DISEASE

Am sending under separate cover a gosling, special delivery. Kindly examine it. Thirty-five out of sixty in this flock have died, not all at once, but over a period of several weeks.

Symptoms: Mainly paralysis, also convulsions, some diarrhea. They lay sprawled out, helpless, for several days before death.

The feed consisted of corn and oats ground together. The sanitary conditions are quite good. There is no pond or water and the runs are on dry upland. There were several cases of the same ailment on the place last year, but by giving intestinal antiseptics the trouble ended. I tried the same treatment on the flock this year, but with no success. I have made no postmortem examinations.—E. B., Wisconsin.

REPLY: In our examination we were unable to find any bipolar organisms but found Gram negative coli-like bacilli which would indicate that the trouble arises from virulent organisms of the colon group. We are studying this organism and will have more to report at an early date. It would be helpful if we could have other specimens, especially one or two of the sick goslings.

MULTIPLE EPITHELIOMA

I was called to diagnose and treat a nine-year-old dun colored rural mare gelding, weighing about 1100 pounds, that had been developing tumors for several months.

In May it was turned out to pasture in the hope of thus effecting a cure.

These tumors have slowly enlarged. They vary in shape, some being nearly round and others oblong. They are from a half inch to an inch deep. The round ones vary from one to three inches and one-half in diameter and the elongated ones from one to three inches in width to from two to nine inches in length.

They are located under the abdomen and on the outside of the hind legs from the hock to the croup. There is one about one and one-fourth inches in width and six inches long on the tendo-acchillis and one on the front leg extending from two inches above the fetlock to two inches above the carpal joints, which is from one to one and one-half inches in thickness. There are about a dozen on each leg and hip and twenty underneath the body. They are quite hard and somewhat sensitive on palpation. The tumors seem to involve both skin and subcutaneous tissue.

The horse seems to be feeling well and is in no way disabled. Appetite, pulse and respiration normal, but there is a slight loss of flesh.

I incised one of these tumors and under separate cover, am sending you a specimen. Kindly let me know your findings.—J. S., Ohio.

REPLY:—Our laboratory diagnosed these tumors as multiple epitheliomas. There is no similarity, either clinically or microscopically

to botryomycosis, in fact multiple tumors of this character are not rare in animals. Our recollection is that they have a predilection for light chestnut and dun colored horses. We believe your patient is incurable.

SWAMP FEVER

I am sending by parcel post a specimen of blood from a two-year-old filly. During the summer quite a number of horses in this district have suffered from a disease showing the following symptoms:

The animal is noticed to be duller than usual, and in a few days does not feed well, although in some cases the appetite remains good until the later stages of the disease. The gait is stiff, the legs and abdomen edematous and the hind quarters weak. The pulse is fast and its character changes as the disease progresses. A jugular pulse is present in the last stages. Temperature ranges from 103.5 to 106° F. Mucous membranes are at first injected; later they become bloodless. The loss of flesh is rapid. Fleshy animals are reduced to a swaying skeleton in ten days.

The disease is highly fatal, running its course in fourteen to twenty-one days. Those that recover are of little use, having no endurance. In other words, they are weak a year after they get well. The disease apparently is contagious

Postmortem examination reveals blood thin and watery. Heart muscle flabby, liver and kidneys soft, intestines empty or containing a few bots. Parasites are common in this province.

The animal from which the specimen of blood was taken is feeding well and has been sick about eight days. The abdomen and legs are edematous, pulse 100 per minute, temperature 104.° F., and it is losing flesh rapidly. The gait is quite unsteady. This is the second animal to become infected on this farm in the last two months. His neighbor had one infected in July and it succeeded in getting into his pasture and in a month after, he had one similarly infected, and both animals died.

The animals on this farm have good well water and are fed on oat sheaves. Those that are healthy are running out on the stubble fields and look well.

I have used several medicinal remedies without success. The disease is commonly called swamp fever by veterinarians and stock men. The disease seems to confine its activity to equines during the hot weather. No cases have been observed during the winter months. —W. F. T., Sask.

REPLY:—The bacteriological examination of the blood sample sent showed no pathogenic organisms.

It appears you are describing swamp fever, which being caused by filtrable virus, cannot be detected by microscopic examination, culture methods, nor by inoculation of laboratory animals. Swamp fever is incurable.

SUSPECTED POISONING OF A BOAR

Under separate cover, I am sending you a portion of the contents of the stomach of a yearling boar found dead this morning.

Last night he appeared normal, eating his feed, which consisted of corn, middlings and a small amount of tankage. On postmortem examination, we found about one-third of the gastric mucosa greatly inflamed and there was an excess of bile. Everything else appeared normal.

I would like to have this examined for the presence of some of the more common poisons and the results reported to me direct.—M. E. H., Ohio.

REPLY:—The chemical analysis shows no evidence of the more common poisons. There are so many things that can kill a boar it would seem advisable to seek some other cause.

NECROBACILLOSIS CONFIRMED

I am sending the lungs of a 100 pound shoat with the hope of getting assistance in the treatment of the balance of the herd on this farm.

I have vaccinated on this farm for several years for cholera. For the last three or four years these shoats seem to contract pneumonia which seems to be swine plague, some in the acute and some in the chronic form. I have given most of them one dose and others two doses of hemorrhagic septicemia vaccine with very good results, but some this fall were not benefited.

The lungs of the pig I am expressing were removed after the pig was destroyed and bled. This shoat was sick two weeks, had a cough, thumpy, fever and constipation. The postmortem examination revealed no signs of cholera. There were no petechia to be found in the kidneys, spleen, heart or intestinal mucosa. The lymph glands appeared to be normal. The intestines show no ulcers nor but-

tons, although the floor of the bladder showed a little cystitis.

There seems to be a pyogenic infection in the lung. Pus can be squeezed out as you will observe in the specimen sent. Kindly advise me of your findings.—R. F. H., Illinois.

REPLY:—Our laboratory reports that the specimen sent showed no indication of hemorrhagic septicemia, but there were a number of streptococci and diplococci and bacilli necrophorus present. None of the signs of hog cholera were present.

The symptoms and the laboratory findings justify your diagnosis of necrobacillosis, as the organisms found are always present in specimens from animals dead from this disease.

CYSTIC-GLANDULAR HYPERTROPHY OF THE INTESTINES OF A PUP

We are sending under separate cover a specimen of large intestine of female Boston terrier, seven months old. We did not see this animal alive, but from all postmortem indications and history, it would seem that death was caused by acute indigestion.

What we cannot understand are numerous spots on the inner lining of the bowels. Maybe you can help us out.—A. L. B., Ohio.

REPLY: The specimen of intestines submitted shows cystic glandular hypertrophy without any signs of malignancy. The character of the spots can not be determined until further preparation on account of the discoloration and shrinking caused by the strong alcohol in which the specimen was preserved.

CHEMICAL POISONS SELDOM FOUND IN STOMACH CONTENTS OF DOGS

I am forwarding to you today, the stomach of a six-month-old collie dog. This animal became sluggish about 4 o'clock in the afternoon and about 6 o'clock was thrown off his feet by a spasm of the muscles.

I was called at 6:30 the same evening, and found him on his side, and unable to rise, and very nervous. The least noise seemed to throw him into violent spasms.

I advised the owner that from the symptoms, I suspected acute gastritis or strychnin poisoning. He then informed me that the cat and dog always ate together and suggested looking at the cat, and to our surprise, we found her stiff and cold near the furnace.

The dog died an hour after my arrival, and to satisfy my own curiosity, I would like an analysis made for strychnin poisoning of the stomach.—J. M. O'N., Michigan.

REPLY:—The search for poisons in the stomach contents of dogs is generally in vain on account of vomition and rapid absorption. The material submitted did not show the presence of strychnin, but the circumstances attending the death of these two animals and the symptoms described in the dog leave no doubt that both of them died from strychnin poisoning. It is seldom worth while to send stomach contents of dogs to a chemist for analysis because dogs generally vomit the poison-containing content and that which has killed has been absorbed and is therefore not available for examination.

HEMORRHAGIC SEPTICEMIA

I am sending you specimens of blood from a five-month-old calf, from lungs, liver and heart. This farmer has lost some calves each year from the same infection, and has been able to check it with hemorrhagic septicemia bacterins each year until this year, and has lost four calves so far.

Symptoms:—The patient gradually weakens, fever 103 to 106.° F., cough and emaciation. The disease runs a course of from one to two weeks.

Febrifuges seem to have no effect, in fact, all medication seems to be useless.

On postmortem examination hemorrhagic spots are found in the skin; the lungs are in a catarrhal condition, the lower lobes show spotted areas; the heart is enlarged showing petechia on the surface; the cardiac sac is filled with a fibrous exudate showing adhesions to pleura; the liver is enlarged and congested; the bowels through the entire tract show venous engorgement and the lymphatics are congested throughout the body.

Please examine these specimens of blood to see if you can locate any bacteria that could cause this affection.—G. C. F., Illinois.

REPLY:—Although the specimens submitted are contaminated, the bacteriological examination showed the presence of bipolar organisms and thus confirms your suspicion of hemorrhagic septicemia.

A few drenches of hard cider is said to be a perfect cure for jaundice including the pruritis that often accompanies that condition.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

VACCINATION AGAINST BLACKLEG WITH BACTERIA (3)

The immunization of cattle against blackleg with bacteria free filtrates is being employed to a large extent both in Switzerland and Japan. The results in Japan are supposed to be so favorable that they have entirely ceased the production of spore containing vaccines. The author reports the vaccination with filtrate of 4,800 cattle in the notorious blackleg districts of Simmental and Thun. A single injection was made subcutaneously in the neck. None of the animals showed a visible reaction. Only three of the vaccinated animals died from natural blackleg within the year. Accordingly the losses amounted to only 0.06 per cent. For comparative purposes in the same year, 22,600 animals were vaccinated with muscle virus. The results of this vaccination were 12 deaths from inoculation blackleg and 59 deaths from blackleg infection in the field.

Free Filtrates Most Effective

The vaccination with bacteria free filtrates, therefore, appears to be more effective and the favorable results indicate that in Switzerland at least the losses from blackleg are produced by the classical blackleg bacillus. The author also mentions that according to the suggestion of Uchimura other anaerobes might also be utilized in the preparation of bacteria-free filtrates. A product obtained in such a manner would also give good results in other infections similating blackleg.

EXAMINATION OF THE FECES IN VARIOUS DISEASES OF CATTLE (4)

The investigations embraced a macroscopical, microscopical, physical and chemical examination of the feces. The reaction of feces of cattle even in disease are almost invariably alkaline. In chronic intestinal catarrh and chronic indigestion they are mostly of a very thin consistence with a watery contents of 91.5 per cent. In chronic indigestion the feces contain a great amount of course, unruminated and undigested food particles. The mucin contents is considerably increased in chronic intestinal catarrh. Albumen is found mostly in chronic intestinal catarrh. It may also occur in acute intestinal catarrh, in malignant catarrhal fever and in traumatic gastro-diaphragmatic inflammation.

Blood coloring matter may occur in gastro-diaphragmatic inflammation and in rare cases also in chronic intestinal catarrh. In paralysis of the rumen and in cases of constipation the feces are usually hard and crumbling and the water contents is only about 70 per cent.

In cases of lead poisoning the feces invariably contain blood coloring matter, they are of very dark color, of a fetid putrid odor and are coated with a tenacious, blackish red slimy covering. The lead as a rule cannot be demonstrated in the feces. It is in all probability being absorbed through the intestinal tract.

THE PROBLEM OF ACUTE LAMINITIS (9)

The author presents scientific conceptions on the nature of laminitis. He does not consider the affection as a local condition of the hoof, but as a general constitutional affection. He aims to support his view by his postmortem observations on animals which died from laminitis. He always observed on such autopsies a discoloration and crumbling condition of the liver and hypertrophy of the heart. He found these conditions even in animals which died eight hours from the onset of the disease. According to his views, these pathological changes cannot be considered as the result of a congestion of the sensitive lamina, but they are suggestive of an intoxication.

Laminitis resulting from feeding as explained by the author, is due to an incomplete splitting of the proteins. The foreign proteins are harmful to the liver and are supposed to induce anaphylactic manifestations. If laminitis results after fatiguing work, the author attributes this to an exhaustion of the glycogen reserves in the body and to an excessive formation of certain acids such as lactic acids, etc. He further is of the opinion that laminitis may also develop from an excessive utilization

of fats and to an incomplete combustion of the same; in the same way at such times the carbohydrates are not sufficiently oxidized.

TETANUS IN SHEEP-RECOVERY (7)

An owner himself undertook the castration of seven bucks by ligation of the scrotum and subsequent cutting. In twelve days there appeared a stiffness in locomotion. Two bucks were so severely affected that they had to be slaughtered before the veterinarian was called. Of the five bucks which were still alive at the time of the examination, one laid flat on the ground with extended stiff legs. The musculature was hard as a board. At short intervals muscular convulsions appeared over the entire body during which the eyes were also drawn back into the orbid. These animals could no longer be made to rise and were slaughtered. Two other sheep walked with great difficulty; the extremities were rigid and extended but they still could take some food. The musculature, especially of the hind legs, was also very hard. In the two remaining sheep the tetanic infections was somewhat slighter. These two animals were given each 500 units of tetanus antitoxin subcutaneously. In two days marked improvement was observed. The same dose was repeated. The castration wound was thoroughly painted with iodine. The improvement continued and after eighteen days all signs of the disease disappeared. The two animals which were not given the antitoxin had to be slaughtered.

VACCINATION AGAINST STRANGLES IN HORSES (8)

The author discusses the various methods of vaccination against strangles. He himself prepared a vaccine which is being tested at the Remount Depots of the Belgian Army. The vaccine consists of a two-day old strangles streptococcic culture in bouillon which is heated to 56 degrees for one-half hour. Living bacilli should not be contained therein; which is controlled by cultural tests. Three inoculations are made at eight-day intervals; 5 cc is given at the first injection and 10 cc is administered on the two subsequent injections. A stronger local reaction follows the first injection than on the two subsequent vaccinations. The rise in temperature hardly ever exceeds 1 degree C. The local and thermic reaction is more marked in young horses than in older animals. The affected or convalescent animals show no local reaction. Vaccinated horses have not developed the disease in localities where strangles was prevalent. The vaccine is also supposed to possess curative action. Repeated subcutaneous injection of 10 cc of the vaccine into horses affected with the disease has, according to the author, a favorable influence upon its course.

BACILLARY CARRIERS IN CHICKEN CHOLERA (1)

Chicken cholera is usually introduced with newly purchased infected birds. If the outbreak of the disease cannot be explained, it is generally assumed that bacillary carriers are responsible for its appearance. This has also been substantiated by Ostertag, Ackermann, Hertel and Muller. The author recently observed a case in which a rooster became infected in an outbreak in the fall of 1918. The bacilli, however, in this case could not produce the typical septicemia as the bird was immunized by vaccination and only a localized suppurating process developed on the leg. In March of 1919 the dried encapsulated swelling opened probably as a result of traumatic influences which permitted the escape of pus containing virulent bacteria. The author attributes the outbreak in the flock to this infection, whereas the rooster remained well throughout the disease.

DOURINE CARRIERS (6)

Dourine was very extensive during the war in Algeria. The investigations of the authors showed that animals which clinically were entirely recovered and which were regularly used for hard work and from which the blood even in doses of several liters failed to be infectious, suddenly broke down and disclosed trypanosomes in the peripheral blood circulation. Such instances were observed to occur at intervals from fourteen months to three and one-half years. A stallion affected with dourine, therefore, may in spite of an apparent recovery become dangerous. In the face of our present knowledge, therefore, it appears indicated to exclude from breeding every stallion affected with dourine. If the animal is in poor nutritive condition it should be destroyed. If with proper treatment a general good condition is attained the animal should be castrated.

3. Prof. Graub (Schweiz. Arch. f. Tierh. V. 63, No. 3).
4. Hilderbrand Inaug. Dessert. Hanover.
9. Fleuret. Rev. Vet. Apr. 1921.
7. K. Neuwierth, Deutschoster Tier. Woch. V. 3, No. 5.
8. Saceghen. Vet. Rev. March 1921.
1. Prof. Manniger, Allatory, Lapok, 1921.
6. Sergeant & Donalin (Bul. Soc. do. Path. Com. V. 13).

Parasitology

Edited by MAURICE C. HALL, Ph.D., D.V.M.

Eosinophilia and Parasitism

Occurrence

Eosinophilia is a blood condition commonly associated with many forms of parasitism. It also occurs in a large number of pathological conditions, aside from parasitic conditions. It occurs in splenomegalous luekemia, sarcoma, osteomyelitis, osteomalacia, chlorosis, secondary anemia following infection, extirpation of the spine, chronic splenic tumors, bronchial asthma, emphysema, pemphigus, eczema, psoriasis, urticarias, leprosy, herpes zoster, burns, vagotonia, exposure to X-rays, and in skin diseases associated with toxic agents. The eosinophile count sometimes rises in scarlet fever, acute rheumatism, malaria, syphilis, gonorrhea and in ovarian diseases with the exception of cancer. Eosinophilia is physiologic in childhood, the average count being 1 to 2 per cent above that of the normal adult. It is sometimes stated that there is a racial eosinophilia, and a count of 15 to 20 per cent among the natives of South China cited as an instance, but in view of the prevalent parasitism in China, this instance must be regarded with suspicion.

Nature of Eosinophiles

The nature of the eosinophiles has been studied by Weinberg and Séguin, who reach the following conclusions: The eosinophiles possess phagocytic properties, engulfing bacteria, protozoa and erythrocytes, but these properties are more distinctly manifested against microbes than against cells. Experiments show that the eosinophiles are capable of digesting the engulfed bacteria, protozoa and red cells, the process taking place in vitro as well as in vivo. When the eosinophiles are abundant, they may play an important role in protecting an organism against infection. In contact with hydatid fluid, eosinophiles absorb this fluid and it loses its antigen properties, a thing which may be demonstrated by a fixation reaction. The absorption takes place equally well at incubator or refrigerator temperatures, but more rapidly in the case of eosinophiles from immunized animals than in the case of those from fresh animals. In brief, whereas the neutrophiles primarily protect the organism against bacteria, the eosinophiles are especially adapted to the neutralization of certain toxic substances, and it is probable that having absorbed these toxic substnces the eosinophiles elaborate specific antibodies.

Relationship

Although eosinophilia is commonly present in cases of infestation with animal parasites, there is no simple direct relation between the degree of eosinophilia and the degree of parasitic infestation. The relationship is complicated by the degree of reaction to the parasitic toxins on the part of the host animal. We may surmise that an animal with high resistance will show a higher eosinophile count than an animal with low resistance and that in animals with high resistance the eosinophile count will rise higher with a larger number of parasites present than with a smaller number present. However, we may expect a variation in the eosinophile count of the same animal from time to time, depending on various physiological conditions, we may expect a difference in the eosinophile count between recent infestations and old infestation and between larval parasites in the tissues and adults in the lumen of tubes or cavities, and we know that some parasites, such as trichinae, with an eosinophilia as high as 86 per cent in some cases, will give a higher eosinophilia than other parasites, and that some host species react to a given parasite in a manner different from that of other host species. In view of these things it seems evident that we must know many things not yet known before we can definitely determine much about the parasitic conditions present on the basis of the eosinophilia present. At this time we know very little beyond the fact that eosinophilia may be indicative of parasitism and that this is one of the many conditions which must be taken into consideration in determining the

reason for the presence of an ascertained eosinophilia.

In a recent article, Wright has given some very interesting findings which show the difficulty at present of correlating the degree of eosinophilia with the degree of parasitism. In the case of one horse, the animal showed an eosnophilia of 0.2 per cent in May and of 9.4 a little over two months later. This animal showed an eosinophilia of 7 in October and of 1.2 in December, shortly before postmortem examination of the animal. On postmortem the animal apparently had a comparatively light infestation, as horses go, having 1 bot, 3 Setaria and a few Strongyles and Cylicostomes. This case may be taken as illustrating the numerous factors present as complications in the study of eosinophilia.

The Eosinophile Count

The light eosinophile count in May might have been correlated with a light infestation due to the loss of many parasites during the winter and perhaps with the presence of an old infestation with adult parasites in the lumen of tubes and cavities. The high eosinophile count near the end of July might have been correlated with fresh infestation picked up during the spring and with the presence of larval worms in the tissues, including the blood. The fall in the eosinophile count in December might have been correlated with the decreasing number of parasites present with the cessation of reinfestation in early winter. But such conclusions would be open to the apparent objection that the eosinophiles were 3.4 per cent on June 14, dropped to 1.4 five days later, rose to 9.2 six days after this, dropped to 2 on October 8 and rose to 7 on October 27. Wright notes that one horse averaged 17.2 per cent for 6 months and showed a relatively small number of parasites postmortem, whereas another horse showing 13 per cent eosinophilia had a large number of parasites postmortem. One case of interest is that of an animal showing no eosinophilia and no parasites postmortem. Wright cites Burnett as authority for the statement that the percentages of eosinophiles are about the same for all animals except cattle, and notes that Dimmock and Thompson found the average for cattle to be 13.15. In connection with the differences manifested by various hosts towards the same parasite, it may be noted that rats do not show the same eosinophilia in trichinosis that man shows.

Role of External Parasites

Not only internal parasites but also some external parasites may caues eosinophilia. In the sarcoptic scabies of man the eosinophilia may reach 19 per cent. In severe cases of sarcoptic mange in the dog, Welch found an eosinophilia of 6 to 30 per cent; in light cases the eosinophile count was 1 to 4 per cent. In severe cases of demodectic mange in the dog, Welch found an eosinophile count of 4 to 14 per cent; in light cases the count was 1 to 3 per cent. Welch concludes that the eosinophilia depends more on the intensity of the dermatitis than on the extent and nature of the disease. Strickler finds that louse infestation in man does not produce an eosinophilia, as scabies and grain itch do. This finding may be explained in the light of Weinberg and Séguin's work as due to a lack of absorption of toxic material in cases of pediculosis. The lice live on the surface of the skin and under ordinary conditions the amount of louse secretions and excretions absorbed by the host skin is probably very small. Apparently there is little or no inoculation of secretions in biting which might lead to a reaction manifested by eosinophilia. On the other hand, mange and scab mites burrow in the skin or become encrusted in the drying exudate which follows their attacks, and their excretions and secretions are readily absorbed under these conditions. They are also believed to inoculate certain secretions with biting, and these may be the cause of the characteristic itch. Powdered mites and extracts of mites will produce this itch. It would appear probable that the eosinophilia would be greater in the case of such deep burrowing mites as Sarcoptes than in the case of the more superficial varieties such as Psoroptes and Chorioptes.

Localized Form

Aside from the generalized eosinophilia manifested by the differential blood count in cases of parasitism, there is a localized eosinophilia in the case of certain parasites in the tissues or attached to tissues at fixed points. Moore and Fitch in this country have published a study of such localized eosinophilia in the case of nodules resembling those of glanders in the lungs of horses, but actually due to parasites. These parasitic nodules show a variable localized eosinophilia, a feature of value in differentiating them from nodules due to glanders. Many similar cases of localized eosinophilia in connection with parasites have been reported.

Can Be Experimentally Produced

Both generalized and localized eosinophilia can be produced by the injection of parasitic material, extracts, etc. Calmida found that the injection of extracts of the dog tapeworms, Dipylidium caninum and Multiceps multiceps, into the circulation of rabbits was followed by an eosinophilia beginning in 6 to 8 hours, and that when a capillary tube containing one of these extracts was placed in the subcutaneous tissue of the rabbit the tube was found at the end of 24 hours to contain leucocytes of which the greater number were eosinophiles. Williams and Bentz digested trichinous pork with artificial gastric juice and introduced the dried residue into dogs, cats and frogs with the production of localized eosinophilia in a large number of cases. Vallilo injected extract of Strongylus vulgaris into the peritoneal cavity of guinea pigs and after 12 hours found an eosinophilia of 19.1 per cent in the blood and of 15.45 per cent in the peritoneal exudate; eosinophiles were present at the site of injection, especially in the subcutis. Panizza found that when a dog was injected with an extract of Ascaris lumbricoides the eosinophiles increased from 0.7 per cent to 12.8 per cent, the eosinophilia being proportional to the amount of extract injected; an extract of Cysticercus pisiformis injected into rabbits increased the eosinophiles to 35.3 per cent. Hadwen has reported that when the body juices of the ox warble are injected into a susceptible animal, a swelling forms, and smears from this swelling some hours later will show an eosinophilia; when a drop of the warble fluids were instilled into a steer's eye and smears made from the discharge some hours later, the cells present in the discharge were practically all eosinophiles.

Experiments on the Cause of Eosinophilia

Ahl and Schittenhelm have conducted experiments to determine the nature of the products causing eosinophilia. They found that animals sensitized to albumen, fibrin and globin showed some eosinophilia when reinjected with these products. Nucleoprotein, histon and caviar peptone produced a high eosinophilia, while such end-products as nucleic acid and protamin gave almost no increase in eosinophiles.

Weinberg and Séguin found in some cases where the percentage of eosinophiles was high in the general circulation that local experimental injections lowered the percentage in the general circulation. Also, that if the general percentage was low, local injections only caused slight accumulation of eosinophiles. Apparently it takes some time for the production of eosinophiles as they have to come from the marrow. They state that if the percentage of eosinophiles is low, the polynuclear neutrophiles will sometimes take their place. Dr. Seymour Hadwin suggests that perhaps this is only temporary until eosinophiles have been produced. Hadwin found in many cases of swamp fever that eosinophiles were very low or else wanting in the general circulation. Wright confirms this. As many of the cases of swamp fever which Ransom examined had many worms and also had many local accumulations of eosinophiles surrounding them, the above observations seem to be confirmed.

TRAUMATIC ACTION OF THE STRONGYLES OF THE HORSE

A study of the buccal capsule of the strongylus equinus and the lesions produced by it in the colon and caecum of horses disclosed that the parasites are usually securely fixed tc the mucous membrane. They are usually close together and often grouped in veritable colonies.

The lesions observed are of four types:

1. **Small wounds or pricks:** These are caused by the mode of fixation of the parasite that aspirates the mucous membrane into its buccal capsule. When the parasite is detached it leaves a little papulary elevation of the mucous membrane which proves to be manifestly altered when seen under the microscope. The gland tubules have disappeared and are replaced by a homogenous mass that shows necrosis and intense infiltration with cosinophile leucocytes. In the center of the necrotic portion the eosinophiles lose their proper character and coelesce.

2. **Edematous tumefactions:** These are observed where the parasites are numerous. The tissues are infiltrated and their cells altered. The arterioles are dilated and the eosinophilic infiltration is very pronounced. The edematous swellings of the caecal wall is very extensive, sometimes over a yard long.

3. **Small or Large Ulcerations:** These ensue as the necrosis sloughs away, and the healing depends upon the virulence of the microbes introduced by the strongyles; if inoffensive, the lesions heal rapidly without leaving any cicatrix.

The microscopic examination reveals a complete destruction of the mucous membrane and the submucous tissue, inflated with leucocytes and many microorganisms.

4. Mucous and submucous nodules: These enclose larvae. The small ones have a diameter of 250 microns and are found immediately under the epithelium. The larger ones are submucous and can attain the size of a hazel nut. They bulge into the lumen of the intestine and sometimes show the small orifice through which the larvae escape. (Parodi et Widakwich. Riv. Zoo., August, 1919.)

GASTROPHILUS

As the old impression that the gastrophilus is perfectly harmless to horses is not entertained today it would seem that the practitioner's duty is to recommend both preventive and curative measures in all horses whose stomachs are thought to harbor the larvae in harmful numbers. Unthriftiness of obscure origin, perverted appetite, gastric disorders and mysterious loss of flesh are among the conditions which would lead to the suspicion that bot larvae might be the cause, especially in districts where the fly abounds and after seasons during which they were numerous, as shown by observations on the many ova deposited on the hairs.

A parasite that is capable of collecting in such large numbers as to actually cause obstruction or to monopolize great areas of the gastric mucous membrane can no longer, in the light the present knowledge of parasitism, be passed off as a triviality.

It is not desirable to go back to or even approach the days of the old empiric who diagnosed bots in all mysterious complaints for the ostensible reason of preparing a safe retreat at the postmortem, but it is very desirable that we study its syndrome with the view of selecting the harmful from the harmless infestations.

Rural practitioners who hold postmortems frequently, are often struck with the large size of the area carpeted with larvae and although taught the contrary, he often finds it hard to pass the incident as entirely without consequence in the disease and death of the patient. And justly so, because in spite of the fact that we are not prepared just now to incriminate them directly there is due and sufficient reason to suspect them as secondary agencies in the cause of serious enteric disorders. A parasite occurring in such large numbers and sojourning so long in such an important organ as the horse's stomach is not a trivial matter.

If they sometimes do no harm they do occasionally destroy life. What disorders result from them between these two extremes remains to be demonstrated, but that none other occur is hardly reasonable.

Among the many harmful cases of which there are many on record are the two reported in recent journals, namely, the case of Wright (Nevada) J. A. V. M. A., June, 1921, a four-year-old gelding that emaciated to the point of death and on postmortem examination showed over a thousand larvae as the only explanation; and that of Vion (France) Rec. de Med. Vet. in which the larvae completely blocked the esophagus with fatal results.

The proper treatment according to Wright and others is bisulphid of carbon, which was recommended by Perroneito many years ago. It is given on an empty stomach and followed a few hours later with either linseed oil or aloes as a purgative. The dose is from one to one and one-half drams given in a capsule.

MOLD FOLLOWS CORN EAR WORM; CAUSES ANIMAL SICKNESS

Moldy corn, due to the injury of corn ear worm, may cause sickness and death to animals, according to H. A. Gossard, entomologist, Ohio Experiment Station.

Careful inspection of ears and fodder should be made this season and the moldy seed discarded.

Owing to the long growing season this year the corn ear worm has been doing unusual damage. Reports show that the worm has even attacked greenhouse crops and has also been found destructive in flower gardens and alfalfa fields.

The habitat of the corn ear worm is further south than Ohio, but it encroaches upon northern crops during long seasons.

Sweet corn is its favorite crop, but it also attacks tobacco, tomatoes, peas, beans, asparagus and sometimes vetch, clover or alfalfa.

Entomoligists believe that in the event of colder weather this winter the brood of the corn ear worm will be partly destroyed so that its damage will be much less next year.

Canine Feline and Avian Practice

The Silver Fox Industry

By J. P. Duffus

The rapid growth of the silver fox industry in the United States during the last few years has opened up a new field for the veterinarian since these animals are now raised in large numbers and are receptive to all of the diseases of dogs and more susceptible to them than the domestic canine.

During the first days of fox breeding, while ranches were few and their population less concentrated, the need of sanitation was less important. In fact, there were then several successfully managed ranches at which no sanitary precaution had ever been taken, but as the industry increased some of the ranchers found that by using more care and more cleanliness in feeding and in quarters they were able to reduce very materially their losses in young foxes which theretofore had been considerable, and as the price of skins increased the more prolific production became more important, and more attention was then paid to scientific feeding and management under the various conditions.

Routine Followed by Most Breeders.

The adult foxes before being mated are dosed with one of the standard worm medicines and if hook-worm is suspected the animal is dosed for these also, but as hook-worm treatment is more dangerous, this is attended to by the veterinarian. Thymol and carbon tetrachlorid are the remedies usually resorted to for this purpose. The old foxes usually receive no other medical treatment except such as may be required for isolated cases or individual ailments.

When the litter is born and has reached the age of twenty-two days they are given a small dose for worms, since it has been found that round worms are so common in the pups that it is better to give a preventive treatment than to wait until there are clinical manifestations or until some harm has already resulted. A month later if there is any sign of worms in any of them a half dose of anthelmintic is given, and this usually rids them of any remaining worms.

Prevention of Rickets Important.

As the young fox grows older it gains in size so rapidly that he must be watched for rickets which in foxes arise from various causes. Too rich a food may sometimes weaken the legs quite as likely as that deficient in bone building elements. Some ranchers feed a special diet to the mother for no other purpose than to prevent rickets, and this is believed to be a good practice. After the pups are three months old they are generally as hardy as the mother if properly fed, but the pens must be disinfected by spraying with proper agents and the isles sprinkled with lime to prevent contagions from being carried about by the feet of the keepers.

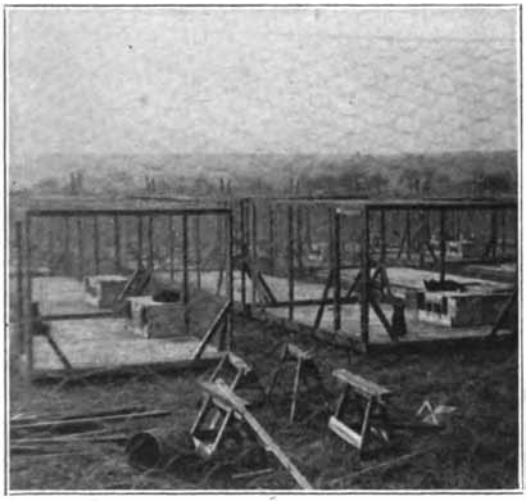
Corner of a Cement Floored Fox Pen.

The Floors.

Many ranchers prefer a floored pen to facilitate the destruction of larvae of worms and other parasites that are difficult to handle on the ground. A good practice is to make a cement floor and then cover it over with ground and then to remove the earth and replace it from time to time. A board floor is however preferable, because it can be scrubbed and because foxes seem more comfortable on them than on either cement or the bare ground. In the case of illness the sick animal should be removed, its disease diagnosed, and the pen immediately disinfected.

Governments Interested.

The United States Department of Agriculture has established an experimental farm where the carcasses of animals dying from any cause may be sent for diagnosis and report. It will also send a representative on request to diagnose any trouble that may occur. On Prince Edward Island, where the industry has developed into an important industry with pelt sales of more than a million dollars annually, the Canadian Government has appointed a specialist who devotes his entire attention to the diagnosis and treatment of fox diseases. The ranchers usually supply the animals the specialist requires to make his investigations and thus several important discoveries have been made in the treatment of the diseases to which the fox is subject. The doctor's work is recognized to such a point that the United States Department of Agriculture accepts his health certificates for the importation of foxes into the United States.



Board Floored Fox Pens Under Construction.

The inspection consists of a careful external examination and a microscopic examination of the feces.

Veterinarians Should Help.

As distemper has appeared on several ranches some of the keepers have been vaccinating the young with a distemper vaccine or serum and some good seems to have resulted therefrom. In several instances the losses from this trouble has been greatly reduced although it never has been a heavy one anywhere.

There is, however, a great field in the industry for experimental work and for veterinarians located near the fox ranches. The ranchers without exception appreciate them and are always willing to co-operate. All things considered, there seems to be nothing in sight that would appear to threaten the solidity of the industry.

The losses from adults are few and far between. They seem to stand any change of climate well, and in shipping the losses are very few.

The Industry Profitable.

The hardiness of the silver fox, together with its productivity, makes the industry profitable in this country even if the present market price of the pelts decreases. It is particularly a safe enterprise because the losses from death of animals invariably come at a season when the pelt is prime or nearly so, and thus gives a relative carcass value above that of other animals.

Breeding stock of proven pelt value can be procured and one of the largest ranchers has established his own sales department in New York.

CANKER OF THE EAR

By first soaking the auditory canal well with a four percent solution of novocain, examinations and treatments of the deep portion of the external ear are very materially facilitated.

Chlorozene solution is the simplest treatment. After anesthetizing the canal with novocain, the dried discharges and wax are wiped out and the canal packed loosely with cotton soaked in chlorozene solution. The treatment should be repeated frequently since at first the patient will throw the pledgets out by shaking its head as soon as the effect of the anesthetic subsides.

Brumley recommends that the discharges and wax be wiped out with ether which is a better solvent for the cerumen than aqueous solutions.

TWO CASES OF TUBERCULOSIS IN CATS

The authors described two cases of tuberculosis in cats. The bovine type of tubercle bacillus was found to be the cause. They conclude from their examinations that tuberculosis in cats is much more frequent than is indicated by the statistics. It constitutes a great menace to man and animals as infected cats may readily disseminate the tubercle bacillus either through the air passages or with the excrements.—(Schweiz. Arch. f. Tierh. Vol. 63, No. 2.)

ETIOLOGY OF CANINE DISTEMPER

The cause of the disease we call canine distemper is still a mystery. The only incontestable feature about it is its great contagiosity. There are no pathognomonic symptoms by which it can be differentiated from other diseases of young dogs.

In 1905, Carre, and a year or two later, Lignieres, announced that they had found it was caused by a filtrable virus associated with other organisms, chief among which is the pasteurella canis. Later, Eiguene reported having produced it experimentally by inoculating pups with a filtrate of the discharges, with defibrinated blood and with peritoneal fluid and that he had produced an immunity with a serum made by successive inoculations.

In 1909 Kregenow, of Berlin, contradicted all of this with a group of experiments that seemed to prove that the specific agents are a number of different microbes found in the discharges from the mucous membranes.

In 1910, 1912 and 1913, Ferry and Torrey of this country, and McGowan of Scotland, were thought for a time to have settled the entire controversy by the discovery of the bacillus bronchisepticus, with which they were able to produce a disease to which both naturally and artificially infected dogs become immune. Ferry proved the specificity of the B. bronchisepticus by agglutination with the serum of dogs infected naturally as well as artificially, leaving little doubt that the question of cause had been definitely settled.

Then, in the report of the International Veterinary Congress in 1914, Carre confessed complete failure to corroborate the findings of the American authors, after having been unable to find the B. bronchisepticus in a single case, but announced that the coccus of Mathis was constant in the cutaneous pustules. He deplored Ferry's flat-footed repudiation of the filtrable virus on the grounds that three other researchers of unquestionable merit had produced the disease with filtrates, and offered as a plausible explanation of the discrepancy, that they may have been working with an entirely different disease, leaving the question of cause as far from solution as ever.

Today, in the light of all that is known, the therapist must still work out his own salvation from the hypothesis that the cause is probably a filtrable virus plus the secondary invaders found constantly in the pathological issues.

ROUP

By parcel post I am sending you a chicken from an infected flock, for diagnosis.

Several weeks ago, the owner called me to see this flock and I diagnosed the disease as roup. He had lost about 25 chickens. They were discharging from the nostrils and some few had swollen eyes and canker in mouth and throat. I treated the birds with a roup bacterin, giving one cubic centimeter dose, and swabbing nostrils and throat with tincture of iodin. I advised the owner to clean up the quarters and put them in a sanitary condition, which he did.

The chickens continued to die, and I again was called, but this time the discharge from the nostrils and canker in mouth and throat had disappeared. The chickens seemed to improve, but later I was called again, as more fatalities were occurring.

The chickens showed discharge from the nostrils, but no canker in mouth and throat. The birds would sit around and droop the head as in limberneck or botulism.

During the course of treatment, they were fed on mash in which sulphocarbolates were added.

Please advise me as to diagnosis at once.—N. McN., Ohio.

Reply:—While the examination of the specimen mentioned showed some bipolar organisms of hemorrhagic septicemia, there were also some ordinary roup organisms shown, which, coupled with the symptoms of the disease you describe, would indicate an outbreak of roup probably complicated in some cases with hemorrhagic septicemia. The bacillus botulinus was not found.

You are dealing with a mixed infection that would call for a mixed bacterin treatment, but above all, do not omit the hygiene and sanitation that must be enforced in dealing with an outbreak of this kind. Bacterins and other medication are all subordinate to a proper cleaning up system, in handling such flocks.

AVIAN HEMORRHAGIC SEPTICEMIA

Under separate cover, I am sending you two live, sick chickens for examination. These were taken from a flock of about 350. About 75 out of the flock have died within the past two months.

They get lame, do not eat or drink much, act droopy, and some of them have diarrhea. They get very thin and finally die.—E. E. R., Illinois.

Reply:—This flock of birds is affected with hemorrhagic septicemia as shown by our examination of one of the chickens submitted. The other one was free from bipolar organisms so far as we could determine.

You are undoubtedly dealing with a chronic form of the disease that might be materially cut short by proper isolation of the sick as soon as they are found, a good cleaning up of the coops and the use of bacterins.

PARTIAL PARALYSIS FOLLOWING DISTEMPER IN A DOG

I have a valuable setter pup which I purchased in Illinois, five months ago. Immediately upon receiving him I gave him distemper serum, because I see a great deal of canine distemper here.

After about two months, he showed symptoms of distemper; respiration hurried, temperature up, for four to six days, then he improved. After one month or so, the symptoms were repeated, evacuations becoming very offensive. Some days there was diarrhea, on others the reverse. This continued for two weeks or so, then he had fits every four to five hours for four or five days. I finally stopped them by giving bromides.

Then I gave him a dose of oil of male fern, 2 grains, followed by oil. Eighteen tape worms were removed by this treatment. From that time, or one week before he showed signs of inability to stand, he would wabble from side to side, backwards and forwards, fall on his side and had to try hard before he could get up. Sometimes he will fall as if in pain, especially if both legs extend outwards or spreading. He is gradually getting worse.

I had X-ray pictures taken twice; but could not see anything, only a dark spot, probably in the bladder. I had several good physicians and surgeons look at the pictures and the dog. I could not give the pictures much consideration.

In regard to treatment, I will lay down no lines as I often secured no results. I would like your advice on the subject, and treatment if any will be of benefit.—B. M. F., Pa.

REPLY: I believe your puppy to be suffering from the nervous form of distemper. This often acts very similar to infantile paralysis in the human.

I recommend that you again worm the pup for tape worms, as there may still be a considerable number in him; also worm him for round worms using either oil of chenopodium, which you can give in 10 to 15 minim doses mixed with one ounce of castor oil, such a dose to be repeated about every three days for three doses; or, you may use carbon tetrachlorid C. P., which is given at the rate of 2½ minims per pound weight of dog. The latter drug is to be given in capsules, unaccompanied by and not to be followed by purgatives. I consider it essential for the recovery of your pup that he be free from all intestinal parasites as they not only give rise to toxemia, but otherwise aggravate the nervous condition.

I fear there is a progressive degeneration occurring in the spinal cord and that the outcome is problematic to hopeless. For the condition of partial paralysis or choreic symptoms described by you, give potassium iodid in two-grain doses three times daily, watching, of course, for symptoms of iodism.

The foul fecal discharges call for the administration of an intestinal antiseptic. For this give three to five grain doses of salol, t. i. d., or the same dosage of betanaphthol. As a tonic, for the anemia, due both to the distemper and the tape worms, I recommend iron cacodylate. Procure from some reputable drug firm in ampules, and give a three-grain dose. Once daily is usually sufficient. This, of course, should be administered subcutaneously.

The dark area you observed in the X-ray photograph is the os penis. Physicians, when examining X-ray photographs of dogs, pronounce the os penis a cystic calculus with great regularity. Don't be misled in this by the technician who operated the X-ray machine.

Queries and Answers

FATAL MECHANICAL PNEUMONIA FROM DRENCHING A HORSE

I am writing you for your advice on veterinary law and if you think best, consult Hemenway or other authorities. I shall relate the case exactly as it is to you, and should like to know if other practitioners ever had it happen to them and how they account for same.

A middle-aged horse was sent in to be wormed, as they thought he was wormy, and I told the hostler that probably I would keep the horse only long enough to give a physic and to discover the kind of worms, then he could take it and give the treatment himself. The horse being just a little warm on arrival, I waited about a half hour (the hostler returning home) and then drenched him with four drams of aloin and six drams liquor cresolis compositus in a quart of water. There was no difficulty in drenching and the horse did not resist, nor show any sign of coughing or getting any into the lungs until just after I had let him down; then I could see him breathing a little more rapidly than before. I suspected what had happened after listening to his sides, yet could hardly believe it, for he never coughed nor struggled while drenching. He died in twenty-eight to thirty hours, but never coughed while I was about. He swallowed enough to purge him fairly well before he died.

I was the only one there while it was drenched, pulling up its head with one hand and drenching with the other. As soon as I was sure what was the trouble I called up the owner. Now, I do not claim that the horse did not die as a result of drenching, but believe this was the cause. Was it negligence on my part? I recently received a statement from the owner's lawyer claiming $250 00 due to negligence.—F. H. B., Ky.

REPLY: Your letter describes a typical case of deglutition pneumonia from drenching and graphically relates the circumstances under which such accidents usually occur, in contradiction to the general impression of those who have had no similar experience, that the danger is greatest when the animal fights or coughs, or both. Our observations show that the accident occurs when least suspected by the one administering the drench and is only detected afterward by the chill and fast breathing.

If you can show the horse was drenched in the usual manner and in obedience with the prevailing custom of veterinary practice you cannot be held responsible.

BOTULISM IN CATTLE

Having had quite a bit of trouble in cattle of late, I am sending in the following case report and would ask you to enlighten me. I think it is forage poisoning from eating rotten corn.

On arrival found several unable to rise and others very stiff. Some would stagger as though drunk, and so blind they would walk into objects. Temperature and respiration were normal. They seemed to have no pain at all; bowels usually normal but slightly dormant.

After several hours these animals will walk off all right and follow the herd to the field. Some remain down for days and days, eat and drink but are unable to rise. One that was down five days, died.

Some of them seem to have laminitis. I gave a purge and followed up with two ounce doses of potassium nitrate night and morning. I also gave them a tonic composed of gentian, nux, cinchona, sulphate of iron and ginger. I gave the tonic three times a day.

There are quite a number of these animals down, and what the termination will be I don't know, nor do I know what else to do. The trouble seems to be due to bad corn as one owner after having had his cattle in a corn field for quite a time, turned them into another field and the following day he had four head stiff but only one went down. The others recovered in a day.

A bad wind storm in September blew down the corn so badly, that many ears sprouted on the ground.—C. J. H., Iowa.

REPLY: The cattle you describe dying from eating sprouted corn are no doubt affected with some form of co-called botulism or forage poisoning, and we would recommend, of course, that they be removed from the sprouted fields and given the standard treatment for this disease, which consists of a good active cathartic. We would advise gamboge and magnesium sulphate as a drench, or even more active cathartics like barium chlorid are indicated.

The secret of cure in forage poisoning is good, active purgation and when this can be accomplished quickly, one can expect a successful termination.

CONTROLLING HORSES FOR HIP WOUNDS

Is it a safe procedure in confining a horse in the standing position for suturing a wound on the thigh or rump, to fasten one end of a plank or pole just ahead of the animal and firmly held against its side by assistants at other end of plank or pole, thus squeezing the horse against side of the stall or building?

Would it be considered the usual and proper method to employ to control a horse for such an operation? The writer once saw a colt placed in an ox frame used for shoeing oxen, and squeezed against the side of the frame by a plank held by two men, for an operation on the colt's foot. Shortly after it was released from the stocks, a large hernia developed and the animal was destroyed.

We know that one of the accepted methods used in casting cows is to squeeze them down with a rope properly placed around the cow's body, drawn taut and pulled by one or two assistants until the animal lies down, but bovines with their four stomachs and limited amount of intestines are different propositions. —W. G. R., Massachusetts.

REPLY: Where there is no operating table to secure a horse with such a wound and no possibility of improvising a good set of stocks, the horse should be taken right out into the open and secured with a twitch and single side line. That is, the opposite hind leg should be lifted from the ground with a rope passed between the forelegs and around the neck or through a collar adjusted to the horse for that purpose.

If the practitioner will then turn up the skin and wipe its internal surface with a two per cent solution of novocain everywhere that the needle will enter, there will seldom be much difficulty in controlling the patient well enough to give the wound a good, surgical treatment.

We do not believe in fastening horses against the side of a stall, fence or wall, because invariably in the struggle they become entangled and inflict injuries either to themselves or to the operators.

ANOREXIA IN A HORSE

I was called to see a horse about ten days ago, but could not get there at the time on account of bad roads. The owner stated that the horse would not eat and he thought he was bound up. The horse had no pain whatever and would drink plenty of water, looked bright, but just would not eat at all. I advised giving a quart of oil every twelve hours, until he got action. Well it took five quarts of oil to get a free passage, but still there was no change. It is about ten days now and the animal hasn't eaten a thing, and of course, is getting more gaunt every day.

I have advised drenching him with eggs and boiled milk several times a day and I am giving him a tonic of nux vomica, gentian, iron sulphate and ginger. What is your diagnosis of the above case and what would your treatment be?

What is a good remedy to get an animal to eat? Any advise on the above would be greatly appreciated.—C. J. H., Iowa.

REPLY: The horse affected with anorexia is undoubtedly off its feed from a torpid liver, since you seem to have excluded all other causes to which persistent anorexia might be traced.

We have always found that three doses of calomel given morning, noon and evening and then followed the next morning by an aloetic purge will generally stir up a little appetite. Stomatics such as you have given are indicated as soon as the purgation has ceased. Such an animal should have exercise, plenty of good water, and small quantities of feed should be offered at the regular feeding periods, taking away any portion that is not eaten within a reasonable time.

AZOTURIA AND SWAMP FEVER

Will you kindly mail me the latest treatment on azoturia and swamp fever, as my experience with these two diseases is not very satisfactory with my present treatment.—McI., Michigan.

REPLY: A good purgative and lots of good care of the azoturia patient, followed in convalescence by tonics is the only thing that we can advise.

Swamp fever is an incurable disease, all statements to the contrary notwithstanding. Medicines are of very little value, and the favorable reports on certain treatments are due purely to the fact that the febrile attacks are periodic. The supposed cures are but the intervals between the febrile states. It is these periods of normalcy that have given the impression that certain medicines are curative.

The North Dakota Experiment Station have had cases of swamp fever in their laboratories for thirteen years, on which they have tried all kinds of treatment and still in spite of this, the patients are still affected, and capable of transmitting the diseases to other animals brought in contact with them.

It seems to us that this proves our contention that swamp fever cannot be cured today.

THE DAMAGE OF THE SOIL BY TRACTORS

In the September issue of VETERINARY MEDICINE, I note on page 78, a statement about farm tractors, and the damage to farms from the use of same, by Wayne Dinsmore.

I would like to ask the author in what way he means this—vibration or lack of fertility from not using horses.

Please understand, I am not looking for someone to argue with, for I have no tractor and never expect to have, but in reading my VETERINARY MEDICINE, I read everything in each issue and try to reason out just what each writer means and this one is not just clear to me in a sense.—E. F. F., W. Va.

REPLY: The damage done to soil by farm tractors may, of course, be exaggerated and will always differ according to the character of the soil. In some soils, the tractor is positively disastrous. In some it is only harmful during wet weather and in others it does no harm at all.

The damage is physical damage and is entirely independent of the fact that it leaves no fertilizer behind. We have seen fields tilled by tractors even when pulling such pulverizing implements as discs and cultipackers show traces of the tractor wheels not only in depressions in the soil level, but also in the growth of the crop thereafter.

It is in tilling the soil more than in plowing that the tractor does harm. For this reason, there are many farmers in certain districts where the soil conditions are unfavorable who have been compelled to discard the tractor for all other work than plowing.

THE TREATMENT OF PNEUMONIA WITH BINIODID OF MERCURY

In an article in the January, 1921, issue of VETERINARY MEDICINE, Dr. Merillat wrote of a treatment by J. Cardas for pneumonia.

I have tried this treatment in a number of cases with good results with regard to the pneumonia, but invariably I get sloughing of the tissue in the region of the injection.

Would you kindly help me out on this as the article states that the swellings are benign and transient.—F. T. J., New York.

REPLY: Your difficulty is no doubt due to the concentrated solution you have been using. This substance, as you know, makes a good blister. I have looked up the formula given in the Journal and am sure that at least twice the amount of water there indicated should be used. You will remember that this was an abstract from the experiments of Mr. Cardas for which we assume no responsibility.

HEMORRHAGIC SEPTICEMIA IN SHEEP

I am sending you by parcel post, a section of lung, taken from a sheep, for bacteriological examination.

I found about twenty-five sick sheep in a band of seventeen hundred. They eat but little, loaf around and gradually become emaciated and die in the course of one to three months.

Postmortem findings are as follows: Adhesions of lungs to various parts of chest cavity, some pericarditis, lungs badly infected and containing a great deal of pus.

Please examine the specimen and let me know your findings.—F. H. H., Idaho.

Reply:—The bacteriological examination we made of the specimens sent showed very clearly that this flock of sheep is affected with hemorrhagic septicemia. The clinical findings indicate that it is of a chronic, non-virulent

form. It would be advisable to treat this herd with bacterins as well as to take the necessary quarantine precautions by insisting on the separation of the sick animals from the others until the disease is entirely eliminated.

AUTOPSIES ESSENTIAL

I am sending you samples of feeds under separate cover, mistrusting forage poisoning, as they have all the symptoms. Seven head of horses have already died and indications are that there will be more.

Please give this food stuff your careful examination, and report to me as soon as possible.—S. L. P., Illinois.

Reply:—The examination we made of the food samples sent is not convincing enough to make a diagnosis of the trouble, and in the absence of any clinical symptoms we could not confirm your suspicion that these animals really are dying from forage poisoning

Postmortem examinations on these animals would help a great deal in assisting you to solve the problem submitted, and should never be omitted in an investigation of an outbreak so serious.

MALIGNANT EDEMA IN A DOG

On Nov. 10th there was a well bred bird dog brought to my place by the trainer.

History: The dog was in the best of health till Nov. 8th, when he was taken out to the field and given a tryout for forty minutes and that evening developed a swelling on the left front leg above the knee.

Symptoms: High temperature, rapid pulse, swelling on left front leg extending along body to last rib, nose dry, lame, difficult breathing, crackling sound on palpation of the swelling.

Just before death I cut into the tumor and it had a very disagreeable odor and a frothy dark red liquid issued from the point of incision.

Death followed in a few hours. I called it black leg, but I had never heard of such a case in a dog and I would be glad to hear of any cases similar to this one.—J. N. E., Oklahoma.

Reply: Your query describes a case of malignant edema. Where no laboratory confirmation can be had. the practitioner is always justified in attributing all such galloping, fatal, emphysematous conditions to this cause.

In young cattle, fatal emphysemas are generally called blackleg, yet even here there are some isolated cases that are due to other similar anaerobes, such as the vibron septique or the group of pseudo blackleg bacilli, to which other animals besides cattle are susceptible.

HARD SWELLINGS IN THE UDDER

A cow, about ten years old, has been a heavy milker. She has had hard swellings in the right front and left rear quarters of the udder. Has had this two or three times this summer and spring, and while in this condition, the eyes weep, the coat is rough, and she shows fever at times. I never heard her cough, but the owner tells me she sometimes does. I administered the tuberculin test.—E. F. F., W. Va.

Reply: Lumpy conditions in the udders of cows are generally serious especially at the age of ten years, and although their true nature cannot be determined in an antemortem examination, there is in this case every reason to suspect malignancy since you have excluded tuberculosis by the tuberculin tests.

We would recommend regular milking three times a day without dragging heavily upon the affected quarters and a course of potassium iodid treatment covering a period of some weeks.

A FISTULOUS SHOULDER LESION

A gray mare twelve years old has a tumor on the point of the right shoulder, very deep seated, having three roots. The tumor and the roots were about eight inches long. This broke before being removed and discharged pus. On being removed, it was covered with roots like a quittor and looked more like a quittor than a collar tumor.

I have removed a good many quittors in this part of the country. There are always a lot of them over the country. Could it be possible this was bacillus necrophorus infection?—E. F. F., W. Va.

Reply: The mare is affected with an infection of the lymph nodes underlying the brachiocephalicus muscle and despite ablation it may recur until these too are surgically removed. The "roots" referred to are characteristic of chronic suppurative conditions in this region.

Chlorozene, ¼ grs., bismuth subnitrate, 2 grs., zinc sulphocarbolate 3 grs, given every three of four hours is a very efficient intestinal antiseptic for the gastro-intestinal complications of distemper.

Zootechnics

Edited by E. MERILLAT, Physiological Processes and W. J. MARTIN, Husbandry

Introduction

By E. Merillat

There is no word in veterinary literature that is capable of a broader construction than "zootechnics." In its fullest sense it might quite properly be made to include the whole realm of veterinary science and animal husbandry combined. In fact, these are the two large branches which again fork into the smaller specialties. Its scope has been bounded at the will of the author in the past but present custom has imposed a limitation. It is today the study of breed, reproduction, food hygiene and the exploitation of the domestic animal and its products for the well-being of mankind.

Various Interpretations.

Zootechnics has been defined as "Animal engineering" (Baron), "The science of production and exploitation of the animal machine" (Sanson), "That part of natural history that treats of domestic animals" (Cornevin), "Experimental zoology" (Claude Bernard), "Domestication of animals" (Cent. Dict.), and "The breeding, keeping and handling animals in domestication or captivity" (Dorland).

According to Dechambre, the zootechnician of Alfort, zootechnics is neither an art nor a science, but the application of scientific facts to the production and exploitation of animals, in the same way as mechanics is the application of these to the liberal arts—the manufacture of machinery.

The word was "coined" by the Count de Gasparin in his book entitled "Agricultural Courses," published in France in 1843. Heretofore the subjects now included in zootechnics were described under such titles as "Applied hygiene," "General hygiene," "Knowledge of animals," "Handling of domestic animals," "Acclimatization and domestication of animals," etc.

To define the scope of this newly created department the word will mean "The production, development, preservation and utilization of the domestic animal and its products in so far as these concern the veterinary practitioner."

The Department's Objective.

The department will be devoted to a review of passing events rather than to voluble compilations belonging more properly to the textbook than to the pages of a monthly periodical. For graphic descriptions of breeds, type characteristics, the fundamentals and details that the veterinarian already knows or in which he is only incidentally concerned, the reader is referred to the library, since veterinary science is already too overcrowded to admit the integer into its scope without sacrifice of the purely veterinary studies.

The two, however, interlock at so many points that the one will always be engaged in making inroads into the other. The veterinarian will always want to know all about animal husbandry and the husbandman will always want to know all about veterinary science. In this, both are destined to disappointment because each is alone a life's study. To illustrate, the veterinary practitioner is not expected to qualify as the zootechnician for the breeder who has made a success and a lifetime study of a single breed, yet on the other hand he would fall short of requirements if he lacked the working knowledge of cardinal principles and poignant details upon which the success has depended, and by which he may be able to instruct the uninitiated and also acquit himself conversationally with the best expert.

It will be the aim to supply this need by refreshing the mind on important phases of fundamentals and by "boiling down" into readable paragraphs the voluminous current literature on the subject that the practitioner has no time to search and to which he has no continuous access.

It will always be interesting and profitable to learn, for example: (a) That the Depart-

ment of Agriculture has produced a new breed of chickens, combining the blood of the White Leghorn, the White Plymouth Rock and the Silver Gray Dorking, that are good layers, that lay the white eggs the market demands and that are fine birds for the table.

(b) That the University of Wisconsin has developed a process by which the bacterial count of milk can be ascertained in a few hours and that the innovation is a step toward the gradation of all market milk from that score.

(c) That a commission of experts in Holland have reported that roaring in breeding stallions is much less significant than was once supposed and that alone it should not disqualify an otherwise valuable stud.

(d) That the Horse Association of America is a live wire and that it reports 3,000 more horses in Chicago this year than last.

(e) That the six-horse unit is the most reliable and the most profitable power on the large farms.

(f) That filled milk is a fraud as a substitute for cow's milk and that its manufacture unchecked will make serious inroads on the dairy industry.

(g) That military experts of all countries unanimously pronounce the horse indispensable to the transport service of modern armies.

(h) That the future of the veterinary profession depends a great deal upon the consumption of animal products in gradually increasing quantities.

A Review of the Fundamentals

And furthermore, the mind might always with profit be refreshed from time to time on the established facts and modern conceptions of such physiological phenomena as heredity, variation, reversion, prepotency, telegony, individual excellence and others which underlie scientific and successful reproduction and exploitation without even implying that the veterinarian is not already well grounded on these fundamentals. It is always interesting to be reminded how the different authors define these phenomena and how breeders apply them to an anticipated goal.

It is never amiss to repeat that **heredity** manifests itself by transmitting characteristics possessed; **variation** by the appearance of new ones; that variation draws the species away from its normal bornes, heredity towards them; the one tending to destroy the work of the other (Dechambre); that reversion is the breeder's evidence of undesirable or desirable individuals in the family tree—the pedigree; or in short, breeding back to remote ancestors; that **prepotency** is the power of transmitting characteristics to the offspring, especially the power of transmitting **good qualities with great certainty**; that **adaptation** (Mumford) refers to the fitness of a breed for a definite purpose, as the Holstein for market milk, the Jersey for butter, the Hereford for beef, the Tamworth for bacon, the Berk for fat, the Merino for wool, the Dorset Horned for market lambs, the Percheron for the farm, the Shire for the dray, the Hackney for the home, the Leghorn for eggs, the Plymouth Rock for the table, and so on through the breeds of all species; and summarizing these facts, that a long line of good ancestors shown in the pedigree plus excellence and prepotency in the individual place the breeder on a sound working basis, providing all hopes are not shattered by the tyranny of environment—latitude, climate, shelter, food supply, attendants, and disease producing agencies. It is here that veterinary science and animal husbandry interlock inseparably; it is here the veterinarian takes command.

Bib. 1. Traite de Zootechnie, Dechambre, Vol. I, page 1.
2. Cours d'Agriculture, Comte de Gasparin, Vol. I, page 17.

Animal husbandry comprises the study of all zoological species capable of economic utilization. Its objective extends through the domestic mammals to the insects; from crustacea to mollusks and from birds to fishes. Its operations for orderly study may be grouped into: Production, Conservation, Amelioration and Exploitation.—LeClainche.

There is lots to learn about silos and ensilage that veterinarians do not know. As ensilage is destined to become as common a food for beef cattle as it has already become in the dairy industry, information in this connection is very desirable.

Except where the raising of chickens is a specialty, quality and performance should rule rather than numbers, since there is nothing that will arouse the temper more than a big flock of voracious miserably bred hens. On the other hand a few well-bred, well-housed and well-fed birds are always a pride.

As good breeds and fresh stock are so easily obtained at small cost there is no excuse for breeding scrubs.

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE

If the interest in the horse is dying out so fast, why these exceptionally large horse exhibits at all the fairs; why these large and enthusiastic audiences at horse shows; and pray tell us why one must crane one's neck so behind the crowded railing to see the horse races at the county fair?

Horse Association of America

Big national authorities stood up in the Chicago convention of the Horse Association of America last week, and unreservedly endorsed the horse as the logical source of power for the farmer and the most economical hauling power for city freighting. H. C. Taylor, Chief of the Bureau of Farm Markets, spoke in place of Secretary of Agriculture Wallace, calling attention to the official investigations of the department, proving that horses are more economical in every field operation on farms than the more recent iron steeds. Computed on 1921 feed prices, the cost of power per acre, according to the U. S. Department findings, is $1.37 for plowing with horses as compared with $1.72 with tractors; disking, 34c with horses and 55c with tractors; disking in combination, 32c with horses as against 59c with tractors; harrowing 18c with horses as against 30c with tractors; drawing hay loader, 52c with horses and 91c with tractors, and drawing grain binder, 31c with horses, 55c with tractors.

President Howard's Report

J. H. Howard, president of the American Farm Bureau Federation, an outstanding figure in American agriculture today and himself a practical farmer, vividly pictured farm life and the indispensability of horses. The work of the state agricultural colleges to promote better use of horses in farming and to raise production standards, was presented to the members of the Horse Association by the various heads of departments from colleges in the central west. The consensus in these reports was that the low point of horse displacement had been passed and that replacement had set in; that it was coming to be realized that horses should be bred for the definite qualities which stand the test of long, hard service; that this year has shown fuller utilization of horses in order to consume the coarse grains produced on farms and save outlay of cash for operating expenses.

Encouragement From the Secretary

Review of the work done in 1921 was made by President W. S. Dunham. The report of Secretary Wayne Dinsmore gave actual methods employed to encourage horse use in city freighting, pleasure riding, farm operations, presenting practical labor saving hitches showing horses in large team combinations, and in farm production, in which the association has urged that all breeding be selective to produce definite marketable utility types. Extensive investigations and publications of the association have reached into every farming community of the United States and to a limited degree into Canada, and to all principal cities. Mr. Dinsmore said, in part, "As stated before, our work is still in its beginning, but we have built broad and deep on

the solid rock of economic truth. Business men in cities are studying transportation problems as never before. It is no longer considered efficiency or progressiveness to use motorized equipment in the horse zone. Experience is showing our farmers the true status of tractors; they are awakening to the fact that neither tractors nor trucks have place in economical management of individual farms. Breeding is proceeding along better standards. Taken as a whole, public sentiment is gradually swinging into sane lines of discrimination."

The big objective—To increase horse and mule production and use.

I. **Investagations:**

(a) City Freighting—Reports covering 51,927 horses on file.

(b) Working Life of Horses, Harness and Wagons.

(c) Inventory: (1) of harness. 1 million sets now in use in cities, 9¾ million sets on farms; total 10¾ million sets. Annual replacement demand, 900,000 sets. (2) of work stock. In cities, 2,083,861 now in use. Annual replacement demand based on average of 9 years service, 231,540. On farms, based on acreage under cultivation for all states and working life of 12 years after reaching age of three, 1,627,856 head. Total annual replacement need for both city and farm use: 1,859,396. (3) of young stock. Foals of 1919 show present production at 1, 594,141 colts. This is 250,000 below replacement need.

(d) Replacements and work stock by zones.

(e) Feeding requirements; growing colts, city and farm work stock.

(f) Service records of city horses, to determine qualities for longevity and efficiency.

(g) Facilities for horseback riding in cities. Race Interests.

(h) Hitches for employment of big teams, a standard day's work.

(i) Displacement of horses and mules on farms by tractors would amount to eight times animal power cost.

II. **Publication**—Grand total 1,690,500 pieces of literature in the fiscal year 1920-21; 590,000 for city distribution and 945,000 farm; also 155,900 on horseback riding.

III. **Distribution**—By direct mail, 286,193 leaflets in letters to city commercial interests; 227,307 similar leaflets distributed indirectly; 82,197 leaflets in letters to encourage horseback riding; indirect distribution of 54,841 additional; 353,404 leaflets in letters to agricultural leaders, and 507,778 on their request, distributed indirectly. Through the newspaper and magazine press, over a thousand linear inches per month turned back to us by clipping bureau, which is estimated at 20% of total appearing. Aggregate audience reached through the press, 24,000,000.

IV. **Results**—Increase in city use: Chicago rises from 30,388 horses in use on January 1, 1920 to 33,660 on June 1, 1921 (10%); Philadelphia from 19,472 on Jan. 1, 1920 to 24,538 in August, 1921, (25%). General rise in public regard of horse-drawn equipment. Increased breeding reported and better standards.

V. **Strengthening of Organization**—Energy and co-operation donated by all members; directors subjugated personal interests to give time and assistance. Membership extended in all groups, but greater effort still needed to offset organized resistance.

PRIZES FOR VETS

Annual cash prizes as an added inducement for careful study in veterinary science are being offered by old grads and faculty of this institution. These added prizes are open to veterinary students taking the required assignment in their division. At the present time there are three cash prizes of $25 each offered and it is probable that other interested alumni will offer more.

Dr. A. T. Kinsley, a graduate of this institution, is the first to offer an annual prize of $25 to the student attaining the best average in veterinary pathology. The faculty prize of $25, donated by members of the veterinary faculty, is offered for the student attaining the highest general average of all veterinary students. Dr. E. A. Schomoker, of the class of '17 and at the present time veterinarian for the western farm of the Carnation stock farms at Tolt, Wash., offers a cash prize of $25 annually for the veterinary student doing the best work in clinics.—Kansas State Collegian.

By expelling the air within their bodies, aquatic birds can make themselves heavier than water at will when they desire to sink.

INTERESTING ADVICE GIVEN TO PHYSICIANS BY THE DRUGGISTS

Do not prescribe a "white" powder or a "simple" remedy. Add an inert ingredient. This will induce the patient to consider the remedy of greater importance.

Do not prescribe colorless preparations.

Do not prescribe "proprietaries" without changing their physical appearance, to prevent them becoming "household remedies."

Prescribe "freshly-made" pills in preference to "factory-made" pills.

Do not prescribe 5 cents or 10 cents' worth of a medicament. It seems unprofessional to some.

It is sometimes well not to inform the patient what is ordered for him.

If requested by the patient to make an estimate on the cost of a medicine, it may not be politic to do so. To say nothing at times displays most wisdom.

Many patients have more faith in larger quantities; they do not believe in small doses; tablespoon doses would appeal more to some than teaspoon doses or drop doses.

It is not always prudent to tell the patient how the prescribed medicine will act.

Co-operation between the medical and pharmaceutical professions will redound to the benefit of both.

ECTOPIA CORDIS IN A HEIFER

Ectopia cordis in mature animals is not a very common malformation, although it is seen with considerable frequency in the newborn, especially in aborted fetuses.

Animals with this infection that grow into maturity are more rare. The University of Argentine, in August, 1920, reported two cases in mature animals who were found infected with this condition postmortem; but a glimpse through veterinary literature reveals a dearth of analogous cases. Dr. Kenneth G. McKay, Colville, Washington, reports such a case in his practice last November. The subject was an eighteen-month-old heifer that exhibited a very pronounced enlargement at the base of the neck that was strictly compatible with the animal's health and general welfare.

It was a pure-bred shorthorn animal that had been entered as an exhibit at the country fairs and which died from an accident in no way associated with the malformation. The autopsy revealed that the once mysterious enlargement protruding from the front and the chest contained the heart, normal in every respect except in location. The apex protruded forward and the ventricles rested at the level of the first rib. The aorta and pulmonary veins were anatomically normal.

SKIMMED MILK

Skimmed milk is a valuable food not only for its intrinsic value but also for its influence on other feeds. It is one of the profitable by-products of the farm and no matter how small the supply might be, it will always help to bring other feeds nearer to the required balance, if intelligently distributed with the rations of pig, calves and chickens. When derived from outside sources or from cows not known to be positively non-tuberculous it should be heated to the point of safety before feeding. It is a crime to waste it. Nitrogen is too precious an element to waste once it has been gathered into such a useful compound as milk. Insist that the separator be set to skim a cream that will test at least 40 per cent.

The protein content of given feeds means little unless its worth is proven by experience, because it is only the amount of available protein that counts. In this, skimmed milk stands highest of all feeds. The price of 25 to 75 cents per hundred would go soaring if its true food value were once comprehended.

COCCIDIOSIS IN CHICKS

In the study of this condition the author found on autopsy especially striking changes in the ceca; even externally it appeared dark red in color, whereas the other parts of the intestine manifested no particular changes aside from an injection of the blood vessels. In opening the intestines the mucous membrane of the cecum was blackish red, swollen and covered with a granular bloody-fibrinous deposit in which small pin-head size white foci were present. The dropplings showed a sausage shape formation of firm consistence and permeated with blood. The mucous membrane of the other intestines showed only a slight catarrhal affection. The stomach showed no abnormal condition The microscopical examination demonstrated coccidia. They were mostly of oval shape, provided with a double contoured membrane and with a gray granular contents in which a round nucleus was distinctly visible. Similar bodies were found also in the course of the entire intestinal tract, but in much smaller numbers.—(Deut. Tier. Woch. Nov. 31, 1921.)

VETERINARY HOSPITALS AT FAIRS AND STOCK SHOWS

The need of a good veterinary service and a properly appointed veterinary hospital in connection with all public events where animals are congregated from different sources will hardly be a question inasmuch as these animal agglomerations have always been recognized as more or less of a menace by exposing exhibits to contagions and then spreading them broadcast over the land when the animals are again redistributed.

Tuberculosis, thanks to the accredited herd system, is now well handled by the simple process of refusing exhibits not certified as free from this disease, but there are other equally serious hazards that have not been brought under the ban of regulatory measures, and which can only be made more safe by a rigid daily inspection and by subsequent isolation in a properly managed quarantine hospital.

There are still some bovines exhibited at many fairs that are not accompanied by acceptable certificates of health, there are many hogs brought to county fairs and larger shows that have not been vaccinated, there are many dogs exhibited at bench shows that come from kennels ridden with distemper and mange, and finally there never has been any effort whatever made to handle the problem of horse influenza.

With these facts staring the veterinarian, there is a good big reason to champion the enforcement of regulations that will carry their weight into every center where domestic animals are brought together for exhibition, and this can only be done by a well organized veterinary service and well managed veterinary hospitals for isolation.

The first movement to this end was put into operation at the Pacific International Exposition last November where a veterinary hospital, with the obvious purpose and determination of diminishing the menace of contagion from this source, was conducted under the direction of veterinarians.

Between the pure-bred scrub and the grade scrub choose the former, but better still insist upon a sire that belongs to neither category.

OBSERVATION—II

Some of the most unfortunate errors in diagnosis and treatment are due to lack of observation. In many instances it is the simple things that count, but, owing to routine methods of diagnosis, and the desire to form rapid opinions, sufficient time is not given to careful observation.

When simple but important matters are discovered on the second examination of a case, which were overlooked at the first examination, it is an indication of lack of thoroughness and of observation.

Many attendants of animals are very observant, and, having ample opportunity for watching the early symptoms of a case, can, if they so desire, give valuable information to the practitioner with regard to diagnosis. Moreover, in many instances, it is of supreme importance to know the correct history and the treatment to which the animal was subjected, etc.

Careful observation has often succeeded in disclosing what the attendant has endeavored to conceal. Evidences of a drench having been administered will not infrequently account for an attack of mechanical bronchitis.

A crepitating, swollen condition of the cervical region in a cow said to be suffering from "choking," and requiring to be "tubed," will suggest that the owner has already been trying his "'prentice hand" on the case, and, having ruptured the gullet, he is anxious to transfer the blame to the practitioner.

Many similar examples could be cited to demonstrate the necessity for observation prior to attempting the treatment of a case.

No doubt the faculty of observation is more highly developed in some individuals than in others, but it can be trained and cultivated in all. Much useful knowledge can be acquired by studying the methods known as those of Sherlock Holmes, which in reality are founded on trained and careful observation. Take, for example, the deceptions so often practiced by dishonest sellers of horses, where the trained eye of the careful veterinary surgeon has often saved him from pitfalls cunningly laid and cleverly designed.—E. Wallis Hoare, F. R. C. V. S., in The Veterinary News.

The real foundations of a nation's power and supremacy are the health, strength and virility of its people.—Chicago Health Bulletin.

THE VETERINARIAN IN THE NEXT WAR

The next war! The term "next war" may be unpopular while an international conference is in session to arrange a peace program for the coming generation, but we have a vague notion that a nation like ours that was born fighting and has fought at shorter intervals than any other nation on the face of the earth, may sooner or later take a notion to elbow its way through the crowd and wade in again.

for the veterinarian to discuss this subject, because the Surgeon-General of the Army has given wide publicity to the program of reorganization of the veterinary reserve corps through the medium of veterinary journals, describing in detail the regulations under which civilian veterinarians may make themselves useful to the nation's defense; urging every eligible man to enlist in this service and placing the responsibility of perfecting an effective corps in the hands of the profession itself.

Captain Jack Has Two Teeth Filled.

Dr. J. F. Gillespie of New York Filling Two Teeth of "Captain Jack," the Prize South African Lion of the Prospect Park, Brooklyn, New York, Zoo. Head Keeper O'Brien is Acting as Assistant.

—Photo by Keystone View Co.

Anyway, the possibility that we might become embroiled is the reason why good citizens of every walk of life should concern themselves about the status their vocations will occupy when the time of this unwelcome event arrives.

The present moment is the opportune one

If we decline this frank invitation to step in and help morally and materially, by supporting the movement and enlisting in the reserve service, we shall lose the golden opportunity to participate in the development of the peacetime forces and forfeit any claim for recognition once the thing is done.

If we procrastinate until the army is going into action our howls about organization, rank and perquisites may fall upon deaf ears. It may be too late. We should enlist in the reserve corps, support the Surgeon-General in his efforts to improve the veterinary corps and register our criticisms now, so that the inevitable mistakes of emergency organization at the last moment may be prevented.

When in 1917 a veterinary officer was sent from Washington to hurriedly "herd up" a veterinary personnel, a great crime was committed against the veterinary profession that will take some years to live down. It has been correctly styled "The Crime of 1917."

IDENTIFICATION OF TRYPANOSOMES IN ERYTHREA

Professor A. Pricolo and Dr. G. Ferraro in La Clinica Vet., 1920, No. 4.

The geographical designation of the various trypanosomes (Tr. sudanense, cerberum, marocanum, aegypticum, etc.) is considered by the authors as inappropriate. According to their findings the various names for trypanosome affections in different localities: mbori, eldebab, gudho jaffar, gefar, tahaga, represent one and the same disease. Their investigations extend over more than a hundred camels affected with trypanosomiasis, and in each case a re-inoculation of rats was undertaken. They further injected a camel which proved free from trypanosomes with the blood of a cow infected with trypanosomes and fourteen days later they found in the blood of the camel numerous trypanosomes which could not be transmitted to rats but were successfully transmitted to lambs. Based on these findings and also on previous observations they are of the opinion that the existence of two species of trypanosomes in erythrea may be considered as proven. One, the trypanosoma Evansi, which occurs in camels and solipeds, and the second, the trypansoma vivax-uniforme, which attacks cattle. On the other hand, it is not proven that the latter occurs under natural conditions in camel or solipeds and the former in cattle. However, on artificial transmission the camel proved susceptible for the trypanosoma vivax-uniforme. The trypanosoma vivax is characterized by extraordinary rapid movement in fresh preparations; in stained preparations it is club-shaped, 16 to 31 microns long, 2 to 3 microns broad; the root of the flagella is located near the posterior extremity, the undulated membrane is only slightly developed. It is distinguished from the trypanosoma Evansi by the movement of the flagella, which in the trypanosoma Evansi is always in the form of a curve, whereas in the trypanosoma vivax it occurs along a straight line.

"VETERINARY CHIROPRACTIC"

To the Editor: The comment on "Veterinary Chiropractic" (The Journal, September 17, p. 944) reminds me of an incident of two or three years ago. A chiropractor was making regular calls at the home of a prosperous farmer to "adjust" the farmer's wife. The farmer had a full blood Holstein heifer fresh for the first time and unfortunately the heifer gave milk but from two teats. To attend the heifer the farmer called a graduate veterinary surgeon, who had made two or three trips to the farm but who had not succeeded in obtaining milk from the other two teats. The heifer was mentioned in presence of the chiropractor, who said, "Let me see the heifer, I can fix her for you." So after adjusting the farmer's wife the chiropractor went to the barn, ran his fingers along the heifer's spine, and said, "Here is the trouble, right here." He secured a croquet ball and mallet, returned to the barn, placed the ball on the heifer's back and hit it with the mallet, assuring the farmer that the heifer would be all right now. The heifer never gave milk from the other two teats. The farmer tells the story and thinks it a great joke that the chiropractor should attempt to adjust the heifer, but it has not yet dawned on the farmer that there is any joke in the chiropractor adjusting his wife.—Rolla Cairns, M. D., River Falls, Wis.

IMPERFECT EGGS FOR HATCHING

Durckhein in Dut. Land. Gefl. Zeit, Vol. 23, No. 29.

It is customary in poultry husbandry to utilize for hatching only eggs which have a good form and perfect shell. The author possessed a good Wyandotte hen which constantly laid imperfect eggs. They were large, had rings, a hunch-like point and a rough shell. The hatching experiment conducted with these eggs resulted that all the chicks hatched from them were in perfect health, of normal confirmation and of good size. That is, they were at least as good as those hatched from normal eggs. Therefore, it is not necessary to attach too much importance to the shape of the egg for hatching purposes.

INCREASING FLOCK PRODUCTION IN SHEEP

Breeders of sheep have always noticed that there is no material difference in the size between twins, triplets and singles once fully developed. In fact, they cannot be distinguished one from another when fully matured. With this outstanding fact in mind, it is quite natural that the one big aim is that of breeding as many twins and triplets as possible. Selection of twins as breeding ewes has failed in producing a higher percentage of twin lambs, and the preservation of the ewe that produced twins at the first parturition has likewise been a disappointment. The twin does not produce any more twins than the single, and the mother that once produced twins or even triplets may go on through life without repeating the precious gift, and besides all things being equal, there is no appreciable difference between rams.

The remedy must be sought in the management of the flock. Ewes conceiving during the first days the rams are turned with them yield the highest percentage of twins; the flock must be so handled and fed that they will gain flesh during the breeding season and in no instance must they ever be exposed to inclement conditions; and the ram must share in this good treatment. It is also very essential that the ram must be given only a restricted number of ewes or, when this cannot be done, it should be given intervals of rest away from the flock.

POWERS OF OBSERVATION

It is of the greatest importance to educate the powers of observation in the student. Generally speaking, this subject is neglected, as it is not supposed to come under the heading of scientific teaching. Yet there are few practitioners who do not recognize the necessity for training in this direction, while there are many who are aware of the detrimental effects on reputation which have resulted from neglect of early training in the subject.

"Use your eyes" is an advice of equal value to "use your ears and hands." Observe carefully your client and the surroundings as well as your patient. This is an important admonition, although it has not emanated from the professional chair. The observant practitioner becomes skilled in the art of reading human character, and thus is often enabled to judge whether the statements made are true, or the reverse.

The young graduate who starts in practice is apt to imagine that plausibility is synonymous with veracity. Time and experience lead him to believe that David of old was not so very far wrong in making the remark, although in haste, that "all men were liars." Certainly, individuals associated with horse-flesh are not specially truthful when giving information to the veterinary surgeon. The medical man is able to converse with his patient, and thus is able to take the information volunteered by the patient's friends cum grano salis. Consequently, he has a great advantage over the veterinary surgeon, even though occasionally the patient may for certain reasons, act the part of Ananias.—E. Wallis Hoare, F. R. C. V. S., in The Veterinary News.

For Alopecia.

℞
Fluidextracti pilocarpi.
Tincturae cantharidis ..... āā ʒss
Glycerini.
Petrolati liquidi ..... āā ʒi
M.
S. Apply externally.

For Constipation or Impaction.

℞
Physostigminae sulphatis ..... gr.i
Pilocarpinae hydrochloridae ..... gr.iii
Strychninae sulphatis ..... gr.ss
Aquae destillatae ..... ʒi
M.
Sig. Give at once subcutaneously.

Tonic for Horse.

℞
Arseni trioxidi ..... ʒi
Pulveris nucis vomicae.
Ferri sulphatis exsiccati ..... āā ʒiv
M. Divide in chartulas No. xxx.
S. One powder on feed t. i. d.

Anodyne for Colic.

℞
Tincturae opii ..... ʒii
Aetheris ..... ʒi
Chloroformi ..... ʒi
M.
S. Give at once dose in pint of cold water, and follow with physic ball.

For Small Wounds, Galls and Chafes.

℞
Methyl, blue ..... gr.ss
Tincture iodi ..... ♏xx
Unguenti zinci oxidi.
Petrolati ..... āā ʒss
M.
S. Apply externally.

Ball for Horses with Diarrhea.

℞
Creolini.
Cretae praep.
Pulv. zingiberis .....āā ʒss
Pulv. opii .....ʒi
M. et fiat bolus No. 1.
Sig. Give at once.

*From Winslow's Veterinary Materia Medica.

NINE WAYS TO KILL A VETERINARY SOCIETY.

Keep away from all the meetings, but kick hard about everything that is done.

If you should go to the town the meeting is held in don't trouble yourself about attending the sessions but be sure to kick hard about the officers elected.

If you attend the session take no part in the discussion but register your arguments to those sitting around and thus expound your wisdom and at the same time cause as much confusion and distraction from the speaker as possible.

If you are not appointed on any committee get sore, and if you are, take no part in its work.

Don't pay your dues promptly; make the secretary waste as much postage and time as possible before loosening up, and then try to send a check that will be returned marked: no funds.

Do not bother about getting new members, but tell everyone you meet that you have a notion to quit the association.

If the chair should ask your opinion on any subject say nothing but after the meeting gather a group around you and tell them all about it.

Be sure to enter all sessions as late as possible and especially while some one is addressing the meeting.

Go out two or three times during each session and induce others to follow. It might discourage the speaker enough to prevent him from coming again.

ETIOLOGY OF INTESTINAL AND MESENTERIC EMPHYSEMA IN HOGS

Dr. K. Jarmai in Allatorvosi Lapok, 1920, No. 23 and 24.

This condition, which is often observed in slaughtered hogs, cannot be detected in the living animals. According to some authors the gases originate from swallowed air. Others claim they are bacterial products (Dupras believes that they are caused by a specific coccus, whereas Jager is of the opinion that the condition is induced by the bacterium coli lymphaticum aerogenes). Joest proved that the ordinary bacillus coli communis is capable of inducing these changes in certain cases, when the intestinal wall permits the penetration of bacteria, as for instance in intestinal catarrh. The author had the opportunity to observe these changes in suckling pigs which were affected with enteritis with superficial necrosis. He succeeded in cultivating pure cultures of coli bacilli from the mesentery lymph glands of Drigalsky-Agar and also in identifying them with the sero agglutination test. The gases in the suckling pigs developed readily in great quantity and thence penetrated through the intestinal walls.

Dr. DeVine's Staff, Goshen Laboratories, Goshen, N. Y.
Left to Right: H. F. Palmer; 2. J. B. Skeleton; 3, Major Scofield; 4, J. F. DeVine; 5, A. R. Ward; 6, Wallace F. W
7, John D. DeVine, Jr.; 8, H. P. Stout.

ASMOSPHERIC CONDITIONS AND VETERINARY PRACTICE.

(Continued from Page 12.)

constant air currents and their virulence being reduced or destroyed through the disinfecting action of the light and dryness. Probably the only diseases that are to be excepted in this connection are sheep pox, hog cholera, rinderpest and perhaps the dreaded foot and mouth disease. On the other hand diseases are transmitted much more frequently in closed rooms and stables when diseased individuals are there to infect the air with their excretions. The infectious agents become mixed with the air through coughing, snorting, etc., in droplet form, as is found to occur in pulmonary tuberculosis, contagious pleuro-pneumonia of cattle, swine plague or hemorrhagic septicemia of swine, equine influenza, pulmonary and nasal glanders, etc. If, however, these droplets become dry, the resulting dust will only be infectious if it harbors such as the following organisms which withstand drying out: hog cholera, sheep pox, staphylococci, spores of fungi, anthrax, black leg, tetanus, malignant edema, etc. Streptococci are more easily destroyed as are also various hemorrhagic septicemia organisms.

Atmospheric Temperature

Heat and cold influences, first of all the body heat regulation, and this in turn is influenced by the humidity, air movements and the natural means of heat preservation, such as hair shedding and fat and also the artificial means of heat control, for example, blanketing, clipping, etc. Too high atmospheric temperature can lead to a heat stasis or heat stroke; insufficient heat or cooling off too rapidly can lead to a cold or freezing.

The harmful effects of sunstroke are due to the intensive heat from the sun. It produces an irritation of the skin and symptoms of cerebral irritation, and even cerebral meningitis. Bones, muscles and fat allow the heat to pass through more readily than the brain and as a result a more marked accumulation and absorption of heat occurs on the upper surface of the brain. The rays from a sixty-five candlepower Nernst lamp will pass through, that is, show their effects through skin, cranial bones and dura mater in fifteen seconds.

The resistance of different animals to heat varies as follows: Generally the horse withstands the heat best, sheep least and cattle, swine and dogs stand halfway between. Lean animals having a delicate skin and a thin coat of hair suffer less than do the very fat animals. Horses known as "dummy"—chronic hydrocephalus—show an increase in their depressed condition, or have attacks resembling mania.

Under certain conditions excessive cold is better withstood than is excessive heat. Freezing of the individual parts of the body or of the entire body in our climate seldom occurs, when sufficient food is eaten and sufficient muscular exercise is indulged in. Wind or a high relative humidity tend to intensify the effects of cold.

During freezing, we first observe anemia of the skin and a cooling of the peripheral parts of the body and the extremities. Local paralysis of the vessels follows, with a resulting hyperemia and swelling, slowing of the circulation and even stasis. Finally the peripheral parts freeze and death and necrosis of the cellular elements occurs. When the cold only causes prolonged contraction of the skin vessels, it leads to pulmonary and cerebral congestion with their sequelae of headache from the pressure, later loss of equilibrium, dizziness, syncope and finally death through paralysis of the central nervous system. Continued moderate cold is best withstood by sheep and least by horses. Feed can be saved by housing animals in moderately warm stables, if they are to be kept indoors for a long period, as they will not require as much feed as when kept in a cold or very cool place.

(To be Continued.)

"The veterinary reserve corps is to be organized and administered in the interest of veterinary military preparedness and by regulations prescribed by law upon which the veterinary profession was well represented. Being a national asset to be used in an emergency which in modern times seems to call for the mobilization of practically every activity of the country, it should be supported by the entire veterinary profession. If the profession cannot support it as thus organized it should demand that it so organize as to warrant its support"—The Surgeon General of the Army.

Looking Backward

It is during the Eocene subdivision of the Tertiary period that mammals first appeared on the face of the earth.

The first tuberculin test in the United States was made by the late Professor Leonard Pearson in 1892, while he was state veterinarian of Pennsylvania.

At a meeting of the Pathological Society of London, April 6, 1875, the germ theory of disease was formally introduced for discussion for the first time.

To Dr. Adolph Eichhorn, of the Lederle Laboratories and a department editor of VETERINARY MEDICINE, belongs the credit of introducing the double neurotomy for spavin into this country—1900.

"Secretary Wilson calls attention to the fact that the United States Army is the only one in the civilized world in which veterinarians do not hold commissions. This is one reason he thinks why competent men in the profession have not sought service in the army."—Breeders' Gazette, May 25, 1898.

As late as October 1877, after the late Lord Lister had performed an operation on a fractured patella, a professor in a neighboring hospital, speaking to his students said. "When this patient dies **that man** should be prosecuted for malpractice." Truly, the man who leaves the beaten path invites the scorn of his peers.

At the annual meeting of the Illinois State Veterinary Medical Association in 1894 there were nine members present. Today a meeting of fewer than 300 is pronounced a failure.

At the World's Columbian Exposition, 1893, veterinary exhibits were not very numerous, nor conspicuous, the organized veterinary profession having entirely overlooked the publicity possibilities of this great exposition. Among the few things shown were six actinomycotic jaws of cattle prepared by N. S. Mayo, then professor of veterinary science in the Kansas State College of Agriculture.

The use of gutta percha in animal dentistry was introduced by R. C. Moore in 1886.

Turner, Lemay, Treacy and Griffin were the heavyweights of the army veterinary service in the early 90's.

As late as 1892 the subject of asepsis in surgery was just beginning to filter into the veterinary profession. Lowe of New Jersey, and the late W. F. Winchester of Massachusetts, were the first writers on the subject in this country.

Prof. D. E. Salmon, the solid chief of the Bureau of Animal Industry, revealed himself as the defender of the two-year schools. His arguments were so powerful (?) at the meeting that no one dared to answer them. (Am. Vet. Rev. Nov., 1894.)

At the Missouri Valley Veterinary Medical Association, October 3, 1894, H. H. Harrison of Atchison, Kansas, said: "I have seen some very disastrous results from irrigations of the womb of cows—it is common to find after this procedure a metritis or endometritis set up by the fluid which has been left."

At the annual meeting of the United States Veterinary Medical Association in 1894, Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, announced that out of thirty veterinarians who took the civil service examinations for meat inspectors, only two passed, and that these two were foreigners.

How Glanders was Diagnosed During the Spanish-American War

He (the vet) jumped from his chariot in which he arrived, injected a quantity of mallein, took the temperature immediately after, scraped some nasal discharge on a slide, slipped it into a microscope he carried with him, stood the apparatus on the fence, cast his eagle eye along the sights and in a moment roared "glanders" to the awe-struck audience of troopers; and another life was sacrificed to the altar of science.—Col. Griffin, in the Am. Vet. Rev. Apr. 1900.

The Haver-Glover Page

PUBLISHED EVERY NOW AND THEN IN THE INTEREST OF GRADUATE VETERINARIANS

TO the majority of the readers of this page it is unnecessary to mention that we have devoted eleven months' time to talking SALES POLICIES. They KNOW that we are not selling to every practitioner who happens to have a license, but only to about half the number of licensed men—the Graduates.

These policy talks have made us many friends —more than we had expected in such a brief period of time—but during the meantime an important part of our work has been mailing our catalogs to graduate veterinarians.

Little has been said regarding our products, and it is *little* indeed when there is so *much* to be said.

The H-G Graduate Harmonies, our bi-monthly publication, has informed you regarding our advancement in the veterinary field, so that we have been with you during the past ten months, regularly — not waiting for the so-called normal conditions to return.

Harvest time, chautauquas and county fairs have interfered with the practitioner's plans no doubt, but now his fall work is right at hand. Most of the country banks offer encouragement for the betterment of conditions and it is up to all of us to make the best of it.

There is plenty of work to be done. Veterinarians who have been engaged in general practice, where all lines of activity invited their attention, have been on the job regularly. Now is the time to educate the client that veterinary service in the care of ALL of his stock is profitable to all concerned.

We can't wait for business, it's up to us to "fight" for it. But with Haver-Glover ammunition, with each package marked, "This product sold only to the Graduate Veterinarian," you do not have to offer excuses because the neighborhood quack has used the same product. You can point out the fact that it is especially prepared for your use, better than he can buy.

If you are not already using these "Graduate" products get out your H-G catalog *now* and prepare an approval order. This will mark the beginning of a profitable co-operative service for you —such as you have never before enjoyed.

Thanks for the opportunity of demonstrating.

KEEP YOUR EYE *on* H-G PRODUCTS!

FROM label to contents they are made to give the Graduate Veterinarian satisfactory service. Look well at the label. It embodies, first—the exact percentages of the composite ingredients, secondly, suggestive indications and directions for use. And above all note well that every product carries in prominent type, the outstanding policy of this organization, "This product sold only to the Graduate Veterinarian."

The trade mark is your assurance of full value for your expenditure, plus our guarantee of quality and efficiency.

The products themselves are only those essential to veterinary practice. Headed by Glover's Mixed Infection Vaccines—the kind you will eventually use—down through our instrument stock—we are prepared to render an ever increasing service to the Graduate Veterinarian.

So keep us in mind—keep your eye on the Haver-Glover line!

Matters of Current Interest

In the general scheme of life the function of the animal kingdom is that of supplying nitrogen to the soil.

Dr. L. E. Hull has moved from Colchester, Illinois, to Joslin, Illinois, and will practice in both Joslin and Hillsdale.

Dr. Fred Evans, veterinarian for the health department of Sioux Falls, South Dakota, has resigned and is succeeded by Dr. O. W. Stanley, who was formerly city veterinarian of that city.

Dr. Alex Johnson of Peotone, Ill., has sold his practice to Dr. A. J. Rooney, formerly of Chicago.

Dr. F. H. Gordon, Augusta, Illinois, has disposed of his practice to Dr. Leslie Clark. Dr. Gordon has been practicing at Augusta for seventeen years.

An examination for the federal accredited herd list will be held under the auspices of the Bureau of Animal Industry, U. S. Department of Agriculture, for the state of Illinois on January 24, 1922, at the following locations: Chicago, Springfield and East St. Louis. Information may be obtained by addressing the state veterinarian, Dr. F. A. Laird, Springfield, Ill.

Dr. Fred C. Schmidt has just opened a modern clinic and veterinary practice under the firm name of the Portland Veterinary Hospital, in the heart of the city of Portland, Oregon. The new hospital occupies a large brick building and is equipped with an operating room, box stalls, kennels and other facilities to handle all species of animals.

Ectropion is more frequent in jacks than in any other domestic animal.—Sigler.

Dr. Walter Smith of Crown Point, Indiana, has removed to Valparaiso, where he will continue practice amid bigger opportunities.

According to a press report more than 2,000 hogs died from cholera in the west half of Coles County, Illinois, during the month of November.

VETERINARY NEWS answers the question "Is it possible to give a too large dose of tuberculin" in the negative after reporting experiment on four healthy cows that were given 2.5, 5, 7.5, and 10cc respectively, without showing any reaction whatever.

Dr. G. H. Hines, who has recently taken over the large practice of Dr. Roberts at Galena, Illinois, was married to Miss Mollie M. Beebe, a popular young lady of Atwood, Illinois, November 10, 1921, starting the big job without the handicap of celibacy.

Secretary of Agriculture Wallace has listed sixty-six packing houses as coming under the federal law regulating these establishments, and it is reported more will be added from time to time.

There is no bovine tuberculosis in the Malay States and out of 250,000 hogs slaughtered in a single abattoir none were diseased. There are, however, from 3,000 to 5,000 per million of the human population affected with tuberculosis.—Tubercle.

Veterinary Specialty Company Sold.

Dr. J. V. LaCroix of Evanston, Illinois, and Mr. Elwood G. Duble, Jr., of Chicago, have purchased the Veterinary Specialty Company, formerly located at Holland, Michigan. The business will be moved to Chicago.

The individual who thinks well of you, who keeps his mind on your good qualities, and does not look for flaws, is your friend. Who is my brother? I'll tell you: He is one who recognized the good in me.—Fra Elbertus.

Assume that the digestive tract always has parasites; that the respiratory system usually has parasites; that the excretory and circulatory systems sometime harbor parasites; and that the muscular, skeletal, nervous, and reproductive systems may harbor parasites at times.—Hall.

Dr. W. L. Coplin and Dr. L. D. Nowell of Humboldt, Tenn., have formed a joint partnership and are conducting two veterinary hospitals

Dr. Coplin is stationed at Jackson, Tenn., and Dr. Nowell at Humboldt.

They both report practice conditions favorable.

At the Pacific International Live Stock Exposition, November 5 and 6, a hospital for sick and injured animals was provided.

Dr. P. C. Molgard has recently located at Ruskin, Neb. Dr. Molgard is a graduate of the Kansas City Veterinary College.

Dr. H. J. Hygren of Waverly, Iowa, has improved his establishment by making important additions to his hospital.

Dr. Jesse Robards, B. A. I. inspector of North Texas, has been transferred from Dallas to San Antonio.

"MY KINGDOM FOR A HORSE"—

"Wish I'd lived when that king was bidding so high for one of our ancestors," said romantic Winnie to her Knickerbocker team mate, Ned. "Yes, he had the heart of a lion all right, but he had to have a trusty steed so he could 'deliver the goods,'" said Ned. "It's pretty much the same today if you're in the milk or ice business. You've got to have the personal service we horses give to deliver the goods. Imagine having to stop a motor at every other door? Our driver never has to stop us—we know." "And we're never 'cranky' like those gasoline eaters," replied Winnie, "and we're always on time."

The Sangamon County Veterinary Medical Association held its regular monthly meeting at the St. Nicholas Hotel, Springfield, Illinois, November 20, 1921, winding up the program with a lively banquet. Dr. M. M. Fletcher of Illiopolis was elected president, Dr. C. C. Hastings of Williamsville, secretary-treasurer, and Drs. Dickerson and .Yowell vice-presidents. The meeting was addressed by Chief Veterinarian Laird of Springfield, Dr. Jungerman of Kansas, and Dr. James McDonald of the B. A. I. The subjects of sterility by Jungerman and of hog cholera by Laird and McDonald were predominant.

Sells Practice.

Dr. K. H. Cleaver, Reading, Pa., well known veterinary surgeon, who has been conducting a large practice at 14 North Eighth Street for more than 14 years, sold out to Dr. Russell S. Detweiler, of Royersford, Pa., and has gone into retirement on account of ill health and advanced age. Dr. Cleaver was one of the best known veterinarians in this part of the state.

Dr. Detweiler was graduated from the University of Pennsylvania in 1915. Shortly after he conveyed horses to Italy for the Italian government and then practiced for two years in Ohio. He served in the world war and was overseas, evacuating horses in the Chateau-Thierry sector for the 28th Division and other divisions of the A. E. F. Since leaving the army he has been doing private work on stock farms.

Dr. J. E. Davis, who moved to Canada several years ago, has returned with his family to the Stars and Stripes and has located for practice at Christman, Illinois.

A serious outbreak of anthrax occurred throughout the Sacramento Valley during October. Dr. M. E. McDonald, field veterinarian for the state department of agriculture, charged with its control, reports a prompt, favorable termination from the measures instituted.

Dr. John F. Keller, who for many years was veterinarian for Barnum and Bailey's circus and said to be an expert on the diseases of all animals from snakes to elephants, has located for private practice at Quincy, Florida.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION

The fortieth annual meeting of the Illinois State Veterinary Medical Association was held in Chicago, December 1 and 2, 1921, carrying out one of the most interesting programs ever presented at a state meeting and by a personnel seldom, if ever, brought together for such an occasion. The literary entertainment was as follows:

A Report of the Progress of the Control of Infectious Diseases of Animals, A. Eichhorn, Pearl River, N. Y., Veterinary Director, Lederle Laboratories.

Common Disease of the Jack and Their Treatment, T. A Sigler, Greencastle, Ind.

Live Stock Sanitation, W. J. Butler, Helena, Mont., State Veterinarian.

The Importance of the Diagnosis of Pregnancy in Sterility Work and Recent Observations on Chronic Cervicitis, J. F. DeVine, Goshen, N. Y., Professor of Bovine Pathology, New York State Veterinary College, New York City.

Small Animal Practice, O. V. Brumley, Columbus, Ohio. Director of Clinics, Veterinary Department, Ohio State University.

The Poultry Industry; Its Loss from Disease and Parasitisms, A. G. Phillips, LaFayette, Ind., Professor of Poultry Husbandry, Purdue University.

Common Diseases of Swine, A. T. Kinsley, Kansas City, Mo., President A. V. M. A.

Carbon Tetrachloride as an Anthelmintic, Maurice C. Hall, Washington, D. C., Senior Zoologist, U. S. Department of Agriculture.

Methods of Increasing One's Professional Income, L. A. Merillat, Chicago, Ill., Editor, Veterinary Medicine.

Atmospheric Conditions and Veterinary Practice, A. A. Leibold, Chicago, Associate Pathologist, Zell-Straub Laboratories.

Lesions of Disease in Swine, J. S. Koen, Bloomington, Liberty Laboratories.

The Veterinary Profession, V. A. Moore, Ithaca, N. Y., Dean, New York State Veterinary College, Cornell University.

The retiring officers are: T. J. Foster, Monticello, President, and D. M. Campbell, Chicago, Secretary-Treasurer.

The officers elected were: W. Lester Hollister, Avon, President; D. S. Jaffray, Chicago, Vice-President; and L. A. Merillat, Chicago, Secretary-Treasurer.

Bitten by Dog, Forgot About It, Dies From Rabies

Rabies, unsuspected for weeks, killed Henry Kessell, thirteen, of No. 402 East 54th street. He died in Bellevue Hospital recently.

His mother, Mrs. Mary Moran, is employed in the laundry at Bellevue. She said that six or eight weeks ago her boy came in from play and showed two pin pricks in his right forearm near the elbow. He told her a little fox terrier he never had seen before had jumped up at him without provocation and bitten him.

Mrs. Moran took the boy to a drug store in the neighborhood and "put peroxide on the wounds and bandaged up the arm." The wounds were so tiny that she and her son gave little concern to them and they disappeared quickly. Henry went to his classes in the parochial school of the Church of St. John, Evangelist, First avenue and 55th street, and forgot the dog bite. It passed out of his mother's mind so entirely that she did not remember it when a physician asked her last week if anything unusual had happened to her son.

Henry Kessell became ill several days ago, drooped and had pains, his mother believed, which indicated pleurisy. She told the physician she did not remember any accident to her son, but two days later she remembered the dog bite and rushed back to the physician. He advised her to send the boy to a hospital at once, and she took her son to Bellevue.

There his case was instantly diagnosed as rabies and every effort made to save him with the serum treatment, effective in most cases if administered in time. The case of young Kessell had progressed too far. The surgeons said the peroxide of hydrogen applied had been of little or no preventive value, that iodine might have helped, but that immediate serum treatment was the only dependable method in any dog bite case.—The Evening (N. Y.) World.

Deadly Horse Disease Epidemic in Nelson County, Kentucky

A disease which caused the loss of over 100,000 head of horse stock in Kansas and Nebraska, seven years ago, has broken out in this and adjoining counties, lately.

The disease was known by "old timers" as sleepy staggers, blind staggers, mad staggers and throat paralysis, according to the symptoms present. Later it was known as infec-

tious cerebro-spinal meningitis, putrid sore throat and forage poisoning or Kansas horse disease.

A few animals receiving early treatment recover, but a large majority die.

Dr. Robert Graham, formerly of the Kentucky Experiment Station has the honor of discovering the germ which is responsible for this disease—the B. Botulinus. While, evidently present at all times, it seems to require certain climatic or atmospheric conditions to become active, and extensive outbreaks usually follow a dry summer.

These germs may be present in "pockets" and only one or two in a herd pick up the infection, and become stricken, and again it may occur in a mass and entire herds be wiped out.

Dr. Graham has developed an antitoxin with which animals when treated may be allowed to eat the offending food with impunity.

Thus the stock is made immune, and at the same time the farmer is enabled to use up questionable feed which would otherwise be a partial or total loss.

Where vaccination is not used the only alternative is a complete change in the feed and a thorough cleaning and disinfecting of the premises.—The Kendrick (Ky.) Standard.

CHOLERA HITS YULE GEESE

Amsterdam, Holland, Dec. 10.—An outbreak of cholera in the Dutch goose pens has been causing heavy losses. Recently the number of deaths averaged 500 a day. Experts think that the disease was brought to this country by poultry imported from Poland, as many cases of cholera occurred in these shipments.

Thanks to a serum distributed by the state, the epidemic has been checked and the deaths have been reduced to fifty-five a day. In the affected districts serum has been injected into all the poultry and the pens have been disinfected.

It is pointed out that, through an omission in the contagious diseases law as affecting poultry, no examination is required previous to importation. As the canning of goose meat is an important Dutch industry, it would be unwise to prohibit the importation of poultry.
—The Chicago Daily News Co.

Dr. G. F. Barber of Tomah, Wisconsin, died on November 3, at Mercy Hospital, Chicago, following an illness of some months.

MEMORIAL MEETING FOR THE LATE DEAN HOSKINS

The Alumni Association of New York University held a largely attended memorial ceremony for the late Dean W. Horace Hoskins in the veterinary college buildings at 331-33 East 26th Street, New York City, on the evening of December 12, 1921.

There were present official delegates from Cornell Uuiversity, University of Pennsylvania, the Department of Agriculture, Veterinary Corps of the Army, American Veterinary Medical Association, New York State Veterinary Medical Society, Veterinary Medical Association of New Jersey, Veterinary Medical Association of New York City, the United States Live Stock Sanitary Association, and Chancellor Elmer Ellsworth Brown, representing New York University.

Marstellar Goes to Cuba

Dr. R. P. Marstellar, professor of Veterinary Medicine and Surgery of the A. & M. College of Texas, has been selected as honorary delegate of the American Veterinary Medical Association, to attend the fifth annual medical congress to be held in Havana, Cuba, December 11 to 17, 1921.

The appointment is the only one made in the United States and was made by Dr. A. T. Kinsley, president of the A. V. M. A.

Dr. Thos. F. Arnold, veterinary inspector of the U. S. Department of Animal Industry, St. Louis, Mo., was held up by a highwayman and robbed of $10.00 while walking down the street near his home, on November 16, 1921.

A total area of 29,563 square miles in Texas, Georgia, Louisiana and North Carolina was released from federal quarantine during last month.

This releases 72% of the total area originally placed under quarantine by the federal government.

Dr. Jacob Helmer, Scranton, Pa., died at his home in that city a few days ago. He was born in Susquehanna county, Pennsylvania, sixty-two years ago, was graduated from the New York College of Veterinary Surgeons in 1887 and had been a practitioner ever since.

ASSOCIATION MEETINGS

ASSOCIATION	PLACE	DATE	SECRETARY
Alabama Vet. Med. Assn.	Auburn, Ala.	March, 1922	C. A. Cary, Auburn, Ala.
American Vet. Med. Assn.	St. Louis, Mo.		N. S. Mayo, Ravenswood, Chicago.
California State V. M. A.	Davis, Cal.	Jan. 1-7, 1922	Jos. M. Arburma, Hanford, Calif.
Central Mich. Vet. Society	Jackson, Mich.	Jan. 6, 1922	W. N. Armstrong, Concord, Mich.
Chicago Vet. Soc.	Chicago	2nd Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Conestoga Vet. Club	Lancaster, Pa.	2nd Thursday each month	H. H. Brady
Illinois S. V. M. Assn.	E. St. Louis	August, 1922	D. M. Campbell, Chicago, Ill.
Indiana V. M. Assn.	Indianapolis	Jan. 10, 11, 12, 1922	J. L. Axby, Lawrenceburg, Ind.
Iowa Vet. Assn.	DesMoines	January 17, 18, 19, 1922	H. D. Bergman, Ames, Iowa
Kansas V. M. Assn.	Ottawa, Kans.	January 4 and 5, 1922	I. J. Pierson, Lawrence, Kans.
Kentucky Vet. Med. Assn.	Owensboro, Ky.	Feb. 8-9, 1922	Chas. W. Fisher, Danville, Ky.
Massachusetts V. A.	Boston, Mass.	4th Wednesday of month	H. W. Pierce, West Medford, Mass.
Minnesota S. V. M. A.	St. Paul	January 12-13, 1922	C. P. Fitch, Univ. Farm, St. Paul
Mississippi S. V. M. Assn.	Gulfport, Miss.	January 23, 24, 1922	J. A. Barger, Jackson, Miss.
Missouri Valley Vet. Assn.	Kansas City	Jan. 31, Feb. 1-2, 1922	R. F. Bourne, Ft. Collins, Colo.
Montana Vet. Med. Assn.	Billings	July, 1922	H. Marsh, Helena
Natl. Assn. of B. A. I.	Meet with A.V.M.A	Sept. 5-9, 1922	S. J. Walkley, Milwaukee, Wis.
New York S. V. M. Soc.	Syracuse	1922	C. E. Hayden, Ithaca, N. Y.
North Carolina S. V. M. A.	Asheville	June, 1922	J. P. Spoon, Burlington, N. C.
North Dakota V. M. Assn.	Fargo	July, 1922	R. S. Amadon, Agrt. Coll., N. Dak.
Northern Tier Vet. Club	Williamsport, Pa.	Feb. 9, 1922	E. B. Mayer, Canton, Pa.
Ohio St. Vet. Med. Assn.	Columbus, Ohio	February 2-3, 1922	F. J. Lambert, Columbus, Ohio.
Pa. State Vet. Med. Assn.	Harrisburg, Pa.	January 24, 25, 1922	R. M. Staley, P. O. Box 1404, Philadelphia, Pa.
Philadelphia Vet. Club	Philadelphia	4th Tuesday of month	C. S. Rockwell, 5128 Chestnut, Phila.
San Joaquin Valley V. M. A.	Davis, Calif.	January 1-7, 1922	H. B. Winteringham, Fresno, Calif.
Southern Cal. V. M. Assn.	Los Angeles	3rd Wednesday of month	J. P. Bushong, Los Angeles.
Southeastern States V. M. A.	Nashville, Tenn.	February 6, 7, 1922	J. I. Handley, Atlanta, Ga.
Southeastern Mich. V. M. A.	Detroit, Mich.	2nd Wednesday, January, April, July, October	H. P. Hoskins, Box 471, Detroit, Mich.
Utah S. V. M. Assn.	Salt Lake City	October, each year	E. A. Bundy, Ogden
V. M. Assn. of N. Y. City	338 E. 26th St.	1st Wednesday of month	J. E. Crawford, Far Rockaway
Va. S. V. M. Assn.	Richmond	January 13-14, 1922	W. G. Chrisman, Blacksburg, Va.
Wash. State Col. V. M. A.	Wash. State Coll.	2nd & 4th Tuesday of month	S. Worley, College Sta.
Western Pa. Vet. Club	Pittsburgh	3rd Tuesday of month	Fred Weitzel, Pittsburgh
Wisconsin V. M. Assn.	Madison, Wis.	Jan. 18, 19, 20, 1922	O. E. Ellason, Madison
York Co. V. M. Soc.	York, Pa.	1st Tuesday March, June,	E. S. Baustieker, York, Pa.

The annual meeting of the Missouri Valley Veterinary Association will be held at the Hotel Baltimore, Kansas City, Mo., on January 31 to February 2 inclusive.

R. F. Bourne, Secretary.

The annual meeting of the Indiana Veterinary Medical Association will be held at the Claypool Hotel, Indianapolis, Ind., on January 10 and 11, and at the Indiana Veterinary College on January 12.

E. T. Davis, Secretary.

The winter meeting of the Kansas Veterinary Medical Association will be held at Ottawa, Kans., January 4 and 5, 1922. Headquarters will be at The North American Hotel, and sessions will be held at the auditorium of the new high school building.

I. J. Pierson, Secretary.

The next meeting of the Colorado Veterinary Medical Association will be held at 1525 Curtis Street, Denver, Colorado, on Thursday, January 19, 1922. I. E. Newsom is the secretary.

The next annual meeting of the Minnesota Veterinary Medical Association will be held at the St. Paul Hotel, St. Paul, Minn., on January 12 and 13, 1922.

C. P Fitch, Secretary.

The Association of the Southeastern States Veterinarians will be held Feb. 6 and 7, 1922, at Nashville, Tenn.

An interesting program is being arranged, a copy of which will appear in the next issue of this Journal. Some of the very best scientists and practitioners will give discussion on current problems.

All qualified veterinarians in the Southeastern states and adjoining states are urgently requested to attend this meeting. With your support the convention should prove to be the best one that the Association has ever had.

Any information concerning the program or meeting will be given through the secretary or other officers of the Association.

JOHN I. HANDLEY,
Secretary-Treasurer.

In an article found the The Hereford Journal, Dr. J. A. Kiernan, chief of tuberculosis eradication division of the B. A. I., states that

stockmen need never expect the government to appropriate enough money to test all of the animals of the country and advises owners to employ qualified veterinarians to help them clean up.

Pearl Alethia Murelle, wife of Dr. F. W. Rutherford, was born in Jackson, Tenn., September, 1875, and died at her home in Maysville, Mo., November 26, 1921, after an illness covering a period of about two years.

Livestock Trade With Mexico

The state of Texas is sending a special train into Mexico in line with the policy of the Mexican government to encourage agriculture and livestock raising in the southern republic. Federal veterinary inspector Jesse Hobard is in charge of the train, and will oversee the disinfection of stock pens wherever the stock is unloaded, and attend to the matter of preventing tick infestation and other diseases. Health conditions of live stock are exceptionally bad in Mexico. The train consists of ten cattle cars, two Pullmans for owners and caretakers and a buffet car.

The itinerary is as follows: Monterrey, Saltillo, San Luis Potosi, City of Mexico, Auguas Caliente, Zacatecas, Torreon, Chihuahua and Jaurez, entering the United States through El Paso.

Veterinarian Infected With Anthrax

Dr. W. D. Garber, assistant state veterinarian, Oklahoma City, Okla., has become inflicted with anthrax while in the line of duty, according to the report of the city health department of that city. Dr. Garber was sent several months ago to Pittsburgh county to combat an outbreak of anthrax in cattle there and while holding postmortem examinations had the misfortune of becoming infected in the hand. Through careful treatment, the disease has not yet been allowed to spread beyond the hand and wrist.

Texas cattlemen headed by J. E. Boog-Scott, chairman of the livestock sanitary commission and Dr. Leon G. Cloud, state veterinarian, are bringing pressure to bear upon Congress to obtain an emergency appropriation for tuberculosis eradication. The livestock sanitary

commission of Texas has appropriated approximately $50,000 with which to pay indemnity to stockmen doing accredited tuberculosis eradication work, but under the terms of the law it is illegal to pay indemnity unless the federal bureau pays a like amount in co-operation with the state.

Dr. G. A. Ottinger, Jamestown, N. D., reports a case of dystocia in a pure bred shorthorn heifer due to twins, of which one was a dicephalous monstrosity with the hind extremities projecting upward instead of in a downward direction from the pelvis.

The Schuylkill Valley Veterinary Medical Association held a well attended meeting at Leesport, Pa., on Wednesday, November 16, 1921. A clinic was conducted in Dr. O. B. Ralm's hospital, limited to operations upon small animals. The literary program was carried out in the town hall, where papers were read by Dr. V. G. Kimball of the University of Pennsylvania, on colics; and by Dr. U. S. G. Beiber, on distemper. The next meeting of the Association will be held at Reading, Pa., December 21, 1921. R. L. Berger, Secretary, Hamburg, Pa.

A Doubtful Triumph.

The failure to secure the enactment of a law prohibiting the docking of horses in England is reported by the agricultural press as being "A Great Triumph for Breeding Societies." The bill before the House of Commons which, if passed, would have prohibited all docking, was thrown out at the protest of Hackney, Clydesdale, Shire and Hunter's Improvement societies and was won on the old, old plea that a horse might sometimes grab the lines with the tail.

Dr. J. M. Loes, formerly of Holy Cross, Iowa, has opened a veterinary office at Dyersville, Iowa, where he was welcomed by the local press as a good citizen and capable veterinarian.

Dr. J. W. Roberts has moved from Galena, Illinois, to Sycamore, Illinois, where he has opened an office for business.

Dr. Fuller of Murray, Iowa, was recently shot and very severely, if not fatally wounded, by bandits while making a call and has been lingering between life and death in the Lutheran Hospital at Des Moines for some days. He has undergone an operation for the removal of one of the bullets embedded in one of the dorsal vertebrae and is reported as having a fighting chance for recovery.

Dr. B. F. Killham, chief veterinarian of the Farm Bureau of Michigan, is pounding away among the local bureau and granges on the matter of tuberculosis eradication.

The United States Live Stock Sanitary Association held its annual meeting at the Hotel LaSalle, Chicago, on the 28th, 29th and 30th of November, 1921.

The attendance, while slightly lower than during the past few years, constituted an enthusiastic audience devoted to the cause of sanitation. Hog cholera and abortion disease were the chief topics discussed.

Dr. T. E. Munce, Harrisburg, Pa., was elected President and Dr O. E. Dyson, Chicago, as Secretary-Treasurer.

Dr. C. C. Nidig, an officer of the veterinary corps during the late war, has opened an office at Aikin, Minnesota. He formerly practiced at Goodhue, Minnesota, where he had earned a good reputation as a specialist in cattle practice.

Dr. L. J. Hinson has completed the construction of a fine veterinary hospital at Newbern, Tennessee, having moved there from Kenton, Tennessee, three years ago.

Dr. Gruenwald of Plattsville, Iowa, is struggling with a very serious outbreak of hog cholera that is threatening the swine population of Grant county and is calling neighboring colleagues into consultation.

Drs. Reed and Scott, 380 High street, Akron, Ohio, have reopened their veterinary hospital which was closed since the last two years of the war. It is a neat, well-equipped infirmary, for both large and small animals, and has been a going establishment for more than twenty-five years.

Black Leg In Colorado.

According to a dispatch from Canon City, Colorado, black leg affecting cattle in that region has been found to be caused by overfeeding with succulent feeds and the idleness due to the easy access to abundant forage. It goes on to state that this condition of affairs can be fixed up with a serum. Fine business.

Death of Dr. Nelson T. Gunn

Dr. Nelson T. Gunn, of Butte, Montana, died suddenly November 28, of heart failure. Dr. Gunn was District Deputy State Veterinarian for the Butte district, and was one of the most highly respected and best known members of the profession in Montana. He was 41 years old, and had spent most of his life in Butte. He graduated from the Butte High School in 1897, and later studied medicine two years in Leland Stanford University. For a number of years he was connected with the city health office in Butte. In 1915 he graduated from the San Francisco Veterinary College and started practice in Butte. He entered the service of the B. A. I. the same year, and was in the meat inspection service at South Omaha for about a year. In 1916 he again took up practice in Butte, and in 1917 was appointed District Deputy State Veterinarian, in which position he served with remarkable success until his death.

Dr. Gunn was a member of the American Veterinary Medical Association and of the Montana Veterinary Medical Association. He was president of the Montana Association in 1918, and secretary in 1920. In 1920 he was appointed on the State Board of Veterinary Examiners, of which he was secretary at the time of his death.

Dr. Gunn's success in the state livestock sanitary work, due both to his personality and his professional ability, was such that his place will be very difficult to fill.

Dr. W. J. Musil of Castana, Iowa, has moved to Denison, where he has opened up the former office of Dr. Hal Simpson, who has transferred his activities to sunny California. Dr. Musil is a graduate of the Indiana Veterinary College and has been associated with Dr. F. J. Mitchel of Charter Oak, Iowa.

U. S. ARMY CORPS AREAS

1st Corps Area, Hdqrs. Army Base, South Boston, Massachusetts. Comprises the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

2nd Corps Area, Hdqrs. Governors Island, New York. Comprises the states of New York, New Jersey and Delaware.

3rd Corps Area, Hdqrs. Ft. Howard, Maryland. Comprises the states of Pennsylvania, Maryland, Virginia and the District of Columbia.

4th Corps Area, Hdqrs. Ft. McPherson, Georgia. Comprises the states of North and South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi and Louisiana.

5th Corps Area, Hdqrs. Ft. Benjamin Harrison, Indiana. Comprises the states of Ohio, West Virginia, Indiana and Kentucky.

6th Corps Area, Hdqrs. 1819 West Pershing Road, Chicago, Illinois. Comprises the states of Illinois, Michigan and Wisconsin.

7th Corps Area, Hdqrs. Ft. Crook, Nebraska. Comprises the states of Missouri, Kansas, Iowa, Nebraska, North and South Dakota, Minnesota and Arkansas.

8th Corps Area, Hdqrs. Ft. Sam Houston, Texas. Comprises the states of Texas, Oklahoma, Colorado, New Mexico and Arizona.

9th Corps Area, Hdqrs. Presidio of San Francisco, California. Comprises the states of Washington, Oregon, Idaho, Montana, Wyoming, Utah, Nevada and California.

Vaccination and improvement in the water supplies is making typhoid fever a vanishing disease. In Chicago the death rate has decreased from 15.8 per 100,000 during the period of 1906 and 1910 to 1.1 per 100,000 during 1921, which is the lowest death rate among the large American cities. Buffalo, New York, is the highest with 22.8 per 100,000 during the former period and 5.1 per 100,000 during 1920.

Dr. John N. Servatius has purchased a farm south of Quenemo, Kansas, where he expects to move and engage in farming as a diversion from rural practice in the region of Williamsburg and Quenomo.

Dr. Merrill Agnew, an ex-service veterinarian of the A. E. F., has located permanently at Smith Center, Kansas, with a determination to build up a big practice by good work and strict attention to business.

The average hen lays about seventy eggs annually, some reach one hundred and twenty, a few two hundred and exceptional ones go still higher. These figures indicate that the industry holds out good prospects, but at the same time show that the hen is a "parasite" and the breeder in general an indifferent mortal.

A fresh egg dropped into a pan of water lies flat at the bottom of the pan, when it is from three to five days old it will tip to an angle of 20 degrees, when it is eight to ten days old to an angle of 45 degrees, when two weeks old to 60 degrees, three weeks old, 75 degrees and after a month it will stand vertically.

The greatest fault with the chicken industry on the farms of this country is the reckless disregard for adaptation and the violation of the simplest rules of breeding. Poor housing and indifferent feeding do the rest.

By using a little common sense the chicken on the farm will yield a bigger income for labor and investment than the stock pens or grain fields.

Professor D. H. Udall, New York State Veterinary College, Cornell University, participated in the program of the veterinary practitioner's course given at University Farm, Davis, California, January 2 to 6, 1922.

Conference Between Mexican and United States Live Stock Sanitary Officials.

Plans to protect Mexico against importation of infectious diseases of animals were discussed at a conference between officials of the two governments in October, at Dallas, Texas.

Dr. Carlos Pavia, bacteriologist; Samuel Torres Eldoruy, chief of statistics, and Guillermo Fuentes, agent, represented the Mexican government.

Dr. Harry Grafke, inspector in charge of Texas; Dr. William Thompson, inspector in charge of territory between Del Rio and Brownsville, and Dr. L. B. Ernest representing the Division of Tuberculosis Eradication, B. A. I., represented the United States Department of Agriculture.

The state of Texas was represented by J. E. Boog-Scott, of the State Live Stock Sanitary Commission, and Dr. Leon E. Cloud, state veterinarian.

Dr. Walter G. Maguire, Bethany, Mo., is one of the active workers in behalf of tuberculosis eradication in that state, notice of his activities appearing frequently in the local press.

A local association has been organized by the veterinarians of Scott, Morgan and Cass counties, Illinois, with Dr. B. F. Webster, of Winchester, as president; Dr. S. G. Carter, Jacksonville, as vice-president, and Dr. A. C. Bolle, Jacksonville, as secretary-treasurer.

Dr. O. W. Beiersdorf, Milford, Mass, reported to be ill at his home from an attack of heart disease, is said to be improving.

Good Work in Nebraska.

The Lancaster County (Neb.) Humane Society has opened up a luxurious hospital and kennels for friendless dogs at Lincoln, with Dr. C. J. Norden in charge. A tract of land has been set aside for the home and will be improved upon according to the increasing needs. Citizens of Lincoln are prohibited from killing dogs in any manner, and dogs falling into the hands of the humane society will have a good chance of finding a new home.

At the semi-annual meeting of the Northwestern Veterinary Medical Association held recently at Sioux City, Iowa, the following officers were elected: Dr. W. E. Hodam, president; Dr. N. R. Jongewaard, vice-president, and Dr. P. E. Ellis, secretary-treasurer.

Jinx Camps on His Trail.

Dr. Ben Dobkins, Tulsa, Oklahoma, lost his fourth car recently when a Ford was taken from his garage by thieves. He lost a Grant Six several months ago by having it burned up on the road, then a Ford roadster was stolen from him, after which he purchased a Dodge that fell into the hands of thieves a few day later. None of these cars have been recovered, and with one of them went all of his instruments and paraphernalia. The doctor doesn't know whether to buy another car or to hoof it in the future.

According to a press report, veterinarians from Kansas City and from the Kansas State Agricultural College were puzzled over the diagnosis of a mysterious disease of cattle that broke out in Oswego county, Kansas.

The October meeting of the Kansas City Association of Veterinarians was held at Independence, Mo., at the hospital of Dr. H. M. McConnel. Seventy-five veterinarians and their wives were in attendance. A clinic in charge of Dr. S. L. Stewart, Olathe, Kansas, and at which Drs. Jungermann and Young performed interesting operations, featured the program.

Northern San Joaquin Valley Association.

Holding their regular monthly meeting, members of the Northern San Joaquin Valley Veterinarians' Association met at the Lincoln hotel, Stockton, last evening. "Laboratory Diagnosis and Its Relation to the Practitioner," was the subject of an address by Dr. J. O'Toole of Sacramento, and Dr. Fox spoke on "Small Animal Practice." Dr. Ronesse of Turlock discussed "Diseases of Chickens."

The members in attendance at last evening's meeting, besides the speakers, were: Dr. O. A. Diller of Stockton, Dr. R. A. Ball of Modesto, Dr. A. J. Whiataker of Manteca, Dr. G. P. Rebold of Stockton, Dr. C. L. Wrinkle of Stockton, Dr A. C. Rosenberger of Stockton, Dr. A. I. Somsen of Stockton, Dr. N. H. Locke of Lockeford, Dr. Nathan Sinai of Stockton, Dr. J. C. Quinn of Antioch, Dr. W. W. Davidson of Stockton, Dr. F. L. O'Neal of Newman, and Dr. Davies of Stockton.

Twenty-five years ago we were lamenting over the two-year schools. Today, specialists are made in seven days in the state of Iowa.

Vaccination Meet for Centerville, Iowa

Centerville, Dec. 2.—Sixty men have signed up for the vaccination school. Definite arrangements have been made for the school. Dr. J. S. Graft will be the veterinary instructor in charge, school beginning at 10 o'clock Thursday morning, December 8, in the music assembly hall on the third floor of the Centerville high school. The school will begin promptly at 10 o'clock and Dr. Graft has given warning that all who take this school course must be there in their seats promptly at that hour and must attend the full session, morning and afternoon, both Thursday and Friday, if they expect to get a passing grade.

The Wabash Valley Veterinary Medical Association held its annual meeting at Logansport, Indiana, December 5, 1921. The princi-

pal speakers were: Dr. L. C. Kigin, Purdue University; Dr. J. E. Gibson, Bureau of Animal Industry, Indianapolis; and Dr. R. C. Julian, state veterinarian. Besides a very interesting program covering state live stock sanitary work, affairs relating to the annual meeting of the state association were discussed.

The officers elected were: Dr. W. B. Wallace, Marion, president; Dr. W. G. Musselman, Denver, vice-president; and Dr. F. E. Kling, Peru, secretary-treasurer.

Drs. Kixmiller and Kling presented an interesting discourse entitled "Postmortem Work on Animals." The wives and lady visitors were entertained by Mrs. Kixmiller.

Dr. Kelene, veterinarian for The Park Falls Lumber Company, has moved from Grand View to Loretta, Wis.

The Federal Meat Inspection Service during 1921 maintained inspection in 892 establishments in 265 different cities, which compares with 897 establishments in 262 cities in 1920.

During 1921 inspectors inspected 62,252,442 animals and condemned 189,874 sheep, hogs, cattle, goats and horses. The number of horses inspected was 246, mostly in New ork, New Jersey and Ohio. (Ext. Weekly News Letter, Dept. Agr.)

MEETING OF THE NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND, LIMITED

The thirty-eighth annual general meeting of the association was held at the Royal (Dick) Veterinary College, Edinburgh on July 28, 29 and 30, 1920, under the presidency of Dr. O. Charnock Bradley. The proceedings were published and issued to all members.

Dr. O Charnock Bradley was re-elected president for the year 1920-1921 and the following officers were appointed:

Vice-Presidents — Sir Stewart Stockman, Messrs. W. A. Taylor, A. Watson and A. Gofton.

Trustees—Messrs. F. W. Garnett, S. H. Slocock and T. Salusbury Price.

Auditors—Professor Macqueen and a professional accountant.

Treasurer—Professor G. H. Wooldridge.

Secretary and Editor—Mr. John Malcom.

Assistant Secretary—Mr. Brennan De Vine.

The lamented death of the secretary occurred in September, and apart from the high

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WANTED—To purchase practice or partnership by graduate, 35 years old; extensive experience in all practices—skilled surgeon and enviable reputation. Would accept position. Salary no object. Address No. 659, care of Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

WILL PAY CASH for a good practice in a good farming or dairy community in any of the Northwestern States or California. State full particulars. Address No. 658, care of Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

WANTED—Position as assistant, or other work, by graduate veterinarian, licensed to practice in Nebraska and Illinois. Accredited for tuberculin testing. Address: J. R. T., 5845 Midway Park, Chicago, Ill.

MISCELLANEOUS

"QUICK COLLECTIONS" — Everywhere. Live wire firm! Established 27 years. William H. Dodd, 57 Nassau St., New York. Don't wait, send us your bills today!

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PRINTING

BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

REFERRING to my advertisement in December issue, I have been using this line of treatment for two years and I have not had a reoccurrence of a single case.
I would like to have my fellow practitioners use it, rather than to sell it to the laity as a proprietary preparation. Curtis Lawton, D. V. M., Vevay, Indiana.

VETERINARY MEDICINE has a good program for 1922. If your subscription is about to expire, renew it. It will not pay you to miss a single copy.

THE INDEX for Vol. XVI. (1921) will soon be ready for distribution. Subscribers desiring copies will please order them.

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571 Lyell Ave., Rochester, N. Y.

esteem, indeed affection, with which he was regarded, his decease was a severe blow to the association in the very difficult period through which it was passing.

The following committees have been formed:

Publication Committee.—Composed of one elected representative from each division.

Finance and Advisory Committee.—Consisting of the president, trustees, treasurer, secretary, assistant secretary and Messrs. Brittlebank, McIntosh, Lloyd and Clarkson.

Salaries Committee.—To consider the remuneration of salaried whole time veterinary surgeons.

An Editorial Committee.—Composed of Professor Macqueen and Messrs. G. P. Male and J. W. McIntosh. This committee is to be elected annually.

Number of Meetings

During the year under review there have been 10 meetings of council and 12 committee meetings.

The past year has been the most important in the history of the association, for it has witnessed the incorporation, and the acquisition of a professional journal—The Veterinary Record.

Incorporation and General Meeting

The association became incorporated on April 18, 1921, and in order to conform to the Articles of Association a general meeting was called for Wednesday, June 29, 1921, when the officers were formally elected, and the various steps taken by the association prior to registration were confirmed.

Appointment of General Secretary and Editors

At a meeting of the council held on October 6, 1920, Mr. J. B. Buxton was appointed general secretary, and at a subsequent meeting on November 25, 1920, Captain J. T. Edwards (since resigned) and the secretary were appointed editors of The Veterinary Record.

Resolutions

The following resolutions have been dealt with by the council:

(a) From the Yorkshire division re control of manufacture and sale of tuberculin. A letter was drafted by the president and secretary and sent to the Medical Research Council, Royal College of Veterinary Surgeons, Ministry of Agriculture, Ministries of Health for England, Scotland and Ireland; the British Medical Association; the Department of Agriculture and Technical Instruction, Ireland; and the Board of Agriculture for Scotland.

Some correspondence passed between the Ministry of Agriculture and this association, and the Ministry expressed the opinion that the standardization of tuberculin was impracticable.

(b) From the Eastern Counties Division re veterinary attendance on boarded out army horses.

This resolution was forwarded to the war office and as a result a discussion took place between the secretary and the director of the particular department when it was found to be impossible to carry the matter further, at present.

(c) From the Joint Council R. C. V. M. A., S. C. V. S., and S. E. V. A., re the inspection of meat by Veterinary Surgeons.

This resolution was forwarded to the Ministry of Health.

(d) Concessions to veterinary surgeons in regard to motor taxation.

This resolution was sent to the ministry of transport and a reply was received to the effect that the question of concessions to medical and veterinary practitioners had been considered, and that the special committee appointed to deal with this question had recommended that such concessions were undesirable.

(e) From the North of Ireland Division re allowance for time served with the army by veterinary surgeons who subsequently joined the staff of the D. A. T. I.

The secretary was informed that the conditions did not apply to officers of the D. A. T. I. and Ministry of Agriculture.

(f) From the Derbyshire Division, regarding the supply of vaccine for the treatment of joint-ill in foals. This was supported.

(g) From the Southern Counties Division, protesting against the increased telephone charges, was forwarded to the Postmaster-General.

Dangerous Drugs Act

As a result of representations made to the secretary of state regarding the proposed regulations to be made under Section 3 and 7 of the Dangerous Drugs Act, 1920, the secretary was invited to represent the Association at a conference at the home office, to which the Central Chamber of Agriculture, the National Farmers' Union, the National Farmers' Union of Scotland, and the R. C. V. S. had also been invited to send representatives.

It was found that the representatives of the farming interests did not require any modifi-

cation to which the veterinary profession could take exception

The several modifications asked for on behalf of veterinary surgeons were in general conceded by the home office.

Membership

At the beginning of the year the membership of the association was 372, this figure has increased to 1115.

On January 1, when The Veterinary Record was taken over by the association, there were 1760 subscribers. Owing to the altered conditions the number has fallen to 1513, but it is anticipated that there will be little, if any, further decrease.

It should be noted that the acquisition of a professional journal during the period under review was a particularly hazardous undertaking, owing to the increased cost of production and the very severe business depression. Moreover in view of the considerable alteration in the price of the journal and in the procedure of the association, the progress which has been made in an endeavor to obtain a representative "National" may be regarded as very satisfactory.

All members of the profession who have not yet become members of the association have recently been circularized, and if, as is confidently anticipated, a satisfactory response is obtained, the position of the association, financially and numerically, will be assured.

At the same time an earnest appeal is made to all members of the national—to endeavor by every means at their disposal to provide at least one other member.

JOHN MALCOLM, Secretary.

Histological Examination of the Spleen in Infectious Anemia of Horses.

D. Mrowka in Zeitschr. f. Veter. Aug, 1920.

The author refers to his previous work on the spleen of healthy and anemic horses (Zeitschr. f. Veter., February, 1919). In his present publication he deals particularly with the cause of the color changes and also with the histological structure of the increased pulp of the spleen. The histological examination of the spleen has a relative importance for the diagnosis of infectious anemia, only in the presence of extreme depigmentation. Myeloid changes in the spleen do not occur in infectious anemia. The hyperplasia of the spleen and of the follicle results from the new formation of functioning tissue cells; the hyperplastic enlarged spleen should be

considered as a reaction of the functionating tissues and is an indication of a regenerative process. The anemic manifestations indicate an intensive destruction of hemoglobin by the spleen. The pathologic-anatomical changes of the spleen showed no uniformity in the different stages of the disease.

The normal spleen owes its brown color to the high content of iron pigment. The distinction in color in anemic spleens are dependent on their content of pigment; in spleens of a flesh and raspberry color the pigment has disappeared to a minimum. The formation of hemosiderin in the course of the disease is not a pathological but a regenerative process for the renewal of the exhausted reserve iron and for the reproduction of the normal condition.

Pyotherapy in Epizootic Lymphangitis.

Dr. F. Lenzi in La Clinica Vet., 1920, Vol. 15 and 16.

In 1918 Bridre published in the "Bull. Soc. Centr. de Med. Vet." a new pyotherapeutic method for epizootic lymphangitis which supposedly possesses excellent curative action. For the confirmation of this work the author undertook the following experiments: He selected three horses and three mules, seven to fifteen years of age, in which epizootic lymphangitis was diagnosed. With subcutane- was produced from which the pus, after diluting with phenol solution, was injected subcutaneously into the same, as well as to the other affected animals; in six to fourteen-day intervals nine such injections were administered. Not the slightest improvement was observed from this treatment in five of the cases. The author does not attribute the recovery of the sixth case to the treatment but to a natural recovery which sometimes occurs in untreated animals affected with epizootic lymphangitis. In conclusion the author reports two other cases of epizootic lymphangitis which were diagnosed microscopically and which recovered without any interference. Two months after the admittance of the affected horses to the clinic, the nodular enlargements disappeared and the ulcerations cicatrized; the swelling of the regional lymph glands and the affected lymphatics regained their normal appearance. The animals were under observation for a long time without showing any indication of relapse.

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Editorial

THE FOUNDER OF VETERINARY EDUCATION IN ENGLAND

CHARLES VIAL DE SAINT-BEL, who was an instructor of anatomy at the veterinary school of Lyons during the first few years of its inauguration, is by right the founder of veterinary education in England, in fact the English-speaking world, although he was by birth and citizenship a Frenchman.

He was born in the neighborhood of Lyons in 1753 and was one of the first students of the college that was founded in that city in 1761 by Bourgelat. He is said to have been unpopular with his colleagues and is described by Bourgelat as having been somewhat of a trouble-maker.

CHARLES VIAL DE SAINT-BEL
1753-1793

In his own memoirs written in 1789 he relates that being disappointed in a promotion he had a right to expect, he migrated to England in disgust in 1788, where he immediately prepared plans for the opening of a veterinary college in London, but being a foreigner his propositions were not met with much favor immediately, in fact, not until 1790 when he had induced the Odiham society, which was then working on a plan to give public instruction in farriery, to change its name to "Veterinary College." Thus the foundation of the Royal Veterinary College that played such a significant role in veterinary education in the English speaking nations was laid down with Vial as its first executive.

His career as such was, however, short, having died of an eruptive fever in 1793.

While Vial was never a prominent character in veterinary education, he must nevertheless be credited with having left his native country with the premeditated purpose and determination to institute public veterinary instruction in England, and in this he succeeded.

The fact that he died within two years after having accomplished his purpose, very likely prevented him from having become more famous as an instructor and literateur. He, however, published a book entitled "Lectures on the Elementaries of Farriery and the Art of Horse Shoeing; and on the Diseases of the Foot," designed chiefly for the use of his pupils in the veterinary college he founded. The book was printed for the author in London, and is not a translation from the French.

THE PHENOMENA OF ANESTHESIA

THE strange fact that anesthesia destroys consciousness without obliterating the function of the vital centers located in the medulla oblongata has been a matter of constant controversy ever since inhalation anesthesia was first discovered. It is a phenomenon that is not easy to comprehend in view of its relative safety to life. Just how volatile chemicals can produce such a profound state of unconsciousness and insensibility in a few moments without materially affecting the vital functions and that will disappear quite as promptly when the administration is discontinued has been a mystery from the very first day of anesthesia by inhalation.

The theory of deficient oxygenation of the blood is no longer entertained, since it has been proved that anesthesia can be maintained when the oxygen saturation of the blood is complete. The theory of nerve-cell alteration will always be but a theory, because such an hypothesis is beyond the pale of experimental proof. The exponents of this theory have, however, attributed anesthesia to transient dehydration of the nerve-cell protoplasm of the cerebrum and compare the phenomena with that shown by certain dessicated infusoria which remain apparently dead when dry and then revive on being re-moistened. That is, in this hypothesis the content of the nerve cells of the cerebrum yields up moisture (or is in some way altered) as the anesthetic reaches the brain and then reabsorbs the loss from the intercellular spaces when it passes off. This theory would be splendidly beautiful if it did not lack proof.

More recently, anesthesia has been attributed to acidity of the blood. Crile, the exponent of this theory, has attempted to show that there is a close relation between acidity of the blood and the state of unconsciousness, not only in the unconsciousness produced by anesthetics but also in that caused by other conditions such as overwhelming emotion and excessive muscular effort. He explains that death itself and the unconscious state that precedes it may be nothing more than extreme acidity.

Just how the higher and the lower brain centers show opposing effects from the acidity is explained by the fact that inhaled anesthetics increase hematosis, the respiratory centers acting with increased vigor in proportion to the increased acidity, whereas the centers controlling the voluntary centers are inhibited. That is to say, acidity does not augment muscular activity, but all the while it is being combatted by an increased respiratory action, sufficient to maintain life. Hence the state of anesthesia is explained, in short, as a fight of the respiratory movements against a condition (the acidity) that is causing the unconsciousness.

Coming from such a profound student of anesthesia as Crile and confirmed by convincing experiments, it seems this simple hypothesis should supersede all former ones.

THE MEDICAL SERVICE OF AN ARMY IN THE FIELD

Colonel A. N. Stark, M. C., U. S. A., who as chief surgeon of the First Army, A. E. F., qualified himself as no living man in this country has ever before been able to qualify in the matter of making recommendations, publishes an article in The Military Surgeon that is likely to astonish anyone who has not had a similar experience with a headquarters preparing an army for action and to carry out extensive operations.

The complexity of the organization (of the medical service alone) is almost beyond comprehension. The wide range of scientifically trained chiefs of services required, the large officer and enlisted personnel needed and the magnitude of the plans and problems, are simply staggering to the uninitiated.

Col. Stark's recommendations in the matter of assistants alone will serve as a basis upon which to build an idea of the service an army surgeon must direct and keep running smoothly. The following are his assistants (chiefs of services):—

1. Sanitary Supervisor and Epidemiologist.
2. Director of Hospitals.
3. Director of Ambulances.
4. Surgical Chief.
5. Medical Chief.
6. Orthopedist.
7. Gas Officer.
8. Neuro-psychiatrist.
9. Urologist.
10. Personnel Officer.
11. Medical Supply Officer.
12. Laboratory Chief.
13. Dental Supervisor.
14. Veterinary Supervisor.
15. Contact Officer (with asst. Chief of Staff for supply).
16. Evacuating Officer (one for each corps sector).

By now stretching the imagination through three, four or five army corps each with its own headquarter's services and each commanding from four to six divisions of 25,000 men and 4,500 animals each, together with the motor service of the Medical Corps and available rail transportation, a glimpse of the trouble of an army surgeon may be obtained.

To illustrate the point, the veterinary service is but one of sixteen other important services required to keep a field army functioning properly. The fact that during the Argonne-Meuse operation the First Army had a total of 96,000 animals, of which 23,000 were evacuated and transported to veterinary hospitals previously prepared by the Service of Supplies, gives but a feeble impression of the big problems with which our capable chief Col. Stark was charged during this, the greatest battle in American history.

SOME SHATTERED HOPES

1. When diptheria antitoxin was discovered, and antitetanic serum soon after, it was thought that the cure of all infections was in sight; that the therapy of the future would depend simply upon the discovery of the causative microbe of each disease and the manufacture of an antitoxic serum that would surely cure.

2. When general anesthesia was discovered by Morton in 1846, it was thought that the living body could now be opened with impunity at the will and convenience of the surgeon, but infection stepped in and stayed the overzealous hand.

3. When Lister in the early 70's proved that infections could be prevented, the surgeon was led to believe that henceforth there would be no bounds to his ardor but shock intervened to curb his inclinations.

4. When tuberculin was discovered it was given a wide publicity as a cure for tuberculosis and some years elapsed before the mischievous announcement was shown to be premature.

5. Once the science of bacteriology began to disclose the role of pathogenic bacteria it was thought that therapeutics would soon simplify itself into the mere discovery of specific disinfectants. But the chemist like the bacteriologist has made but feeble progress in that direction. The harmless internal disinfectant is yet undiscovered, but this the internist hopes to realize.

6. Among the fallacies of the past the blunder bus prescription, as if imbued with the nine lives of the feline, seems to die hard, but faith in its merits is waning because the therapist no longer seeks fame in its mysteries.

A GOOD PLATFORM FOR A VETERINARY JOURNAL

1. Champion the cause of the practitioner against all harmful agencies.
2. Promote the welfare of the veterinary associations and encourage the organization of more of them.
3. Enlarge the realm of veterinary science.
4. Establish a loyal relation with the livestock interests.
5. Participate actively in the work of the Horse Association of North America.
6. Develop the breeding of pure-bred stock of all domestic species.
7. Initiate and endorse helpful legislation.
8. Increase the attendance of the veterinary schools.
9. Supply the veterinary news of the world.
10. Ameliorate the veterinary service of the war and agricultural departments and the status of their personnel.
11. Advertise the veterinary profession as a remunerative industry.
12. Advocate the eradication of tuberculosis, abortion disease and rabies from domestic animals.

THE FLAVINES

Although the flavines have been attracting a great deal of attention abroad for several years they are just coming into general use in this country. They are anilin derivatives possessing a microbicide power twenty times stronger than that of mercuric chlorid and without inflicting much injury to living tissues or retarding phagocytosis. They penetrate the tissues more than the common germicides and therefore do not produce the pellicle or wall behind which septic processes evolve unmolested. The veterinarian has his choice between acriflavine, flavisol (Zell), and proflavine (Abbott).

Chronic chloralism, a term preconized by Prof. Udriski, results when chloral hydrate is given in repeated doses. The disease is manifested by general paralysis, alopecia and pustular dermatitis.

Editor's Personal Page

To think is to succeed.

The new address of VETERINARY MEDICINE is No. 4753 Grand Boulevard, Chicago, Illinois.

"It is plain that if universal immunization of dogs was put into effect for two years the virus of rabies would vanish from the face of the earth."—Eichhorn.

Since veterinary education in the interest of progress has been gracefully turned over to a few state colleges, students should all be accepted on equal terms, regardless of their citizenship.

The slogan "Kill the dogs and send the food to the starving women and children" is a high sounding aphorism, but the average dog lives from the scraps of the table and pays mighty well for its board.

We are informed that the existing veterinary college can not legally covet influence beyond their lawful bornes and only to a limited extent within them. Just what will be the termination of such a situation is, to say the least, very problematical.

MISSOURI'S LOSS

After serving his state for more than 25 years as state veterinarian, Dr. D. F. Lucky of Jefferson City, Missouri, has resigned, according to press reports. The resignation was sent to the state board of agriculture to take effect December 1, 1921. The resignation comes as a big surprise alike to the layman and veterinarian since everyone knows what such a loss means to the cause of animal husbandry. The name of Lucky will live in our annals as the pioneer of the intradermal tuberculin test, but his colleagues who know him best will want to remember him as a relentless critic of everything that is bad and a tireless champion of everything good in live stock sanitation.

A high preliminary education will not make a veterinarian out of an ill taught student.

Foot and mouth disease does affect man after all. Does not the golf enthusiast "hoof all day and mouth all night?" Apology to Paz, Chicago Tribune.

After having attended all of the veterinary association meetings the practitioner may go home thankful that domestic animals are not susceptible to logorrhea.

When veterinary education was in the hands of the private schools it was, in effect, national in character. Now it is so strictly provincial that the veterinarians unfortunate enough to live in states where there are no veterinary colleges may be pardoned for believing that veterinary education has passed into history.

The love of animals and the humane treatment of them are matters of great importance to the veterinary profession from the economic point of view. The brutal owner is never a good client of the veterinarian, while the other calls him for trivial as well as for serious complaints. The one pays his bills grudgingly if at all, the other pays cheerfully and promptly.

To meet the needs of the constant increase in the editorial and clerical staffs and the space requirement of added equipment, accumulating records and library, together with a personal desire of the directors to own a home amid a more inspiring environment than the crowded downtown district, if not also to display by deed its confidence in the future of the veterinary profession, VETERINARY MEDICINE moves into new quarters surrounded with every comfort to meet the most fastidious inclinations, and every facility to improve the quality of its production.

It seems to be dawning upon the curious that there is a vast unexplored field in medicine away beyond the realm of bacteriology. It may be the realm of nutrition. Who knows?

Original Contributions

Small Animal Practice

By O. V. Brumley, Columbus, Ohio
Director of Clinics, Veterinary Dept., Ohio State Univ.

IT is an established fact the practice of veterinary medicine has been modified to a great extent during the past few years, so that instead of the veterinarian restricting himself to caring for the various diseases of the large animals, we find him paying a great deal more attention than formerly to some of the other animals, especially dogs, cats and the various breeds of poultry. This means to us as veterinarians that there is a growing demand for our services in taking care of practically all classes of animals, and as a result of this we must look the situation squarely in the face and prepare ourselves for such an emergency.

During the past few years we have had ample opportunity to observe the gradual change in the character of our practice; the automobile trucks and automobiles have reduced practice to a certain extent upon certain classes of animals. This is especially true in our larger cities, where horses were used exclusively for local transportation, deliveries, pleasure, etc.

However, in spite of this displacement of the horse to a certain degree, we will find veterinary practice better in the near future than it has ever been in the history of the profession. In support of this statement we feel safe in saying that there are several factors contributing to the betterment of the profession.

The Veterinarian Faithfully Constructive

In the first place, progressive, live veterinarians, who are trying to elevate the profession from every angle, so that the public has begun to realize that the men of our profession can be educated, trained for service, are equally as efficient in our profession as the physician is in his. We are all glad to see this change wrought, and no doubt all of us can look forward to the future and see better service, better appreciation of service, and a more hopeful outlook all around, because the veterinarian himself is willing to do something to get out of the rut.

Prospects Splendid

In the second place the value of livestock, now low, will increase during the next few years; even the price of good horses will keep pace fairly well with other animals, so that from an economic and business standpoint the owners will realize the necessity of expert advice and treatment for animals when sick. This is especially true with all meat producing and pet animals, and isn't it true that our calls are becoming more frequent in caring for these animals than formerly?

Rural Progress a Factor

In the third place, there is the education of the laity. Just to what degree this has been a benefit to the veterinarian is somewhat problematic, but we all must admit that the extension of the telephone, rural delivery of mail, the electric lines, better roads, have been a great uplift to the rural communities, and consequently given these people a much broader view of things, and has materially increased their respect for the advice and professional services of the veterinarian. It is also admitted there is still chance for improvement along this line, and we hope to see the day the laity will refuse to employ the uneducated, unprofessional man.

Education of the public on the importance of expert service is, in our opinion, of great value to the profession.

The Love for Animals Increasing

In the fourth place, people are becoming more attached to small animals and consequently there is a great increase in the number of animals kept simply for pleasure. Several years ago veterinarians were hardly ever called upon to treat this class of patients, but now a large share of the practice in cities is the so-called small animal practice. This practice is very remunerative, and it is gradually extending to the smaller cities and rural com-

munities.

In this connection we wish to call your attention to the great possibilities for giving advice and for practice in the poultry industry. The veterinarian must accept the newer conditions and adapt himself to them in every way.

A Source of Additional Income

We firmly believe our annual incomes can be doubled by taking advantage of all these possibilities. It is surprising how rapidly innovations develop when taken seriously and energy is devoted to them. You will find the county agricultural agents willing to co-operate on all these problems.

Our experience has shown that if we take responsibility and assume the right attitude there will be no difficulty in securing hearty co-operation with the state and federal agents in our communities so that mutual benefit will result.

You will please pardon these general remarks, on the ground that we wanted to emphasize the importance of considering veterinary practice in a broader sense than it was formerly, and because small animals are of greater consequence in our professional work than they have been in the past, depending, of course, upon the interest we display toward them, and the success we have in their treatment.

Equipment

Certain equipment is essential in small animal practice. We recommend first of all a clean, well equipped office, and if possible a waiting room similar to those used by physicians. This should be provided with comfortable, neat furniture, and should be well lighted and ventilated. In other words, a pleasant place for our patrons to wait in. Pleasing pictures with up to date literature add a great deal towards keeping up the tone of the office and the morale of patrons. Current veterinary and agricultural literature should be well represented.

Keep Office Orderly and Clean

Secondly, sufficient instruments and in proper order with some adequate way of sterilization should be provided. We think an ordinary copper boiler of small size would answer the purpose. Be sure that all instruments are thoroughly sterilized before using. An elaborate outlay for instruments is not necessary.

Thirdly, provision should be made for a few, clean, well lighted and ventilated cages. These should consist of an isolation cage or cages to take care of infectious cases. A few cages to house the regular patients. All of these should be kept clean at all times and painted occasionally. The painting will clean and disinfect them. Generous use of such reliable disinfectants as 3% liquor cresolis compositus is also recommended.

Lastly, we do not believe it possible to do satisfactory work in small animal practice without some diagnostic instruments. A microscope, phonendoscope, etc., should be available at all times. They should be in use every day in a small animal practice.

Examination

A careful, thorough examination should always be made in order to establish, if possible, a definite and accurate diagnosis. We are inclined to be rather lax in making our examinations and apply treatment before definite conclusions are arrived at. In small animals particularly there are many rather obscure diseases and conditions and unless we are very careful, mistakes will occur, which may lead to the use of wrong treatment and unsatisfactory results, discouraging both the practitioner and owner. At any rate unless the examination is thorough and a definite diagnosis is made, it is impossible to give a correct prognosis and rational treatment. The diagnosis cannot always be established even after the most thorough examination.

Feeding and Diet

The feeding of small animals is very important. We should make a careful study of the subject. In many conditions dieting is the most important part of the treatment. Many small animals suffer from too much food rather than an insufficient amount. A large number of cases need only restricted diet for several days.

On the other hand, nourishing and concentrated foods are required in animals recuperating from many diseases. Eggs, beef extract, salmon, lean meat, mush, oatmeal and milk constitute the common foods for weak undernourished animals. The ordinary dog biscuit as sold on the market can be used as the regular food, and varied with other foods as the case demands.

Table Scraps Not Recommended

Our experience has shown that indiscriminate use of table scraps, trimmings from meat, left overs from restaurants, etc., is often dangerous on account of preformed toxins, infections, foreign substances such as glass, etc., which may produce serious results. Dieting and selection of foods for our small patients is just as important as medication. Very sick

dogs and cats require special care regarding foods. Often they will eat certain things and refuse others. This must be determined and a diet fixed accordingly. Good care and grooming plays an important part in keeping the hair coat and skin in good condition.

Internal Parasites

In small animals, the parasites of the digestive tract are very numerous. They are found in large numbers in the intestines. They pass rapidly through the anterior portion of the digestive tract, which prevents their becoming fixed; also in this portion of the canal secretions for their proper development are lacking. In the stomach, owing to its acidity, they do not remain long, but are either destroyed or pass into the small intestines.

In a few instances, however, they may burrow underneath the mucosa of the stomach. The intestines are favorable for the development of parasites, owing to their length, the presence of an abundance of fluid, and the slow peristaltic movement of the bowels which does not materially interfere with their fixation and development.

Atmospheric Conditions and Veterinary Practice

A. A. Liebold, D. V. M., Chicago

(Continued from Last Month)

Exposure to a limited amount of cold air or drafts can give rise to diseases through chilling, particularly if the cold air strikes the body while it is very warm. Intense cold is not necessary to bring this about, but the change from the warm to the cold must be very sudden. In foggy, cold weather, lambs are particularly liable to develop severe muscular rheumatism.

The exact nature of a so-called cold is not fully understood. It is usually assumed that the contraction of the skin vessels caused by the cold temperature results in a hyperemia of the internal organs, especially the mucous membranes and most usually those of the respiratory tract. Frequently there also occurs varying degrees of pneumonia, that is hyperemia, exudation, formation of fibrin coagulums in the lungs, capillary and other small hemorrhages in the lungs, trachea, larynx and pharynx, with a simultaneous decrease and weakening of the phagocytes. Aufrecht traces the coagulation of the blood in the lungs and other organs to the toxic substance resulting from the destruction of the leucocytes produced by the irritation of the cold; and the vascular changes, which permitted the hemorrhages he attributes to the toxic substance in the blood arising as a result of it being cooled off. The protective epithelium of the respiratory tract suffers injuries through the exudations and hemorrhages, and these areas of lowered resistance act as points of entrance or invasion of pathogenic bacteria. It has been proved that in many diseases resulting from a chill, such as pulmonary and mammary inflammations, a simultaneous infection does occur. However, there is no doubt that beside these, there are true chill-diseases in which there is no infectious matter concerned. In this group would fall muscular rheumatisms, neuralgias, laminitis, spasmodic colic, etc. These are views upheld by Klimmer.

The most effective prevention against chill and catching cold is hardening or toughening the animals, proper care of the skin and avoidance of sudden severe temperature changes, etc. The animals should become accustomed to cold. First found in both man and animals that repeated short and mild cold and heat irritations of the skin produced a thickening of the epidermis up to eight times the normal; by this means the terminal points of the cold or sensory nerves became more protected and therefore less exposed to the cold.

Atmospheric Pressure

Atmospheric pressure, which is due to the weight of the atmosphere, is of questionable importance to veterinary medicine. At sea level the air pressure amounts to 2.2 pounds for each .1549 square inch. A full grown cow, whose body surface may amount to 64.58 square feet, is subjected at sea level to air pressure amounting to 132,276 pounds. Air pressure is, of course, not perceptible, since it comes from all sides and the body is not compressible. As one passes upward from the sea's level the air pressure diminishes.

The greatest importance of air pressure is the manner in which it influences the weather. There is as yet no unity of opinion as to whether the fluctuations in air pressure, as they ordinarily occur, exert an immediate in-

fluence on the health of animals. Slight fluctuations probably do not have much, if any, effect. However, there are authorities who assume that there is such an influence exerted. Chief among these is Krogoe-Petersen, who claims that parturient paresis, or milk fever, in cows only occurs when the barometer, that is, the air pressure, is low or falling. He looks upon it as a cerebral anemia resulting from a hyperemia of the cutaneous vessels and a transitory hyperemia of the mammary vessels. The cause of the hyperemia he believes to be the diminution of the atmospheric pressure on the cutaneous vessels, the effect being increased through the diminished intra-abdominal pressure following parturition. According to Anderson, cows suffering from parturient paresis, before it became customary to inject air into the udder, were more easily cured when the air pressure was rising than when it was falling. Dressler considers that certain forms of colic and some other diseases increase when the weather is hazy and damp, that is, when the air pressure is low. It is not explained by these men how cases of parturient paresis occurring before parturition are produced.

Atmospheric Movements

Atmospheric movements arise through the differences in the atmospheric pressure, and these, in turn, are caused by the differences in temperature, high temperature causing expansion, and low temperature contraction of the air.

Wind has a direct influence on the heat loss from the body, since air movements increase the conduction of heat from the body and increase the heat currents. It is refreshing during intense heat and causes freezing or chilling during intense cold. A strong wind will also interfere with an animal's breathing when it is forced to run against the wind. The direction from which the wind comes has a decided influence on both the temperature and the humidity of a locality. We all know that the north, and especially the northwest wind, are the coldest and the west winds on the average the driest, although the dryness is often changed to comparative high humidity if the dry wind first sweeps over a large body of water. These colder winds can lead to chilling and diseases of the respiratory tract, etc.

The air movements are also of importance in that they influence the weather, mix the air and carry away impurities, producing ventilation. Impurities, which may even lead to poisoning, may be brought from a distant part to some other region, where they settle on food plants. Infectious matter is also transmitted in some cases by the air currents, as previously shown.

Precipitations

The various precipitations, rain and snow, result from the condensation of the water vapor in the atmosphere, due to cold. The quantity of the precipitation is, of course, dependent upon the extent of the saturation of the air and the intensity of the cold.

The influences of rain, etc., are very numerous. Among the beneficial influences we have the cleansing of the air and the earth, settling the dust and furthering the growth of plant life; also, it is refreshing during intense heat and rids the body of dust and insects.

The precipitations may cause harm in that they can be the cause of diseases due to sudden chilling and can cause disturbances of nutrition. A cold cloud burst striking an over-heated animal can cause serious disturbances of health. Disturbances of nutrition may be observed in sheep after a protracted rain, producing chlorosis, anemia and hydremia, due to the fact that the forage contains insufficient nutrition and too much water. Furthermore, rain favors the development of parasitic and so-called soil diseases, such as distomatosis, lungworm and stomach worm infestations, anthrax, black leg, etc., as mentioned previously when I spoke of humidity.

Mowed grasses leech out during prolonged or repeated rains and then decomposes more readily. A warm rain following a protracted drought will cause a rapid and luxuriant growth of forage plants, which may cause tympanitis when eaten green. Feed that has grown during a prolonged rain contains more water and less nutritious substances than other feed. Frost bitten feed gives rise to catarrh of the stomach, colic, diarrhea and abortion in animals whose gestating period is drawing to a close, according to one authority. It is also known that such feed will cause tympanitis. These diseases can be easily avoided by allowing the feed to first dry before being fed, or by feeding the animal some dry feed before turning them out onto pasture so that they do not eat the frost bitten grass on an empty stomach.

Swine Practice

Edited by A. T. KINSLEY, M.S., D.V.S.

Sterility

STERILITY is relatively common in sows throughout the corn belt. Slow breeders and sterility in boars is not uncommon. These conditions have recently attracted the attention of the veterinarian because there are more pure-bred herds of swine than formerly and breeders are becoming educated to greater efficiency in production. The older practitioners, no doubt, have observed this condition in swine for many years, but they were seldom asked advice as to its cause and prevention. Sterility in swine is not a new disease or condition, but is one of the many newer problems that falls within the domain of the practicing veterinarian.

Extent and Distribution

It is not possible with the present available information to even estimate the extent of sterility in swine. It is not uncommon to find eight or ten sterile sows on the ordinary farm and in some instances an amazingly large percentage of the breeding sows are found to be sterile. Sterility is not confined to any particular breed, but is apparently equally common in all breeds. It would appear, although the available information may be misleading, that the condition is most common in sows that have successfully produced one litter of pigs. On the other hand, it has been observed in sows from three to five years of age and in gilts. Sterility is also reported to occur quite frequently in boars. The condition is most common, according to the reports of practitioners, in young boars. Sterility is probably equally prevalent in all sections of the country, although the significance of the condition is more fully appreciated in those areas where swine are produced extensively.

Causes of Sterility

An occasional case of sterility occurs in either gilts or boars as a result of improper development or malformation of the genital organs. In breeding beyond a certain point diminishes the reproductive powers and is a factor that must be more carefully considered in swine breeding. Insufficient exercise and over-feeding, resulting in excessive accumulation of fat, is one of the common causes of sterility, particularly in young sows.

From recent investigations it would seem that certain mineral foods are essential for the maximum of reproduction. Some breeders have demonstrated that slow breeders and non-breeders can, in many instances, be made positive breeders by supplying a proper ration in which there is the required mineral constituents. Perhaps the largest number of cases of sterility in either sows or boars is the result of previous disease. There has been an infectious abortion disease rather wide-spread in swine in this country. Metritis is a common sequel of abortion and precedes sterility in a large number of cases.

Non-breeding or sterility in boars is commonly the result of an injury to the male organs. The injury may be due to mechanical interference, or it may be the result of overuse or abuse. Small litters and those litters in which the pigs have little vigor or vitality can frequently be traced to a boar in which the testicles have been damaged.

Symptoms of Sterility

Sterile sows often show no evidence of the existing condition, excepting their failure to conceive. Some non-breeding sows, especially those in which the sterility is secondary to metritis, show the estral periods regularly, others irregularly, and an occasional sow is observed to be constantly in heat. In some cases there is a continuous purulent vaginal discharge indicating a purulent inflammation of the vagina or uterus. Gilts have been observed, in which there was a copious purulent vaginal discharge at the beginning of the estral period and which would indicate pyometra. Sows that are sterile are usually in good condition, although a few cases have been observed that were unthrifty or emaciated, probably the result of absorption of purulent or putrid materials from the uterus.

Sterile boars in which the sterility is not traceable to inflammatory diseases of the testicles are usually in prime butcher condition. Sterility resulting from orchitis is usually associated with unthriftiness and the affected individuals have a disturbed locomotion.

Prevention of Sterility

The occurrence of sterility can be diminished by observing the proper methods of breeding, feeding and general care of swine. Although in-breeding and line breeding are of value in establishing some peculiarity or characteristics, such breeding must not be continued until it diminishes the vigor of the offspring or produces sterility. Breeding swine should not be given a fattening ration, but should be provided with a maintenance ration. The mineral ingredients necessary in a ration for breeding sows and boars probably varies in different locations. From the evidence now

Sterile Sow, Apparently Healthy, Bred 20 Times Unsuccessfully

available it would seem that little if any feed has sufficient mineral ingredients to give the best results, and thus it has been advised that mineral substitutes be provided.

It appears this problem is likely to differ more or less in each community, and it would therefore be a community problem that the local veterinarian could best advise upon. Reproduction is much more certain in animals that are required to take a certain amount of exercise. Breeding swine should not be kept in small pens. Sows that have recently aborted, and those showing a discharge from the genital organs, should not be bred until the condition causing the discharge has been overcome. These sows should be segregated in one pen or lot and kept separate from the healthy swine.

Excessive use of a boar frequently causes an acute congestion or inflammation of the testicles which diminishes the vitality of the sperm cells and may destroy them entirely. Sows rarely conceive when served by a boar in this condition. This condition can largely be avoided by the proper use of the boar. Young boars should be used in service once every other day. Mature boars may be put in service once daily, and known positive breeders may, for a short time, be given two services each day.

Boars should not be permitted to serve sows that are known to be diseased, or even suspected of being affected, for the boar can probably carry infections from a diseased to a healthy sow. A sufficient ration of the proper foods should be provided for a boar during the period of service.

Treatment of Sterility

The provision of proper foods, surroundings and general sex hygiene is a detail that should be exercised by the herdsman or breeder, and the treatment of disease is the duty of the veterinarian. Some of the cases of sterility in sows, resulting from disease of the genital organs, can be relieved and the sows become certain breeders. The procedure for relieving such cases depends upon the nature of the disease. In some cases it is necessary to destroy cysts on the ovary.

Rupturing ovarian cysts in sows may be done by palpation through the rectum provided the sows are relatively large and the hand and arm of the veterinarian is small or medium in size. The accompanying cut is from a photograph of a sow that had been bred about twenty times to several different boars before being treated by rupturing ovarian cysts, by Dr. D. S. Otey.

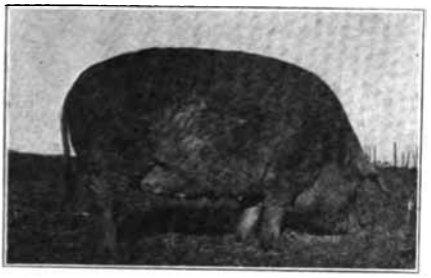
This sow was bred ten days after treatment, conceived, and farrowed fourteen pigs. Dr. Otey describes his method of procedure as follows: "The sow is placed in a crate and confined by tying in such a way that she can not move. After lubricating my arm with soap, the hand is passed very carefully into the rectum. My hand and arm are small and I do not attempt to treat any animal that weighs less than 400 pounds. The wall of the intestine is very tender and is easily punctured, and therefore care should be exercised in grasping the ovary.

"The left ovary is manipulated with the right hand and the right ovary with the left hand. The ovarian cysts are ruptured in the same manner as those of the cow." Cystic ovaries

may also be treated by making an opening through the abdominal wall similar to the incision made for the flank method of the Cesarean operation. This method of treatment is radical and it is doubtful if it should be advised, except in extreme cases.

Douches for Uterine Infections

Uterine infections can usually be overcome by douching with sterile salt solution once daily, or in extreme cases of purulent infection, tincture of iodine in water may be used. The intramuscular injection of ten to twenty grains of quinine bisulphate is of value, particularly in the acute cases of metritis. When the uterus of a sow is irrigated it is advisable to confine the animal in a crate and raise the



Same Sow, After Farrowing 14 Pigs.

front end sufficient to obtain the advantage of drainage. The uterus should be well drained of the irrigation fluid.

Sterility due to inactivity of the ovaries can, in some instances, be overcome by the judicious use of Yohimbin, which apparently increases the amount of blood passing through the ovary. Slow breeding boars and sterile boars, in which the sterility is due to inactivity of the testicles, are usually benefited by the administration of Yohimbin.

The veterinarian who makes a careful study of sterility in swine will, no doubt, find conditions that we have not described, and any further verified information concerning sterility from practitioners will be given proper publicity. Sterility in swine is of importance and the practicing veterinarian should be properly prepared and equipped to render service in this capacity.

While many sows may farrow twenty or more pigs per year, the annual average number of pigs per sow that reach maturity is fewer than eight.

POLYARTHRITIS

Polyarthritis is the name applied to a condition in which there is a subacute or chronic inflammation of the structures of the joints. Many inquiries are received during the late winter and early spring months relative to this malady from practitioners in the north central states. The frequency and importance of this condition warrants a brief discussion of it at this time.

Extent and Distribution

The extent of this disease is difficult to ascertain, because most feeders and only a relatively few breeders recognize the malady which is essentially chronic and is insidious in its onset. The disease is usually not identified until the swine are slaughtered. The prevalence of the disease is, at least to some extent, determined by the weather conditions during the period that the swine are developed. Cold, damp weather appears to be favorable for the occurrence of polyarthritis. The disease occurs with equal frequency in all breeds of swine and it is as common in gilts and sows as it is in barrows or boars. It is primarily a disease of young animals, although if affected individuals are kept, the disease persists, and therefore, occurs in the mature animal.

The most reliable information available, indicating the distribution of polyarthritis, is the post mortem findings in packing houses. According to this information polyarthritis is most common in the north central states.

Cause

Cold, damp weather predispose pigs to polyarthritis. The disease is apparently more prevalent in swine that are not properly housed in the winter time. Cement floors, if not properly covered by dry bedding, is conductive to this and other diseases. The B. pyogenes suis has been identified in the affected joints of swine, but it has not been determined whether this microbian agent is the specific cause or an associated organism. Some investigators are of the opinion that polyarthritis is a condition resulting from navel infection.

Symptoms

The first manifestation of the disease consists of disturbances of locomotion. The affected joints are usually swollen and sensitive. The early symptoms of the disease are frequently overlooked by the caretaker for in many instances, the affected swine will evidence slight lameness for a very short time. The

manifestations of the disease after the acute stage has subsided, consists of a general unthriftiness and there may or may not be visible enlargements of the joints. There will be interference with joint action, the extent of which will vary with the nature of the joint lesion.

Lesions

The affected animal may be under-developed and more or less emaciated. The lesions of the joints are variable, depending upon the extent, intensity and chronicity of the process.

In the less severe cases there is a mild synovitis characterized by a limited infiltration into the joint cavity and perisynovial structures. The fluid in the joint cavity will be turbid and may contain coagulated material. As the disease progresses, there is a fibrous proliferation in the synovial membrane and surrounding membrane and surrounding tissues. In some cases there are erosions of the articular cartilages and there may be fibrous proliferations within the joint cavity.

Prevention

The economic loss incident to porcine polyarthritis, that is sustained by the breeder and feeder, is preventable. Veterinarians are not doing their full duty unless they properly advise men interested in the swine industry, of the proper methods of preventing polyarthritis. It is first advised that proper surroundings be provided for sows during the farrowing period, thus preventing or at least diminishing the possibility of navel infection to a minimum. After weaning, the pigs should be properly housed, thus preventing undue exposure. Cement and concrete floors should be covered by ample bedding. Some have advised the use of a bacterin containing the B. pyogenes. This may be of value in the early stages. The local application of hog packs will reduce the intensity of the acute attacks.

VETERINARY MEDICINE is at your service. We believe that practitioners have some additional information on porcine polyarthritis, and we will be glad to have your comments for future publication. It would appear that there is a possibility of a more efficient service in the prevention of disease in swine and we shall be pleased to help in this important problem.

A preliminary dose of morphia hypodermically does not increase the anesthetic action of chloral hydrate.

PICA IN SWINE

I have under my care a herd of hogs that have acquired the habit of eating wood and tearing fence boards. I have used tankage, minerals, wood ashes and coal but these have done no good. Any suggestions from you would be greatly appreciated.—A. S., Iowa.

REPLY—You have not stated the nature of the feed these swine are receiving. How old are the swine? How large is the lot in which they are maintained? Has there been any necrotic stomatitis in this lot? If you will answer these questions, I will be glad to respond. From the information you give it is difficult to arrive at a diagnosis, although I would suspect that the trouble is either of dietary origin or due to some defect or injury to the structures of the mouth.

"PETRIFIED PIGS"

I am writing you regarding a condition that has been brought to my attention by a breeder of swine in this community.

A sow farrowed eight petrified pigs and one that had a diminished vitality. However, it lived for about twenty-four hours. The petrified pigs were the same size as the live pig. The petrified pigs were black, dense and hard, appearing like charcoal but were more dense.

The period of gestation in this sow was 122 days. She is an extra large animal, weighing about 650 pounds. This sow has been bred for a March litter and the owner is wondering whether or not there will be a repetition of the production of petrified pigs.

The sow was in a two acre lot on a timothy and clover pasture. She had been fed a small quantity of ear corn and shorts slop, and had tankage in a self-feeder. The occurrence of petrified pigs and a live pig in the same litter is a little unusual. We are wondering how many veterinarians have observed like incidents.—F. J. K., Illinois.

REPLY—This is a case of superfetation, in other words, fecundation of the pregnant. The mummies and the live pig came from two different services of the boar. If the uterus has not been damaged the sow should suffer no permanent effects.

On the other hand, it might be claimed that these cases are due to streptococcic infection of the placental corium of the particular pigs affected. We have classified this case as superfetation on the ground that the pronounced state of petrification could not have developed in so short a time.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

A Few Words on Milk Fever Medication

AS regards milk fever medication. I have read, with no little interest, the discussion that took place at the last meeting of the A. V. M. A. at Denver on the question of drugs best suited in the relief of parturient paralysis. There has likewise been some discussion on the same subject in the recent numbers of VETERINARY MEDICINE. We find there are some that have been unfortunate enough to use strychnin hypodermically in these cases. I say unfortunate because:—

First, while strychnin is always dangerous to the cow, it is particularly so when her heart needs prompt stimulation.

Second, because strychnin does not give the heart the stimulation we have been led to believe.

So much of this controversy has prompted me to again discuss the subject of milk fever, particularly the treatment, notwithstanding that I attempted to cover it rather thoroughly in three articles published in the April, May and June numbers of Veterinary Medicine, 1919.

Under treatment I stress the importance of cleanliness of technic, special and proper inflation, and medication to avoid collapse. It would seem an unnecessary repetition to recite that article in detail, but the following seems justified:

On page 241, the May, 1919, number of Veterinary Medicine, I mention under Complications.

"Another complication which writers on Veterinary obstetrics seem to have failed to consider and one of the complications to be feared where the attack is particularly severe, and the animal has been suffering for several hours without receiving proper relief, is acute uremia, which is manifested by chronic contraction of the legs and neck muscles, followed by general epileptiform convulsions as the animal lies prostrate on its side. Such a case in addition to prompt catheterization and inflation of the udder should receive the most judicious hypodermic medication of diuretics and diaphoretics, choral per rectum and lobeline subcutaneously are also indicated. **Arecolin and Strychnin in these cases are dangerous and almost surely fatal.**"

Technic and Medication

*The technic consists solely in dilating or inflating the udder with oxygen or filtered air with sufficient pressure to reach every part of the udder, and still not use such force as to injure the udder tissue and cause the air to escape into the flank and under the skin, producing an annoying, if not a serious complication.

The apparatus most commonly used at the present time is a small cylinder packed with gauze or aseptic cotton through which the air is forced either by a bulb similar to the bulb that has been used in connection with the thermocautery for the past two decades, or a small metal pump as shown in the cut. On the other end of the cylinder is a small rubber tubing to which is attached a milk tube to convey the air into the gland.

In order to avoid contamination, two things must be taken into account: (1) The cylinder and milk tube must be kept clean by either regularly boiling or immersing in a reliable antiseptic. (2) The packing of the cylinder should be replaced often enough to properly serve the purpose for which it is intended.

The Pump of Choice

Some practitioners are of the opinion that the bulb inflates more rapidly and more thoroughly than the metal pump, but in my judgment it has the disadvantage that it is not dependable and may rupture at the critical moment when another bulb is not immediately available. The embarrassing effect of this is not always relieved by a veterinarian carrying an additional one in his bag, since it too may be very defective, if it has been carried

*Page 302, Veterinary Medicine, June number, 1919.

long enough for the rubber to have deteriorated, even though it has done no service.

Some veterinarians resort to a pump carried to inflate auto tubes, this, however, has the appearance of an unprofessional makeshift, and we have frequently been called to treat animals where others by some methods have produced a subcuteaneous emphysema covering almost the entire body. When one approaches a case of milk fever it is well to place the milk tube (which may be left attached to the apparatus) in a basin containing a suitable antiseptic, thus making sure that it will be exposed to the antiseptic at least several minutes before being used. It is well to have the solution of sufficient strength to leave no doubt as to its efficiency, but it should also be well diluted by adding water before being used, so as to avoid the possibility of the tube carrying too strong and irritating a solution into the teat.

Restraint Necessary

The next important step is to see that the animal is effectively secured so that after the udder, flank and upper leg have been properly cleansed and the act of inflation begun, which usually causes the animal to struggle after one or more quarters are inflated, the danger of reinfecting the udder area or impeding rapid, clean technic is reduced to a minimum. If attendants are not available the animal should be placed on her side and the head secured; the lower hind leg drawn well out and secured, which will also be of great advantage in properly inflating the lower quarters. A rope placed around the hock of the upper leg and drawn backward and upward completes the restraint. Time and trouble consumed by this method will oft-times avoid embarrassment and criticism of particular and appreciative people who are the ones really worth while.

Preparation of the Udder

The whole area about the udder, flanks and hind legs should be thoroughly washed with soap and water and then rinsed with clean warm water. If clean towels are available it is well to dry off any of the surplus water and then milk out the udder. The teat ends are then disinfected. Authorities seem to differ as to the advantage or disadvantage of milking the udder dry before inflating it. My experience leads me to believe that milking out before inflating is best, as it permits of a better and more uniform inflation.

A clean towel or cloth should now be placed under the udder to guard it from rolling around and becoming soiled on the floor or bedding. With care and promptness the tube is then passed from the basin into the teats.

The lower quarters should be inflated first, since if the animal begins to struggle, which she is apt to do after one or two quarters are inflated, her struggles will interfere less with the technic of inflating the upper quarters. It is well to have each quarter so thoroughly distended that it is drumlike.

Teat Tourniquet Advised

I cannot agree with those who believe it is no advantage and not necessary to tie each teat immediately after the quarter is inflated. Experience has clearly shown me in practice where an assistant has been taught that this practice is not necessary, that the cases treated by such an assistant have always been more or less tardy in regaining their feet and the cases requiring reinflation are out of all proportion to the cases in which the ligature has been applied.

For tying the teats I prefer wide strips of strong muslin or canton flannel, say 2½ to 3 inches wide; this is tied well up toward the base of the teat and not near the apex, and is tied absolutely tight. Instructions should be given that the bandages are to be taken off as soon as the animal rises, but under no condition to be left on longer than five hours. By this method we never had a single case of necrosed or injured teat.

Some Fatalities Explained—Preventive Medication

Practitioners are more or less familiar with the fact that occasionally a case, particularly those that have approached the point of death and rally rather quickly, rising or attempting to rise as promptly as some cases where treatment has been applied in the early stages, to their great chagrin and not infrequent condemnation, such animals have dropped down, giving a struggle or two, and died—plainly from what is styled heart-failure.

When we stop to consider how disturbed the circulation has been in these cases it is rather astonishing that the center of circulation can possibly become readjusted as promptly as it appears to in this malady, and the wonder is that such fatalities are not more common.

To overcome this it has been our custom for years, to give a heart stimulant and regulator, beginning such medication just as soon

as there is evidence of consciousness returning, or immediately if the animal is not unconscious at the time we treat her.

I prefer a mixture of nux vomica, strophantus and digitalis. The dose is repeated in one hour, and again in two hours, and again in three hours, if the condition warrants it.

Since we have practiced the administering of this heart adjutor we have not had a single case of heart failure in approximately nine hundred cases. Another type of cases that in our literature seems to have received no attention, are those where one or more quarters of the udder is suffering either from acute garget, or induration or atrophy, as a result of chronic mammitis. Such quarters cannot be satisfactorily inflated and rarely respond promptly to treatment.

Thorough Inflation Required—Repetition

Every effort should be made to inflate each quarter as thoroughly as possible, and the veterinarian should keep in touch with such cases since it may be necessary to repeat the inflation one or several times. The best results will be obtained where improvement is not marked, if reinflation is practiced about five or six hours apart. As a matter of fact in every case of parturient paralysis the veterinarian should either remain with the animal if it is a great distance from his office, for a time, or return and see it or get some very definite information at different intervals, as to its progress for the first twenty-four hours after treatment. There are many minor happenings that may interfere with the satisfactory recovery that udder inflation, phenomenal as it is, will not take care of, and the veterinarian who makes it a practice to hurriedly inflate an udder and then dismiss the case, is sure to have an occasional experience that will cause dissatisfaction and regret.

Cathartics Seldom Necessary

Except in complicated cases cathartics, diuretics and catherization are useless and unnecessary.

In cases where parturient paralysis sets in while the animal is in the act of calving, the fetus should be promptly removed before the udder is inflated, unless this occasions too much delay, when the reverse should be the order.

Digitalis in Milk Fever

Digitalis, first recommended by William Withering in 1775, is one of the most dependable and widely used drugs in medicine today, but acts too slowly for emergency use. It best serves its purpose in cases of failing compensation, and if used in acute cases, it should be restricted to those wherein immediate results are not necessary.

For oral administration, the leaves are most active and dependable, in that they contain all the glucosides, and, because they deteriorate less rapidly; the official tincture ranks second, losing about 40 per cent in from seven to fourteen months.

It should be remembered that digitalis does not do its maximum work for seven hours after being administered, irrespective of amount given, so we give it, at least, every six hours, to get a continuous action. Most of the patented preparations of digitalis for subcutaneous injection, are made from glucosides, omitting digitonin, which has no value as a heart stimulant. Solutions of, and combinations containing digitoxin (dose, 1/4000th grain) are the most efficacious, and are indicated when the patient is unable to take the leaf by mouth. **Even with this method, we fail to get results within five hours.**

There is a method of using digitalis which is rapidly gaining deserved popularity, and this is so-called **"digitalizing"** a patient. If a patient exhibits signs and symptoms of a heart lesion, and is about to be delivered or operated upon; or, possibly, in an early stage of pneumonia or influenza, and may need digitalis at any time during the illness, a drachm of tincture may be given daily in divided doses, for one or two days, and then when stimulation is indicated, later, we get results without delay. This is a practical and satisfactory method.

There are several ways of computing a large single dose. Robinson gives 15 cc. of tincture to each hundred pounds of weight. Eggleston has worked out some practical methods of determining amount of digitalis to be given. Weight of dry drug in milligrams, which is required to kill 1 kg. of cat, when solution is injected slowly and cautiously, is usually 100 mg. and is called a "cat unit." Average total amount of digitalis required for oral administration to man is .15 of one cat-unit, per pound of body weight.

Report of a Case. Bos. Med. and Sur. J., 1921, 185. 15. Thos. J. O'Brien, The Cornell Veterinarian, October, number, 1921.

Meat eating is quite as important a matter to the veterinary profession as meat making.

Purely Practical

"It is surprising how easily a dog will swallow a very large capsule of two, four or even eight-dram capacity."—Quitman.

There is very little danger of being bitten in administering pills to dogs if the hand is passed boldly into the mouth.

"Carbon bisulphid will clean all of the bots from the stomach and take all of the ascarides out of the small intestines, but it stops there."—Hall.

When the stallion begins to fall below the expected standard as a foal-getter, blister the testicles with cantharides. It will make a change for the better.—Head.

"Oil of chenopodium will clean out about all strongyles and sclerostomes from the large intestines of horses and is effectual against ascarides of other animals, but it is of no use for bots."—G. G. Blank.

"I have little patience with the theory that hog-cholera is a lesionless disease. If this be true we are never justified in making a diagnosis of hog-cholera excepting in such cases as present no lesions."—Koen.

Intravenously, chloral hydrate produces a prompt general anesthesia without any initial period of excitement. The full effect is felt in less than ten minutes and the anesthesia lasts for two hours or more.

Professor G. Udriski reported to the Tenth International Congress that the intraperitoneal injection of chloral hydrate is an excellent anesthetic for horses, asses and dogs.

Twitch the horse; grasp and twist the ear of the mule; thumb and index finger in the nose of the ox; arm at the breast and hand at the rump of the sheep; snare the snout of the hog; and grasp the feet of fowl and place the body under the arm.—Maxfield.

For weeping skin diseases picric acid solution cannot be beaten.—G. G. Blank.

For azoturia we use oxalic acid and gelsemium and find that it not only acts as a sedative but also relaxes the muscles.—Ibid.

The dose of carbon tetrachlorid for horses is from 25 to 50 cubic centimeters (6 to 12 drams). It may be given in capsules or as a drench with oil.

It is not generally known that a good general anesthesia can be produced by sub-arachnoid injections of cocain, stovain or novocain delivered between the occiput and atlas.

There is an almost inexhaustible supply of "Purely Practical" points. Think, what a privilege it would be to have access to a reservoir containing them all.

From the convincing experiments of Maurice C. Hall and J. C. Shillington on the actual virtue of anthelmintic drugs, carbon bisulphid, oil of chenopodium and carbon tetrachlorid belong in the front rank.

In administering carbon tetrachlorid to ruminants, Hall recommends that it be mixed with castor oil, believing from the results obtained that much of the mixture flows right on to the duodenum.

"Anthelmintics for hogs administered in slop lose much of their medicinal properties by dilution—mass treatment with drugs as toxic as anthelmintics is dangerous. I know of no way except to catch the animal and give it a dose that fits the case and condition."—Hall.

"With all due respect to DeVine and Ferguson, allow me to suggest that the family cat has the dog beaten to a frazzle in making a stubborn cow rise. Grasp pussy by the tail, allow the business end to connect with bossy's ears and she's up and going without further procrastination."—Porter.

General Practice

Edited by L. A. MERILLAT, V. S.

Interstital Scrotal Hernia

Failure to distinguish interstitial hernias from the ordinary congenital ones account for the numerous fatalities and recurrences following herniotomies in domestic animal surgery.

Dissection of a Normally Closed Inguinal Ring.

A review of literature on animal kelology shows that only one kind of scrotal hernia has been described. Many years ago, we attempted to show from autopsies held on horses dead from misdirected hernia operations, that there are some hernias differing from those in which the contents co-habit the vaginal process with the testicle and spermatic cord. We have found that not infrequently, like in humans, the hernia sac is constituted of a separate fold of peritoneum saculated through an opening adjacent to the internal inguinal ring and not through it.

These hernias we have called "interstitial" because they are caused by a breach of the aponeuroses of the abdominal wall and not by a non-closed ring.

The importance of this lies in the fact that ordinary hernia operations which deal only with the vaginal process as the sac, often miscarry, because the real sac and the aperture through which the viscera leave the abdomen is entirely overlooked, inviting fatal post-operative prolapse and recurrence.

In operating upon horses and pigs this separate sac may not be observed because its contents in the dorsal recumbent position fall back into the abdominal cavity and thus collapse it into a very indistinct structure that is pushed aside unobserved and often torn in the dissection of the vaginal process which is thought to have harbored the viscera while the patient was standing.

The Cause of Insterstitial Hernia

Just what will cause a breach in the abdominal wall in the inguinal region we have never been able to demonstrate to a certainty. The aperture may be traumatic or it might possibly be congenital, as sometimes occurs in ventral hernia in the region of the umbilicus, where perforations are found adjacent to but not connected with the navel aperture. Then they may, as in human beings, be charged to muscular strains induced by rearing, jumping or, in stallions, by serving mares.

Dissection of a horse dead from scrotal hernia. 10-Scrotal Sac. a¹ Hernial Orifice. A skewer is shown passing through the inguinal canal.

There are two very weak points in the abdomen of horses (a. a. Fig. I) that might easily be torn open in this manner. They are located on each side of the prepudic artery adjacent to the internal inguinal ring. The fact that hernias sometimes develop in mature stallions and even in geldings that have never

before shown any enlargement in the inguinal region would indicate that purely acquired (traumatic) scrotal hernia is not a rare disease in domestic animals.

We have also found that these weak places in the abdomen are characteristic of certain individuals and in which muscular strain or even muscular contraction would seem sufficient to cause a rupture.

Location and Character of the Aperture

The breach in the abdominal wall that allows the peritoneum to sacculate by the weight of the intestines, we have found at two different locations: one medially and one laterally to the prepudic artery and always just below the internal inguinal ring. (Figs. 1, 2 and 3.) Here the walls are very thin and with the

Dissection of the Inguinal Region of a Horse Dead from Interstitial Hernia. Dark Oval Spot Shows Location of Orifice Below the Inguinal Ring.

complex arrangement of the aponeuroses, determine the location at which tears may be expected. In some cases we have found that the prepudic artery is the anterior boundary of the aperature, and in others, it formed the posterior boundary.

The aperture is irregularly oblong and extends obliquely from before backward and medially.

Its edge is thin except along the artery where it is rounded and more bulky, and in every case, corresponds to the thickness of the abdominal wall of the particular subject, at that point.

The Hernia Sac and Contents

The sac is composed of peritoneum that was pressed down through the aperture. At first it is thin, in fact very thin, but later it becomes thickened from the mild inflammatory process that supervenes. Exteriorly it is adherent to the scrotal skin and to the vaginal process, or if a bubonocele, to the skin of the inguinal canal. The interior of the sac is smooth, lined with endothelium and only in rare instances, denuded and adhered to the intestines or the omentum it contains. Adhesions of wall to contents are more common in interstitial hernia than in the purely congenital one located in the vaginal process with the testicle.

The contents may be intestines or omentum, or both. The prolapse of a long fold of omentum after castration is often due to an aperture adjacent to the internal inguinal ring. Fig. 3, a dissection of a horse three years old, dead following castration, is one of these. Some hours after the horse had been castrated with an emasculator, in the standing position, a long string of omentum was found trailing almost to the hocks. The owner not having access to trained help, or advice, cut it off at the level of the scrotum. The bleeding that followed, and the dirty method proved fatal.

Differential Diagnosis

Differential diagnosis is not a difficult matter to one familiar with the inguinal region, on palpation. In the congenital, or usual hernia the aperture, on rectal exploration, is felt where the normal ring should be found; while in the interstitial hernia there is a normal ring and an adjacent aperture, oblong in shape and extending in an oblique direction from before backward toward the linea alba, and along one edge the pulsations of the prepudic artery can always be felt. In small animals the differentiation is more confusing, and must be made by a palpation externally, with the subject on its back and its inguinal region well exposed by parting the hind legs. When the region is not covered with too much ventral fat, it will not be difficult to decide that the perforation is nearer to the median line of the body than the inguinal ring, where the opening would be found in congenital hernia; then besides, in the small animal, including the pig, the abnormality is more easily discovered during the operation than in the horse.

In short the correctness of diagnosis of scrotal hernias in the horse will depend upon the rectal exploration while that of the small animal, upon external palpation and, when uncertainty exists by very careful dissection.

In dogs, the so-called inguinal hernia, is in reality seldom connected with the inguinal canal, but like the interstitial hernia of horses and pigs, perforates the abdomen adjacent to it.

TECHNIC TO BE PERFECTED IN BOVINE SURGERY

Restraint of cows, bulls, calves and steers, in recumbent and standing positions.
General anesthesia.
Rumenotomy.
Ablution of the rumen.
Administration of drenches.
Administration of intra-venous medication.
Castration of young and mature males.
Ablation of new growths.
Operation for ventral and scrotal hernias.
Extirpation of growths in the teat ducts.
Irrigation of the milk sinuses.
Operation for hard milkers.
Dentistry.
Anesthesia for dehorning.
Trephining the frontal sinuses.
The use of the stomach tube.
Administration of medicines with the stomach tube.
Treatment of warts.
Amputation of the digits.
Wounds of the udder and teats.
Removal of foreign bodies from the reticulum and rumen.
Cesarean section.

APROPOS THE STOMACH TUBE

It hardly behooves one of my tender years to enter into a discussion with such men as Dr. Merillat and my friend, Dr. Devine, but I also feel that I must say a word along with Dr. DeVine, in defense of my good friend, the stomach tube.

I cannot for the life of me see how anyone can justly say anything in condemnation of it, unless it is because they haven't used it enough to find out for themselves. Dr. DeVine has left unsaid one or two of the most important points. What he says about its use in acute gastritis, when the stomach of the horse is badly distended with gas, is all very fine.

Saves Many Lives

I can recall many cases where I am reasonably positive the animal would have died without the use of the stomach tube. One case in particular, the animal had not been sick an hour, and immediately on my arrival, I passed the stomach tube, with the result that as soon as the end of the tube entered the stomach a flow of foul smelling liquid started without any use of the pump whatever, and this flow continued without interruption until two large wooden candy pails holding approximately 16 quarts had been filled.

Where it all came from I do not know, but I do know that in twenty minutes the horse was apparently all right and received no further treatment and no medicine at all.

Handy to Administer Bulky Medicines

The point I especially wish to emphasize is its use as a vehicle for administering bulky liquids, such as oil. Here in our locality, we are called to treat many cases of colic due to impaction from overloading the intestinal tract with coarse roughage, such as straw, during the winter months of inactivity.

We rely a whole lot on the old treatment of oil, usually a combination of linseed and mineral oils, followed by small doses of arecoline and in obstinate cases, several gallons of saline solution via the stomach tube. As a matter of fact, practically every case of indigestion or colic lasting an hour gets a quart of oil and

Dr. W. B. Davidson, of Windherst, Saskatchewan, Administering Medicine to a Cow Intravenously

in the majority of cases, this starts our treatment.

If we had no other use for the stomach tube than simply to give these bulky medicines through it, it would be worth many times its cost price to us. Personally, I think that a dose of any liquid exceeding eight ounces in bulk can be given most easily and safely in this way. I haven't raised a horse's head to give a drench in four years and hope I shall not have to in the next four. There is absolutely no excuse for it. Any stable man can do that. It probably takes five or six minutes to pass the tube, give a quart of oil or any other medicine, wash up the tube and put it away.

Single Tube Preferable

As for passing the tube, we always use the single type and always pass it through the nostril and seldom ever get a hemorrage. Occasionally this may happen, but usually if it

does, it is in an old horse. I do not recall a hemorrhage in nearly two years and we use the tube in practically every case of colic or indigestion, and I have never seen a hemorrhage that was the least bit alarming. The whole secret of not getting hemorrhages is in keeping the end of the tube pressed well down onto the floor of the nasal passage as it is passed up the nostril.

Diversion to Trachea Easily Prevented

One can tell almost beyond a doubt by the resistance offered whether the tube enters the esophagus or the trachea, but instead of shaking the latter to see if it is right, simply press the fingers of the left hand into the esophageal groove on the left side of the neck behind the trachea, and the thumb on the right side as you pass the tube along with the right hand (I work on the right side of the horse and through the right nostril) and you will always feel the end of the tube when it passes down the esophagus under your hand, nearly always on the left side, but you may occasionally feel it on the right side of the neck under the thumb.

Useful in Tetanus

We had one very bad case of tetanus in our hospital recently, and we used the stomach tube once or twice daily for fifteen days, giving the animal milk, gruel, etc., before the jaws relaxed sufficiently to eat solid food, and we experienced no hemorrhage or difficulty whatever. I have been using the stomach tube continually for nearly eleven years and I have yet to see any bad results whatever from its use.

A. L. DANFORTH.

Watertown, N. Y.

Comment:—The most acute and all around serious case of tetanus we have ever seen recover was one in which a liquid diet was administered daily with a stomach tube, and while there are cases that become a little excited from the first attempt and sometimes there is some difficulty in pushing the tube against the muscular contractures, it is a part of the treatment of tetanus in horses that should never be omitted when the trismus hinders mastication.

The relief of the hunger and thirst and the escape of foul gases from the stomach is so great that many of the poor patients actually wait for these forced rations.

On account of the danger of shock in cases that have been suffering for some hours from colic, it is advisable to empty the contents slowly, when, as in the case related by Danforth, two or three pails of stomach and intestinal contents are evacuated. In these cases it has been our custom to stop the flow by kinking the tube every few moments so as to give the intestinal circulation a little time to react as the pressure is being relieved.

A DECAYED MANDIBULAR MOLAR

Will you please reply to the following query through the columns of the Journal?

I was called to see a colt, three years old, with a history that he could not eat. On examination, I found there was an enlargement on the lower right jawbone, about the size of a goose egg. It was firm, hard and immovable. It felt like a bone.

An examination of the teeth showed them to be normal. The animal was in good flesh. Palpation of the enlargement caused no pain, apparently. The enlargement was in the region of the second and third molars (lower).

Could you suggest some line of treatment.

C. J. C.—North Dakota.

REPLY: Although you may not have found any evidence of dental disease in the mouth, the trouble is nevertheless due to the teeth. Such lumps are very common, especially in three-year-old colts and generally arise from delayed shedding of the third molar.

You should make a very careful examination to note that the cap of this molar has been shed, and if not, extract it. Should you find that the third molar is the permanent one and in the proper position, then you may rest assured that the disease is due to some inflammatory action about the root.

These enlargements in the jaws of colts sometimes recover without extraction, yet it would be well for you to keep watch over this colt, inspecting the mouth from time to time, expecting that evidence of decay will appear; and, in the meantime, blister the enlargement with a binodid of mercury ointment.

The most frequent cause of post-operative pneumonia in domestic animal surgery is embolism and not anesthesia as is generally supposed.

A new testing device, in reality nothing more than the old lactometer, recommended as a substitute for the Babcock tester, was given a trial at the Wisconsin Experiment Station and found to be unreliable.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of formalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.
2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 percent formalin solution and sent to the laboratory whole and unopened.
3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per-cent formalin solution.
4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

CHICKEN POX. EPITHELIOMA CONTAGIOSA

I am sending you two three-week-old chicks for examination. They were taken from a flock of one hundred, the last of a hatch of two hundred and sixty. They were kept in the same feed lot in which a number died last spring from bowel trouble. These, however, have shown no pronounced bowel affection, but instead show lesions about the head. Some have a caseous-like tissue in the eyes as in the case of roup. They all eat well until they go blind or die. A number of the half-grown and full-grown birds show the same symptoms, and some of these have died.

I would like a report on the diagnosis and treatment.—J. B. McQ., Ohio.

REPLY:—Microscopic sections made from the chicks sent indicate that they were affected with Epithelioma contagiosa, a diphtheritic disease of chickens due to a filtrable virus. It is also called avian diphtheria.

The handling of a flock with this disease is difficult on the ordinary small farm, because the general prophylactic measures required are seldom carried out. In the first place, the coops and runs must be abandoned until they can be cleaned up, which means cleaned up in reality, properly disinfected and white-washed. Every infected chicken must then be taken away from the flock and quarantined for a long while, because cured cases are carriers for some weeks. It is best to build new runs rather than try to disinfect the old ones, but where the "run" is the whole farm or barn and houseyard, this part of the treatment is, of course, impractical.

Where individual care is assured, local treatment of the lesions is very helpful and will save many of them. Especial care should be taken of those which are blinded from conjunctival discharges and scabs about the eyes, because a blind chicken will starve to death. Antiseptic washes followed by ointments that will keep the affected part softened, can be used to good advantage. Such treatments should be repeated every day until the lesions heal.

JOHNE'S DISEASE IN A BULL

I am sending you under separate cover, blood serum from a short horn bull suspected of having Johne's disease. The bull began to scour last December (1920) and lost flesh. Intestinal antiseptics and astringents were administered without any marked results. After being turned to grass, there was some improvement, but later he began to scour again and then went down entirely. There was no temperature and no pain.

The postmortem examination revealed a typical thickened condition and convolutions of the intestinal mucous membranes found in Johne's disease. The elevations of the mucous membranes were reddened in spots and also studded with hemorrhages and the me-

senteric glands were swollen.—J. C. G., Iowa

REPLY:—The usual acid-fast bacillus of Johne's disease was not found, but this is not a surprise since this organism must be sought in sections or scrapings from the affected mucous membrane, or from fecal matter, preferably the former.

The clinical symptoms and the postmortem lesions described indicate beyond doubt that the bull was affected with the disease you suspected.

Test with avian tuberculin will help to confirm the diagnosis, yet it is by no means 100% efficient. The best medication is sulphate of iron and diluted sulphuric acid, recommended by McFadyean.

GENERALIZED TUBERCULOSIS

I am sending portions of a pig's internal organs for your examination.

I might first state that the herd boar on this farm died some time ago showing the same lesions, but the condition was more generalized. All the internal organs were a mass of lesions.

In that case, I was at a loss to know whether or not it might be tuberculosis and accordingly am forwarding specimens for laboratory diagnosis. I do not doubt that the pig was infected from this boar, although the latter died three or four months ago and no other cases have been observed among the pigs until this one lost flesh and died.—H. B. P., Wisconsin.

REPLY: Tubercle bacilli were found in all of the organs submitted. The pig died from generalized tuberculosis. It would be advisable for you to investigate the cow herd, or the source of whatever milk supply is included in their feed.

HEMORRHAGIC SEPTICEMIA IN A HORSE

The specimens I am sending you under separate cover were taken from a horse, the third one to die in three days, all showing the same symptoms. The specimens are the kidney, blood and stomach contents. All horses mentioned showed symptoms of chronic lead poisoning: Blue discolorations of the gums and all mucous membranes; constipation; lack of co-ordination in gait; subnormal temperature; fast, stringy pulse; spasms and death in about twenty-four hours after the first symptoms appeared.

Reply:—An examination of the specimens sent show unquestionably that your patient died from hemorrhagic septicemia, as there were quite a number of bipolar organisms present.

Chemical analysis failed to show any traces of lead. The bacterial toxins were responsible for the blue gums, incoordination and other symptoms of poisoning you describe.

AGGLUTINATION TEST FOR ABORTION DISEASE

I am mailing a sample of blood from a cow that aborted two weeks ago. As quite a few abortions have occurred on this farm, I am desirous of having the agglutination test made of this specimen.—E. W. N., Illinois

REPLY:—The agglutination test for abortion disease gave a negative reaction, which means that the blood of this particular cow does not contain any immune bodies. A blood test of each one in the herd would be required to give you the desired information.

MAXILLARY ACTINOMYCOSIS IN A VALUABLE COW

The specimen sent you is a section of what I think is an actinomycotic growth. It has been affecting this cow for a year and a half. The growth extended from the region of the eye to the nostril and obstructed the nasal passages on the affected side sufficiently to cause difficulty in breathing.

As she has been a wonderful producer and on semi-official test, it was thought best to carry her through the year, to make her son more valuable as the herd sire, than to take any chances with an operation.

When an examination proved her to be non-pregnant on account of cystic ovaries, she was slaughtered and postmortem examination revealed a large mass occupying the right nasal cavity and pressing over the septum into the left one, so as to cause the difficult breathing. The character of the growth throughout was the same as that of the section submitted to you.

It seems that total ablation would have required an opening 6 to 8 inches in diameter. I would like your opinion as to the nature of the growth, thinking it might be a sarcoma. —C. L. B., Maine.

REPLY:—The examination proves the tumor to be an actinomycoma. The invasion was too extensive for successful surgical intervention.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

SEPTICEMIC ERYSIPELAS IN FOWL[1]

At the Veterinary Institute of the University of Leipzig out of a total of 1,300 autopsies on fouls during the years 1919 and 1920, erysipelas bacilli were demonstrated in three cases to be the cause of poultry diseases. In two instances in ducks and once in a turkey hen. The isolated poultry erysipelas bacilli were recognized as true erysipelas bacilli which while possessing a somewhat higher virulence for white mice than the true swine erysipelas bacilli and a somewhat slighter agglutination titer on comparative tests, yet in all its other characteristics the identity was established. In both cases of the infection in the ducks, the birds had abundant opportunity to eat pütrid organic substances, in which it is well known that true erysipelas bacilli as well as the related Koch's mouse septicemia bacilli find favorable conditions for their propogation. The author recommends for the control of erysipelas in poultry the vaccination of the birds with swine erysipelas serum in doses from 0.5 to 1cc.

INVESTIGATIONS OF BLACKLEG BACTERIA[2]

Inasmuch as the blackleg bacillus may also participate in the production of gas gangrene in man, therefore, the subject of blackleg becomes of greater importance in human medicine. In order to determine to what extent other anaerobes than typical blackleg bacilli are associated with spontaneous blackleg in young cattle, the author investigated fifteen different strains of blackleg and for control purposes seven other types of anaerobes. The blackleg strains were obtained from blackleg material of the Alpine regions of Switzerland and Austria and some were procured from various institutes. The examination included the study of the cultural and pathogenic characteristics of the cultures, as well as to their immunizing properties. The results established that the cause of blackleg in cattle is almost invariably a species of bacterium which is characterized by more or less well defined biological properties and should be considered therefore as the typical blackleg bacillus. Aside from this other anerobic organisms are occasionally met with in cases of true blackleg and some of the cultures obtained from institutes belonged to this group. They proved to represent the causes of malignanto edema or representatives of the group of putrefactive organisms. However, it was not established whether they may be responsible for blackleg in animals or whether they only play a part as mixed infections. No definite proof could be obtained during the investigation of the material whether spontaneous blackleg of cattle may be caused by two different organisms or even by a larger number of various anaerobes as is the case in gas gangrene of man.

COITAL STRANGLES[3]

Numerous mares following breeding manifested inflammatory conditions which gave rise to a suspicion of dourine infection. The searching examinations of the author excluded dourine and coital exanthema. It has further been established that the great majority of the affected animals were covered by stallions from a stud in which strangles prevailed. In view of the clinical findings, the post mortem examination, the bacteriological findings and animal inoculations, the diagnosis of strangles was established in two affected mares. The following conclusions were established in connection with this condition:

In mares which were covered by stallions affected with strangles, pustular and erosive changes develop in the region of the vulva, more rarely on the posterior mucous membrane of the vagina. At times extensive oedematous swellings may be observed in the region of the vulva and rump in which later deep abscesses may develop. The latter may penetrate up to the spinal canal resulting in severe phlegmous and paralysis with fatal termination. In the pus of the affected mares the streptococcus equi has been demonstrated. The infection is probably conveyed by the stallion infected with strangles either by transmittal of the nasal and buccal discharge to the

female genital organs or by transmission from the penis to the vaginal mucous membrane.

The author recommends the name of coital strangles for the effection in mares. Colts on the same premises where coital strangles occurs become affected with typical strangles. Stallions suspected of being affected with strangles should not be used for breeding purposes.

INFECTIONS OF POULTRY WITH CHICKEN TYPHUS. (TYPHOSE AVIARE)[4]

The author is of the opinion that various chicken diseases are designated as chicken cholera in which the cause and the character of the disease varies; true chicken cholera occurs much more rarely than is generally accepted. In France at the present time there exists among chickens a very severe enzootic. The disease is spread over the entire country. The author examined 67 blood samples from affected and also from recently dead birds, and succeeded in demonstrating the avoid chicken cholera organism only in a single case. In 56 cases he found the bacillus sanguinarium (Moore); in 7 cases the blood was aseptic, although it originated from chicken flocks in which the disease caused great losses. Chicken pest could be excluded from the fact that experimentally the samples proved avirulent.

Chicken typhus was first studied in the United States; Moore described the bacillus sanguinarium as the causative agent. The disease is supposed to similate the typhous-like affections of man; the blood and the excreta are virulent. The disease raged in France since the Spring of 1916. It has probably been introduced with American horse transports. It rapidly spread over the entire country and attained an enzootic character. In outbreaks of the infection the chicken owners are compelled to slaughter their flocks.

THE INTRAPALPEBRAL TEST IN TUBERCULOSIS IN CATTLE[5]

Based on very extensive investigations the author concludes that the intrapalpebral tuberculin reaction on the lower eyelid offers means for the diagnosis of tuberculosis in cattle, but at the same time it possesses no advantages over the old tuberculin eye test. The results from both of these methods are very much the same. The older method is simpler in its execution and the results may be more readily observed. Introduction of the tuberculin into the eye, therefore, should be preferred to the injection into the eye lid.

THE TRANSMISSION OF PATHOGENIC ORGANISMS BY FLIES; TECHNIC OF ASEPTIC CULTIVATION[6]

Investigations as to the part the flies play in the transmission of pathogenic germs are accompanied by great difficulties. This is due to the fact that flies invariably harbor bacteria. The isolation of any causative agent of disease from them is tedious and accidental and is practically impossible for the bacteria of the typhous and paratyphous group. Even under normal conditions bacilli are found in flies which similate the organisms of those groups and which may be distinguished from them only by serological tests. Due to this fact the author attempted to raise flies in an aseptic manner. Flies may take up infectious germs as fully mature insects or in their larval state if their development occurs in surroundings in which the pathogenic organisms are present.

The author conducted investigations on larva of the meat fly (Calliphora vomitoria); also on the green flies (Lucilia cesar) and on the house fly. The larva which originated from aseptic eggs were infected with tubercle bacilli, dysentery bacilli and typhous bacilli. In all cases the flies which were hatched from sterile pupas proved aseptic. Pathogenic organisms which were placed in the larva have not passed into the fully developed insect. In practice, however, the fly might become infected with the organisms which are lodged on the surface of the pupa. Investigations with fully developed insects were carried out only with the house fly. They proved that the infected flies retained the infectious agents only for a few days. If they are removed from the source of infection they free themselves very rapidly from the infectious agents, probably in a mechanical way.

Barley water made by adding boiling water to finely ground barley is a splendid exclusive diet for scouring calves. To tempt a calf with a poor appetite, milk may be added. Barley water and milk is very soothing to the intestinal mucous membrane, and it prevents the formation of curds.—Frost and Varley.

1. Prof. A. Eber, (Deut. Tier. Woch. No. 24, 1921).
2. Dr. Y. Uchimure (Deut. Med. Woch, 1921, P. 788).
3. Prof. H. Miessner, (Deut. Tier. Woch. No. 32, 1921).
4. D'Herelle, (Rev. Gen. de Med. Vet. March 1920).
5. R. Breithor (Inaug. Dissert., Berlin, 1921).
6. E. Wollman, (Compt. rend. de L'acad. des Sciences. Vol. 172).

Parasitology

Edited by MAURICE C. HALL, Ph.D., D.V.M.

The College Course in Veterinary Parasitology

IT will probably be conceded by most American veterinarians that there is no topic in veterinary medicine concerning which the veterinarian is less informed than the subject of parasitology. He is baffled by the scientific names of parasites, bewildered by the changes in these names, unacquainted with many of the parasites he sees, and unfamiliar with the life histories of many parasites. As a result he is handicapped in the important matters of diagnosis, treatment and prophylaxis on which his competence, satisfaction and income depend in the practice of his profession, whenever he deals with parasitic conditions. This is not the fault of the veterinarian or of the veterinary colleges. It is the natural and inevitable historical result of past and present conditions in this country.

Bacteriology and Parasitology

Since the establishment of the comparatively new science of bacteriology, the engaging study of bacteria and of diseases caused by them has dominated the attention of the veterinarians more or less to the exclusion of the study of animal parasites. The diseases due to bacteria and the filtrable viruses are spectacular and demand attention. The ravages of hog cholera, striking quick death throughout a herd of swine, are not to be overlooked. Anthrax, black-leg, foot-and-mouth disease and kindred diseases have a sudden onset and take a prompt toll from which the stockmen clamor to be relieved. That the offending organisms are not seen only serves to put them in the category of the mysterious and, therefore, terrible.

The animal parasites are not so spectacular. They take their largest toll among young animals, and the loss is readily explained by the stockman to his own satisfaction on other grounds. The infant animal has no long previous record of established vitality and strength to make the stockman inquire closely as to why this animal should die. The loss is put down to lack of vitality, inherent weakness or some other plausible cause. There is no warning rise in temperature and there are few sudden deaths. The lack of a febrile condition inclines one to think that the animal is not sick—it is merely unthrifty. The lack of thrift and the loss of condition may extend over long periods and establish the idea that the animal in question is a weakling. When it finally succumbs to the long siege by the parasites present, no explanation of the death appears necessary. The animal "never did well" and the loss is discounted in advance. The parasites themselves are so common that they too are discounted. They are often noticed and the idea is established that all animals have them—perfectly healthy, normal animals as well as the unthrifty. This has been the prevailing idea.

We are beginning to understand the situation better and to realize what animal parasites do, what unthriftiness means, and what parasitism costs in terms of diminished meat and milk production, poorer quality of meat, decreased horse power, increased susceptibility to bacterial and constitutional diseases, and premature deaths.

The Veterinary Colleges

With the growing appreciation of the importance of parasitology, we are taking stock of our preparation for dealing with parasites and parasitic diseases. This stock-taking reveals the fact that we are by no means bankrupt, but it also shows that some of our assets are not what they might be, and we might add, with Mister Dooley, "moreover, they never were." In the field of research in veterinary parasitology this country has a record of accomplishment of which it need not be ashamed The investigations in the Bureau of Animal Industry have been of a high order. The work of Smith and Kilborne on the tick transmission of Texas fever constitutes one of the great pioneer achievements in the field of medicine in general. Stiles was in the Bureau of Animal Industry when he found that the

common hookworm of man in this country was a new species. The important researches by Ransom do not suffer by comparison with the achievements of workers elsewhere in veterinary parasitology. It is worth noting, however, that of the men named above, only one, Kilborne, is a veterinarian. A number of veterinarians outside of the bureau, such as Law, Dalrymple, Francis, Cary and others, have done important work in the field of veterinary parasitology, but only as a part of their many and varied activities.

For the most part, parasitology in this country has been neglected by the American veterinarian and regarded as a minor and comparatively unimportant topic by our veterinary colleges. Any member of the teaching staff who was willing to teach this subject was welcome to do so. If there were no volunteers, the work was, in the current slang, "wished onto" any one available. The sacrificial goat could volunteer or be drafted; someone must teach parasitology, not because of its interest and importance, but to avoid leaving a gap in the curriculum. The result was almost inevitable. With such rare exceptions as Leidy, who taught parasitology to veterinary students at the University of Pennsylvania, the men who taught parasitology were not parasitologists and did not claim to be parasitologists.

Anatomists like Sisson taught anatomy, physiologists like Fish taught physiology, pathologists like Burnett, Crocker, Kinsley, Goldberg and Hallman taught pathology, bacteriologists like Moore and Fitch taught bacteriology, and surgeons like Williams, Adams and Merillat, taught surgery, but anyone who would or must taught parasitology.

The Parasitologist

These teachers of parasitology were heavily handicapped. They had not had special training or experience in parasitology. There were no adequate texts or reference books and they did not have the extensive libraries of parasitological literature which were necessary to compensate for the lack of comprehensive reference books. They were in a field in which discoveries of major importance were being made at a rapid rate. In this sea of change they had no map or compass by which to steer. There was little to do except to anchor at a few apparently safe ports, and in many cases these ports were being blown up by the research workers in parasitology.

The field of parasitology has been but little exploited in this country and it offers large returns to the investigator. But it is a field which demands adequate preparation for its exploitation, as does any other field in veterinary medicine. Adequate technique is always essential in any field. The surgeon must have the surgeon's knowledge of anatomy, his eye and hand and nerve, to be a surgeon. A liking for the work is essential to success.

The veterinary parasitologist must combine with his knowledge of veterinary medicine a sound knowledge of zoology and a special knowledge of veterinary helminthology, entomology and protozoology if he is to teach effectively. Unfortunately, zoology has suffered with parasitology from the neglect of the veterinary profession in the United States. If we are to raise up parasitologists among our veterinary students, we must have the inspiration of teachers of parasitology who are enthusiastic parasitologists. Good teachers of surgery inspire students to become surgeons; it is the exceptional man who leaves a poor course in surgery fired with a determination to be a surgeon.

The Course in Parasitology

The course in parasitology should fit a veterinarian for the work he is to do. The following suggestions represent what may be aimed at and perhaps attained at some time in the future.

The veterinary student in parasitology should be taught to examine all the common domesticated animals for external parasites. He should be taught correct methods of making scrapings and examining them for mange mites. The only way to teach him to do these things is to have him do them, not once but many times. The parasites he finds he should identify by consulting the literature, precisely as he would do if in practice. He should conduct postmortem examinations, using suitable technique, on all the common domesticated animals, collecting the parasites present and identifying them, so far as possible, by reference to the literature. He should make examinations of the feces of all the common domesticated animals and, so far as possible, determine the parasites present from the eggs, cysts and other parasitic material present in the feces.

We learn by doing. The mental effort involved in doing a thing the first time is less for the student than for the older man who has ceased to be a student. It is easier and better to do a thing for the first time under competent guidance and under satisfactory

laboratory conditions than to do it the first time alone, unaided and unadvised, under field conditions in practice under the eyes of a critical, and sometimes suspicious, client. The things that have been done repeatedly are the things we find easy to do again.

Laboratory Training Essential

The course in parasitology should be primarily a laboratory course. It should be supplemented by lectures in order that the student may be oriented in the field and that what he finds may take its proper place in the orderly scheme of the science of parasitology. The lecture course is necessary in order that the student may properly evaluate what he finds in the laboratory, and, later, in the field, that he may not mistake the commonplace for the new or the new for the commonplace. But the veterinarian must be given laboratry training if he is to feel sure of himself in practice when he is confronted with a problem in parasitology. A mere lecture course absorbed by the student in college is most easily utilized by the practitioner in conversation; words beget words. But these words are not easily translated into action. Words are of value in treating the client, but of little value in treating the patient, and our worth to the community depends on the actual results obtained with our patients. The thing the student has done often and well in the laboratory will present few difficulties in practice, as a rule.

Prospects

It will be objected that such a course takes too much time. It need not. It can be correlated, and should be correlated, with the work in anatomy and pathology. It will be said that the necessary literature for accurate identification of parasites is not available in our colleges. This argument has some weight. But the literature is much less available to the practitioner in the field. Make the identifications as exact as possible. What we can not do today we can do tomorrow, and beyond tomorrow there are other days ahead. Meanwhile we can get on the right track and start. Slow progress in the right direction is better than no progress or a trip in the wrong direction. It must not be inferred that nothing that is suggested here is being done in the American veterinary colleges. Something is being done. More should be done and will be done. The need exists for veterinarians who have a sound working knowledge of parasitology. As we come to realize the extent of this need, we shall find men to supply the demand. The number of men who are interested in this field has increased immensely in the last ten years. The interest is manifest at our veterinary meetings. The needed improvements may be confidently expected in due season.

ROUND WORMS IN SMALL ANIMALS

By O. V. Brumley

Round worms are quite common in dogs and cats, especially in puppies and kittens two or three months old. Fully 50 to 75 per cent are infested. In one animal ten to thirty parasites are usually present; eighty were found in one subject.

Require No Intermediate Host

Round worms do not require an intermediate host to complete their life cycle as do the taenia. The ova deposited by the adult worm with the feces are passed out, and in warm, damp ground or in other suitable places undergo certain changes, leading to the formation of the embryos. Such changes may occupy a few days to several weeks, depending upon the conditions of moisture and temperature. The embryos when ingested by their particular host, rapidly develop into the adult parasite. Puppies and kittens become infested as soon as they begin nursing, provided these parasites are present in the mother or other animals in the kennel. The adult worms pass a large number of ova continuously, and embryos present in infected soil adhere to the mammary glands and are swallowed by the young while nursing.

Nematodes Not Common in Birds

Birds are not as commonly affected with round worms as dogs, and as a rule they harbor only a few specimens. Occasionally, however, round worms are found in birds in large enough numbers, particularly in localities where this form of parasitism may be enzootic. Pigeons are the common victims; in some cases whole flocks succumb to the infestation.

Symptoms of Nematode Infestation

Puppies and kittens when infested show symptoms of inanition at three to five weeks of age. They are stupid and do not play as such animals usually do at this age.

Vomition is common and quite often some of the parasites are thus expelled. Emaciation increases, the mucous membranes are anemic, and the abdomen appears enlarged (pot bellied). Diarrhea is not uncommon, often alternating with constipation.

Quite frequently the patients, especially kittens, show epileptiform or rabiform symptoms. These are probably due to the irritation of the nervous system produced by toxins excreted by the parasites as well as by the irritation of the intestines.

These symptoms gradually become more severe, and finally food is refused, followed by weakness, coma and death in 5 to 8 weeks. The temperature is only slightly elevated in the early stages, later as coma comes on it is subnormal.

In mild cases or in older dogs the symptoms are less pronounced and often unnoticed. The appetite remains good, often voracious, but the general condition is not good; the hair coat is dull and rough and growth is impaired.

Young birds infested with round worms show diarrhea, emaciation and depression and finally die. In older birds the condition becomes chronic with marked emaciation.

Therapeutics of Round Worms

It is advisable to administer a vermicide to all puppies and kittens when three to five weeks of age, and repeat every two to four weeks until several months old.

Treatment should be given as soon as symptoms appear. Santonin (puppies 0.016; small dogs 0.05-0.2; large dogs 0.2-5; kittens 0.008-0.025; cats 0.06-0.2) is the most efficient agent used to remove the ascaridae. It is best administered in small doses, repeated for three or four days, then in a single large dose. This is especially true for all young animals, as they are very susceptible to the toxic action of this drug. Older animals are rarely affected even with enormous doses.

Posology and Administration

Santonin may be administered in castor oil in sufficient amount to produce catharsis, or the oil may be given an hour or two later. Tablets of **santonin and calomel** of various proportions may be had and are convenient to use with the food. Other anthelmintics are employed with good results, such as **areca nut powder** (dogs 0.5-4.0; cats 0.1-2.0) which is easily given with milk; **benzine** (1.0-7.0 in oil); lamala (2.0-?.0). Birds may be treated with areca nut powder (chickens 3.00, pigeons 1.00 each) mixed with moist ground feed. Oil of anise (0.4-0.8) or benzine (0.2-0.6) in castor oil has been used with good results.

Nematode Prophylaxis

In order to raise young animals free from these parasites energetic measures must be directed toward the removal of all ascaridae from the older animals and a thorough disinfection of all the premises to which they have access. This is best done in the early winter, the weather conditions at this time being unfavorable to their development.

Frequent examinations of the feces should be made and treatment applied when necessary. All additions to the kennel or flock should be examined and treated before being allowed with the other animals or birds.

Pregnant animals should be entirely freed of all parasites, and thoroughly washed to remove all ova or embryos that may be on the hair or skin. Afterwards remove to a clean place that has not been used for animals for some time where the mother and young should be kept for several weeks.

The feed and water, and all receptacles must not be permitted to be soiled by other animals which harbor parasites. In this way it is possible to rear puppies, kittens or birds without experiencing the trouble with parasites.

ASCARIDIASIS OF THE PLACENTA OF A COW

On Sept. 15, I was called to attend a case of obstetrics in a Jersey cow, six years old. On examination I found the knees presented with head turned down on the sternum. The calf was dead. It was eleven days premature.

I delivered the calf without much trouble at about 11:00 A. M., and 4:00 P. M. the same day the placental membrane passed all right, but it was found to contain fifty to one hundred white worms from 1½ inches to two inches in length, and about as large as a medium darning needle.

There is nothing unusual about the obstetrics, but what about the worms? Have practiced for twenty-five years, and never met with a case like this before. The cow is doing fine. —W. J. R., Ill.

REPLY—We are unable to find anyone who has seen or heard of parallel cases of worm infestation. The report is indeed interesting as well as apparently unique, although Hall has stated in a recent issue of VETERINARY MEDICINE that the reproductive organs "may sometimes" harbor parasites. There is, however, the one chance that the placenta after being expelled or while still hanging from the vagina was soiled with feces containing helminths.

Zootechnics

Edited by E. MERILLAT, Physiological Processes and W. J. MARTIN, Husbandry

The High-Grade Milk Industry

WHILE the demand for a grade of milk higher than the common market variety is probably increasing, there is, unfortunately, a remarkable indifference as to its superior merits on the part of the consuming public. In the sale of milk, as in most all food products, it is the sense of sight rather than the nutritive value that governs the demand. A food well displayed is easily sold, no matter what its merits might be, while one badly displayed, despite its nutritive qualities and healthfulness, goes begging for a market.

The Public Easily Deceived.

A clean dairy barn, tuberculin tested cows, clean milkers, clean utensils, an inviting pastuerizing plant, a nicely appointed milk wagon driven by a uniformed driver and a clean looking, securely capped milk bottle constitute a formidable aggregation, but if the sum total of the product of this complicated system is nothing more than a costly modified milk extracted of much of its nutritious elements, it is obvious that the ancient system with all of its imperfections but which assured whole milk to the consumer and a reasonable return to the producer, had some redeeming features. It at least yielded the consumer milk that tested from 3% to 5% butter fat, whole and unmodified by any artificial process; and if the bacterial count was high the same may be said of much of the product of the new system wherein pasteurization is only a sham and the other precautions but outward pretenses, and wherein the producer is ill-paid, the consumer overcharged and the system of distribution exacts the big toll.

The Supply of Better Milk Will Meet the Demand

The improvement in market milk over that of former years has not come about through any spontaneous desire of the consuming public, but through the co-operation of the public health service and the producers. The public in general had stood by unconcerned, contending nothing except by feeble complaints about the butter-fat content.

Although there are everywhere both small and larger producers willing to improve their methods of production in order to increase the income from their herds, the public has given them but little encouragement by its steadfast notion that any white looking liquid delivered in a neat package is good enough, complaining about nothing except the low cream content and sometimes about its tendency to sour so soon after delivery. The matter of cleanliness and low bacterial count has not entered into their indifferent deliberations. Although the same sermon has often been preached it is always worth repeating that when the public demands better milk it may rest assured of an abundant supply from an industry that is only awaiting the call.

Certified Milk In No Great Demand

In 1920 an inquiry made into the demand for certified milk in a city of almost a million inhabitants brought information from a reliable source that there were only eighteen families demanding such milk. At the same time in a city of over two hundred thousand no certified milk was being sold. These cities are located amid a farming district exploited by farmers, many of whom are just begging for an opportunity to furnish such a product or at least a product of a higher grade than the common market milk. There is no way by which these producers can with any assurance of adequate returns for their trouble and expense, either individually or collectively, create a market for the kind of milk they are anxious to produce. The uncertainty of the whims of mankind forbids because the resources for such campaigns of education are too limited.

The Veterinarian Is Seriously Concerned

Higher grade milk means more veterinary service. It means better stables, better care, better regimen, better breeding, and an all-

around better attention to the little infirmities which make professional services successful to the practitioner and profitable to the dairyman. It will strengthen the industry financially and improve the wealth of the nation and the health of its population. It will popularize milk as food to the decided advantage of all concerned. It will decrease the mortality of infants and supply their nutritive needs, and will impose a higher scientific and moral significance to veterinary inspection and service.

AN UNBALANCED RATION THE PROBABLE CAUSE

The specimens sent under separate cover are from a number of organs taken from a 50 pound pig immediately after death. The pig belonged to a herd of seventy head, a number of which had previously died showing similar symptoms. The owner raises about one hundred and fifty head spring and fall and always has them given the virus and serum treatment at the age of 6 weeks to 2 months.

The veterinarian who had treated the herd for several years had such bad luck that I was called with the hope of improving matters. This departure, however, was a disappointment, since 10% to 15% of my cases died. The postmortem examination showed no lesions, parasites or any other visible causes to which the fatalities could be attributed. A representative of the Bureau of Animal Industry assisted at two of the autopsies and found nothing more than a number of anemic and congested areas along the intestinal tract, and cloudy degeneration of the liver.

The sick pigs show a staring coat and arched back, but no weakness until the third week. There is no elevation of temperature and none recover.

The feed consists of corn and oats chopped and skimmed milk right from the separater. They have access to the manure of the cow stable.—J. B. McG., Ohio

REPLY:—From the fact that no pathogenic organisms were found in any of the numerous organs examined and that the food allowance is far from a balanced ration for the growing pigs, we are inclined to believe a radical change in the regimen should be made. Corn and oats chop with the limited amount of skimmed milk that a small dairy herd is able to supply to so many pigs does not meet the requirements. Then there seems to be no provision made for minerals, salt, or sufficient protein.

Feed these pigs coarse ground shelled corn and oats, middlings, tankage and some minerals, each in a separate compartment of the self-feeders and distribute the skimmed milk so that each one of them will get a proper share. Where the ration is not well balanced or where it lacks in quantity, pigs always eat entirely too much cow manure.

Except for horses, unground oats is not a good feed. For cows and pigs it should be ground, for chickens it should be sprouted for winter feeding.

Oats sheaves stacked in the open is a dangerous feed for horses when the bottom of the stack is reached. Outbreaks of botulism often occur from this source.

One of the chief demands of the milk consuming public in the present situation is milk that will remain sweet for 24 to 36 hours after delivery. To meet this, the dairyman's problem is control of bacteria.

Somewhere enroute between the producer and the consumer, milk undergoes a great physical change. At the producer's it must test 3.5% butter fat, while at the consumer's the cream at the top of the milk bottle is but a pellicle.

Potato Silage for Hogs

When potatoes are cheap, when there are lots of unmarketable culls, or when there is a surplus in the spring, they can be made into a valuable food product in the form of ensilage. The silo for this purpose is a barrel or as many barrels as may be needed. The potatoes are cut up with an ordinary cutter into small pieces and put into the barrels mixed with a little fermented corn meal. The fermentation of the meal is necessary because potatoes do not ferment alone. From 2% to 5% of corn meal is all that is necessary. The meal is placed in an open tub soaked with warm water and allowed to stand several days until the mash begins to ferment. The potatoes and mash are then put into the barrels in alternate layers and covered up. As the mass settles it is covered with chaff to keep out the air. In three weeks it is ready for use. It is also a good feed for cows.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.
Professor of Botany, Iowa State College, Ames, Ia.

Ergotism

ERGOT is a parasitic fungus common upon rye, barley, wheat and oats. The sclerotium varies from one-eighth to one inch, is more or less cylindrical, generally somewhat curved and wrinkled, purplish without and white within. This is the part of the fungus which is poisonous. The technical name of the fungus is **Claviceps purpurea.** Ergot is especially common upon such wild grasses as quack, wild rye, red top and timothy, and is especially poisonous to livestock. The cases of poisoning in the human family are less frequent. Cases of its criminal use are not frequent, although there are such cases on record.

Contains Several Toxic Agents

Ergot contains a number of toxic substances in addition to the fungus sugar micose. In addition to **ecbolin cornutin** and **ergotin,** there are present certain organic acids like **ergotinin,** and some toxic substances like **secalinotoxin** and others.

Some quite recent work has been done on the substances in ergot by Dale, Barger and Carr. According to these investigators cornutin, as such, does not occur in ergot but is an artificial decomposition. Barger and Carr isolate **ergotoxin** as a substance of great physiological potency. This substance not only causes the characteristic reaction of ergot but also gangrene. Enormous single doses of ergot are required to poison animals or man. According to Dr. Winslow three ounces have produced fatal poisoning in dogs.

Symptoms of Ergotism

Acute poisoning is characterized by vomiting (in dogs) profuse salivation, dilation of the pupils, rapid breathing and frequent pulse. Chronic poisoning or ergotism rarely occurs in animals owing to continuous ingestion of ergotized grains. Nausea, vomiting, colic, diarrhea or constipation, and abortion ensues in pregnant animals. In addition to gastro-intestinal irritation the symptoms naturally assume two forms, first the gangrenous form, and second the spasmodic form.

In the first variety of ergotism there are coldness and anesthesia of the extremities, including the feet, ears, and tail of quadrupeds; the comb, tongue and beak of birds, followed by the appearance of passive congestion, blebs and dry gangrene in the vicinity of these parts. The hoofs and beaks often drop off. Death ensues from general exhaustion. In the spasmodic form are seen toxic contraction of the flexor tendons of the limbs and anesthesia of the extremities; muscular trembling and general tetanic spasm, with opisthotonos, convulsions and delirium. Death also occurs from asthenia.

The Two Forms

There are two forms of ergotism in animals; the nervous type and the gangrenous. Ergot stimulates the nerve centers that cause the contraction of the small blood vessels and causes one of the two forms of ergotism. In the nervous form the contraction of the small blood vessels of the brain produces dullness and depression, and in the gangrenous form causes the loss of a part or of all the limb below the knee or hock, the tail or the ears or by the formation of ulcers at the top of the hoof or between the toes. This form of ergotism occurs where it is used in medicine causing a contraction of the uterus.

POISON IVY AND HORSETAIL

Mr. Albert A. Hansen of the Extension Department of Pennsylvania State College has issued a series of ten leaflets on weeds, one of which is on poison ivy and one on horsetail, touching on the poisonous nature of these plants. Mr. Hansen states that when cattle eat horsetail in large quantities, scouring is apt to result, the symptoms of poisoning being similar to blind staggers. The disease **Equisetum** is said to occur in Jefferson county, Pennsylvania.

Poison ivy is said to occur in every county in Pennsylvania where suspected cases of poison ivy poisoning occurs. "Wash immedi-

ately with cheap laundry soap" because this cheap soap contains the alkali necessary to be effective in destroying the poisoning from poison ivy. "A strong solution of cooking soda (bicarbonate of soda) may also be used."

These bulletins can no doubt be obtained by writing to Prof. M. S. McDowell, Director, State College, Pennsylvania.

DIFFERENTIATION BETWEEN WILD AND CULTIVATED PLANTS

Mr. H. E. Swain of New Haven, Conn., sends the following interesting letter:

"Have recently had occasion to use your book 'A Manual of Poisonous Plants' and found it to be the most wonderful and comprehensive piece of work on the subject that I have ever seen, which has prompted me to write and ask for further help.

"I have been endeavoring for some time past to find an answer to the following questions, but so far without success: (1) Are there any plants of a toxic variety which so closely resemble the edible domestic vegetables and fruits, that they might easily be eaten by mistake? Or are all poisonous fruits and vegetables so radically different that a casual observation would be sufficient to distinguish them from edibles?

"(2) If there are any of the toxic variety that do so closely resemble our domestic plants that they might be eaten by mistake, which ones of the domestic type do they so closely resemble?

"I have frequently read of cases of serious consequence that have arisen and wondered whether it was due to the profound ignorance of the individual and his stupidity, or if it was a perfectly natural mistake.

"These questions remain unaswered in my mind and as I am very desirous of getting this information, and knowing that you are doubtless best qualified to answer them, I am appealing to you for the assistance or for any advice that you might care to give me as to where and how I may obtain this information."

Some Difficult to Differentiate

In answer to the first question, one of the best illustrations is the bitter almond. Not even an expert can tell the difference between the plants, except by taste. Poisonous toadstools, at least some that are not always markedly poisonous are easily mistaken from the edible. As a matter of fact unless one knows these species it is better to leave so-called mushrooms alone. The expert can, of course, tell these. A plant may, however, be poisonous to one and not to another.

Cowbane and Cultivated Parsnip

As to the second question, frequent cases of poisoning are reported from cowbane and there is really no reason for this. The roots of both plants are fleshy. The cultivated parsnip has a conical root and the cowbane a fleshy root. The odor also is different. The cowbane has a very pungent odor and the parsnip sweetish, the parsnip has yellow flowers and the cowbane white. There is really no reason for mistaking these plants. If you admit, which I do not, that the fernal parsnip (with yellow flowers) is poisonous, there surely would be no way of telling one from the other. The cultivated parsnip according to my observations, is not poisonous. Take another illustration, the poisonous hemlock has white flowers, resembling many other plants of this family, but the odor is characteristic. I can well see how a layman might make a mistake in identifying these injurious plants. I think many cases of poisoning are perfectly natural.

Animals Discriminate Better Than Man

It is of interest to note in this connection that certain types of animals do distinguish differences better than does man. This is said to be the case of the cow which readily eats one kind of plaintain and does not eat the other.

MOLDY CORN AGAIN

Mr. G. P. Plaisance in charge of the research department of a milling concern in St. Louis, Mo., has written me as follows:

"We have been finding a lot of damaged corn on the market this year, part of which has been caused by ear worm and part by molding. It has been rumored that this damaged corn is injurious to livestock and that it has resulted in considerable loss to the feeders.

"Is this rumor justly founded? Have you had any experience or have you heard of anybody who has had experience wherein the damaged corn of the present season has caused injury to livestock?"

Permit me to say moldy corn of the grade I have seen should not be used, at least, for horses and cattle. I do not think all the molds found on corn are injurious to livestock, but I do think some species produce toxic substances which are more or less injurious, so the rumor is correct.

Canine Feline and Avian Practice

External Parasites

By O. V. Brumley

Small diseased areas and the larger parasites, if not very numerous, may easily be overlooked in long haired individuals and feathered animals.

The Microscope Often Necessary

In the majority of cases a microscopic examination is necessary to determine if a skin disease is parasitic or non-parasitic. If the former, it is necessary to identify the parasite in order to give the proper prognosis and treatment.

Some few cases present certain rather characteristic features which indicate the real nature of the disease but the only accurate diagnostic method is by the use of the microscope. The larger parasites may be identified with a reading glass, the mange mites can be seen with a microscope, using low power, while high power is necessary to identify some of the vegetable forms.

Microscopic Examination

With a small, sharp curette, scrape deeply into the skin at a point where the disease process is active until a mass of moist scrapings the size of a grain of wheat is obtained. Transfer this mass directly to a slide and moisten it with a drop of water. Put on a cover glass and press down with a rotary motion to evenly distribute the material to the proper density.

By this method animal parasites remain active, and their movements readily indicate their presence.

For vegetable parasites in addition to the scrapings pluck a tuft of hair at the edge of the diseased area and mount as above. Examine with high power for the fungus along the hair near the roots. If the scrapings are to be examined later, secure a larger amount and put in a clean vial or ointment box.

Smear slides can not be made with this very well after it has dried. Usually it is best to boil it slightly in a 10 per cent solution of KOH. Centrifuge it and withdraw some material from near the bottom with a pipette and mount with cover glass.

Dandruff

The disease occurs chiefly on the upper surface of the body especially on the neck, under the collar and along the back. The hair coat is dull and dry and the skin is covered with small grayish-white scales or dust. Itching is sometimes present.

Treatment

Good nourishment is necessary if digestive disturbances are suspected as the indirect cause. Internal treatment with digestive tonics especially preparations containing arsenic for its action on the skin. The external treatment consists in cleaning applications with alkaline solution (sodium carbonate 2%) and applications of salicylic ointment (10%). A solution of resorcin (5%) is very satisfactory as it does not soil the hair coat, nor cause dirt to adhere to it.

It is best to clip the hair and brush the skin well before medicinal treatment is begun, and thereafter at frequent intervals.

Eczema

Symptoms—The early stages appear as an ordinary dermatitis progressing through the various stages of inflammation until the pustular eruptions occur. Recovery may occur spontaneously at this time, or with proper treatment, but if not it passes on to the eczematous stage.

Pustules continue to form and discharge their contents often unnoticed, under the long hair and crusts. If sufficient to keep the skin moist it is commonly classed as weeping eczema.

The itching is intense and the frequent scratching, biting or rubbing removes the matted hair and crusts leaving a raw bleeding surface. The skin lesions may occur in one or more small areas or over a gradually increasing large surface. In consequence of continued efforts to relieve the itching by licking and scratching, the inflammation extends

into the deeper layers of the skin.

Healing occurs in three or four weeks with recurrence of the condition. The skin becomes thickened and fissured, and bleeds easily. Scales continue to form on these partly healed areas. Some of the hair bulbs atrophy or are destroyed and only a partial growth of hair reappears on the surface.

A recurrence of the condition each succeeding summer is quite common in well fed house pets especially among well bred dogs with fine skins, as the poodle.

The Treatment of Eczema

Carefully cleanse the affected parts, remove all the crusts and scabs possible, and clip any hair that may be over the part and for some distance around the margin. Mild soap may be used for washing, also alkaline solution (sodium carbonate 5%).

Upon the condition of the skin further treatment depends. If the surface is moist, drying powders can be used, such as **talcum, zinc oxide,** or **boric acid.** Liquid preparations of **lead** and **zinc** (Burrow's solution) are also very **good.**

Proper internal treatment is important in all cases of eczema as marked improvement has been shown by this form of treatment alone. Mild purgatives, especially **calomel** (1 to 2 gr.), for its antiseptic action repeated at two to three day intervals is of value. **Fowler's solution** (3 to 10 drops) daily for dogs gives the best general results and should be continued for a long time. **Calcium chlorate** (15 to 30 grs.) in solution daily acts to relieve the itching. A good diet of easily digested, non-irritating foods is essential.

(8) Scabies, Mange, Red Mange, Itch

Etiology—Two kinds of mites, the sarcoptes and the demodex, are the chief ones found on small animals. They are quite small and can only be recognized when highly magnified.

Symptoms

Sarcoptes mite of the dog (Sarcoptes scabiei, variety canis.) This is the common mite found on the dog. Sarcoptic scabies may appear on any part of the body but usually around the head. If unchecked it gradually spreads becoming generalized in 4 to 8 weeks.

Scratching and rubbing induced by the intense pruritus is the first noticeable symptom. Small red spots appear followed by papules and pustules and these, ruptured by scratching, lead to formation of moist areas which continue to spread. The areas first invaded soon become dry. Yellowish-gray crusts form and gradually scale off. The hair falls out during the process. The skin becomes thickened and shows wrinkles and thick folds.

The dog gives off an offensive and characteristic odor and is repulsive in appearance. Emaciation increases, and if not treated, death occurs from cachexia and exhaustion, sometimes caused by nephritis. In some cases the skin remains dry with profuse desquamation of bran-like scales; it may be and often is mistaken for a non-parasitic condition.

Therapeutics

It is necessary to remove all the hair coat, if long. A possible exception may be made when the disease is strictly localized or in cats. Cleanse the skin and remove all scales and crusts by using an alkaline wash (sodium carbonate 2%, or soapy water) applied with a fairly stiff brush. However, indiscriminate brushing should be avoided in localized cases as it may tend to spread the disease to healthy parts of the skin.

Care must be observed in washing the cat, rabbit and ferret as they do not endure bathing very well. In some cases softening of the crusts is advisable which may be accomplished by using carbolated oil glycerin.

For dogs, even in the early stages with only small areas affected, vigorous treatment is advisable and careful repeated inspection is necessary to detect new areas. This is especially true in long haired individuals.

Most any of the parasiticides are more or less effective and failures are due as much to improper application as to the preparation used. Alcohol or aqueous preparations are convenient to apply but they are less energetic than those prepared with an oleaginous base. These will adhere to the skin longer and at the same time penetrate to the deeper layers. They should be applied generously and well rubbed in. Care should be taken to avoid irritating the conjunctiva when applying in the region of the eyes.

Application may be made immediately after cleaning the skin, and repeated daily for 4 to 6 days, followed by another thorough cleansing. The course of treatment must be continued with 3 to 4 day intermissions until itching disappears. Prevent the animal from licking the applications by muzzling or the addition of a bitter substance such as aloes.

Many remedies have been used to destroy the mites. The following give good results and are least objectionable: **Sulphur ointment** is one of the most common preparations used

for the sarcoptes mite. It gives better results when used against the sarcoptes minor of the cat and sarcoptes mutans of the chicken. A more active preparation must be used on the dog. The following mixture is recommended:

Creolini	30.0
Phenol	15.0
Sulphur flor.	60.0
Cl. terebinth	120.0
Aq. ammonii	90.0
Ol. lini	600.0
Kerosene	1200.0

M. f. Emulsio

Daily application may be made over small areas but in generalized cases only a part of the body should be treated at a time. The mixture is irritating, hence when the animal shows signs of exhaustion its use should be discontinued for a few days. Other preparations used are **balsam of Peru in alcohol** (5% to 10%), creolin ointment, styrox ointment (5%).

A NEW METHOD OF DESTROYING DOGS

The sentimentality surrounding the ordeal of killing a pet dog has always given an interest and a significance to any manual of procedure that will accomplish the object without pain.

Until now it can hardly be said that any of the classical methods are entirely without fault. Hypodermic or intrapleural injection of strychnia solutions generally cause a sudden and apparently painless death, yet there are cases in which a number of violent spasms lasting a minute or more, supervene to invite criticism. Potassium cyanide solution injected into the peritoneum or pleura cause sudden death only when the salt has not deteriorated by exposure to air, and chloroform by inhalation which is generally the method of choice of the inexperienced owner always requires the usual forcible restraint and is accompanied by struggles and whining that last for some minutes.

In Recueill de Medicine Veterinaire, October 15, 1921, Mr. Jacques Taskin, a Parisian veterinarian, after discussing the merits of all these old methods describes a new procedure that merits consideration. It is the intracardiac injection of 1cc to 2cc of chloroform. This, the author assures, will bring an instantaneous and painless death.

The procedure is described as follows: After locating the position of the heart by auscultation or palpation, which in dogs is best done on the right costal surface, the needle is passed into the heart through the intercostal space selected as the most direct route. When a drop of blood appears at the head of the needle or flows into the syringe, if already attached, the chloroform is driven in rapidly. This is followed by immediate and irremediable respiratory syncope.

The needle should be of small caliber and of a length to correspond to the size of the dog.

FALSE ESTRUM IN THE BITCH

I would like to make a few suggestions in regards to the cases of false estrum reported by M. F. W. in the September issue of VETERINARY MEDICINE. I have had a number of cases of bitches that showed estral periods after spaying and found that infection of the uterus was the cause. In one it was necessary to remove the uterus which was found to have degenerated walls cystic in character. In the other cases the trouble was of a pyogenic nature and responded to irrigations and bacterin treatment.—F. L. Ober, Duluth, Minnesota.

RANULA IN A DOG

What is the best treatment for ranula in a dog? I have incised it and cut out the upper anterior part of the cyst wall and painted it with iodin, but it has returned again.—P. L., Colorado.

REPLY: When a veterinarian tackles a case of ranula in the dog, he is beginning a real job. In all of our experiences with this disease, the condition has very often terminated just as your case did, and we have always attributed our failures to the fact that we did not dissect out the sac entirely.

Our successes have always been after a very careful and painstaking dissection of the entire lining of the sac, and this is generally only possible when the enlargement is not too large or too deeply imbedded under the tongue.

In other words, the operation of total extirpation is easier said than done. We have also had some success by touching up the depths of the wound two or three days after the operation with a pencil of silver nitrate.

To induce labor in a bitch that has passed the period of gestation, drive her in a vehicle over bumpy roads.—Dogdom.

HEMOPHILIA IN A SHEPHERD DOG.

A common shepherd dog, 18 months old, belonging to a farmer and utilized for the usual purposes of watching the premises was presented for treatment with an odorous emanation from the mouth and a slightly bloody froth drooling from the commissures. On examination it was found that a spicula of bone was lodged firmly between two molars. The free end of the bone extended beneath the tongue and, being pointed, produced a superficial excoriation of the lingual mucous membrane. Attempts to dislodge it with the fingers failed and caused some bleeding that was not thought important at the time. When, however, the mouth speculum was adjusted and the spicula extracted with a small molar forcep the blood flowed freely.

Twenty-four hours later the owner announced that the dog was soiling everything about the place with blood, and that the drooling of bloody saliva from the mouth was much worse. Examination at this time showed that the bone had made a wound through the gums down to the alveolar level, exposing the jaw bone and that from this wound a continuous, sheet-like stream of blood was flowing. The wound was packed with cotton wedged in the space between the teeth the bone had previously occupied.

On the third day, when the patient was returned to have the packing removed, it was seen that there was still some bleeding, which increased again when the packing was taken out.

The space was repacked to be left in place for an indefinite time to be determined by the behavior of the bleeding.

The dog was not seen again, but the owner reported that when the packing was removed about ten days later the flow of blood was worse than before, and that it had become such a nuisance from distributing blood all about the premises that it was thought best to destroy it. Was this a cancer of the jaw or hemophilia?—A. C. K., Quebec.

REPLY—The dog was too young to have suffered from cancer, and since the hemorrhage from the wound was so obstinate there is no doubt the subject was a "bleeder." Hemophilia or bleeder, as such subjects are often called, while probably more rare than in man, does occur in animals. We have seen cases in mules and at least one case in a horse.

A case was reported by Lieutenant Flieger of the French Army in Recueil de Medicine Veterinaire (Paris), October, 1921, in a horse occurring after puncture firing; and E. H. Strent, M. R. C. V. S., reports another case in a dog in The Veterinary Journal, December, 1921, in which, as in your case, the bleeding came from the gums.

The classical treatment of hemophilia consists of intraveneous injections of blood serum or in lieu of this a ten per cent solution of gelatin in water containing the physiological salt requirement. Permanent results do not generally obtain; the patients usually die.

DESIGNS MASH FEEDER FOR HENS AND PULLETS

A feeder for poultry devised to induce a heavy consumption of dry mash has been designed by D. C. Kennard of the Ohio Experiment Station.

It consists of an open, rectangular box 30 inches long, 12 inches wide and 8 inches deep, mounted on a frame 24 inches wide and 30 inches long, which is elevated 18 inches above the floor. A reel is mounted lengthwise on the feed box to prevent roosting.

Such a feeder will accomodate 50 birds; for 100 birds a four-foot feeder should be made.

It is stated that the feeder combines all qualities necessary for a feeding device, being waste-proof, roost-proof, dirt-proof and easy to make.

ENLARGEMENT OF THE CARUNCULA LACHRYMALIS IN THE DOG

I have a patient, a Boston terrier that was brought to me a few days ago for treatment. The membrane nictitans bulges out like a cyst, and is very red. Is it advisable to treat this condition or should it be extirpated? In either case, please advise me treatment or technic of operation.—S. W. H., Illinois.

REPLY: There is nothing to do for your patient but to operate.

Flood the eye with a 10 per cent solution of cocain in adrenalin chlorid 1 to 1000. After about ten minutes, pick up the little tumor-like formation with a tenaculum and cut off with scissors as close in as possible. No after treatment is required.

The eye is so extraordinarily sensitive, that the operation is an extremely painful and inhuman one, unless the anesthetic is used, and the blood supply is so great that unless adrenalin is used, there may be objectionable hemorrhage.

Queries and Answers

Botulism in Horses

I should like to know from some source why I have lost so many horses and mules. On March 28, 1915, I was called to see a mule, and on my arrival I found the animal down thrashing around and pawing with his front feet as though galloping in his spasms.

His temperature was 102. I passed a catheter and found the urine straw colored, very thick and full of white pigments; bowels dormant; tail relaxed; paralysis of hind extremities. He would eat hay, also drink water without difficulty. I warned the owner that he had forage poisoning and told him what to do; but he never changed the water or feed nor cleaned up. The blood seemed crystalized like ice.

I sent a specimen to a laboratory for examination, but received no reply as to the trouble. This mule died. I told my client he should change feed and water, but he did not do it. I also warned him of an epizootic of the disease if something was not done. In nine months to the day, another went down, and in three weeks fifteen head of horses and mules were dead. No cattle died, although they drank the same kind of water and ate the same feed. In treating these horses, during that time I tried everything known, but they all died. They were all alike as far as temperature was concerned, which ranged from 101 F. to 102.5 F. Autopsy showed nothing but a dark blood. Some lived four days and some lived seven. During this time, there were three other veterinarians who saw these cases, and all said the same.

A Second Outbreak

This outbreak was last fall, and now I have the same trouble seven miles from this ranch, all belonging to the same man, and none of these eighty head came from the first ranch. In fact, the ranch where the trouble now is, has all new buildings, corrals, water device and the best of alfalfa hay. There was also an outbreak sixteen miles north. I lost the horse that was down, but treated the other three, giving urotropin in the water, and they have never taken it.

This has occurred on low land, and also on very high land, and the water on the high land is pure mountain water. I have given arecoline in ½ grain and one grain doses (barium) chlorid, P. D. Cathartic, also Mulfords No. 3, and magnesium sulphate in maximum doses, but nothing seems to do any good. These horses were all working hard at the time they went down. I have bled some and given all the serums known since I have handled these cases. I will state further that I have a good field for experiment and if any one can give me any light on this trouble would be pleased to know.—F. A. H.

REPLY: There seems to be very little doubt about correctness of your diagnosis in these cases. The cause is for you to discover. It will be found somewhere in the food or water, very likely in the feed because water from a mountain stream is seldom ever contaminated.

A few weeks ago in pondering over the cause of an outbreak of forage poisoning wherein six horses out of a total of eighteen had died and three others were already very sick, the feed was found to be of exceptionally good quality. It consisted of a bright heavy white oats from a dry granery and would have graded number one in any market. The hay was a well-cured prairie hay, bright in color and unmixed with weeds of any kind. The water was from a very deep drilled railroad well over a thousand feet deep, pumped out continually to supply the passing locomotives day and night. Was this not a puzzle? The feed and water pure and the surroundings everything that could be desired. The horses were never fed nor watered elsewhere. When about ready to leave the riddle for some one else to solve it was rather accidently discovered that this very pure water was first pumped into a cistern that had been dry for some months before the railroad water supply was

drawn upon. True enough on inspection of the water therein it was found to be contaminated with a stinking organic material including a number of dead rodents. After watering the horses directly from the railroad well no more died. The credit of this discovery belongs to Dr. Chas. Head, of Regina, Sask., who had stubbornly refused to give up the search. This is described at some length to show that apparently safe conditions are very often deceptive.

WHITE LINIMENT FORMULA

A few months ago you published a prescription for white liniment that would not separate. I have lost that number and would thank you for the prescription.—W. R. P., Pa.

REPLY (by Dr. Quitman)—The formula and modus operandi for making a staple white liniment is as follows:

℞

Ac. oleici (U. S. P.)	ʒ ij
Ammon. chloridi	ʒ ij
Ol. terebinth.	
Aq. ammon. (10%)	aa ʒ j—ʒ jss
Aq. qs. ad	o j

This prescription should be mixed as follows: Mix the turpentine and ammonia and shake thoroughly. Then add the oleic acid and again shake thoroughly. While it is not absolutely essential, it will insure a more staple liniment if the ingredients thus far mixed are allowed to stand for twenty-four hours before the water is added.

Whether all ingredients are mixed at once, or the twenty-four hour interval is allowed, the ammonium chlorid should be dissolved in the water, then the water added, shaking from time to time.

The ammonium chlorid is added for the purpose of creaming or thickening the liniment, and you can regulate the amount to suit yourself. However, if you add too much ammonium chlorid, the liniment will be so thick that you cannot pour it out of the bottle, and I wish to advise you that after standing a few days, it is inclined to thicken slightly as it is. It is, of course, obvious that you can make this liniment stronger or weaker by increasing the amounts of turpentine or ammonia and relatively increasing the amount of oleic acid, or decreasing the amounts, if you so desire. However, the proportions as given above make a good general purpose liniment.

THE PROCREATIVE QUALITIES OF JACKS

In May, 1920, a farmer bought a jack with a written guarantee from the seller, that the jack would get fifty percent (mule) colts from all services. The seller, himself, at the time of the sale, made a microscopic examination of the spermatozoa and found them active and alive, and the buyer also looked through the microscope and ascertained this fact.

During the season of 1921 the jack served 24 mares, but only four mares became pregnant and had colts. The result from the 1921 season is not yet determined, but the present owner knows that of three mares served, belonging to himself, not one is pregnant.

The buyer paid for the jack with his personal note, now long overdue. He wishes to return the jack, but the former owner refuses to take him back, unless a microscopic examination of the sperm now shows them to be dead. To this the present owner will not agree, as he insists that the number of colts gotten is the only dependable test, which also to me seems reasonable.

The present owner has, according to his own statement, taken reasonable good care of the jack as far as feed, housing and exercise are concerned. The jack is able to serve the mares, and according to the statement of the former owner, there is no noticeable pathological condition which would account for the jack's unfertility.

Since I may be called on the witness stand as expert witness, but can find nothing in my textbooks and journals referring to such cases, I would like you to enlighten me on the following points:

1. What chances has the present owner of returning the jack to the former owner if he takes the case to court?

2. There being no other pathological condition which would render an animal unable to serve properly, (a) is the spermatozoa test 100% accurate? (b) Is not the number of colts gotten a much more accurate test?

3. (a) Would it be necessary to determine what percentage of the mares bred this year are now pregnant? (b) and if so, is manual examination through the rectum a test that would stand in court? (c) Is there any biological test for pregnancy?

4. Is one service daily throughout the breeding season too often for a jack, stallion or bull?—O. W. J., Wash.

REPLY (By Dr. Sigler): Replying to your inquiry in regard to sale of jack will say the farmer guaranteeing 50 per cent of all mares served would be putting it too high. Sixty per cent would be putting it high for the horse for all mares served. If he had said 50 per cent of all good producing mares he would even then be putting it too high. Seldom do we see a jack that is as fertile as a stallion on mares. The coupling of the jack with mare does violence to nature and produces a sterile hybrid. Many good producing mares to stallions will not breed to jacks, although the mule is produced easier by the jack than the Hinney —the cross between the stallion and Jennet.

Guarantee Placed Too High

I think in this case the seller has placed his guarantee a little high for all mares served. You do not state the age of jack which will have some effect upon the production. It looks like the chances of the present owner of returning the jack would be good under such a guarantee. The test of spermatozoa varies. I would think it would be necessary to determine what percent of the mares bred this year are pregnant. This can be done by manual examination. One service is not too much throughout the breeding season for a jack of proper age. An aged jack can perform two services a day, one in the morning and one in the evening if properly cared for and exercised.

PERSISTENT DIARRHEA IN HORSE

I have a case of persistent diarrhea in a horse following enteritis. The feces are of a liquid to semi-solid consistency and the evacuations are more numerous than is normal.

I have tried many lines of treatment without results. The case is of several months standing. The horse has a good appetite.

Please suggest a line of treatment.—H. H. D., S. Carolina.

REPLY (by Dr. Quitman)—First, you might try arsenite of copper, which I administer in 10 grain doses three or four times daily in these cases, or in some instances, better results are obtained by the administration of 1 or 2 grain doses every one-half to one hour. This drug may be obtained in 10 grain tablets from the veterinary supply houses, or in lieu of them, or the arsenite of copper, you may prescribe arsenic trioxid in 2½ to 3 grain doses, with copper sulphate in 1 to 1½ dram doses three or four times daily. This may be administered in the animal's food. A little fenugreek or linseed meal added to it will make it more palatable for the horse.

Should this fail, I would recommend the following prescription:

℞

Ac. hydrocyanici dil
Chloroformi
Ol. menthae piperitae.....aa ʒ ss
Ol. terebinth. rectif.....ʒ j ss
Tr. capsici
Spt. camphorae
Tr. opii.....aa ʒ iij

Sig. Give two ounces in one-half to one pint starch gruel every two or three hours. Lessen the dose when improvement is marked.

BELL'S PALSY (FACIAL PARALYSIS) FROM NEGLECTED MASTOIDITIS

I have a black mare, eleven years old, brought to my stable and left for treatment showing the following symptoms: Paralysis of lower and upper lip, buccinator muscle, eye lid, and ear on left side. Discharge of a creamy pus from left ear. I inquired into the history of this mare, but the only thing I could find out was that she had had difficulty in eating for about two weeks prior to the time he brought her to me. I made an examination of her mouth and found the fourth superior molar decayed but not sore on palpation of the tooth and there was no bulging of the simsus so I concluded that the tooth was not causing the trouble.

As I had never seen a case just like this one, I called another veterinarian. After he made an examination, he said he thought she had an abscess of the ear which was causing the trouble.

I began treatment by cleaning and washing the ear out with a solution of borax, massaging the lips and cheek and the course of the seventh cranial each day with liniment and gave her 3 drams of fluid extract of nux vomica three times a day.

This mare can use her lips a little better, but the discharge is still coming from her ear and at times it seems as if the sight of her left eye is impaired.

Summary. Paralysis of ear, eye lid, upper and lower lips, buccinator muscle of left side; discharge from left ear of creamy pus and shreds of necrotic tissue at times; no bulging of simsus; no discharge from nostrils; fourth superior molar decayed but not sore; sight of left eye impaired at times; appetite good; pulse and temperature normal.

I will appreciate any comment any doctor has to offer as I never had a case like this before and perhaps some other reader of the Journal has and I would like to hear from him.—W. A. T., Ind.

REPLY—This is a very interesting case of facial paralysis, differing from the usual ones due to injury of the facial nerve where it passes over the ramus of the lower jaw.

Here the querist describes a paralysis that indicates injury at or within the stylo-mastoid foramen. The fact that there is paralysis of the ear and eye lids shows that nearly all of the extra-cranial portion of the facial nerve is involved.

The suppurative process at the ear may be a mastoiditis or it might possibly be a hidden dermoid cyst the character of which is masked by the pathological changes of the auricular region.

A positive diagnosis of the exact cause of the nervous injury would be interesting but this would be impossible without making a physical examination of the patient and with it, weigh the nervous phenomena exhibited.

Medical treatment will do no good and any surgical operation attempted must be done with strict regard for the chances of inflicting still more injury to the nerve.

CHRONIC PROFUSE PTYALISM IN A HORSE

The subject is a grey Percheron mare eight years old weighing 1,400 pounds. There is such a persistent salivation that one to two inches of saliva is found in the feed box every morning. The appetite is good and general condition is fair. She has been so affected for two years and is getting worse.

This mare was shipped to an Eastern market in March, 1920, where she contracted shipping fever. The salivation began at the onset of this attack and has continued ever since.

The teeth have been examined several times and have been pronounced normal.

I would like your opinion of the cause of the trouble and suggestions as to treatment.—D. M. K., Pennsylvania.

REPLY—Chronic ptyalism is a common enough affection of horses. Its cause has never been satisactorily explained. Freidberger and Frohner and also Hutyra and Marek without, however, making any positive statements, are inclined to attribute it to some aberration of deglutition associated with the pharynx or esophageal infundibulum. In spite of this we have never yet been able to find anything wrong with these organs, although in one case we divided the soft palate and made a good manual exploration of these organs.

Since in all of our cases the trouble supervened a more or less serious illness, or occured in old age, we have been inclined to regard the trouble as due to a lesion of the central nervous system that keeps up a stimulation of the secretory nerves.

Atropin hypodermically or a course of treatment with belladonna will give some relief but will not cure. We have had the best results with arsenic and potassium iodid.

MASTITIS

I have a case in a cow on which I would like to have some advice before going any further.

This cow calved her second calf some seven or eight days ago. She is giving her normal flow of milk from three quarters, but the other does not give much and looks to be awfully atrophied. I was called this morning and gave mastitis serum with frequent small doses of salts and an iron and strychnine tonic to be given three times daily. I also advised hot applications with frequent massage, this quarter is not hot or painful to touch, will you give me a probable cause, outcome and treatment?—R. E. C., Ga.

REPLY: The best method of handling such a condition is to allow the quarter to dry up for this period of lactation. In fact, in all cases of mastitis, the one best treatment is to try to suspend the secretion of milk. This always gives the parts a better opportunity to heal before the next period of lactation.

I would not advise the use of hot water or any friction other than that of rubbing the quarter with some belladonna ointment, to which camphor might be added and only milk ation. In view of the fact that you have no it out when the sinus seems to require evacuserious inflammation in this case, bacterins do not seem to be indicated.

A teaspoonful of borax three times a day for three or four days and then once a day thereafter will make a bad "heavy" horse more serviceable. Matters are improved still more if this treatment is augmented with Fowler's solution, nux vomica and stramonium.—G. G. Blank.

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE

Horse racing is an out-door sport that entertains and maintains thousands. It is an industry that develops fundamental resources—an ally of agriculture, the enterprise upon which our prosperity almost entirely depends. The horse in any of its estates is a component part of a great, big, prosperity-producing host of which the automobile is a parasite.

Infectious Abortion in the Army Brood Mares. Official Recommendation of the Bacterin Treatment

The appearance of infectious abortion among the brood mares of the army remount depots becoming a matter of serious concern to veterinary officers, has caused the Surgeon General to issue specific instructions for its control. Revised instructions for handling the disease was sent out to veterinary officers on duty at remount depots under date of October 27, 1921, as follows:

Every mare whether pregnant or not and every stallion will receive at least two series of four doses each of infectious abortion bacterin each year, the first series during the fourth and the second during the ninth month of gestation for pregnant mares. All other animals at the station are treated at the same time. Mares bred during the spring of 1921 were given the first treatment during November and the second series during the ninth month of gestation except such animals as were entering the eighth month of gestation at the date of the first treatment (November).

Mares or stallions newly purchased, irrespective of the time of the year are given the first series of treatments without delay, preferably during the prescribed quarantine period. Thereafter the new purchases receive treatment with the others.

As treatment already started is vitiated by transfer to other depots, animals thus transferred are treated anew at the new station. When an animal has received a series at one depot it need not receive another at the new station until time for routine treatment of all of the animals arrives.

Intervals and Dosage

Each series of treatment consists of four doses of increasing strength at intervals of five days as follows: 1st dose, 1cc, 2nd dose 2cc, 3rd dose 4cc and 4th dose 6cc. The bacterin is supplied by the Army Medical School, Washington, D. C., in 10cc ampules.

Careful Administration Prescribed

The administration is subcutaneous under strict antiseptic precautions. The site must be disinfected by washing with soap and water, liquor cresolis 5% and then with a coating of tincture of iodine. In view of sterile rubber gloves the hands must be properly prepared. The syringe and needle must be sterilized by boiling and the needle in addition must be immersed in alcohol after each injection. At least three syringes should be used so that two may be kept immersed in alcohol while the other is in use. The veterinary officer is held responsible for a strictly aseptic technique.

The Reaction Characteristic

The reaction described consists of an elevation of temperature, loss of appetite, accelerated intestinal activity, injected mucous mem-

branes, enfeeblement and depression and a swelling at the site of injection. These symptoms last for twenty-four to forty-eight hours causing no permanent harm to the animal's health.

When the reaction is exceptionally severe, discretion as to intervals between injections is advised. The animals must be allowed to recover from one injection before the subsequent one is given.

Provision for Serum Diagnosis

Indiscriminate sending of serum to corps area laboratories is discontinued and will only be sent when abortion from whatever cause may occur or when suspicious clinical symptoms appear. In all such cases, however, in addition to serum, specimens of vaginal discharge and fetal membranes will be sent to the laboratory, and in the case of suspects, vaginal and urethral discharges, skin lesions and lesions of mucous membranes are required.

A serum specimen of all new purchases, mares or stallions, as soon after purchase as practical is sent in every case before a series of treatment is begun.

The new purchases giving positive reactions must be considered as carriers and disposed of as unfit for breeding purposes, as it is thought not advisable to retain such animals at the present time, that is until the bacterin treatment has proved to be absolutely preventive.

A mare that has been treated, aborts and gives a positive reaction must be carefully judged because the reaction may arise from the bacterin. Such a case must be decided on its merits but a history of previous abortion should constitute grounds for suspicion, isolation and monthly laboratory tests.

Accurate Records Kept

Individual records are kept of each animal treated and of each successive treatment, noting any unusual symptoms that may appear. The reports are made to the Surgeon General on special blank forms and copies are filed at the depot. When abortion occurs in animals treated, these are reported on special blanks.

True copies of all treatment records, reports of abortions and items of importance are sent with all animals transferred from one station to another.

Study of the Complement Fixation Test by the Army Laboratories

A study of this test has shown that complement-fixing bodies remain in the blood as long as seven months after the bacterin treatment, the evidence ranging from plus-minus to complete fixation, and also that many animals that have received one or two series of treatment failed to show an evidence of fixation bodies after three months. This applies to both mares and their foals.

Many animals that have shown the presence of complement-fixing bodies three to four months after bacterin treatment were found negative after seven months. Many foals show a four-plus reaction while their dams were negative, although in many cases both mares and foals showed four-plus at the time of foaling.

The report emphasizes the fact that complement-fixing bodies can not be utilized as an index to immunity and that it is of no value except in diagnosis where bacterin treatment has not been administered.—Ext. Vet. Corps. Bulletin.

RUPTURE OF THE SPLEEN IN EQUINES

The spleen is the largest of the ductless glands. It is situated chiefly in the left epichondrium, in close relation to the left part of the great curvature of the stomach, to which its long axis corresponds. Its size and weight vary greatly in different subjects and also in the same subject under different conditions, depending chiefly on the great variability of the amount of blood contained in it. The average weight is about 35 ounces. Its length about 20 inches and its greatest width about 8 to 10 inches. It is usually bluish-red or somewhat purple in color. In natural state it is soft and yielding, but not friable.

Location Hidden

The spleen is so deeply seated and so surrounded by other organs that its diseases are not readily appreciable by physical examination and the absence of any special secretion excludes the possibility of diagnostic deductions through this channel. Even the relation of the condition of the organ to the number of the leucocytes and red globules fail to afford trustworthy indications of disease, since leucocytes originate in other tissue besides the spleen and the destruction of red globules may take place elsewhere.

Its Function Predisposes to Disease

The physiological relation of the spleen to the blood especially predisposes it to disease

in which the blood is involved. As the splenic capillaries terminate in the pulp cavities the blood poured into these spaces is delayed there and opens the way not only for the increase of leucocytes and the disintegration of red globules, but for multiplication of microorganisms which may be present in the blood and form a poisoning (local or general) with their toxins. Hence, we explain the congestion, the sanguineous engorgements and the ruptures of the spleen in certain microbion diseases.

The spleen is in a sense a safety valve for the blood of the portal vein when supplied in excess during digestion. In this way it protects the liver against sudden and dangerous engorgement, but it is itself subject to extreme alterations of vascular plentitude and relative deficiency.

This may be held to take place largely under the influence of the varying force of the blood pressure in the portal vein. It is also powerfully influenced by muscular and nervous actions.

A Rare Accident

Rupture of the spleen is not a frequent lesion in solipeds. Yet, the number of cicatrices of the spleen which are found postmortem in old horses would indicate a considerable number of slight and non-fatal cases. The most common cause appears to be external violence, especially kicks or horn thrusts to the left hypochondriac region.

Horses running at large in pastures or in yards or standing side by side in short stables or tied with too long halters are the usual victims. In other cases, pre-existing disease of the spleen or its blood vessels have proved active factors. In the friable, degenerated spleen of leucocythaemia multiple small lacerations have been found in engorgements of the spleen consequent on thrombosis of the splenic vein in chronic indigestion with habitually loaded stomach compressing the gastric and hepatic arteries and determining a reflex of blood through the coeliac axis into the spleen. Sometimes also a traumatic accident that may be slight in itself such as falling down, rapid motion, cough, etc., may cause a rupture.

Lesions

The rupture may be on any part of the spleen and it may be complete or incomplete. In the latter even the capsule may have ruptured while the more elastic peritoneal covering has remained intact, enclosing a coagulum of variable size, bulging above the level of the spleen. When the peritoneal coat has given way, the laceration is usually smaller than that in the spleen properly enveloped. Any degeneration of the spleen will affect the appearance of the lesion. In some cases, caused by external violence, the adjacent portions of the spleen are reduced to a soft pulp. In such cases there is a slow but continuous flow of blood in a small stream which may, however, prove fatal. Again in cases caused by external violence there may be a fracture of the ribs, ecchymosis, local swelling or even wounds of the skin, but all these may be absent. The blood effused into the peritoneum is usually clotted. If the effusion has taken place slowly it is more or less coagulated around the edges of the wound or even in its depth and in this way the hemorrhage may be arrested. When the peritoneum is still intact the pressure of the clot beneath it has served to arrest the flow. In such cases the clot may be in part liquified and absorbed and in part organized into fibrous tissue, constituting the cicatrices of the spleen found in old horses.

Symptoms

Rupture of the spleen produces in general only symptoms of internal fatal hemorrhage. The cause of this can at least be suspected on account of the simultaneous colicky symptoms. The accumulation of fluid in the abdominal cavity, anemia of the mucous membranes, cold extremities, rapid failure of strength, fear, sweating, imperceptible pulse, fall of bodily temperature, dilated pupils and increased respiration. Sometimes periodically recurrent hemorrhages is noted with alternate improvement and deterioration of the general health.

The Therapy

The early mortality usually forbids treatment. When opportunity is furnished, keep the animal absolutely quiet and apply ice or other refrigeration to the left hypochondrium. Give internally tincture of neutrate of iron or other astringents and relieve any severe suffering by anadynes (hyds, cyannes, atropin, morphin, sulphate). External wounds should be treated antiseptically.

—John W. Salter, Dawson, Georgia.

The secret of curing roup in chickens is found in feeding them. Bad roupy chickens starve to death because they can not see to eat.

SUMMARY OF A REPORT ON INFECTIOUS ABORTION IN SWINE*

By J. W. Connaway, A. J. Durant and H. G. Newman

1. A specific contagious or infectious disease exists among swine which causes the majority of abortions in this species.

2. The cause is identical with or closely related to the micro-organism which causes the majority of abortions in cattle; namely, the Bacterium abortus—Bang.

3. The infection is contained in the dead aborted pigs, after-births, uterine discharges and the colostral milk of the infected sows. The organism was isolated from all these sources, and its infectiousness proven.

4. Infected sows which are apparently healthy, and farrow live pigs, also discharge

Litter of Aborted Pigs

abortion infection in the after-births and colostral milk.

5. The abortion disease can be detected in swine by the serological tests—agglutination and complement fixation—by examination of the blood-serum or the colostral milk-serum.

6. Healthy swine contract the disease by eating materials containing the abortion germs; as dead fetuses, after-births, milk, or other food contaminated with the infection. Transmission by breeding is probable but not definitely proven.

7. Non-pregnant as well as pregnant sows may contract the disease.

8. The herd boar is susceptible and may contract the disease by association with infected sows—but whether by copulation or by ingestion has not been established.

9. Suckling pigs of infected dams react to the serological tests for abortion disease. Some newborn pigs show the reaction before sucking, but the majority only after sucking.

10. The abortion germs of cattle (Bact. abortus—Bang) inoculated into pregnant swine have caused abortion, and the development of the specific blood reaction.

11. The blood serum of abortion-infected cattle reacts to the swine abortion antigen.

12. Pregnant sows, in close association with a herd of abortion-infected cattle, aborted; and the infected animals of both species reacted to the same serological test.

13. Sexually mature sows, as a rule, retain the abortion infection indefinitely; and react persistently to the serological tests.

14. Infected sows which have aborted, and continue to react, may farrow full term living pigs at the next gestation. Some, however, become either temporarialy or permanently sterile. And some farrow half developed dead fetuses with living, fully developed pigs.

15. Healthy abortion-free progeny can be reared from infected sows bred to an infected boar by isolation of the pigs after weaning to prevent reinfection.

16. Control measures. Apply the abortion test to all the mature breeding animals in the herd, and to recently purchased animals. Isolate the aborters and reactors. Disinfect thoroughly.

17. Vaccination is of doubtful value and probably detrimental.

*Bul. 187, Mo. Agr. Exp. Sta.

HEALTHY ANIMAL MEAT IS FREE FROM BACTERIA

By Drs. E. Bruge and W. Kiessig. From the Allatorvosilapok, August 31, 1921.

The authors conclude from their investigation that the healthy animal's muscle is contaminated by various bacteria not as a consequence of distribution of bacteria from the alimentary canal during lifetime as Condrady describes, but from some other sources. Special consideration should be given to the wounds made on the animal at the time of slaughtering. Through these wounds the butchers enter into the body, for the removal of blood clots (or for other reason), with their unsterile hands or fingers. The contamination is increased by section of the esophagus, partial or complete. In the jugular vein and in the anterior vena cava negative blood pressure

exists, contaminated matter around these open blood vessels from the butchers' hands, or from the severed esophagus will be drawn into the right auricle of the heart; from there into the right ventricle; into the lungs; from there back to the left side of the heart; and from the heart it will be forced into the aorta, and into the tissues of the entire animals.

Blood samples taken from healthy animals at the time of slaughtering, were found to be sterile. But blood and muscle samples taken from the same animals at intervals after slaughter showed various degrees of contamination with various kinds of bacteria. According to the authors, the contamination of healthy animals meat occurs at the time of slaughtering. This conception is supported also by the finding of various kinds of bacteria in the organs of slaughtered animals.

In judging contaminated meat, aside from the postmortem contamination (such as unsanitary handling of meat), the contamination of the meat in the animal's lifetime, that is, at the time of slaughtering, should receive more consideration.—Borsos.

SYMPTOMS AND TREATMENT OF ACUTE CARDIAC FAILURE

This article points out the tardy action of drugs in acute heart failure, stating that strophantus is the only known drug that acts promptly. Therefore, the mixture that has given us such good service may have more merit than we knew, in that the strophantus stimulates immediately, the nux vomica and digitalis coming along later, supporting and balancing the heart's action.

Drug treatment involves the personal equation, exact dosage and careful selection of drugs.

Venesection is clearly indicated when the patient is greatly cyanosed, dyspnoeic, coughing, and raising bloody sputum. There is absolutely no danger in drawing off blood at this stage, and wonderful results often follow as drugs certainly are made more effective thereby.

Aseptic ergot has been strongly recommended for subcutaneous use as a substitute for digitalis, for heart failure, but should not be used as an emergency measure.

Camphor-in-oil, also given subcutaneously, has been a favorite in the last few years, for emergency stimulation, and while it has some value, is not worthy of the confidence bestowed upon it, and ranks far below some other drugs in practical use.

Adrenalin is fleeting in action, and not dependable, and the same statement might be repeated for pituitary extract, as emergency measures.

Alcohol, while popular, is not a true circulatory stimulant, and the great faith in its ability to do the impossible, as held by the layman, is not shared by the medical profession.

Aromatic spirits of ammonia has fleeting action, is a mild stimulant, possesses irritating qualities, may have some virtue in a simple faint, but certainly does not qualify as a heart stimulant for emergency work.

Strychnine is popular, but undeservedly so, as it fails to produce results in acute cardiac failure.

Caffeine has some vasodilator properties, but acts more as a diuretic, and is not an emergency drug.

Cactus grandiflora, squill, and **sparteine sulphate** have value, and when chosen for selected cases, as for patients having idiosyncrasies for digitalis or strophanthus, or, when the cumulative effect of digitalis appears, and it becomes advisable to discontinue it for a while, cactus, or sparteine is very dependable.

Thyroid extract has been known to help heart-block, by giving sufficient amount to produce a tachycardia. This may work all right from a theoretical point of view, but not enough cases have been reported to justify an opinion.

TREATMENT OF MASTITIS

The treatment of mastitis in cows may be summarized as follows: (1) A good rapid purgative as early as possible. This may sometimes abort a case in the incipient stage. (2) Repeated evacuation of the milk sinus by milking gently or by syphoning out the contents. If evacuation is found impossible owing to the lumpy character of the contents these must be loosened up and dissolved by irrigation. Chlorozene is a good drug for this purpose. (3) Internal administration of formalin in 2 dram doses with a mineral oil three times a day. (4) Streptococcic mastitis bacterin treatment will help materially in many cases. (5) Support the udder with a sling when large and painful and especially when more than one quarter is affected.

*Ext. Boston Med. Jour.—J. F. DeVine.

Looking Backward

Many a young bull has been sacrificed to the butcher only to discover when too late that he had sired some precious offspring.

A few short years ago we preached that the serous membranes of horses had such a pyogenic susceptibility that intrusion meant death.

"We know that all chemical disinfectants interfere with the vitality of the tissues and thus retard the healing process."—W. B. Niles, Iowa State Veterinary Ass'n, 1893.

At the annual meeting of the Indiana Veterinary Medical Association of 1893 there were nine members present. Among these were Bolser, Roberts and Boor. W. L. Williams was president and J. E. Cloud was secretary.

The annual meeting of the Maryland State Veterinary Society of 1893 convened at Baltimore with seven members present. Among these were Drs. Dougherty and Clement, of which the former was president. Geo. C. Faville was the secretary.

The Michigan State Veterinary Medical Association was convened at Owosso, Michigan, on Feb. 7, 1893. There were sixteen members present, and among these were Drs. Grange, Brenton, Dunphy and Hawkins.

Two hundred years B. C., Mago, a republic of Carthage, wrote and published a library of useful information about animals and animal diseases comprising nearly thirty volumes.

The California State Veterinary Association meeting of 1893 was attended by thirteen members, among which was Drs. Archibald, Fox, Spencer and Egan. Dr. Egan was the president and Archibald was the secretary.

Stupid of Us to Forget Such Important Discoveries

In 1894 a prominent German scientist announced, through the medical press, the discovery of an antitoxin for influenza. "The serum," he says, "has a strong antitoxic power, but does not destroy the bacteria. The serum of animals so vaccinated when injected into others, imparts its qualities to them and guarantees an immunity from an infection."

Professor Walley of the Royal Dick Veterinary College, died December 10, 1894.

The passage of a veterinary examination law was engaging the attention of the Pennsylvania veterinarians in 1894, when at the semi-annual meeting of the state association the matter was seriously discussed for the first time.

The Congress of Veterinary Colleges, which afterwards developed into the Association of Faculties and Examining Boards of North America, and eventually into the Section of Veterinary Faculties of the A. V. M. A., was convened for the first time at Buffalo, N. Y., July 14, 1894. Harvard, New York, United States, Pennsylvania, McKillip and Kansas City Colleges were represented.

The annual meeting of the A. V. M. A. (then the U. S. V. M. A.) for 1893, was held in conjunction with the World's Fair Auxiliary Congresses at Chicago, Illinois. The sessions were held at the building erected for this purpose, and now the home of the Chicago Art Institute on the Lake Front. W. L. Williams was president, and the late W. H. Hoskins, the secretary. The principal subjects discussed were hog cholera, swine plague and contagious pleuro-pneumonia.

Once upon a time the veterinarians of Cleveland, Ohio, preferred charges of unprofessional conduct against a member for using an automobile in his practice, and about the same time, a teacher of a well known veterinary school on driving up to the college for the first time in a new two-lunger was greeted with jeers by the students and a professor, who on leaving the school after delivering his lecture, said, "Shame, shame, on you," and left the scene in disgust. Sure enough the veterinarians of the past generation were loyal to the cause, in distinction to those who eat butterine and drink filled milk and show no reservation in branding certain animal products as harmful, but to add insult to injury, a veterinarian recently addressed an audience on "the dog and cat as disease carriers." Can you beat it?

The Haver-Glover Page

PUBLISHED EVERY NOW AND THEN IN THE INTEREST OF GRADUATE VETERINARIANS

Avian Infection

Bacterial Diseases of fowls have been very prevalent the last few weeks. History of the various outbreaks has shown variable types of infection. In some localities the condition commonly termed Roup has been very much in evidence. In others, more acute infections have been reported. Some of these acute cases by complement fixation tests were proved to be true Fowl Cholera, or infection with B. Bipolaris Septicum, while in other cases this organism could not be incriminated.

The cases of so-called Roup are usually the result of a mixed infection, as are most of the other diseased conditions of fowls. Mixed Infection Vaccine (Avian) is indicated in all true bacterial diseases of fowls and has been proved a very reliable product. It must be remembered, however, that Chicken Pox and other conditions coming under the head of Contagious Epithelioma are caused by an unknown virus and all bacterial products are impotent as regards these disturbances.

Also it is advisable to look for parasites and other factors that might prove to be instrumental in predisposing birds to disease. Successful treatments are dependent on correct diagnoses.

H-G Catalogs

Numerous requests have been received during the past month for copies of our latest catalog. There have been few changes in prices as listed in the H-G catalog, issued late last spring, consequently our present catalog should be considered as the latest issued for this year.

Price changes, including instrument prices, which have been somewhat reduced, will be included from time to time in our Graduate Harmonies. Watch for the various issues and price changes.

We have quite some few Graduates on our lists who have not received our catalog; or if perchance you have misplaced the copy already sent you, a request or advice to this effect, will prompt the forwarding of same.

Internal Antisepsis in Pulmonary Infections

We have had many inquiries regarding internal medicaments for treatment or associate treatment in pulmonary infections, such as pneumonia, bronchitis, etc. In this regard an agent that contains therapeutic properties that are eliminated by way of the respiratory mucous membrane is essential. Such agents act also as intestinal antiseptics and by their elimination by way of the respiratory tract, serve a dual purpurpose as internal antiseptics.

For the treatment of all catarrhal affections of the respiratory and intestinal tracts, we recommend H-G Creseptol. This product by virtue of its containing such agents as Guaicol, Creosote, Oil Eucalyptus, which are known antiseptics and eliminated by way of respiratory mucous membrane, assures an antagonistic influence on the bacteria affecting these surfaces. Also by direct contact, these same agents act as antiseptics in the intestinal tract.

This product will prove to be a valuable adjunct to any treatment of infections of any character affecting the respiratory or intestinal tracts.

In order to obtain Prompt Service, may we suggest that you place your order with the nearest branch office carrying a complete stock of H-G Products:

The Royal Serum Co.	721 S. Washington, Peoria, Ill.
The Royal Serum Co.	76 N. Seminary, Galesburg, Ill.
The Royal Serum Co.	208 Observatory Bldg., Des Moines, Ia.
The Royal Serum Co.	31 W. Ohio, Indianapolis, Ind.
The Royal Serum Co.	Packers Station, Kansas City, Kan.
Illinois Veterinary Supply Co.	521 S. Water St., Peoria, Ill.
The Liberty Laboratories	Ralston, Nebr.
The Liberty Laboratories, Dr. J. S. Koen	402 E. Front St., Bloomington, Ill.
The Liberty Laboratories, Dr. J. S. Koen	Davenport, Iowa.
The Liberty Laboratories, Dr. C. R. Riordan	1535 W. 9th St., Des Moines, Ia.
The Riordan Co.	Rock Island Bldg., St. Joseph, Mo.

Matters of Current Interest

Dr. D. F. Lucky, who has recently resigned from the position of state veterinarian of Missouri, has accepted a more lucrative position with the St. Louis Live Stock Exchange.

The Jefferson City (Mo.) News, commenting on the resignation of Dr. Lucky says: "The resignation was doubtless due to politics. He is a Democrat (the villian), and for this reason must go." The parenthesized phrase is ours.

Let the Good Work Go On

The veterinarians of Southern Pennsylvania and Maryland met for the purpose of organizing the Cumberland Valley Veterinary Medical Association. Dr. B. M. Beatie of Chambersburg, Pa., was elected president, and Dr. Rohn of Waynesboro, Pa., secretary-treasurer. The first regular meeting was held at Chambersburg, January 5, 1922.

The Oregon, Washington and British Columbia associations form a strong combination, holding meetings that display "pep" and "ginger" according to reports from Secretary Cozier. The 1922 meeting will be held in Vancouver, B. C.

Lieutenant-Colonel Brocq-Rousseu who was the senior French officer of the Franco-American Veterinary Liaison Mission during the world war is now director of the Army Veterinary Laboratory at Paris. He is also president of the Alumni Association of Alfort.

Dr. Pierre Blaizot (then Lieutenant) who was junior French officer of the mission is treasurer of the association. Blaizot before the war was one of the chief practitioners of Paris with a clientele limited to the elite along the Bois de Boulogne and the environs of l'Etoile. He is now interested in biologic and therapeutic specialties for the veterinarian.

Many American officers of the veterinary and remount services retain pleasant recollections of these two cheerful veterinary officers and of their devotion to the cause of the veterinary corps of the A. E. F.

Dogs are often blamed for killing sheep that have died from disease.

To bring cheer during the long, long hours of a Northwest winter, the stork left a baby girl at the home of Dr. and Mrs. G. A. Jenne, Unity, Saskatchewan, November 21, 1921. A late report, but no less welcome.

The American Veterinary Publishing Company, South Clinton street, Chicago, Illinois, has sold out its entire stock of books and interests to Alex Eger, the well-known publisher.

Major Charles Jewell, V. C., has been transferred from the Army School for Veterinary Officers at Chicago to Governor's Island, N. Y., as chief veterinarian of the 2nd corps area.

Lieutenant Burton C. Bridges, V. C., who earned the sobriquet of General Pershing's personal veterinarian among the veterinary officers of the A. E. F., delivered an address before the Oklahoma Veterinary Medical Association at its last annual meeting on "Veterinary Interest in the American Remount Association and Remount Service."

Hog with Four Kidneys

An animal slaughtered by a butcher at Menges Mills, Pa., was found to have four kidneys, each of which was 10 inches in length but otherwise normal. The animal weighed 325 pounds dressed. The case is reported by Dr. E. S. Bausticker of York, Pa.

Dr. R. E. Wise, 45 years old, a practitioner at Hartford City, Indiana, while mentally deranged, attempted suicide by shooting himself with a shot-gun. After shooting one barrel into his body unsuccessfully he was prevented from completing the deed by his 15 year old son who wrestled the weapon from his hands after a hard scuffle.

The Hillsdale County Veterinary Medical Association of Michigan claims to be the oldest county veterinary association in the United States. The present officers are: Dr. A. Z. Nichols, president, and Dr. A. B. Curtice, secretary-treasurer.

The Kansas State Veterinary Medical Association at its eighteenth annual meeting held at Ottawa, Kansas, in January, passed a resolution condemning the sale of biologics and other veterinary remedies direct to the laity and one recommending the enactment of stringent laws against tuberculous dairy cows

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Mr. David Lee Glenn announces the marraige of his daughter, Ora Mast, to Dr. Guy Alexander Roberts, December 1, 1921, at Lavras, Minas, Brazil.

There are 460 active members belonging to the Iowa State Veterinary Medical Association. The growth of this association is one of the big achievements of the past decade.

Disease specimens, blood samples and whole parts of diseased animals, including fowls, are received at the rate of twenty-five to forty each week at the state laboratory of South Dakota. These come from farmers, county agents and others from all parts of the state for examination and diagnosis. The work is in charge of Dr. C. C. Lipp and his assistants and is done free of charge.

Dr. Lipp complains that some of these specimens are not packed according to the classical regulations. "One woman," he says, "feeling that she may have contracted tuberculosis wrote a letter to the laboratory asking for information and expectorated in the center of the sheet so that a sputum examination might be made."

Dr. George Berns of Brooklyn, who before retiring conducted one of the largest equine practices in America, demonstrates his continued interest in the veterinary profession by attending nearly all the local association meetings where his sound advice to the rising generation is much appreciated.

Dr. A. B. Carter of Attica, Indiana, suffered the loss of the index finger of his right hand from blood-poisoning sustained while vaccinating hogs.

Championship Goes to St. Paul

"In reference to the speedy work of Drs. Maxwell and Smith of Ohio, in vaccinating 351 hogs in less than two hours, we suggest that the champions come to the stockyards at South St. Paul where hogs are vaccinated with real celerity," says Marrinan of the M. & M. Serum Company of St. Paul, who reports (without a blush) that he held a split-second watch of unquestionable accuracy on Dr. H. M. Cameron while vaccinating 133 hogs weighing 120 pounds and snapped the finish at 41 minutes and 20 seconds from the word "go."

Now listen, this included both the mixed infection and simultaneous treatments, the doctor handling all three syringes himself, injecting 54 cc of serum, 3 cc of virus and 2 cc of mixed infection bacterin. Next!

Appendicitis Loses Caste

Columbus, Ind., Aug. 13—An autopsy performed on a hog which died suddenly on a farm near here disclosed that the animal died from appendicitis, according to Dr. A. A. Trotter, veterinarian.—Chicago Herald-Examiner.

According to Cough and Giltner, after an extended experimental study of Echinacea as a therapeutic agent in the diseases of animals, the big claim about the wonderful medicinal properties of this drug was "Much ado about nothing."

Since it has been proved that a milk cow excretes much more mineral matter than is contained in the usual feed, the deficiency must be met by the addition of inorganic salts to the ration or by the mineral impoverishment of its skeleton.

Dr. R. D. Wright of Maple Rapids, Mich., officiates as county veterinarian through a recent appointment, vice H. V. Kittle, resigned.

A quart of milk is equivalent in food value to 2½ pounds of bananas, 1 pint of oysters, 2 pounds and 3 ounces of potatoes, 12½ ounces of steak, 3 pounds of codfish, 9½ ounces of ham, 2 pounds of chicken, or 8 eggs, according to the computation of the Guernsey Cattle Club.

At the request of the commanding officer, Drs. D. M. Campbell and L. A. Merillat, addressed the School of Meat Inspection for veterinary officers at Chicago on December 6, on matters appertaining to the welfare and development of the veterinary corps.

Outbreak of Rabies at Rockwell City, Iowa

Four persons are under treatment for hydrophobia and a few unaccounted for rabid dogs are at liberty playing havoc among other dogs and livestock generally in that region. "As long as the outbreak was confined to animals no attempt was made to control the spread, but since the epidemic is threatening human life," says the local press, "the public officials are determined to wipe it out as soon as possible."

Dr. H. B. Treman, our estimable Iowa colleague, has instituted a vigorous campaign against the march of the epidemic among the several dogs successively bitten that promises an early control of the trouble.

The United States civil service examination for an assistant biologist qualified in bacteriology and parasitology will be held at an early date. The receipt of applications close Feb. 7, 1922.

The annual meeting of the Maine Veterinary Medical Association was held at the Augusta House, Augusta, Maine, Wednesday, January 11, 1922.

Papers were read by Drs. A. L. Murch, M. E. Maddocks, A. J. Neal and R. P. Stanhope.

R. P. Laird, Secretary.

Dr. Geo. B. Jobson, a veterinarian of the old school, died at the age of 81 at Franklin, Pa., Dec. 16, 1921. He was born in Scotland, and emigrated to this country while still young. He was once elected mayor of Franklin, Pa., and also held the position of inspector for the state live stock sanitary board of Pennsylvania. "Although a non-graduate, he was a very useful man and a well informed veterinarian" writes one of his colleagues. Two of his sons are graduates of the Ontario Veterinary College, one of whom died shortly after graduation from an injury received in college athletics. The other son took a post graduate degree in medicine and taught for several terms at the Columbian University, Washington, D. C., and is now an eye and ear specialist at Franklin, Pa.

Dr. John O. Eyman, a non-graduate of McKeesport, Pa., died last month. It is the granting of the license of Dr. Eyman that caused so much trouble in Pennsylvania two years ago and that resulted in the resignations of Drs. Hoskins and McNeal from the Board of Veterinary Exminers.

The wife of Dr. N. Rectenwald, Cullom, Pa., died during the last month after an illness of two years. Mrs. Rectenwald was a wonderful woman, mother of fifteen children. She reared five daughters and seven sons who are all college men. Two are graduate druggists, one an attorney and four are physicians, one of whom took a veterinary degree at the University of Pennsylvania before finishing his medical course. She left thirty-three grandchildren.

Dr. X. G. May of Fort Smith, Ark., is the city milk and health inspector of that city, besides taking an active interest against the reinfestation of tick free districts in that section of the state.

The protein of milk should not only be judged by its quantity but particularly by its superior value. Milk contains enough water-soluable vitamine to meet the full requirement of the growing infant.

A Fatality From Mallein

Redmond and Charcot of France have reported a fatal termination from the use of mallein for diagnostic purposes, in a recent issue of Rucueil de Medicine Veterinarie. The horse had received an intrapalpebral injection which was followed with a subcutaneous injection for the thermic test. This was followed by the typical triple reaction: thermic, general and local. These manifestations instead of receding as usual began after the fifth day to accentuate, and death followed one week after the injection.

The autopsy revealed a vast subcutaneous edema of the whole anterior half of the body due to an extension of the local reaction. There were only two tubercule of the lungs and a few foci of bronchopneumonia to indicate glanders, in all quite insufficient to account for the death, which according to the authors, was due to the anaphylactic phenomena.

Prince Edward Island Association Meets

A meeting of the Prince Edward Island Veterinary Association was held at Charlottetown, P. E. I., on December 14, 1921.

The president, Dr. J. A. Allen, was in the chair. Vice President Dr. I. E. Croken and other officers were in their appointed places. The minutes of the last meeting were read by the secretary, Dr. W. G. Church, and after being fully discussed were finally adopted.

Dr. J. A. Allen read a paper on Dominion Registration and Co-operation of Provincial Veterinary Associations, which he had also read at the meeting of Veterinary Surgeons, held in Ottawa on Nov. 21st.

Dr. Pethick read a paper on the Accredited Herd Plan now being put into force in the Provinces of Canada by the Dominion government, how it was carried on and the benefits to be derived.

A number of other very important papers were read; one by Dr. I. E. Croken on Contageous Diseases in Live Stock on the Island and another by Dr. W. G. Church on Veterinary Hygiene.

ASSOCIATION MEETINGS

ASSOCIATION	PLACE	DATE	SECRETARY
Alabama Vet. Med. Assn.	**Auburn, Ala.**	March, 1922	**C. A. Cary, Auburn, Ala.**
American Vet. Med. Assn.	**St. Louis, Mo.**		**N. S. Mayo, Ravenswood, Chicago.**
California State V. M. A.	Davis, Cal.	Jan. 1-7, 1922	Jos. M. Arburma, Hanford, Calif.
Central Mich. Vet. Society	Jackson, Mich.	Jan. 6, 1922	W. N. Armstrong, Concord, Mich.
Chicago Vet. Soc.	Chicago	2nd Tuesday of each month	**J. B. Jaffray, Chicago, Ill.**
Conestoga Vet. Club	Lancaster, Pa.	2nd Thursday each month	H. B. Brady
Illinois S. V. M. Assn.	E. St. Louis	August, 1922	**D. M. Campbell, Chicago, Ill.**
Indiana V. M. Assn.	Indianapolis	Jan. 10, 11, 12, 1922	J. L. Axby, Lawrenceburg, Ind.
Iowa Vet. Assn.	DesMoines	January 17, 18, 19, 1922	H. D. Bergman, Ames, Iowa
Kansas V. M. Assn.	Ottawa, Kans.	January 4 and 5, 1922	I. J. Pierson, Lawrence, Kans.
Kentucky Vet. Med. Assn.	Owensboro, Ky.	Feb. 8-9, 1922	Chas. W. Fisher, Danville, Ky.
Massachusetts V. A.	Boston, Mass.	4th Wednesday of month	H. W. Pierce, West Medford, Mass.
Minnesota S. V. M. A.	St. Paul	January 12-13, 1922	C. P. Fitch, Univ. Farm, St. Paul
Mississippi S. V. M. Assn.	Gulfport, Miss.	January 23, 24, 1922	J. A. Barger, Jackson, Miss.
Missouri Valley Vet. Assn.	Kansas City	Jan. 31, Feb. 1-2, 1922	R. F. Bourne, Ft. Collins, Colo.
Montana Vet. Med. Assn.	Billings	July, 1922	**H. Marsh, Helena**
Natl. Assn. of B. A. I.	Meet with A.V.M.A	Sept. 5-9, 1922	S. J. Walkley, Milwaukee, Wis.
New York S. V. M. Soc.	Syracuse	1922	C. E. Hayden, Ithaca, N. Y.
North Carolina S. V. M. A.	Asheville	June, 1922	J. P. Spoon, Burlington, N. C.
North Dakota V. M. Assn.	Fargo	July, 1922	R. S. Amadon, Agri. Coll., N. Dak.
Northern Tier Vet. Club	Williamsport, Pa.	Feb. 9, 1922	E. B. Mayer, Canton, Pa.
Ohio St. Vet. Med. Assn.	**Columbus, Ohio**	February 2-3, 1922	F. J. Lambert, Columbus, Ohio.
Pa. State Vet. Med. Assn.	Harrisburg, Pa.	January 24, 25, 1922	R. M. Staley, P. O. Box 1404, Philadelphia, Pa.
Philadelphia Vet. Club	Philadelphia	4th Tuesday of month	C. S. Rockwell, 5128 Chestnut, Phila.
San Joaquin Valley V. M. A.	Davis, Calif.	January 1-7, 1922	H. B. Winteringham, Fresno, Calif.
Southern Cal. V. M. Assn.	Los Angeles	3rd Wednesday of month	J. P. Bushong, Los Angeles.
Southeastern States V. M. A.	Nashville, Tenn.	February 6, 7, 1922	J. I. Handley, Atlanta, Ga.
Southeastern Mich. V. M. A.	Detroit, Mich.	2nd Wednesday, January, April, July, October	H. P. Hoskins, Box 471, Detroit, Mich.
Utah S. V. M. Assn.	Salt Lake City	October, each year	E. A. Bundy, Ogden
V. M. Assn. of N. Y. City	338 E. 26th St.	1st Wednesday of month	J. E. Crawford, Far Rockaway
Va. S. V. M. Assn.	Richmond	January 13-14, 1922	W. G. Chrisman, Blacksburg, Va.
Wash. State Col. V. M. A.	Wash. State Coll.	2nd & 4th Tuesday of month	S. Worley, College Sta.
Western Pa. Vet. Club	Pittsburgh	3rd Tuesday of month	Fred Weitzel, Pittsburgh
Wisconsin V. M. Assn.	Madison, Wis.	Jan. 18, 19, 20, 1922	O. E. Eliason, Madison
York Co. V. M. Soc.	York, Pa.	1st Tuesday March, June,	E. S. Bausticker, York, Pa.

The business of the year was brought to a close by the election of officers for the coming year as follows: President, Dr. J. A. Allen; Vice President, Dr. I. E. Croken; Secretary-Treasurer, Dr. W. G. Church; Registrar, Dr. J. T. Cosgrove; Dr. Cannon, Dr. Thompson, and The Hon. G. E. Hugs, were elected to the council.

The resolutions passed at the meeting of the representatives of the Dominion Association, held in Ottawa on the 21st day of November, 1921, were approved.—W. G. Church, Sec.-Treas.

During the period of lactation the elimination of inorganic substances in all mammals is greater than the consumption. The deficiency is felt most in cows because of the long period of lactation and the extreme capacity of the mammary secretion. These facts, always suspected, have been proven by a series of experiments by Forbes of the Ohio Experiment Station in 1920, who compared the inorganic content of the excretions of cows with that of the feed consumer.

NEBRASKA VETERINARY MEDICAL ASSOCIATION BRINGS CREDIT TO THE PROFESSION

Despite the fact that few conventions are of greater public significance than a meeting of veterinarians convened to discuss problems that intimately concern every man, woman and child of the nation, it has always been strikingly curious how little publicity they receive outside of the profession itself.

It is therefore a pleasure to reproduce verbatim, an editorial from the Daily Drovers Journal-Stockman of South Omaha, Nebraska, inspired by the meeting of the Nebraska Veterinarians in that city.

The Veterinarians

Omaha is host this week to representatives of the veterinary profession. On the program which begins today and concludes Thursday, are listed a number of men who have won national recognition in investigational work of live stock diseases. Some of the terms which these men will use may be strange to the average layman, for they will speak of bacterins, of toxins, of immunization, of botulism, of antisepsis and use other expressions which are limited to their profession.

But these men, meeting here for discussion and for consultation, are representatives of a profession which has at heart the investigation and control of diseases of live stock in this country. When one realizes that there are over two hundred millions of horses, cattle, sheep and hogs on the farms of this country having a valuation of more than six and one-half billions of dollars, the importance of the work of these men is more forcibly brought home.

Although plans for veterinary education in this country were first begun about 1855, veterinary medicine has made more rapid strides since 1884 than in any previous period of its history.

It was a veterinarian who discovered a serum for hog cholera, a discovery whose benefits affect every farmer who raises hogs. It was the investigation of veterinarians which revealed the fact of the cattle tick in the south being a carrier of the dreaded Texas fever and led the way to cleaning up infested areas. Veterinarians stand guard at our ports and inspect cattle for import and export and carry on the task of inspection in interstate live stock shipments. The work of the veterinarians has been forcibly brought home in every state where through the use of tuberculin thousands of herds are being tested in the campaign of tuberculosis eradication and the accrediting of herds.

The importance of the veterinarian in relation to diseases of the human family may be better realized when we consider that rabies, glanders, anthrax, trichinosis, tuberculosis and other diseases may be communicated from animals to man through meat products. Indeed, we often fail to take into consideration the fact that every piece of meat we purchase on the market has received the careful inspection of men who are experts in recognizing diseased tissues in any part of the animal body.

In their sessions this week the veterinarians are to discuss a number of disease problems which are of vital concern to every stockman. Through round table discussions, clinics and addresses the results of investigation will receive wide dissemination. The importance of such gatherings cannot be overestimated.

KANSAS VETERINARIANS MEET

The eighteenth annual meeting of the Kansas Veterinary Medical Association was held at Ottawa, January 4th and 5th with headquarters at the North American Hotel.

President C. B. Kern of Beloit presided and the association was warmly welcomed in addresses by Hon. Walter Pleasant, mayor of Ottawa; F. F. Fockele, president of the Chamber of Commerce, and Thos. W. Morgan, head of the local Kiwanis Club. Dr. J. R. Zecha, who is mayor of his city, Ellinwood, Kansas, responded nicely to these welcome addresses. Dr. Kern then gave the president's annual message which was one of the best given in years, full of interest and good advice for the practitioner and profession in general.

Dr. R. R. Dykstra, Dean of the Division of Veterinary Medicine, Kansas State Agricultural College, was present and announced the Short Course in Animal Tuberculosis which is to be given at the college, February 7th, 8th, 9th and 10th, and urged a full attendance by the veterinarians of the state.

The able and interesting program which followed was characterized by the fact that it was presented almost entirely by the practicing veterinarian of the state.

Pertinent Resolutions Passed

Through its resolution committee the association went on record condemning the practice of certain commercial Veterinary supply houses having as controlling members veterinarians that are now members of recognized veterinary societies who are advertising biological and other veterinary remedies to the laity with direction for their application. Such practice being considered as violation of the code of ethics of the association.

The association also went on record favoring the enactment of stringent laws favoring the testing of all cattle from which milk is consumed in Kansas.

At the election which followed Dr. J. H. Hanna, Burlington, Kansas, was elected as president; Dr. I. J. Pierson, re-elected as secretary-treasurer; Dr. R. C. Foulk, Holton, Kansas, and Dr. A. A. Cuthbertson, Sterling, Kansas, as members of the Executive Committ. It was unamimously voted to hold the next meeting at the capital city, Topeka, January, 1923.—I. J. Pierson, Secretary-Treasurer.

Dr. R. P. Raffensperger, Bureau of Animal Industry, Chicago, addressed the Corn Growers' and Stockmen's convention held at the

Department of Agriculture, University of Illinois, January 16th to 17th, 1922.

Conference of Veterinarians at Pennsylvania

A conference of veterinarians will be held at the University of Pennsylvania Veterinary School on February 28th and March 1st. The present status of vaccines for abortion disease of bovines, diagnosis of pregnancy and treatment of sterility in the cow, hog cholera and other infectious diseases of swine, treatment of udder diseases, and other topics relating to cattle and swine will be discussed by veterinarians who are especially qualified to speak on on these subjects. All veterinarians are invited. No fees will be charged. A copy of the program will be mailed on request.

The next meeting of the Alabama Veterinary Medical Association will be held at Auburn, Alabama, February 23, 24 and 25, 1922. The examination for state and federal accredited herd testing will be held on February 25. C. A. Cary, Secretary.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine.

FOR SALE

FOR SALE—Anti-Fis-Treat is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. L. G. Wimsett, D. V. M., Winfield, Kan.

FOR SALE—Pammel's "Manual of Poisonous Plants," at $7.50 plus postage and insurance. Publisher has found a hundred copies of this work. Address orders to: Prof. L. H. Pammel, Iowa State College, Ames, Iowa.

FOR SALE—Airdale puppies; males at $15.00, females at $10.00. Fancy breeding and dogs with size. F. M. Long, D.V.M., Doland, S. Dak.

FOR SALE—Established veterinary practice in central-western Illinois, in one of the best livestock counties of the state. Located on the main line of the Wabash Railroad from Chicago to Kansas City. No competition. Nearest veterinarian nine miles. Great hog and cattle country; thriving town in a busy livestock section; fine school and the very best class of people; I.O.O.F. and Masonic fraternities and many other social orders. Have good Ford roadster and complete stock of drugs and will sell so that the purchaser can earn enough in a short time to pay the bill. Practice has run more than $3,000.00 annually for the past four years. Would like to sell by March 1st, as I have other business opportunities. Terms if desired to reliable party. This is an unusual opportunity to step into an established practice with a very small investment. Address No. 665, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

FOR SALE—Delta practice, mostly hogs and mules. Runs $600 to $700 monthly. Most of the work by appointment; some contract work. Good roads, schools, church, no competition; no blue sky. Real proposition for a live wire. Address No. 660, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

FOR SALE—Well established city practice in Northwestern Ohio. Population 150,000, growing rapidly. Including new fixtures, drugs, instruments, Ford and lease. Will sell right if sold at once. Address No. 662, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

FOR SALE—Dog hospital, boarding kennel, sales department, etc. Located in the west for twenty-six years. Receipts exceed $400.00 a month. Modern home, real estate and equipment cost $8000.00. Will sacrifice at cost of equipment. Legitimate reason for selling. Will take $3000 cash and balance on time. Address No. 663, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

POSITIONS, LOCATIONS, ETC.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

WILL PAY CASH for a good practice in a good farming or dairy community in any of the Northwestern States or California. State full particulars. Address No. 658, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

GRADUATE VETERINARIAN WANTS POSITION—Any kind of position considered; prefer serum or manufacturing house or teaching; graduate State College of Washington. Reasonable salary. Post-graduate work in Veterinary lines. Also do laboratory work, etc. Experienced in government work, inspection, etc. Address No. 2944, care of F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

GRADUATE VETERINARIAN WANTS POSITION—Nine years' experience in city and country practice in Central States. Clean habits, industrious, good appearance, has car and instruments. Address No. 661, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

WANTED—To buy general practice or partnership in Ohio. Property also, if satisfactory. Address No. 664, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

MISCELLANEOUS

"QUICK COLLECTIONS" — Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

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BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

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Your goods will cost you less than to buy them and be worth more.

Our Illustrated catalog gives a lot of information. It tells how to take off and care for hides; how and when we pay the freight both ways; about **our safe dyeing process** on cow and horse hide, calf and other skins; about the fur goods and game trophies we sell, taxidermy, etc.

Our Fashion Book, which heretofore has been a separate affair, has been incorporated in and made a part of our regular catalogue. **It has Fashion plates** of muffs, neckwear and other fine fur garments; also remodeling and repairing, together with prices and estimates. In ordering catalog, write name and address plain.

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MEETING OF THE NEW YORK CITY VETERINARY ASSOCIATION

Municipal Milk Control

The first subject on the literary program was a paper by Dr. J. Payne Lowe of Passaic, N. J., on State and Municipal Milk Control. Dr. Lowe first pointed out the many advantages of milk as a food product and stated that at the present price of milk, it is the cheapest of all the valuable foods. Aside from this, it is really an essential food during the growing period. It is particularly difficult to produce milk in a proper manner. Unfortunately, a very small percentage of the public understand and realize fully the value of milk and the difficulties surrounding its production. The speaker then reviewed the many advantages that the veterinarian has in aiding and encouraging the production of clean, wholesome milk by his training. All veterinarians should make an effort to aid the dairyman in the many problems that enter into milk production, such as breeding, housing, sanitation, etc.

Uniform Codes Desirable

Ordinances at present differ too much, and this adds to the hardships of the producer without serving any real good. Inspectors are apt to pay too little attention to the human elements entering into the production of milk. A person, innately neat and clean, is a big factor in making clean milk.

Inspectors Not Without Fault

Veterinarians, likewise, take their judgment sometimes too seriously in the examining of the lungs of cattle. Experience teaches the sensible veterinarian that to make a diagnosis of tuberculosis by auscultating and percussing the lungs, that he needs to have a pretty plain case to make a reasonably positive diagnosis of tuberculosis.

We would like to inject a word or two in here to substantiate Dr. Lowe's reasoning on this subject. It is positively painful to note how many more tuberculous cattle some whipper-snapper of an inspector can pick out by physical examination than some of us can who have had a quarter of a century of constant experience.

Osteomalacia in a Dog

A communication was read from Dr. Robert Dickson of Little Silver, N. J., describing a dog where the supermaxillary bones were so swollen as to give the face a bulging appearance. The swelling extending back into the articulation, preventing the dog from shutting his mouth. The doctor diagnosed the case as osteoporosis and destroyed the dog. He also sent with his communication some photographs.

Dr. Dickson's case of Osteoporosis

Dr. DeVine reported the U. S. Live Stock Sanitary Association meeting and the Illinois State Veterinary Medical Association meeting. Several new members were admitted to membership.

McKeller Gets Life Sentence

The election of officers was then taken up. The result was that the same faithful men who served the association last year will serve it again this year. Dr. Robert McKeller, as president, and Dr. J. E. Crawford, as secretary. It begins to look like McKeller is doomed for life. He served nine years as secretary and this is his third year as president. He and Crawford, as their names would indicate, are good safe business men. There is no danger of the treasury getting low while they are the watch dogs. In fact, they are accumulat-

ing so much money that it is beginning to worry some of the members how they are to spend it.

McKinney Also a Victim

But, notwithstanding this splendid situation, they insisted upon the re-election of another one of their ilk, Dr. W. J. McKinney. He has served as vice-president of the association so long that the memory of man runneth not to the contrary.

We need have no concern for this association for at least another year.—J. F. DeVine.

It is becoming evident that more attention must be given to the inorganic constituents of the cow ration and those of all animals suckling their young. The state of enfeeblement caused by unbalanced ration may prove to be a much greater cause of disease than pathogenic bacteria.

The analysis of the protein content of commercial feeds is deceptive, because it is only the available protein that counts, and this can only be determined by feeding experience. In other words, the man who feeds is a better judge than the chemist.

Country bankers and merchants always retire at night with more or less fear of safe-blowing burglars. A few dollars spent for a barking fox terrier will make their establishments almost one hundred per cent secure.

Although corn silage is not regarded as a marketable product, it is sometimes sold to neighbors and to new tenants. A fair way to make an approximate valuation is to place the price at one-third the market price of good hay. With hay at $15.00 a ton, ensilage should sell at $5.00.

The veterinary hygienist in prescribing the regemin for calves invariably omits the importance of an early access to roughage and fresh water. Tufts of selected hay and a bucket of fresh water in the calf stall no later than the eighth day should not be omitted in the ration. Roughage develops the alimentary canal, promotes early rumination and forestalls disease by strengthening the digestive tract which when weak is a veritable sponge for infections.

MARCH
1922

VETERINARY MEDICINE

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VOL. XVII **No. 3**

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Veterinary Medicine

Vol. XVII MARCH, 1922 Number 3

Editorial

Selling to Laymen

Despite the fact that since time out of mind it has been the custom to stock up with home remedies for emergency use in both the house and stable, the medical and veterinary professions have continued to exist. They have existed and progressed in spite of the fact these remedies are always tried out before calling for skilled help. The patient that has not been tampered with is the exception and not the rule when the professional man arrives, and not infrequently much of his work is that of undoing the damage the home remedies have done.

The lame horse is often found blistered from shoulder to foot with violent liniments; the colic case is generally doped with harmful drugs, the cow with dystocia is found to have been dragged upon by neighbors who "understand such things" and nearly all small animals and many colts have been castrated by the handy gelder of the neighborhood.

These are our misfortunes just as the thousand of home remedies and the different cults and "pathies" are the misfortunes of the faithful family physician. It seems to be a thing to endure and it will be pitiful for us if in the future we shall be less able to endure it than we have in the past.

It is a thing to be deplored but just how the thousands of such remedies advertised in the public press can be kept from overflowing the limits we would like to impose is another matter.

The fault will probably never be corrected entirely but it can and will be kept in control by higher professional attainments and conduct, by a broader and more practical understanding of animal diseases than it will ever be possible for even the best educated layman to possess. If we fail in this it will be through our own faults. But, we shall not fail because today we are thinking, we are reading books and journals and we are studying the problems of animal diseases with a seriousness that will breed true appreciation of our achievements.

We are suffering somewhat from the sins of our fathers who twenty years ago were too well satisfied with the feeble knowledge they obtained at college and devoted too little time to adding to their accomplishments, contenting themselves with railing about every little obstacle that crossed their paths without doing anything constructive to remove them.

We stand upon the solid fact that the buying of nostrums (and all medicines are nostrums in the hands of the non-medical man) does not pay the purchaser. In the end it proves a losing game.

The Point Illustrated

The following is a verbatim report of an incident of recent occurrence showing how dangerous medicinal agents are in the hands of the untrained:

That the balling gun is a dangerous instrument in inexperienced hands was recently proved near Marceline, Missouri.

T. P. Grubbs and "Ted" Herbert found their hogs out of condition and decided they were suffering from worms.

They accordingly purchased a balling gun and sufficient anthelmintic from the local veterinarian, and proceeded to dose the two herds.

The hogs began dying in a few hours and at the end of five days one herd of seventy-five had dropped to fifteen while out of nineteen in the other only five were left.

Dr. H. W. Haley was called and found the throats of the hogs greatly distended, caused by lodgement of the capsules of medicine in the "blind pouches" (sacculi laryngis).

It was evident the "gun" had been thrust in too low, thus not allowing the epiglotis to function as a bar to the passage to the larynx.

Later examination of the carcasses revealed the presence, in some hogs, of swine plague, so a wrong diagnosis on the part of the owners was the original cause of the trouble.

It will be ever thus. It will be ever thus, that our vocation is spared a sentence to oblivion.

A Real Danger, However, Looms in the Horizon

Strange how silent the self-named benefactors of the veterinary practitioner are about a real menace—the menace of training farmers in the technic of hog cholera immunization; the menace of decorating them with a license; the menace of scattering a death-dealing virus to the four winds.

The stock of medicine in the farm stable is not likely to harm the veterinary practitioner today any more than it has harmed him in the past, but the Iowa idea is something else. It is a dragon, a real, devouring, fire-spitting dragon that does not only fill up the medicine chest, but fills it up with agents for diseases that even the most learned veterinarian knows too little about; and at the same time it purports to give a course in manual training on a mammoth scale by veterinarians all in a short space of two or three days.

Here is something that makes the medicine evil sink into the background as a triviality. Here is an evil that establishes the nasty precedent of taking everything out of the veterinarian's hands that anyone else can do, even where it can not be done with safety. It is a penny-wise-and-pound-foolish policy, that is staggering to contemplate, not only because it robs the practitioner of the work he has a right to expect after giving his life to the study of a legally instituted profession. No state, no nation has the moral right to lure its sons into a vocation and then sacrifice them at such an altar. And then, there is by right not even common sense in turning over the handling of such scourges as swine diseases to unqualified persons and to do so at a time the veterinary profession might reasonably expect some appreciation for its achievements in discovering the means of controlling these very diseases.

In countries where animal husbandry is in a primitive state of development and where every man's farm is virtually a quarantine station, veterinarians might conceivably be done without, but improved and intensive animal husbandry presupposes frequent interchange of breeding stock, and the inevitable spread of disease with occasional flare-ups of devastating epizootics that can be handled, controlled or eradicated only by scientifically trained men. Admitting then, and it must be admitted that the veterinary profession is essential to the sort of live stock industry that we hope to see in the near future, and even to the industry in its present state of development, it becomes of greatest moment to have an adequate, well trained veterinary personnel, but this it can not have by taking away its means of sustenance by laws such as are being enforced in Iowa.

THE DEBT WE OWE OUR LABORATORY COLLEAGUES

Now that the veterinary associations have met and the annual fund of new-born knowledge is open to the gaze of the practitioners many of whom have traveled many miles to quench their thirst for first-hand information we may now settle down to review the year's achievements of our research colleagues and select therefrom the useful facts that may be taken into the field and put into practical operation.

The practitioner of today has a precious advantage over his predecessors who never expected more from a veterinary meeting than that of exchanging simple ideas with his practicing confreres. Now he has a reassurance annually that the veterinary profession has a big army of research workers, toiling week after week and month after month with the knotty problems posed by animal diseases, and that this army reports the year's progress in great detail at the different meetings with a willingness that shows earnestness of purpose and for which the practitioner has reason to be exceedingly grateful.

There is something very reassuring and confidence-inspiring in the privilege of listening to the past-masters of each specialty who come forward to give publicity to their work and opinions in open meeting where discussions bring out every phase of the subject those in attendance may want to know.

Reflecting over the events of the past two months we arrive at the decision that the veterinarian of today is a fortunate man in the matter of improving his accomplishments from the workers who condescend to bring their messages directly to those who attend the meetings of our local associations.

The State Water Survey at the University of Illinois has analyzed 44,404 samples of water between 1895 and 1920, including thousands of samples from wells, nearly half of which were found to be "non-potable."

THE ACCREDITED HERD WORK

As the live stock interests stand solidly behind the accredited herd program mapped out by the department of agriculture the veterinary profession should likewise give it solid support. The narrow sighted policy of fighting a cause because it sometimes works isolated hardship will lead to no good end and will brand the whole veterinary profession as harboring selfish motives to the detriment of the nation's biggest industry. We can not afford to block progress in this work because there is no good and sufficient reason for doing so and we can not afford to risk a high rank for the sake of a few dollars in sight.

There are good reasons to believe that very soon, depending upon the worthiness of our personnel, practically all of the technical work of this enterprise will fall to the practitioner and that this work, during good behavior, will place us upon a higher plane than we have ever before occupied.

It is hoped, however, that the work will not drag along too long to the disadvantage of breeders on the waiting list, and thus bring discredit to the whole project. Insufficient appropriation for carrying on the work and especially for the payment of indemnities is the most threatening obstacle in view, since it incurs delay that will sooner or later be misconstrued by the small breeder who is denied, through no fault of his own, the selling advantage of the accredited herd certificate which his larger competitor does not hesitate to advertise.

It is hoped also that the method of starting the work will be reversed. It would seem only just for the federal authorities to insist that an applicant furnish some evidence that he has made a reasonable effort to clean house and not expect the national government to begin with a neglected, disease-ridden herd. The work in our opinion should begin with the state inspection and end with federal approval of the work when accomplished.

The fact that the original policy to limit this work to the larger pure-bred herds on the grounds that it is from these herds the disease is disseminated to the four winds by frequent sales and wide distribution of the animals, has been changed to include anyone who may apply, seems to be a good reason to alter the original modus operandi so as to prevent the hardships likely to be inflicted to both the veterinarian and the small owner once the enterprise has developed into larger proportions.

There is no evidence in sight that the veterinarian's welfare is not being considered nor that the profession in the several states will not be consulted as the work progresses.

The whole veterinary profession should work as a unit in the matter of eradicating tuberculosis from domestic animals, just as others are as deeply interested in banishing it from human beings. But when we depart from our vested duty so far as to pass resolutions "demanding stringent tuberculin test regulations" we assume an unprofessional and unethical attitude toward the public health service and often arouse a well-deserved hostility from the live stock interests. The veterinarian's duty in this connection is that of attending to the health of animals. The matter of public health belongs to another service.

Although there seems to be no shortage of veterinarians in this country just now, there is nevertheless a shortage of veterinary students that will be felt as soon as the demand for veterinarians increases in civil life and in the departmental services of the government. It may be felt sooner if some economically inclined legislators should begin to compute the value of a veterinarian to the state as compared with the cost of his education. Larger classes is the best protection against harmful legislation and diminished appropriations, but these can hardly be expected if the only available veterinary schools remain so effectually hidden in the shadows of the state universities, and no systematic effort is made to give some national publicity to them.

The state associations everywhere were well attended this year. Each one with very few exceptions showed a higher registration than at the meetings of former years. The reason for this is obvious. It is in the home state that the veterinarian must seek influences helpful to his cause. It is here he obtains the helpful legislation and fights the bad. Associations covering a greater territory than a state may have done some good by their moral influence, but the practitioner now knows that the material help they have promised has not been forthcoming.

Editor's Personal Page

The only way to avoid making mistakes is to do nothing.

The most important part of a man's education is that which is self-acquired by reading, by observation, and by practice.

A diploma is a good matriculation certificate to the school of experience in which the owner pays the tuition and furnishes the laboratory.

Williams believes we are making entirely too much ado about abortion disease and paying too little attention to the other menaces of breeding animals.

We need a word in veterinary medicine that means the same as "gynecology" in human medicine. VETERINARY MEDICINE will give a prize to the subscriber who will coin an appropriate word for this purpose, one that promises general adoption.

A veterinarian speaking before an association recently, made a hit with those who want to make the world believe that hazards lurk in cow's milk, but he failed to say anything about live stock sanitation. He furthermore made a mighty poor impression on those of his audience who drink three pints of milk a day, spread the butter thick on their bread and then eat cheese sandwiches between meals to show they harbor no grudge against the foster mother of our kiddies and the savior of our profession—the cow.

Veterinary associations would expel unceremoniously from their membership any private practitioner who would organize classes of laymen and instruct them in the technique of hog-cholera immunization and it would boycott the establishment that would supply the virus and serum. The same associations are strangely lenient with the members who do the very same thing at so much per month from the state treasury. Just how the source of the remuneration removes the odium is not plain.

Cultivate a close acquaintance with your clients and don't forget the kiddies.

Madame Nature is the witch of therapeutics; her wisdom is only questioned when her methods and motives are misunderstood.

Do you know that "chenopodium" is pronounced "ken-o-pó-dium" and "multiparous" should be "mul-tip'-a-rous"?

Just what will we say when the live stock owner and the general public begin to charge us openly with having selfish motives in meddling with public health matters in advance of the medical profession?

The practitioner who does not studiously cultivate friendly relations with employees as well as owners charged with the care of sick animals is always a failure. Leave a sweet taste in the mouths of everyone about if you want to prevent damaging gabble after you leave.

Everywhere throughout the corn belt veterinarians are up in arms about legislation threatening to regulate swine vaccination and to take it all out of the practitioner's hands. Such a movement is without parallel in veterinary history and if found to be born of our own imperfections the cause must be removed at the source.

On account of numerous requests for details about the method of securing horses in the recumbent position with sixty-five feet of half-inch rope mentioned in the January issue we are featuring the department of general practice with a complete description, the illustration of which was made possible through the courtesy of Dean Craig of the Indiana Veterinary College, who during the recent post-graduate course interested himself in having the method photographed for the benefit of the class and supplied the illustrations for the readers of VETERINARY MEDICINE, with his compliments.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

The New Method of Casting Horses

THE word "new" is used in this caption with some reserve since the method has been known to a few veterinarians for years and has been the one of universal choice in some districts for a long time. It was first brought to our attention at the 1915 session of the annual summer school for veterinarians given in the University of Saskatchewan where it was used as the routine measure of securing horses for the surgical operations demonstrated at the clinic.

It would seem more appropriate to call the system "A perfect method of securing horses with a simple appliance." After years of experience in casting horses for surgical operations under all manner of conditions with nearly all of the various methods, the facility with which the animals were cast, effectually secured and positioned for a large number of very different major and minor operations was so impressing and perfect that the thought of using any other method thereafter never entered our minds.

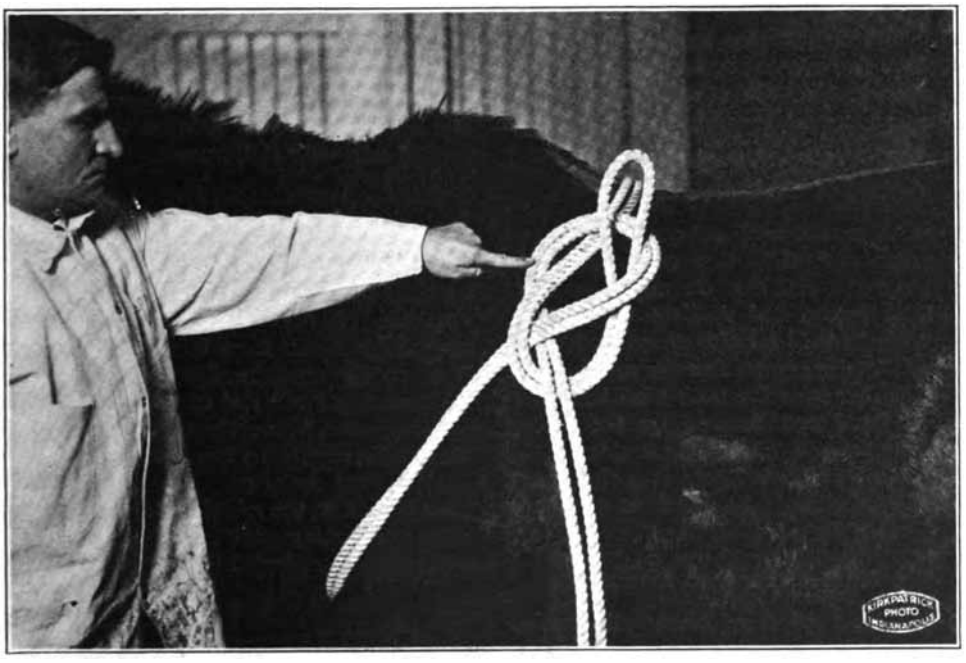

Fig. 1.—Details of the Knot. (Courtesy of Indiana Veterinary College.)

No Danger from Rope Burns

As will be seen it is an "all rope" method, and while some may raise the objection that hopples to the hind feet are omitted, on account of possible rope burns to the flexion surface of the pastern, we have never found this accident to occur in a single instance and in fact it will not occur unless in releasing the ropes the horse is permitted to swing the leg violently backward as it is being untied and while the hitch still encircles the pastern. By

taking the precaution to lift all the hitches off of the foot while it is still flexed and thus let the leg flop loose, free of rope, there will be no danger whatever of doing any damage to the most delicate skin.

Hopples Not Advisable

Paradoxical as it may seem, hopples are not only not required but they are prejudicial to the best results, because it is after all the "all rope" feature that makes the method so reliable against slipping of the rope as the horse is being tied. That is, a rope running through the D-ring of a hopple, slips too easily when the horse struggles against the effort to flex up the legs while a hitch around the pastern will hold fast, at any position to which the leg is pulled, without the use of much force.

Then again hopples are just two more useless articles to cart about, besides lending to some extent to the shifting of the ropes after they are tied and while the operation is being performed.

Absolute Fixity a Feature

The one thing above all others to be desired in a casting method is that of fixity. It is always very essential that the apparatus does not shift or loosen and that the subject will remain securely held in spite of contortions or struggles. In this connection the new method stands high, for once the both hind legs have been well fixed and secured by the simple hitches and figure-8 arrangement around the hocks the subject is helpless and the ropes, figuratively speaking, are glued to the body until intentionally released.

The Kind of Rope to Procure

Sixty-five feet of rope meets all requirements except for large horses weighing over fifteen hundred pounds. In these large animals as much as eighty feet may be needed to assure enough rope to complete the tying process according to specifications. The matter of length is of special importance because a monstrous animal requires good tying to avert such accidents as pushing the hind legs forward toward the elbows or wiggling loose entirely.

A good plan is to provide two forty foot lengths where there is a great variety in the size of animals to be handled. Two 40-foot lariat ropes meet every requirement where animals to be cast vary from small colts to large stallions, and then besides these two ropes will always be found handy in handling all kinds of domestic animals from the newborn calf to the herd bull. They will be found especially useful in securing cows and other bovines by Ferguson's stretching method.

The rope should be a half inch in diameter. The nine-sixteenth and five-eighths sizes are really larger than necessary although these sizes will answer. The larger sizes are too cumbersome, and should only be used when improvised from the rope supply on the farm and smaller sizes of the proper length are not available.

There is, however, no excuse for avoiding an operation anywhere a rope of the required length can be procured regardless of its diameter. The small size is recommended because such rope is light, convenient and strong enough to meet all requirements. It will not be broken by even the most powerful stallion because the secured subject is immobilized into a state of helplessness.

Application of the Rope

If a one-piece rope is used center it, that is, double it so that the ends are even. Take the centered end in the left hand, stand at the near-side of the horse and pass the rope around the breast from left to right and bring it up on the opposite side behind the withers with enough loose end to tie the knot, shown in figure one. When the knot is tied, the rope should lie snugly to the chest passing under the pectoral muscles. The position of the knot should be the middle of the dorsal region, although for inguinal operations it may with advantage be adjusted farther back.

The Knot

The knot, although sometimes called a bowline is in reality a simple harness hitch that will not jam, but any non-jamming knot will answer. A common bow knot will not do because the tension from the horse's struggles will tighten it too much and cause trouble when it must subsequently be untied. The harness hitch is recommended because it has the non-jamming feature of a bowline knot and besides lies flat over the dorsal spines and does not torture the subject as most any other knot would. The knot is an important feature of the method.

The knot is made by first making a loop or hitch about six inches in diameter in the proper place in the rope to make it lie at the

right place on the back when completed. In making this loop the part of the ropes going forward around the chest is outside and the dangling end inside. The loop is held between the thumb and fingers against the horse's body over the costal surface. The next step is to pass the centered end that has been brought around the chest through this loop from within outward and then bring it downward under the dangling end and upward through the loop, again from within outward but this time it must pass through the loop behind the part passed through first. Figure one, carefully studied, will show these steps.

ward and snubbed around a post or fixed object eight to ten feet or more in front of the horse. (Where there are only two persons to do the casting this end can be tied to the post.) The other or left-side end is given into the hands of one or two strong men. One, however, is ample in handling the ordinary horse or colt.

Better to control the head the man assigned there should slip the lead shank into the mouth to serve as a bit and is instructed to keep the horse's body on a straight line with the rope running forward. It is the crucial thing to keep the horse from swerving away from this

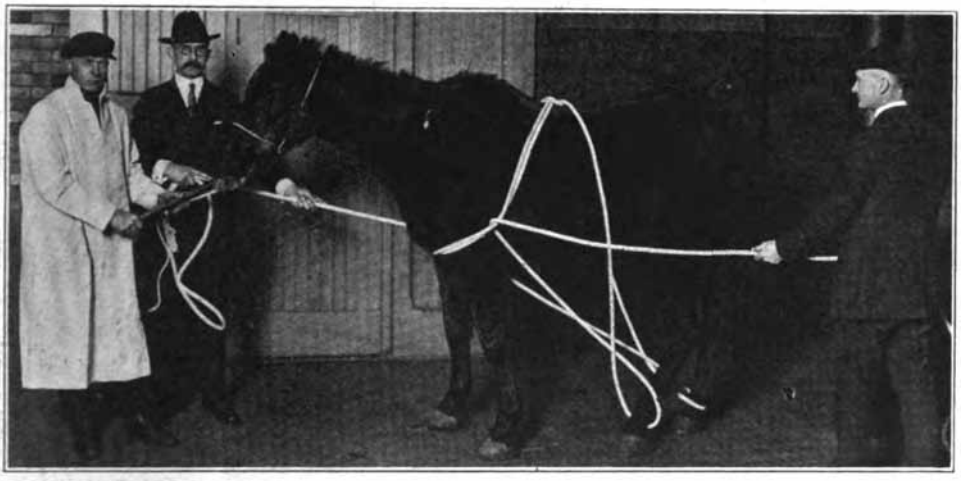

Fig. 2.—Details of Rope Properly Adjusted and Manned.

Once the knot is made to the point shown in this figure it is drawn together loosely (never tightly) and then placed on the middle of back, flatwise.

The Leg Hitches

Each rope is now passed backward around the hind pasterns as shown in figure two. It is best to pass them around the leg from within outward and then upward to the loop encircling the chest. It is advisable to avoid a twist in front of the leg where the ropes should simply pass over each other.

Casting Supremely Simply and Effective

In casting by this method the scene does not shift from one end of the lot to the other; the subject can be laid down on a spot the size of a horse blanket, if certain simple regulations are followed.

The rope on the right side is brought forline, for if it does swerve outward the backing movement will not draw the right hind leg from the ground as it should do to assure an easy successful fall.

When everything is ready the man at the head pushes the horse backward slowly to lift the hind leg and the man at the left side rope running backward pulls hard on the rope to lift the left one. The horse sits easily on its haunches and then topples over on either one side or the other according to the skill displayed by the man at the head. If he displays skill in backing the horse so that the two hind legs come forward evenly and then draws the head toward him the horse will always fall to the left.

We do not advise tying up a fore leg because the fall is much more violent when this is done, and it is much more difficult to back a horse whose weight is all on one leg.

Securing the Hind Legs

The uppermost leg is then drawn into complete flexion, hitched with a single hitch around the foot and then fixed by passing as many figure-8 loops from hock to pastern as may be required to consume the redundant rope, leaving two or three feet as a handy rope to turn the animal over to the other side or in inguinal operations to spread the legs apart.

For a simple castration on a colt it is not necessary to roll the subject over nor to pay much attention to the fore legs, but where there is a more serious operation to perform both of these precautionary measures should not be omitted.

To let the horse up untie the fore legs, unwrap the figure-8 hitches on the hocks and untie the knot at the back. With this the horse jumps to its feet and is free from everything.

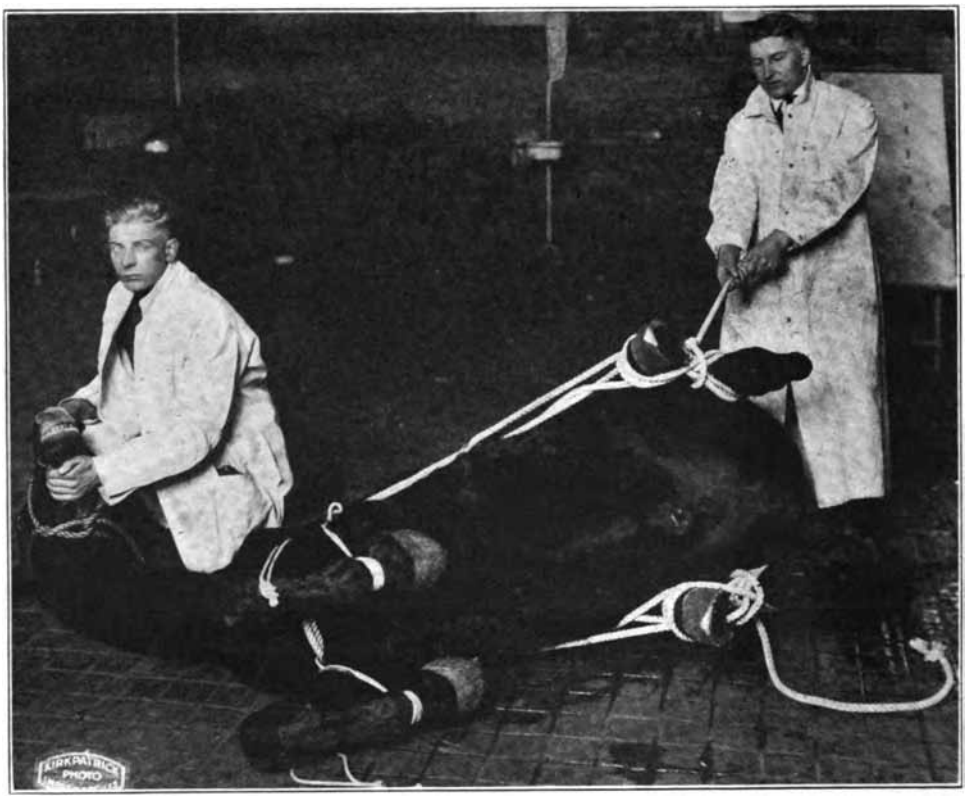

Fig. 3.—Details of Horse Secured.

The next step is to secure the fore leg. This may be done with a strap or rope preferably the latter. For this purpose we prefer a piece of sash cord five to six feet long when doubled, one for each leg. This is double-half hitched around the pastern so that the centered end protrudes a foot from the hitch. The other end is then passed under the large ropes running around the chest, looped into the other end, drawn taut and tied with a bow knot that can be easily released.

The subject is then rolled over and the same performance carried out on the other side as regards both the hind and fore legs.

The method is particularly splendid for ridgling castration because it parts the hind legs so well and for operations on the withers because there are no ropes crossing near to that region to obstruct it. In the latter group of operations the fore legs being so well folded under the body the horse can be rolled right on its breast and thus bring the withers into a handy position and height for effective work.

Veterinarians who have not tried this method are requested to withhold judgment until they have. Once tried a few times all other contraptions are scrapped.

Prevention of Stock-Yards Pneumonia (Hemorrhagic Septicemia) of Cattle

By H. Preston Hoskins, V. M. D., Biological and Medical Research Laboratories, Parke, Davis & Co., Detroit

OUR present agricultural system embraces the raising of annual crops of grains and grasses, and the feeding of a large part of these crops to meat-producing animals, principally cattle, sheep and swine. In many parts of the country the balance between the crops of grains and grasses for feeding purposes on one hand, and meat-producing animals on the other, is difficult to maintain. The result is that many farmers find themselves short of animals to consume the crops they have raised, and for the sake of maintaining the fertility of their land, go into the large live-stock markets to buy feeders, to consume their surplus crops, these same animals having been shipped to market from farms where feed was short.

Feeding Beef Cattle Looked Sound

This practice is looked upon as sound, is extensively engaged in, particularly in the Central Western states, and is usually a profitable one. However, it is not without its disadvantages, and among these is to be considered the chance of loss by disease. Sickness incident to and shortly following the shipment of animals, especially in carload lots, from one part of the country to another, has been a factor to reckon with ever since the custom became common. For a long time the affection of the equine genus, known as "shipping fever," was the most serious of these diseases, and losses involving thousands of dollars each year were suffered by those engaged in buying, selling and shipping horses.

But Disease Intervened

Later it came to be recognized that we had a "shipping fever" of cattle, and within the past ten years this malady became so serious that the attention of live stock sanitary authorities was directed to it. It was found that a large percentage of the young cattle that passed through certain large public stock-yards subsequently developed a disease which came to be designated "stock-yards pneumonia," rather a descriptive than a scientific appelation. Young cattle, of the "stocker" and "feeder" class, purchased in the stock-yards and shipped to various points, after a fairly constant incubation period, would come down with a pneumonia which proved to be fatal in many cases.

Proved to be Hemorrhagic Septicemia

Bacteriological investigations soon indicated that "stock-yards pneumonia" of calves was in reality a pulmonary or pectoral form of hemorrhagic septicemia. At least, in many typical cases, it was possible to isolate the hemorrhagic septicemia organism, Bacterium bovisepticum, from the pneumonic lungs of calves dead of the disease. In this connection it should be remembered that hemorrhagic septicemia organisms have been incriminated by more than one investigator studying the etiology of equine "shipping fever." An almost identical condition is frequently seen in sheep[1] that have been shipped from one locality to another for feeding purposes. The similarity of the symptoms, coupled with the history and the finding of Bacterium ovisepticum in these cases, point to the close connection of the three conditions. These bacteriological findings prompted Kinsley[2] to use hemorrhagic septicemia bacterins for the prevention of the disease in calves. Later the present writer[3] used antihemorrhagic septicemia serum as a curative. Reports indicating that vaccination had reduced losses in one locality led to the employment of biologicals in other localities, with the result that the vaccination of young cattle shipped from certain large stock-yards soon became a routine procedure.

The Minnesota Regulations

During the year 1918-1919, the Minnesota State Live Stock Sanitary Board passed a regulation providing that all cattle shipped from the South St. Paul market to Minnesota farms must be injected with hemorrhagic septicemia bacterin. This was furnished by the Division of Veterinary Medicine, of the University of Minnesota, and in the annual report for that year Fitch[4] states that 56,815 doses of bacterin (killed organisms) were prepared and distributed.

Vaccination with Living Organisms

Vaccines (living organisms) have also been employed to prevent hemorrhagic septicemia, but no reliable reports are available, showing

the results of attempts to prevent outbreaks of the pulmonary form of the disease (stock-yards pneumonia). Hardenberg and Boerner[5], [6], [7], of the Pennsylvania State Live Stock Sanitary Board, have given us several reports that point to the value of living organisms as vaccines for the prevention of other forms of hemorrhagic septicemia in cattle. It hardly seems necessary to more than mention the classical experiments of Mohler and Eichhorn[8], on the buffalo herd, in Yellowstone Park. These vaccinations really mark the beginning of biological therapy against hemorrhagic septicemia in this country. There are other reports on the use of "vaccines," but the word vaccine has been so loosely used, to describe both dead and living organism products, that no reference is made, in this report, to the use of any product, the exact nature of which is not definitely known.

In one of his splendid reports on hemorrhagic septicemia in sheep, Newsom[9] rather strongly intimates that prophylactic vaccination against hemorrhagic septicemia with killed organism products (bacterins) has not given entirely satisfactory results, and he suggests that better results could probably be obtained with products containing living organisms.

The Controversy Anent Immunization

It is not the intention of the present writer to enter into any discussion of the theories underlying vaccination against hemorrhagic septicemia, nor is it his intention to review or comment upon the several disputed points in the recent controversy which has already taken up so much space. That hemorrhagic septicemia is a disease in which immunity and susceptibility play a large part is not debatable when we consider the evidence at hand. Neither can it be questioned that it is possible to establish immunity against this infection. It is rather a question as to the best means or method available, with which to do this.

Experience the Best Teacher

It is desired in this report to present the results of the practical use of hemorrhagic septicemia bacterin and vaccine, with a view to keeping down losses from hemorrhagic septicemia. The use of the product was undertaken rather as a practical problem than as a scientific experiment. This statement is made to explain why no controls (as such) appear in the records. Anyone who has had experience in work of this kind realizes what a difficult matter it is to gain the consent of an owner to allow one-half or one-fourth of a carload of calves to go untreated. It is the usual experience that the owner takes the view that if the product—bacterin, vaccine or serum—is any good at all, he wants all animals treated. A study of the results obtained, eighteen months after vaccination had been adopted as a routine, reveals much that is encouraging from the standpoint of prophylactic measures.

Concrete Cases Cited

A concern owing a large farm in Southeastern Michigan was in the habit of purchasing calves in carload lots and having them shipped to this farm. In the fall of 1919, a bad outbreak of stock-yards pneumonia developed in a carload of calves about twelve days after they had left the Detroit stock-yards. A few days later the disease broke out in another carload, from the same source, but shipped a week later. The disease was typical in every respect, and responded nicely to the application of anti-hemorrhagic septicemia serum and hemorrhagic septicemia bacterin as curative agents. There were 95 calves in the two lots. Of these there were 84 which showed some symptoms during the outbreak. About half of these were quite sick, two deaths occurring. The other half had mild attacks and made uneventful recoveries.

VIABILITY OF A HORSE WITHOUT WATER

I would like your opinion on how long a horse will live without water on poor pasture in warm weather.

There will be a lawsuit here over some horses that died in a pasture, and I am on the case. If you can spare enough time to answer this and tell me how long you think they will live, I shall greatly appreciate it.—J. M. F., Sask.

REPLY: Horses living under the condition you describe could survive without water for three weeks or more. We have a case on record of a horse that was incarcerated under a straw stack for three weeks and removed alive.

It is a general impression that animals survive without food and water for about ten days. Where there is access to food, especially grass, they should live a month or more, depending upon the amount of moisture the food contains.

The duration of life of fasting mammals varies a great deal with the circumstances:

the vigor of the subject and the tyranny to which they are exposed, such as hot weather, cold weather, storms, and disease they might contract from the enfeeblement. To this might be added mental agony, from worry. The trapped coal miner does not live long, while persons on "hunger strike" live on for weeks.

JOHNE'S DISEASE

THE chronic contagious enteritis of ruminants manifested by emaciation and sooner or later by diarrhea that we call Johne's disease or paratuberculous enteritis is common enough where the bovine population is congested to warrant more mention than it has recently received in current veterinary literature. The fact that the diagnosis can not be confirmed except in the laboratory and in only about 60 per cent of the suspects is probably the reason there are so few case reports appearing in veterinary journals. Laboratory examinations of scraping or fragments from the rectal mucous membrane or of the feces may confirm the diagnosis in a little over half of the cases and sometimes, though by no means always, the tuberculin test with a tuberculin made with avian tubercule bacilli may help, but in the rest of the cases the practitioner must depend upon clinical symptoms, or when the situation warrants the patient must be isolated or destroyed as a menace.

The fact that there is quite as characteristic a syndrome in Johne's disease as in other diseases in general diagnosed from clinical symptoms, is a good and sufficient reason to act therefrom and not always wait for a laboratory confirmation which should be entirely unnecessary when postmortem evidence can be added to the clinical symptoms.

Symptoms

Emaciation gradual in character and a chronic mushy diarrhea that soils the pudendum, tail and thighs and that progresses week after week and even month after month, is never to be regarded as a trivial matter and when more than one animal falls sick with the same conditions, procrastination would be little less than criminal, even though all laboratory tests were negative.

The feces are fetid and bubbly, the mucous membranes anemic, and the secretion of milk usually suspended. The appetite usually remains fair and there is the usual excess of thirst that occurs in dysentaries and diarrheas. In rare cases where the diarrhea is lacking the clinical picture is more confusing and the diagnosis must be based upon the gradual emaciation and anemia which would be quite sufficient in establishments where others are presenting the full syndrome.

Lesions

The postmortem findings are characteristic, consisting of a strikingly thickened and folded condition of the mucous membranes of the small intestines, sometimes only in large patches but usually throughout their whole extent. The free edges of the folds are reddish from ecchymotic hemorrhages. The lymph glands corresponding to the affected areas are enlarged, grayish and soft but never caseous. The whole carcass shows pronounced anemia. True tuberculous lesions are accounted for by the fact the two diseases often co-exist. When autopsies are made the laboratory can usually confirm the diagnosis because here there is access to tissues ladened with the causative organism—the acid fast bacillus found by Johne and Frothingham in 1895 and later by Moussu, McFadyean and others.

Treatment and Prophylaxis

Chronic diarrhea cases should always be isolated from the herd and when others fall sick with the same symptom a thorough cleaning up and disinfection should not be delayed. Emaciating animals are placed with those quarantined and the pasture abandoned for a time. In order to find suspects before they menace healthy stock a test with avian tuberculin will help somewhat.

The affected animals must be kept clean and their excrement properly disposed of to prevent spread of the disease therefrom.

The best internal treatment is that recommended by McFadyean, consisting of:

Sulphate of Iron	5 oz.
Dilute Sulphuric Acid	5 oz.
Water	6 oz.

The mixture is given in ounce doses once a day diluted with a pint of water and is continued for six weeks or longer.

One confirmed case and many unconfirmed though characteristic cases have been cured by this treatment. The practitioner must, however, take into consideration the economic value of the treatment where affected animals can not be isolated with an absolute safety to others.

Purely Practical

"Chloroform and ether by inhalation is dangerous anesthesia for swine."—Craig.

Ferguson condemns the use of antiseptics to the peritoneum of any of the exposed viscera in performing cesarean section in sows.

"For nymphomania in cows, pituitin and adrenalin given hypodermically every two or three days give exceptionally good results."—Williams.

Rupture of the attachment of the prepuce to the body of the penis resulting in a serious balanitis may be caused in bulls by the force of the coital thrust.

Inflammation of the sheath of steers is sometimes caused by inability to extrude the penis because of an undeveloped prepucial fold.

"I do not think a practitioner should wait until he can make a positive diagnosis of hog cholera before recommending vaccination."—Niles.

The average annual pig yield per sow is less than eight mature pigs, according to Kinsley's observation; and the average annual calf yield per cow is less than one half a calf, according to Williams.

"When a cow has been stretched out for a long operation the feet sometimes 'fall asleep' and cause a difficulty in rising that might be misjudged as a more serious trouble."—Ferguson.

The stomach tube for cows should be a half inch in diameter, twelve feet long, and as hard as a garden hose.

Kinsley's Sow Tonic

Syrup of malt extract, 2½ pounds; sugar, ½ pound; hops, 1 ounce; yeast, 2½ cakes; water, 5 gallons. Let the mixture ferment for five days, cork tight in pint bottles and administer as directed.

It is not always a simple matter to extrude the penis of bulls for inspection.

The stomach tube in cows is passed by way of the mouth which is held open with a speculum. The expert can pass it without a speculum, however, by placing the hand palm upward in the interdental space as a guide.

"There is very little danger of abortion or any other harm from casting pregnant cows for operations even up to the last ten days."—Ferguson.

"If you experience trouble in removing the placenta after cesarean section in sows, let it alone. It will extrude through the vagina."—Sherrick.

It is impractical to pass the stomach tube through the nose in cows for the reason that the caliber would have to be of such small dimensions that it would not serve the purpose.

The secret of success in the now classic roaring operation will not be found in variations from Williams' original technique, but in scrupulous cleanliness and in the removal of just enough mucous membrane to accomplish the purpose and no more.

When a calf is born in a cold place and needs an addition to its natural raiment, take a burlap sack, cut about one-third across the bottom end. This will make a hole for the head. Just a few inches along the opposite end of the base, cut two holes for the front feet. Pull the bag over the calf's head and you have a blanket that cannot come off and just fits. If one is not sufficient pull another one over it.—Hills.

When you have to treat one of those ugly wounds such as occur in the shoulder and gluteal regions of large animals, and which always become cess pools for infection, take one of your uterine capsules (boric acid with chlorozene or iodoform) and work it into the wound as far as possible. Furnish drainage at the bottom. When you examine the wound twenty-four hours later, you will wish you had thought of this before.—Hills.

Cattle Practice

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Forage Poisoning in Cattle

By Henry Frederick, Watertown, N. Y.

THE fact that several inquiries have appeared in VETERINARY MEDICINE in the last few months concerning forage poisoning in cattle prompts me to give others the benefit of my experience with this disease. Since locating here two years ago, I have seen more cases of poisoning in cattle than in all the previous eight years I spent in practice. This is one proof that it is more prevalent in some sections than others. If you are located in a section where this disease is not very scarce, you will not question its existence. On the other hand, no matter how long one may have been in practice in a locality where it is infrequent, one may diagnose these unusual cases as something else and doubt whether there is such a disease in cattle.

My first cases were diagnosed as forage poisoning, as I did not quite understand the cause. However, after reading the reports of this disease in the University of Illinois bulletins, I felt certain that botulism was the proper term. As I have treated some 40 or 50 cases in the past two years, I have mentioned the fact to other practitioners and was somewhat surprised when some seemed to question my diagnosis. Therefore, I had Dr. De Vine to consult with me and he will tell you that there is no question about my diagnosis.

The symptoms have been described in the bulletins mentioned above, and so, little need be said here concerning them. Diagnosis is not difficult after you have once seen a case. The first one may puzzle you some. However, observe it closely, and if it dies a post-mortem will show it to be a cerebro-spinal-meningitis with temperature close to normal and practically no post-mortem lesions. Different cases will vary some but visionary disturbances and incoördination of movements are especially to be looked for. They may be up or down, depending upon how soon one is called. Inquiry into the matter of food and chance of having had access to poison of any kind will help to get right to the cause.

Nearly always one will find nothing wrong with the food. It is likely to be some portion of hay or feed that has been contaminated and one or a few of the herd have received that particular portion. There may be more somewhere else or there may not. One could not tell the affected portion by the naked eye anyway. Or, the supply may have been obtained from a certain small spot in the pasture. I have seen cases develop where they had no access to anything but the pasture. It has been my experience that most of these cases develop on lowland pasture or from hay gathered from such pasture. Of course, there are exceptions. The idea, however, that ensilage is most often the source of supply, is, in my opinion, erroneous.

Only one or a few may be affected, in a herd. The most I have seen at one time was 16 in a herd of 24.

As to treatment there is little satisfaction unless one is called early. Purgation is the first essential, and after that, intestinal antiseptics and stimulants. Potassium iodid is useful in some cases. If they have not ingested very much toxin they will recover with little treatment, but if they get sufficient they will die in spite of any treatment. It is well to keep some cases fast in the yoke to prevent injuring themselves.

Case Records

Case record on a heifer owned by J. A., Uniontown, N. Y.: The subject was a yearling Holstein heifer, examined for the first time on December 5th. The owner had noticed her queer actions during the preceding twenty-four hours. She would veer to one side behind when walking and showed lameness of one hind leg; then, the same symptoms would appear in a front leg. Becoming gradually worse, she finally fell and was moved to a box

stall with difficulty. The owner has administered a dose of salts, thinking she would improve, but finding her worse on the following morning, called me. The feed had consisted of hay, ensilage and a commercial cow feed.

Symptoms

Temperature, 101 degrees Fahrenheit, pulse 60, and respirations 20. The head was turned to the flank and the eyes nearly closed, as in milk fever. There was no appetite, but she drank some water when the head was held in a pail.

In attempting to get her up, she lifted her body a few inches from the floor and then fell flat on her side. She was rolled back to the sternal position. There was some peristalsis and one bowel movement during the night.

Treatment

To accelerate the action of the salts, I passed the stomach tube and pumped in two pails of warm water containing sulpho-carbolates and nux vomica. A grain of eserine was given hypodermically, and sulpho-carbolates and nux vomica were left with instructions to give a dose every four hours. Instructions were also given to encourage drinking. She remained about the same during the following night, defecating once after another one-half pound dose of salts. At midnight she had stretched out on her side again, and had to be braced up. This was repeated several times, but on my arrival in the morning she was resting comfortably and held the head straight. The eyes were sleepy and the temperature, pulse and respirations normal. She had drunk but little, but had had a large bowel movement.

I passed the stomach tube again and pumped in a large pail of water. The sulpho-carbolates were discontinued, but the nux vomica was prescribed to be given three times a day.

Not being a very valuable animal she was not visited during the next two days, but at this time I found her lying on the sternum and nibbling at a bran mash from a feed box placed before her. Watched, she would be seen to nibble a while and then doze off, only to wake up and begin nibbling again. The temperature, pulse, respirations and bowel movements were normal and she would drink a little when the nose was held in the drinking pail. The nux vomica was continued and a teaspoonful of potassium iodid was prescribed, to be administered twice a day. Two days later she seemed so hopeless than I advised the owner to destroy her. This was done, however, at a time that prevented me from holding an autopsy. In other cases quite similar, I had never found any lesions worth mentioning.

Other Cases.—The other cases I have diagnosed as forage poisoning have differed somewhat from the above described one, but in every case the predominating symptom has been that of auto-intoxication. During the first stage the patients have a frightened appearance and impaired sight, and some lean forward in the stanchion. Some do not go down, and others that do, may not show the typical milk fever posture. Some walk in a circle, and ptyalism is a frequent symptom. When called early and especially when I have succeeded in evacuating the bowels quickly, I have had several cases recover, even among those that have been unable to rise. Potassium iodid has given me the best results.

Comment by Dr. DeVine: I am enclosing some correspondence from Dr. Harry Frederick of Westtown, N. Y., which I am quite sure will interest many readers because

1st—The question of forage poisoning in cattle has not had much publicity.

2nd—Dr. Frederick is a reliable, careful and conscientious veterinarian, and his report of the increase of botulism in his locality is free from any exaggerations or imagination.

3rd—It is evident that forage poisoning is more prevalent at the present time in Dr. Frederick's locality than in any other section that I know of here in the East. We have seen botulism in cattle now and then to my knowledge for the past twenty years, but such cases have always been very scattered and at no time did it take on the character of an enzootic. I think it safe to say that Dr. Frederick has seen from five to ten times the number of cases that we are seeing in our immediate locality. If this continues, it would indicate that that particular locality has something to do with the propagating of the infection.

The country around Westtown is rolling, and has many valleys or what are termed swales. It is spoken of by us as our "anthrax district," since I have not known a year to pass without outbreaks of anthrax in that locality. I believe it has been carried from farm to farm, and for miles and miles, by streams that are swollen by heavy rainfalls and that flood much of the low lands.

This brings up the question, has the character of the soil, or rather the lay of the land, anything to do with harboring the organism of botulism and infecting the fodder? Time will probably answer this question, because we

are having no more forage poisoning in our immediate locality than we ever had.

Dr. Frederick has been in his locality only about two years, and as he is located about twenty miles from our office, the stockmen in that section depended much upon services from our office before he settled there. But the distance was such that we were not called nearly as frequently to treat the ordinary animal as Dr. Frederick naturally would be. So it is possible that botulism has been more prevalent for years, in that district, than has been recognized.

Forage poisoning in cattle does not differ materially from botulism in horses, excepting that paralysis of the throat is not as early and so constant a symptom as it is in the case of the horse. However, the nervous symptoms preceding paralysis are pronounced more frequently in the cow than in the horse.

After receiving this communication from Dr. Frederick, he had another case and was good enough to ask me to come and see it. It seemed to be typical of the cases that have been observed in our locality. He gives a very good description of the cases in his communication to me.

Hutyra and Marek (page 684 and 685, Vol. 2) describes botulism under the name of meningo-encephalomyelitis, stating that Meyers discovered an enzootic in 1867 and Schmidt in 1888. Wilson and Brimhall found an enzootic in Minnesota, North America. They do not give the year but enter into the discussion of the probable cause of it and the organisms isolated.

Friedberger and Frohner (Vol. 2, Page 111) describes it under cerebro-spinal meningitis—spasm of the neck. They say it was first observed in America in 1850. They precede the discussion of the infection in the ox by their theories as to the various causes, etc. But their description of the symptoms in the ox is very true of the cases that occur in our locality.

It may be well to add that Dr. Frederick tells me that he has used great quantities of botulinis antitoxin on infected animals without one bit of results. This is an important thing to know since it may save others the expense of trying it.

Post-Partum Paralysis

IN THE previous chapter we discussed ante-partum paralysis and stated that it is rather a common ailment in the cow and seen occasionally in the sheep and goat. This statement applies equally to post-partum paralysis, excepting that its occurrence in the mare should be mentioned.

I recently saw a large, well-nourished, standard-bred mare so afflicted. She gave birth during the night without aid to a pair of well-developed twins. In the morning she could not rise, and being very uneasy she was put in slings. However, she refused to be comforted, notwithstanding that an improvised stock was built around her to support her. She continued to fight the slings until it was thought best to let her down again. Drugs failed to give her any permanent relief and she continued to thrash about until she died that evening. It seems probable that some nerve injury pained her beyond endurance.

Cause

The cause of post-partum paralysis is, in an overwhelming majority of cases, due to an injury of the gluteal or obturator nerves by pressure of the fetus while passing through the pelvic cavity. However, as with ante-partum paralysis, there are many incidental causes that must receive most careful consideration in order to make a reasonably definite diagnosis on which to base a reasonably safe prognosis.

If post-partum paralysis follows or is a continuance of ante-partum paralysis, a most careful examination should be immediately made to eliminate, if possible, fractures and dislocations. If these may be eliminated the behavior of the paralysis will be a guidance to the veterinarian after he has observed the case for a few days.

Symptoms

It is well to keep in mind that the symptoms are very much the same as those of ante-partum paralysis so far as the general health of the animal is concerned unless there is a fracture with displacement, possibly involving the sensory nerves which will make the animal very restless and uncomfortable. Ordinarily, however, the cases exhibit no apparent distress and lie in a fairly normal position.

After the veterinarian has eliminated frac-

tures, he should concentrate on the character of the paralysis, and note whether one or both of the hind extremities are cold, and also, whether there is loss of sensation on one or both sides, and if so, how far up. The possibility of fractures or displacements, and pressure on the spinal cord in the lumbar region should never be ignored. Injuries to the gluteal nerves are more apt to affect both legs than an injury to the obturator nerve. Likewise, an injury to a gluteal nerve, if severe, is apt to make the animal more helpless behind than an injury confined to the obturator nerve. An injury to the obturator nerve affects particularly the adductor muscles, and more often one leg than both, and we often can observe the difference by the location or rather by the nerves injured, in the attempt to treat or relieve an animal. For instance, in the case of a severe injury to the gluteal nerve, the animal may not be able to even turn herself over for several days, and if this condition persists too long, the prognosis may become very grave. This handicaps the cow more than the mare for two reasons. One is that the cow gets up hind end first, and, if she has no power of her hind extremities, she is practically helpless. Another is that it is almost impossible to satisfactorily sling a cow that is paralyzed behind on account of so much of the weight of the abdominal viscera being carried by the hind legs.

In the case of the obturator muscles of one or both of the hind extremities being affected, it was an old custom among our forefathers, and not a bad one, to gather or tie the hind legs together above the hock. Oftentimes with very little support a cow can be made to stand in this position at intervals long enough to rest or change her from a lying position, and thus hasten recovery. The word "stand" is used advisedly; she may stand but cannot walk.

Treatment

The treatment is plain and simple. Cases complicated with dislocation or fracture are usually best destroyed. Uncomplicated cases require comfortable surroundings, stall to be roomy and well bedded, feed only light nourishing food, avoiding any forage that may cause bloating, frequent turning, same as recommended for the treatment of ante-partum paralysis, and such aid in regaining the feet as the case indicates. In the case of the cow, if she is able to drag herself about a little, and particularly if she is able to rise on her hind legs, sufficient to turn herself, it is a very good indication, and if she does not flounce about too much her recovery will be reasonably prompt. Ordinarily, it is best not to attempt to sling or help her up in any way, at least not too soon. If, however, it is noticed that for several days she can get up about so high but not quite able to raise herself, it is then well to help her either by raising on the tail or using a sling made of a rope, passing it under each leg and crossing on the back, padding with bags where it burrows into the flesh. A still better way if help is available is to pass a plank under the abdomen and have a man lift on each end and another lift on the tail. A cow that can help herself even a little can be raised this way. If it is determined that the animal can stand fairly well with some assistance, it is by all means best to support her by planks or two-by-fours on each side, and in front and behind her. Have them well padded and fit close enough so as to hold her up in a comfortable position. Care should be taken that the side pieces are not placed too high but partly under the abdomen, so to speak. This method is far superior to any sling that has yet been devised so far as I know.

Medication

Internal medication is probably as well trusted to nux vomica as any or all other drugs. Brushing and rubbing the hips and legs from the lumbar region back with rough brushes and stimulating liniments help to satisfy the owner and may have some value.

Occurrence

Post-partum paralysis is always intimately associated with the act of parturition and is usually a continuation of parturient decubitus, but occasionally an animal may be able to rise partially or wholly after parturition is completed, and shortly develop evidence of pain or paralysis resulting in a paraplegia.

When a female is born it has as many ova in its ovaries as it will ever have. Many of them never reach maturity.

The bulbo-urethral glands, commonly known as Cowper's glands, were not described in bulls by the old anatomists. Being covered over with a layer of fibrous tissue they were probably overlooked.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Pig Loss Excessive

THE extent of the loss of pigs is not realized or at least efforts to prevent this exorbitant waste have been very feeble. This heavy toll is apparently assumed by the swine producer as one of the occurrences in the routine of his business. Most veterinarians are aware of the extent of the losses but they have given little consideration to preventive measures.

Extent of Losses

There is probably less than one-half of the pigs farrowed that live until they are marketed or matured for breeding purposes.

Various estimates have been made of the percentage of the losses of pigs but it is difficult to obtain even an approximate estimate because of the absence of breeding records. It is true that some pure-bred breeders maintain books but they are frequently incomplete and thus fail to reveal the information necessary in making such records.

The grade breeder rarely has any breeding records. The assessors' records are not accurate but they are probably the most reliable information available as they give the approximate number of brood sows and the number of swine produced annually from which can be deducted the average number of pigs produced by each sow, and this, compared with the average number of pigs that are farrowed, would give the average percentage of pigs that are grown to maturity.

Using the assessors' records of one of the average swine producing states, it is found that 600,000 brood sows are maintained and that approximately 4,700,000 pigs are produced annually. In this particular state practically all sows produce two litters each year. Each sow in this state would therefore produce a fraction less than eight pigs on an average each year and less than four pigs on an average each litter. The average number of pigs farrowed is estimated at from eight to ten, or an average of nine. Therefore, the estimated loss of pigs each year is in excess of 50%. The loss on some farms where rather complete records are available vary from 20% to 70% each year. The relative percentage of loss is large on those farms where a large number of sows are bred and small on those farms where only a few sows are bred.

Economic Importance

About the same number of swine could be produced by one-half of the present number of brood sows if their breeding efficiency were approximately perfect and the pig loss after farrowing were reduced to a minimum. The reduction of 50% of the brood sows would, other things equal, make swine production much more profitable.

Cause of Pig Losses

There are at least three important factors that should be considered in relation to this problem, namely: breeding, feeding, sanitation and treatment.

Sex hygiene has been given little consideration in swine breeding. The selection, development and care of the breeding animals has been neglected, the breeder apparently preferring to keep twice the number of brood sows necessary to produce the required number of pigs, rather than devoting some time and energy to increasing the breeding efficiency.

Some of the breeding problems that should be given consideration by the veterinarian in order that he can properly advise the breeder are: proper age of gilts and young boars for mating, number of years that sows and boars can be successfully and economically used for breeding, proper care and feeding of the sow and boar during the breeding season, the frequency of service of a boar to insure the maximum of strong vigorous pigs, isolation of sows showing evidence of genital infection. Failing to observe and enforce the problems of breeding accounts in a large measure for those pigs that are dead at the time of farrowing, the weak pigs that have little vitality

and die soon after farrowing, the runts and at least some of the losses due to abortion.

Proper Diet Not to be Overlooked

The feeding of breeding swine is of very great importance. A boar can not be expected to give the maximum service or even a reliable service on a starvation diet or a fattening diet. The sows' diet during the gestation period should contain tissue and bone building elements in sufficient quantity to insure proper development of the fetuses. The diet provided for the sow after farrowing should be of such a character that it would stimulate milk production. Improper diet of the sow is responsible for a considerable percent of the pigs that die within ten days after farrowing. Deficiency diseases such as goitre and rickets can be largely prevented by providing the proper diet for the sow during the period of gestation, and the time that she is suckling her young.

Bad Sanitation Disastrous

Sanitary surroundings are now recognized by some of the more progressive breeders as a necessary requirement in successful swine breeding. The provision of clean, dry farrowing houses and pens will materially diminish the loss of young pigs. Insanitary surroundings contribute largely to polyarthritis, pyaemic arthritis, stomatitis, ascaridosis, infectious rhinitis and necrobacillosis.

The Veterinarian's Duty

The veterinarian is the guardian of the live stock industry. The effort exerted by the veterinarian in increasing the production of swine or other animals by the advice that he can give to the breeder will be fully compensated for by the extra service required in caring for the increased number of animals in his community. Efficiency in breeding is an important economic problem that should receive the co-operation of the veterinarians and the breeders. Veterinary service in the future will not only have to do with the prevention and treatment of disease, but also with the problems of efficiency in breeding, and advice upon feeding and general farm sanitation.

The veterinary practitioner is the logical man to inaugurate a campaign, "Save the Pigs."

Rickets has been quite prevalent during the last year and can be prevented by providing a proper diet for the sow. In some instances, it will be found necessary to prescribe special mineral tonics for the pigs after they are weaned. In those cases that develop rickets the use of cod liver oil and calcium phosphate has been recommended.

Scour is probably primarily the result of a diminished resistance, due to improper diet of the sow and secondarily of infection. Generally speaking, the treatment of little pigs affected with scour is of little value but the condition is quite generally prevented by regulating the sow's diet.

Ascaridosis in small pigs is rather common. It is due to the invasion of the larval ascarids into the lung. The treatment of pigs affected with pulmonary ascaridosis has not been successful. The condition can be prevented by providing clean quarters for farrowing and worming out and dipping the sow just prior to the time that she is placed in the farrowing house or pen.

Bull nose or infectious rhinitis usually occurs in pigs that are kept in insanitary quarters. The condition is manifested in the early stages by persistent sneezing and a tendeney to root on the part of the infected pig. During the very early stages the condition may be successfully relieved by inhalation, medication or douching the nasal chambers with mild antiseptics.

Stomatitis in pigs is usually due to infection succeeding a trauma. This condition is sometimes secondary to injuries due to fighting each other. Proper placing of the pigs for nursing at the time of farrowing at least partially overcomes this condition by preventing fighting for a place on the part of the pigs. Knocking out the so-called black teeth predisposes to this condition and does not prevent it. Stomatitis can be successfully treated in the early stages by curetting away the necrotic tissue and the application of some reliable antiseptic.

Other ailments of pigs occur and most of them are preventable. VETERINARY MEDICINE will be pleased to answer inquiries relative to swine management, breeding and feeding problems and the prevention and treatment of swine diseases.

The way to reduce the harmful effect of "breaks" is to re-treat the herd with serum just as soon as possible.

Providing hog cholera can not be positively excluded the death of two or three hogs should be regarded as good and sufficient reason to vaccinate the whole herd without delay.

"DO SOWS HAVE PARTURIENT PARESIS?"

During the short course in the Indiana Veterinary College, a condition in sows similar to parturient paresis in cows was reported by two or three different veterinarians in attendance. The writer has been unable to find previous reports of this condition in the available literature.

This condition occurred in sows that had recently farrowed. The affected animals were usually constipated; there was suppression of milk; consciousness was retained. The first evidence of this condition was the finding of the sow in a comatose condition. Breed, age and general condition were not factors in the occurrence of the disease.

The affected animals usually recovered as a result of elimination by emptying the posterior bowel with enemas and rapid purgation by the administration, through a stomach tube, of a large dose of Glauber's salts. In other cases, prompt recovery followed the inflation of the udder with oxygen.

This condition as described is essentially distinct from puerperal eclampsia. Tonic or clonic muscular spasms with or without convulsions characterize eclampsia. In the condition above described there are no muscular tremors or indications of convulsions.

Veterinary Medicine will be glad to have other similar case reports of this condition, also suggestions as to whether or not the condition is parturient paresis.

DANCING PIGS?

We have recently had some inquiries of a peculiar condition that occurs in small suckling pigs and make this report with the hope of obtaining more definite information, in order that our readers may be better informed on swine problems.

The symptoms as described, vary in intensity from muscular twitching to uncontrolled movements. The disease usually occurs in pigs not over one month of age. The affected individuals are usually unthrifty and, as we understand, the entire litter is similarly affected. In the beginning, in the mild cases, there are muscular twitchings which become more aggravated until there is malnutrition and death. In the severe form the muscular spasms are so violent that the feet are raised off of the ground or floor and the pig appears to be dancing. The pigs affected with the severe form may survive for some time, but ultimately die of malnutrition and possibly exhaustion.

This condition may be a typical form of chorea but from the history it would appear that it is of a dietary origin. Any one having more definite information will confer a favor by reporting same.

THORN-HEADED WORM

I have had considerable trouble with several different herds of swine in which there was extensive infestation with ascarids as proved by autopsy. Most of these swine have been fed liberally on stock foods, some of which are supposed to be efficient vermifuges.

The most intensively infested swine are unthrifty and become extremely emaciated and some of them finally die as a result of malnutrition or secondary complications. The autopsy of these cases reveals large numbers of round worms throughout the small intestine and it is not uncommon to find several of them in the bile duct. In those cases in

Why Pigs Have Worms.

which there is obstruction of the bile duct there will be more or less icterus the extent depending upon the degree of obstruction of the bile duct.

The usual line of treatment consisting of capsules of santonin, arecanut and calomel, or oil of chenopodium has been used with success prior to this season but repeated doses have not proved successful. I am beginning to doubt the value of capsule therapy in swine. I shall be pleased to hear from you and am particularly anxious for advice in these cases.—D. K. W., Missouri.

Reply by Dr. Kinsley: Your very interesting letter received and I am wondering if you have carefully identified the parasites in the swine in question. You will recall that the

thorn-headed worm also inhabits the intestine of swine. The thorn-headed worm differs from the round worm in that it is attached to the mucous membrane of the intestine and the attached head can usually be recognized as a nodular projection on the outside of the intestine whereas the round worm is free in the lumen of the intestine.

The larval form of the round worm produces marked pulmonary disturbances, particularly in pigs and young shotes. Thus far, no reliable remedial method has been found that will overcome the pulmonary form of the disease or destroy the larvae in the lung. The adult round worm or ascarid is usually not difficult to expel from the digestive tube, although it is not possible to cause expulsion of the worms from the bile duct. The best results are obtained by properly preparing the subjects prior to the administration of the medicament by fasting them for 12 to 36 hours. Practitioners generally report good success by the use of santonin capsules in which there is two and a half grain to three grains of santonin combined with calomel or aloin. Oil of chenopodium has also been successfully used in expelling the ascarids. Some authorities states that the oil of chenopodium is the most reliable agent to use for the expulsion of ascarids in swine. The oil of chenopodium is an irritant and may aggravate any enteric disturbance that may be present in the swine and this agent should therefore be used judiciously.

If the swine in question are infested with the thorn-headed worm then the results from the use of any agent are uncertain but we would advise the use of the oil of chenopodium in these cases.

Sanitary regulations should be combined with any form of medication that may be used in order that future infestation may be diminished to a minimum.

The Cause of "Breaks"

1. Lack of balance between serum and virus.
2. Lowered vitality from exposure; weather, shipping, etc.
3. Other infections and infestations.
4. Lowered vitality from improper rations.
5. Failure to vaccinate when pigs are still young. Niles states he does not hesitate to vaccinate the new-born where cholera exists.
6. Too much virus does not cause breaks.

ACUTE GASTRITIS IN A HERD OF HOGS

I am sending by mail, a portion of stomach contents and also a part of the stomachs of two hogs. The herd consists of twenty-one 125 pound hogs, vaccinated for cholera on October 29, 1921. Apparently all well, they were given two bushels of corn and some water in the morning, and at three o'clock one died as if from convulsions and two more followed later. Several other are sick. The owner suspects poisoning with arsenic and I am inclined to believe his suspicions are justified. He wishes a chemical analysis if necessary.

REPLY:—The chemical analysis did not show any traces of arsenic. If your postmortem observations are correct and complete, it is very likely these hogs ate some other acrid substance capable of producing the acute inflammatory condition you found.

ALL DISEASES ARE NOT BACTERIAL

I am shipping the heart, lungs and kidneys of a hog for examination.

History: One or two hogs fell sick and a veterinarian called by the owner diagnosed the disease as swine plague. He vaccinated the hogs for this ailment, but it continued to spread in the herd. Fourteen 125-pound hogs, four brood sows and their pigs died after a lingering illness. Hog cholera is prevalent all around the farm.

The owner still has twelve pigs to which I administered hog cholera serum and mixed infection bacterins. I had not seen any of the hogs that died.

I would like to know your findings at the earliest moment.—C. & C., Indiana.

REPLY:—The laboratory examination did not show any evidence of hemorrhagic septicemia, nor were any pathogenic organisms found, and there were no parasites in the lungs.

We cannot help you much since the examination proved negative from every standpoint. While there is still some question as to hog cholera, this cannot be diagnosed at the laboratory without animal experiments. All ailments are not bacteriological in origin. Domestic animals often die from diseases in which bacteria play no important role—feed, environment, etc.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of farmalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.
2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 per cent formalin solution and sent to the laboratory whole and unopened.
3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per cent formalin solution.
4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

MYXOSARCOMA IN A HORSE

I am sending you a specimen of the kidneys of a 1,400 pound bay gelding, ten years old, for examination.

About two months ago, this horse began to fall off in flesh and lose appetite, gradually becoming weaker and weaker until about a week ago he was unable to rise and was destroyed.

Temperature was 101.5° F., pulse 60, respiration nearly normal. About two weeks before he was destroyed, he showed lameness in the right front and hind legs, and at times showed colicky pains.—J. E. S., Ohio.

REPLY: Microscopic sections of the tumor proved it to be a myxosarcoma, which is a soft vascular tumor of a very malignant type.

ROUP AND CHOLERA

I am sending you, by express, a chicken taken from the flock of one of my clients, for diagnosis. This is from a flock of 600 birds that I treated on October 28th and again on November 15th with roup bacterins.

The flock was apparently healthy at the time of the first treatment, but developed this condition in about five days after the first treatment was administered. Was it the bacterins? The bacterins used were obtained from a reliable source, a state university.—N. McN., Ohio.

REPLY: The specimen examined showed typical symptoms of roup and the bacteriological examination showed quite a number of bipolar organisms, which would indicate that you have to deal with a complication of two diseases.

In fact, it is quite common for flocks of chickens to be affected with more than one disease in a way to complicate the matter of making a clinical diagnosis.

SUSPECTED ARSENICAL POISONING

I am sending you, under separate cover, contents of a hog's stomach, which died with typical symptoms of poisoning, from the description of the owner, who suspects arsenic.

You will notice some pieces in the food of what I should call broken crockery.

Please let me know your findings.—P. R. B., Maine.

REPLY: Chemical analysis of the contents of the stomach did not show the presence of arsenic. The death of this animal was due to some other cause.

HEMOPTYSIS IN A COW

I am sending you, under separate cover, in a sterile container, specimen of blood that was taken from the box stall in which a fine Jersey cow, nine years old, is confined. The clot or cast appeared to have been coughed up from the lung.

This cow recently finished a milk test and lost considerable flesh. She is coughing, in

fact she coughs a great deal, but I have attributed this to dusty hay, as the cough came on suddenly and affected the entire herd. The specimen I sent you was recently coughed up when I found it.

This herd has been tested annually both by the subcutaneous and intradermal tests, the first one in June and the latter in October. A retest of this cow was made on account of her physical condition, with negative results.—M. R. P., Conn.

REPLY: As the bacteriological examination did not show any tubercule bacilli, and your thorough tuberculization of the herd, and especially of this particular cow seem to exclude tuberculosis, it is possible that you are dealing here with a case of hemoptysis from some other cause. In a cow of that age, one would have every reason to suspect a malignant growth located in some part of the bronchial tract. It will require a postmortem examination to make a positive diagnosis in a case of this kind.

NECROBACILLOSIS IN YOUNG PIGS

The specimen of lung I am sending is from a pig three weeks old. About one half of the forty pigs from five different sows, born last fall, have died. At birth they are normal and apparently in good health until the third or fourth week, when they begin coughing, lose appetite and die. The coughing is associated with thumps.

The spring litter from the same sows died off until only a few were left. Those remaining are unthrifty, weighing only 80 pounds. Considering the feed they consumed, they should weigh at least 200 pounds. Some of them were affected with "bull nose," including the one from which the specimen was taken, which, in addition, had an abscess at the level of the elbow containing a greenish pus.

There were no ascarids found in any of the autopsies held, although a year ago the premises were infested with worms that caused considerable loss.

Kindly examine these lungs closely for Ascaris larvae and the bacteria that may be responsible for the condition.—F. F. S., Illinois.

REPLY:—A variety of organisms were found on bacteriological examination. Besides the usual saprophytes were streptococci, B. pyocyaneus, and B. necrophorus. There is no doubt that necrobacillosis is the cause of your trouble. The fact, however, that the premises have only last year been so seriously infested with Ascarids would be a good and sufficient reason not to ignore these in your future deliberations over this herd.

COCCIDIOSIS IN A RABBIT

The enclosed specimen is the liver of a rabbit 5 months old, the diseased condition of which was only disclosed while dressing the carcass for food. The white spots on the liver were the only lesions found. The rest of the litter all appear in good health and three of them previously dressed showed nothing abnormal.

The feed consists of dry oats and wheat and table scraps. All of them, including the one from which the liver was taken, are very fat.—I. C. B., Iowa.

REPLY:—Microscopic examination of the specimen sent shows many coccidia (Coccidium oviforme.) They are the cause of the liver lesions described in your letter. A thorough disinfection of the pens and runs, separation of any of the animals that may show signs of illness and a change to as much succulent food as they will clean up, is the best plan of management we can advise.

WHY BACTERIN TREATMENT FAILS

I am sending you a specimen from the lung of a 50 pound pig that belongs to a herd averaging between this weight and 175 pounds. The herd was treated for worms during the early summer by the capsule method, and later with copper sulphate and a general cleaning up of quarters for necrobacillosis. For a while they seemed to improve, but later began to cough and show a general decline in condition.

Some which I examined postmortem showed that their lungs were just full of small thread worms, literally thousands of them. There were also pus foci here and there like in chronic pneumonia. We gave them mixed bacterin treatment.—S. A. P., Iowa.

REPLY:—Just why bacterin treatment was chosen for these pigs, which showed so clearly by the postmortem examination that they were dying from lung worms, is beyond comprehension. The specimen sent showed plenty of Ascaris larvae, and the numerous mature worms found in the lung, the cough, the unthrifty state of the herd all plainly show that the owner of these animals should either plan and carry out a program of worm extermination or else quit the hog business.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

INFLAMMATIONS OF THE EYE CAUSED BY FILARIA[4]

Parasites occur with greater frequency in the eyes than is generally accepted. Filaria are usually indicated as intra-ocular parasites, whereas the thelazia species occur as extra-ocular parasites in the conjunctiva and in the apparatus of lacrimation. These two forms, however, cannot be readily distinguished from each other. Poschl observed in Hungary an extra-ocular filaria, while Vethy, Balla, Ratz, Plosz and others demonstrated intra-ocular filaria. Recently the author established the presence of Thelazia lacrimalis (Gurlt) in the conjunctiva of two horses, also the Thelazia rhodesi (Desmarest) in the cornea and conjunctiva of cattle; the latter is a specific parasite of the eye whereas filaria may also occur in other parts of the body.

BLACKLEG AND OEDEMA BACILLI[4]

It may be considered as an established fact that Koch's bacillus of malignant oedema is identical with Pasteur's "vibrion septique" and that this bacterial variety does not possess properties causing putrefaction. Likewise it may be considered an established fact that the bacillus of malignant oedema (vibrion septique) is distinguished from the blackleg bacillus by its growth, by the forms of the colonies and by its specific character in active immunization. It appears, therefore, that the numerous observations published during the war, claiming the blackleg bacillus as one of the causes of gas gangrene might be erroneous and that the organisms described as blackleg bacteria have probably not represented the classical blackleg type. At times the oedema bacillus and also bacteria causing putrefaction were considered as blackleg bacilli. The occurrence of typical blackleg bacilli in human gas gangrene cannot be denied but it occurs less frequently than has been assumed in some of the publications.

The supposition that the bacterium designated in the French literature as "B. oedematicus" is nothing else than the blackleg bacillus cannot be accepted, but it rather appears that the B. oedematicus of the French literature does not represent a specific type and that aside from the types which are close to malignant oedema such others are included in the group which should rightly belong to the blackleg type.

SUSCEPTIBILITY OF SMALL TEST ANIMALS TO FOOT-AND-MOUTH DISEASE[5]

Hobmaier succeeded in transmitting foot-and-mouth disease to guinea pigs by intracutaneous, subcutaneous, intraperitoneal, intracebral and intravenous inoculations. The guinea pigs showed after 24 hours typical rise in temperature, also a diffused reddening of the feet and ears. In the absence of vesicular formations, red spots appeared on the hairless parts of the metacarpus and metatarsus. Reinoculations succeeded only in five passages. The intracutaneous inoculation on the abdomen or breast developed usually only in a dense, fibrous nodule at the point of inoculation. Based on additional experiments Hobmaier considered the transmission effective even by this method. Intracutaneous inoculations in rabbits failed in all cases to produce vesicles. On the other hand a dense fibrous nodule developed at the point of inoculation which could be reproduced up to the fourth passage. This nodule when ground up in salt solution and inoculated into guinea pigs produced vesicles on the feet. Other methods of inoculations of rabbits resulted aside from intensive itching on the ears and feet, the appearance of small delicate vesicles on the lips. The reinoculation of the vesicular contents to guinea pigs resulted in the development of vesicles on the feet. Transmissions from rabbits to guinea pigs and rats were also effective. The inoculation of the foot-and-mouth disease virus into white rats developed a similar tense hard cutaneous nodule as described in the rabbits, also minute vesicles on the lips and on the hard palate. The transmission of blood from infected rats and rabbits to guinea pigs resulted in vesicular formation in these animals. The inoculation of mice was without results. In chickens a

protracted fever followed and also vesicles on the ball of the foot.

OBSERVATION ON POISONING WITH NEW HAY[1]

It is a well known fact that new hay, especially heated hay is apt to produce disturbances in the health of domestic animals especially in the horse. Very little is known as to the cause from a scientific point of view. The author discusses the publications on this subject and also the observation made by himself. According to his opinion, chemical changes occur in new hay which are partly due to the action of the eliminated enzymes from the dying plants, partly to fermenting fungi and saprophytes and partly to inorganic catalyzators which result in the development of various new products. As such might be considered volatile compounds, etheric-oily substances which although they gradually evaporate and finally disappear yet at the time of their presence in the hay confer to it an irrigating action. The quantity and quality of these substances is dependent on the composition and on the degree of curing of the hay as well as on the bacterial flora and the intensity of the fermentation process. The condition cannot be prevented and therefore the well-known although empiric prophylactic should be adopted, namely, that new hay should not be fed for at least three months.

ETIOLOGY AND THERAPY OF STERILITY IN MARES[2]

After consideration of the literature, the author discusses the anatomic-physiological condition of the genital organs of the horse, and concludes his introduction with the statement that the principal cause for sterility lies in the mares and only rarely in the stallion. After briefly discussing the effections of the ovaries, oviducts, uterus and the vagina, the author discusses the causes of sterility in mares: (1) Abnormally frequent periods of oestrum (nymphomania); (2) cessation of oestrum, which should be considered unfavorably in the presence of incurable conditions of the ovaries; (3) failure of conception in spite of regularly occurring oestrum and frequent breeding. This condition occurs more frequently than all others and is caused in most cases by an affection of the uterus. If the examination of the uterus reveals a chronic fluor albus, treatment may be inaugurated. However, the prognosis for a successful utilization of the animals for breeding purposes is slight. The author is of the opinion that in most instances subacute or chronic affections of the uterine mucous membrane resulting from retention of the afterbirth, abortion, dystocia, colts and infectious diseases are the principal causes for sterility.

An infection of the uterus plays an important part in the sterility of mares; Schiebel found in 70 per cent of sterile mares bacteria in the uterine mucous membrane of which several were capable of producing severe changes in the mucous membrane. Opperman's treatment consists in the irrigation of the uterus three to six days before oestrum with 500 cc of an iodine tincture solution) 2 g. to 100 g. of water) and after a time this irrigation is repeated in case the syphoned solution contains a quantity of mucous which causes cloudiness of the fluid. Out of 76 mares treated in this manner conception occurred in 44 and 32 remained sterile. Opperman urges to undertake the uterine irrigation more frequently than has been practiced heretofore and apply it on every sterile mare where any indication of sterility has been observed.

EXPERIMENTAL DIAGNOSIS OF DOURINE[3]

The Trypanosoma equiperdum is so rare in the general circulation of animals showing typical clinical signs of dourine that the inoculation of 1/50 to 1/60 of the total blood volume of an affected horse into susceptible subjects often gives negative results, showing that such inoculations should not be regarded as absolute proof unless positive results are obtained.

"Talking about arsenic, what a wonderful medicine it is. As a vermifuge tonic for dogs in conjunction with bitter tonics, it cannot be beaten. Our vermifuge pill is composed of Fowler's solution, 5 minums; gentian compound, 1 grain; nux vomica, 1 grain; and capsicum, ½ grain. This makes a pink colored pill that is very popular. It can be cut in two for small dogs."—G. G. Blank.

1. C. Sobernheim (Berl. Klin. Woch. pg. 693, 1921).
2. Dr. M. Hobmaier (Deut. Med. Woch. Vol. 47, No. 22).
3. Professor Zschokke (Schweiz. Arch. f. Teir. Vol. 63, No. 5).
4. Dr. A. Kotlan (Allat. Lapok. No. 5 & 6, 1921).
5. Paul Uhlenhuth (Deut. Med. Woch. Vol. 47, No. 24).
6. MM. Edm. Sergent, Donatien and Lheritier (Bull. Soc. Path. Exot. 1920).

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

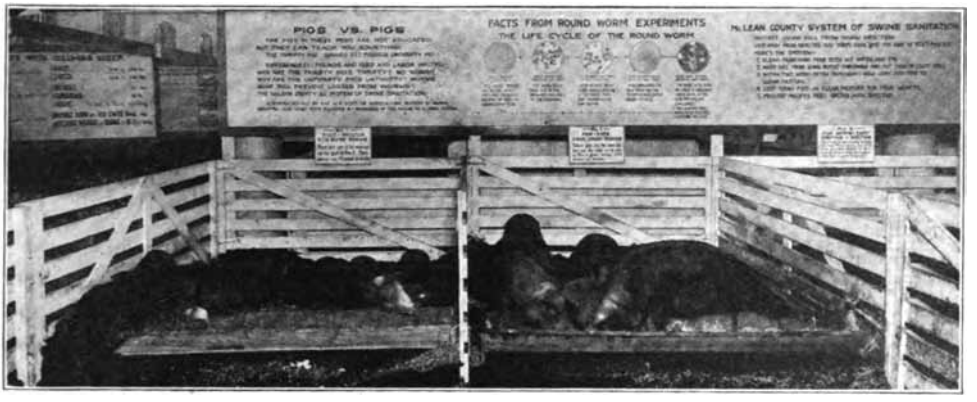

Fig. 1.—Stunting effects of ascarids on animals. (Exhibit of the Zoological Division, B. A. I., at the International Live Stock Exhibition, Chicago, 1921. The wormy pigs at the left average 54 pounds in weight. The worm-free pigs at the right average 105 pounds.) Photo by B. A. I., U. S. Dept. Agr.

Stunting and Other Effects of Parasitism

A VERY convincing demonstration of the effects of parasitism was staged by the Federal Bureau of Animal Industry at the International Live Stock Exposition of 1921 at Chicago. This exhibit was intended to show the effects of roundworm infestation in swine and comprised three pens of pigs, live roundworms from swine, and some charts and figures. Two of the pens contained pigs which were of the same breed, of the same age, raised under the same surroundings, and given the same kind and amount of feed.

In one pen were six pigs which had been fed ascarid eggs on six different occasions in order to secure a heavy worm infestation and in another pen were four pigs which had been raised under sanitary conditions to prevent the infestation of these animals with worms.

The wormy pigs averaged 54 pounds in weight and the worm-free pigs averaged 105 pounds in weight, the latter weighing almost twice as much as the wormy animals.

Farmers Convinced by the Exhibit

This demonstration of the effects of worms in stunting growth was most convincing. It was an object lesson which could hardly be misunderstood and the importance of which could hardly be overestimated. Numerous farmers came up to Dr. H. B. Raffensperger, who had prepared this demonstration, and to the other bureau men in charge of the exhibit, and stated that the worm-infested runts were the counterparts of the "tail-enders" of their own herds of swine. That these "tail-enders" are frequently the victims of worm infestation is shown by the results of numerous post-mortem examinations in the field, where "runts" have been very generally found to be heavily infested with worms.

Losses from Runts

These "runts," due to parasites, represent a considerable loss in money. Not only was there only half as much pork to be marketed in the case of these animals, as compared with the worm-free animals, but it was a poorer quality of pork, a fact which the buyer for a packing house would take into consideration in buying these animals. They represented fewer pounds of pork per animal and fewer cents per pound for what there was of pork present. But this does not tell the entire story of the loss due to worms. This is only the loss in the case of animals which had survived the worm infestation; it takes no account of the animals which had died.

Losses from Thumps

The stage of worm infestation which appears to be responsible for most of the deaths actually due to ascarids in swine was shown in the third pen. In this pen was a sow with a litter of eight pigs. Two of these pigs had been fed ascarid eggs about five days before the opening of the live stock show and two others were fed ascarid eggs two or three days later. At the time the show opened, the two animals which were the first to be fed the worm eggs were showing signs of difficult breathing and soon developed typical cases of "thumps" due to verminous pneumonia. Later the other two animals showed the same conditions. The other four pigs served as checks and were unaffected. Many young pigs die from pneumonia following the invasion of the lungs by the larval worms, and this loss by death must be added to the loss in quantity and quality of pork in determining the damage done by these worms.

Life History of Ascarids, Discovered by Ransom and Foster

The discovery that larval ascarids cause pneumonia in pigs with the symptoms commonly referred to as "thumps," is due to the work of Ransom and Foster, in the Bureau of Animal Industry, following observations made by Stewart of the effects of these parasites on rats and mice. About six years ago, Stewart discovered that when eggs of the human ascarid were fed to mice or rats, the larval worms made their way to the lungs and then traveled up the windpipe to the mouth, the larvae being swallowed and passing out in the feces. While the conclusions which Stewart arrived at on the basis of these findings as to the possibility that rats and mice acted as intermediate hosts for the human ascarid were subsequently shown by the work of Ransom and Foster to be not well founded, the findings themselves were of great importance and led to the correction of the previously incorrect assumption that when infective ascarid eggs were swallowed by a suitable host, the young worms left the shell and developed to adult worms in the intestine without leaving it.

It is now known that after the eggs hatch, the larval worms enter the wall of the intestine, get into the portal circulation and are carried to the liver. Here they leave the capillaries of the portal circulation and enter the veins of the systematic circulation, being carried to the heart and thence to the lungs through the pulmonary artery.

In the lungs they leave the capillaries and enter the air passages, crawling up the windpipe to the mouth, and are swallowed. On arriving in the small intestine they complete their development.

A very interesting and detailed account of the wanderings of these larvae has been published by Ransom and Cram.

Verminous Pneumonia

It is while the larval ascarids are breaking through the lung tissue from the capillaries to the air spaces that the first serious damage to the host animal is likely to take place. At the points where this occurs small hemorrhages will be found on post mortem examination, and when numerous worms are present the resultant inflammation is so great that extensive or generalized pneumonia occurs. The lung tissue injured by the migrating worms may become secondarily infected by bacteria. At this time infested pigs show a rapid, spasmodic breathing, and it is at this stage that many young pigs die.

The spasmodic breathing is often called "thumps" and is commonly caused by ascarid larvae, but it is not exclusively associated with worm infestation. A form of "thumps" which occurs in larger animals, often in fat pigs weighing about 200 pounds, appears to be due to overfeeding and lack of exercise and is commonly treated by taking a whip and driving the animals around.

Forced Exercise Bad Therapy in Pneumonia

It is evident that the two conditions mentioned must be differentiated in practice. While driving an overfed animal around may be good treatment, driving an animal that is suffering from pneumonia is very bad therapeutics. We must keep in mind that the condition called "thumps" is only a symptom and that it may be a symptom of two very different things and perhaps of several different things, and that what is good treatment in one case may be very bad in another.

Susceptibility to Other Diseases

Ascarids are responsible for the deaths of many young pigs by causing verminous pneumonia, and are responsible for a loss of growth and meat production amounting in some cases to half of the possible production, and for a loss in quality of the meat produced, but these things do not make up the total of the damage done by these worms. Among other things it should be noted that the wormy animal frequently becomes a runt, an animal of lowered vitality and resistance. Such animals are more susceptible to such

diseases as hog cholera, mange, etc., and here is an item that must also be charged in part to the worms.

Stunting in Human Beings

The proof that worm infestation results in stunting the growth of swine extends our knowledge of stunting effects due to worms as previously observed in human beings. In case of the human hookworm, which also has the habit of wandering through the tissues while it is in the larval stage, a fact which has been known for some years, it was observed years ago that infestation with these worms resulted in stunting both the physical and mental growth. Hookworm victims were found to be undersized and below the normal in mental development for their ages. Striking reports were published by the Rockefeller Foundation, covering such cases as those where infected children born and raised in infected rural districts were smaller and less developed mentally than uninfected younger children of the same family born after the family had moved to the city and raised under proper sanitary conditions.

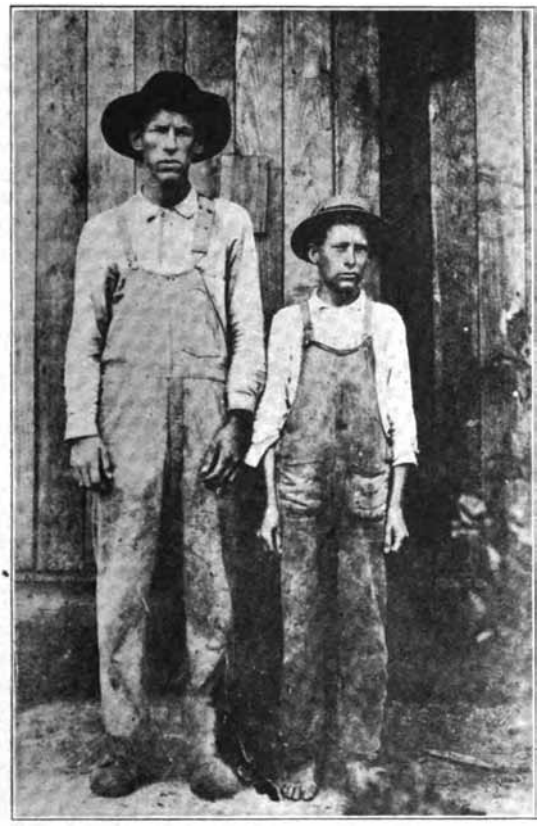

Fig. 2.— Stunting effect of hook worms on man. Two brothers, Forest County, Mississippi. Smaller, infected, said to be twenty-one years old, weighs 61 pounds. Larger, not infected, seventeen years old, weighs 126 pounds. (Photo by Rockefeller Foundation.)

Runts a Common Result of Ascarids

The stunting effect now demonstrated in the case of ascarid-infested swine and hookworm-infested persons must occur in a wide range of animals and in connection with infestation with many species of worms. It is known that young animals are generally more susceptible to worm infestation, more easily and more heavily infested as a rule, and that they suffer more from the effects of the worms.

This should be correlated with the fact that youth is the growing period and that anything which interferes directly or indirectly with metabolism in youth, may result in impairment of growth. We know that runts are very common among domesticated animals and that many of them are the result of worm infestation. To be sure there are other things (poor feeding and poor breeding) that cause runts, but where they occur, in spite of good feeding and breeding, parasites are largely responsible.

The prevention of parasitic infestation, like the prevention of many other diseases, is largely a matter of sanitation and usually a matter of cleanliness. Animals become infested with some parasites as a result of eating other animals infested with larvae. Animals also become infested with some parasites as a result of the attack of some biting insect or related animal which conveys the parasite by biting, and in these cases special sanitary measures, and not mere cleanliness, are necessary.

Cleanliness the One Big Essential

But in the case of the majority of parasites cleanliness is the essential thing. The feces are the principal source of danger, since they carry parasite eggs and larvae and protozoan cysts. The safe disposal of the feces is a measure of importance in protect domesticated animals as it is in the case of man. It does not appear to be feasible at present to keep domesticated animals away from areas infested with their feces, and it appears to be especially difficult in the case of herbivores kept on pasture, but it does appear to be feasible to protect dogs, cats, foxes, swine and poultry from parasites by the frequent and thorough removal and proper disposal of their droppings.

It is especially advisable to raise young

animals under clean surroundings, as young animals are most susceptible to parasitic infestation and most injured by it.

Swine Sanitation

The method of swine sanitation which has been used in raising thousands of swine in McLean County, Illinois, under the supervision of the Federal Bureau of Animal Industry, is as follows:

1. Clean the farrowing pens thoroughly with hot water and lye before farrowing.
2. Wash the sow thoroughly, paying especial attention to the udder, before farrowing, and put her in the clean pen.
3. Within two weeks after farrowing, remove the sow and litter to clean ground previously prepared.
4. Keep the young pigs there for four months. When four months old they will have developed a relative immunity to ascarids. However, the provision of clean surroundings, clean feed and clean water even after this age is reached, is profitable. Plenty of good food and water is essential, of course, and well bred stock is more profitable than scrub stock.

The pig has been a symbol of filth for ages. It is therefore the more striking that this animal should be the first to be raised on a large scale under cleanly conditions. In McLean County these sanitary measures have been found very profitable.

Cleanliness Profitable on Fox Ranches

Cleanliness has been found profitable on those fox ranches where it has been practiced. It affords protection from so many things that we can hardly afford to lose sight of it at any time in veterinary medicine. Where the life histories of parasites are unknown and can not be surmised with probable accuracy, our only prevention is oftentimes the practice of cleanliness, keeping in mind that where parasite eggs or larvae pass in the feces, safe disposal of the feces is the first obvious indicated measure of prevention. Young animals especially need protection from the parasitic content of feces and of polluted areas. Breeding, feeding and sanitation are the foundations of healthy, vigorous, profitable animals. Lacking any or all of these, we are sure of an abundant crop of runts.

ROUNDWORM IN SWINE SUBJECT OF NEW FILM

The life and adventures of a worm would not seem to be promising material for a movie scenario, but a film recently issued by the United States Department of Agriculture proves that the doings of such a lowly organism as the roundworm that infests the intestines of swine may be absorbing. Ascaris lumbricoides is the scientific name for this parasite that causes great losses every year to swine growers, and the title of the educational picture is "Exit Ascaris."

The screen story is built around two neighbor farmers, one of whom has success with pigs and the other so much hard luck that he is discouraged almost to the point of giving up the business. The man with the unthrifty herd goes down the road to see the successful hog raiser about his troubles and is told that roundworms are the probable cause of his failure. But he is skeptical and remains unconvinced until a Federal veterinarian is called in to diagnose the case.

The veterinarian brings a high-power microscope and sets it up on a box in the hog yard where he shows the farmer and his neighbor that the soil of the lot is badly infested with the minute eggs of the roundworm. The eggs with the squirming young worms plainly visible within the walls are shown in the field of the microscope that is reproduced on the film. Then the entire life history of the worm is shown, from the time the egg is swallowed by the unwitting pig until the parasite is mature and one of hundreds in the intestines. The growing worms are shown to the owner right in his own sick pigs where there are plenty of specimens in various stages of development from the very small, newly-hatched forms up to those that are full grown and more than a foot in length.

This film, "Exit Ascaris," will be sent to extension workers and field men of the department and the state agricultural colleges and to farm bureaus. Other organizations that are interested in improving the swine industry may get reels when they are available, and prints of the film may be purchased at cost by anyone who cares to own it.—(Press Service U. S. Agr.)

Zootechnics

Edited by E. MERILLAT, M. D. V.

A single mating of a hen will fertilize about a dozen eggs.

When hens lay soft shelled eggs the fault is either one or a combination of three different entities: (a) lack of minerals in the ration; (b) obesity; (c) or derangement of the reproductive organs.

Poultry well managed will overcome hard times on any small farm. Disease prevention through well-directed sanitary regulations and feed hygiene is the determining influence between success and failure.

In the selection of a dairy sire four important points are to be considered, viz.: 1, breed; 2, type and looks; 3, pedigree, including in this all facts with reference to ancestry such as milk records; and 4, character of offspring. For the profitable production of milk and butter the sire is of the greatest importance.

A contrast: In 1921 the state of South Carolina paid $14,000,000 for dairy products shipped into that state and $53,000,000 for commercial fertilizers, while in 1920 Denmark imported into this country 20,000,000 pounds of dairy products.

There are nearly 11,000,000 autos and trucks in use in this country and not one of these use an ounce of hay or grain in generating motive power. This is one of the prime causes of the intense indigestion from which at the present time American agriculture is suffering.

McLeod County, Minn., farmers are a progressive, up-to-date, class. At the recent National Dairy Show held at St. Paul a large delegation of farmers from this county came as a unit, bringing with them two brass bands to add cheer to the event. The delegates also carried various banners setting forth the achievements of their county, on one of which the following was written: "McLeod County Leads State in Tuberculin Tested Herds."—"Buy Clean Cattle." Verily, it is a wonder what plain work, thrift and co-operation can accomplish in this world.

About 80 per cent of the grain crops grown in this country, is fed to livestock.

A lone wolf that in six years had destroyed more than 150 cattle for Montana ranchers recently was killed by trappers of the federal Department of Agriculture. He measured 5 feet, 10 inches, and weighed 82 pounds.

The Jersey cow "Raleigh's Sybil," has just completed a 365 day test during which she produced 18,874 pounds of milk. She is valued at $10,000 and is owned by the University of Illinois.

The fact that the average cow gives birth to but four calves in a lifetime instead of ten as she should places a big burden on the veterinary profession whose work it will be to bring about the change upon which the success of the breeding industry depends.

Some thirty different kinds of hog yard and hog barn equipment, which will save labor and time and help to keep swine growing profitably, are described in a new circular No. 69, "Handy Equipment for Swine Raising," just issued by the Iowa Agr. Exp. Station. Send for a copy.

A prolific cow.—A shorthorn cow dropped a calf on Aug. 15, making her fourteenth. She is 10 years old, and has dropped five sets of twins and four single calves, all of which she has raised. She and her four sisters have a combined age of 46 years, and have dropped 48 calves, there being eight sets of twins. 44 of these calves were raised, two sets of twins being lost in calving.—Breeders Gazette.

It is estimated that only about 20% of herd inefficiency of cows is due purely to the bacillus abortus. Other infections of the reproductive organs in which the role played by Bang's bacillus has not been demonstrated, enfeebled physiological processes of both sexes, and genital diseases of the bull are among the problems confronting the "herd efficiency expert" as well as abortion disease.

The Boston terrier was evolved from cross breeding the English bull dog with the English bull terrier and then inbreeding the progeny.

A quart of milk is equivalent in food value to 2½ pounds of bananas, 1 pint of oysters, 2 pounds and 3 ounces of potatoes, 12½ ounces of steak, 3 pounds of codfish, 9½ ounces of ham, 2 pounds of chicken, or 8 eggs, accord-to the computation of the Guernsey Cattle Club.

The treatment of white scours according to modern precepts consists of: (1) Diet restricted to barley and milk. (2) High enemas of warm soda solution. (3) Disinfection of the navel. (4) Administer internally sodium bicarbonate, ½ ounce, aromatic spirits of ammonia, 2 drams, and water 1 pint, with a drenching bottle and tube. (5) Give pneumatic bacterin after diarrhea has stopped.

The dairy division of the United States department of agriculture is experimenting in the manufacture of Roquefort cheese from cow's milk at Grove City, Pa., where caves favorable for the growth of the proper molds for ripening the green-mold varieties of cheese have been located. The product although more yellow than imported Roquefort is of good quality and marketable.

Roquefort cheese, as we know it in this country, is imported from Southern France and is made from sheep's milk.

Cows Pay the Mortgage

Better Than a Tractor.—The Lawrence county, South Dakota, "Farm News," recently printed the following item under the heading, "A Hereford Cow Will Pay the Mortgage."

In November, 1884, a farmer of Sturgis, South Dakota, purchased a pure bred Hereford cow. She was three years old at the time. She remained in the herd 15 years. On November 4, 1889, she was shipped to market and brought $25, after producing a calf the same year. The original cost of the cow was $300. At the end of 15 years she left 15 daughters, granddaughters and great granddaughters on the farm. These were valued at $200 each, or a total of $3,000. Ten grandsons and great-grandsons as bull calves were valued at $150 each, or a total of $1,500. Fifteen bulls and four females had been sold for $3,450. This cow had produced $7,950 worth of purebred Herefords.

Milk is the cheapest of all the animal products when its food value is considered. At 15 cents a quart it is cheaper than beef at 35 cents a pound.

Barley water for calves is made as follows: Take three quarts of ground barley, place it in a ten to twelve quart pail and add boiling water until pail is nearly full; stir for a few minutes and then allow to settle and cool. Pour off the clear fluid and use as needed: 1 pint to 1 quart a day warmed.—Cassius Way.

Speaking about our friends the vitamines: Fat soluable A is found in milk fat. It has been shown by investigation that this vitamine is essential to growth; prevents rickets, eye disease, and other troubles. While it is found abundantly in milk, it is also found in grasses, leafy vegetables, yellow carrots, and in kidney and liver fats. The most available source, and one naturally sought by the housewife of this country, is milk.

The Sex Control Fetish

From time-out-of-mind theories about the control of sex have been propounded and a variety of experiments have been carried out in man as well as in domestic animals, and although there has never been anything achieved that endured the test of time exponents of new ideas continue to crop up.

In the January issue of The Farm Journal, B. F. Averill tells poultrymen that sex can be controlled by differentiation of food. That is, by feeding the male and the female differently is the virility of fecundation controlled.

Veterinary Medicine has no such hope to hold out to the breeders of domestic animals because procreation, virility and sex production are not governed by the physiological variations that can be influenced by dietetics and hygiene, but by biological laws over which there is no direct control.

There might be some wisdom in selecting breeders of both sexes that possess the tendency to produce offspring of the sex desired and to thus develop strains of male or of female producers. This has, however, never been tried out at any length and when it is tried we predict the occult influence that has kept the sexes numerically equal during all the centuries will creep in and upset all calculations.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Moldy Silage and Corn

I HAVE the following letter from Dr. A. L. Wood, Hampton, Iowa, concerning moldy ensilage. "I am forwarding to you today a small box of ensilage that is pretty well affected with a green mold. A client of mine wishes to know as to the kind of mold it is and as to whether or not it is poisonous and as to the cause of same. He says that from the condition of corn when silo was filled that he should have less than usual and has more. He finds it scattered all the way through the silage. I attempted to classify from description in your Manual of Poisonous Plants but would not say I am correct."

The green mold is referable to Aspergillus and Penicillium. We also found a number of bacteria and a white mold Fusarium, a pink mold Trichothecium and a red mold Monascus. I do not think this sort of silage is good feed for animals, and while I do not know that any one of these molds would produce the condition you spoke about, yet there is no reason why animals should not be fed good corn silage.

These moulds grow best where air has access to the silage. I am satisfied that the silage was not properly put up or the silo has numerous air vents.

The following letter came from Dr. R. L. Meier of Missouri Valley, Iowa. "I am sending you under separate cover sample of corn showing a white mold. This corn came from a farm that has a great lot of moldy corn on it. The owner tells me when he husked this corn he threw out all the moldy corn and now has his horses and cattle turned in that field.

"I was called out to his farm the other day to see a horse the owner said could not see, hear, and would walk through fences or anything in his path.

"I diagnosed the case as mold poisoning. The temperature was 96, breathing very difficult and sounded as though he was being choked with a rope, pharynx was paralyzed as he was unable to swallow, pupil was dilated. The horse urinated constantly, no parastalsis, pulse fast and weak. The gait was very unsteady and tended to take body toward the left. The owner said he did not notice anything wrong the evening before. When I arrived at the farm and made an examination I was convinced that treatment would be of no avail. The horse lived four hours, getting worse toward the end. I did not have a chance to hold an autopsy. I wish you would examine this specimen and determine if my diagnosis was correct and if the corn could have been the cause.

The corn is very moldy, but we are unable to find any spores on the mold, all in a vegetative condition. From your description, however, I am inclined to think the mold produced the disease in the animal you mention. There seems to be an unusual number of complaints about moldy silage. Some of the molds are certainly not injurious and can do no harm. Some molds certainly produce toxic substances. Some animals can consume moldy silage apparently without injury. For some animals it is injurious. All cases of so-called forage poisoning certainly cannot be attributed to these molds. It may be an entirely different disease. The veterinarian in the field should be the best judge of the conditions surrounding the disease.

Dr. R. E. Hansen of Forest City writes as follows:

"I am sending you some ensilage under separate cover, and I would be pleased to have you give me an answer as to its value as feed under its present condition.

"The owner of ensilage has had some trouble with his horses that have picked up after the cattle, but no bad results in cattle. No horses died, only have shown symptoms of colic."

I have examined the corn silage sent to me. I do not think it is advisable to feed this kind of silage. It is thoroughly permeated

with molds and bacteria. Of the molds I find the following: common blue mold (**Penicillium glaucum**) (more of this than of anything else). This mold though not poisonous has been suspected in several cases. There are records in human medicine where the species produced stomach trouble. This blue mold is found on vegetables, canned fruit and canned vegetables. It might easily cause colic. The second mold is a white one, the **Fusarium** which is very common on corn and causes the ear rot so prevalent in the field this year. This mold is only injurious because it secretes an enzyme. There is a little of the pink mold (**Monascus**) but there is not much of this, and therefore it is probably not responsible for the trouble. There is a fourth fungus, corn smut (**Ustilago zeae**). This is not poisonous, though it may cause a severe irritation at times. There is also an abundance of yeast in this corn material, actively growing. This yeast is not injurious. Some of the leaves of the silage have a red color, probably due to the growth of one of the bacteria, the **Bacillus prodigiosus.** No cultures were made and its identification is not positive. This organism is not parasitic nor does it produce any toxic substance. There are many bacteria in the mass.

It seems to me this material should not be fed to horses, it would be less injurious to cattle, hogs and sheep.

SWEET CLOVER SILAGE SUSPECTED OF BEING INJURIOUS

Dr. John Dunn of Barrie, Canada, sends a specimen of sweet clover silage with the following letters:

"I am sending you under separate cover a sample of moldy sweet clover silage for examination and your report on same.

"The particulars are on Dec. 25 I was called to attend two sick cows. No. 1, temperature 102.° F., pulse 75, very weak, mucous membranes very pallid, almost white, rumen impacted. No. 2 temperature 102.° F., pulse 55 and regular, mucous membrane not so pale, rumen but slightly impacted.

"While examining these animals the owner told me of having six animals dehorned on the Saturday before and losing them all within 3½ hours after the operation. The death of these animals I concluded was not due to the dehorning but their anemic condition.

"Two spring calves in another part of the stable were very weak. All these animals I saw alive were in good flesh.

"With the above information I at once wanted to know where these animals were watered; this was out of a spring well of considerable depth. I then inquired if the silage was moldy and the owner produced some, part of which I have sent you. My conclusions were some form of forage poisoning, perhaps from the moldy silage.

"No. 1 cow died on the evening of Dec. 25.

"Since writing you on Dec. 25 re moldy forage four spring calves have died, all having a slight epistaxia except one, the fluid coming from the nostril was only slightly colored. All of these animals showed absence of blood in the arteries and heart, no evidence of hemorrhage from the bronchials. The lugs were light grey in color and no evidence of change in spleen."

I found only one mold in the silage and that of a species I did not recognize. This mold was not like any commonly found in corn silage. I hardly think this mold of sweet clover is responsible for the trouble. There were also bacteria and these produce poisonous substances. However there is no direct evidence in this case, as the material was not cultivated. I am inclined to think that the fermentation of the silage has brought about changes in the chemical nature of the cumarin. The question of the injuriousness of cumarin was brought up by a Frenchman some years ago. He was inclined to think that cumarin, under certain conditions, might act injuriously upon animals.

CORN A GOOD HORSE FEED

Contrary to the opinion sometimes expressed that corn is not good for horses and mules, the University of Illinois Agricultural Experiment Station has found, as a result of a series of tests just completed, that sound ear corn properly fed with legume roughages is a healthful and satisfactory feed.

"Ear corn and alfalfa hay alone are sufficient to maintain farm horses and mules doing a considerable amount of medium to hard work. However, more satisfactory arrangements may be made and perhaps more economical feeding practiced when part of the alfalfa or clover roughage is replaced with timothy hay, oat hay, oat straw, prairie hay or corn stover.

"Farm grown feeds need no special preparation, such as codiments or commercial mixed feeds, to be successfully fed to either horses or mules."

Canine, Feline and Avian Practice

Symptoms of Poultry Diseases Summarized

AT THE recent meeting of the Missouri Valley Veterinary Medical Association, Dr. R. F. Beaudette of the veterinary division of the Kansas State Agricultural College presented a legendary scheme of the symptoms of poultry disease so graphic and concise that it easily won the distinction of being the big feature of the whole meeting. It earned this distinction for the reason that it laid down a definite point of departure from which a practitioner of veterinary medicine may begin to distinguish, one from another, the group of fowl diseases which to him have heretofore seemed like a veritable puzzle.

When the practitioner treated only horses, the cow was a puzzle; it was thought to present no symptoms upon which anything like a correct diagnosis could be based; and it was proverbial that a dose of salts was the only treatment required. Then when the dog came along to claim attention this creature was never thought to have any other affliction than that from overeating; and the veterinarian laughingly resorted to the classical treatment of fasting. Now comes the fowl, which it must be admitted we know too little about as diagnosticians. All sick chickens have looked alike to us just as the cow and the dog did when we studied only the syndromes of equine diseases and infirmities. As to swine we thought everything was cholera and let it go at that, believing that nothing could be done to check the march of the disease.

Matters Are Changing

Today we have a working understanding of the common diseases of all of these species and are doing mighty effectual work in controlling them, but the chicken, like the others which drew our attention one after another, is the enigma, and it is an enigma because we have never given the subject any thought and have never had access to any inspiring literature nor any great motive to study it.

With the chicken attracting the attention of the farmer as a profitable domestic animal, the veterinarian is finding that he must again broaden his realm so as to include another species or else leave a good prospect slip into other hands, and it is fortunate for us that the study of fowl diseases is falling into the hands of such colleagues as Beaudette, who is such a profound student of the subject and who is so willing and capable of giving us the wealth of information for which we now thirst. He not only won his audience over by the way he displayed his knowledge of fowl diseases but also by his skill as a diagnostician.

Fishing out a Leghorn pullet from a crate of chickens he had never before seen, he diagnosed the local lesions about the head as roup but expressed his belief that the state of emaciation was due to intestinal parasites, which a post mortem examination then and there proved to be true. The intestines were loaded with helminths. Thus was demonstrated that clinical diagnosis of fowl diseases like that of all the other species of domestic animals is an art that can be cultivated, and that can yield valuable information on individual treatment and flock management.

Beaudette's Agenda on Diagnosis

1. **Exudates about the eye are seen in:**
   - (a) roup
   - (b) nutritional disease.
2. **The comb is:**
   - A. Congested in:
     - (a) botulism
     - (b) cholera
   - B. Cyanotic in:
     - (a) black head
     - (b) cholera
   - C. Anemic in:
     - (a) tuberculosis
     - (b) nutritional disease
     - (c) intestinal parasites
     - (d) fowl typhoid
     - (e) air-sac mites

D. Tumors are found in:
(a) contagious epithelioma (chicken pox)

3. **Lameness is a symptom of:**
(a) scaly leg
(b) tumble foot
(c) tuberculosis
(d) sod disease
(e) cholera
(f) rheumatism

4. **Limberneck means:**
(a) botulism

5. **Wry neck means:**
(a) parasitism

6. **Temperature is:**
A. Elevated in:
(a) cholera
(b) fowl typhoid
(c) black head
(d) white diarrhea
B. Subnormal in:
(a) botulism
(b) nutritional disease

7. **Diarrhea is:**
A. White in:
(a) botulism
(b) cholera
(c) nutritional disease
B. Green in:
(a) cholera
C. Yellow in:
(a) black head
(b) cholera

8. **Emaciation occurs in:**
(a) black head
(b) nutritional disease
(c) tuberculosis
(d) air-sac mites
(e) parasites

Notes Worth Remembering

1. Tumble foot is abscess of the feet from a staphylococcic infection.

2. The lameness of tuberculosis is due to the articular involvement.

3. Sod disease affects chicks kept on unbroken sod and is manifested by blisters on the toes.

4. Botulism in chickens is often caused by feeding them with spoiled canned goods thrown out when found unfit for human food. It may kill rapidly.

5. Fowl cholera is due to the B. sanguinarium.

6. In occular roup a cheesy accumulation in the conjunctival sac can be squeezed from the eyes. The fowl turns its head over to the side and soils its wings.

7. The diphtheretic form is manifested by the development of a false membrane in the throat and is treated by lifting off the membrane and cauterizing the lesion.

8. Contagious epithelioma is manifested by granular growths. It is also treated with caustics.

FATAL TETANUS IN A DOG

I was called to see a puppy that was showing very peculiar symptoms and was unable to swallow. On arrival I found what appeared to be a very well developed case of tetanus. I learned that a nail had been removed from the anal region three weeks previously. The owner informed me that she had caught hold of the nail and pulled it out and that undoubtedly the dog had swallowed the nail, and that it had become impinged into the anus in passing out.

I advised her of my diagnosis and, in view of the advanced stage of the disease, gave an unfavorable prognosis. She was very anxious to save the dog, and I told her that the only thing that could possibly help would be tetanus antitoxin.

The dog was taken to the hospital and immediately 5,000 units of tetanus antitoxin was administered, followed in twelve hours by an injection of 5,000 units and again in 12 hours by a third injection of the same amount. In addition to the foregoing, the dog was given three injections of morphin and atropin in large doses. There was not the slightest response to the treatment— the muscles becoming more rigid with each hour, the tail extended, every external muscle rigid, head extended, jaws locked and totally unable to swallow even water.

The animal was so rigid prior to death that I could support its entire weight in a standing position by catching hold of its hind leg at the hock. The only remedy that caused any relaxation whatsoever was inhalations of ether but the rigidity would return immediately after its effects had passed off. The dog was finally disposed of by chloroform.

H. A. Locke, D.V.M.

Washington, D. C.

A barking dog is better protection against thieves than a burglar proof safe.

To induce labor in a bitch that has passed the period of gestation, drive her in a vehicle over bumpy roads.—Dogdom.

The Perils of the Mad Dog Scare

"THE first mention of hydrophobia is believed to be that of Aristotle about 400 years before Christ, who gave it as a disease of dogs, and made the remarkable statement that all things bitten by rabid dogs go mad except man, using in both cases a word that signified an insane fury or furious insanity.

"Authentic allusions to this disorder appear again only about the time of the Christian era. From that time on there was a constantly increasing amount of literature on the subject, until it became absolutely enormous; and from a simple disorder its symptoms came to include very remarkable conditions, in which imitations of the actions of animals, especially of dogs, came to hold a very prominent place. It was believed and said that the eyes of patients glowed in the dark, and besides barking and biting they even at times turned around before lying down, as dogs sometimes do.

Veterinarians Charged with Exaggerating Dangers

"The belief in regard to the mode of its communication became grotesque, and reputable authors, even up to a very recent date, have believed that it could be communicated not only by a bite but also by the application of saliva to an unbroken skin, by eating the flesh or drinking the milk of a rabid animal. More fantastic than this is a story that a woman having hydrophobia gave rabies to her pet dog by her kisses. The popular beliefs are probably about as erroneous today as they ever were. One would suppose that every angry dog was in a technical sense a mad dog, certainly almost every biting dog, and in this the veterinarians as a class do not assist the community very much. Most of them seem very timid on this subject, and very easily convinced that a biting dog is mad, and they have done much to keep up the fears of the community in regard to hydrophobia.

Specificity of Hydrophobia Questioned

"One of the most striking illusions about hydrophobia is that it is what is known as a specific disease and owing to a specific cause. How these illusions stick may be judged from the fact that in 1884 I published a paper entitled "Disorders Mistaken for Hydrophobia," in which I collected over thirty illustrations of diseases in which symptoms appeared without any relation to infection by a dog, and since that time other diseases have come to my notice in which these symptoms appeared. But I know of no reference to it in medical literature in this country.

"In rabies it was long held that the saliva was the principal vehicle of contagion, while later the blood and other tissues of the body were included in the list. The mode of communication has been thought to be by bites, by scratches, by licking, by careless handling of swords that had been used to kill mad dogs, and in one case by a peck of a cock, while within a few months in this country, a woman was believed to be in great danger from an accidental wound with a bullet that had been shot through a dog believed to be rabid.

Suspected Organisms Prematurely Announced

"In the study of this disease, after the general use of the microscope, a good many different lesions have been described as present exclusively in rabies or hydrophobia. In 1872, Hallier described a small body that he named the lyssophyton; in 1881, Pasteur described a germ which he believed to be peculiar; in 1890, Mollenhauer believed that he isolated and cultivated a bacillus peculiar to hydrophobia, and other investigators in various countries have displayed similar enterprise.—Within five years, one peculiar lesion found in the brain and spinal cord was so fully credited that many persons bitten by dogs in which these lesions were afterwards found were, by men of high authority, condemned to the fear of having hydrophobia.

Negri Bodies No Criteria

"The most recent of these 'specific lesions' is what is known as the Negri body, that is found in certain parts of the brain. This is now the one universally accepted, the latest, but not the last, if history repeats itself. I have made studies in regard to it that compel me to seriously doubt this general belief, and I sometimes charge my veterinary friends not to swear away the lives of their fellow human beings when they think they see these bodies in a dog's brain. Unfortunately, I never yet found the workers in this line familiar with a tithe of the evidence that the Negri bodies have been found in brains of animals dying of a variety of diseases or injuries, of which I have collected a considerable number, and of which even some of the high priests of the Pasteur cult cite instances.

Frequency of the Disease in Doubt

"Another illusion in regard to hydrophobia consists in the absolutely erroneous statements made by Pasteur and his followers in regard to the frequency of the occurrence of hydrophobia in relation to the age of the person or the location of the bite. These things I have studied from the details of a very large number of cases gathered by me personally with great care; and I have in publications in 1894 especially shown that there is no such fixed relation. But it is remarkable that men of eminence in the medical profession, who testify a great deal of kindly feeling for me and confidence in my method of study, accept and repeat uncritically the very errors that I think I have fully exposed.

Ratio of Infections to Persons Bitten

"Equally erroneous are most estimates of the ratio of cases of hydrophobia to the cases of biting by presumably rabid dogs. This error contributes to another that attributes to the "Pasteur method" the salvation of many thousands of persons who without it would have died of hydrophobia.

"In this connection it is interesting to note that in France, which is full of Pasteur Institutes, there are supposed to be annually thousands of cases with the infection of hydrophobia, while in Great Britain, where there is no Pasteur Institute, the disease does not occur. Another curious thing is that in Constantinople, where dogs have for centuries run wild in the streets, there was so little hydrophobia that it was long denied that it existed at all; but since a Pasteur Institute has been established cases have been quite frequent, according to the Pasteur people. This has been the experience of every country in which Pasteur Institutes have been established.

Cauterization and Vaccination not Recommended

"The commonest preventive method adopted against hydrophobia, that of cauterization at the seat of the injury, is, in my opinion, absolutely harmful, and itself responsible for some outbreaks of so-called hydrophobia. The Pasteur method I likewise think is injurious and responsible for many deaths. For some time after the introduction of this method the Zoophilist, published in Great Britain, printed the names, the addresses and some circumstances of the death of a very large number of persons who had been treated at the Institute at Paris, but I have not discovered that my medical colleagues are aware of this, or attach importance to it an evidence of the unreliability of the method and the want of candor of those who employed it.

"In contrast to this I might cite my own experience in the treatment of persons bitten by dogs supposed to be mad which has furnished not a single case of the developed disease in thirty years. This consists in antiseptic treatment of the wound and in the securing of confidence on the part of those in dread of hydrophobia. There is nothing in this method that is not well known to all who have thoughtfully considered the subject; but it is in singular contrast to methods frequently pursued.

Rarely Encountered by Physicians

"Hydrophobia is a disease so rarely encountered that the usual history of a case is that a medical man who has never seen one and who has but a superficial acquaintance with the subject is unexpectedly called to a patient presenting symptoms that are hardly less alarming to him than they are to the relatives and friends. Under these circumstances he ordinarily flies to the use of strong narcotics and frequently to physical restraint when the accesses of convulsion occur.

Illusions May Disappear

"The belief in witchcraft once had the support of the highest authority in church, in state, and in science, but though it can still be found in ignorant communities, even in this enlightened country, it has been largely banished from civilized lands. We may, therefore, hope that in due time the illusions in regard to hydrophobia may disappear and that they shall some day cease to color the teachings of medical men or to fill with horror the minds of the people."—Dr. C. W. Dulles, in Dogdom.

Comment by Dr. Quitman: This article was certainly worth reprinting, at least it meets my ideas. I have often talked in this vein even to the point of doubting the specificy of Negri bodies. I also know of a physician diagnosing the delirum of uremic poisoning in a woman as hydrophobia. The woman had been nursing a sick dog night and day and since in her delirious state feebly imitated the cries and barks of her sick dog, she was thought to have contracted the disease from it. It happened, however, that a post-morten examination on the dog showed it had suffered from intestinal obstruction. A piece of cloth was found blocking the pyloric orifice.

Queries and Answers

TUBERCULOSIS (?)

Am sending you the trachea, lungs, liver and heart of a hen which has been sick for about a month. Symptoms are: coughing, very loud rattling in lungs and trachea, affected fowls live from one to two months but invariably die; comb stays bright red until near death, then turns purple; fowls stay fat and appetite normal. In a flock of about 150 there are at all times two or three affected fowls and it seems that no treatment does any good. This flock is well fed and cared for, with good quarters. Would you please make examination of organs and give me advice and treatment for this disease. This is a chronic infection which has been in this flock for two years.—X. Y. Z., Indiana.

REPLY—The specimens arrived in such an advanced state of decomposition that no examination for pathogens was possible. The syndrome described would suggest the handling of this flock with contagion in mind and if other specimens are sent we shall be glad to examine them. We strongly advise that this be done since in a chronic condition of this kind it is poor policy for all concerned to leave the question of cause unsettled.

TREATMENT OF BOG SPAVIN

I would like to get a good prescription for reducing bog spavin in horses. I am experiencing considerable difficulty in treating this ailment, and will appreciate your assistance.—M. H. T., Manitoba.

REPLY: For reducing bog spavins, aside from the radical treatment such as aspirating and injecting with iodin, which commonly produces symptoms of an alarming character, there is nothing to equal the application twice daily of fusil oil. This should be applied full strength with moderate friction. It acts equally well on large thoroughpins and side puffs. However, it may require two or three months' application.

You may also try injecting the region subcutaneously with Lugol's solution at different points, so as to assure distribution over the whole enlargement, or, ligation of the vena saphena which has proved of value in some hands.

THE SUSCEPTIBILITY OF DOMESTIC ANIMALS TO TUBERCULOSIS

Kindly advise me the relative susceptibility of domestic animals to tuberculosis, that is in the order of their likelihood to contract the disease. This question was asked at the federal examinations last June.—F. E. M., Mich.

REPLY: The reply would, of course, be largely the opinion of the writer discussing the subject as no two authors seem to place the domestic animals alike in a scale of susceptibility. It would not be far from the facts to place them in about this order: cattle, hogs, fowl, dogs, cats, horses, goats and sheep. This may not be regarded as 100% correct by all teachers yet it would be safe to risk a very fair grade on this scale.

PECTORAL INFLUENZA WITH LOCOMOTORY COMPLICATIONS

A six year old draft mare recently shipped from Illinois showed soreness in the fore feet on the day following her arrival. While standing she would stretch out as if to urinate and then worry about in the stall. In fact, she would not stand still in a well bedded stall. The temperature was 104° to 105° F., pulse 60 and respirations 32, but there were no suspicious rales on auscultation. In moving her out to water one would suspect founder but in walking these symptoms would disappear, and there were no pulsations in the digital arteries. There was no swelling but the legs were slightly painful on pressure. The appetite was fair and the feces normal yet this restless state continued day after day until several days later. When the legs became swollen below the hocks and knees it disappeared and pulmonary complications began to develop. These proved to be a broncho-pneumonia that lingered along for two weeks and then broke up into a favorable convalescence. The swellings in the legs have, however, persisted and are now proving very annoying to remove by any treatment I have been able to apply.

I shall be thankful for any information you

may be able to give me as to the best way to bring these swellings down to normal.

REPLY: The case is simply one of ordinary influenza with cellulitis and pneumonia as a complication. The uneasiness of the patient in the initial stage is common enough and is due to the pain of the developing cellulitis. The persistence of the swelling we suspect is due to the application of irritating liniments to them. It is always wrong to use local applications to the legs of horses suffering from influenza because they invariably produce a chronic cellulitis with more or less permanent enlargement of the fetlocks. Shower the mare's legs with cold water, apply a mild astringent lotion of witch hazel and acetate of lead three times a day and assure yourself that there are no flexion crevices on the pasterns. We have also had good results by applying Antiphlogistine and covering it first with a thin layer of cotton and then bandage rather tightly. This we leave on for some days. As the swelling subsides from the pressure of the bandage, the paste gradually shrinks with it by evaporation.

TIC AGITANS IN A HORSE

I have been treating a horse that seems to be very nervous. He is a six-year-old gelding, weighs about 1500 pounds and is in first class condition except that he is very nervous.

I put him on a triple bromide treatment with no effect. I gave him

Amonium bromide	gr. xxxv
Pot. bromide	3 i
Sod. bromide	3 i
Et aqua	5v

Sig. One tablespoonful b. i. d.

I gave the owner enough of this medicine to last two weeks. It did no good. The horse has a good appetite, and the temperature, pulse and respirations are normal.

When standing, the horse will straddle out on all four feet, the hind feet extended backwards and to the side, and the fore feet a little forward. His head bobs up and down all the time he is standing. When in the stall he pulls back on the halter all the time. When he is working, he shows no symptoms of this nervousness and pulls right up into the collar. He has been acting this way for three years now, ever since the owner has had him.

Could you diagnose this and give me a treatment. Other veterinarians have tried to treat this animal and failed as I did.—H. C. G., Okla.

REPLY—The horse you describe is affected with tic agitans; in short, a form of atypical weaving—a nervous disease that is incurable. I doubt whether you will ever be able to even modify the symptoms by any form of calmitive treatment.

Animals so affected always do better if kept in a box stall, unmolested by any form of annoyance from other animals. They very often live a long and very useful life, and are generally good workers.

NAVICULAR DISEASE

I have a bay gelding eight years old, weighing about 1,400, that has been going lame for two years but always recovers as soon as the foot has been pared. About two months ago, while pulling a load, the singletree broke, giving him such a jerk that he became very lame on the following day. The owner pared the foot as usual, but did not succeed in making any improvement.

On examination, I found a foot of good conformation and in good condition, but one shoulder showed atrophy of the scapular muscles. When walking, he carries the foot wide but brings the leg forward to a full stride. Full weight is placed on the lame leg until the sound one comes even with it. The stride of the sound leg stops when it arrives at the level of the lame one, and nothing I could do would induce him to carry it farther forward. That is, there is no anterior stride of the sound leg. There is nothing abnormal about the leg or foot to be observed either on inspection or palpation.—H. A. T., Sask.

REPLY: The case seems to be one of navicular disease. This you can confirm by paring the sole quite thin and then test the pain in the articulation with a good, strong pair of hoof pincers. Have a man hold the foot up at a comfortable position of flexion, set the inside jaw of the pincers in the lateral lacuna of the frog exactly one inch behind the tip of the frog, and squeeze carefully and firmly. Test both sides. A horse with real navicular arthritis will flinch perceptibly, although probably not in a very pronounced manner.

It is possible that the accident mentioned may have hurt the shoulder and thus may have complicated matters, but the shoulder injury will not be lasting unless the horse sustained a real so-called shoulder-slip, which could prove disabling for a long while. We, however, believe as you do that the atrophy is due to the old trouble.

FORAGE POISONING

I was called yesterday to attend two horses, one a grey gelding nine years old, weight when well about 1,200 pounds, but now much emaciated. On examination I found the following conditions. Patient standing quietly in a closed driveway, head held high, fore feet well back under the body, appearing ready to topple over forward, breathing quite shallow and hurried, pulse 46 and weak in character, mucous membranes injected, pupil much dilated and temperature 101° F.

The least noise would cause him to start violently, prick up his ears, throw head still higher, and immediately walk or almost run around the enclosure, always towards the right in a circle. The head and tail were held high, and he showed the most intense excitement, the forward movement being accompanied with peculiar grunts. He was somewhat unsteady on the hind legs, would run around the barn at a rapid gait for five or six rounds, then would stop and resume the old position, always seeming to push forward, but not pushing head against any object.

In passing urine or feces he drops low behind and strains violently. Urine seems normal in amount, but clear as water, bowels constipated although feeding on green corn, largely, at present

The history of the case is that about three weeks ago during extreme hot weather, and after he began feeding on new hay, which is clover and seems nicely cured, but contains many weeds, he began to show this nervous condition, and has grown steadily worse until now he is unable to work.

The other, a black mare four years old, is showing the same symptoms only in a more modified form. The same nervous condition and the same "pushing forward" attitude is present but the animal is still at work, although she wants to go ahead and never stop. They are eating and drinking pretty well, but getting very poor.

The drinking water is pure, the oats clean and good, but I suspect some poisonous weed in the new hay, and have advised green corn fodder entirely, for the present.

I have heard of four other cases showing these same symptoms, horses ordinarily of quiet disposition developing this highly nervous condition and although I suspect some poisonous weed, I don't know what to look for.

Please give me some information as to the probable cause, also what line of treatment to follow. Any assistance you may give me in this matter will be very much appreciated.—T. W., Wisconsin.

REPLY—This is undoubtedly forage poisoning again. The best treatment is bleeding at the jugular and a good purgative. The querist is referred to the reply to F. A. H., this issue.

THE DOSE OF SPECIFIC BRYONIA

What do you consider the dose of specific bryonia for a thousand pound to a twelve hundred pound horse? I find the drug most useful but fear I am not using it in large enough doses.—D. J. P., Florida.

REPLY—The dose of the specific tincture which is the same as the fluid extract is from 2 drams to 12 drams according to the frequency of administration. Bryonia simulates belladonna in physiological action with the exception that it is also a hydrogogue cathartic in large enough doses.

DROPSY OF THE PERICARDIUM

I wish you would kindly give me some information on the following case.

A bay gelding, nine years old, in poor flesh, off work for about one month, was brought to have a tooth extracted. Another veterinarian had failed to extract it that morning.

I adjusted the speculum, entered the mouth and pulled the tooth with my hands. It was split and loose. About three hours later, the animal was down and I was told he staggered for some time before falling. He was breathing fast and shallow, with a temperature of 98°. F. All visible mucous membranes were very pale.

I pronounced it internal hemorrhage and gave a very unfavorable prognosis. I gave one ounce 1-1000 adrenolin chlorid hypodermically and two drams of fluid extract of digitalis internally. The animal died in about one hour.

The autopsy revealed some internal hemorrhage into the pleural cavity. The pericardium was about three times as large as the heart and filled with a yellow fluid, which made me change my diagnosis to pericarditis. The horse had been trotted fast for five miles.

Was there any chance for this horse, if

diagnosis of pericarditis had been made before death, and what would have been the best treatment?—R. L. W., Oklahoma.

REPLY: The disease was aggravated by the ordeal of extracting a molar. There is no doubt that this horse would have died, sooner or later, from the trouble, and the operation could only be incriminated as having hastened an inevitable result.

IMPOTENT STALLION

I have a young stallion two years old, in fine form. I have let him serve two mares and I waited about another month, and thought I would let him serve another and he wouldn't pay any attention to the mare, even when in heat. I even let him run loose with mares.

I will certainly appreciate your advice or reply in regard to this horse. I also want to know what steps to take first, what medicine to give, as this is a valuable horse.—L. C. D., Kentucky.

REPLY: We advise the administration of yohimbin in proper medicinal doses, together with the necessary hygiene that would keep the horse in good health, such as feeding, exercise, ventilation, pure water, etc.

If he does not improve under such treatment, there is no hope for his service in the immediate future. Young stallions, however, in that condition tend to improve when they arrive at the age of three or four years.

PREPUTIAL CATARRH AND PURULENT PROCTITIS IN A POODLE DOG

Will you kindly give me some information on the following case?

Subject: Poodle dog, four years old, has intermittent discharges from the penis and rectum. The testicles will also be swollen and painful.

Could this be gonorrhea? My treatment was five grains of hexamethylenamin internally once daily and one grain of iron carbonate. The patient had lost its appetite. The penis and rectum were washed out with a saturated solution of boracic acid, and injected with a 10 per cent solution silver nucleonate twice daily.

This condition has existed for over one year. Two veterinarians have treated it without success. Everything in the way of antiseptics, such as potassium permanganate, white lotion, zinc sulphate, plumbi acetate, have been tried.

Was my treatment all right?—R. L. W., Oklahoma.

REPLY: The catarrhal condition you describe in the dog seems to be too chronic to respond to any of the ordinary treatments. We would advise you to secure specimens of this pus and have an autogenous bacterin made, providing however, that the ordinary polyvalent bacterins do not help. There would be no use in depending entirely upon local applications for curing a case such as this, but for this purpose we would recommend flavine injections. Dogs do not have gonorrhea, but suffer from catarrhal conditions simulating it. The condition generally follows distemper.

PUSTULAR DERMATITIS

I wish to describe a skin eruption on an English bull dog, one year old. At times, the sides of his face will swell and stay that way for a few hours, and then disappear. At other times, his ears are swollen and this condition disappears also in a few hours. Then again, the swelling will be across the nose in the hollow over the nostrils. In this place, a circular sort of a pustule remains.

There is no itching. It acts like urticaria in larger animals. I think it is constitutional, but am not sure as I have never paid much attention to dog diseases, other than distemper and surgery.

As this dog is very valuable, I would like to have your opinion as to the cause of the disease and an outline of the best treatment for same.—R. J. N., Ontario.

REPLY: The dog you describe is affected with some form of pustular dermititis, due to local infection, probably to streptococci.

It might be constitutional and a sequel of distemper. The skin manifestations of dog distemper are varied in nature. In short, one can never tell about the tricks of these complications in this remarkable disease. As you do not mention the age we are unable to entirely exclude distemper as the cause.

It would be advisable to treat this animal with a course of saline purgatives after having given a medicinal dose of calomel, bicarbonate of soda, and follow up by very careful medication with Fowler's solution of arsenic. Touch up the spots affected with tincture of iodine.

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE

Horse racing is an out-door sport that entertains and maintains thousands. It is an industry that develops fundamental resources—an ally of agriculture, the enterprise upon which our prosperity almost entirely depends. The horse in any of its estates is a component part of a great, big, prosperity-producing host of which the automobile is a parasite.

Camphor in Bovine Practice

E. E. GIESKE, D. V. M., Wheeling, Illinois

FOR some years I have been an advocate of camphor as a heart and respiratory stimulant in cattle as well as in other animals. It may be just a personal liking but I know of a number of other veterinarians who prefer it to strychnin, glonoin, etc., as I have often discussed this subject with others. I have never seen an over-stimulation result, such as sometimes occurs with the more powerful heart stimulants in sensitive animals.

It has no marked effect on the nervous system but rather a gradual supportive action that permits the animal to regain its normal state of health in a more uneventful manner. My practice is mostly among cattle but I also use camphor in horses, dogs and hogs and it has always given good satisfaction.

Camphosol My Choice

Within the last few months I have been using Camphosol instead of camphorated oil. It has given me splendid results. It is an aqueous colloidal solution of camphor discovered by C. A. Zell. Containing no oil it can be used intravenously without the possibility of an embolus or thrombus forming. It stimulates more rapidly than the oil due to its rapid absorption and does not cause any deterioration of the rubber plunger in the hypodermic syringe. This latter fact alone is a big convenience.

A concrete example of the value of Camphosol is shown in the following case to which I was called last August:

The subject was a grade Holstein cow which had just calved the day before. She had a bad diarrhea which had weakened her very noticeably, and upon examination I found that she still retained the afterbirth. She was down and unable to rise. Her temperature was 108 degrees F.; pulse very rapid and weak and she was gasping for breath. The hot day added a great deal to the seriousness of the case. She actually looked to me like a dead one. There was evidence of sapremia due to the absorption of the toxic substances resulting from the putrefied afterbirth. Only a putrid, stinking mass was found in the uterus.

Treatment: I immediately gave her 10 cc. Camphosol intravenously and 15 cc. subcutaneously. I removed the decomposed afterbirth and irrigated the uterus while she was still in the recumbent position. I then left the animal with little hopes of seeing her alive again.

In two days I was notified that the cow was still alive and in an improved condition. I was told that she got up about one hour after I left and that her breathing was noticeably better. I went to see her and found her very much improved over the condition in which I had left her two days' previously, except for the diarrhea which was as bad as before. I was so encouraged that I told the owner that she would probably recover. For the diarrhea I administered sulpho-carbolates

and made a mixture of aromatic sulphuric acid, spirits of camphor and fluid extract of glycyrrhizae which was also given. Her recovery was gradual and entirely satisfactory.

There is no doubt in my mind that her recovery must be credited to the Camphosol which was given her on my first visit, as the stimulation at this time tided her through the serious stage and enabled her to rally.

BLIND STAGGERS IN A HORSE

I have recently been called to see a horse the owner thought was suffering from indigestion. The subject was a sorrel mare weighing about 1,100 pounds, in good flesh and showing the following symptoms:

Stepping from side to side in the stall, profuse perspiration, and crowding the manger with the head and nose. She was found in this position in the morning and did not change from it until my arrival. On being pushed back she immediately pressed forward into the same position with her whole weight until she choked. In an effort to move her to another stall she pushed against the wall and had to be pulled back by force. She was stiff and unable to open the mouth. Since she persisted in pushing against something I placed her against a hay mow.

I gave her ½ grain of arecoline hypodermically which acted in 20 minutes. This was followed with an ounce of chloral hydrate in a capsule and an aloetic purge, the latter being given with a balling gun after forcing the mouth open. She was then placed in a box stall to await my return two hours later, at which time I found her improved, drinking a pail of water and pushing against the wall much less forcibly than during the morning hours.

On the following morning she received two doses of nux vomica but nothing was given on the third day as she was still purging from the aloetic ball.

On the fourth day she relapsed in the former state, jumping through a window in front of the stall and tearing things up in general. In this attack the symptoms seemed worse than before. The mouth was now open and could not be closed but after a dose of cannabis Indica she became quiet and towards evening seemed much improved. On the following morning which was the fifth day, everything was normal and there has been no relapse since.

Was this forage poisoning due to moldy feed? I have seen cattle with these nervous symptoms but not horses.—Wesley D. McCoy, V. S., Cassopolis, Michigan.

Comment: The mare was affected with the complaint the old school called "blind staggers" or "stomach staggers," terms which of course mean nothing to the modernist, describing the gymnastics rather than the pathology of the affected subject. It was attributed to congestion of the brain without, however, any proof that any such conditions actually existed. Bloodletting from the jugular and a good drastic purgative was the classical treatment. Most of the cases recovered, although a few of them went down, struggled with all fours and cramped into the typical opisthrotonos of what we then called cerebrospinal meningitis. Today, it is quite the thing to attribute all of these states to forage poisoning and so long as there is no proof to the contrary why not accept the custom with the same placid, self-satisfaction as the old timer accepted blind staggers.

Now, as always before, cases taken early, that could be promptly purged, recovered; the others died.

ANTI-ROOTING OPERATION

The original wild hog subsisted on vegetation, nuts and roots. To obtain roots nature provided swine with a snout that enabled them to root. In the domestication of swine there has been a change in the surroundings and the foods, but the anatomical provision for rooting still persists. Swine differ in their desire to root. It appears that probably the nature of the food supplies may be an important factor in causing swine to root. When roots and succulent foods are provided in ample quantities, swine do not root. Various means and appliances have been used with varying degrees of success to prevent rooting, such as rings, cutting the snout, etc.

An operation that is claimed to be quite successful when done early—that is about the time that the pigs are weaned—is simple and easily performed, and is being resorted to by many practitioners, the operation being known as the Kinsley operation.

There are two sets of tendons attached to the cartilaginous rings of the nostril. One set extends and the other retracts the cartilage. In the small pigs the retractor tendons are found close to the median line. Matthews of Pennsylvania reports good successs by severing the retractor tendons. This may be done

by having an assistant restrain the pig, and the operator should grasp the pig's snout by placing the palm of the hand on the under side of the lower jaw and encircling the snout with the thumb on one side and the forefinger on the opposite side. By manipulation the tendons can be definitely outlined and should be severed near the cartilage by the use of a bistoury. The operative wound should be painted with tincture of iodine and as a rule no further treatment is required.—American Veterinarian.

BULL INDICTED FOR PROLONGING GESTATION

Having been confronted with a peculiar condition in cows, I am writing you for some light on the subject.

I have practiced for seven years in one locality and have, on several occasions, been confronted with a condition in cows termed by myself as "Prolonged Pregnancy." I have some ten or more cases of this nature and the excess ranges from six weeks to four months.

The first two or three cases I attributed to a mistake in the breeding time, but after careful investigation found I was wrong as the owners of the cows had made very careful notes on the dates of service.

This trouble I find points to one strain of Holstein bulls, and covers an area of some five miles in diameter.

I have made postmortem examinations of several cases and found the fetus in a perfect state anatomically, but in one or two cases, I considered the young had been dead for some ten days or two weeks. The last one I saw was at an autopsy. The cow died in the attempt of delivery and I am safe in saying that the fetus would weigh nearly two hundred pounds. Two or three others I attempted to deliver had to be abandoned owing to the fact that the cows were not in normal condition for parturition, the offspring being too large to deliver.

On investigation, I found that two of these cows gave milk for two or three days at the time they should have freshened, only to become dry again.

This condition has become so common, herdsmen are refusing to breed to this strain of Holstein's and it is for this reason that I am prompted to write you for information on the subject, as I cannot see any apparent cause for this uncommon disorder.—C. B. S., Nova Scotia.

REPLY—We believe the bulls are not responsible for these anomalous circumstances.

HARD MILKERS

A client has a milk cow that milks hard and wishes something done to make of her an easy milker. He gave no history of traumatism, but says one teat milks much harder than the others.

This cow has just freshened. What procedure would you advise?—J. B. B., Iowa.

REPLY (by Dr. DeVine)—There are several ways that a hard-milking teat may be improved, and in some cases, made entirely satisfactory. You, as a practitioner, will at once realize that for such conditions no set rule will work for all cases. It will depend upon how hard the teat milks and also somewhat upon its size.

Ordinarily, if a teat is not too large, it can be made to milk much easier by stretching the sphincter. The handiest instrument I know for this is the teat dilator devised by Garland, which has a sliding obdurator or piston that makes it possible to stretch the sphincter almost to the tearing point. After the teat is stretched enough for a minute or two, a sterile teat dilator of the right caliber to keep the sphincter well stretched should then be inserted and left in the teat between milkings. I am sending you two sizes of self-retaining dilators which we carry at the laboratory and which we use in our practice. One is for a medium size teat and the other for quite a large one. Please accept these with my compliments.

The advantage of this, over cutting the sphincter, is that stretching may be repeated and continued for almost any length of time without the least danger of infection; but if this fails, the sphincter should be incised at three points equal distance apart. Three incisions not quite through the sphincter is much better than one all the way through. Of course, the operation must be done with the greatest respect for asepsis, and it will be necessary to use the dilator until it seems certain that the sphincter will not contract again. The greatest care in regard to surgical cleanliness must be exercised before inserting the dilator after each milking; but of course, there is not as much danger of serious

infection as there would be if the wound were higher up or a longer instrument, like a milk tube was used. It is not good practice, however, to attempt any surgery around the teats or udder too soon after freshening, if it can be avoided. Danger of infection seems to be greater during the early part of lactation than later when the animal is dry.

CORN STALK DISEASE IN CATTLE

During the late fall and early winter season in this central section of Iowa, in fact over the entire state and in the adjoining states, there has been more or less much trouble in cattle. This disease occurred in cattle a short time after they were turned into the corn fields, in the majority of the cases. Many cases did not appear until the field was practically cleaned up, since the owner was planning on placing the cattle into another field in a few days. In other instances the cattle were grazing mostly on the feed in the meadows since the feed in the cornfields was practically gone. At the present time of this writing, which is a few days before New Year's, we are having a few cases appearing in the fattening lots.

In some instances only the young cattle were affected, or just the old cattle, while in other instances both were affected. Again in some herds only a single mild or serious case occurred, with no losses and with no repeated attacks. In other herds these mild or serious attacks reoccurred in from three to five or ten days afflicting the same cattle with some additional new cases. Occasionally the attack was fatal.

The condition of the corn in the field in this section of the state was varied even in the adjacent fields as well as in the adjoining localities and in the adjoining counties. In this section all the fields of corn in general contained little, if any smut. There was much corn that was down and lying on the ground which was decaying. However, in the general run of the cornfields, the dry mold or rot of the ear of corn on standing stalks was a greater damage than the down corn. The corn and cob were completely destroyed with the husk clinging persistently to the destroyed ear on the stalks standing erect. Occasionally there was a field where the down corn was the main damage and again the dry mold or rot of the ear on standing stalks was the greater factor. In all fields of corn this dry rot of the corn and cob was present to a great degree. Finally the cases of this malady were not found present uniformly in the cornfields where the corn was damaged the worst.

Symptoms given here are in order of their distinctiveness and uniformly present in the most of cases.

A distinct and pronounced inability of coordination of equilibrium usually of the fore quarters, neck and head, if the animal was found standing. High stepping; light footed; stumbling and staggering. The animal was following the course of the fence or side of the building and if the animal was found in the center of the lot or field, the course taken was that of a large circle. The eyes stared, with the eye ball apparently bulging from the socket. By shaking the arm or the side of your coat at the animal, there was a quick response of the animal ready for fight, manifested by shaking of the head or making a dive for you. The temperature was normal or raised from a degree to a degree and a half. The pulse was throbbing, full and strong. Certainly a tremendous high blood pressure was present. Rumination was suspended in most cases. Peristalsis arrested. In some cases there was a quivering or twitching of some group of muscles. In a few cases there was a frothy slobbering from the mouth and nostrils. Occasionally a case was found where profuse diarrhoea was present. Many mild attacks presented a stiffness and soreness of all the feet as if the animal had been foundered.

The duration of these serious attacks usually lasted from twelve to thirty-six hours, while a few cases persisted from forty-eight to sixty hours. Occasionally a case when first visited was found down, unable to rise, proved fatal. The mild cases cleaned up in from twelve to thirty hours.

Medication—the cases presenting only apparent symptoms of Laminitis, all was used, was a pound to two pound saline purge and intestinal antiseptic other than the sulphocarbolates. In the other more serious cases where only one or two animals were affected and no history of repeated attacks an ounce of the concentrated Guiacamphol or a similar product in a capsule and barium chloride for a purge. I have equally good results from camphorated oil as I had with aconite. Some veterinarians have reported equally good results from the use of Elixer of Calicaya, iron Arsenic and Strychnine. Where many cattle were affected in a herd especially one dead

or a few down unable to rise and where the attacks reoccurred for the second and even the third attack, I have treated the sick ones intravenously with ten cc of Swan-Myers Hemorrhagic Septicemia Bacteria and the animals would be on their feet within from six to twenty-four hours. These cases had been down for from twelve to twenty-four hours and to the owner they were apparently growing worse. Treat the rest of the herd with the bacteria in the usual way. Place the cattle in the same field, with the result that no new cases occurred nor repeated attacks.

In conclusion I believe that only a comparatively few cases have been fatal in this section of the state compared to the number of cases each veterinarian was called to see and treat. However, personally my experiences were, in many instances, new cases would occur from time to time and in some instances reoccurring attacks in the same individual cattle. Even neighboring veterinarians had some cases that were troublesome, but as a rule most of the veterinarians report a very small percentage of fatal cases, compared to the number of cases that were treated.—**Fred M. Maxfield, Tama, Iowa.**

HORSE SHOW BODY PROTESTS TO GOVERNMENT AGAINST CURTAILMENT OF REMOUNT SERVICE

The Association of American Horse Shows, Inc., of which Reginald Vanderbilt is president, the annual meeting of which was held recently at the Hotel Biltmore, telegraphed yesterday the following protest to various members of President Harding's Cabinet, officers of the War Department, members of the Senate and the House of Representatives:

"No business problem in farming operations is more important than the question of the horse supply. Horses are essential to economical farming and are vital to the business of ranchmen. According to the investigations of the United States Department of Agriculture, 70 per cent of the power used in farm operations is furnished by horses. In order to make this power efficient it is necessary that the horses of the United States be brought to the highest possible quality. The horse breeding work begun by the Bureau of Animal Husbandry of the United States Department of Agriculture and now carried on by the Remount Service of the War Department has been of incalculable value to the horse breeding industry of the country, not only on the farms, but on the range. The Association of American Horse Shows, Inc., protests against any attempt to curtail the appropriation for the Remount Service or to hamper its work. We especially protest against the proposal to abandon the Remount Depot at Fort Royal, Va., the only Remount Depot in the East or South."—New York times, Feb. 5, 1922.

PRACTICAL PRESCRIPTIONS FOR SMALL ANIMALS

Stomatitis

℞

Phenolis ..... gtt. VIII
Sodii Bicarbonatis..... ʒ II
Glycerine Opt..... ʒ IV
Aqua qs. ad..... ℥ IV

M. Sig.—Apply to parts on a cotton swab.

Indications: Used to relieve swelling, pain, etc., of the gums and tongue.

Constipation

℞

Extract cascaras sag..... ʒ I
Ext. nucis vomica..... gr. IV
Ext. Physestigmatis..... gr. II
Ext. Hyosyami..... gr. V

Misce. et fiat pilulæ No. XXX.

Sig.—One pill night and morning.

Indications: Used in atony of the bowels.

℞

Aloini ..... gr. V
Asafoetidia ..... gr. XL

Misce. et fiat pilulæ No. XX.

Sig.—One or two pills late at night.

Indications: Used in constipation with more or less flatulency in cases of old animals.

Dropsy

℞

Tinct. Digitalis..... ʒ II
Tinct. scilliæ..... ℥ SS
Potassii acetatis..... ℥ I
Spts. juniperis comp..... ʒ II
Spts. vini rect. qs..... ℥ X

M. Sig.—One teaspoonful diluted in 30 cc of water t. i. d.

Indications: Used in renal, cardiac and hepatic dropsy.

Catarrhal Jaundice

℞

Sodii salicylatis ..... ʒ IV
Aqua menthæ viridis..... ℥ III

M. Sig.—Teaspoonful diluted t. i. d. after feeding.

Indications: Used in catarrhal and obstructive jaundice.

New Haven, Conn. Oscar Schreck.

Looking Backward

TWO HUNDRED years ago Morgagni expressed the belief that consumption was communicable from man to man.

In the year 1689, Morton already regarded tubercle as the underlying cause of pulmonary consumption.

In 1843, Klencke produced tuberculosis in rabbits by inoculating them with tuberculous material obtained from human beings affected with consumption.

As early as 1865 Villemin had proved beyond the question of doubt that tuberculosis is a contagious disease.

The Veterinary Department of the University of Pennsylvania was opened October 2, 1884. The introductory address was delivered by Rush Shippen Huidekoper, who was dean of the veterinary faculty.

At the time of the San Francisco earthquake in 1906, 35,000 pounds of antiphlogistine loaded on a New York steamer sailing up the California coast were unloaded and distributed free of charge to the various relief stations improvised for the care of the injured.—Ia.-Neb. Bull., April, 1907.

Dr. Hugo L. Ramacciotti, who was one of the pioneer veterinarians of the Middle West and a man who had earned a nation-wide popularity as a veterinary practitioner, died suddenly at Omaha, September 19, 1907.

Another Great Discovery Overlooked

Here, we have been tussling with the gigantic problem of tuberculosis eradication all these years, after John H. Trent, M. D., of Brooklyn, N. Y., told us already in 1897, through the Medical Record (December, 1897), that bovine tuberculosis is due to over-milking, viz.: not allowing the cows to rest during pregnancy, but milking them from one year to another until they die. He goes on to inform us that bulls, steers and unpregnant heifers never contract tuberculosis and that a law compelling farmers to allow their cows to go dry at least three months before gestation would fix things all right. Our stupidity is certainly provoking.

"Dr. C. J. Sihler of Kansas City, Kansas, has completed arrangements for the production of hog cholera serum."—Mo. Val. Vet. Bull., 1909.

The oldest veterinary journal in the world is the Receuil de Medicin Veterinaire of Paris, established in 1824, and it has been published without serious interruption until the present day.

The first qualified practitioner of veterinary medicine to settle in this country is said to have been John Rose, a Prussian graduate who entered practice in New York City in 1827.

The first attempt at public instruction in veterinary science in this country was made at Boston by G. H. Dadd in 1855. The "school" did not survive long enough to be baptized.

In a list of graduates of the Montreal Veterinary College published in the American Veterinary Review, July, 1884, we find the name, Austin Baker, medalist, '76. This is "Pa." Among the others named in the same list are: W. L. Williams, '79; A. W. Clement, '83; Alex. Glass, '82; D. Lemay, '79; C. C. Lyford, '77; Fred. Torrance, '82; John Ryan, '77, and Benj. J. Pierce, '81.

Speaking before an alumni meeting of his alma mater twenty-two years ago, Professor W. L. Williams said, "General practice is the body, the foundation of veterinary science; sanitary medicine, meat inspection and others are branches." * * * "Our journals exalt the official veterinarian and his achievements, associations discuss sanitary problems at great length, and college professors seem at times to almost advise their highest graduates to not sacrifice their talents on common practice." Of the army veterinarian he said in the same address, "Instead of entering into the careful study of how to improve the service of animals in the army and publishing in either the army or veterinary periodicals they have largely assumed the prerogative of the army mule and expend their energy 'kicking' about their low pay and absence of rank."

The Haver-Glover Page

PUBLISHED EVERY NOW AND THEN IN THE INTEREST OF GRADUATE VETERINARIANS

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Matters of Current Interest

TRIBUTE TO A FRIEND

THE veterinary profession of the United States has lost one of its most beloved and useful members in the death of Dr. R. A. Archibald of Oakland, California, following an attack of influenza which found him an easy victim on account of a mysterious illness resembling anterior poliomyelitis, which had confined him to his home for nearly three years. It was only during the last six months that he had been able to resume in part the care of his affairs, attending his office for only a few hours daily.

The task allotted to me by the editor, though filled with regrets and heartaches, is nevertheless one of gratification—gratification that I, one of his closest friends, who knew him most intimately, who was a classmate and who valued him most highly, should be chosen and privileged to write this message, his obituary.

Dr. Robert A. Archibald
1870-1922

I regret deeply that space does not permit me a full opportunity to give utterance to the sentiment of esteem and warm affection his host of friends shall ever cherish for the deceased.

The opinion of his worthiness in medical circles is shown in his election to honorary membership in the Oakland Medical Society and the Alameda Medical Society.

He was a pioneer in procuring laws regulating veterinary practice in the state of his adoption.

Dr. Archibald's biography would be a just representation of a character, pleasing by his beautiful traits, and useful as a rare pattern of what is most praiseworthy in our profession.

The doctor was born in Queens County, Ireland, in 1870, of English-Irish parents. He came to the United States in 1887, living in central Illinois. In 1889 he enrolled as a student in the Chicago Veterinary College and in this institution exemplified the spirit which characterized real men. His funds were very limited, so much so that a considerable portion of the time of his student life he subsisted on one meal a day. It is needless to say that he was a most ardent, diligent student. He graduated in 1891 with the second highest general average, and won the prize in anatomy.

After his graduation, he went to Oakland, California, arriving there with just one silver dollar in his possession. He borrowed twenty dollars from a colleague to embark in practice, and, handicapped as he was by limited funds, he was in a few years, enjoying one of the largest veterinary practices in California. He was a very successful practitioner and wielded a big influence in the uplift of veterinary practice on the Pacific coast, where he earned the beautiful distinction of being the true friend and guardian angel of many young veterinarians.

Being a profound student of bacteriology, he began to specialize on that subject, soon becoming associated with the most prominent bacteriologist and pathologists of the coast. In 1898 he was appointed assistant bacteriologist of the city of Oakland, and for several years, preceding his long illness, he had been chief bacteriologist. During this time, he also did yeoman work for the improvement of dairy conditions in California.

He held the position of Professor of Bacteriology in the Oakland Medical College, and also in the San Francisco Veterinary College.

He was three times president of the California State Veterinary Medical Association, twice vice-president of the American Veter-

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Veterinary Medicine

Vol. XVII APRIL, 1922 Number 4

No Amateur Horse Doctors Wanted

WITH reference to the issue of medical supplies to stable sergeants and possibly other noncommissioned officers of the line of the army for the treatment of minor injuries to animals to be included in a wallet to be designated as "farrier's wallet," the surgeon general of the Army is forced to place himself on record as absolutely opposed to such issue to non-technical troops. He would take precisely the same position if it were proposed to issue medical supplies to the first sergeants of each unit for the treatment of minor injuries of men. His objection is based on the fact that a veterinary service, commissioned and enlisted, is now available throughout the Army for the care of sick animals precisely as such service is available for the care of sick men. Veterinary personnel is assigned to every station of any consequence and will be available with every regiment and larger unit in time of war. So far as known, it has never been proposed to attach medical personnel or to furnish medical supplies to units smaller than the regiment such as the company or troop. Under present conditions practically no sick or injured animal need lack the professional care of a veterinary officer and his trained enlisted assistants. It is stated:

No Sympathy with Pseudo-Professionals

"The surgeon general confesses to a lack of sympathy with a proposal which encourages the practice of veterinary medicine by sergeants of the line under any circumstances. The Army can not, in his opinion, afford to develop and maintain a group of amateur horse doctors whose activities have in the past tended to discredit the science of veterinary medicine and will doubtless so continue in the future. The treatment of minor injuries is not a minor matter, because such conditions frequently result in prolonged disability and loss of life. Minor injuries are as much within the province of the veterinary officer as major ones.

"If a stable sergeant is to be equipped for this treatment there is no limit to the scope of his pseudo-professional activities, and, it should be noted, he serves under the instruction of the unit commander, entirely independent of the veterinary service, which by regulation is responsible for the care of sick animals. Without doubt the stable sergeant occupies a broad field of usefulness, in which much remains to be accomplished, without taking over the treatment of injured animals. The care and hygiene of normal animals is a most important matter in which he, under the unit commander, can render most excellent service in keeping animals physically fit. No one else can do this work. It is vastly more important to keep animals well than it is to cure them after they are injured.

The Untrained Service Wasteful

"It would seem that the best and most useful development of the stable sergeant's activities would be in this direction and that time and materials spent by him in treating the sick would be worse than wasted. In conclusion, the surgeon general urgently recommended the abandonment of the proposal to issue a packet of medical supplies to line sergeants, confidently believing that the first-aid

packet to be developed and supplied every animal, together with the veterinary service now available, will meet every reasonable requirement."—Army and Navy Register.

IS HOG CHOLERA THE ONLY SERIOUS SWINE SCOURGE?

Dr. Stouder of the Extension Division of the Iowa State College was quoted as follows in an article that was recently published in "The Country Gentleman": "Ninety-five per cent of all hogs that die from disease in the United States die from hog cholera. Just get that fact across to farmers as strong as you can. All other diseases are insignificant compared with hog cholera. I have made post mortem examinations on thousands of hogs in Iowa for years and I have never found more than two or three positive cases of hemorrhagic septicemia. Let a farmer immunize his hogs against cholera, even if it does cost something and he need never worry over the few hogs he may lose from any other disease."

The statements in Dr. Stouder's quotations are misleading, but it may be that the Doctor has been misquoted as is frequently the case in such articles. If the term "hogs" includes all swine from the time of farrowing until maturity, the statement "ninety-five per cent of all hogs that die from disease in the United States die of cholera," is certainly an error. Practitioners and most state veterinary control officers will approve the statement that the greatest loss in numbers of swine occurs within six weeks after farrowing and is due to parasitism, scour, enteritis and other conditions and not to hog cholera. In certain sections of the country, the loss in numbers from cholera of swine after weaning may be 95% of the total losses or even more, but this statement is probably not true of the entire country. Ninety-five per cent of the economic loss to the swine industry of the United States is not due to hog cholera.

The fact that Dr. Stouder has only observed two or three cases of hemorrhagic septicemia in swine, although he has "made post mortem examinations on thousands of hogs" does not eliminate the possible existence of this disease in other sections of the country. The sanitary authorities in an eastern state maintain that hemorrhagic septicemia is the most important disease of swine in that state. Are the readers of "The Country Gentleman" article to assume that hog cholera and very rarely hemorrhagic septicemia are the only significant diseases of swine? Are the swine in Iowa free from necrotic enteritis and influenza or flu? If not, have these two diseases become insignificant and of no economic importance?

The quotations above referred to could not have been intended by Dr. Stouder to impress the reader with the fact that practically all diseases of swine may be assumed to be cholera and the simultaneous immunization with anti-hog cholera serum and virus would prevent all losses, although the statement "Let a farmer immunize his hogs against cholera, even if it does cost something, and he need never worry over the few hogs he may lose from any other disease" would seem to imply that there is no further need for differential diagnosis of swine diseases and therefore the services of veterinarians are no longer required.

We believe: first, that hog cholera is the most important disease of swine after weaning; second, hemorrhagic septicemia, necrotic enteritis and influenza are important economic diseases of swine; third, that the safeguarding of the swine industry requires more than the promiscuous immunization against hog cholera. Fourth, that because of the prevalence of other diseases than hog cholera, the immunization of swine should be done by those capable of making a differential diagnosis, that is, a veterinarian.—A. T. K.

IS THE MYSTERY OF PERIODIC OPTHALMIA SOLVED?

It is a well known fact that periodic opthalmia exacts a very big toll from the horse industry; which in some districts is much bigger than that of all other diseases combined; and that in spite of its disastrous influence and the wealth of investigations of which it has been the subject nothing worth while has ever been discovered about any part of its phases. In short it has until now been a profound mystery. Bacteriological studies have thus far all ended the same—in nothing.

Six years ago Drs. Augusto Bonazzi and E. Merillat of Wooster, Ohio, began a quiet, methodical study which today, judging from a preliminary report submitted to VETERINARY MEDICINE for publication promises a complete solution of the whole mystery and with it preventive and curative suggestions which are to say the least almost revolutionary in character.

The study was conducted in a region where periodic opthalmia is a scourge, where it is

rampant in the extreme and where as high as 33% of all horses are so affected. It is doubtful whether there is another region in the country better suited for the wide mesological study of the disease these authors have been able to pursue. But besides the mesologic and endemic studies which have added to the fund of facts accumulated the report includes bacteriologic, anatomo-pathologic symptomatic and therapeutic investigation and experiments which are extremely interesting and which seem conclusive.

The work seems to have eliminated systematically about everything that might be suspected as causative and closes with line of management that promises to remove the tenacles from this previously refractory affection of horses.

It will be given to readers of VETERINARY MEDICINE beginning with the May issue.

THINK IT OVER

It seems indeed unfortunate that the close relations we should by right enjoy with the live stock interest are being so badly broken by scareheads about the hazards of this or that disease of animals to the human family.

There is a gap, a wide, wide gap, between the veterinary profession and the live stock interests. These two interests have lost contact and both of them are suffering the consequence. We feel the results of the breach most because we are the weaker of the two.

Instead of becoming narrower the gap is widening more and more. It is widening because the whole profession is being drawn into an absolutely untenable position before a critical public and a critical live stock industry.

On the one hand we purport to be the champions of the stockman, and then on the other we unhesitatingly preach doctrines that incur distrust in our intentions as a profession and worse still inflict incalculable harm to the practitioner who must subsist from him despite the unfriendly relations thus created.

And all of this we do at the beck and call of a few men who seem to feel that their positions might be less secure if they did not eternally exaggerate the harmfulness of tuberculous cattle and hogs to human health, for the ostensible purpose of frightening appropriations out of the public treasuries. It is thus that the welfare of more than twelve thousand veterinarians threatens to be sacrificed at the altar of about two hundred.

The veterinarian in an official position who preaches tuberculosis eradication from the standpoint of economy, and economy alone, stands upon solid rock, and is making a position for himself and his profession that will endure; but he who tries to whip the live stock interests into supporting his programs through campaigns of frightfulness is pulling the profession into a precarious situation, a situation that is already reaping a harvest of restrictive and destructive legislation, the force of which will always be felt most by those struggling to make a living by general practice.

What the profession seems to need today to stem the tide that is leading it over the unsafe grounds that now threaten to swallow it up is a great big solid organization of veterinarians for veterinarians that will champion the cause of the majority and study the problems of the many and not of the few, an organization of the twelve thousand who are traveling the country roads to administer to the wants of the farmer at so much per call,—an organization that will re-establish the lost contact between client and practitioner, an organization that will go to legislatures with the stockman for mutual benefits—an organization that will build up the field of veterinary practice after its own ideals—in short an organization for veterinary practitioners that will mind its own business and protect itself against ulterior exploitation.

The A. M. A. Journal, Vol. 78, No. 9. The physicians' protective association of Buffalo are protesting against free medical service for the public. They recently passed the following resolution:

"We believe that the time has arrived for an accounting, and that widespread and unnecessary pauperization in the form of medical aid should cease. Abuses are tolerated under the mask of public health, and should be ruthlessly exposed. There is no greater menace than the creation of a vast, willingly dependent class, and it concerns the public more than the medical profession. We are tired of the burden forced upon our profession, and weary of interference and attempted dictation of a class of salaried workers whose livelihood depends so largely on the inflation of the number in the army of fraudulent dependents."

Our Accolade

MISSOURI has a new state veterinarian. His name is Wilson—Dr. H. A. Wilson of Malta Bend. Earlier, one would have addressed him Lieutenant H. A. Wilson, U.S.A., A.P.O., 823, A.E.F., France.

In making up a biographical sketch of Wilson one encounters some mighty formidable captions: Seventh Field Artillery, March, April, May and June, 1918, First Division; One Hundred and Thirty-Third Field Artillery, Thirty-Third Division, September, October and November, 1918; Mondidier, Verdun, Argonne, Gondrecourt, Thierville, Dead Man's Hill, Breuille, etc. These names make the writing of a short biography easy since these organizations at the places and between the dates indicated wrote many a glorious page into American history and Wilson was there to help write it.

DR. H. A. WILSON
Jefferson City, Mo., State Veterinarian

To have been an officer in the Seventh Field Artillery during its operations before Mondidier is quite enough glory for one man; to have served with the Thirty-Third Division along the Meuse north of Verdun during October, 1918, was enough to have made Sherman blush for having been so modest in expressing his conception of what war really is. Wilson served with the Thirty-Third Division from July until the armistice was signed.

After that date, like all peace loving civilian soldiers, his military record is that of a yearning for home and native sod where he arrived February, 1919, and was discharged a month later.

He reentered the practice of his profession at Malta Bend where he remained until decorated as state veterinarian, February 1, 1922.

The job of state veterinarian of Missouri is a big job; it was made big by a big man—D. F. Luckey—after more than twenty years of hard knocks against obstacles that are best understood by those who have occupied such positions since the pioneer days of live stock, sanitary science and police in this country during the evolution of our present animal husbandry.

But, although the work of the pioneer is admittedly a very hard one, fraught with the difficulties of blazing new and uncertain trails, that of continuing a labor well begun is also an arduous task, fraught with the difficulties of keeping the pace of a capable predecessor.

A man, however, who has acquited himself well as a practitioner at his own home; one who has served his country with credit in such an old, disciplined military organization as the Seventh Field Artillery through trying days; one who is mayor of his home city and master of his local Masonic Lodge; and one who enters office with a determination to work, to please, to confer with his colleagues and to assume the role of servant rather than commander, may be trusted to render a good and lasting service to the state that drew its sword and touched him with the accolade of distinction.

No man is greater than the estimate placed upon him where he is best known; and it is always safe to confide in testimonials expressed, not in words, but implied in the deeds of close acquaintances.

Missouri is in safe hands, and the veterinary profession is pleased that it chose wisely and well in filling a position made famous by nearly a quarter of a century of achievement in live stock sanitation.

Editor's Personal Page

When honesty is only policy it isn't much to brag about.

A hobby is always a pleasure and if properly ridden it can often be turned into a profitable enterprise.

Confidence is a cardinal prerequisite of profitable business, confidence of the buyer in the seller, and back of confidence is reliability.

Ability is the result of a disciplined mind—the training of the intellect, but ability without reliability only makes a gifted criminal.

It is easier to lose than to hold a client. Lost through unreliability, he is lost forever, through misfortune he will return because no one has a monopoly on luck.

Don't be the cheapest man in your neighborhood if you want to be thought of as the best veterinarian. As regards harmfulness, undercharging and overcharging belong in the same rank.

The veterinary practitioner is ex-officio a good and successful stockman. His knowledge of animal diseases gives him a big advantage over those who know less about the pitfalls of the breeding industry.

Oh, yes, commercialism does hurt the profession. It is probable, however, that it is our own commercialism that hurts most. We must leave the old-time days to the memory and banish the thought that we have anything to sell by the yard.

A practitioner is not "in right" until he can safely acknowledge that he does not know what is the matter with a case, suggest helpful treatment, and postpone the diagnosis until the next call, without inviting criticism for the apparent shortcomings. This is always much better than a snap diagnosis that will require revision at the next call.

Make your word as good as your bond and keep both above par.

The only cause of hard times is spending more than is earned.

Beware of the misanthropic motives of the self-named philanthropist who operates from the house tops.

If the written and implied code that prohibits the exploitation of secret medicines were enforced. Gee!

The clinic of the Missouri Valley Veterinary Medical Association almost won the distinction of being the first horseless clinic in its history when at the last moment a subject belonging to this domestic species was "run in" on the awe-stricken audience.

Charles J. Frey, D.V.S., Silver Spring, Md., says: "The paternalistic tactics that have been employed by the federal government tend to destruction rather than construction of the whole veterinary profession.

"Where ignorance is bliss, 'tis folly to be wise."

Just as soon as we are big enough to extricate ourselves from the false position into which we are being drawn by a few who, entirely unsolicited, assume the role of watchdogs of the public health, the sooner we practitioners will be able to again array ourselves side by side with our clients.

There are, after all, two separate branches of the veterinary profession with clashing interests. The one is composed of all the practitioners and all of the sanitarians who restrict their activities to the health of live stock. The second branch is composed of the half-trained watch dogs of the public health who studiously try to scare the public away from animal products as food. Don't let this second branch "sic you on." It hurts the profession.

Purely Practical

IN LIEU of the usual mechanical methods, Williams recommends hypodermic injections of pituitin (2 cc to 5 cc) to prevent the uterus from being re-expelled after reposition.

Do not overlook Bryonia (Lloyd Bros.) in the treatment of pneumonia and pleuritis in the dog.—Reed.

Equal parts of weight of phenol-gum camphor and chloral hydrate triturated together until liquefaction occurs is a valuable application for painful wounds.—Reed.

Lighting a fine grain hexamethylenamin tablet affords a quick and easy way to produce a flame to heat a spoonful of water for a hypodermic solution, or to render the needle sterile by passing it through the flame produced. Try it.—Reed.

By placing the fingers in one horn, the thumb in the other and then pressing gently forward an inverted uterus will return in 100% of the cases, just as if it were a sack turned wrong side out.—Long.

Among the different enterprises the veterinarian is particularly qualified to undertake with profit and pleasure and to keep the mind from worrying over a declining income are: 1. The bee industry; 2, the poultry industry; 3, the fox industry; 4. the wild fowl industry; and 5. the dog industry.

Veterinary practice and farming do not make a good combination for the veterinarian. The one distracts from the successful pursuit of the other because each one requires a too close attention to detail to assure success, and because calls can only be made at the expense of the farm operations which in turn makes for neglect of the veterinary practice.

To cure foot-rot in cows Ferguson recommends: phenol, five parts; formalin, three parts, and water 100 parts. Apply cotton wads between the claws and around the coronet and hold them in place with a good bandage, and keep the dressing well soaked with the above mixture in the proportions of two ounces to pint of water.

For metritis I impregnate liquid petrolatum and icthyol with 2 per cent of iodine by heating. I allow this to remain in the uterus for several days and then irrigate and repeat.—Ober.

One of the troubles with bacterian treatments is probably due to the fact that practitioners have expected too much from a single dose.

A single dose of bacterin is not always sufficient. Under-dosing is often the cause of failure to get the best results.

Every practitioner knows something that others do not. It would be a precious privilege to have access to a reservoir containing all of this knowledge.

A good way to remove warts is to pinch them off with a pair of rather dull pincers. The common horse-shoer's pincers will answer.

"Dentistry is a branch of veterinary science that should not be neglected, as the teeth play an important role in preserving the health of animals," writes an Oklahoma colleague. "It prevents waste of feeds, improves the general appearance, aids digestion and keeps the eyes brighter," he says.

Finely sifted hard-wood ashes is a good dusting powder for lice in cows, horses or dogs. The ashes should be dusted into the hair and then brushed out the next day. For chickens the ashes are placed in a box to which the chickens have access for self dusting.

The information furnished by a paper prepared by Dr. P. H. Fulstow of Norwalk, Ohio, for the information of the members of the Northwestern Ohio Veterinary Medical Association on the average income of veterinarians, details of which will be published in a future issue, shows clearly that the veterinarian is not as unfortunate from the business standpoint as other lines of industry. Many an enterprise in this country has cheerfully "written off" great losses during the last two years and we, like the rest, must be good sports and bear ours with the same good humor and fortitude.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

The Tucking Operation for Ventral Hernia

SEVERAL years ago while performing some surgical operations at the veterinary hospital of Dr. A. F. Schrage at St. Cloud, Wisconsin, among the cases presented was a very remarkable one of ventral hernia in a mare—remarkable because of the great size and because it was bilateral.

Resembled Rupture of the Prepubian Tendon

The mare was a middle aged, black Percheron, weighing about 1,400 pounds and in fair condition of flesh. She was badly deformed with two, enormous bulgings at each flank. The case resembled one of rupture of the prepubian tendon except for the fact that the protrusion was more lateral than ventral as in the case of dropping of the abdominal walls from the weight of a heavy fetus when the attachment of the prepubian tendon gives way at the pubis. A casual examination, however, soon revealed that this was not the case. The linea alba divided the protruding mass into two equal parts, between which it was deeply embedded. The two halves give the appearance of being "cut in two" by the linea alba and almost touched each other ventrally.

Diagnosis: Two Ventral Hernias of Enormous Size

The size of each was enormous, closely approaching that of large wash tubs, protruding from the regions of the flanks and making the patient a very poor surgical prospect. Intervention at first seemed like an insane act in view of past experiences with large ventral hernias of horses operated upon by the usual open method.

The hernias were of several years duration having become gradually larger until finally incapacitating the mare for any kind of ordinary work. No authentic history as to the cause was obtainable.

On palpation of the sac it was found to be composed of a thick layer of hypertrophied peritoneum internally and of normal skin externally.

The orifice, the edges of which could be traced indistinctly, extended from the vasti muscles posteriorly to the costal margin anteriorly and then traced a course downward and backward over the abdomen, striking the linea alba about eighteen inches behind the xyphoid cartilage, whence it followed the linea alba straight back to the brim of the pubis. Its course from the pubis upward could not be traced on account of the margin being lost in the volume of the mass. It seems likely, however, that Poupart's ligament was its posterior boundary.

Both sides were about the same as regards the boundary of the orifice, volume of the sacs and thickness of the peritoneal layer. They were entirely too heavy to manipulate for visceral adhesions.

Prepared for Operation

Despite the unfavorable prospects of the case it was decided to make an attempt, the owner having consented to take the small chance there was to effect a cure.

Although the mare had been walked a considerable distance and was quite empty it was thought best to postpone the operation to lighten the weight of the intestinal contents by a fast of 24 hours. In the interim the parts were clipped, shaved and given a preliminary disinfection, as much to shorten the duration of the operation as to effect the best disinfection possible for so large a surface and for an operation of such magnitude.

Narrative of the Operation

On the following day the mare was secured on the operating table, anesthetised with chloroform, after having received a preliminary anesthetic of chloral 20 minutes before. The following procedure was carried out:

1. An incision was made through the skin following the whole longitudinal axis of the sac. It was more than two feet long.

2. The skin was separated from the sac throughout its whole extent, as far down as the linea alba and right up to the margin of the orifice in all the other directions, except backwards where the peritoneum seemed to be too thin to justify transgression.

3. The sac, which on being thus exposed

proved to be an inch or more in thickness, was then tucked inward in two regular, longitudinal pleats which were held in place with interrupted sutures here and there, preparatory to suturing them permanently with a continuous suture, running the entire length of the pleat, that is from the anterior margin of the orifice near the costal border back to the region of Poupart's ligament. The suture material used was a double strand of strong linen saddler's thread. In suturing care was taken not to pass the needle into the abdomen. Let us understand. The sac was folded in and held there by a continuous suture running along the crease thus produced. This produced a heaped up double fold of smooth endothelieal lined peritoneum internally and a crease held shut with sutures externally, all of which served as a veritable sill to support the weight of the viscera. The idea was to hold the fold up with sutures while adhesions were forming to serve the same purpose in permanence.

4. The skin was sutured with a continuous suture of the same material. This was done in a rather slipshod manner on account of the haste that seemed now to be necessary to bring a long, drawn out operation to a close. The animal had been under the anesthetic more than an hour which in such operations is near the dead line.

5. While reviving from the anesthetic a strong muslin wrap was slipped around the body and sewed up as tight as possible.

There was no thought of operating upon both sides at this time because repositioning of an anesthetised patient is impossible on an ordinary operating table even if a continuation of the anesthesia were safe.

The Outcome a Surprise

The wound healed without any serious complications, although fistulous tracts developed here and there on account of the large amount of non-absorbable suture material incarcerated beneath the skin. In about five weeks it was apparent that the hernia on the operated side was cured—cured permanently—which time proved to be the case.

As the total cost of an expensive operation and a long sojourn in the hospital discouraged the owner against a second operation the case was abandoned.

The rest of the narrative is unconfirmed hearsay. The mare is said to have fallen into the hands of a veterinarian who repeated the operation on the opposite with equally good results.

Subsequent Experiments Successful

Beginning with this unique case and especially with these unexpected results the tucking method of lifting ventral hernias into the abdominal cavity was practiced as a routine measure on a large number of similar cases.

It has been found that the operation is not successful except in old cases in which the peritoneum is intact and has had time enough to become hypertrophied. The peritoneum of a recent case is too thin to make a good support even after it has been folded in, except in a hernia with very small orifice.

It is likewise of no service where the peritoneum has been divided with the causative violence since in this case the omentum and even the intestines are located subcutaneously. There is only one layer—the skin—and to this viscera are adhered. Such a case is incurable and always a surgical hazard.

On the other hand the operation is a complete success and remarkably simple and harmless in the average and small ventral hernias of considerable duration, when on palpation it is found that the inner layer of the sac is composed of a good strong peritoneum which can be made use of to plug the orifice or construct a new floor over it.

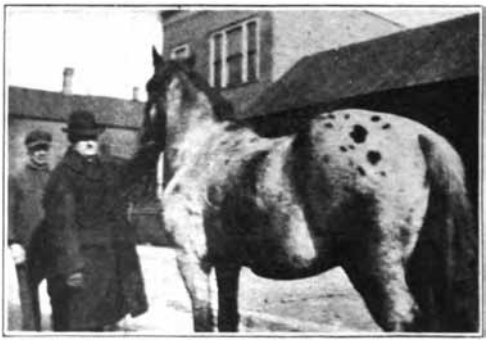


Figure 1

In an operation performed in the practice of Dr. W. Lester Hollister, of Avon, Illinois, several years ago the futility of operating upon a ventral hernia with a thin peritoneum was shown. Hollister's case was a pure-bred Percheron mare three years old with a ventral hernia the size of a twelve quart pail located midway between the costal border and the stifle. In operating on this animal the peritoneum was found to be thin—very thin, in

fact so delicate and transluscent that the intestines could be seen through it. After the tucking operation had been performed there was a period during which it seemed to have been successful, but later this delicate support gradually gave way, leaving the hernia sag down again to its original dimensions.

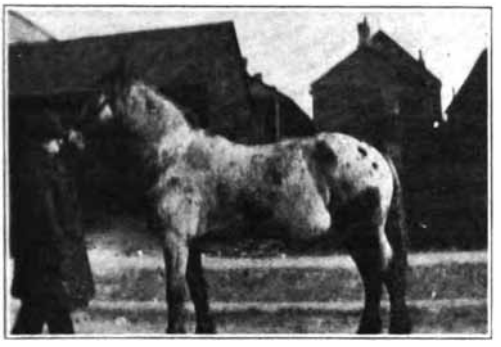


Figure 2

Illustrating a Recent Case

The case, photographs of which are reproduced herewith, is a recent ventral hernia that would not as yet be regarded as a safe surgical subject but which would after several months become operable. It is, however, an interesting one at this stage because the true character of the injury was difficult to estimate at the onset, as is so often the case with recent abdominal traumas. What may seem like a simple contusion today may prove to be a serious ventral hernia some days later. When complicated with hematoma or serous sac the exact nature of the bulging may remain masked for two weeks or more.

Figure 1 reproduces a photograph taken the fifth day after the accident, which consisted of a glancing blow from the fender of a swift moving automobile. At this time the symptoms were that of a thick, diffused ventral edema, extending forward almost to the fore legs and across the medial line to the opposite side. There was only a slight fluctuation at a small zone just beneath the point of contact with the fender—about two inches in diameter. Hernia was, however, suspected on account of periodic colicky pains the patient manifested from time to time during the first few days following the accident.

Figure 2 was taken at the end of ten days. The edema was gradually diminishing and the area of fluctuation was enlarging. Yet at this time it was not possible to determine by palpation whether hernia actually existed or not. Deep palpation was too painful and there was still too much accumulated serum in the sac and too much inflammatory swelling and edema to either locate or exclude an orifice. It was, however, becoming plain that hernia existed.

Figure 3 which shows the developments at the end of three weeks is a splendid reproduction of unmistakable ventral hernia, projecting sharply from the flank. At this stage the case was easy to diagnose. The pain had subsided, the edema was all absorbed and the orifice could be felt on deep pressure.

These three figures graphically portray the typical evolution of abdominal injuries which puzzle the best practitioners at first but which later develop the differentiating syndrome between hernia and serous or sanguinous collections. The photographs were supplied through the courtesy of Dr. C. O. Kroener, Chicago, Illinois, in whose practice the case occurred.

Figure 3

Farmers Meet with Veterinarians

We quote the Triumph (Minn.) Progress: This meeting was well attended and some heated discussions were heard. At the present time only about one-fourth of the hogs in this county were vaccinated last year and many of them too late. As a result there was considerable loss from cholera. It is proposed to get the serum wholesale and arrange the vaccinating so that the veterinarian can do his work cheaper and still realize more from his labor than he does now and at the same time cut the cost of vaccinating to about one-half what it is now. This will give every one a chance to vaccinate and hog cholera losses will be a thing of the past. This item one year with another means thousands of dollars to every community.

Minerals for Livestock

By F. B. Hadley, D. V. M., University of Wisconsin, Madison

VETERINARIANS should be particularly interested in the subject of minerals in the livestock ration especially because it is being much discussed by farmers, due to the prominence given to it by the agricultural press. Naturally conflicting views exist about the importance of minerals and the kinds needed to maintain animals at their highest efficiency. In this paper an effort will be made to summarize what is known about the subject.

Need of Minerals Not Questioned

There is no doubt that minerals have a very important place in the ration of farm animals. This is shown by the fact that experimental animals die sooner on a ration containing no minerals than when all food is withheld. All young animals require these elements for growth; older female animals need them to make up the shortage produced as a result of bearing young and to replace those secreted in the milk.

Normally the kidneys do not allow any sugar to pass out with the urine. When some sodium chlorid solution of the same strength as the salt content of blood itself is injected into the veins a curious effect is observed. The kidneys become unable to hold back the sugar in the blood, so it filters through them and escapes in the urine. If, however, there is added to the sodium chloride solution some calcium, magnesium, and potassium salts as found in blood, large amounts of the solution can be introduced into the blood stream without causing any disturbance in the function of the kidneys whatsoever. It is not known why this is, but it has been observed many times, so physiologists have given the term "balanced salt solution" to that solution necessary for the proper functioning of the living tissues. This experiment clearly demonstrates that mineral elements are essential to the animal mechanism.

Investigation has shown that the one mineral substance above all others required by animals to maintain health is sodium chlorid. Every feeder of livestock knows that hays, grains, and other natural feeds do not contain enough common salt for the needs of animals, so he provides it, knowing full well the bad results that would follow unless he does so.

Timothy and Blue Grass Hays Low in Calcium Content

So far as is now known all other minerals needed by the animal are secured by it in sufficient quantities from the feed, even if the latter is quite restricted in character. There is a possibility, however, that calcium (lime) may be lacking, especially in those sections where the soil is low in this substance, and acid in reaction, for plants grown upon lime-deficient soil are relatively low in their lime content, as is also the drinking water. Both timothy and blue grass hays are low in cal-

Missouri Valley Medical Veterinary Association

cium, especially if grown on acid soil. On the other hand, legumes (clover and alfalfa) and certain feeds of animal origin (tankage and skimmed milk) are rich in lime and contain an adequate supply for the needs of the animal body.

It is fortunate indeed that green plants contain a relatively high percentage of calcium, as this means that when animals have access to pasture for several months each year they will get along on less lime in their ration during the winter months, when the feed is most likely to be low in lime content.

Phosphorus an Essential Constituent

Phosphorus is another essential mineral constituent of the body, as has been shown by Dr. Forbes of the Ohio Agricultural Experiment Station, who states that structurally it is important as a constituent of every cell nucleus and of all cellular structures; it is also prominent in the skeleton, in milk, in sexual elements, glandular tissue, and in the nervous system.

Functionally, phosphorus is involved in all cell multiplication, in the activation and control of enzyme actions, in the maintenance of neutrality in the organism, in the control of nerve stimuli, and through its relation to ozmotic pressure, surface tension, and inhibition of water by colloids it has to do with the movement of liquids, with the proper liquid contents of the tissues, with cell movements, and with absorption and secretion.

Fortunately phosphorus is not nearly so likely to be lacking as are the other mineral substances already mentioned, because grains, tankage and skimmed milk contain enough for the needs of our animals most of which are fed at least one of these feeds.

Cows Store Up Calcium and Phosphorus in the Bones

It has been demonstrated that a cow will draw calcium and phosphorus from the store in her bones to the extent of 25 per cent of the total amount contained therein if there is a deficiency in her ration. When dry or producing less than 10 pounds of milk per day, the cow starts to store up a supply of these elements in the skeletal system. We should take cognizance of this fact and feed her liberally during this period on a ration which would make it possible for her to assimilate liberal quantities of both these elements.

While it is possible to produce premature and weak offspring in experimental animals by withholding calcium or by feeding fodders low in mineral matter, it seems improbable that under ordinary farm conditions these disasters occur from this cause. This is because the ration is not restricted in the manner mentioned throughout the year, since there are four months or more during which the stock is on pasture when they have opportunity to replenish their depleted stores of minerals. We are convinced that many stockmen are deluding themselves into believing that abortions are due to deficiencies in the ration, when, as a matter of fact, most of the cases are caused by infection with the abortion bacillus of Bang.

Complex Salt Compounds Superfluous

For many years, but more especially recently, the manufacturers of various stock salts, mineral mixtures and similar patented

Kansas City, Mo., Jan. 31-Feb. 2, 1922

preparations have advertised their preparations to contain one, more or all of the following substances: glauber's salts, epsom salts, iron sulphate, copper sulphate, and charcoal. They have succeeded so well in their efforts to impress upon the public the value of these substances that stockmen have come to believe them essential for the welfare of animals. Now as a matter of fact, there is no evidence to show that any one of them is of value to a healthy animal. Since none of these substances contain any one of the essential mineral elements previously mentioned, it is not reasonable attribute any worth of them. It would be much more economical to purchase any extra minerals needed by livestock separately and mix them with the feed, than to purchase and use these complex salt mixtures.

A satisfactory and adequate salt mixture

(Continued on Page 200)

Prevention and Control of Tuberculosis*

By Dr. A. T. Kinsley

TUBERCULOSIS is a specific infective disease caused by the tubercle bacillus. This disease affects practically all warm-blooded animals, including man. Cattle, swine and poultry are more susceptible and consequently more frequently affected with tuberculosis than other farm animals, although an occasional case of tuberculosis has been reported in the horse, sheep and goat. Tuberculosis of farm animals is more or less prevalent in all sections of the country. Bovine tuberculosis is most prevalent in dairy cattle of the older states. The extent of bovine tuberculosis varies from ½% to 1% in some of our western states to from 5 to 30% in some of the eastern states. These estimates are based upon the findings in tuberculin testing and inspection in abattoirs.

Porcine tuberculosis is most prevalent in those sections in which swine are fed by the by-products of the dairy cow. The percentage of tuberculosis in swine as indicated by inspection in abattoirs has been increasing at an alarming rate and was recently reported to be approximately 12%, of all swine slaughtered at official establishments during the fiscal year ending June 30th, 1921.

Avian tuberculosis, according to the available reports is not as generally distributed as tuberculosis of cattle and swine. Tuberculosis of fowls is most common in the central northern states, although the disease has been reported to be more or less prevalent in some of the Pacific states. The extent and distribution of this disease combined with the fact that at least three different groups of farm animals are subject to its ravages complicates the problems of control. The relation of tuberculosis of farm animals and tuberculosis of the human, although it is not excluded in the subject assigned, will not be discussed.

Control Depends on a Comprehensive Knowledge of the Disease

In order to fully recognize the significance of preventive and control measures of tuberculosis or other infective diseases, there should be a comprehension not only of the extent of the disease but also of the transmission of the disease from animal to animal of the same species and the intertransmission from an animal of one species to an animal of another species.

In the control of an infectious disease it is essential to have a comprehensive knowledge of the cause of the disease, source of infection, channels through which the infection may successfully gain entrance into the susceptible animal and the avenues through which the infection is eliminated from the diseased animal.

The types, morphology, staining reactions, and cultural requirements of the tubercle B., particularly concerns the laboratory technician. The vitality and resistance of the tubercle B. are the properties of this microbian agent that concerns the sanitarian. Generally speaking, the vegatative form of bacteria are not difficult to destroy but the tubercle B. is said to possess a protecting substance or envelop that protects it against the ordinary injurious influences. It is therefore necessary to assume that the tubercle B. is not easily destroyed and that measures adopted for the prevention and control of this disease should take this fact into consideration.

The Source of Tuberculous Infection Significant

A knowledge of the source of tuberculous

infection is indispensable in the prevention of the spread of tuberculosis. The origin of the first tubercle B. is not known and is of little consequence. The important problem is the present-day source of tubercule B. The primary source of the tubercle B. is the tuberculous animal. Tuberculosis may be characterized by either closed or open lesions. A closed lesion is one that is definitely enclosed usually by means of a capsule and the tubercle B. are retained within the circumscribed area. An open tubercular lesion is one in which there is no definite circumscription and the products of the tuberculous process including the tubercle B., are or may be disseminated in the body or be discharged from the body. Closed lesions may become open lesions and open lesions may become circumscribed and it therefore seems justifiable to consider all tuberculous animals as possible spreaders because of the uncertainty of the character of the lesions.

The avenues through which the tubercle B. are eliminated from a tuberculous animal will depend, to some extent at least, upon the location of the lesions. Thus it has been demonstrated that tubercle B. may be eliminated from tuberculous cattle in the discharges from the nose, digestive tube, urino-genital organs and udder. From the evidence now available it would appear that tubercle B. are rarely eliminated from the bodies of tuberculous swine excepting in a few instances in which suckling pigs became infected by the milk from sows affected with mammary tuberculosis. Avian tubercle B. are usually eliminated from the tubercular fowl in the feces. In those cases in which there are open lesions of tubercular arthritis in fowls or other animals the tubercle B. will be eliminated in the discharge from the joint. The carcass of a tubercular animal contains tubercle B. and unless properly disposed of, is a source of infection. The infective discharges of tubercular humans may be a source of infection of farm animals although this source is of little significance with the possible exception of swine.

The primary or direct sources of tuberculous infection are:

1. Infected discharges of a tuberculous animal.

2. The carcass of a tuberculous animal.

The secondary or indirect sources of tuberculous infection are air, soil, food stuff, water and equipment that have been contaminated with infected discharges used in feeding, watering, housing and transportation of animals.

Susceptibility a Factor

Another factor that should be taken into account in the prevention and control of tuberculosis of farm animals is the relative susceptibility of the different species of animals to the infection from other species of animals. Most bacteriologists agree that there are at least three rather distinct types of tubercle bacilli and they designate them as the human, bovine, and avian types. Thus it is noted that there is no distinct type of tubercle B. that affects swine. Tuberculosis in swine is almost entirely due to infection with bovine tubercle B.

It has been estimated that from 96% to 100% of tuberculosis in fowls is due to infection with the avian tubercle B. The infection of swine or cattle with avian tubercle B. may occur but probably is not of much consequence unless the cutaneous tubercular lesions of cattle are of avian origin. An occasional case of porcine and avian tuberculosis may be the result of infection with the human type of tubercle B.

Portals of Entrance

The channels of entrance of the tubercle B. into an animal body are: 1. The digestive tract. 2. The respiratory tract. 3. The uro-genital tract. 4. Abrasions in the skin.

The digestive tract is the most frequent channel of entrance of the tubercle B. in cattle, swine and poultry. An occasional case of pulmonary infection may occur in cattle, but is extremely rare in swine and poultry. Uro-genital infection occurs rather frequently in cattle and may occur in swine but the available literature does not contain reports of this form of infection in fowls, however, tubercle bacilli may occur in the egg. Cutaneous infection occurs in cattle, swine and fowls.

The usual source of tuberculosis in cattle is first tuberculous cattle; 2nd, infected milk or other dairy products; 3rd, infected barns, yards, pastures, cars, public stock yards, exhibition buildings and their equipment.

Tuberculosis in swine is due primarily to infection obtained by first following tuberculous cattle; 2nd, feeding upon infected milk or other dairy products; 3rd, consuming the carcasses of tuberculous animals and uncooked garbage.

Avian tuberculous infection is obtained by contact or the consumption of infected excretions.

Practical Points On Its Control

In controlling tuberculosis and the prevention of reinfection it is of paramount importance to thoroughly clean and disinfect infected premises. Many instances of infection of healthy animals have been traced to premises

from which reacting animals had been removed but the barns, lots and equipment had not been properly cleaned and disinfected. In some cases the efforts of disinfection have been fairly good but the proper cleaning had not preceded the application of the disinfectant and infection still persisted. Cleaning is fully as important as disinfection. All trash and rubbish should be removed and burned. Mangers, feed boxes and walls should be thoroughly scrubbed. Board floors should be torn up and burned. Concrete floors should be scrubbed and dirt floors thoroughly saturated with disinfectants. All trash should be removed from outside racks, feed and salt troughs before applying disinfectants.

From the foregoing, it is evident that tuberculosis can be controlled in (a) cattle by:

1. Tuberculin testing of all cattle. When reactors are found they should be properly disposed of and the premises cleaned and disinfected. In herds in which a large percentage of tuberculous reactors are found, it is advisable to salvage the entire herd excepting the pure-bred and very valuable breeding animals, which if conditions are favorable may be handled by the Bang system.

2. Cattle for breeding purposes or even feeders should be bought subject to the tuberculin test.

3. Using foods for calves or older cattle that are known to be free from tuberculous infection.

4. Disinfecting barns, cars, yards or equipment.

(b) Swine by:

1. Pasteurization of milk or its products used as hog feed.

2. Cooking of garbage.

3. Allowing them to follow only cattle that are tuberculosis free.

(c) Poultry:

1. Tuberculin testing and removing reactors. In case a large percentage of the fowls are tuberculous, disposition should be made of the entire flock.

2. Cleaning and disinfection of chicken house and yards.

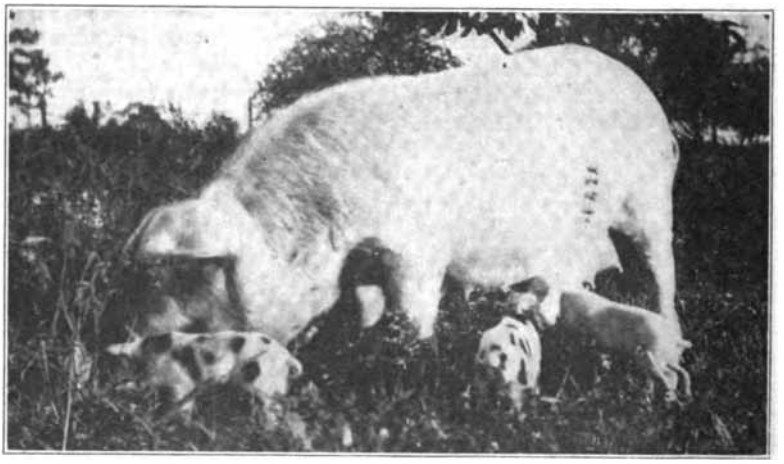
3. Guarding against the feeding of infected foods.

4. Selecting eggs for hatching from flocks known to be free from tuberculosis.

*Address delivered at Manhattan, Kansas, Farm and Home Week, January, 1922.

A Case of Cesarean Section in a Sow

THAT sows may be successfully delivered by gastro-hysterectomy, that a healthy litter can be raised after the operation and that Dr. C. W. Sass, of Toledo, Ohio, is a good surgeon is attested by the reproduction of a photo of a sow and pigs taken some four days after such an operation had been performed.



The figure also shows that the patients are ing well even at this critical moment of convalescence, and we have the doctor's word that the recovery was not only uneventful from beginning to end but that the sow remains a good breeding animal.

The technique of the operation was the usual routine: asepsis, well disinfected field, flank incision, removal of the pigs from a single hysterotomy, removal of the placenta, Lemnart sutures for the uterus and interrupted sutures for the abdominal walls.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.
Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

The Fallopian Tubes

(Salpingitis—Hydrosalpinx—Atresia)

THE Fallopian tube is a short tortuous canal lodged in the broad ligament near its anterior border. It commences at the ovary by a free expanded extremity (the pavilion of the tube or ostium abdominale), and terminates in the cul-de-sac of the uterine cornu by opening into it—the ostium uterinum.

It is composed of three coats—the mucous, muscular and serous. The outer coat is obtained from the peritoneum. The mucous coat is lined by columnar epithelinum provided with cilia. The ciliary motion is directed toward the uterus.

The muscular wall of the oviduct is formed by two layers of small muscles, an inner circular and an outer longitudinal.

The orifice of the uterine extremity opens in a small and very hard tubercle. The ovarian extremity, in all mammilia, offers a very remarkable arrangement. It opens into the peritoneal cavity, near the fissure of the ovary, and in the center of the expansion named the pavilion of the tube, which is also designated the fimbriated extremity. This pavilion is attached to the external side of the ovary, and has a very irregular outline—notched, as it is, into several lancet-shaped, unequal prolongations (fimbriae), which float freely in the abdomen. Here are, then, two important anatomical facts (the discontinuity between a gland and its excretory duct, and the communication of a serous cavity with the exterior).

The Hardest of Soft Tissues

The fallopian tube is perhaps the hardest of the so-called soft structures of the animal body. When rolled between the fingers it simulates very much the feeling of cartilage. Its function is to seize the ovum expelled from the Graafian vesicle and carry it to the uterus.

It is, therefore, necessary that, at the moment of rupture of the vesicle, the fimbriae should be applied to the ovary in order to receive the germ and bring it to the abdominal orifice of the tube. The application of the pavilion to the ovary is brought about, either by the contraction of the muscular fibres it contains, or through the distension of the bulb of the ovary. Sometimes this mechanism is insufficient, and the ovum falls into the abdominal cavity, becomes fixed there, and is developed if it has been previously fecundated; this occurrence constitutes the most remarkable variety of extra-uterine gestation.

The oviduct also conveys the seminal fluid of the male to the ovum. It is generally supposed that fecundation of the ovum usually takes place in the oviduct.

Fallopian Troubles Can Be Detected

Undiagnosable disease of the fallopian tubes is said, by some writers, to be a rather common condition in the bovine. In other words, pathological changes, sufficient to cause sterility, may frequently occur in the tubes and not be detectible by palpitation. Clinical experience, however, leads me to state that such has not been the case in the herds that I have worked in. Not that I claim to be able to diagnose minute pathological changes of the tubes, but rather from the fact that where nothing abnormal is detectible by examination or repeated examinations I have seen many animals that continue to be sterile. True it is that every operator occasionally examines an animal that is not breeding and in which no severe pathological conditions are determinable.

For instance, we not infrequently find animals that are not ovulating regularly or if they are ovulating fairly regularly that all organs seem in reasonably good condition with the possible exception that the ovaries seem too small or too soft, or too hard, or possibly a very small corpus luteum is found indicating lack of tone of the ovary. Or again, when examining animals with an unfavorable history, we find no evidence, whatever, of the right ovary having functioned. If in such cases we disregard these minor ovarian con-

ditions and turn to laboratory reports, the latter might lead one to suspect an obscure infection of the fallopian tubes and such a probable diagnosis is entirely reasonable. But in an overwhelming majority of such cases ones suspicions will probably prove erroneous if the ovaries are given regular massaging. Metabolism seems to be improved and the ovary softens or increases in size as the case may be, and shortly we find the animal having regular periods of estrum, followed by a well-formed corpus luteum and later conception.

It is likewise generally known now among those who give special attention to sterility that the disease of the tubes is occasionally associated with cervicitis. Naturally, we therefore examine with great care the tubes whenever we are in the presence of a case of cervicitis. Here again we find that cervicitis, if successfully treated until the cervix becomes apparently normal, the animal may not conceive at once and obscure disease of the tubes may be suspected. However, we must reckon with the fact that when the cervix or uterus becomes apparently normal to the touch after being diseased, it does not follow that it is at once histologically normal.

Consequently, patience with such cases and no haste to breed the animal after they are apparently normal, say for two or three months, is very apt in most cases to upset our suspicions of tubular trouble as we not infrequently find the animal later conceives after one or two services.

An Illustration

Not long since I had a case that typifies this condition. I was called in consultation to see a pure-bred Guernsey cow that the local veterinarian had been treating for more than a year for cervicitis by douching the uterus at different intervals with a 2% Lugol solution. The history was that the cow had probably suffered catarrh of the uterus and cervicitis for about three years, but owing to her valuable blood lines and unusual conformation and production. the owner did not wish to have her destroyed if there was any possibility of recovery.

I advised metritis bacterins; daily douching of the cervix only with a very warm saline solution; cauterizing of the cervix by swabbing it with tincture of iodine, to be repeated as often as seemed necessary, about every two weeks, and when improved to begin massaging the uterus (which was soft and flabby) about every week. In about there months I was called again to see the same animal. The veterinarian advised me that the inflammation of the cervix had subsided almost at once under this treatment and so far as he could see had been entirely normal for about a month, and that the animal had been bred but did not conceive.

I examined the uterus and cervix and found that the veterinarian's report of conditions was correct. He had been reading of the number of cases of tubular trouble exhibiting no gross lesions during life and had gained the impression that this cow was such an example. The tubes so far as palpitation revealed, were not in the least enlarged or adherent. I suggested that the douching of the vagina with hot solution be continued and that a couple of heat periods be allowed to pass without breeding the animal. This was done and she was bred on the fourth heat period, conceived at once and is now heavy with calf.

Repeated experiences of this character have given me more faith in the possibility of diagnosing at least the majority of serious affections of the tubes. In doing sterility work it is a good custom to examine the tubes first when introducing the hand into the rectum, that is, before the hands become cramped and tired and so lessen the accuracy of touch. To examine the tubes with ease and accuracy, the practice of having the animals fasted or at least all roughage kept from them for twelve hours prior to examination is of tremendous advantage.

If this is done and the animal's back kept down so that she does not strain and throw the abdominal viscera back against the pelvic cavity, the examination of a fallopian tube is as easily made as it hangs in the living nimal as it would be lying before one on a table post mortem.

How to Palpate the Fallopian Tubes

After we tip up the uterus in the pelvic cavity and pass the hand around to the right or left to locate the ovary, the ovary is then passed to the hand in the vagina. The tube will be felt hanging in the broad ligament where it can be rolled between the index finger and the thumb. If it is free from adhesions, it can be readily traced from the ovary to the end and very minutely examined. If it is adherent to the mesosalpinx (the peritoneal fold that suspends the oviduct) or the ovary; or is enlarged, then, of course, it is reasonable proof that the tube is diseased, keeping in mind that the normal Fallopian tube is a very small, hard, tortuous organ, varying but little

according to the size of the cow. It is about the size of the lead of a pencil.

Before taking up the subject of salpingitis, hydrosalpinx and atresia it might be well here to compare some laboratory findings with this clinical resumé.

Gilman in the Cornell Veterinarian makes two interesting and complete reports on the histology and bacteriology of the oviducts of the cow.

Case Reports*

Case No. 1. History—Born 1913. First recorded parturition occurred May 15, 1918, with the delivery of a healthy calf. The placenta came away promptly, but on June 30, 1918, the uterus contained two ounces of pus. On July 8, 1918, examination revealed normal organs, and frequent examination thereafter showed no clinical manifestations of disease. Although oestral periods continued at essentially normal intervals, pregnancy had not resulted from numerous services when last examined on September 30, 1919. Slaughtered October 14, 1919.

Macroscopic Changes: Left Ovary—Contained one small cystic corpus luteum. Right Ovary—Many small connective tissue tufts on its capsule. Remainder of Tract—Apparently normal.

Microscopic Changes: Left Oviduct—In a section near the middle of the tube the lumen contained quite a bit of cellular debris. The epithelium is very well preserved, though the cilia are gone in a few places. The folds are engorged with blood, and a few contain some cellular infiltration. The entire wall is markedly congested and shows some cellular infiltration with slight oedema. Acute catarrhal salpingitis. In a section near the uterine end, the lumen contains much debris. The epithelium is entirely destroyed. The folds appear as very thick or broad, low eminences, some like warty growths, others finger shaped. They are made up of cellular, pascular, connective tissue which also thickens the basement membrane. The muscularis is much hypertrophied, and the interstitial connective tissue is somewhat increased. Several large blood vessels are seen running from the mucosa to this coat. Chronic catarrhal salpingitis.

Right Oviduct—In a section near the uterine end, the lumen contains much cellular debris and exudate. The epithelium is entirely destroyed. The folds have a jagged outline, and appear as very thick, broad eminences, the larger of which have united across the lumen, and are gradually occluding it. The epithelium is entirely denuded. The folds and basement membrane are thickened by a chronic proliferative inflammation. Most of the blood vessels show hyaline or amyloid degeneration of their walls. The inner half of the muscular coat is somewhat atrophied due to an increase in the interstitial connective tissue. The subserosa is slightly thickened due to an amyloid or hyaline infiltration of the connective tissue fibres and capillary walls. Chronic catarrhal salpingitis.

Bacteriological Findings: Left Oviduct—

Dr. C. D. Hornbeck's Multiparous Brown Swiss

Streptococcus viridans. The organism was short-chained, and rather large and oval in form. The growth on agar was filmy and granular. In bouillon it gave a uniform cloudiness, and fermented glucose, lactose, and saccharose. In litmus milk, the litmus was reduced with the formation of acid, but no coagulation took place.

Right Oviduct—Streptococcus viridans. It was evidently the same organism as that found in the left tube.

Case No. 2. History—Born 1915. First parturition occurred April 15, 1918, delivering a healthy calf. Placenta came away promptly, and on May 7, apparently complete involution had taken place, though there occurred a cystic degeneration of the corpus luteum on the right ovary, which was removed. Several subsequent examinations failed to reveal any further cause for sterility. On August 20, 1919, a cystic corpus luteum was removed from the left ovary, accompanied by slight enlargement of the left uterine cornu. On this date, the uterus was douched with a 2% Lugol's solution. On September 30, 1919, a pelvic peritonitis was evidenced by adhesions of the left uterine cornu and left oviduct. Slaughtered October 14, 1919.

Macroscopic Changes: Left Oviduct—Congested and firm. Right Ovary—One small embedded luteum, undergoing organization. Left Ovary—Very small connective tissue tufts on its capsule, some 3-4 cm. long. Left Uterine Apex—Adherent to bladder and ventral side of the uterus by a strong band of connective tissue. Remainder of Tract—Apparently normal.

Microscopic Changes: Right Oviduct—Shows a typical chronic catarrhal salpingitis with destruction of the epithelium, productive inflammation of the mucosa, etc. Left Oviduct—Mucosa alone affected, showing destruction of the epithelium, and a chronic proliferative inflammation of the mucosa. Chronic catarrhal salpingitis.

Bacteriological Findings: Right Oviduct—Staphylococcus aureus. Streptococcus viridans. The streptococcus was short-chained, and round in form. It fermented all three sugars, producing acid but no coagulation in milk. Left Oviduct—Streptococcus viridans, which was evidently the same organism as that found in the right tube.

Discussion and Conclusion

But two cases are given, as they are quite typical of those met with in the work. In all, the history was such as to make the definite cause of sterility uncertain, or lead one to suspect tubal infection with inflammatory changes, as the causative agent. Many of them showed no, or very few gross lesions in any part of the tract, but on microscopical examination, salpingitis in various stages was invariably present, ranging from the acute catarrhal endosalpingitis, to the chronic catarrhal form, with occlusion of the lumen. Case number 1 shows no gross lesions except a small corpus luteum of one ovary and many small connective tissue tufts on the capsule of the other, and there is little in the history to indicate the definite cause of sterility. In case number 2, removal of the corpora lutea was followed by a peri-salpingitis, with adhesions of the left uterine cornu and oviduct, which is quite indicative of tubal infection. Both cases show a distinct salpingitis on microscopical examination, which would seem to be quite closely related to the failure of conception.

Bacteriological Study of Tubal Infections

The bacteriological findings varied somewhat, but staphylococci and streptococci were found in most cases, the streptococci predominating. In one tube, an organism agreeing in every way with B. abortus was isolated from the uterine end. Negative cultures do not necessarily imply that the tube was sterile, for the small part cultured might have been sterile, while other parts not reached by the platinum loop, might harbor the organisms. On the other hand, finding but one organism does not exclude the possibility of others being present. The possibility of finding the bacteria only in certain parts of the tube is suggested as being probable in view of the fact that usually the catarrhal inflammation affects but a part of the tube. Only occasionally does one find a severe inflammation of its entire length. The streptococci were mostly of the viridans type, though the hemolytic variety was found in a few cases, as well as some giving no reaction on the blood plate. This conforms agreeably with the type of inflammation found, for the Streptococcus viridans is usually the variety found in chronic streptococcic inflammations. The etiological relationship between the lesions found, and the organisms associated with them, especially the streptococci, is undoubted, the infection usually spreading from a cervicitis, metritis, or inflammation of some other part of the tract.

No definite assertion can be made concerning the relationship of infection and inflammation of the tube to the production of sterility, but it seems quite significant that in the study of sections from 34 pregnant animals made on two visits to an abattoir, not one oviduct showed inflammatory changes. This is in marked contrast to finding salpingitis present in all sterile animals examined. Sterility might result in many instances from death of the spermatozoa ova from contact with the inflammatory exudate. In other cases, it is reasonable to believe that the fertilized ovum might die, being unable to reach the uterus, especially in those cases where the ciliated epithelium is destroyed, and the muscular coat weakened by inflammatory changes. Likewise, the spermatozoa might be unable to survive, or reach the ovum, due to the exudate in the lumen. Total or partial atresia, which is by no means uncommon, would, without doubt, prevent conception, especially if bilateral.

Macroscopic Study and Conclusions

Clinically, and on macroscopic postmortem examination, the catarrhal forms of salpingitis are not unrecognizable, even in cases where atresia of the lumen is present, except when tubal infection might be indicated by hyperaemia, or the formation of fibrous strands as

a result of peri-salpingitis or pavilionitis. Aside from these changes, the tube appears normal in every way, and there is no indication of infection in the part. For this reason, it is well to consider the possibility of tubal infection in cases of sterility.

In view of the results obtained in the work, the following conclusions were justified.

1. Streptococcic salpingitis with or without atresia of the lumen is apparently quite common in herds in which sterility and abortion are present.

2. Its relation to the production of sterility seems to be very important in many cases.

3. This form of salpingitis is not recognizable on clinical examination, except when accompanied by a peri-salpingitis with the formation of connective tissue strands on the mesosalpinx or capsule of the ovary.

4. It is suggested that the tube may harbor organisms which, if pregnancy takes place, may be directly or indirectly associated with abortion.

*Herbert L. Gilman—"Diseases of the Oviduct of the Cow and Their Relation to Sterility." New York State Veterinary College, at Cornell University.—The Cornell Veterinarian, Volume XI, No. 1, page 15.

Foreign Body of the Reticulum

DR. ROY HOUSER, BOURBON, IND.

Being stituated in a fairly congested dairy population, and having been compelled to devote some study to the diseases of cattle in general, I have been struck with the frequency with which one meets the condition that Hutyra and Marek calls "atony of the forestomachs," in short, indigestion, which most veterinarians re-

Foreign Bodies Impinged in the Forestomachs of a Cow

call is frequently encountered during the winter months.

As a disease per se I doubt if it exists. The causes ascribed by the authors are improper feeds, lack of exercise and diminished water allowance. The ration as a general rule during the winter is drier than in summer when the water supply is more abundant. But those of us who have had experience know that such cases appear when there is nothing to be desired as regards both the feed and the water supply, and it is becoming more and more apparent that most of them are due to but one cause: foreign bodies in the reticulum. I have found that it is not only the penetrant foreign bodies that inflict harm to ruminant patients, and than many of them do not travel in the direction of the heart as is generally supposed. I have found that some of them pass through the walls in other direction, become encysted and cause no inconvenience whatever and that others, through the actions of purgatives, are dislodged and pass off with the feces.

Since having learned to classify such cases and use rational treatment I have diminished the losses very materially. I now make it a practice to mention the possibility of foreign bodies in all such cases and to suggest operative treatment if the eliminative treatment brings no results. I have yet to be disappointed by not finding a foreign body nor in the outcome of the operation when proper aseptic precau-

tions have been taken. To illustrate the following cases are reported:

Case No. 1

A four year old pure bred Jersey giving a good flow of milk suddenly lost in appetite and milk secretion, manifesting at the same time a pronounced indigestion. I saw the case for the first time on January 22, 1922, and then almost daily for the following 24 days. At times she would seem to recover but only to relapse again into the same condition. The temperature was always normal, and the bowels alternated between diarrhea and constipation. The constipation was at times so obstinate that it would require 2 gallons of mineral oil and two pounds of bovine hydrogogue to produce evacuation. Defecation was painful and attended with frequent unsuccessful attempts.

From the beginning I had diagnosed the condition as foreign body and had requested permission to operate almost daily. The cow having become emaciated, the owner consented to an operation February 4th, just 23 days from the beginning of the period of illness.

I made an incision in the left flank, manually removed the contents of the rumen, and then passed the hand into the reticulum, where I found three 10-penny nails, one of which was penetrant, one steel heel-plate, some pieces of lead, some steel-drill shavings, a number of small pieces of wire, two tacks and one screw. All of these were more or less deeply embedded in the mucous membrane which on palpation felt like a burned piece of shoe leather.

The patient showed no improvement for several days, but finally revived and is now on the road to recovery.

Case No. 2

A three year old shorthorn heifer in advanced pregnancy began to show anorexia and diminished lactation when I was called on January 8, 1922. Besides the syndrome of case No. 1, the abdomen was tucked, there was the grunting of painful breathing, the temperature was 104° Fahr., and the extremities were cold.

The owner laughed at my diagnosis of foreign body and even jeered about it to his neighbors. She became gradually worse and died January 24th. The autopsy revealed a ruptured abcess, adhesion of the reticulum to the diaphragn, pneumonia and a wire penetrating the right lung.

I have had so many other cases of the same kind that I am becoming convinced that many valuable animals are lost through failure to diagnose foreign bodies in time to make operative treatment successful.

CORN STALK DISEASE SUCCESSFULLY TREATED

Regarding the treatment of so called "Corn Stalk Disease" of horses in this community will state that I have had most encouraging results from administration of the following via stomach tube:

Chloral Hydrate	2-3 oz.
Potass. Permang	45-60 gr.
Aluminum Sulphate	30-45 gr.
Magnesium Sulphate	3-4 lbs.
Hot Water	3 gallons

It requires considerable amount of gymnastics and energy to get the tube down in some instances, owing to the excitable condition of the animal and the partial paralysis of the pharynx which seems to be present in most cases. No further medication is given until the next day when I place the patient on nux every 3 or 4 hours, followed the third day with arecoline lobeline and strychnin hypodermatically providing the bowels haven't moved thoroughly.

Out of some fifteen recent cases in its various forms have lost but one, and its death came as a surprise the 4th day.

Would appreciate hearing from brother practitioners giving this treatment a trial.

Weldon, Ill. W. P. Shoaf.

FINDS BARIUM CHLORIDE HARMFUL

As a matter of possible interest to your readers I am characterizing barium chloride as contra-indicated in the treatment of impaction in bovine animals. It causes wasting, intestinal irritation and weakness, and it counteracts the effects of the stimulation that is greatly needed. I regard it a dangerous, harmful drug, particularly in impaction even in small doses. I prefer tartar emetic alone or alternated with ipecac.

I treated a $25,000 bull impacted for ten days before being treated that responded to this treatment without developing any signs of enteritis which would not have been the case had I prescribed barium chloride.

Duluth, Minn. F. L. Ober,

Miss Catherine McClaughry, official weight tester of the public schools of Cook County, Illinois, reports there are more school children in the country districts showing evidence of undernourishment than in the City of Chicago, and attributes the cause to lack of milk and butter in the food supply.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Metritis in Sows

THIS is the season of the year when the practitioner is confronted with diseases and conditions incidental to farrowing. Metritis is probably one of the most common diseased conditions as a sequel of farrowing in sows, although this condition is apparently not as prevalent in sows as in other animals. There has been considerable abortion in sows during the last two or three years and metritis is not at all uncommon after this accident.

Types of Metritis

According to the intensity of the process and the character of the lesion it appears justifiable to classify porcine metritis as catarrhal, purulent and septic.

The Cause of Metritis in Sows

Dystokia predisposes to metritis. Undue exposure after farrowing and unsanitary surroundings are factors in the occurrence of this condition in sows. Infection is the primary cause of uterine inflammation in sows. There is probably a variety of microbian agents that may cause metritis. Pyogenic micrococci and streptococci, B. of Bang, representatives of the colon typhoid group are the principal infective agents that have been isolated from the discharges and uterus of cases of metritis. Other pathogenic bacteria such as B. pyocyaneus, B. suipestifer and B. suisepticum have been identified in some cases of metritis in sows, but were not considered to be causative factors. It is probable that the infection that produces abortion is capable of producing metritis.

The Symptom Complex

Catarrhal metritis may be so mild that it is not recognized. In the more intensive catarrhal metritis cases there will be a mucous or mucopurulent vaginal discharge. The affected sow will be unthrifty; there may or may not be a rise of temperature, depending upon the intensity and extent of the process.

Purulent vaginal discharge is a characteristic symptom of purulent metritis. There will be a rise of temperature of from 2-4° F. The affected animal will not eat. The inflammatory process may extend and involve the peritoneum thus complicating the symptoms.

In the cases in which there is septic metritis there will be a sudden onset. There will be 4-6° F. rise of temperature and the affected animal will have a tucked abdomen. There is usually a bloody discharge from the vagina and there is marked depression and dullness. The affected animal may drink freely but usually refuses to eat. This form of metritis usually terminates fatally in from one to three days. Purulent metritis may or may not be fatal, depending upon the extent of the inflammatory condition. Catarrhal metritis is usually subacute or chronic and may be a sequel of purulent metritis.

Postmortem Findings

The lesions observed in postmortem of cases that have died as a result of metritis consist of swelling of the external genitals, relaxation and dilatation of the uterine horns, varying quantities of fluid in the cavity of the uterus and inflammation of varying degrees of the uterine structures. When the peritoneum is involved there will be lesions of inflammation of that structure.

Treatment of Porcine Metritis

Porcine metritis is difficult to successfully treat and especially if the treatment is not begun in the early stages. Local applications are difficult because of the small size of the external genitals. Uterine irrigations are of value provided the fluid is siphoned out. A speculum may be used to dilate the vagina after which a small tube such as a horse catheter may be passed into the uterus and then the fluid can be injected. A dilute solution of tincture of iodine has been recommended by different practitioners as an irrigation fluid. After the irrigation fluid has been removed the injection of from one to four ounces of grain alcohol may be introduced and probably is of considerable value. It may be necessary to use the uterine douches three or four times. We would also suggest the injection into the axillary space once every 24 hours of 20 grains of quinine bisulphate.

Suggestions on Porcine Abortion

There has been much discussion at veterinary meetings and numerous articles have appeared in Veterinary Journals on the subject of "Abortion in Swine," from which valuable information has been obtained concerning this disease, but there are certain important facts that are yet unknown and unfortunately for the swine breeder the disease continues to exact its toll. The term "abortion" is used in this article in a broad sense and includes the loss of pigs regardless of whether they are prematurely expelled or remain in the uterus until the normal time for farrowing. This condition should probably be described under the caption of "Genitalia infections of Swine," as suggested by Dr. Williams, rather than porcine abortion. "Porcine Abortion" is not a new disease for authentic cases have been observed by practitioners for many years. The disease was not sufficiently widespread and prevalent prior to 1918 to require serious consideration. During 1918, 1919 and 1920 the disease was widespread and caused extensive losses but the disease was much less prevalent in 1921. Practitioners are now reporting the occurrence of this malady in various sections of the country and it appears as though it was becoming quite prevalent.

Etiology

There is apparently no specific cause that is responsible for abortion in swine, excepting rare instances of accidental abortions. The principal cause of this condition is infection, however, there are certain predisposing influences that should be given careful consideration. The extent of loss of pigs that may be attributed to abortion disease is variable and probably depends upon the virulency of the infection and the resistance of the sow and the foetus. Thus in one case there may be a loss of only one pig, in other instances there may be two, three or even the entire litter may be dead when expelled or die soon thereafter. It seems probable that by observing proper sex hygiene the vitality of the pig in the uterus could be increased and infections would not be as prone to attack and destroy the foetuses as in those cases in which the foetuses have a low vitality because of the failure of observing proper sex relations in the breeding animals. By a careful study of the gravid uteruses of sows, it is almost the exception to find one in which all of the pigs are normally developed. In such an examination one may find from 3 to 6 pigs of equal size and normally developed and from 2 to 5 that are either dead and disintegrating or are undersized. The foetal membranes of the under-developed or dead foetuses will show gross lesions of infection which, no doubt, has been responsible for the death or diminished vitality of the affected foetuses. Unless the infection extends in the gravid uterus and causes death to practically all of the pigs their premature expulsion will probably not occur. The loss of from one to four or five pigs in each litter is common and has probably occurred for many years. Runts are according to Williams the result of an infection in the uterus, in which the foetus was not destroyed but it failed to develop normally. This condition is probably not the result of infection with the B. Abortus.

The abortion storms in herds characterized by the premature expulsion of pigs that are all of the same size is the result of an acute infection. In some of these cases the B. abortus (Bang) has been identified and may have been the causative organisms. Other outbreaks are, according to laboratory findings, due to various representatives of the colon typhoid group.

In summarizing the causes of abortion in swine, it may be stated that according to the information now available the important factors in the occurrence of this condition are, first, diminished resistance of the sow and the foetus due to improper methods in breeding, feeding and care; second, infection with microbian agents such as pyogenic cocci, B. coli communis, B. suipestifer, B. paratyphoid B., and the B. Abortus Bang. These infections may occur in pure culture or in various combinations.

Control

The control of an infectious disease depends upon a comprehensive knowledge of the cause, source of infection, channel of entrance of the infection into the susceptible animal, and avenues of elimination of the infection from the diseased animal. The predisposing causes can be avoided by adopting the proper breeding methods and the provision of proper feed and care. A boar should not be put to service more than once daily and better results would be obtained by less frequent use.

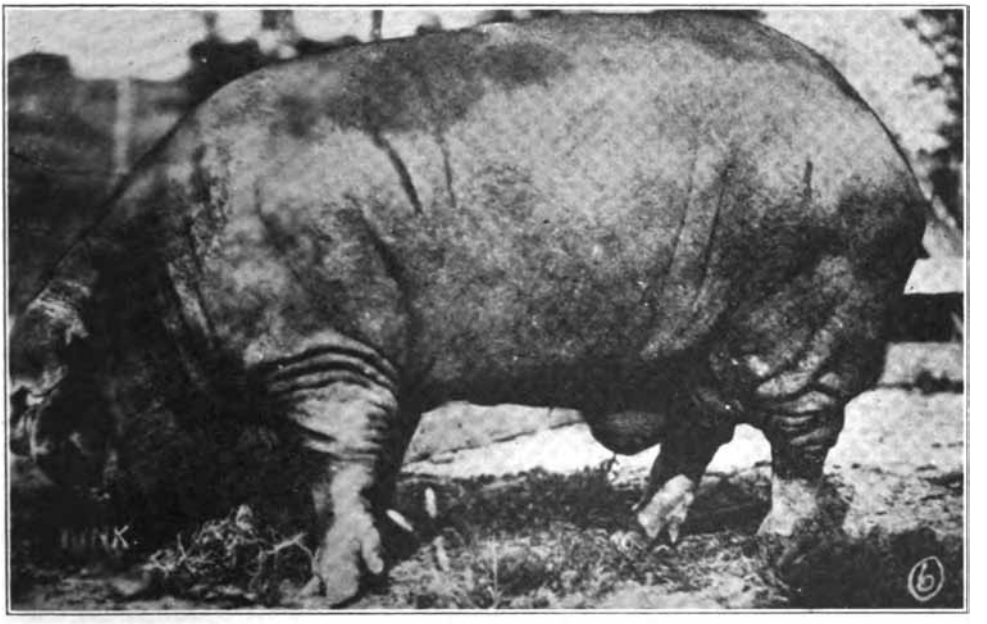
As previously indicated, the principal cause

of abortion is infection, but there is a variety of microbes that are or may be etiologic factors and this fact necessarily complicates the measures of control. The pyogenic microorganisms and most if not all of the representatives of the colon typhoid group are universally distributed and to avoid the possibility of swine coming in contact with them is not practical. The B. abortus is probably primarily pathogenic for cattle and the prevention of infection with these microorganisms entails the complete separation of swine and cattle and also eliminates the use of milk or any of its products as food for swine, unless such products are sterilized. Such a radical provision is impractical and the relatively few instances in which abortion in cattle and swine occur simultaneously on the same premise does not warrant such a procedure.

It is generally conceded that infection that produces abortion in swine is ingested. It is therefore advisable to provide food and water that is free from infection. The provision of such provender is difficult but possible. The equipment used in feeding and watering should be frequently cleaned to remove possible contamination. Infection may be introduced into a healthy sow by breeding to an infected or contaminated boar, and therefore diseased sows should not be bred to the herd boar.

Infection is primarily eliminated from infected sows in the aborted pigs, placenta and discharges from the genital organs. In those cases in which the B. abortus has been an etiologic factor, it is possible that the B. abortus may be eliminated from infected sows in the milk.

The measures that may be used in the control of swine abortion may be summarized as follows: Observe proper sex hygiene in breeding, rational feeding, and good care; isolation of aborting sows and the proper disposal of aborted pigs, and placenta; aborters should not be bred until there is no evidence of discharge from the genital organs and the same boar should not be used on aborting and non-aborting sows; sows and boars should not be permitted to run in the same lots or to mingle with breeding cattle and milk or any of its by-products not known to have been obtained from abortion free cows should be sterilized before using as good for breeding swine; recently acquired gilts should be quarantined until they have had at least one normal oestral period, bred sows should be isolated until they have farrowed; and boars should not be used in service for at least thirty days and his sheath has been thoroughly cleaned; avoid the public service boar.



THE LARGEST HOG IN THE UNITED STATES
Fourteen Hundred Pound Poland-China Boar, Valued at $40,000, and Owned by John Grant, an Iowa Breeder

Treatment

Treatment of abortion proper is of no avail. If the microbian agents previously described are the cause of abortion, prevention of this malady is possible. It has been demonstrated that an increased resistance to pyogenic micrococci, representatives of the colon typhoid group, and the B. abortus, can be produced. Some practitioners have reported apparent success in the control of swine abortion by the use of a bacterin containing the various microorganisms that have been isolated from aborted foetuses, placenta, etc.

Metritis and other secondary conditions of the genital organs can usually be relieved providing such treatment is not delayed. The general methods of applying treatment was described in a recent issue of VETERINARY MEDICINE. The Swine Department of VETERINARY MEDICINE will gladly receive reports from practitioners.

PULMONARY ASCARIDOSIS

Pulmonary Ascaridosis

Pulmonary ascaridosis is a destructive disease of pigs caused by the larval form of the ascaris lumbricoides. This condition is frequently mentioned in the columns of Veterinary Medicine because of its importance. The economic loss occasioned by this condition is enormous. It has been estimated that 1/5 of the pig crop is destroyed by the parasites in some sections of the country. There is a further loss due to unthriftiness that occurs in a large percentage of pigs that do not die as a result of infestation.

Life Cycle of Parasite

The adult ascarid or round worm occurs in the small intestine and is less frequently found in the stomach, large intestine and bile duct. The sexually mature female discharges thousands of eggs or ova. The ova are eliminated from the body of the swine in the feces. The length of time necessary for incubation of the ova depends upon the external temperature. The embryo are protected by a capsule and are not easily destroyed by external influences. The embryo are found in filth, wallers, manure heaps and the superficial soil that have been contaminated with infested swine feces. The embryo are liberated in the intestine and some of them gain entrance to the lymph vessels and blood vessels and are thus carried by the circulation. Those that ultimately reach the capillaries surrounding the lung find conditions favorable and in this location they pass through the larval stage. When the larval stage has been completed in the lung the larvae migrate or are carried along the air tubes to the pharynx where some of them are entangled in food or water and are thus transported down the digestive tube and these paarsites find conditions favorable in the small intestine where they develop to maturity.

Control of Ascaridosis

The conditions resulting form these parasites are not difficult to prevent. The adult parasite is not difficult to expel from infested swine excepting in those cases in which the parasites have entered the bile duct. Oil of chenopodium and santonin are the drugs usually used in expelling the adults. According to recent experimental findings, oil of chenopodium is the most reliable agent but it has the disadvantage of being an extreme irritant. Successful "worming out" of swine is dependent upon properly preparing them by withholding feed for from 12-36 hours prior to the administration of the vermifuge.

The second important factor is the rotation of lots and pastures and the regular and systematic cleaning and disinfecting of hog houses. Special emphasis should be placed on the cleaning of the quarters for it has been demonstrated that the embryo and ova of the ascarid will live for months in 3 to 5% solutions of formalin and are not easily destroyed by any known disinfectants.

In summarizing control methods of ascarid infestation we would suggest that sows be given a reliable vermifuge soon after breeding and that they be thoroughly scrubbed and placed in clean quarters preferably on ground that has not been used for swine for at least one year. After the sow farrows her pigs should be kept in non-infected quarters until weaning time. By this simple procedure the losses due to these parasites will be reduced to a minimum.

INFECTIOUS RHINITIS

(Sniffles or Bull Nose)

Infectious rhinitis is relatively common and quite persistent particularly on some of the older farms in the corn belt. This condition may be the same as catarrhal rhinitis but it is usually more severe. The extent of the loss occasioned by this disease is difficult to estimate because of incomplete records of farm operations. It causes a loss of not less than 25% on some farms. As a rule, when the disease first appears on a farm only a few swine become affected but each succeeding year the percentage of affected animals increases and by

the fourth or fifth year from one-fourth to one-third of the pig crop may become affected.

Etiology

Inbreeding is probably an important predisposing factor. Filthy pens and hog houses and particularly those that have been in continuous use for swine for several years are conducive to this disease. It is not uncommon to find the disease affecting swine that have been recently introduced into premises where the disease had previously existed. This latter incident suggests the possibility of an infectious cause of sniffles. Some investigators have suggested the B. pyocyaneus as the specific causative factor. This microorganism is widely distributed in manure and other filth around the hog houses and lots. The pyocyaneus has been demonstrated in the discharges from swine affected with this disease, however, the universal distribution of this microbe would account for this.

Symptoms

Sneezing or blowing is usually the first evidence of infectious rhinitis hence the name sniffles. There is a tendency for the affected swine to root. They soon become gaunt and unthrifty. There will be a nasal discharge which is at first serous and becomes purulent as the disease progresses. Deformity of varying degrees occurs. The facial bones are usually involved and the snout may be turned upward or sidewise.

Lesions

This disease is characterized in the beginning by a catarrhal inflammation of the nasal mucosa, which later becomes purulent. In some cases variable sized areas of the mucous membrane becomes necrotic and the underlying bone tissue is then involved and soon becomes cancellated and enlarged, thus producing distortions of varying degrees.

Treatment

The value of curative treatment is doubtful but the condition can be prevented. It is possible that inhalation medication in the early stages before there is necrosis of the mucous membrane or involvement of bone will be of value. Some practitioners report the successful treatment of several cases by the use of tincture of iodine in a steaming bag. Veterinarians should use their influence in promoting better farm sanitation. Successful swine production is dependent upon rotation of pens, lots and pastures and clean sleeping quarters and houses. Filth is an enemy to health and normal development in swine.

Sex hygiene must be given more consideration in the swine industry. It is very probable that inbreeding is an important predisposing factor not only to sniffles, but also to other diseases. The excessive use of the boar is conducive to the production of pigs of a low vitality and hence a diminished resistance to various diseases.

Improper feeding particularly of the pregnant sow and especially at farrowing time is responsible for digestive disturbances and other derangements. The care and management of the breeding animals and the pigs until they are at least one month of age is of the greatest importance in swine production.

The Swine department of Veterinary Medicine is desirous of giving information that will be of value to the practitioner and we will be glad to receive suggestions.

ABORTION DISEASE IN A HERD OF SOWS

The following is the history of a herd of hogs from which the specimens mailed to you this morning were obtained:

There are 12 sows and 16 gilts in this herd. Four of the old sows have aborted 80 and 105 days after breeding, the pigs from three being about the same as the specimen you have, the other which went about 105 days, seemed to be normal but were not fully developed. They were alive but weak and died shortly after birth. Three gilts aborted within 30 to 60 days after breeding, were re-bred and aborted again, re-bred but failed to conceive. Three gilts aborted at about 100-105 days after breeding. Four gilts went full time and farrowed eighteen reasonably good pigs and a number like the specimen. The one from which the specimen was taken had five such as these came before the normal pig and three after.

These hogs were all vaccinated with anti-hog cholera serum and virus about thirty-five days after breeding. I should say all but two which were already immune. All had a very large dose of serum and absolutely no re-action was noted. The owner had a herd of hogs across the road which had a very acute attack of mixed infection previous to the time these sows were vaccinated but nothing had ever been noted among them.

Several owners in this vicinity have had large numbers of abortions mostly like this instance I have just described. One man has about 80 sows and gilts, 28 of which are pure-bred gilts and are separated from the remainder of the herd by just a wire fence. Twenty-four out of the 28 have aborted at from 30-60 days after breeding, the pigs varying from shapeless

gelatinous masses to pigs, some larger than a good sized mouse.

The discharged mass was reddish in color and part of it resembled the normal after-birth. All of these sows had a profuse discharge from the vulva for one to three weeks following abortion as did those of the other herd mentioned. These gilts were bred to three different boars; those of the other herd to two different boars. The rest of these 80 sows were bred to the same three boars as the twenty-eight gilts and so far none have aborted nor farrowed dead pigs but are having nice healthy pigs.

If it should be found that these hogs were affected with contagious abortion what should be done? Part of these sows and all the boars are pretty valuable. How long will they be carriers of the infection? When will they be likely to breed and carry pigs to maturity and when would it be safe to bring more sows on the premises?

In fact, would like to have all the data you can give on the subject together with your diagnosis.—H. B. R., Missouri.

Reply: Your letter received, also the specimen. You have given a very complete and concise description of the condition existing in the bred sows on the two different farms. There is, apparently, no question concerning the general diagnosis of the condition; that is, an infection that is resulting in abortion.

The specimen you submitted was a mass of foetal membranes containing several mummified foetal pigs. These mummified pigs had been dead for a considerable length of time before they were expelled. The cause of the death of these pigs could not be positively determined but infection has been found to be the most frequent and important etiologic factor in such cases. The mummified pigs were of different sizes indicating that the causative factor had affected one foetus originally and had extended from one foetal sac to the next until several had become involved and the pigs were thus destroyed at different periods of time.

Abortion in sows as it has been found in different sections of the country and particularly on a scale in which it has occurred in the herds you have described, is invariably due to infection. The type of infection probably differs in different outbreaks. In some cases as the infection that produces abortion in cattle. In other instances, abortion is apparently due to streptococcic infection or invasion of the foetal membranes or the uterus itself by organisms belonging to the colon typhoid group.

The length of time that infection will persist on premises has not been determined but it probably is not as important a source of infection as the diseased animal. Infection is eliminated from aborting sows, probably until the discharge ceases.

It has been found that by isolation of the aborting sows and douching those in which there is a purulent discharge, using a dilute solution of iodine, will usually suffice to overcome the infection. Some forty to sixty days after such treatment the animals are usually successfully bred. When the douche is applied, care must be exercised that all of the fluid is withdrawn, and some practitioners have reported splendid results after the iodine has been withdrawn by the introduction of from one to four ounces of pure grain alcohol, leaving this latter within the uterus. All aborted pigs and placental membranes should be disposed of by burning.

Some practitioners have reported that apparently good results have been obtained in these cases by the use of autogenous bacterins or stock bacterins containing the same type of microbian agents that have been identified in the placenta and discharges from aborting sows. These bacterins have been used in conjunction with the preceding outlined treatment.

Pertinent Information Anent Hog Cholera, by Dr. Niles

The final session was opened by Dr. W. B. Niles of the U. S. Bureau of Animal Industry, whose subject was "Hog Cholera and Other Infectious Diseases of Swine." Among the many important points brought out by Dr. Niles, the following were noted:

1. Hog cholera may be controlled but it will be many years before its eradication.

2. Owing to the varied symptoms and lesions, the diagnosis of hog cholera is often difficult, but delay is dangerous, so use serum alone if not sure of diagnosis and double treatment if no doubt exists.

3. The administration of the simultaneous treatment a short time after a single (serum treatment) does produce immunity, contrary to the belief of some.

4. "Breaks" are likely caused by insufficient virus or virus of low potency. Best to handle "breaks" as any other outbreak.

5. Hogs, newly purchased in stock yards, should be given serum. After they are taken home and are over the fatigue of journey, etc., give double treatment.

Report Vet. Con. Univ. of Pa., 1922.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of farmalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.

2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 per cent formalin solution and sent to the laboratory whole and unopened.

3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per cent formalin solution.

4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

A CONTAGIOUS CATARRHAL CONDITION OF CHICKENS MANIFESTED BY SEVERE LAMENESS

Under separate cover I am sending you a chicken. I would like your aid in diagnosing the condition. This chicken is from a flock of 400 kept under ordinary farm conditions, the farm being an upland one. Some 25 have died in the past week. About a month ago the breeder began the use of potassium permanganate twice weekly in water, a very diluted solution of the same for a "sort of wheezing," as she called it. None died at that time.

The first noticeable symptom is lameness which before death becomes so painful that they can use the legs but little. Some of them show slight white-colored diarrhea; have little appetite during sickness but drink a great deal. Others of the flock do not show lameness as principal symptom, but instead a purple condition of the comb and wattles, sit around with eyes closed and the head and tail drooped.

Their feed consists of cracked corn, barley, oats and wheat all of which is in good condition. Small amounts are fed.

Some of the hens in the flock seem to be affected the same way. Three have died in the past week.

Post-mortem examination revealed digestive tract practically empty and only a number of petechae and small hemorrhages of the heart.

What treatment do you recommend in this case?—J. B. McQ., Ohio.

Reply—As no bacterial cause was found in the specimen we request that others be sent in order that we may continue the investigations.

There are three symptoms, however, that point to cholera: lameness, white diarrhea and the petechae found postmortem.

HEMORRHAGIC SEPTICEMIA IN A COW

I am mailing you, under separate cover, a section of the intestines from a three-year-old cow, one of a herd of twenty, which had just been turned into the stock field. On the second day, the animal fell sick at noon and died the same night. The autopsy showed lungs normal, but the pleura, pericardium and epicardium inflamed with large ecchymotic hemorrhages the outlines of which were rather diffuse.

These hemorrhages were also found in the peritoneum, kidneys, rumen and intestines. The liver and spleen seemed to be normal. There was no abnormal amount of fluid in the peritoneal or plural cavities and no gelatinous infiltration of connective tissues so commonly found in hemorrhagic septicemia.

I am wondering if it was botulism or, without complications, what a bacteriological examination will reveal. Any advice in this case will be appreciated.—E. D. R., Nebraska.

REPLY: Bacteriological examination showed typical organisms of hemorrhagic septicemia. The impression gaining ground that botulinus intoxication is a very widespread affection

of domestic animals is entirely without justification, and should not even be suspected of being the cause of the death of an animal showing the particular kind of postmortem lesions you describe in this case.

AVIAN TUBERCULOSIS

Under separate cover, I am sending you a fowl for examination. We have lost chickens out of this flock for over a year, with symptoms that vary considerably. Some show diarrhea, some are lame and some are emaciated.

A diagnosis will be appreciated.—V. W. M., Ohio.

REPLY: The microscopic examination of the specimen sent showed many tubercule bacilli in the liver and also in the intestines, showing that you are dealing with avian tuberculosis in this flock.

When tuberculosis is very widespread in a flock, much the best way of handling the problem is to destroy them all, clean up the coops and runs in a way that would prevent their successors from becoming contaminated.

It is possible, when only a few of the flock are suspected of having the disease, to give them the tuberculin test and then rid the flock of disease by killing the reactors and of course, following up with the usual sanitary measures that would be necessary to eradicate the disease.

JOHNE'S DISEASE

I am mailing you a package containing a portion of the small intestines of a cow. The animal in question is one of four that have taken sick and the disease ran the same course.

The appetite remains fair almost to the last few days of life, but in spite of this and the most careful attention in feeding, the affected animals become gradually more and more emaciated and finally die.

There is diarrhea that becomes thinner and thinner after the first symptoms noticed, and finally it becomes very watery and frothy. The animals show a great inclination to lick salt, and as a result, drink considerable water.

The feces are dark colored, but there is no distinctive odor. The lesions found on postmortem examination are confined to the intestines, which are very much congested, the walls thickened and red and are covered with mucous. The balance of the carcass is emaciated and anemic.

Your diagnosis and a method of eradicating the malady will be appreciated.—S. K., Illinois.

REPLY: Although the bacteriological examination of the specimens sent did not show the presence of the usual acid-fast bacillus of Johne's disease, it seems almost certain from the symptoms described and the course of the disease that this is the diagnosis that should be made.

In fact, when a number of cows in a herd begin to show diarrhea and emaciation and finally die, the practitioner is justified in suspecting Johne's disease as being the cause, and the herd should be handled accordingly. The proper treatment is isolation of the affected animals, the administration of intestinal astringents, particularly sulphate of iron and sulphuric acid.

While some animals yield to such treatment, most of them prove very refractory. In short, where many animals are exposed to a few thus affected, it would be economical to destroy the affected animals, clean up the establishment and dispose of the animals and everything that they have contaminated so as to prevent further infections.

Testing with avian tuberculin has been recommended as a diagnostic measure, but we are not as yet assured that it is not without fault.

COMPLEMENT FIXATION TEST FOR CONTAGIOUS ABORTION

I am sending you by parcel post a sample of cow's blood for examination. This is a five-year-old, part Durham and part Holstein cow that aborted during the sixth month of pregnancy, calf dead when born. The cow seemed to be in good healthy condition with the exception of retained fetal membranes which I removed without any difficulty.

This being the only cow in the herd that has aborted, the owner is very anxious to know if the cow has abortion disease.

Please send me your report at once.—R. E. B., Ohio.

REPLY: The complement fixation test for abortion gave a negative reaction. The findings, however, only show that this cow did not show any antibodies at the present time, but there may be other animals in the same herd which would give reactions as carriers of the disease.

We suggest that you send in specimens from a number of the animals in the herd, if you desire to have a complete test made. Remember that the complement fixation test for contagious abortion is a herd and not an individual test.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Dog, Cat and Fox Parasites

IN a previous paper, published in Veterinary Medicine for September, 1921, the subject of examining feces for parasites and parasite eggs has been discussed. It now seems advisable to follow this with some descriptions and illustrations of the parasite eggs present in the case of the dog, cat and fox. There has been some demand for something of the sort on the part of veterinarians, and in view of the scarcity of illustrations covering this point in textbooks and the fact that the available illustrations are scattered through numerous publications largely inaccessible to the practitioner, there is evidently some reason for the demand. Strange as it may seem, the eggs of some of the commonest parasites have been figured but very seldom, presumably on the assumption that

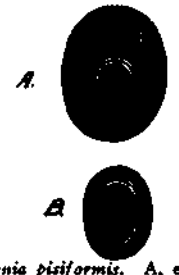


Fig. 1. *Taenia pisiformis.* A, egg surrounded by vitelline membrane containing vitelline masses. B, embryophore. Enlarged. From Railliet, 1893.

everyone interested in them is familiar with them, which is not a safe assumption. Some of the available figures are not very satisfactory, but material for new illustrations is not always available in these cases, and as the existing illustrations serve the purpose of at least indicating something of the appearance of the egg in question, they have been copied here.

A number of the figures are taken from Railliet's Traité de voologie médicale, a work which has been for almost thirty years the most satisfactory reference book of veterinary parasitology. It is a matter for regret that this splendid work has never been issued in revised editions and brought up to date. At the present time it is almost impossible to purchase copies of the sole edition printed.

In examining the feces of dogs, cats and foxes for parasite eggs, there are certain eggs which are very commonly present, and for this reason these eggs are figured here. However, it is

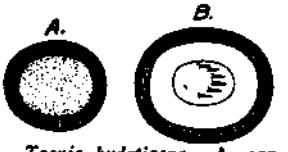


Fig. 2. *Taenia hydatigena.* A, egg as seen mounted in glycerine. B, egg after treatment with a concentrated potash solution. x 350. From Railliet, 1893, after Laboulbène.

the uncommon thing which is most perplexing, and for this reason the eggs of some of the rarer parasites are also figured. Among the commoner species present are tapeworms of the genera Taenia and Dipylidium and nematodes of the genera Belascaris, Toxascaris, Ancylostoma and Trichuris.

In the genus Taenia, the egg forms with a thin shell, with or without filaments, and the embryo, or onchosphere, lies inside of this enclosed in a thick, radially striate shell called the embryophore. As found in the feces only the embryophore and the contained embryo, or onchosphere, are present as a rule. This embryophore is commonly termed the egg and is so termed in this paper. The contained embryo is armed with six small hooks which may be seen without difficulty under the ordinary powers of the microscope. The eggs of tapeworms of the genera Multiceps and Echinococcus are quite similar in structure. In view of the over-

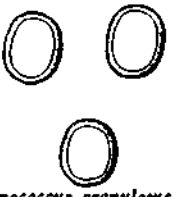


Fig. 3. *Echinococcus granulosus.* Eggs. x 245. From Blanchard, 1889, after Krabbe.

lapping of the egg sizes of tapsworms in this group, it is not usually feasible to make a definite diagnosis in regard to the species of tapeworm present, but such a diagnosis is usually

unnecessary anyway. The following figures cover briefly the eggs of some of the dog, cat and fox tapeworms.

Taenia taeniaeformis (T. crassicollis) of cats, spherical, 31 to 37 microns in diameter; T. pisiformis (T. serrata) (Fig. 1) of dogs and foxes, elliptical, 37 by 34 microns; T. hydatigena (T. marginata) (Fig. 2) of dogs, elliptical, 38 to 39 microns by 34 to 35 microns; T. ovis of dogs, 30 to 24 microns by 24 to 28 microns; Multiceps multiceps (T. coenurus) of dogs, spherical, 29 to 37 microns; M. serialis (T. serialis) of dogs, elliptical, 31 to 34 microns by 29 to 30 microns; Echinococcus granulosus (T. echinococcus) (Fig. 3) of dogs and cats, elliptical, 32 to 36 microns by 25 to 30 microns.

Fig. 4. *Dipylidium caninum.* Egg capsule. Enlarged. From Stiles, 1903.

The eggs of Dipylidium have two thin shells and are contained in egg capsules formed by the breaking up of the reticular uterus. The

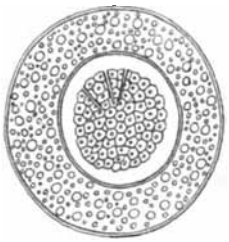


Fig. 5. *Dipylidium caninum.* Egg. Magnified. From Railliet, 1893, after Monlez.

number of eggs in a capsule varies with different species and may vary in one species. In the case of worms of this genus, one may find, in the feces of infested animals, segments, egg capsules or indivdual eggs. In D. caninum of dogs and cats, the egg capsule (Fig. 4) may contain 5 to 20 or more eggs, the egg (Fig. 5)

Fig. 6. *Mesocestoides lineatus.* Eggs. x300. From Railliet, 1893.

being spherical, 43 to 54 microns in diameter and with an onchosphere 25 to 36 microns in diameter. In D. sexcoronatum of dogs and cats, the egg capsule may contain 2 to 15 eggs, the eggs being spherical and 21 microns in diameter.

The eggs of tapeworms of the genus Mesocestoides are ovoid and have two very thin shells. The egg of M. lineatus (Fig. 6), which appears to be identical with M. litteratus, of dogs, cats and foxes, is 40 to 60 microns long by 35 to 43 microns wide.

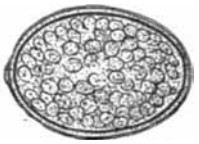


Fig. 7. *Diphyllobothrium latum.* Egg. x 680. From Magath, 1919.

The eggs of Diphyllobothrium (Dibothriocephalus or Bothriocephalus) are elliptical and provided with a small operculum or lid at one end. The egg of D. latum (Fig. 7) of dogs, cats and foxes is 68 to 71 microns long by 44 to 45 microns wide, according to texts. Magath finds a range of 55 to 76 microns in length by 41 to 56 microns in width. In general the figures given here for egg sizes are those given

Fig. 8. *Opistorchis pseudofelineus.* Egg. Enlarged. From Barker, 1911.

in texts. As a matter of fact, careful measurement of a large number of eggs will usually show some eggs which lie outside of the range of measurement given.

Fluke eggs are usually more or less oval in shape, with an operculum or lid at one end. Opisthorchis pseudofelineus (Fig. 8) of cats has an egg 29 to 36 microns long by 14 to 16 microns wide.

Nematode eggs are very variable in shape and in the amount of development at the time they are deposited. Some of the more common are discussed below.

In the genus Belascaris, the eggs are more or less globular to elliptical, with a thin pitted shell. In B. marginata of the dog, the eggs

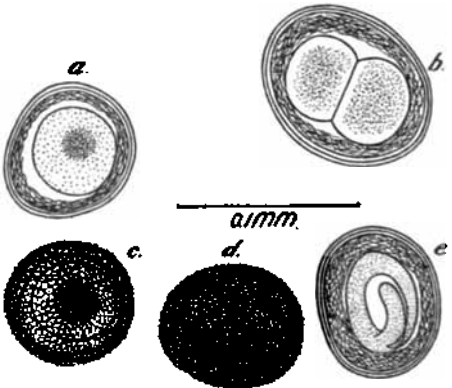


Fig. 9. a, b, c. *Toxascaris limbata,* Eggs. With developed embryo. c, d. *Belascaris marginata.* Eggs. Enlarged as indicated. From Wigdor, 1918.

(Fig. 9) are 72 to 104 microns long by 50 to 78 microns wide. In B. mystax of the cat, the

eggs are more or less oval and 65 to 75 microns long.

In the genus Toxascaris, the eggs are ellipsoidal, clear and smooth in appearance, with an outer clear, double-contoured chitinous shell and an inner yellowish membrane with interlaced striations giving the appearance of fibres. In T. limbata of the dog and fox, the egg (Fig. 9) is 72 to 104 microns long by 64 to 80 microns wide. As deposited by the female worm and as

Fig. 10. *Ancylostoma caninum.* Eggs in various stages of development. x 300. From Railliet, 1893.

found in the feces, the ascarid eggs (Ascaris, Belascaris, Toxascaris, etc.) show little trace of internal development and some little time is necessary for the formation of the embryo in the shell. Where eggs are found containing

Fig. 11. *Trichuris depressiuscula.* Egg. x 340. From Riley and Fitch, 1921.

developed embryos, it may be taken as evidence that they are not actually from fresh feces but from older material which may contaminate fresh feces collected from an area not

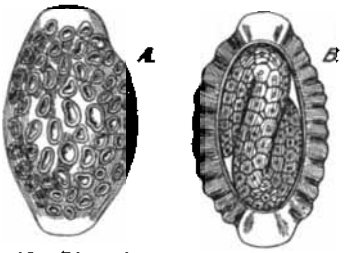


Fig. 12. *Dioctophyma renale.* A, egg showing shell surface with markings. B, egg showing embryo and optical section of shell. x 250. From Railliet, 1893.

properly cleaned before the collection of the fresh sample.

The hookworm eggs are elliptical, thin-shelled and usually found with the contents in a state of segmentation. In Ancylostoma caninum of dogs, cats and foxes, the eggs (Fig. 10) are 74 to 84 microns long by 48 to 54 microns wide. In Uncinaria stenocephala of dogs, cats and foxes, the eggs are 63 to 67 microns long by 32 to 38 microns wide.

Whipworm and hairworm eggs are characteristically lemon-shaped, with an opercular plug at each end. In Trichuris depressiuscula (T. vulpis) of the dog and fox, the eggs (Fig. 11) are 72 to 80 microns long, according to Railliet, or 77 to 86 microns long, according to measurements of American material, by 37 to 40 microns wide. In T. campanula of the cat, the eggs are 72 microns long by 34 microns wide. In Capillaria feliscati of the cat, the eggs are 61 to 64 microns long by 27 to 32 microns wide. This species occurs in the urinary bladder, the eggs passing in the urine. Eggs passing in the urine are quite liable to be found in the feces as a result of contamination. In C. aerophila of the dog, cat and fox, the eggs are 67 to 72 microns long. This species occurs in the air passages of the lungs and the eggs pass out in the feces. The eggs of this species should be carefully differentiated from those of the whipworm in examining feces from foxes, as this is a common parasite of foxes in North America.

Fig. 13. *Echinopardalis pardalis.* Egg. Enlarged. From Travassos, 1917.

The eggs of the kidney worm of the dog and fox, Dioctophyme renale (Fig. 12), are ellipsoid, brownish, have a thick shell marked with numerous depressions, and are 64 to 66 microns long by 40 to 44 microns wide. When the female worm is in the kidney, the eggs pass in the urine and may be found in feces as a result of contamination. When the female is in the body cavity, the eggs are passed into the abdominal cavity and are largely picked up by the omentum in its role of protector against foreign objects.

Acanthocephalids, or thorny-headed worms, are rare in dogs and cats, but they sometimes occur, and one species, Oncicola canis, has

Fig. 14. *Synthetecaulus abstrusus.* Larva. x 150. From Railliet, 1893.

been found in the United States. The eggs have three shells. The eggs of Echinopardalis pardalis (Fig. 13) of the cat are 53 to 63 microns long by 38 to 42 microns wide. The egg sizes for O. canis do not appear to have been reported.

In the case of certain nematodes, such as some of those occurring in the lungs, the eggs do not pass in the feces, but hatch in the body of the host animal. In such cases larvae are found in the feces. An illustration of this is the cat lungworm, Synthetocaulus abstrusus. The eggs of this worm develop in the alveoli of the lungs and the young worms hatch, make their way up the trachea and are swallowed, appearing in the feces as larvae (Fig. 14).

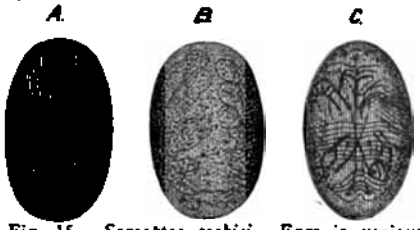


Fig. 15. *Sarcoptes scabiei.* Eggs in various stages of development. x 150. From Railliet, 1893.

Numerous objects, such as plant spores, stimulate parasite eggs in feces to some extent. Among other things which may be present and which must be eliminated from consideration as worm eggs, are the eggs of mites, both parasitic and free-living. An illustration of the eggs of a sarcoptic mite (Fig. 15) is given here. These eggs are elliptical and rather large, being in the case of Saroptes scabiei canis of the dog about 150 microns long by 80 microns wide. In an early stage the contents of the egg are granular; later the development of the mite in the egg makes an identification easy.

HABRONEMIASIS IN HORSES

I have three horses under my care that are affected with a peculiar disease. There are other horses on the premises but these three are the only ones affected.

The first symptom noticed is a swelling of the tongue and lips and after a time caseous deposits form on the tongue. The temperature and appetite are normal but the animals are a little poor in flesh. The tongue and lips are getting better on one after four months, but the tongue is still very fibrous on the other two.

No organisms have been found but it appears to be a parasitic disease called "habronemic granulomata" by Dr. C. P. Fitch of the University of Minnesota. Two of these horses have been sent to Dr. Fitch for experimental purposes.

Kindly give me the life history of the above parasite and explain how they get into the tongue and lips, how long they remain there and where they go. There is no similar disease in this section of the state. Is there any cure?—T. L., Minnesota.

REPLY (by M. C. Hall)—If the parasites present in the tongue and the lips of horses prove to be larvae of **Habronema,** it will constitute a new finding in connection with the occurrence of these worms so far as the writer is familiar with the literature on this subject. The worms at present referred to the genus **Habronema** were formerly referred to the genus **Spiroptera.** The forms from the horses were known as **Spiroptera megastoma** and **S. microstoma.** At present we are familiar with three species, **Habronema megastoma, H. microstoma** and **H. musca.** These worms occur in the stomach, sometimes free in the lumen and sometimes in the mucosa. Worms can sometimes be collected by picking the glandular mucosa with forceps even when no worms are seen in the lumen of the stomach. **H. megastoma** forms large nodules, sometimes the size of a pigeon's egg, and is apparently the least common of the three species of **Habronema** in this country.

Life History Discovered By Ransom

The life history of **Habronema** was first discovered by Dr. B. H. Ransom of the Zoological Division of the Federal Bureau of Animal Industry. He found that the worm eggs passing in the manure were ingested by flies, **Musca domestica,** in the maggot stage. The flies breed in manure, and the embryos escaping from the eggs after ingestion by the fly maggots develop to larval worms. These larvae when fully developed are found in the head of the adult fly, frequently in the proboscis, and sometimes in the thorax or abdomen. When flies containing infective larvae are swallowed by horses, asses or mules, a thing which must occur frequently, especially when the flies are numbed with cold and fall into feed troughs or watering troughs, the larval worms develop to adults in the stomach of the new host. It also appears that the larvae in the proboscis escape as flies feed on the moisture on the lips of the horse, and this is apparently the customary mode of infection.

Summer Sores Due to Habronema

But these worms are not confined to the stomach of the horse and related animals as a site of infestation. It has been found that the skin conditions known as summer sores in the Equidae are due to larvae of **Habronema.** These sores arise in warm weather, which is the fly season, and are due to worm infestations.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

COCCIDIOSIS IN RABBITS (2)

The measures to be adopted for the control are of prophylactic, hygienic and of therapeutic nature. The two first mentioned play the principal part in the control of the disease. Attempts to treat coccidiosis are, up to date, without marked results.

Prophylaxis

For prophylactic purposes it is advisable to make a fecal examination immediately after the purchase of the animal, preferably on the first day. A second examination is made on the fifth or sixth day. Animals showing positive findings should be rejected. The newly purchased animals should be isolated and during the quarantine period they should be fed green feed and provided with sufficient drinking water. This facilitates the microscopical examination of the feces for coccidia and spores. Special care should be exercised in the microscopical examination when it is desired to introduce new female breeding stock, as they may infect their entire litter. The hatches should be kept dry and accessible to sunlight. In winter the rabbits should be protected from cold. They should also be protected from excitement by dogs and other animals. Each hatch should have a run which should provide exercise for the animals. Straw or hay should be used as bedding. These measures will increase the natural resistance of the rabbits and they do not become such easy prey to the invasion.

Slaughter Preferable

After the disease has already appeared the slaughter of all rabbits is indicated; in considering the unsatisfactory results which follow any known therapeutic measures, such procedure is probably the most economical. If the outbreak occurred in valuable breeding animals, attempts should be made to adopt measures which will prevent the transmission of the disease. The infected animals should be immediately slaughtered. The healthy animals should be subjected to microscopical examination. The meat of the infected animals is suitable for food purposes.

Disposal of Carcasses

The affected viscera as well as the carcasses should be covered with lime and buried at least three feet under ground. The burning should be even preferred to any other disposal. The hatches should be thoroughly cleaned, all refuse burned and the building washed with hot water and soda solution. Then white washed and exposed to the sunlight for at least fourteen days. The runs should also be thoroughly cleaned. The soil of the runs should be covered with lime and turned under.

An effective treatment for coccidiosis has not yet been developed. The administration of the various remedies have all failed to give any positive results.

CONTRIBUTION TO THE BIOLOGY OF THE CAUSATIVE AGENT OF SWAMP FEVER IN HORSES (5)

The extensive experiments of the author established that the cardinal symptoms of infectious anemia is a progressive anemia resulting from a primary destruction of the red blood corpuscles in the blood which, however, may be replenished to a considerable extent by the undisturbed regenerative activity of the bone marrow. Besides the anemia, there is the characteristic periodical fever with its typical intervals of six to eight days. These symptoms are supplanted by the other known clinical manifestations and autopsy findings (septicemia, swelling of the spleen, swelling of the lymph glands).

Diagnosis Possible

Considering this symptom complex, it is possible, therefore to make a diagnosis of infectious anemia in horses without diagnostic inoculations of horses. In doubtful cases the blood inoculations gives positive results. A general practice of diagnositic inoculations, therefore, does not appear absolutely necessary in all cases. From a differential diagnostic standpoint piroplasmosis and glanders are the principal infections and they may be readily excluded by blood examinations and by the specific tests.

May Be a Piroplasmosis

The supposition, based on the peculiar course of the fever, that the ultravisible virus of infectious anemia is of a malaria or protozoa-like character is substantiated by the hematological finding of the progessively

diminishing number of red blood corpuscles, the peculiar enlargement of the spleen and the absence of changes in the picture of the white blood corpuscles. This supposition is further substantiated by the peculiar epidemiological character of the disease and by the clinical course (chronic and latent form, virus carriers). Infectious anemia of horses, therefore, should be included in the group of piroplasmosis, anaplasmosis and malaria-like infections of domestic animals.

THE VALUE OF THE CLINICAL AND BACTERIOLOGICAL EXAMINATION FOR THE DIAGNOSIS OF OPEN TUBERCULOSIS IN CATTLE[1]

Based on his extensive data the author in his critical review on the value of the clinical diagnosis in tuberculosis concludes that it is hardly ever possible to establish a diagnosis with certainty. Even the suspicion of tuberculosis can be established only in about 20% of cattle affected with open tuberculosis. The cough and nutritive condition may only be suggestive of the presence of the disease as these signs may occur in many other abnormal conditions. The percussion and palpation are also only of slight value. More important is the demonstration of râles on auscultation. Râles, however, are absent in about 80% of open cases of pulmonary tuberculosis. Furthermore, they may be present in bronchial catarrhs. An absolute clinical diagnosis of tuberculosis of the udder cannot be made without a bacteriological demonstration of tubercle bacilli in the milk. The same applies to tuberculosis of the uterus, and for intestinal tuberculosis.

The value of the bacteriological methods for the diagnosis of open cases of bovine tuberculosis is also very limited. It is very difficult even in open pulmonary tuberculosis to obtain sputum containing tubercle bacilli. None of the instruments used for this purpose up to date have given satisfaction. Furthermore, the collected mucous also usually contains food particles to which acid-fast pseudo tubercle bacilli may adhere; therefore, the microscopical examination is not conclusive (animal inoculation takes from 4 to 6 weeks). The bloody operations (trachealtrocar) may lead to very unpleasant complications. On the other hand tubercle bacilli may not be present in the sputum even in advanced open pulmonary tuberculosis, besides the microscopical demonstration of tubercle bacilli in early cases of tuberculosis is very uncertain. Even by the combined clinical-bacteriological examination it is possible to recognize the disease only in 30% of cattle affected with open pulmonary tuberculosis, whereas in about 70% of such infections they have been considered erroneously as free from the disease.

TRANSMISSION OF FOOT-AND-MOUTH-DISEASE TO GUINEA PIGS[2]

Three guinea pigs inoculated with the virus from a hog developed vesicles on their feet. A reinoculation of the material into two other guinea pigs resulted in an affection of the mouth. Aside from the changes in the general condition, the guinea pigs showed salivation and nasal discharge; transmission with the blood of severely affected guinea pigs was not successful. Negative results also followed attempts to transmit the disease by scarification of the abdominal wall and subcarneal inoculations. The natural transmission has also failed. Rabbits, mice and rats proved refractive to inoculations.

FOOT MANGE IN CATS[3]

The author observed several cases of mange in cats which markedly differed from other forms of mange. It is manifested by the formation of very prominent scabs and similates the Scabies Norwegica of man. The affection is limited to the feet and especially the paws on which hard gray scabs up to a quarter inch thickness form. These scabs are strongly attached to the epidermis. In forcibly removing them a part of the epidermis becomes also detached. Itching and disturbance in locomotion are only noticeable at the onset of the disease; in advanced cases these symptoms are absent. The other parts of the skin are not affected. The cause of the disease is a new variety of the Sarcoptes mite which is not identical with the notoedris cati nor with the other mites occurring in our domesticated animals. The treatment requires thorough removal of the scabs (soap, oil) which is the most difficult part of the treatment. This is to be followed by the application of any of the known antiscabiescidal ointments.

1. Hoeller, Vienna (Monat. F. Tierh. Vol. 32, No. 7 and 8, 1921).
2. Prof. Reinhordt (Ideb.).
3. Muehler (Tier. Riurdschan, Nov. 16, 1921).
4. Zwick, Zeller, Krage, Gimier. (art. a. d. Reichs, 1920).
5. T. Pagliareine (Clin. Vet., 1921).

Zootechnics

Edited by E. MERILLAT, M. D. V.

Milk Versus Beef

EVER since 1850 the center of dairy production both in cattle and products has been gradually shifting westward and southward. In 1850 the center of the dairy production was in Eastern Ohio; in 1920 it was in Central Illinois. In a discussion of the subject by Edw. N. Wentworth in Hoard's Dairyman (Jan. 13, 1922) some interesting data are recorded, such as the gradual ascendency of some states, the sudden ascendency of others and the difficulties that some states have had holding their own against the growing competition of others. Referring to the details of these changes Wentworth reports:

Dairy Centers Changing

"The first census recording dairy cattle separately from other cattle was taken in 1850. At that time the center of dairy production was about ten miles north of Crown City, Ohio, and about sixty-five miles north of Huntington, W. Va. New York was the leading dairy state with 931,324 head; Ohio was second with 544,500 head; Pennsylvania, third with 530,000; Georgia, fourth with 334,000; and Virginia, fifth. Wisconsin, which is the leading state in dairy production today, was twenty-seventh at the time of this census.

Shifts to Kentucky

"By 1860 the center had moved to a point about 18 miles south of Cincinnati to the town of Independence, Ky. New York was still the leading dairy state, but Pennsylvania and Ohio had reversed positions, Illinois had come into fourth, and Texas fifth, with Georgia and Virginia following.

"Ten years later the center was found about fifty miles south and a little east of Muncie, Ind., between the small towns of Connorsville and Liberty. New York was still at the top, but Illinois had passed Pennsylvania for second place; Ohio was fourth; Indiana, fifth; and Iowa, sixth. The war had depleted the south and Texas ranked only ninth, with Georgia eleventh and Kentucky between.

Then to Indiana

"In 1880 the center was in the vicinity of Greencastle, Ind. The states ranked as follows: New York, Illinois, Iowa, Pennsylvania, Ohio, Missouri, Texas, Indiana, and Wisconsin.

"In 1890 the center was at Oakland, Ill., about forty-five miles south and east of Urbana. For the first time New York was forced to yield the palm as a dairy state, Iowa showing about 60,000 more cows. Illinois was third; Texas, fourth; Pennsylvania, fifth; Missouri, sixth; Ohio, seventh; Wisconsin, eighth; Kansas, ninth; and Minnesota, tenth.

Finally to Illinois

"The opening of the new century found New York once again predominant, with Iowa and Illinois following. Wisconsin had come into fourth place, with Pennsylvania, Texas, and Ohio following in sequence. The center was about five miles south of Urbana, Ill.

"Then years later it had moved to a point approximately eight miles east of Clinton, Ill. New York was then the leading dairy state, with Wisconsin a close second, and Iowa, Minnesota, Illinois, and Texas following in order, with Pennsylvania as seventh.

Wisconsin Now Leads

"In 1920 Wisconsin had assumed the lead; New York and Minnesota were virtually tied for second; Iowa was fourth; Illinois, fifth; Texas, sixth; and Ohio, Pennsylvania, Michigan, and Missouri ranged from seventh to tenth respectively, with over 1,000,000 cows each. The center of production was about forty miles south of Galesburg.

Ratio of Dairy to Beef Cattle

"The gradually increasing proportion of dairy cattle in our cattle population is of interest. In 1850, 36.2 per cent of all cattle in this country were dairy cattle; in 1860, the percentage was 38.5; in 1870, it was 40.1; in 1880, it was 34.6; in 1890, it was 31.9; in 1900, it was 25.3; in 1910, it was 33.7; and 1920, it was 47 per cent. Just why there was a decline in the period from 1870 to 1900 is easily explained. The number of dairy cattle were constantly increasing during this time but the development of the range stimulated the production of beef cattle so much more rapidly than the growth of the cities stimulated the production of dairy cattle, that the percentage of dairy cattle declined despite an actual increase in numbers."

"Dairy Blood" Not the Cause of Low Beef Consumption

This variation in the ratio of beef and dairy cattle as shown in the national decennial census is exceedingly good information and coming from such a profound student of big problems as Mr. Wentworth it is taken as authentic, but we can not agree with his views about the harmfulness of "dairy blood" to the beef industry nor about the project of encouraging the breeding of dual-purpose cattle as a remedy for the low consumption of beef products. The truth seems to be that the packing industry has destroyed itself. Industries, like bacteria, often produce conditions that destroy them. The meat packing

industries by paying a reasonable price for cattle and selling at a price that was within the purchasing power of the public made beef a nationally approved food. But, since more than a decade ago the public began to balance its ration with dairy products because of the high price of beef the consumption has gradually declined, and although the climax was delayed by the demands of war its arrival sooner or later was, we think, inevitable. On the contrary Wentworth explains the discomfiture of the beef producer and beef industry as follows:

Future of Dairy Interests Bright

"The future of dairy production seems bright. There is no longer cheap land available for an extension of beef production, and it may reasonably be expected that the next census or two will show a ratio between beef and dairy cattle closely comparable to the ratio of rural to urban population.

"The increase in dairy cattle introduces a complex problem in beef production, since an increasingly large number of the cattle received at the principal markets show dairy blood and conformation. Regardless of the efficiency of the dairy animal in its own field, it is very unsatisfactory as a producer of beef, and a large share of the blame for the decrease in the quality of beef during the last twenty years, as marketed in the small towns and from local butcher shops, may be laid at the door of the dairy cow. Despite the partisan beliefs of the supporters of beef and dairy cattle respectively, it seems possible that a half century hence American cattle will be more of a dual-purpose type. This will probably not involve a change in the present breeds of cattle, but instead a modification of the ideals towards which the breeder will select. Such a forecast is tentative, to be sure, and there will likely be many other economic factors introduced before the future trend of cattle types will be definitely determined."

The immutable law of supply and demand is operating to the advantage of the dairyman whose products are being recognized as indisputiably essential to the national welfare: Both health and general prosperity depend much upon the dairyman. It is he who will survive and his position will become more secure as the cultivated prejudice against the beef of dairy types declines. It is becoming too apparent that the difference in both the quality and percentage of edible meat between the beef and the dairy types has been very much exaggerated. Commenting on this phase of Wentworth's article the editor of Hoard's Dairyman says: "The buyer has been in the habit of paying for the color of the hide and prejudiced opinion, rather than the amount and quality of edible meat."

Missouri Hereford Cattle won first honors at the 1922 Western Live Stock Show in Denver.

MEXICO BUYS OUR LIVE STOCK

Recently two agents of the Mexican government visited this country in search of live stock for agricultural schools in Mexico. They wanted milking shorthorns, Guernseys and Ayrshires, Duroc-Jerseys and Poland China hogs, Merino sheep, milk goats, Arabian and Morgan horses. They stated that Mexico is undergoing a great industrial and agricultural revival, and that in the last 10 months the government has expended 1,000,000 pesos for agricultural implements.

BREEDING EXPERIMENT BY THE B. A. I.

The animal husbandry division of the U. S. Department of Agriculture is beginning a breeding and feeding experiment to contrast the results of using scrub, crossbred and purebred boars on scrub and crossbred sows. Ten crossbed sows of various breeds and mixtures and 10 scrub sows of the razorback kind will be used. Half of each of these groups will be bred to a purebred boar; and half of the first group will be bred to a crossbred boar, and half of the other group will be bred to a scrub. This scheme of breeding will be carried on from generation to generation. Some of the offspring will be fed out, and some will be kept for breeding. Shotes from the different lots will be fed identically, so that a fair comparison can be made. Scrubs and crossbreds also will be compared in feeding trials with purebreds.

ILLINOIS SHORT OF HORSES

The Farm Bureau Bulletin of Warren county, Illinois, recently published the following: "It will take 24 years to replace horses now on Warren county farms, according to the present rate of breeding. This fact was brought out by a survey of the Illinois Agricultural Association and the farm bureaus. The figures showed 9,195 horses on 1,076 farms in this county. A survey on 32,515 Illinois farms in 43 counties shows a total horse population of 238,564. The 45,312 brood mares only foaled 8,918 colts during the quarter ending July 1, 1920. If it is assumed that the average age of a horse is 13 years, it follows that a shortage of good farm horses will be inevitable, unless the present output of farm raised colts is doubled. Continued inactivity in horse breeding on the farms of the corn belt may ultimately result in the prices of work horses rising to an almost prohibitive point."

Feeding Orphans With Milk of Other Species

So many of our readers are requesting information about the preparation of a milk diet for young animals that have been unfortunate enough to lose their mothers, or which must, for one reason or another, be raised from milk of another species.

As the question almost always applies to the nourishment of young other than bovine, which must be raised on cows' milk and is therefore purely a matter of transforming the milk of cows into one that nearly approaches in analysis the milk of the species to be thus raised, the accompanying table will enable the veterinarian to compound a food by making the changes indicated in the figures shown.

To compound a substitute, lime water should be used in making the desired equivalent, sugar of milk to bring up any deficiency in the sugar contents and cream of cow's milk to supply needed fats.

It is only necessary to remember that during the first few days after birth the equivalent should be accurately compounded in order to prevent digestive disturbances and that as the young grow older the raw milk from cows unchanged will answer every purpose.

It is also very essential to feed such animals only with uncontaminated milk. Care must always be taken to use only clean products and always mix them for immediate use in perfectly clean vessels until such time as the alimentary tract becomes less susceptible to derangement. As an example, the milk of mares is very low in fat and very high in sugar. This fact would require that the milk of cows to be used to raise an orphan colt should be diminished in fat by diluting with lime water and increased in sugar content by the addition of sufficient sugar of milk to bring it up to the percentage shown in the table. In the case of pigs to be raised with cows' milk the fat content is increased by the addition of cream of cows' milk and the sugar diminished by dilution with lime water.

By referring to the table equivalents can be made to serve any purpose.

Average Content Table

Species	Water	Solids	Fat	Sugar	Casein	Alb.	Ash
Human	87.58	12.42	3.74	6.37	6.80	1.21	0.30
Cows	87.27	12.73	3.68	4.94	2.88	0.51	0.72
Goats	86.68	13.32	4.07	4.64	2.87	0.89	0.85
Ewes	83.57	16.43	6.18	4.17	4.17	0.98	0.93
Camels	87.13	12.87	2.87	5.39	3.49	0.38	0.74
Asses	90.12	9.88	1.37	6.19	0.79	1.06	0.47
Mares	90.58	9.42	1.14	5.87	1.30	0.75	0.36
Sows	84.04	15.96	4.55	3.13	7.23	7.23	1.05
Bitches	77.00	23.00	9.26	3.11	4.15	5.57	0.91
Cats	81.63	18.37	3.33	4.91	3.12	5.96	0.58
Rabbits	69.50	30.50	10.45	1.95	15.54	15.54	2.56

TRIPLETS JUST BORN

(Shown at two weeks old, Page 167.)

Please find enclosed photographs of a cow that has given birth to triplets which are now two weeks old, and in splendid condition.

The cow is a brown Swiss, bred to a roan bull. Two of the calves are roan and one is red. The calves are all spry and are developing normally. The cow is owned by one of my clients, Mr. Clate Ladley, who lives one mile east of Deep River.

Weather conditions were rather unfavorable for taking a good picture.

--C. D. Hornbeck, D.V.M., Deep River, Iowa.

FLUSHING EWES

In bulletin No. 906 issued by the U. S. Department of Agriculture and entitled "Flushing (extra feeding) and Other Means of Increasing Lamb Yields," a very complete summary of experiments extending over a period of five years is given covering a total of 302 matings as conducted at the B. A. I. farm at Beltsville, Md. From these experiments we learn:

1. Feeding at breeding time to increase the number of twins produced by ewes is called "flushing."

2. The percentage of lambs produced by a flock depends upon the number of dry ewes and the proportion of ewes producing twins and triplets.

3. The practical advantages of flushing lies in the production of twins, which in turn depends upon the number of ova produced by the ewe.

4. Experiments reported herein indicate that ewes getting in lamb first produce the largest percentage of twins.

5. Data from experimental work indicate that ewes should gain at least seven pounds a head during the breeding season to obtain largest percentage of twins.

6. There seems to be a natural tendency toward twin production, which varies in different breeds.

7. It is only in extreme cases that the ram has shown any influence on the number of twin lambs produced by a flock.

8. Records do not indicate that ewes born twins of twin parentage are more prolific than single ewes.

9. There is no material difference in the size of twins and singles when fully developed.

10. Although at market age twin lambs would not weigh so much as singles the difference in weight would be small compared to the total weight of lambs for sale, thus making twins more profitable.

This excellent Bulletin and one entitled "Breeding Morgan Horses," or Circular 199 of the U. S. Department of Agriculture, may be obtained for 15 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Instinct is a mystery, insoluble by empirical science like gravitation, for though its behavior may be analyzed as a compound reflex, automatic habit or sum of evolutionary effects through natural selection, its primal essence (the original impulse) can never be defined any more than life itself.—Maud Phillips.

EFFECT OF PASTEURIZATION ON THE CREAM LAYER

Although the pasteurization of milk is important and necessary, the volume of cream on milk begins measurably to decrease when the temperature of pasteurization rises from 140° F. to 144° F., according to a bulletin issued by the Agricultural Experiment Station of the University of Illinois.

"As the temperature goes higher, the decrease in the volume of cream becomes rapidly more pronounced; at 145° F. it amounts to slightly more than 10 per cent by volume; at 146° F. it amounts to 16.6 per cent; and at 148° F. to approximately 40 per cent," says the bulletin.

"The layer of cream on the bottle of milk as delivered to the consumer is important because the consumer used it as an index of the richness of the milk and as a source of cream.

"Since 1900 a heating of the milk to 140°-145° F. for thirty minutes has been generally recognized as proper pasteurization. Recently there has been a growing demand that the temperature of pasteurization be increased to 145° F. for thirty minutes as a minimum time and temperature.

"In the operation of practically all large commercial pasteurizers, a variation of at least three degrees Fahrenheit is practically unavoidable. Many machines vary even more widely. Accordingly, the requirement of 145° F. as the minimum temperature means pasteurization at 145° to 148° F.

"Repeated, careful studies by different scientists have uniformly shown that the most resistant disease germs which may enter milk are destroyed by a fifteen-minute heating at 140° F. Under such circumstances pasteurization at 142°-145° F. for thirty minutes provides a very considerable margin of safety, both in the matter of temperature and of time of exposure.

"The proposition to require pasteurization at a minimum of 145° F. for thirty minutes involves so large a destruction of the cream layer, which is highly esteemed by the public, that such requirement would probably result in a decreasing consumption of pasteurized milk. Accordingly, this increase in the margin of safety would hardly seem justified in the absence of any evidence that 142°-145° F. is insufficient, and in the absence of any attempt to provide increased safety in other ways.—Weekly News Letter.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Cotton Seed Meal

Dr. J. Howard Brown of Rich Square, North Carolina, sends some cottonseed meal and the following letter:

"Under separate cover I am sending you a sample of cottonseed meal. This meal was fed to one cow, four or five years of age and giving milk. On the morning of the 13th the cow was noted to have a staggering gait and listless appearance. Muscular tremors were apparent and the cow rapidly became weaker, finally went down and died with a spasm about 3 p. m. of same day.

"A two year old heifer, with a four weeks' old calf was immediately brought to same place and was fed with same meal. On the morning of the 17th day the heifer showed a staggering gait with weakness of hind quarters and refusal to eat anything with exception of small ears of corn. Temperature pulse and respiration seem to be normal.

"The owner of these two animals seems to think that the cottonseed meal has poisoned them. I should add that the cow that died had access to lye soap and undoubtedly ate and licked some of it. My opinion is that the cow died from the effects of the lye and that the heifer has a case of indigestion."

Microscopic Examination Negative

I cannot find anything in the meal, so far as the microscope will reveal that is injurious. The lye, of course, is injurious.

There has been much talk and discussion of the injuriousness of cottonseed meal to livestock and investigations have been made. However, most of this goes back years ago. I have before me bulletin by Prof. R. R. Dinwiddie on Cotton Food-Products in Hog Feeding, published by the Arkansas Agricultural Experiment Station, from which I will quote as follows:

"Cottonseed meal of good quality, when fed beyond a certain limit, has been found harmful to health in all species of farm animals. Nevertheless, in suitable doses, which experience has determined, it is profitably used in cattle feeding, in fattening steers at or in the vicinity of the oil mills in the south, and as a component in rations for dairy cows everywhere throughout the country. Evidently the toxicity for these animals is a question of dosage, a suitable allowance forming a harmless and profitable food, while an undue allowance acts as a more or less virulent poison and is, therefore, in the highest degree unprofitable.

Dangerous for Hogs

"It might be supposed that the same statement of the case would apply to hogs, but this is not the prevalent belief. Feeding experiments with cotton seed and meal have, in general led to so many fatalities in hogs that these feeding stuffs in any quantity are usually regarded as unsafe and unprofitable as a food for pigs at any stage of growth. In my previous report it was pointed out that many of the experiments on which this opinion was based were open to criticism on account of the large quantity of cottonseed meal fed as compared with similar feeding tests with cattle assuming the susceptibility to a toxin to vary inversely as the weight of the animal. Some experimenters, however, have found that even minute doses of cottonseed meal have proved either fatal or harmful in their effects. I have not had this experience but have no desire at this time to criticise or analyze the experiments of others, since experimental work in this line is by no means complete.

Results of Over Feeding

"The present series of experiments did not afford much opportunity for further studying this problem. The following based upon such opportunities for observation as we have had may be previously set down as the course or sequel of events in cases of overfeeding with cotton seed or cottonseed meal. Congestion of the eliminative organs, liver and kidneys, followed by one of three conditions according to the degree of overfeeding.

"(a) Progressive engorgement with impairment of function leading to acute drops-

ical effusion into the various serous cavities and death within two months or less. This is the most acute form.

"(b) Primary engorgement as above followed by degenerative changes, fatty and atrophic in the liver, sclerotic and atrophic in the liver, sclerotic and atrophic in the kidneys, with progressive loss of function.

"(c) Congestion of less degree which the organs become more or less habituated to and in which only slight and temporary symptoms develop and no marked organic changes are found.

Proper Rationing Not Harmful

"(d) Long continued feeding on cottonseed meal in the safe doses prescribed above has given rise to no gross organic changes in liver, kidneys or other organs discoverable on slaughter. No fault has been found by the butcher purchasing our animals as to the quality of the flesh or fat. Prolonged feeding on cotton food products has been found to greatly heighten the melting point of the lard.

SILAGE SUSPECTED OF POISONING

Dr. R. E. Hanson of Forest City sent me a sample of moldy silage with the following letter:

"Under separate cover am sending you a sample of ensilage which I think is the cause of the death of five horses on one farm.

"These horses have all shown symptoms of forage poisoning have had access to ensilage for the last two months.

"Up to January 1st Mr. Waltum (owner of dead animals) lost five horses and two mules, ages ranging from two to four years old, was first called there on January 27th and at that time there were two horses down which died that night. Horses were first to die, all the above seven had excess to ensilage, mules were the youngest of all and did not get as much ensilage as the others and I think that, that is the reason they were last to go.

"After my first visit I gave the last five head a physic with a tonic and potassium iodid, but with no results.

"First symptoms that were noticed was that animals were unable to swallow and a slight stiffness in their gait, these symptoms increased until animal was unable to stand, would die in about eight to twelve hours after going down, temperatures were all sub-normal, pulse about normal, bowels discharge contained mucous with a slight diarrhea.

Autopsy showed congestion of all intestines but will say that post mortem was not very satisfactory, animals had been dead several hours."

The silage was examined and found to contain several molds of the type referred to previously in the journal Penicillium, Monascus, Fasanum and Trichothecium, and I feel that animals should not be fed silage of this kind. I am satisfied that cases of poisoning of the kind described are most likely referable to molds of some kind.

SYMPTOMS OF WILD CHERRY POISONING

Dr. F. C. Smith of Sherman, New York, writes the following letter about the symptoms of cherry poisoning:

"What I want to know especially is whether or not wild cherry poisoning is ever characterized by a high fever, continuing for a day or so or even longer. As I understand from reading, it is only when the leaves become wilted that they are dangerous. In your experience have you found this to be true? Are there any characteristic lesions on post-mortem examination?"

The cherry poisoning referred to here is undoubtedly the common black or rum cherry (Prunus serotina).

I submitted the above letter to Dr. H. D. Bergman who replies as follows:

"Replying to your communication relative to the attached injury will advise that I can locate no specific instances of poisoning in animals due to the wild cherry. I appreciate that it is generally supposed that the leaves, particularly in the wilted state are poisonous. I have talked with veterinarians who live in localities where the wild cherry is found quite generally and while it is commonly understood that it is poisonous, they have failed to observe specific cases of poisoning. It is probable that animals generally will not eat the leaves in sufficient quantity to cause poisoning.

"Considering what is commonly supposed to be the active cause of the poisoning, I do not think that it would be characterized by a high fever, unless of sufficiently chronic nature that secondary infection might result. I am enclosing two reported cases of poisoning in ewes and in the horse by cherry laurel which might be of interest.

"C. Aggio[2] observed the poisoning of ewes by cherry laurel. There was a loss of appetite, vomitation, inability to rise, and several deaths.

"Adsetts describes a similar case in the horse. There was an indistinct and feeble pulse, mucous membranes ingested, difficult respiration, uneasiness, prostration, coldness of the extremities, loss of appetite, constipation, diminished urination, and acute pain; protracted over three days, these eventuated in death.

Not a Cyanide Poison

"It will be readily perceived from these examples that one has not to deal here with simple cyanide poisoning. It is well known that the train of symptoms and the post mortem lesions in cases of the ingestion of a plant often suggest irritation which is by no means typical of the pure active principle. The difference between the effects of the yew plant on the one hand and the active principle texine on the other hand form a good similar example. The difference is obviously referable to the fact that often these plants contain, in addition to a specific active poison, irritant substances; e. g., cherry laurel contains an essential oil analogous to turpentine.

The wild black cherry is perhaps the species most frequently referred to as the one which causes prussic acid poisoning. The distribution of this species is from Nova Scotia, New England, middle states and south to Florida and west to Dakota, Nebraska, Missouri, Oklahoma and Texas, in which it is common. In the Mississippi valley it only occurs in woodland pastures. In Vermont it is common in cleared pastures. Mr. Charles D. Howard made a large amount of chemical analysis.

"The average of ten analyses shows that 100 grains (about ¼ lb.) of leaves (a) yield 212 milligrams, or about 3.2 grains, acid, while the same quantity of fresh leaves (d) yields 42 milligrams acid. The same is noticeable of chokecherry.

"The leaves of the wild black cherry are the most poisonous of three species investigated, though all are dangerous.

"Both the wilted and fresh leaves are poisonous, while the dried are to be regarded with suspicion.

"Vigorous, succulent leaves from young shoots, which are the ones most liable to be eaten by cattle, are far more poisonous than the leaves from a mature tree or stunted shrub.

"Leaves wilted in bright sunlight to about 75 per cent original weight, or until they begin to appear slightly limp and to lose their gloss, yield the maximum amount of prussic acid."

I would expect the cases of poisoning more frequently in the eastern states than in the west. This plant, as I stated, is rarely seen in our common pastures in Iowa.

The symptoms as commonly recorded are "labored respiration, diminished pulse, numbness, fright, protruding eyeballs, convulsions and death from paralysis of lungs," there is considerable frothing at the mouth.

FLORA OF CORN MEAL

Professors Charles Thom and Edwin LeFevre have published an interesting article on "Flora of Corn Meal." Corn meal is often moldy and injurious to animals and these authors say: "Among these the following species of molds were characteristic of many series of cultures: Fusarium sp., Aspergillus repens, A. flavus, A. tamaria., A. niger, Citromyces (or Penicillium section Citromyces) sp., Penicillium oxalicum, P. luteum varieties, Mucor sp., Rhizopus nigricans, and Syncephalastrum sp., together with various yeasts and yeast-like fungi. Among bacterial groups, the colonaerogenes group and lacto-bacilli were most abundant in fresh meal. Aerobic spore formers and micrococci were always present and persisted in the stored product.

Within the range of composition found in merchantable meals no bacterial activity was detected. Only one grade of unbolted meal showed signs of mild development below 13 per cent of moisture. Above 13 per cent moisture, Aspergillus repens begins to be an active agent of spoilage somewhere between 13 and 15 per cent of moisture, varying with the form of milling practiced. Several other species of molds are active in meal containing 16 per cent moisture; and numerous forms, including some bacteria, develop when 18 to 20 per cent of moisture is found.

Many samples of corn are found to carry extensive infection with Fusarium, Diplodia, Aspergillus repens, or Penicillium, especially in the germinal area and in the tip of the kernel. These sections of the kernel are removed in varying degrees by different milling systems. The bolted meals examined show a corresponding reduction in count of viable organisms as shown by culture.

[2]Bull. New Hampshire 56.

According to Babcock and Bennett the screw worm causes an annual loss in this country of not less than $4,000,000.

Epitheloma of the Penis. Amputation

By C. W. SASS, TOLEDO, OHIO

History

The subject is a middle aged, light draft gelding that developed a paralysis of the penis from the weight of a growing epithelioma of the preputial fold until the penis hung down full length, producing total disability, not only from the constant flopping of the organ but also on account of its offensive appearance. The case is remarkable for the absence of any complications arising from as they usually do, from exposure and traumatism. There was no edema of the organ or sheath at the time of the operation.

The patient was in fair health but somewhat unthrifty in general appearance despite a good appetite and good care, indicating the usual obscure cachexia that is generally associated with cancer.

The affection began as a small erosion that was not noticed until the horse began to show an inclination to keep the penis extruded but grew gradually during the year preceding the operation.

The Operation

The operation was performed under general anesthesia and the hemorrhage was controlled with a tourniquet applied tightly behind the proposed seat of amputation. An ordinary gauze bandage was used for this purpose.

The urethra was dissected away from the body of the penis from before backward and the amputation effected just behind the tumor where the tissues seemed healthy. A multiple ligature was applied to the stump to control bleeding after the tourniquent was removed, and then a triangular piece of the urethra was resected at the point of cleavage and sutured with interrupted sutures to the adjacent integument.

With the exception of the usual enfeeblement arising from a major operation the patient survived the ordeal without any operative complication.

The Results

There was almost immediate improvement in the patient and not post-operative complications developed despite the fact that little attention was ever given to the wound. In two weeks it was ready for the harness and gradually gaining in flesh and vigor which before the operation was lacking.

At this writing several months later there is no obstruction of the urinary passage. The stream is a free one showing no evidence of structure from cicatrization as is often the case after amputations, especially when the urethra is not properly handled.

The enormous size of the growth is shown in the second photograph which was taken immediately after the operation.

Canine, Feline and Avian Practice

Small Animal Clinic, Berlin Veterinary High School —Keystone View Co.

Incontinence of Urine in Small Animals

By Oscar Schreck, New Haven, Conn.

This troublesome condition, although common enough, is very difficult to handle because the cause can not always be determined and because drugs can not be intelligently prescribed until the cause is known.

Before planning the treatment, a careful examination aiming to seek out the cause must be made. Small animals should not be whipped for enuresis when the cause is some form of irritation, since the excitement makes matters worse. While essentially an affection of the young it is sometimes seen in mature animals. The condition may improve spontaneously but occasionally it continues until maturity, rendering the subject undesirable and offensive. It is usually for this reason he veterinarian is consulted.

The Etiologic Influences

When the cause can be determined the treatment is suggested. Unfortunately, however, the cause can not be disclosed and different treatments must be tried until the correct one is found. It is worth noting that incontinence from irritation may be prolonged by habit after the cause has been removed and that mere removal of this cause may not effect an immediate cure.

Dietetic errors, such as feeding young animals rich food, food hard to digest or food that causes indigestion, produce incontinence by making the urine irritating to the urinary tract. Then again intestinal indigestion (fermentation, gas, etc.) may produce incontinence by pressure upon the bladder.

Other cases are caused by hyper-acid urine irritating the cystic mucosa. This I find to be the cause in many cases coming to my notice.

To these causes must be added that of compelling young animals to hold the urine too long—longer than nature intended, excessive secretion of urine, and congenitally small or undeveloped bladder. It seems reasonable to suspect that the bladders of animals affected with incontinence while young do not develop to the required, normal size and thus prevent the condition from improving.

Cystitis of a mild character may also cause incontinence, although in mature animals this only causes frequent urination.

Constipation and coprostasis of the rectum may disturb normal urination, and then the abdomen should always be examined for new-growths that may press upon or involve the bladder.

If mucus or blood is found in the urine examination, with a history of pain or cystitis calculi may be suspected.

The rectum should be examined for parasites (Oxyuris vermincularis) which may sometimes invade the urethra and bladder of the bitch and queen.

Treatment of Incontinence of Urine

When any of the causes above described can be incriminated, the proper treatment of

the condition found to be the cause, if curable, will correct the incontinence.

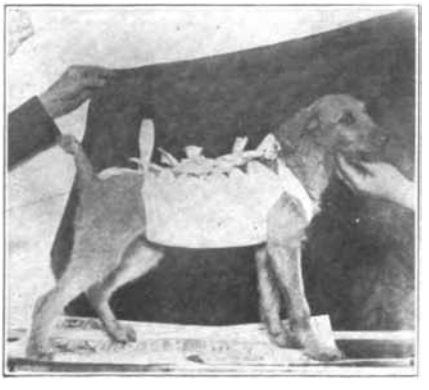
If due simply to excessive secretion of urine, the restriction of liquids may be sufficient treatment, but if the kidneys are involved, the enuresis though unfortunate, is less important than the disease causing it. But in such cases the quantity of urine can be diminished by the resort to proper food. When general ill-health is responsible the condition usually subsides as the health improves, and an irritability of the neck of the bladder and urethra is sometimes greatly improved by the use of atropin. For such purposes the dose should be large and administered twice a day, early in the morning and late at night. To obtain good results from atropin it must be given in sufficient quantity to bring out its primary physiological action after the animal's tolerance has been obtained. No preparation of belladonna will act as well as atropine in such cases. The dose for a pup is from 1/200 to 1/100 grains.

Nervous irritability or excitement following distemper or any condition in the region of the bladder receiving nerve impulses from the same source may cause the trouble by relaxing the sphincter. Ergot is the proper treatment in these cases. Ergot is a stimulant to the involuntary muscles fibers and a sedative to the central nervous system, and may this inhibit reflaxes.

Bromides are not advisable because they cause general debility.

For hyperacid urine I prescribe:

Potassii citratis 3 Iss.
Aqua menthae pip. q.s. 3 IV.
Misce et sigma. Give a teaspoonful t.i.d.



Many-Tailed Bandage for Dog

SUSPECTS "SAMSON FOX" IS DUE TO ACARIAN PARASITE

I am satisfied that the cases described below are what the fox ranchers call "Samson Fox." I see articles now and then in fox magazines describing it. The owners of the described foxes sent one of the diseased pelts to Washington, D. C., about two years ago, and received a letter stating they could not give cause but it was no doubt some kind of skin disease. I have certainly given this considerable thought and study and if I may hazard a guess I would say it is acariasis, squamous form, but understand it is only a guess as I do not know.

Animal—Blue Fox; Sex, Female; Age, 2 years.

History—Trapped Dec. 29, 1921, general appearance similar to two foxes trapped in 1920, and one trapped in 1919. The two foxes trapped in 1920 were destroyed immediately. The fox trapped in 1919 was kept in quarantine pen for one year before it was destroyed. Appetite and physical condition appeared normal throughout the year, no evidence of scratching, owners did not attempt treatment. There was no noticeable change in the fur during the year it was kept in quarantine. Regarding the condition of the fur of the three foxes,—The under fur is thick but short, guard hairs absent (same as a summer skin), tail similar to that of a house cat. The two 1920 foxes gave off a strong offensive odor unlike normal fox odor, the 1919 fox did not give off offensive odor. Both 1920 foxes were aged, the 1919 fox was two years old when trapped.

Symptoms—Physical condition good, appetite good, no abnormal odor, no discharge from eyes or nose, general appearance bright, bowels normal, temperature normal, teeth good, fur in same condition as the above mentioned three foxes—fur short and very thin on belly and guard hairs absent. Branlike scales (Seborrhoea) found throughout fur, especially on the back and at root of tail. Small dry scabs to the extent of about twenty, varying in size from a pinhead to a pea, located from the middle of the back to the middle third of the tail, very little inflammation surrounding scabs, no bait spots, **no signs of scratching.** There are no lesions on the head or ears, nor the feet and legs.

Treatment: I first clipped the animal and made several slides, especially from scrapings at the seat of the scabs (but the only microscope available was a $3.90 Sears-Roebuck affair

which was more of a toy than a scope) of course, my findings were negative. I next removed all scabs and painted seat of scabs with tincture iodin, the following day animal was dipped in strong antiseptic solution, and the next day was dipped in a solution of lime and sulphur, which I intend to repeat in ten days. At present the appetite is good, bowels normal, and from appearance one more dipping should clear up the skin.

(It is a fact that hook-worms infest foxes and sometimes cause trouble along these lines, but I have examined postmortem, for this ranch, the carcasses of forty foxes and found no evidences of hookworm, my findings were absolutely negative.) Another thing which I cannot understand, there are no evidence of scratching and no lesions around the head.

I certainly wished for you and your favorite microscope. Both Canada and the United States have veterinarians investigating fox conditions, strange why they don't put out something on the "Samson Fox."

ESOPHAGOTOMY IN A PUPPY

The patient, a fox-terrier puppy, five months old, was known to have eaten the remains of a cooked hare, and shortly after doing so it was noticed to be continually attempting to vomit. At the time little notice was taken, but the next day, when solid food was taken, similar symptoms happened. Liquid food was taken without much trouble. This went on for five days, after which the puppy was brought for examination.

Slight anæsthesia employed, and the obstacle was located with a probang just in front of the sternum. It could also be felt externally. With a long pair of forceps one could grip the foreign body, but being so wedged in the gullet it was impossible to withdraw it.

The following morning, after hypodermic injection of morphia and codrenine used locally, the animal was secured in the usual way and operated upon.

A skin wound about 3½ inches was made, and after careful dissection immediately over the object it was eventually reached. A little swelling was encountered, probably due to the interference with forceps the previous day. After removal of the foreign body (a neck vertebræ of the hare with several spikes, which obviously caused it to be so firmly stuck in the œsophagus), the œsophagus was closely sutured, then the muscle, finally suturing the skin. The following day the operation wound became very foul and septic, and, as most of the stitches had given way, the others were removed. The wound was well washed with Dakin's solution and filled with a mixture of calc, chlor, and boric acid, the dressing used throughout the case. In two days the wound put on quite a healthy appearance.

Water was allowed at intervals, but it all came through the wound until the morning of the sixth day after the operation, then only a few drops, the leakage stopping entirely at night, when he was put on to bread and milk, well mashed, and so continued to make a good recovery.

Up to the time of closure of the œsophagus rectal meat suppositories were used to keep the patient's strength up.

The case has had a very satisfactory termination.—R. A. Phillips, Vet. Jour, Feb. 1922.

CANINE PARAPLEGIA

During the years 1905-1909 at the U. S. Quarantine Station, Blackbeard Island, Ga., a disease known locally by the name of staggers was observed among a pack of hunting hounds. The name described accurately the early symptoms of the disease.

In the early stages the dog had a very characteristic gait; the hind quarters owing to weakness of the muscles, were very unsteady, causing lurching from side to side, with stumbling in the hind feet. The weakness steadily increased until finally the dog was unable to stand up, but dragged himself about by the forequarters, with total loss of power in the hind quarters, which dragged along the ground. No incontinence of urine or feces was observed.

On examining dogs thus affected it was found that the inner surfaces of the ears, especially those portions free from hair, were covered by masses of wood ticks so firmly attached that artery forceps were required to remove them, and in doing this some of the epithelium was detached also, where the buccal capsule had been attached.

Dogs heavily infected with ticks developed paralysis quickly. The severity and rapidity of onset of the paralysis was closely associated with the numbers of ticks adherent to the ears in each case. Solitary ticks attached to dogs, although gorged with blood, caused no demonstrable symptoms of paralysis. When no other means than the removal of the ticks was employed, the paralysis rapidly disap-

peared, the dogs regained their former health, and they were able to hunt as well as ever.

Cattle roaming the woods throughout the year were singularly free from ticks, only an occasional solitary gorged tick being found. None of the cattle developed paralysis during the five years during which they were observed. Wild deer and wild ducks were free from ticks. The wild deer apparently would have the same opportunity to pick up ticks in the woods as the dogs. Some raccoons which were captured were free from ticks.

Human beings were rarely attacked by ticks; when they were, a solitary tick could be found in each case. On human beings a favorite point of attack was between the shoulder blades where the tick was difficult to reach, and an annoying itching sensation was experienced, accompanied later by pain and inflammation. On removal of the tick, the symptoms rapidly disappeared.—M. K. G.—Md.

PANTING IN DOGS

I would like to ask your advice about a dog I am treating.

Subject: Bull dog, seven years old, weight about 30 pounds.

I was called to see the patient on November 5th, and on examination found the temperature, mucous membranes and appearance of the eyes normal, but the respiration were about 110 per minute. The thorax seemed normal on percussion.

History: This rapid breathing came on suddenly some three weeks ago. For exercise he was given freedom by means of a wire and pulley. Neighbor boys would throw stones and sticks to see him run for them until he would be quite warmed up and panting, then he would lie down in the shade. He emaciated rapidly even as the appetite remained normal. He would not go to the basement to sleep as before without being forced, and would howl to return. He would fall asleep in the sitting position and on awakening would fall over and run around the room.

Bowel movements were as regular as usual. Another veterinarian had told them the collar was too tight and they had removed it two weeks before, with no improvement. Walking did not aggravate the rapid breathing to any great extent.

To sum the case up, rapid breathing was the only thing I could observe that was wrong with him. There was no double exhalation, but just a rythmic abdominal breathing with no abnormal respiratory sounds. The nostrils were dilated.

Is this a partial occlusion of the trachea or bronchi, or is it an affection of the pneumogastric nerve?—M. B., Pa.

REPLY: Your dog is affected with some functional disease of the heart. I would recommend that he be kept away from any excitement and given such heart stimulants as you deem advisable.

Very rapid breathing in the carnivora can occur from only three causes: excessive heat, either from fever or external thermic influences; diseases of the lungs; or diseases of the heart.

It is among these that you must search for the diagnosis. Since you seem to have excluded the two former in your description, we are inclined to believe that the heart is the organ to incriminate.

BRAIN LESION IN A DOG

Will you kindly give me some information on the following case?

A client brought me a black male pointer, four years old, for treatment. Three days previously the dog began turning in circles to the right. Nothing else abnormal was noted. On examination I found a temperature of 103.5° F., heart very irregular and 85 per minute. Respiration normal. Countenance of dog seemed to be normal and bright.

The most noticeable condition was the turning to the right and at times barely able to stand. Weakness seemed to be manifested to a greater extent in right hind limb. Further observation discloses that his appetite is normal and bowel and bladder movements are normal. The dog lies quietly part of the time but on attempting to move goes to the right.

I made a tentative diagnosis of partial paralysis, gave castor oil and placed him on a course of potassium iodid. It is not known whether the dog has had distemper.—J. H. B., N. C.

REPLY: The condition you describe is due to a lesion of the brain on the opposite side to which the dog turns. Just what is the character of the lesion, of course, cannot be determined except at the autopsy. It often follows distemper.

If it is chronic, we fear that you will not be able to effect a cure. The ordinary nervous stimulants such as strychnin given in carefully prepared doses, and a regimen of potas-

sium iodid continued for a period of time might be helpful.

PARALYSIS SIMULATING DUMB RABIES; RECOVERY

I am writing for a little information and hope that you can help me. I was called to see an Airedale dog on September 15, 1920. The dog's pulse, temperature and mucous membranes were normal; the lower jaw had dropped and the dog was unable to close his mouth. He was examined for foreign bodies in the mouth but none were found and the mouth was in good condition.

On September 15th the dog was sent to my hospital as the owner was unable to adminster the medicine. My diagnosis was paralysis of the jaw. The dog was given 1-60 of strychnine sulphate, three times daily and was discharged October 2, 1920.

October 21, 1920, I was called to see a small spitz dog that had been ordered destroyed for dumb rabies by another veterinarian. As there were no symptoms of rabies and the dog had been sick about a week and the symptoms were the same as the Airedales', my diagnosis was the same and the dog was given 1-120 of strychnine sulphate, three times daily, and was discharged November 5, 1920.

Case No. 3 was a small shepherd pup about 9 months old. This dog entered the hospital on February 16, 1921, and had been sick about two days. This pup had the same symptoms as the other two, the lower jaw dropped and he would lick his front paws all the time, but which he stopped doing after entering the hospital.

On examining the patient I found the mucous membranes normal, tongue slightly congested and a large red spot on the upper portion of the left eye ball. In examining the left side of his head he would try to push my hand away with his paws. He was in much more pain than the other two and all liquids given him would distress him; he would press his nose against the door of his kennel and then go around rubbing his nose on the floor. Strychnine sulphate given hypodermically would ease him and he would quiet down for about 1½ hours. There was no paralysis of any part of his body excepting the jaw.

This dog died on February 18th about 11:00 P. M.

Were all cases paralysis of the lower jaw? Would a blow on the head cause the red spot in the eye and the other trouble? There were no bruises on the head.

In the history given by the owner the dog had never been bitten and the trouble came on very suddenly.

I trust you will be able to give me some information on this subject.—J. W. G., Utah.

REPLY (By Dr. Quitman): In reference to your query regarding the three dog cases, will say that symptoms shown in these dogs may be due to three conditions, paralysis, dumb rabies and typhus. In cases No. 1 and No. 2, the fact that these animals recovered would tend to preclude dumb rabies and if there was no foul and almost characteristic odor to their breaths it would also preclude typhus and especially so, if the mouths, as you say, were found in good condition.

Consequently it would bring these two cases down to a pure paralysis, the cause of which I am unable to give. Case No. 3 we fully agree with your conjecture, was a paralytic condition of the lower jaw. In this case, together with the other symptoms shown, points strongly to the possibility of this dog having received a powerful blow upon the head. It is my experience that the head of the dog will stand a powerful blow, especially if it lands on the parietal muscles, without showing a swelling.

Your treatment was entirely rational. The only suggestion we are able to make is that should you have any more of these cases and the paralysis persists, recovery may be facilitated by the addition of potassium iodid to your treatment.

It is an old belief that sex can be regulated in cows by mating at the first possible opportunity after bearing a calf. The issue will be the same sex as the last one, it is claimed.

An appropriation of $25,000 has been approved by the Governor of Alabama for the Pasteur treatment of dependent persons bitten by rabid animals.

It has usually been supposed that rabies was always fatal. In a recent article in the "Journal of Infectious Diseases," it is stated: "Spontaneous recovery from rabies naturally acquired, while rare, does occur." The saliva of cases of rabies that recover has been demonstrated to be virulent.

CHICKEN CHOLERA

I would like to have information about a flock of chickens under my charge. The flock is kept under ordinary farm conditions and is composed of about 400, of all ages. Thirty have died during the last week.

At first, about a month ago, the sick ones were said to make a kind of wheezing noise in breathing and for this the whole flock was given permanganate of potassium in the drinking water, but during this wheezing period none died.

The first noticeable symptom of those now sick is lameness which becomes very painful before they die. It is so painful that some of them hardly use their limbs at all.

Some of them have white colored, loose stools and very few of them eat or drink much.

The comb and wattles are cyanotic, eyes closed and head and tail drooped. The mouth is held open and at times some of them sneeze.

They are feed cracked corn, barley, oats and wheat, all of which are in good condition.

All ages seem to be affected. The autopsies thus far held reveal nothing more than small petechial spots in the heart membranes. What treatment do you recommend?

REPLY. The syndrome presented consists of lameness, cyanosis, white diarrhea and the inappetence of cholera, and the autopsies seem to confirm this. It would, however, be best to have specimens examined by a laboratory. On the other hand, we believe that there is some nutritional disturbance because the pure grain ration of this flock is not a balanced one. They should have meat scraps or tankage and minerals to make up a balance. It so often happens that chickens are affected with more than one disease at the time, the one contributing to the development of the other.

As a consequence, the practitioner who must in his own protection make a diagnosis then and there, without the aid of a laboratory, is without other recourse than that of correcting all existing faults in the handling of the flock, in order that each of the two, or even three, diseases suspected are safely covered until a diagnosis can be made either by additional clinical evidence or by a laboratory confirmation.

By a careful study of Beaudette's symptoms table on page 137 of the March issue, a practitioner should be able to come pretty close to a sound decision in any outbreak of fowl diseases, and from this decision arrive at an equally sound plan of management and treatment.

The things that are always in order are: (1) Separating the sick from the flock, or, better still, killing and burying them. (2) Thorough disinfection of the coops. The runs can not generally be handled under farm conditions because these constitute the whole ranch, or at least that part surrounding the buildings. Where there are small runs, however, these can be plowed, spaded or limed. (3) Prescribing a proper ration. (4) Flock medication by means of the drinking water. In this connection we have always found sulphate of iron or, better still, the proprietory remedy known as Fer-Sul which, consists of a 46% solution of ferric sulphate in combination with sulphuric acid, a byproduct of the steel mills. One per cent of these or of copper sulphate are, never far amiss as correctives of fowl plagues until biologics after the disease is actually diagnosed become indicated.

WAREHOUSE CATS DIE

I have a client that has a large flour and feed business, who has been trying to raise cats for the past five years to rid his place of rodents.

When the cats reach the age of six months and begin to catch rats and mice they fall sick, get very dull, start vomiting, and then die. These cats never leave the feed store. Would it be possible that they eat too many mice?

Any information that you could give along the line of prevention would be gratefully received—**C. A. K., Ont.**

Reply: The trouble with these cats is lack of balance in the ration. It is impossible to raise cats without allowing them some food in addition to that which they forage from an enclosed environment. After a cat arrives at the age of one year or more and is allowed to run about out-of-doors they do very well without any particular attention to feeding, but they require attention until they reach the period of maturity. These young cats should be fed milk once a day—all they will drink. If you could procure fresh, skimmed milk right from the cream separator, it would not only meet all requirements but being an incomplete ration in itself would not entirely destroy the appetite for rats and mice.

It is, of course, essential that the feed store be examined carefully for any poisons that

might be lying about. It is the practice of many country warehouse men to sell all kinds of poisons, such as fruit tree, shrubbery, and potato spraying materials that make their establishments dangerous places for cats and dogs.

TAPE WORMS

Notwithstanding their extreme frequency, the taeniae often have no apparent influence on the health of the dog. Sometimes, however, by their accumulation and intestinal obstruction they cause abdominal pain or a chronic enteritis.

Young dogs are uneasy, change their position frequently and show desire to bite the skin over the abdomen. They may have epileptiform attacks, which are periodical with normal intervals between. When frequent, these attacks may be followed by a gradual sinking and death.

Taeniasis of Cats, Rabbits and Fowl

The Taenia crassicolis of cats is frequently found in large numbers in the small intestines and occasions serious disease. The appetite gradually declines. A slight diarrhea is an early symptom followed by constipation; salivation is abundant; great prostration; nervous phenomena as loss of sight and hearing, and epileptiform convulsions which occur at intervals.

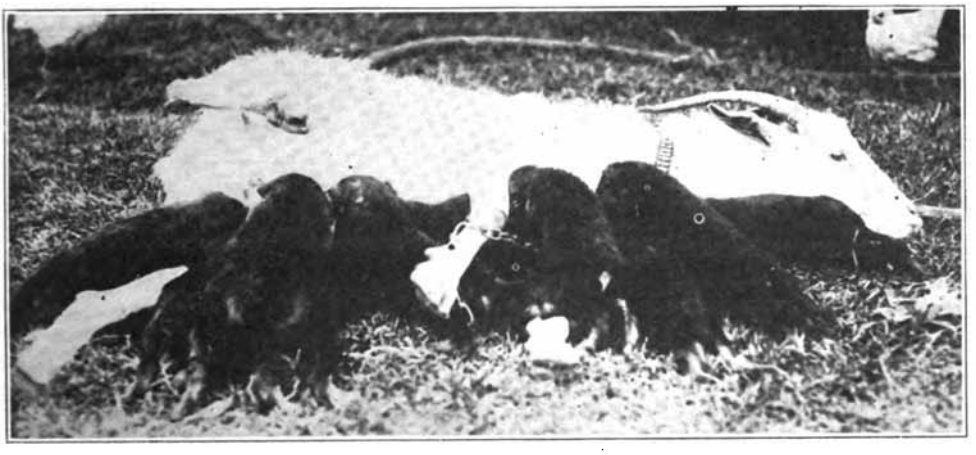
Rabbits exhibit symptoms similar to the cat, except the former usually have a partial posterior paralysis instead of convulsions.

Fowls lose their appetite, become emaciated, are dull and feeble and a few show diarrhea. The presence of segments on the surface is often the only symptom of taeniasis.

Kamala (dogs 3.0-10.0; cats 1.-4) is also good; it also produces a good purgative action. **Areca nut** powder is often used and is given in doses of two grains per pound weight of the animal. It may be given with soup, ordinary food or milk, after the bowels have been emptied by a purgative. Areca nut powder may be repeated in a few days.

Rabbits may be given kamala (0.5-1.0) in the feed. Birds are best treated for taeniasis by mixing areca nut powder (chicken 2.0; geese 4.0; young chickens 1.0) with the feed. **Oil of anise** is also good, and can be administered in 0.9-1.0 doses to adult birds.

—O. V. Brumley.



MOTHER GOAT ADOPTS AIREDALE PUPPIES

An interesting fact was recently disclosed by a camera man when he found that a mother goat on the ranch of Glenn T. Braden, a millionaire oil man at Tulsa, Oklahoma, had adopted eleven Airdale pups. The mother of the pups became suddenly ill after birth of the pups and at the same time a mother goat lost its kid, so Braden placed the pups with the goat. At first the goat rebelled but finally allowed the pups to nurse standing up. However, after a week had elapsed, the foster mother lay down and allowed her pup family to enjoy their meals at all hours in the natural position for that species.

MINERALS FOR LIVE STOCK

(Continued from Page 162.)

that will answer requirements as to mineral substances may be made by mixing: 50 pounds of common cattle salt, to supply the sodium chlorid, with 150 pounds of steamed bone meal or finely ground limestone, to supply the calcium. Four pounds of this mixture may be added to each 100 pounds of the grain fed. If desirable, the salt may be fed separately especially to dairy cows which need about one and one half ounces daily.

The suggestion has been made that it would be well to add potassium iodide to the above mixture as a means of controlling goiter, hairlessness in pigs, and actinomycosis. We doubt the advisability of doing this, primarily because all animals do not need iodine, secondly because it would be harmful if fed throughout the gestation period, and thirdly because it would be a waste of money.

Meig's and Woodward's Experiments

In connection with the subject it is interesting to note the recently reported results of experiments with cows conducted by Meigs and Woodward of the U. S. Department of Agriculture. They have shown that the amount of milk yielded by a cow largely depends on the changes that go on in the udder for sometime before her calf is born. These changes vary with the state of nutrition in which the animal happens to be during the few weeks immediately preceding parturition. They administered sodium phosphate daily during the dry period to cows, which had been fed an ordinary maintenance ration, with the result that there was an increase in the milk yield of about 35 per cent over what they had given in previous years between the 10th to 40th day after calving.

The number of cows under experiment was small, so no conclusions as to the general feeding of phosphorus have been advanced.

Professor Hart's Opinion of Sodium Phosphate

Professor E. B. Hart of the Wisconsin College of Agriculture thinks it would be unwise to advise feeding sodium phosphate generally until more has been learned about its use. Since wheat bran is amply supplied with phosphorus and is widely used as a dairy feed he thinks it may meet the requirements of animals for this mineral. Investigations are in progress at several agricultural experiment stations to learn more about the effects of sodium phosphate for cows. The reports of the results of these experiments will be watched with interest.

According to Market Reporter, the number of turkeys on farms in the United States on Jan. 1, 1920, was 3,627,028, compared with 3,688,708 on April 15, 1910; the number of ducks in 1920 was 2,817,624, compared with 2,906,525 in 1910; and the number of geese in 1920 was 2,939,203, compared with 4,431,980 in 1910. These figures have been announced by the Census Bureau.

According to Forbes and his collaborators, the alkali reserve of the blood supply of swine may be increased by the feeding of the potentially basic precipitated calcium carbonate or decreased by the feeding of the potentially acid precipitated calcium phosphates when these substances are fed as supplements to a cereal ration in quantities such as might be used in practical feeding.

The general development of pigs is not influenced by mineral feeds but the skeleton is affected in an important way, especially in the breaking strength of the bone.

"OFF LIMITS"
Dr. and Mrs. Adolph Eichhorn Visit Our Cubian Colleagues

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE

Horse racing is an out-door sport that entertains and maintains thousands. It is an industry that develops fundamental resources—an ally of agriculture, the enterprise upon which our prosperity almost entirely depends. The horse in any of its estates is a component part of a great, big, prosperity-producing host of which the automobile is a parasite.

Cooperation in Live Stock Disease Control

By W. T. Spencer, Omaha, Nebraska

THE best definition I have seen for the term "cooperation" was given in the Weekly News Letter of the United States Department of Agriculture a year or so ago. It defined "cooperation" as meaning for us to work so that the other fellow could work with us. The plan of controlling livestock diseases in this country is such that a close unity of the cooperating agencies is very necessary for best results.

The first thing, I think, should be the enactment of practical laws from which to base regulations for carrying out the plans and policies that are deemed necessary, depending somewhat on the location of the country in which the work is being done. The laws should not be too specific, but should be quite general, leaving to the administrative officers the opportunity of making regulations to suit conditions.

If this be done it is, of course, very necessary that officers filling such positions must be chosen with great care. They should be qualified by training and experience, and one of the chief qualifications should be their ability to work with the other fellow—unfortunately they are not always chosen according to these specifications.

Official veterinarians should be cognizant of the fact that they are public servants and that their endeavors should be with the thought of administering their work; not to suit the whims of the individual, but in the interests of the livestock industry at large. No man should be chosen for a position of authority unless he is particularly interested in the work over which he is placed and has a good general knowledge of it. If his heart is in the work he will study his job and make every effort to better inform himself so that he can render better service.

The Influence of Human Nature

Human beings like to think they are free agents, and this human trait of being highly developed in some people causes them to resent what they call "interference with their personal liberties." In having someone attempt to advise and instruct them how to handle what they believe to be "their own business" is one of the common obstacles met in sanitary control work, especially when new steps are taken or when drastic requirements become necessary, such for example as are needed in controlling an outbreak of foot and mouth disease. This resentment is more often met with, I believe, where the administrative officer has the reputation of being glad of an opportunity to show his authority. I realize of course that there are times and certain characteristics of man that require handling with force, but the point I am wanting to make is that the work should be so administered as to lead the public into full confidence in the fact that it is being done in their interest and for its protection. People are quick to discover our real attitudes and desires and the public is a fair referee, deciding our

cases on their merits, rejecting us if we prove unworthy, and demanding increased service if we are valuable.

Cultivate Cooperation with the Stockman

Without the stockman's cooperation it would be almost useless to think of controlling and eradicating a widespread disease such as tuberculosis. To secure their cooperation, they must be interested and to become interested they must have some knowledge of the disease, and the more information they have as to its infectious nature, the manner in which it spreads, the effect it may have on their welfare, the sooner will they be ready to render assistance. This has been clearly demonstrated in the tuberculosis eradication campaign that has become so popular that it is difficult for the Federal and State governments to devise plans for handling the work fast enough to keep up with the demand for tuberculin testing. I think this is due to a great extent to the wide publicity that has been given the subject and the general knowledge the public has relative to tuberculosis.

Heavy losses amounting to millions of dollars annually resulting from condemnation of carcasses, or parts of carcasses, from preventable disease, prompted the important livestock exchanges throughout the country to organize sanitary committees and employ Livestock Commissioners to devote their time to animal disease control work. The larger percent of this loss is due to tuberculosis and it is thought that assistance can be given the Federal and State officials in controlling this and other diseases by helping to extend general interest in the care and treatment of domestic animals and in developing favorable public sentiment.

The practicing veterinarian has had much to do with the development of this condition favorable to tuberculosis control and it is right that he should, for he is, or should be, the one to whom the stockman looks for such information. The veterinarian should be in a better position than almost any other man to render community service in a country district and should, I believe, take an active interest in all community affairs, looking toward the betterment of conditions. This helps him to become established with the best class of citizens and aside from the commercial advantage gained, it brings to him the satisfaction that comes from the knowledge that he is doing his part in helping to make that community a better place in which to live. I think the veterinarian should show special interest in helping to promote livestock organizations, boys' and girls' clubs, fair associations, cow testing associations and other organized efforts in behalf of better agriculture.

Our business is largely commercial and we must eventually leave the farmer with the balance in his favor if we continue to do business with him. In these days of preventive medicines great stress should be laid on the importance of sanitation. If properly educated, the stockman should be more willing to pay for information and advice that will prevent his stock from contracting diseases than he would to pay for the treatment of sick animals. It is true that in some localities the practitioner has failed to grasp the significance and the importance of the educational campaigns in livestock disease control work that have been put on by the federal and various state governments, and has looked upon these programs as interfering with his rights and taking away work that rightfully belongs to him. This disposition on the part of some of the veterinarians has, in a way, prevented the practitioner from taking the place he should in these programs.

Governmental Activities Helps the Practitioner

When the federal government inaugurated the hog cholera control work and placed in the various localities veterinarians to supervise it, there were some practitioners and other veterinarians who said the government was infringing on their business and eventually would take over all of the work in connection with immunizing hogs for cholera. But did this happen? It did not. The same argument has been advanced by the same people, that the federal and state governments would soon be doing all of the tuberculin testing of cattle but the indications are that this will not come true. But it is true, I believe, that a very large percent of the practicing veterinarians' business today is from the calls from these two sources, due chiefly to the educational work done by the sanitary officials. The test of the right kind of methods is in their success, and the manner in which this important work has been received indicates the practicability of the methods used.

I want to quote some figures showing the comparative amount of tuberculin testing the practitioners have done in Nebraska since the first appropriation was made in the state for the cooperative work in January, 1919. There were tested by private practitioners during that calendar year 2,231 herds, having total of 10,673 cattle; in 1920, 7,640 herds, having a total of 30,169 cattle; in 1921, 10,339 herds, having 41,138 cattle. In the three years that the

cooperative work has been operating in Nebraska the tuberculin tests applied by private veterinarians have increased, as you will see, from 10,673 cattle for the year 1919 to 41,138 cattle for 1921, and this is only an indication of the important part that the practicing veterinarian should, and will play in the eradication of tuberculosis.

There can be no doubt, it seems to me, that the local practitioner must be the backbone of this or any other program of animal disease control work undertaken, and we have been repeatedly advised by the men in charge of tuberculosis eradication that it has been the intention from the start to build on such a foundation—so let us get together, pull together and work together. Let us work with, rather than against each other. There has been a tendency for a few of our number to stir up strife between the veterinarians and some of the representatives of certain agricultural organizations.

Antagonizing Agricultural Interests Unwise

I refer particularly to the County Farm Bureau. No doubt some of these men have over-stepped their authority and have done things they should not have done, but I am of the opinion that if such conditions exist, the adjustment should be left with the officials who are charged with the responsibility and with the individuals directly interested, rather than to have someone who thinks he will profit by keeping up such agitation try to dictate the manner in which they should be handled.

As I stated previously in this paper, the public is quick to discover our real attitude—we are dependent almost entirely upon the success of the agricultural interests for our success and I do not believe we can antagonize an organization that is made up of farmers, backed up by the U. S. Department of Agriculture, and still claim our interest in the farmer's success. The same interests referred to above have spent a great deal of energy in an endeavor to bring distrust into our own family and break down our own organization by attacking some of the men that have been placed in positions of honor and responsibility.

The point that I want to emphasize in this paper is that it is time for the veterinarians to get closer together and carry out some of the constructive work that has been outlined by the federal and state livestock sanitarians. I think this understanding of each other—for that is all that is needed in getting closer together—can best be brought about through local organizations where we, as neighbors, can meet and discuss our problems, and these local organizations can extend their usefulness by inviting the stockman to meet with them.

Mutual Understanding Our Salvation

There is a small organization of veterinarians in Nebraska known as the Central Nebraska Veterinary Association that has been following out a plan of this kind for the past two or three years, inviting the breed associations and farmers to hold an annual meeting on the same date and place and holding a joint session some time during the meeting. Their annual banquet has also been a joint affair and the plan has proved a decided success.

How long would a successful commercial enterprise permit one of its salesmen to continue on the road whose chief stock in trade was knocking a competitive line? For instance, some piece of machinery that they were both trying to sell. Such a practice would tend to impress the prospective purchaser with the faults of the machine, rather than with the merits of either, and would probably result in his refusing to buy either one. I think the same principle will hold good as to the practice of veterinary science. I have noted as a general rule where two practitioners are located in the same town pulling together and boosting each other honestly, that they are both enjoying a good practice and have a high standing in the community. The reverse is most generally true where they are at loggerheads. Internal strife will do more to disrupt and tear down our profession than all outside influence combined can do; if we come to this realization we will not have much difficulty in getting together and putting our profession on the plain it justly deserves or in putting across any program of controlling livestock diseases that may be considered advisable.

SKIM MILK CAUSES TUBERCULOSIS IN YOUNG CATTLE

One man in New York was feeding all the skim milk his young cattle would take. These young cattle were all yearling and two year old heifers, pure bred Holsteins. The milk was not pasteurized. Every one of the heifers that drank this milk reacted to the tuberculin test, 15 in all, and every one which had refused to drink it, about six, passed the test. There were 48 head in this herd. None of the main herd reacted. The milk is clearly the source of infection in this herd. All these heifers were very choice ones; $3,000 would have been a small price for them.

Bath, N. Y. Dr. C. C. Walker.

TREATMENT IN BOTULISM

This is the report of a critical study of the literature on botulism and an extensive investigation of the causes and possible methods of treatment of the disease. The possibility of botulism resulting from the ingestion of toxin-free organisms is discussed in considerable detail, both from the literature and from the results of experimental inoculation of rabbits.

Toxin-Free Organisms Not Pathogenic

"The major evidence as we have presented it here favors the view that botulism in man very rarely, if ever, occurs following the ingestion of toxin-free organisms. The available evidence is too inconclusive to form the basis for any definite conclusions. Many of the facts presented can be explained in more than one way. Our own belief is that infection in human beings following the ingestion of toxin-free organisms never occurs. We are inclined to believe that the organism does produce toxin in the alimentary tract following the ingestion of preformed toxins and after paralysis has set in. Treatment of the digestive tract should be designed to neutralize and wash out the toxin and inhibit or destroy the organisms."

Vigorous Boiling Required to Kill the Organism

A practical point brought out in this connection is the necessity of prolonged boiling of suspected food. Experiments are reported which indicate that spoiled canned foods giving the appearance of boiling for 7 minutes and subjected to actual boiling for 4 minutes are not safe to eat, and also that spoiled canned foods exposed to a temperature of 80 degrees centigrade for 1 hour may appear to be boiling part of the time due to the evolution of gas. Vigorous boiling of all suspected foods for at least 30 minutes before tasting is recommended.

Antitoxin Must be Given Early

Experimental work on the extent to which antitoxin is effective in preventing death has shown that to be effective it must be given in excess before or very soon after the symptoms appear. The serum should be polyvalent, bacteriolytic as well as antitoxic, and should be injected intravenously. Tests of the effect of various foods on the appearance of the symptoms and on the death rate of botulism indicate that slight protection is afforded by substances such as oil or milk which retard the rate of absorption of the toxin. Certain substances including sodium hydroxid, potassium permanganate, and liquid soap appear to have a neutralizing action on the toxin. In conclusion recommendations are given for specific and general treatment of the disease.—V. Burke, J. C. Elder, and D. Pischel (Arch. Int. Med., 27 (1921), No 3, pp. 265-304). Ext. Exp. Rec.

IN RE CRIBBING AND WINDSUCKING

At the January meeting of the New York City Veterinary Association the matter of cribbing and windsucking horses was discussed at length, the subject having been awakened through the interest in a lawsuit arising out of the sale of the thousand dollar horse, "Play Boy," which was alleged to be so affected.

Dr. George Berns of Brooklyn, one of the oldest practitioners in this country and whose knowledge of equine problems would not be questioned by anyone, seriously doubted the possibility of a horse swallowing wind, basing his opinion on the fact that he has never seen a case of flatulence occasioned by windsucking.

Dr. C. W. Shaw expressed a belief that a horse could swallow wind, clinching his opinion with the fact that a woman of his acquaintance could and did swallow air.

Dr. W. H. McKinney doubts if a horse can swallow air and believes that a horse cribs because of tooth irritation.

Dr. Slawson thought a horse might accomplish the feat while eating and drinking.

Dr. Gannett believes that horses do suck sufficient air to cause flatulence.

Dr. Reed Blair stated that the question of swallowing air by horses was regarded of such importance when he was at college that a committee of students was appointed to study the question.

Dr. McKim was skeptical about a horse being able to swallow air and thinks that bloating in cribbing horses is due to some other cause.

Dr. Ackerman reports having seen two aged horses that actually swallowed air.

Dr. Higgins thinks it possible that an anomalous palate might make it possible for individual horses to become true wind suckers.

Dr. A. J. Paddock, on the contrary, claims that the large velum of a horse actually aids air swallowing.

Dr. DeVine believes that if a horse attempted to swallow air it would be expelled through the nose.

Quitman says they do swallow wind. Veterinary Medicine says they do not—so take your pick.

Queries and Answers

COAL SLACK SUSPECTED OF KILLING HOGS

I am desirous of information relative to a condition that is existing in some sows and pigs.

History: A client had 9 white sows and 47 pigs on one farm and 5 sows and about 30 pigs on another nearby farm. These hogs had not been vaccinated. The sows and pigs were all doing fine, they are being fed corn and oats and on January 10th, they were all fed some coal slack, excepting one sow and her pigs. About January 15th, some of the swine appeared to be sick. On January 19th one sow died.

Post Mortem: The sow that died on January 19th was carefully autopsied and the following lesions found: Mammary glands swollen and there were many small crater-shaped ulcers in the skin of the abdomen. Cervical lymph glands black, apparently due to a deposit of carbon. There was an intense inflammation of the gastric and intestinal mucosa.

January 21st another sow and two pigs were autopsied. They evidenced the same lesions as the sow autopsied on the 19th. All of the remaining sows and pigs were noticeably affected at this time, except the one sow and pigs that had not received the coal slack.

February 9th, I was called again and autopsied a large boar and found the same lesions as before mentioned and in addition there was a purulent cystitis and some pneumonia.

Practically all sows and pigs that obtained the coal slack became affected and the one sow and her pigs that did not eat any of the slack remained healthy.

An early reply will be appreciated.—J.A.C., Ill.

Reply by Dr. Kinsley: The description you have given would appear as though the disturbance in the swine were of dietary origin. The length of time between the feeding of the coal slack and the first symptoms would suggest infection and it is possible that the food (coal slack) diminished the resistance and thus permitted of a secondary infection.

It is doubtful if the crater-like ulcers have any significance in the occurrence of the disease you have described. The discolored lymph glands could be caused by the deposit of carbon from the coal slack. The occurrence of pneumonia and cystitis in the boar was probably the result of complication. The gastro-intestinal inflammation was probably the important lesion.

It is not possible to make a positive diagnosis but will make the following suggestion. The cutaneous ulceration that you described may be due to the so-called measles which has prevailed more or less through the corn belt during the last two or three years. Measles, as you know, is rarely fatal and if it did exist it was only of secondary importance. The principal disturbing factor was gastro-enteritis and no doubt infection was a factor, although it was probably secondary to dietary disturbance.

The suggestion for treatment would include a change of diet and provision of good clean comfortable quarters. In addition mixed bacterin would probably be of value.

INCIPIENT POLL-EVIL WITH NERVOUS COMPLICATIONS

I treated a mare about one year ago appearing to be affected with poll-evil but which seemed to recover after a course of blistering. This mare during the period of blistering appeared to be very nervous about the head, throwing it first one way and then the other, and although she eats and drinks well she remains very nervous.

I also had another mare that showed no swelling at the poll, but for some time showed the same nervous symptoms, repeatedly shaking the head and ears. Any information as to the cause will be appreciated.—**C. A. K., Ont.**

Reply: There is nothing unusual about the disappearance of poll-evil swellings. Sometimes the swellings never return and at other times they reappear after the condition seems to have been entirely cured. The fact that this animal continues to show uneasiness about the head would indicate that trouble still exists.

It is doubtful if the second case you described ever had poll-evil. We are more inclined to believe that she is slightly epileptic.

TORTICOLLIS IN A JERSEY COW

I was called this morning to see a cow seven years old, a Jersey, due to calve in a short time. Her head was drawn to the left and there was a large distension on the right side of the neck. Temperature normal, pulse normal and she eats the same as she always did and gives just as much milk. She has been this way for five days and the client has been using liniments on her neck.

She has been kept in a small lot and a box stall. There is no other stock around her. Would you call this a contraction of the muscles on the left side or a disarticulation of the cervical vertibrae? The distension on the right side is hard and she cannot straighten the neck.

Please give me your opinion as soon as possible. She is a good cow and I would like tc cure her.—M. D. M., Illinois.

REPLY—The cow is affected with torticollis, either traumatic or rheumatic. As you do not give any history, we could not venture a closer diagnosis.

It will be necessary for you to get this cow on her feet and to construct some kind of support to the head that will enable her to remain in a standing position without agony. If she is unable to stand, she is probably doomed.

On the other hand, if it is found possible to keep her standing at least part of the time, you can expect that the condition will gradually improve. It will, however, require five or six weeks before the trouble entirely disappears.

This is not an disarticulation of the cervical vertibrae, but is often described under the name of pseudoluxation.

I would advise the administration of salicylates presuming that the condition may be rheumatic.

MASTITIS AND ROPY MILK

About the middle of August, I was called to see a cow (a grade Jersey) that gave stringy milk out of her left back quarter of udder.

About two weeks later, three others of the same kind developed similar conditions.

Mastitis vaccines were used on these three, two of whom lost the entire udder from abscessation. The first one without receiving vaccine, was almost well when the other three fell sick.

I would like to know the cause and also what line of treatment you would suggest.—W. A. B., Ohio.

REPLY: Stringy milk (usually called ropy milk) is caused by a bacterium that finds its way into the milk buckets or other containers. The bacterium does not in itself produce mastitis but often where mastitis exists the two conditions are due to the same cause, namely, bad sanitation. The milkers do not exercise proper care in doing their work.

When mastitis occurs in a number of animals simultaneously or consecutively, the effected animals should be isolated or at least milked separately after the others have been milked, and everything possible must be done to prevent it spread, in obedience to the general rules of quarantine.

The treatment of mastitis may be summarized as follows: (a) active purgation; (b) mixed mastitis bacterins; (c) support udder with a sling; (d) cold applications followed later with camphorated oil; (e) administration of formalin internally, two drams in eight ounces of mineral oil three times a day; (f) drainage of the milk sinus, by milking, by intubation, by amputation of the teat or even by bold lancing.

CURES TEXAS FEVER

I am outlining a system of medication for Texas fever that has proved successful in 90% of the cases attended. I am sure this will be of value to veterinarians in tick infested territory, especially where a client has purchased a valuable pure bred bull or milk cow and a call if received indicating that the animal is affected with this disease, which is usually thought to be incurable.

Case Number 1. Pure bred Jersey cow. Temperature 108° F. Pronounced hematuria. Weakness in hind quarters. Excessive salivation. Diagnosis tick fever piroplasmosis.

Treatment: 25 grains of quinine and urea hydro-chloride in broken doses subcutaneously. This is given with one grain of strychnine hpyodermically.

The constipation is treated with one pound of Boro-lax and this is followed with the following prescription:

Fluid extract nux vomica.
Fluid extract gentian aa 2 ounces.
Aqua q. s. ad., 32 ounces.
Mix, sig. 2 ounces T. I. D.

This is all the treatment necessary unless the bowels refuse to function, in which case a half

gallon of linseed oil in 15 drops of croton oil are indicated.

Case Number 2. Pure bred Jersey bull. Yearly. Shipped from Iowa. Down on the ground and unable to rise. Same treatment was given as outlined in case number one. Complete recovery.

Case Number 3. Pure bred Red Polled bull. Same symptoms and treatment as number two. Complete recovery.

I could recite quite a number of cases that appeared hopeless but which recovered from the above line of medication.

G. E. E.

Waynesboro, Miss.

HEMORRHAGIC SEPTICEMIA. PNEUMONIA FROM DRENCHING

The bottle I am sending you, contains the heart blood of a cow that died from pneumonia. I would like to have it examined for bipolar organisms.

On August 20th two cows showed symptoms of stiffness in the hind legs, temperature 101° Fahr. and a very low pulse rate. On the following day both seemed to have recovered. The stiffness had disappeared and they ruminated for awhile. On this day a third cow showed the same symptoms.

On the 22nd day of August, one of the cows showing signs of constipation was drenched with a dose of salts in solution. She immediately seemed worse and laid down, breathing heavily and grunted with each respiratory movement. She died on the 26th, and on postmortem examination showed lesions of pneumonia and bronchitis, together with inflammation of a part of the small intestines and a hemorrhagic spot the size of a dollar at the apex of the heart. The other two cows recovered.

These animals had been pasturing on a wheat stubble that was overgrown with Russian thistles, but the postmortem examination showed no thistles among the intestinal contents. In addition to the pasture, they were given oat hay night and morning.

As the summer has been dry and I suspect that recent showers may have caused some molds to develop in the pasture, I am sending some of the pasture grass and oat hay to be examined for molds.

I suspect that the fatal case died from deglutition pneumonia caused by the drench the owner administered, but as this conclusion does not account for the previous symptoms manifested, I would like to have the specimen examined for bipolar organisms and the feed samples for molds.—O. W. J., Washington.

REPLY:—The miscroscopic examination of blood showed typical bipolar organisms, but the examination of oats and grass sample showed nothing unusual. The cow therefore was undoubtedly affected with hemorrhagic septicemia, but as you suspected, the immediate cause of death was the mechanical pneumonia caused by filling up the bronchial tract with salts solution in administering the drench.

Drenching! What sins are committed in thy name. Until the veterinarian practicing among ruminants, convinces his clients that drenching is a dangerous practice for the novice, the troubles arising from this source will never cease.

False deglutition, while not always fatal, aggravates existing lesions, conceals the typical syndrome and transforms the simple ailment into a fatal disease.

THYROIDECTOMY IN LAMBS

I would like to know the technic of the operation of thyroidectomy in lambs. I notice an item in the Journal that it is performed in Italy.—P. L., Colorado.

REPLY: The operation of thyroidectomy in lambs is a unilateral operation. As you know, both thyroid glands cannot be removed without disastrous results.

This operation is very simple. An incision is made over the gland, through the skin and muscles, taking some little pains not to sever the jugular vein. When exposed, it is pressed out much as in castration and tied off with braided silk suture.

The only danger of the operation is that of cutting off the gland too near the ligature. It is advisable to leave a little of the gland tissue with the part outside of the ligature to prevent slipping. It is always well to clip and shave a considerable area in order to make a clear field.

Professor Freidrich reports that roentgen-ray castration in the human is followed by serious and lasting results.

Endameba histolytica have recently been identified in the necrotic areas of bone and marrow in cases of arthritis deformans of the human.

Matters of Current Interest

WEDDING BELLS

Dr. G. A. Roberts and Miss Ora Mast Glenn were married December 1, 1921, at Lavras Minas, Brazil, and will be at home in Sao Paulo, Brazil. Dr. and Mrs. Roberts had an extensive "honeymoon" trip to Uruguay and Argentina.

Dr. O. E. Troy, of Raton, N. Mex., and Miss Alvina Postel were married in Albuquerque, N. Mex., on the 3d of January, 1922. Dr. Troy is interested in general ranching at Raton, N. Mex.

Dr. Verne A. Scott and Miss Anna Pearle Kern were married at Bryan, Texas, on December 28, 1921. Dr. Scott is an instructor in the John Tarleton Agricultural College at Stephenville, Texas.

John R. Ludwigs, Lieut., U. S. A., and Miss Jean Alice McKenzie were married at Tacoma, Wash., on December 1, 1921. The Ludwigs are at home at Camp Lewis, Wash.

Wm. R. Wolfe, Lieut., U. S. A., and Miss Anita Marie McCormick were married at Little Rock, Ark., on December 31, 1921. They expect to be at home in Honolulu, H. T. Their address will be Headquarters, Hawaiian Department.

Dr. J. V. Ramler and Miss Verlie Martin of Anoka, Minn., were married on January 11, 1922. Dr. Ramler is in the employ of the State of Minnesota.

Dr. J. T. Wilson of Hampton, Va., and Miss Edessa Teater were married on February 23. Dr. Wilson is in general practice at the above address.

Dr. B. C. Parker of Kodiak, Alaska, and Miss Madge Woodward were married in Seattle, Wash., May 15. Dr. Parker is engaged in raising fox.

Dr. J. D. Wolf, formerly of Bronson, Kan., located at Osawatomie, Kan., on February 1, 1922.

Dr. S. Bennett, veterinarian of the Union Stock Yards, Chicago, was in Kansas City in February.

Dr. Tait Butler of Memphis, Tenn., was recently elected president of the Southern Cattlemen Association.

Dr. N. F. Williams of Fort Worth, Texas, resigned as sales manager of the Kansas Blackleg Company and expects to engage in some other professional service.

Dr. W. A. Cornell has recently accepted a position as salesman for the Lederle Antitoxin Laboratories, with headquarters at Amarillo, Tex. The doctor was associated with Dr. J. C. Flynn, small animal practitioner of Kansas City, Mo., since his discharge from the army about two years ago.

Dr. G. N. Russell recently located in Lawrence, Kan., where he is engaged in general practice. The doctor was employed by the State of Kansas in the tuberculosis eradication work for the last two years.

Dr. H. R. Thompson of Kansas City was recently called to McFarland, Kan., to investigate the loss of about 600 sheep in a shipment of 5,000 en route from New Mexico to Chicago. The loss was probably caused by exposure and hemorrhagic septicemia.

Dr. L. A. Tischhauser of Garnavillo, Iowa, believes that it is profitable to have his clients obtain general information on swine management and to further this cause he has called meetings in his community and the various phases of swine management were discussed.

Dr. L. G. Pottle, of Quincy, was elected president of the Adams County, Illinois, Veterinary Medical Association at the meeting held at Quincy, Illinois, February 23. Dr. J. W. Ireland, also of Quincy, was elected secretary.

Dr. Bruce Merrill of Mason City, Iowa, has moved to Van Hook, Iowa, where he will continue to practice.

Dr. Albert Buck, practicing at Urbana, Ohio, is the victim of an ugly lawsuit arising out of losses following the vaccination of a herd of hogs.

A small outbreak of glanders has broken out at Toluca, Illinois. Dr. H. E. Bears, assistant state veterinarian, is in charge.

A serious outbreak of hog cholera is reported to have broken out in the region of Grand Rapids, Wisconsin. The control work is in charge of Dr. V. P. Norton of that city and Dr. A. H. Legenhauser of the B. A. I.

Dr. R. A. Shafer has associated himself with Dr. Jas. B. McNamara of Upper Sandusky, Ohio, where he will take charge of the horse practice in order that the latter may henceforth devote his entire time to care of swine diseases.

Lieutenant Floyd M. Freidline, a graduate of the Indiana Veterinary College, an officer of the veterinary corps during the late war and a practitioner of Marion, Indiana, has organized a veterinary company of the National Guard of Indiana with headquarters at Marion. This is said to be the first company of the kind organized in the United States.

Hog cholera is said to be rampant in several counties of Arkansas according to reports of Dr. Peters of Little Rock, who in company with Dr. Glockner of the B. A. I., have instituted measures to stamp it out.

Dr. Clarence Baldwin, formerly of Wayland, Illinois, has moved to Ursa, that state. The doctor is a graduate of the Kansas City Veterinary College and was an officer in the veterinary corps during the World War.

Mrs. Annie E. Taylor, wife of Dr. C. C. Taylor, died at their home, 2627 Wells street, Milwaukee, Wisconsin, Monday, February 6, 1922.

The Jay and Randolph County Veterinary Association met at the office of Dr. Bayles, Pennville, Indiana, February 3, 1922. Drs. and Mesdames Kamel, Hinshaw, Redkey, York, Brooks and Gott were among those present. The next meeting will be held at Farmland, Ind.

Dr. J. T. Purcell, in charge of hog cholera work in Wisconsin, reports that the disease is much less prevalent than in 1921.

Dr. D. D. Tobias, of Wayne, Nebraska, has moved to Lincoln to take up the duties as a veterinarian in the state department of animal husbandry. Dr. Tobias has enjoyed a large practice and is one of the prominent veterinarians of Nebraska.

According to reports of State Veterinarian J. D. Adams of Idaho, an exceptionally virulent form of hemorrhage septicemia has broken out in several counties of that state, due to the low vitality induced by lack of feed and exposure during last winter.

Dr. R. L. VanSickle, a former member of the veterinary corps of the United States army, has opened an office at Aledo, Illinois. He is an alumnus of the Colorado State College and formerly practiced at La Junta, Colo.

Dr. G. H. Pierce, a specialist in the treatment of swine diseases, has moved from Washington Court House, Ohio, to Ashville, Ohio, where he will engage in practice on a more extensive scale.

Dr. Frank R. Reese of Woodland, California, addressed the Woodland Ad Club of that city on the subject of meat and vegetable inspection for public protection in January and aroused enough interest to bring about an investigation of existing conditions by the public authorities.

The special committee of the A. V. M. A. appointed by President Kinsley to study the question of reorganization of that association met at Charles City, Iowa, March 3, 1922. The personnel of the comimttee are J. H. McLeod, chairman; Charles E. Cotton, state veterinarian of Minnesota, and L. A. Merillat, editor of Veterinary Medicine.

Dr. Charles Bracke of Belleville, Illinois, sustained a serious accident when a horse upon which he was performing a dental operation tossed its head forward and struck him senseless with a blow on the nose. Nothing serious, it is said.

Dr. Henry S. Lewis died at his home in Chelsea, Mass., January 4, 1922, of pneumonia.

At the annual meeting of the Indiana Veterinary Medical Association, January 10-13, 1922, the attendance was 563 members and visitors—the largest attendance at a state association on record.

Dr. Edward M. Lang has sold his stock farm in Wisconsin and will open up the finest dog and cat hospital in the United States, so he says, in Louisville, Kentucky, this spring.

The mid-winter meeting of the Kentucky Veterinary Medical Association was held at Owensboro February 8-9. Dr. Robert F. Fisher of Paducah is president and Charles W. Fisher of Danville is secretary.

The Oklahoma Semi-Annual

The semi-annual meeting of the Oklahoma State Veterinary Medical Association was held in Oklahoma City, January 4th and 5th, 1922.

"Opportunities of Veterinarians in Poultry Practice in Oklahoma," by Dr. C. L. Nelson. "Production of Certified Milk," by Dr. C. H. McElroy. "Normal Temperature of Animals," by Dr. L. L. Lewis. "Report on the National Progress of Tuberculosis Eradication," by Dr. Elmer Lash. "Diseases of Hogs in Oklahoma," by Dr. C. H. Fauks.

Dr. H. Jensen conducted a very spirited round table talk and Dr. A. T. Kinsley led a very spirited and instructive discussion on the diseases of hogs. On the evening of January 4th a very enjoyable banquet was attended by all veterinarians, wives and friends, at which time a discussion of a proposed veterinary college to be established at the A. & M. College of Oklahoma was held. The meeting was attended by about fifty veterinarians and several visitors in adjoining states.—**T. O. Booth, Secretary.**

At the annual meeting of the Maine Veterinary Medical Association, January 11, 1922, Dr. C. F. Davis was elected president and Dr. P. R. Laird, secretary-treasurer. A large attendance is reported. Dr. A. L. Murch presented a paper on sterility and Dr. M. E. Maddocks one on "Drugs from the Financial Standpoint." An anesthetic committee was appointed to draft an anesthetic law. Resolutions were passed on the death of Dr. W. L. West, whose sudden death was a shock to his colleagues.

Dr. W. K. Strouder of the veterinary extension department of Ames, lectured to the farmers of Buena Vista County on January 23rd and 24th, on common diseases of swine, and sanitary measures for their control.

Dr. H. R. Schwarze of East St. Louis, Ill., addressed the meeting of the South Dakota Veterinary Medical Association, January 16, on the subject of botulism.

According to the report of the retiring state veterinarian, D. F. Luckey, of Missouri, that state ranks third in the total number of cattle tested last year. The total number tested was approximately 118,000.

Dr. J. A. Kiernan, of the Bureau of Animal Industry addressed the meeting of the Minnesota State Veterinary Medical Association at its recent annual meeting, January 12 and 13, on the "Eradication of Tuberculosis and the Progress of the Movement in the State of Minnesota."

Prof. W. L. Boyd, of the University of Minnesota, was elected president of the veterinary association of that state at its twenty-fifth annual meeting, recently held at St. Paul. A. J. O'Hara of Northfield was elected first vice-president, B. L. Cook of Farmington second vice-president, and C. P. Fitch secretary-treasurer. The meeting was one of the most successful in the history of the association. There were 225 veterinarians in attendance.

Dr. W. E. Bates, a member of the Illinois State Veterinary Medical Association, practicing at Odell, was shot and seriously wounded by Bernard Tollensdorf, a neighbor, Tuesday, January 10th. The attack is alleged to be unprovoked, according to press reports. Tollensdorf was arrested by the sheriff and taken to Pontiac.

The state board of veterinary examiners of Iowa are Peter Malcolm, S. H. Johnson and E. E. Sayers. They recently held a two-day examination at which there were twelve candidates for licenses to practice in that state.

Dr. Felix Ezzel, an assistant to the state veterinarian of Missouri, is at Bloomfield, Mo., for further activities in tuberculosis eradication.

It has been said that acid rations fed to swine or calves occasion a rise in urinary ammonia with a fall in output of urea.

There are more than 3,500,000 goats in the United States.

Buttermilk with added cream is being recommended as a splendid food for abnormal children.

There were 819,117 pure-bred Duroc Jersey swine in the United States on January 1st, 1920.

Goat fanciers report that the usual cause of abortion in these animals is due to insufficient food.

By a series of experiments, McCandlish and Olson have demonstrated that drug administration to cows can not be relied upon to influence the yield of milk or butterfat.

Stafseth reports the intradermal abortion test reliable and specific for Bact. abortion infection in guinea pigs, and suggests that it may be useful in detecting this infection in cattle.

Results obtained by Beach and Hastings indicate the possibility of eliminating Johne's disease from infected herds by the use of Johnin as a diagnostic agent.

It has been demonstrated by Regan and Mead that the percentage of butterfat in milk may be increased from ¼ to ½% for two days by leaving half of the milk in the udder during the milking prior to the test period.

Rachitic lesions which develop regularly in rats upon a diet adequate in calcium but low in phosphorus may be prevented by short exposure to direct sunlight, according to Hess, Unger and Pappenheimer.

Dr. A. S. Cassin, 30 years old, of Kingsley, Ia., was instantly killed when his driving horse kicked him in the temple February 15, 1922. The doctor had just returned home from making a call and was returning his horse to the stable when the accident occurred. He is survived by a widow and a two-year-old son.

McCollum states that the palatability of a ration is most significant in animal nutrition. Without palatability, the rations may possess all the food ingredients and yet fail to nourish an animal properly.

According to Hart, Steenbock, and Fuller, the addition of calcium carbonate or calcium phosphate into grain ration increases the retention of both calcium and phosphorus by growing pigs and results in formation of a heavier skeleton.

In Research Bulletin No. 33, of the Wisconsin Experiment Station, is found the statement that alfalfa hay has specific diuretic properties and its ingestion was generally followed by marked rise in the output of urine. This rise in renal activities causes a depression in the milk flow, in some cases amounting to 5 or 6 lbs. on a flow of 25 lbs.

In Circular No. 40 of the Michigan Station, it is stated that recent research on abortion disease indicates that the bull is not as important a factor in transmitting abortion as was formerly believed, and that abortion may be very largely prevented by removing non-infected pregnant females from sources of infection.

Dr. Cliff Ackley, state veterinary inspector in charge of tuberculosis work in a district in Washington, reports the percentage of reactors is remarkably low. In one report of 1,354 cows tested less than one per cent reacted.

The Schuylkill Valley Veterinary Medical Association will hold its next meeting April 19, at Pottsville, Pa. This meeting will be the twenty-eighth anniversary of the association, which was organized April 19, 1894, at Pottsville. The Schuylkill veterinary association is the oldest veterinary association in Pennsylvania.

Dr. Peter Malcolm, state veterinarian of Iowa, announces that bovine tuberculosis is being slowly but surely wiped out of that state. There are 2,177 herds in the state that have passed the first test, 377 accredited herds, and 11,000 accredited animals already on the list.

ASSOCIATION MEETINGS

ASSOCIATION	PLACE	DATE	SECRETARY
Alabama Vet. Med. Assn.	Auburn, Ala.	March, 1922	C. A. Cary, Auburn, Ala.
American Vet. Med. Assn.	St. Louis, Mo.		N. S. Mayo, Ravenswood, Chicago.
California State V. M. A.	Davis, Cal.	Jan. 1-7, 1922	Jos. M. Arburma, Hanford, Calif.
Chicago Vet. Soc.	Chicago	2nd Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Conestoga Vet. Club.	Lancaster, Pa.	2nd Thursday each month	H. B. Brady.
Illinois S. V. M. Assn.	E. St. Louis	August, 1922	D. M. Campbell, Chicago, Ill.
Kentucky Vet. Med. Assn.	Owensboro, Ky.	Feb. 8-9, 1922	Chas. W. Fisher, Danville, Ky.
Massachusetts V. A.	Boston, Mass.	4th Wednesday of month	H. W. Pierce, West Medford, Mass.
Missouri Valley Vet. Assn.	Omaha, Nebr.	July, 1922	R. F. Bourne, Ft. Collins, Colo.
Montana Vet. Med. Assn.	Billings	July, 1922	H. Marsh, Helena.
Natl. Assn. of B. A. I.	Meet with A.V.M.A	Sept. 5-9, 1922	S. J. Walkley, Milwaukee, Wis.
Nebraska Vet. Med. Assn.	Lincoln	Dec. 5, 6, 1922	C. J. Norden, Lincoln.
Nevada Vet. Med. Assn.	Reno, Nev.		Stephen Lockett
New York S. V. M. Soc.	Syracuse	1922	C. E. Hayden, Ithaca, N. Y.
North Carolina S. V. M. A.	Asheville	June, 1922	J. P. Spoon, Burlington, N. C.
North Dakota V. M. Assn.	Fargo	July, 1922	R. S. Amadon, Agri. Coll., N. Dak.
Northern Tier Vet. Club.	Williamsport, Pa.	Feb. 9, 1922	C. B. Mayer, Canton, Pa.
Philadelphia Vet. Club.	Philadelphia	4th Tuesday of month	C. S. Rockwell, 5128 Chestnut, Phila.
San Joaquin Valley V. M. A.	Davis, Calif.	January 1-7, 1922	H. B. Winteringham, Fresno, Calif.
South Dakota V. M. Assn.	Sioux Falls	January, 1922	W. J. Joseph, Iroquois, S. D.
Southern Cal. V. M. Assn.	Los Angeles	3rd Wednesday of month	J. P. Bushong, Los Angeles.
Southeastern States V. M. A	Nashville, Tenn.	March 13, 14, 1922	J. I. Handley, Atlanta, Ga.
Southeastern Mich. V. M. A.	Detroit, Mich.	2nd Wednesday, January, April, July October	H. P. Hoskins, Box 471, Detroit, Mich.
Utah S. V. M. Assn.	Salt Lake City	October, each year	E. A. Bundy, Ogden.
V. M. Assn. of N. Y. City.	338 E. 26th St.	1st Wednesday of month	J. E. Crawford, Far Rockaway.
Wash. State Col. V. M. A.	Wash. State Coll.	2nd & 4th Tuesday of month	S. Worley, College Sta.
Western Pa. Vet. Club.	Pittsburgh	3rd Tuesday of month	Fred Weitzel, Pittsburgh.
Wisconsin V. M. Assn.	Marinette, Wis.	July, 1922	O. H. Eliason, Madison.
York Co. V. M. Soc.	York, Pa.	1st Tuesday March, June	E. S. Baustcker, York, Pa.

"Back to nature" is the retrogressive step forced upon breeders by the difficulties attending adaptation.

According to Dr. J. A. Kiernan, chief of the Tuberculosis Eradication Division of the Bureau of Animal Industry, enough meat was lost from tuberculosis to feed more than 36,000 American families.

The annual meeting of the Central Wisconsin Graduate Veterinarians' Association will be held at Marshfield, March 7, 1922.

Terrestrial animals use the pelvic limbs to move them along and the pectoral ones to supply the balance. In aquatic animals the pectoral appendage, the vertebrae and the caudal appendix are the organs of locomotion, while the pelvic accessories supply equilibrium.

Weaver of the Missouri Experiment Station, concluded after analyzing the results of a feeding experiment that 1.5 pounds of semi-solid buttermilk may be used to replace a pound of tankage without substantial influence on the rate of economy or gain.

Atwood and Lueder found the recently hatched gape worm to be extremely susceptible to the action of dilute creolin or phenol. They report that 3 drops of creolin in a pint of water killed the newly hatched worm within one minute. This suggests a very effective remedy to control gapes in fowls.

A tabulated report of 5,664 cows tested by testing associations during November, 1921, shows that only 696 of them produced more than 40 pounds of butter fat. Only 12% of these cows yielded an income of more than $18.00 per month. The sterility problem, that is, the problem of increasing reproduction, is one thing, and that of increasing production is another. Both are questions the veterinarian is in the position to work out.

Going Some

Dr. Vird O. Cudd of Monmouth, Illinois, makes his calls by aeroplane these days of mud ridden roads. He recently went from Monmouth to Wapello and return, a trip that would require a whole day by train, in exactly 35 minutes, including the time required to adminster the professional service.

Looking Backward

The first mule brought to America was sent by the King of Spain as a present to George Washington. Its name was Royal Gift.

Galen (130-200, A. D.), whose definition for inflammation stood test of 19 centuries, wrote more than 500 works during his life time.

Twenty-one years ago Koch, the discoverer of the bacillus of tuberculosis (1882), announced that there was such a difference between bovine and human tuberculosis that it was not essential to take steps to prevent its transmission from the bovine species to human beings.

In 1884 Kansas was all "het up" about a supposed outbreak of foot and mouth disease and brought all available veterinarians of high standing to the rescue. Among those who wrote elaborate reports about the outbreak are: Law, Salmon, Trumbower and Holcombe (U. S. A.); Faville and Hopkins. They found the trouble to be ergotism.

"Drs. I. E. Newsom and H. E. Kingman, who have been doing special work at the Kansas City Veterinary College, have returned to the Veterinary Department of the Colorado Agricultural College to take up teaching during the spring term. Dr. Newsom is professor of anatomy and Dr. Kingman professor of materia medica."—Mo. Val. Vet. Bul., April, 1909.

The first three issues of volume three (1889) of the American Veterinary Review contains 80 closely printed pages on the etiology of tuberculosis, by Robert Koch.

Rome, according to fiction, was founded by twins rescued, suckled and raised by a she-bear. Kipling wrote his jungle books around such characters. A British scientist refers to nine children rescued from such foster parents and states that none of them ever regained the normal human mentality. That physiological processes weigh down instead of push upward in the evolutionary trend is shown by contrasting this circumstance with the fact that dogs raised by human beings retain canine characteristics, and ducks, turkeys, guineas and geese raised by chickens never lose their respective habits.

Thyroidectomy in cattle does not produce thyroid insufficiency, according to Hug who removed both thyroid glands of young bull calves and carefully observed them for some time thereafter.

The Veterinarians employed by the Board of Agriculture of Missouri and the field veterinarians of the B. A. I., in the state of Missouri held a two days conference early in March to discuss the future plans for Tuberculosis control.

According to the 1920 census there were 52,617 blind people in the United States. There was, therefore, one blind person to every 2,000 population. The percentage of blindness has been noticeably reduced in the last ten years, which may be attributed to improvement in medical knowledge and education.

Dr. C. E. Inskey of Urbana, Ohio, was elected president of the Northwestern Ohio Veterinary Medical Association at the annual meeting of that association at Toledo, Ohio, February 23, 1922. Dr. H. Fulstow, of Norwalk, was re-elected secretary-treasurer.

Dean White of the veterinary department of the Ohio State University addressed the Logan Elm Grange at Circleville, Ohio, February 23. on the "Diseases of Farm Animals."

Captain W. F. L. Bright, a veterinary officer of the British army who served in the R. A. V. C. in France during the World War from 1915 to 1919, was killed by raiders November 22, 1921, at Zhob, India, as a consequence of the unsettled state of affairs in that country. —Vet. Jour.

English Colleagues Honored

Secretary Smith reports that the following Fellows of the Royal College of Veterinary Surgeons have been elected as members of the Royal Institute of Public Health: Patrick J. Austin, Ralph Bennett, Robert Bryden, Joseph H. Carter, William Caudwell, Robert C. Cochrane, Frederick W. Emery, Richard Finch, Hedley G. D. Golledge, John J. Griffith, William Hepburn, George Howe, Charles J. Humphrey, Walter Jowett, William A. King, William L. Little, John H. Wynne.

MICHIGAN VETERINARY MEDICAL ASSOCIATION

"We Represent the Protectors of a Ten Billion Dollar Industry," was the wording of a banner prominently displayed in the Surgery and Clinic Building at the Michigan Agricultural College when the Michigan State Veterinary Medical Association held its 40th annual meeting there on February 7 and 8. The attendance was beyond expectation. One hundred and ten veterinarians registered and 30 ladies attended the sessions for women. Practically every one present attended the dinner and dance on the evening of the first day.

The papers and discussions manifested the trend of affairs in the profession in this state. They indicated that the profession is changing with the times. Much was said about tuberculosis eradication, diseases of dairy cattle, municipal meat inspection, public health work, poultry diseases and very little about subjects that were commonly discussed a few years ago.

The social event of the meeting, which was so popular a year ago, was repeated this year and was received with even more enthusiasm than last year. A banquet fit for a king, with music by a college orchestra and entertainment by the college yell-master who is a veritable comedian, followed by dancing, cards, smokes and real heart-to-heart visits with old friends, occupied the whole evening.

The ladies enjoyed a theater party, the dinner-dance, a lecture on nutrition in the Home Economics department of the college, a visit to the Girls' Practice House, an exhibition of swimming by co-eds in the gymnasium-pool, and a luncheon where men were entirely excluded.

Clinic consisted of a radical operation for fistulous withers, one for laryngo-hemiplegia, and a demonstration of a treatment for sterility in a cow.

The Association went on record as endorsing the Sterling-Lehlbach bill for the reclassification of civil employes. It was voted to hold a summer meeting at the college in conjunction with the Veterinary Department of the college, the State Bureau of Animal Industry and the local branch of the Federal Bureau of Animal Industry.

The following officers were elected for the year:

President, Dr. J. E. Wurm, Practitioner, Pigeon; 1st vice president, Dr. B. J. Killham, Chief Veterinarian, State Dept. of Agriculture, Lansing; 2nd vice president, Dr. H. Preston Hoskins, Parke, Davis & Co., Detroit; 3rd vice president, Dr. G. W. Cronkite, Practitioner, Saginaw; secretary-treasurer, Dr. R. A. Runnells, Dept. of Animal Pathology, Mich. Agricultural College; director for 6 years, Dr. W. N. Armstrong, Practitioner, Concord.

—R. A. Runnells, Secy.

The regular monthly meeting of the Weld County Veterinary Medical Association met at Johnstown, Colo., Feb. 23. A good attendance was present considering the severe cold. A general discussion of animal disease and important matter relatively the profession.

The following officers were elected for the ensuing six months: Dr. A. G. Fisk, Greeley, Colo., President; Dr. George Cooper, Keensburg, Colo, 1st Vice President; Dr. N. J. Miller, Eaton, Colo., 2nd Vice President, and Dr. W. G. Blake, Johnstown, Colo., was re-elected Secretary-Treasurer.—**W. G. Blake, Secretary-Treasurer.**

Dr. Homer Wilson who was appointed state veterinarian of Missouri to fill the vacancy caused by the resignation of Dr. D. F. Luckey, was an officer of the veterinary corps, A.E.F., ranking as first lieutenant.

Dr. J. H. Nichols of Paris, Illinois, indicted last October for the death of Miss Ethyl Crume of Mattoon, Illinois, surrendered to the sheriff of Coles county, where he hopes to be released on bail awaiting trial. Dr. Nichols who is a man of high standing in Paris, belonging both to the Elks and Masons, characterizes the charges against him as a "frame up."

Dr. L. V. Puckett of Arthur, Illinois, has moved to Mt. Vernon, Illinois, where he will engage in the mercantile business with his father.

Dr. N. E. Peigh of Medaryville, Indiana, has moved to Knox, Indiana, where he has opened an office to continue general practice. Dr. Peigh is a graduate of the Chicago Veterinary College.

The non-graduate veterinarians of Kentucky have a state association of their own, that holds regular stated meetings. The annual meeting of 1922 will meet at Dawson Springs, April 4 and 5. Burie E. Parker of Boaz is the secretary and C. A. Washburn of Mayfield is the president.

Maryland's Semi-Annual

The Maryland State Veterinary Medical Association held its regular semi-annual meeting at the Medical Hall, 1211 Cathedral Street, Baltimore, Md., January 19, 1922. President Dr. R. V. Smith, of Frederick, was in the chair. Twenty members responded to roll call.

The meeting was then addressed by Dr. J. F. De Vine, of Goshen, N. Y., on abortion in cattle and its treatment. Dr. De Vine reviewed the most recent literature on the subject, outlined his preferred manipulations and treatment and cited many cases to illustrate his convictions. After an open session on the subject, led by Dr. Reed, of the University of Maryland, during which Dr. De Vine went into greater detail concerning many features of the disease, a rising vote of thanks was given the speaker for his courtesy and instructive address.

The annual election of officers resulted as follows: President, Dr. R. V. Smith, of Frederick; vice-president, Dr. C. M. Grubb, of Rockville; secretary, Dr. H. Young, of Baltimore. Meeting adjourned at 4:30.—**Herbert Young, Sec'y.**

The Central Michigan Society

Central Michigan Veterinary Medical Society held its annual meeting Friday afternoon, January 6, 1922, at the Otsego Hotel, with a very large attendance.

In the absence of the president, Dr. H. F. Roberts, Dr. W. N. Armstrong, secretary-treasurer of the society, called upon Dr. B. F. Killham, chief veterinarian of the state of Michigan, to act as chairman, who, after a few well chosen remarks, called upon Dr. T. S. Rich, who is head of the department of eradication of tuberculosis in Michigan, to explain the proposed tuberculin test, which is to be started in Jackson County. Dr. Rich stated there would be at least fifteen federal and state veterinarians to complete these tests.

Roy Decker, Jackson county agricultural agent gave a talk on the relation of the agricultural agent to the veterinarian, which was well received.

Dr. A. B. Curtis, of Hillsdale, presented an interesting review of the result of the tuberculin test in Hillsdale County, in which he stated that cattle could not be shipped into the county without the tuberculin test made by approved veterinarians.

Dr. C. C. Mix, of Battle Creek, gave a splendid talk on the intradermal tuberculin test and its technique.

Dr. John Hutton, of the Michigan Agricultural College at Lansing, during his talk told of the situation of the live stock in relation to veterinary medicine. Statistics show that in 1921 the number of live stock in the United States was 203,355,000 and the valuation $6,235,469,000, milch cows having increased in number 2,498,000 at a valuation of $558,000,000. The number of horses in the United States in 1911 was 20,277,000, and in 1920, 20,184,000. Michigan, as compared to this, had 602,410 horses at the time of the April census in 1910, and 605,509 January, 1920. Dr. Hutton stated that the draft horse was much more economical than the automobile for short hauls.

Dr. H. F. Palmer, of Goshen, N. Y., spoke on veterinary practice in New York state.

Dr. H. M. Newton, of the bureau of animal industry at Lansing, had for the subject of his talk, hemorrhagic septicaemia and neuratic enteritis in hogs, stating that hog cholera, though quite prevalent in the state, is not alarming at this time.

Dr. A. McKercher of Lansing had for his subject the opportunities of the present day veterinarian which brought out much discussion.

The result of the election of officers for the year was Dr. E. F. Meyer of Jackson was elected President, Dr. Fred Mains of Albion, Vice-President, and Dr. W. N. Armstrong reelected Secretary-Treasurer.

A program committee was appointed, consisting of Dr. A. Campbell of Jackson, Dr. John Scott of Jackson, Dr. F. Richmond of Springport.

A dinner was served at the Otsego Hotel following the meeting, after which several good talks and smokes were enjoyed by the members.

A vote of thanks was given manager Magmer of the hotel for the splendid manner in which the dinner was served.—W. N. Armstrong, Secretary-Treasurer.

The Chicago Veterinary Society, one of the oldest municipal associations of veterinarians in the country, has been in continuous operation since 1896 and has held monthly meetings without material interruption since that date. The present officers are: L. A. Merillat, president; T. B. Crowe, first vice president; T. A. Newell, second vice president; and John B. Jaffray, secretary-treasurer. . .

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

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PRACTICE FOR SALE—Splendid location, complete equipment, will sell at reasonable price on account of failing health. Income between $350.00 to $400.00 per month. Practice principally bovine and canine. Will sell on an inventory of the equipment. Address Dr. A. R. Andrews, 720 S. Commercial St., Salem, Oregon.

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I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

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WANTED—To buy good established veterinary practice in the west or northwest. Must stand investigation. Will pay cash for practice and equipment, or would consider partnership with reliable man. Address No. 669, VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

SEVERAL third year students at the Ont. Vet. College, are looking for perceptors for the summer with intentions of buying practice after graduations. May 1st to October 1st. Address, F. A. Clarke, 110 University Ave., Toronto, Ont.

MISCELLANEOUS

WANTED—Silver fox. We pay $500.00 each for fine skins. We buy all you supply. Write to us for information as to how to raise the Silver Fox. Duffus Silver Fox Store. 21 West 30th St., New York City.

"QUICK COLLECTIONS"—Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

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BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

FIFTEENTH ALABAMA ANNUAL

The fifteenth annual meeting of the Alabama Veterinary Medical Association was called to order at 2 p. m., February 23, 1922, by President L. E. Beckham, in the College of Veterinary Medicine, at the Alabama Polytechnic Institution.

Surgery

Following the President's address and the report of the Secretary-Treasurer, L. L. Denson read a paper on the amputation of the supernumary teats in cows. He described the cautery method and the Flap Method. E. T. Davis next described the method of draining the sinuses of the head in cattle. Each sinus was described individually and the proper method of drainage by the trephine, etc., was brought out. A. A. Miller then described the parasites and gave the life history of the parasites that are found in the sinuses of sheep and goats.

Parasites

J. L. Miller read a paper on "The Dog as a Primary Host of Parasites." He confined his paper largely to worms found in the alimentary canal. E. Everitt next described the principal round and flat worms found in the digestive tract, and the round worms found in the trachea of chickens. He gave definite methods of diagnosis and treatment and related his experience with various drugs, such as oil of chenopodium.

Hog Cholera

Dr. H. C. Wilson, Federal Veterinarian on hog cholera work in Alabama, described his method of injecting serum directly into the peritoneal cavity. He told how he controlled "breaks" and quoted Dr. Niles, who stated that 90% of hog diseases was cholera.

H. S. Stewart gave a paper on the life history of the Ascaris lumbricoides of pigs.

Anthrax

The morning of February 24, Dr. R. S. Sugg read a paper on "Anthrax Problems." He told how smears of blood made on glass and smooth paper, and dried in the sun, and sometimes in the shade, soon lost viability, explaining that the mature germs die before they form spores. He advised that blood from anthrax carcasses be collected early after death with small pieces of gauze rolled up and used like blotting paper. This should be allowed to dry slowly and then put into a container—not air tight—plugged with cotton; then put in a secure mailing box and ship to the laboratory.

He also stated that it was impossible to

make an accurate diagnosis with smears alone. It is necessary to make cultural and inoculating tests in order to be positive.

Dr. D. J. Meador discussed this paper and told how he had controlled an extensive outbreak of anthrax on an open range by burning carcasses very promptly after the death of the animals. This prevented flies and dogs and buzzards from distributing the infection and also destroyed infection. He also stated how the Alabama state authorities prohibit the indiscriminate use of anthrax vaccine. In no case is it permissable to use it until a positive diagnosis has been made by a state or federal authority.

Chemical Poisons

Dr. E. R. Miller, Chemist, gave a short talk on some peculiar cases of chemical poisons. Arsenate of lead was suspected, but neither lead nor arsenate could be found in tissues, intestines or stomach; but sulphur and lime were found in abundance, and he attributes the toxic effect to hydrogen sulphide and sulphite and calcium sulphide or sulphite.

Major I. Spalding of the U. S. Army next gave a short talk on feeding horses and mules in the army.

Botulism

Dr. N. G. Coving read a paper on botulism in man and animals. He gave the history of botulism and reported records of outbreaks in man and discussed the disease in general in animals. The important point he brought out was that the toxin of botulism was not developed in animals but in the foods before the toxin was taken into the animals.

Thumps

"Why do Hogs Thump?" was discussed by Dr. W. D. Staples. He said this is a symptom which was in reality a spasmodic contraction of the diaphragm, due to a toxic or some other irritant of the nerves and muscles of the diaphragm. He said also, that it was often a symptom found in pneumonia, indigestion and lung parasites.

Miscellaneous

The intradermal tuberculin test was discussed in full by Dr. C. P. Gaston; the Ophthalmic test by Dr. T. M. Dennis and the combination test by Dr. C. J. Becker. Dr. I. S. McAdory then read a paper on the location of the lymph glands in cattle and in hogs. This was followed by a discussion on the lymph glands that are most frequently involved in tuberculosis in hogs and in cattle.

A special committee composed of W. D. Staples, D. J. Meador, W. B. Fleming, reported on the method of the Veterinary Supply Co., of Kansas City. This report was adopted by a unanimous vote of the Association. The resolution or report read as follows:

"Whereas, it has come to the attention of the Alabama Veterinary Medical Association that the American Veterinary Supply Company whose officers are: Dr. A. Trikett, Dr. G. F. Jungerman, Dr. R. E. Naylor, and who are members of the American Veterinary Medical Association, are advertising by circular letter and catalogue that for the past twelve years they have sold to veterinarians only, but have changed their policy and in the future will sell to laymen direct; Therefore, Be It Resolved, That, we, the members of the Alabama Veterinary Medical Association, do heartily condemn and disapprove of such methods.

"Resolved that a copy of this resolution be spread upon the minutes of this Association and that a copy be sent to the secretary of the American Veterinary Medical Association for publication in the Journal."

The officers elected are: D. J. Meador, Selma, President; R. S. Sugg, Auburn, Vice-President, and C. A. Cary, Auburn, Secretary-Treasurer.

On the night of February 24, the veterinary student's association of the Alabama Polytechnic Institution gave a banquet to the members and visitors, with the aid of the Local Order of the Eastern Star. It was a most delightful and entertaining evening.

On the morning of February 25, the B. A. I. and the state authorities gave an examination to graduate veterinarians who wished to be granted permission to test accredited herds.

On the same day a poly-clinic was held at the A. P. I. College of Veterinary Medicine.

A number of cases were examined and diagnoses made. A grade Holstein heifer that had given tuberculin reaction was killed at the serum plant slaughter house and an autopsy was held for the benefit of the students and the veterinarians. It proved to be a case of generalized tuberculosis in which a large number of body and visceral glands were infected with slight infection of the lungs, no apparent infection in the kidneys and a very distinct lesion extending from the iris out through the cornea of the right eye. This heifer was only two years old and came from a tuberculous herd.—C. A. Cary, Secretary.

NEW YORK CITY VETERINARY MEDICAL ASSOCIATION

February 1, 1922.

Dr. Charles H. Higgins read an interesting paper on specific therapy, reviewing some of the achievements of the veterinary profession in diagnostic and preventive measures in the control of animal diseases. His discussion was confined to the measures in force in Canada and particularly to those appertaining to the control of glanders.

Speaking of tuberculosis organisms he stated they are the same wherever found, the virulence depending upon the temperature of the host as examplified in the variation found between those in birds and those of the cold-blooded animal.

Three Interesting Cases Reported by Dr. Bruce Blair

Case No. 1. A four-month old Boston terrier had been growing fat for about two weeks, lost its appetite. It was diagnosed as ascites, and two quarts of fluid removed. The dog died on the following day. The postmortem examination showed the causative lesion was in the heart, although pathological changes were found in several of the abdominal organs.

Case No. 2. Aberdeen terrier, bred by accident to a collie. The physical examination showed a hemorrhagic, fetid discharge from the uterus. Operated upon, the uterus was found non-gravid but to contain more than a pint of pus. Hysterectomy was successful and the recovery slow but complete.

Case No. 3. Five year old mongrel apparently suffering from jaundice. It was given an enema, and a quarter of a grain of arecoline per os once daily for three days. There was improvement on the second day and complete recovery on the eighth day.

New Tape Worm Therapy

Dr. Reid Blair related the success he was

having in the treatment of tape worms in dogs from the use of arecoline. One eighth to one quarter grains of arecoline are given per os on an empty stomach. The worm is passed in about 24 hours.

He also spoke about the importance of an early diagnosis in cases of pyometra and the danger of mistaking it for pregnancy. The uterus, filled with pus, feels about the same on palpation as the pregnant uterus. The temperature may sometimes serve to distinguish one from the other.

An Endothelial Carcinoma Exhibited by Dr. Slawson

After speaking of the importance of performing hysterectomy before pyometra is too far advanced, Dr. Slawson exhibited the liver and spleen of a dog that was destroyed on account of an incurable internal tumor, which proved on microscopic examination to be a rare specimen—a multiple endothelial carcinoma. "This tumor occurs frequently in man but it has never been reported in dogs," said Dr. Slawson. The dog had emaciated rapidly. The diagnosis of tumor was made antemortem by palpation.

The Question Box

The question box brought out a discussion on nephritis in dogs. Dr. Gannet has found the disease very prevalent. Dr. Reid Blair referred to its frequent occurrence in old house dogs, and recommended sanmetto in teaspoonful doses three times a day as the best treatment.

Dr. Cassius Way presented a report on the veterinary conference at Ithaca.—**J. F. DeVine.**

Dr. J. E. Wurm, of Pigeon, was elected president of the Michigan State Veterinary Medical Association at the 40th annual meeting of that association held at Lansing during February. Dr. H. Preston Hoskins of Detroit was elected second vice president, state veterinarian, B. J. Killham, first vice president, Dr. R. A. Reynolds of the agricultural veterinary department of the college, secretary-treasurer, and Dr. M. W. Armstrong of Concord, member of the executive committee.

The romance of and thrills of farming and country life and the bright side even of disease and adversity was the theme of an address delivered by State Veterinarian W. H. Lytle of Oregon Farmers' week at Bend, Oregon, during February.

A special conference of inspectors in charge of hog cholera control work was held at the Federal building in Kansas City, Kans., on February 2nd. The states of Nebraska, Kansas, Oklahoma, Missouri, Iowa and other states were represented.

On Jan. 1, 1920, there were 463,504 pure-bred sheep in the United States. This was only 1.3% of the 35,033,516 or total number of sheep. The largest percentage of pure-bred sheep is in the New England States.

First Lieutenant A. D. Martin, V. C., has been transferred from the quartermaster intermediary depot at Boston to Fort Niagaria N. Y., for duty as station veterinarian.

For quickly sterilizing a hypodermic syringe and needle, fill syringe with chloroform, let remain a few moments and expel. Chloroform will also remove the stains of cannabis indica from graduates, bottles, syringes, etc.—Reed.

Balsam of Peru is a much neglected agent in the treatment of wounded surfaces, especially those attended by suppuration and consequently slow granulation. It should be applied freely to the wound until every crevice is filled. Its high cost is more than offset by the results obtained.—Reed.

A four drachm dose of potassium iodid repeated each four to six hours, will render real service in the treatment of azoturia. If delirium is present, alternate with gelsemium.—Reed.

Hexamethylenamin in two drachm doses three times daily is of value in the prevention of infectious cerebro-spinal meningitis of horses. The drug can be given in the drinking water.—Reed.

There is no drug more valuable in sloughing of tissue, "local gangrene," etc., than rectified oil of turpentine. It is equally useful for furuncles, phagedenic ulcers, and foul smelling wounds in general. Remove the dead tissues and apply by means of a small brush direct to the affected parts.—Reed.

THE MANITOBA ANNUAL

The annual meeting of the Veterinary Association of Manitoba was held in Winnipeg on February 7 and 8. The first day of the meeting was held at the Royal Alexandra Hotel, Winnipeg, about fifty members of the association being present.

Addresses were delivered by Dr. Geo. Hilton, Chief Veterinary Inspector, Health of Animals Branch, Ottawa on tuberculosis. Dr. W. A. Shoults of the provincial health department, Winnipeg on the control of animal food products in the interest of public health. Dr. J. Rowe Fisher, Brandon on the use of the stomach pump. Dr. H. N. Thompson, Virden, on goitre affecting live stock. Dr. N. V. James, Gladstone, on surgical cases encountered in country practice.

On February 8, 1922, the second day of the meeting, a demonstration of the newer methods of tuberculin testing and postmortem examination of reacting animals was conducted at the stock yards and abattoir of Gordon Ironside & Fares Packers, by inspectors of the contagious diseases and meat inspection divisions of the Health of Animals Branch.

The following officers were elected for the ensuing year: President, Dr. H. R. McEwen, Stonewall; vice-president, Dr. J. R. Fisher, Brandon; secretary-treasurer, Dr. J. B. Still, Winnipeg.

FOURTEENTH ANNUAL CONFERENCE FOR VETERINARIANS, NEW YORK STATE VETERINARY COLLEGE

An outbreak of hemorrhagic septicemia in a flock of 1,400 killed two-thirds of them at Stone Bluff, Indiana, during last November. was convened at Ithaca for the fourteenth consecutive convention with a program covering a large list of subjects presented by men foremost in the rank of the veterinary profession and animal husbandry.

Among the subjects discussed were: B. Botulinus and Botulism, by V. A. Moore; Surgical Diseases of the Udder, by Frost and Varley; Anesthesia, by H. M. Milks; Interpretation of Nervous Symptoms in Domestic Animals, by D. H. Udall; Control of Abortion Disease, by W. L. Williams; Lung Worms in Domestic Animals, by B. H Ransom; Tuberculosis Control, by Bruner, Leonard, Pyrke, Frink and Babcock.

An informal dinner at the Ithaca Hotel was featured by post-prandial addresses by Dean White of the Ohio State University, and W. G. Hollingsworth of Utica.

A portrait of Professor W. L. Williams was presented to the University by the Veterinary College Alumni Association, with appropriate ceremonies, J. L. Wilder making the presentation speech.

Dr. M. E. Elzinga was re-elected president of the Western Michigan Veterinary Association at the annual meeting held at Grand Rapids, January 20. Dr. D. M. Thynge was elected secretary-treasurer. Dr. B. H. Killham, state veterinarian, was the principal speaker, addressing the meeting on the subject of "Tuberculosis Eradication." The meeting was also addressed by County Agent K. K. Vining.

The St. Joseph County Veterinary Society was organized at a recent meeting of Michigan veterinarians at Centerville, Thursday, January 19th. Dr. C. C. Dauber of Sturgis was elected president and Dr. Tobin of Three Rivers secretary-treasurer. The meeting was addressed by Drs. Newton and McCollister, B. A. I. veterinarians, and Dr. Killham, state veterinarian, on the subjects of tuberculosis and hog cholera.

Dr. W. A. Ferry of Sandusky, O., retired from the position of city dairy and food commissioner to enter private practice.

The Northwestern Ohio Veterinary Medical Association held its annual meeting at the Waldorf Hotel, Toledo, February 23, 1922, with an exceptionally large attendance. Among the old timers in the audience were Newton, Hilty, Blattenberg, Cliffe and Merillat. The officers were Dr. Glen Biddle of Bryan, president, and Dr. P. H. Fulstow, of Norwalk, secretary-treasurer.

Dr. George T. Casper, B. A. I., inspector at St. Joseph, Mo., has been transferred to Olympia, Wash., and Dr. Charles Pearson of Amarillo, Texas, goes to California for field work.

Chile has renewed an import duty of 36 cents per head on all imported cattle.

One Kansas feeder made a profit of $25,000 in feeding lambs in the fall and winter of 1921-22.

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Veterinary Medicine

Vol. XVII MAY, 1922 Number 5

Enlisted Men of the Veterinary Corps, A. E. F., 1918

Editorial

OUR MERCENARY TREND HARMS THE PROFESSION

The veterinary profession of the United States might do worse than take warning from the fate of the Romans, who after crowning their nation with splendor and prosperity fought among themselves until the whole fabric of the nation broke down and had to be entirely effaced from the earth before anything better could replace it.

A few years ago a selling concern entering the veterinary field announced its intentions to sell only to graduate veterinarians. It was a laudable commercial departure, and we suspect, a good trade policy. This organization and others, which afterward adopted the same policy, we have good reason to believe were sincere and we know that they are sincere now.

But, unfortunately, this original and unique idea was soon pirated by others, who naively sought the advantages of the idea without intention to actually live up to it. By placing their wares in the hands of others than graduates such concerns hurt the profession by breeding discontent, hatred, and strife, disrupting harmony, monopolizing attention that should go towards constructive issues, and all without a jitney of gain to anyone but themselves, the non-graduate, the herdsman, and the ambitious layman, whose activities as psuedo-practitioners were on the decline, but who are now being impressed with their importance through the growing belief that veterinary practice, after all, is nothing more than a matter of supplies.

Quackery Profits by Our Folly

Ten years ago quackery was dying out in the veterinary profession; except in outlying districts it was fast being forgotten; it was seldom mentioned in veterinary associations; today it has taken on new life under our own stimulus. Many laymen are beginning to believe they can treat domesticated animals as well as the trained veterinarian. The quack thinks so, the farmer is beginning to believe it, and many a farm adviser is sure of it. For this trend we have only ourselves to blame. We are particularly to blame if we continue to march blindly to the jazz of those who blow the horn of discord for mercenary gain and never can be caught lifting a finger of helpfulness toward the uplifting and protecting movements so sorely needed by the practitioner today.

Formerly, quackery was dying out because it was being ignored; today it is being revived because we are giving it publicity. The more an evil influence is advertised the more importance it assumes.

By classifying ourselves we imply there are others. By making drugs and biologics available to others than the veterinarian, there has been established a desire on the part of unqualified persons to use these armamentaria which, after all, constitute only one of the

many factors necessary to the successful treatment of animals, and which entirely lack value unless associated with the necessary educational qualifications.

Education Discounted

But this is not the worst. The entire matter must be handled in such a manner that, by preventing the sale of drug mixtures, biologics, operating tables, journals, books, and instruments, to anyone but ourselves, we shall not convey the impression that successful practice depends solely upon our ability to obtain these supplies. In other words, we must not allow the impression to prevail that success as a veterinary practitioner is simply a matter of supplies instead of a matter of education. In fact, any attitude other than this would be a pretense.

The policy of selling only to graduates is good, both for the profession and the commercial establishments who follow the same. There is nothing to be gained, however, by the practitioner publicly proclaiming that he is a preferred individual who can buy something that the other fellow cannot obtain, and thus expose this part of our enterprise to the scrutiny of the outsider and all of the while forgetting entirely that our very life depends upon driving home the thought that successful practice is a matter of education, training, experience and honesty of purpose—the thought that prevailed before our heads were turned—the thought that raised us from obscurity—the thought that once differentiated us from the empiric.

Any one in the United States who has the price can obtain any veterinary, medical or other journal published, any instrument or any drug, not even excepting the intoxicants and narcotics prohibited by law, although obtaining these may offer some difficulty to the inexperienced. It is nothing short of ridiculous to make claims to the contrary.

The professional man's advantage lies in his superior ability to use these tools and not, let us repeat, in his ability to obtain them. It is the brains that count.

It will indeed be a misfortune if we do not extricate ourselves before it is too late, from the lure of an influence that tends to perch mercenary thoughts above professional ideals. If we cannot be big, let's not be silly. There is no sincerity in the claims of many who proclaim their devotion "to the profession." Too many are simply trading upon prejudices, and every one, the practitioner first, will pay the penalty in the end.

THE QUARREL WITH THE FARM ADVISER

The troubles we are having in the matter of hog cholera vaccination are modulating in some quarters and intensifying in others, modulating where a give and take attitude has been struck and intensifying where both sides remain stubborn.

At Monmouth, Illinois, March 20, 1922, the executive committees of the Farm Bureaus of six counties and two farm advisers met with members of the Mississippi Valley Veterinary Medical Association to discuss the situation in western Illinois and while no attempt was made to reach a definite agreement it was apparent that the whole controversy that ended by creating serum depots by the Farm Bureaus of several counties last year was simply an effort to reduce the cost of vaccination in the face of falling markets and that there was no intention to harm the veterinarian who was willing to be reasonable in that connection.

Interviews with these men showed an inclination to play fair with the veterinarian and each of them lauded the particular veterinarian he employed in the highest terms most of whom were in the audience. From these facts

First Annual Veterinary Conference

it would seem that the veterinarian and the swine owners of this region are within the reach of an understanding that will end this controversy for all time.

Where veterinary service is ably and honestly performed and where the give and take principal prevails there is indeed little chance for serious friction between client and veterinarian since the personal equation is the governing power that cements them together, but where there is greed on the one hand and stubbornness on the other, friction and ruptured relations are bound to obtain.

As the veterinarian is the employee and the other the employer it is only natural that the former must take the initiative in whatever reasonable condescension may be necessary to bring about a return to the old status. In short the relation of veterinarian to client should be so close and friendly that no intruder appearing on the scene can change or disrupt them.

In spite of impression to the contrary almost every farm adviser whom we have interviewed has no quarrel with the veterinary profession and only in few cases with individual veterinarians. We have yet to be convinced that the farm adviser is not more of an asset than a liability to veterinary practice except in isolated instances where this new office is being abused because its duties have never been sharply defined. When the farm adviser is older and has had time to distinguish between professionalism and commercialism matters will go better. It is necessary for us to endure some hardships imposed during the interim the farm adviser is learning that it is for his scientific knowledge and not for his commercial acumen he is being employed, and it is our prediction unless this is learned his enterprise is riding blindly for an ugly tumble when it reaches the hurdle of American business interests.

If the farm adviser insists on handling all the coal, all the fertilizer, all the spraying material, all of the rat poison, all of the hog serum, etc., etc., used in his realm, there will soon not be enough taxable property left to pay his salary.

THE VETERINARY SERVICE IN THE FRENCH ARMY DURING THE WAR

One of the most prominent veterinarians of France, LeClainche, subjected the veterinary organization of the French Army in the spring of 1917 in the Revue Gen. de Med. Vet. to a critical review. The veterinary service at the outbreak of the hostilities was not organized. This service was considered for the purpose of war, unimportant. Up until 1917, no great progress was made with the organization. While all branches of the service under the pressure of emergencies discarded the obsolete methods, yet the veterinary service continued its functioning under the former methods and regulations. The reporter also complains on the wrong placement of the veterinarians. The depots for sick animals were poorly organized. They were directed by military heads. The veterinary service had no technical direction. The veterinary inspection had no personal knowledge and the numerous experiences which were gained daily through the war were not collected and utilized. Finally LeClainche suggested a reorganization of the service which centers upon the advice that the veterinary inspection should be charged with the technical direction, particularly so with regard to hygiene, the treatment of animals and the utilization of animal products.

Kansas State Agricultural College, Feb. 7-10, 1922

Editors' Personal Page

Vaccinate the little pig this spring. It means success for you and profit to your clients.

"I have small use for them that's seeking to offend no one. If you're in the richt the man who takes offense need not concern you."—Harry Lauder.

There is no substitute for milk and butter. Substitutes are frauds that enrich a few at the expense of health and racial physique.

Food substitution of all kinds is commercial chicanery that takes its toll in money, indigestion and undernourishment of the deluded.

Let us see. Vaccination against tuberculosis and other chronic diseases is said to be effectually as long as the living vaccine organism is extant in the body of the vaccinated. Is it not therefore probable that the bovine type is actually protecting the human family against annihilation.

Although the "vaccination" is sometimes pretty severe it seems to be a question whether the few cases of articular tuberculosis of bovine origin is not a good vaccination against the demon human-type that makes such short work of its unprotected victims.

"Truth is merit, is not capable of modification, is not adapted to the machinations which would enable her to win her way into the hearts of man" while "Falsehood, on the other hand, possesses the most wonderful resources." Fortunately truth prevails in all large projects in the end.

Boost the use of:—The horse, the pure-bred sire, milk and butter, meat, semi-solid butter milk and minerals.

All other things equal there is said to be no appreciable difference in the amount of infantile tuberculosis between the milk-drinking and the non milk-drinking nations.

THROWING MONKEY WRENCHES INTO OUR OWN MACHINERY

The Dairymen's League and Co-operative Association whose headquarters are at Utica, New York, now handles $8,000,000 worth of milk per month and expends as much as $30,000 a month for straight newspaper advertising. Besides it conducts a continuous campaign of publicity through bulletins, booklets and leaflets addressed to the public with the object of making milk products more popular.

These campaigns of advertising have brought about a much improved state of public opinion with regards to the healthfulness and indispensibility of milk as well as a better understanding between milk producer and milk consumer.

The National Dairy Council with headquarters in Chicago is engaged in the same work, devoting most of its effort to propaganda in behalf of milk products. Its work is supported by milk distributers, milk producers and public welfare organizations.

Besides these two large organizations, there are many smaller ones all devoting a great deal of effort and all expending large sums of money with the one purpose of showing a previously deluded public that it has misjudged milk as to its food value. Among these are the New England Dairy and Food Council, the Ohio Co-operative Milk Company of Cleveland, the Philadelphia Inter-State Dairy Council and the extension branches of some of the agricultural colleges. A total of more than $55,000 was spent on advertising in Philadelphia alone between January 1 and October 1, 1922.

Educational Campaigns on Milk Consumption

Then again, experts are conducting nutritional classes in the public schools in many cities, making surveys of undernourished and underweight children and in general carrying on a fine public service approved by the highest authorities. These educational campaigns already have driven home the incontrovertible truth about the necessity of an increased consumption of milk, cheese, butter, butter milk,

(Continued on page 258)

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

Studies on Periodic Ophthalmia in the Horse

First Contribution

By Augusto Bonazzi and Edward Merillat, Wooster, Ohio, U. S. A.

ETIOLOGY AND MORBID ANATOMY

THE eye disease of the horse known commonly under the name of moon eye, blue eye or periodic ophthalmia is possibly known to every practicing veterinarian for two distinct reasons: (1) lack of a typical complex of symptoms which will permit the early diagnosis, and (2) its relatively endemic nature.

The second of the two above assertions is proved by the fact that a statistical study of the prevalence of eye affections in the equine population of a specific locality is seldom of value in other localities, a fact that leads to the hypothesis that eye disturbances are endemic in character. A review of the limited literature on the subject of periodic ophthalmia in the horse reveals the fact that opinions vary as to reasons for this apparent endemism. This review also shows the meagerness of our knowledge of the question.

In 1917 Avery (Journ. Amer. Vet. Med. Assoc. 51; 78-81, 1917) claimed that he had proved the transmissibility of the affection not only by experimental means, but that he had observed it to be transmitted from one horse to another during the process of play. Again recently Dalling (Vet. Journ. 75: 16-24, 1919) isolated from the optic nerve of horses, suffering from an attack of specific ophthalmia, an organism which he names for convenience "nerve bacillus"; an organism towards which,

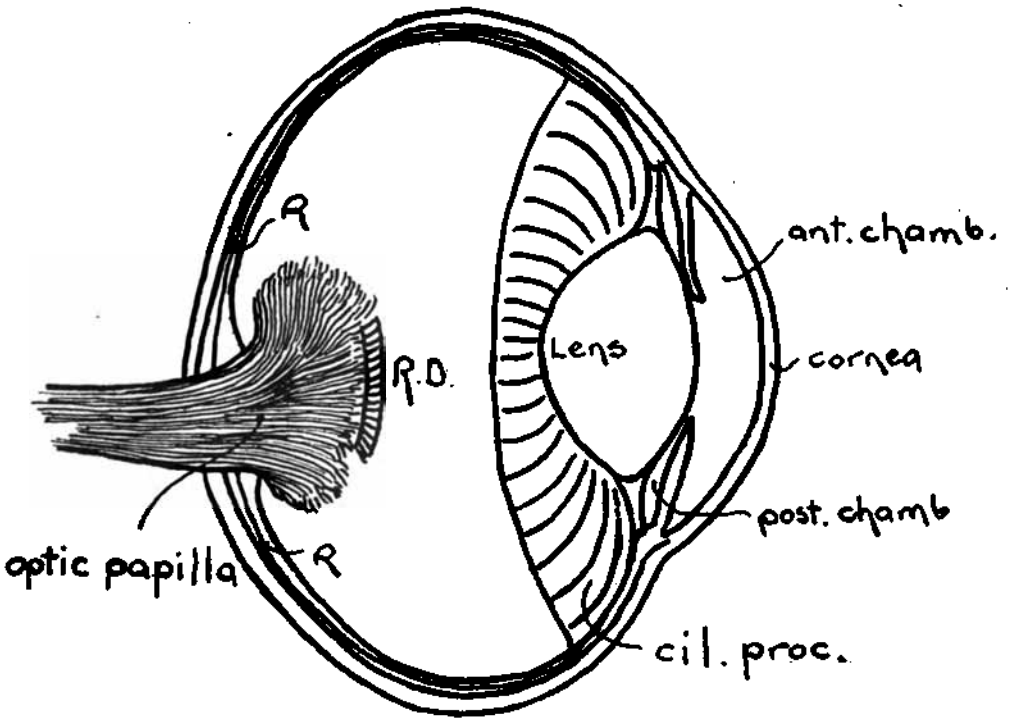


Fig. 1. Scheme of the Eye of the Horse

he claims, blood of affected horses possesses an agglutinative power. Knowles (Journ. Comp. Path. Therap. 32: 192-196, 1919) states that he was unable to confirm these last findings of Dalling. In a recent review of the subject, Savage (Canad. Veter. Rec. 1:20-23, 1920) adds little new to the subject but although not apparently clear on the path followed by the disease he does nevertheless point to the inadequacy of the term "periodic ophthalmia."

It is the object of this first contribution to remove this condition of indefiniteness from the affection and establish if possible the true picture it presents at its various phases of development, so that future work may be based on a definite and known symptomatology.

In view of the above considerations several questions of extreme importance require solution: (a) what are the conditions which favor the inception and distribution of the disease, (b) what are the paths of distribution and, (c) what is the immediate cause of the affection?

It is a matter of common knowledge that animals bearing pronounced symptoms of eye disorders are used for breeding purposes, and aside from the fact that this practice is faulty from the zootechnic standpoint, it may offer one of the paths for the distribution of the disease. Coupled with this may be mentioned the fact that there is a practice on the part of the owners of infected animals to dispose of their stock by an immediate and often fraudulent sale. It may here be mentioned also that this sale is frequently encouraged and, in fact, often urged by the attending veterinarian. It stands thus to reason that with such a promiscuous and wholesale distribution of affected animals in a region, the disease, if it were to prove of an infective character, can but be propagated from these innumerable new foci. These considerations may furnish a priori an answer to the first of the above questions.

Unfortunately, any satisfactory answer to the third of the above questions is not available, and again this is especially ascribable to the lack of careful and systematic observation on the part of the practicing profession.

With regard to the distribution of the eye affection in the equine population of Wooster and immediate vicinity, a census taken of random horses showed it to present pathological conditions in as much as fifteen per cent of the several hundred horses examined. It may, nevertheless, be stated that the figure thus obtained may be slightly lower than would have been obtained by an official census.

Experimental

From a clinical standpoint the progress of the disease may be summarized as follows: The early stage of the disease is characterized by an abundant non-purulent lachrimation followed after a lapse of time, variable in different cases, by a clouding of the aqueous humors. Slow but progressive clearing of this fluid may lead to an apparent recovery, but this normal condition may again become disturbed by a repetition of the sequels presented during the first attack. The attacks, often repeated during the course of one or more years, lead to a malnutrition of the lens, opacity and an intraocular pressure with resultant distention of the iris in the anterior chamber leading to disintegration. Fig. 2 pictures an eye (case 2) at this stage of the affection.

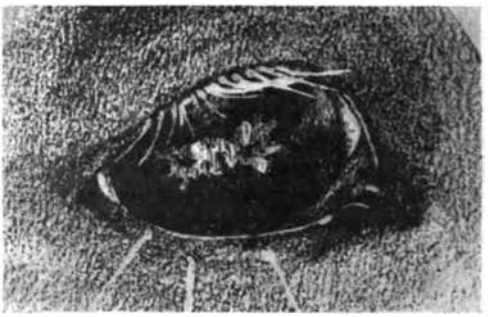


Fig. 2. Eye in Early Stage

Finally the lens becomes completely dislocated and either projects into the anterior chamber as is pictured in Fig. 3 (case 6) or disappears in the fundus of the eye. This last condition has been mentioned by Savage in his review.

It is worthy of note here that the cornea preserves in most cases its transparent and normal aspect throughout the affection, although occasionally a slight keratitis may establish itself. This was observed in one out of many dozen animals examined in the present investigation. Occasionally, and especially in experimental inoculations, a pronounced marginal keratitis may establish itself at the periphery of the cornea and extend one or two millimeters from the corneo-sclerotic line towards the center of the eye. Nevertheless, opacities of the cornea are extremely rare and when observed they appear to be due to the adhesion and abrasion, by the hardened lens, on the Descemet membrane. These conditions are apparently quite distinct from those de-

scribed by Osborn and Mendel and by Isabel M. Wason (Journ. Am. Med., 76-905-912, 1921) in ophthalmia associated with deficiencies, in the diet, of fat soluble vitamine A.

From what has been stated it appears therefore that the affection is often of extremely long duration and unfavorable prognosis. The second part of this first contribution dealing with the zootechnical phase of the subject will serve to emphasize this statement.

Transmissibility Not Shown

Of the questions which were advanced in the preceding pages, the one relating to the transmissibility of the affection has as yet received no answer. Avery related (l. c.) that the condition of periodic ophthalmia could be transmitted in some cases by inoculation of aqueous fluid from an effected eye into the anterior chamber of a healthy eye. According to his findings, transmission may also take place by simple contact, and without apparent trauma to the organ. In our own experiments material taken with sterile syringes from the anterior chamber of an effected individual (case 2) and introduced into the anterior chamber of a normal eye failed to reproduce the typical pathologic symptoms (case 3).

Injection of the material into the conjunctival sac failed also to give rise to the typical symptoms complex. In this connection it may be mentioned that also Avery found cases where transmission by inoculation into the anterior chamber failed to give results. In view of these contradictory results it is evident that the disease if transmissible, a fact proved by the positive results of Avery, it is only so at some special stage of affection. In view of the widespread occurrence of the disease in some regions some of these contradictory results could be explained also by means of an individual resistance, natural or acquired, after contact with an infected herd. Nevertheless, this possibility, although theoretically possible, is as yet open to experimental proof and cannot be invoked here. In fact, animals which will resist injection of pathogenic material from a diseased eye may later present typical disurbances after injection of a pure culture of an organism isolated from these same infected eyes.

In order to understand the actual rôle of an infecting agent, if such were to be found, in the various stages of the disease, a survey seems necessary of the various pathologic conditions found at the various stages of its progress. As has been seen in the study of the progress of the external symptom complex, and as will be seen again later, the conditions that characterize the various stages are distinct and range from a mild indisposition of the animal to complete blindness with a frequent repetition of the incipient sequels.

These externally visible symptoms are accompanied by a whole set of internal conditions and changes which are directly responsible for the appearance of the clinical. In fact, many internal changes have taken place before a sufficient intraocular pressure is obtained sufficient to give rise to the typical malnutrition and opacity of the lens, visible on gross examination. Specimens of our possession seem to justify the following interpretation of the path followed by the disease.

The Path of the Disease

This path may be subdivided into a phase of inception characterized by lachrimation, opacity and the aqueous and incipient involvement of the vitreous: slow haemmorrhage into the vitreous chamber from the choroidal layer with formation of a red cloud on the internal face of the lens, a cloud which is often visible to a cursory examination of the living animal.

Fig. 3. Anterior Displacement of Lens

This condition is followed by a formation of a jelly in the vitreous chamber permeated by hematocytes and forming a pseudomembrane closely fitting the posterior capsule of the lens. This jelly acquires a stiff consistence and produces the intraocular pressure that finally leads to the reachment of the lens through the rupture of the suspensory ligament, it penetrates the anterior chamber in the long run, while penetrating between the choroid and the posterior surface of the retina it completes the detachment of this organ as is diagrammatically shown in Figs. 5, 6 and 7.

The final stage of resolution leads to the decomposition of the interior structures of the eye, a decomposition which appears not to involve the ciliary zone, as may be seen in Fig. 8. This zone is only slightly affected and shows only a pronounced increase in the number of lymphocytes in the lymph nodes.

Tumor-Like Lesion of Optic Nerve

A structure, the genesis of which is at present yet unexplained, is a tumorlike development at the proximal end of the optic nerve which has repeatedly been found protruding into the cavity of the eye. It is the belief of the authors that its appearance dates from the period of involvement. The optic nerve which has undergone a distinct change in structure

Fig. 4. Fibroma on Optic Disk

for a distance of a few millimeters (see Fig. 5) from the optic disk, protrudes in the vitreous chamber and is apparently checked after the entrance. Fig. 4 reproduces one of the several specimens in our possession that point to the tumor origin of the structure: the histology points to a fibroma development.

These changes in the structures of the eye with the advance of the disease find their cause in a deep-seated disturbance of the normal metabolism of the structures involved. The apparent transmissibility of the condition experimentally established in some cases by Avery seems to speak for a transmissible agent, and indeed this possibility has been more or less tacitly assumed by the profession.

Flora of the Conjunctiva

Cocci are frequent inhabitants of the conjuntival sac, and it is not surprising if they have often been found connected with material obtained from the surface of the cornea. As a matter of fact, the periodicity of the disease which seems to be one of its specific characters (although the periodicity is not at all always regular, as Savage has also pointed out) could be ascribed, on the basis of an infective agent, to one of the two following causes: (a) repeated infection, a hypothesis hardly justified in view of the pathologic picture presented by the patient, and (b) repeated activity of an organism harbored within the eyeball capable of overcoming the natural defense of the host or capable of passing relatively long periods of time in the inactive state intraocularly. This last hypothesis, which is indeed not a new one, becomes tenable on the basis of an infection by a spore forming organism. It would naturally preclude the intervention of the known micrococci. Again the possibility of a mixed infection presenting characters of a joint action of two parasites (commensalism) should not be rejected.

The relatively abundant flora of the normal cornea, conjunctiva, nose and mouth of the normal horse makes it evident that a study of all the possible sources of infection is an endless task. In the present contribution only such organisms will be studied as were obtained from the interior of the eye.

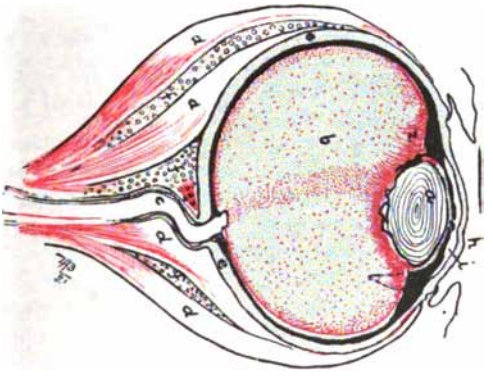
Flora of the Humors

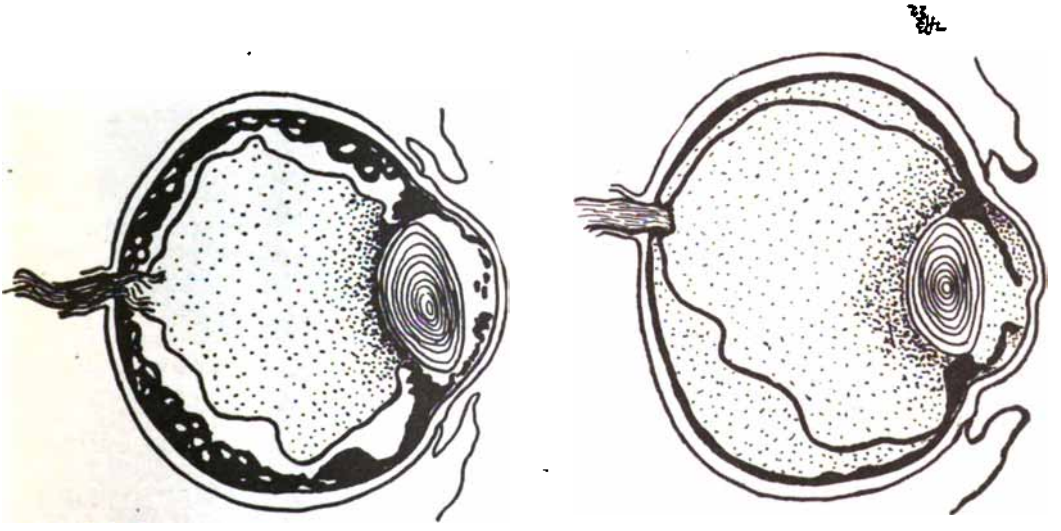
The fluids drawn aseptically from the eye of the affected animal when studied immediately seldom show to a microscopic examination the presence of bacterial cells and in the majority of cases examined so far in the present investigation, both aqueous and vitreous fluids proved sterile to a direct microscopic examination. Occasionally a coccus growth would take place on cultural examination. Nevertheless it was soon found that in sampling, faulty technique may lead to erroneous conclusions. The other surface of the cornea may harbor numerous types of organisms and the ordinary means of disinfection of these surfaces seldom prove adequate. It is only after careful sterilization that significant results can be expected. To avoid these sources of error it has been our practice when obtaining samples for cultural examination from postmortem specimens to sterilize the outer surface by means of red hot irons. Only such specimens were used as had been obtained from the animals immediately after slaughtering.

Occasionally, however, the fluids from the eye when examined by direct microscopic examination may yield interesting results. Case 1 presented a typical picture of periodic ophthalmia in the final stage, according to

our classification mentioned above. The lens was completely detached while the aqueous and vitreous fluids had been completely replaced by a sanguinous fluid apparently derived from the decomposition of the jelly which lately had occupied the vitreous chamber. The animal had lost the use of the eye within a period of eighteen months and died after an attack of pneumonia of unknown cause. Unfortunately, an examination of other tissues of the body was not possible. Preparations made from this sanguinous fluid stained with Loeffler's methylene blue showed a pure culture of a single bacillary type. The individual cells were unevenly stained and presented granulations sometimes located polarly and at other time equatorially.

The fact that organisms may sometimes be found in the humors of the eye is shown by another case (No. 4), a six-year-old mare, which was blind on the left eye and was killed because of a tramatic injury to the left hind quarter. The left eye was completely opaque to the reflectoscope; although the lens was still attached, it was soft and presented evidence of disintegration. The cornea, ciliary zone and iris were found normal on autopsy. The vitreous fluid had lost its normal consistency but appeared yet distinctly transparent and colorless. The eye was therefore entering into the phase of involvement such as has been described above. Cultures made from the aqueous into bouillon and incubated for thirteen days failed to give any





Figs. 5, 6 and 7. Pathological States Due to Intraocular Pressure (Diagrammatic)
Legend of Color Plate: a, lens; b, jelly in modified vitreous; c, modified nerve; d, muscles; e, sclera; f, adipose tissue; h, cornea; i, anterior chamber. (Note pseudo-membrane on posterior surface of the lens.

growth. Bouillon was used in order to similate the normal conditions of the eye.

The right eye of this same animal, which appeared normal to examination in vivo showing a normal fundus to the ophthalmoscope, was also found apparently normal on autopsy. Nevertheless a sample taken from the aqueous by means of a sterile syringe, following the precautions outlined above, led to the isolation of an organism which will be here, for convenience, named Bacillus A. The salient points of the histopathology of this eye may be summarized as follows: The cornea, although normal to miscroscopic examination, was found the seat of a pronounced bacterial infection which, curiously enough, was not accompanied by leucocytic infiltration. This is well shown in Fig. 9, where the

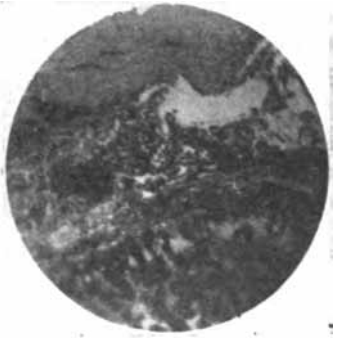


Fig. 8. Normal Ciliary Except for Increased Lymphocytes in Lymph Nodes

bacillary cells are seen mostly to occupy a position periclinal to the surface of the organ. The ciliary zone was apparently normal except for a slight infiltration of lymphocytes from the lymph node of the canal of Schlem. The optic nerve was found the seat of a pronounced bacterial infection similar to that found in the cornea and picture in Fig. 10.

The conclusions drawn from these findings as well as the findings obtained by the study of other cases in our investigation are to be summarized as follows: The eyes of horses affected by the disease commonly known under the name of blue eye or moon blindness, although failing to give good cultural developments on artificial media, are sometimes found to have an abundant bacterial flora easily demonstrated by a histological study.

In the following pages some experiments aiming at the artificial reproduction of the disease will be described, and although it is far from the intention of the present authors to claim that the organism isolated should be identified as the one causal agent of moon blindness in the horse, it is here described as the first one found in a number of eyes affected by the disease and therefore worthy of note. It is the hope of the authors to continue these studies and establish the etiological im-

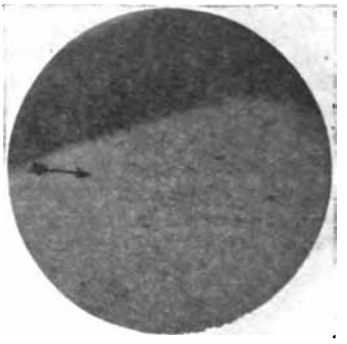


Fig. 9. Bacteria in Cornea

portance of the organism or of any other which might be isolated in the future.

Description of the Organism

Bacillus A

A rod shaped form 1.4-1.8u x 0.2-0.5u, somewhat variable in size, larger in living tissue than in culture, sometimes assuming a curved appearance. The staining properties of the organism is rather special. Such stains as Loeffler's methylene blue and Kühn's blue do not give good results, whereas aniline waters gen-

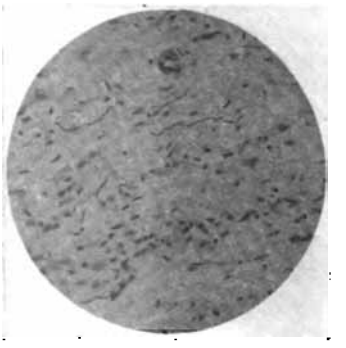


Fig. 10. Bacteria in the Nerve

tian violet, and carbolfuchsin one-half diluted with water give the best results: Gram positive. In stained preparation it appears granulated, the two or often only one pole appear occupied by a highly refractive body strongly retaining the stain. Cultures in bouillon acid or alkaline do not show growth within 48

(Continued on page 256)

What Autopsies Disclose

By E. V. Hover, Lima, Ohio

Foreign Bodies in the Bowels of a Mare

A GREY four-year-old percheron mare. I was called in the evening and found the mare in a chill, with temperature 104° and pulse 60 and respiration 30 per minute, surface of body and extremities cold. The diagnosis was congestive chill and the treatment stimulants and blankets. On my return the next morning, I was surprised that the temperature was up to 106° and the pulse fast and that it was a grave case, much like pneumonia.

As the lungs were sound I sought to determine cause of the distressed breathing. Let me confess I did not know what was causing these symptoms. There was quite a lot of gas in the hypochondrium and pressure just back of the region of the stomach on the right side created pain. Peristalsis was absent. I visited the patient again the same day and found the above symptoms more accentuated. The following morning I washed out her stomach because she was showing gastric disturbance and found when this was completed we were "doing something" to the patient and owner. Death took place that evening. The following morning we held an autopsy and found the trouble to be a wire that had penetrated the large colon and which had caused all of the pathological changes that go to make and absess wall. There was no general peritonitis. This case is cited because horses do not usually swallow foreign bodies. The case seemed like one of rupture of the bowel, excepting that there were no colicy pains. The mare breathed like a pneumonia patient, but there were no rales. There are times when intervention of man has little influence on the period between life and death.

Omental Strangulated Hernia in a Bull from Copulation

It has been said that rabbits sometimes faint, even men have done likewise during or immediately after copulation. Recently a bull was turned into a lot for his first service. His ambition was high. He leaped, he groaned, and the service was complete. His fatherly appearance was soon lost to one of utter dejection. The thoughts may have come to him that he has been mislead, or that he was in wrong. I was called to examine this new head of a family. I found him stretching, twisting his body, kicking at his abdomen, groaning, trying to roll when down, and in a general restless condition. My diagnosis was intestinal obstruction. I dosed him, irrigated him and plastered his belly walls with mustard, but that look of having gotten in wrong never left him.

The autopsy was interesting. In order to explain it is necessary to observe some of the splanchnology of the bovine. The greater omentum conceals the greater part of the intestine on the right side, with the exception of the duodenum, and covers the ventral sac of the rumen almost entirely. It is not lace-like as in the horse, and contains a large amount of fat in animals in good condition. It may be described as consisting of two layers or parts, each of which is composed of two layers of peritoneum; the serous layers enclose a variable amount of fat. The superficial part extends from the left groove of the rumen ventrally around the ventral sac. It ends along the retrograde part of the duoenum and the greater curvature of the abomasum. At this point there was a small rent in the omentum, through which a small loop of bowel had passed, causing strangulation of the bowel. This can correctly be called an omental strangulated hernia. The bull lived four days following this rupture and at no time did he show any temperature above 103°. After twenty-four hours there was little or no pain. There were no feces voided after the first day. Our supposition is that this hernia took place following the service above mentioned.

Foreign Bodies in Cattle

In cattle foreign bodies are rather common. In these days when bovine practice is receiving particular attention, more skillful diagnoses are made than in former years. We say that foreign bodies are relatively common. In the last year I have had six positive cases, and in a limited number of suspects upon which I did not hold autopsies. So far as is known no one has been able to state even approximately the length of time it takes a foreign object to cause clinical trouble.

The subject to be described below is one that sheds some light on the time that elapses between ingestion and the appearance of symptoms. A call came in to attend a Jersey heifer. The examination revealed cardinal things not much disturbed. There was inappetence, a

feeble grunt, less pronounced than in most cases. The animal received a purge, rumen and other stimulants. The medicament acted favorably, and after three days she was so improved as to start eating and ruminating. These physiological acts ceased after a few days and the owner decided to destroy her. The autopsy revealed a piece of wire protruding through the anterior wall of the rumen, into the diaphragm. Around the free end there was a small abscess wall, within which there was a small quantity of pus. The other end of the wire was a loop from a wire muzzle. The total length of the wire loop and all was about three inches. On questioning the owner he said that as near as he could remember the muzzle was found broken about two months before, having removed pieces from the manger at that time. I believe if this wire had had no loop it would have passed on to the pericardium. My diagnosis was atony of the rumen, but later I thought it might be pus formation in the liver, because the animal had become icteric.

An X-ray examination, a good picture, a skillful operator, and an anesthetist, a trained nurse, and a fee of 25 dollars might have saved this valuable life.

Urinary Calculus in a Colt

Urinary calculus result from deposits, or material deposited through the urine accumulating around hard substances, foreign bodies, clots of blood or masses of mucus, which have found their way into the urinary passages. Catarrh or inflammation of the urinary passages, therefore, give the first impulse to their formation. Calculi are also said to be due to an abnormally high percentage of salts in the urine, produced by food and water rich in lime and to a specific tendency (lithiasis). Of more importance is the fact that retention and decomposition of urine are liable to cause an alkaline reaction and calculus deposit. When calculi begin to form the process is rather rapid. The symptoms of urethral calculi are rather constant, such as frequent attempts to urinate, straining and colicy symptoms. Another thing that should be remembered is that the history will reveal the fact that the horse is not passing any urine. If the owner does not know, a rectal examination will show that the bladder is distended.

Vesical calculi take longer to produce obstruction. The urine drips or may be voided in a small stream. Much depends on the size of the stone. If the stone is rough and partially free, there may be blood and shreds of mucous membrane passed with the dribbling stream.

Here is a case in a sixteen months old colt that had a very large calculus. The colt was a pure-bred draft animal. The first symptoms noted was a dribbling of urine and some soreness of the skin on the anterior surface of the hind legs. Examination revealed calculus that completely filled the bladder. This colt was found dead one morning following a thorough examination both from the rectum and by the irrigation of the bladder. I was not present at the autopsy but saw the bladder and the stone. The weight was four and a quarter pounds. It was shaped like the bladder. The walls of the organ were greatly thickened. So far as known no other animals have been so afflicted on this farm.

Hypertrophic Nephritis

Last July I was called to a dairy farm to see a pure bred Holstein cow, the autopsy of which was one of the most interesting I have ever held. During the year of 1920 while out to this farm on other business my attention was called to a pregnant animal that was passing some blood-tinted mucus from the vagina. At this time she was in about eight month of pregnancy. No examination was made but I gave the cow a douche and advised that the same be done daily. The cow went through parturition all right, but we do not know whether the off-spring lived or not. Last July I was called to see this cow because she was not feeding well. On examination I found a little disturbance in the pulse but no elevation of the temperature. The cow is again pregnant and due in about one month. I made a rectal examination to determine the position and the condition of the fetus. It was alive and no cause for the discharge was found. As she was very valuable and was not responding to stimulation, another veterinarian was called in consultation. The cow was free from tuberculosis, but continued to grow weaker without apparently suffering any pain of the usual discomfort of an animal suffering with some death dealing disease.

On being notified that the cow had died during the night arrangements were made to hold an autopsy which was done in the afternoon. The owner asked what I expected to find at the autopsy and I replied that there must be a pus sac somewhere in the abdominal cavity. We found chronic nephritis that could have been diagnosed antemortem.

There were no pathological conditions present anywhere except in the urinary tract. There was nephritis and some cystitis. The left kidney was elongated to 14 inches, several inches

thicker than normal. Sisson describes the left kidney as follows: The left kidney occupies a remarkable position, and when hardened in situ, differs strongly in form from the right one. When the rumen is full, it pushes the kidney backward and across the median line, so that it is situated on the right side and at a lower level than the right kidney. As to its normal size, it is 6 to 8 inches long and its width is 2½ to 3 inches and somewhat thicker posteriorly. In this subject the left kidney was about 14 inches long, ten inches thick and weighed pounds instead of ounces. Normally the weight is 20 to 25 ounces. The right kidney was even larger than the left. The lobules were filled with pus and urine. There was an immense collection of offensive material throughout them.

The normal ureters are small with a diameter of ⅓ to ¼ inches. The length is shorter than in the horse. Sisson gives the length of the ureters in the horse as about 28 inches. The walls are relatively thin. In this case, the walls were thickened to about one half inches and filled with pus, blood, and other inflammatory material. The bladder was thickened.

The cause was not determined. The supposition is there was a mechanical obstruction of the ureters. There was so much diseased tissues around the region that we could not find what caused it. The animal never showed active signs of uremia, or delirium as is shown in severe disturbance of the urinary apparatus. Another co-incidence is that the demise of this dam was the third in succession of the same line and ancestry. But all were from different causes.

Pseudo-Leukemia (Hodgkin's Disease)

By pseudo-leukemia, is understood a chronic affection in which the blood-forming organs show the same changes as in leukemia but the increase in the number of the white corpuscles in the blood is absent.

Occurrence: Cases have been observed, in this country, in horses, cattle, dogs, and cats. The disease occurs more frequently than leukemia for which it is frequently mistaken.

Cause: The absence in the increase of white corpuscles in the blood corpuscle constitutes the only important difference in the two diseases: otherwise the symptoms are almost identical.

Symptoms: In most cases a chronic swelling of the lymph glands appear symmetrically on both sides of the body. Enlargements which vary in size, dense, roundish and painless are found in the submaxillary space and in the vicinity of the pharynx on the neck along the jugular furrow, on the chest, in the axillary region and in both inguinal as well as where other surface lymph glands occur. The skin covering them is normal and easily raised. Because in some cases the glands enlarge enormously, it interferes with motion due to compression of nerve trunks. One might go on and describe what may take place when internal glands are involved to a large extent. Thus disturbing vital organs.

Diagnosis: In leukemia a diagnosis can only be sure by microscopic examination, and from the pale, whitish color of the blood. There is an intense anemia of the visible membranes. In pseudo-leukemia the blood count is nearly normal regarding the relations between the white and red cells. The course of the disease is shorter. From the standpoint of differential diagnosis leukemia, tuberculosis, glanders, and malignant growths of the lymph glands come into consideration.

Prognosis: So far as is known no cases recover. If similar cases recover it was no doubt due to mistaken diagnosis. About four or five years ago I examined a cow with an ailment of this kind and if I remember correctly my diagnosis was that of lymphadenitis. The disease too far advanced to attempt treatment. Not long since a veterinarian called to a case of this nature; made a correct diagnosis and he found that every lymph gland in the body was enlarged.

Hypertrophic Hepatitis

In November of 1920 we were called to attend a farm mare that had been sick several days. Inasmuch as she would eat the owner thought she was not very sick. On examination I found the pulse 60, full and strong, the heart beats giving an impact to the body. Temperature 104°. Respirations about 18. The visible membranes were quite yellow and the skin was tense. The back had a straightened line, ribs elevated, but no pleuretic line on the abdomen. The mouth was clamy and the breath fetid. Pressure and percussion over the last ribs caused pain. My diagnosis was hypertrophy of the liver, probably an abscess formation. The history of this mare was that she had been used to haul beets from the field and that she had been overloaded. From that date the animal had not shown the usual spirits. A postmortem examination was held and I found that I was wrong again. This time it was the liver which weighed seventy pounds. The right kidney was destroyed and a large abscess filled the renal capsule.

Purely Practical

Pituitin is par excellence the best agent to use in the treatment of nymphomania of cows.

The nose ring equipped with a good sash cord rope is to cattle practitioner what the twitch is to him in handling horses. Both of them are indispensable.

Cheesy collections in the eyes of chickens may be caused by nutritional disease as well as by ocular roup, according to Phillips of Purdue University.

Drenching is a more dangerous practice in cows than in horses. It should always be done slowly in both species, with the head held up at a comfortable angle, and with due caution against false deglutition.

Streptococcic infection of the seminal vesicles is found by Williams to be a common affection of bulls. Its significance, although problematical, is worthy of study.

Hardening (ossification) of the cartilages after roaring operations is due to infection, rough handling of the interior of the larnyx and exposure of areas of pericondrium.

Pigs should be castrated before weaning. The best time for castration is when the pig is from 6 to 8 weeks of age. Unfavorable results from castration is usually due to infection from dusty or muddy pens.

The best practitioners use the stomach tube a great deal in administering bulky doses to bovines and many of them prefer this method to drenching in horses.

If you are a poor diagnostician, seek some other occupation. If you are a poor surgeon your colleagues will overlap your vested territory. If you can not maintain a reasonably inviting establishment why not try the junk business? If you do not read, study, think, it is no wonder, in view of the shifting situation, that you find practice declining. There is more money invested in domesticated animals today than ever before, there are not as many veterinarians as formerly, and there is more sickness among animals than when the population was less dense. Those who have taken these facts into account and have governed themselves accordingly are not complaining. Anyway railing, whining and complaining will never accomplish any thing.

TWO SIGNS OF APPROACHING DEATH

Two distinct signs of approaching death can be observed in horses and cattle; one of which is indicated in the masseter muscles, the other on the nostrils. The masseter muscles appear greatly atrophied, flattened and in the superior portion markedly depressed, so much so that the zygomatic crest protrudes more than ordinarily. The nasal openings are very much extended and on the nostrils the activity of the participating muscles may be observed through the skin. Although both of these manifestations may occur under other conditions, the first in association with prolonged debilitating diseases, the latter a symptom of severe inspiratory dyspnea, nevertheless if they appear after a very short duration of sickness they are always sure indications of approaching death.

"To pass the stomach tube in the cow attach the nose ring in the nose, throw the rope over a beam, and draw the head up to a comfortable angle, then adjust the mouth speculum and push the tube right down without ceremony."—Ferguson.

A NEW EXTRACTOR

Tooth Extractor.—The novel mechanism of this instrument is on the wedge tooth principle; the jaws being actuated through the pressure exerted on them by a screw on the end of a single rod. By this arrangement the operator has very little bulk of iron in the mouth (a very important factor in all dental operations), yet with a sufficient gripping power to extract teeth with deceased crowns, as the points of the jaws can be dug into the root of the stump by means of the movable fulcrum on the shaft, or, reversely, used as an aid in the extraction of the tooth.—Vet. Rec.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.
Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

The Fallopian Tubes

WHEN we realize that the calibre of the Fallopian tube is so small that it is with difficulty that the finest probe can be passed into it, we can see at once that it will not require much of an inflammatory process to occlude the tube temporarily and if at all severe that permanent stenosis is very likely to follow. But, again, my experience has been that inflammations that are severe enough to cause occlusion usually leave some evidence in their wake because I have repeatedly diagnosed enlarged tubes, and in some instances, probable atresia when the tubes were enlarged only in spots or portions, not more than twice their normal size. Still the history, with the enlarged tube gives one a reasonably safe ground to work on.

A Significant Autopsy

I recall having an experience with a valuable cow that had been barren for about a year and a half at the time I first examined her. I found her right tube slightly enlarged and the fimbriated extremity adherent to the ovary. The ovary was apparently normal and the cow was ovulating regularly, sometimes from the right ovary and sometimes from the left, repeated examinations revealing a corpus luteum in either ovary a short time after a period of estrum.

I diagnosed occlusion of the right tube with the probability that the animal might conceive sometime from the left ovary. She was, however, bred more or less regularly for about two years after and then slaughtered. On postmorten examination the right tube aside from being adherent to the ovary was closed just as solid as though there had never been a canal through it. The left tube and ovary were on section, apparently entirely normal. Nevertheless, this cow being eight years old and having had two calves, had evidently never conceived from the left ovary as the left horn was very small and the right indicated that pregnancy had always occurred on that side.

Hydrosalpinx

Hydrosalpinx is one of the manifestations of infection of the Fallopian tube and is said to be due to the closure of the ostium and so causing a collection more or less of clear serous fluid into the tube which causes the tube to stretch and its walls to become thin.

The present theory is that this fluid is serous from the beginning and in the human family it is said to be depended upon gonorrheal infection which seals both ends of the tube and allows the fluid to collect within the lumen differing only from salpingitis in that the inflammation does not progress to the stage of pus formation. In other words, representing a mild and quickly aborted gonorrheal infection. It is also supposed that a hydrosalpinx may be formed after the active pus-forming stage of the disease as a result of a late sealing of the tubes when the secretion has become serous. However, not infrequently in hydrosalpinx workers have been unable to even demonstrate bacteria in the fluid and in many specimens examined no evidence of inflammation was found in the tissue walls. Consequently, the present belief is that hydrosalpinx may be caused by a pelvic inflammatory process whose origin is outside of the tube, the closure of the ostium being the result of a perisalpingitis. It is said that in this way tuberculosis, puerperal infections, and appendicitis are doubtlessly accountable for a certain number of these cases in the human family.

Fluctuations Deceptive

We occasionally find in the bovine a condition that would lead us to believe that soft enlargements of the tubes are not always necessarily the results of any severe inflammatory condition because we may find a tube enlarged, soft and influctuating, perhaps as large as the end of one's small finger, and upon re-examination at a later date find that the condition has entirely disappeared, either

indicating that it was a hemorrhage in the tube that had become absorbed or an accumulation of serum that had become discharged without creating a disturbance. Therefore, the prognosis in the case of hydrosalpinx or an enlarged soft tube, should be guarded until at least several examinations have been made. It is said by some writers that hydrosalpinx is always bilateral. I have seen cases where this statement would not hold good. We not infrequently see perhaps part of the right horn, tube and ovary more or less of a distorted, twisted mass of hardened tissue due to an infection associated with retained placenta and not infrequently we may find the tube enlarged and bulging at one point so that it is very bladder like and still have the other ovary, tube and horn in apparently good condition.

Apparently Hopeless Case Reclaimed

Less than three months ago an extremely valuable Channel Island cow dropped a fine, strong, healthy calf. About three years ago this cow had been examined by two capable veterinarians, one of whom devotes all his time entirely to sterility work. She was considered by these able men probably hopelessly sterile. I examined the cow a short time after and found the exact condition as cited above with reference to the distorted horn and tube. The cow very shortly after conceived on the other side, carried a calf seven months, then aborted and held her placenta. She was given good attention by douching and bacterins. The uterus cleaned up quickly and in about a month it was found that every vestage of the distorted horn and tube had disappeared. The animal was bred some nine weeks later, conceived from the first service, and as stated has just dropped a normal living calf.

This is one of the most interesting cases I have ever examined. I have had several of my colleagues, interested in sterility work, examine this cow and compare her present condition with the notes recorded before conception by the other two veterinarians and myself.

Salpingitis

Salpingitis is an inflammation of the Fallopian tubes and is divided by pathologists into endosalpingitis and pyosalpingitis.

Endosalpingitis is a term used to express the earliest stages of the disease when the mucosa becomes swollen and reddened and the lumen is filled with an exudate, more or less purulent according to the severity or the duration of the infection. The condition may go on to a resolution or become more severe leading to pyosalpinx, when the inflammatory process extends into the muscular and subserous tissues. In this way a pus sac is formed which may grow to considerable proportion, the tube frequently attaching itself to some of the surrounding tissue, usually the broad ligament or ovary. It is said that pyosalpingitis may occasionally become healed spontaneously, but as a rule it results in permanent damage to the tube.

Clinical experience would lead us to believe in the bovine at least that it is not the Bang organism but the secondary invaders that are the cause of salpingitis. This in turn would indicate that conception had taken place and that death of the fetus with or without expulsion had occurred. However, this is evidently not in harmony with the pathology in the human subject; it being regarded in such cases as dependent almost solely upon gonococcus infection with or without conception following exposure by coitus with a resultant urethritis and cervicitis. In the cow it is manifest by barrenness and usually associated with a cystic degenerated corpus luteum, more or less enlargement of the tube and irregular estrum. If the ostium abdominale is not completely closed and the ovary still ovulating, the ovum is apt to perish in a virulently diseased tube.

Hasty Prognosis Not Advisable

In clinical work it is, therefore, constantly feared that a diseased tube, sufficiently so to be detected on palpation, is an indication that the ovum will either perish in the tube or atresia become so complete as to inhibit conception. But it is not good practice, unless the tube is pronouncedly diseased and hardened, to make an unqualified prognosis of hopeless sterility from the one examination. It is also well to keep in mind according to our present knowledge that salpingitis is frequently associated with chronic cervicitis and there is ever the danger that after having the cervicitis under control, an undiagnosed or later developed salpingitis may defeat one's efforts. However, it is a consolation to practitioners to know that such cases are the exception rather than the rule and the law of averages comes to our relief. Any attempt to treat pyosalpinx will do no good and may do positive harm by rupturing the tube and allowing its contents to escape into the peritoneal cavity.

(Continued on page 51)

The Problem of Sterility as it Confronts the Practitioner

Chas. W. Fisher, Danville, Ky.

UNTIL recent years sterility in cattle and mares was given very little attention by the general practitioner, but of late this problem has commanded the attention of everyone engaged in practice where the breeding of live stock is carried on. Breeders of pure bred stock are asking for advice and assistance in the handling and treatment of non-breeders. In former years a non-breeder, if a food animal, was fattened and slaughtered; while in the case of mares, they were disposed of for work purposes. The development and extension of the pure bred business, giving rise to the very great value of animals as breeders, as for example, dairy cows and race horses, which have little or no value other than for breeding purposes, has materially changed the procedure that breeders must pursue if they are to meet with success in their business. Naturally they look to the veterinary profession for assistance in this problem, and it therefore behooves every veterinarian to get all the information he can on the problem of sterility, that he may be able to treat sterile animals intelligently.

"Weed Out" the Incurables

The first problem is to be able to pick out the incurable cases at the earliest time possible, and eliminate them from further consideration. For the practitioner, the acquiring of information, and the practical, yes, successful application of his knowledge, must go hand in hand, because he will be judged by results, whether justly or unjustly. We must then, at the earliest possible time, separate sterile or barren animals into two general classes, curable and incurable. The latter cases in general, would consist of malformations, deformities, injuries and various pathological conditions, during the course of which changes have occurred in the affected parts that are beyond repair.

The first class, or those that give promise of correction, may be further subdivided into temporary and semi-chronic cases of sterility.

Inflammatory and other pathological conditions of the reproductive organs following abortion are possibly the cause of more cases of sterility than any other one condition. There are many systematic and organic diseases that will interfere with conception, but here we will consider only the reproductive organs: uterus, ovaries, fallopian tubes, cervix, vagina and vulva.

Metritis the Most Common Cause

In our experience eighty percent of the cases of sterility are due primarily to a metritis. However, this often causes the ovaries, fallopian tubes and cervix to become involved, and if so, these must be treated, especially if the condition is of a serious nature. However, often when the metritis is cured the other will right itself without treatment. We must then consider first of all the primary cause and the location of the pathological condition which causes sterility. We will first take up the treatment of metritis.

Here we must consider the different forms of metritis, in as much as each often requires an altogether different treatment from the other, for in many cases the treatment for one will aggravate the other, and full success depends upon being able to tell at an early time just which treatment is indicated.

Acute metritis is seldom met with in sterility work. However, it should be impressed upon our clients that no case of dystokia, abortion or retained placenta should be neglected, for acute inflammatory changes will subside if the proper treatment is applied at the time of these troubles, and many cases of sterility can be prevented in this way, for in this, as in all other diseases, prevention is more satisfactory than treatment. If breeders of stock would call their veterinarian to see all cases of parturition, whether normal or otherwise, a large percent of the sterility cases would never exist. If we agree that 80% of the sterility is due primarily to a metritis, and that at least 50% of chronic metritis cases are the result of some condition that occurred at the time of parturition, then we can say that almost 50% of sterility cases in animals (that have at some time in the past given birth to an offspring) are due to neglect. The reason for this is either that a competent veterinarian is not available, or that the owner of the animal does not call a veterinarian, or pos-

sibly, in many cases the veterinarian thinks such cases of so little consequence that he neglects them.

Therapeutic Suggestions

Acute metritis should be treated with irrigations of a mild astringent solution, such as zinc sulphate, potassium permanganate, etc. This is to prevent, as much as possible, the absorption of the toxic material and to mechanically remove any discharge or parts of decomposed material which might be present. Strong antiseptic solutions are never to be recommended, in as much as they are very irritating, lessen the resistance of the uterus to infection, and are not necessarily more destructive to microorganisms than a milder, less irritating solution.

Care should always be taken not to spread the infection by forcing the solutions into the uterus too hard, or by filling it too full. As much of the solution should be siphoned out as is possible, the remaining can be evacuated by gently massaging the uterus per rectum. This treatment should be repeated every twelve hours for several days, depending upon the severity of the case.

Echinacea has been used with good results, but we doubt if the cost would justify its use generally. Calcium sulphid and echinacea in tablets of thirty grains each, given per orum every four to six hours, is the best general treatment. Serum and vaccines may be used; in some cases they are apparently beneficial, while in others the results have been doubtful. Sodium cacodylate intravenous is very useful for cases showing general debility.

Chronic metritis is the form found most frequently in our sterility work. We will not attempt to take up separately the different forms of chronic metritis, and their respective treatments. It is important, however, to determine the character of the inflammatory process and outline our treatment accordingly.

In the use of irrigations it has been our experience that in acute metritis they do some good, but are seldom indicated in the chronic form; they have, on the other hand, often aggravated the conditions more than helped them. In the chronic catarrhal inflammation of the uterus where there is a muco-purulent discharge, the uterus enlarged, the walls thickened, the cervix closed or partly closed, we bail out the fluids with cotton or sponge, and paint the uterus and horns as far as possible with ichthyol or soluble iodine. This treatment should be repeated every twenty-four to forty-eight hours.

For the uterus which shows ulcers, abrasions, etc., we currett the parts and use above medical treatment.

In those cases where there is an excessive semi-fluid discharge, we use a uterine capsule inserted well into the uterus. This capsule contains sodii perborate, boracic acid and iodoform. The capsule may be repeated every three to four days, and kept up as long as is necessary. The above condition is much more prevalent in mares than in cows.

In cows we find cases where the cervix is closed and almost impossible to open. In these cases, we merely attempt to open it enough to allow the passage of a small catheter, and inject the uterus not too full of a solution of patassium permanganate, and allow this solution to be retained. Give no further treatment for two or three days, after which the cervix will generally be found dilated or in good shape to dilate. After this, several weeks should elapse before the animals are bred. We determine when the uterus is full enough by making a rectal examination.

Ovaries Not Often the Cause

The ovaries in sterile animals have received considerable attention in recent years by specialists in gynecology and are possibly the cause of some sterility. However, we feel that it is only a small percent of the cases that result from a condition of the ovaries, compared with those due to morbid changes of other genital organs. The ovaries, however, should be examined and if found to be cystic, should be treated by breaking down the cysts.

Lesions in the fallopian tubes are possibly quite often the cause of sterility. They are nearly always secondary, as they become occluded from the results of the inflammation which has spread from the uterus. Any form of salpingitis is very important, as there is no way to diagnose the condition clinically except by a process of elimination, and we have no treatment to suggest except that, in the case of valuable animals, it might be worth while to try a bacterin.

Reviewing the events of countless ages it seems that the wonderful operations of the greates. of biological laws—survival of the fittest—can not be set aside with impunity, even if such an achievement were possible.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Necrotic Enteritis

NECROTIC enteritis is relatively prevalent in various sections of the country. The condition occurs in swine of all ages. It is common in pigs about weaning time, although extensive losses from scour, which is frequently a form of necrotic enteritis, is very prevalent in suckling pigs, at this time. This condition is relatively common in stock hogs in which it sometimes produces extensive losses. A recent investigation was made on a farm where 1,000 feeder hogs had been purchased and immunized before shipping, and in which there had been a loss of approximately 100 swine within 20 days. The cause of the loss in this case was found to be necrotic enteritis. This disease is of considerable economic significance not only because of the losses but also the extensive shrinkage of the affected swine. The specific cause of necrotic enteritis has not been determined. From the available information it would appear that various representatives of the colon typhoid group are the principal factors.

Susceptibility

The condition of the swine undoubtedly is a factor in the susceptibility; however, shotes in the best of condition become affected. Sanitary conditions in which the swine are maintained have an influence upon the susceptibility of swine to the infection. Intestinal parasites injure the intestinal mucosa and are therefore a factor in infection. Feeding is probably one of the most important influences in the causation of necrotic enteritis.

Symptoms

Because of the frequency of published articles on necrotic enteritis and discussions at association meetings of this disease it does not seem necessary to give a detailed description of the symptoms and lesions. In the usual form of the disease the first symptom evidenced is depression and dullness. At this stage there is usually a rise of temperature. The second group of symptoms consist of digestive disturbances such as diarrhoea and impaired appetite. As the disease progresses the affected animals appear unthrifty, have rough coats and arched back. The affected animals become emaciated, thin and weak and may die of exhaustion. In some cases the emaciation is so marked that the affected animal appears as though they were dried, hence the name "drying up disease." This latter has been designated as the chronic form of the disease.

This disease may affect a few swine only in a herd or it may involve the entire herd. The intensity of the symptoms manifested may not be proportional to the intensity and extent of the lesions. The course of the disease varies from a few days to several weeks.

Lesions

The outstanding lesion of necrotic enteritis consists of an inflammation of the intestinal mucosa. The inflammatory process varies in intensity and extent. The first evidence of the disease is usually in the lymphoid areas. In the beginning the affected mucosa is swollen and red, but as the disease progresses there is an accumulation of inflammatory exudate upon the affected mucosa and there is also more or less necrosis, particularly of the surface epithelium. The exudate and necrotic tissue adheres firmly to the underlying structure, this appearing similar if not identical to diphtheretic inflammation. The so-called button ulcer may occur in the cases that are prolonged. The lymph glands through which the lymph passes from the affected areas become tumefied and may be hemorrhagic. The inflammatory process may extend and involves the visceral peritoneum which will appear dull, show more or less adhesions and fibrous thickening.

Diagnosis

The diagnosis of this disease is not difficult when uncomplicated. The identification of the disease without autopsy findings is uncertain. The characteristic lesions, chronic inflammation of the visceral peritoneum and diphtheroi

inflammation of the intestinal mucosa are usually sufficient evidence for a diagnosis but should be supplemented by a definite history and symptoms. The simultaneous occurrence of other disease such as hog cholera and swine plague must be taken into consideration.

Control Measures

The losses sustained by the swine produced because of necrotic enteritis have been excessive. If the feeder or breeder will execute the regulations prescribed by the Veterinarian there is no occasion for excessive losses from this disease.

This disease involves the digestive organs and therefore the successful treatment must include a consideration of the diet. The affected animals should be given a small ration of a liquid or semi-liquid food. All solid foods and tankage should be withheld. Semi-solid buttermilk is probably one of the most valuable foods for swine affected with necrotic enteritis because it contains an excess of lactic acid and this acid has a tendency to diminish or prevent the activity of the bacteria of the colon typhoid group.

Proper sanitary surroundings should be provided and the swine should be maintained in comfortable quarters. A quarantine should be affected by isolating all diseased animals and they should be maintained for several days in separate lots.

It is possible to experimentally produce an immunity in swine that will protect them against artificial infection and it would, therefore, seem plausible to assume that an immunity may be produced that will protect against natural infection. Mixed Bacterin is the product used for the purpose of immunization in swine against necrotic enteritis. From field experiments it has been found that 2 or 3 injections of bacterin give the best results.

By the judicious use of bacterin, careful regulation of the diet, and the enforcement of sanitary regulations this disease is being successfully controlled in infected herds on infected premises.

Five hundred farmers recently attended a two days' vaccination school at the Iowa State College at Ames. The course was given by the Iowa Health Commission to disseminate knowledge regarding hog cholera prevention. Under a law county vaccination schools may be conducted in Iowa, and those qualifying receive certificates permitting them to do vaccinating.—Breeders Gazette.

GOITRE IN PIGS

We are having quite a little trouble this spring with malnutrition in pigs, among several litters. We have also found quite a number of hairless pigs, sometimes as many as five in a litter of twelve pigs. This last condition, I believe, we are overcoming by increasing the mineral content of their diet.

I have just post mortemed five pigs that died from a litter of thirteen. The pigs seem to have a pronounced swelling in the region of the larynx. On post mortem, the intestial tissue was quite hemorrhagic and pronounced oedema was present. The glands are very much enlarged and hemorrhagic. This condition is quite prevalent in pigs from nearly every litter where there were more than five. The owner states that the pigs were alive when they came, but seem to "choke up" and die immediately. All the pigs I have post mortemed show these same symptoms, and a number of owners have told me of this "lump in their throats" (as they call it). These pigs are in nearly every case from pure-bred sows. We have some wonderful stock in this community, the Duroc Jersey predominating.

I would like very much to have you give me a clue if you can, as to what this condition might be. It is causing a lot of trouble here, and is threatening the hog industry. Perhaps you can refer me to literature where I can find some information on this condition. --E. H. I., Idaho.

Reply: You have given rather a typical description of goitre. In certain sections of the country, including a large portion, if not all of Idaho, this condition is relatively prevalent every spring. The losses some years from this disease are large. It is frequently found to affect only a portion of a litter, or it affects the litter of one or more sows on given premises, the other being normal.

Goitre in pigs was described in Veterinary Medicine in the December issue. The following publications also give a complete description of this condition:

Bulletin No. 117 of the State College of Washington.

Bulletin No. 119 of the University of Montana.

Bulletin No. 297 of the Agricultural Exp. Station, Madison, Wis.

Thus far, it has not been possible to find any definite means of relieving the affected pigs. The condition is relatively easily prevented by administering potassium iodid in the feed dur-

ing the period of pregnancy. Some authorities recommend the administration of 10 grams over the entire period of gestation, dividing the iodin, giving an equal amount each day. Recently I have been informed that the administration of 2 or 3 grains in the feed twice weekly to sows during the period of gestation is sufficient to prevent the occurrence of goitre.

DIET CAUSES PIG LOSSES

I have a client whose little pigs are dying.

History

No cholera among other hogs on this farm. In fact, there has never been an outbreak of cholera or any other contagious swine disease on these premises for at least fourteen years. There is no cholera near this farm at present and all swine have been immunized for a period of three years.

He has ten sows in all, five young and five old ones. Young sows first litter, old sows third litter. The old sows all farrowed and pigs are doing nicely. Two young sows have farrowed, one farrowing eleven pigs and one seven pigs. Sixteen of these pigs are dead; we used the other two for postmortem examination, which were sick at the time. These young sows and the herd boar were given the simultaneous treatment against hog cholera on October 6, 1921, receiving 75 cc of serum and 2 cc of virus. They weighed approximately 125 pounds when immunized. The sows were injected in the axillary space and the boar behind the ear. They were bred on November 5, 1921.

None of the hogs have been off the premises and no new stock has been bought. The sows have been fed one pint of Armour's Meat Meal and about six ears of corn a day, and allowed the run of an eighteen-acre pasture, with running water. This same ration was fed up to farrowing time. Sanitation and housing on the farm are above the average in this community.

Symptoms

Pigs appear absolutely normal and healthy at farrowing time. Sows have plenty of milk. Pigs remain healthy until forty-eight hours old when they begin to become listless, hide in the straw and refuse to nurse; no rise of temperature, scours or external lesions of any kind. They live about twenty-four hours after showing signs of illness and die lying prone on the abdomen, legs tucked under. There is no goitre and the pigs are well haired and were farrowed at full period of pregnancy. Sows experience no trouble at time of farrowing.

Lesions

Post mortem was held on two sick pigs that had been sick twenty-four hours. Very small sharply defined petechia on kidneys. The mesenteric glands slightly tumefied and congested. Liver rather pale in color. Light petechia in stomach of one of the pigs.

Treatment Advised

Change ration of sows to one of oats and shorts slop for a week prior to and one week after farrowing. Exercise sows daily. Teaspoonful of mineral tonic twice a day and inject all pigs when twenty-four hours old with 10 cc of anti-hog cholera serum. Could this pig trouble be due to immunizing the young sows and boar four weeks before breeding? The owner thinks this is what has caused his trouble.

The other three young sows are to farrow in about one week and I would like an early reply so as to advise my client further as to any treatment that you might suggest. - **M. J. J., Ohio.**

Reply. You have given a comprehensive description of the condition in question.

The history, symptoms and lesions apparently eliminate all infective diseases. The petechial hemorrhages in the kidneys and the lesions of the mesenteric lymph glands suggest hog cholera, but this disease is eliminated first by the fact that these pigs evidence the first symptoms when two days old and the period of incubation of hog cholera is five days or more; and second, there is no febrile disturbance and hog cholera is manifested by a high temperature. The supposition that the simultaneous immunization of the sows and boar with anti-hog cholera serum and virus is not well founded because thousands of breeding swine are similarly immunized and losses of pigs, as you have described, are exceptional.

It is very probable that the condition you have described is of dietary origin.

Your recommendations of the change of diet to oats and shorts slop for a week prior and one week after farrowing, requiring exercise and the addition of some good mineral tonic are splendid and will probably overcome the difficulty.

Regarding the use of 10 cc of anti-hog cholera serum, will say that I would suggest that you use the serum on only one-half of each litter and thus determine whether or not it has any value.

RENAL LESION NOT PATHOGNOMIC

I am desirous of information relative to a condition that is prevailing in a herd of swine. There are 35 swine in the herd in question, consisting of eighteen 125 lb. shoats and the remainder are sows with pigs or are due to farrow soon and they are practically all affected. Some eight or ten have died. It is about six weeks since the disease first appeared in this herd.

The first symptom evidenced is soreness and the affected animals move with difficulty. Some few swine have had a very mild attack and have apparently recovered. The temperature is usually subnormal. There is constipation and the bowel discharge is quite black. One sow with pigs has been affected and there was complete agalactia in addition to the above symptoms. The affected swine become emaciated and their coat is rough and stary.

Two cases were autopsied. The stomach and intestines contained an accumulation of gas. Spleen and liver normal, kidneys contained one to five black spots or areas varying in size from a pea to a hazelnut beneath the capsule. When the capsules over these areas are incised a dark fluid escapes leaving a depression in kidney substance. Thoracic viscera apparently normal.

These swine are fed slop feed. One dose of mixed bacterin has been administered. Any information relative to diagnosis and treatment will be appreciated.—**C. H. S., Mo.**

Reply. From the description, it would appear that the condition in the swine in question is unusual. The fact that all of the swine in the herd are affected and they have no fever would be indicative of adietary disturbance rather than an infection.

The occurrence of gas in the stomach and intestine was probably derived from putrefaction of the content of these organs and may have occurred after death. The occurrence of the black areas beneath the kidney capsule is interesting and their significance is not understood.

It would probably be advisable to make a complete change of diet and would suggest that not more than a half ration be given for a period of time. Laxatives or purgatives are also indicated and if possible such medicaments should be given in the feed or slop. Comfortable quarters should be provided and the swine made comfortable. A further report on this herd will be appreciated.

PORCINE MANGE

One of my clients has about a dozen sows affected with a disease of the eye that is unusual, at least in this community. The skin around the eye becomes swollen and thickened and the eye-lids are so pendulous that the eye is completely closed. There is no inflammatory disturbance of the ocular mucosa or cornea. The pupil is dilated, excepting for the condition of the eye-lids these sows are in good condition.

Any information on the above cases I assure you will be appreciated.—H. L. L., Ohio.

Reply: Your inquiry concerning the diseased condition in swine received and the description is quite interesting. The diagnosis of the condition is, of course, problematic but the condition that you have described is suggestive of sarcoptic mange. The parasite producing sarcoptic mange in swine locate by preference where the skin is thin, such as the eye-lids, inside of the ears, axilla and inside of the thighs.

The usual symptoms manifested consist of violent rubbing and on close inspection papules will be observed in the pruritic areas. The skin of the affected areas is thickened and wrinkled and the bristles stand erect and later become loosened and shed. There is usually more or less supuration beneath the surface. The disease process spreads slowly.

A positive diagnosis depends upon the finding of the causative parasite by a microscopic examination of scrapings from the deeper layers of the affected skin.

Sarcoptic mange is difficult to overcome. Some practitioners report good results from the application of kerosene after the scurf and debris have been removed from the skin by the use of warm soap suds and brush. This treatment should be repeated every seven to ten days.

The cases you have reported are interesting. The diagnosis suggested may not be correct. We will appreciate a further report on the cases.

QUESTIONNAIRE BY DR. LAWSON

1. What is life?
2. What is blood?
3. What produces blood?
4. What causes pain?
5. What causes swelling?
6. What causes fever?
7. What will raise temperature?
8. What drug is harmless to the tissues?

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of formalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.
2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 per cent formalin solution and sent to the laboratory whole and unopened.
3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per cent formalin solution.
4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

FIBRO-MYXOMA OF THE LIVER OF A COW

The specimen I am sending you, under separate cover, is from the liver of a cow that died from an intestinal disorder. Please examine this specimen for tuberculosis.—A. J. Z., North Dakota.

Reply: The gross appearance closely resembled tuberculosis but the microscopic examination as well as cultivation experiments failed to show any signs of the tubercle bacillus. The liver lesion proved to be multiple fibro-myxomata.

INFECTED MILK

Under separate cover I am mailing you samples of milk and water from a herd of cows that have been troubled for about two months. There are periods of five to eight days in which the milk is normal and then it will become ropy and sour in a very few hours. The milk is sometimes flaky. We have tried everything in regard to sterilization of the utensils and I have made recommendations about clean milking, which I believe are being carried out, but thus far without any results. There seems to be no lesions of the udder.—O. S. T., Pa.

Reply: The bacteriological examination of the milk specimen showed many streptococci and biplococci, which are undoubtedly responsible for the trouble you are having. It would be advisable for you to scrutinize very carefully the supposed sterilization the vessels are given, and also look into the cleanliness of those who milk these animals, the cleanliness of the animals themselves while they are being milked, and also that of the stable. With these precautions in operation you might then expect a benefit from the administration of a mixed bacterin.

BLACK LEG, ORGANISM NOT FOUND

I am sending specimens taken from the frozen carcass of one out of a number of young cattle that have died from a disease that seems to be black leg, but which has not been conformed in any of several laboratory investigations I have had made. The cases seen so typical that I am sending this specimen to you in hopes that my clinical diagnosis may be confirmed. More than fifty head have died on this ranch during this year.—**A. N. R. Sask.**

Reply: We were unable to find any pathogenic organisms in the specimens, which means that there were none in the particular muscular tissue examined. Under such circumstances vaccination should not, however, be delayed. The symptoms and the age of the animals incriminate black leg as the disease at hand and action should be taken promptly to stamp it out even though the several laboratory examinations have been negative.

SUSPECTS FORAGE POISONING

I am sending you samples of feeds under separate cover, mistrusting that it has been the cause of the death of seven horses and the illness of others which seem to be going the same way. Please give this feed a careful examination and report to me as soon as possible.—P. L. Iowa.

Reply: Careful examination of the feed did not reveal anything that would indicate that the feed is to blame for the death of these horses, and we suggest that you send specimens of the organs should you hold any postmortem examinations on any of these animals that may die in the future.

CHICKEN CHOLERA

A client of mine has lost 75 out of a flock of 350 chickens in the last two months. They get lame, do not eat nor drink much, act droopy, and some have diarrhea, and others do not. They emaciate and finally die.—E. R. L., Illinois.

Reply: The examination of these specimens revealed many bipolar organisms, which would indicate that you are undoubtedly dealing with avian hemorrhagic septicemia in an unusually chronic form.

The flock will be best handled by a good cleaning-up, immediate destruction of the sick, and the administration of a bacterin.

HEMORRHAGIC SEPTICEMIA

I am sending you the blood of a cow that died very suddenly. While sick she acted very nervous, ran blindly into objects, frothed at the mouth, fell to the ground, and then struck out with all four feet and bellowed with pain. The postmortem examination revealed practically nothing wrong with any of the organs, except some petechae on the heart and bladder.

Two weeks ago the same owner lost two calves within twenty minutes of each other, with exactly the same sickness.—C. J. H., Ia.

Reply: Bacterilogical examinations of the blood sample showed many typical bipolar organisms of hemorrhagic septicemia.

PROBABLY ASCARIDOSIS

I am sending you a portion of intestines, liver, and lung, of a pig that was brought to my office for diagnosis. All of the pigs of this herd are said to eat well but do not thrive. They have considerable cough especially when driven about. They have been treated with worm capsules without benefit.

The postmortem examination showed enlarged liver, spleen, and kidneys with some caseated foci in the lungs and small inflamed areas in the intestines. Please make a laboratory examination and send me your reply.—A. D. P., Ohio.

Reply: Bacteriological examination did not show any tubercle bacilli but many streptococci and staphylococci in the lung lesions. This herd should be examined more carefully for ascarids, an article on which appears in this issue under the caption of "Round Worms in Pigs."

THE SO-CALLED SPONTANEOUS RABIES IN DOGS

Dumb rabies were diagnosed in a bitch in the medical clinic of Tourin. This animal gave birth 14 days previously to a litter of puppies. Six days following the examination the animal died and the microscopic examination revealed Negri bodies. The test inoculations were likewise positive. Of the 7 puppies the owner donated 4 to the clinic for observation. One of these died in 67 days following birth with characteristic dumb rabies (test inoculations on rabbits positive, Negri bodies demonstrated), and two months later another became affected with symptoms of rabies where as the two remaining ones remained alive and in the best of health. This case tends to support the observations of other authors that the hereditary transmission of rabies is possible.

VAGINAL GRANULOMA

I would like to know if any reader of the Journal ever saw a case of imperforate vagina in the mare. A three-year-old mare I was called to see recently had what the owner thought was a case of eversion of the uterus. I found a mass hanging from the vulva about the size of a half-gallon measure and on examination found it was not the uterus, but a growth containing fluid which I think was menstrual discharge—about one quart. The mass was thick with several large blood vessels running through it. I removed it surgically, dressed the wound and left some medicine for the owner to use. In four days the mare was found to be nearly healed and three days later she was put to work.—J. A. S.,

From one eighth grains to one quarter grains of arecoline will expel tape worms in the dog in about twenty-four hours, if given per os on a full stomach.—Reid Blair.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

DISEASES OF COLTS[6]

Pyo-septicemia of colts is not a uniform affection sui generis; various organisms may produce the same clinical manifestations and on the other hand, the same organism may be responsible for a variance in the clinical picture. The dogmatic naval infection should not be considered as the sole point of entry. The greatest number of diseases of colts are caused by the organisms belonging to the coli-areogenes group, by the group of pyogenic organisms such as diplococci and streptococci, by the bacteriumviscosum equi and by the paratyphosus bacillus. The author describes these various bacteria illustrating the changes induced by them. Of other bacillary infections in colts he mentions tetanus, paratyphus, colon prodigiosus and a streptothrix. Aside from these he found a pneumonia caused by parasites and in 16 cases localized inflammation of the naval (a primary bacterial naval infection in the lumen of the naval vessels).

For the treatment the administration of maternal blood is recommended which, according to the author, gave splendid results in a great number of cases. It failed in infections with the bacillus viscosum equi, in peracute coli infections and in peritonitis, as well as in cases of already existing organic changes. He also considers of great importance the use of specific vaccines. In case the causative agent is unknown he obtained good results from the administration of streptococcus and colon serum, simultaneously with the maternal blood. For prophylactic purposes in all kinds of infections he recommends repeated immunizations with bacterial preparations (vaccines, extracts, toxins).

SWINE ERYSIPELAS INFECTIONS IN MAN[10]

In recent years Stengel had an opportunity to treat repeatedly man affected with erysiplas infections. In one instance four out of six persons engaged in the dressing of a hog which proved on postmortem infected with swine erysipelas, became infected. In most cases the dorsal side of the finger is affected. The bluish violet discoloration of the affected portions of the skin is typical. Following the injection of swine erysipelas serum (1 cc to 10 kg. body weight) the inflammatory manifestations have rapidly subsided. In one case where the dose of the serum was insufficient a progression of the disease developed.

THE INTRAVENOUS TREATMENT OF NERVOUS DISEASES WITH PREGL'S SOLUTION[11]

Professor Pregl in Graz prepared a solution which contained the iodine free and partly in cleavage and which may be administered in large doses intravenously. It circulates in the body without causing any ill effects and exerts a disinfecting action upon disease processes by releasing the free iodine. Detailed information on the composition and the chemo-physical properties of the preparations are not published. In the Psychiatric of Halle the solution was employed on 40 patients in doses up to 100 cc injected intravenously. The results obtained especially in paralytic patients are very encouraging for further experiments with Pregl's iodine solution. It has been also observed that in all cases treated with this preparation iodine could be demonstrated in the urine.

PRESENCE OF HEMOGLOBINOPHILIC RODS IN CANINE DISTEMPER[9]

Olsen isolated from five cases of distemper pneumonia a bacillus which, in its cultural and serological characteristics, was identical with Pfeiffer's influenza bacillus. The intraperitoneal innoculation of this bacillus into dogs produced a fatal peritonitis. Peritoneal injection of the exudate resulted in severe general disturbances and a general hemorrhagic fibrinous peritonitis. The virulence of the bacillus was increased by further passages. The peritoneal exudate of a dog used for passage of the bacillus, produced in another dog on intratrachial injection a fatal pneumonia. The pneumonia foci contained influenza bacilli in great masses. While the author is not inclined in considering his findings conclusive, he nevertheless deems it advisable to point out the possibilities of a relationship between canine distemper and influenza of man.

A SIMPLIFICATION OF THE CUTANEOUS TUBERCULIN TEST[7]

For the purpose of avoiding Von Pirquet's scarifier and the disadvantages from the use of Moro's tuberculin ointment, Brandes recommends for the cutaneous tuberculin testing the following procedure: Over a space of the size of a quarter, Fuller's earth is rubbed on the skin with the fingers whereby the most superficial epithelial layer is removed and which opens the fluid spaces without bleeding. Following this a small amount of old tuberculin is applied to this part and is also rubbed in with the finger. In from 20 to 48 hours, sometimes even in from 9 to 12 hours, the reaction appears. This method of tuberculin testing is simple, painless and without danger. In effectiveness is compares very well with the other cutaneous tests. It deserves the widest application, especially in child practice.

CASE REPORTS OF TETANUS[8]

The author, practicing in a locality where tetanus developed very commonly from wound infections due to the heavy impregnation of the soil with tetanus spores, has since the war made it a general practice to administer tetanus antitoxin in all cases where the possibility of such an infection exists. With these precautions not a single case of tetanus developed. In the following he describes some unusual cases of tetanus.

Tetanus in a Dog

A German hound was operated under morphine anesthesia for the removal of a tumor on the head. Six days later the stitches were removed. The healing of the wound did not progress very satisfactorily on account of the scratching of the animal by which he tore out several stitches. The dog was kept in a shed in the garden, rolling and playing around in the sandy soil. Fourteen days following the operation, tetanus developed in the animal with pronounced trismus, unable to take any food, prolapse of the membrane nictitans, general condition undisturbed. Locally tincture of iodine was used; 4,000 units of antitoxin were administered at four different times. Marked improvement was observed. Six days later a relapse occurred following which additional tetanus antitoxin was administered repeatedly. The animal made a complete recovery.

Tetanus in a Goat

The examination revealed trismus of a moderate degree. The animal did not eat. Slight lameness was noted in this animal three days prior to the examination. Diagnosis, tetanus partialis. Treatment consisted of the administration of 2,000 units of tetanus antitoxin. Three weeks later the animal was considered recovered.

The infection in the dog has without a doubt taken place through the operation wound; in the cow from the uterus; whereas in the goats it is possible that the infection also took place from the uterus, although the possibility of injuries cannot be excluded.

Tetanus in a Cow Following Retention of the Afterbirth

This animal developed tetanus 14 days following normal calfing. The afterbirth was retained, two fingers could be passed through the os uteri. Purulent metritis, temperature 104, pronounced trismus, two days later tetanic spasms of the extremities. At the request of the owner an attempt at treatment was undertaken by irrigation of the uterus with Ichthargan solution. Eight thousand units of tetanus antitoxin was administered and injections of antitoxin were repeated. As there was no indication of improvement, and in fact as the spasms became more pronounced, the animal was slaughtered. The bacteriological meat inspection declared the meat fit for consumption.

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6. Dr. F. Luetje (Deut. Tier. Woch., No. 37, 1921).
7. Belcour M. Gladbach (Ber. Tier. Woch.).
8. Dr. Grawert, (Ber. Tier Woch.).
9. Dr. Olsen (Sent Med. Woch., Vol. 47, No. 31).
10. Dr. Stengel (Med. Klinik., Vol. 17, No. 33).
11. Dr. Ponitz (Munc. Med. Woch.).
12. Prof. Kraus, Drs. Bois and Oyarzabal (Munch. Med. Woch., Vol. 68).

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

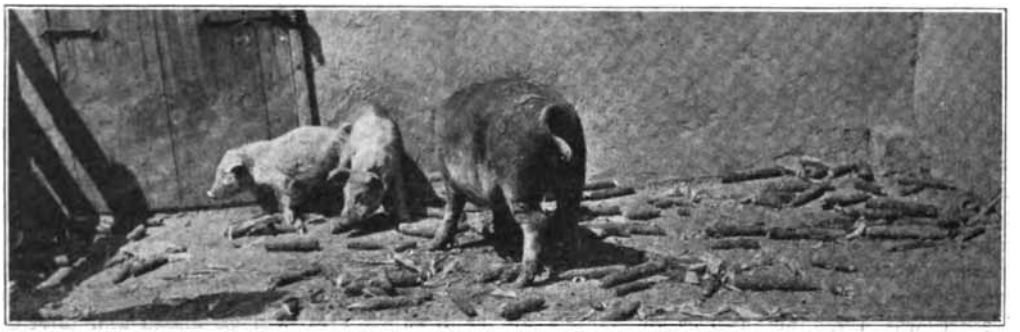


Fig. 1. Small Pig Stunted by Ascaris Infestation

Round Worms in Pigs*

H. B. Raffensperger

Bureau of Animal Industry, Zoological Division

MR. CHAIRMAN, I want to make a statement with reference to posterior paralysis of pigs of which Dr. Connaway spoke before I speak on the subject assigned to me by the program committee.

I hesitate to say that kidney worms would cause the paralysis which we see in pigs. About three years ago I examined sixty pigs that were shipped to Chicago from Arkansas. The pigs were thin but very active; no symptoms of paralysis. Every one of the sixty showed on post-mortem examination large numbers of kidney worms. In many of the paralysis that we see in pigs in the North there are no kidney worms, as we seldom, if ever, find kidney worms in our Northern hogs. I would not be surprised if there are as many cases of paralysis in pigs in the North as in the South.

The subject assigned to me is "Round Worms in Pigs." I will confine my remarks mostly to some facts obtained in field experiments.

Stewart's Conception of Invasion Not Entirely Correct

Major Stewart, of the Indian Medical Service, was the first one to discover that when embryonated ascarid eggs are fed to rats and mice they are able to produce a pneumonia, due to the larvae migrating to the lungs. These larvae are coughed up and pass out with the feces. He made his deductions that probably rats and mice by soiling food were the means by which children and pigs become infected. Recent investigations show that these deductions are not correct.

You will wonder why we speak of Ascaris lumbricoides in children in connection with round worms in pigs. This is because Ascaris lumbricoides in children is in all respects exactly the same as the parasite in hogs.

The question will come up, "How do children become infected?" Children can become infected not only by exposure to soil polluted by human beings infested with ascaris but also undoubtedly, in some cases, at least, by playing around hog lots or in orchards where wormy pigs have been kept. Ransom and Foster, of the Zoological Division of the Bureau of Animal Industry, did much work on the mode of infection of ascarids and they have shown contrary to Stewart's conclusions that an intermediate host is not necessary. The animals they used were rats, mice, guinea pigs, rabbits, pigs, goats and sheep. In most of the work they did they used the eggs of worms obtained from pigs.

Sheep an Unusual Host for Ascaris Lumbricoides

One thing they observed, and I have observed the same thing several times since, and I want to especially make this point before I go any further: One can produce an infection

*Address made at the meeting of the Missouri Valley Veterinary Association, February 1, 1922.

in the lungs of sheep by feeding embryonated ascarid eggs, and the larvae when coughed up and swallowed, will develop into a rather large size ascarid in the intestines. Ransom and Foster in their work were not able to develop females in the intestines of sheep that would produce fertile eggs, neither was I in the experiment I conducted, notwithstanding the fact that in one case a lamb was kept 111 days after infection. I have gone to the packing houses in Chicago and examined a large number of sheep's intestines until I found arcarids, and of those I found none of the females contained fertile eggs. I took the eggs from the uterus and cultured them but obtained no cleavage. I bring this point out to call your attention to the fact that it appears there is no Ascaris ovis species that should be recognized. If there was a distinct species of Ascaris in the sheep, it should produce fertile eggs. The sheep is evidently an unusual host for Ascaris.

Eggs Develop at Temperature Lower than Animal Body

By request of the Chief of the Zoological Division, I conducted three years ago a series

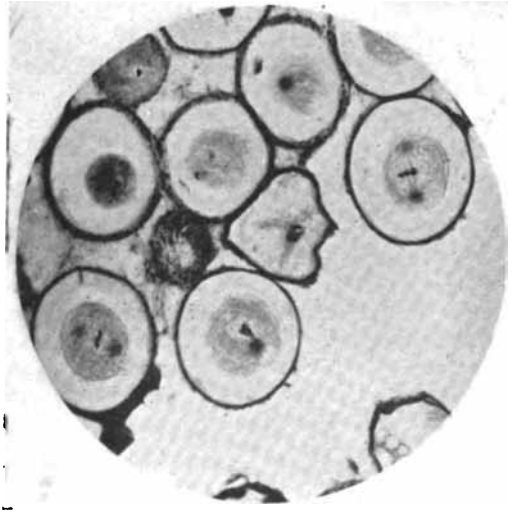


Fig. 2. Early Cleavage

of experiments on pigs of different ages. I took pigs that were two weeks old, pigs that were four, six, eight, ten, sixteen and even twenty weeks old, and fed them with the embryonated eggs. I might bring out the point here before speaking of the experiments that you cannot infect a pig with the fresh ascaris eggs. They must be developed outside the animal body at a temperature that is lower than the animal body. If you take the ascarid eggs and put them in the incubator at thirty-seven and one-half Centigrade, which is the temperature of the human body, they may develop as far as the sixteen cell stage; then cleavage stops and the eggs will not develop any further. If you incubate Ascaris eggs at the temperature of the hog (39° C.) you get no cell division. They simply remain in the resting stage. So you can see that you could feed a pig half a bushel of fresh eggs and you would not be able to infect the pig. They must be incubated at a lower temperature than that of the human being or hog if you would develop them. They develop well at temperatures between sixty and ninety degrees Fahrenheit. When you get above ninety-five degrees Fahrenheit they are inhibited in their development, but below ninety and over sixty degrees Fahrenheit they will go ahead and develop in the presence of moisture and oxygen until there is an active embryo inside the eggshell. The eggs are then infective.

You can readily see that the manure pile, mud hole and general environment of the dirty hog lot are likely to be good places for the development of eggs, because they often provide the proper combination of conditions for development; oxygen, moisture, and at certain seasons of the year a suitable temperature. The dirty hog lot is a splendid medium place for the development of ascaris eggs.

Observation on the Acute Stage

With reference to the experiments which I have mentioned, I observed a number of things in infecting pigs at various ages. I observed, as noted by Ransom and Foster, that susceptibility to infection greatly decreases as pigs become older. I observed that the first symptoms of lung invasion by the larvæ were those of rapid breathing. This is usually observed the fourth or fifth day after feeding embryonated eggs. The seventh or eighth day there would appear the spasmodic or jerky breathing, a case of typical thumps. I am describing now the acute stages. You ofttimes get a secondary infection. When you get a secondary infection following the irritation caused by the larvæ in the lungs, you may find well distributed small abscesses throughout both lungs. When you do not get that condition, you find several large abscesses that will break down; you may get what we term gangrenous or necrotic pneumonia, and the extent of the lesion will determine how long that pig will live. One thing we do know; that when secondary infections occur in the lung of the pig, that pig

will never do well. That is the pig that will be thin, rough-haired and unthrifty, (Fig. 4). The pig that has passed through an acute stage of heavy ascaris larval infection of the lungs will never do as well as the pig which has never passed through such an infection.

Lung Stage of Ascarids Must Not Be Confused with Common Lung Worms

After the larvæ by the way of the blood stream pass into the lungs, they migrate into the bronchioles and from the bronchioles into the bronchi and into the trachea; then they are coughed up with the mucus, are swallowed and pass into the intestinal tract where they settle down and develop into fully grown ascarids. I don't want you to misunderstand me. I am not speaking of the lung worms of pigs. I am speaking of the intestinal round worms of pigs that have a lung stage, and this stage often causes serious damage to the young pig.

Now we will grant that there may be a considerable infestation in the intestinal tract without fuch apparent harm. With ten, twelve or fifteen ascarids in the intestines the pig may do first-rate if there has not been too much damage done by them in passing through the lungs. It is by the lung stage that the great harm is often done. During the attack of so-called thumps the pig gets a set-back. When secondary infection occurs it is likely to be serious and the pig will not do well afterwards.

Confirmed by Field Observations

As I said before, I conducted experiments with pigs of various ages; not only did I do that, but I went into the field in different sections of the State of Illinois and other States, but more particularly the State of Illinois. I examined pigs in different herds that appeared to be good clinical cases and posted them, and I was able to find the larvæ and note conditions which I have just described.

Not only did I observe the clinical symptoms of ascarids in pigs in dirty and insanitary hog lots, but commonly observed other diseases such as bull nose or infectious rhinitis and so-called necrotic enteritis. In the post-mortems of the so-called necrotic enteritis cases the mucous membranes of the intestines would vary in color from a dark brown to a black. Not only were these lesions in the caecum and in the large intestines, but sometimes in the small intestines and the stomach as well. We find that these conditions are likely to go together.

Ascarids Filth-Borne

Some years ago I spoke of these conditions as filth-borne diseases. I am very happy to state today that in speaking to Dr. Dorset about a week ago at Washington he agreed with me and said he looked upon these conditions as filth-borne diseases. I think that is a very good term for these particular conditions.

When we went into the field to conduct a series of experiments to overcome these conditions, what did we expect to accomplish? It was somewhat indefinite. However, our observations in the field indicated that pigs from two to eight weeks old, and even older, were the ones in which the losses were heaviest from these filth-borne diseases. We also felt if we could protect the pig from the infection until it was four or five months of age, we would accomplish much in saving the young pigs.

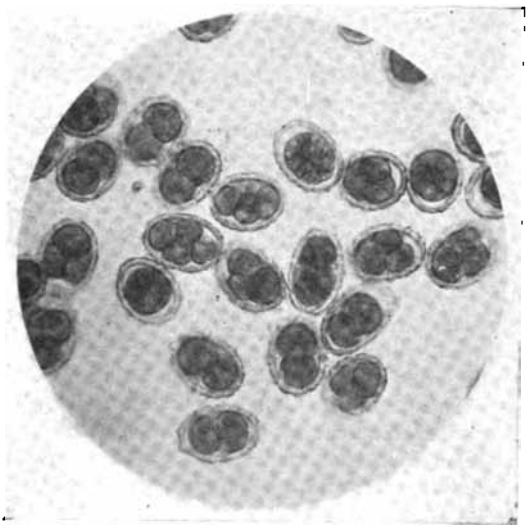


Fig. 3. Cell Division

The Clean-Up Also Helped Other Conditions

We started out with a clean-up compaign. When we first began this campaign a few years ago, it was said that we were trying to adopt parlor methods for raising pigs, but there was nothing like that in the stand we have taken. Everything has been done for a purpose, and we would never have thought of taking the steps we took if we had not known the life cycle of ascarids. Knowing the life cycle, and knowing what was necessary to prevent the infection, the steps taken came along in natural sequence. When we got rid of the ascarids, we got rid of these other conditions.

Why do we wash the sow? We wash her because she is dirty. She has been kept around the hog lot; she has lain in the manure and mud. Why should you not wash her? Our slogan was, "The first mouthful a little pig takes should be a clean mouthful." If the sow is in the clover patch in the Fall of the year we wouldn't think of washing her; let her farrow out there and keep her away from the permanent, dirty hog lot.

Ascarid's Eggs Resist Ordinary Disinfectants

Another thing: Why did we scald the farrowing pens with hot water and lye? We didn't know what else to do to destroy the ascaris eggs, as they will develop in a ten per cent solution of dichromate of potassium, in a one to one thousand bichloride of mercury solution, and we can develop them in seventy per cent alcohol; the medium in which we incubate them for experimental use is a two per cent formaldehyde solution. What else can you do? They have fairly thick shells and antiseptics do not penetrate readily. That is the reason we use hot water.

We have done some work with reference to the phenols. If you suspend the eggs in a three per cent solution of cresylic acid for five hours you can kill them; or a five per cent carbolic acid solution for ten hours will effect their destruction.

Sometimes people squirt a little disinfectant around and give the farrowing pen a smell of phenol and think they have done something. They probably have done something to other microorganisms, but not to the ascarid eggs.

Permanent Hog Lot The Menace

The first thing we try to do is clean up. We use hot water and lye simply to clean the pens; that is all. After we have done that we wash the sow and put her in the clean farrowing pen. After the pigs have been farrowed they are kept in the pens until eight or ten days old; then we take them out to a clean pasture and never let them get back to the dirty hog lot until the pigs are four or five months old. We usually haul them to the clean pasture.

You will say: "How about shade and water?" Yes, you must have shade and water. If water isn't piped in, haul it in. With reference to shade: If you don't have shade, make a temporary one. We have been using in our work temporary shades which you can build in half a day; one that will be sufficient to protect one hundred pigs. It isn't so much trouble. The one shown this year at the International Stock Show by the Bureau of Animal Industry is a very satisfactory one.

Wallows Not Necessary

With reference to hog wallows, you don't need them. You can get along without them. It is all right to use them if they are clean

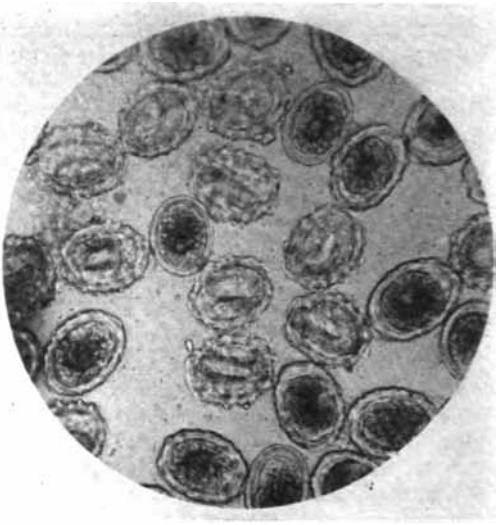


Fig. 4. Embryos in Infective Stage

wallows. Let them wallow, but many of our sanitary wallows the pigs don't seem to want to use. I think they would be all right if you could make the pigs use them. They don't seem to want to go into the sanitary wallow. You can get along without a wallow. A further feature of our plan is this: After the pigs have been farrowed and you have moved them to clean pasture, never let them get back to the old dirty, permanent hog lot. Forget there ever was such a thing as the dirty, filthy hog lot. After the pigs are five months old the danger from ascarid infection is not so great; and if you have to take them to the feed lot, you are going to get by a good deal better with reference to ascarids than you would otherwise.

Gives Better Results from Vaccination

With regards to our experimental work in McLean County, Illinois, it has not been one hundred per cent efficient because all who are cooperating have not carried out the plans in sufficient detail, but those that have followed the system carefully have obtained good results. We vaccinate or immunize against cholera and get excellent results. We don't have so many so-called cholera brakes other than real cholera breaks. When you have raised your pigs properly and immunize, you are going to get better results.

(Continued on page 52)

Zootechnics

Edited by E. MERILLAT, M. D. V.

The shipments of spring lambs from California in 1922 will only be about 80% of the normal.

The outlook for irrigation water in the Rocky mountain region is very favorable because of the large amount of snow in the mountains.

Semi-solid buttermilk when added to the ration of brood sows, according to swine breeders, stimulates milk production and largely prevents the development of scours and other digestive troubles of suckling pigs.

The presence of vitamines A and B in cows' milk is entirely dependent upon their occurrence in the ration, according to the findings of Kennedy and Dutcher. This indicates that milk vitamines are not synthetic substances.

The Department of Agriculture has completed arrangements for ascertaining the number of swine in the principal swine producing states. This information will be of considerable value and will probably be available by the first of June.

The animal species found in a given area constitute a fauna; the plant species found in a given area constitute a flora; the combined animal and plant species found in a given area may be termed a biota.—(Science.)

If diseases of all kinds were nearly eliminated the lost immunity now extant would probably leave future generations exposed to outbreaks like the ancient scourges that threatened to depopulate the earth.

A proposed bill in the Kentucky Legislature forbidding the teaching in the State University, Normal schools and public schools of "Darwinism," or the evolution as it pertains to the origin of man, was defeated by one vote in the house of representatives.

The total output of coal in 1921 was approximately one billion one hundred million metric tons. The United States produced 40.9% of the total. The production in 1922 in the United States may be materially diminished because of the miner's strike.

Inbreeding judiously executed is of very great value in the fixing of type. This form of breeding is a powerful tool but a dangerous one for the unskilled to attempt.

It is an old belief that sex can be regulated in cows by mating at the first possible opportunity after bearing a calf. The issue will be the same sex as the last one, it is claimed.

The goat industry is of considerable importance in some sections of the United States. A twelve stall modern hospital is being constructed at the Experiment Station, Sonora, Tex. This hospital is especially designed for the investigation of diseases of sheep and goats.

INTEREST IN PUREBRED SIRES DOUBLED DURING PAST YEAR

Judging from records of the United States Department of Agriculture, which conducts the "Better Sires—Better Stock" campaign, interest in purebred sires is more than double that of a year ago. During January and February the Bureau of Animal Industry issued 512 emblems or recognition to persons who signed declarations stating that they would use purebred sires exclusively in all classes of live stock kept. The number of persons granted emblems during the same time last year was 239.

Continuation of interest is shown by the unusually large number of enrollments early in March, more than 150 having occurred the first week. Henceforth all these owners will breed their cows, mares, sows, ewes, and hens to purebred sires only and will use breeding methods leading to further live-stock improvement.

"There is increasing evidence," declared Dr. J. R. Mohler, Chief of the Bureau of Animal Industry, "that raising scrub live stock is an unnecessary waste of time and feed. Any

live-stock owner can improve the quality of his herds and flocks by the better-sires route. Purebred sires permit the raising of grades, crossbreds, or purebreds—whichever is preferred—depending on the kind of females used."

According to reports from more than 500 live-stock owners who have used purebred sires for several years, the greater returns derived greatly exceed the initial outlay and the benefits accumulate with each generation of animals raised. —Clip Sheet 195, U. S. Dept. Agr.

JACKS TEN PER CENT BELOW STALLIONS

In regard to the procreative qualities of jacks, I will say that when we used to sell stallions and jacks, our guarantee read something similar to this: If an animal was sold in the spring of the year, we would, in the case of a stallion, guarantee him to be a sixty per cent foal getter, and with jacks, fifty per cent providing they were bred to good healthy mares, and they themselves properly taken care of, complaint to be made on them twelve months from date of sale, when the buyer could choose another animal of equal value or his money would be refunded. If the complaint was made one day after expiration of the guarantee, the buyer was out of luck.

In my opinion, it will depend entirely on what kind of a guarantee the buyer has and how it is worded.—**J. W. Oltmanns.**

FEEDS FOR FARM HORSES

Corn is a good grain feed for horses and mules doing farm work.

Ear corn and alfalfa hay alone are sufficient to maintain farm horses and mules doing a considerable amount of medium to hard work.

Farm grown feeds need no special preparation to be successfully fed to either horses and mules.

Legume hays should be fed with ear corn or preferably with ear corn and oats at the rate of one pound of grain and one pound of the roughage per hundred pounds of live body weight, increasing the roughage and decreasing the grain or vice versa according to the character of the work. (Ext. Bull. 238, Univ. of Ill.)

Approximately 90,000,000 gallons of sirup were produced in the United States in 1921.

WHAT IS FRESH AIR?

Most people no doubt would say that fresh air is air that is not stale or polluted with impurities of any kind. Others might insist that fresh air means outdoor air, where the conditions are such that it has not been contaminated by industrial smoke, dust or gases. In short, the popular notion seems to be that, when we say fresh air, we mean good air; that is, safe, breathable air; and this conception of the meaning of the term is not far from wrong.

It has remained for Prof. C. E. A. Winslow to give a clean cut definition of what is meant by the term, "fresh air." He tells us that "Fresh air has four qualities. Fresh air, first, is cool air. Air that is above 69 degrees F. is always harmful, except for very old people. Whenever the indoor temperature rises above this point, the circulation is upset, one tends to become dull, languid and inefficient, and the delicate membranes of the nose and throat are injured.

"Secondly, fresh air is moving air. Still air blankets the body and produces a deadening, numbing effect. Air in general motion stimulates the skin.

"Thirdly, fresh air is moderately moist air. Either very dry or very humid air is harmful.

"Lastly, fresh air is variable air. Slight changes in temperature and humidity are stimulating and wholesome for the body."

—Bull Health Dept., Chicago.

According to the annual report of The Indiana Stallion Registration Board there were 5,602 stallions registered in 1914 of which 2,666 or 52.6% were pure-bred and in 1921 there were 1914 stallions registered of which 1,442 or 75.3% were pure-bred. Although this is a splendid showing on the increase of the percentage of pure-bred stallions the marked reduction in the total number of stallions is an index in decreased horse breeding. The present relative price for good horses compared with other farm commodities no doubt will be a stimulus for an increase in horse breeding.

"Horse flesh was served in the guise of fillet of beef at the annual banquet of the Ohio State Veterinary Medical Association at the Deshler Hotel" says Dr. E. W. Brumter in reporting the meeting to the Alliance (Ohio) Leader.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Supposed Forage Poisoning

Dr. T. B. Crowe of Chicago sent a sample of oats and corn which local people of Hillsboro, Ill., thought might have caused forage poisoning, with letter from G. H. Longwell, Agent Am. Railway Express Co., at Hillsboro, Ill., as follows:

"As per telephone conversation regarding above (company horse dead at Hillsboro, Ill.), this horse died in harness on Main St. at 1:30 p. m., apparently crazy. Dr. Harris, veterinarian, arrived in time to give horse a shot, but horse died in street in five minutes' time. Dr. Harris advised that he thought it was forage poison as there had been several horses in vicinity died in past two weeks, and to all appearance the same cause and Dr. Harris claims that forage poison is an infection of feed, and sometimes cannot be told and is found in the very best grade and sometimes in poorer grades of feeds. The team worked this with nothing apparently wrong. Very frisky going to stable at noon, ate noon meal. Had made about two blocks of delivery on Main Street when horse suddenly became crazy, falling, getting up and down behind, then down in front, on sidewalk and in gutter and driver F. F. Criswell had a hard time keeping him out of show windows and automobiles that were parked at curb. I am sending you under separate cover small samples of feed (corn and oats) taken from bins immediately after death of horse, for your inspection. (Signed) G. H. Longwell, Agent."

Letter from T. B. Crowe, veterinarian, is as follows:

"I am sending you under separate cover some corn and oats which was sent to me for examination to determine if possible if same was responsible for the death of this horse. I am enclosing copy of letter which explains the case. It is my opinion this horse died too quick for forage poison. Dr. L. A. Merillat advised me to send same to you."

The oats is somewhat weathered, not of good quality, with no external evidence of mould. I do not think it is the cause of the trouble.

The corn contains a great many mouldy kernels. In looking it over I find that 25% of the kernels are mouldy and the mould is mostly **Diplodia zeae** which is rather common this year in stored grain. Mouldy corn of this kind was common in many parts of the corn belt last year.

I do not, however, think from the symptoms given by Mr. Longwell that it is the cause of the very sudden death of the animals. This does not mean that the corn may not be injurious to animals. I think such mouldy corn should not be fed to animals.

MOLDY CORN

Dr. H. Vollmer of Nunica, Michigan, sends specimens of moldy corn and leaves and the following letter:

"Recently a client of mine lost two head of young cattle, age about 15 months, died quite suddenly. They were taken sick quite suddenly during the night. In the morning he found one down, lying flat on her side, head stretched out and flat on the floor, also feet and legs. She seemed nervous, pupils of eyes dilated, head seemed drawn back. She was slightly bloated and died in a few hours. The other was just about the same; temperature normal. These animals were not treated. They were in good flesh having good pasture until snow fell, then he brought them in and fed them cornstalks and a small amount of corn. The drinking water came from a drive well. We have some very moldy corn this year on account of a worm working into the ear early in the season. I am sending you some samples of it, also silage, although the young stock have not had any silage this year. Would you kindly examine this for me?"

We have examined the specimens and found a lot of mold, especially Fusarium and Monascus and some other molds. There is much moldy corn in the corn belt this year. There

is also much complaint about loss of livestock from the moldy corn. I have on several occasions discussed moldy corn in the Journal. Moldy corn, no doubt, under some conditions, causes poisoning.

We think it advisable that such corn should not be fed to livestock. This is especially true for horses. The danger is not nearly so great with horses and hogs.

WEEDS IN ALFALFA HAY

Dr. J. F. Callison of Ramsey, Ill., wrote me on March 2nd, 1922, as follows:

"I am sending by parcel post a sample of alfalfa hay, that we believed is poisonous. This hay came from the State of Colorado. There has been one death in the valuable herd of dairy cattle, and at the present time there is another animal in a grave condition. This animal (cow) started in with a temperature of 107 F. with trembling of the muscles of the fore quarters, staggering gait, reduced rumination, inflammation of visible mucusmembrane, frequent urination, weak and accelerated pulse, respiration is clear but accelerated. The animal that died I was unable to be present to hold an autopsy but the herdsman reported the kidneys contained pus, and the liver was darker than normal and very soft. Some of these cattle have had a diarrhea at times since being on this particular hay. The cow now under treatment has not this symptom, on the contrary we have up to the present time been unable to evacuate the bowels but have had her under treatment 18 hours. If you can enlighten us as to the nature of the weeds contained in the enclosed samples we would appreciate hearing from you at once. If the sample is not dried out too much on reaching you, you can notice a very peculiar odor in the smallest package enclosed.

Hoping I have given you some idea of the symptoms that will be of assistance to you, and that we may hear from you as regard to your findings as soon as convenient.

I received the two packages of weeds and so-called alfalfa hay. If this was sold for alfalfa hay it certainly was very far below the standard, because most of it consists of weeds of various kinds. It contains the following weeds: Pigweed (Amaranthus retroflexus), tickle grass (Panicum capillare), barnyard grass (Echinochloa crusgalli), western marigold (Dyssodia papposa), candy grass (Eragrostis major), and green foxtail (Setaria viridis). None of these weeds can be looked upon with suspicion, except the pigweed or the western marigold. The odor from one of the packages is no doubt due to the western marigold. You will find this plant described in my Manual of Poisonous Plants. You will find in this same volume a description of pigweed and an account of poisoning from the same.

It seems to me that the person who sold this material for alfalfa hay made himself liable by doing so. The material you sent is less than 10 per cent alfalfa and there is a good deal of the pigweed in it. The pigweed is somewhat prickly.

PLANT DERMATITIS

T. A. Sprague* makes a discussion of dermatitis produced by the family Anacardiaceae to which the poison ivy belongs. The writer calls attention to the fact that as early as 1702 a Frenchman who visited South America between the years 1702-12 related how some sailors suffered severely from cutting down some Llithi (Lithrae caustica) on the coast of Chili. Their hands on the second day had swollen to an extraordinary size and their features indistinguishable. The juice of this tree produces painful pustules and swellings on the hands and face. The record is also made that some persons do not suffer. The author records another plant of the Subalpine region of the South American Andes which is injurious namely the Rhus juglandifolia. Triana records some persons are very sensitive to its poisoning. The Gluta renghas (G. benghas) of the Celebes is equally poisonous and the timber after long drying is said to be injurious. Gluta coarctata, Mangifera odorata Semecarpus Anacardium of the same family produce dermatitis. The vanilla pods of the orchid family sometimes produce dermatitis but this has been attributed to the oil of cashew, a member of the poison ivy family, which is used to improve the color of the pods. The author states that Vanilla Griffithi of the Malay peninsula contains a slightly milk latex which is irritating to the skin.

*Journal of Botany 49: 308-310.

Colostrum milk according to the commonly accepted standards is unfit for human food. The Wisconsin regulation provide against its use from eight days before until four days after calving. The government standard is still higher extending from fifteen days before until ten days after.

Canine, Feline and Avian Practice

Parasites in Small Animals*

By O. V. Brumley, Columbus, Ohio

Director of Clinics, Veterinary Dept., O. S. U.

Show Predilection for Small Intestines

The majority of the parasites in small animals are found in the small intestines; small numbers are found in the cecum, colon and rectum. Each species of parasite has its particular location, and unless in unusual numbers, or under abnormal conditions, they will be found infesting an exclusive portion of the bowel.

Parasites, however, are frequently found in a very large number, and produce serious disturbances there, depending upon the species of parasite and the animal infested.

The most common parasites found in the intestinal tract belong to the animal kingdom, and are: Cestoda, Trematoda and Acanthocephala.

The Taenia Syndrome

The appetite is often irregular and while the patient may eat well its condition remains bad. Growth is checked, emaciation often develops, and the hair coat loses its normal lustre.

Taeniacide Therapy

As taenia, even in mild infestations, inconvenience the host more or less, it is advisable to treat them. A further reason is the possible infestation of man and herbivorous animals with the cyst form.

Hogs, cattle, sheep and show and hunting dogs not only improve in condition when the taeniae are removed, but the further propagation of taeniasis is correspondingly reduced.

The administration of a taeniafuge should be preceded by a purgative and a twenty-four hour fast. Many preparations have been employed with good results, but male fern is probably one of the most reliable. The oleoresin (small dogs 0.5-1.0; large dogs 2.-5.0; cats 0.2-0.5) may be used. An excellent mode of administration is to mix it with a dose of castor oil. The purgative action of the oil assists in the evacuation of the parasites.

(3) Hook Worm

This species of the nematodes inhabits the small intestines, preferring the anterior half, and, occasionally are found in the stomach. They attach themselves to the intestinal walls, wound the mucosa, eat the epithelium and suck the blood.

According to present evidence they produce a poisonous substance that inhibits the coagulation of blood and possibly also injures the host. Inasmuch as these parasites frequently move from place to place wounding the mucous membrane in many different places from which hemorrhage continues for some time, a severe anemia is soon produced. These traumatisms to the mucosa soon cause a severe enteritis with all of the symptoms of inanition.

The Therapy of Hook Worm

Treatment in hook worm disease must be directed toward the removal of the parasites. The common anthelmintics used for intestinal parasites in these animals have little or no effect on the strongylidae.

Thymol (.06-.6) is one of the best for this species, good results following its use in daily repeated doses. It is advisable to precede the treatment with a good dose of Epsom salts to free the intestines of food and the mucous with which the parasites are usually covered.

The object of the treatment is to have the finely pulverized thymol pass, only slightly dissolved, through the entire length of the intestines, and thus, by coming in contact with the parasites, destroy, or so disable them that they may be evacuated.

As thymol is very soluble in alcohol, fats or oil, and serious results follow its absorption, all medicines containing alcohol as well as all fatty foods (fat meat, milk, butter, etc.) should be withheld during its use.

It must be administered in a capsule thoroughly mixed with three times the amount of sugar to prevent it from collecting in a mass

as it would otherwise do as soon as liberated from the capsule and pass through the intestine with little or no effect on the parasites.

Should absorption occur with the production of toxic symptoms, a subcutaneous injection of magnesium sulphate (0.3) will often overcome it.

Nutritious and easily digested food (lean meat, rice soup, cooked vegetables) may be given during the treatment after which the best of food that the dog will eat should be allowed.

Stomachic tonics as iron, quinine citrate (0.2-0.3), tincture gentian compound (1.0-4.0) are useful to stimulate the appetite. These should be continued for some time. In a few weeks make another examination for parasites or ova, and, if present, repeat the treatment.

(4) Whip Worm

This parasite lives in the cecum and large intestines, and is less common than the species above described. It is also much slower in development, requiring three to four months to produce embryos, which, when introduced into the digestive tract, attain complete development in two to three months.

Life Cycle Simple

The whip worm does not require an intermediate host; embryonic development takes place entirely outside the body and the parasite must pass into the digestive canal while still enveloped in its shell.

This species is often found in animals affected with severe anemia, but it does not appear to play other than a secondary part in the development of the disease. When present in considerable numbers in the cecum, however, it may cause a chronic inflammatory condition by its repeated injuries to the mucosa. Birds are more often seriously affected than other animals.

Symptoms

Gradual emaciation and anemia are the principal symptoms. The appetite may be variable, and constipation and diarrhea alternate.

General symptoms are rarely noted, unless the infestation has been severe, when general anemia is noted.

(9) Demodix Mite

Etiology—Demodectic scabies is produced by the parasite Demodex folliculorum.

Symptoms

The early indications of demodex mange are the presence of isolated inflammatory areas from one-half to two inches in diameter. The hair covering them appears as though clipped off closely. The condition gradually spreads and may cover the entire body. Occasionally demodex mange occurs in the well named squamous form. In this there is only slight irritation and no marked inflammatory symptoms. The hair becomes thin, and gray white scales cover the skin.

This condition may continue without change for months especially when the dog is brushed and bathed frequently as may be done with house pets.

The disease makes progress by a gradual peripheral spread over the skin, or less often by the occurrence of new isolated areas over the body. The skin thickens, pustules develop and erupt forming crusts; the hair falls out. Emaciation follows and the animal becomes cachectic and exhausted. Pruritis is present from the beginning and frequent scratching and rubbing is the most noticeable symptom.

Therapeutics

Mild localized cases may be treated without washing or brushing. Generalized cases with crust formations require thorough cleansing with soap or alkaline solutions and all hair removed. As the demodex live deep in the skin glands it is obvious that severe and vigorous treatment is required to effect recovery.

Every parasiticide known has been used either alone, or in combination without success. One mixture deserves mention as many cases have recovered after its prolonged use. It is not toxic, and will not be licked off.

℞

Creoline	30.0
Phenol	15.0
Sulphur flor	60.0
Ol terebinth	120.0
Aq. Ammonii	90.0
Ol. lini	600.0
Kerosene	1200.0

M. f. Emulsio.

Herpes Tonsurans. Ringworm. Red Itch

Symptoms—Ringworm occurs in all small animals but is most common in the dog. The lesions may be found on any part of the skin but usually appears on the head and legs, parts frequently in contact with objects harboring the parasite.

Ringworm is characterized by small, well defined circular areas. By increasing in size

and number they merge to form irregular, large patches. At first slightly reddened, these areas soon are covered with their dirty, gray crusts or scabs. Irritation is variable; at times it is very intense inducing scratching and rubbing which removes the crusts and leaves the surface raw and sometimes bleeding. Small nodules are sometimes seen, due to swollen hair follicules. Most of the hair is broken off. On these areas where pruritus is absent the crusts remain, become thicker and agglutinate the hairs. Suppuration proceeds beneath the crusts and an offensive odor is emitted.

In general the condition is less severe and more superficial than sarcoptic scabbies, but the spread is more rapid. When the condition involves a greater part of the body general disturbance follows. Suppuration beneath the scabs permits of the absorption of toxins which poison, and the constant irritation exhausts the animal.

Treatment

In a generalized case, except in short haired animals, remove all of the hair. Where only isolated spots occur clip the hair well back from the margin. Remove the crusts, softening them if necessary with lard, oil or ointments. Cleanse the skin by washing with a soapy or alkaline (sodium carbonate) solution.

Creolin or **iodin ointment** is recommended and gives good results. These may be applied once daily for a week followed by a thorough cleansing. Continued treatment depends upon the appearance. Small areas may be treated with pure tincture of iodin, two or three applications a week. A strong solution of bichloride of mercury (1-500) is also quite efficient. Careful inspection must be made frequently for new disease areas. **Powdered aloes** will prevent the patient's licking off the ointment.

* Ext. Report. Ill. S. Vet. Med. Ass'n. 1921.

FOLLICULAR MANGE IN A DOG

I have a dog under treatment that seems to have a typical attack of follicular mange. I have given several courses of treatment with no results. With the exception of the legs the entire body is affected and in certain regions the skin is entirely bare and wrinkled up like that of an elephant. Is there any treatment that will help?

Reply: Dr. Flynn at the clinic of the Missouri Valley Veterinary Association, at Kansas City, February 2nd, 1922, exhibited a dog that seemed to have been cured of a diffused case by applications of formalin solution. After washing the body well to rid the sore places of scabs a one per cent solution of formalin is applied all over the body. As the stinging pain of this drug causes considerable agony the body should almost immediately be annointed with a bland oil or soothing ointment.

PRESCRIPTIONS FOR DOGS BY DR. SCHRECK

Parotitis

℞

Ichthyoli .....
Plumbi Iodid ..... aa ʒ ii
Ammonia Chloride ..... ℥ iv
Adepts lanæ hydrosi..... ʒ i
Misce. et. fiat ungentum.
Sig.—Apply to swollen glands.

Indications: Used to relieve swelling and pain.

Pharyngitis, Angina Catarrhalis, Sore Throat

℞

Ext. Gambir ..... gr. xxx
Codelinæ ..... gr. iii
Ext. Glyeyrrhiza ..... ʒ iss
Misce. et fiat Chartular No. XX.
Sig.—One chart on tongue every three or four hours.

Indications: To relieve inflammation in acute cases and relieve cough.

Gastritis (Acute)

℞

Chloroformi ..... ʒ i
Tinct. Opii Deod..... ʒ iss
Mentholis ..... gr. i
Magna Bismuth qs..... ℥ iv
M. Sig.—Teaspoonful every one or two hours as the case demands.

Indications: To relieve pain and check vomiting.

Intestinal Catarrh

℞

Olei Ricini ..... ʒ iv
Sig.—One dose.

Indications: Initial treatment to free the bowels of all irritating materials. Not required if evacuations have been profuse and watery.

℞

Tinct. Opii camphorated..... ℥ i
Bismuth sub-nitratis ..... ℥ iv
Aqua cinnamomi qs..... ℥ ii
M. Sig.—Teaspoonful every two hours as case demands. Shake. Less often as improvement is shown.

Indications: Used in acute catarrhal enteritis after evacuation of irritating materials.

INVESTIGATIONS ON THE PREVALENCE OF AVIAN TUBERCULOSIS AND ITS CONTROL WITH AVIAN TUBERCULIN[2]

The author found avian tuberculosis very prevalent in Germany, and recommends for its control the tuberculinization of the flocks at least once a year. Newly purchased birds should not be placed in the flock until proven free of tuberculosis by the tuberculin test. Hatching eggs should be purchased only from flocks known to be free of the disease. All tubercular carcasses should always be properly disposed of as they constitute a menace not only to the poultry but also to hogs and other animals.

The intracutaneous injection of avian tuberculin induces in tubercular chickens a definite characteristic reaction. The test should be made with avian tuberculin since this produces a more pronounced reaction than any other kind of tuberculin. The injection is made into the wattle. The technic and interpretation of the results are not difficult. Considerable skill may be attained by practice and accuracy of the work. A positive reaction is characterized by the appearance of an odematous swelling on the injected wattle which somewhat varies in intensity becoming most pronounced in from 24 to 48 hours following the injection. The swelling disappears in from 3 to 5 days.

The reaction is specific. Only tubercular infections will induce positive reactions. Other diseases will not cause a reaction. As for instance, in fectious leukemia which has been formerly considered as a form of avian tuberculosis no reaction appears following the tuberculinization of such infected chickens. Birds giving a negative reaction should not be considered entirely free of tuberculosis. At times even repeated testing of cachectic birds which are affected with old extensive tuberculosis failed to give a reaction. Such birds, however, may be picked out by a clinical examination of the flock. The author is of the opinion that the intracutaneous injection of avian tuberculin offers a very useful and dependable agent for the early recognition of avian tuberculosis.

Tuberculosis of fowls is much more prevalent than is ordinarily suspected. The principal source of infection is the droppings of tubercular fowls. There is a possibility of the transmission of infection in eggs. The sparrow is susceptible to avian tuberculosis and may be a factor in the transmission of this disease. Fowls may become infected from the carcasses of tubercular fowls. The farmer and poultryman are concerned with the health of their fowls and the veterinarian can render a valuable and appreciative service in this work.

2. Deut. Tier. Woch.

AVIAN TUBERCULOSIS

I am sending a chicken for postmortem examination and diagnosis. The chicken in the flock whence this one originated seem to be healthy and eat well until the last. Over 100 have died last year and about 140 this year. The younger ones are beginning to die. They are fed oats, corn and some bran and have the range of the barn yard.—**J. A. K., Ill.**

REPLY. The chicken was killed as soon as received and the postmortem examination revealed typical miliary tuberculosis. The bacteriological examination showed many tubercule bacilli, especially from the liver specimen.

There is but one way to handle such a badly infected flock and that is to kill them all and start with new ones after clearing up the coops and other places where infection may occur.

Valuable individuals of such a flock might be given the tuberculin test with the view of conserving the non-eaters for breeding.

Veterinarians who are public spirited should grasp the opportunity offered by the war department to join the veterinary reserve corps. It is the one opportunity we shall have of showing whether there was any sincerity or not in our demands upon Congress during the past thirty-five years.

Press announcements that the death of Gwendolyn Armour, the six-year old daughter of Philip D. Armour III, of Chicago, Illinois, April 3, 1922, was caused by milk-born streptococci has been refuted by the attending physicians. Dr. Frank S. Walls, baby specialist, cast doubt on the theory that the infection originated with the milk and this opinion was confirmed by Dr. VanDerslice, who stated that the certified milk the child drank was in no way at fault and Mr. Owen W. Rollins, owner of the farm, has declared that the milk was as sanitary as ingenuity can make it. Thus another milk scare goes flooey.

Queries and Answers

PREMATURE LACTATION IN A MARE

I have a patient a good big healthy looking mare. She is due to foal about May and she has quite a large udder and is losing milk like a mare going to foal in a few days. She is in good order and feels well and gets good care. The milk runs more when she is moving, especially when she trots along on the road. It will run out in a good stream, both sides. Do you think it will make the foal weak? Your advice on this case will be much appreciated. —G. S. S., Que.

Reply: It is always a misfortune when the period of lactation begins so long ahead of parturition. So often this event presages premature delivery. It is best not to attempt either local or internal medication but see to it that the mare is given excellent care and only such exercises as will maintain a good state of health.

I doubt very much the wisdom of working such an animal in harness, and believe that overworking may be the cause of the whole trouble.

OXALIC ACID IN AZOTURIA

May I ask for information on oxalic acid? There is much said about its use in the treatment of azoturia, but I can find no literature on it.—F. L. O., Minn.

Reply by Dr. Quitman: Oxalic acid first came into repute or perhaps I should say disrepute, some years ago in a proprietory preparation under the name of "Azolysin" preconized and exploited by a veterinary practitioner as a sure cure for azoturia. It was a fake pure and simple and in spite of extensive advertisement it failed to make good.

Country azoturia cases recover on almost any treatment or in spite of treatment and it is to this fact that azolysin and other azoturia cures gain passing reputations.

When the formula of azolysin was finally made known it was seen that oxalic acid was the curative (?) agent it contained. On account of the wide publicity azolysin through advertisements, veterinary supply houses to supply a demand put oxalic acid the drug on the market in four grain tablets which was the dosage in azolysin. (The human dose, although the drug is practically never used internally, is given at from ¼ to ¾ gr. very well diluted.)

The only physiological actions accredited to the drug is that of a caustic and paralyzant to the vascular and nervous systems.

The inventor claimed to have found this drug to possess wonderful solvent, alterative and eliminant action. However, I believe he is alone in this discovery (?). Such discoveries are common in patent medicine trade.

Azolysin also contained coniine hydrochloride to control the delirium. This was the only bit of merit in the preparation.

I am sure the curative action of oxalic acid is nil.

TREATMENT OF SUPPURATIVE MASTITIS

I am having considerable trouble with mammatis in cows; their udders go on to suppuration and the cows become weak and emaciated and finally die. It seems to be very prevalent in my territory. New cases are coming up every day.

I have used hot applications to the udder for several hours and arecolin and magnesium sulphate as evacuants at the onset. Used mastitis mixed bacterins, six cubic centimeters every 24 hours until three or four doses had been given and every second and third day thereafter. I give formalin one dram, once to twice daily with nux vomica. I used poke root ointment to the affected quarters, put the udder in a suspensory and applied a flax seed meal poultice.

These cases go on and get worse. What I am earnestly praying for is some information that will help me to get better results. Can you give me help? If not, who can?—W.L.H., Indiana.

Reply: As you are having so many fatalities it is likely you are dealing with an exceptionally virulent infection, yet we are inclined to the belief that you are not making enough effort to drain out the contents of the sinus during the early stages. It is better to make

a bold incision right into the sinus rather than to allow the inflammatory process to advance beyond control. Ferguson, in lieu of lancing, recommends amputation of the teat right at its base as a drainage expediment.

BLISTER FOR DECLINING LACTATION

In case where a cow is gradually drying up in one quarter without at any time showing signs of active inflammation, is it possible to restore milk secretion partially or fully by applying a rubefacient, or a mild blister, periodically, at the same time manipulating the teat of the affected quarter, as in the act of milking. If so, at what intervals should the application be made, and what drug would prove to be more satisfactory?—E. A. S., Washington.

REPLY: The application of irritants to revive declining lactation has been practiced with good success by many veterinarians. It is very important in applying these to prevent blistering the teat and that part of the quarter immediately above it because the tenderness resulting therefrom causes pain on milking as the skin of the udder is delicate. It is seldom possible to administer but one blister, the irritation from which will require almost a month to disappear. We use cantharides ointment at the strength of one part cantharides to sixteen parts of lard.

FORMULA FOR PANTING HORSES

Some time ago I saw a formula for horses that pant in extremely hot weather in VETERINARY MEDICINE. I have either mislaid or lost the journal it was in, and would appreciate it very much if you would reprint this formula. —M. D. R., Pa.

REPLY: The following is recommended for horses that do not sweat and as a result pant, and suffer severely from the heat. Clip and give:

℞

Tr. arnicae rad.
Fldext. pilocarpi.
Spts. Aeth. nit. aa ʒ iv.

M. Sig. Give three ounces in one-half pint of water, three times daily until the skin secretion is improved. Then it may be cut down to twice daily until the secretion of sweat is fully reestablished.

In addition to the above place the patient on 2 to 6 dram doses of Fowler's solution of arsenic three times daily in the feed. Also give one to two handfuls of linseed meal mixed with each feed.

ARTICULAR TUBERCULOSIS IN PIGS

The specimen I am sending you is the hock joint of a pig that was killed for the purpose of making a diagnosis on other similar cases that occurred in this herd during the last two years. The trouble seems to be rickets but it fails to respond to any treatment for that disease that I have been able to work out. Some time ago a local laboratory found tubercle bacilli in the same kind of specimen and I am very anxious to find out if they were correct and if this is actually joint tuberculosis and just why it should take this particular form in this herd.

REPLY. We were unable to find any tubercule bacilli in the specimen, but as the lesion and the previous findings seem to indicate tuberculosis we would like very much to have other specimens. In the meantime, the source of the infection should be sought out particularly among the milk products they are receiving in their food.

FILARIA OCULI

I have a case that I would like to ask you about.

A registered mare has a white thread-like worm in the aquous humor of the left eye. Is there any instrument manufactured to remove this? Is it advisable to operate? The worm is so active that it keeps up enough inflammation to give the eye a whitish blue appearance. I should judge it is an inch and a half in length. Awaiting your reply, I am—J. W., Man.

REPLY (by Dr. Quitman)—Regarding the removal of a white thread-like worm in the aqueous humor of the eye, in a registered mare, will say that this parasite is most often the Filaria oculi and the only way to remove it is by an operation, which is a very simple one.

The eye should be thoroughly irrigated with a saturated (4%) solution of boric acid, then by slowly dropping a 4% solution of cocain on to the site of the operation, the eye should be anesthetized. Then, with a paracentesis needle or a very fine eye lancet, puncture the cornea in its most dependant part, running the instrument through the cornea in an oblique manner, being careful to avoid the iris. Then, with the exercise of a little pressure on the ball of the eye, so as to cause a forceful stream, the worm is usually carried out with the humor.

THROMBOSIS OF THE ILIAC ARTERY

Please advise me what the following described condition is: Clydesdale gelding, six year old, weight about 1,400 lbs., apparently in good health when at rest but upon exertion shows an affliction of the right rear leg. The following is the history obtained by me.

Was called in for consultation and observed that the animal walked without the slightest inconvenience, but upon a little run showed a slight lameness which increased upon continuing this exercise. We hitched him to a light cutter and drove on a gentle walk (just previous to this the lameness had subsided and started out fresh) within a half mile he showed lameness again and increased to the extent that he was compelled to stop. He was unhitched and replaced by another horse and he was led behind, this rest sufficed to take him another twenty rods and then rest, this was continued for a course of a half mile. He was placed in a stable for six hours then proceded on the journey of another two and a half miles. His first half mile was accomplished without any lameness but thereafter it became evident and increased gradually to the extent of inability to bear weight upon it. A rest of ten minutes recovered him so he could walk twenty to forty rods at a time. Towards the end he was pressed for a longer space but it resulted in such pain that he laid down in agony. A rest of thirty minutes was given on the last half mile and this sufficed to take him this distance but was exhausted. He was in a profuse perspiration.

As I said before, he is apparently in perfect health when at rest, no abnormalities of any part of the leg including the lymph glands. A history of his castration could not be had, but the spermatic stub is a little longer than the other side. I took a series of temperatures they proved normal. Eats and drinks well.

Any information as to the cause and the treatment, if any treatment of this condition, will be greatly appreciated.—H. C. L., Sask.

Reply: The Clydesdale gelding you described is affected with thrombosis of the iliac artery on the side showing the lameness. If you will make a comparative palpation of the two iliac arteries you will be able to locate the trouble.

Dissection of the Iliacs of a Horse Dead from Iliac Thrombosis

It is very likely that a case so very severely affected as the one you describe will also show some hardening and obstruction at the aortic quadrification and it is also likely that the left side is slightly affected.

The horse is incurable. Nothing will help.

LIQUID BLISTER

Would you kindly give me a formula for a blister similar to Fleming's liquid blister, and instructions for use?—J. H. B., Wisconsin.

Reply: The best liquid blister that we have ever used for general horse practice and which will meet about every requirement, consists of:

Tincture of iodin, 1 ounce;

Powdered cantharides, 1 dram;

Denatured ethylic alcohol, sufficient to make one pint.

This combination, while showing a little sediment of cantharides, may be made weak or strong by the mere changing of the iodin and cantharides content, and we think answers every purpose.

The directions are shake and apply every day until the part is well blistered. The alcohol should not be denatured with methylated spirits, because the latter even in small quantities is incompatable with iodin.

INDIGESTION IN SHEEP—BACTERINS WRONGLY BLAMED

A client recently purchased a carload of feeding lambs that came from Montana. They were unloaded at a place west of Chicago and put on dry feed for about a week. They were then shipped from there to Michigan, arriving here the evening of November 5th, all in good condition. They were driven about a mile, put into a modern sheep barn and given a feed of clover hay.

On November 7th, I administered to each one of the lambs (328 all told) a dose of hemorrhagic septicemia vaccine for immunization, this disease having appeared on this farm in the fall of 1919 with a loss of about 50 head in a flock of 400 animals. Since then, the barn has been thoroughly cleaned and disinfected.

On November 9th, a few of these lambs were noticed to be scouring, and on November 11th, when I saw them, nearly all of them were scouring badly and were a discouraging looking mess, gaunt, humped up and a listless expression. Only a few have refused to eat. On taking the temperature I found that it varied from 103° F. to 104.5° F. The feces passed are a thin dark-colored fluid, no odor. Some of them strain so hard that they bleat in the act. Respirations normal and not any discharge from eyes or nose.

No fatalities have occurred to date and the owner is not willing to sacrifice one for post-mortem examination.

They were being fed third cutting alfalfa hay mixed with clover and about 100 pounds of oats twice daily and have access to good, clean water at all times. The owner declares that the bacterins are at fault and I am at sea to know to just what source to lay the blame.

A flock of natives in other side of barn and the breeding ewes receiving the same quality of feed appear to be all right.

If you can help me out in the cause and suggest a way of handling the situation, I will be very thankful.—F. M. M., Michigan.

REPLY: We are of the opinion that the trouble with your lambs is due to the change of feed.

Lambs coming to the North Central States from the west very often suffer from very severe digestive troubles after eating their first few feeds of clover. The fall clover pasture has been particularly harmful.

There is nothing you describe about this disease that could incriminate the bacterins. If this herd is kept on very low diet, given access to plenty of fresh water, they will recover, with very little loss.

Bad cases that bloat might be isolated in separate pens and given some form of antacid or intestinal antiseptic treatment.

MULE NEEDS NO DOCTOR; TREATS SELF

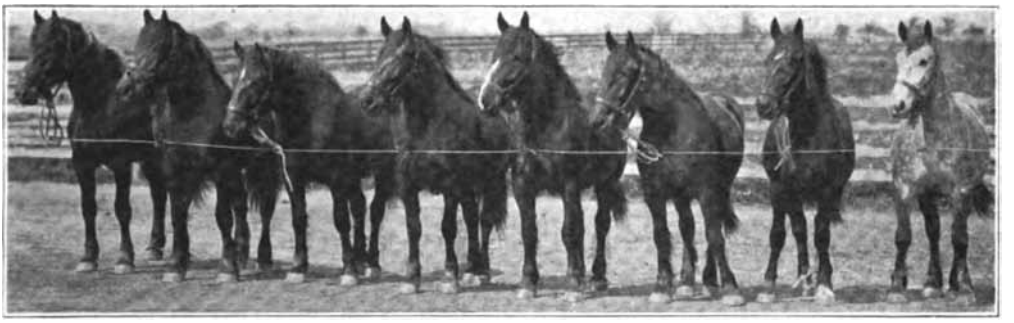
Subject: 14-16 years old mule, 1200 pounds, long haired, belonging to a turpentine distilling company. Due to business depression this mule was leased for its food to a tie contractor and farmer last November. One Saturday night the mule, with the others, was turned out after work hours in a field to save a barrel of corn and a couple of bales of hay. Sunday morning it was found slightly ailing, which was attributed to a few chenopodium leaves, which were thrown over the fence for some hogs, which this particular mule was seen to eat.

In passing by, I was called. The symptoms were temperature, pulse, and breathing normal, peristalsis very weak, conjunctiva not congested, no rolling, lying easy, bringing head to left side once in a while.

Diagnosis: Impaction. Treatment: One quart light lard and a pill of nux vomica, about 60 grs. I promised to return if the mule was reported no better. In 25 minutes mule got up, shook itself and began to eat. The next afternoon the teamster noticed a mass of worms, which, when shoveled into a peck measure, filled it more than half full of ascarids. Am, of course, unaware whether chenopodium was 100 per cent effective or not as no further treatment was desired, but there was a decided change for the better in the mule's condition in about three or four weeks. The amount of green chenopodium tops and seed eaten must have been at least five to six quarts.—Anon.

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE



Courtesy of Professor J. L. Edmonds, Univ. of Ill.

The farmer who would sell his horses and invest the returns in a tractor and tractor-drawn implements would have little left in five years, while the one who kept them would have a power unit of precious animals and a surplus to sell at a good price.

Infectious Alopecia

By Dr. Herbert S. Perley, Hanover, N. H.

ON July 6th, 1921, was called to treat a black gelding seven years old, weighing 1200 lbs. He had been shipped from the West three years ago and had never been sick since reaching this part of the world. History was not very complete. Owner said that the animal was not sick and was doing the required work (farm work) well enough, but seemed dull and although eating well, was losing flesh. The examination showed swelling of left hind leg, and enlargement of the sheath. The pulse was normal and the temperature 101°. I gave a purgative and advised light feed. Two days later I found both rear ankles swollen with no swelling above the fetlock and sheath twice normal size. At the end of each hair of the coronary band was a drop of bright yellow liquid the size of a pinhead. This liquid was also found on the hairs around the left nostril, giving the impression that the nostril was discharging, which was not the case. I was informed that the purgative had operated. The pulse remained normal. The animal was getting exercise and was eating everything put before him. I gave sodium cacodylate. The next day the swelling of legs had extended as far up as the hocks and sheath swelling was enlarging. The temperature and pulse had not changed and appetite was good.

I now began to dig for history and found that the animal had never sweated even on the hottest days but had never had sunstroke or heat prostration. The hay in the mows was almost gone and what there was left was of very poor quality and three or four years old. My diagnosis now was uremia from arrested sudation and overtaxed kidneys. I observed at this time that there was quite a quantity of dandruff and that on rubbing the neck and ribs, it fell off in a shower. There was also some ventral swelling. The gait was stiff but the animal had no difficulty in getting up or down and could step about without difficulty.

The hair was beginning to fall off around the coronary band and the yellow exudate on the hair extended up the legs to the fetlock. The bowels were working nicely and the feces were soft and normal in color and odor. I advised that animal be allowed to run loose where it could get grass instead of hay and that a cooked bran mash be fed once a day. The animal was groomed twice a day to encourage skin action and sodium cacodylate continued. Two days later the hind legs were very much

enlarged to the body and the swelling on the abdomen was two inches thick with abrupt borders. The nostrils and lips were swollen, and the appetite as good as ever. The temperature was 101° and pulse normal but a little weak. The kidneys had been secreting a normal amount of urine, and continued to do so. I gave a heart tonic and adrenalin. In twenty-four hours the swellings had all increased in size, that on the abdomen being three inches thick and extending forward to the chest and down the fore legs. The temperature was 101.5° and pulse stronger. The animal still ate well and moved about, was very stiff and was still able to get up and down without aid. I told the owner that I did not know what I was dealing with and offered to call another veterinarian in consultation. This he did not care to do, so I dropped the matter. On the next day the animal was worse, the swellings were larger and for the first time, the animal was depressed and showed signs of collapse.

As I now considered the case hopeless, took another veterinarian to see the case. He was unable to diagnose the trouble or to advise any further treatment. Twelve hours after this visit the animal was down and showing signs of pain. Half an hour after going down there was not a hair left on him except the mane and tail and they would come out at the slightest touch.

Every particle of swelling had disappeared also. I tried to quiet the animal with lobelin sulphate and morphin, as the owner did not want to destroy him. The above had no effect so I resorted to a big dose of chloral hydrate administered with a stomach tube. This quieted him and he passed off easily six hours after going down.

Of course I thought up some wonderful theories to explain the almost instantaneous disappearance of the swellings and the falling out of the hair, also what I would find postmortem, which was made about six hours after death.

Autopsy: The entire skin was without hair and looked similar to that of a hairless Mexican dog. It was smooth and tough. The immense swellings of legs, abdomen and chest were gone. There was no sign of the dandruff that had been present in large amount up to the time of death. No tympanitis and no discharge from nose, mouth, nostrils, ears, anus or sheath. Internal organs appeared normal with the following exceptions: Kidneys slightly inflamed and enlarged. Iliac lymphatic glands very much enlarged and hyperemic. All other lymphatics normal. Lungs and heart normal. No fluid in either thoracic or abdominal cavities. No abscesses. I cut through the skin in twenty or more places, head, neck, legs, back, etc., and at each incision found the muscular tissue of a pinkish tinge, closely resembling bob veal and filled with gas. On making the incision the gas would bubble out of the muscular tissue. I cut down to the femur and humerus and the same condition existed all the way to the bone. Along the spine at different places, cervical, dorsal, lumbar, etc., the same condition was noted.

I may add that after going down and appearing in pain, the temperature rose to 104° F., and the brain became involved. I am not going to advance any theories of my own, but would like to have this case reported in VETERINARY MEDICINE. Was this botulism?

Comment: There is no part of the symptom complex of this case that would justify even a suspicion that the B. botulinus was the responsible agent.

Perley, on the contrary, graphically describes a typical case of infectious alopecia, a rare enough entity, but nevertheless occasionally encountered in an equine practice. In several cases we have seen, we have been able to isolate a microbacillus that gained entrance through the hair follicles. The disease usually begins at several different places in the body simultaneously and gradually advances in every direction until the whole body is affected, unless the process is arrested by very energetic treatment.

If the parts of this animal's body first showing indications of seborrhoea had been clipped, scrubbed thoroughly with a strong mercuric chloride solution and then briskly annointed with mercurial ointment the process may have been arrested or at least kept under control.

A Colleague Asks

10. When a cow eats 60 pounds of corn and is sick and can't get up, what drug will remove the cause?

11. What drug will physic the corn from the rumen?

12. Why do they infect healthy animals with germs that make them sick?

13. If diseases are contagious where did the animals first contract them?

RECOVERY OF A VERY ACUTE CASE OF TETANUS IN A MARE

Pure-bred registered Percheron mare, weight 1850 pounds, December 20 stepped on a nail and developed a case of acute tetanus in seven days. The prognosis was reserved. I treated the wound with tincture of iodin and phenol, equal parts daily. She received during 21 days 86,000 units of tetanus antitoxin. She made a nice recovery as shown in the photograph herein enclosed.

Escondido, Calif. J. H. Hogan, M. D. V.

Comment: In the April number of the Bulletin de la Societe de Medicine Veterinaire, Barlette reports two interesting cases of equine tetanus that was cured with intra-

Fig. 1. A Case of Very Acute Tetanus

muscular injections of antitoxic serum. The one infected through a poll-evil was treated from the very onset of the symptom. It was given 21 doses of serum of ten cubic centimeters each in the masseter and cervical muscles, together with hypodermic injections of pilocarpin and some diruetics. The cure

Fig. 2. Recovery Complete

was complete in 17 days. The other was a mule that was cured in 15 days with 20 doses, four per day. Barlette insists that intramuscular injections into the masseters has an influence on the trismus and that this method of delivery should be the one of choice.

CHRONIC GASTRITIS

A curative measure of the highest importance in treating chronic gastritis in the small animal is the "Skim Milk Cure."

This consists in the exclusive use of milk for food until the stomach is free from materials of fermentation and has had sufficient rest to recover, a period of time determined by the cessation of the symptom for which it was prescribed. During this time nothing whatever should be given the animal, except a laxative to relieve the constipation, or medicine for other purposes; but no medicine should be given during the course of the milk cure unless imperatively demanded.

Dr. Oscar Schreck.

New Haven, Conn.

FOOT ROT IN SHEEP

In muddy weather in the spring often comes foot rot in sheep, which may be either the sporadic type or the genuine lip-and-leg ulceration, due to the bacillus necrophorus. When the latter is suspected or diagnosed, of course, a report should be made to the federal authorities.

A formula which has given good satisfaction in general foot rot is the following:

Acidum arsenosum — lb. vi.
Potassii bicarbonas — lb. ix.

Boil these together in 20 gallons water until dissolved, stirring thoroughly. This usually takes from 15 to 25 minutes. Then add 80 gallons warm water, and mix well. Drive the animals through this solution, which should be kept about lukewarm. The depth should be regulated to the extent of the lesions.

In small bands, in addition to the above treatment, one can resort to drastic surgery, and paint pure Balsam Peru (without or with one per cent silver nitrate) over the sores; this will often keep the claws and even the whole hoof from dropping off.

If at all possible, disinfection of the corrals with lime and sulphur, coal tar dips or a weak solution of copper sulphate. However, "aseptic precautions" are slightly out of place in a band of 3,500 or more ranging over an area larger than Rhode Island.

Moscow, Idaho. E. T. Baker.

Lowe Spays a Pregnant Bitch

Dr. John Payne Lowe reported a case where he spayed a bitch and on opening the abdomen found that there were several small embryoes in the horns. He removed the ovaries, but did not disturb the horns, and since then the

owner has informed him that he has noticed nothing abnormal about the dog since the operation. It, of course, leaves the question unsettled, whether he aborted or the embryoes have become mummified.

FATALITIES AFTER DEHORNING

During the past couple of weeks I have had a peculiar case or occurrence. It has to do with sweet clover ensilage, which is becoming more in use as a fodder for animals throughout different parts of the country. This case might be of interest to veterinarians as well as to stock owners.

On December 22nd I was called to dehorn five yearlings which were in good condition. These animals had been fed on sweet clover ensilage, straw and some hay. There were other animals in the herd without horns.

At 2:30 p. m. I arrived at the farm, and, having no difficulty, I removed the horns from the five with clippers by 3 o'clock. As the animals were dehorned, they were turned loose in the yard. Out of the five there were only two horns spurting blood when I returned home. The weather being mild, my instructions were to leave the animals outside until the bleeding ceased.

The animals were stabled in a large box stall at 5:30. Upon examination by the owner, after partaking of his evening meal at 6:45, he found one lying dead and another unable to rise. The remaining three walked outside again apparently as well as ever.

After having learned what had taken place, I returned to the farm, and to the one unable to rise I administered alcohol, sulphuric ether and fluid extract of nux vomica, blanketed and propped up on sternum.

Having finished with this one for the time being, we examined the three outside and found the largest one unable to rise, so we drew it in on a drag. The remaining two walked in, but immediately lay down, and in twenty minutes all three were dead. At 9:30 p. m. they all got stimulants except the last one.

The symptoms were similar in all four. In the other one, in addition to the symptoms shown by the four, were cerebral symptoms. He would raise his head and go over backwards or shove against a corner. After a spell he would fall and lay quiet for a minute or two. This animal took about six of these spasms before dying. The other four seemed distressed more than in pain. They were very weak, pulse about 140 and weak, temperature slightly below normal, unable to hold head up or lay upon sternum unless propped. I did not hold a post mortem examination, but on severing the carotid artery after the heart ceased to beat, about a pint of blood came away which was very dark.

I would like to hear through Veterinary Medicine from anyone who has had similar experiences or from anyone who can account for the change which took place to cause death.

My own solution is, silage—especially sweet clover silage—is very acid in reaction. The absorption of this acid solution from the alimentary canal to replace the lost blood has changed the blood from a normally alkaline reaction to an acid reaction which, I understand, means almost sure death.

The animal with cerebral symptoms might be accounted for by loss of blood from that organ or from a thrombus caused by action of acids on protoplasm, etc., of blood.

Could any other treatment have been used with success? Had I, when I first arrived, injected an alkaline solution intravenously, would there have been a chance of saving some?

I think anyone about to dehorn or perform any operation entailing the loss of considerable blood on animals being fed on sweet clover ensilage would be well advised to have the animals' diet changed for a couple of days preceding or administer large doses of bicarbonate of soda or some such alkaline solution.

I hope this will be of sufficient interest to appear in the Journal.—F. R. P., Ontario.

UNKNOWN DISEASE KILLS MANY EWES IN KENTUCKY

For the third consecutive season, an unusual condition again is developing among sheep in the State and causing the death of from six to eight per cent of the animals in different flocks, according to a report from the Kentucky Agricultural Experiment Station where studies are being made to determine the nature of the trouble and the best methods of controlling it. Observations made indicate that the condition occurs during February and March and is confined to ewes in advanced pregnancy. It is said to be fatal to practically 100 per cent of the animals that become sick.

Early symptoms of the disease are sluggishness and a tendency to lie down. Infected animals get up with difficulty, walk with a staggering gait and often with the head held to one side. As the disease advances, mus-

cular twitching may set in and the animal stands with its head pressed against some object. Animals showing symptoms of the disease grit their teeth, gradually lose their appetite, become blind and breathe laboriously. The temperature remains normal. Before death, the animals become prostrate and move their feet while lying on their sides.

While a number of investigations have been made on the disease, veterinarians at the station have been unable to find infectuous organisms connected with it, attempts to transmit the disease to other sheep have been unsuccessful and no growth has been recorded on culture media inoculated from the blood and tissues of sick animals. In several cases, sick sheep were given an injection of Botulinus antitoxin in an effort to determine the relation of the disease to forage poisoning but in no case has the animal been benefited by the injection.

Preventive measures being recommended by the station veterinarians suggest that pregnant ewes be given good care with as much variety of feed stuff as possible and that laxatives, such as salts or oil, be used freely. Exercise for the animals also is recommended. Agr. Ext., Ky.

AN OPINION OF TURPENTINE

If all the numerous medicinal agents and even the modern panaceas for all ills, the biological products, were taken from us we need not dispair as long as the pine tree grows and from the sap Turpentine can be distilled.

Turpentine is not a new remedy but is fortunately a cheap one, which paradoxically as it may sound, is I believe one of the reasons why it is not more universally used.

A Very Old Remedy

Ancient physicians were well acquainted with the medicinal properties of turpentine and used it in a great many other diseases besides those for which it is prescribed by the modern practitioner.

In one of the old veterinary works published in London in 1737 the author, Henry Boutken, M. D., expressed his opinion of turpentine as follows: "There is no one thing in nature but turpentine, that is endowed with such sovereign virtues in respect to healing of outward as well as inward wounds and ulcers and other systemic complaints and I make no doubts of the possibility of so managing the matter that by judicious use at proper times, that an animal body may be made proof against detrimental external influences as well."

Externally

Applied to the unbroken skin, turpentine acts as a violent irritant, causing heat, redness, vesication and even ulceration if used repeatedly, but properly and scientifically handled, it is a valuable stimulant and counter irritant.

Internally

Internally administered in medicinal doses, it is a stimulant antispasmodic and anthelmintic acting on the vaso-motor sympathetic system.

In being eliminated from the body, it acts on the particular excretory channel, expelling it. In large doses it is, therefore, a cathartic and in smaller doses a diuretic and diaphoretic.

In horses turpentine is serviceable in indigestion and overloading of the stomach, especially when accompanied by flatulence and even in some cases of diarrhoea, owing to its stimulant, antiseptic and invigorating effects on the mucous and muscular coats of the intestines. It is a prompt antispasmodic in colic, and in purpura it is one of the best remedies, stimulating the heart, bracing the dilated weakened vessels, and exerting haemestatic and antiseptic properties.

Its stimulant, antiseptic, diuretic and diaphoretic actions renders it useful in rheumatism of all animals in which it can be used both externally and internally.

Therapy

In cattle practice full and repeated doses are valuable in hoven, and in chronic diarrhoea and dysentery the animal is often benefitted by a few doses combined with aromatics. With iron salts it will check haematuria.

As an anthelmentic, turpentine should be given after the bowels have been emptied by a cathartic and with a laxative, usually linseed oil is the most available.

It is one of the best, if not the best remedies known for removing bronchial filiria in calves when given in proper solution by the mouth.

A few drops of a solution made with one part of turpentine and eight of milk placed in the mouth kill the gap parasites of poultry. A dressing of one part of turpentine and two of olive oil sprinkled outside the throat of chickens is partly absorbed and helps the destruction of the parasites.

In conclusion there is only one organ in the whole animal economy where turpentine cannot be used with benefit and that is the eye.

—Henning.

PERIODIC OPTHALMIA

(Continued from page 218)

hours from inoculation, when a cloudiness appears at the surface spreading to the whole tube, with late development of a surface film. Gelatine not liquified, milk not changed in reaction and not coagulated. On potato no growth for two weeks after which time a meagre whitish colony will form. No gas production in saccharose, lactose or dextrose broth, while nitrates are reduced to ammonia with no nitrite appearing. Indol production slight. Optimum temperature 33-34° C, with a minimum at 30° C. Pathogenicity: pathogenic for the horse when injected in the aqueous chamber. Non pathogenic for rabbit either by subcutaneous, intravenous or intraocular inoculation. Spore formation could not be demonstrated.

That the injection of non-infective material into the anterior chamber is without effect is shown by the innocuous and repeated transfers made during the course of the present investigation from the eye of one horse to the eye of another. General anesthesia was adopted in

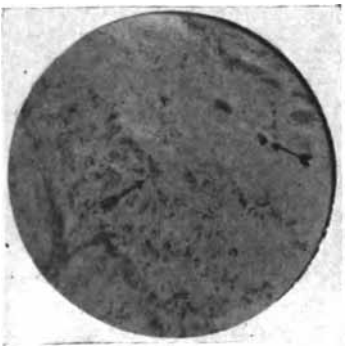


Fig. 11. Dumps of Bacteria in Optic Nerve

these investigations in order to minimize undue trauma in the attempt to immobilize the eye ball during inoculation. In addition it was occasionally found necessary to adopt a slight local anesthesia to insure the immobility of the membrane nictitans.

On November 15, 1920, and old sound horse received 0.5cc of a suspension of a six-day-old culture of bacillus A in bouillon, in the anterior chamber of the left eye after removal of the aqueous. No apparent change was noticed during the 24 hours following inoculation, the temperature remaining normal, but after 12 hours there appeared an abundant purulent discharge, a complete clouding of the aqueous while the lids and conjunctiva because distinctly swollen and edematous. The temperature was still normal but the general appearance of the animal was below normal. Abundant lachrimation accompanied a purulent discharge. Two or three days after inoculation the general systemic symptoms subsided and the animal slowly returned to a higher level of vitality. The purulent discharge subsided somewhat fourteen days after inoculation together with the conjuntivitis. The corneo-sclerotic juncture retained nevertheless the highly congested appearance it had acquired earlier, the acqueous retained its cloudiness and so continued until January 13th, when it was found necessary to dispose of the animal due to the fact that it could no more use its molars in the process of mastication: old age.

Autopsy showed the cornea to be apparently normal to macroscopic examination the lens transparent connected to the ciliary by an intact suspensory ligament. The other structures of the eye were also found apparently normal. Samples taken aseptically from the aqueous and cultured in bouillon yielded the organism inoculated although the inoculation of this recovered form in the acqueous of another normal horse failed to reproduce the typical symptoms.

A second horse, inoculated February 24, 1921, with 0.5 cc. of a suspension of the same organism in sterile saline (case 7) showed in fifteen hours after inoculation a distinct congestion with distinct turbidity of the aqueous Lachrimation soon ensued and a strong turbidity of the aqueous made the lens invisible. The animal behaved normally, and retained an opaque aqueous up to March 20, 1921, when a clearing was incipient. The opacity slowly settled to the lower side of the anterior chamber, forming a crescent shaped deposit acquiring a yellowish tinge and on March 27 the aqueous has acquired its normal transparency. A recurrence of the pathological condition was nevertheless visible again on April 6, when an abundant lachrimation ensued and the acqueous became distinctly opaque for two or three days when it slowly regained its normal appearance. The animal was then allowed to run to pasture and showed no more pathologic symptoms for six months.

(To be continued in June issue.)

Matters of Current Interest

(Continued from page 212)

and all products containing the health giving and growing elements of milk.

In Philadelphia one group of school children picked at random was found to average 13 pounds underweight. After a month of propaganda these same children gained nearly a thousand pounds. These propaganda have brought out the ugly fact that in spite of our great food resources, we are actually an under nourished people. As proof of this we only need refer to the 700,000 physically unfit men drafted for military service in 1917 and 1918. During the same period the consumption of milk changed in Philadelphia from 14,000,000 in 1918 to 17,000,000 in 1921 in spite of the hard times that prevailed during the latter year and the unprecedented good times with which all were blessed during the former.

Milk Consumption Too Low

These investigations show that the average milk consumption per capita is only a little more than a half pint per day when it should by right reach a quart per day. They show also that milk is as necessary as food for adults as it is for children, and also the deplorable fact that 28% of school children consume no milk at all, when in fact it is little less than criminal to deny the growing child the advantage of a proper ration.

While a great deal of good has already been done in this connection, both in regard to the physical welfare of the people and to the development of sound agriculture, the tremendous field for betterment of every mortal of the nation is just beginning to be opened up.

Where Does the Veterinarian Stand?

Where is the veterinarian arrayed in this nation-wide endeavor to help the people, animal husbandry and agriculture? The veterinary practitioner is on the right side or at least means to be found there, but he is put in the ignoble position of appearing to be on the other side by reason of the fact that he has allowed the veterinary profession to be branded as hostile to these uplifting movements. With the public health service everywhere recommending a greater consumption of milk for the good of the people, and the large agricultural interests preaching the same gospel to strengthen one of the nation's big industry, the veterinary profession with its mere handful of members, by its unwise, selfish propaganda is very rapidly making itself a nuisance others feel must be curbed, eliminated or at least made as impotent as the situation justifies. It is little less than ridiculous (silly is the better word) for us to draw swords against such big uplifting enterprises when in fact the motive is but a thin-veiled design of a few political job holders who by reason of their access to big audiences inflicted much harm not only to the agricultural interests but to all of the people by scaring consumers away from the milk products they have needed for normal development.

The same few who, right from the beginning of the tuberculosis scare, have seen fit to exaggerate proven facts now find it necessary to juggle with distorted statistics to keep themselves in the limelight at the expense of harmony between the veterinary practitioners and the live stock interests, and all without even a shadow of solicitation from anyone. It is all truly a shining example of throwing the proverbial monkey wrench into a smooth running machine—agriculture—by a profession from which a different attitude is expected.

Dr. M. E. Elzinga, who was elected president of the Western Michigan Veterinary Medical Ass'n, for the ensuing year, died suddenly at his residence, January 21. Dr. Elzinga was 47 years old, was born in Michigan, and had practiced in Grand Rapids for 22 years. He graduated from the Detroit Veterinary College in 1896 and has been a very active worker in association and promotional work among his colleagues. His loss is one that will be keenly felt, not only by his host of friends but by everyone who appreciates the worthiness of men who are loyal workers for the cause of practicing veterinarians.

Dr. M. J. Roimpe has located in Scotia, Nebraska, to which place he moved from North Luke, Nebraska.

THE REGULAR MONTHLY MEETING OF THE NEW YORK CITY VETERINARY ASSOCIATION

The regular monthly meeting of this Association was held in the College building on Wednesday, March 1st. It was one of the best meetings of this old Association that has been held in many a day, several visitors being present.

The speaker of the evening was Dr. D. C. Kimball of the University of Pennsylvania; his subject being pneumonia. He stated that he would speak principally on pneumonia in horses. Speaking of classification, he reviewed the various names and types that the human pathologist differentiates. He cited McFadyean's resume of the microscopical lesions found in the lungs of a horse affected with pneumonia, showing that we have the various types all manifest at the same time. Consequently, there is but one form pathologically.

Etiology

Dr. Kimball believes that all cases are due to infection.

Diagnosis

The clinician is greatly handicapped in cases of pneumonia, due to the fact that the apices are so often the parts of the lung that are most severely affected and out of the area of examination.

Treatment

Treatment resolves itself largely into good hygiene, plenty of fresh air, clean surroundings, and a dry stable, good nursing and mild stimulation. Mustard, he believes, is useful in all stages due to the fact that an affected lung really has areas of all stages. He reported the history of twenty hospital cases, a chart which was kept showing the marked effect in reducing temperature by the application of a liberal coating of mustard on the chest walls, the mustard being made into a thin paste with cold water. Speaking of tapping the chest, experience leads him to believe that it is a good safe treatment and not as dangerous as has been formerly supposed.

Many entered into the discussion. Dr. George Berns commended Dr. Kimball's address and agreed with him as to the value of counter irritation. Dr. Bern's experience has been that cases of simple pneumonia usually do well, but that complicated cases do not. He believes auscultation of much value, but percussion of little value.

Major Jewell Advocates Bacterins

Major Jewell was present as a visitor and cited some of his experience in treating pneumonia in the army. Intravenous injections of saline solution, injecting about a quart daily, gave splendid results in some cases, but he wished to impress the necessity of prophylaxis in handling horses in great numbers. He believes bacterins are of value if they can be given before the horse's resistence is lowered by shipping. After horses are gathered in numbers sanitation is the important factor.

Mustard No Good Says McKinney

Dr. W. J. McKinney told of a case of double pneumonia where counter irritants were used on the right side and not on the left, the horse being destroyed on the second day. The right lung showed the most severe lesion, indicating that mustard had been of no value or possibly harmful. Tapping has not been successful for him.

Gannett Likes Hygiene Best

Dr. R. W. Gannett believes early detection of lung infection and putting the case in the proper surroundings are important steps. President McKellar agrees very strongly with this view. Dr. C. W. Shaw gets most of his cases late. He relies upon stimulants, bacterins and sanitation. Bacterins in his hands have proved of much value.

Intraspinal Delivery of Antitetanic Serum

Dr. Charles Higgins spoke of his experiences in Canada in 1914 at the outbreak of war. All horses were given bacterins just as soon as they were purchased, using a streptococcic bacterin. This method kept the loss down very low. If serum is used it should be used early and in large quantities. In the human they use as much as 300 cc. as an initial injection, using it on the same principle as in treating tetanus.

Dr. Higgins told of the way Dr. Fowler of Canada treats his tetanus cases by injecting great quantities into the spinal canal. Unless enough serum is used to neutralize the toxins already present favorable results will not follow.

Clayton Likes the Old Nomenclature

Dr. O. E. McKim believes that pneumonias, as is the case with every disease, are due to tissue reaction. Influenza was mentioned by several of the speakers and Dr. C. E. Clayton stated that he questioned if we have influenza; that it is rather a blanket term. He believes a better name is epizootic cellulitis.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

FOR SALE

PRACTICE FOR SALE—Splendid location, complete equipment, will sell at reasonable price on account of failing health. Income between $350.00 to $400.00 per month. Practice principally bovine and canine. Will sell on an inventory of the equipment. Address Dr. A. R. Andrews, 720 S. Commercial St., Salem, Oregon.

FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

FOR SALE—We have some extra bound volumes of VETERINARY MEDICINE, 1914 and 1915, which we will sell at $4.00 per volume while they last. Address VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

FOR SALE—Practically New Simplicity Equine Operating Table, Style S, upholstered. Also Ajax Stocks, complete with dental halter. Price, $225.00 f. o. b. The Plains, Va. Original cost, $355.00. Going out of business. Address Dr. R. Vickers, The Plains, Va.

Iowa veterinary practice for sale. Small investment. Practice runs from $4,500 to $6,000 year. One best locations in state. Only graduate veterinarian in town. Good town. Full particulars address—2998, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

POSITIONS, LOCATIONS, ETC.

15 practices for sale in West and Middle West—incomes range from $3,000 to $11,000 a year—some very cheap. Address No. 675, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

ASSISTANT WANTED—In large equine city practice—able graduate with practical experience; good opportunity for right man. State past experience and salary expected. Address No. 676, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

WANTED—I have a good opening for a competent veterinarian who is not afraid to work. Apply to S. E. Hershey, Box 283, Charleston, W. Va.

WANTED—Graduate Veterinarian with several years experience wishes position as assistant with prospects of an interest. Address No. 677, care of VETERINARY MEDICINE.

WANTED—To buy established veterinary hospital preferably in the northeast states or in the eastern states or an established veterinary practice. Will pay cash. Address No. 674, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

WANTED—Graduate veterinarian with several years experience wishes position as assistant. Address No. 673, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

POSITION WANTED—With a hog serum plant by experienced pathologist and bacteriologist. Will furnish microscopic equipment. Well qualified and experienced. Address No. 679, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago.

MISCELLANEOUS

"QUICK COLLECTIONS" — Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

PRINTING

BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

DeVine's Hypothesis

Dr. J. F. DeVine believes that the general febrile conditions that are spoken of as catarrhal fever, influenza, etc., are in reality a septicemia unless they localize. Then they become more of a specific ailment such as pneumonia and enteritis. He believes also that the organisms causing these specific ailments depend upon symbiosis; septicemic conditions lowering the resistence of the animal allowing the more specific organisms such as the streptococci to produce pneumonia. We see this in the so called complicated cases of influenzas in horses which later develop into pneumonia and pleurisy. A striking illustration of it in cattle is stock yard pneumonia as well as the so called mixed infections in swine. It is common knowledge that before we had mixed infection bacterins that stock yard pneumonia always meant a high mortality, in the animals affected, and the spread of the disease in stables where they were brought in. Bacterial treatment has reduced the mortality in the affected animals so noticeably that no one that has had any experience with this disease would differ with this statement. It almost never spreads further in a stable if vaccination is promptly instituted.

Pyometra in a Bitch, by Dr. Blair

Under case report Dr. Reid Blair exhibited the uterus, tubes, and ovaries of an old English sheep bitch. She had been used as a show animal and later it was desired to breed her. She was bred several times unsuccessfully, when she developed pyometra which was about three years ago. She was treated with bacterins and apparently recovered; was bred again and supposed to be in whelp. She suddenly died and it was found that one of the Fallopian tubes had ruptured close to the ovary. The uterus was greatly distended with pus as were also the two oviducts. Dr. Blair had at one of the previous meeting called attention to the danger of diagnosing pyometra for pregnancy. This was a typical demonstration.

Message of Good Will from Veterinary Medicine

Mr. I. C. Brenner of Veterinary Medicine, Chicago, was present and was asked by the Chair to "say something." Brenner, who is "always there," complimented the society on its long history and the noted men that have taken part in the Association work for years. He expressed a wish that steps be taken to prepare a history of the veterinary profession of New York City. Mr. Brenner's wish was

favorably received and probably some day we shall have a history of the birth-place of the veterinary profession in America.

Dinsmore Not Asleep

A communication was read by Wayne Dinsmore, Secretary of the Horse Association in America, in reference to an article that has appeared in the New York City newspapers advocating the abolition of the horse on the Island of Manhattan by 1925. Dr. A. Silkman stated that we have seventy-five thousand horses in greater New York as against one hundred fifteen thousand in 1914.

CONFERENCE OF VETERINARIANS AT THE UNIVERSITY OF PENNSYLVANIA

On February 28 and March 1 a very interesting conference of Veterinarians was held at the School of Veterinary Medicine of the University of Pennsylvania. There were about 175 Veterinarians in attendance, largely from Pennsylvania, but many from New York, New Jersey, Delaware, Maryland, the District of Columbia, and Ohio. The program provided for the presentation of many phases of the problems connected with the swine and cattle industry by recognized authorities. The speakers covered their subjects in a masterly manner and the great interest of the audience was manifested by the lively discussions which followed.

Schroeber on Abortion Disease

On the opening day, Dr. E. C. Schroeber, of the U. S. Bureau of Animal Industry, delivered a paper entitled "The Present Status of Vaccination Against Abortion Disease of Cattle." He emphasized the necessity for more knowledge of the nature of the abortion bacillus before the subject can be lifted out of the experimental state in which it now is. He also said that tremendous doses of living cultures were necessary in attempting immunization; that an animal so treated would possibly be a spreader; and that there is no reason to believe that dead suspensions of the organism have any immunizing value. Dr. Schroeder told of his study of twenty-four (24) samples (representing five different firms) of anti-abortion vaccines obtained on the market. Of these:

15 contained only bacteria identified as the Bang bacillus.

2 contained other bacteria and the Bang bacillus.

7 contained many other bacteria and a spore.

His conclusions were that 44% of these samples were of doubtful value and 79% were not only doubtful but worthless and dangerous.

Udder Diseases, by Turner

Following this well discussed paper, Dr. John P. Turner of Washington, D. C., gave a very practical paper on "Experience in Practice with Udder Troubles." Dr. Turner covered the subject thoroughly, giving sound, practical advice on the handling of every possible disease of the udder. He emphasized the importance of preventing mastitis and advocated a large, clean, disinfected maternity stall for parturient animals; cutting off the hanging fetal membranes and eliminating sucking calves when the teats are sore. He questioned the presence of contagious mastitis in this country, most cases being sporadic.

Diagnosis of Pregnancy, by Boyd

In the afternoon session, Dr. W. L. Boyd of the University of Minnesota talked on "The Diagnosis of Pregnancy in Cows," and paved the way for the subject of sterility which he discussed the next day. He does not lay so much stress on the pulsation in the uterine arteries in diagnosing pregnancy as on the mucous plug in the cervix, the corpus luteum and the changes in the uterus. Ballottement is not possible before seven to seven and one-half months, according to Dr. Boyd, who also said that in heifers accidentally bred or if for other reasons it is desirable to terminate pregnancy, it may be accomplished at about the second month by expressing the corpus luteum, after which abortion will follow in about three days.

Sound Advice on White Scours

A paper on "Hygiene and Sanitation in the Care of Young Animals" was presented by Dr. E. S. Deubler of Penhurst Farms, Narberth, Pa. He spoke particularly of handling white scours and told how he had kept his calves free from its ravages by building maternity stalls with tight partitions to the ceiling and disinfecting the same after each calving with formaldehyde gas. He also urged the necessity of keeping heifers away from abortion infection for six months before breeding and until after parturition.

Evening Session

In the evening the conference was delightfully entertained, first by Dr. Edward Lodholz, professor of veterinary physiology at the Uni-

versity of Pennsylvania, on "Physiology of the Fetus." Following this entertaining lecture a smoker was given by the Alumni Society of the school.

Lecture on Bovine Sterility (Illustrated)

The second day's program started with a lantern slide talk by Dr. Boyd on "The Pathology of Bovine Sterility." He explained thoroughly the slides which covered every conceivable pathological condition related to the subject. Later, Dr. Boyd gave a practical demonstration of examining and treating sterility on five cases provided for the purpose. He handled the subject in a convincing manner, answering innumerable questions to the satisfaction of all. In discussing this subject, Dr. W. H. Ridge, Pennsylvania Bureau of Animal Industry, gave an interesting talk on prevention. He believes that the douching of all cows with a one and one-half per cent solution of Lugol's iodin from one week to ten days after calving is not injurious but beneficial, and submitted charts of the breeding records of three herds of several hundred animals which he had been treating in this manner for four years, and the proof seemed conclusive that sterility had been reduced to a minimum.

Adhered Placenta by a New Jersey Colleague

Dr. George W. Grim, of Plainsboro, N. J., read a paper on "Treatment of Retained Placenta in the Cow." His experience covered 107 cases. Many different methods were reported with the results attending. The conclusion seemed to be that the membranes should be removed as soon as they can be readily separated from the cotyledons. In a number of cases he took them away in twenty-four hours with satisfactory results.

Following Dr. Niles' interesting and instructive talk, Dr. H. H. Havner of State College, Pennsylvania, spoke on "The Swine Industry in Pennsylvania. He explained how the State College Extension Department is developing the swine industry in Pennsylvania and pointed out the difference in the status of this industry in Pennsylvania and Iowa, showing that improvement must be accomplished by community effort, because rarely does one farmer have enough sows to warrant the purchase of a high-class pure-bred boar.

Numerous feeding trials which had been conducted in various parts of the state were explained and he showed that farmers who had marketed their corn through their hogs had received twice the market price for it.

It is regrettable that space does not permit the reporting of the valuable and instructive discussions which followed the papers. The conference was considered a great success by the many who attended.

Praises the Veterinary School

Acting-Provost Dr. J. H. Penniman gave the attending veterinarians a very cordial welcome and spoke in a most appreciative manner of the work they are doing and the importance of it. He referred in very flattering terms to the veterinary school of the University of Pennsylvania and to the fact that the university is proud of its scientific achievements.

Hassall Awarded Steel Memorial Medal

Dr. Albert Hassall of the Zoological Division of the Bureau of Animal Industry has recently been notified that the Steel Memorial Medal for 1921 has been awarded to him by the Council of the Royal College of Veterinary Surgeons. This medal is awarded at intervals of three years on the recommendation of the Honors and Prizes Committee as an award for scientific or literary work of merit in connection with the veterinary profession.

Dr. Hassall has been in the Bureau of Animal Industry for the last thirty-five years, and in the course of that time in addition to publishing numerous papers on parasitology, has built up an Index Catalogue of Medical and Veterinary Zoology which is the most complete work of the sort in existence. The author's catalogue was published as a joint work of Dr. Ch. Wardell Stiles and Dr. Hassall as Bureau of Animal Industry Bulletin 39, and the subject catalogues covering the cestodes, trematodes and nematodes have been published by these authors as bulletins of the Hygienic Laboratory, U. S. Public Health Service. These publications constitute very valuable reference works which are in great demand both in this country and abroad by zoologists, veterinarians and physicians.

Dr. Gauss has moved from Marshall, Michigan, to Homer, Michigan, where he will continue practice.

Dr. L. A. Ruff, of Marshall, Michigan, spent the winter in Florida, for a well earned vacation.

Dr. J. S. Koen, of Bloomington, Ill., made a hurried trip to Kansas City recently.

OLD COWS MADE FRISKY BY PIG GLAND PROCESS

Harrisburg, Pa., Thursday.—The principle employed in monkey glands for rejuvenation has been used with success in experiments on cows, it was announced by officials of the State Bureau of Animal Industry. Eleven dairy cows which had become grandmothers many times were made young and frisky by a serum extracted from glands of sows, the statement said. The old cows were given the serum in capsules and did not develop any traits of pigs.

They were reported by observers to have become useful again.

Dr. F. A. McLean, an officer of the Veterinary Corps during the world war, is now a practitioner at Griggsville, Illinois.

The state veterinarians' convention of Idaho, will be held at Boise City, May 10, 1922, with Dr. J. V. Adams, Director of the Bureau of Animal Industry, as the presiding officer.

Dr. W. A. Bisbee has been appointed keeper of the Brookside Park Zoo, of Cleveland, Ohio, with a salary of $1,500 a year.

Dr. Ray W. Hughes, of Berthold, N. Dakota, has moved to Frazee, Minnesota, to escape the tyranny of seven successive years of crop failures, he says, that occurred at his former location.

Dr. L. L. Lowenberg purchased the practice of Dr. J. C. Johansen of Northwood, Iowa, and has moved with his family to the new location.

Dr. W. H. H. Miller, Director of Public Registration and Education, and Dr. N. O. Bourque, were indicted by the Cook County, Illinois, grand jury for alleged irregularities in connection with the issuance of licenses by that board. The veterinary board itself is not under suspicion as the alleged irregularities are said to have been committed after the examiners' reports are turned in.

Dr. F. A. Laird, state veterinarian of Illinois, has issued from his office copies of a Municipal Milk Regulation that according to the attorney-general's opinion will stand the test of constitutionality for the information of villages and cities that desire to enact such regulations.

Dr. M. J. Roimpe has located in Scotia, Nebraska, to which place he moved from North Luke, Nebraska.

Dr. J. W. Murdock, formerly in practice at Denison, Iowa, has entered the B. A. I. service and is stationed at Omaha, Nebr.

Dr. W. R. Barnard of Belleville, Kans., is a breeder of Hampshire swine. He reports several cases of abortion in swine in his community.

Dr. J. F. Hemphill of Clay Center, Kans., has an extensive swine practice. He was recently called to treat 2000 swine in which necrotic enteritis had caused extensive losses.

Dr. B. F. Mills of Denison, Iowa, is fast recuperating from a serious attack of appendicitis. The doctor was operated upon by the Mayos at Rochester, Minn.

Dr. J. C. Bowman of Hebron, Nebr., was called to Cottonwood Falls, Kans., recently because of the death of his mother. Veterinary Medicine extends sympathy to the doctor and family.

Dr. O. O. Wolf of Ottawa, Kans., represented the Kansas Live Stock Association at the hearing of the Mistletoe Yards at the Live Stock Exchange in Kansas City during the latter part of March.

Dr. C. R. Diller, Formerly of Marshalltown, Iowa, where he conducted a general practice for several years, recently moved to Mercedes, Tex., where he is interested in practice and real estate business.

Dr. A. Eichhorn has been appointed an honorary commissioner of the U. S. Department of Agriculture. His duties will include the investigation of conditions of the Live Stock industry of Great Britain, France, Belgium, Germany, Hungary, Austria, Italy, Spain, and other European countries.

Dr. Latimer, of Springfield, Minnesota, makes a specialty of hogs and chickens and makes no complaint that practice is not good.

Dr. H. W. Lyle, state veterinarian of Oregon, reports that the tuberculosis indemnity appropriation of that state for 1922 has been exhausted.

Drs. Dennison and Burgess, of Grand Forks, North Dakota, are constructing a new veteri-

nary hospital in that city. It will be 64x100 and will be used as a sales barn as well as a veterinary hospital.

Dr. S. E. Hershey, of Charleston, West Virginia, has recently moved into a brand new veterinary hospital equipped for attention to all species of domesticated animals. It has ten single stalls, three box stalls, operating room with table and stocks, and kennels for 24 dogs, six for cats, and two for isolation. Photographs of this splendid establishment will be reproduced in a coming issue.

Dr. H. Paul Gray, formerly of New York, has opened up a practice at Woodstock, Illinois.

Dr. E. F. Lowery, president of the Hawkeye Veterinary Association of Central Illinois, addressed 200 farmers at Sycamore, in March, on Farm Sanitation and the Prevention of Swine Diseases.

Dr. J. R. Hockenbury, formerly of Renwick, Iowa, a graduate of the St. Joseph Veterinary College, is now engaged in practice at Metmora, Illinois.

Dr. R. Gillies, inspector in charge of the Bureau of Animal Industry in St. Joseph, Mo. addressed the Contract Club of that city on the importance of Eradicating Tuberculosis from Cattle.

Dr. J. F. DeVine of Goshen, N. Y., was one of the principal speakers at the Southeastern States Veterinary Medical Association at Nashville, Tenn. He also conducted an interesting clinic in which he demonstrated the proper technique for overcoming sterility in cows.

Dr. W. G. Gregory of Ft. Worth, Texas, recently made a business trip to Kansas City and St. Joseph, Mo. The Doctor reports business good in Texas and said there were many good locations for practitioners in the Lone Star State.

Dr. F. F. Brown, one of the best known practitioners in Kansas City, Mo., recently submitted to an operation, and will be confined to the hospital for three or four weeks. All join in wishing him a speedy and complete recovery.

Dr. J. C. Green, formerly of Redfield, Kansas, is now in general practice at Bronson, Kans.

Dr. F. F. Fischer, a practitioner of Bosworth, Mo., recently accepted a position with the B. A. I.

Dr. J. L. Hearn, of Texarkana, found time between calls to make a hurried trip to Kansas City recently.

Dr. Louis F. Heydecker is now located at Recluse, Wyo., where he is in general practice and manager of a homestead.

Dr. Laird, State Veterinarian, recently stated that the Illinois farmers were losing from 30 to 40 per cent of their spring pig crop from abortion.

Mr. Ehle, father of Dr. A. M. Ehle of Oak Grove, Mo., died on March 17th. Burial was in the Mt. Washington Cemetery, Kansas City, Mo.

Dr. J. I. Gibson, former State Veterinarian of Iowa, is now Live Stock Commissioner of the Live Stock Exchange of St. Joseph, Mo.

Dr. Wm. Osterholtz of Shelby, Iowa, has been having considerable experience with swine abortion. He reports excessive losses from this disease in that community.

Dr. Arthur Graves, who has been in B. A. I. service since 1917 resigned on March 15th. The Doctor expects to do some general practice from his farm on Route 1, Harrisonville, Mo.

Dr. J. C. Flynn, small animal practitioner of Kansas City, attended the Illmo Veterinary Medical Association in East St. Louis on March 15th. The Doctor also investigated the small animal clinic facilities for the annual meeting of the A. V. M. A.

Dr. Geo. N. Russell of Lawrence, Kansas, was in Kansas City on March 7th to purchase a Ford to replace one that had burned. He reports the prevalence of abortion in swine in that territory.

Dr. George Paul, Renville, Minnesota, has moved to Melrose, Minnesota, to continue practice.

In order to increase the efficiency of its veterinary department Ohio has districted the state into twenty districts, with a view of assigning one assistant state veterinarian to each district. This movement is said to be taken in the interest of economy and rapidity of progress in the work.

Dr. John William T. Stewart, of Franklin, Illinois, died at his home in that city, Tuesday, March 14. He was born in 1851 and had been a practicing veterinarian for more than 30 years. He is survived by a widow, three daughters and one son.

Dr. J. I. Gibson, who has recently been appointed as veterinarian for the Live Stock Exchange, of St. Joseph, Missouri, is attacking his job with a vim that characterizes the man, using the propaganda of the United States Dept. of Agriculture in his field work among the farmers.

Dr. Mark White, of Chicago, who is a brother of Dr. George R. White, state veterinarian of Tennessee, was united in marriage to Mrs. Pauline Porter-Meuirheah also of Chicago.

Dr. J. C. Johansen, formerly of Northwood, Iowa, has moved to Ruskin, Nebraska, where he will open an office for general practice.

Dr. Mark Larkin, of East St. Louis, Illinois, was shot and instantly killed by Dr. J. D. Hawkins, whom he had attacked with homicidal intent, and who was immediately exonerated by a coroner's jury.

The Michigan State Board of Veterinary Examiners have issued through the public press a warning to all persons not to engage in the practice of veterinary medicine and surgery, unlawfully, drawing attention to the fact that violation of the veterinary practice act is a misdemeanor and punishable by fine or imprisonment.

Dr. R. W. Langstaff, of Colfax, Illinois, is a recent appointee to the position of assistant state veterinarian of Illinois.

Dr. J. H. Lynch, of Fonda, Iowa, addressed the Northwestern Iowa Veterinary Medical Association, March 23, on the subject of Co-operation, bringing out his view about the need of re-organizing the American Veterinary Medical Association.

TENTATIVE PROGRAM FOR 1922 MEETING OF A. V. M. A., ST. LOUIS, MO.

Monday, August 28, Opening and General Session.

Monday evening, President's reception.

Tuesday morning, August 29th, Section meetings.

Tuesday afternoon, General Session and Election of Officers.

Tuesday evening there will be a Smoker and Round Table at the Planters Hotel, with entertainment.

Wednesday, August 30th, and Thursday, August 31st, there will be clinics both for large and small animals at East St. Louis. The large animal clinic will be in charge of Dr. H. E. Kingman with Dr. S. L. Stewart as assistant. Dr. J. C. Flynn will have charge of the Canine and Feline Clinic. At the Clinics a definite program is being arranged and each part well carried out on a definite time.

On Thursday evening there will be sectional meetings and on Friday, September 1st, general sessions.

It is probable that the Sections on Sanitary Science and Police and Education and Research will have programs at St. Louis, while the clinics are being held at East St. Louis, so that those who are not interested in the clinics will have an opportunity of attending interesting Sectional meetings.—N. S. Mayo, Secretary.

(Concluded from Page 224)

1st. Building up immunity by bacterins, beginning as soon as the animal has calved. (Bacterial treatment today has been so improved as to be almost a specific.)

2nd. Keeping down putrifaction.

In our own practice we rely upon plenty of hot douching early and so mechanically cleanse the uterus as much as we can. This is to be followed by some mild non-irritating agent to control putrifaction (the less weight the better) such as boric acid, iodoform and thymol.

Others prefer other methods. But let them be what they may, the aim should be to get dead material, that acts as a medium for the development of the secondary invaders, out of the uterus as quickly as possible, without injury to the mucosa or opening of blood vessels and applying such agents to the membranes as will keep down putrifaction and still not injure the lining of the uterus. If the principle is carried out, the technique is probably the least important.

(Continued from Page 238)

Some have started to carry out the plan, but after they have a herd of good pigs they get tired of hauling water, and have made the mistake of permitting the pigs to go back to the dirty old hog lot for water and thus undo the good they have done. I want to emphasize the point that if you are going to adopt this plan of sanitation, carry it through until the pigs are at least four or five months of age before you think of letting them go back to the dirty old hog lot.

The motion pictures we are going to show are merely a reproduction of the work that has been done in McLean County, and it might have been done somewhere else, but it was done in McLean County because they asked us to come and they were willing to co-operate with us in our experimental work.

Viability of Eggs Not Destroyed by Freezing

Gentlemen, one question has been asked me about the effects of freezing on the eggs. I might say I have taken the eggs and placed them in a freezer at two to sixteen degrees below zero and held them there for forty days; then took them out, put them in the proper medium, and they went ahead and developed active embryos inside; so cold weather hasn't much effect on them.

Incubation

I have also been asked how long it takes the eggs to develop to the infective stage. I might say it depends on the temperature. At a temperature around seventy with proper oxygen supply and moisture you will have active embryos inside the eggshell at the end of three weeks. If the temperature is a little lower than seventy, they will not develop so fast. Around seventy-five to ninety degrees is a mighty good temperature for development and you will get plenty of active embryos.

Dr. Miller: I would like to know how long these eggs are capable of living in case they are not picked up. Have you determined that?

Dr. Raffensperger: I have not determined that in soil. I have kept them in a formaldehyde solution two years and they were still living. We have records where they were kept five years.

Dr. Miller: How much heat does it take to kill the larvae?

Dr. Raffensperger: Just roughly, around eighty Centigrade for half a minute will do the job.

Dr. Miller: What effect does drying have?

Dr. Raffensperger: They will stand a great deal of desiccation. You do not get real desiccation in the pasture or manure pile or dirty hog lots. After keeping them in a dry condition in the incubator at a temperature of twenty-three to twenty-five degrees Centigrade for thirty days, and then adding moisture, I obtained no cleavage.

Dr. Kinsley: How large are the larvae?

Dr. Raffensperger: When they first come out of the shell they are 0.2 to 0.3 millimeter in length; that is, about one-fourth of a millimeter, and when they pass out of the lungs they are one to 2.5 millimeters; commonly 1.5 millimeters.

DR. R. W. HICKMAN, QUARANTINE CHIEF, RETIRES

Washington, D. C., March 31.—Dr. R. W. Hickman, chief of the Quarantine Division, Bureau of Animal Industry, retired from active Federal service today. For the last 34 years he had performed varied inspection and administrative duties in behalf of the live-stock industry. Dr. Hickman took an active part in the complete eradication, from the United States, of pleuropneumonia, a serious contagious disease affecting cattle. Following that work he organized the inspection at Chicago, of cattle for export. He has also served on committees instrumental in placing the work of veterinary colleges on a high plane of instruction and equipment.

Though a pharmacist, graduate veterinarian and a specialist in veterinary education, Dr. Hickman is best known to the public for his services in administering the Federal quarantine which prevents the introduction of animal diseases from abroad. He has drafted or revised most of the requirements regarding the export and import movement of live stock and is the author of important contributions to veterinary literature.

Owing to his activity and vigor, Dr. Hickman's retirement under the age clause of the Federal retirement act was a surprise to many of his associates. Dr. G. W. Pope, recently assistant, has been designated as acting chief of the Division.

(Press Service, U. S. Department of Agriculture.)

Meeting Pennsylvania State Veterinary Medical Association

The Pennsylvania State Veterinary Medical Association held its 1922 meeting at Harrisburg, January 24th and 25th. The week of January 23d is known as Agricultural Week in Pennsylvania, and the Penna. State Vet. Med. Assn., being one of the Allied Agricultural Associations, holds its meetings at the same time that the other Allied Organizations are holding their meetings.

Holding our meetings at the same time that the other Organizations are in session, has a distinct advantage of bringing the practitioners of Pennsylvania into close contact with the live stock owners, and gives the stock owners an opportunity to see that the Veterinarians are well organized and a representative group of men who are taking their proper places in agricultural activities.

Pennsylvania meetings are very well attended. Our usual place of meeting would have accommodated our own number, but the attendance had been increased to such an extent by live stock men, that this year the committee of arrangements secured the Hall of the House of Representatives, in the Capitol Building, for the Veterinary Medical Association. This Hall was filled to capacity on the second day of our meeting.

The programme, as published in former issues of the journals, was carried out to its entirity. Papers of every day interest to practitioners were presented by practitioners, and every section of the State was represented. This was made possible by inviting the officers of each Veterinary Club in this State to designate one man to present a paper at the State Meeting and two men to discuss their fellow-member's paper. Any success that the meeting may have attained is due to the good co-operation of the men appearing on the programme.

It has been the practice of our Association to publish the proceedings of our Annual Meetings and it is hoped that means will be divised whereby the 1922 proceedings may be published. If this is not accomplished, in a single publication, it may be found possible to publish the papers through other channels.

Election of Officers resulted as follows:

President, E. E. Bittles, Waterford; Recording Secretary, C. S. Rockwell, Philadelphia; Vice-Presidents, H. B. Roshon, Reading, B. M. Beattie, Chambersburg, M. A. Davis, Troy; Treasurer, Thomas Kelly, Philadelphia; Corresponding Secretary, R. M. Staley, Philadelphia; Trustees, John W. Adams, Chairman, Philadelphia; H. E. Bender, Litiz; L. A. Kline Philadelphia; John Turner, Wellsboro.

R. M. Staley, Sec'y.

JUNE
1922

VETERINARY MEDICINE

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VOL. XVII **No. 6**

HEAT CASES

ARE COMING

Use

Camphosol

Read what one of the many satisfied veterinarians has to say:

Dear Doctor:

Last July 1st, I used nothing but CAMPHOSOL subcutaneously on a 1400 lb. horse suffering severely from heat stroke. In 1 hour he was up and went to work the following day.

On the same date I had a Boston terrier that was overcome by the heat, being wild and delirious. He was given a small dose of CAMPHOSOL and in 10 minutes he was quiet and rested easily throughout the night. The next morning he was all right.

On August 24th I was called to see a Scotch collie that was also suffering from heat stroke and was wild and delirious. I also gave him nothing but CAMPHOSOL and he recovered just as satisfactorily and quickly as the other dog.

I notice one good feature of your CAMPHOSOL is that it quiets that delirium which we so often meet in heat cases. This is no doubt due to the circulation and respiration being restored to normal so nicely by CAMPHOSOL.

O. F. R., D. V. M.—Nebraska.

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Veterinary Medicine

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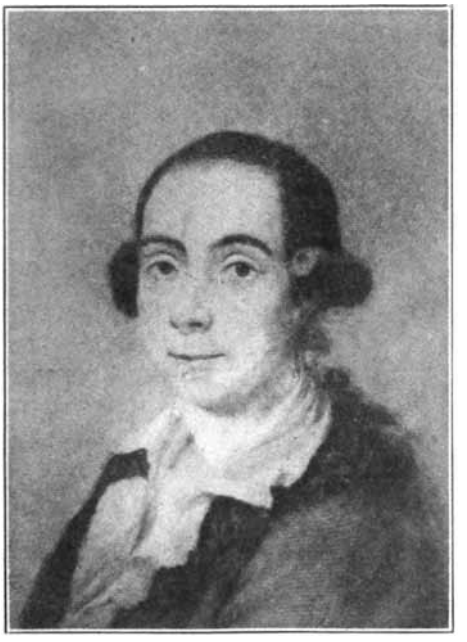
Editorial

FOUNDER OF VETERINARY EDUCATION IN AUSTRIA

It has often happened in the history of the world that the man who preconises a thought is later entirely screen into obscurity by the achievements of those who exploit it. This is particularly the case in veterinary history. We have too often praised the man of material achievement and have left unsung the name of he who has made the achievement possible. It is with this idea in mind that we introduce another pioneer of veterinary education to our readers, who will recall Bourgelat (January, 1922) who founded veterinary education, and Vial (February, 1922) who carried the first message into England. We now retrace our steps into the interior of Continental Europe where the seeds of Teutonic veterinary education were implanted and which developed into the great schools of the Central Empire. As fast as authentic biographic sketches can be obtained the thread will be carried through the years into the present day events.



John Gottleib Wolstein
1738-1820

Born March 14, 1738, in Finsberg in Silesia; died in Altona July 3, 1820. He studied medicine and surgery in Vienna and practiced surgery there for nine years. On the recommendation of Brambilla, the Imperial Surgeon, as well as by Field Marshall Laszy he was sent to Alfort where he studied under Bourgelat and Chabert. In 1772 and 1773 he was closely associated with Lafosse in Paris which was of a great advantage to him. In 1773 he went to London, Denmark, Mecklenburg and Holland. In 1775 in Jena he received the degree in medicine and surgery. 1777 Vienna already had a veterinary hospital rected by Scotti. Wolstein opened the same as a veterinary school for the purpose of educating there military veterinarians and farriors. In 1795 he was exiled from Austria, probably on account of his free thoughts or possibly also because he was a Protestant and he moved to Altona where he died at the age of 82. Wolstein was the founder of scientific veterinary medicine and published the following works:

Umbilical and Naval Hernias (1784); Diseases of Colts (1787); Injuries of Horses by Weapons (1788); Phlebotomy (1791); Infectious Diseases of Cattle, Sheep, Cattle Plagues (1789); tc. (1791, 1800, 1808); Wound Treatment of Animals (1784); Maintaining of Army Horses in Winter Quarters (1793); Horse Plague (1805); The Development of Glanders (1807) and Breeding of Animals (1814). Finally a revision of the work of Max Fugger on "The Management of Studs" which he published under the title of "The Breeding of Army and Other Horses." Many of the publications of Wolstein were translated into French, Italian, Russian and the Swedish language. His publication on "Conformation, Recognition of Age, Color, etc., of the Horse" has been published on two occasions without his knowledge.

PROPORTION OF EOSINOPHILES IN THE BLOOD OF BOVIDAE

By L. Panisset and G. Havet

Excerpted for Veterinary Medicine by H. Simonnet, Paris

All authors agree that eosinophilia reflects a pathological condition and particularly that an excessive number of acidophiles characterizes the existence of parasites in the individual.

The determination of eosinophilia is not possible unless the average percentage of eosinophiles is known. The hematological researches in this connection (Jolly, Sacquepee, Bezancon, Courmont, Naegeli) for human beings give the average percentage as 2.5% to 3%.

As regards the blood of the different species of domestic animals, Marek in a classical work gives the following percentages of acidophiles: Horses, 2% to 4%; asses, 10%; bovidae, 1% to 2%; swine, 2% to 4% and dogs, 2% to 2.5%.

Aside from the ass whose percentage is very high it will be noticed that the blood of the other species approaches that of man.

However, in seeking to determine the leucocytic formula of bovidae we were struck by the entirely different results from those given by Marek in regards to the proportions of acidophiles.

We have examined a large number of specimens from bovine adults (cows of the breed Breton) and found that in none of these was the percentage less than 5.4% of eosinophiles. The averages we determined were as follows: 5.4%, 6.5%, 6.9%, 8.5%, 9.8%, 9.9%, 10%, 10.5%, 11%, 11.1%, 12.9%, 13%, 13.5%, 14.4%, and 18.6%.

They differ not only with the animals but also with the series of preparations examined for each animal. With blood obtained at the same time, exposed on different plates, an entirely different number of eosinophiles can be found for each hundred leucocytes; for example from 5.4% to 13.5%.

The general percentage, after assembling the results obtained in bovidae, was 11.7%.

The preparations were always fixed with alcohol-ether and stained with the same method (panoptic of Pappenheim).

In view of eliminating the possibility of parasitic infestation the excrements were examined at least of several of the subjects and sero-precipitation tests were made with the liquid of hydatid cysts.

The bovidae examined were in good health and condition and were kept at the laboratory for a long time. Some had never been sick and others had long since recovered from foot and mouth disease. One was in the period of lactation. Two of them affected with chronic enteritis and actinomycosis respectively did not show leucocytic formulae that were much different from those of healthy animals.

Our findings were so discordant with those usually accepted as we increased our examinations that we searched the literature on the subject and found that Dimmock and Thompson (American Veterinary Review, Vol. XXX, No. 5) in examining the normal blood of bovidae arrived at similar results. These authors found the following figures: Average, 13.5%; extremes, 3.89% to 26.5%.

In calves we found the percentage much lower than in adults, noting the following results: 0.8%, 1.02%, 2.5% and 6.5%. It has seemed to us that in these young animals, the percentage is the function of age.

Our results show that in bovidae 10 to 15 eosinophiles or 100 leucocytes does not indicate parasitism or any other conditions capable of producing eosinophilia, because this percentage is normal. But the high proportion is only in adults. In calves it is lower, scarcely exceeding 1% to 2%. (Ext. Comptes Rendus de la Societe Biologie, Feb. 1922.)

PITUITIN IN BOVINE OBSTETRICS

By Prof. G. Moussu, Alfort, France

Pituitin or extract hypophysis is the name given to extract of the pituitary glands. The manufacturers of organotherapeutic products make it from pituitary glands gathered en masse in the large abottoirs. On account of the difference in the various commercial brands the dosage and potency is unforunately still faulty, and make the estimation of results veritably difficult. Comparative dosage can only be given of each particular brand.

It is, however, well known that pituitin acts on the renal function, activating diuresis; and on the gravid uterus, provoking contractions. The experimental researches conducted in human obstetrics show that subcutaneous injections of pituitin render a real service under the restricted condition of not being utilized except in certain determined phases of parturition. As it produces an engergetic and prolonged action on the musculature of the uterus its employment should be exclusively reserved for the "expulsion stage" when the cervix is totally dilated, the fetus normally presented and the expulsive efforts are absent or feeble.

The use of pituitin, on the contrary, is prohibited in all cases where the preparation for normal delivery is not complete and perfect, for the reason that it can cause incidents and even accidents through non-dilation or insufficient dilation of the cervix; through tetanization of the uterus over the fetus; and through causing futile violent contractions and thus complicating labor with very intense labor pains.

It does not appear, a priori at least, that pituitin can render as much service in veterinary as in human obstetrics because the former is more often hindered by parturient straining than by complete absence of contractions. But as pituitin acts on the musculature of the uterus it might be well to inquire whether its subcutaneous administration would not be justified in certain cases of non-delivery in cows.

It is perhaps one way of provoking a prompt involution of a passive inert uterus, wherein as a consequence of adhered fetal membrances, it shows no tendency of doing so.

One condition seems to impose itself: That of withholding the drug as long as the cervix is not completely dilated, until the day of parturition or the two or three days following when there is some assurance as to the state of the uterine orifice. When later than this the orifice is still contracted the contraindication is even more formal because there is then great danger of imprisoning the mass to be expelled in the uterus.

It seems this is a study to be undertaken, pursued and specified. I have had no cases of non-delivery here that would have enabled me to make the test but believe that this could be done in practice.

—Recueil de Medicine Veterinaire.

THE CARDINAL PITFALL OF STERILITY WORK

The cardinal pitfall of sterility work in cows is that of mistaking a pregnant cow for a sterile one. There is the danger also of pronouncing a non-pregnant cow sterile and then live to see her conceive and give birth to a healthy calf. Experts make few of these errors, yet all of them may sometimes make them. If some have thus far succeeded in avoiding these pitfalls they may fall into one in the future.

The man who does not make any mistakes at all is indeed a rare diagnostician no matter in what particular branch of medicine he may be engaged. Medicine is a tricky occupation because of its erratic complexity, of which we are reminded by a letter requesting us to publish under the caption, "Farmer Succeeds where Specialist Fails," the story of a Holstein cow of fabulous value that was pronounced hopelessly sterile only to give birth, first to a slink caused by the diagnostic maneuvers and then ten months later to a normal calf. The diagnostician in this case is given as a demonstrator of methods of treating abortion disease and sterility employed as an official of one of the large commonwealths. The cow is owned, it is said, by one of the largest breeders of Holstein-Friesians in America. The farmer in question is the father of the butcher to whom the cow was sent to be slaughtered, but who advised the owner to wait for his father's opinion before slaughtering her. This was done with the results that the veterinarian, theretofore so certain of his infallibility, brought suspicion not only upon himself and the position he holds, but also upon the whole veterinary profession. The moral is "Watch your step."

OFFICERS' MOUNTS, U. S. ARMY
General Pershing and Staff at the head of his Army at the Fetes de la Victoire on the Champs Elysee, July 14, 1919

Editors' Personal Page

A journal that vacillates with every breeze, shudders at every wind and side-steps every passing storm can't help you much.

Do you get everything out of Veterinary Medicine that goes into it? We would like to feel that you do and that the journal plays a role in your daily life.

A veterinary journal, like a newspaper, can not rise above the level of its patrons. Its standards are set by its readers and its mail is the barometer of its popularity.

We are devoting too much of our energies to the matter of buying supplies and too little to the study of their use.

When time-honored customs so change that the medical profession can prevent the sale of quinine over the counter where malaria exists, the veterinary profession may then hope to control the sale of hog cholera serum in the corn belt.

We believe the only way veterinary practice can continue to live, thrive and hold respect is by retrieving the idea that success is a matter of education and experience and not simply one of purchasing supplies. If our only hope were to be found in keeping drugs out of the hands of laymen, as many are being led to believe, we might just as well sing requiem now and not prolong the agony.

Agents known or reputed to possess great merit in the treatment of man or animals always find their way to the counters where he who has the price may buy. The professional man stakes his destiny and stubbornly pins his faith upon his ability to use them more intelligently than the non-medical person. The time and energy devoted to restricting distribution might better be devoted to the study of scientific and skillful application. At least, we should not be so short-sighted as to let any other impression grow into the mind of the public.

Dorland says it's pronounced vit-am'-in.—S. H.

A subscriber writes: "It seems to me that veterinary practice as a vocation is being allowed to drift from lack of leadership. Or, is it being unconsciously led astray by unsympathetic interests? There seems to be no one on the job defending the practitioner's position."

Already in 1886—thirty-six years ago—Robert Koch, in writing at length on the etiology of tuberculosis, stated that steps taken against the disease must be carefully considered for fear of prejudicing the advantages gained. The advice was so well taken that it has needed no change.

It has been well stated "The state of unrest in the medical profession largely due to public service and the healing cults can be overcome by service." This statement is quite applicable to the veterinary profession.

Veterinarians in large cities, especially New York and Chicago, report business exceptionally good. Those whose practices are confined chiefly to horses are actually amazed at the prosperity they are enjoying.

When the veterinarian treated animals with drugs and prescriptions he compounded himself in his own pharmacy, the mystery surrounding therapeutics was too deep for the layman to fathom, but since all these "ines," "ols" and biologics have crept in and were unwisely accepted as specifics, the outsider has become more and more determined to use them himself to save the expense of the professional fee. A return to the old order is not insisted upon, but it does seem important just now to accept the special chemicals, the special compounds and the special biologics as purely pharmacal conveniences as they always were intended to be accepted, both by the honest manufacturer and the educated practitioner.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

A New Operation for Hernia, Particularly Umbilical Hernia of All Animals

By J. R. Zecha, D. V. M., Elmwood, Kansas

DEFINITION. An operation for exomphalocele by means of special sutures, designed to replace clamps and ligatures.

The operation is a substitute for clamps and has advantages over all of the other methods for this condition. It has the appearance of a real surgical procedure and always leaves a good impression on the client. Compared with blisters, clamps, caustics, skewers and even ligatures it is more refined. When years ago I practiced as an empiric I found that ranchmen practiced them all. It was nothing novel to find one fired, one blistered, another ligated and still others clamped by the owners. I once found a case the ranchman had treated by transfixing the sac with a finishing nail and then strangulating it with a piece of baling wire. Another case of more than usual interest was that of a calf that a ranchman had ligated in such a manner as to close up the sheath and entirely block the passage of urine. The suture method described below is never imitated by these ambitious men.

It is also superior to the more popular Derr operation because it does not pucker up the skin adjacent to the base of the sac and there are no protruding ends of skewers or clamp to catch on objects while sloughing off.

Indications. It is well known that there is a tendency of all umbilical hernia to recover spontaneously through the natural provisions to close up the navel aperture, yet when the opening is large and there are already intestines in the sac I advise immediate intervention instead of waiting to see what will happen. This course is justified by the fact that prostination makes the operation more difficult and always more dangerous. The fact that it is always good advice to attempt to help nature holds particularly good in the case of umbilical hernias.

Restraint. The kind of restraint that is best, differs somewhat with the size of the animal. A young colt or calf can be held by two assistants or it can be secured with ropes. Larger animals must be cast and properly secured with ropes or harness the same as for castrations. Shoats and other small animals are best secured on the canine operating table or simplar contraption. Local anesthesia is helpful and of course more humane.

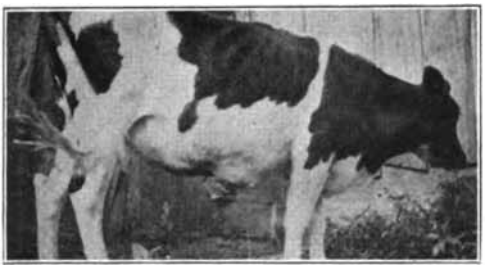
Instruments. Scissors, clippers, large curved needle, suturing material, antiseptic solution and two towels. The curved scissors will answer in lieu of clippers and heavy wrapping twine is the best suture. Silk seems to absorb too rapidly.

Type of Erstwhile Incurable Hernia

Technique: 1st step. Mark the field by snipping a pinch of hair at the extreme anterior and at the extreme posterior end of the sac and also at the apex while the patient is still in the standing position. Cast the patient and roll into the dorsal position, clip the hair and disinfect the area and then place the towels on each side of the sac to prevent the needle and suture from becoming soiled while suturing.

2nd Step. The sutures resemble a succession of matress sutures placed in such a manner as

to include all of the tissue along its whole route, and are made without rethreading the needle. Thread the needle and be sure there is enough material to complete the operation. Thread it so that one strand is two inches longer than the other. Reduce the hernia and draw the sac together at the base as much as possible in the longitudinal direction. Start suturing at either end and keep along the line between the marks made while the animal was standing. Pass the needle through from right to left and draw the thread through to a point near to the short end of the suture. Take this short end and tie it as an interrupted suture to the same strand on the other side around the end of the sac. Cut this strand at the knot and thread it to the needle so that its end will be two inches longer than the other strand. This will prevent it from being drawn through in making the next stitch. Draw the sac together at the base again and



"Tying Off" Such a Growth Before Ablation Makes the Operation Bloodless

pass the needle through from left to right until the uncut thread tightens. Pull on the end protruding from the right side to locate the proper strand and tie as a matress suture. Cut the tied end and rethread the needle so as to leave the cut end two inches longer again, and repeat by passing the needle through from right to left. Continue this process until the other end of the sac is reached.

If the hernia is a large one the sutures should not be drawn too tight because they may slough off too soon.

After Care. Little or none is required, but the parts may be examined from time to time for complications. After the sac sloughs off a healing powder is prescribed. When the sac tissues become putrid or fly-blown, preservative agents are applied. For this creolin, formalin and boric acid may be used.

Sequelae. Recurrences are rare although like all similar operations they do occassionally occur. I have had one case of tetanus due purely to improper disinfection in very unsanitary quarters.

Results. I have used this operation to the exclusion of all others in a pretty extensive practice with only one failure requiring a second operation. I have resorted to it in colts, calves, pigs and dogs, with one death in a colt from tetanus and one in a calf from septicemia.

Discussion of the Operation before the Kansas State Veterinary Medical Association

The following questions were asked the author during the discussion of the paper which was given publicity for the first time at the annual meeting of that association, January, 1922:

What would be the result if one of the sutures would break prematurely?

The author's reply: It would prevent the sloughing of the portion involved forming a sort of peduncle that can either be ligated or simply twisted off.

Why not soak the suture material with tincture of iodin and paint the area with it to prevent infection?

The author's reply: Iodin weakens suture material. The idea is to assure a suturing that will hold until sloughing occurs.

What success have you had in umbilical hernia of male shoats?

The author's reply: The operation is not indicated in male pigs or any other males where it would implicate the sheath area. It is likewise contra-indicated in pigs that are too fat around the hernia sac.

Comment: Too much credit can not be given the author for having preconized an entirely unique and very practical method of tying off tissues en masse in certain surgical operations, a feature which to us is a most valuable achievement, not only for handling the redundant skin of certain hernias but also in many other operations. Tumours of the mammae bitches and sows can thus be tied off before cutting off the growth. In the latter group of cases it will only be necessary to draw the loops tight enough to prevent blood vessels from slipping above them when the growth is removed and thus become the cause serious subcutaneous bleeding. This accident can also be averted by cutting off the growth some distance from the suture line.

The author, in-so-far as the operation applies to umbilical hernia, should, however, have

warned against suturing both layers of the sac. Like in all umbilical hernias the inner or peritoneal layer falls into the aperture and being held there by the sutures, adheres and forms the plug or floor that prevents recurrence.

The Effect of Vitamine Deficiency on Various Species of Animals

By L. H. Pammel, Ph. D., Ames, Iowa
Professor of Botany, Iowa State College

VICTOR E. NELSON, Alvin R. Lamb and V. G. Heller have published their results of "The effect of vitamine deficiency on various species of animals." * The authors discuss the importance of vitamine, a requirement of growing pigs and the paralysis of the hind limbs in rabbits when feeding rabbits oats along with similar rations.

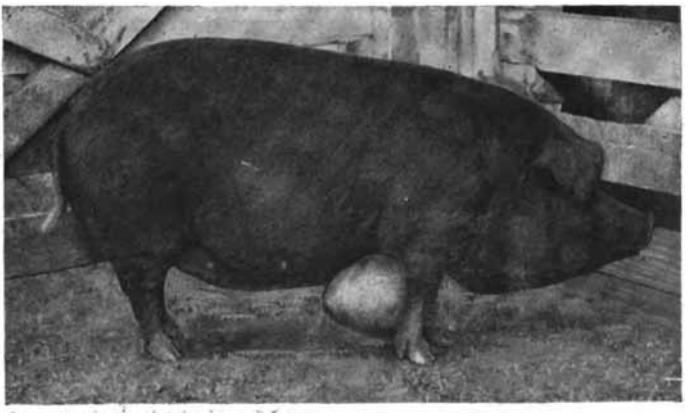
"We have observed nutritive failure, generally terminating in a peculiar paralysis of the hind quarters.

"In connection with the question of various symptoms of deficiencies of certain rations, we have observed that it is a very difficult problem at times to ascribe certain specific symptoms of a faulty diet to a particular factor which might be lacking in that diet. We have noticed in many of the rats in our colony various diseased conditions of the skin, in some cases so marked as to cause growths and wart-like malformations on the ears and nose and characteristic concretions upon the tail. In a good many cases these eruptions have been cured by the feeding of butter-fat, in other cases by the addition of casein to the ration, so that it appears that these diseased conditions of the skin may be the outcome of a poor nutritive condition and not due to any specific factor.

"In order to determine whether a deficiency of Vitamine A in the ration of the sow would cause eye-disease in the young pigs we fed a sow throughout the gestation and suckling periods on the following ration:

White corn (6)	55
Linseed oil meal	22
Ground oats	15
Tankage	5
Supplementary salt mixture	3

No green vegetation was obtainable by the sow or pigs. Four pigs were farrowed, three of which lived but remained rather unthrifty and grew slowly both during the suckling period and after; they were fed the same ration as the sow had received. No signs of congestion of the conjunctivae were observed at any time. After several months on this ration an allowance of about 10 grams of butter-fat per day was given to the smaller and less thrifty animal, which was nearly dead. This pig improved rapidly in condition while the other continued to show the decided effect of the vitamine deficiency, but no sign of xerophthalmia. From our experience with this ra-



Another of the Many Types of Conditions in Domestic Animals in which Zecha's Stitch may be used to advantage as a "Tying Off" Process before Ablation Others are Mammary Tumors of Bitches and Sows, Shoeboils of Horses and Many Less Significant Growths

In growths such as shown in the illustration herewith, a line of sutures traversing the pedunclc and drawn taut after proper preparation of the suture line by shaving and disinfection, will make the ablation safe and bloodless.

tion, not all detailed here, we are inclined to class the pig with the rat in that it probably requires less Vitamine A than the rabbit. Its need for this particular vitamine, however, is here demonstrated to be great enough to make the question of practical importance when pigs are fed without access to pasture or forage. The white corn ration noted above was made up from common feeding materials and so constituted as to supply, with its supplementary salt mixture, good quality of protein and all other dietary essentials except that it was deficient in Vitamine A.

"The same ration was fed to both rabbits and rats, to make possible further comparisons between these species. Its marked deficiency in Vitamine A was demonstrated by the fact that it quickly caused xerophthalmia and death in rabbit 81 after 6 weeks on the ration. Rabbit 80 showed slight xerophthalmia at the same time, but was cured and grew normally thereafter with the addition of 5 per cent butter fat to the ration. Four rats on the same ration grew fairly well showing growth curves slightly below the normal, and reached maturity but the young which were born were not suckled and died in a few hours or were eaten, a characteristic effect of deficient rations.

*American Journal of Physiology 59: 335-345 1 f. 4 charts.

TULAREMIA

Tularemia is a specific infective disease of rodents and humans caused by the B. tularense. This disease is transmitted from infected rodents to man by the bite of an insect or by direct infection by the dissection or autopsy of infected rodents. This disease is especially of interest to laboratorians although several cases have been identified in rural people.

Occurrence. The disease in rodents is quite wide-spread having been identified in the ground squirrel of California, jack rabbits of Utah, and cotton tail rabbits of Indiana.

Several cases of the disease in the human have occurred in Utah. Other cases may have occurred in various locations but probably have not been recognized. Several cases have occurred in laboratory workers.

Cause. The specific cause of the disease is the B. tularense. This micro-organism was discovered and named by McCoy in 1912. This organism is non-motile and Gram negative. It does not grow on ordinary culture media.

Transmission. The disease may be transmitted by direct inoculation from an infected rodent but is usually transmitted by a blood sucking fly or parasite.

The rabbit louse (Haemodipsus ventricosus), the bed bug (Cimex lectularis) and at least one blood sucking fly (Chrysops discalis) are capable of transmitting the disease from rodent to rodent and from rodent to man.

Symptoms. The first evidence of the disease is manifested at the site of the insect bite or related lymph gland. The site of the bite becomes necrotic, suppurates and sloughs the lymph gland, becomes tender and painful and undergoes suppuration. There are usually general symptoms manifesting a low grade septic infection.

This disease is briefly recorded because it should be of interest to veterinarians. The present knowledge of the disease has been determined by investigations of the U. S. public health service.

Dr. H. E. Hershey in the Office of His New Hospital at Charleston, West Virginia

Studies on Periodic Opthalmia in the Horse

First Contribution

By Augusto Bonazzi and Edward Merillat, Wooster, Ohio, U. S. A.

(Continued from May Issue)

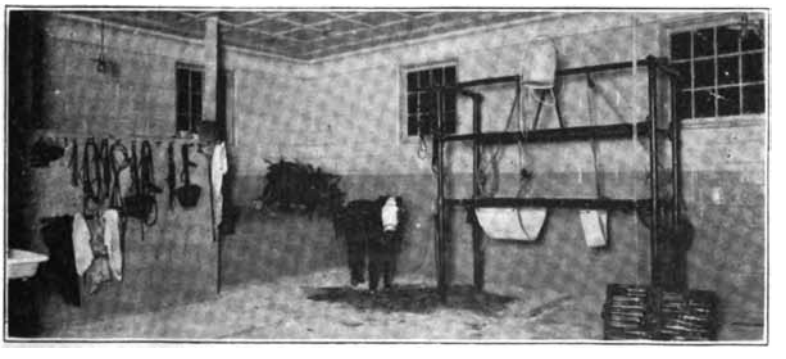
In spite of the fact that these experiments and their results are of a preliminary nature and are thus presented, it is the belief of the present authors that they indicate a succession of phenomena which take place in the development of the disease and which if recognized will open a line of attack that will yield results of value.

The recognition of the various phases in the disease, each with its special symptom complex takes the place of the indefinite picture of difficult diagnosis and uncertain meaning. The fact that the externally visible changes in the eye are linked to definite internal disturbances and that some of these may be duplicated in experimental conditions, by the use of pure cultures, is indicative of the results to be obtained by a systematic attack of the problem.

The tendency in the past has been to search for a curative of rapid and sure application, but it is the aim of the present authors to spend some time on the question of diagnosis in the early phases of the disease at a time when the disturbance is not recognizable from other conditions often referred to as acclimatation troubles. This is especially important in view of the fact that the negative results obtained in the present investigation as well as by Avery, in some cases, when attempts were made to transmit the condition by direct cross inoculation, point to the possibility that the natural disturbance far from leading to complete blindness in a short time is sometimes limited to a slight transitory disturbance often overlooked, treated symptomatically without leading to the final fatal termination syndrome. These cases are potentially important cases as they constitute the resistant types of animal which should be closely studied and used for breeding purposes. A sure means of diagnosis in these cases capable of indicating whether the animals under examination are in reality suffering from a mild case of periodic ophthalmia and are capable in the long run of overcoming the affection by natural means would only serve to discriminate among animals for breeding with the result of a betterment of the equine population of a region. Unfortunately at present there is not even a means of sure diagnosis in spite of the fact that a fair portion of the practicing veterinarians make light of the affection.

It is not the aim of the present authors to prepare a curative vaccine with the culture obtained and it should be also remembered in this connection that the "nerve" bacillus of Dalling was itself found destitute of agglutinability in the hands of Knowles. The present form, obtained during these investigations failed to be agglutinated by the blood of animals in the last stages of the disease, and in view of the type of the disturbance this is not surprising. The affection from all indications, is one of the nervous system the infective agents so far discovered being localized in the optic nerve to the greatest extent, so that responses in the blood stream can but be slow.

The other question which should be closely investigated is the path of entrance of the



A Corner of Hershey's Operating Room

organism in the organ and the mechanism of localization, and it is the opinion of the present authors that another line of attack will here be necessary to insure the transmissal of the disease from one animal to another. The transfer of the humours of the eye appears to be a very unsatisfactory means to obtain reliable results and another method may have to be devised.

In concluding this first part of the contribution it is to be emphasized that the disease is far from being understood, and that its great prevalence in some localities would justify a careful study. Fortunately it appears as if the disease is localized to the family of the solipeds.

Fig. 1
1 and 2—Stallions showing the condition of eyes during the early stages of the disease. No. 1—Indicating the condition of an eye in the incipient stages of clouding, and No. 2 showing the same eye six weeks later. At this time the aqueous was cloudy.

Pathogenesis

A careful examination of the obtainable literature on the subject of periodic ophthalmia together with our experimental findings lead us to the conclusion that the cause of the disease is still undetermined. The development, course and termination have been well considered long ago, and we have but little to add to the traditional symptomatology; nevertheless during our investigation we classed the symptoms into (1) **Premonitory** and, (2) **Pathognomonic,** and studied them as they appeared in order to account for the phenomena from a physiological and pathologic standpoint and to gain an insight into the cause of the systemic disturbances which give rise to these symptoms. In doing this we have correlated and applied information gathered from various sources; (a) from the literature on the subject as well as our experience with the disease in Chicago while engaged in the practice of veterinary medicine; (b) data obtained while field veterinarian for the Illinois Stallion Registration board; (c) observations made while a veterinarian for the British Remount Service, and (d) deductions made while experimenting with the disease during the winter of 1920-1921 in Wooster, Ohio, the results of which investigation are reported in this paper.

These various sources of information will be separately considered in the following paragraphs.

The deductions drawn from the experiments conducted by the present authors to determine the cause of the disease have been summarized in the first part of this contribution and need not be repeated here.

The following cases were used for clinical and experimental purposes:

Case No. 1.—A gray mare 12 years old. Blind. The eyes were used as bacteriological and pathological specimens.

Case No. 2.—A sorrel mare, 12 years old, with one good eye was used as a source of infective material for inoculation in animals and culture media. The animal was destroyed to obtain specimens later.

Case No. 3.—A gray gelding (Swartz) aged. From an affected herd but with good eyes. Experimentally inoculated then destroyed in order to obtain pathological specimens.

Case No. 4.—A gray mare (Metcalf) 8 years old, blind of one eye although owner was not aware of the fact. Destroyed for post mortem examination and eyes preserved for bacteriological, and other purposes.

Case No. 5.—A bay mare (Mellinger), 25 years old, and blind of left eye. Suffering from acute attack in right eye. Destroyed and eyes preserved for various purposes.

Case No. 6.—A gray gelding 10 years old and blind. No history obtainable. The animal was used for ophthalmoscopic study then sold.

Case No. 7.—A bay mare (Swartz) 15 years old and with sound eyes. Inoculated experimentally then pastured and sold.

Case No. 8.—A brown gelding (Wright and Merillat) 6 years old used for clinical study. A complete history of the case is on hand.

Case No. 9.—A bay gelding (Merillat) 13 years old, used for clinical study. Complete history on hand. The animal now at the Meadows Stock Farm under observation, for traumatic injury.

Case number 1, was a blind gray mare seen on consultation with Dr. Wm. Kinney of this

city; her condition was diagnosed as bilateral pneumonia and the prognosis was unfavorable. As Dr. Bonazzi contemplated a series of experiments on periodic ophthalmia, her eyes attracted the attention of the present author being very good specimens for a beginning. The owner was informed to communicate di-

Fig. 2

rectly, immediately after the animal's death, so as to facilitate extraction of the eyes immediately. The next day the animal was destroyed and sent to the rendering plant where the author held a post mortem and obtained the eyes as his fee for the examination. The eyes were taken to Dr. Bonazzi's laboratory to constitute the starting point of the present investigation. The bacteriology and pathology of the specimens were studied and a line of experimentation planned in order to gain an insight into the disease.

This led to the purchase of cases No. 2, 3, 6, and 7, the renting of a stable, and to the employment of a man to care for the animals.

The histories of cases No. 2, 3, 6, and 7 are described elsewhere, and for want of space and to avoid repetition will be given here only a passing mention. These cases, as has been stated above, were used for experimental purposes. Horses No. 4 and 5 were destroyed at the same time and place. Number 4 had a large keloid which rendered it useless, while number 5 was an old family mare too old for service.

Horse No. 8 was a brown gelding 6 years old, owned by Wright and Merillat in Chicago, bought from a dealer in September, 1909, to be used as a driver and driven personally for purposes of observation for three consecutive years. Two weeks after purchase the animal became sick and the diagnosis pronounced as stock yard fever. After recovery he was driven every day, Sunday included, until December (2½ months after first "complex") when he became sick again and was placed by the man in attendance in a "string" of pink eye cases for three weeks. He was then placed again among the drivers but could not stand the morning work due to subnormal condition. Driven every day in the afternoon to the Chicago Veterinary College (about one mile) the horse was allowed to stand in a driveway inside the College buildings from one to three p. m. every day. During these hours Dr. Hughes held his clinics on lameness and after exhausting all available clinical material the class would use this horse as a subject for diagnosis. Soon the students learned that while some days he was lame in front other days he was lame at the other end; sometimes on one foot, other times on two or three.

In March the subject had his first diagnosed attack of periodic ophthalmia. In May, 1910, eight months after purchase and three months after the first complex he had an attack that lasted six weeks; before the first eye cleared up the other became affected. In September 1910, four months after the last and eight months after the first diagnosed attacks, he had another attack, and from that time on always had one eye affected becoming totally

3—An acute attack, sometime during the progress of periodic ophthalmia, with purulent lachrimations.

blind the following March, 1911, six months after the last attack and about one year after the first diagnosed attack of periodic ophthalmia. One year and six months had elapsed since the appearance of the first premonitory symptoms.

Case number 9 was a four year old gelding shipped from Chicago to the Meadows Stock

Farm, Orrville, Ohio, in 1912. The horse was a patient in one of the large veterinary hospitals in Chicago for fracture to the first rib and was sent to the Meadows Farm for observation.

In the spring of 1913 he was used in putting out the spring crops, became sick and was treated by a local veterinarian for acclimatation fever and as he responded to treatment the diagnosis was considered correct. In June, 1914, at the hay harvest, 14 months after the first complex of pathologic symptoms he became sick again and the condition was personally diagnosed by the author as pink eye. About six weeks later he became lame, sore and "stiff all over" and was treated for rheumatism but did not respond to treatment very well; he had a sleepy appearance with eyelids partly closed, but no perceptible lachrimation; a congestion of the conjuntiva, eyelids and eye brows were the only symptoms noticed. This third appearance of pathologic symptoms, however, cleared up in a short time. In October, 1915, two years and five months after the first subnormal period and 13 months after the last the horse developed sore eyes again.

Fig. 4

4, 5 and 6—Stallions showing various conditions in the intervals between "complexes." Here the extraocular structures have acquired a definite physiognomy; an idiosincrasis for the disease.

The attack lasted about twenty days after which time the horse appeared as though he had recovered, but his eyes were blue and always appeared blue after that; probably they had been so in 1913, 1914 and 1915, but were not noticed since all that ever interested us in the case was the atrophy of the shoulder and arm.

During the year 1916 he had no recurrence of the disease, but his sight was impaired as he would shy at solid objects, stumps, boulders, etc., either in the field or on the road.

In April, 1917, 18 months after the last and in fact the first diagnosed attack he had another attack of periodic ophthalmia which lasted over four weeks; first in one eye then the other, and his sight remained decidedly impaired until the spring of 1919, two years after, when the intervals became more frequent, ranging from eight to four weeks each, until he became blind in May, 1921. Thus, from June, 1913, when he first became sick, to May, 1921, when he became totally blind, this horse had shown six subnormal periods, i. e., during the lapse of eight years.

Symptomatology

The premonitory symptoms of cases number 8 and 9 correlate by steps in their development, and the question arises: "Does this correlation exist in every collection of cases?" The only difference between the two cases under examination lies in the time for the appearance of the separate symptoms. In number 8, the time for the completion of the full path of the disease visible on clinical examination was one year and one half, whereas in case number 9 this same period was protracted over eight years. In each case the intervals between periods of subnormal complex were distinctly variable. For the sake of convenience we have called each of the premonitory attacks a complex (of symptoms) and the cause or force regulating the variability of the intervals between complexes a function.

In the following pages are gathered the results of a series of surveys made during the course of the present investigation in order to obtain data on the following points:

A—Type and time of appearance of first complex.

B—Morbidity of periodic ophthalmia.

C—Influence of mesological conditions.

D—Influence of diet.

E—Age at which horses become blind.

They will be presented separately to facilitate interpretations. **Time and type of appearance of first complex.** Eleven histories obtained from the owners showed that five horses were raised by the owner, the first complex to appear being diagnosed as influenza at the age of three and four years. Four histories were of horses bought from shippers at horse sales and the first complex appearing was acclimatation fever according to the owner's diagnosis. One history was from a horse purchased at a public sale the first complex was diagnosed as

distemper, but no abscesses were found at the time. This horse had also several attacks of "pink eye" following the distemper, but the owner could not recall the length of the intervals between attacks. One history was of a horse purchased from a horse dealer; the animal contracted epizootic from the neighbor's horses according to the statement of the owner.

In experimental cases number 1 and 5, the first complex was influenza and number 6 which had been purchased by the owner two years before it was used in the present investigation was not known by the owner himself to be blind of one eye. Numbers 8 and 9 beyond a doubt had influenza as a first complex.

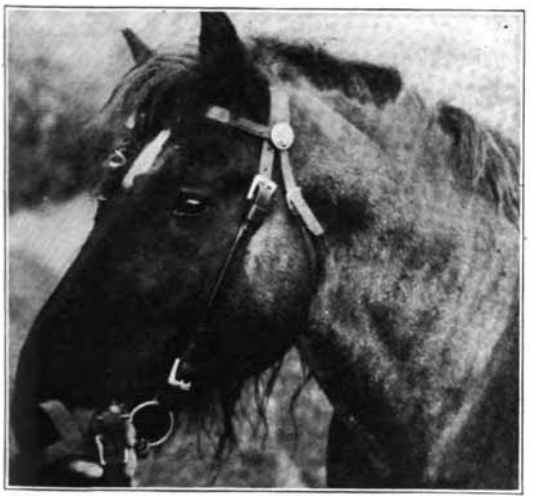


Fig. 5

Thus summarizing we find that in 9 out of 16 histories, influenza was the first complex or 60 per cent of the cases, followed by 26.6 per cent of cases which developed acclimatation fever as a prodromic symptom, 6.6 per cent distemper and 6.6 per cent epizcotic. According to this survey there is no doubt but that the first complex is influenza in the majority of cases, since the cases showing distemper and epizootic may well be thrown in the first would not be accurate enough to differentiate between these conditions and influenza.

Morbidity of Periodic Ophthalmia

Counts were made of horses in Wooster and vicinity by one of the authors with the results class due to the fact that the owner's diagnosis given in the accompanying table No. 1.

Another survey made during the months of April and May, 1921, by the other author in the streets of the city of Wooster showed on a total of 93 horses, 14 blind ones; giving a percentage morbidity of 15.05. It may, therefore, be stated that at least 15 per cent of the horses in the region studied are victims of periodic ophthalmia.

Mesological Survey

This survey was made with the aim of determining the housing conditions of horses suffering with the disease. The results obtained may be summarized as follows:

11 cases were kept in bank-barn stables.
6 cases were kept in common, well lighted stables.
4 cases under unknown conditions.
1 case was kept in a stall with a front window. South exposure.

From this survey no deductions can be drawn, but it is the opinion of the authors that the mesology of the disease should be studied more thoroughly. The actinic influence which light has, may prove an important factor in the pathology of the disease and its development, more so than it is generally given credit for. However, this survey is here given only as a beginning and this phase of the subject will be left for future consideration.

Fig. 6

No. of survey	Date	Where count was made	Total number of horses	Number of blind horses	Percent
1	Nov. 6, 1920	Country north of Wooster	20	1	5
2	Nov. 13, 1920	City of Wooster	21	3	14.28
3	Nov. 21, 1920	City of Wooster churches	24	5	20.34
4	Dec. 18, 1920	Apple Creek, Maysville, and Mount Eaton	30	5	16.66
5	Dec. 31, 1920	City of Wooster	50	8	16.00
		Total	145	22	.....
		Average	...	..	15.17

Dietetic Survey

In view of the fact that the prodromic symptoms are often of a systemic character, it was thought that a survey of the feeding of horses would prove of interest. The appended summary is the result of a survey of herds. Cases appearing in these herds would cause the whole herd to be considered as a unit of feeding with the results that follow.

6 cases were found in herds fed on corn, hay or straw during winter, with oats, corn, hay and pasture in summer.

5 cases were found in herds fed timothy hay in winter, with oats, corn, hay and pasture in summer.

5 cases were found in herds fed mixed hay only in winter, with oats, corn and hay in summer, when at work. Never pastured during working season, only between seasons.

4 cases were from herds fed on corn and oats only when worked, with hay or pasture when not worked.

1 case from herd fed on hay or straw during the winter with corn, oats and hay during the summer. Pastured when not working and always conditioned before being put to work.

1 case from herd fed on corn, oats and mixed hay in winter with oats and timothy hay in summer. Never pastured.

Fig. 7

7, 8 and 9—A series of eyes from various animals at different stages of the disease. No. 7, in the interval between the early diagnosed "complexes" of the disease; No. 8, after some time, between advanced "complexes"; No. 9, in the terminal intervals, showing permanent atrophy of extraocular structures.

Bran was mentioned by none of the above mentioned owners, so that there is no opportunity to attribute some of these conditions to the disease commonly known as **bran-disease.** These horses were carefully classed according to the similarities in the systems of feeding and regime of working.

If this survey were to be repeated and extended, as indeed it should, the individual stables should be given careful attention as well as each animal, so as to gain an insight into the possible predisposing or aggravating causes.

Two observations can be made from the above survey; (a) farm horses are never kept in good physical condition for work, they are "let down" and expected to "come back" without proper treatment such as good food and carefully planned exercise and (b) the diet of work horses does not vary much, consisting generally of grain, hay and pasture. It is only occasionally that a herd is found which is fed exclusively on mixed hay. These two facts should receive more than a passing notice. We cannot recall a single case of periodic ophthalmia among the working stock of a well regulated Chicago transportation company operating several hundred animals. Nevertheless this condition was often seen to develop among the horses which were being prepared for the working stock of such companies.

A survey of the age at which horses become blind may be compiled from a total of 22 cases examined or experimented upon.

1 became blind at 7 years of age.
6 became blind at 8 years of age.
8 became blind at 10 years of age.
5 became blind at 11 years of age.
1 became blind at 13 years of age.
1 became blind at 25 years of age.

This survey shows that none of the horses examined became blind at 9 or 12 years of age, but this may be due to the fact that the total number of animals examined was not very extensive. There is absolute certainty as to the age when cases No. 5, 8 and 9 as o among the experimental animals became blind. For the remainder of the animals, presented in the above table, the owner's statement was accepted.

It may be stated, however, that this is only a provincial survey and that for a full knowledge of the disease it is desirable and in fact absolutely essential to repeat it in a number of regions and states where the disease has gained a foothold and become prevalent.

At present the results thus far obtained seem to indicate that blindness generally occurs about the end of the adult and the inception of the senile period. This, however, is influenced by the function which regulates the variability of the period intervals between succeeding complexes. Whether this is de-

pendent upon dietetic or hygienic conditions or functional hygiene is still undetermined.

The premonitory symptoms have been found to be generally diagnosed as influenza acclimatation fever (in the country) or stock yard fever (in Chicago), rheumatism, arthritis of the articulations of the appendicular skeleton, synovitis of the sheath of digital flexors followed all by a drowsiness, contraction of the muscles of the eyelid (frowning) modified race habits, standing in abnormal positions (rheu-

Fig. 8

matism), sniffling, sneezing and lachrimation. The temperature ranges between 101 and 103° F. and the pulse remains normal. Respiration becomes abdominal. There is a tendency to chill. The animal avoids light without any particular fear of it, by eating hay with the head hanging in the manger, or placing it in a position where the light is intercepted. The special senses become more sensitive except the sense of vision which is slowly becoming impaired. The animal becomes hypersensitive (in most cases) to the application of grooming utensils, harness, saddles and bridle (hyperthesia). The noises made by using stable utensils, forks, brooms, buckets, etc., produce excitement through audition (hyperacusis).

The complex accompanied by the first ocular invasion presents palpebral and ocular conditions that resemble the previous complex with the exception of the physiology of accommodation which gradually decreases in efficiency until the sight is completely destroyed.

The pathognomonic symptoms follow. Congestion of conjuntiva and eyelids, tonic contraction of palpebral muscle and sometimes of the posterior rectus muscle followed all by atrophy and wrinkling of the eyelids and eyebrows. Cloudiness of the acqueous humor, contraction of the pupil, disintegration of the iris, followed by the crowding of the lense forward and sometimes by its detachment. Frowning, nictitation, lachrimation, photophobia, nyctalopia and niphotyphlosis and sometimes nyctophobia in certain stages of the disease are common symptoms.

There is nothing obscure about the symptoms, except the variation and intensity of the attacks which terminate in a progressive destructive process that end in the loss of the physiological function of the organ not only but of all the anatomical structures involved. (See Figs. 4, 5 and 11.)

General Conclusions

From the above study the following conclusions may be drawn as a guide to further study of the subject.

1. There is a definite sequence of internal disturbances which have been classified as stages of **inception, involvement** and **resolution** leading to complete blindness of the horse, not only, but to final picture characterized by the breakdown of the internal structures of the eye and frequent formation of a fibroma like development at the apex of the optic nerve.

2. An organism (Bacillus A) isolated from the humors of the eye, and found also in the optic nerve, has been studied with the result that it was found capable of reproducing the typical clinical symptoms with a limited recurrence. This organism is not, however, con-

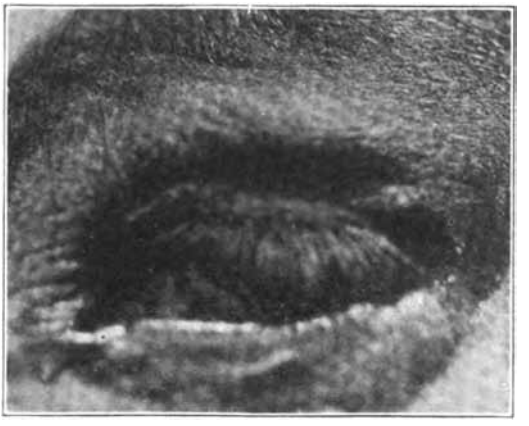


Fig. 9

sidered by the authors as "**the causal agent**" of the disease; nevertheless its presence in the optic nerve justifies the hypothesis that it plays

an important rôle as one of the organisms of a flora which will be studied in the future.

3. The period in life when a horse appears to be most susceptible to the disease is at the transition between the period of maturity and senility. This may explain the apparent failures in the experimental work when old animals were used for inoculation purposes. Future work will require the study of animals in the early period of maturity.

Fig. 10

10 and 11—Different views of the same eye showing the grayish crescent, in the aqueous, on the lower margin of the anterior chamber, during the early period of involvement. No information could be obtained as to the duration of the attack, then running its course, or of the number and severity of the previous attacks.

4. The conditions leading to the development of a susceptibility have as yet not been exactly determined. Nevertheless, there are indications that hereditary predisposition may play an active rôle. A survey of the mesological conditions, and of the factor of lighting in particular, should be given careful consideration as factors of a predisposing or aggravating nature.

Fig. 11

5. The importance of the type, and time of appearance, of the first symptom complex may have a deep seated influence upon the subsequent development of the disease. The course followed is extremely long and may vary according to whether the first complex was an attack of influenza or some other pathological condition. The time of completion of the full cycle and the severity of the attacks are thus deeply influenced by the type of previous history.

One horse among the experimental cases used in the present investigation was suspected of having a natural or acquired immunity to the disease (case No. 7): the animal had been in a stable, harboring an affected herd, for several years without acquiring the disease. This case opened up the question of immunity and hereditary susceptibility.

The experience gathered in the stallion Registration Board of the State of Illinois allows only of the statement that the disease is never sporadic. When the so-called sporadic cases are traced by means of pedigree or bill of sales they are found to constitute a provincial, not a providential sin. The same obstacles were met with in examining stallions as in general practice: a correct history of cases is seldom obtained. Histories from two or three sources may be proffered, however. The one, from parties pretentially disinterested, the other from parties with opposite interests, and the third from parties equally interested in the deductions obtained from a correct history.

It should be stated here that although periodic ophthalmia is not the only cause of blindness, in horses it is in the final stage easy to differentiate from blindness resulting from other causes. Periodic ophthalmia does not end with the blindness it causes, but continues advancing until all the structures of the eye are destroyed except the external coat (Fig. 12). This fact will be referred to in a later page.

Observations and deductions made while in the British Remount service contributed nothing to the knowledge of the cause, development course or termination of the disease. A great deal was nevertheless learned about the handling and traffiking in this class of horses for military purposes. Horses with defective

Comment: Therapeutic and prophylactic data gathered at random and during these observations and studies will be published in the July issue.—Ed.

CHRONIC URTICARIA

Some time ago I reported a case which was directed to you for help, but got no results whatever from your suggestions.

I shall restate the case and hope to receive your opinion as a great deal depends upon the outcome of this case.

The horse is a 1700 pound black gelding, eight years old, of blocky build and an easy keeper. Each summer for the last few years, he has had an attack of urticaria which subsided with the coming of the cold weather, but last fall the disorder failed to subside and now he is covered with many thickened patches over his body, ranging from one-half inch to two inches in diameter. His poll and withers are considerably thickened and enlarged and gives the semblance of poll-evil and fistula of the withers. At the lower part of the collar on the breast, there is a considerable thickening.

Horse has been fed good dry feed for several years and had moderately light work every week day until put on treatment by a non-graduate here before my arrival at this location. This man took two gallons of blood from the animal twice, at two week intervals and had him turned on pasture at night.

The horse was turned over to me and I began administering 45 grain doses of sodium cacodylate intravenously every three days until about six doses were given. The first three doses seemed to give considerable relief. The skin softened up and some knots left him. Then no further good seemed to be derived.

I diagnosed the case as chronic urticaria, although the horse shows very little itching or irritation of the skin. On the tip of a few of the enlargements is a small spot devoid of hair, but these are very few.

Please give me your opinion. I have never seen or heard of a case like this before.—E. L. H., Illinois.

Reply (By Dr. Quitman): I fully agree with your diagnosis of chronic urticaria in the case described by you. Referring to the treatment it is my opinion that you were on the right track when you prescribed sodium cacodylate, but failed to get the desired results because of two errors in the technic of its administration in this case.

A horse weighing 1700 pounds should receive a dose of sixty to sixty-five or even seventy grains administered on every fourth day, (that is at three day intervals) and it should not have been administered intravenously. It should have been administered subcutaneously. When given in the blood stream it is taken up too rapidly for the best effects except in acute or peracute conditions.

Try it again as suggested in the foregoing and I believe you will be successful this time with six to eight doses. I have had only favorable results from the drug in just such cases.

Should it fail, however, in your case, place your patient on the following treatment:

Sodii bicarb.....
Carbo ligni .....aa ℥xij
Sulphur sub. ..... ℥xxxij
Misce et div. in pulv. No. xvi.

Sig. One powder in the feed three times daily.

In addition, prescribe six dram doses of Fowler's solution three times daily which may also be mixed with the animal's feed. The patient should receive a bran mash every night.

External applications except to allay itching are of no value. Hair growth on denuded spots may be stimulated by daily applications of petrolatum and of tincture of iodin every third day.

No Study of Summer Sores Made in This Country

What are called summer sores occur in the United States and were discussed at the last meeting of the Illinois State Veterinary Medical Association. Dr. Sigler reported them in jacks and horses in Indiana and Dr. Quitman discussed their occurrence in Illinois. As yet we have had no studies of summer sores in this country in which the finding of the larval **Habronema** has been reported. This is a matter which deserves attention. The treatment most strongly recommended for this condition is early and complete ablation of the affected tissues. Dr. Quitman states that the application of a paste composed of 1 part arsenic and 5 parts flour accomplishes this result in a more satisfactory manner than surgical measures. Prophylaxis consists in protecting surgical wounds and other skin agrasions from flies, by the use of bandages or suitable dressings and repellents.

Purely Practical

Uncertain gait, standing on toes, shifting lameness and normal appetite are usually the initial symptoms of rickets in pigs.

Thumping, unthriftiness, coughing, depression and irregular appetite are the usual symptoms of pulmonary ascaridosis in suckling pigs.

High temperature, tendency to hide in bedding, and inappetence are prominent symptoms of hog cholera. The diagnosis should be verified by an autopsy.

Temperature of 104-105° F., unthriftiness, diarrhoea, appetite normal or slightly impaired is indicative of infectious necrotic enteritis in swine.

High temperature, thumping, tendency to hide in bedding, and inappetence occurring in a large percentage of the herd is suggestive of influenza in swine.

Wheezing respiration and paroxysms of coughing characterizes parasitic bronchitis. The diagnosis in these cases can be verified by identification of the parasites or their eggs in the nasal discharge.

Runty pigs are probably indicative of a uterine infection of insufficient intensity to destroy the pig in utero. It is economical to destroy runts immediately after farrowing.

It has frequently been stated that the hydrochloric acid of the gastric juice of the human was sufficiently antiseptic to destroy ingested bacteria. It has been recently demonstrated that the gastric juice is only feebly antiseptic and that it will not prevent infection.

Recent experiments indicate that the spleen has no influence on the production of pancreatic, gastric or biliary secretions, neither does it have any relation to the gastric or intestinal motion. The removal of the spleen does not affect the growth or the demand for food.

It is said that infections of the uterus play a more important part in the sterility of mares than in that of cows.

In performing cesarean section in a sow or bitch do not make the incision in the uterus too near the os uteri. If you do, you will find the incision more difficult to suture than if it is made farther back.—H. C. Groff.

Present knowledge would indicate that the prevention of salpingitis rests in the control of retained placenta and the prevention of cervicitis.—DeVine.

A solution of pyroktanin to which a little glycerin is added is the best treatment for scratches in horses we have used.—Blank.

"In the individual treatment of ocular roup the patients must be fed, since they can not see well enough, even, in slight cases, to select food thrown to them. We have good success with Calcidin, 1 to 2½ grains twice a day."—Blank.

ANTISEPTIC FOR HYPODERMIC SYRINGES

The following antiseptic is recommended by Dr. C. H. Shultz to keep hypodermic, or in fact any, syringe pure and in good working order: Equal parts of glycerin and water, 5 per cent liquor cresolis and enough fuchsin to color. The mixture is drawn into the syringe with needle attached and set aside until needed. The glass is kept smooth and the plunger in good state of preservation, and the needle will not rust.

Before beginning work the mixture is syringed out and a few drops of the biologic to be used is drawn in and immediately rejected before it is refilled to begin the injections. When a large number of animals are being injected the syringe is refilled with the mixture from time to time. The sum of the process is a clean, smooth-running syringe and a minimum of danger from infections.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.
Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Immunization of Cattle Against Contagious Abortion

Excerpted for Veterinary Medicine, by C. H. Schultz, Chicago, Illinois.

A most interesting and comprehensive article on the subject of artificial immunization of cattle against abortion disease is published in volume 52 of the official publication of the department of health of the German states. (Arbeiten aus dem Reichs Gesundheits Amtes.)

During the period of 1911-1915, 5,135 cows and heifers from 123 herds were treated with five different vaccines with the object of demonstrating whether active or passive immunity that would prevent abortion can be produced by artificial methods. Live as well as killed cultures of the abortion bacillus were used.

1. **Live cultures.** Two agar slant cultures, eight days old, were washed with five cubic centimeters of physiological salt solution and kept in brown-glass vials and ten cubic centimeters of this bacterial emulsion was used for each injection on non-pregnant cows and heifers. In infected herds it was used on animals that had calved as well as on heifers that had been exposed. Only one injection of these live cultures was given to each animal. The injections were intended to demonstrate:

(a) Whether such injections of live cultures would hasten immunity in animals already infected.

(b) Whether non-infected animals, not pregnant but exposed to severe infection, can be protected against infection by injections of live cultures.

2. **Killed cultures.** Killed cultures were grown in different ways and used in different quantities and concentrations. Cultures grown for three weeks in flasks of English bouillon to which amniotic fluid was added were killed by heating two hours at 55° Centigrade. Thirty cubic centimeters of this emulsion were injected subcutaneously. In later experiments 14 days bouillon cultures were killed and 100 cubic centimeters of the emulsion were injected and repeated in four to eight weeks. There experiments were intended to demonstrate, if and to what extent, active immunization can be produced with killed cultures.

3. **Live cultures plus serum from immune animals** were used on pregnant cows and heifers. This was done to avoid the pathogenic effects caused by live bacilli when injected simultaneously with anti-serum, without lessening the immunizing effect.

4. **Killed cultures plus serum from immune animals** were also used on a large number of pregnant animals in order that the toxic effects of the vaccine be prevented and also to produce passive as well as active immunity.

5. **Attenuated cultures.** These were used in a few infected herds when immunizing your heifers and calves. The bacilli were attenuated in order to prevent infection and dissemination of bacilli by vaccinated animals.

No antiseptics were added to any of the bacterial emulsions or sera used in the experiments.

6. **Contagious abortion immune serum.** Seventy-six calves in three infected herds were each injected with 50 cubic centimeters on this serum. In all three herds diarrhea almost entirely disappeared, while before the injections most of them died before they were two weeks old, or remained weak for a long time. Only three of the calves injected died from diarrhea.

After careful consideration of the results of their experiments the authors state that the simplest and best method to immunize animals against abortions disease would be to inject:

(A) **Infected pregnant animals** with two injections of killed cultures two to four weeks apart.

(B) **Infected non-pregnant animals** with two injections of live cultures also two to four weeks apart.

(C) **Non-infected pregnant animals** two injections of killed cultures two to four weeks apart.

(D) **Non-infected non-pregnant animals** (a) in herds where the infection is mild two injections of killed cultures two weeks apart and (b) in herds severely infected, two injections of live cultures two to four weeks apart, and the cows bred no sooner than eight weeks after the second injection.

According to their views these methods, as well as all others with which they are familiar, are not altogether satisfactory and an improvement in the vaccines is very desirable. Prophylactic and hygienic measures are recommended as important.

The Final Conclusions

They have carefully tabulated and analysed the results on 3,006 animals in 80 herds. Among these 1,650 were injected with four different vaccines and immune sera while 1,356 were used as controls. The following vaccines were used:

(a) Killed cultures of abortion bacilli on pregnant and non-pregnant animals.

(b) Killed cultures plus immune serum on pregnant animals.

(c) Live cultures on non-pregnant animals.

(d) Live cultures plus immune serum on pregnant animals.

(e) Serum from immune animals on animals in advanced pregnancy. The final conclusions shows that:

(1) After the different vaccines the total number of abortions were reduced from 25.21% to 15.15%. Among the controls abortions increased from 16.31% to 22.68% showing that the decrease was due to the injections of the vaccines.

(2) The number of abortions decreased: (a) after injections with killed cultures, from 18.51% to 13.20%; (b) after injections with killed cultures plus immune serum, from 21.76% to 13.60%; (c) after injections with live cultures, from 29.09% to 6.36%; and after injections with live cultures plus serum, from 16.36% to 5.45%.

(3) It was not possible to produce passive immunity during advanced pregnancy, and no definite conclusions could be drawn from the results obtained from injections of the attenuted cultures which were used in a few herds.

(4) No difference could be noted in the production of artificial immunity among sexually mature animals of different ages, but it was found to be more difficult to produce immunity in calves and young animals not sexually mature.

(5) Animals may be vaccinated at any stage of pregnancy with killed cultures or with live cultures plus immune serum, one part to ten, without disturbing the normal course of fetal development.

(6) Vaccination during pregnancy favors the production of immunity. It is therefore less difficult to immunize non-infected pregnant animals than animals that are not pregnant.

(7) Animals that have already calved can be immunized by injections of live cultures during the time they are not pregnant and thus be prevented from aborting the second time.

(8) The period of immunity among animals injected with the same vaccine often varies in a marked degree. Two injections with killed cultures will, in infected or non-infected animals, seldom produce immunity that protects for more than two years against natural infection.

Since even a double injection will not always produce a lasting immunity against abortion disease in non-infected animals it becomes necessary to vaccinate infected herds repeatedly to assure permanent protection against the disease.

(9) Vaccination against abortion disease has neither favorable nor unfavorable influence on estral periods or non-conception of cows.

(10) Cases of retained afterbirths become less frequent as abortion disease disappears from a herd.

(See also Page 288)

MILK FOR ORPHANS

A country practitioner is often asked how the various species of young should be fed when left orphans. I do not find any literature on the subject and would be pleased to have some light on the subject. How should cow's milk be prepared for colts?—J. W. M., III.

Reply: The department of Zootechnics, April issue, page 187, gives a categorical reply to this query. The question is asked so frequently during the spring months we publish an instruction table to which all those interested in this subject may refer whenever a substitution of milk is needed to rear young orphans of any species.

Successful Operation for Traumatic Pericarditis

By Dr. T. H. Ferguson, Lake Geneva, Wis.

THE subject was a two-year old pure bred Holstein bull purchased in California by Mr. George Schuster of Mukwonago, Wisconsin, owner of a large, well-equipped farm stocked with choice cattle a few miles from that place.

The bull had been sick for about a month, responding somewhat to treatment for indigestion. I was called to operate by Dr. Herbert Lothe who was attending to Dr. J. C. Harland's practice during the latter's illness, and who was the attending veterinarian of the herd.

I examined the bull on March 22nd and found him in rather good flesh for an animal sick so long. He was, however, very weak and showed a marked edematous swelling extending from the submaxillary space to the pectoral region. The pulse was 100 and the temperature 103° Fahr. On auscultation of the heart distinct splashing sounds were heard on the left side and less pronounced ones on the right.

I concurred in Dr. Lothe's diagnosis of traumatic pericarditis and we informed the owner who was present at the examination, that the foreign body could be recovered by an operation and that such intervention was the only chance to save the bull's life. Mr. Schuster was not only willing but anxious to have this done and remained as an interested spectator during the entire ordeal.

Details of the Operation

One half hour before beginning, an ounce of chloral dissolved in a gallon of warm water, was administered with the stomach tube, which was passed without a mouth speculum and with no other restraint than the nose ring held by the herdsman.

The restraint consisted of placing the animal along a partition and holding the head by means of the halter and nose ring. The left hind leg was secured by looping a rope around the metatarsus just above the fetlock and snubbing it through a ring directly behind. This rope was held by an attendant to provide against a sudden kick.

The seat of the incision at the site of rumenotomy, was anesthetized with apothesine and adrenalin chlorid. The incision which was made through the skin in a vertical direction and through the external and internal oblique muscles along the direction of their fibers, was carried through the peritoneum and then through the rumen. The rumenotomy was five to six inches long. The edges of the rumen wound were drawn out to the exterior and a sterile cloth wrapped around it in such a manner as to cover the entire wound and environs.

On exploration a number of metallic objects and several stones were found in the reticulum, and farther forward, a piece of baling wire four or five inches long was felt protruding through the anterior wall and extending in a forward direction toward the pericardium. The distance being so great in such a large animal this palpation could only be made with difficulty at arm's length. When the wire was withdrawn the finger could trace a fibrous tract extending in a forward direction.

Whole Abdomen Explored

With the other arm which had not been soiled in these operations the whole abdominal cavity was systematically explored but nothing abnormal was found except the lesion produced by the wire.

The rumen and parietal wounds were closed in the usual manner and protected with a proper dressing.

The pericardial sac was then punctured with a trocar and canula. More than three quarts of a watery fluid was thus aspirated. The fluid, which resembled water, was without color or odor.

The animal stood the operation without visible signs of shock, which in view of its weakened conditions seemed remarkable. The following mixture was pumped into the stomach through a stomach tube: aromatic spirits of ammonia, two ounces, fluidextract of nuxvomica, two drams, fluidextract of ginger, two ounces, and water, one gallon.

The legs were bandaged, the body clothed with a warmed blanket and fluidextract of digitalis was prescribed to be given as indicated.

The case was left in charge of Drs. Harland and Lothe who at this writing (April 5th) have not found occasion to spoil a unique case report.

Treatment of Mastitis

HOWEVER slight an attack of mammitis, treatment should be prompt and vigorous, so as to curtail its seriousness, and it should be based upon elimination of the cause of the disease, relief of pain and reducing fever.

The animal should be comfortably housed and clothed, being provided with a bed of soft material, such as corn winnowings, long chopped straw or such like material if rigors and high temperature exist. I give 2-3 oz. liq. ammon. acet. fort. with 2 oz. nitrous ether and 5 m. tr. aconite; if the animal is in strong plethoric condition, a large dose of Glauber salts with treacle; if fever persists, antifebrin, tartrate of antimony and nitrate of potash three times a day. The appetite should be tempted with good clean meadow hay and clean cold water in summer, chilled in winter. Locally, I have applied to the udder thick flannels wrung out in hot water to which bicarbonate of soda has been added; these are applied frequently and over fairly long periods, followed immediately afterwards by massage of the quarter with emulsified olive or castor oil, and then thorough stripping of the teat. If one sees the case early and before thick purulent matter is in evidence, I inject blood heat sterilised solution of chinosol, 5 grs. to the pint; this I allow to remain in the gland two to three hours, in the meantime massaging and gently rubbing the udder. This I repeat on following days. When suppuration appears inevitable it should be hastened by all possible means, and, if there is but little hope that the quarter can be saved for the future secretion of milk, free incision into the gland or complete amputation of the teat should be practised. Hemorrhage may be severe, but does not last long, and can be lessened by judicious plugging of the milk sinus; this gives wonderful relief.

The occurrence of gangrene is always serious, especially when it becomes diffuse. There should be no hesitation on the part of the practitioner in advising removal of the affected parts, or if needs be the whole of the mammæ-

Technique of Ablation

The method I adopt is as follows: I cast the cow with side lines, seeing that the cow's head lies on high ground, prepare the skin and give chloroform (I use a Carlisle muzzle) up to 1½ oz. to start. This as a rule induces complete anæsthesia. I make a circular incision around the whole of the udder through the skin only about three inches distant from abdominal wall. Cutaneous hæmorrhage may be severe, but can be checked by means of artery forceps. I strip the skin from the gland tissue till I reach the abdominal wall. I then proceed with my fingers or blunt end of scalpel to separate the gland from the abdominal tunic, to which it is only loosely attached, in the meanwhile ligaturing any veins or arteries I may meet till I get to the posterior third of the top of the udder when it is necessary to proceed cautiously, as here, about three inches in from the back part of the udder and towards the median line and in front of the supra-mammary lymphatic glands, are the main blood vessels. To these I apply a strong tape ligature around the whole of the vessels above the lymphatics, and then remove all the structures below the ligature. I bring the edges of skin together with interrupted sutures, and apply freely a dry dressing of starch, chinosal and boric acid. I have had some surprisingly good results, and in cases where I am satisfied death could only have ensued.

As regards the practice of vaccine and serotherapy treatment of mammitis, I know nothing, and only hope that those of you who have practised such methods will give us their experience as to its value.

(Barry, Ext. Vet. Record, Feb., 1922.)

The feed consumed by farm animals in the United States during 1919 was valued at $1,101,228,543.00.

On Grand Turk Island, West Indies, where cow's milk is not a common food of the population, the death rate from tuberculosis was 4 per thousand between 1909 and 1913. In England it was less than one per thousand.

MILK HYPODERMICALLY AS A GALACTOGOGUE

I would like to ask through your query column if any real results have ever been obtained from the theory that some fellow advocated a year or two ago that hypodermic injections of a cow's own milk would increase the flow.—J. A. T., Va.

Reply: We have no evidence to substantiate such a claim and believe the merit of the procedure has not been proved.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

"Immunize the Spring Pigs"

A RELATIVELY small number of the pigs of the spring crop of 1921 were immunized against hog cholera. The reasons for not immunizing the 1921 spring pigs was due to the low price of swine coupled with the fact that there was very little hog cholera in the country. During the fall of 1921 hog cholera outbreaks occurred in several sections of the country and spread rapidly because of the large numbers of susceptible swine and the losses due to hog cholera in 1921 were in excess of the usual annual losses.

A repetition of the 1921 hog cholera losses during 1922 will probably occur unless there is general immunization of the spring pigs. The veterinarian is the guardian of the live stock industry and it is justifiable for him to urge his clients to have their spring pigs immunized.

The question at what age should pigs be immunized is pertinent and is worthy of consideration.

According to a report of the Bureau of Animal Industry, a permanent immunity against hog cholera can be produced in suckling pigs, even pigs not more than ten days old. Some general information has been obtained from practicing veterinarians relative to the durability of hog cholera immunity in suckling pigs and unfortunately the results have not been uniform. One veterinarian has immunized all pigs while they were suckling on the farms in his community and has had good success; however, on further investigation, it was found that there was practically no cholera in that community and therefore his report would be of little value. In several instances there has been cholera developed in swine that had been simultaneously injected with serum and cirus before they were weaned.

It is generally assumed that the younger the animal when immunized, other things equal, the shorter the period of immunity. If this assumption is correct, then it would not be justifiable to assume that an immunity in a young pig would be continuous throughout the life of the swine. It may be that an immunity produced in a suckling pig will endure in a considerable percentage of cases until the swine are fattened and marketed, provided there is no virulent outbreak of hog cholera in the immediate vicinity but it is problematic whether a suckling pig's immunity will be sufficient for breeding animals.

Many practitioners have reported the occurrence of hog cholera in herds in from 60 to 120 days after simultaneous immunization. The diagnosis of cholera in several of these instances has been proved by laboratory tests. From investigation it would appear as though there was no question as to the potency of the serum and the virulency of the virus used in some of the cases in which there was a so-called break in 60 or 90 days. Although some investigators are of the opinion that there was some defect in the virus but there is no definite proof to substantiate this theory. Is it not possible that an immunity against the filterable virus of hog cholera may be offset or overcome by some depressing or devitalizing influence such as gross errors in feeding or the occurrence of disease? There are indications that immunity against cholera may, under certain circumstances, be overcome and swine that were immune from cholera may actually become affected and die of cholera.

The method of administration of serum in pigs should receive the careful consideration of the veterinarian. The intraperitoneal injection is simple and desirable. Serum injected into the peritoneal cavity is rapidly absorbed, does not cause soreness or difficulty in locomotion, and does not damage the hams or shoulders. The intraperitoneal method is especially advantageous in 40 to 50 pound pigs for an attendant holding them by the hind legs favors the descent of the abdominal viscera and there is little or no danger of puncturing any of the visceral organs. The same precaution should be taken in making intraperitoneal injections of serum as to cleanliness and asepsis that are observed in the injections in the axillary space

or ham. The virus should be injected into the ham or axillary space. Cold serum injected into the peritoneal cavity may cause distress from shock and it is therefore advisable to have the serum for such injection about body temperature.

Cocklebur Poisoning in Swine

IT does not seem necessary to give a detailed description of the cocklebur, as, no doubt, all veterinarians are familiar with this plant. According to botanists, there are about a dozen different species of cocklebur in the United States. They all resemble each other quite closely and are similar in their habits. All cockleburs are annuals and the only plant that they might be confused with is the burdock. The cocklebur contains two seeds and during the ordinary season one of the seeds germinates, the other seed germinating the following season. This apparently insures the continued existence of this plant.

Some authorities maintain that if the season is particularly wet and the spring days warm, both seeds of a cocklebur may germinate. The cotyledon of the young cocklebur contains a glucoside that is extremely poisonous. The seed of the cocklebur contains an oil and a method has recently been perfected of extracting this oil which is claimed to be useful for the mixing of paints and also as a food for the human.

The cocklebur is responsible for the loss to live stock producers in the following way: The bur causes rather extensive losses by depreciating the value of wool from sheep and mohair from goats. Wool or mohair containing cocklebur is always docked. The cocklebur is also responsible for the production of more or less irritation of the stomach walls of practically all animals. Instances have been observed in which choke in pigs and calves has been traced to the lodging of cocklebur in the oesophagus. Other instances have been observed in which losses have resulted from the obstruction of the intestine by masses of cocklebur.

The most serious losses from cocklebur occurs in pigs and is the result of the consumption of the di-cotyledons just as they come out of the ground. These losses are then usually most prevalent in the early spring. Losses are usually reported from the southern states in the latter part of January or early February. In the middle states these losses occur in March or April and in the extreme northern states in April or May. The losses in pigs occasioned by this plant are much greater than are usually recognized. The pig is most susceptible to this trouble about weaning time. The amount of cotyledons necessary to produce disturbance in the pig varies as the toxicity of the cotyledon apparently varies. In some feeding experiments, it was found that one-fourth of a pound of the cotyledon was sufficient when fed to pigs weighing from 30 to 60 lbs., to produce fatal results. When a small quantity of the plant is consumed, a mild form of the disease follows.

Symptoms

Symptoms of cockebur poisoning usually become evident within a few hours after consumption of the plant. In those cases in which large quantities of the plant has been consumed the first evidence of the disease consists of colicky pains, the animals are restless, frequently getting up and down; they show marked distress, usually vomit freely and within a few hours a marked diarrhoea develops. The depression becomes more marked and the animals appear to be in a stupor; during the latter stages there may be periodic convulsions and death usually insues within 24 hours after first symptoms are manifested. If only small quantities of the plant are consumed, then the animal may show depression with or without vomition. There may be diarrhoea. Such animals usually show marked loss of condition and as a rule, the animals ultimately recover.

Lesions

The principal lesions evidenced in pigs dead of cocklebur poisoning consists of a marked gastro-enteritis. The extent of the lesions will depend largely upon the length of time that the pig lives after the first symptoms are evidenced. In those cases in which the pig dies within an hour or two after the first manifested symptom the lesions will be relatively insignificant. If the pig survives for 12 to 24 hours, after the first symptoms have become evident, then there will be marked lesions not only involving the gastric mucosa but also practically all of the mucosa of the entire small intestine. Swellings may be evidenced in the

parenchymatous organs because of the high temperature.

Prevention and Treatment

The losses incident to cocklebur poisoning can be prevented by eradicating the cocklebur or by preventing swine from coming in contact with soil that is infested with cocklebur during the early spring season. The treatment of pigs affected with cocklebur poisoning has not been successful. There has been no antidote found that will counteract the glucoside of the cotyledon of the cocklebur.

Symptomatic treatment is indicated and, where feasible, oleaginous substances or demulcents should be administered. In most of these cases the pigs refuse to eat and therefore it becomes necessary to administer the medicants preferably by means of a dose syringe.

VETERINARY MEDICINE will be glad to obtain reports on cocklebur poisoning in pigs and also treatment should any of our readers have a successful method of overcoming the disease.

(See also Page 295)

THORN-HEADED WORM INFESTS 30,000 SWINE

We are at the present time keeping some thirty thousand hogs. Our shipments coming mostly from Texas and Colorado, but a few come from other sections.

In all our post-mortem examinations we find the presence of the thorn-headed worm in the intestines. Undoubtedly they help to lower the resistance of the animals though we never find them as the only cause of deaths. Most of the literature that I have delved into on this parasite is far from enlightening and I am looking to you for any information you can give as to their removal, the extent of their ravages and any publication which will help us to free our animals. We are anxious to co-operate with any experiments that you may suggest along this line.—L. F. C., Calif.

Reply by Maurice C. Hall: At the present time, unfortunately, we are unable to make definite recommendations as to a dependable treatment for the removal of thorn-headed worms from swine. The critical tests necessary to establish a treatment on a basis where we can speak positively in regard to its value have not been made in the case of this worm. It is only possible to cite the treatments which are given in the literature, and as the older treatments, established wholly on clinical results, have so often proven unsatisfactory on actual test in the case of treatments for other worms, we can only reserve judgment at the present time as to their value in this case.

Among the recommendations are: Turpentine in doses of 4 fluid drams for a 100-pound animal, to be given in a light feed or in skim milk for three successive feeds, treatment to be preceded by fasting and followed by 1 ounce of Epsom salts; powdered copper sulphate in doses of 1 dram for a 100-pound animal, to be given in a thick mash morning and evening, treatment to be preceded by fasting and followed by 1 ounce of Epsom salts. Dr. Peters has told the writer that carbon tetrachloride will remove thorn-headed worms, but to what extent it will remove them and in what dose it should be given we would be unable to say until critical tests have been made, such tests to involve postmortem examination of treated animals and a comparison of the number of worms recovered from the manure with the number found postmortem. It is possible that oil of chenopodium, which is quite effective in removing ascarids from swine when given in doses at the rate of 1 fluid dram in 2 ounces of castor oil to animals weighing 100 pounds, might be effective against thorn-headed worms, but we have no evidence in regard to this.

In view of the fact that the white grubs, which are the larvae of the May beetle or June bug, are the intermediate hosts of this worm, measures to prevent pigs from rooting out and eating these grubs might be useful at times. However, such preventive measures are not always feasible or desirable.

At the present time no special symptoms have been definitely associated with these worms, the effects being those customary for intestinal parasites in general, namely, unthriftiness and digestive disturbances without an associated febrile condition. They cause local inflammatory reaction with some necrosis, and occasionally perforation to the peritoneal cavity occurs, with a resultant peritonitis. Steffani reports finding the worm in the gall bladder. Alessandrini states that the worm contains a hemolysin of a colloidal nature, water-soluble but not alcohol-soluble, the action of which diminishes at 40° C. and is lost at 55° C.

Tuberculosis was the cause of 110,285 deaths in the United States during 1917. Of these 97,047 were from tuberculosis of the lungs, according to the U. S. Public Health Report of 1919.

AGE WHEN PARASITES DAMAGE HOGS MOST TO BE STUDIED

Lice and internal parasites of hogs are known to cause great losses to pork producers, but little is known about the period of the animal's life when the losses from these causes are greatest. To clear up this question the Zoological Division and the Animal Husbandry Division of the United States Department of Agriculture are co-operating on a test that will be carried on through this spring and summer. They expect to determine the comparative damage done before weaning, during growth, and while the hogs are being finished for the market. In order that conditions may be comparable to those on the farm 20 hogs will be used in each lot.

NECROBACILLOSIS IN A HERD OF PIGS

The specimen I am sending you is from a February pig in a herd that is badly affected with what I believe to be necrobacillosis. These pigs, some 75 in number, have been treated with tincture of iodin, silver nitrate and zinc chlorid. I realize that the only way to handle this trouble is to abandon the old hog lot, but often it is not possible to find suitable, non-infected quarters for a large herd, and that it is difficult to get a plan of individual treatment carried out by herdsmen. When this is done, however, I am able to save 50% of the cases, even in badly infected herds. I pack the cavity with the above mentioned drugs and have used Flavisol with good results. The owner uses the ordinary commercial dips and when these are applied the same results are obtained. It seems largely a question of caring well for each individual pig. I use copper sulphate internally for necrotic enteritis but have never applied it to the local lesions. I am wondering whether a strong solution of copper sulphate would not be advisable.—J. B. B., Ia.

Reply: The bacteriological examination of the buccal membrane specimen shows B. necrophorus in large numbers. The diagnosis of necrobacillosis is therefore correct. Salicylic acid and potassium permanganate are giving the best results. The former softens the skin and the latter is effective against anaerobic organisms.

But to harbor a herd of hogs in an environment pestered with so serious a disease, is very imprudent, and if the losses are not sufficient to jarr the owner into quitting the hog business, improving the situation or going to the trouble of giving the poor brutes the individual attention to which they are entitled, your position is hopeless. Sanitation, sanitation, teach it, preach it, insist upon it. It's the practitioner's only hope where carelessness prevails.

SEMI-SOLID BUTTERMILK

The value of milk as a food for animals is fully appreciated by all veterinarians. Unfortunately, it is not possible for feeders in some sections of the country to obtain whole fresh milk in sufficient quantities to supply their demands. The by-products of milk from skimming stations, creameries and cheese factories are available to a limited number of farmers but the unaltered by-products are so bulky that it is not profitable excepting for those feeders that are within hauling distance of the factories.

There is now available a special preparation of buttermilk called "Semi-solid Buttermilk" that has found favor among veterinarians and feeders. We shall be glad to have reports relative to the following:

1. Is semi-solid buttermilk relished and readily consumed by farm animals?
2. Does the product increase the amount of other feeds that farm animals will consume?
3. In your judgment, can swine and poultry be produced more economically by the use of buttermilk?
4. Is it profitable to feed this product to pigs at weaning time?
5. Have you observed whether or not it has a tendency to eliminate the ordinary round worm in swine?
6. Is there any difficulty in having the product ferment or spoil before all in a container is used?
7. Does it materially increase the time necessary in feeding of animals?
8. Have you ever observed breaking down in the back of swine that were fed on this product?
9. What do you consider normal quantities to feed to swine of different sizes, also poultry?
10. In your judgment, is semi-solid buttermilk worth while?

Pertinent fundamental information on swine parasites will be found on pages 289, 292, this issue.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of formalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.
2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 per cent formalin solution and sent to the laboratory whole and unopened.
3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per cent formalin solution.
4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

BANG'S BACILLUS FOUND IN PLACENTA

The parcel I am sending you contains a piece of the placenta of a cow from a herd of 45 in which 10 have recently aborted. Please make a laboratory examination for abortion disease.—F. G. P., Ill.

Reply: The specimen not only showed the typical lesions found in abortion disease but the bacteriological examination confirmed this diagnosis by revealing typical abortion bacilli. The fibrinous purulent exudate on the cotyledons of the specimen is exceptionally characteristic. Immunization of this herd with live-culture vaccines is advisable and without delay.

TWO CALVES DIE FROM TUBERCULOSIS

I am sending you three samples of milk which please examine for B. tuberculosis. Two calves that have been drinking this milk have died from tuberculosis.

The bottles are numbered 1, 2 and 3. Numbers one and two are from suspected individuals and number three is a herd sample.—B. B. H., Ia.

Reply: The samples contained numerous streptococci and diplococci, but no B. tuberculosis were found. It will be necessary to make cultures and will require some time to determine whether or not these samples contain the organism you suspect.

The fact, however, that two calves have died from tuberculosis indicates there is something seriously wrong with this herd, and no time should be lost in locating the mischief makers by tuberculin tests.

HEMORRHAGIC SEPTICEMIA IN A FLOCK OF SHEEP

Enclosed find a specimen from a sheep, which please examine bacteriologically and send me your report as soon as possible.

This animal was found very weak upon examination and when helped up could not stand. It would throw its head upward and backward and showed pronounced nervous symptoms. The respirations were fast and labored and the temperature 102.6° F.

The autopsy revealed hepatized lungs and an intestinal mucosa that was dark colored and showed necrotic areas. There were also some caseous nodules here and there on the intestines that resembled those of caseous lymphadenitis. The intestinal tract was empty.

This was the second death in the flock. The feed is silage and grain and the water supply is from a nearby ditch. Although the autopsy indicates hemorrhagic septicemia I have suspected botulism and would like to know whether these two diseases are sometimes found together. On an adjoining farm a case that seemed similar recovered after receiving a

dose of sodium cacodylate, nux vomica and a laxative of mineral oil.—N. E. P., Ind.

Reply: The specimens of every organ you sent showed the organisms of hemorrhagic septicemia and the findings were verified by cultural experiments. The flock should be immunized with bacterins as there seems to be no question as to the correctness of your diagnosis.

COMPLEMENT FIXATION TEST SHOWS ABORTION DISEASE

The blood samples sent you are from a heifer that lost a calf a year ago from scours. At various times she has shown signs of impending abortion and abortions have occurred in the herd during the last nine months. I am requesting a laboratory test for abortion disease and a reply as soon as possible.—F. G. D., Ill.

Reply: The test gave a positive reaction, showing there are immune bodies in her blood and possibly in that of the others of this herd. We advise you to read carefully the article on immunization against abortion disease by C. H. Schultz in this issue.

GENERALIZED STREPTOCOCCIC SEPTICEMIA

The cow in question was a grade Holstein that freshened in January. She was given the intradermal test without reaction and was apparently healthy until the first of February when one night she was found bloated. She seemed to recover from this sickness but gradually became weaker and dried up. The appetite was good until two or three days before she died but she lost a great deal in flesh.

The specimens are: heart muscle; right kidney which was four times the normal size; right ovary showing surface deposits; liver and some heart's blood. At the autopsy the intestines were found empty and showed numerous ecchymoses the size of a match head. The liver was normal as to size but light in color; the spleen was enlarged and very light colored; both kidneys were abnormally large and encapsulated in a putty-like and cream colored tissue; the right lung was normal but the left was dark probably from hypostasis and was emphysematous in the parenchyma; and the heart was 33% too large and very dark.

The cow came from a tuberculous herd two years ago, where four cows reacted, two of which were condemned at the post mortem inspection.

Please make a careful examination and report your findings.—R. G. B., Ia.

Reply: We are inclined to believe, after a careful examination of your specimens that you may safely exclude tuberculosis. The cultural experiments were negative as to the tubercle organism but positive as regard to the streptococcus found in the first examination.

FIBROSARCOMA IN A MULE

I am sending you a section of a wart-like tumor ablated from the hind fetlock of a six year old mule.

A year ago, when the growth was about an inch and a half in diameter I excised it level with the skin and after the bleeding stopped dusted the area with arsenic and repeated this caustic application after the scab of the first one dropped off. These two cauterizations left a depression below the level of the surrounding skin. It has now grown to twice the original size. I have ligated the growth and extirpated the section for your examination.—J. E. S., Ohio.

Reply: The microscopic examination of the specimen proves the growth to be a fibrosarcoma, a form of malignant tumor that is not uncommon in the locomotory apparatus of solipeds. The only hope of curing this animal is in radical extirpation of the entire growth, together with as much of the surrounding healthy tissue as seems prudent. It is possible that this treatment has been delayed too long and that a recurrence will follow. In early ablation lies the only hope from the treatment of such growths. As this tumor is located amid "forbidden tissue" it is doubtful whether you will be able to reach the desired objective with safety.

Tetanus in a Goat

A Swiss milk goat upon examination disclosed trismus, stiffness in gait; otherwise no change in the general condition, incapable of taking food. History revealed that two weeks previous the animal was slightly lame. The diagnosis was partial tetanus. Treatment with tetanus antitoxin, 2,000 units. The animal made a speedy recovery.

—Ber. Tier. Woch.

The omentum is rarely mentioned in veterinary literature excepting as an anatomical structure. It is an important factor in absorption and is capable of walling off and thus circumscribing peritoneal infections. It is also important in vascularization after abdominal operations.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

IMPOTENCE AS A RESULT OF CHRONIC PROSTATITIS IN A BULL[1]

A bull which had no inclination for breeding whatsoever disclosed upon examination that he stood with his hind legs widely spread apart and that he urinated with much less frequency and for a much longer time than other animals. He was slaughtered on account of his incapacity for breeding and a careful examination of his urino-genital apparatus was made. The testicles appeared normal, the semen contained spermatozoa of normal appearance and in sufficient numbers; the kidneys and seminal vesicles showed no deviation from normal. The urinary bladder showed a slight thickening, its mucous membrane manifesting traces of a catarrhal inflammation. The prostate was greatly enlarged, of uneven nodular surface with pea to hazel nut size protuberances. Its weight was 103 grams, 13 cm long and 7 cm broad. On incision its tissue proved very hard. The cut surface showed a slight yellowish color. The microscopical section revealed the presence of a very pronounced chronic interstitial prostatitis with atrophy of the glandular elements. The author attributes the impotence of the bull to this condition which he supports by the observations in man resulting from similar conditions.

INFECTIOUS ABORTION OF MARES AND PYOSEPTICEMIA OF COLTS[2]

The author points to the great extension of these diseases and is of the opinion that both conditions may be attributed to the same cause. The transmission occurs as a rule during the act of breeding. The disease producing organisms develop slowly in the genital passages and result sooner or later in abortion; or in case of normal birth it results in an affection of the colt. The author considers as a proof for the identity of both diseases the pathological findings of the fetal membranes in which the changes depending on the extension and intensity are an index for the severity of the disease in the young. He believes that the causative agent has not as yet been definitely established and therefore the vaccinations are of doubtful value. The so-called blood injections have also failed to give uniform results. For this reason stress should be laid upon prophylaxis and for this purpose the following recommendations are made: All mares which aborted or if their colts die within the first few days from septicemia should not be bred in that season. All owners of stallions should be advised to thoroughly disinfect and clean the penis of the stallion before every breeding act. Therefore, it should be required that stallions should cover only mares with a clean record as far as an infection of the genital organs is concerned or such which after three weeks still have a healthy colt. These precautions appear justified from the observation of mares which aborted. Such mares after a short time develop an irregular period of oestrum which results from the action of the pathological secretions on the genital organs.

AN INVISIBLE STAGE OF PATHOGENIC PROTOZOANS (PIROPLASMA ANAPLASMA, AND TRYPANOSOMES)[3]

According to Schaudinn there are developing forms of spirochetes which are so fine that they cannot be individually recognized. Schaudinn considered it possible that protozoa in this stage of development may pass Chamberland filters, and furthermore that there are stages in the life cycle of protozoa where they are entirely invisible. His theory has been confirmed by the works of Japanese and German investigators relative to the spirochetaicterohemorrhagic. They succeeded in infecting test animals with filterates from organs of affected patients. The authors have further confirmed the correctness of Shaudinn's theory that protozoa in certain cases are present in invisible condition through their investigations with piroplasma bigeminum and anaplasma. They inoculated blood of infected cattle into sheep and goats and succeeded in reinfecting cattle with the blood of these animals without their showing any disease condition or a visible form of the transmitted parasites.

They further withdrew blood from guinea pigs and horses which were infected with trypanosoma Gambiensis equinum and surra and inoculated the same into sheep. They

could at no time demonstrate trypanosomes in the inoculated animals, but on re-inoculations of their blood into guinea pigs they obtained positive results. The investigations are continued.

INFECTIOUS ABORTION AND INFECTIOUS VAGINAL CATARRH[4]

There are great differences of opinion as to the nature and importance of the two diseases which are widely spread and frequently occur simultaneously in one and the same herd. The question as to the cause of sterility, uterine catarrh, hypertrophy and the persistence of the corpus luteum, cystic ovaries, etc., are still to be solved. The author examined several herds of cattle for the presence of both diseases with a view of obtaining data to determine to what extent both of these diseases have an influence on the disturbances on the breeding and sexual life of cattle. Based on the published observations, the officially collected data of the live stock board of Rostock and on his own very extensive investigations, he is of the opinion that in herds where both of these diseases exist simultaneously the abortions are almost without exception due to an infection with the bacillus abortus Bang. An infection with this organism, however, does not necessarily mean a case of abortion. Infectious abortion has an etiological relation to disturbances in oestrum and conception. Cows which still possess antibodies in their blood—which as a matter of fact are present there for a long time—may have normal oestrum periods and conceive normally. Infectious vaginal catarrh alone does not cause abortion. The possibility of it causing at times irregular oestrum periods or failure of conceptions is possible.

IMMUNIZATION AGAINST INFECTIOUS ABORTION[5]

For a period of five years the Imperial Board of Health conducted investigations to determine to what extent a passive or active immunization may control infectious abortion. An accurate interpretation of the results of the vaccination and the determination of the value of the various products is very difficult. Abortion in a herd may suddenly cease for various reasons. For instance, a diminished virulence of the virus may bring about a spontaneous cessation of abortions. Besides the disease running through the entire herd may also be responsible for the disappearance of the disease. Only in excluding all these possibilities can a sudden cessation of abortions be attributed to the action of vaccination. The solving of this question, therefore, requires very extensive investigations of several years. The experiments of the Imperial Board of Health involved 3,000 animals in 80 herds. Of these, 1,650 were vaccinated and 1,350 served as controls. For the vaccination they utilized living and killed abortion cultures, abortion immune serum as well as abortion cultures and immune serum. The results of the vaccination were as follows: Following the vaccination the total number of abortions diminished by 10%. In the control animals it increased by 5%. The passive immunization of pregnant animals with the abortion serum failed entirely. Non-pregnant animals with a record of one previous abortion proved protected against further abortions by the injections of living cultures. Two injections of killed cultures produced in non-infected and infected animals a protection against the natural infection which lasts for two years. Two injections with live cultures in non-infected cattle does not invariably produce a life immunity. In order, therefore, to obtain lasting results in infected herds it is necessary to continue the vaccination for several years with abortion cultures.

(See also page 277)

FOOT-AND-MOUTH DISEASE IN MAN[5]

Time and again during various outbreaks in America and the continent cases have been reported of the disease occurring in man, but in a large number of instances the disturbance in health has been so slight that the medical attendant has not been notified, and in all probability the disease is more common than is generally believed. The human subject may be infected by direct contact with affected animals, either by the transference of virulent saliva or contents of pustules to the mucous membrane of the mouth, to the conjunctiva, or through already existing wounds. More frequently, however, infection is carried by milk and its produce (cheese, whey, butter, &c.) from infected cows; and consequently human beings may be affected in areas where foot-and-mouth disease does not exist.

—A. K. Cameron, The Lancet.

1. Clinica Vet. 1921. No. 5 and 6.
2. Derl. Tier. Woch. Vol. 37, No. 40.
3. Munch. Med. Woch. No. 28. Vol. 63.
4. Arch. f. Wiss. u. Tarkt. Tier. Vol. 47.
5. Arb. A. D. Reichsgesund. 1920.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Swine Parasites

IN a paper published in the April issue, the eggs and larvae of some dog, cat and fox parasites were discussed and figured. This paper continues the discussion of eggs and larvae in feces in the case of swine.

In view of the fact that one of the protozoan forms is very commonly present in swine feces and may be mistaken for a parasite egg, this form is briefly noted here. It is Balantidium coli, one of the ciliates. In fresh feces it may be milked or siphoned out as is so often the it will resemble the parasite as figured here (Fig. 1). In older feces it is found encysted and is then much more suggestive of a parasite egg.

Tapeworms are rarely found in swine and can not be regarded as normally parasitic in this host. The few records we have of these worms from swine indicate, for the most part,

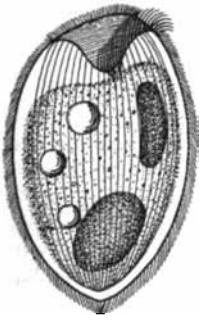


Fig. 1. *Balantidium coli.* Enlarged. From Gedoelst, 1912, after Leuckart.

that they are present as a result of the swine having eaten entrails of sheep or other animals, the swine being slaughtered shortly afterwards while the worms were yet present and undigested, or that the worms had developed in the swine but had failed to attain the normal development attained in the usual host, the worms being sterile. In view of this fact, the injunctions occasionally published by some writers, advising the feeding of pumpkin seed or other vermifuges to swine to remove tapeworms, are not well taken.

Of the flukes present in swine in this country, the common liver fluke, Fasciola hepatica, which occurs in swine, sheep and cattle, may be left for consideration in connection with the parasites of sheep, the usual hosts. The lung fluke, Paragonimus westermannii, is not uncommon in swine in some parts of the United States, including parts of Texas, Oklahoma and Louisiana. The form in swine has been called P. kellicotti, as a different species from that in man, but the Japanese writers regard the forms from man and swine as identical. The eggs are coughed up and probably swallowed, as a rule, passing out in the manure. These eggs (Fig. 2) are 78 to 96u long by 48 to 60u wide, with an operculum or lid at one end.

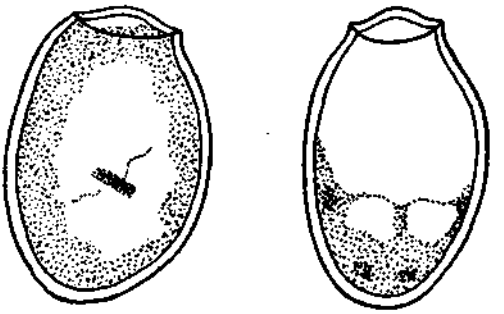


Fig. 2. *Paragonimus westermannii.* Eggs from mucus in lung. x 475. From Ward and Hirsch, 1915.

Of the nematodes of swine, probably the most important, as a rule, is the ascarid, regarded by most authorities at present as identical with the common ascarid of man, Ascaris lumbricoides, though yet discussed in many texts as A. suilla. The eggs (Fig. 3) of this worm are from 56.5 to 87.5u long by 46.5 to 57.5u wide; they are elliptical, with thick,

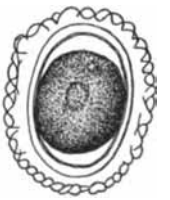


Fig. 3. *Ascaris lumbricoides.* Egg. Enlarged. From Leuckart, 1868.

transparent shells surrounded by a thick layer of albumen which is irregularly mammilated and yellow, and are not segmented when deposited.

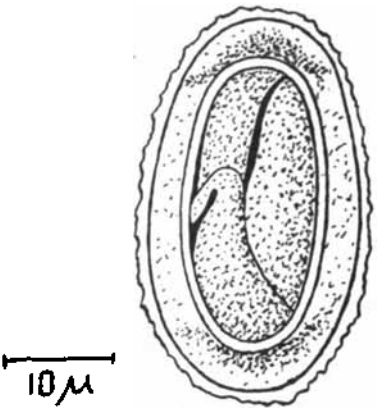


Fig. 4. *Arduenna strongylina.* Egg. From Foster, 1912.

There are two species of spirurid worms, Arduenna strongylina and Physocephalus sexalatus, which are not uncommon in the stomach of swine. The eggs of Arduenna strongylina (Fig. 4) is elliptical, 34 to 39u long by 20u wide, thick-shelled, the shell surrounded by a thin irregular membrane, and contains a well developed embryo when deposited. The egg of Physocephalus sexalatus (Fig. 5) is elliptical, 34 to 39u long by 15 to 17u wide, thick-shelled, the shell surrounded by a thin irregular membrane, and contains a well developed embryo when deposited.

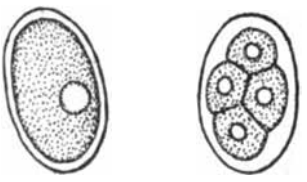


Fig. 5. *Physocephalus sexalatus.* Egg. From Foster, 1912.

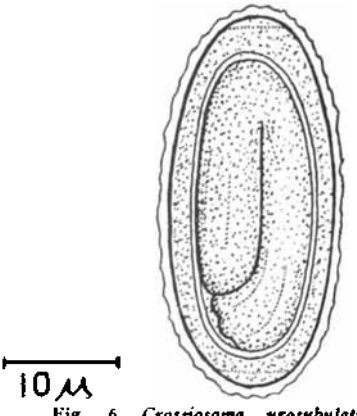


Fig. 6. *Crassiosoma urosubulatum.* Eggs. Enlarged. From Alessandrini, 1909.

The eggs of the swine whipworm, Trichuris suis, are 52 to 56u long, brown, and lemon-shaped, as in the case of other species of the genus Trichuris, such as Tr. depressiuscula, which was figured in the previous paper. In the case of a closely related and highly important worm, Trichinella spiralis, which occurs in swine, eggs and larvae are not found in the feces, as the eggs, which have a delicate vitelline membrane but no true egg shell, hatch in the maternal uterus and migrate through the tissues of the host, the parasite being transmitted by new hosts eating such infested meat and not through the medium of the feces.

Swine in this country and elsewhere are infested occasionally by a worm belonging in the group of hookworms. This swine hookworm is known as Globocephalus longemucronatus or Crassiosoma urosubulatum. The description applied to the worm under the first of these names does not appear to conform to the description given for the worm described under the second name, but the points of agreement are such that it is probable that they are identical. The eggs (Fig. 6) of this worm are elliptical and 52u long by 35 to 36u wide. In this connection it is of interest to note that the Old World hookworm of man, Ancylostoma duodenale, has been reported from swine in the Ellice Islands by O'Connor and that Legg and Reuben state that they find it relatively common in swine in Queensland, Australia. Ransom has recently reported the occurrence of three specimens of the dog and fox hookworm, Uncinaria stenocephala, from the stomach of a pig in Canada, and notes that there are specimens of Bunostomum trigonocephalum, the sheep hookworm, labeled as collected from the pig, in the collections of the Federal Bureau of Animal Industry. A new species of hookworm from swine in the Island of Trinidad has just been described by Ackert and Payne under the name of Necator suillus. The eggs are 56 to 66u long by 35 to 40u wide.

The eggs of the nodular worm of swine, Œsophagostomum denatum, are similar in shape to those of the hookworms and are 60 to 80u long by 35 to 45u long. Another nodular worm, Bourgelatia diducta, has been described from swine in Annam. The eggs are ellipsoidal, 69 to 77u long by 38 to 43u wide, and in the morula stage when deposited.

The eggs of the kidney worm of swine, Stephanurus dentatus (Fig. 7), are elliptical, 100 to 120u long by 55 to 56u wide, thin-shelled, and segmenting when deposited. These eggs pass out in the urine, but may be found in the feces as a result of mixing urine and feces.

Fig. 7. *Stephanurus dentatus.* Egg, containing embryo. Enlarged. From Taylor, 1900.

The eggs of the small red stomach worm of swine, Hyostrongylus rubidus (Strongylus rubidus) are elliptical, 45u long by 36u wide, and segmenting when deposited.

An interesting nematode of swine which has not yet been reported from the United States is Gnathostoma hispidum. The eggs (Fig. 8) are 70 to 74u long by 39 to 42u wide, the shell marked with small depressions and with a wart-like projection or plug at one pole; segmentation begins in the anterior portion of the maternal uterus.

There are two species of lungworms, belonging in the genus Metastrongylus, in swine, these being M. elongatus and M. brevivaginatus. The eggs of these worms hatch in the

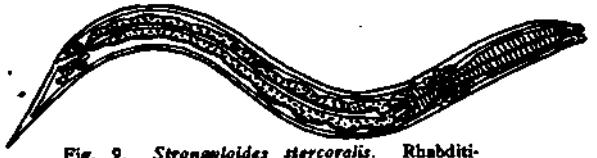


Fig. 9. *Strongyloides stercoralis.* Rhabditiform larva from fresh feces. x 310. From Stephens, 1916, after Looss.

lungs and the larvae are coughed up and swallowed, as a rule, the larvae passing out in the feces. The larvae of M. elongatus are 220 to 350u long by 10u wide, clear anteriorly and granular posteriorly, and with a knob-like tail.

The larvae of these lungworms must be distinguished from those of worms of the genus Strongyloides. Members of this genus occur as parasitic females which are parthenogenetic, no males being found. The eggs passing out in the feces usually contain embryos, which soon hatch under ordinary conditions, giving rise to rhabditiform larvae. These rhabditiform larvae may then give rise to filariform larvae, capable of reinfesting host animals, or may develop to free-living adult males and females, which reproduce and give rise to

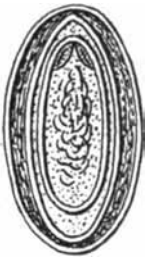


Fig. 11. *Macracanthorhynchus hirudinaceus.* Egg. Enlarged. From Travassos, 1917.

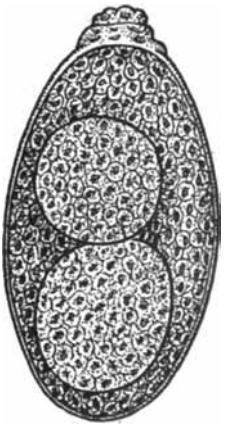


Fig. 8. *Gnathostoma hispidum.* Egg. x 700. From Ciurea, 1911.

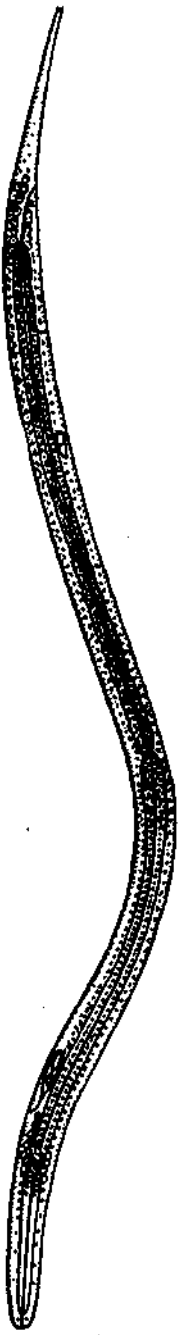


Fig. 10. *Strongyloides stercoralis.* Mature filariform larva. x 620. From Stephens, 1916, after Looss.

rhabditiform larvae, which later develop to infective filariform larvae. One species which has been described from swine in Strongyloides suis. Another species which is reported from swine is the one found in ruminants, Str.

papillosus. Ackert and Payne have recently reported the form from man, Str. stercoralis, from swine in the Island of Trinidad. The rhabditiform larva (Fig. 9) and the filariform larva (Fig. 10) of the human Strongyloides are figured here.

The eggs (Fig. 11) of the thorny-headed worm of swine, Macracanthorhynchus hirudinaceus (Gigantorhynchus gigas) are oval, 90 to 100u long by 51 to 56u wide, and provided with 3 shells; the embryo is coiled up and has at the anterior end 4 large hooks and a number of smaller ones.

THE DOSE OF CARBON TETRACHLORIDE

Will you kindly inform me as to the proper dosage of carbon tetrachloride for dogs and cats? Is the drug very poisonous in large doses? Is it a safe treatment for pups and delicate dogs? And, is it an efficient vermifuge for horses and swine and what is the dose? Is it necessary to follow the treatment with a cathartic? Any information you can give me on the drug as a vermifuge will be appreciated.

Reply by Dr. Maurice C. Hall: The therapeutic dose of carbon tetrachloride for dogs and cats is at the rate of 0.3 cc. of the drug for every kilo (2.2 pounds) of live weight of animal. The dose for a dog of average size (22 pounds) is 3 cc. This should be given in capsules after fasting the animal overnight, without purgation of any sort before or after treatment. Care must be taken to introduce the capsules into the esophagus without breaking them, as the drug is quite dangerous if introduced into the lungs. If, by accident, any of the drug gets into the lungs, the animal will usually stiffen out and collapse or show signs of intoxication, in which case artificial respiration is sometimes of value in reviving the animal. In the digestive tract the drug appears to be unusually free from toxic or irritant effects so far as dogs are concerned, as adult dogs will tolerate, without evidence of any bad effect, extremely large doses. While it is probably true that carbon tetrachloride, like many other drugs, is less well tolerated by pups than by mature dogs, it also appears that this drug is safer than the other drugs now in use for removing hookworms, for dogs of any age.

From the few experiments which have been made on horses, it appears that carbon tetrachloride in doses of 25 or 50 cc. will remove all the ascarides and worms of the genus Strongylus from the intestines and will remove about one-fourth of the bots. It is inferior to carbon bisulphide for removing bots and to oil of chenopodium for removing the cylicostomes from the large intestine.

Carbon tetrachloride is less effective than oil of chenopodium for removing ascarids from swine. Chenopodium is quite effective when given at a dose rate equivalent to one fluid dram for an animal weighing 100 pounds, but it is necessary to use about one fluid ounce of carbon tetrachloride to secure results which appear to be somewhat less satisfactory than those obtained with chenopodium. Carbon tetrachloride is said by Doctor Peters to be effective in removing the thorny-headed worms of swine, but no experimental evidence has yet been publishd in regard to this.

I am enclosing a list of references covering the publications to date in regard to the use of carbon tetrachloride as an anthelmintic.

List of References to Carbon Tetrachlorid as an Anthelmintic

Allen, J. A., 1921.—Parasitic diseases of foxes in captivity. Canad. Vet. Rec., Toronto, v. 2 (4), Dec., pp. 9-11.

Hall, Maurice C., 1921.—Carbon tetrachlorid for the removal of parasitic worms, especially hookworms. J. Agric. Research, Dept. Agric., Wash., v. 21 (2), Apr. 15, pp. 157-175.

Hall, Maurice C., 1921.—Carbon tetrachlorid for hookworms in dogs. J. Am. Vet. M. Ass., Wash., D. C., v. 59, n.s., v. 12 (3), June, pp. 310-312.

Hall, Maurice C., 1921.—Carbon tetrachlorid for hookworms in dogs. Vet. Med., Chicago, v. 16 (7), July, pp. 52-54.

Hall, Maurice C., 1921.—Treatments for removing the gastro-intestinal parasites of horses, with some tests of carbon tetrachlorid and of mixtures of carbon tetrachlorid and carbon bisulphide. N. Am. Vet., Chicago, v. 2 (11), Nov., pp. 512-524, 550.

Hall, Maurice C., 1921.—The use of carbon tetrachlorid for the removal of hookworms. J. Am. M. Ass., Chicago, v. 77 (21), Nov. 19, pp. 1641-1643.

Allen, J. A., 1922.—A treatment for hookworms in the silver black fox. Black Fox Mag., N. Y., v. 6 (2), Feb., pp. 14, 42, 1 fig.

Allen, J. A., 1922.—The efficiency of carbon tetrachlorid against hookworms in the silver black fox. J. Am. Vet. M. Ass., Wash., D. C., v. 61, n.s., v. 14 (1), Apr., pp. 31-37, 1 fig.

Hall, Maurice C., 1922.—The animal parasites of foxes, with notes on treatment and prophylaxis [Author's abstract]. Am. Fox & Fur Farmer, Utica, N. Y., v. 1 (8), Feb., pp. 12-13.

Hall, Maurice C., 1922.—The animal parasites of foxes, with notes on treatment on prophylaxis. Black Fox Mag., N. Y., v. 6 (2), Feb., pp. 3-4, 6, 36-41.

Editorial, 1922.—Carbon tetrachloride in ankylostomiasis. Lancet, Lond., (5139), v. 201, v. 1 (8), Feb. 25, p. 391.

KENTUCKY EWE DISEASE: A SUGGESTION

On page 255, May issue, you mention disease of ewes in Kentucky. Perhaps your trouble may be Oestrus ovis, described in Hutyra and Marek, Vol. 2, or perhaps Acute Diffuse Parenchymatous Hepatitis of Sheep on page 520 of the same volume may help you. —V. C. P., Wash.

Zootechnics

Edited by E. MERILLAT, M. D. V.

FILLED MILK

The harm filled milk is capable of doing to the dairy industry is comparable to the destructive influence of motor drawn vehicles on that of the horse, and although it is growing among us and is arousing the dairy interests to action, the menace is hardly recognized as such in veterinary circles.

It is important that we array ourselves with the movements against filled milk, just as we would array ourselves against any menace to animal-husbandry, for here we are attacking not only a harmful food product but one that can do an incalcuable damage to agriculture and to our profession.

Filled milk can be produced very cheaply. In fact, it is sold at wholesale as low as two and a half cents a can. It is such a good imitation of condensed milk that the retailer can turn it over for 10 to 11½ cents and thus bring staggering results to producers of honestly made milk products sold in competition.

POPULARITY OF MORGAN HORSE INCREASING IN SOUTHWEST

Because of its superiority in activity, hardiness, and stamina, the Morgan horse is increasing in popularity in the Southwest where stallions of the breed are being used to improve the saddle horses on the range. Used on the native light mares they produce a useful animal that satisfies the ranchers' demands.

As a result of the efforts of the United States Department of Agriculture in improving the Morgan and in stimulating a renewal of interest in this useful American breed, good breeding specimens are now found in many parts of the country. In order to obtain suitable remounts for the service the Army has placed Morgan stallions in Kansas, Missouri, Montana, Nebraska, and Texas. A few are owned privately in Illinois, Missouri, and Iowa, but the stronghold of the breed remains in New England, particularly in Vermont, where it was first developed.—U. S. Clip. Sheet.

The "Truth in Fabrics" bill which has been in Congress for some time, is sleeping somewhere in the archives of the Senate. Although designed to protect the consumer against shoddy and part wool clothing, and to help develop the sheep industry, there seem to be influences stronger than the agricultural bloc, which prevent it from being enacted into a law.

AGE TO BREED BITCHES

At what age is it considered advisable to breed bitches? Six to eight months is given as the age of puberty and considering that some bitches are undeveloped at that age I am quite undecided as to the proper time to begin mating. I would thank you for a reply.

Reply: Bitches like the female of any other species should not be bred too young. It is always better to wait until the second heat period. Exception might be made in the short-lived dogs such as the English bull dog which develop much more rapidly than most other breeds.

BUTTER FAT AND FEEDING

Can the fat content of milk be improved by feeding or is the matter purely one of individual quality?

Reply: The fat content depends upon the cow and very little upon the food. Perceptible increase is sometimes induced by feeding but in the end of any definite period it is always found that the average is the same.

KEEPS FEEDER PIGS AT HOME UNTIL FINISHED FOR SLAUGHTER

A co-operative live-stock shipping association in Indiana helps to keep feeder pigs at home instead of sending them to market when they are offered by members for shipment. This feature of co-operative work has been called to the attention of the United States Department of Agriculture, which thinks the idea a good one. Farmers who desire feeder pigs inform the manager of their wants, and when pigs of the feeder type are brought in on shipping day all but a few head are kept at home until finished for slaughtering. Only enough are sent to market to determine the prevailing market price. Those retained are sold to farmers desiring them at the Buffalo

market price less transportation and marketing costs, the usual costs assessed against those animals going to market.

The American food supply will, no doubt, always be sufficient to prevent starvation, but it requires more than quantity to prevent malnutrition.

Meat scraps and ground bone are an excellent food for poultry, but care should be exercised in the selection of these foods to guard against the introduction of disease.

Cabretta is a term used in several large cities to denote kid meat. There is a movement on foot to give a special name to goat meat to correspond to pork, mutton, etc. The name "goaton" has been suggested.

There are $8,000,000 invested in fox farming in the United States, over 500 fox ranches and more than 15,000 silver foxes in captivity. The industry is said to be the most promising departure of the period in animal husbandry.

Egg production can be increased by the use of artificial light and proper feeding. The most successful poultrymen provide electric or other artificial light during the winter months at 4:30 a. m. and feed just before the hens go to roost.

A hog waller even the concrete type is a nuisance on any farm. They are favorable for the harboring of parasites and various infections. Provision of shade during the summer months is more preferable than the maintenance of a hog waller. Swine are clean in their natural wild state, then why subject them to filth in domestication?

THE FUTURE OF CAVALRY

After a study of all the events of the recent war and prospecting into the needs of the future, experts from the British Army announce that cavalry is not an obsolete arm of modern military operations. In spite of such adjuncts as aeroplanes and tanks they say the day has not yet arrived when mechanical contrivances can replace the man with the rifle and the man with the horse. The campaign in Palestine is cited as an example of achievement by cavalry.

It has been estimated that there were between 18% and 25% more sows bred for spring farrowing in 1922 than in 1921.

It has been reported that the Western Texas Goat Growers are expecting a short kid crop. The extent of the expected losses is variously estimated at from 10 to 25 per cent.

Lad's Iota, a Jersey cow owned by S. J. McKee of Independence, Oregon, has been proclaimed as the champion butterfat producer of mature cows. Her record of production for one year was 1047.94 pounds of butterfat.

The Bureau of Animal Industry of the United States Department of Agriculture is "on its toes" ready for a possible outbreak of foot and mouth disease, made possible by the prevalence of the disease in Europe.

The Eastern States Tuberculosis Eradication Conference of the United States Bureau of Animal Industry will be held at Hartford, Conn., June 6, 7 and 8, 1922, under the auspices of the Connecticut State Veterinary Medical Association and Commissioner of Domestic Animals.

A high authority on dairy cow judging, whose opinion I fear to challenge, said: "The ribs should be well strung so that you can lay three fingers between them, denoting that you have a better digestive capacity." This may be entirely correct for all I know, but just what the ribs have to do with digestion is beyond me—a mere vet.—I. D. K.

As milk flows from the mammae through the influence of mechanical stimulation it is essential that milking manipulations should convey only perfectly agreeable sensations; and in order that there be no interruption to the normal functioning of these sensations, quietness must prevail in the environment. Soft pleasing music is even helpful.

Harsh, hasty milking, rough handling of the cows, and pandemonium in the surroundings are capable of decreasing the production of a single milking as much as 33%, and will eventually reduce efficiency of the best dairy herd both as regard milk production and breeding results.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

COCKLE BUR

"For the last week I have been having calls on cattle of all ages running on rye and wheat pastures on low, overflowed land having a thick growth of cockle-bur. Some of these calls have been twenty miles apart. The cattle show the first symptoms eight or ten hours after being on the pasture; staring eyes, staggering gait, frothing at the mouth, very nervous resembling strychnin poisoning, paralyzing and going down and dying in from one to four hours after the first symptoms.

"Autopsy shows congested areas in muscles under the skin, and mucous membranes of large bowels congested with small amount of blood in the bowel. The liver is dark in color, the gall bladder stretched to its limit with a light green colored fluid. The entire lungs are congested, spleen normal in size but showing slight decomposition, kidneys normal, and large quantities of cockle-bur stems in the rumen.

"I have not been able to get any results from drugs. Large doses of strychnine seems to hurry them up. Chloral hydrate did not give me any results.

"I diagnosed these cases cockle-bur poisoning and have had no further trouble when the cattle were removed from the pastures containing cockle-burs. The loss has been heavy in some herds. There has also been a heavy loss in hogs through here from this cause, one man losing twenty-five head in one night. Has anyone else had this trouble?"—C. E. W., Okla.

Reply: Nearly every spring the present writer has received letters similar to the above in regard to cocklebur poisoning. The cocklebur plant contains the substance Xanthostrumarin, a poisonous glucoside, but we do not know much about its action on animals. It is certain that the burs act injuriously in a mechanical way on hogs. From all the cases reported to me, and several of these have been reported in VETERINARY MEDICINE, no mention is made of mechanical injuries. Dr. Williams mentions the occurrence of cocklebur stems in rumen. I am inclined to think that the above cases of poisoning are not due to cocklebur, but to something more powerfully poisonous. Some veterinarians should do some experimental work with cocklebur. It is, of course, possible that this has been done and that I have overlooked it.

Comment: Dr. Kinsley has observed three deaths in Jersey calves from gastro-enteritis apparently caused by cockleburs. The losses ceased when the herd was removed from the pasture ridden with cockleburs.—Ed.

SAGE BRUSH

We are sending you under separate cover some specimens of sage which cattlemen are claiming is causing a sort of poisoning among their cows. It is very evident cattle are eating large quantities of this sage brush at this time and would like your opinion as to whether it was ever considered poisonous for this species of animal.—O. M. F., Texas.

Reply: This particular specimen is Artemisia frigida. This has been compared for me by Mr. Cratty and the species occurs from Texas to Saskatchewan in the semi-arid region of British America.

Of course it is well known that we have several species of Artemisia (wormwood) containing poisonous substances, like absinth which is a stimulent and tonic. This one also contains the well known substance absinthin, and the oil produces cerebral disorders. Santonin which is a worm remedy also comes from the species. There are certainly not many cases on record where species of Artemisia have been suspected of being poisonous. It is a well known fact that the powdered material of the native sage brush produces sneezing. I have this to say in regard to the species in my Manual of Poisonous Plants:

"Various species are suspected in Montana of being poisonous to stock, but no specific cases have been reported to the department. At Boston in May, 1900, it was noticed that the terminal branchlets of A. tridentata had all been eaten off from a considerable number of plants."

I would, therefore, say that the plant in ques-

tion is not poisonous, unless inordinate and large amounts of it are fed, and without other food.

MOLDY MIXED FEED

Am sending under separate cover samples of a mixture of feed made of oats, corn, alfalfa, salt and cane syrup. This feed has been used in this locality for some time and given good results but this sample is out of some feed that has become damaged from being wet. There were five animals (mules) that died in the course of two weeks time and in my opinion death was due to the moldy condition after becoming wet. Would like you to make examination and give report on this as soon as practical.—L. E. B., Ala.

Reply: This mixed feed is very moldy and smells musty. The same has been submitted to an examination with the following results: The corn contains a species of Fusarium in considerable quantity, also some kernels contain the common blue mold (Aspergillus glaucus). The form found here contains the perfect spores of the fungus in asci, which means that this material has been moldy for some time. There is also a brownish mold (Cladosporium) and the alfalfa contains a fungus which we have not determined. Every sample of the alfalfa is covered with this fungus. There are also numerous bacteria. It appears to me that this material is not good feed to use and I should say that feeding such material might easily cause poisoning in livestock. I wish I might impress on the farmers that such material should not be used for feed.

GOLDEN GLOW

Specimens have apparently caused auto intoxication of a herd of 18 pigs and 3 sows. The plant is only about 6 inches tall now. Enclosed are pods of last year's plant.—F. D. R., Neb.

I am sending samples of weed which has been poisoning hogs. I have been to the place every spring for the last 3 years to see hogs which were poisoned when turned into the pasture. There is a lot of wild hemp in the pasture but do not think this causes the trouble. Hogs get blind and stagger around, go into convulsions, finally getting down and become comatose. I have good luck when I treat them at the start with large doses of tannic acid. Hope to hear from you as to what this weed is.—J. A. B., Ia.

Reply: One of the plants sent to me proves to be a wild gooseberry (Ribes gracile) which could only be injurious in a mechanical way. The other plant is a perennial and is what is called golden glow (Rudbeckia laciniata) a native member of the sunflower family which is common in low grounds in Iowa. I have had a number of letters at different times in regard to the supposed poisoning from this plant. I have suspected it was poisonous. Specimens of this plant have come from Kansas, Illinois and Iowa. There can be no question but what the wild plant of hemp is poisonous. I am sure the strong odor from young hemp plants will deter hogs from eating the same. I should like to hear from others in regard to golden glow. It is easily recognized. Stem smooth, branching, 0.5-2 m. high; leaves smooth or roughish the lowest pinnate, with 5-7 cut or 3 lobed leaflets, upper leaves irregularly 3-5 parted; heads long peduncled.

I should hardly consider this plant capable of causing auto-intoxication as I understand that term. I believe, however, that it is injurious to livestock.

MILK WEED CAUSES MANY DEATHS

Stock poisoning by weeds on the western ranges is often so insidious that it is difficult to trace the cause of the trouble to its correct source. This is true of the various milkweeds, some of which have poisonous properties, while other suspected varieties have been found to be nonpoisonous.

A recent publication of the United States Department of Agriculture describes one of the most injurious of these weeds, the Mexican whorled milkweed, which is believed to have caused much of the sheep trouble attributed to some other varieties. The plant ranges from Mexico northward through California, western Nevada, and southern Washington to eastern Idaho. It is also known as the narrow leaf milkweed. Feeding tests indicate that the poisonous qualities are most pronounced in the leaves. Only sheep were used in the feeding experiments, but other investigators assert from experience that cattle also are subject to poison.—Weekly News Letter.

I have found phenol a good antidote for black cherry poisoning. It grows in abundance here (W. Va.) and if cattle eat the leaves when wilted it is deadly poison.—Schuck.

Canine, Feline and Avian Practice

Veterinary Service in the Poultry Industry*

By Professor Allen G. Phillips, Lafayette, Ind.
Professor of Poultry Husbandry, Purdue University.

WHY I have been called up here to talk about the old hen to you is more than I know except in nineteen-seven I was a sheep inspector and was called doctor. They didn't have enough veterinarians in those days and they called animal husbandmen in New Mexico and Mexico, "Doctor" and by the way, I got my eye teeth cut. The veterinary profession has been a big help to me. I have been called from Indiana to come up here and discuss this question with you and I say I don't exactly know why. It might be that once there was a rooster who flew over the fence into the neighbor's yard and brought home a big ostrich egg. He had an awful time getting it back. He got it over in the pan and called all the hens around it and said, "Now, ladies, I want you to look at this egg. I have no complaints to make but I want to show you what they are doing in other countries." That may have something to do with it because they have no poultry department in the Illinois University. Mr. Hart of Cornell University will, however, soon be put in charge of such a department on the 1st of February. He will co-operate with you and will be a big asset to you.

A Billion Dollar Industry

Now the poultry business in this country is something you ought to realize in order that the very facts discussed awhile ago concerning the use of small animals in your practice may be appreciated. I want that pretty clearly put out. I don't put the poultry business with the cat business. I don't put it with the lion or tiger or parrot or dog business. The poultry business in the United States is a billion dollar industry and last year it produced one billion dollars and more because no hens in cities were counted in making up our census.

In nineteen-ten there were over four hundred million hens. I don't want to give you a lot of statistics because a man once told me there were three kinds of lies; black, white and statistics. At the same time, I want you to get clearly the fact that the hen is a big thing, although she in herself is small. In the last ten years this industry has increased many per cent.

Phenomenal Increase

As a practitioner, a man is interested in knowing whether the business is going forward or backward. It is going forward. There are three million more hens in Indiana than there were ten years ago. In Illinois there are over five million hens. There is something for you to work on because it was said awhile ago that there are plenty of sick chickens with feathers on, outside of that I know nothing. The increase in Illinois last year aggregated sixty-seven million and more dollars.

Figures to Ponder Over

Now if I can take Indiana for an example, (and I am sorry I can't get the figures on your state because the state census report as I get it regarding agriculture is not available), I find Indiana produced fifty-two million dollars' worth of poultry, the farmers sold thirty-one million dollars' worth of that and ate twenty-one million dollars' worth. The average farmer is not apt to consider the hen particularly; if he expects his wife to pay for the groceries out of the poultry business he doesn't think how much they eat. When nearly half the poultry produced in the middle west is consumed at home that makes it look a little different. We found Illinois is the second state in the union in production of poultry and eggs. Iowa is first in production; Illinois is second; Missouri is third; Ohio is fourth; Pennsylvania is fifth; and Indiana is sixth. That puts most of the poultry industry in this corner.

Chickens Per Farm Not High

If I can take Indiana as an example I might say of all the fifty-two million dollars we produce in poultry, there are only eighty-six hens on a farm. These eighty-six hens produce only about sixty-one eggs per hen yet look at what the aggregate does. That means nearly three hundred dollars for every farm. Nearly three hundred dollars for every farm!

*Ext. Rept. Ill. S. Vet. Med. Assn., 1921.

It also means an income of over three dollars from every hen. Now that might give us just briefly the fact that the poultry industry is not an infant industry. It is worthy of every bit of thought that any phase of agriculture ought to have.

Eggs Class with Milk as a Food Essential

We all know that poultry and eggs are food essentials. You were talking awhile ago about what to feed the sick dog and the first thing mentioned was eggs. Any physician will tell you the first things many times a human needs, when an invalid, are milk and eggs and I put them both in the same class as far as food values are concerned. I will admit the oatmeal manufacturer says, "Eat one plate of our oatmeal and you can have the equivalent of one dozen eggs," or the raisin man says, "A bunch of our raisins is equal to four or five quarts of milk," but you and I know that is simply advertising. They have to go away off the subject to prove that. Poultry and eggs are on every table and if they weren't so blessed high you and I would eat more of them. That is the reason we don't. Every man, woman and child in the city of New York eats over twenty-one dozens of eggs every year. I believe out here where we get them lots cheaper we eat more. Since I get eighty-eight cents a dozen in New York, I believe we are eating them because we don't have to pay that much.

Importance Forecasted by Dean Skinner

When I went to Purdue University in nineteen-ten to organize a Poultry Department—asked Dean Skinner why in the world he had organized a Poultry Department. He said, "Phillips, as the days go by and the years roll along we are going to find that the beef industry particularly, followed by the hog industry is going to become a more precarious part of agriculture. So far as productions are concerned there is very apt to be less of it as our farms become smaller, our population increases and farming becomes more complicated. The hen must be the individual to produce food for human consumption." Any chicken man, of course, will tell you that because any chicken man believes in his industry or he wouldn't be in it and have a little stock man tell him that it must be based on something besides favoritism. We know the poultry business is economical. Besides, we know if there is anything on the farm that is profitable it is the old hen. I have had live stock men in our state tell me in the last two or three years that they had to increase the number of hens to hold them over when live stock wasn't paying. For a beef cattle man to admit the hen is the main thing is the biggest victory we want.

Men Are Replacing the Women

Regarding extension work: eleven years ago it was largely women who raised chickens. I think you will admit that a woman is harder to put a business proposition before than a man. She can't understand because that isn't her forte, she can understand domestic problems better. I am not speaking in any uncomplimentary way at all. The poultry business on a farm must be as much a man's business as it is a woman's. When we get it on a dignified basis it will be a good business because a man doesn't like to see anything die and if it belongs to the woman and dies he doesn't care.

Fits Into Agriculture

The hen business fits into agriculture. It isn't the most important part of agriculture but its fits in as a part of it. Every farm in Illinois ought to have two hundred hens and every farm with two hundred hens would bring the farmer seven to eight thousand dollars income. How much that profit is, is dangerous for me to suggest. Of course, profit depends on the man in the business more than it does on the business. Some people say, "Is the poultry business profitable?" It all depends on you and where it is. I think that is true of every line of business we have.

Disease of Poultry

Now your Secretary asked me to talk a little about the diseases of poultry. You will have to pardon me as I am not a veterinarian, I am not particularly trained along the line of diseases but I do know there are some things I have come in contact with, some things I have learned, at least the high spots. I know most of you when you went to veterinary college did not have an opportunity to study poultry. I think I can give you a few hunches that may help you to meet certain situations.

The Factor of Malnutrition

The first thing you have to give consideration is the managerial end of the poultry business because malnutrition, in my estimate, is as big a cause of loss as are infectious diseases among poultry. It has been mentioned today a dozen times. I enjoyed hearing you speak of the jack and that management was as big a problem there or the biggest thing that

(Continued on Page 342)

HOG SERUM FOR DOG DISTEMPER

Case No. 1

I have had a bitch affected with distemper that had been given as much red iodide of mercury as would lay on the point of a small knife blade, repeated every two days. This treatment was thought to be a cure for distemper by the dog fancier and sportsman who owned him and who said he had cured many cases and had known that others have also been successful with this treatment. As an adjuvant to this treatment the county farm adviser was called in on account of the reputation he had made with the use of the hypodermic syringe. As there was a bottle of hog cholera serum handy, he gave the dog a dose of 20 minums with instructions to repeat the dose in two days, if the dog was living. In the meantime I was called and my advice solicited. I stopped the mercury and also the serum and wrote a prescription for the general tonic to be preceded with castor oil.

The dog had been quite sick from what they told me and at this time had some fever, and the breathing was very labored, but strange to say, the dog had never lost his appetite.

I am not trying to be severe in my criticism, but this treatment is indeed a new one for distemper as far as I am concerned. Have you ever heard of this new therapy?—B. E. C., La.

Case No. 2

I have just had a client in my office settling a bill for a dead setter, nine months old, who told me about an article he read in the American Field about a veterinarian who has cured 128 cases of dog distemper with hog cholera serum, losing only two cases. Will you please give me your opinion about this treatment?—G. R. S., Wash.

Case No. 3

For canine distemper, have you ever tried making a subcutaneous injection of clarified hog cholera serum in doses prorated as if for hogs of similar weights? Do not say it will kill the dog or is not scientific. Make the injection, collect your fee and send a cured dog home. This is more economical than the canine distemper vaccines and gives just as good results.—G. E. E., Miss.

Reply: Several letters have come to this office recently announcing the remarkable results obtained in the treatment of canine distemper with hog cholera serum, each one announcing the marvelous results they are having with this unusual serotherapy, and as a consequence we publish these queries simply to indicate that the treatment is attracting some attention outside the profession. A clipping from Field and Stream (December, 1918) published in VETERINARY MEDICINE in June, 1919, refers to the benefits of the hog-serum treatment, and an interview with Dr. Chas. Crowe, veterinarian for the American Field, brings out the fact that hog-serum has been used some among dog fanciers because blood serum has proved helpful in the treatment of this disease. Hog cholera serum is selected because it is blood serum and not for specific effect.

OTITIS EXTERNA IN A DOG

I have under my care a Chesapeake Bay spaniel 12 years old that is affected with canker of the ear. I have been using Dr. Saunder's treatment recommended in his "Canine Medicine and Surgery," for about four weeks without success. A hint as to what I should do for this disorder will be appreciated.—A. C. K., N. D.

Reply: The canal should first be well saturated with ether to dissolve the cerumen and desicated discharges, trim all the hairs that can be reached with the scissors, and then fill the cavity with a warm 2% solution of novocain to take care of the pain of the subsequent treatment and prevent shaking out of the pledgets of cotton. We then irrigate the canal well with a 3% solution of zinc sulphate and dust it well with boric acid to which iodoform may be added where there is no objection to the odor. Pledgets of cotton are very useful to take up the discharges when these are not thrown out by shaking the head. A treatment of this kind twice a day for a few days and then daily for two weeks will generally bring good returns in the acute cases. The chronic case especially in old dogs will require cauterization with a pencil of silver nitrate preparatory to the above treatment.

HYDROPHOBIA ERADICATION

As I am writing a paper for a health movement program to be given by the local board of health, on the subject of hydrophobia I would like information about any plan that might be promulgated to the end of making rabies as rare as it once was in England. Any suggestions you can give me will be appreciated.—Anon.

Reply: Rabies was eradicated from England by the simple process of not admitting any alien dogs into its boundaries except after a

long period of quarantine. It recurred there during the war through smuggling dogs over by soldiers and aviators during the war.

Eichhorn has recently made the statement that since the "virus" of rabies is so purely parasitic, preventive vaccination of all dogs once a year for two consecutive years would banish it from the earth for all time.

THE CAT

The cat is a living witness of the progress of mankind; of settled life; of civilization; but not of subjugation, submitting to man only so far as it feels like doing so. The cat does not place itself unreservedly at man's disposal. It has never, like other domestic animals, allowed itself to sink into contented slavery, and as a consequence, mankind invariably associates the cat with women. In fact everyone connects cats with femininity. Even in mythology, the cats belonged to the goddesses. Frega rode a chariot drawn by cats and other goddesses were attended by maids that rode on cats. Bart, the Egyptian Venus, was catheaded. In Egyptian history the cat is a household pet; in China, it has been used through all the ages by the housewives to tell the time of day by the size of its pupils; in legend, it is sacred to St. Martha, St. Gertrude, and the spinster. Sullivan and Balzac refer to the cat as revealing the presence of woman about the place; in fables men have changed cats into women, and it is quite natural for women to dote on them, while men are prone to do the opposite.

MANGE CURES FAIL

Would you please outline the best treatment for a practitioner to adopts for mange in dogs? My canine practice is not large enough to keep me "on my toes" on every detail and the information in the books I have and the journals I read is very conflicting, and does not seem to help me out.—J. J. L., Ore.

Reply: Mange due to acaridan parasites should never be difficult to cure. Your treatment probably fails because it lacks attention to details in regards to the preparation of the skin for the reception of the parasiticide you select. Proper preparation consists of such clipping, scrubbing and dislodging and dissolving of encrustation as the case requires. Acaridan parasites that do not actually burrow into the skin are often sheltered by filth and scabs. The cleaning up process brings them out where the parasiticide can destroy them. Then, since eggs are not destroyed by ordinary agents a second and third application is required to kill them when they have hatched and grown toward harmful maturity. It is, however, not possible to set the intervals of treatment because the incubation period is not known. There is a belief that eggs either sojourn in the skin for long periods or else the incubation is a varied one.

If an aqueous solution is used as the parasiticide it should be applied hot, because it has been shown that hot solutions are from 20 to 40 times more destructive than cold ones. If an unctuous mixture is preferred we recommend: flowers of sulphur, tincture of iodin, oil of tar and olive oil in the proportion of 1,1,8,8, respectively.

BOARD STANDINGS FOR CHICKS

Why is it that chicks do so badly when raised on a board floor? No matter how clean the place is kept all my efforts to raise a small brood fail.—J. W. W., Ill.

Reply: It is a well known fact that chickens can not be raised off the ground and that all attempts at poultry raising that ignore this fact go wrong. Poultrymen and every housewife in the country knows this and every amateur soon finds it out. Even when abundant grit is allowed and greens are included with the ration the chick on boards develop leg weakness, sicken with other complaints and begin dying.

The cause is probably due to the fact that chickens require the exercise they get by scratching for normal development and also that obtained by roaming about in the open. Close confinement is also harmful from the facts that the standings become soiled and infected from the excrement and that the variety of things the chicks is continually picking up from the ground is a balance of food requirement that can not be duplicated artificially.

Several years ago bacteriologists at Louvain University announced to the poultry raisers of Belgium that all efforts to control the serious scourges they were asked to investigate would fail as long as it was attempted to raise 10,000 chickens on a single acre of land. Chickens require space to roam upon that is large enough to be kept within the bounds of safety through the disinfecting influences of the elements, sunshine, rain, frost, etc.

Gapes is essentially a disease of young chicks and turkeys. It is manifested by sneezing, gaping, strangling, asphyxia and death.

TYPICAL FOWL CHOLERA

I am mailing to you by parcel post special delivery, a pathological specimen from a fowl.

History. This fowl was one of a flock of 300 chickens kept on a farm and allowed free range. Water supply pure. Feed which consisted of whole wheat and shelled corn was of fair quality, although I noted some of the corn was somewhat mouldy. Yards and houses were not in best of sanitary conditions; no infectious or contagious disease on this farm for the last two years. Three years ago they had chicken cholera on these premises. Birds all roost in hen houses, nothing affected but adult birds. One case of bumble foot noted on premises, no other disease except the one in question at this time.

First outbreaks noticed about two weeks ago when two birds sickened and died, no more trouble for eight days when eight died in one night. Total loss at present about twenty. Roosters seem to linger longer than the hens usually die in 48 hours; find some dead under the roosts and on the nests which have no symptoms whatever.

Symptoms. Diarrhoea, greenish in color, and watery in consistency, in the roosters. The comb and wattles become purple or cyanotic after they are affected for four or five days, usually find them dead lying on the sternum with head deviated to one side, legs out behind them, no high temperatures; a few elevated a degree or two, pulse and respiration normal. Birds in fine condition physically.

Lesions. A few small sharply circumscribed petechia on heart, a few nematodes in the caeca. The liver very large and decidedly green in color, air sacs normal.

Treatment. This was advised until I could hear from the laboratory. Make all buildings and yards sanitary by the application of lime and liquor cresolis compound. Change diet entirely to one of scratch feed and a mash of bran and middlings, use intestinal antiseptics. Isolate sick birds.

I would like a report on your findings as soon as possible.—M. J. J., Ohio.

Reply by Dr. Kinsley: Your description is quite typical of fowl cholera. The history of the outbreak, symptoms and lesions characterize the usual outbreak of fowl cholera.

The specimens were carefully examined and a bipolar microorganism, which in our judgment is the B. avisepticus, was demonstrated. From the examination of the specimens both gross and microscopic coupled with the history, symptoms and lesions, it seems that the fowls are affected with hemorrhagic septicemia or fowl cholera.

As to treatment, the suggestions of the isolation of diseased birds, proper disposal of the dead, the constant cleaning of the houses and the use of intestinal antiseptics you have recommended should be continued. The value of hemorrhagic septicemia bacterin (avian) has been demonstrated by practitioners in various sections of the country and should be used promptly in such outbreaks.

SKIM MILK AND GREEN FEEDS WILL SAVE BABY CHICKS

By the use of skimmilk or buttermilk and an abundance of green feed, many of the troubles affecting young chicks may be prevented, according to D. C. Kennard, poultryman at the Ohio Experiment Station.

Giving the chicks a good ration with all the skimmilk or buttermilk they will drink during the first six or eight weeks is regarded to be the most effective treatment for white diarrhea.

The feeding of skimmilk or buttermilk is also a good treatment for coccidiosis, a highly-contagious disease, which may break out when the chicks are from four to eight weeks of age. With this disease the chicks usually become droopy and listless.

For leg weakness an abundance of finely-cut succulent green feed with plenty of exercise is helpful.

Intestinal worms, which are responsible for many immature and inferior pullets in the flock, may be eradicated by feeding two pounds of tobacco dust in each 100 pounds of dry mash. The medicated mash is fed for four weeks.

Sodium fluorid is one of the most effective remedies to destroy lice on poultry. One pound of this product is sufficient to treat 100 fowls. It is a powder and should be applied among the feathers. Care should be exercised to prevent inhalation of the dust as it is extremely irritating.

Chicks should be fed very sparingly until they are one week of age for they absorb the egg yolk before hatching, this being natures method of providing food that will prevent digestive disturbances until the chicks become accustomed to the usual foods.

SAYS THYROID EXTRACT SPECIFIC FOR CHOREA IN DOGS

I think I have found a specific for chorea following dog distemper. While treating a horse with thyroid extract, affected with chorea that followed influenza, with apparent success a neighbor asked me to treat a bitch affected with the same disease following an attack of distemper. I prescribed three grains four times a day, stopping all other medicine, and put her a ration of milk and eggs. In ten days the jerking had stopped and there has been no return of the symptoms. The thyroid extract cured her without doubt, as since that time I have had occasion to use the treatment on other cases with equally good results. The maximum dose for full grown dogs is from three to six grains according to body weight.

Mayfield, Ky. C. A. Washburn.

PANTING IN DOGS; A REPLY

In your April issue under the title "Panting in Dogs," page 196, you describe a case which from the symptoms given I believe is affected with a rupture of the diaphragm. I would appreciate a report on the postmortem findings from the writer of this query.—J. W. H., Pa.

ANESTHETISING A MONKEY

A tiny species of squirrel monkey was recently brought to me in order that I should amputate most of its tail. The owner complained that sores were constantly in evidence on various parts of the tail, which, on account of the monkey's wilful and persistent interference, never healed, in spite of all treatment.

The little animal could lie easily within the palm of my hand, and I was in some doubt as to the probable effect upon it of a general anaesthetic. I decided to administer A. C. E. mixture.

To avoid unnecessary handling or restraint, I sought to administer the vapour whilst the monkey slept. Hobday's second pattern of inhaler was employed (minus the mask), and the sudden delivery tube passed through the bars of the cage into close proximity with the nostrils. The vapour having been pumped through for ten minutes, without anything happening, I touched the nose with the tube; the monkey thereupon looked up sleepily, gazed at the tube, pushed it away with its hand, and then went to sleep again. I continued pumping for another five minutes without result, then changed the A. C. E. mixture for chloroform. After its administration for five minutes, the animal began to grab the tube for support, and was obviously losing its balance. I found then that I could handle the little fellow without resistance, so removed him to the operating table, where he was laid upon a blanket and completely anaesthetised after three or four more minutes.

I assumed that the long time required to bring about unconsciousness was due to the large proportion of air inhaled, and not to any idiosyncrasy on the part of the monkey.

The operation was performed under strict asepsis, the excision being made through a joint, and the skin brought over the stump and sutured. The wound was painted with orthoform in collodion, and a bandage applied. Consciousness was regained almost at once, and the old attitude of sleep was shortly afterwards resumed as though nothing had happened.

—Capt. Hamilton Kirk, Vet. Record.

Our mail is full of reports on the curative value of hog cholera serum for canine distemper. Dr. Chas. Crowe, veterinary adviser for the American Field, says there is merit in blood serum for this disease and that hog serum is probably as good as any other.

Dr. C. H. Herron, one of the leading canine specialists of Chicago, says that cod liver oil is the best treatment for canine distemper. It is used both as the only food and the only medication of the affected subject.

Kerosene that has been left to evaporate a few days in an open vessel is said to be a specific for mange in dogs. An exponent of this treatment insists that one application will cure any case of acaridan infestation and several applications will cure the follicular form.

According to reports, Rhododendron (Great Laurel) is poisonous to goats unless considerable other forage is simultaneously consumed.

Some infections of fowls may be transmitted by the drinking water and it is therefore advisable to provide well protected sanitary vessels so arranged that the fowls cannot get their feet into them.

Queries and Answers

WANTS TRUTH ABOUT BACTERINS

To arrive at a definite line of treatment for various diseases is, indeed, difficult for a recent graduate. A few days ago I had a full blooded horse step on a nail which penetrated between the frog and the bar and deep into the digital cushion. When examined some days later I found a temperature of 106 degrees F., rapid pulse, and the leg swollen to the body, although not very large. The appetite was good. I opened the wound thoroughly, washed it out with lysol and tincture of iodin, and ordered a daily irrigation with iodin. I thought the high temperature and swelling would take care of themselves after the wound got drainage. The horse died in 48 hours. Steffen says: "Give me mixed bacterins or anti-streptococcic serum, iodin, nux vomica or strychnin, and a lance, and I am ready to do battle with any case of septicemia from wound infection." Do you think that if I had used febrifuges, bacterins and stimulants I might have saved the life of the animal?

Hundreds of practitioners claim good results from the use of serums, vaccines and bacterins, while others claim no results. Why the difference of opinion? If biologics are specific, every practitioner and veterinary school would have found it out long ago. If they are of no value, why continue to extract money from the stock raiser's pocket if we can do him no good? I should like to learn the opinion of every practitioner who is reading the Journal about his experience with the use of various biologics.—O. W. J., Wash.

Reply: Bacterin, like any other line of treatment for disease, is not 100 per cent perfect. The highest degree of efficacy is, however, reached when the diagnosis is correct and a reliable bacterin is used and given in sufficient dosage. In no case must wonders be expected of them. The horse described above that died after so brief an illness from a wound was affected with an infection of such high virulence that nothing short of amputation or radical extirpation of the hot-bed would have cut short the rapid march of the process. Bacterin treatment is generally useless against such cases.

It is likely that if this horse had been submitted to the classical resection of the plantar aponeurosis its life might have been saved. The only cases of this kind which do not yield to this operation are those due to virulent anarobic organisms such as the bacillus of malignant edema.

Practitioners who depend upon bacterins alone to cure wound diseases can never hope to have the same success as those who use them as adjuncts to properly executed surgical procedure. No medical agents would have saved your patient.

A FATAL COLIC IN A MULE

A mule recently shipped from the North showed the following symptoms: Lying down frequently, rolling about and then before getting up would sit on its haunches dog-fashion. When standing it would stretch out as if to urinate, indicating impaction in the small intestines. The temperature was 104° Fahr. and it had not eaten anything for a week and only worked one day on a grader.

I administered one grain each of eserine sulphate and lobilin sulphate, a quart of linseed oil, one ounce of oil of turpentine and four ounces of ether. The mule died. What should I have done or what was left undone?

Also outline a treatment for stomach engorgement. When is salicylic acid indicated? I have had some bad results with it, and have become afraid to use it. G. E. E., Miss.

Reply: The mule died from intestinal obstruction, probably at one of the flexures of the large colon. The dog-fashion posture in colics is almost pathognomonic of such a state. The hypodermic injection you gave did much more harm than good and should have been omitted. Such cases must sink or swim on oil and intestinal stimulants. Washing out the stomach might also have done a great deal of good by overflow of the water into the intestinal tract.

There is only one treatment for engorgement of the stomach and that is removing the contents by washing it out with the stomach tube. In a few minutes a horse so affected can be completely cured. The value of salicylic acid

in such cases is not very great. In fact, it should not be depended upon for the reason it is not an evacuant.

FLY REPELLENTS

Every summer I am requested to supply my clients with information of fly repellents, especially later in the summer when the flies are numerous and animals are being prepared for the fall shows and fairs. I would like best a preparation that will not stain or mar the appearance of the animals.—I. C. B., Ia.

Reply by Dr. Quitman: Here are a number of very good fly mixtures you can make up yourself. Some of them may have objectionable features but you can select the one that best suits your purpose:

Fish Oil	100 parts
Oil of Tar	50 parts
Crude Carbolic Acid	1 part
Oil of Tar	½ gallon
Cotton Seed Oil	½ gallon
Naphthalin Powder	4 ounces
Crude Carbolic Acid	½ pint

Both of these are in Bulletin No. 267, of the Ohio Experiment Station, and are recommended by the men in charge.

Comment: While these are undoubtedly efficacious as shoo-flies or fly repellents, on account of the oil of tar they are apt to stain the white coated animal, and to a certain extent "gum up" the hair. Especially number two, containing the cotton seed oil. For this, we would suggest substitution with either fish oil, which of itself has fly repellent properties, or with lard oil, which will not gum.

Common Laundry Soap	1 pound
Crude Petroleum (or fuel oil)	1 gallon
Water	4 gallons

Directions: Shave and boil the soap in the water, stirring until thoroughly dissolved. Dissolve the naphthalin in the crude oil or in the fuel oil, whichever may be used. Mix the two solutions. This was taken from the bulletin of the Utah Agricultural College and is highly recommended.

Comment: This fly repellent is liable to stain light colored hair, and separates upon standing, which however, could be overcome by aggitation. It is possible that the use of more soap would overcome the tendency to separate.

"Fuel oil" used alone is superior to crude oil, as the former does not burn or irritate

the skin, as does the latter. Fuel oil may be applied by means of a spray gun or by means of a sponge or cloth. Its application once daily is usually sufficient.—Recommended by Dr. S. P. Reagan of Oklahoma.

Powdered Naphthalin ..... 1 ounce
Lard Oil ..... 1 pint

Mix and apply with a sponge, cloth or wad or oakum.

Comment: This is easy to make, does not stain nor gum, and will wipe off easily, leaving the skin clean and the coat glossy.

Naphthalin, powdered ..... 4 ounces
Kerosene ..... 1 pint
Soap .....¼ to ½ pound
Water ..... 1 gallon

Directions: Dissolve the naphthalin in the kerosene. Shave and dissolve the soap in boiling water. Let cool and add the kerosene and naphthalin solution. This is stainless and will not gum up the coat. It may be used in a spray gun or otherwise applied.

Comment: The present author is responsible for fly repellents number 5 and number 6.

As a fly exterminator, for stables, you might try the following:

Molasses ..... 20 parts
Water ..... 80 parts

Add 40 parts of arsenic; in making this mixture, the arsenic should best be stirred for about twenty to thirty minutes in the water while it is boiling, which will dissolve a considerable portion of the arsenic. Then it may be allowed to partly cool and the molasses added.

For use, one quart of the above mixture is added to fifty gallons of warm water, and well stirred before using. This diluted solution may be sprayed on cement floors or placed in pans around the stable. Such pans or containers should be so protected that dogs, cats, poultry and other animals cannot get to the fluid.

Comment: This is a very effective fly exterminator, especially useful in stables which are protected by screens.—Contributed by G. G Blank, Allentown, Pa.

PURPURA HEMORRHAGICA

A mare developed an edema along the ventral surface of the abdomen without attracting much attention until it advanced to the breast, when I was called and found the appetite good, the pulse 48 and the temperature 102° F., and the swelling descending the fore legs. There was a muco-purulent discharge from one nostril which I thought could be attributed to a

decayed fourth molar. There was a slight edema on the nose that stopped abruptly at the nose-band of the halter. There were swellings around the precrural lymph node and a chain of swellings running under the mane from the poll to the withers and other edematous areas at different parts of the body.—J. A. B., Ia.

Reply: Atypical cases of purpura hemorrhagica are sometimes seen in horses. We recall cases of this character which developed without any preexisting febrile disease, and invariably each of them could be traced to a focal infection. In this case the trouble may have been caused by the decayed molar. Quinin, potassium chlorid, turpentine and antistreptococcic serum is the line of treatment we would recommend.

DECAYED FOURTH SUPERIOR MOLAR OF A HORSE

A four year old horse has an enlargement just over the fourth superior molar on the left side of the head. The enlargement recedes and then becomes quite large again. It has behaved in this manner several times during the last six months.

There is no nasal discharge, no suppuration and no pain manifested while eating. Any suggestion will be appreciated.—W. L. B., Wis.

Reply: Horses showing the symptoms you describe invariably have a decayed molar, although it is not always easy to confirm this fact by an examination of the tooth itself. On the other hand, if such a patient can be put in a recumbent position, the mouth opened widely with a speculum and the suspected tooth given a very thorough examination with a sharp steel pick the incriminating opening on the table of the tooth can generally be found. It may be as small as a pin point or it may be large enough to admit a probe. We advise you to go to this trouble if a diagnosis is important.

If it were possible for you to extract the tooth the horse would be cured without any further treatment but if the extraction is difficult for you to do, it will be necessary to drive it out after trephining.

It is advisable to attempt the extraction while the horse is in the recumbent position. and to use a separating forcep to help loosen it before using the extractor. By working faithfully over such a tooth, alternately using the separating forcep and the extractor to loosen it, it can usually be extracted with suc-

cess. It is always important to loosen the tooth well before attempting to lift it out. In fact, it is pretty safe to assume that a tooth that cannot be loosened cannot be extracted without fracture. The successful extraction of a molar tooth of the horse is a long, drawn-out, process, requiring patience and good judgment and much less actual force than is usually supposed, but in the end it always pays because the ugly difficulties and complications of trephining are thus avoided.

TRANSFUSIONS OF BLOOD AND NORMAL SALT SOLUTIONS IN VETERINARY PRACTICE

1. Is blood transfusion in veterinary practice practical and to what extent is it practiced in ordinary country practices?

2. In lieu of rectal injections or peritoneal injections of normal salt solutions why not pump into the stomach with the stomach tube as much normal salt solution as it is safe to pump in without injury to the stomach and intestines, and how much would be safe to pump in?—O. W. J.

Reply: Blood transfusion is not practiced as a routine measure in veterinary practice despite the fact that it is feasible and exceeding effectual therapy. Direct transfusion from donor to patient is probably not a practical operation for a field veterinarian to undertake, but the intravenous injections of citrated blood taken from a convenient donor is a practical operation and one that should become a part of our therapy. Citrate of sodium 2%, one part and freshly drawn blood nine parts is the combination to use. Blood may be drawn directly from the jugular of the donor into a large Leur syringe already containing the citrate solution and then after shaking the mixture a little it is delivered immediately into the jugular of the recipient—the patient.

Physiological salt solutions are helpful but less so than blood when it is necessary to add to the volume of blood of a patient. These can be given, in the loose subcutaneous spaces of the shoulder and stifle, in the peritoneal cavity, in the jugular or in the rectum. These we name in the order of practicability.

TREATMENT OF MASTITIS

Open the teat with the teat slitter and inject Germisol (nocte manque) and give per os 10 ounces of Bovolax (Betz) every second day and ½ ounce of hyposulphite of soda daily. I also have good success with etherization of the udder.—J. A. S.

Looking Backward

A look into the past unfetters the mind, gives a clearer conception of the present, and tends to strengthen our confidence in the future.

"Where two people died fifty years ago out of every thousand, only one died during 1920." —Report Health Dept., N. Y. C.

The Babcock method of determining the fat content of milk was invented in 1890.

The first bacterial count of market milk was made by Sedgwick and Batchelder in 1892.

In 1892 Theobald Smith isolated and identified the bacillus of bovine tuberculosis and determined the degree of heat that will destroy it.

The production of certified milk was first conceived by Coit of New York, but none was actually produced as a market commodity until 1900-1901, when a medical milk commission was established in New York City.

The significance of sex control was appreciated already by the ancients. Pliny (50 A. D.) a writer of natural history, states in his works that if a bull after covering comes to the ground on the right side a male results, and if on the left, a female.

Galen (131-201 A. D.) recognized the importance of milk inspection. Having prescribed ass's milk for a patient he directed that the ass from which the milk was to be obtained should be inspected as to its general health.—Early Hist. Vet. Med. by F. Smith.

The first ice cream was made by Gunton, a London confectioner, but the method of freezing was unsatisfactory.

Mrs. Nancy Johnson, the wife of an American naval officer, invented the modern ice cream freezer. It is said that the first ice cream served in America was at a White House reception during President Madison's administration. From this departure Americans have developed an appetite for this confection that craves for 300,000,000 gallons a year.

Small-pox vaccination as practiced by Edward Jenner in 1796 was not an empirical procedure (an accident) as is generally supposed, but a carefully worked-out theory preconized from Benjamin Tresty, a Gloucestershire farmer in 1774, who vaccinated his family with cow-pox to prevent them from being pock-marked like the other victims of the disease.

In January, 1890, the editor of the American Veterinary Review was certain that legislation favorable to the army veterinarians would pass the Congress then in session. Twenty-four years, however, elapsed before any favorable action was taken despite the fact that the Spanish-American War showed up the shameful shortcomings of the service. After more than thirty years and a great war had elapsed into history, the much desired veterinary corps became a reality.

THE FIRST VETERINARY BOOK

The first work known that was devoted entirely to veterinary medicine was written by Publius Vegetius Renatus* (450-500 A. D.). It was published by Basle in 1528 and is believed to be the first veterinary book printed. The manuscript from which the book was printed is the first one known in which the word "veterinary" was used. The book refers to the remarkable fact that the treatment of animals has always been regarded as a low occupation and beneath the dignity of the educated mind, but Vegetius attempts to set things right by pointing out that knowledge is never mean, low, nor contemptible and there can be no shame in practising a profession that can save the state from loss. The ground covered is a vast one and conveys the impression of having been written by a profound student. It deals with classification of disease, the fallacy of charms and superstitions, good hygiene, treatment of colics by tapping, exercise and nitre for founder, fistula of the withers, poll evil, oaken distemper (tetanus), ulceration of the lungs in oxen (bovine tuberculosis), blood in the urine (azoturia), the benefits of quarantine, and a wealth of other material that shows the broadness of his observations, studies and teachings.

*Early Hist. Vet. Med., by F. Smith.

Pointed Discussions of Live Topics

A Marvel of Equine Speed and Intelligence: the World's Renowned Driverless Wonder, Falfine 2:19¼, Owned by Dr. W. F. Brownlee, Kirkwood, Ill.

ETIOLOGY OF FISTULOUS WITHERS AND POLL EVIL

By W. R. Davis, M. R. C. V. S., Enfield

Traumatisms of some kind—wounds, bruises, bites, blows, pressure of harness, etc.—are universally taught and held to be the cause of the above-named maladies. In a fairly long experience I cannot recollect to have traced directly either of these conditions to the causes assigned, yet I have seen really dreadful cases of sore back, and severe sitfasts of old standing, which recovered without developing into fistulous withers. One case I recall was a donkey, used for giving rides to visitors on the sea shore. When I examined it the unfortunate creature had a suppurating wound on the side of the withers, and from it, back as far as the lumbar region, the subcutis was replaced by a thick layer of yellow pus. It did not give rise to fistulous withers. A curious observation I have made is that horses used continuously in town work are seldom affected. I have had contracts for twenty years with two firms owning over one hundred and twenty horses between them, and I have never had a case of either malady among the horses. However, about eighteen months ago one of the firms bought a farm and sent some of their heavy horses to work on it. Six months afterwards one of these animals—a mare, fourteen years old, developed a very severe poll-evil. I should say that a hundred agricultural horses are affected for every one used constantly in town work—and never turned out to grass. I recently asked the manager of a large firm who have depots all over North London whether their horses were often affected by these diseases, and he told me that the only case he could remember was that of a young horse that had poll-evil three weeks after purchase (the horse was probably bought with it, as the seller took the animal back).

A curious thing to remark is that many cases may be met with in one area of a practice and few in other parts of it. On eight farms, almost touching each other in my practice, I have met with the following examples of these diseases:—Farm A, fistulous withers; B, one case of fistulous withers and one case of poll-evil; C, fistulous withers; D, fistulous withers; E, three cases of fistulous withers; F, fistulous withers, followed by poll-evil in the same horse; G, fistulous withers; H, poll-evil.

The farms are small, and I do not think the horse population on them reached beyond fifty.

The late Mr. G. Upton, M. R. C. V. S., the news of whose tragic end came as a painful shock to many of us, used occasionally to permit himself some extravagances when discussing questions of pathology, but he made a remark at a meeting of the Central Veterinary Society which, though it was received with incredulity at the time, had, I venture to think, a basis of truth in it. Mr. Upton said that he regarded fistulous withers and poll-

evil as being allied to glanders and tuberculosis, and that they were contagious. It is probable that what the speaker intended to convey was that the process was due to infection, rather than to the effects of violence, and I begin to believe that he was not far wrong. It would be interesting to know whether horses used in mines, where they must frequently be subjected to bumps and knocks on head and back, are particularly liable to these maladies, and perhaps one of your readers engaged in mining practice would enlighten us on this point.—Veterinary Record.

THE STORY OF A WORM

Recently, an ordinary worm was taken into a large research laboratory for the purpose of study. The life of this worm heretofore had been thirty days. None of its ancestors had lived longer. All the worms of this family were born, ate green vegetables, got a little longer and much thicker, and after they had gorged themselves, they died. This particular worm was starved, when it was twenty-three days old for one week; then fed for a week and starved for a week; the alternate feeding and starving were kept up for twelve months. In other words, they prolonged the life of this worm twelve times its natural duration, or until it was 365 days old. Many others were experimented on in the same manner with the same results.

Moral: "We dig our graves with our teeth."

—Pageant News Letter, No. 1, Pageant of Progress, Chicago.

NEVER-FAILING MANGE REMEDY

Here in Queensland we see more mange in one month than one would probably see in a whole lifetime at any other place. We find that the following lotion stands alone; one application never failing to clean up the very worst case:

Powdered Cavadella seeds.....	10 parts
Sulphur sublimate	6 parts
Burnt alum	4 parts
Linseed oil	100 parts

Directions: Apply the lotion over one third of the body (if general) at the time, rubbing in well with a brush and wash off with hot soapy water in four days.—Brisbane Vet. Hospital, Brisbane, Australia.

YEAST THERAPY

I have good results from the use of crumbled yeast cakes in many forms of digestive troubles in both horses and cattle. I procure the crumbled waste from yeast cake makers at the small cost of 10 cents a pound, fresh every day. I also use it to good advantage as a base for several tonic powders.

A discussion of yeast and its uses in the treatment of animals seems important as it is both a very useful and a cheap medicinal agent.—W. E. T., Ont.

2,000,000 MARK PASSED IN NUMBER OF CATTLE TESTED

The total number of cattle now under supervision in the tuberculosis-eradication work being carried on by the United States Department of Agriculture in co-operation with the States has passed the 2,000,000 mark, the total for February being 2,027,000. During that month 200,334 cattle were tested, bringing the total of cattle once tested up to 1,181,516, and the total of those in fully accredited herds to 292,716. There are now 361,826 cattle on the waiting list. On March 1, more than 12,000 farmers and breeders had accredited herds.—Clip Sheet, No. 196, U. S. Department of Agriculture.

Hanford's Balsam of Myrrh

C. H. M., Wisconsin, in VETERINARY MEDICINE, January, 1921, inquired about balsam of myrrh. Presuming he referred to Hanford's, I am sending you the formula. Although late, I trust it will be no less welcome. Here is the formula: Tincture of myrrh, and chloroform of each one ounce and wood alcohol eight ounces. This contains 80 per cent of wood alcohol as stated on the label.—W. E. T., Ont.

COLLYRIUM FOR DOGS

For inflammatory conditions of the eye, instead of yellow oxide of mercury ointment, I find 25% argyrol solution much better. Irrigate copiously several times a day and if there is any corneal opacity alternate with a solution of silver nitrate, 10 grains to the ounce, and then wash out the eye with a warm solution of sodium chlorid.

With quinine and urea hydrochlorid and argyrol solution I have cleared up the worst ulcers in 16 days.—D. Richards-Buckley, M. R. C. V. S.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

FOR SALE

FOR SALE—$500.00 buys established veterinary practice, good Ford roadster, and complete stock of drugs. Located in one of the best live stock counties in Illinois. No competitor. Closest veterinarian nine miles. Good town, good schools, good people. On main line Wabash R. R. Will introduce purchaser. Practice runs $3500.00 annually. Terms if desired. Address No. 679, care of VETERINARY MEDICINE.

FOR SALE — Simplicity Equine Operating Table, Style 2-O. In perfect condition, nearly new, at half price if taken at once. Dr. E. J. Robinson, Cheney, Kans.

FOR SALE—Good Veterinary Practice. I am offering what is perhaps the best practice in California. Reasons for selling: Retiring from business. Address D. B. Mazza, San Luis Obispo, Calif.

FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

POSITIONS, LOCATIONS, ETC.

POSITION WANTED—With a hog serum plant by experienced pathologist and bacteriologist. Will furnish microscopic equipment. Well qualified and experienced. Address No. 683, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago.

WANTED—To buy established veterinary hospital preferably in the northeast states or in the eastern states or an established veterinary practice. Will pay cash. Address No. 674, care of VETERINARY MEDICINE.

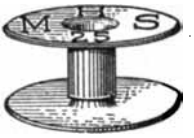
VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

WANTED—Hospital Assistant. Must be single and understand canine practice. Would consider a non-graduate. Must be American and like to work. Send photo and salary expected. Location, Texas. Address No. 680, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

WANTED—Veterinary practice in California—will pay cash for practice with or without equipment in a mixed farming or dairy country or would buy half interest with reliable man. Address No. 681, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

POSITION WANTED — (Or practice, if in Ohio) Can consider position any state. Graduate Ohio Univ., Dept. Veterinary Science. Several years' experience, general and technical. Address 3016, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

BACTERIOLOGIST WANTED—To take charge of a small commercial laboratory, producing bacterins, tuberculin and mallein. Address No. 682, care of VETERINARY MEDICINE, 4753 Grand Boulevard, Chicago, Ill.



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The identification tag for animals that IS satisfactory. Used by the B. A. I., most states, and hundreds of veterinary practitioners. Write for sample and price. An ear mark for every purpose. M. H. STOLL. Colorado Springs, Col.

MISCELLANEOUS

"QUICK COLLECTIONS" — Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

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TWO COWS POISONED WITH MOLDY FORAGE

Having had cases of blind staggers in horses but never before in cows I was much interested in Dr. Henry Frederick's case reports in your March issue.

A few days after reading the article I saw a cow that seemed to be so affected. She was a small Jersey found leaning heavily against a fence. Taking hold of her head she kept backing until tied up.

Although apparently well in the morning she refused to stand to be milked in the evening. The nose was moist, froth was drooling from the commissures of the mouth and she sucked the tongue like a calf after drinking milk. She was thought to be mad. I, having never seen a cow act that way, was uncertain on this point myself. The pulse was accelerated, but the respirations and temperature were normal.

I administered eserin, atropin and a dose of Fer-Sul cow drench, and left another dose for the morning. Except for the difficulty of keeping the head up she was easy to drench.

Three days later I met another case, a Red Poll cow, that had been off feed and milk for two days and was acting as if drunk. She was lying down and upon staggering to her feet, flopped down again. The pulse, temperature and respirations were normal. She received eserin and atropin and a drench. The drench was, however, difficult to administer. She recovered in two days. The bowels were normal and the urine clear in both cases.

Cushing, Okla. **H. C. Groff, V. M. D.**

CARBON TETRACHLORID GAINING WORLD-WIDE ATTENTION

The findings of Dr. Maurice C. Hall, editor of the department of parisitology, in regard to the curative effects of carbon tetrachloride for hookworm, and other blood-sucking worms of animals, is attracting world-wide attention. A recent issue of the London Medical Journal reports its use in the Fiji Islands against hookworm, stating that 98% of the parasites are removed with a single dose of this remarkable agent and comments favorably upon its harmless effect on the patients. The remedy is also attracting attention in Brazil, Indian, Ceylon, and Dutch Guiana.

Dr. I. E. Woodward has been appointed meat inspector for the board of health of Natchitoches, Louisiana.

PITTSBURGH WIDOW'S ENDOWMENT CAUSES DISCORD

When the widow of the late Dr. H. E. Werntz of Pittsburgh converted the lamented doctor's old establishment into a memorial hospital, where homeless dogs and cats might take refuge from the tyranny of the elements, she unintentionally precipitated a bitter quarrel among the practitioners of that city who claim she has failed to provide for a qualified veterinary attendant to administer medical attention to ailing inmates in accordance with public announcements.

The climax of the arguments was reached at the January meeting of the local association when two erstwhile peaceful practitioners doffed their monocles and cloaks for a pitched battle after an interchange of sizzling idioms, too hot for publication. A timely truce declared to give one of the combatants the opportunity to show that he is actually the veterinary advisor of the new establishment, saved the dignity of the convention.

DEPARTMENT EDITOR HOLDS HIGH POSITION

Professor L. H. Pammel, editor of the department of live stock poisoning of VETERINARY MEDICINE is one of the seven men of national repute in forestry circles who met at Chicago in April to formulate plans for organized tree planting on a large scale. The members of the commission were: Governor J. A. O. Preus of Minnesota; Professor L. H. Pammel of the Iowa State College of Agriculture; Professor James Toumey of Yale University; Mr. W. L. Hall, former Assistant Federal Forester; Mr. William A. Gutherie of Indiana; Mr. Wyllys Baird and Mr. John V. Norcross, both of Chicago.

SUNFLOWERS FOR SILAGE

From the Ohio Experiment Station, at Wooster, comes the information that sunflowers cannot compete with corn for silage in Ohio. From the standpoint of comparative nutrient values corn stands ahead, and is much more palatable. Where the climate is unfavorable for corn, sunflowers may be substituted to good advantage, but in the Mississippi Valley, where corn is such a staple farm product there is no reason at this time to substitute it with sunflowers as an ensilage forage. Sunflowers also have the disadvantage of being very difficult to harvest as compared with corn.

JUDGE RULES HOG VACCINATION IS VETERINARY PRACTICE

In the case of State of Indiana versus W. H. Myers, in which the defendant was charged with violation of the veterinary practice laws of that state for having administered hog cholera serum at a stated sum of ten cents per head the judge found for the state and fined the defendant $25 and costs. The contention of the defense was that vaccination of hogs is a preventive measure and does not come under the laws against the treatment of animals by non-licensed persons; and also that a farmer who in that state is permitted to do his own vaccination has a perfect right to employ whatever assistance he sees fit and to compensate him for the labor.

The judge after pondering over the wealth of technical evidence given by a number of veterinarians, among whom were State Veterinarian Julian, assessed this penalty after overruling a motion to squash the affidavit.

THE HORSE CENSUS

The total number of horses in the United States in a recent government report is given as 21,848,066. Iowa leads with 1,385,522, with Illinois a close second, Kansas third, then Texas, Nebraska, Minnesota, and Missouri, in the order named.

While a number of horses in the country are sufficient, there is a serious shortage of the right kind.

OPEN VETERINARY VOCATION SCHOOL

Prescott.—A class in veterinary surgery started in Prescott with Dr. J. W. Osborn at its head and Wayne S. O'Neal of Phoenix, vocational student, as its first pupil. "The school is not restricted to vocational students," said Dr. Osborn, "but is ready to accommodate pupils from any place."—Tucson (Ariz.) Citizen.

Foot and Mouth Disease Again Serious in England

One of the most serious outbreaks of foot and mouth disease broken out in North England. It is reported to be one of the most widespread visitations experienced for many years. Six counties are said to be effected and twelve counties have been quarantined against movements of cattle.

ASSOCIATION MEETINGS

A BUMPER VETERINARY PICNIC

As the Illinois State Veterinary Medical Association has decided to forego the pleasures of its annual big mid-summer meeting down state in the interests of the A. V. M. A. meeting at St. Louis, the Central Illinois association invites all the members of the state association to attend its historic annual picnic which, this year, will be held at Miller's Grove, Bloomington, in July. Secretary Sisk of the Central and Secretary Merillat of the State association are planning to make this a memorable occasion—a titanic notandum. Look out for dates in the July issue.

A. V. M. A. CLINIC PROGRAM

First day (forenoon): Genital Organs, Boyd; T. B. Reactors, D. F. Luckey; Sterility, J. F. DeVine. Afternoon: Poultry, Kaupp; Sheep, Newsom; Parasites of Sheep and Hogs, Hall. **Second day** (forenoon): Surgery of Udder, Ferguson; Cholera, Schwarze. Afternoon: T. B. Lesions, B. A. I.; Horses, Merillat.

Dr. H. E. Kingman, Professor of Surgery of the Colorado Veterinary College, has been selected as Director of Clinics for the St. Louis meeting of the A. V. M. A. A complete program for the two day clinic will be published in an early issue.

The annual meeting of the South Carolina Association of Veterinarians was held at the Jefferson Hotel, in Columbia, April 8. The following officers were elected: W. K. Lewis, president; T. J. Kinard, vice-president; M. R. Blackstock, secretary-treasurer. The secretary's address is Spartansburg.

The Thumb Veterinary Medical Association, of Michigan, will hold its next meeting at Bay Port, Michigan, July 20, 1922. Milton J. Geiger, Sec'y.

The Nebraska State Board of Examiners of Veterinary Medicine will hold their next regular examination in Lincoln, June 15.

The Wisconsin State Board of Examiners announce an examination at the Capitol Building, Madison, June 6 and 7, beginning at eight o'clock in the morning.

ASSOCIATION MEETINGS—Continued

The Illinois State Veterinary Medical Association will hold its mid-summer meeting at East St. Louis, in connection with the clinical program of the American Veterinary Medical Association, in lieu of the usual down state meeting.

The Interstate Veterinary Association held a two-day meeting at Wichita, Kansas, in March. The officers are: Dr. F. Fisher, Ralston, Okla., president; Dr. M. W. Goode, Hinton, Okla., vice president; and Dr. L. G. Atkinson, St. Paul, Kans., secretary-treasurer.

The North Dakota Veterinary Medical Association will convene for its summer session at Fargo, July 18-19, 1922.

R. S. Amadon, Secretary.

THE MINNESOTA SUMMER MEETING

The Minnesota State Veterinary Medical Association will hold its summer meeting at the University Farm, in conjunction with a short course to be given by the University of Minnesota. The dates are July 12-13-14. Among the speakers from outside of the state are Professor O. V. Brumley, of the Ohio State University; Professor J. M. Frost, of the New York State Veterinary College, Cornell University; Professor L. Van Es, of the University of Nebraska; L. A. Merillat, Editor of Veterinary Medicine, Chicago; H. Lothe, of Waukesha, Wisconsin; and Professor H. S. Murphy, of the Iowa State College of Agriculture.

Evening programs of an entertaining and educational nature are being provided, and an interesting and instructing meeting is anticipated.—C. P. Fitch, Secretary-Treasurer.

CENTRAL NEBRASKA VETERINARY ASSOCIATION

The spring meeting of the Central Nebraska Veterinary Medical Association was convened at Cozad, March 29. The features of the meeting were surgical clinics by J. S. Anderson, of Aurora, and autopsies of tubercular reactors by Dr. Woodring, assistant state veterinarian. The latter was witnessed by a number of stock men whom the doctor convinced as to the accuracy of the test. The literary program consisted of a paper on "Colics" by C. J. Sall,

ASSOCIATION MEETINGS—Continued

on "Canine Distemper," by P. T. Smith, and an address by Dr. A. T. Kinsley, on "Swine Feedings, Breeding, and Sanitation." Dr. H. S. Jensen held a round table on "Cattle Practice" which brought out many points in the use of new drugs. Dr. Jensen acted as toastmaster at the banquet. Addresses were made by Henry Holt, A. A. Munn, and Leo Stuhr, secretary of the State Department of Agriculture.

The following officers were elected: Dr. L. J. Boulier, Cozad, president; Dr. E. C. Jones, Grand Island, vice-president; Dr. J. N. Gruber, Lexington, secretary-treasurer. The next meeting will be held at Kierney next September.

L. B. Wolcott, Secretary.

KENTUCKY VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Kentucky Veterinary Medical Association was held at Owensboro, February 8-9, 1922. The convention was one of the most successful ever held by that association. The program was featured by a discussion of The Intradermal Tuberculin Test, in which all of the important phases of this test were fully discussed. The midsummer meeting will be held at Lexington, July 12-13, 1922.

The following officers were elected: Dr. J. K. Ditto, Pleasureville, president; Dr. Wm. M. Coffee, LaCenter, 1st vice president; Dr. J. A. Austin, Fulton, 2nd vice-president; Dr. E. C. Higdon, Madisonville, 3rd vice president; and Dr. J. A. Winkler, Newport, secretary-treasurer.

J. A. Winkler, Secretary-Treasurer.

MICHIGAN STATE SUMMER MEETING

The annual summer meeting of the Michigan State Veterinary Medical Association will be held at East Lansing, June 28-30, in conjunction with the state department of agriculture, the local branch of the United States bureau of animal industry, and the veterinary department of the agricultural college. The president has named committees to take active charge of the arrangements. The chairmen of these committees are:

Committee to represent the association, W. N. Armstrong, Concord; committee to represent the state department of agriculture, J. B.

ASSOCIATION MEETINGS—Continued

Killham, Lansing; committee to represent the bureau of animal industry, H. M. Newton, Lansing; committee to represent the veterinary department, W. F. Chamberlain, East Lansing; clinic committee, J. P. Hutton, Lansing; entertainment committee, O. A. Taylor, East Lansing; ladies' committee, Mrs. J. P. Hutton, Lansing.

The first day will be "clinic day"; the second, "practitioners' day," and the third, "scientific day."

The entertainment and ladies' committees are charged with the fun and frolic of the occasion, and all interests are combining for the good of the cause.

The secretary is circulating a questionnaire among the members, seeking information about the ground the program should cover, in regard to every species of domestic animals, together with suggestions that well help make the meeting a howling success.

The officers of this association are: John E. Wurm, Pigeon, president; and Russell A. Runnells, East Lansing, secretary.

The annual meeting of the New York State Veterinary Medical Association will be held at Syracuse, July 26-28, 1922. Dr. C. E. Hayden is the secretary and Professor D. H. Udall is the president.

The Colorado Veterinary Medical Association will hold its semi-annual meeting at Fort Collins, Colorado, on June 1, 2, and 3, 1922. Dr. I. E. Newson, of Fort Collins, is secretary, and Dr. J. F. Meinzer, of La Jara, is president.

The Non-Graduate Veterinary Medical Association of Kentucky held its annual meeting at Dawson Springs, April 4-5. Papers were read on the following subjects: first, Animal Diseases and Important Matters Relative to the Profession; second, Retained After-Births of the Cow; third, An Illustration of the Use of Capsules in Retained Placenta. C. A. Washburn was re-elected president, and Burie E. Parker, secretary. The next meeting of the association will be held at Central City.

The board of veterinary examiners of Texas are: P. P. Starr, Gainesville, president; W. G. Brock, Dallas, vice president; and F. E. Barnes, Waxahachie, secretary-treasurer.

Dr. F. L. Ober of Duluth, Minn., has been appointed assistant county adviser of Saint Louis County. Dr. Ober is active with bull and testing associations and takes a keen interest in poultry scourges.

Dr. F. C. Roach has opened an office for general practice at Nashua, Iowa.

Dr. A. C. Spannaus of Waconia, Minn., has built a veterinary hospital that is reported to be one of the most up-to-date establishments in that state. The hospital has seven stalls, operating room equipped with table and stocks, a pharmacy, office, garage, a central heating plant, hot and cold water, and storage for feed on the second floor.

Dr. A. C. Dononhew has been appointed state veterinarian of Cooper County, Missouri.

Dr. W. H. Lytle, Oregon state veterinarian, is making another effort to have the California authorities annul a ruling made last fall prohibiting the importation of Oregon sheep into California unless they had been dipped by inspectors.

At the federal examination for accredited herd work held in Iowa in 1921, 456 passed successfully.

Dr. W. R. Swan of Stevens Point was elected secretary-treasurer of the Central Wisconsin Association of Veterinary Graduates at the fifth annual meeting of that association at Marshfield in March.

Dr. R. R. Downing of Farma, Illinois, has moved to Mattoon, Illinois, to continue practice, instead of taking the opportunity offered him to enter the governmental service.

The importance of washing milk cans as soon as they are empty is emphasized in instructions to handlers of milk, by the U. S. Department of Agriculture. The carelessness in this connection by hotels, restaurants, bakeries, and other places, is given as a flagrant violation of good milk sanitation.

Drs. W. T. Johnson and Edward Pugh have opened an establishment known as the City Veterinary Hospital at 4208 Washington avenue, Houston, Texas. The hospital has a well stocked pharmacy and is equipped for all animals. Dr. Johnson specializes on the treatment of dogs.

From the Who's Who column of the Beatrice (Neb.) Express we gleam, "Dr. E. J. Neuberger is a graduate of the McKillip Veterinary College of Chicago, a vigorous, fair and square, 100 per cent man and an A-1 veterinarian. He is counted among our useful and progressive citizens in excellent standing with all."

Dr. G. E. Norman of Jasper, Indiana, was elected president of the First District Veterinary Medical Association, at the meeting held in Evansville, during March. Dr. A. P. McDonald of Mt. Vernon is the secretary-treasurer; Dr. Wm. Hume, of Boonville, 1st vice-president; Dr. J. O. Chaille, Ft. Branch, 2nd vice-president; and Dr. R. R. Schultz, 3rd vice-president.

Dr. Lee Marney of Oklahoma City has opened an office for practice at Hinchley, Oklahoma.

The best known stimulant for the rumen is tobacco. Give a ten cent plug or two every day in the form of boluses. For the atony associated with convalescence from serious diseases, parturition or overfeeding, tobacco stands first.—C. H. Schultz.

Dr. Walter Runge, city veterinarian of Newark, N. J., announces that plans are out for the building of stables for horses to be used in producing municipal antitoxin.

Dr. A. M. Storm of Ortonville, Minn., has purchased the veterinary hospital of Dr. E. N. Scheon of that city. Dr. Storm, who is a graduate of the Indiana Veterinary College, takes over the extensive practice built up by his predecessor with a determination to make it still bigger.

Dr. P. McKenzie of Fergus, N. D., has taken over the practice of Dr. E. G. Sloulin of Aneta who moves to the western part of the state. Dr. McKenzie is a graduate of the veterinary department of the Ohio State University.

Dr. Raymond Miller has moved from Van Wert, Ohio, to Marion, retaining his practice in the former place with the aid of an assistant.

The veterinarian is the watch dog of our ports; he prevents the introduction of foreign plagues into the country; he inspects live stock for interstate shipment and thus lessens the dangers of internal plagues; he investigates new diseases, formulates new ideas about the old ones, and enforces new methods of prevention, cure, and eradication.

Dr. Fred Middleton of Conrad, Iowa, has moved to Gladbrook where he has opened an office for business. Dr. Middleton is an alumnus of the Chicago Veterinary College.

Dr. H. M. Barrows, the capable assistant of Dr. E. L. Quitman of Chicago for several years has opened an office for practice at Plano, Illinois.

Dr. H. H. Groat, who is a son of Editor Groat of the Chase (Kans.) Register, has recently moved to Lyons, Kansas, where he has taken over the practice of Dr. B. O. Moore.

Dr. E. H. Hyland, Nebr., has moved from Albion, Nebr., to his former home, Fremont, Nebr., where he is associated in practice with Dr. Boyle, who succeeded him several years ago.

WE CLIP A COMPLIMENT

Particularly good were Blackman's talks on improving scrub herds by pure-bred sires and by feeding scientific balanced rations. Rudnick, Iowa state college man, gave a lot of practical dope about improving butter and milk quality and making markets, and Dr. J. F. DeVine of Goshen, N. Y., gave the best talk on "Contagious Abortion" that has ever been given in the state—or anywhere else, I guess.

Imagine me—sitting for over an hour under a rapid-fire discussion of a strictly technical, pathological, obstetrical subject and taking a vital interest in every phase of it. Imagine any layman doing it.

The fact is, of course, that DeVine is probably the biggest man in his line in this part of the country, if not anywhere, and his lectures are so crammed full of facts—some of them brand-new discoveries in research—and the man himself is so happily gifted with making

you en rapport with his subject that his lectures are positively fascinating.

I question whether Vermont dairymen could have learned so much about a very important phase of their business by paying out hundreds of dollars otherwise as those present learned from DeVine.

—Rutland Daily Herald.

Mayfield, Ky., April 24.—(Special)—Dr. C. A. Washburn, veterinarian, and daughter, Mildred, narrowly escaped death Sunday night when their automobile was struck by an Illinois Central passenger train at Broadway crossing. Dr. Washburn saw the train in time to swerve his car. The engine caught the right rear wheel, demolishing the car. Dr. Washburn and his daughter escaped uninjured.

Under the title of "General Lymphangitis," Dr. J. P. Klench, December 13, 1888, presented a paper before the California State Veterinary Medical Association, describing a disease among horses and mules that closely resembled glanders but which presented clinical differences that excluded that disease. A careful review of the report seems to show that he was dealing with the epizootic lymphangitis that caused so much trouble and sometimes confusion during the late war.

Dr. and Mrs. Richard Wharton of Lost Springs, Kansas, are rejoicing because of the arrival, on April 6th, of a son, "Richard Lincoln Wharton."

Dr. C. R. Donham of Mexico, Mo., has accepted a position on the teaching staff of the Oregon Agricultural College.

Dr. F. A. Hines of the firm of Hines and Madden, of Gravity, Ia., was elected Mayor of that city at a recent election.

Dr. H. B. Allen, a deputy state veterinarian for the state of Missouri, is now located at Oregon, Mo., where he is in general practice.

Dr. W. H. Richards, one of the first graduate veterinarians that located in Kansas, died in March at Emporia, Kans. The Doctor located at Emporia over thirty years ago. He was a splendid practitioner and a leader in the profession.

MRS. SCHWARZKOPF DIES FOLLOWING LONG ILLNESS

Mrs. Laleopoldina Schwarzkopf, wife of Major Olaf Schwarzkopf, U. S. Army, retired, died at Hotel Stolzenfels, Capellen, Germany, April 7, 1922.

Mrs. Schwarzkopf had been in declining health for a number of years. Major and Mrs. Schwarzkopf came to Germany last November and have been living at Capellen.

Mrs. Schwarzkopf will be remembered for her charming personality, in the army and among veterinarians and friends. She was born in Budapest, Hungary, sixty-five years ago and had lived in the United States since 1884.

Most of Major Schwarzkopf's service as veterinarian in the army was with the 3rd U. S. cavalry.

Funeral services were held at Capellen, and burial took place at the cemetery there.

Mrs. Lydia Beachley, age 56, and her son, Kenneth Beachley, age 32, wife and son of Dr. Rufus M. Beachley, of Meyersdale, Pennsylvania, were both instantly killed when they were struck by a B. & O. freight train on April 6, 1922, at that place.

Dr. H. L. Mahnken, of Windsor, Mo., was married March 8, 1922. Mrs. Mahnken was Ethel Barnard, a graduate in Domestic Science of the Colorado Agricultural College.

Dr. J. B. Snyder, formerly in practice in Miami County, Indiana, recently purchased a small farm near Blue Springs, Mo., where he will direct farm operations and a general practice.

Dr. W. H. Buchleiter, formerly of Braddyville, Ia., succeeded Dr. R. T. Irvin in general practice at Coin, Ia. Dr. Irvin is now located at Hamburg, Ia.

Dr. C. E. Simpson, of Yates Center, Kansas, purchased a carload of Hereford cows in the Kansas City Stock Yards on April 12th for one of his clients.

Hydrocephalous Monstrosity

An exceptionally large hydrocephalous monstrosity was delivered from a cow during March, 1922, by Dr. Kenneth G. McKay, of Colville, Wash. The calf's head measured 33 inches from the forehead over its apex to the cranium

posteriorly. The right eye was normal and the left eye absent.

The delivery was effected by tapping and crushing the enlargement.

Dr. C. C. Walker, a field inspector of the B. A. I., formerly of Helena, Montana, has been transferred to Bath, New York, for County Farm Bureau work.

Speaking before the veterinarians of Illinois at the Illinois Veterinary Conference in 1920 on the matter of hog cholera immunization, Dr. C. H. Hays said: "The kind of service we render enters into the situation, because upon careful observation it is evident that there has been considerable reflection upon our profession due to the inefficient service that has been given in many instances."

Dr. W. A. Litton has moved from Lake Charles, Louisiana, to Port Arthur, Texas, where he was received by the mayor and other citizens who welcomed the arrival of a veterinarian to that district.

Dr. Charles Carr, of Clinton, Minnesota, has moved into a new establishment which serves the combined purpose of a hospital and feed stable.

Dr. E. C. Higdon, Madisonville, Ky., joined the appendicitis club in March and came out of the initiation ceremonies unscathed with the exception of the official brand that distinguishes members of this club from ordinary mortals.

"The work of biologists and chemists has revealed the fact that no other food is so vital to the welfare and health of the human race as milk."—North, A Half Century of Public Health.

COUNTY AGENTS HAVE RANK OF ASSISTANT PROFESSORS

Under the California plan of organization of extension work in co-operation with the United States Department of Agriculture, county agents have the rank of assistant professors in the university and are entitled to all the rights and privileges of the resident teaching force.

The 51-year old horse "Clover" belonging to Pastor Uriah Myers of Catawissa, New York,

was exhibited as an attraction at the Masonic Exposition at Madison Square Garden during the week of May 8.

EXAMINER FOR VETERINARIANS

State Department of Agriculture, Columbus, announced the appointment of Dr. Norton Dock, of Cincinnati, as member of the State Veterinary Examiners' Board. He succeeds Dr. Reuben Hilty, whose term has expired. Dr. J. A. Lane, negro, of Cincinnati, was named field veterinarian.—Cincinnati Post.

HIGH AUTHORITIES DISAGREE

Our flock of chickens has the roup. We heard that one could vaccinate the birds for the disease. If so, could you give us information as to how it is done, and what is used for it?—A. B., Adrian, Mich.

Vaccination for roup and chicken pox has been done with some success experimentally, but has not been accepted as a generally practical method of controlling these diseases. The Federal Department of Agriculture does not recommend the practice, saying that it has not proved successful. Vaccines may be obtained with directions for their use, however, from the Veterinary Department of the Ohio State University at Columbus, O., and the Veterinary Department of the University of California, Berkeley, Cal.—Rural New Yorker.

(Continued from Page 298)

probably came into it. It was mentioned in the care of dogs and other animals. The management of the hen, the care of her, is just as important in handling the diseases because when you are called, probably malnutrition or improper feeding is the fundamental cause of most of the trouble.

The Word "Ration" Defined

Now one can take any grain mixture provided it is a whole grain and make up a satisfactory grain part of ration, but remember that the definition of a ration is what an animal or anything eats within a certain given length of time, for instance, one day. Now even people ask questions about the value of a certain mash or certain scratch grain for poultry. I am not interested in those two separately because they belong together. A ration is everything they eat. It includes the grain, it includes the mash, it includes the mineral feeds and it includes the water. They can not be separated in considering the ration.

(To Be Continued)

JULY
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD
Chicago

$4.00 the year

VOL. XVII **No. 7**

Your wish of YESTERDAY has come true TODAY

YESTERDAY—

You wished for a sure-enough **dependable** Anti-Hog Cholera Serum, with all the good left in and the bad taken out—and sold at a reasonable price.

You wished for a Serum that you would be **proud** to use in the presence of your clients.

You wished that a really practical and satisfactory **CLEAR** Serum was available.

You wished for a **refined** Serum embodying all the good qualities of "Bloody" Serum, but with none of the disadvantages of that product.

You wished for a CLEAR Serum that had **actually made good** right out in the field.

TODAY—

All your wishes of yesterday—and more—are embodied in **FORT DODGE IMPROVED CLEAR SERUM.**

A success from the start, the demand for this **superior** Serum has increased so rapidly that even our resources are taxed to take care of it.

FORT DODGE CLEAR Serum is **THE** Clear Serum that has been used right out in the field for several years—upon thousands and thousands of swine—and has never failed to make good.

It is **THE** Clear Serum, in the production of which, practically **none** of the antibodies are lost or discarded.

It is THE Clear Serum which, **in its finished state,** has to pass all B. A. I. tests—and in addition is subjected to rigid microscopic examinations and animal inoculation tests.

It is **THE** Clear Serum that has made such a success that other Serum Companies have been **compelled** to come out with Clear Serums of various kinds.

MAKE NO MISTAKE—Use Clear Serum this year—But

BE SURE IT'S FORT DODGE

VETERINARY MEDICINE

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Veterinary Medicine

Vol. XVII JULY, 1922 Number 7

BIG MEN TACKLE BIG PROBLEM

Delegates Who Met in Chicago During May to Study Questions Appertaining to Reforestation. Reading from Left to Right, They Are: Governor J. A. O. Preus, of Minnesota; Professor L. H. Pammel, One of the Editors of Veterinary Medicine; Wm. A. Guthrie, Indiana; Professor James Toumey, of Yale University; John V. Norcross, Chicago; Wyllys Baird, Chicago; W. L. Hall, Former Assistant Federal Forester

MILK TESTING AS AN ADDED VOCATION FOR PRACTITIONERS

At this time when the whole civilized world is beginning to agree that much of the physical imperfection of mankind and many of its diseases are directly traceable to a low per capita consumption of milk, and it is beginning to dawn upon the veterinary profession that its proper station is with and not against the producer in spreading milk-drinking propaganda, the situation offers an opportunity for the veterinary practitioner to enlarge his realm of usefulness by becoming the accepted authority on milk standards in every community. It seems important that we grow with and in the milk industry. The veterinarian understands cows and he understands milk (physically, bacteriologically and chemically). He is the one man in every district who is qualified to solve questions arising in this connection from every angle; he is the one logical man whom the dairyman and breeder should be consulting to select the valuable from the useless cow, the profit-producing cow from the "boarder," the producer of precious from worthless offspring; he is the one man in many communities who could assure his clients from time to time that they are not victims of unfair butterfat tests at the condensery, milk station or distributing plant; and to see that they are paid for all the butter fat their cows produce; he is the one man qualified as a referee between the distributor and consumer when deliveries are suspected of falling below approved standards; and he is the one man to gather information about the value of community bulls some of which are slaughtered only to learn later that they had been sires of high merit.

Much of this work is undone because it has not been exploited and what is done goes to the purely commercial expert who is responsible only to those who employ him—the milk dealer or the testing association.

The veterinary practitioner can begin this work by simply equipping and qualifying himself to do it and by showing his clients the unwisdom of pursuing the hit-or-miss tactics of breeding or keeping animals proved to be unprofitable.

The large breeder is attending to these matters in every detail but the small one, if he tests his cows at all, usually limits his investigations to one or two cows thought to be worth the expense of advanced registry, and leaves the rest of his herd in the uncertain class. By preparing to make accurate tests we would put ourselves in a position to do a great service to our clients and to the country in general and at the same time fix veterinary practice solidly into an industry with which

we have heretofore not been closely enough allied and whose problems, other than those of disease, we have never attempted to study systematically.

In view of promoting such a departure through publicity and by publishing a course of instruction in the department of zootechnics on milk and cow testing we submit the following questionaire to our readers:

1. Are you fully familiar with the details of the milk situation in your community?

2. In your opinion, to what extent could such an enterprise be developed in your district?

3. Have you a working knowledge of milk tests, or would you want a full instruction on the subject?

MILK, THE BULWARK OF THE NATIONS

It is a significant fact that milk is a prime factor in the development of stature. The milk drinking people are large, while the non-milk drinking ones fall below the desired average in size, strength, endurance, and longevity. The inhabitants of the tropics who are not milk drinkers in general are smaller and weaker than the northern races, and besides in the warm countries, where some milk is consumed, it is a thin and unpalatable product that has but little influence in the general welfare of the people.

The inhabitants of Southern China, who do not drink milk, are small, puny, and have a high infantile mortality, while the Northern Chinamen, who maintain cattle herds, are a much larger people.

The Zulus of South Africa are the largest natives of that continent, because they maintain herds of cows for milking purposes.

The per capita consumption of milk in Sweden is almost twice that of the United States and the Danes another specimen of big people are great consumers of milk products. In short the trail of the big types of humans is but the trail of the cow.

This, and other very conclusive evidence, might be gathered to show the direct connection between milk and large stature. In fact, where milk is lacking, the frame of the inhabitants does not reach a high state of development, because large stature, being mainly due to skeletal growth, requires mineral in the form found only in milk, besides vitamines and protein needed to build up the other tissues. It is, therefore, undeniable that in the Jersey, the Holstein, et al., lie the strength of any nation.

PUBLISHERS' ETHICS

A prospective advertiser writes: "With reference to your article on periodic ophthalmia I wish to state that I have a remedy for this disease that has given me good success for a number of years. I have never given it out for fear it would be discredited on account of its simplicity and because I had been thinking of putting it up to sell to veterinarians. What are your charges for advertising and what is your opinion of my project?"

The accepted ethics of the veterinary profession prohibit the exploitation of secret remedies. In fact there are already too many secret and semi-secret remedies on the market for the common good. The editors of VETERINARY MEDICINE belong to a national association of publishers which lives up to certain standards we reproduce herewith as a reply to this request and for the information of all concerned:

1. To consider, first, the interests of the subscriber.

2. To subscribe to and work for truth and honesty in all departments.

3. To eliminate as far as possible, personal opinions from news items, and to make all criticisms constructive.

4. To refuse to publish "puffs," free reading notices or paid "write ups," keeping the columns independent of advertising consideration.

5. To decline any advertisement which has a tendency to mislead or which does not conform with business integrity.

6. To solicit subscriptions and advertisements solely upon the merits of the publication.

7. To supply advertisers full information regarding character and extent of circulation.

8. To co-operate with organizations and individuals engaged in the industry.

9. To avoid unfair competition.

10. To determine what is the highest and largest function of the field which it serves and then to strive in every legitimate way to promote that function.

THE FLAVINES HAVE REMARKABLE ANTISEPTIC PROPERTIES

Flavines were first produced by L. Benda at the suggestion of Ehrlich who conducted experiments on trypanosome diseases with these dyes. Benda first reported his work in 1912. A year thereafter Browning, a student of Ehrlich's, and Gilmour, demonstrated their remarkable bactericidal properties and recommended their use as a wound antiseptic and introduced them as therapeutic agents.

The dyes in this group are coal tar derivatives and are classed as acriding dyes. Their great antiseptic properties have attracted much attention in Europe for several years, but it is only rather recently that they have come into general use in America. The very beneficial and deesirable actions of the flavines in the treatment of wounds and their intravenous use in infectious diseases, was only recently called to the attention of veterinarians in America.

In contrast to other antiseptics, these dyes can be used to much greater advantage in the presence of blood, serum or wound secretions than any other known antiseptic. No coagulation of the protein or albuminous constituents of these fluids occurs—a feature which is universally recognized as a big advantage over other antiseptics. In the presence of serum, flavines exert a bactericidal power on the Staphylococcus aureus 800 times that of dichloramine-T and 200 times greater than is necessary to kill the common pathogenic microorganisms.

DOES EVOLUTION DULL THE SENSES?

Dr. G. B. Shaddock in a recent book on African pygmies attempts to show that the special senses in civilized human beings are much less keen than those of animals and barbarians and cites as proof of this contention, the remarkable development of certain of the special senses of African pygmies and of different species of animals, as compared with the dullness of the same senses in human beings in general.

Pygmies can hear ordinary conversational tones a distance of 100 yards without difficulty and the North American Indian by laying the ear on the ground detects the approach of men or animals at a great distance. The dog can hear sound the human ears cannot perceive. Human beings have a very poor sense of smell, as compared with that of the dog, which can smell objects where they were many hours before, while man can only distinguish bad from pleasant odors, and only when these are pronounced. There are bushmen that can see a bird 10,000 feet in the air that is invisible to the eye of civilized men without a field glass.

By having learned to determine shape, size, and quality of things by sight, the sense of touch in man has slumped to the point where we can only determine hot from cold, and rough from smooth objects, while the horse through the keen tactile sense of its lips, can reject the finest undesirable objects from its food.

In short, the whole trend of the argument centers on endeavoring to show that as the spirit of the individual develops the sensorium deteriorates.

Is this, however, not purely a matter of training? Any one of the special senses of man is capable of undergoing a degree of development quite as fine as that of any animal, minus of course the disadvantage arising from undeveloped organs deteriorated because high development has not been needed through countless generations. The whole question is purely one of balance. Man has a better balance among all of the special senses and a lower degree of development of any one of them because the operation ensemble and not of a single highly developed sense alone is needed by man.

BACTERIN TREATMENT FOR STRANGLES

Encouraging success in the immunization of horses in the Belgian Army against strangles has been obtained by the use of a bacterin prepared by growing the streptococcus equi in bouillon, according to the report of Van Secegem. This is the Wright or English method of preparing bacterin.

'TWAS EVER THUS

Thirty years ago when the advance guard of the veterinary practitioners blazed a trail into pioneer territory, they drove long distances over bad roads, treated only very serious cases and were able to collect only very small fees, but in spite of these handicaps those who had ability and business tact built up great practices—the others failed. Showing that you can treat animals better than the untrained was the big job of the pioneer just as it is the big job of the practitioner today.

Editors' Personal Page

He who seeks no information from others is soon trailing at the end of the procession.

On his departure for home after his recent sojourn in America, Conan Doyle said: "I have but one criticism to make of the American people. They mistreat their horses."

"There is about as much danger of getting too much milk in the diet as there is of breathing too much air," says a food specialist of the Colorado agricultural college.

Battles Ahead

1. Fight the big menaces that threaten to invade veterinary practice.
2. Fight for the horse and against the tractor.
3. Fight with and not against the live stock interests in all campaigns for better conditions.
4. Fight for the Horse Association of America.
5. Fight for good roads that can be used for horse drawn vehicles.
6. Fight for a higher per capita consumption of milk, and meat.
7. Fight to make veterinary schools 100% efficient.—B. D. R.

CLASSIFICATION UNWISE

"From agents who have called at my office during the past two years or so I have learned that veterinarians are classified into the following groups," writes a reader who practices not a thousand miles from the Missouri river:

1. Graduates.
2. Licensed graduates.
3. Non-licensed graduates.
4. Licensed non-graduates.
5. Non-licensed non-graduates.
6. Qualified veterinarians.
7. Recognized veterinarians.
8. Accredited veterinarians.
9. Two-year men.
10. Three-year men.
11. Four-year men.
12. One-year men.
13. Permit holders.
14. Legal practitioners.
15. Illegal practitioners.
16. Quacks.

Although written in a frivolous mood there is food for thought in the misconception of the facts created in the minds of the outsider by this form of self-classification, when in truth our welfare depends upon showing that we are a solid aggregation working harmoniously for a common purpose.

DEPARTMENT OF LABORATORY DIAGNOSIS DISCONTINUED

As so many specimens are arriving in an improper state of preservation, and the fact that almost everyone now has access to nearby laboratories, it has been thought advisable to at least temporarily discontinue this department, in spite of the fact that its popularity has continued to increase since the very beginning.

The editorial staff, we are sure, voices the sentiment of all concerned when it compliments Dr. Zell for his untiring efforts and the high ideals that have always governed them, and for the help he has given to so many practitioners.

In short, it seems impracticable to carry on such work for veterinarians in a country so large as ours.

Nowadays the term "pure-bred" does not mean much when applied to an animal, unless it is backed up with an authenticated record of worth while performance. The terms "standard bred," "pure bred," etc., are parodies when they decorate poor cows and slow horses.

GIVE BUDDY A CHANCE

The U. S. Veterans' Bureau has 130,738 ex-service men in training status who are receiving instruction in every trade, industry, profession, and in agriculture. They are completing their courses at the rate of 500 a month. Every person completing a course of instruction is a skilled workman. If you want persons trained in a particular vocation write to: Rehabilitation Division, Employment Section, U. S. Veterans' Bureau, Washington, D. C.

We respectfully request our subscribers and advertisers to consider this opportunity to secure the skillful service of deserving men.

Important News and Announcements

SIBERIAN VETERINARIANS APPEAL FOR HELP

To the Editor of Veterinary Medicine:

Be so kind as to give space to the following invocation in your next issue:

The Siberian Veterinary Zootechnical Institute was established in Omsk, 1918, to study local Siberian zootechnical conditions, to organize a campaign against epizootics and to supply Siberia with veterinarians.

In spite of the severe conditions of life, after the great war against Germany, and the impossibility to communicate with foreign countries the institute broadened its activities, thanks to the personal initiative and energy of scientific and pedagogic personnel of the old veterinary institute at Kazan. But today the institute cannot continue without foreign help. It needs school books and laboratory supplies. Not knowing any other way out of the present conditions a group of professors have the honor to appeal to you in the name of culture and science for moral and material support, as much as it is possible to assure the existence of the institute and its co-laborators and to meet the misfortunes of life after a great war and the bad harvest of last year.

We remain in hopes of receiving from our colleagues food supplies, etc., that can be sent to Siberia.

Rector Lapajninam.

VETERINARY CORPS NEWS

Lt.-Col. Roy Stancliff is transferred from the Surgeon General's office to Fort Sam Houston, Texas, to serve as Eighth Corps veterinarian, October 1, 1922.

Lt.-Col. Morse, M. C., who has been chief of the veterinary service for several years, goes to the Philippines in October.

Major W. R. Pick, now at Camp Travis, as division veterinarian of the Second Division, is transferred to the Army Medical School at Washington, for instruction, and Major Aquilla Mitchell, fills the vacancy.

Lt.-Col. J. R. Jefferies has been ordered before a retiring board at Washington, D. C.

Col. Wm. V. Lusk, whose health has been a matter of considerable concern to his friends for several years, and who is a veterinarian of the Eighth Corps area, is confined to the hospital at Fort Sam Houston.

Veterinarians who desire to take the examination for federal accredited herd work are requested to report at the state house at Springfield on June 30. No application required.

Incorporation of the Simplicity Manufacturing Company, Chicago, Illinois, is announced. The incorporators are J. V. Lacroix, E. G. Dable, Jr., and J. T. Hernsheim. The company will engage in the manufacture and sale of veterinary hospital and farrier's equipment.

The Missouri Valley Veterinary Association will hold its regular annual meeting at Omaha, Nebraska, July 10, 11 and 12, 1922. R. F. Bourne, Secretary.

The Society of American Bacteriologists maintain a collection of type cultures of various bacteria at the Army Medical Museum, Washington, D. C.

Dr. John F. DeVine, editor of the department of cattle practice, addressed the New York State Guernsey Breeders' Association, on the subject of "Advanced Registry Work, Delayed Breeding and Its Effects on Our Dairy Breeds," in which he took the position that forced feeding, close confinement, and delayed breeding have affected our best producing cows that it would seem the practice would soon have to be stopped, if we wish to save the best blood lines and the greatest animals for future use.

Our Accolade

Dr. P. L. Cady, President of The Missouri Valley Veterinary Medical Association, 1922, is a native son of the Middlewest, born at Bellwood, Nebraska, on his father's farm, August 1, 1883.

He attended the public schools where all good men find their first inspiration, later the Columbia, Nebraska High School, the Fremont, Nebraska Normal and after teaching school for three years graduated at the school of pharmacy of the latter college where he received the degrees of bachelor of science and graduate pharmacist. His veterinary education was received under the old masters at the Kansas City Veterinary College where he took the degree of doctor of veterinary science in 1910. In college he is described by one of his old teachers as a cool-headed, deliberate worker with a determination of getting at the bottom of things and always on the right side of any controversy where the welfare of the students or teaching staff was at stake.

P. L. CADY, B. Sc., Ph. G., D. V. S.
President, Missouri Valley Veterinary Medical Association

On leaving the veterinary college he located at Fremont, Nebraska, for general practice, where he remained seven years when he moved to Arlington, a few miles east, to improve his prospects, and to look after his farming interests at that place.

Cady is not only a bachelor of science, a graduate pharmacist and a doctor of veterinary science, he has also the distinction of being a practical farmer and a very ardent worker for veterinary associations. He is a member of the Nebraska State Veterinary Medical Association, The American Veterinary Medical Association and the Missouri Valley Veterinary Medical Association. He served the former as president in 1913 and is now the presiding officer of the latter.

The cool-headedness attributed to him by one of his teachers is borne out by the manner in which he handled one of the stormiest sessions in the history of the Missouri Valley Veterinary Medical Association at Kansas City in February. Although the very air of the session was rent with charges and supercharges against certain members who were up for summary dismissal from membership Cady maintained a discipline that was beautiful to behold and at the hazard of his own popularity insisted that only fair play shall prevail.

A man may become distinguished by chance; he may be elected or appointed to a high public office; he may achieve distinction by accumulating more that the average proportion of wealth; or he may become famous through a single accomplishment; but he who grows up in a community, is educated from that community and then goes back and does his bit for society among the same people, without show or affectation and has deported himself among the colleagues of his profession in such a way as to be selected as a leader attains distinction by sheer uncamouflaged merit. His accolade is earned, not thrust upon him by chance; and is a decoration for merit, for loyalty and obedience to an accepted code.

In September, 1910, Margaret Larson, his old school day sweetheart, displayed her good judgment by becoming his wife and is now the proud mother of three sons: Duane (10), Dick (7), and Jack (4).

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

Extrauterine Gestation

By Professor G. Hebrant, Brussels, Belgium

Comments by Professor W. L. Williams, Ithaca, N. Y.

CASES of extrauterine gestation are very rare in veterinary medicine; Belgian and foreign literature do not contain very much information in this connection. It has been our privilege recently to operate on a small bitch thought to be affected with an abdominal tumor, but which proved to be a fetus hidden in the folds of the omentum. The conditions under which the development of this embryo was affected and the circumstances which brought about surgical intervention appeared to us to be interesting enough to justify the following report. It is an incident so rare that in a practice of more than twenty years, in a small animal clinic, we had never observed a case before.

During last December, a colleague presented a small native bitch, four years old, that was presenting an abdominal tumor. The tumor could be felt by palpation. The bitch simply manifested inappetence and a general malaise during several days that was little observed. Submitted to an examination, our colleague in palpating the abdomen, could feel the tumor through the abdominal walls. The growth seemed to have the form and volume of a goose-egg, located in the anterior abdominal region, behind the stomach. It was free from all adhesions to the surrounding organs, only slightly sensitive, and displacable to the point that it could be brought back as far as the pelvis. On account of its irregular consistency, presenting some places more resistant than others, certain parts easily yielded to finger pressure; and it seemed to show a more or less striking lobulation. Let us say at once that the character was such as to justify a diagnosis of malignant tumor.

In regard to the particular location of this tumor, which seemed to be developed on one of the intra-abdominal organs, it could not be thought of as attached to the mesenteric lymph nodes, because these when diseased, are perceived like a string of beads attached to the vertebral column. It could not have been an intestinal obstruction from a foreign body, because the digestive symptoms presented by the patient were not sufficiently alarming, and the consistency of the tumor was not such as is found in the usual obstructing objects; nor was it like a stercoral mass. One could not attribute it to a tumor of the liver, of the pylorus, or of the spleen, in view of its movability. Pregnancy was also excluded as the bitch had not been bred for more than four months. The uterus could not be invoked as the point of attachment for the reason that when it was moved about no serous attachment, having any continuity with it, could be felt. There was still the ovary; we could not imagine it as a cyst of this organ as the irregular consistency of the tumor did not permit of this diagnosis, but we could possibly find ourselves in the presence of a tumor of this organ that had become pendulous by its weight dragging upon and elongating the ovarian ligaments. It is this last diagnosis we finally decided upon, but without insisting upon its certitude.

The bitch in question had been bred four months before without becoming pregnant, information to which the owner attached no importance as such things were frequent enough in the breeding of dogs. The bitch had been a mother. After having been bred this last time, and when she should have begun to show signs of pregnancy, a swelling of the mammae and a restlessness appeared as if she was pregnant, but several days later everything was normal.

The owner did not pay any attention to this as such occurrences are frequent in bitches. However, our colleague and I, should have attached some importance to this information in our deliberations, but cases of extrauterine gestation are so rare we thought of nothing except abdominal tumor.

Through a laparotomy performed on the

median line, a tumor was drawn out which was not difficult to detach from the omentum in which it was found. It was not adhered except on a limited area by its contiguous relation and was not attached anywhere to the peritoneum. It was not necessary to use the scissors nor the bistoury to detach it. It tore off very easily by rupture of the capillaries passing between the omentum and the tumor at the adherent points. An insignificant hemorrhage followed, but it stopped spontaneously. The abdomen reclosed, according to the usual methods of suturing, healed by primary union. The patient was completely cured in ten days.

The tumor was enclosed in a regular, ovoid sac, smooth over the greater part of its external surface, only the adherent parts were rough. The sac was fibrous and very tough and contained a mass entirely covered externally with black hairs and molded to the form of the sac. By the transparency of the sac, the character of the contents was already suspected. On first look this monstrous parasite was seen to be constituted of a mass of flesh covered with a thick skin, certain parts were ossified, notably a short transverse zone, a centimeter large, toward the middle of the mass. It was this region that contained the adhesions. At no part could a vestige of the umbilical cord be found.

But on sectioning the fetus longitudinally, a cutaneous ply, giving access to a deep transverse fold, could be seen at one point of its small circumference. This fold enlarged and deployed within the fetus. It was thus recognized that it was not a simple tissue and that inside there was a fetus in an advanced state of organization. At one end a head could be recognized, and at the other the vestige of the tail. On the borders were rudiments of legs, two of which showed digits and claws. Sectioned through its long axis from head to tail, the vertebral column was found in the course of ossification, in the form of protovertebrae in lineal series. At the head, the skin covered an ossified cranium which contained nervous substance. The branchial arches had disappeared and it was impossible to find the buccal orifice. On the surface of the longitudinal section all the fleshy mass was formed of muscular tissue without any evidence of a digestive tube.

There is no doubt that we were in the presence of an erratic malformed fetus, whose evolution was puzzling, partly because of the solid fibrous sac surrounding the monster and partly because it was independent and lived only by contact. Where did the membrane come from? It was certainly not one of the normal fetal membrane, because it had no umbilical cord. Neither was it a fold of the omentum because it was not continuous with the rest of the omentum. In seeking to clear up this obscure point, we were put in the way of the explanation that we give below in our reference to Zundel's dictionary. To this author, extrauterine gestation differs according to the place where the ova develop.

First, ovarian gestation, which he divides into two kinds: one is internal ovarian gestation, when the germ develops in the interior of the Graffian vesicle, and the other is external ovarian gestation, when the ovum escapes from the vesicle and is developed under the ovarian capsule. In these two forms, observed in domestic animals by Gurlt, the ovarian integument ruptures at a given time and the embryo falls into the abdominal cavity.

Second, tubular gestation, in which the fecundated ova, taken by the oviduct, is fixed and enveloped therein. But the oviduct, not being able to withstand the development of the embryo ruptures and discharges the ovum into the abdominal cavity.

Third, abdominal, or better still, peritoneal gestation, that is distinguished as primary and secondary, according to whether the germ is fixed at once in the abdomen or whether it is developed in the ovary or oviduct and falls into the peritoneum later. "It is admitted," said Zundel, "that the part which the ovum contacts becomes thickened and more vascular, and that it develops a serous pouch around the embryo. In one case observed on a goat by Mollart, the fetus was attached near the umbilical region of the mother by short vessels and was enclosed in an omental-like envelope adhered to the embryo throughout the whole extent. A placenta was also mentioned as being almost complete, formed in the abdomen, and attached to the serous membrane that had organized. Fonari claims to have seen a placenta in a goat that was formed from the serous membrane of the rumen." In our case there is no argument about a placenta but the existence of a fibrous sac is certain. This sac might be considered as emanating from the fibrous tissue of the ovary, in an ovarian gestation; the pouch containing the embryo pedunculating by the growing weight of the fetus in its course of develop-

ment, and at a given moment the peduncle ruptures. This is possible in our opinion, because in the case of ovarian cysts of the bitch, there is always a thick fibrous membrane that has all the characters of the pouch that we found in our operation. These cystic productions do not, however, pedunculate, but is there not a difference between an abnormal production (the cyst) and a fetus in the course of development whose ultimate destination is to be expelled normally? And note the development of this embryo. Does it not come directly from a tubular or uterine gestation, in which the uterus or the oviduct are dehiscent, leaving their contents fall into the abdomen where normal and complete evolution is prevented? The very advanced state of embryonic development of this case seems to confirm this. The fibrous sac found may represent the amnion, but it is well worth-while asking, what has become of the umbilical cord? If at the moment of rupture of the uterus there was also dehiscence of the extra-fetal membranes, the fetus would have passed naked into the abdomen and would then cause doubt as to the origin of the fibrous sac and oblige us to admit the view of Zundel, that such membranes are of peritoneal origin.

We may add in regard to this case that the fetal membranes remaining in the uterus may have been expelled at the moment they become inutile in that it is possible in dogs that this expulsion may have occurred unnoticed. All of these reflections came to our thoughts in the close examination of the contents of the sac and in pondering over the point of departure; all of which happened quite a while after the operation. It is evident that if the examination of the monstrosity could have been made during the course of the operation, more of our attention might have been directed toward the ovaries, the oviduct, and the uterus.

—Annales de Med. Veterinaire.

Comment by Professor W. L. Williams

The contribution of Professor Hebrant of an instance of extra-uterine gestation in a bitch is of unusual interest in veterinary science because the presence of the fetus in the peritoneal cavity was clinically recognized even though an erroneous diagnosis of ovarian tumor was made; and because an effort is made to explain the manner by which the fetus attained its extra-uterine location.

Differential Definition

In veterinary obstetrics there is a very vague conception of extra-uterine pregnancy. Perhaps there is some confusion as to what constitutes pregnancy or gestation. What is pregnancy? If it is admitted that pregnancy signifies the presence within the genital organs or elsewhere of a living ovum, embryo or fetus, it excludes from consideration as extra-uterine pregnancy or gestation all embryonic or fetal remains existing outside the uterus which have not undergone any part of their development in such extra-uterine location. That is, a gestation may be intra-uterine but owing to accident the embryo may escape from the uterus into the peritoneal cavity. Such an occurrence is not extra-uterine pregnancy, and it is a technical and practical error to so designate it although this is usually done in veterinary literature.

Sometimes Only a Fake

Thus there was recorded comparatively recently a case where a veterinarian erred in diagnosis, attempted to douche a pregnant uterus, the fluid naturally could not return, the uterus ruptured, the fetus fell into the peritoneal cavity and perished at once, the cow died promptly and upon autopsy the veterinarian, having found the fetus outside the uterus, designated it as a case of extra-uterine pregnancy, which it clearly was not. The fetus was extra-uterine but the pregnancy was physiological until terminated through an error.

An extra-uterine pregnancy is one in which the embryo becomes attached through its placenta to some other structure than the endometrium and develops to some degree in such surroundings.

Extra-Uterine Fetuses are Seldom, If Ever, Extra Uterine Pregnancies

I described and figured (Veterinary Obstetrics, 1917) some features as extra-uterine pregnancy. They were unquestionably extra-uterine fetuses but the right to term them extra-uterine pregnancies might very well be questioned. It is not at all impossible that they attained their complete development in the uterus and then became located outside that organ. The prevailing rule of nomenclature was followed without careful analysis.

In early medical and veterinary literature, if a fetus were discovered outside the uterus it was designated extra-uterine pregnancy, and the actual nature of the phenomenon ascribed to a variety of causes, some credible and some incredible. Every experienced veterinary practitioner has encountered rupture of the uterus with the escape of the fetus into the

peritoneal cavity, but that is not, and cannot become extra-uterine pregnancy.

If the cervical canal had not been open in these cases, the rupture would generally pass undiagnosed. The mother might survive and the fetus become encased in a deposit of lymph to form a pseudo-membrane with feeble adhesions to the contiguous surface and in this state it might remain indefinitely as an inocuous foreign body but no difference how long the fetus so remains it does not and cannot become extra-uterine pregnancy. It was an intra-uterine pregnancy and the fetus escaped into the peritoneal cavity and immediately perished. The accident terminated the pregnancy and displaced and killed the fetus. The female then became non-pregnant and the fetal cadaver extra-uterine.

Previous Views Not Now Entertained

Early veterinary writers like Zundel—upon whom Professor Hebrant bases his views—believed, in primary peritoneal or abdominal pregnancy. That is, it was believed that an unfertilized ovum might drop into the peritoneal cavity, be overtaken and fertilized by spermatozoa, become attached and develop, or an ovum already fertilized might drop into the peritoneal cavity, attach itself and grow.

During recent years it has become practicable to clinically diagnose and surgically relieve extra-uterine pregnancy in woman. This fact has rendered available for study an amount of material wholly unknown to veterinarians. These studies have practically eliminated the probability of primary abdominal pregnancy in woman and there is no logical reason for believing that the same is not true for domestic animals. Modern obstetrists recognize two classes of extra-uterine pregnancy, ovarian and tubal, but the former is technical rather than of practical importance, tubal pregnancy accounting for virtually all the cases. Professor J. Whitridge Williams, in his Obstetrics, 4th edition, 1917, says, "As the fertilized ovum may be arrested at any point on its way from the Graafian follicle to the uterine cavity, it may undergo development in the ovary or in any portion of the tube, giving rise to ovarian or tubal pregnancy respectively. It is doubtful whether the ovum can become implanted upon the peritoneum and a primary abdominal pregnancy follow."

This distinguished author has operated upon numerous cases of extra-uterine pregnancy, removed the embryo, its coverings and seat of attachment and has, as have many other obstetrists and gynecologists, given each case minute and careful study. All modern writers upon obstetrics appear to be in general accord upon this point. Extra-uterine pregnancy is either ovarian or tubal. This confines pregnancy to the reproductive organs and almost wholly to the derivatives of the ducts of Mueller anterior to the cervix. The oviducts and uterus, alike in origin, are similar in some respects in structure. The restriction of extra-uterine pregnancy to the ovaries and oviducts is highly fortunate.

Even "Sterility Experts" Can Not Produce It

In recent years there has arisen from darkness a large group of "sterility experts" who cure all genital disorders by "massage of the ovaries and rupture of cysts." These disciples of darkness unquestionably rupture many ripe Graafian follicles and spill the ova into the peritoneal cavity. If these could be readily fertilized in the peritoneal cavity, become fixed and grow there, there would occur primary abdominal pregnancies galore in the cow, but Providence is kind to these "specialists" and the ova perish.

No Authenticated Case on Record

So far as I know, no genuine, indisputable case of extra-uterine pregnancy (ovarian or tubal) has yet been recorded in any domestic animal. They doubtless occur. Now and then it is recorded that a cow has died from hemorrhage following the dislodgement of a hypertrophied corpus luteum. Was the operator in error and dislodged an ovarian pregnancy? Tubal pregnancy in domestic animals has not been diagnosed either clinically or by autopsy.

Professor Hebrant's Case Reviewed

Turning to the highly interesting case recorded by Professor Hebrant there are certain data which suggest an interpretation at variance with that submitted.

1. He failed to show that the ovaries, tubes and uterine cornua were intact and showed no evidence of rupture.

2. Hebrant states that the fetal cadaver was "enclosed in a regular, ovoid sac—the sac was fibrous and very tough—Where did the membrane come from? It was certainly not one of the normal fetal membranes because it had no umbilical cord." The development of a mammalian embryo without fetal membranes is not known to be possible. When the fertilized ovum passes from the morula stage to become a blastoderm, its further evolution into an embryo involves the formation of the amnion and in higher mammals at least, an al-

lantois. These are often designated as adnexa, and thought of as mere additions of a convenient but non-essential character. But an embryo cannot form without an amnion: it is a basic and essential part of the embryo. Neither can an embryo live without an amnion.

Fetus Not Developed in Position Found

The fact that the fetus described by Hebrant had no amnion, shows that it had not lived in the position and relation in which it was found. Hebrant suggests that the fetus was nourished "by contact" but this is an unknown and certainly impossible method of nutrition in a fetus. The morula and blastoderm apparently absorb nutriment and supply means for growth, but in these the exterior cells are primitive and still perform feebly, the general functions for the maintenance of life but the formation of an embryo means the specialization of cells and embryonic nutrition is provided for by the placenta and by it only. It is impossible for a fetus to sustain life by the absorption of nutriment through a fully developed hairy skin; its function is essentially the opposite (with rare exceptions of highly volatile substances like turpentine, etc.) and repels absorption. Even if this were not true, Professor Hebrant's fetus could not have procured nutriment "by contact" because it was isolated by a tough, fibrous sac so that its surface was not in contact with any possible source of food supply.

Compared with Specimens at the New York State College

The very interesting contribution of Hebrant caused me to make a careful study of extra-uterine fetuses in the museum of the New York State Veterinary College. There is one ovine fetus and two closely adherent porcine fetuses. They are without history except they were abdominal. The fetuses are all near full term, are bent sharply ventralwards, their limbs folded tightly against the ventrum and they are enclosed in a tightly investing, tough, fibrous-appearing sac. The investing sac is at most places closely adherent to the hair—the sac does not merely lie against the hair as the amnion may if the fluid escapes but has been formed upon the hair so that the substance of the capsule encases the hairs themselves. In some places the ovine fetus is covered by a smooth, thin membrane which is wholly free from the hairs and is evidently amnion but over this is stretched the fibrous-appearing capsule. The ovine fetus has a definite umbilical cord. It is perfectly clear that it once had a full complement of fetal membranes, but they ruptured, the chorion with its cotyledons remained in probably their original situation and portions of the amnion accompanied the fetus as it moved to a new location. It had gained the peritoneal cavity where it acted as a foreign body and upon the surface of this mass, lymph was precipitated to form a dense, tough capsule. Where the amnion remained the precipitate was upon its exterior and the capsule adhered to the amnion while the latter was free from the hairs. Where the amnion had ruptured and the exterior of the fetus lay in contact with the peritoneum, the lymph precipitate surrounded and adhered to the hairs (wool).

The porcine fetuses are similar in most respects. Both are wholly devoid of amnion throughout almost their entire extent and consequently the fibrous-appearing, tough capsule is closely adherent to the hairs essentially everywhere, but there is a small mass of evident fetal membranes lying against the ventral portion of the abdomen. This mass is not adherent to the hairs but the tough capsule extends over this, adheres to it, and presses the membranes closely against the fetal belly. No umbilical cord can be found in either swine fetus but a long and patient search revealed an umbilicus with umbilic veins, etc., in the abdomen. The navel cord had been broken off and the wound lay hidden beneath a broad, transverse fold of skin. These swine fetuses correspond precisely with the canine fetus described by Hebrant except in two particulars, the fetuses were not teratologic (no monstrosity was present) and a very careful search revealed a navel and hence the prior existence of an umbilical cord. The following conclusions appear to me justified:

1. The canine fetus described by Hebrant and the ovine and porcine fetuses described by me were abdominal (extra-uterine).

2. They were not the result of abdominal pregnancy but may have been either ovarian, tubal or uterine. If the latter, the pregnancy was uterine but eventually, owing to rupture of the uterus, the fetuses became abdominal. If ovarian or tubal in origin they were extra-uterine, but not abdominal pregnancies.

3. The probabilities are that the fetuses named were the result of tubal pregnancies, the oviducts eventually rupturing from over-distension and the fetuses escaping into the peritoneal cavity, perishing immediately and gradually acquiring a dense capsule from a precipitation of lymph.

Control of Glanders in United States Army

Excerpt from War Department Circular, Number 264

PENDING revisions of Army Regulations, the following regulations relating to the before-mentioned subject are published for the information and guidance of all concerned:

1. Nature and Importance of Glanders

Glanders is a communicable disease to which horses and mules are peculiarly susceptible and is caused by infection with the bacillus mallei. It produces progressive disability, generally resulting in death, and is practically incurable. The ease with which one infected animal can transmit the infection to others by reason of the presence of the organism in discharges from the nose and mouth, and the extensive losses which it has occasioned in the past whenever animals in considerable numbers have been brought into close contact with each other, demand the adoption of extreme measures in the army to keep glanders under control.

2. Methods of Control

The important measures to prevent the appearance and propagation of glanders in a command comprise early diagnosis; prompt isolation and destruction of the infected animal and the sanitary disposal of the carcass; the application of thorough disinfection; and the quarantine, close observation, repeated examination and testing of suspects and contacts. There is no treatment for the infected animal other than prompt destruction. Hence the essential measure of control in all cases is a prompt and accurate diagnosis. The diagnosis is based on the clinical signs and the results of mallein or serological tests.

3. Clinical Signs

a. Veterinary officers should at all times be on the alert to detect the clinical signs of the disease, which are many and varied, necessitating frequent and careful physical examinations. The existence of an open lesion means a vast increase in the possibility of dissemination; therefore it is the constant aim to detect the infection prior to this event, for which purpose frequent mallein tests are utilized.

b. Whenever a positive clinical diagnosis is made the animal should be destroyed irrespective of what or how many tests it may have passed. It should not be held for further testing of any kind. Saturation of the system with tonic products in case of positive infection may be cause of failure to react to a mallein test. An animal with suspicious clinical signs should be isolated at once, kept under observation and given the tests hereinbefore prescribed until the presence or absence of glanders is definitely determined.

4. Glanders Tests

The difficulty in arriving at an early clinical diagnosis of glanders and the undesirability of awaiting the appearance of definite symptoms which are always a menace to well animals have led to the development of biologic reactions, the so-called mallein and serological tests. These tests are extremely delicate and within well defined limits are diagnostic. The mallein tests are field measures, applied and interpreted by the veterinary officers present with the animals. The serological tests require trained laboratory technicians and special equipment and are to be made at the laboratories of the Medical Department designated by proper authority.

The responsibility for a correct diagnosis lies primarily with the officer in attendance on the animal. He alone is in possession of all the facts and has knowledge of the local situation. The information furnished him by the laboratory is advisory in nature and should be given proper relative weight in connection with all other factors bearing on the case in forming an opinion.

5. Kinds of Glanders Tests

Two types of mallein tests are authorized, the ophthalmic and the intradermic. In cases of doubt following an intradermic test, laboratory serological tests consisting of the complement fixation and the agglutination tests are prescribed.

6. The Ophthalmic Mallein Test

a. The ophthalmic test consists of the instillation of ophthalmic mallein into the conjunctival sac and the interpretation of the reaction during the succeeding 24 hours. Its use is authorized only at the time of purchase because of the rapidity with which a definite decision may be reached. Every newly purchased animal will receive this test in case a

veterinarian be available. Animals are generally purchased contingent upon passing a negative test unless it is practicable to first apply and read the test. When purchased under this contingency, any reaction other than negative is a cause for rejecting the animals, which should at once revert to the owner for disposal under local sanitary live stock regulations. Consequently, retesting and serological tests following its use are unnecessary.

b. On the detection of a positive or suspicious reaction, all other animals from the same lot or stable will be regarded as contacts. Each lot of contacts should be segregated from all others. When it is impracticable to maintain the contacts in quarantine at the purchasing point, they may be shipped as a suspected lot avoiding contact with other animals. On arrival at a depot or other station, they are subjected to quarantine and testing like any other green animals but should be handled as a separate lot with special precautions because they are actual contacts. See par. 11c.

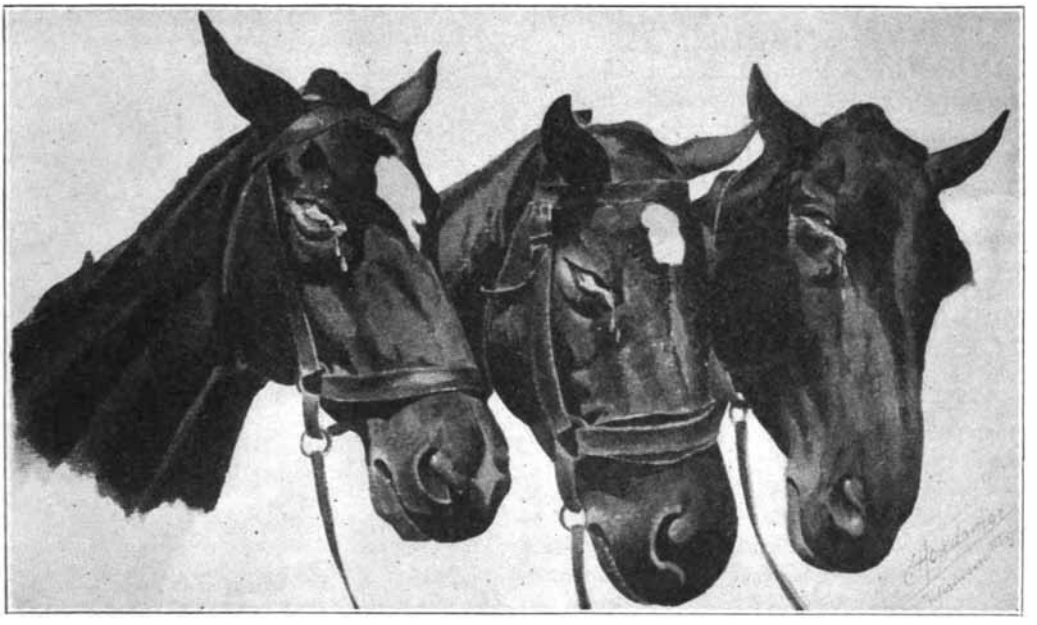
7. The Intradermic Mallein Test

The intradermic mallein test consists of the injection of mallein into the skin of the lower eyelid and the interpretation of the resulting reaction. It is the standard mallein test prescribed for general use in the army at all times excepting at purchase.

8. Reactions

a. A mallein test is followed by a reaction described as positive, negative or suspicious. A positive reaction means that, so far as concerns the test to which it refers, positive evidence of glanders infection was found, and a negative reaction means that no evidence of glanders infection was found. A suspicious reaction refers to an indeterminate condition presenting too much positive evidence from a given test to justify a negative finding and not enough to warrant a positive finding.

b. The disposition of an animal reacting to an opthalmic test is discussed in paragraph 6. An animal reacting positively to an intradermic test is judged to be infected with glanders and should be destroyed without delay. One reacting negatively is considered to be free from glanders. Animals yielding suspicious reactions or "suspects" are undetermined cases, to be held for retest and serological tests. If the results of these tests are not conclusive, the animal is held for further tests.



MINIMUM REACTION FROM THE INTRAPALPEBRAL TEST FOR WHICH HORSES SHOULD BE CONDEMNED
(Drawn by Capt. E. Houdamer, Assistant to the Chief Veterinarian of the French Army, During the War, for the Veterinary Corps, A. E. F.)

9. Retests

The term retest is applied to the injection of mallein into the skin of the lower lid of the untested eye not sooner than the 48th nor later than the 72nd hour after the primary in-

jection which has yielded a suspicious reaction. It constitutes a convenient check on the results obtained by the test.

The retest is applied immediately after the blood is drawn for the serological tests.

Omission of the retest is authorized only when the opposite eye is affected with a diseased condition which will interfere with the injection of mallein and interpretation of the reaction.

11. Resume

a. The successive procedure indicated when the primary injection of mallein yields a positive or suspicious reaction are as follows:

(1) The animal presenting a positive reaction will be destroyed without unnecessary delay and further testing or retesting of any kind. The same procedure applied to a positive reaction following a retest of serological test. The disposal of the carcass, the handling of contacts and the quarantine and disinfection measures to be adopted are such as are now authorized or may be authorized from time to time by the War Department.

(2) The animal yielding a suspicious reaction to the primary injection will have a specimen of blood drawn between 48 and 72 hours after the primary injection and immediately afterwards will be retested in the opposite eye The retest is made and interpreted precisely as is the test. Serological tests following a suspicious retest are not required. Should the retest prove suspicious and the laboratory report not clear up the case, the animal will continue in isolation for a period of 21 days from the date of the retest, and the entire program of test, collection of blood sample and retest will be repeated, thus continuing until a positive or negative opinion can be reached.

b. To summarize in the case of a suspicious reaction to a test:

(1) A positive retest, whatever the serological findings, or a positive serological test whatever the retest findings, establishes a positive diagnosis of glanders.

(2) A suspicious retest with suspicious or negative serological test or a negative retest with suspicious serological test continues the case as suspicious and it should be held in isolation for further tests.

(3) A negative retest with a negative serological test denies the diagnosis of glanders and justifies the release of the animal.

(4) It will be apparent that a negative serological test is not to outweigh a suspicious mallein test and retest combined, but a negative serological test plus a negative retest are considered as outweighing a suspicious test and warranting the release of the animal as free from glanders.

c. Animals presenting suspicious reactions will be tagged and immediately isolated. Until a diagnosis is definitely established, suspects and contacts with positive or suspected cases and their surroundings will be handled precisely as if the case were a positive one. Contacts should be tested at once, if not already done. If the suspect is eventually released as negative, the contacts should likewise be released, but the discovery of a positive or suspicious reaction amongst the contacts should be reason for further isolation and testing of the original suspicious case or cases as well as of all the contacts.

14. When Mallein Tests Are Required

A mallein test is mandatory—

a. At time of purchase, if a veterinary officer is present or available.

b. In case of newly purchased animals, immediately after arrival at any station or depot.

c. In case of newly purchased animals, before release from the 21-day quarantine which all such are required to undergo on arrival at any station or depot and irrespective of the result of the first test at the station.

d. In case of animals not newly purchased, at the earliest practicable date after arrival at any station unless tested within the preceding 21 days and there has been no subsequent exposure to the disease. Unloading at a public feed and rest station en route will be considered as exposure.

e. Before issue, shipment, turn in or transfer from any station or hospital thereat to another station or hospital thereat unless tested within the preceding 21 days.

f. Before sale to civilians, unless tested within the preceding 21 days.

g. Before turning in to a depot by an organization, unless tested within the preceding 21 days.

h. Before embarking on an animal transport unless tested within the preceding 21 days.

i. In case of all captured animals. Such animals will be treated as newly purchased animals under sub-paragraphs b and c.

j. In case of all privately owned animals, including officers' mounts allowed to enter a command, unless accompanied by evidence

satisfactory to the veterinarian of a negative test within the preceding 21 days.

k. On all contacts with clinical cases or with animals reacting positively or with animals reacting suspiciously.

l. On receipt at a veterinary hospital from another station, unless tested within the preceding 21 days, in which case they will be tested at the end of the 21-day period.

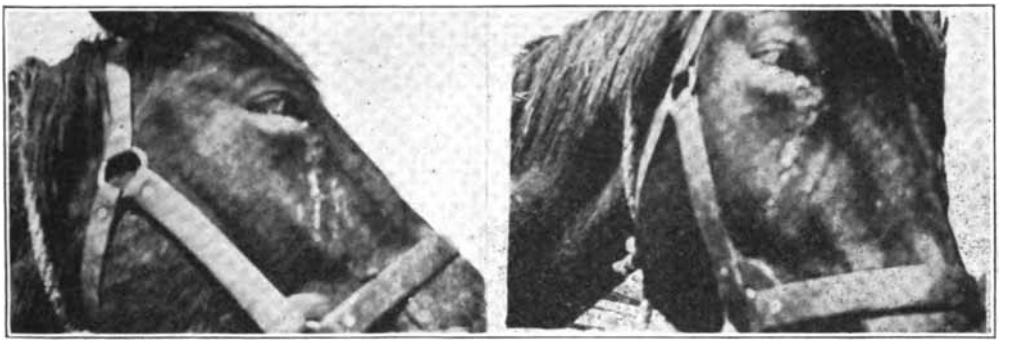
m. In case of any animal suspected from clinical signs, but not definitely determined to be glandered, irrespective of the date of last test.

n. (1) At least once every six months in the case of every animal not tested under any of the foregoing subparagraphs.

(2) So far as practicable, semiannual tests will be made during April and October of each year.

b. The veterinarian of a station or command is responsible for advising when a mallein test shall be undertaken or for the supervision of all its details. He will use any veterinary personnel available for this purpose, assigning the work of applying the test and interpreting it to officers selected for their suitability. He will so arrange the work that the officer who applies the test to one or more animals will, in so far as practicable, make all the readings for the same animals It is not contemplated that mallein tests will be made or interpreted except by veterinary officers or properly qualified civilian veterinarians.

c. Animals should not be allowed to remain untested for long periods. While the veterinary officer should always be on the lookout for suspicious cases and should test



POSITIVE OPHTHALMIC REACTIONS

16. Responsibility for Mallein Testing.

a. Under the general supervision of the department or corps area commander, all commanding officers and commandants of Reserve Officers' Training Corps units at educational institutions will require a semi-annual mallein test to be conducted by the station veterinarian where there is one, and to include all the animals at the station not otherwise tested under the provisions of paragraph 14 during the preceding six months. Commanders of stations having no veterinary officers assigned, including those directly under the War Department, will apply to the commander of the department or corps area in which their commands are geographically located for the necessary veterinary service to test the animals. So far as practicable the services of the veterinary assistant to the surgeon of the department or corps area should be utilized for this duty.

such individuals whenever in doubt, yet it is no excuse for not testing to state that there was no reason for suspecting the presence of glanders. The only real evidence for regarding the station as free from glanders is embodied in records of routine tests of all animals at the prescribed intervals.

d. The authority and co-operation of commanding officers is always necessary when wholesale tests are undertaken, since some interference with military duties is inevitable. The veterinary officer should make suitable recommendations to the commanding officer, advising the selection of such times for testing as are most convenient to all concerned and station commanders will afford such assistance as may be necessary.

e. When animals are issued to or by an organization in another command, without a mallein test by reason of military necessity or in compliance with these instructions as in-

terpreted below, a statement of the facts and showing the date and result of last test should be included in the health certificate (Form 101, M. D.) submitted by the veterinarian of the place of issue to the veterinarian of the place of receipt.

17. **Glanders Autopsies.**

a. All animals destroyed pursuant to a positive clinical diagnosis or as a result of a mallein or serological test will be autopsied in order to confirm the diagnosis if possible. A careful and thorough search should be made for characteristic lesions; if none are found this fact should be frankly reported. It may be difficult or impossible to demonstrate the presence of glanders by autopsy. Where animals are frequently tested, as is the case in the Army, the mallein or serological test often reveals the presence of the disease in its incipient stage and before glanders lesions are perceptible to the naked eye. Consequently such autopsies are frequently negative.

b. Whenever an animal is destroyed for glanders, specimens showing any pathological changes found at autopsy, irrespective of whether such lesions are considered positive, suspicious or negative, will be sent to the designated laboratory for examination. The specimens will be accompanied by a report containing the data required.

18. All instructions in conflict with the provisions of this circular are rescinded. (448.9, A. G. O.)

Studies on Periodic Ophthalmia in the Horse

By Augusto Bonazzi and Edward Merillat, Wooster, Ohio, U. S. A.

(Continued from June issue)

THE foregoing experiments and observation while lacking any revolutionary discovery have brought out a number of related facts which may prove of economic value. From these coupled together with information already well known and not herein recorded on account of lack of space it seems possible to outline a definite plan of management with at least more hope of success than formerly.

If it is remembered that the disease is very common in some districts and unknown or very rare in others and that mutations cure horses brought into non-affected areas and at the same time will make victims of well horses moved into regions where the disease is prevalent, the theory of infectiousness which has dominated all research until now, seems to be poorly grounded.

M. Jacobs, (An. rep. A. V. M. A., 1902) said "Horses and mules brought from a district in which the disease does not exist into one where it is prevalent very often become affected. Then, again, those already having the disease when taken to a locality where it is rare oftentimes become entirely cured." Since that early date and even some years before, we had already observed this fact and the special obervation of the last few years seem to make these early observations of Jacobs incontrovertible. Assuming this to be a proved fact, the disease is not infectious, because affected horses instead of spreading the disease when taken to areas where the disease does not exist, actually recover in a striking manner, either in the form of a complete restoration of the sight or by a delimitation to the damage existing when the patient was moved. This is probably best illustrated in the blue-eyed horse taken from the country into the city stable where the disease shows such a remarkable tendency to undergo arrest and where a continuation of the process to the point shown in figure 9 has never been observed by us. In the city a horse that suffers an attack soon after being brought from the country often makes a complete recovery or loses only one eye, while in the country the course is more often so insidious that it pursues its havoc first on one eye and then attacks the other without diminished severity until the intraocular structures are actually destroyed. In these damaged organs we find a bacterium, especially in the optic nerve and retina which seems to cause the damage but not the disease itself at the beginning.

We have endeavored to show that periodic ophthalmia is associated with a subnormal state of the body which we are inclined to believe is nutritional in character; (2) that the disease is manifested by a high intra-ocular tension, especially in the vitreous chamber, which actually tears the lens away from its normal attachments; (3) that the destructive process continues after blindness has supervened under the influence of a bacterium we have found to be

constant in the damaged tissues; (4) that the subnormal state produced by working horses too hard before they have been properly prepared by rationing and gradual exercise; (5) that the feed of horses in certain areas and farms lacks elements required to compensate for the enormous waste of the large muscular system of horses at hard work.

We are inclined to attribute the cause of periodic ophthalmia to environment, large muscular waste and improper balance of ration; to a nutritional rather than to an infectious origin.

The fact that the disease is stubbornly confined to given areas and even to certain farms where one or more of the causes we are inclined to incriminate is as much the basis of this conclusion as any of the research work we ourselves have made.

The disease is found on actual investigation to be most common where one or more of the following conditions prevail:

1. The soil was too acid to raise the high protein-containing legumes without the use of lime at least with each rotation of crops;

2. Work horses and growing colts were sustained a great part of the year on unbalanced roughage:—stalk-fields, oats, straw, timothy hay or inferior native hays.

3. Horses were given spurts of very hard work without what is usually regarded as proper preparatory workout.

4. The subjects were kept in dark, damp stables—bank barns with ground floors—where ammonia emanations contaminated the air. (Thus far we have made only a cursory study of actinic influences.)

It is incontrovertible that where none of these conditions exist periodic ophthalmia is a rare disease, and where a combination of them prevail the disease is rampant.

The point is illustrated by the difference in prevalence in two adjacent communities in Wayne county, Ohio. The one, a lime soil community, is free from the disease and when affected horses are taken into it they recover; the other, a shale district, is pestered more or less on every farm. Differences in severity can even be noticed on different farms—mild on one and notoriously severe and destructive on others.

The well bred trotting horse may be invoked to refute these conclusions, but thus far in each of our investigations on this type of horses there were always more errors in handling and management to which the disease could be attributed than in the common work horse.

In fine, under present condition on American farms, the ponderous body of a horse is built up on a roughage, corn or oats and water—a combination which does not meet the requirements of a beast subject to such a severe condition of life.

These conclusions are given with reservation and are not insisted upon, although they are at least in part confirmed by the fact that the only permanent cures observed by us or which have been reported by others, have been in horses wherein the causes we have incriminated have been removed.

Dry, well-lighted stables are essential and these should be kept clean; the ration should include grain and roughage of a proper protein content and hard work without adequate preparation should be avoided; and in districts where feeds are especially low in minerals and proteins these should be supplied in the form of legumes and mineral salts.

The affected horse should be treated by dilating the pupil with atropin, evacuation of the anterior chamber by appropriate and by feeding such minerals as coal slack, carbonate of lime, phosphate of lime, bi-carbonate of potassium, etc., together with red-clover or alfalfa hay in addition to the usual grain allowance of corn, oats and bran.

The authors express their thanks to Dr. Wm. Kinney of this city for placing operatory facilities at their disposal, and to the Ohio Agricultural Experiment Station for the use of their laboratory facilities.

A GOOD, CHEAP FLY REPELLENT

℞	Creolin (or any coal tar emulsion)	36 ozs.
	Fish oil	32 ozs.
	Kerosene	24 ozs.
	Whale oil	20 ozs.
	Oil of tar	12 ozs.
	Napthalin	8 ozs.
	Laundry soap	16 ozs.
	Water q. s.	10 gals.

The soap should be dissolved in enough hot water to assure a perfect solution and the napthalin in the coal tar emulsion and kerosene before mixing the other ingredients.

By soaking a sponge or cloth with this mixture and stroking it over the body of the animal in the direction of the hair a maximum of effect with a minimum of irritation is obtained.

It is never advisable to soak the skin with any active fly repellent owing to the erythema such applications always produce when repeated day after day.

Purely Practical

Dr. John Patterson says that anti-influenza serum is not a bad treatment for navel-ill of colts.

A packing of powdered potassium dichromate will render good service in the treatment of thrush of horses' feet.—Reed.

The American Railway Express recommends that hog crates should be bedded with sand. It prevents shipping casualties and is cool and clean.

A sixty grain tablet of naphthalin placed in a hen's nest will prevent lice infestation. Carry some in the Ford, and give it to the farmer's wife. It will make a "hit" both with the wife and hen.—Reed.

The most important procedure in the treatment of tetanus in man or animal, is the through dissection of all devitalized and infected tissue at the seat of the primary infection. Go well around it and deep enough to be sure to get it all, and see what a difference. —Wm. Bell.

In odorous sloughing or gangrenous areas of the epidermis and subcutis, powdered copper arsenite dusted over the area gives an improved appearance in a few hours time.—Reed.

A VERY PRACTICAL SUGGESTION

A common carpenter's apron is recommended by Dr. Wadley, an Iowa practitioner, as a mighty handy garment to wear while immunizing hogs against cholera. He places the serum bottle, equipped with filler attachment, in the left (nail) pocket, carries the hose around the neck and attaches it to the two-way stop cock of the syringe. The virus syringe goes in the right lower pocket, the virus bottle in upper right hand one, and a small viol of tincture of iodin in the upper left.

This arrangement enables the operator to move about from place to place with his whole outfit always at hand and to do much cleaner work than where these paraphernalia are strewn about, often in places difficult to keep clean.

One fourth drachm doses of mistura cantra diarrhoeum N. F. is very useful in diarrhea and dysentery of foals and calves.—Reed.

Placing a one grain tablet of quinine and urea hydrochlorid under the upper eyelid will give relief in painful eye affections. The effect will last for several hours.—Reed.

In canker of the ear in dogs, especially chronic tenacious cases, will ofttimes respond to a good swabbing with the following: formalin, one drachm, and glycerine, one ounce, applied every third day.—Reed.

To stimulate the delayed action of purgatives Quitman recommends the following prescription:

℞ Fluidextract physostigma ..... 1 oz.
Fluidextract nux vomica..... 6 drs.
Fluidextract colchicum .....12 drs.
Water q. s. .....12 ozs.

Met Sig. Give one ounce every two hours for horses, one and a half to two ounces for cows and prorated doses for small animals.

SIMPLE ENOUGH

H. A. Quinn of the Ft. Dodge Serum Company says: To drench a hog easily, cut a hole at the toe of a lady's shoe, and after holding the pig up by the fore legs just put the toe of the shoe in the mouth and pour in the dose; and to physic a hog put one or two compound cathartic pills in a "OO" capsule and fire them into the throat with the capsule gun.

TWITCHING THE COW

A cow can be subdued with a twitch quite as effectually as a horse but in the case of the cow the twitch must be put on the tail according to information from Dr. George Albery of Monticello, Iowa. Albery's cow twitch is made with a round stick two feet long with the loop in the middle instead of at the end. Two holes are bored an inch or two apart at the middle and the loop made by passing the rope through them. The loop is passed over the tail to the butt, turn up tight and pulled on in the backward direction. It is said that cows thus confined will stand for any ordinary operation about the body especially for ovariectomy.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Pertinent Comparisons Between Equine and Bovine Sterility

HAVING covered the salient points of the present information on sterility of cattle in a series of articles written for Veterinary Medicine during the past two years, the cattle department for the next few issues at least will be devoted to brief discussions of some of the ordinary ailments of cattle, being directed largely by inquiries addressed either to me personally or to the Journal as a guidance to that which would interest the practitioner most.

My article this month will be in the way of answers to three questions that have come to my desk within the past ten days. The first concerning sterility of mares at a breeding establishment.

Paradoxical though it may seem and notwithstanding that horse breeding had been studied scientifically for centuries before any extensive interest was given to the subject in cattle; literature on sterility in mares is very meagre and unreliable as compared with that on cattle breeding with reference to pathological conditions. There are, perhaps, reasonable explanations for this.

1st. There has been much careful attention given to hygienic breeding of mares and stallions and guarding against infection.

2nd. Possibly the genital tract of mares is less susceptible to the same character of infections as those that cattle so frequently suffer from; that it has made the problem of pathological study of much less importance.

3rd. Mares are not so easily handled and do not respond nearly so promptly to treatment as do cattle with the result that many very able men have become thoroughly discouraged in the matter of treating barren mares and volunteer the opinion that results are so unsatisfactory as not to warrant it.

The latter has the merit of some truth, but is not wholly so. Any one who has examined many mares that are irregular breeders or have been barren for years will testify that there are two conditions that they meet with most commonly.

One is the peculiar form of pyometra which should be studied and which I hope to give some attention to in the near future. It is not the thick, creamy, pus type that we find in the cow but a sort of catarrhal, mucopurulent, offensive exudate often in a sufficient quantity to bear the uterus down out of line and which is very difficult to clean up and bring the uterus back in tone and normal position again.

Sterility Most Common in the Lighter Breeds

The other condition is enlarged ovaries, usually fibrous in character and may or may not be complicated with cysts. The treatment of either cystic ovaries or pyometra in the mare is far more tedious and discouraging than in the case of the bovine. Nearly every mare that I have examined and found to have fibrous ovaritis, has had the history of having been trained and my records give positive indication that there is much more breeding trouble among the thoroughbreds and standardbreds than among heavier mares and that in the latter, uterine trouble is fully as prevalent as ovarian trouble. As I see it, training and particularly early training of the thoroughbred and standardbred mares has an effect on the metabolism of the ovary, similar to heavy protein feeding in the bovine. In the case of the bovine I am fully convinced that undue confinement and liberal protein feeding both in youth and later under advanced registry conditions have a positive influence in producing ovaritis and cystic ovaries. In the case of the trotting and running horse, training for speed apparently disturbs the circulation of the ovaries. At least I have never yet examined a thoroughbred or standardbred mare that had been subjected to considerable training that had two normal sized ovaries. In

fact, it is not an uncommon thing in every case to find one or both ovaries from two to five times the normal size, hard and extremely sensitive. This is not so with the draft breeds.

Mares More Difficult to Handle than Cows

I mentioned above that the handling of mares is not so simple or satisfactory as cattle. In the case of ovaritis in the mare, particularly the large sensitive ovaries, it is entirely out of the question to apply force or pressure enough in massaging them to make any material impression by one or two massages. Whereas, in the cow in the case of cystic ovaries, ovaritis or cystic degeneration of the ovaries, every manipulation gives very positive results because we can apply long and thorough massaging with the result that the ovary perceptibly softens after each massaging and it is possible in at least 99 per cent of the cases to crush all superficial cysts that may be present. In the case of cystic degeneration, by applying all the force of the first finger and thumb some of the deeper cysts may be ruptured the first time the ovary is massaged. But if not, by using much pressure, after two or three massagings some five or six days apart, the circulation will be excited so as to make it possible to dislodge any deep cysts or cystic corpus luteum that may be encapsulated. The same condition in the mare would require perhaps six months treatment because the animal cannot withstand the pain that is occasioned by pressure and the hands of the operator soon become fatigued, owing to the awkward position that the location of the ovaries occasions.

Again, in the case of pyometra in the cow, if there are no adhesions, the tubes in good condition and the uterus is emptied by syphoning it out and perhaps cleansing with a saline solution a few times and then massaged, in the majority of cases the uterus begins to involute at once and regain its normal texture and position very promptly, perhaps in two weeks. While in the mare the whole organ seems to suffer more from even a slight pyometra than the endometrium of the cow does, not the tendency to fibrosis but a lifeless condition which requires repeated and persistent douchings and perhaps a variety of stimulants or irritants to check the secretions and to tone up the organ. Among some of the things that we have found useful to irrigate with is a mild alkaline astrigent composed of sodium chloride and permanganate of potash. If the condition is accompanied with an irritable disposition and evidence of constant estrum, filling the uterus with camphorated oil every three or four days for a few times, may give splendid results. Other cases may need to be douched with a two or three per cent solution of lugols. Even this may not irritate sufficiently to stimulate uterine reaction and the uterus will sag in its half-dead kind of way. In those chronic cases we have even resorted to swabbing with pure iodin and again others seem to respond best by dry treatment such as packing with gauze, dusted with bicarbonate of soda or boracic acid. Occasionally all this irritation will affect the soft cervix, which is so characteristic of the mare. In that event, it is well to protect it with soothing, mild ointments or if necessary, smear some ointment on some gauze and plug the cervix.

Notwithstanding these apparently erratic and discouraging variations, I wish to emphasize the fact that mares rarely suffer from the fibroses and adhesions that cows do and unless out by age or there is some unusual pronounced pathological change in the genital organs, many barren mares will respond to treatment. Breeders of thoroughbreds and standardbreds are learning that they have sacrificed in the past some great brood mares that probably could have been relieved of their infirmities.

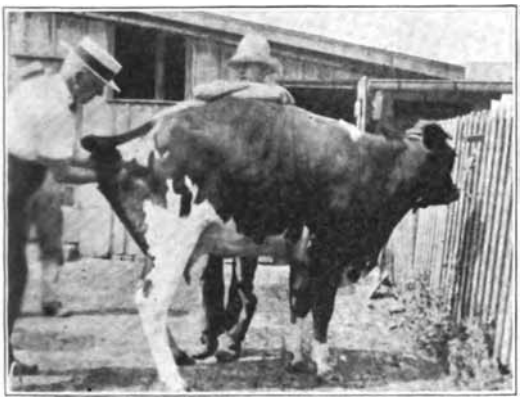
Last year in conjunction with my colleague, Dr. F. A. Wehle of Lexington, Kentucky, we restored to breeding usefulness several world noted standardbred and thoroughbred mares, one, which had been repeatedly bred unsuccessfully for four years, conceived on first service after treatment. Two of these mares, seven and fourteen years old respectively had never had a foal. Our experience would indicate that we may expect about 75 per cent success in young mares with enlarged ovaries if the uterus and tubes are not seriously diseased, irrespective of their history. The number of old mares that have been barren for a long period; say, five, six or seven years, that respond to treatment is all together too small to warrant a favorable prognosis in a high percentage.

Where the animal cannot be frequently examined and consistently and persistently treated metritis bacterins mixed and uterine capsules will often clear up cases of chronic endometritis and pyometra in the mare where the value of the animal does not warrant too

much expense. In fact, this is a very practical way of treating most mares that have but ordinary farm value.

Cervicitis in the mare differs materially from the hard cervix in the cow. It is usually manifest by a soft dilated cervix. Its handling is the same as for endometritis and as a matter of fact is so associated with it that it is customary to treat the endometritis, which automatically involves the treating of the cervix.

MANIPULATIONS OF THE GENITAL ORGANS PICTORIALLY DESCRIBED



When a cow arches her back, the organs cannot be successfully examined, but by pressing upon the dorsal spines with a hard blunt instrument like a closed pocketknife, the back goes down and the organs fall into their normal position, where they can be systematically explored.

And if the organs are carefully handled, there is not much resistance offered thereafter, even when the ovaries and the cornua are drawn back into the pelvic cavity, for further manipulation.

Fifty to sixty cows a year are all a mature bull should be allowed to serve. Young bulls should be limited to much less than this number and no bull should be made to serve a cow twice in succession. A single service is sufficient.

By the application of a saturated solution of sodium thiosulphite to your arms and legs before going camping or fishing the discomfort from "chiggoe" bites will be prevented. The solution should be applied once daily while exposed.—Reed.

FATAL MASTITIS IN COWS

Some time ago I had a cow patient develop mammitis in all four quarters a few days after parturition. The udder was as big as a four gallon bucket and it was impossible to milk out any of the coagulated milk. There was rapid pulse but no fever. I ordered hot water application to be applied every half hour, vigorous massage, and last thing at night a drying oil consisting of camphor and olive oil. I also gave a saline physic and ordered restriction of feed and water. The cow died in two days.

A year ago I had a similar case after parturition, but with high fever. In that case I also tried antiseptic injections, but the amount of caseated milk I could wash out did not justify the time and labor involved. This case also proved fatal.

What I wish to learn is: (1) Are those cases of mammitis occurring immediately after parturition in all four quarters always fatal? (2) Was there anything the matter with my treatment? (3) Now if those cases often prove fatal would it not be best to make a bold incision into each quarter and wash out all caseated material and inflammatory products and thus save the life of the animal and then fatten her for beef or keep her till next lactation period? (4) In case of the last alternative, if wounds are well healed, would she give enough milk to justify the expense of keeping her over?

I have been in practice only a few years and cases that may look simple to you cause me much worry.—O. W. J., Wash.

Reply: 1. Severe mastitis occurring immediately after parturition is very often fatal, unless given very prompt treatment. If the revulsive action of a quick acting purgative fails to check the course of the disease the patient is generally doomed, either to a fatal ending or complete destruction of the gland, sinus and ducts.

2. Your treatment lacks active purgation. A dose of eserine followed with either saline or oleaginous purgation is essential at the very beginning. We also believe in formalin internally; although this agent is less popular than formerly, we are giving it up slowly on account of the good results observed in many bad cases. We give it in two dram doses with oil three times a day. Then a mixed bastitis bacterin is always indicated. S. L. Stewart places great stress on supporting the udder with a sling.

3. When the contents of the sinus can not be milked or siphoned out as is so often the case, lancing the sinus is justified. It often saves life and many times also saves the glands from destruction by the inflammatory process.

4. If the damage of the inflammatory process is not too great there is hope of conserving the animal as a milk producer.

PREGNANCY AT THREE MONTHS IN A CALF

A Jersey heifer calf was born on May 12th, 1921, and with a male calf near its own age was turned out to pasture during the summer. On May 17th, 1922, I was called to attend this calf which was then one year and five days old and found she was about to give birth to a calf when I arrived. To me this is interesting as I had never attended a bovine mother so young. She was only as high as

Is This the Youngest Bovine Mother on Record?

my hips, and I am not a giant. Her horns were only as long as my fingers and she had a typical calf's head. She weighed about 400 lbs. and her udder contained about a gallon and a half of milk. The teats were about one and half inches long, and her calf—a heifer—was of medium size, both mother and calf are doing well. The owner is Wm. Pea, Decker, Ind.

Floyd Gilliatt.

According to Hoard's Dairyman, one third of the dairy cows of this country yield a profit, one third pay their for the feed consumed and the other third are just parasites.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Sterility, an Important Swine Breeding Problem

THE importance of the swine industry of a country increases in a direct ratio with the increase of population. In order that this industry maintains its present economic relation it will be necessary to increase the production of swine. When production is increased in such animals as swine there is a greater necessity for efficiency, not only in the matter of economic production but also in the control of disease. There are many problems in the breeding and general management of swine that will require a more careful consideration and their solution will be of great economic significance.

One of the most important problems of the swine husbandman is the comparatively small production resulting from abortion and sterility and from the excessive loss of small pigs. Abortion, slow breeders and sterility are common in swine, and there has been an unusual loss of pigs in the central states that was due to some disease of the genital organs of the sow; although the boar was, no doubt, a factor in many cases. Abortion was very prevalent but the pig losses were not all due to abortion. Veterinarians are being consulted by swine breeders for practical information on breeding problems as it is being realized that a greater efficiency in production is an actual necessity.

Some breeders, becoming discouraged, have discontinued the breeding of swine. Many of the breeders of grade stock fatten and market the sows that failed to produce and raise reasonably large litters. One of the most important problems of the swine breeder at this time is sterility.

Common in Primaparae

Sterile and slow breeding boars are much more common than is usually suspected. To attempt to estimate the extent of sterility in sows would only be a guess. There has been an effort made to obtain definite information as to the prevalence of sterility but the datum collected thus far is not sufficient upon which to base a definite statement. The condition is, it seems, equally prevalent in all breeds. It is probable that more sows become sterile after the first litter, normally farrowed or aborted, than gilts or older breeders. Some farms, carefully surveyed, have shown 50 per cent of the sows sterile. In other instances only a small proportion of them are non-breeders. It is an exception to find a herd of 15 or more sows that are all breeders. Sterility in sows is more or less prevalent in all sections of the country but it would appear from the available information that it is most common in those districts where swine are extensively produced.

Causes of Sterility

Many practitioners contend that sterility is more common in young boars than in the mature animal.

An occasional case of sterility occurs in gilts or boars as a result of improper development or malformation of the genital organs. Inbreeding long continued may be a factor. Insufficient exercise and overfeeding is also a common cause in gilts.

It is probable that the most important factor in sows is the influence of previous disease. Infections of the genital organs that produce abortion frequently bring about changes that produce the sterility.

Abortion following swine influenza and hog cholera, with secondary infection of the uterus may result in sterility, and diseased ovaries no doubt is also an important factor.

The non-breeding or sterile boar usually arises from injury of the genital organs. Such injuries may be due to mechanical interference, but is more frequently the result of excessive use or abuse. Small litters and those litters of low vitality can frequently be attributed to pasture breeding or excessive service.

Symptoms

As the syndrome in sows is common knowledge it is sufficient to state that sterile sows

may or may not evidence estral periods. In some the estral interval is regular, in others irregular and an occasional one is in heat continuously. A persistent purulent discharge indicates vaginitis or metritis. There may be a pyometra or purulent collection in the horns and tubes.

Sterile boars may show disease or defects in the testicles. Boars with diseased genitals are usually unthrifty and exhibit more or less disturbance of locomotion.

Prophylactic Measures

The production of swine can be increased by observing the primary principles of feeding, sex hygiene and sanitation. Breeding swine should not be given a fattening ration but should be provided with a properly balanced maintenance ration. It is probable that some of the recent pig losses occurred because corn and water constituted the ration. Ground oats or barley and semi-solid buttermilk is a splendid food for breeding sows or boars in service. The mineral ingredients in food stuffs vary but since it appears that all food stuff is deficient in essential minerals, it is advisable to use mineral substitutes, particularly in breeding animals. The addition of mineral substitutes to the feed has apparently prevented rickets. Some investigators report an increased milk supply in sows provided with mineral foods.

Inbreeding and line breeding are of value in fixing some pecularity of the breed but should not be carried to the point of diminishing vigor and vitality. Breeding swine should not be kept in small pens but should be so managed as to give them forced exercise. Excessive use of the boar may cause orchitis which will diminish the vitality of the sperm cell and may destroy them. Boars should not be permitted to run with the sows during the breeding season as this favors excessive service of the boar. A boar running in a lot with sows was recently observed to do twelve services in one day. All breeding should be done in a small pen and after one service the sow should be removed. A young boar should not be permitted to do more than one service every other day and a mature boar one service each day. The excess service in pasture breeding is probably responsible for many of the small litters.

Recent aborters or diseased sows should not be bred until all evidence of disease has disappeared, and all aborters or other diseased sows should be segregated and handled to prevent the spread of the infection.

The Value of Treatment

The important question from the breeders' viewpoint is: Shall the aborters and apparently sterile sows or boars be retained? An intelligent reply involves a consideration of several factors. If a sow is a good individual then it is worth while to attempt to overcome the infection of the genital organs and prevent sterility. In attempting such treatment the sow should be isolated and the proper ration as previously indicated should be provided.

The bacteriologic examination of the diseased genital organs and the discharges from the same has revealed a variety of microbes. The occurrence is fairly constant. As many practitioners have reported favorably on the use of one or more injections of a combined bacterin made from the microbian invaders, it seems justifiable to recommend its use in conjunction with carefully applied douches of non-irritating solutions. Sterile salt solution is preferable. Douching is done most effectively by placing the sow in a crate and raising the front end enough to get the advantage of drainage. The uterus should be well drained of all irrigating fluids at the end of each treatment. The proportion of sterility in aborters given the above treatment is very small and the expense of treatment is not prohibitive.

Treatment should not be recommended for aborting or sterile sows that are not good individuals. Such sows should be fattened for the market. The treatment of sterility in sows involves many different problems. In some cases this condition has been corrected, according to reports from practitioners by providing a properly balanced ration and particularly the addition of mineral substitutes. This method of treatment will produce results only in those cases in which there is little or no alterations of the genital organs. The cases of sterility caused by infection of the uterus may be overcome by the treatment suggested for genital infections succeeding abortion. Sterility resulting from cystic ovaries or similar conditions can be overcome, in some cases, in large sows, according to Otey by manual manipulations. Dr. Otey describes his method of procedure as follows: "The sow is placed in a crate and confined by tying in such a way that she can not move. After lubricating my arm with soap the hand is passed very care-

fully into the rectum. My hand and arm are small and I do not attempt to treat any animal that weighs less than 400 pounds. As the wall of the intestine is very tender and is easiiy punctured, care should be exercised in grasping the ovary. The left ovary is manipulated with the right hand and the right ovary with the left. Ovarian cysts are ruptured in the same manner as in the cow." Cystic ovaries may also be treated by making an incision in the flank but this method is too radical to be advised except in extreme cases.

Sterility in swine offers the Veterinarian the opportunity to render the swine industry a valuable service. From the available information it appears to be more economical to prevent or treat abortion and sterility in sows that are good individuals and breeders, than to depend upon the gilts each year for pig production.

Diseases of the Mammary Glands

THE mammary glands of sows are modified skin glands that supply food for the new born. There are from ten to twelve distinct glands arranged in two series on either side of the middle line. Each gland is complete itself, and has one distinct teat with one or more openings. Inflammation or other diseased condition may affect one or several of the individual glands. The location of the mammary glands in sows predisposes them to injury and infection of various kinds. Tumors also frequently occur in these glands.

Mammary gland disturbances generally occur at farrowing time or when the pigs are weaned.

Catarrhal Mastitis

Mastitis is a relatively common condition. Catarrhal mastitis is a simple form of inflammation and involves the mucous membrane primarily. This condition is very common in sows but fortunately it is not very serious. The usual cause of catarrhal mastitis is retention of milk and occurs most frequently in sows that have lost their pigs or at weaning time. This form of inflammation usually affects several or all of the glands simultaneously. It is manifested by enlargement of the glands. They feel doughy and dense and usually hot and rather painful. A stringy ropy milk may be forced from the teat.

Catarrhal mastitis can usually be obviated in sows that lose their pigs by milking small quantities from each teat for a few days and reducing the milk producing feed. It can usually be prevented in sows during weaning time by proper regulation of the diet. The treatment of sows affected with inflammation of the mammary glands is usually not difficult. The first procedure is to remove the cause. The patient should be given a laxative or purgative and if the inflammation is severe the gland should be massaged and hot and cold packs alternated.

Parenchymatous Mastitis

This type of inflammation is not very common in sows. It is most frequently caused by injury, although infections may be the primary cause. It is usually confined to one gland which will become swollen, hot and painful. In some cases the affected gland is so painful that the animal will not lie down, she will usually not allow her pigs to nurse and will frequently shift her position. The milk from the affected gland is usually ropy and it is not unusual to find a rise of temperature and inappetence. In the early stages this condition can be relieved by the application of hot and cold packs. If treatment is delayed abscess formation may occur. This may destroy the gland tissue. Abscesses in the mammary gland generally appear as nodular masses varying in size up to that of a base ball. The nodules are usually dense and hard and may or may not be distinctly circumscribed. In some cases, multiple abscesses occur within the gland. Unless surgically interfered with, it is rare for the abscess to rupture and discharge as the wall is usually so dense it remains intact.

Mammary abscess should not be mistaken for abscesses located beneath the skin and outside of the gland tissue. The latter form of abscess can be distinctly outlined by manipulation and are easily removed by surgical interference. The treatment of abscess within the gland usually necessitates destruction of the gland and the most satisfactory method of relief consists in the removal of the entire gland, which is not a serious operation when the animal is properly prepared and the wound properly treated.

Mammary Actinomycosis

Mammary actinomycosis is common in sows in some sections of the country. This condition is caused by the actinomyces which very probably gains entrance through abrasion of the skin. Abrasions of the skin are common mammae particularly in sows pasturing on stubble fields. Actinomycotic infection usually results in abscess formation. The mammary actinomycotic abscess corresponds in general appearances and structure to actinomyces of other tissues. The lesion is usually slow in developing and by this means can often be distinguished from ordinary mammary abscess.

It is not uncommon for the actinomycotic lesions to erode the tissue and discharge to the outside. The only successful method of treatment is ablation of the gland. If a diagnosis can be made before suppuration is established the internal administration of potasium iodide is helpful.

Tubercular Mastitis

Tuberculous mastitis is not at all uncommon in swine. The condition is caused by infection with the tubercle bacilli, usually of bovine origin. Tuberculous infection of the mammary gland is of slow development. The affected gland will be more or less nodular, although the enclosed capsule will not be dense. The diagnosis can be confirmed by the tuberculin test. Sows found to be affected with mammary tuberculosis should not suckle pigs because of the danger of transmitting the infection. If pigs have suckled a sow that is found to be affected with mastitis and are to be used for breeding purposes, they should be given the tuberculin test within three months, and the reactors destroyed. Other types of abscess and inflammatory new growths may occur in the mammary glands of swine. It is not uncommon to find large masses containing fistulous tracts with pus of varying consistency. These abscesses are always due to the same type of infection.

Fibrous masses as large as a football containing fistulous tracts have been observed. These large growths interfere with the movements. They usually involve only one gland and can be safely removed when the operation has not delayed too long.

Tumors may also occur, although they are not as common as in the mammary glands of some other animals.

From the foregoing, it will be noted that there are a variety of inflammatory disturbances that may occur in the mammary glands of sows and that the majority of these conditions are not difficult to overcome if treatment is instituted in the early stages. The value of a breeding sow through loss of a single mammary gland is only diminished to the extent of suckling one pig less. From general observation the packing centers, it would seem advisable that veterinarians be called upon more frequently to treat mammary disturbances of sows, as such a practice would be economical for swine producers.

Comment: Case reports on mammary diseases of swine are very desirable.—Ed.

IS THE OILY FAT OF PEANUT FED HOGS HEREDITARY?

Whether the soft oily fat of hogs feed on peanuts is a tissue quality that can be inherited and that might persist in offspring regardless of the nature of the ration they themselves receive is a question that will be solved experimentally by the United States Bureau of Animal Industry on the experiment farm in Maryland.

Eight gilts will be grown on a peanut ration from the time of weaning until they farrow their first litter, then the progeny beginning at weaning time will be fed a hardening ration—corn and tankage, and these will be checked with pigs whose dams were fed hardening rations instead of peanuts during the period of growth and gestation.

Observations will be made when both the experiment and check pigs are grown and finished for market by noting the difference, if any, in their carcasses.

(Ext. Clip sheet, U. S. Dept. Agr.)

Soft pork produced by a peanut ration can be obviated by feeding corn and cotton seed meal for the last thirty or forty days of the fattening process.

Further investigation on bacterial infections and bacteriophage may reveal a relationship of the B. suipestifer and the filtrable virus of hog cholera.

Fiileborn reports the finding of ascaris larvae in the kidney and brain. He assumes that they are carried to these locations by the circulation. No visible symptoms result from the invasion of the brain or kidney by these parasites. Hemorrhages may occur as a result of their presence in the kidney.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

SWINE ERYSIPELAS

A sow weighing about 250 lbs., purchased on the Kansas City market and slaughtered in one of the local abbattoirs, attracted the attention of veterinary inspector, Dr. Jos. W. Parker, who reports his observation as follows:

"Lesions: Skin showed extensive reddened areas varying from one-half inch to a foot in diameter on the shoulders, back, hams, legs and head. The skin of these areas was thickened and raised. There was evidence of superficial necrosis in a few of the smaller areas. The subcutaneous tissue, in the affected areas, was intensely inflamed to a depth of one and a half inches.

"The lymph glands were intensely congested (possibly hemorrhagic). The spleen was engorged, enlarged and firm. The splenic enlargement was apparently due to increased size of the Malphigian bodies.

"There was a muddy appearance of muscular tissue and all parenchymatous organs. A provisional diagnosis of swine erysipelas was made."

ACTINOMYCES BOVIS FOUND IN BUTTER

This butter was made from the cream of a Jersey cow, four years old, and freshened seven months ago. Physical examination of the cow shows no organic disease and the milk and cream seem to be normal in appearance.

When it was attempted to turn the cream into butter it took about four hours and yielded a peculiar slatty color shown in the specimen. On melting it was found that it yielded a grayish green sediment at the bottom of the dish.

The cow has been fed a good quality of hay, with bran, cornmeal, and oats as the grain ration. The water is city tap water. If you can help in diagnosing this cases, I shall appreciate it. Would tuberculosis cause such a condition?—C. M. M., Me.

Reply: Tuberculosis is not the cause of motley butter, and while we are unable to state the exact cause of the trouble in the specimen, we strangely enough, found typical colonies of the ray fungus in the specimen, which in view of the fact that the udder and teats of the cow are in a normal condition, would indicate that there is an extraneous infection of the milk itself.

AVIAN TUBERCULOSIS

We are sending you a chicken by parcel post that comes from an infected flock. The owner says he has been losing chickens for the past four years. I am enclosing a written report from the owner for your information, as follows:

"I have been pestered with this disease in my poultry for four years, three or four chickens at a time lose thriftiness, sit down as though their legs were weak, and stand up but little. In the last stages they do not walk at all, and lose their appetites. They stay on their roosts late in the morning and retire early. Our losses have always been greater after the heavy laying season and we have never lost a pullet. The year old hens are the only ones to contract the disease, and none of them ever recover. I have tried all kinds of medicine but the only results were greater losses than ever. I also practiced sanitation without results.

"The hens live from four to six weeks, and strange to say those that stay around the barns during the summer months, never have the trouble, while those that remain around the poultry house and yards are more susceptible. I feed oats, ground oats, and corn, and wet mash and tankage, with some boiled meat. I have changed flocks twice, but in each case, after ten or twelve months, the disease appears among the new flock."—L. A. D., Ill.

Reply: Bacteriological examination showed many typical tubercle baccili in the specimen sent. They were especially numerous in the liver. This flock of chickens is tuberculous, and the reinfection of the new flock purchased is due to the fact that the source of infection has either not been determined or else that your client has purchased chickens from in-

fected flocks. There seems to be need here for a very thorough and systematic cleaning up the establishment, and the rebuilding of the flock from tuberculous-free replacements. This could be done by testing with avian tuberculin or through some degree of assurance that the newly purchased chickens originate from healthy flocks.

A RARE TYPE OF MALIGNANT TUMOR

I am sending you a tumor removed from a ten year old mule. It was located on the costal surface over the 15th, 16th and 17th ribs. The inguinal glands were enlarged and endurated. The tumor was removed 18 months ago, but recurred. Please examine and report your findings. My clinical diagnosis is sarcoma and my prognosis doubtful.—E. H. W., Tenn.

Reply: Microscopic examintion of sections of this tumor proved it to be a very rare neoplasm. It is an xanthoma, a tumor on the order of the melanosarcoma, with the difference that it contains a yellow pigment instead of the black one that is found in melanotic sarcomas. The tumor is malignant, the prognosis should, therefore, be unfavorable.

CHOLERA IN CHICKS

The chicks I am sending you are two of 125 chicks hatched in an incubator, April 28. No trouble has appeared on these premises in any previous hatches this Spring, although a considerable number died during the Spring of 1921. They hatched well and were started on a prepared moist food. They began dying at two days old and at this writing (three days later) all have died except 20, making a total of 105 dead in three days. The eggs were purchased from a flock which were infected last year, but there is no history of trouble in that flock during 1922.

I prescribed sulphocarbolate of copper, lime, soda, and zinc, to be given in the first water they drank, all without any beneficial results.—A. R. K., Ill.

Reply: The numerous typical bipolar organisms of chicken cholera found in these chicks show without doubt that the trouble is chicken cholera. Immunization and proper sanitary measures is the treatment to prescribe.

In a series of experiments, Sheather has shown that tubercle bacilli obtained from infected cattle in India are less virulent than those obtained from European tuberculosis cattle.

SUSPECTED RABIES

I am sending by express the brain of a hog, which I believe died from rabies. It lived less than 24 hours after the first symptoms appeared. The animal was very nervous, had a temperature of 105° F., and would squeal when it heard the least bit of noise, or when attempt was made to handle it. There was more or less paralysis apparent. This animal was a boar one year old. A sow showing the same symptoms died at the same place a few days before.—J. C. M., Iowa.

Reply: As the brain examination does not show any Negri bodies, we cannot make a diagnosis of rabies, and since the hog was only sick for 24 hours, it is very doubtful if rabies was the cause of death. It would, however, be advisable to inoculate some experimental animals with parts of the brain to verify this conclusion.

NECROBACILLOSIS OF THE THROAT OF A CALF

A client of mine is sending you a specimen of a calf one month old, from a herd of Herefords. He loses a few calves from this disease every spring and says that all of them are affected in the same way.

The symptoms are: loss of appetite, labored breathing, slight rise of temperature, but no external swelling in the region of the throat. Tracheotomy relieves the labored breathing. Is this calf diphtheria?—H. H. S., Ill.

Reply: The examination proves that your diagnosis of calf diphtheria is correct. The mucous membrane of the larynx and trachea is covered with a fibronous exudate and the typical coagulations. Besides the bacteriological examination showed the presence of a B. necrophorous.

BACILLUS PULLORUM FOUND

I am sending you two chicks for examination. The chickens of this flock lose their appetite, and in a few days they cannot stand or walk, losing the use of their legs. Later they develop diarrhoea and die. They are kept in a good warm place, with a ground floor and under good sanitary conditions.—N. E. P., Ind.

Reply: The bacteriological examination of the chicks showed not only the bacillus pullorum but also streptococci and staphlycocci, which would indicate you are dealing with a mixed infection, with probably the bacillus pullorum playing the most important role.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

THE PREVENTION OF TUBERCULIN REACTIONS BY SERUM, TRANSUDATES AND EXUDATE

The admixture of any kind of transudate, exudate of blood sera to tuberculin prevents a reaction which would otherwise appear upon application of a cutaneous or subcutaneous tuberculin test. This manifestation is attributed to the colloidal contents of the mentioned fluids. It is physical and not biological. The author succeeded in suspending the reaction with any kind of other colloid. For instance with iron. The colloid contents acts similarly as animal charcoal. The mixing of animal charcoal and tuberculin has also a tendency to diminish or entirely suspend the specific tuberculin reaction.

FROM THE PRACTICE ON THE EAST COAST OF SUMATRA

A peculiar skin affection and stomatitis in goats. A goat showed a severe skin affection on the lips whereas the buccal mucous membrane disclosed an ulcerating surface. The picture resembled Framboesia of man and as a matter of fact numerous spirochetes may occur in the mouth of healthy animals. The intravenous injection of salvarsan resulted in the recovery in eight days. Later, however, the author observed spontaneous recoveries and noted some cases of the disease without complications. In these cases he noted warts on the shin and on the face, on the outside and inside of the lips. In the latter case sometimes bleeding ulcerations. This disease occurs among goats on the East Coast of Sumatra in an enzoatic form.

Wounds on cattle inflicted by the claws of tigers are quite frequent. These infected wounds are always of a very serious nature being accompanied by great swelling, at times with gas formation. The treatment consists of incisions and counter openings and irrigation with warm solutions of creolin.

A peculiar affection of the horns occurs in work oxen. The horn loosens and finally drops off. The base of the horn is hot, painful and swollen. The bone contains a cauliflower-like proliferation. This reappears even after radical operations. They found that the tumor is not of a malignant nature but that it represents a strongly proliferating periostitis of the bony process of the horn. According to Briburg the cause is of a tromatic nature and probably an incomplete fracture of the base of the horn which in want of rest does not heal but results in a chronic process with softening of the bony substance and losening of the horn.

Gangrenous choryza in cattle. A cow had severe gangrenous inflammation with ulcers on the nasal openings, ulcers on the nose and lips, small and large exoriations in various parts, gangrenous ulcers on the coronary bands without, however, affecting the interdigital space. Similar lesions were found on the udder and on the tongue. There was no fever, bowels were normal. Finally the animal could no longer rise, the mouth could be opened only slightly. On post mortem, aside from the lesions described, there was a purulent inflammation of the trachea and the bronchi and a right lobar pneumonia with an adhesive pleuritis and swelling of the thoracic lymph glands. Large ulcers were also observed in the rumen, omasum and abomasum, hyperemia of the meninges with fluid in the ventricles of the brain. Besides there was also a swelling of the spleen and a cloudy swelling of the liver and kidneys. This disease occurs in Sumatra sporadically and the principal sign is a rhinitis gangrenoza. It is very likely identical with malignant catarrhal fever.

Hemorrhagic Septicemia in Cattle. An ox disclosed hematuria, fever, inappetance, icteric mucous membranes and a swelling of the head, which in form resembled that of the head of a rhinocerous. There was a serious discharge from the nose, mouth and from the eyes. Besides this in various parts of the body subacute edema were present. In fourteen days an improvement set in. An inoculation of a rabbit with the blood from this ox gave no results, probably as during the recovery of the animal the bacilli were no longer present in the blood.

Dr. H. Welch reports that a 10% solution of nitric acid applied locally has been successfully used in the treatment of the mild cases of ovine necrobacillosis.

CARBON TETRACHLORIDE BECOMING KNOWN EVERYWHERE

A telegram has been received from Fiji reporting the successful treatment of more than 12,000 hookworm cases by carbon tetrachlorid with 90 per cent of cures with one dose, and the removal of 98 per cent of the worms. This method was tried first on dogs by Dr. Maurice C. Hall of the United States Bureau of Animal Industry, who found that 0.3 c.c. of the drug for every kilogram of live weight expelled all the hookworms of those animals, a result he had never previously obtained by any other method of treatment, while it could be given after fasting in hard gelatin capsules without purgation being necessary. As the new drug is much less toxic and far cheaper than either thymol or oil of chenopodium, the last of which has given rise to a number of fatalities owing to the uncertain amount of the active principle in different samples, these are matters of great practical importance, and the remarkable success of the trial now reported will, if confirmed by further observations, prove a notable advance in dealing with this the most widespread health- and labor-destroying scourge of immense areas of the world.

(Nature, London, No. 2743, v. 109, May 27, 1922, p. 688.)

Pasteurization destroys all of the pathogenic bacteria of milk and more than 98% of the non-pathogenic.

GOLF NOT THE ONLY PASTIME AT THE GLOBE LABORATORIES

The Globe Laboratories, of Fort Worth, Texas, support a baseball team, the personnel of which is made up from the employees of the institution. The team has met and defeated some of the best clubs in Texas, and is the pride of Fort Worth fans.

In the picture are: Dr. W. J. Crocker (left), Director of the Globe Plant Operations and Executive Manager of the Team; W. G. Peterman (right), in Charge of Serum Production and Managing Captain of the Team. The Players Are: Top Row, Left to Right, Le Blue, Rountree, Blackburn, L. Ponder and C. Ponder. Bottom Row, Left to Right: Pettit, Chapin, Sommrall, Roberts and Van Wagenen.

We Pick Chapin as the "Babe Ruth" of the Team.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Cattle, Sheep and Goat Parasites

IN previous issues the eggs and larvae of some parasites of dogs, cats, foxes and swine were discussed and figured. This discussion is continued here for parasites of cattle, sheep and goats.

These animals are infested with a number of tapeworms belonging to the group which includes the unarmed tapeworms, or those in which the head or scolex is not provided with hooks. So far as can be judged from the literature, goats are less subject to tapeworm infestation than are sheep and cattle. Tapeworms are often found in the small intestine of ruminants, the usual site for tapeworms

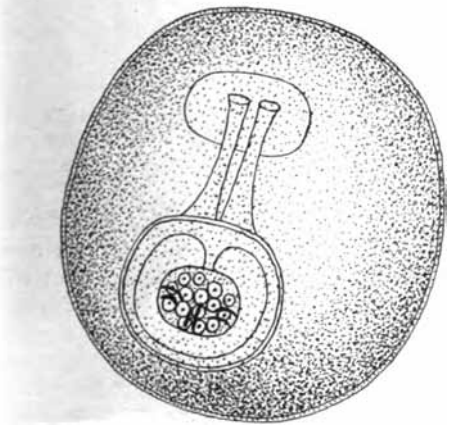


Fig. 1. *Moniezia planissima*. Egg. Enlarged. From Stiles and Hassall, 1893.

in general, but in some cases they are also found in the ducts of the liver and pancreas, in the gall bladder and, rarely in the stomach, as is the case of Thysanosoma actinioides of sheep, this being the fringed tapeworm found in sheep in the western United States. Stilesia hepatica occurs in the biliary ducts of the liver in sheep and goats and in the stomach of cattle, and Avitellina contripunctata is reported from the stomach of cattle and the small intestine of sheep.

The eggs of tapeworms belonging to the genus Moniezia are thin-shelled and the embryo has, in place of the radially striate embryophore of the taenioid cestodes, a special structure called the piriform apparatus. In its most highly developed condition this consists of a central bulb surrounding the onchosphere, with two so-called horns extending from the bulb and terminating in a disk. The diameter of the eggs of some of the commoner species of Moniezia are as follows: M. expansa, 50 to 60 microns; M. planissima (Fig. 1), 63 microns; M. trigonophora, 52 to 60 microns. The eggs of Thysanosoma actinioides are 70 to 105u long by 35 to 58u wide; the piriform body is without horns in this species. In examining feces of ruminants for evidences of tapeworm infestation, it appears probable that one will usually find gravid segments containing the eggs of the tapeworms present rather than free eggs released from the segments. The gravid segments of Moniezia are wider than long; those of Thysanosoma tend to show a triangular outline when viewed dorso-ventrally, the anterior margin of the segment contracting to a blunt point and the

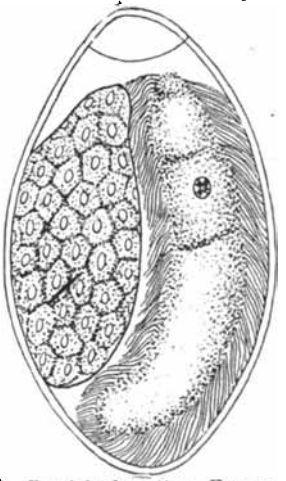


Fig. 2. *Fasciola hepatica*. Egg containing embryo, or miracidium. Enlarged. From Fiebiger, 1912, after Csokor.

posterior margin displaying the fringe-like structure present on the posterior margin of every segment of the worm.

There are few flukes known to occur in ruminants in the United States. The most important one is the common sheep liver fluke, Fasciola hepatica, which occurs in sheep, goats, cattle and swine. It is rarely present in horses and then usually in young animals.

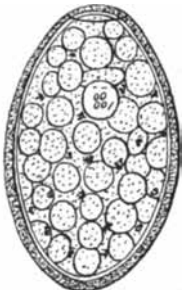


Fig. 3. *Fascioloides magna*. Egg. Enlarged. From Stiles, 1894.

The eggs (Fig. 2) are 130 to 145 microns long by 70 to 90 microns wide, yellowish-brown, and with an operculum, or lid, at one end. The large liver fluke of cattle, Fascioloides magna (Fasciola magna), has been reported but rarely from sheep. The eggs (Fig. 3) are 140 to 160 microns long by 90 to 100 microns wide, brown, and operculated. The giant liver fluke, Fasciola gigantica, reported from the Philippines, has eggs 125 to 175 microns long by 60 to 100 microns wide. Dicrocoelium dendriticum (Dicrocoelium lanceatum), a fluke common in Europe, but not yet reported from

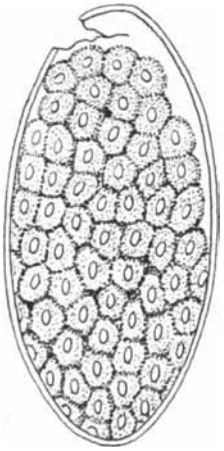


Fig. 4. *Dicrocoelium dendriticum*. Egg. Enlarged. From Fiebiger, 1912, after Csokor.

the United States, has eggs (Fig. 4) 38 to 45 microns long by 22 to 30 microns wide. The conical amphistome, Paramphistomum cervi (Amphistoma conicum), occurs in the rumen and reticulum of cattle and other ruminants and is sometimes found in these animals in the United States. The eggs are 155 to 162 microns long by 82 to 90 microns wide, thickened at one pole and operculated at the other. Schistosomes, a group of flukes inhabiting the blood-vessels, have not yet been reported as present in domesticated animals in the United States. The eggs of these flukes are usually much elongated. In the bovine blood fluke, Schistosoma bovis, the eggs (Fig. 5) are 160 to 180 microns long by 40 to 50 microns wide, with a pronounced swelling in the middle and armed with a pointed spine at each end. In the case of this species, the eggs may pass in the manure and in the urine, as the veins both of the rectum and of the bladder may be inhabited by the flukes.

Ruminants are infested by a large number

Fig. 5. *Schistosoma bovis*. Egg. Enlarged. From Railliet, 1893, after Sensino.

of species of nematodes, some of which occur in the digestive tract or respiratory tract with the evidence of their presence in the form of eggs and larvae in the feces, and some of which occur in the blood, body cavity and various tissues and which cannot be determined as present by fecal examinations.

Two of the swine parasites of which the eggs were figured in the previous article in this series, namely, Arduenna strongylina and Physocephalus sexalatus, have recently been reported as accidental parasites of cattle in the United States by Dikmans, and another swine parasite, the kidney worm, Stephanurus dentatus, has been reported from cattle by Hall. The gullet worm of cattle, sheep and goats, occasionally present in horses, Gongylonema scutatum, has an egg (Fig. 6) 56 to 60 microns long by 32 to 36 microns wide, containing at the time of oviposition an embryo provided with a hook-like process on one side near the

anterior end, the opposite side of the anterior end of the worm showing an annulate marking. The eggs of another gullet worm, G. verrucosum, of sheep and goats, are 45 to 50 microns long by 25 to 27 microns wide. The eggs of the cattle ascarid, Ascaris vitulorum, are 75 to 80 microns in diameter. The ascarids found in sheep appear to be specimens of Ascaris lumbricoides of man and swine, present as accidental parasites in an unusual host and quite generally incompletely developed and devoid of eggs, or at least of fertile eggs.

The eggs of the numerous strongyles occurring in the digestive tract of ruminants are commonly more or less elliptical and thin-shelled. Although the egg sizes overlap in

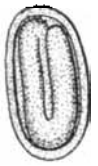


Fig. 6. *Gongylonema scutatum*. Egg containing embryo. Enlarged. From Stiles, 1892.

many cases to such an extent that it is often impossible to determine the species present, a reasonable probability as to the presence of certain worms may be established in the case of some worms. Haemonchus contortus is so commonly present that the presence of eggs falling within the size range for this species may be taken as a fairly safe indication that this worm is present.

The egg sizes in microns for some of the larger strongyles, those having a well developed mouth capsule and belonging to the family Strongylidae, are as follows: The cattle hookworm, Bustomum phlebotomum, 75 to 98 long by 40 to 50 wide; the sheep hookworm, Bunostomum trigonocephalum, 75 to 83 long by 38 to 45 wide; the cattle hookworm, Proteracrum radiatum, 75 to 85 long by 40 to 50 wide; the common sheep hookworm, Proteracrum columbianum, 65 to 75 long by 40 to 45 wide; the goat hookworm, Proteracrum asperum, reported from the Canal Zone, 83 to 85 long by 55 to 60 wide; the veined hookworm of sheep, Hysteracrum venulosum, 85 to 90 long by 45 to 55 wide; the sheep and goat hookworm, Gaigeria pachyscelis (Fig. 7), reported from India and the Belgian Congo, 105 to 118 long by 50 to 55 wide; the strongyle from the large intestine of ruminants, Chabertia ovina, 90 to 100 long by 50 wide.

The egg sizes in microns for some of the trichostrongyles, which are the smaller strongyles, those without a well developed mouth capsule and belonging in the family Trichostrongylidae, are as follows: the common stomach worm, Haemonchus contortus (Fig. 8), 75 to 95 long by 40 to 50 wide; H. similis, reported from the United States by Dikmans, 70 to 78 long by 35 to 42 wide; Ostertagia

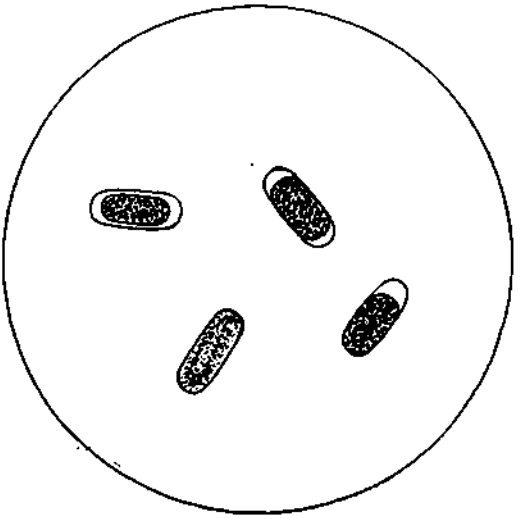


Fig. 7. *Gaigeria pachyscelis*. Eggs. Enlarged. From Gaiger, 1911.

ostertagi, 65 to 80 long by 30 to 40 wide; O. circumcincta, 75 to 100 long by 35 to 50 wide; O. trifurcata, 85 to 95 long by 40 to 48 wide; O. marshalli, 160 to 200 long by 75 to 100 wide; O. bullosa, 85 long by 65 wide; Cooperia punc-

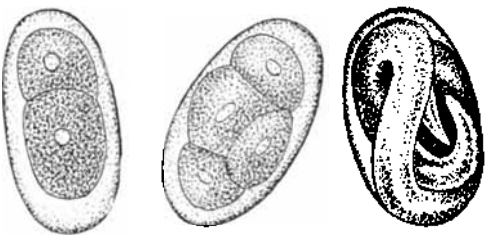


Fig. 8. *Haemonchus contortus*. Eggs in various stages of development. x 380. From Veglia, 1916.

tata, 65 to 72 long by 30 wide; C. oncophora, 60 to 80 long by 30 wide; C. pectinata, 70 to 80 long by 36 wide; C. curticei, 63 to 70 long by 30 to 32 wide; Nematodirus filicollis, 130 to 200 long by 70 to 95 wide; N. spathiger, 150 to 220 long by 80 to 110 wide; N. abnormalis, 160 to 230 long by 85 to 115 wide; Trichostrongylus extenuatus, 70 to 80 long by 35 to 45 wide; T. colubriformis, 73 to 80 long by 40 to 43 wide; T. probolurus, 76 to 80 long by 43 to 46 wide; T. vitrinus, 84 to 90 long by 46 to 50

wide; T. capricola, 75 to 95 long by 35 to 45 wide.

The Y-worm of cattle and carabao, Syngamus laryngeus, a relative of the gapeworm of poultry, has been reported from the Philippines by Hall and has recently been reported by Ransom and by Bagué from Porto Rico. The eggs of this worm are 80 microns long by 40 microns wide.

The eggs of the common whipworm of ruminants, Trichuris ovis (Fig. 9), are lemon-shaped and 70 to 80 microns long by 30 to 35 microns wide. Those of the hair-worms, belonging to the genus Capillaria, are also lemon-shaped, the dimensions for the various species being as follows: Capillaria bovis of cattle, 47 microns long by 27 microns wide;

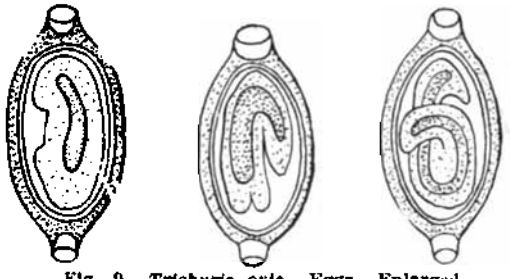


Fig. 9. *Trichuris ovis*. Eggs. Enlarged. From Fiebiger, 1912, after Cnokor.

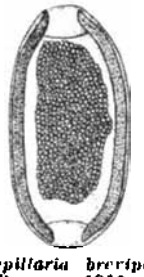


Fig. 10. *Capillaria brevipes*. Eggs. Enlarged. From Ransom, 1911.

C. brevipes (Fig. 10) of sheep, 50 microns long by 25 microns wide; C. longipes (Fig. 11) of sheep, 45 to 50 microns long by 22 to 25 microns wide.

As noted in the paper on eggs and larvae of swine parasites, the eggs of species of the genus Strongyloides contain well developed embryos when passed, and these eggs hatch promptly. The eggs may be found in fresh feces, but in older feces the free larvae are present. Brumpt, in 1921, reported a new Strongyloides, S. vituli, from cattle, but no description of this species is yet available. The eggs of S. papillosus of sheep and goats are 40 to 60 microns long by 20 to 25 microns wide. The rhabditiform larvae and the filariform larvae are similar in a general way to those of S. stercoralis, figured in the paper on eggs and larvae of swine parasites.

Fig. 11. *Capillaria longipes*. Egg. Enlarged. From Ransom, 1911.

As previously noted, the eggs of the lungworms belonging to the family Metastrongylidae hatch in the lungs and the larvae ascend the trachea and are usually swallowed, passing out in the manure. The larvae of the common lungworm of cattle, Dictyocaulus viviparus, are 280 microns long by 25 microns wide when first hatched; these larvae have a button-like

Fig. 12. *Synthetocaulus capillaris*. Larva. Enlarged. From Fiebiger, 1912.

head and a rather blunt tail. The larvae of the common sheep lungworm, D. filaria, are somewhat similar. The larvae of the hair lungworm of sheep, Synthetocaulus rufescens, are 300 to 400 microns long by 16 to 18 microns wide and have a tail prolonged by an undulate appendix. The larvae of S. capillaris (Fig. 12) are similar and are 230 to 300 microns long by 20 microns wide.

The embryo of the stomach worms of sheep practically all perish in one year on pasture land.

Zootechnics

Edited by E. MERILLAT, M. D. V.

THE HORSE IN ITS HIGHEST ESTATE

The grace of the equestrienne, the uplifting and invigorating influence of the bit and the spur, and the morale attainable only through the love of animals, guarantees a permanent place for the horse in the affections and in the affairs of man. Imagine, if you can, an artist finding such an inspiration amid an array of the finest limousines.

DISEASES EXACT HEAVY TOLL

From April 30, 1921, to May 1, 1922, approximately 3,082,000 hogs died from disease in the United States. This figure is apparently in addition to the loss of suckling pigs during the first three weeks after farrowing. The number that died is slightly larger than the average number for the five years preceding, although it is less than half of the number that died in 1914. The loss in cattle for the same period of time has been approximately 2,016,000 which number is below the average annual loss for the five year period preceding. The sheep loss for the same period of time was 1,293,000, which is also below the average loss for the five year period, preceding. The loss of horses and mules was a little over one-third million, and is slightly less than in preceding years.

The value of the animals that died of disease in the United States is more than sufficient to pay the income of all veterinarians for a long period of time. No doubt, the loss in live stock would have been much larger had not the veterinarian used preventive and curative measures on the farms in this country.

California Dairy interests have an organization known as The California Dairy Council. This organization is supported by the dairy interests of California. The Council is active in educational work on the nutritional value of dairy products as human food, dairy improvement and the importance of the dairy industry to the economic welfare of the state. As a result of the activities of this organization, there was an increased consumption of butter in California in 1921 and good prices prevailed.

WHAT IS CHURNING?

Will your zootechnics department tell me what churning is? That is I want to know what change takes place that separates the butter fat.—A. J. T., Va.

Reply: This is a simple appearing question and yet a good one. It is a fact that the ordinary phenomena around us are those we often know the least about.

Churning is a process of whipping the fat globules of cream into butter granules. The impact of the churn-paddles tears away the films which cover the fat globules and enmesh the mutilated globules to one another. In other words butter consists of the fat globules of milk enmeshed to one another through the medium of the torn films which cover them.

In a recent investigation of the souring of beef, the B. megatherium was found to be the causative factor.

ROPY MILK

As the milk situation becomes more complex and demands for better preservation of drinkable sweet milk increases, ropiness is becoming a greater problem than when milk was handled in such a way as to sour promptly. Ropiness is a condition that creeps in while milk is being kept sweet by keeping the bacterial count low and the milk cool. When milk is consumed soon after milking or is allowed to sour quickly ropiness does not often occur.

There are different degrees of ropiness. The condition may be so slight as to almost escape notice or it may be so pronounced as to give cream the consistency of a thin bread dough.

The cause is a bacterium (B. aerogenes) which seems to be an insidious inhabitant of the milk-can and other utensils which come into contact with milk. It is also found in the water of the milk house when this is not properly handled (standing water) and from this point of departure is carried about on the exterior of cans even when they have been well sterilized on the interior.

Although Harding and Prucha (Jour. of Dairy Science Nov. 1920) do not place much stress on the milk-house contamination, others before them and many dairymen now hold contrary opinions, having not only found the bacterium in this medium but have proved that given outbreaks are often impossible to control until the milk-house has been included in the clean up program instituted to correct matters.

The point is illustrated in an outbreak on a small farm where only three cows were kept, and which proved exceedingly puzzling. The milk from these cows was separated and after cooling was kept in a five-gallon milk can and called for each week by the wagon of the neighborhood creamery. Each week despite the fact that all possible source of the infection were attended to by careful scalding of every utensil that came either directly or indirectly in contact with the milk, the condition continued. The milking was done as clean as milking can be done, even to the point of disinfecting the udders and sides of the cows as well as the milker's hands. A sample of milk was collected from each teat of each cow in four ounce sterilized bottles and set with cotton stoppers in a cool cellar for observation. None of the samples became ropy. It was then decided to clean up the milk house which was supplied with water from a well from which the water was pumped with a wind-mill. It was disinfected by airing and light for a week and then when everything within was perfectly dry a good disinfectant to the walls, floor and trough was used. During this week while the cream was kept cool in the farm-house cellar, the milk did not get ropy nor did the condition re-appear after the cleaned up milk-house was again put into use. Thereafter in all similar outbreaks the milk-house was included in the cleaning up process with much better results than we had ever had before in handling this condition on small farms. In a measure this confirms the observations of others that the exterior of milk-cans, although well sterilized interiorly, is a carrier. Harding and Prucha mention this in connection with milk-cans contaminated in the can-washing vats of distributing plants, even where the interiors were well steamed.

The veterinarian when called upon to handle a ropy-milk outbreak must therefore concentrate his efforts to sterilization of everything that can possibly be a carrier.

Ropy milk is not harmful as food; it is even relished by some milk drinkers. The harm arises from the fact that the product is not marketable. It is not caused by garget.

SWINE HERD DOGS

Dogs are subject to training and perhaps one of the most useful animals to mankind. In some sections of the United States, dogs are trained particularly to assist in the round-up of range hogs. Range hogs and particularly those on large ranges are frequently rather ferocious if they are disturbed or excited and they are quite apt in self protection in a combat. It is not uncommon for range hogs to be kept until they are four or five years of age. There are a few rather extensive ranches on which hogs are profitably produced without being provided with any foods excepting the nuts, grasses and other provender they obtain from the range.

The magnitude of range hog production and the services of dogs may be illustrated by citing a recent roundup of 1400 hogs on one particular ranch of 19,000 acres, on which there is something over eighty miles of hog wire fence. Round up of the hogs on such a ranch is accomplished by men on horse back, the man being provided with heavy chaps, boots and spurs and each man has a trained hog dog. On the particular ranch in question a round up pen is provided with the usual long wings to direct the hogs to the corral proper. The hog dog is trained to bay when he finds a hog. This baying is a signal for the rider. The hogs are usually in droves and will chase

the dogs and the dogs are so trained that when the hogs start after them they will run toward the roundup pen and the hogs will follow. After the dog gets into the corral he goes to the far side and jumps over the fence, otherwise the hogs would attack and kill him.

The hog dog is also used in marking the pigs, the dog keeping the sows at bay while the pigs are caught and marked by the riders. The range pigs are usually marked by notches or slits in the ear and there have been some rather disastrous feuds, which develop as a result of disputes arising over the ownership of range swine.

Hog cholera in range swine is extremely difficult to control because of the difficulty of quarantining and treating the animals under range conditions.

The old razor-back type of hog is fast disappearing from the range, as most of the range hog men are using pure-bred boars.

SCRUB BULL MEETS THOROUGHBRED HEIFERS

The bull, though ill bred and wise in the ways of bulls, was unrestrained and allowed to run at large. The heifers were young—but 13 months old—and unsophisticated, and without regard for the wishes of their owner, who had planned to have them make their debut in bovine society when they were two years old, when mates of high degree and suitable breeding would be selected for them. But the bull had other ideas, and, on meeting the heifers in their pasture, proceeded as bulls will, and the owner's plans for an early social career for the heifers were blasted. Seven poor-bred calves were the result of the meeting, which also had the effect of stunting the heifers' growth.

El Toro's Indiscretion Costly to Owner

The owner of the bull was mulcted in damages because of the mesalliance. He claimed an alibi for his bull, but the latter had been seen in flagrante delicto. The Supreme Court of Kansas affirmed the judgment in Matthews v. Langhofer, 202 Pacific Reporter, 634. Chief Justice Johnston wrote the opinion, in the course of which he said in discussing the question of damages:

"Two elements of damage entered into the loss suffered by the plaintiff, one from injury to the heifers resulting from the premature breeding, and the other from the loss of production of thoroughbred calves if they had been bred to a registered bull at a suitable time, as the plaintiff intended. There was plenty of testimony to the effect that premature breeding, when the heifers were only 13 months old, was a real injury to them. It was to the effect that it would stunt their development and diminish their breeding value for the future.

Damages Assessed Two Ways

"Some said there would be injury to the extent of $75 on each heifer, and others that their value would be depreciated about one-half. The plaintiff contemplated breeding them about January of the following year, and we think the injury and depreciation of value was well established by this evidence. The other element was the loss of production for a season. The premature breeding in June, 1917, operated to postpone a breeding at the proper time, and resulted in a loss of production of thoroughbred calves the following year. The loss of production was separate and distinct from the injury to the heifers and the depreciation of their value by the premature breeding, and only by an award of indemnity for both could the plaintiff be compensated for the actual loss resulting from defendant's negligence."

(Am. Law Rev.)

Mottles in butter arise from improper working of salted butter. They do not occur in unsalted butter and are caused by incomplete fusion of the water and brine.

According to Harding and Prucha of the department of dairy husbandry of the University of Illinois, the estimate on the total amount of dirt found in ordinary milk is erroneous. The amount of soluble dirt in milk is estimated by them to be less than one-half to one million.

The Cooper Hog Ranch, near Denver, Colorado, a modern practical hog breeding farm on which over 1,000 brood sows are maintained, is one of the interesting industries of this country. All boars and most of the sows on this ranch are pure-bred.

Over 60 per cent of chopped straw is digestible when boiled for three hours in a one per cent solution of sodium carbonate. No doubt, the process of treating waste materials with soda ash will be improved and the feeder will have an unlimited possibility of obtaining cheap and efficient stock feed from straw, cobs, etc.

AVERAGE MILK PRODUCTION LOW

The average annual production of American cows is too low. Four thousand pounds of milk and 160 pounds of butter fat are the figures given in a recent report. These figures could be greatly increased, and in fact must be, before dairying can be called a profitable industry. Better breeding (the elimination of scrubs and low producers); better feeding (proper balance of ration); and attention to the details of sanitation (better housing and the eradication of dairy herd scourges); must be more studiously and more universally appreciated before much improvement can be expected in this connection.

The dairy interests devote a great deal of time to the study of the first two (breeding and feeding), but seem to religiously keep the last one (disease) in the background and thus turn the attention away from the most baneful of all influences against high production and profit.

Proper breeding and feeding programs are of course fundamental but without attention to tuberculosis, abortion disease and the hygiene that will curb the ravages of these, the dairy situation, we believe, will become more hopeless than ever.

The Voigt filled milk bill which will prohibit the interstate shipment of filled milk has passed the House of Representatives. The vote was 250 to 40. Notwithstanding the conviction of many that a tax bill similar to the measure that controls the manufacture of butter substitutes, would be more desirable, this measure will have a stunning effect and will eliminate this insidious enterprise as fast as each state takes similar action. Many of them have already done so.

ACCREDITED HERD DEMANDS INCREASE

The large demand for accredited herds of cattle or the desire to eradicate bovine tuberculosis has become so large that Congress has recently appropriated $2,877,600 for this purpose. It is estimated that in addition to the money provided by Congress the various states will provide $5,000,000 for the payment of indemnities during the coming year. This systematic plan for tuberculin testing, established in 1917, has appealed to men who appreciate the cost of tuberculosis and they are willing to submit their herds to state and government supervision. Marked progress has been made in the application of the tuberculin test and in the handling of herds containing reacting animals which encourages us to believe that this work will go forward much more rapidly than it has in the past and far better results will be accomplished.—Hoard's Dairyman.

Comment: While this growing popularity may seem encouraging it is unfortunate that evidence is piling up to indicate that the real objectives are less attractive than the free and even profitable clean up of herds at public expense. We are informed on good authority that much of the enthusiasm to get on the accredited herd list often slumps quite promptly after the first emoluments have been derived. That is to say, the free test and the indemnities, which are sometimes high, seem to be the real cause of the popularity instead of an honest desire to keep clean thereafter.

Accredited herd work is done for the public good. It is only fair that it be done at public expense, but until the initial incentive is the determination to keep clean, the movements to eradicate tuberculosis from cattle, will likely fail from lack of a solid foundation as a point of departure.

Veterinarians started early to scare the people away from animal products for food. A distinguished veterinarian in June, 1899, read a paper before a veterinary association in which the whole trend of the narrative was to show that there is a "uniform ratio between the quantity of such foods consumed and the prevalence of tuberculosis among the people." He blamed the ravages that tuberculosis was then making among the North American Indians to the tuberculosis beef the government fed them, emphasized that the "cow is the most important factor in the spread of the disease," and arrayed the medical profession for its stupidity in presuming that there could be some relation between the avenue of entrance and the location of the lesions.

The Kansas City Missouri Park Board is contemplating the establishment of bridle paths in connection with various boulevard systems. This movement is in conformity with the return of the saddle horse. There was a successful saddle horse sale in Kansas City recently, in which about fifty high class horses were sold.

Canine, Feline and Avian Practice

Valuable Airedale Recovers from Fracture of the Thoracic Vertebra

THE animal herein described is the property of John W. Scott, of Philadelphia, treated by Dr. H. B. Balthaser, 4907 Market Street, that city, for a serious traumatism incurred February 26, 1922, when it was struck by an automobile. A report of the case, submitted to VETERINARY MEDICINE by Dr. Balthaser, is as follows:

Diagnosis and First Aid

"One half hour after the accident, I was called to treat the patient and diagnosed the case as a fracture of the spine in the thoracic region with paralysis of both hind legs. The legs were dangling back and were powerless. The back, in the region of the eleventh vertebra was arched and out of line. I immediately set the bones and applied a temporary bandage, then took the dog to my private hospital and applied a permanent cast (consisting of a silicate of soda, cotton and bandage) around the thorax and shoulders to keep the bones in apposition.

Unique Nosocomial Treatment

After this, I applied a bandage-padded pack, reaching from the top of the shoulders to the root of the tail to prevent arching movements of the back, and two other strips, one on either side of the body, reaching from the side of the shoulder to the hip, to prevent lateral motion. The dog was kept standing three hours until the cast was thoroughly set and fixed to the body. The dog was cathetrized and then permitted to lie down in a padded cage. To relieve the distress from lying in one position, he was placed in a sling-arrangement similar to the horse slings, twice daily, during meal time, and then fed in a pan, fixed to a table at a comfortable height, so that the head would be kept in a normal position and not exert the body by its movements. Catheterization twice daily was practical until the eighth day when urine began to dribble off. Enemas were given daily until the fourteenth day when bowel movements occurred without assistance.

In regard to the medical attention, the animal was given calomel, strychnin and sodium iodid, and daily massages with mild liniments

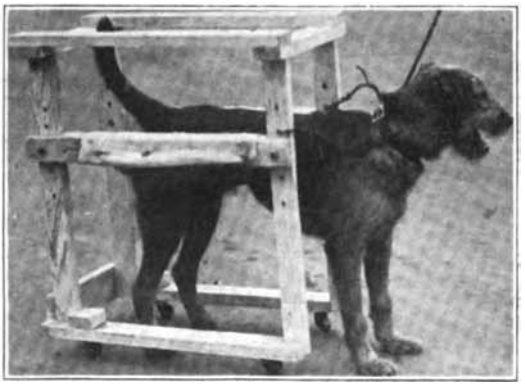
and electricity.

On the eighth day when the dog began to urinate, jerking impulses were observed in the left hind leg and a few days later, both hind legs were twitching and jerking at intervals.

Convalescence Scientifically Interesting

"Two weeks after the accident, when hoisting him into the sling as usual for meal time, and especially before feeding, I observed him flexing both hind legs and stamping the feet. It was during the third week of the treatment that he began to support the body momentarily. At the end of the third week, while in the slings, he began to take short steps, during the excitement just before receiving his meals. It was then I began to plan the "walker," shown in the illustration and which I constructed myself. It was equipped with ball-bearing rollers. I placed him into it, passing the hind-legs through two holes made in a canvas, arranged on the adjustable slat of the "walker," so that the hind legs could be kept in a natural position. The front legs being normal, pulled the walker along while the hind ones following, would take short but careful steps. Instead of being placed in the slings, he was then placed in the "walker" twice daily.

Padded Splints Used After Cast Was Removed



Improvised Ambulator Used to Support the Dog During the First Exercising Period

He was allowed the "walker" longer periods from day to day, as the strength increased. At the end of the fourth week, he could use the apparatus without bearing on the slings. He was, however, not allowed to walk unassisted until the end of the fifth week, when the "walker" was discontinued. Gaining strength continually, he was discharged from the hospital, and now (3 months later) has enough control of his body to play with a ball and jump into the air with all fours. Medical treatment was continued until the end of the eighth week.

"I attribute the speedy recovery to the prompt attention and proper reposition and retention of fracture and also to the good disposition of the patient."

Dog Taking Exercise Unassisted

Dr. H. A. McIntyre vouches for the following as a good anesthetic for dogs: Chloral hydrate, 2 ounces; gum acacia, 2 ounces; distilled water 1 pint. Give one ounce per rectum for small dogs and two or more ounces for large ones.

Subcutaneous injections of adrenalin are not entirely harmless. When used too freely and in too strong concentrations they may prove fatal. Death occurs two or three days after administration.

The greatest fault with chloral hydrate anesthesia, a colleague declares, is the fact that the state of anesthesia lasts several hours and keeps the busy practitioners waiting too long for the patient to revive.

Veterinary Service in the Poultry Industry

By Professor Allen G. Phillips, Lafayette, Ind.
Professor of Poultry Husbandry, Purdue University

Not an Exponent of Cracked Grains

I do not believe in feeding cracked grains and I am going to tell the reason. I saw the other day a beautiful mixture of feed on the market. It had in it pearl hominy made from yellow corn. Those of us who study about vitamines which are something we hear about and know about and never saw, nobody else ever saw them either, know in that pearl hominy every bit of kick that corn ever had is taken out. The bran is taken out, the corn sugar is taken out and all we have left is the flinty part. I don't want the cracked corn in feed, because it is not reliable.

I can give an example. Down in the hills of Kentucky there have been a great many cases of rickets among children, pellagra, etc. We found that those people ate hominy, hog and hominy and salt pork and hominy. It has been found that by adding just one or two little things to that diet the whole problem of rickets and pellagra has been eliminated. The vitamines and mineral salts were all they needed to add. Now cracked grains that are polished and sifted and bolted very often have those taken out, so I say our grains in ninety-nine cases out of one hundred ought to be whole grains such as corn, wheat, oats and barley. If you haven't four take three, if you haven't three take two. I wouldn't split hairs on it. I put oats almost at the bottom because of its low value. I put corn at the top, if I had nothing but corn I would get along just as well. I don't need wheat now as it is too high.

Leg Weakness of Chicks Nutritional

We find when chickens break down and have weak legs we call it leg weakness in little chickens. Nine times out of ten it is a non-infectious disease due to lack of vitamines. One time we had trouble with chicks about three or four weeks old. They all got down on their hocks. We opened the door and let them run in the alfalfa patch and in two days we couldn't find a single chicken that was down. Immediately we recommended the feeding of alfalfa to chickens. We give sprouted oats if possible and let them eat dirt and all. We give them hard coal ashes from the stove and we supply those chickens with mineral salts as nature would give them. We give them some thin leafed greens and we have the best chickens. Out of some thousand chickens we raised ninety-one per cent and that is a very good average.

Every day I get an average of ten or twelve calls on sick chickens and they want to know what to do and in most cases I don't have to refer to a veterinarian. I just recommend that those chickens be fed proper vitamines.

Limber-Neck Often Due to Bad Feeding

Now we found a great deal of toxic poison that caused limber-neck, the necks pull back almost to the tail. This is probably a feeding proposition due to putrid animal matter but as a rule it is merely bad feeding. If they will add exercise, get them on the ground, add green food to the ration, balance the diet, that which they call a disease which isn't a disease gets away from them. If you turn chickens out doors they will eat dirt first before they will eat green stuff; therefore, there must be something lacking in the average ration.

Roup a Misnomer

Roup is probably the disease that causes more people to worry than any other one thing a chicken has. Roup is like a hoop skirt, it covers everything and touches nothing. It is a misappropriated term. Now I think that some of it, particularly when the cheesy matter forms, may be due to malnutrition. If you find you are called upon to diagnose a case in which a chicken suddenly dies, I would suggest that you look and see if there hasn't been suffocation or diphtheric canker around the larynx or windpipe. I have seen several cases like that. The history of it was that we found they were suffocated from some form of roup.

People wonder what to do for roup. I have an idea that our good friend from Ohio may tell you that chicken-pox is another form of roup or is very closely correlated. If vaccines are made particularly from certain flocks within the neighborhood in which your flock or the flocks you are interested exist, it can have some very beneficial effects.

Epsom Salts a Good Chicken Medicine

I know mighty well that you fellows have to guess when you are not sure. That is the class we travel in and we might as well admit it. I think if you will tell the average farmer

(Now turn to Page 410)

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

HEDGE MUSTARD

A dairyman's cow presented a peculiar array of symptoms: Infected rumen, icterus, extreme costal tenderness and of course inappetance and agalactia, temperature 105° F. Treatment: eliminant and febrifuge. Next day animal some better with the temperature 103° F. Food was pasture and bran. The weeds in the pasture were red root, dock, plantain, pepper grass, wire grass and the enclosed specimen with which I am unfamiliar and fear might be poisonous. Kindly name and identify the plant indicating toxicity, if any. All animals (cattle) have been removed from the pasture.—C. E. B., Kans.

Reply: The specimen sent is a species of hedge mustard (Sisymbium officinale) which is not, so far as I know, poisonous. Like all other members of the mustard family, it may, however, produce symptoms of irritation, but even then the hedge mustard is not a very strong irritant and I doubt very much whether the symptoms herewith described could have been produced by it.

IS THE BRACKEN FERN POISONOUS?

"Since you are recognized as our leading authority on poisonous plants, I should be greatly obliged if you would favor me with your opinion about the poisonous properties of the bracken-fern. I find a very great diversity of opinion among farmers here in regard to it. In the Northwest, this, as you know, is one of our worst weeds, and is a continuent of all hay; but horses avoid it except when hard pressed by scant food-supply. Prof. Lawrence of the Agricultural College is out with a bulletin on the stock-poisoning plants of Oregon, in which he enumerates the fern. Many of our farmers and even the State Veterinarian deny that it is injurious. But it would seem to me that the Canadian experiments reported in Jadwen & Bruce (Dept. Agrl. Canada Health of Animals Branch, Bull. 26, 1917) are fairly conclusive. Not having access to your book on poisonous plants, I should deeply appreciate your opinion. Will you tell me also if the poisonous principle has been isolated and chemically determined?"—J. C. K., Ore.

Reply: The common brake or bracken is an extremely common plant in Washington, Oregon, California and British Columbia, more common than in the East. The statement in my Manual of Poisonous Plants is very brief. The testimony given there is not sufficient to warrant classifying it as a poisonous plant. Since the publication of my book it has been demonstrated quite conclusively by Hawden & Bruce of Canada that it is poisonous, and I have accepted the results of this excellent work, as proving conclusively that the plant is poisonous. The marginal fern and male shield fern sometimes certainly cause poisoning. Since the Manual was written and since the appearance of the Hawden and Bruce paper I have had several notes in Veterinary Medicine from reliable sources that make me think it is poisonous.

BLUE VERVAIN SUSPECTED POISONOUS TO HOGS

Will you kindly identify the enclosed weed and let me know if it is poisonous to hogs? One of our farmers lost six sows which have been running on good blue grass pasture. The local veterinarian thought the trouble was due to weed poisoning. Will you kindly give me the names of weeds that are poisonous to swine and which are found at this time of year in southwestern Iowa?—H. L. E., Ia.

Reply: The specimen sent is common blue vervain (Verbena hastata), a species of vervain common in the northern part of the United States and in Iowa. I have observed quite generally that live stock (cattle, horses and hogs) do not eat it. Evidently there is something in the plant that is offensive to them.

I do not remember of having seen an account of a single case of poisoning from plants of this character. It would therefore be difficult for me to say what the trouble is with these hogs and do not think the plant caused the trouble. I have often wondered why live stock do not eat vervain. The plant is prob-

ably objectionable because of its slightly bitter taste.

SUPPOSED INJURIOUS MUSTARDS

Would you kindly name the three enclosed specimens and state whether they will cause bloat in cattle if eaten in quantities?—F. C. Y., Illinois.

Reply: The three specimens of mustards sent prove to be common pepper grass (Lepidium apetalum), shepherds purse (Capsella bursa-pastoris) and the other (Berteroa incana).

Certain types of mustards have at times caused bloat in cattle when the plants are covered with dew or when very moist. I do not believe them injurious otherwise, and although rather pungent herbs I think a considerable amount would have to be eaten to cause trouble. Certainly bloat would not be caused if the animal was in perfect condition and had the proper feed of other sorts, especially blue grass.

PARSNIP OR BUCKEYE POISONING

Under separate cover I am sending specimens of two plants: (1) is known as wild parsnip and (2) is leaves of the buckeye. May 9, my client noticed one cow to be stupid and the next morning she was in a recumbent position, similating parturient paresis. I gave atropine and inflated the udder. Temperature, 97°. Pulse 75 and weak. In an hour or two she got up and was much improved, but the next morning was worse and another cow was affected. Temperature was about 101° each. Pulse in No. 1 cow was 100 and very weak, bowels constipated in No. 1 and very loose in No. 2. I gave No. 1 a dose of purgative in morning and rumen accelerator to each at two p. m. and left more for six p. m. and ten p. m. and six a. m. However, both cows have dried up and another cow is checking on her flow. These cows have been running on pasture six weeks but were out of the permanent pasture about 1 week and were returned to it two or three days before the first became affected.

Several buckeye sprouts, three or four feet high, were in the permanent pasture and several of them were stripped of leaves, apparently by these cows. This is the only specimen of parsnip that could be found in the pasture. Were these cows "buckeyed" or poisoned or what? The No. 1 was fresh one month before and No. 2 only three weeks ago. Both were ravenous eaters.—L. B. H., Ohio.

Reply: The plants sent me are wild parsnip (Pastinaca sativa) and Ohio buckeye (Aesculus glabra). With reference to the parsnip, the plant sent is what should always be called milk parsnip: yellow flowers and straight conical roots. Many experiments have been conducted with this plant and so far as I know no one has been able to determine from experiments that it is poisonous. Some years ago I made a test on myself with this plant. A party brought it to me and said it was very poisonous, and that he knew that I would not eat it. I thereupon ate it without any injurious effect. Experiments were also made by Dr. Powers of Madison, Wisconsin, with the same results. I am aware, however, that the flowers of this plant are known to cause poisoning similar to that of poison ivy. Many experiments are recorded in which the Ohio buckeye is said to be poisonous, especially the seed.

I am inclined to think that under certain conditions the Ohio buckeye is poisonous, especially when young. Many of the plants of this family contain the substance—saponin—which has destructive action on the red blood cells. I am, therefore, inclined to think the symptoms found in the case of these cattle may be due to the buckeye.

SNEEZE WEED

A sheep owner suspects that a weed, a sample of which I am sending you for identification, is causing death in his flock. I shall appreciate your opinion.—C. E. B., Stockport, Iowa.

Sneeze weed is a well-known poisonous plant of the sunflower family (Compositae) and this weed occurs in low grounds in eastern North America from the Atlantic to the Rocky Mountains, and is particularly common in Iowa, Minnesota and Wisconsin. It has long been recognized as a poisonous weed. Cattle, sheep and horses not familiar with the plant are often poisoned when driven into localities where it is abundant. As a rule, animals avoid it, but sometimes they acquire a taste for it and are quickly killed by eating it in large quantities. The poisonous constituent has not been closely investigated but it is known that it exists principally in the flowers. The young plants are only slightly dangerous. In the mature ones the amount of poison present seems to vary greatly even in the same field. In fatal cases, death is preceded by spasms and convulsions.

Queries and Answers

MORE ABOUT FORAGE POISONING

I am writing to you at this time to try and get information on a couple of diseases which give me no little concern. The first is a condition in cows very much like, in fact corresponds minutely to Hutyra and Marek's description of atony of forestomachs of ruminants. The subjects in question start with a loss of appetite, diminished milk flow, cease to ruminate, emit dull moans and, in spite of treatment, pursue a prolonged course of illness.

Temperature usually remains normal, or nearly so, constipation alternates with diarrhea. Some recover, some do not.

As to treatment, I have tried nearly everything which would seem beneficial, outside of drastic purges, which I never thought did any good in digestive disturbances of cows. I used nux vomica, capsicum, gentian, aromatic ammonia, sodium bicarbonate, belladonna and gallons of oil, but just can't get them started as soon as I would like.

Now, if I remember correctly, this similates very much what Dr. DeVine describes as gastritis and on which he dwelt at length in the Journal sometime ago. I would be pleased to have information from anyone who can suggest a good treatment.

The second class of cases which I refer to are also found in horses. One receives a call at an early hour, as a rule, to see a horse down in the stall and cannot be gotten up. Generally all skinned up from throwing around in the stall, emits terrible groans and seems delirious to some extent. Temperature is normal, bowel action is variable, some having diarrhea and some having constipation.

Anything given does not seem to relieve condition much. The animal just paws the air, groans and thrashes about, and usually continues that way for several days or a week, showing no improvement.

What do you call this? Would appreciate an early reply.—R. H., Indiana.

REPLY: The proper treatment to give such animals is a very careful inspection of the food and water supply.

See to it that the animals are supplied with a reduced ration and have access to good water, as ruminants should. Also, that they are allowed enough outdoor exercise to maintain a good state of health, and yet not be exposed to inclement weather.

Administer a good saline purgative of Glauber's salts, containing ginger and gentian, and follow up with proper medicinal doses of nux vomica, to which might be added small doses of sulphate of iron.

The horse case you describe is undoubtedly one of forage poisoning, which calls for very prompt treatment of bleeding and active purgation. When these two things are done early in the disease, if possible before the horse goes down, a recovery may be expected. However, when delirium has supervened, the cases are generally hopeless.

PROBABLY MILK FEVER

I am desirous to obtain information in the matter of cows following parturition which show the following symptoms. I have had several such cases. They calf in the normal way, and appear all right from six to twelve hours and then begin to show signs of milk fever, insofar as the preliminary weakness is concerned, but are able to get up when urged during the first 24 hours, when they lie down and appear to be sleeping. When urged to get up they only remain standing a few seconds. The pulse is very weak, but the temperature is unchanged and the afterbirth is properly expelled. Examination reveals nothing wrong with the uterus, but the bowel movements suspend after the first day unless enemas are used. They die on the second or third day.—A. W., Ia.

Reply by Dr. DeVine: The information in your inquiry is scarcely enough on which to risk a diagnosis. There are at least four possible conditions that may be considered, viz.: parturient paralysis (milk fever), parturient eclampsia, forage poisoning and the so-called

digestive paralysis.

Just a little more detail of symptoms and surrounding conditions might make it easier to eliminate all of these but parturient paralysis. I would suggest that you read my article on parturient eclampsia published in Veterinary Medicine, August, 1919, Volume XIV, page 411, and see if the course of these ailments have a similarity.

From the information given my guess would be that your cases have been affected with a slow form of milk fever. Did you use udder inflation and cardiac stimulants? If so, how did the cases that died progress? Was the coma predominant or did they develop convulsions? Further information would be helpful.

RECTAL FISTULA IN A MULE

A two year old mule was brought to me with a small opening about the size of a pencil between the rectum and vagina, and on the left of the median line about 16 inches around on the left hind leg there was an abscess about the size of a gallon bucket.

It contained pus. I made a large incision, six inches long, for drainage, and then enlarged the incision in the perineum, large enough to get the nozzle of a pump into and found by feeling and probing that the two openings came together and passed under the pelvic bone.

I washed out daily, using a good strong antiseptic solution and the pus seemed to stop, so I left the upper hole heal and used the lower one to wash out as before, using the pump so it all healed up and the mule went home.

Sixty days later the mule was brought back in the same condition as at first. Then I used some mixed bacterins and it healed again, so the mule went home, but is back again for the third time with the same trouble. The mule was supposed to have been kicked.—W. E. G., Texas.

Reply: The mule has a rectal fistula, a condition that is very difficult to cure in domestic animals, because rectal operations have not reached a very high degree of refinement in veterinary surgery. There is, somewhere, a perforation in the rectal mucuous membrane, through which gases and fecal matter escape into the periproctal space, which cause reabscessation and fistula. There are cases which recover spontaneously when the perforation heals, and the foreign material in the sur-

roundings become ensystend, absorbed, or is discharged. There is nothing much to be done for such a case except that of keeping the opening from healing externally. It is not always possible to find the opening on a rectal exploration, because the mucous membrane is folded but in every case of this kind we have had the opportunity to examine post-mortem such an opening was found.

RIGID CERVIX IN HEIFERS

Please tell me the best method of handling cases of induration of the cervix in heifers during parturition. I have encountered two such cases for the first time in my practice, the cervix being dilated just enough to insert one finger and the heifer straining and in labor pain. I have tried inserting swabs saturated with belladonna and also uterine douches, but without any success. Is the guarded uterine knife of any value, or is it dangerous?—O. W. J., Wash.

Reply by Dr. DeVine: There is no specific way of handling the cases you describe. The handling will depend much on the individual case, which may be due to the spasm of the cervix; inertia of the uterus; or in rare cases, induration following previous injury or infection of the cervix.

"Watchful Waiting" the First Step

Spasm of the cervix is not an uncommon condition in cattle. At least we have not found it so in our practice. Without definite data I would venture that we encounter perhaps an average of twenty-five cases per year. We have no set way of treating them. The one principle that applies to all such cases is be patient and give them time. If the calf is alive and the mother is not suffering or in danger of sepsis, there is no reason why these cases should be hurried. We do not even have need of concern as to the life of the fetus as we would in the case of the mare. I have seen obstinate cases that we have watched and treated for a week or ten days without resorting to surgical interference and sudden! have the cervix dilate making it possible to deliver a live and normal calf or in some cases the calf being born without aid. So "watchful waiting" is perhaps the first step.

Belladonna Worthless

As to mechanical means of dilating, it is quite natural that we try everything that has been suggested. My personal opinion is, that belladonna ointment or any other ointment that we know of today has absolutely no value so far as the dilating or relaxing action of

the drug is concerned. On the other hand, any manipulation of the cervix with either the bare hand or with an ointment on it may be just enough irritation to produce the desired reflex and cause the cervix to dilate in a few hours as if by magic. But I repeat, such cases will dilate just as well by using nothing but the bare hand, shaping the fingers in a cone, and rotating patiently.

Sponge Pessary Has Merit

There is one mechanical device that in some cases really appears to have merit. That is, to sterilize a large sponge or soak it well in an antiseptic, dry it in an oven, roll it very tight, place it in the cervical canal and then moisten. The swelling of the sponge in some cases seems to have a mechanical influence when the cervix is not too rigid.

Manipulation of Endocervix

It is well to keep in mind that the cervix dilates from the endocervix outward and if we can by patient rotation of the finger or any small smooth instrument dilate the cervix sufficient to once pass the hand through and complete the dilation from the inside out (perhaps after a time by getting both hands in), there will be more satisfactory results. In practice, it is our custom, where distance permits, to see such cases about twice a day and continue to do what we can to excite dilation.

MINERALS FOR LIVE STOCK

In reading your article on "Minerals for Livestock" in the April number of VETERINARY MEDICINE I notice you advise the use of finely ground limestone to supply the calcium. Would this be the kind quarried at Marble Cliff, Columbus, Ohio, or the so-called Tennessee rock which is taken from a deposit at Mount Pleasant, Tennessee? This is of a reddish brown color. Would also like to know if the calcium is available in these rocks. Would the percentage of sodium chloride in the formula given be safe to be fed to swine? Thanking you for this information, I am, R. H. G., Ohio.

Reply by Professor Hadley: If I am correctly advised, the limestone quarried at Marble Cliff near Columbus, Ohio, consists largely of calcium carbonate ($CaCO_3$), while the product of the deposit at Mount Pleasant, Tennessee, is largely calcium phosphate (Ca_3PO_4). The latter is commonly known as rock phosphate, or floats, and contains from 25 to 30 per cent of calcium phosphate, or about 11 per cent of phosphoric acid.

It is a well known fact that rock phosphate is relatively insoluble in water, but this does not mean very much, because there is enough hydrochloric acid in the stomach of an animal to dissolve the calcium phosphate, and thus make it available for the use of the animal.

From experiments conducted at the Wisconsin Agricultural Experiment Station under the direction of Professor E. B. Hart, it has been found that calcium carbonate is more suited for animals during the winter months when they are being fed heavily on grains, all of which contain a sufficient quantity of phosphorus, than is calcium phosphate. On the other hand, calcium phosphate is better for animals on pasture, and those which do not receive a ration containing grain. These experiments showed that there is something in fresh, green oats, as compared with dry oat straw, that increases the amount of calcium assimilated. This factor, whatever it may be, is resident in green oats and grasses and is also present in cod liver oil. It makes these substances capable of changing negative calcium balances to positive balances.

As a general rule it may be stated that any grain ration will always be low in lime content, therefore, extra lime should be added to the ration of livestock, especially when they do not have access to green feeds, which contain plenty of calcium for the needs of the animal body. Undoubtedly steamed bone meal contains more available lime than raw limestone or wood ashes, but it costs more. Of course, one should always provide clover or alfalfa, either green or in the form of hay, for dairy stock. When either one of these feeds is available throughout most of the year, it does not seem advisable to go to the expense of purchasing lime in any form for dairy cattle.

Now, in regard to the formula in the article entitled, "Minerals For Livestock," will say that the percentage of sodium chloride given would be quite suitable for hogs. It is a common practice, however, to allow hogs free access to salt at all times. If this is done, or salt is mixed with the feed, as some swine producers prefer, the formula should be altered accordingly. You will be interested to know that in experiments conducted at the Wisconsin Station with hogs on alfalfa pasture in which ground limestone, rock phosphate, and steamed bone meal were fed to different lots that practically no difference was noted in the rate of growth of the hogs or the size of the litters. In pen fed animals there would be a noticeable difference.

Looking Backward

A Look Into the Past Unfetters the Mind, Gives a Clearer Conception of the Present, and Tends to Strengthen Our Confidence in the Future

Dr. J. F. DeVine of Rhinebeck, N. Y., has moved to Brooklyn and has become an assistant in the practice of Dr. Roscoe R. Bell.
(Am. Vet. Rev., Dec., 1900.)

During the last decade of the 19th century hypodermic injects of carbonic acid in solution (2%) was heralded as a sure cure for tetanus in horses. It's remarkable how quick we forget these sure cures, and let our patient go right on and die.

The old authors of medical literature displayed such an amazing amount of confidence in their unproved theories that the public can hardly be blamed for having sought refuge in other cults from time to time as true facts were gradually disclosed.

Only a few decades ago medical literature was a comedy of contradictions and immature conclusions; today there is nothing seriously entertained except facts well proved.

"Apoplexy" is one of the oldest medical words. It was used by Hippocrates to designate the same condition for which it is used today. "A stroke caused by hemorrhage of the brain that ends in paralysis."

The first clinic of the American Veterinary Medical Association was held in conjunction with the annual meeting of 1898 at Omaha. The exhibits were a roarer, a ridgling and case of purulent sinusitis, all horses. From the esthetic standpoint the exhibition was called an abomination by the late Dr. Jos. Hughes.

Just one hundred years ago, iodoform was discovered by Serullar, and in the same year, 1822, the stomach pump was invented by Bush.

Dr. H. F. Steele, formerly of New York City, is stationed at Santiago, Cuba, in charge of the quartermaster horses and mules that are unassigned and also of the veterinary hospital. (Am. Vet. Rev., Aug. 1900.)

This is Lt.-Col. Steele, V. C., U. S. A., about to be retired for physical disability.

The word "abscess" is derived from the Latin "abscedere," to separate.

In 1856 Bouley defined abscess as "A collection of pus in an abnormal cavity formed at the expense of the tissues.

Foot and mouth disease was first described by Ruini and Francini, whose works were published in France during the last years of the 16th century.

In 1900 a collie bitch belonging to J. Pierpont Morgan gave birth to 27 puppies, breaking the record of 23 pups whelped by a collie bitch in Scotland some years before.

Before the middle of the 18th century and for some decades after that time surgery was regarded as a low occupation. The learned physician of that period treated the surgeon with contempt.

The first time a cow was exhibited for clinical purposes at an association meeting in this country was at Atlantic City in 1901. The demonstration consisted of methods of casting cows for various purposes, by Dr. J. C. Michener, and was described by the reporter of the clinic as "quite interesting."

SWEET MILK DELIVERED IN FRANCE FROM ILLINOIS

During the Paris Exposition 22 years ago, Mr. Gurler, of DeKalb, Illinois, shipped milk from his farm at that place to Paris which, except in a few instances during the hot days of August reached its destination in good condition. The milk was usually 17 days en route and was generally delivered for consumption as sweet milk three or four days after arrival. It only arrived slightly acid a few times and then only after some undue exposure or delay in transit. Milk experts were at first hard to convince that only cleanliness and cold were used to preserve these exhibits but after rigid investigation awarded gold medals to the exhibitors.

SPEAKING ABOUT OLD HORSES

During the year 1888 or thereabouts the Chicago Tribune reported the death of a horse at the age of 63 years. The horse was the property of Dr. Mather, 31st and Wabash avenue, Chicago, Ill. This remarkable animal was reported to have been used by the doctor as an officer's mount during the Civil War, and then as a buggy horse for years after the doctor reentered civil practice. A few of us, however, knew that the doctor had changed horses during the seventies unnoticed to his many friends. The new horse was a "double" of the old Civil War mount, and as years went on, one after another of his neighbors became amazed at the apparent longevity of the old white horse that had now become a part of the permanent scenery of the neighborhood. The doctor who was a comedian by nature jokingly allowed the misinformation to prevail for years and until the new horse had become the most famous "old horse" on record. Dr. M. H. McKillip could tell the full story. We wonder what is the real truth about the old protege of our New York colleagues that is now claiming the record for equine longevity.

Veterinary practice will progress or decline in strict obedience to the skill we put into it; in other words it will survive or perish under the immutable laws of commerce.

The veterinarian has been more successful in protecting domesticated animals against disease and subnormalities than the medical profession has been with the human race. The percentage of young men rejected for military service during the recent war was approximately the same as that during the Civil War, showing that there has been little improvement in our physical condition in 57 years.

Frenzied finance was a pastime of the A. V. M. A. way back in 1900 when Professor W. L. Williams charged a publication committee with having bankrupted the association in the short space of three years. An assessment of $5.00 per member failed to meet the deficit and the association had to forego the pleasure of printed proceedings for two years, the report goes on to state.

ANNOYING GRANULATIONS FOLLOW SEVERED PERFORATUS

On April 10th I was called to treat an 18 year old mare in good condition that had sustained an incised wound from a hay knife four inches below the carpus of the off fore leg. On examination I found that the perforatus was almost but not completely severed.

The wound was treated with tincture of iodin and bandages for three days and thereafter with a good antiseptic dusting powder. Instead of healing it soon began to enlarge and develop very annoying exhuberant granulations. These have been chemically and surgically treated and the borders touched up with nitrate of silver every two or three days without benefit. The wound still shows but little tendency to heal. Could you suggest any better treatment?

Reply: The granulations continue to form and fail to mature into scar tissue because they are attached to poorly nourished and movable structure—the tendon. Such wounds eventually heal up but only after a surrounding reaction that leaves an ugly and large blemish. To hasten normal cicatrization with minimum amount of new tissue it will be necessary to immobilize the limb for a week or two, or even longer, and to avoid molesting the granulation beyond the level of the skin. In fact it is better to leave them protrude a little than to devitalize them with caustics.

The immobilization may be effected with any of the classical leg braces fixed at the toe of the shoe and running up over the dorsal face of the leg, a fenestrated cast of plaster of Paris, or an improvised splint. Mild astringents only should be applied to the wound. Regeneration will be slow on account of the mare's age.

More Fly Repellents

℞ Crude carbolic acid
Oil of tar
Cotton seed oil, aa.....1 gal.
M. et sig.
Apply as a fine spray.

℞ Powdered resin
Shaved soap
Fish oil
Oil of tar
Kerosene aa .....1 part

Boil the resin, soap and fish oil with enough water to dissolve the resin, stir well with three parts of water and add the kerosene and oil of tar. Sig. Apply as a spray.

Discussions, News, Personals

"WRINKLES, SHIELDS AND SWIRLS"

Veterinarians are frequently requested to prescribe or operate to overcome or relieve wrinkles, shields and swirls. The skin of swine if very similar in its general structure to that of other animals, with the possible exception that the dermis is more loosely attached to the underlying structures. The loose dermal attachment permits of the deposit of large quantities of fat, particularly in the large type of swine.

Wrinkles

Wrinkles are corrugations of the skin and occur particularly in mature swine that have been previously fat. The excess of fat disappears from the subcutaneous tissue and causes the skin to wrinkle. Wrinkles in swine can usually be overcome by fattening them. In some old swine and more especially in the bacon type there may be some digestive derangement that must first be overcome.

Shields

Shields are vestiges of the original wild hog and served as a protection while in combat. They are prone to occur in mature or aged swine and particularly in boars. These masses are composed of fat meshed with fibrous tissue. The fibrous tissue forms the framework of the mass. It occurs in considerable quantity, and diminishes or prevents the absorption of the fat with the effect that shields may persist after the animal becomes quite thin. As the animal becomes older the fibrous tissue in the shields increases in quantity and the masses become so dense they cannot be made to disappear by starving.

It may be possible to arrest the development of shields in the younger animals by frequent and persistent massage, but these masses usually cannot even be reduced in mature animals.

Swirls

Swirls are whirls or cowlicks, which occur in the skin, particularly on the back of rump. Swirls are much less common now than during the earlier history of the breeds, as breeders have been trying to eliminate this fault. The price of breeding swine having swirls is lower than those without them. Swirls can be removed surgically but whether or not this should be done is questionable, because there is an inherited tendency to transmit swirl which the surgical operation does not remove.

The operation for removal of the swirl consists of dissecting out the entire affected area. Done while the pig is relatively small there is no complication and the wound heals without a scar.—A. T. K.

CHRONIC PERFORATION OF THE SKULL IN A MULE

I am sending herewith a picture of a mule that was injured six or eight months ago which caused an enlargement between eyes that was blistered with Caustic Balsam. The owner then skinned the place and must have injured the periosteum as the bone separated around the edge of the blistered area and finally the whole mass came out leaving an opening about the size of the crown of a hat.

The mule so far hasn't suffered any inconvenience from the opening, is hardy, eats well, and does as much work as ever.

I thought this might be of interest to your

Photo by Dr. Fred H. Steele, Scottsboro, Ala.

readers.

Comment: Perforations of the skull are generally due to fracture, the displacement of which is not noticed by reason of being slight or by being masked with the swelling associated with the traumatism. When the bones are "set" by prying them up into their proper level they heal well enough, but when the displacement is not corrected sloughing is a very common result, especially when the sunken area is large. The skin in this case was undoubtedly underrun with pus and when it was punished with such a strong caustic sloughing was a very likely result.

THREE LEGGED COLT

I am sending you a picture of a freak colt, it being a three legged or equine triped. It was foaled by a large draft percheron mare, belonging to Mr. Jacob Raquer, Arcadia, Indiana.

The colt was healthy; when born was not valued highly by owner and was not given much attention. It lived about seventy-two hours. It was never able to get upon its feet,

but seemed to be normal otherwise than the missing limb. The scapula was perfect and the stump was smooth and completely covered by skin and hair. It moved the stump very freely in making efforts to move its body.

This is the first three legged animal I have ever seen while I have been in the profession and thought it might interest others in the profession.—W. V. Billhymer, Arcadia, Ind.

SEMI-SOLID BUTTERMILK FOR NECROTIC ENTERITIS

Semi-solid buttermilk having been suggested as a valuable article of food for pigs affected with intestinal disorders, a herd of some two hundred affected with necrotic enteritis were given a thick slop made with this product and shorts. The pigs had been fed mill feed, corn and water and were doing well until the disease appeared among them, and they began showing the typical symptoms of diarrhea, unthriftiness, weakness and emaciation. After this feed was begun there were losses for a week but thereafter the losses ceased and the whole herd improved until at the end of four weeks all were thrifty again and none showed any evidence of disease. Each pig received two doses of mixed bacterins in addition, and the owner who yielded to this plan only after considerable persuation on account of his past experiences with this disease, now agrees the expenditure was justified.—D. A. K., Mo.

HYDROPHOBIA DRAMA AMONG THE THRILLERS

Rabies is the new thrill of the stage. The drama, which has been running in a London theater, portrays an outbreak of small pox in a garrison town that necessitates the vaccination of the regiment. The vaccine arrives. A spy affixes the labels on bottles containing a deadly rabies virus. Then the curtain descends.

When it rises for the next act 1,500 men are raving in the courtyard. One of them appears on the stage and remains there quite long enough for the most of the members of the audience. In the end the regiment is shot down for self protection. It is not stated whether this amusement was passed by the censors.

TREATMENT OF MECHANICAL PNEUMONIA FROM DRENCHING

In the January issue you published a case report from F. H. B., Kentucky, describing a fatal case of mechanical pneumonia that ended in a lawsuit.

For this trouble, I have always given my cases one half grain doses of pilocarpine hypodermically, repeated every half hour until relieved. I am sure if our Kentucky colleague had used this treatment there would have been no occasion to institute legal proceedings against him. His case would have been cured.—J. F. S., Minn.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

FOR SALE

FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

FOR SALE—Established practice in Northern Illinois, town of 600. No competition, run 5,000 annually. Must sell immediately. Write for particulars. Address No. 686, care of VETERINARY MEDICINE.

FOR SALE—A rapidly growing mixed practice in the best city in Minnesota; including full equipment and small animal ambulance. Am going to Asia to do colonization work for 5 years. If desired will lease very attractive home and hospital. Address No. 684, care of VETERINARY MEDICINE.

FOR SALE—Simplicity Operating Table for horses. Three movements; locks in any position. Good as new. Address J. C. Jones, South Charleston, Ohio.

POSITIONS, LOCATIONS, ETC.

POSITION WANTED—Successful graduate. Married. Desires position as practitioner. Contemplating later partnership or purchase of practice from retiring veterinarian. Go anywhere. Give full details, stating salary. Address No. 685, care of VETERINARY MEDICINE.

WANTED

Veterinarian

As Salesman for State Bordering Missouri

Line consists of soaps, chemicals and disinfectants sold direct to hospitals, schools, city and county institutions, druggists, factories, hotels, buildings, theaters, etc.

Compensation: Strict commission basis with generous drawing account to cover actual traveling expenses. Standardized contract gives full credit for all sales, mail and personal, from the salesman's entire territory. Right man should make a minimum of $5,000 per year within two years. Write in detail giving your reasons in first letter for your belief that you can fill the job.

UNITED CHEMICAL COMPANIES

401 Delaware, Kansas City, Mo.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

WANTED—Male Skye terrier, weighing sixteen to eighteen pounds; age eight to twelve months; color, light blue. Address H. H. Blahut, 333 Benton St., Hot Springs, Ark.

MISCELLANEOUS

LET US TAN YOUR HIDE—Cow and Horse hides for fur coats and Robes. Cow and Steer hides into Harness or Sole Leather. Catalog on request. We repair and remodel worn furs; estimates furnished. The Crosby Frisian Fur Co., Rochester, N. Y.

"QUICK COLLECTIONS"—Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

AMERICAN FOX AND FUR FARMER—Instructive magazine devoted to raising silver black foxes and fur farming. Best reference book in existence pertaining to this industry. Sample copy free. 406-V Arcade Building, Utica, N. Y.

PRINTING

BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

M. J. Hoffman

Taxidermist

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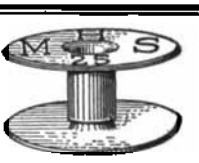
Specializing in the Mounting of Pet Dogs, Cats, Birds and Monstrosities

Game Heads and Rugs Made to Order

Mounted Specimens of All Kinds For Sale



STOLL STAY-THERE EAR MARK

The identification tag for animals that IS satisfactory. Used by the B. A. I., most states, and hundreds of veterinary practitioners. Write for sample and price. An ear mark for every purpose. M. H. STOLL Colorado Springs, Col.

Dr. George W. Blanche has accepted a position as a branch manager for the Fort Dodge Serum Co., with offices at 816 South San Pedro Street, Los Angeles, Calif.

Dr. Peter H. Canakis relinquished practice at Milbank, South Dakota, to take a position in the state veterinarian's office at Pierre.

Dr. W. W. Bronson is now located at Anamosa, Iowa, having moved there recently from Wyoming.

Dr. Kirtley Sears is engaged in practice with Dr. E. D. Criswell at King City, Missouri. Until recently, Dr. Sears was located in St. Joseph, Missouri.

Dr. Fred Cox has located in practice at Persia, Iowa.

Dr. A. V. Barbee is now engaged in practice at Siloam Springs, Arkansas. Dr. Barbee is a graduate of the St. Joseph Veterinary College, 1915. He served in the Veterinary Corps during the late war.

Dr. I. C. Mattingly, formerly of St. Louis, Missouri, is now practicing at Concordia, Kansas.

Dr. W. H. Ashley has returned to Colfax, Iowa, after an absence of several years and has re-established himself in practice there.

Dr. H. N. Holmes is now located in Lanesville, Illinois, having moved there recently from Buffalo, Illinois.

Dr. Russell Meyer, a graduate of the 1922 class of the Iowa State College, is located at Granville, Iowa.

Dr. J. H. Crawford has moved from Cornell to Arthur, Illinois.

Dr. Lyman R. Vawter is the new president of the Nevada State Veterinary Association, having been elected to that office at the last association meeting. Dr. Vawter is a graduate of the Kansas City Agricultural College, class of 1918.

Dr. F. K. Voss has built an attractive and modern hospital at Antigo, Wisconsin.

(Continued from Page 383)

when his chickens are sick to administer Epsom salts, it will overcome a lot of his trouble. We recommend a pound to one hundred hens, which is in the neighborhood of two-thirds of a teaspoonful to a hen. Some people administer it in the drinking water. I have more compassion for the hen, I put it in the mash and wet the mash and the hen is hungry and eats it up.

Copper Sulphate Purifies the Drinking Water

I never recommend the use of permanganate of potash. I believe it oxidizes when it comes in contact with animal matter so rapidly that in a few hours its value is gone. For that reason, we use copper sulphate. I do not prescribe copper sulphate as a medicine in any way, but to keep the water pure. It is very cheap. An ounce to ten gallons of water will supply a sufficient amount to keep the water absolutely pure. I am not afraid to use it in metal vessels, although I prefer to use it in crockery ware. The average farmer has it if he sprays his apple trees. He calls it blue stone.

Tuberculosis an Avian Scourge

Tuberculosis is rampant through this section of the country. I understand it is very virulent through your state. I have an idea the state of Wisconsin has done more on tuberculosis than any other state. If I were going to give a recommendation, I would say this: tuberculosis is the easiest thing to diagnose. We find extreme emaciation of the bird followed by lameness. Many symptoms show particularly in the liver and spleen. There is no cure but the farmer can clean up and clean out and start over. He can get new stock. He might go so far as to take eggs from that flock and go over on another piece of land and start raising chickens and go back on the land where the tuberculosis was. If he cleans up I think he can get away from the disease and that is the recommendation I can give anybody for tuberculosis in the flock.

Cholera Rampant

Cholera is, of course, very rampant. Cholera is often accompanied by pneumonia which complicates matters a great deal in diagnosing the situation without taking the bird into the laboratory. I don't know how many of you men can look at a chicken and diagnose its disease. As a rule cholera infection will show the greenish yellow feces. You will also find feces in bunches and this condition goes rather rapidly through a flock which differentiates it from typhoid. You will find the liver gener-

ally shows red spots and also the heart shows bright red spots. In poultry typhoid which may give you the same similar symptoms as cholera you find the bird becomes pale and the disease is chronic. A bird dies here and there and in post mortems you will find large livers and grey specks.

Diarrhea Scares Farmers

Diarrhea scares every farmer in the spring. In the state of Indiana the farmer raises about fifty-five chickens out of every one hundred he hatches, which is one million two hundred thousand dollars' loss. Now white diarrhea is something you can pretty well determine by the test on the adult females and also on the male, thereby eliminating the carriers of the disease with a very high degree of accuracy. It is generally too late to be done when the disease breaks out and the farmer comes to you with the problem, or the poultry man comes to you. Most diarrheas in little chicks are not caused by bacillary white diarrhea at all, it is generally caused by over-heating, chilling, dampness or too early feeding or something of that kind. I think the average chicken man and particularly the woman on the farm, over-feeds the chicks and over-feeding is more dangerous than under-feeding. It has been mentioned regarding dogs and I think it applies to you and me and all.

If we can determine by asking questions as to whether or not these chicks die because of the fact that they are improperly managed, then we can look for bacillary diarrhea. In bacillary diarrhea you will find some very definite and distinct post-mortem lesions. You will find the liver large, streaked with bright red; the bright red streaks come from the enlarged liver coming in contact with the ribs of the chicken. Where the ribs come in contact with the liver they generally make little, light streaks in the liver. You will also find congested red spots, pustules in the lungs, on the heart and in the intestines. I think you will have to watch out you don't confuse that with tuberculosis.

Now if you want to study poultry diseases, as good a book as I know is Ward & Gallagher's digest of domestic birds. It is a particular book written for men who understand veterinary medicine. The average layman can't use it because it is too technical. I am sorry there isn't a copy of it here. Ward & Gallagher's is the best book published. I think for the average layman you will find Dr.

(Now turn to page 419.)

ASSOCIATION MEETINGS

ARKANSAS VETERINARY ASSOCIATION

The semi-annual meeting of the Arkansas Veterinary Association was held at the Marion Hotel Friday, June 9. Those in attendance state that it was the most interesting and harmonious meeting that has been held in several years.

The address of welcome was given by Honorable Ben D. Brickhouse, Mayor of the City of Little Rock, who stated in part that the veterinary profession has a service to perform and that he had always favored the employment of veterinarians in municipal health work; the veterinarians were diplomatically adversely criticized for their indifference, citing his own experience in that during his three years of office not a single veterinarian or veterinary association had suggested in any manner the importance or desirability of having a veterinarian engaged in conducting certain lines of municipal health work. He urged the importance of organization, stressed the importance of publicity through the various daily papers and agricultural publications by members of the profession themselves, furnishing articles or material. Mayor Brickhouse made many other timely and constructive suggestions, which space prevents mentioning.

Dr. W. A. McDonald, inspector in charge tick eradication force, in a few well chosen remarks responded to the address of welcome.

Dr. D. F. Lucky, livestock commissioner, National Stock Yards, Illinois, delivered a stereopticon lecture on tuberculosis, which was very helpful and highly appreciated by all present.

Dr. W. F. Miller, Stuttgart, Arkansas, being unable to attend forwarded an excellent paper on "Municipal Testing Dairy Herds." He made a most emphatic statement that the control and eradication of tuberculosis is a social problem worthy of our most serious consideration. He adduced figures, showing that 3,000 human beings die annually from tuberculosis and that 25,000 people are totally or partially incapacitated by this disease in Arkansas; 10% of the patients in one sanitarium at Denver being from Arkansas.

Dr. Earl Kittrell, Augusta, Arkansas, presented in a very able manner a paper entitled "Practice in the Field." He urged all the various forces engaged in encouraging poultry and stock raising to co-operate in promoting

ASSOCIATION MEETINGS

a common interest.

Dr. H. J. Hayes, Helena, Arkansas, read a very highly interesting paper on rabies. He brought out some very fine points in differential diagnosis of this condition.

Dr. C. D. Stubbs, assistant state veterinarian, Little Rock, Arkansas, in a few well chosen remarks gave his experience of some years duration in the observance of the occurrence, dissemination and prevention of anthrax. This disease is highly feared in the infested districts and he suggested that it is almost as important to treat the stock owners, in order to allay their fear, as well as the animals.

Dr. H. W. Wilson, Helena, Arkansas, has found that since the Arkansas razor-back hog has been replaced by the pure-bred animals that swine practice is adding considerable revenue to his yearly income, in a paper discussing caesarian section of sows. The difficulty in administering anesthesia in these cases without intelligent assistance has been met by entrusting this to some cool-headed farmer, with a minimum risk.

Dr. N. J. Pearce, Monticello, Arkansas, requested information regarding losses of horses and mules, which appeared to be due to Buffalo gnats. It was disclosed that losses had been experienced from gnats this season in some eight or ten counties of Arkansas, being confined to the low-lands; losses probably being due to the injection of a toxin which deranged heart action, produced flatulence, which if not relieved results in ruptured stomach. No one reported losses of animals due to excessive inhalation of the gnats into the respiratory tract.

President Hubert Shull read some extracts of cures recommended in an English book published in 1678, among other ludicrous treatments recommended the following is an example for mad dog bite; "Take hob-goblin, periwincle and box leaves, each a handful; first mince them small, then stamp them very small in a stone mortar and with milk or beer administer it both at the change and full of the moon."

Dr. H. W. Wilson, Helena, Arkansas, was elected president; Dr. Earl Kittrell, Augusta, vice-president; Dr. Joe H. Bux, Little Rock, secretary-treasurer.

The next meeting is to be held at Little Rock between the 9th and 15th of October.—Joe H. Bux, Secretary-Treasurer.

ASSOCIATION MEETINGS

CENTRAL IOWA MEETING

The Central Iowa Veterinary Medical Association met at Fort Dodge, Iowa, on May 25, carrying out an interesting program on a variety of subjects of current interest.

The meeting was attended and addressed by A. T. Kinsley, president of the A. V. M. A., Dean C. H. Stange, of the veterinary division of the Iowa State College of Agriculture, and L. A. Merillat, Managing Editor of VETERINARY MEDICINE.

J. H. Lynch, of Fonda, was elected president; and Howard L. Shore, secretary-treasurer.

In the evening the members were the guests of the Fort Dodge Serum Company, and were entertained by a sumptuous banquet, dance, and musicale, that was enjoyed by more than 150 members and wives.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION

The California association just closed a very successful meeting. There were nearly 100 in attendance.

The next annual meeting will be held in San Francisco, June 23. The following officers were elected: John L. Tyler, president, Huntington Park; Oscar Kron, vice-president, San Francisco; J. P. Bushong, secretary, Los Angeles; Jas. A. Boyd, treasurer, Milpitas.

The special feature on the opening day of the examination of normal and abnormal female genital organs of cattle, was an innovation out here, which was made possible by the co-operation of the B. A. I. inspector, who supplied the material exhibited.

The state board of examiners also held a session at this time, eleven candidates presenting themselves for examination, seven of whom passed.—J. L. Tyler, President.

The Idaho Veterinary Medical Examining Board met at the State Capitol Building, Boise, Idaho, May 9. Thirteen candidates were examined for license to practice. The board consists of Drs. R. B. Hurd, Payette, president; H. E. MacMillan, Filer, secretary; and E. J. Powell, Lewiston, treasurer.

The fourteenth annual meeting of the Tennessee Veterinary Medical Association will be held in Memphis, Tennessee, July 26-27, 1922. C. E. Kord, Sec'y.

ASSOCIATION MEETINGS

THE PICNIC OF THE CENTRAL ILLINOIS VETERINARY MEDICAL ASSOCIATION

The annual picnic of this association will be held this year at Miller Park, Bloomington, Illinois, July 26. In view of the large crowd expected, it has been decided by the committee of arrangements to make this a basket picnic and the command comes out from headquarters not to forget the basket. It is predicted that this will be one of the largest gatherings of veterinarians ever held by this organization, which during former years, has made this occasion a memorable one.

The Mississippi Valley Veterinary Medical Association, one of the oldest local associations in the country, whose influence extends over the river counties of Northern and Central Illinois, where the hog vaccination situation has been acute for a number of years, is doing good work for its members, by bringing about a more harmonious relation with swine breeders. Its officers are: J. H. Kritchel, president; J. A. Campbell, vice president; E. C. Eckley, secretary-treasurer. The secretary's address is Monmouth, Illinois.

SOUTHEASTERN STATES VETERINARY MEDICAL ASSOCIATION

The sixth annual meeting of the Southeastern States Veterinary Medical Association, which was held at Nashville, Tennessee, in March, was one of the best conventions that the association has ever enjoyed. The attendance was unusually large considering the present financial situation of the country.

Program

Dr. A. T. Kinsley, president of the American Veterinary Association, addressed the convention on the "Veterinarian's Future." His views were very optimistic and were substantiated by convincing facts about the profession.

A most interesting and instructive paper was presented by Dr. Louis A. Klein, University of Pennsylvania, on "Mastitis."

Other features of the program were: "Scours in Young Cattle," by Dr. M. Jacobs; "Experience with Recent Outbreak of Anthrax," by Dr. C. C. Brown; "Tuberculin Accredited Herd Campaign in Virginia," by Dr. J. G. Ferneyhough, and "Practitioner's Relation to Sanitary Control Work," by Dr. G. R. White.

A unique feature of the program was a moving picture illustration and discussion of "In-

testinal Parasites in Swine," presented by Dr. E. I. Smith, through the courtesy of Dr. B. H. Ramson, Chief of Zoological Division, B. A. I.

A Clinic was held at the hospital of Dr. W. M. Bell, an interesting feature was a discussion and treatment of sterility by Dr. J. F. DeVine, Goshen, New York.

The convention was presided over by President Dr. M. R. Blackstock. Mr. J. O. Tankard welcomed the association on behalf of the city of Nashville, to which Dr. W. A. Barnette responded.

The following officers were elected and installed for the coming year: President, Dr. W. M. Bell, Nashville, Tenn.; 1st Vice Pres., Dr. W. K. Lewis, Columbia, S. C.; 2nd Vice Pres., Dr. M. Jacobs, Knoxville, Tenn.; 3rd Vice Pres., Dr. A. L. Hirlemen, Atlanta, Ga.; Sec.-Treas., Dr. John I. Handley, Atlanta, Ga.

Dr. J. G. Ferneyhough acted as toast-master at the banquet held at the Hermitage Hotel.

The growth of the association is shown by the election of thirty-two new members and by the interest displayed at this meeting.

John I. Handley, Sec.-Treas.

At a meeting of the Orange Belt Veterinary Medical Association, held in Los Angeles last month, the following officers were elected:

Dr. A. W. Hubbell, San Bernardino, president; Dr. T. N. Davidson, Ontario, vice-president; Dr. Hal C. Simpson, Pomona, secretary-treasurer.

HELPFUL RESOLUTIONS

Adopted by McLean County (Illinois) Better Farming Association, Relative to Farmer Vaccination of Hogs.

I. In view of all the information obtainable regarding the vaccination of swine from the department of agriculture, bureau of animal industry, Washington, D. C., the university of Illinois, the state veterinarian's office of Illinois and other states, the live stock department of the Illinois agricultural association, serum manufacturers and all veterinarians in general, and since the McLean County farm bureau stands for a constructive agricultural policy it seems that it would be very unwise to advocate farmer vaccination.

II. The above **shall not** be so construed as to mean that the farm bureau wishes to prevent anyone who has confidence enough in his own ability and wishes to take the responsibility of vaccinating his own hogs. The

Farm Bureau should render the customary service of locating a source of serum supply and investigate prices and quality but assume no financial or other guarantee.

III. It should be kept uppermost in the minds of both the live stock men and the veterinarians that one cannot carry on without the good will and co-operation of the other. It should be the policy of the live stock members of the farm bureau to encourage the conscientious, capable veterinarian who is trying to render the stockmen and the community a service at a price which will make his practice remunerative to himself and at the same time be reasonable to the farmer.

We are informed that today in all the veterinary schools of the United States there is a total of about 170 Freshmen. The outlook for graduate veterinarians in the next few years is indeed very poor. It seems that these men, after surveying the field, come to the conclusion that there is not sufficient inducement in the veterinary business for them to go through the preparation that is required to secure the veterinary training.

On the other hand when a veterinarian is incompetent or seems to have adopted the policy of rendering as little service as possible and charging the highest fees the traffic will bear it is time for the community to remonstrate and if no suitable understanding can be arrived at encourage another veterinarian to come in.

IV. Inasmuch as there has been co-operation between the McLean Co. veterinarians and the McLean county farm bureau in the past, we have every reason to believe that co-operation in the future may be expected. To this end we recommend that a committee be appointed to meet with a similar committee from the McLean County Veterinary Association to arrive at some general policies regarding the vaccinating question which will be fair and satisfactory to both. This committee to report to the board of directors for their approval at their next meeting.

V. Since a large per cent of the vaccinating charge must go for overhead such as mileage to two widely separated places or two trips to the same locality, loss of time due to handling of hogs, outstanding accounts which must be carried and a certain per cent which are never paid, some veterinarians have expressed themselves that if these charges could be eliminated they would give the farmer the benefit.

To this end in some places there has been proposed so-called vaccinating rings. If several farmers in a given locality will arrange to have their vaccinating done at the same time, have their hogs ready and furnish plenty of help and pay cash, a considerable saving can be had.

If any farm bureau members should decide to form such a ring the farmer advisor should give all assistance possible in helping them to perfect the necessary arrangements.

INDIANA VETERINARY COLLEGE GRADUATES TWENTY-ONE STUDENTS

The annual commencement exercises of the Indiana Veterinary College were held Friday, May 19, 1922, when a list of 21 senior students, who had successfully passed the final examinations, were given the degree of the institution. The graduates are as follows: Carlos C. Byler, Henry O. Chapman, Murray J. Dills, Hall A. Dockstader, Dolie Hancock, Guy P. Hatchett, Ralph B. Hipenbecker, Walter F. Holmgren, Troy S. Hopkins, Joseph G. Johnson, Emmett E. Keigan, Norton H. Larson, Fred W. Milke, Ralph G. Routon, Francis D. Sexton, William P. Tague, Thomas W. Todhunter, Jasper B. Vance, Jasper C. Vance, Lee A. Wilcox, and Ary S. Willard.

Dean Craig reports favorably upon the quality of the graduates and holds out promising prospects for their success, together with an optimistic attitude toward the future good work of the college.

COMMENCEMENT EXERCISES AT THE ST. JOSEPH VETERINARY COLLEGE

The annual commencement of the St. Joseph Veterinary College was held in the college auditorium Wednesday, May 17, before a large audience. Among the guests were President A. T. Kinsley of the American Veterinary Medical Association, Dr. John S. Koen, of Bloomington, Illinois, and Dr. G. I. Gibson, veterinarian of the St. Joseph Live Stock Commission. The degrees of the college were conferred upon the following students, by President Dr. F. M. Cahill:

Sherman Aldridge, Irwin H. Baird, John A. Carlsen, William H. Chapman, Louis N. Davidson, Melvin L. Dietrich, Emanuel S. Freitas, Rece C. Gregory, Herman C. Groeteke, William C. Logan, Harold McDonald, Abner H. Stafford, Jonas Wm. Trowbridge, David C. Wilke, Arthur H. Williams, Roy Emil Willie, James T. P. Wright.

(Continued from page 411.)

Count's book, "Diseases of Poultry" would suit, but for you and for me I think Ward & Gallagher's would be the best.

Now I hope that the veterinarian will not miss his chances to help out the poultryman. In this section of the country we are finding the development of commercial poultry farms very rapid. In our state we have a poultry farm of thirty-two acres and the man who owns that farm made a barrel of money last year and the year before. He wrote me the other day that chicken-pox broke out in his flock, and he had in one flock one thousand chickens in which chicken pox broke out. He said, "What will I do? Give me advice, I don't care what it costs. Tell me what to do." When a chicken man gets that way, don't worry about his ability to pay you. Don't worry, the fact that he needs help and will appreciate help guarantees payment.

Must Know More than the Dog

I heard a story many years ago that might be advice to us when we help the other fellow. There was a boy had a cur dog on the street corner. The dog was sitting on his hind legs doing tricks and stunts. A rather well-to-do man came along with a fine bull dog. The man was all dolled up and he watched the boy with his cur pup and finally he said, "Sonny, why is it your dog can do so many tricks? Here is my bull dog with pedigree as long as your arm and he can't do those tricks. Here is your cur dog as smart as can be." The kid said, "Well, mister, in the first place, you have got to know more than the dog."

I think before we advise the farmers we have got to know more than the farmer. You will find coming to you, particularly those who have practice in rural districts, a demand for information as to how to handle poultry disease problems. That is coming for the very reasons I gave you awhile ago. You will find Dr. Graham at the Illinois University taking an interest in poultry. He is every day getting in a better position to help you men out.

The time is coming when there will be a splendid opportunity for veterinary practice in poultry husbandry.*

*(Address delivered before the Illinois State Veterinary Medical Association, December, 1922.)

Master John Robert Thomson, weighing eight pounds, arrived at the home of Dr. and Mrs. H. B. Thomson, of Danbury, Iowa, on May 20, 1922.

Dr. J. Rowland Snyder and Miss Lola Evelyn, daughter of Mr. and Mrs. Hugh Armstrong, of Gordon, Nebraska, were united in marriage on Wednesday, May 17, 1922.

Dr. Guy Parker Hatchett of Winchester, Tennessee, and Miss Dolores Healy of Indianapolis, Indiana, were married May 24th, at Indianapolis. Dr. Hatchett is a 1922 graduate of the Indiana Veterinary College and a member of the Theta Chapter of the Alpha Psi Fraternity. They will make their home in Chattanooga, where Dr. Hatchett will practice.

Dr. W. R. Scott has quit practice at Arkansas City, Kansas, to enter the government service. The esteem in which Doctor Scott was held by many residents and friends in Arkansas City was attested to by a public farewell, given for him a few evenings prior to his departure.

Dr. W. A. Litton has moved from Lake Charles, Louisiana, to Port Arthur, Texas.

Dr. A. C. Burns, Cleburne, Texas, narrowly escaped with his life when caught in a flood recently. Dr. Burns lost his automobile in the accident.

Dr. H. A. Hoffman is now practicing in Xenia, Ohio, having moved there from Plain City.

Dr. George Gordon, well known to many Illinois veterinarians, has sold his practice in Gibson City, Illinois, to Doctors McBride and Walters. Dr. Gordon has moved to Bloomington where he is now engaged in the tire business.

Quince Harris, father of Dr. Harris of Plainville, Illinois, dropped dead while accompanying his son on a professional call, May 10.

Journals are like men. They are imperfect. Some have chills; some fevers; some wabble, and some have cooties.—W. L. Williams.

A new veterinary hospital was built recently by Dr. E. B. Ledyard, of Ohio City, Ohio.

Dr. J. S. Koen delivered the baccalaureate address at the commencement exercises of the St. Joseph Veterinary College, May 16, 1922.

Dr. W. H. Buchleiter recently moved from Braddyville, Ia., to Coin, Ia., and Dr. R. T. Irwin moved from Coin, Ia., to Hamburg, Ia.

Dr. F. H. Hume recently located at Hume, Mo. The doctor was formerly in practice at Leon, Ia.

Dr. L. T. Kilfoy is now in general practice at Albia, Ia., having moved there recently from Melrose, Ia.

Dr. and Mrs. Richard H. Wharton of Lost Springs, Kansas, announce the arrival of a son, weight 9 lbs.

Dr. S. B. Aldrige of Norborne, Mo., recently had the misfortune of having his car burned while making a call.

Dr. C. D. Dailey of St. Elmo, Illinois, has accepted a position with the Liberty Laboratories as sales representative and laboratory assistant and has moved to Ralston, Nebraska.

Dr. D. L. Schantol has moved from Arispe to Osceola, Iowa.

WATSON! PAGE DR. KAUPP

Did you know that spring chicken and our good old roast turkey belong to "a group of chiefly terrestrial, polygamous praecocial ptilopaedic birds, with schizognathous palate, schizorhinal nasal bones, sessile basipterygoid facets, a hypoclidium, a muscular gizzard, no intrinsic syringeal muscles—the bill corneaous, with the culmen rising on the forehead"? —G. O. K.

(Chicago Daily News, May 5, 1922.)

"ATABOY"

Say! Look. Take Notice. I was brought out as a candidate for sheriff by my friends against a "hard nut" and was nominated by a large majority.

My opponent received 874 votes and I got 1,134, a plurality of 460. November 7 is general election. My friends say they will make it 1,500 votes. I would have done better if it had not rained. Dr. W. H. May.

Nashville, Ill.

Dr. J. S. Sanders, Sutherland, Iowa, has re-entered veterinary practice after engaging in farming for several years.

The salary of Dr. William F. Doyle, veterinarian for the New York Fire Department, was increased from $4,700 to $5,500 a year recently.

Dr. Elmer A. Assmann, a member of the Ohio State University faculty, Columbus, Ohio, is one of the owners of the largest boarding and breeding dog kennels in the central states. A fifty-seven acre tract was recently purchased by the owners of the enterprise.

Dr. Jay Cottingham, a recent graduate of the St. Joseph Veterinary College, is practicing at Motley, Minnesota.

Dr. E. G. Kuykendall, for many years a practitioner and resident of Carmi, Illinois, has sold his practice to Dr. W. J. McIntosh.

Dr. George Goubeaud is veterinary health officer of the city of Waxahachie, Texas.

Dr. Owen H. Cripe, graduate of the Indiana Veterinary College, 1913, and a member of the veterinary corps during the period of the war, is located for practice at Attica, Ind. He was formerly located at Royal Center, Ind.

Dr. W. E. Carey, formerly of Wells, Minnesota, has located for practice at Good Thunder, Minnesota. Dr. Carey is a graduate of the Chicago Veterinary College and grew up in the live stock business with his father Wm. Carey, formerly owner of the Shady Creek Stock Farm at Mapleton, Minnesota.

Dr. J. S. Koen, after making an auto trip through Illinois, Iowa and Missouri, reports that while some veterinarians are still complaining of quiet times others are very optimistic. Quite a little hog cholera is reported and farmers have been immunizing their herds earlier than during former years.

The blood of horses affected with infectious anemia (swamp fever) retains its virulence for at least one year after the primary infection. The infection can be transmitted by subcutaneous or intravenous injections hence care should be exercised in the use of a hypodermic syringe to avoid the transmission of the virus.

AUGUST
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD
Chicago

A Magazine for the Veterinary Profession

$4.00 the year

VOL. XVII No. 8

Your wish of YESTERDAY has come true TODAY

YESTERDAY—

You wished for a sure-enough **dependable** Anti-Hog Cholera Serum, with all the good left in and the bad taken out—and sold at a reasonable price.

You wished for a Serum that you would be **proud** to use in the presence of your clients.

You wished that a really practical and satisfactory **CLEAR** Serum was available.

You wished for a **refined** Serum embodying all the good qualities of "Bloody" Serum, but with none of the disadvantages of that product.

You wished for a CLEAR Serum that had **actually made good** right out in the field.

TODAY—

All your wishes of yesterday—and more—are embodied in **FORT DODGE IMPROVED CLEAR SERUM.**

A success from the start, the demand for this **superior** Serum has increased so rapidly that even our resources are taxed to take care of it.

FORT DODGE CLEAR Serum is **THE** Clear Serum that has been used right out in the field for several years—upon thousands and thousands of swine—and has never failed to make good.

It is **THE** Clear Serum, in the production of which, practically **none** of the antibodies are lost or discarded.

It is THE Clear Serum which, **in its finished state,** has to pass all B. A. I. tests—and in addition is subjected to rigid microscopic examinations and animal inoculation tests.

It is **THE** Clear Serum that has made such a success that other Serum Companies have been **compelled** to come out with Clear Serums of various kinds.

MAKE NO MISTAKE—Use Clear Serum this year—But

BE SURE IT'S FORT DODGE

Fort Dodge Serum Co., Fort Dodge, Iowa

A Public Health Measure

vaccination of all dogs in localities where the disease is prevalent might readily be employed. The method should be given a trial by the public health authorities in some locality where rabies is prevalent and where the results can be properly controlled.

*Eichhorn, A., and Lyon, B. M.: J. Am. Vet. A. 61: 38, 1922.

UNDOUBTEDLY the work of protecting humanity against this dread disease will be given increasing attention by medical health officials, in view of the means now at hand for preventing the disease in animals.

The work of immunizing the animals being essentially a veterinary problem, the maximum results will only be obtained by the cooperation of the veterinary profession with the medical profession.

To this end every veterinarian should inform himself fully on this subject, that he may be in a position to render the fullest measure of professional advice and assistance.

We offer veterinarians all the information at hand on this subject. Inquiries relative thereto will be given prompt attention.

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511 FIFTH AVENUE
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Veterinary Medicine

Vol. XVII AUGUST, 1922 Number 8

THE MOUNTED SQUAD OF THE CHICAGO POLICE DEPARTMENT

The Chicago police department has maintained a mounted squad for many years that has been the pride of this cosmopolitan city. Scored in every count by which mounted organizations are judged it is said to stand without a peer in this or any other country. A contest for supremacy with the mounted squad of New York City will be staged in the near future. Courtesy of Dr. Frank T. McMahon.

The Farm Bureau Movement and the Veterinary Profession

THE veterinary profession has never questioned the wisdom of solid organization of the agricultural interests on a nation-wide scale. On the contrary such movements were thought of as helpful, on the grounds that whatever would help agriculture would in turn help us, and in the belief that we can never be any more prosperous than the interests we serve.

We were led to believe that the farm bureau through its national, state and county agents would do wonders for agriculture. We thought they were going to show how two bushels can be grown where only one grew before; how soil could be made to respond to the touch of scientific knowledge the farmer did not possess; how plant and soil scourges could be subdued with profit; how farm life could be made more alluring; and how the bountiful harvests coming out of these helpful instructions could be marketed to better advantage to both the producer and the consumer, both of whom are assessed equally to meet the enormous expense entailed.

Not a Peace Program

It is, however, becoming more and more apparent that we have been deluded. The dream has not come true. On the contrary, instead of bringing the peace and contentment it was intended to bring, the movement as exploited by some ambitious promoters, has brought only strife, discontent and suspicion. It has brought strife between the farmer and those in town who serve him: the merchant, the druggist, the veterinarian, because the promoters have shown but little fairness in handling the welfare of all concerned.

A Lure Pure and Simple

The trouble seems to have come from the difficulties encountered in recruiting the membership. Recruiting was lagging. The farmer had to be shown the practicability of the scheme into which he was being lured. Alluring phantoms had not brought results. The farmer must be given quick returns as he was turning a deaf ear to the versatile agents employed to make the "drives" for new members. The farmer must be given something right off for his annual assessment of ten dollars and the added taxes he must pay to support the project. But how was this to be done? Simple

enough. Transfer the farmers' attention from soil improvement and co-operative marketing to diseases of animals. Hog cholera! Happy thought. It was a simple matter to get farmers to join the movement and pay ten dollars a year if they could be made to believe that they have been paying too much for having their hogs vaccinated. But to do this it was first necessary to show that veterinarians are robbers and have been taking undue advantage of the situation by overcharging. No, not all of them were robbers, it was admitted, but enough evidence of extortion was gathered to pull the wool over the eyes of legislatures and make the farmers believe that in the matter of hog vaccination alone membership in the farm bureau is worth while.

Just a Catchy Argument

It was started as a catchy argument to get members, and not, let us emphasize, to save them money. We say this advisedly because we know intelligent men would not try to save the hog industry from losses by turning the biggest scourge of that industry over to the hands of the novice, without some ulterior motive. In this particular case it is unfortunate that the motive is so purely selfish and one which in the end will hurt both ways. It will hurt the farm bureau and it will paralyze veterinary practice, two interests which would work hand in hand for mutual benefit if wisdom and fair play could be entertained as the best policy to pursue.

Farmers Themselves Not Complaining

Inquiry among farmers; a study of the actual relations which exist between the veterinarian and his clients all over the Corn Belt; discussions before veterinary associations; untrue and misleading advertisements by farm bureaus in all too many instances; plus a wealth of circumstantial evidence, show clearly that there is no justification for the restrictive movements against veterinary practice and that the trouble was started and is being kindled in the offices of the farm bureau and not by the farmers themselves.

Congress Informed

Congress is already flooded with protests against the activities of the farm advisers according to statements coming right out of the office of the secretary of agriculture. Among the complaints appearing from various sources are: 1. Violations of the franking privilege; 2. Political activities; 3. Acting as agents for the purchase of supplies for farmer's organizations; 4. Acting as agents for cooperative buying to the detriment of the local business interests; 5. Boosting certain breeds of live stock; 6. Boosting the output of certain breeders; 7. Usurping the prerogatives of the veterinary profession; 8. In short, in many instances meddling in about everything except the work for which their office was created.

The complaints coming into the hands of congress ask for nothing less than complete abolition of the county agent and many of them demand a repeal of the Smith-Lever act. The complaints are real, they are earnest, they come right out of the heart and the soul of men who feel the sting of co-operative buying by the farm adviser and foresee in the movement a demoralization of the business interests they have spent their lives in building up and which the farmer needs much more than he probably comprehends.

Action of Some Advisers Ill-advised

Many advisers went at their jobs with a vim that was beautifully egotistical; with a determination to fix up all the ills of rural life forthwith. They were not advisers, they strove to become general managers and in so doing are running amuck of interests that find it necessary to retaliate in self protection. To assume that these interests will continue very long to look on the work of demoralization without a show of opposition would display a mighty poor conception of the American mentality.

Farmer Needs the Middleman

The author believes from personal experience that co-operative buying, whether of hog-serum or of coal, is a snare and a false economy that in the end will die from lack of merit. The merchant who loses trade through the activities of the farm adviser must make up the loss by charging more for what he does sell and in this connection the veterinarian is in the same boat. If the warehouseman loses his fertilizer trade he must make up the loss on middlings; if the veterinarian loses hog-vaccination he will have to take the lost toll from the case of colic. In the end the farmer is the loser and during the interim the existing order of things is demoralized to no good purpose. "Eliminate the middle man" sounds fine but it just won't come to pass, because the man who buys the full quota of merchandise a community needs, stores it ready to deliver it on call and extends credit accommodations is not a thing the farm adviser can harass with impunity nor to the benefit of anyone.

UNIVERSAL IMMUNIZATION OF CORN BELT HOGS THE GOAL

Immunzation of hogs against cholera is but an infant industry. It is an industry that can be increased ten fold. Its prospects are immense, real and in no sense imaginary, because it has merit and because any enterprise that actually conserves wealth need never make any apology for its existence. But it must conserve wealth in fact and to do so it must be done at a price that will pay.

About the greatest misfortune that could befall the hog raiser, the serum producer and the veterinarian would be the high cost of immunization that prevailed during the years that have passed—the high cost that prevented 'til now and will prevent in the future, a more general use of hog cholera serum by the hog industry. More hogs should be immunized than heretofore if the hog industry is to be made a stable business instead of a game of chance; that is, if it is to profit as fully as possible from one of the greatest scientific achievements of the day.

Although the amount of serum used seems enormous it is nevertheless an outstanding fact that only a very small proportion of the hog herds of the country are protected against losses from cholera and that the disease goes merrily on exacting a big annual toll from the nation's resources.

It is estimated that more than $15,000,000 was thus sacrificed during 1921 and that the total amount of serum produced with every plant now existing running at full capacity would hardly be sufficient to immunize much more than 10 per cent of the hogs in the Corn Belt alone; all of which indicates that hog raisers continue to resort to immunization merely as a control of existing outbreaks and not as an assurance against impending calamity. In other words, the hog industry resorts to immunization as a therapeutic expedient rather than as an insurance, a situation that should be reversed and which will be reversed just as soon as the merits of universal immunization are established in the minds of the interested and the cost is made and kept commensurate with the actual risk involved.

It is up to the veterinarian and the serum producers to bring this change about, to popularize immunization by showing its merits as an economic proposition and then live up religiously to every last one of the commonsense fundamental principles upon which endduring business depends. The cost must be right, the serum and virus must be beyond suspicion, and the administration must be above reproach.

There is mighty little hope of approaching any nearer to the goal of universal immunization of the Corn Belt hogs if the cost of the insurance is too high; if the production and handling becomes less reliable; or if its use falls into the hands of the untrained. There is a hazard to the industry in each of these and each one must be met before it can be expected to bring the 90 per cent of unimmunized hogs into its realm.

Insofar as the practicing veterinarian is concerned, difficult as it has proved, the profit that can be made on the sale of serum must be shunted aside as a bagatelle and must be made to become a mere incident to the service he can render in diagnosis, in hygienic suggestion, in skillful administration and in attention to untoward sequels. It is very unfortunate that the ratio between the cost of the prescription and the cost of the service in the case of hog immunization has lured the veterinarian away off from his chosen ideals, made a mere salesman of him in spite of himself, capitalized his pharmacy and discounted his professional attainments both in his own eyes and in those of his clients.

But, where there is some one lured there is also a lurer. Let us then not attach all of the blame to the veterinarian. The competition to get hog serum from the plant into the hog has done its share in bringing immunization into the public limelight, into the hands of the unscrupulous, into disrepute. The veterinarian is a human being, he wants to make all the traffic will bear like all other human beings around him, and if he has in isolated instances been indiscreet, there has always been some one at his elbow urging him on. It is therefore obvious that in the interest of healthy progress toward universal immunization, the system of serum distribution and administration needs to undergo some form of reformation by mutual agreement among all concerned—the producer, the jobber, the hog raiser, and the veterinarian.

It would be unfortunate in view of the enormous possibilities of the serum industry, if stunting, short-sighted policies are allowed to predominate over sane, constructive moments which actually build up and not destroy; and in all deliberations let us not forget that there is but one man who holds the whip, who

will have the last word, and that is the man who has the hogs to immunize.

IF HOG VACCINATION WERE A CASH TRANSACTION

We have studied the hog-cholera situation until our heads are dizzy. We have placed ourselves in the perspective of the veterinary practitioner; we have tried to look through the eyes of the serum producer; we have thought of the welfare of the swine owners; and we have not forgotten the relations of those engaged in sanitary police work as public officials; and we have even stepped into the shoes of the hog vaccinating farm adviser, all with the purpose of visualizing the future and if possible shape the destiny of this particular part of veterinary work.

We have tried to arrive at conclusions that would be fair and equitable for all concerned after mixing the pros, the cons, the charges, the counter-charges, the discord, the hatred, the commercial controversies, the wars and rumors of wars, into a single pot, hashing them all into as homogeneous a mass as such a heterogeneous combination can possibly make and find that there is probably a solution to all of our troubles that can be put into operation forthwith and that is to put all hog-vaccination on a cash basis.

Let us not be deluded into thinking that the old saying "Money is the root of all evil" is not as true in the matter of hog-vaccination as anywhere else.

When hog-vaccination becomes, by agreement or custom, as cash a transaction as the selling of wheat, the producer will be able to sell cheaper, the veterinarian can take a just toll for his time, knowledge and skill and the farm bureau will not find it necessary to maintain costly distributing stations to curb imaginary grievances. Discussion of this phase of the situation is invited.

REDUCING SHIPPING LOSSES

The Western Weighing and Inspection Bureau continues to spread information on the matter of preventing losses of live stock in shipping and yarding. June 17, Dr. W. J. Embree, chief veterinarian of the bureau addressed all the live stock handlers employed by the stock yards company, commission firms and packers of Chicago on the improper methods of handling live stock and illustrated his talk with stereopticon views. R. W. Carter of the Institute of American Meat Packers lectured on live stock losses and how to reduce them, using motion pictures to illustrate his recommendations.

The work of this bureau which was started a few years ago has resulted in the saving of a great deal of property once wasted by indifferent methods of handling. It has drawn attention to the unwisdom of careless practices in handling stock and of settling claims in the old way.

$50,000 ONLY POCKET MONEY NOW

There was a time when the importation of such horses as Negofol, Prince Palatine, Archaic and Brown Prince, whose total purchase price is reputed to have been in the neighborhood of $50,000, would have created a sensation, but they have been absorbed as though it were an ordinary transaction for an American fancier to pay upward of a quarter of a million for a thoroughbred horse.

The war was the means of this country gaining noteworthy recruits to our supply of blood stock. Exceptional specimens were parted with then with the greatest reluctance. An endeavor has been made within the last two years to regain some of these for English studs, but so far without success.

Recent importations of mares include Herencia by Roi Herode, Rose Pom Pom by Rock Sand and Orla by Dark Ronald, which came over for Messrs. August Belmont, Joseph E. Widener and Harry F. Sinclair, respectively. Their influence on the thoroughbred families of the United States must be for good.—N. Y. Times.

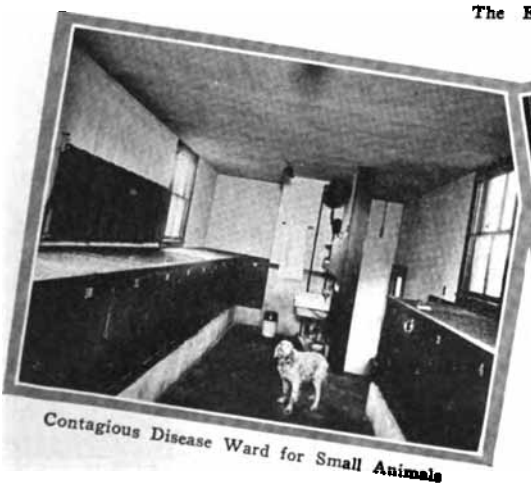
FARMERS MAY VACCINATE OWN HOGS

Under a recent decision handed down by the attorney-general of Illinois a farmer has a right to immunize his own hogs with serum and virus in that state. The opinion was made in a controversy which arose when the department of agriculture endeavored to enforce the rulings of the previous administration which instructed the state veterinarian to prohibit hog vaccination by any one except licensed veterinarians. The opinion goes on to state that there is nothing in the statutes to prevent an individual from vaccinating his own hogs but that no one but a licensed veterinarian can legally vaccinate those of another for a fee.

Drs. Calldemeier, Miller and Kearns and the Operating Room for Small Animals

Small Animal Ward

The Elevation



Contagious Disease Ward for Small Animals

Preparation Room

CALLDEMEIER AND MILLER'S VETERINARY ESTABLISHMENT
LOUISVILLE, KENTUCKY **(See Page 475)**

Editors' Personal Page

Everybody damns the doctors — until they need one.

Always say good things about your competitors, even if (as is often the case) you have to tell a lie.

Learn something today, something tomorrow, something the next day and so on, if you want your competitor to pack up and go on to the next town.

If your competitor is a low-down cuss as you say, so much the better for you; your picking is easy.

North Dakota is going Iowa one better. It is sending experts among the farmers to show them how to treat all of their animals, not only the hogs.

It seems that the permanency of the hog industry in the corn belt will depend in no small measure upon finding adjuncts which with corn will make an economical balance of ration.

With due apology to Goldberg the cartoonist a reader writes: "How would this go for a motion at the next meeting of the Missouri Valley Veterinary Association? I move that everything be stricken from the minutes but the date."

MAURICE HALL, TAKE NOTICE

A discouraged subscriber writes: "If a veterinarian did not have to stumble over so many long, undefinable words, that are creeping into scientific literature, he could conserve lots of energy that might be devoted to the cure of disease. As matters now stand, one life-time is too short."

Some men are great and then spoil everything by admitting it.

It has been said that "Methods and viewpoints rather than men, determine periods in the history of medicine."

The outstanding feature of the veterinary situation is the great interest that is being taken in the local associations, compared with a few years ago when only associations of wider jurisdiction drew crowds.

Hie yourself to the tall timbers, hook a few bass, a few trout or a "muskie" or two. It will cure that grouch; for a while.

With good positions awaiting each of the twenty graduates of the veterinary division of the Iowa State college, the state faces a shortage of trained men, according to Dean Stange in a recent interview.

New York State which contains about one-tenth of the total population of the nation, has enacted a law against the exploitation of filled milk, not through the activities of the dairy interests but through the work of health departments, public welfare associations, and women's clubs.

The profit on drugs dispensed must be high in order to make the pharmacy pay its proper proportion of the total expense of a veterinary practice. The usual profit taken from goods by the jobber and merchant will not cover the losses from waste, breakage, gifts, bad debts and overhead, of the veterinarian.

The modern veterinarian must not forget entirely that the pharmacopeia still contains some useful drugs, which can be combined into some useful prescriptions, and that the cost of production and distribution of the specialties he buys is prorated among the contents of the bottles on the shelves.

Important News and Announcements

VETERINARIAN CORPS NEWS

The following is the student personnel of the Army Veterinary School, Chicago, Illinois, for the fall term.

Captain Jean E. Underwood, V. C.; First Lieut. Walter K. Herbott, V. C.; First Lieut. Fred W. Shinn, V. C.; First Lieut. Mott Ramsey, V. C.; First Lieut. Stanley C. Smock, V. C.; First Lieut. Harry L. Watson, V. C.; Second Lieut. James D. Young, V. C.; Lieut. Sperry.

Staff Sgt. William F. Ellis, Sgt. Hugh Grove, Sgt. Milo L. Farley, Sgt. Earl F. Sherman, Cpl. Harold Hennigar, Pvt. 1st class George W. Carpenter, Pvt. 1st class James B. Cole, Pvt. 1st class Grover C. Cole, Pvt. 1st class John M. Bolling, Pvt. Nick Fernandez, Pvt. Louis Bradshaw, Pvt. Frank W. Demunbrum.

The assembly of veterinarians recently held at Simbirsk, Russia, passed resolutions thanking the American people for gifts of corn received through the American Relief Demonstration. President Tourgevitch, during his address, referred to the numerous benefits received by starving Russians from the American Relief, and expressed thanks for help that has been extended to Russia during the martyrdom of that nation.

The World's Dairy Congress will be held in this country during 1923 on dates and at a place to be announced later. It will be held under the auspices of the World's Dairy Congress Association working in co-operation with the United States department of agriculture, which has sent out official invitations to fifty foreign countries. Eminent authorities from all parts of the world are expected to take part in the proceeding.

Dr. S. Hadwen, Chief Veterinarian and Parasitologist of the U. S. Biologic Survey, who has been investigating the various problems of the Alaskan reindeer for the last eighteen months, is continuing his studies of this subject in Europe.

PROGRAM SMALL ANIMAL SECTION A. V. M. A. MEETING, ST. LOUIS, MO.

Papers

Gastro-enteritis in Small Animals.....
.....O. V. Brumley
X-Ray in Canine Practice.....G. P. Frost
Diseases of the Eye.....H. J. Milks
Gastro-intestinal Parasites of Dogs and Cats and Treatment for Removing These Parasites .....Maurice C. Hall
Sequels of Canine Distemper..W. E. Muldoon

Clinic

Abdominal Surgery.....W. G. Brock
Microscopic Demonstration of Diseases of Dogs.....R. P. Marsteller
Illustrated Talk and Practical Demonstration of Anesthesia for Small Animals....
.....J. G. Hardenberg

In addition to the above there will be on exhibition a number of interesting cases that will be presented and lectures given by some of the best men available.

THE MINNESOTA SHORT COURSE

The Short Course for veterinarians given by the University of Minnesota at the university farm July 12, 13 and 14 in conjunction with the mid-summer meeting of the state association is reported to be one of the most instructive courses of that kind ever held. Papers and addresses of exceptional interest will be published in future issues of VETERINARY MEDICINE.

LIVINGSTON (ILLINOIS) COUNTY FARMERS AND VETERINARIANS MAKE AGREEMENT

An understanding between farmers and veterinarians as to the charges for immunization of hogs has been reached during a recent conference. The agreement provides for an itemized bill for every job, charging actual cost of the serum plus 25 per cent for expenses in handling, one dollar and fifty cents mileage for the first mile and 50 cents for each additional mile, together with a per capita charge of 10 cents for hogs under 125 pounds and 15 cents for larger ones.

A grievance committee composed of three farmers and three veterinarians will arbitrate all disputes and complaints about overcharges.

Purely Practical

Informative Hints from Those Who Know and Do

A good way to prevent a cow from sucking herself is to run a broom handle between the front legs from the halter ring to a surcingle.

Never cast an animal without sufficient help. Slight-of-hand gymnastics in the matter of securing animals is unsafe for you, for your patient and for your client.

For rigid cervix in heifers, try tamponing: Pack the vagina tight with clean cloths, soaked in antiseptic solution, take a stitch in the vulva and repeat in 24 hours if necessary. Try the same for eversion of the vagina, and end all your troubles in this connection.—T. L. J.

A combination consisting of equal parts of linseed, turpentine and kerosene is claimed to successfully ward off Bot flies when this combination is sprayed or applied to the hair of the legs of the horses. This combination would probably have to be applied once daily or at least once every other day to be successful.

Swine Pneumonia

I have been prescribing guaialyptol, one pint to a half gallon of water and oil tar one pint to one-half gallon of kerosene. I mix these two together and give one pint to every one hundred head of shotes, twice a day until they improve; then once a day, and later only two or three times a week. This treatment has given me very good success.—Heckard.

How to Cast a Large Boar

If casting a boar proves a difficult matter with you try Dr. F. E. Barret's method. Loop a small rope around the snout, pass it around the body behind the elbows as in casting cows, and then pull backwards. The boar or any large hog will promptly lie down and the dangling end can be hitched over the uppermost hind leg to draw it forward out of the way for any operation about the inguinal region, or it can be hitched to the other legs according to the needs.

Ewes reach the age of puberty at six months but they should not be bred until they are from 16 to 18 months old.

It has been suggested that the laxative action of colostrum is due to physiologic "salt action."

Screw worm flies breed in the decomposing carcasses of animals; therefore, the first essential in controlling these pests is the proper disposal of carcasses immediately after death.

Although many experiments have been conducted, up to the present time, a successful mosquito attractant has not yet been found.

In doing intradermal testing the operator should use two needles; a long one that will perforate the rubber stopper if necessary and reach to the bottom of the vial and another, the regulation short one, to do the injecting.

Unthriftiness and underdevelopment in pigs are frequently associated with a deficiency in the feed of vitamine A. This condition is usually overcome by adding cod-liver oil in the feed.

PASTER FOR OLD ACCOUNTS

You need your money
And I need mine,
If we both get ours
It will sure be fine,
But if you get yours
And hold mine too
What in the world
Am I going to do?

—S. H. Howard.

TRY THIS FOR HEAVES

℞ Liquor potassium arsenite.... 1 oz.
Fluidextract of belladonna.... 2 ozs.
Fluidextract of stramonium
Sodium iodid aa..... 2 ozs.
Fluidextract grindelia rob....1½ ozs.
Water, to make..... 16 ozs.

M. et sig. Give a half ounce after each feed.

This mixture is said to have value in keeping bad cases of heaves in better condition to stand hard work in hot summer weather.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

Common Diseases of the Jack

By T. A. Sigler, Greencastle, Ind.

THE general structure of the domestic ass is very much like the horse, although there are some features quite different. The essential difference is lack of symmetry, quality and finish. Comparing it with the horse, it is narrow and lighter in the body and especially lacking in hind quarters, which are short and not well muscled. The legs usually show strong bone, but the joints are quite frequently large and course. The feet are smaller and narrower than the horse. There are no callosities on the hind legs of the jack. They are of a sluggish temperament, very docile, less subject to extreme in temperament than the horse. There is as much difference in the ordinary horse and jack as there would be in a drafter and thoroughbred. The progeny of the jack—the mule—is less subject to unsoundness than the horse. Condition is largely determined by the care and management given these animals.

Jack Sores

Careless treatment usually develops a very objectionable condition in form and appearance and in the development of jack-sores. This is the dread disease. Jack-sores are called breeding sores by jack men and also summer sores because they have a tendency to heal up in the winter, or partially so. These sores are known by veterinarians as bursattee. I believe this condition is produced by improper diet and lack of exercise, in jacks kept up in stall and not allowed the freedom of a paddock.

Exercise Important

The jack is not handled for style and action and is seldom groomed by the average keeper. The ultimate object is the perpetuation of the male for the production of mules. I know of no animal more abused than the jack. A man will pay a thousand dollars for a good stallion and the same price of a jack, then take good care of the stallion and let the jack take care of himself. He is usually placed in a box stall without exercise, and the result is his legs become stalky, circulation poor and skin dry and rough. Pruritus, that cause him to rub or bite the parts affected follows:

This condition is not seen among animals allowed to run out in the open pasture or lot. These sores do not affect the jennet. Diet and plenty of exercise will do much toward keeping them free from sores, although the sores are said to be produced by a small nematode, Filaria Irritans. Where or in what form it reaches maturity is still unknown. Rivolta believes that the larva is present in manure or damp earth. Megnin suggests that they are the young of the Oxyurus curvula, but there is not sufficient evidence to support of either theory. I believe flies play an important role in producing these sores. If it is due to a parasite, it would seem other animals subjected to precisely the same environment should also contract the infection.

Symptoms

They may appear in any part of the body, but are more often found on the limbs below the carpus and tarsus. They may be as small as a millet seed to two or three inches to one-half foot in diameter. The sores are more active in hot weather and tend to heal over in cold weather. The lesions remain as dry, bare, elevated spots, during the winter months. They are insensitive in the quiescent stage, but become very itchy in hot weather. They become encircled and calloused after a time, leaving a bad scar. This condition is worse in the South than the North. Jacks bred and raised in the North and shipped south seem to be more susceptible than these bred and raised in the South.

Treatment

The animal should be restrained from injuring the sores by gnawing, rubbing or scratching to relieve the intense itching. If long standing with a lot of granulations, it may be necessary to resort to surgery or to actual cautery. Applications containing carbolic acid, subnitrate of bismuth tend to re-

lieve the pruritis. Law claims a covering of iodoform on the scraped surface covered with a layer of collodion and repeated daily has brought a recovery in fifteen days. Chloroform or tincture of iodine followed by collodion has done equally as well. Equal parts of tincture of iodin, tannic acid, and glycerin. The treatment should be religiously applied until a cure is effected. Internally we give arsenic.

Deformed Feet

Another sequel is bad feet. The hoof of the jack is harder and denser than that of the horse, and if allowed to run in a small paddock or box stall, the feet, especially the front ones, grow out long. The feet lose elasticity, become dry and hard and denuded of its varnish-like covering. The hoof loses its round profile, grows long and throws the weight on the heels. This causes a chronic type of inflammation of the sensitive structures of the foot—chronic laminitis followed by tendonitis.

The pathological lines so common in the hoof of the horse from heel to heel do not develop, on the contrary the ridges run in the direction of the horn fibers, from coronet to toe.

Symptoms

When the condition arrives without previous symptoms, the first thing noticeable is an alteration in gait. The animal seems to go feelingly, especially when first moved out of the stables. Before the changes in the form of the hoof occur, it is hard to make a diagnosis. Many times, when the feet are at fault, the jack will lift the feet high when walking quite different from the gait and attitude of the horse in laminitis. The animal remains down most of the time. There occurs a rise of temperature and fast, quick and shallow breathing while the pulse rate may be doubled. The appetite declines. In animals that remain down continuously, there develops pressure necrosis of the skin which may become a general septic infection leading to rheumatic arthritis. Jacks are subject to articular rheumatism.

Entropion

This is a common condition in jacks and is due to the fact that they have such a large awning over their eyes. It is confined to the upper lids. When jacks are kept in dark stables, the eyes retract, the lids turn down and inward and the lashes brush the ball, it is necessary to operate. A transverse incision from canthus to canthus is made through the skin and subjacent tissue. The incision should follow the curve of the lid and be made near the border. The wound is then separated and narrow bundle of muscle fibres which run transversely with the upper border is dissected with scissors and forceps. Three sutures are applied, one in the middle and one at each side. Entropion is more frequent in jacks than in other animals.

ACUTE ANTEPARTUM PARALYSIS IN EWES

F. B. Hadley, D. V. M.

Anent the article entitled, "Unknown Disease Kills Many Ewes in Kentucky," in your May issue and suggestions offered by V. C. P. in your June issue, I would call attention to the similarity between this affection of ewes and the condition known as antepartum paralysis of ewes. The latter disease was discussed in several numbers of VETERINARY MEDICINE for the year 1918 to which reference may be made.

Acute antepartum paralysis is characterized by difficulty in locomotion followed by more or less complete paralysis and death. It occurs toward the end of the gestation period in closely confined ewes on dry feed.

Etiology. The cause appears to be the exclusive feeding of too coarse or dry feed, such as timothy hay, straw and chaff or any roughage with much woody fiber and little or no succulence. The commonest predisposing or indirect cause is insufficient exercise. Fat ewes when heavy in lamb naturally take only what exercise is absolutely necessary to secure their daily food. This is mighty little in yard or shed-fed animals. As a result, the ewes develop torpidity of liver, constipation, and toxemia, which are followed by symptoms of brain disturbances.

Symptoms. Early symptoms are sluggishness and a tendency to lie down most of the time, dullness, and lack of appetite. As the disease progresses the animal has difficulty in getting up, a staggering gait, and often holds the head toward one side. It also shows a desire to keep by itself.

Treatment. To be effective, treatment must be given in the early stages. A large dose of epsom salts at this time has been found as good as anything. A rectal injection of warm, soapy water will aid to empty this part of the digestive canal and to stimulate bowel movements. It should be understood, however, that once symptoms of brain or nerve involvement appear that medicines are of practically no avail.

Preventive treatment is largely a matter of care and management. During the last month of pregnancy ewes should be fed with judgment. If very fat, they had best receive little or no grain from then on, but where possible be provided instead with roots, silage, or other succulent feed. A laxative grain ration consists of bran, 44 parts; oats, 22 parts and oil meal, 12 parts. One-half pound of this mixture should be sufficient with clover or alfalfa hay. Daily exercise is essential. This stimulates the organs of the entire body and relieves the tendency to constipation. It may be enforced by feeding the sheep at some distance from the shelter sheds, or by driving them a reasonable distance daily.

From the above description, it is evident that antepartum paralysis of ewes is neither a contagious nor an infectious disease; moreover, it is not new. The symptoms in certain cases are somewhat like those of "grub in the head," with which it might be confused. However, this parasitic disease of sheep is easily diagnosed by opening the air sinuses in the head and searching for the larva of grub of the sheep bot-fly.

PODODERMATITIS OF HORSES

J. W. Harbaugh

I see but little in our journals relative to horses' feet. Why is this? Is it because we have no trouble with this ailment. Lameness! Yes, horses go lame from corns. What do you do when your client begs you to do something for a case of very sore corns? Pare a little away from under the shoe covering the corn and look wise?

A New Theory About Corns

What is a corn? A corn is a condition in a horse's foot where the circulation is impeded in that part of the foot where the wall makes its abrupt angle to turn over the base of the frog and comes forward towards the point. In the normal condition the frog is large enough to spread at each step, and thus expands the foot, and as it is raised from the ground again it contracts. With each alternate expansion and contraction the blood ebbs and flows by the aspirating action which nature has provided as a natural selection. In other words, when nature finds a process not needed it is discontinued. I mean that nature found that this aspiration would care for the circulation and as a result, long ago, in the evolution of the horse, discontinued the valves in the veins in the horse's foot below the ankle.

Now, in the same law we find the common cause of corns. That is, horses are shod in such a way that the frogs are raised from the ground so as to prevent frog pressure from serving this purpose and thus deprives nature of her well intended help. The result is atrophy of the frog and a contraction of the heels to such an extent that the wall crimps the sensitive foot and impedes the circulation intended for it. When the shoe is left on too long it makes matters still worse by bruising this already enfeebled part. At any rate, the sensitive structures there are broken down.

The Remedy for Corns

Now what I propose to do here is to describe methods to cure the corn, not to alleviate but to cure. One is simple. Shoeing with a broad bar shoe, resting about the thickness of a cardboard from the frog and keeping it up for several years will finally cure corns by re-establishing the proper function of the frog through constant frog pressure created.

It is my opinion that shoeing and nothing but shoeing causes corns. There are very few corns in unshod feet.

Here is a cure that will bring quick results. In the spring, take the old lame, sore, stilty, swinnied, chronic case of corns and pare the foot down to where the lines and fissures that characterize the true foot can be seen, taking as much as possible from the heels and digging out the bars. Then, have the smith make a plate shoe to fit the contour of the foot exactly, following around the wall snugly to the very heel and at the place where the wall makes its abrupt turn to go along the side of the frog. Have him turn up a clip towards the foot from each webb of the shoe so as to hook into the opening between the frog and the foot I spoke of above. Be sure you have this clip to hook onto the bar near the heel. That is, hook to it at its extreme apex. There is a short space here where there are no sensitive structures, that is where the wall doubles upon itself. If the clip is placed too far forward it will rest upon that part of the bar where there are sensitive parts and cause lameness.

About every five or six days call around to the smith and have him to take a couple of rasps and put something between them and pry the shoe apart about a quarter of an inch and apply a light blister to the coronary band over the seat of corn as often as the character of the blister used will permit and continue

Treatment

Give plenty of good bedding, avoid cold

drafts and administer internally salicylic acid, salicylate of soda and fluid extracts of colchicum. A good combination is:

Sodium Salicylate	6 oz.
Flu. ext. colchici	2 oz.
Aqua qs.	2 pints

Give two ounce doses every four hours. The local treatment is friction of infected joints with camphor linament. Keep feet well pared. the spreadings until the foot is of normal width and the corn will disappear until the same cause is allowed to operate again. When the foot has been spread properly, which will take only a few weeks, shoe with a bar shoe that has a bar as wide as the base of the frog. This will be about two inches wide. Have it fitted to within one sixteenth of an inch from the frog. This will allow the frog to touch it at every stride. If calks are needed weld them to the shoe, then after a few months shoe with a low heel so as to assure frog pressure and the corns will have disappeared.

This same procedure will also relieve side bone lameness caused by contraction of the wall which in turn is caused by atrophy of the frog.

Equine Infectious Abortion

Excerpt from Veterinary Bulletin, U. S. Army

BROOD mares at remount depots due to foal in the spring of 1920, began to abort in the fall of 1919. The continuance of these abortions pointed to their infectious nature, and specimens sent to the laboratories were reported as positive to infectious abortion.

Blood samples and uterine exudates from all brood mares were sent to the laboratories for the complement fixation and bacteriologic test, and the following number of positive reactions were received: Front Royal 1 positive, 1 suspicious; Fort Keogh 32; Fort Reno 31.

Abortions continued until in March when the administration of bacterins started. After the bacterins were administered abortions ceased.

Cases of infectious abortion, pronounced positive by laboratory findings, occurred as follows: Fort Keogh 37; Fort Reno 31; Front Royal 4 positive and 1 suspicious. In addition abortions not considered infectious in character, occurred as follows: Fort Keogh 12; Fort Reno 6; Front Royal 6; Fort Robinson 2.

Laboratory Findings On Mares Bred

All mares were given the bacterin treatment, whether in foal or not, and after the treatment serologically tested and approximately 80 per cent gave positive reactions.

The following table shows results of laboratory work upon the mares bred in 1919 to foal in the spring of 1920.

Station	Number of mares positive to complement fixation prior to bacterin treatment.	Number of mares given bacterin treatment.	Number of mares positive to complement fixation after bacterin treatment.	Number of Infectious abortions.	Abortions not considered infectious.
Fort Keogh	32	308	96	37	12
Fort Reno	31	309	254	31	6
Front Royal	2	56	19	5	6
Fort Robinson	—	125	75	0	2

One case at Front Royal reported as positive prior to complement fixation test and included in number of infectious abortions was suspicious.

The 96 cases at Fort Keogh shown as posi-

tive to complement fixation test following bacterin treatment were the only ones so tested.

In addition to the 75 at Fort Robinson reported as positive to the complement fixation test following bacterin treatment, 22 were reported as questionable.

Following the 254 positive reactions to the complement fixation test from the 309 mares at Fort Reno after bacterin treatment, about 1600 additional blood specimens were so tested from June 1st to September 30th, when negatives on all were found.

Preparation of the Bacterin Used

The bacterin employed in this work was prepared by growing on glycerinagar for 48 hours several strains of the organism isolated. The growth was then washed up with sterile physiological saline solution and heated at 65° C. for one hour to kill the organisms. This stock suspension was then standardized and diluted with phenolized salt solution so that each cubic centimeter contained approximately 2 billion organisms. This was termed "Bacterin A" and was administered to nonpregnant mares and to stallions, giving 6 subcutaneous injections 5 days apart, as follows.

First dose 1 c.c., 2 billion bacteria
Second dose, 5 c.c., 4 billion bacteria
Third dose, 3 c.c., 6 billion bacteria
Fourth dose, 4 c.c., 8 billion bacteria
Fifth dose, 5 c.c., 10 billion bacteria
Sixth dose, 7 c.c., 14 billion bacteria

For pregnant mares a lot of "Bacterin A" would be diluted with an equal part of phenolized saline solution and termed "Bacterin B," and this was administered at 5-day intervals as follows:

First dose, ½ c.c., 500 million bacteria
Second dose, 1 c.c., 1 billion bacteria
Third dose, 2 c.c., 2 billion bacteria
Fourth dose, 3 c.c., 3 billion bacteria
Fifth dose, 5 c.c., 5 billion bacteria
Sixth dose, 8 c.c., 8 billion bacteria

The weaker bacterin was administered to pregnant mares because it was feared that heavy injections might produce reactions sufficiently great to induce abortion. Not a single case of abortion, however, was reported as a result of the bacterin treatment.

Checked After Second Bacterin Treatment

After the second injection of bacterin abortions were checked and practically ceased by completion of the treatment. The mares remaining in foal ran full term, some foaling as late as August. No dystocias were reported.

The majority of mares aborted on the 8th, 9th and 10th month of pregnancy. It was therefore decided to give two series of treatments for the season of 1920-21; the first series at the fourth month of pregnancy and the second series at the ninth month.

Experience With Complement Fixation

When abortions were first recognized as infectious, great reliance was placed upon the complement fixation test as a means of diagnosing the condition, and the value of testing the blood of all mares prior to injecting bacterin was recognized as a means of locating carriers or infected mares, but the length of time it would take, coupled with the lack of help necessary to do the work, made this procedure impracticable as, owing to the sudden onset and number of abortions occuring immediate action were necessary if any foals were to be saved.

It was decided, however, to test the blood of these mares fifteen days after the course of bacterin treatments, and nearly every mare gave a positive reaction. The bacterins had undoubtedly checked the disease, as live colts were foaled after its administration. Did the positive reactions to the complement fixation test following the bacterin treatments indicate over 50 per cent of the Army brood mares were infected with the B. abortion? This was hardly probable. Were these reactions then due to the presence of complement fixing bodies in the blood of these mares elaborated by reason of the bacterin injections? Continued blood tests were made, and the number of positive reactions gradually decreased so that in September, 1920, when it was decided to give the mares bred in the spring their first course of bacterin treatments at the fourth month of pregnancy, the blood tests prior to this treatment gave the following results:

Fort Keogh, 46% positive.
Fort Reno, all negative.
Front Royal, 27% positive.
Fort Robinson, 2 positive out of 136.

Fifteen days after the injections were finished nearly 100 per cent of the mares again gave positive reactions to the blood test. In February, 1921, the second course of bacterin treatments were administered, the blood tests prior to this treatment giving the following results:

Fort Keogh, 79% positive.
Fort Reno, 70% positive.
Front Royal, 97.2% positive.
Fort Robinson, 55% (only 20 mares tested).

Following this treatment all mares gave a positive reaction to the blood test.

Mares bred in 1920 to foal in 1921 have aborted as follows:

Fort Keogh, 2.
Fort Reno, 7.
Front Royal, 4.
Fort Robinson, 2.

While a history of traumatism was known on nearly all cases, maternal and foetal membranes and material sent to the laboratories for a bacterial diagnosis has demonstrated the presence of B. abortus in but two instances, specimens from Front Royal.

The claim is made, then, that by the use of a bacterin infectious abortion has been controlled. But two cases have occurred in 1921, out of fifteen abortions, while 73 cases out of 99 abortions in 1920 were infectious. Army brood mares have foaled 175 healthy colts during the spring foaling season of 1921.

While all of the mares gave positive reactions to the blood test after the second course of bacterial treatments in January and February, 1921, and most of them gave positive reactions three months after the first course of bacterial treatments in September and October, 1920, about 5 per cent did not produce complete fixation of the complement until after the first or second inoculation of the second course of treatments.

The absence of complement fixing and other serologically demonstrable bodies, and the slowness of the production thereof, is peculiar to certain individuals of a variety of species, so much so in many instances that some animals used for the production of "immune" sera are rendered valueless for that purpose owing to the apparent lack of perceptible reaction. It is not believed that such an animal is any more susceptible to a disease than one showing complement fixing bodies, they both having received equal quantities of the same protection producing substances.

Serological Test More Interesting Than Practical

There appears to be but one way in which to ascertain the significance of the presence of complement fixing bodies; that is, the artificial infection of a number of mares yielding a negative reaction and of an equal number showing complete fixation of the complement three months after each group has received a first course of bacterin treatment. If, owing to deliberate infection with live organisms, pregnant mares which were negative to the complement fixation test after receiving bacterin treatment would abort, while those giving positive reactions after receiving bacterin treatment would fail to abort, it would appear reasonable to assume that the presence of such substances produced through bacterin treatment would be indicative of immunity, and until some such experimental work is conducted, it is not thought that credence is due the serological tests as meters of degrees of immunity. And while the production of normal colts will be gratifying, it will not prove that such results can be foretold by the employment of laboratory tests for, so far as is now known, a pregnant mare which has received bacterin treatment and which produces no reaction of a serological nature, might foal equally as well as one which shows an abundance of complement fixing bodies. In the absence of corroborative evidence, laboratory tests to determine the presence of such "immune" bodies appear to be more of interest than of practical value.

At Fort Reno as the mares that had foaled this spring (1921) came up for breeding on the ninth day after foaling, blood specimens were taken from mother and foal and out of 58 samples, 41 of the colts gave complete fixation of the complement. Most of the mothers gave positive reactions, but not so complete as the colts. It was then decided to obtain maternal and foetal material at time of birth for a bacterial examination to determine whether the B. abortus was present to cause these reactions. Of samples from four cases sent to the laboratory all were negative to bacterial examination. Two mares were negative to the complement fixation, while their colts gave complete fixation. One mare and colt gave complete fixation, and one mare and colt were negative.

Bacterin Dosage

The veterinarian at Fort Reno reports that while the regular dosage of bacterin and intervals of time between doses was adhered to as closely as possible, local conditions compelled deviations in various ways on certain individual animals. There were a few more which could not be found when wanted, due to bad fences and width of range, and these were given larger doses when found as time and help was not available to hunt these animals for a regular series. Cases of this kind were observed for clinical effects of large initial doses and it is believed no ill effects will occur from an initial dose as large as 8 c.c.

It is believed the initial dose could start at 2 or 3 c.c. and increase much beyond 8 c.c. with no attending danger, if desired: These varying doses have been given to mares up to nine months of pregnancy with no ill effects. It is not believed the dilute strength bacterin for pregnant mares is necessary.

Serological Test Not a Protection Against Carriers

In March, 1921, a brood mare was received at Fort Reno in a shipment from Kansas City. Serum specimens were taken from this mare on her arrival for infectious abortion and dourine, both tests being negative. The mare went through the regular quarantine period, and then to herd. When oestrum occurred she was brought in for breeding and an examination disclosed a chronic metritis, and the right horn of the uterus contained about two quarts of fluid. Bacteriologic examination of these fluids disclosed the B. abortus. Later serum tests from this mare show doubtful reactions, but positive fixation of complement has not occurred.

It is evident that blood tests will not always act as a protection against the admission of carriers. It is believed when mares are received for breeding, that uterine fluid or discharge should be procured for a bacterial examination. These specimens can be obtained easily, especially during the first period of oestrum, as at this time the cervix is soft and usually dilated with ease. If the uterus is entered deeply to get this material it is doubtful if infected mares would get to the herd.

At the commencement of the breeding this spring at Fort Reno a regular routine was inaugurated whereby a thorough examination of the reproductive organs which included the palpation of the ovaries and uterus, observation of mucous membranes with the aid of the speculum and electric light, and in conjunction with any breeding history for the past two years a clinical paragraph was made for each individual mare. When abnormal conditions of mucous membranes or discharge were found, slides were prepared and material sent to the laboratory for complete diagnosis. Cases of metritis and leucorrhea were weeded out and treated successfully or condemned. A number of cystic and indurated ovaries and indurated or torn cervics were found and eliminated from the herd in this manner.

The above procedures together with the use of bacterins will eliminate infectious abortion from the brood mares of the Army.

SHOCK FROM LEG WOUND

A few days ago I was called to see a mare which had severed the superficial flexor tendon about two inches above the pastern joint on her hind foot. When she stepped on her foot the toe would stick up and all joints of the foot were abnormally extended. The injury had occurred about 30 hours before I examined her, and she had bled considerably.

I realized that it was a bad wound since the tendon sheath must necessarily be injured and infected. The mare was also very weak from the loss of blood and pulse barely perceptible. The owner stated that whether or not the foot could again be made perfectly restored he would like to save her life and use her as a breeding mare.

I washed the wound with one part of iodine crystals and one part of formalin, in 20 parts of glycerine, and ordered the wound washed every day. I gave the mare a rectal injection of six gallons of normal salt solution and stimulants of camphor in oil and nux vomica by the mouth. The mare died the next day.

What I cannot understand about this case is that if she died from the loss of blood how could she survive about 48 hours after the injury and the bleeding. Do you believe she died from the loss of blood?—O. W. J.

Reply: The mare died from shock, the seriousness of which was aggravated by the blood loss, and also from the painful treatment given at the time reaction from the shock should have been occurring. The fact that the pulse was almost imperceptible at the 30th hour indicates the serious state of circulatory embarrassment at that late hour must have been caused in part by the blood loss. In fact blood loss and shock are pathologically similar. Both of them cause collapse by diminishing the aortic content. The only difference is that in hemorrhage the blood is out of the body while in shock it is pooled somewhere within, generally in the splanchnic vessels. It was wrong to apply such a strong solution of formalin to a patient in such a pronounced state of collapse, because of the prolonged and excruciating pain it always produces. The normal salt solution per rectum was good treatment but more prompt results would have been obtained by administration directly into the jugular vein, or into the peritoneal cavity.

The period of gestation in ewes is 147 days. A ram should be given not to exceed 20 ewes at the time.

BOTRYOMYCOSIS

I have recently been consulted about the treatment of a Shire stallion that has been developing a large growth on the chest for the past six or eight months. It is located at the end of the strenum right over the cariniform cartilage and is spreading evenly in every direction. It is now about the size of a foot ball cut in half longitudinally.

The horse has been under treatment during all of this time with no better results than that of making it grow. It is now almost hairless probably from the blisters that have been applied in the effort to reduce it but also from the irritating effect of the discharges which flow from time to time from the various small openings distributed all over the surface.

On probing these openings they are found to be shallow and none of them can be traced to a central cavity as might be expected from the general appearance.

Is this botryomycosis? The case is a very important one on account of the high value of the horse and I am exceedingly anxious to make a correct diagnosis and to make a sensible statement about the results. I fear on account of the diffused character of the base which seems to be deep-rooted that it is not operable.

I would like to have some pointers that would help me to make a diagnosis with the help of the local laboratory here.—A. D., Ind.

Reply: There is no doubt that your diagnosis is correct, at least as correct as can be made from a clinical examination. These growths in horses especially those about the breast and shoulders having the physiognomy described are generally dismissed as botryomycomas without laboratory confirmation. We are not justified in excluding cancer, however, without knowing the stallion's age.

CAUSE, PREVENTION AND TREATMENT OF AZOTURIA[7]

Based on the observations made in the war that horses which received raw sugar in place of oats have developed hemoglobinemia much more frequently, the author comes to the conclusion that there exists a relation between carbohydrate metabolism and hemoglobinemia. The examination of affected horses revealed an excess of meat-lactic acid in the blood which originates from the musculature. In animal experiments on mice, guinea pigs and horses an injection of ¼ cc of lactic acid into the musculature of the hind leg resulted in a condition which clinically, pathologically and histologically resembled hemoglobinemia. The spontaneous lactic acid formation results from the chilling of the body and its sudden muscular exertion. The meat-lactic acid originates partly from the albumen, and partly from the glycogen of the muscles. For the prevention of the disease excessive accumulation of glycogen as well as chilling and severe muscular activity should be avoided after a period of rest. Daily work and on rest days moderate exercise. Cathartics after longer rest in the stable. Hardening of the animal; avoiding of drafts, when outdoors, blanketing during the cold weather.

Treatment. Blanketing, rubbing dry, moist hot applications and repeated injections of ½ to 1 gram of morphine. Morphine to be strongly diluted and injected in various places of the affected parts. Bleeding is not indicated since this induces an increase of the lactic acid. He, however, recommends intravenous infusions of 3 to 5 liters of physiological salt solution containing 0.02% calcium chloride, 0.02% potassium chloride and 0.1 to 2% bicarbonate of soda. In disturbances of intestinal activity mild cathartics (arecolin, sodium bicarbonate, enemas). In retention of urine, massage of the bladder and catheterization. Animals should be urged to rise and supported. The feed should be poor in carbohydrates, hay is best suited. Large quantities of drinking water for the flushing out of the drinking water from the kidneys.

[7] Hertha (Mon. f. Prak. Tier.).

CAUSTIC PASTE

℞ Zinc chlorid.
Powdered hydrastis.
Powdered ulmas.
Powdered gum acacia.
Powdered ginger aa equal parts.
Water q.s. to make a putty-like paste.

Sig. Apply with a spatula, cover over with cotton and hold the cotton in place by pasting its circumference down with collodium.

This dressing prevents exudates from overrunning the surrounding skin, and may require renewal each day during the exudative period.

The paste itself is designed to absorb much of the exudate as well as to dilute the powerful zinc chlorid.

Dr. George Waddell, of Kalamazoo, Michigan, according to a press report from that city successfully removed a filaria from the eye of a horse.

India's Native Vets

By Capt. George Cecil
(5 Rue des Pyramides, Paris)

USUALLY veterinarians are not allowed to prescribe the simplest nostrum until they have qualified by passing the necessary examination. In India, however, the conditions are less exacting. Although the native assistants in the "Army Veterinary Department" are not allowed to place the letters "V. A. D." after their names until they have satisfied the powers-that-be that they at least know a splint from a saddlegall, he, the "salutri," is not subjected to any such vexatious restrictions. Sometimes he makes appalling mistakes, diagnosing severe lameness as a simple strain. But in minor matters he can be trusted to perform his task without incurring the just wrath of the indignant "Sahib." He has mastered the mysteries of clipping, and he can be trusted to hog a mane and to trim a tail—more or less symmetrically. The coloured vet also is an authority on sore backs; and if an unhappy çab horse has had its neck chaffed by a badly fitting collar, he knows how to mend the broken skin. It is, however, advisable for the owner to be present when the fellow conducts shoeing operations. From time immemorial he has been accustomed to this work, and from time immemorial he has done it badly. Yet, with all his drawbacks, he is a useful creature, and the "Sahib log" cannot dispense with his services.

His Ambition

As the "Salutri's" one ambition in life is to be a "government servant," he endeavors to get himself attached to a remount depôt, to a cavalry regiment, or to a battery of artillery. The pay is very modest, the emoluments add little to his income, and the daily duties may be heavy. But the lowliest government appointment carries with it a pension which is paid monthly upon the person to whom it is due having reached a certain age. Besides, a "Sirkari salutri" is a person of some importance in the circles in which he moves. Although his "tulub" (pay) may be only a trifle, he ranks higher socially than does the civilian vet who in a week earns as much as the "pultan ka salutri" does in a month. Money-grubber though he is, social position is his fetish. The semi-regimental "khaki" kit is a never-failing source of joy to him, and the badge which decorates his turban is the envy of all other "salutris." Promotion, too, awaits him; indeed, unless he misbehaves outrageously, he scarcely can avoid "moving up in grade succession." After a few years service, he finds himself vested with more authority than is altogether good for him, and he loses no opportunity of lording it over his inferiors—the jack-in-office.

A Fractional Profit

If the "salutri" is unsuccessful in securing pensioned employment, he turns his attention to the various infantry officers, officials and railway employes, who form the local society

The "Salutri" of India

in an Indian "station." Nor does he disdain working for the Eurasian head-clerks in the government offices, for though they beat him down till the fee yields but a fractional profit, he lives up to his business motto: "Every little helps." Where the "Commissioner-Sahib" gives him five rupees for doctoring a sore back with a peculiar ointment of his own concocting, the Da Silvas and the Da Castros of the place will not go beyond a few pence. If the "Police-wallah-Sahib's" crock goes lame, the "salutri" applies a poultice of "neem" leaves

to the damaged leg, receiving as his "dam" (fee) sufficient to satisfy him. He performs a similar service for the half-caste "Inspector Sahib" at a greatly reduced rate. In fact, his charges are based on a sliding scale; while he expects the General commanding the district to pay him at least ten rupees for reducing a swollen fetlock to its normal size, he gladly accepts whatever is forthcoming from a poor, ill-paid "opium-wallah" for effecting a similar cure. Sometimes he receives a retaining fee from a "Sahib," in return for which he is supposed to perform any service required of him and to shoe every animal in the stable as often as is necessary. Half a dozen such jobs provide him with a substantial income; consequently there is no little competition amongst the local coloured vets to obtain them.

Extortion

The "salutri" who lives in a tea or indigo district often tramps miles to the planter's bungalows, doctoring their ponies and doing a brisk trade in shoeing. He also obeys the call of "Rajahs" and other native magnates, who, living at a distance, occasionally send for him. His services, however, seldom are adequately requited. The fee passes through many hands before it eventually reaches those for which it is intended, until, eventually, there is not much left for the poor vet. The "bukshi" (paymaster) who sanctions the charge, claims his commission; the "chupprassis" (footmen) who convey the rupees from the treasury to the courtyard—where the unfortunate "salutri" has been kicking his heels—demand "baksheesh," and the rapscallion who takes the payee's receipt also clamours to be "remembered." Scarcely has he made known his business to the black gatekeeper than he has to disgorge four "annas" before being admitted to the stable. Next comes the head "sais" (groom), who extracts a rupee from the harassed "salutri"; and the minion who is in charge of the horse, requiring attention, receives half this sum. Roughly speaking, the native vet has to expend at least half his fee in satisfying the highly improper demands of a pack of rascals.

The Indigo Cure

The "salutri's" methods being rough and ready, it is a lucky thing for his patients that he does not perform any serious operation. If, however, he is ignorant of equine anatomy, he at least is an authority on all kinds of lameness. He applies his own particular lotion for collar galls—a decoction which has been handed down to him by generations of ancestors; and he can cure colic, corns, cracked heels, thrush and "bursati" (a form of skin disease which attacks horses during "the rains") and inflamed eyes. He wrestles with glanders cases; he prescribes tincture of arnica and a native nostrum for a capped hock; and a broken knee delights him, for he then

Now turn to page 502

The Arab displays little regard for human life and is frequently cruel, but towards his camel, his dependable beast of burden, he is kind and considerate. The Gilliams Service

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Variola Vaccina

I would like your comments or suggestions as to treatment of the three following described cases of apparent poisoning in cattle.

1. A heifer just at calving time that was running on seedling turnips during very cold and stormy weather, became dull and inclined to lie down a great deal of the time. The teats were doughy and milk scant after calving. Ten days later the teats were covered with closely adherent scabs and very sensitive. The milk although scant was normal in appearance. Tincture of benzoin was applied to the teats and the heifer dried up owing to the difficulty in milking.

2. Heifer six weeks after parturition, showed signs of madness, running around, kicking at the belly. She had made a good meal of chenopodium and docks thrown out of the garden. After a short time she became quiet. The pulse rate was rather high but everything else was normal. I administered a dose of oil of linseed, turpentine and formalin believing the trouble to be digestive. The next day the excitement recurred with increased violence, one teat was swollen but the udder was not painful on handling. Chloral hydrate had only a temporary effect. A few days later the skin peeled off and became so sensitive milking was discontinued. The kicking continued and the heifer would turn head around and lick the udder with vigor.

3. Cow several months after parturition, was under treatment for sterility, but in good health. After being fed some seeding turnips she became dull, feverish and stiff. She was given magnesia sulphate and treacle as a purge. I did not see her until three weeks later when she was found to have lost flesh and was declining in milk production. The teats were less affected than in the other two cases but some sores and scars were studded here and there over the two front ones and some extended over the shoulders, loins and neck, much like the remains of blisters. The scabs were thin and firmly attached.

Turnips are used here as dairy feed during the winter and spring. In the spring when cows are turned into the seeding turnips indigestion and bloating is a common occurrence. Observant dairymen also blame seeding turnips and too free use of turnips for the cases of "redwater" that so frequently occurs here ten days or so after calving. Common salt given is a drench, the popular remedy for the trouble, gives quick relief.

Reply: Professor Pammel, editor of the department of live stock poisoning, after deliberation over the cases above described, reports that in his opinion the trouble is not caused by turnips.

Although the physiognomy of lesions is lacking in the above description, by reading between the lines one might hazard the guess that these animals are affected with variola, which disease very often overruns regions other than the udder and which is capable of producing the itching sensation manifested by these animals. Variola cases exposed to hot sun rays in certain climates does sometimes produce remarkable diffuse dermatitis. Whether these diffused lesions are due to direct solar heat or to secondary infection is not known to us.

TRIPLETS: SOUND, HEALTHY AND LARGE

Enclosed find a photograph of triplets, all white and black, the progeny of a grade

Guernsey, owned by William Halm, of Nazareth, Pennsylvania, which displays the prolificacy of the stock we raise in this county. The weight of the calves at the age of four weeks is: 132 pounds, 149 pounds, and 162 pounds, respectively. If this isn't the record, let us hear from any challenger.—N. Calvin Nickel, Nazareth, Pa.

AN UNSUCCESSFUL TEAT OPERATION. A PITFALL.

The writer was called upon to operate upon the teat of a Guernsey cow that had freshened for the first time, for a congenital perforation. The teat in question had two openings, one at the normal location and another about one inch higher along the side of the teat. When milked the stream would flow from both openings, but the greater portion would flow out of the abnormally located one, keeping the milker's hand soaked with milk all the while he was milking. I advised an operation when the cow became dry or when the particular quarter could be dried up. This event occurred several months later by reason of the program of partial milking mapped out to accomplish this end as soon as possible.

The cow was cast, the spot anesthetised with novocain, the mucous membrane of the duct with the skin about the meatus was resected and the wound was puckered together with a tobacco-pouch suture. This operation failed completely. After the next freshening period milk flowed from the opening as freely as ever. Dr. F. H. Ferguson, who was consulted by mail, advised closure with actual cautery. After allowing the quarter to dry up again, this was done with complete success. The operation consisted of heating a piece of hay wire in the family stove, carrying it hot to the stable from the kitchen in a bed of hot coals and, without any ceremony, inserting it (red-hot) into the opening down to the point thought to be the level of the main duct.

Here is the pitfall. When this splendid cow freshened for the third time (May, 1922) no milk flowed from the false opening. It was sure enough closed. The scar made an effectual plug. But on milking the flow would go into this false channel from the sinus above, balloon it out and so effectually press against the main duct as to completely prevent any milk flowing from the channel too. In fact on milking, the first three or four strokes of the hand would bring out a copious flow, but as the duct, made blind by the operation filled up, the flow was immediately blocked. The cow, in so far as that particular quarter is concerned was therefore ruined about as completely as a surgical operation could ruin a quarter, with a bad diagnosis as the cause. It should have been determined that the false opening was that of a duct that went up all the way to the sinus and that it was more the main duct than the one which ended at the tip of the teat.—Anon.

Calf scour has been eradicated by the immunization of the fetus prenatally, according to the report of Maguire. The prenatel immunization is accomplished by the subcutaneous injection of three doses of bacterin, containing the micro-organisms obtained from cases of calf scour, into the cow during the seventh and eighth month of pregnancy.

"A TRIBUTE TO THE COW"

Little do wo realize the debt we owe the cow. During the dark ages of savagery and barbarism we find her early ancestors natives of the wild forests of the old world. As the bright rays of civilization penetrated the darkness of that early period, and man called upon the cow, she came forth from her seclusion to share in the efforts that gave us a greater nation and more enlightened people!

For twenty thousand years she has shown her allegiance to man, sharing alike in his prosperity and adversity, responding nobly to all that was done for her, until through her development she became an idol of the people of her native country.

When Columbus made his second voyage to America, the cow came with him, and from that time to the present day she has been a most potent factor in making this, our own country, the greatest nation, with the highest type of womanhood history has ever known!

Her sons helped till the soil of our ancestors and slowly moved the products of the farm to market. They went with man to the dense forests of the new world, helped clear them for homes and made cultivation possible for the coming generation, and when the tide of emigration turned westward they hauled the belongings of the pioneer across the sun-schorched plains and over the great mountain ranges to new homes beyond.

Truly, the cow is man's greatest benefactor. Hail, wind, drouths and floods may come, de-

stroy our crops and banish our hopes, but from what is left the cow manufactures into the most nourishing and life-sustaining foods, and is she not foster mother and life itself to countless thousands of little children all over this world of ours. We love her for her docility, her beauty and should misfortune overtake us as we become bowed down with the weight of years, we know that in the cow we have a friend that as never known to falter. She pays the debt. She saves the home. God bless the cow—little do we realize the debt we owe her. —Bennett, Missouri, Brd. Agr.

IS FOOT AND MOUTH DISEASE TRANSMISSIBLE TO MAN?

Eloire writing in the Recueil de Medicine Veterinaire says: "While I know that there are a number of different kinds of stomatites in man I hold that there must and does exist a stomatitis caused by the virus of bovine aphthae." On the other hand LeBailly in the same journal declares "Foot and mouth disease and aphthous stomatitis of man are distinct diseases. The former is not transmitted to man nor the latter to cattle." Voila. Take your pick.

DEVELOPING HARDY BREED FOR DAIRYING IN ALASKA

In some of the valleys of Alaska where grain and forage crops do well dairying seems to be desirable, and many farmers have taken it up on a small scale. The United States Department of Agriculture is trying to develop a hardy breed of cattle for that climate by crossing the Galloway and Holstein-Friesian, but in the meantime Milking Shorthorns have been introduced at two of the department stations, as they are considered fairly hardy and in addition to being good milk producers are good beef animals, a combination of qualities desired in this rigorous region. The animals brought in were secured in Iowa and Minnesota.—U. S. Clip Sheet.

MILK FOR CHRONIC ARTHRITIS

Eidelesberg has reported on the injection of milk intramuscularly to overcome chronic arthritis in the human. The milk was prepared by him in a closed vessel and heated to the boiling point for twenty minutes. From 4 to 6 mils were injected and they were succeeded by a second injection of from 5 to 8 and later by a third injection of from 7 to 10. Of fifty patients treated, ten per cent were apparently cured and fifty-five per cent were improved.

The principal of the administration of milk is in the introduction of a non-specific protein. Has any veterinarian used this method in arthritis cases?

TOBACCO A USEFUL DRUG

It is not often that the veterinarian, even when he smokes, remembers that the weed, the leaves of tobacco—foliae nicotianae—have pronounced medicinal properties, properties which we should remember, because they may be used to great advantage.

Tobacco leaves act as an irritant on mucous membranes. Small amounts of tobacco increase the digestive secretions. Large doses cause marked salivation, gastro-enteritis, trembling, vomiting, colic and diarrhoea. They also have a very depressing action on the heart, causing arhythmical and weak heartbeats and therefore marked muscular weakness. If this is the case, the body temperature is often subnormal.

The beneficial effect of small doses of tobacco as a digestive tonic is especially marked in ruminants. Cattle, sheep, and goats may respond to a few doses of tobacco, when other tonics fail. Tobacco is well borne by these animals; it may be given as tobacco leaves, finely cut up and mixed in the feed, or in form of a plug of chewing tobacco, of suitable size, as a bolus, once or twice a day.

The weed does not only stimulate the intestinal secretions but also the peristaltic movements of the stomach as well as of the intestines.

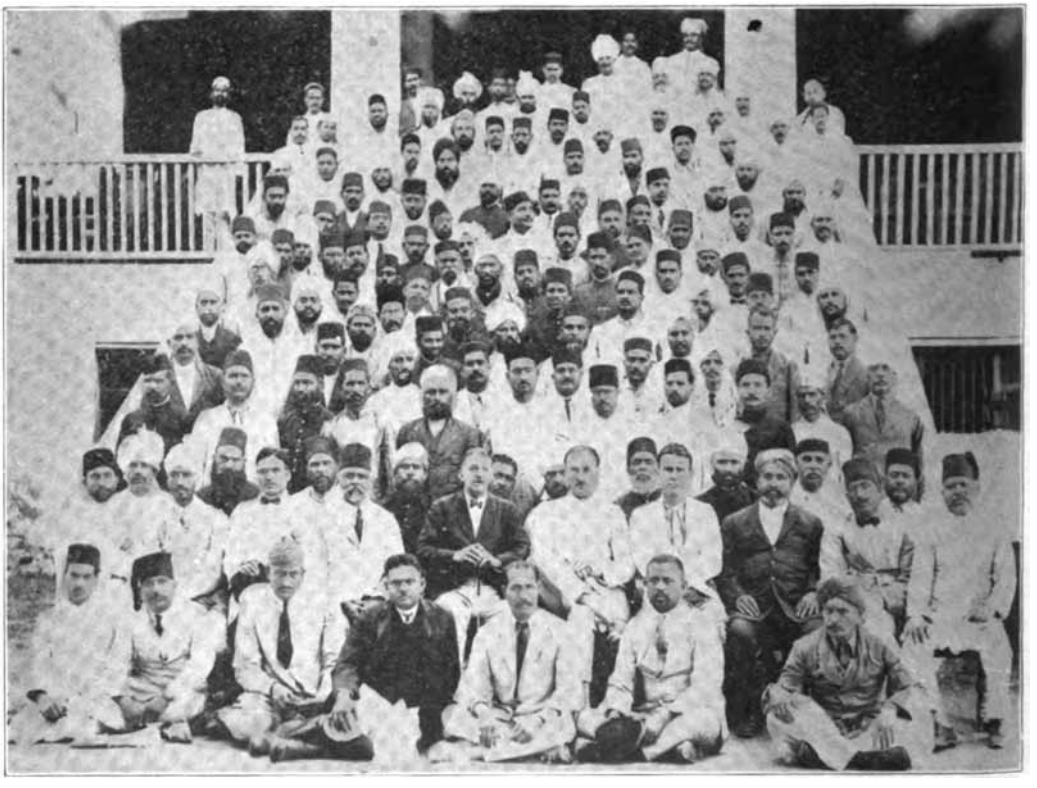
It is indicated in all cases of anorexia and indigestion due to chronic catarrhal conditions of the stomach and intestines, where marked paucity of the digestive secretions with recurrent attacks of tympanitis—often due to weak peristaltic movements, are the characteristic symptoms. Animals that suffer from the after effects of overloaded stomachs (engorgement) are also very favorably affected by this treatment. In cases of superpurgation it is also quite worthy of a trial. In animals that are making slow recoveries from severe diseases, maybe after difficult parturition and retained afterbirth, when they are weak and debilitated, an occasional, repeated dose of chewing to-

Now turn to page 502

Veterinary Activities in India

THE Seventh Annual Conference of the U. P. Veterinary Association was held at Moradabad on April 15, 16, and 17, 1922. The meeting was well attended. Besides veterinary inspectors and veterinary assistants of the United Provinces, civil veterinary department and municipal boards, many other European and Indian gentlemen also attended, the chief among them being: Major E. W. Oliver, veterinary adviser to U. P. Government; Captain W. H. Preston, Supt. C. V. D.; 'Khan Sahib' Sh. Niaz Mohd. Sahib; and Syed Raza Husain Sahib, deputy superintendents C. V. D.; Mr. B. K. Badami, deputy supt. C. V. D., Hydrabad Daccan; Mr. Zia Abbas, Veterinary Officer Gwalior; Mr. Jamal Uddin Jalali, Veterinary Supt. Bhopal; Mr. Jamal Uddin, Second Cattle Supt. Pusa; Khwaja Karam Elahi and Ch. Mushtaq Ahmad, professors Punjab Veterinary College Lahore; M. Bashir Uddin Ahmad Secretary Dist. Board Cawnpore and Abdul Hakim Sahib Faridi, Kham Supt. Garhwal; Th. Kalyan Singh, Member Dist. Board Shahjahanpur and several other local officers and members of the Municipal and District Boards.

The delegates were comfortably accommodated in Dandama Kothi Moradabad. Mr. Ghulam Qadir, president of the reception committee thanked the members and others for the trouble they took in joining the conference. The secretary, S. M. Raza Husain Sahib, requested Major E. W. Oliver to open the meeting, who in his opening address thanked the members to invite him on such an occasion and expressed that it was a great pleasure to him as it gave him a chance of seeing so many members of the veterinary profession assembled in one place. He expressed the necessity and utility of the profession to the public and informed of the proposal of the establishment of the veterinary college for these provinces which shows that the profession has proved itself a necessary factor in the public life of the country. He also spoke of experimenting mobile hospitals with a view to timely operation against infectious diseases. He was of the opinion that the cost that may be incurred in equipping such a hospital would be very little as compared with the benefits derived by the agriculturists. K. S. Sheikh Niaz Mohammad was elected president, took up the chair and in his presidential address impressed on the members the necessity of co-operation



and told them that the future betterment of the profession depends upon their sincere and true efforts in serving their country. He explained briefly how a veterinarian can be useful to the country in different phases i. e. not only in the treatment of the domesticated animals but in the training of the ignorant classes of India in the more scientific methods of the improved breeding of the animals and eradicating the contagious diseases in India, most of which are even communicable to human beings. Thus a veterinarian can prove himself an important factor in the health and wealth of the country. The following interesting papers were read and discussed:

Co-operation is the basis of all evolutions, B. Gajadhar Singh; History of six cases met in practice, M. Khairuddin; Legislative control of contagious diseases among animals in India, M. Tahir Mirza; Surgical treatment of wounds, M. Imdad Husain; Veterinary profession and public health, M. Moin Khan; Fever, B. Hira Chandra; Veterinary Hospitals, M. Tahir Mirza; Municipality and slaughter houses, Mr. Abdul Razzaq; Poultry diseases, Nazir Husain; Rabies, Sardar Udham Singh; Laminitis, B. Chunni Lal; and Infection, M. Keramat Khan.

The members took a keen interest in the speeches and discussions. The chief feature of the meeting was the coming of Mr. B. K. Badami who was deputed by the H. E. H.'s Nizam Government and took an active part in all discussions.

The members were "At Home" on the evening of the 15th which was well attended by the Europeans as well as the Indian gentlemen of the district. Major E. W. Oliver distributed the medals and prizes to the following members: Mr. J. N. Mitra, M. Tahir Mirza, M. Allah Baksh, M. Khai Uddin, M. Imdad Husain, M. Ishtiaq Ali.

The local officers, specially Kunwar Abdul Karim Khan, City Magistrate, Mr. Abdul Wahid Khan, Deputy Collector, and M. Shamsuddin Sahib Tahsildar of Moradabad took great pains to make the Association a success.

S. M. RASA HUSAIN, General Secretary.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Marketing Swine

VETERINARIANS are usually consulted on all problems pertaining to live stock which often includes loading and shipping. The losses of swine incidental to shipment, can be appreciably reduced providing certain details are carried out prior and during the shipment.

About 80 per cent of the spring litters of pigs are marketed between October and February, and about 85 per cent of the fall litters are marketed between April and September. The average age of the market hog is about seven months. The average weight of swine at the time of marketing varies from 230 to 250 lbs. There has been a tendency for an increased demand for slightly lighter weights in market hogs. In some sections of the country, only one litter of pigs is produced annually and they are usually marketed when they are about nine months of age and weigh upward of 300 lbs. The demand for the heavy hog has been less each year and unless there is a change it would seem that hogs weighing above 225 lbs. will not find a ready market in the future.

When to Market

Some feeders are close observers and carefully study the market prices and they usually sell at an advantage, but a large number of swine are marketed when they are finished regardless of price. Some feeders maintain that it is better to market swine when they are finished, even though the market is uncertain, than it is to hold them for a better market. If the market conditions are favorable, fat swine or other stock will make a better profit if they are marketed when they are in prime condition. Excessively fat hogs are not in as great demand as they were formerly, neither do they command the price that is paid for the prime finished hog that will weight approximately 225 lbs.

Graded Hogs Bring Best Price

The farmer that feeds only a few swine either sells them to a local buyer or several farmers pool their holdings and ship in the same car. In come sections of the country, the feeders sell direct to the packer but as a general rule most swine are marketed through a commission company. It may be necessary in combined shipments to separate the different lots in a car by partitions to prevent fighting, exhaustion and overheat. A slightly better price is usually paid for swine that are properly graded; therefore, in shipments containing swine of various sizes it would be better to have the commission firm classify the hogs before they are sold. All feeders are familiar with the fact that the top of the market is obtained only by shipments of swine that are uniform in size, color and condition.

Avoid Crowding, Driving and Over-Exertion

The proper handling of fat hogs for shipment requires care and judgment. In hot weather fat hogs should be taken to the loading station in early morning, late evening or during the night. Unless the loading station is a half mile or less, the hogs should be hauled in wagons or trucks that are well bedded and the bedding well soaked with water. Even these precautions will not always prevent heat exhaustions and death, unless promptly treated by the use of diffusable stimulants and cool water over the body and ice in ample time to allow them to become rested and cooled before loading. Ample time should be taken for loading to avoid excitement or over-exertion.

Bedding, Loading and Care Enroute

The car should be bedded with wet sand. Overloading is almost certain to result disastrously. The load for an ordinary 36 ft. car should not exceed 16,000 pounds. It is advisable for an attendant with shipping knowledge to accompany the car. Shippers that sprinkle their hogs whenever it is possible enroute have diministed their losses to a minimum. Some shippers provide four to six ice bags that are suspended from the roof of the car so that the drip falls upon the swine. By the icing method there was a loss of 15 hogs in 150 shipments.

Such measures that will diminish the losses and make the shipment of fat swine safer, should be resorted to by all shippers.

Cold Weather Precautions

The winter marketing of fat swine also requires care and judgment. Fat hogs may be driven short distances to the loading station but they should not be driven when it is extremely cold and windy, because the inhalation of cold air has a tendency to produce congestion of the lungs. When hauling fat hogs during cold weather they should be amply bedded and the hauling should be done during the warm part of the day. Care should be used in loading and the car should be amply bedded with hay or straw. If an ordinary stock car is used the exposed side should be papered with a cheap grade of building paper or similar material to prevent undue exposure. Thousands of pounds of pork are condemned during the winter because of freezing of the skin and deeper tissues in open stock cars.

More Loss Than Gain from "Filling" in Transit

Regardless of season, fat hogs should be fed sparingly before being loaded. They should be provided with plenty of good fresh water. In long hauls some shippers prefer to give the feed in the car, thus avoiding unloading and loading. If the hogs are not crowded this is probably the most convenient and economical method of feeding. Only a small quantity from ½ pounds of shelled corn or other feed should be given every 24 hours to fat hogs enroute to market. Some shippers still believe that the more they can get swine to eat after they arrive at market the greater will be their profits. As a matter of fact, we believe that the shipper will receive as much for his fat hogs if they do not have a feed at market, the so-called fill, and he will have the further advantage of not having to pay for it.

Loss from Congestion of the Lungs Great

The greatest losses of swine in shipments are due to pulmonary congestion. This condition occurs in those cases that die of heat exhaustion as well as those that die in the winter shipments as a result of piling up on each other. Some few cases survive the acute congestion stage and later die of pneumonia or are condemned for pneumonia when slaughtered.

Shrinkage

The question of shrinkage has been a perplexing problem to shippers. The usual shrinkage on an ordinary shipment, requiring 30 hours or less, is from 5 to 8 pounds for a 200-pound hog. A larger hog will shrink slightly more and a smaller pig will shrink less. Shrinkage is due to normal elimination and in an ordinary haul requiring 30 hours or less there will not be any shrinkage in flesh. In other words, a 240-pound hog will shrink approximately 5 pounds in a 30-hour shipment, but the 235-pound shrunken hog will actually dress out as many pounds of pork as it would if slaughtered before shipment.

Conclusions

A veterinarian can render a service by advising with swine feeders and shippers on the following:

1st—The size of hog that demands the highest price, viz., about 225 pounds. Some packers will pay a premium for 280-pound hogs during the winter, but it does not take many to supply the demand.

2nd—The raising of one twpe of swine in a community, and especially the small feeders, in order that they can combine their lots in a single shipment and have them uniform. The purchaser of stockers should be advised to buy uniform hogs.

3rd—Proper handling while marketing to prevent losses from heat, pneumonia and freezing.

4th—Give detailed information relative to the feeding of swine while en route and at market. A large feed just before hauling to the loading station or if given in the stockyards pens usually results in digestive derangement and excess shrinkage. The fill at market centers is of no value to the swine, and is an added expense to the shipper. Advise against this practice.

5th—Explain shrinkage in detail. It is the result of natural elimination, and unless the shipment is en route for several days and improperly handled, there will be no loss of actual flesh.

POLYARTHRITIS IN KENTUCKY SWINE

A peculiar disease of swine has been reported in Daviess County, Ky. The affected animals become lame from which they may ultimately recover. There is usually a swollen condition of the affected joint. Although no positive diagnosis has yet been made, it is possible that this condition is either polyarthritis or rickets.

Castration of Pigs

As castration of swine is done more frequently by the layman than by the veterinarian, the operation is frequently followed by conditions requiring professional attention.

The principal reasons for the castration of swine are to prevent the reproduction of scrubs, improve the breeds, and the quality of the pork. The meat of a boar or stag has a disagreeable odor and is seldom palatable. The various breeds of swine would have developed more rapidly had a rigid system of selecting the best individuals and castration of the unfit been inaugurated years ago. The age at which swine should be castrated will depend on surrounding conditions. Generally speaking, castration should be practiced while the swine are young. It is not advisable to castrate pigs during stormy weather nor during the season of the year when sudden changes are likely to occur, unless the animals operated upon can be placed in clean quarters and properly protected.

The prevalence of any infectious disease in a herd should be sufficient reason for delaying this operation. When veterinarians are called upon to castrate pigs, the operation should be done in a cleanly manner and the proper aftercare assured. It is advisable to place castrated pigs in a pasture where they will take exercise, which is an important factor after castration. The veterinarian is more particularly concerned in the conditions that arise from castration, viz.:

Hemorrhages

Old boars are prone to bleed freely unless the ecraseur or an emasculator is used to crush the spermatic cord. Hemorrhage is frequently induced in these animals by violent exercise immediately after the operation. Small pigs rarely bleed enough to cause any concern. Severe hemorrhage can usually be controlled by either ligating the end of the cord or by packing the scrotum.

Scirrhous Cord

Scirrhous cord is a common sequel of improper care after castration. This condition is manifested by tumefaction in the scrotal area. The size and general appearance of the enlargement varies and it may or may not contain fistulous tracts. The specific cause of scirrhous cord is probably infection. Because of the location of the castration wound and the nature and habit of swine, infection is very common. Scrotal abscesses in castration wounds are not serious, if properly opened, drained and cared for but if the pus is allowed to accumulate it may infiltrate the surrounding tissue or extend along the vas deferens and ultimately enter the peritoneal cavity.

The treatment of scirrhous cord will depend upon the nature of the lesions. In the early stages the condition may be relieved by the application of active disinfectants and if necrosis is present the excision or curetting of the necrotic centers is required. After the dense masses of fibrous tissue are formed complete ablation is necessary. Care should be exercised in removing the large ones as the animal may bleed to death. The animal should be properly prepared and anesthetised. After the operation has been completed and the

A Sequel to Bad Castration

hemorrhage controlled, the wound should be properly treated to prevent reinfection.

Actinomycosis or botryomycosis may be observed in the castration wounds and by some are classed as scirrhous cord. The relief of either of these conditions is found in the operative procedure, above described.

Screw Worms

In some sections of the country, it is necessary to protect castration wounds against infestation of screw worms. This is best accomplished by the use of coal tar products, frequently applied. The indication of screw worm infestation of a wound consists of an active acute inflammation with or without the production of pus. The surrounding tissue will be tumefied and found to contain the larva

or screw worm. Extensive tumefaction developing within one or two days after castration, is suggestive of screw worm infestation.

The treatment of castration wounds infested with screw worms consists of removing the worms and the application of agents to prevent reinfestation.

Heat Stroke or Overheat in Swine

Occurrence

Heat stroke is a condition caused by excessive heat in the animal body. Heat stroke is relatively common in swine. This condition occurs primarily in the summer months, however, an occasional case is observed in nervous fat hogs in cold weather. Swine are especially subject to heat stroke, because of the excessive accumulation of fat beneath the skin which diminishes heat radiation from the body. The ordinary domestic swine are not accustomed to excessive exercise, particularly while in the fattening pen, therefore, when swine are subjected to unusual exercise such as driving or hauling them to market they may be overheated. The crowding closely of swine in a wagon, truck, freight car or when crated and placed where there is no ventilation in an express car, will cause an increased heat accumulation that may be of sufficient intensity to produce heat stroke. Thousands of swine die of heat stroke while in transit to markets. This condition may also occur in swine in lots or pastures where no shade has been provided.

The Symptom Complex

In the beginning of a case of heat stroke, the affected swine will have an uncertain wabbling gait and they will be dull and depressed. Breathing will be more rapid than normal and some cases breathe with difficulty and have an anxious expression. The temperature will be extremely high. In the later stages there will be muscular tremors and the animal will fall to the ground and have convulsions. This disease is of short duration. In most cases the affected animals will die within a few minutes after the onset. Some times the affected animals may live for from one to three days and in rare instances they may recover without treatment.

Post Mortem

The conditions found post mortem are practically the same as those evidenced in cases of asphyxia or suffocation and consist of a parboiled appearance of the heart, liver, spleen and kidneys. The blood is usually quite dark in color and does not coagulate readily. Excessive quantities of blood occur in the veins. The lungs are usually dark in color due to the excessive quantities of venous blood. The air tubes contain more or less of frothy mucus. In some cases there are large hemorrhages into the heart.

Prevention and Treatment

Affected animals should be placed at once in the shade and stimulants should be administered. Camphorated oil has been highly recommmended. Apply cool, but not cold, water on the head and over the shoulders and body. If possible, use ice packs on the head but not over the body. Heat stroke can be prevented by providing ample shade in the lots and pasture. When fat swine are driven they should be given an abundance of time and they should be prevented from bunching; in other words, they should be kept scattered. The hauling to loading stations should be done in the cool part of the day. Five or six 100 lbs. cakes of ice suspended from the roof of the car will usually prevent any cases of overheat in carload shipments. In case of an attack of heat stroke, prompt action must be taken or the affected animal will die.

BACTERIN TREATMENT OF NEW-BORN PIGS

I have been interested in the use of bacterins to save little pigs, not only as a veterinarian, but also as a breeder of swine. The first bacterin employed for this purpose was used on my own pigs.

In 1919, seventeen runts represented the total pig crop from eighteen sows. As the same conditions prevailed in 1920, bacterins were employed. The outcome was not entirely satisfactory, probably because the bacterin was used as a cure, and not as a preventive. In 1921, the practice of injecting the bacterin into all the pigs of each litter on several farms was adopted. One injection of bacterin was given immediately after farrowing, and a larger dose about five days later.

A bacterin with a high B. colon count is preferred.

It is apparent that the sow harbors the infection. Whether this disease is similar to bovine abortion disease and the B. coli corresponds to the B. abortus, remains to be determined. When the disease does not appear until ten days or two weeks after farrowing, digestive disturbances are in the part responsible.

Sanitary measures including the rotation of lots and movable pens are of prime importance although not always applicable. In my opinion the judicious administration of properly prepared bacterin will prevent these losses.—John Thomsen, Armstrong, Ia.

CAESAREAN SECTION IN THE SOW

Today when all live stock are being bred up and the Arkansas razor-back hog has been replaced by pure bred animals of most breeds throughout our state, we find the individual brood sow has become of such value to her owner that in cases of dystocia the veterinarian is called to remove the pigs when parturition is unsuccessful.

When we arrive at the time the sow is in distress, we often find her attended by several neighbors and friends of the owner who have exhausted their resources in assistance and nursing, only to leave the sow worn out, lacerated, infected, and thoroughly weakened. At times, however, we find our patients in very good physical condition for the caesarian operation.

Operation Simple

The caesarian operation is neither difficult or tiresome in its length of duration, but is comparatively simple, if not delayed too long, and can be finished quickly—35 to 50 minutes. Not all these cases are necessary to operate, but often through careful instrumentation or the judicious use of pituitin delivery can be effected. However, the decision as to whether or not to operate is always to be made after examination. Cleanse the labiae and explore the vagina with fingers or hand to determine possibility of successful instrumentation. Often minor cases of abnormal presentation of the fetus can be relieved through the birth canal without an operation. Cases of slow uterine contraction or weakened and incomplete contraction can often be relieved by one grain doses of pituitin and applications of hot towels to the abdominal wall for 30 to 60 minutes. However, do not give pituitin if the os uteri is not open. What can be accomplished through these methods will be done inside of two hours, after which delay of operating is reducing the chances of recovery.

There is little or nothing to be gained in operating on cases weakened by complications of infectious diseases, severe lacerations, or where there is infection and decomposition with formation of gas. However, the operation is indicated where active labor pains have not brought about delivery in 18 to 24 hours. Often the third or fourth day is not too late, but these cases are the exception.

Helena, Ark. H. W. Wilson.

STOMATITIS

Stomatitis in pigs has been prevalent in many localities during the last few months on account of the excessive rains and the consequent insanitary pens and surroundings. The primary cause of stomatitis is infection but there is usually some predisposing influence that lowers the resistance of the tissues. Probably the most important predisposing factor is the mechanically injured buccal mucosa. Thus, infection most frequently has its origin in the gum around loose teeth or an injured tooth. An occasional outbreak of stomatitis occurs in which nearly all pigs are simultaneously affected. Such outbreaks are sometimes due to feeding hot slop or cooked foods before cooling them and which produce a catarrhal stomatitis. This form is frequently followed by the necrotic type.

Cause

Necrotic stomatitis is the most severe type of this disease. The usual predisposing causes are: loose teeth, injured buccal mucosa, contaminated foods and insanitary surroundings. The primary cause of the condition is infection of which the B. necrophorus is the most frequent offender.

Symptoms—"Bull Nose"

Frequent attempts to nurse is one of the first symptoms observed in pigs. The affected pigs are gaunt, have an unthrifty appearance and they may develop a persistent diarrhea. An examination of the mouth reveals the lesions. The infection may be transmitted to the teats of the sow and by this means spread through an entire litter. The course of stomatitis varies with the virulency of the infection

and the resistance of the pig. The necrotic type is usually fatal, the type caused by the B. pyocyaneus may be fatal. The type due to the B. pyocyaneus is in many cases succeeded by infections of the nasal mucosa, producing the condition known as "bull nose."

Lesions

The lesions in the beginning are most common in the gingivae, around the base of one or more teeth. The successive tissue changes in the lesions caused by the B. necrophorus consist of redness, tumefaction, sensitiveness and bleeding. These foci later become yellowish white or even brown in color and of a mushy or mealy consistency and they may slough, leaving an eroded surface upon which a coagulated necrotic material accumulates, which in appearance is similar to a diphtheritic membrane. The necrotic material has a characteristic, disagreeable odor. These changes extend, progress and become confluent. It is not uncommon for the lesions to involve the labia and in some instances necrosis of the structures of the buccae occurs. Later, the skin becomes involved, and the infection may be carried down the digestive tube, where it may produce similar lesions.

Stomatitis caused by the B. pyocyaneus does occur, but it is not common. This organism produces an intense inflammation of the buccal mucosa but, excepting the superficial epithelium, the inflamed tissue does not become necrotic, although it may accumulate and appear as white blotches.

Diagnosis of Stomatitis

The diagnosis is not difficult because a careful examination reveals the lesions. The differentiation of the different types depends upon the history, symptoms and lesions. The catarrhal form affects a large per cent of the pigs simultaneously and the cause is ascertained in the history. The necrotic type is intense and fatal and is characterized by a rapid course and offensive necrotic lesions in the buccal mucosa. The type produced by the B. pyocyaneus is typified by the white patches on the buccal mucosa, and the frequent simultaneous involvement of the nasal mucosa.

Treatment

The catarrhal type is usually successfully overcome by removing the cause which consists of improper food, hot slops, etc., and providing nourishing soft food or slops properly prepared.

Necrotic stomatitis may be successfully controlled when the proper treatment is begun early.

The most successful treatment consists of removing all necrotic tissue by means of a currette and then applying tincture of iodin. This procedure should be repeated once daily until the lesions are nearly healed. When the disease appears in a herd it is advisable that all exposed pigs be examined and all showing disease be treated daily as above indicated.

The type of the disease caused by the B. pyocyaneus is successfully controlled by the line of treatment suggested for the control of the necrotic form excepting the curretting should be less vigorous since the infection is not as difficult to overcome.

In addition to the above mentioned treatment the surroundings should be made sanitary and proper housing provided.

COCCIDIOSIS OF PIGS[1]

In a piggery where great losses were sustained the examination of two ten day old pigs revealed on autopsy pronounced changes in the intestinal canal. Oocysts and merozoites were found in the intestines of one; in the other intracellular unsporulated forms, resembling macrogametes and merozoites of the variety of coccidia described by Noeller as Eimeria suis. The death of the pigs could be positively traced to the coccidial infestation.

Salivation, nausea, weakness, temperature, slightly lower than normal, pulse and respiration slightly less rapid than normal, and coma, are the usual symptoms of death camas poisoning in sheep and cattle.

Loco poisoning is responsible for losses of cattle, sheep and horses on the ranges of the west and southwest. This plant can be destroyed by cutting the plant off just below the crown.

Stagger grass (Chrosperma muscaetoxicum) has caused some losses of live stock in New Mexico and adjacent states. The fatal dose for a 1000-pound steer is approximately two pounds of the plant.

Gilts that are intended for show purposes as sows should not be bred until they are practically mature for Mumford of the Missouri Experiment Station has demonstrated that lactating sows do not grow and develop.

[1]Professor Noeller and O. Frenz (Det. Tier. Woch.).

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

SWINE ERYSIPELAS BACTERIA CAUSES CHRONIC INFECTION IN CHICKENS[3]

An outbreak of a chronic infectious disease occurred on a farm which in spite of all measures could not be eradicated. According to the history the symptoms were those of inappetance, diarrhea, which later subsided, general debility and stunting in growth. Some died within a few days; others only after five weeks. Not a single recovery was observed. Thorough careful investigations revealed an infection with true swine erysipelas bacilli. Pfaff recommends, therefore, in similar cases the preventive treatment with erysipelas serum.

COLI BACILLOSIS IN CHICKENS[4]

The author isolated from the carcass of a hen a bacterium which at first appeared to be a paratyphous. On further bacteriological studies, however, proved to be a colon bacillus. Colon bacilli are found quite frequently in chickens. This particular strain, however, appeared to be of importance for the reason of its high virulence. A subcutaneous injection of a loopful of the culture killed mice, and pigeons in two days. Chicks proved also very susceptible, an intramuscular injection killing them in a few days. The chicks which were used for experimental purposes revealed hemorrhagic enteritis which markedly simulated the lesions found in the original bird. The same owner lost a considerable number of chicks from the same disease.

THE FORMATION OF ANTIBODIES IN INFECTIOUS ABORTION[5]

Along the line of the experiments of McFadyean the author infected a steer and two bucks by injecting a pure culture of abortion bacilli into the prepuce which resulted in a positive reaction in all animals after two to three weeks. A multiplication of bacteria could be demonstrated, however, only in the prepuce of one buck. In pregnant cows the antibodies appeared inside of 10 to 14 days following an infection by feeding or through the vagina. Non-pregnant animals as well as males reacted at different times but invariably inside of 6 weeks. Following an infection through the udder in 2 goats the antibodies could be demonstrated serologically in the blood. One of these goats aborted, the other was not pregnant. Two other pregnant goats aborted after the author dropped upon their conjunctiva cultures of abortion bacilli. In these cases the antibodies appeared in the blood from four to nine days. The agglutinins reached their maximum in 17 days following the infection; in the non-pregnant goat after 11 days. In the goats infected through the conjunctiva the abortion occurred on the 23rd and 16th day respectively.

In spontaneous abortions the examination of the blood is of no special diagnostic importance. Even though antibodies are demonstrated in the blood the respective animal may give normal birth. Inasmuch as the body may overpower the infection in such cases the natural infection may act as a vaccination. This applies for an infection which takes place before oestrum. If, however, the infection occurs during or directly before pregnancy as a rule abortion follows. In some animals the antibodies can be demonstrated only after abortion. Very frequently the agglutinins appear first and the complement fixing substances only somewhat later.

THE BACTERIOLOGICAL CONTROL OF MILK[6]

The most important method for the bacteriological milk examinations are: (1) The determination of the number of bacilli on nutritive agar and gelatin; (2) examination for leukocytes; (3) the catalase test and (4) examination for B. coli and pathogenic bacteria. As a supplement the following examination is also recommended: (5) The reductase test; (6) the fermentation test at 37°; (7) examination of a stained preparation; (8) determination of the most important bacteria. The classification of the milk is then carried out, a rating is given on the result of each examination. The rating is made on a percentage basis. The various kinds of milk (sterilized and pasteurized milk, sterile raw milk, ordinary milk) are graded according to the rating obtained from the examination; records should be maintained of the tests which should be systematized as

to uniformity in such a way that the various workers could adopt them for the recording of the tests.

THE RELATION OF CONCENTRATES AND BUTTERFAT[3]

In the infant clinics of various hospitals of the City of Dusseldorf a series of examinations revealed that the qualitative composition of the mother milk is neither influenced by good nor by poor nutrition; as a matter of fact it was proven that during a starvation cure the chemical composition of the milk shows no change. Similar investigations with regard to cow milk were undertaken by the author in 1920 during which the animals were kept under the worst possible feeding conditions. Consideration was particularly given to the fat contents which as has been commonly accepted, is supposed to be greatly influenced by the feeding of concentrates which as known are rich in proteins and fat. In 38 well nourished cows with an average daily yield of 9.34 liters of milk a considerable discrepancy in the fat contents in the individual animals was noted. The fat contents fluctuates between 2.1 and 5.5 per cent. The average of all animals was 3.37 per cent. This average was therefore not lower than the normal which in this particular locality amounted to 3.0-3.25 per cent.

In 30 moderately nourished cows in which the average daily yield was 6.1 liters the fat contents was practically the same as in the well nourished cows. The average fat contents was 3.26 per cent. In this class only a diminishing of the milk yield has been observed.

In the 31 poorly nourished cows the feeding resulted in a still greater reduction of the milk yield. It averaged 5.5 liters per day; whereas the average fat contents was 3.51 per cent and therefore was higher than in the well or moderately well nourished cows. The good or poor feeding, especially the deficiency of concentrates has, therefore, no definite influence on the composition of the milk, especially with regard to its fat contents. The good or poor feeding of the cows exerts itself particularly on the quantitive production of the milk but not on the quality of the same. Poor feed and deficiency in concentrates increases the fat contents but diminishes the quantity of the milk.

THE NATURE OF THE TUBERCULIN REACTION[8]

Bessau observed that following repeated simultaneous injections of tuberculin and bovine serum into tubercular individuals, the hypersensitiveness for the serum has soon vanished, whereas the hypersensitiveness for the tuberculin remained. An identical cause for both of these phenomena appears therefore to be practically excluded. According to the investigations of Selter, he failed in producing anaphylactic shock in tubercular guinea pigs even after the injection of large doses of old tuberculin; milk and casein had no effect on tubercular guinea pigs. Confirming the observations of Bessau, Selter concludes that the tuberculin reaction is not an antibody reaction and has no connection whatever with anaphylaxis. He considers the same as a specific reaction which develops only in tuberculous individuals following the introduction of tuberculin. He is of the opinion that tuberculin should not be considered as a toxin but as an irritant which when coming in contact with the sensitive tissue of individuals infected with tuberculosis induces an inflammatory condition of the lesions without itself undergoing any change. It induces an irritating or inflammatory condition not only in the tubercular foci but also in the entire body tissues which have undergone specific changes as a result of the tubercular infection. The possibility of inducing in the body tissues an inflammatory condition corresponds with the tuberculosis resistance of the infected organisms. A further investigation will have to prove the correctness of the above theory on the action of the tuberculin. If the tuberculin is considered simply as an irritant, then it cannot be considered as an antigen which is also accepted by all authors. Therefore an immunity cannot be established with the same.

Perkins and Shen have reported the identification of B. lactimorbi in the throat region of cats. It is suggested that this micro-organism may have been mistaken for the diphtheria bacillus in previous reports in which cats were incriminated as diphtheria carriers.

[3]Dr. F. Pfaff (Zet. f. Infek. Par. Krank., etc.).
[4]Y. Baudet (Tijd. voor, Dierg.).
[5]M. Thompson (Dut. Tier. Woch.).
[6](Ann. de l'Inst. Pasteur, 1919.)
[8]Professor H. Selter (Deuts.).
[9]Dr. C. Capelle (Inaug. Dissert. Berlin).

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Horse Parasites

IN general the parasites infesting horses infest asses and mules also.

Horses are infested with three species of tapeworms, all of them having heads which are not provided with hooks and all of them occurring in the United States. The eggs of the tapeworms are provided with a piriform apparatus such as was described in the previous paper on eggs and larvae of ruminant parasites. The egg of Anoplocephala magna is described as oval, round or polyhedral, and is about 88u long by 50 to 60u wide. The egg of A. perfoliata (Fig. 1) is approximately spherical and

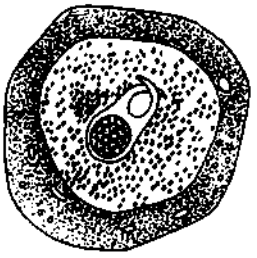


Fig. 1. *Anoplocephala perfoliata.* Egg. x 360. From Yorke and Southwell, 1921.

is 65 to 80u in diameter. The egg of A. mamillana is 50 to 60u in diameter according to some writers; Fiebiger states that it is oblong.

Of the flukes infesting the horse, Fasciola hepatica, Fascioloides magna and Dicrocoelium dendriticum have already been considered in previous papers. In India the horse is infested with a blood fluke, Schistosoma indicum, the eggs passing in the manure and in the urine. The egg (Fig. 2) is oval, with a spine at one end. In the fluke these eggs are from 92 to 100u, rarely 112u, long by 42 to 44u, rarely 52u, wide, with a spine 13 to 14u long; eggs from the rectum of horses are 120 to 140u, rarely 152u, long by 68 to 72u wide. The remaining flukes reported from horses are mostly amphistomes, flukes having an oral sucker at the anterior end and having the ventral sucker or acetabulum at the posterior end. Of these, Gastrodiscus aegyptiacus has ovoid eggs (Fig. 3) 150 to 170u long by 90 to 95u wide, according to some writers, or 170 to 190u long by 110u wide, according to Looss. The eggs of G. secundus are 150 to 160u long by 90 to 100u wide. The eggs of Pseudodiscus

Fig. 2. *Schistosoma indicum.* Egg. Enlarged. From Skrjabin, 1913.

collinsi and Ps. stanleyi do not yet appear to have been observed.

There are numerous nematodes infesting the horse. Among these is a species of Strongyloides, S. westeri, which is so far reported only from Holland. The life history of this worm is similar to those of species of Strongyloides referred to in previous papers; the eggs hatch soon after their passage from the host and if manure is not examined promptly after it is passed, larvae will be found instead of eggs. The eggs of S. westeri are thin-shelled, 40 to 52u long by 32 to 40u wide, deposited in strings similar to those described by Ransom for S. ovocinctus from the prong-horned antelope. The rhabditiform larva is 495 to 525u

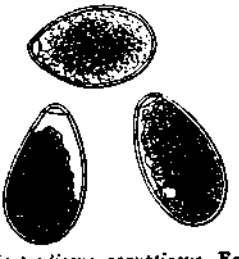


Fig. 3. *Gastrodiscus aegyptiacus.* Eggs. x 100. From Railliet, 1893.

long by 15 to 20u wide.

Among the most important of the spirurid worms of the horse are the stomach worms belonging to the genus Habronema. The eggs of H. muscae (Fig. 4) are thin-shelled and are 40 to 50u long by 10 to 12u wide in an

early stage of development in the uterus. As the embryo develops the egg becomes longer and at a stage where the embryo is doubled on itself is 87u long and about the same width as given above. Later the shell becomes closely applied to the embryo except in the tail region and in this stage the shell is very suggestive of a cuticle. The embryos are 85 to 100u long by 5 to 7u wide, with a rounded anterior end. The eggs of H. microstoma are oblong and truncate, and are 45 to 49u long by 16u wide. The embryo is 90 to 98u long. The eggs of H. megastoma are elongate, 40 to 57u long by

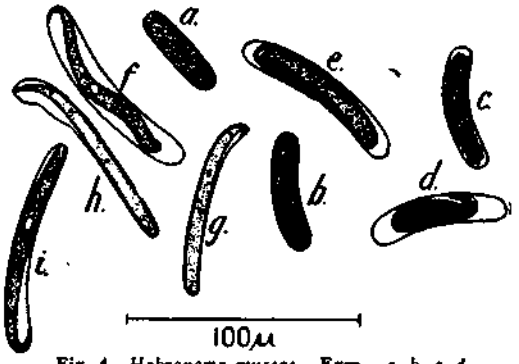


Fig. 4. *Habronema muscae*. Eggs. *a, b, c, d*, early stages of development; *e*, containing embryo doubled on itself; *f*, with embryo almost straightened out; *g, h, i*, with flexible egg shell applied to embryo in a manner resembling that of a cuticle. From Ransom, 1913.

10 to 18u wide, according to Hill. Railliet states in his Traité that these eggs are 330 to 350u long by 8u wide, and these measurements have been copied by subsequent authors, but apparently the figures for length here have been multiplied as the result of a shifted decimal point due to a printer's error or a lapsus of some sort. Hill states that the embryo is about 104u long, whereas Railliet states that it is 600 to 700u long, perhaps as the result of a lapsus similar to that in the case of the egg measurements. Gongylonema

Fig. 5. *Strongylus vulgaris*. Egg. Enlarged. From Winchester, 1892.

scutatum, the gullet worm of sheep and cattle, occurs in horses also, and has been collected by the writer from the horse at Bethesda, Maryland. Physocephalus sexalatus, one of the stomach worms of swine, has been reported from the ass by Seurat, but the description of his specimens does not agree in all respects with the description of P. sexalatus and it seems advisable to reserve judgment in regard to the occurrence of this worm in the horse for the present.

Dioctophyme renale, the giant kidney worm of the dog, has been reported at least four times from the horse by various writers.

In spite of the fact that the numerous strongyles in the large intestine of the horse constitute the most important group of worm parasites of the horse, there is an astonishing scarcity of figures of the eggs and of egg measurements. It is of great interest to note that the only figure of one of these strongyle eggs which has been found by the present writer is one published by the late Dr. J. F. Winchester thirty years ago. This egg (Fig. 5), like the remainder of Winchester's figures, is labeled Strongylus armatus, but the other figures are evidently figures of S. vulgaris, and the sizes he gives for the egg, 92u long by 54u wide, appear to be correct for S. vulgaris. Winchester's paper is an excellent piece of work, giving excellent illustrations of S. vulgaris eight years before Looss in Egypt definitely separated out and named this species. It shows what good work the practicing veterinarian can do along investigational lines when he has the time, the inclination and the taste for painstaking work.

The eggs of the other strongyles of the large

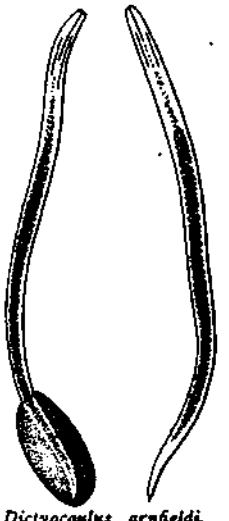


Fig. 6. *Dictyocaulus arnfieldi*. Larvae, the one at the left in the process of leaving the egg shell. x 150. From Railliet, 1893.

intestine of the horse are probably similar in a general way to those of S. vulgaris in appearance. The egg dimensions which have been published are as follows: Cylicostomum euproctum, 80 to 100u long by 50 to 60u wide; C. insigne, 75 to 86u long by 45 to 50u wide; C. goldi, 100u long by 50u wide; OEsophagod-

ontus robustus, 100 to 130u long by 50 to 60u wide; Triodontophorus minor, 87u long, according to some writers, or 80 to 90u long by 40 to 50u wide, according to Boulenger; Tr. serratus, 130u long; Tr. intermedius, 90 to 100u long by 40 to 50u wide; Tr. tenuicollis, stated as similar to those of Tr. intermedius; Tr. brevicollis, 90 to 100u long; Acheilostoma par-

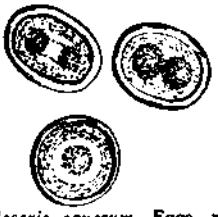


Fig. 7. *Ascaris equorum*. Eggs. x 130. From Railliet, 1893.

anecator, 63 to 64u long by 43u wide. The egg of the small trichostrongyle, Trichostrongylus axei, from the stomach of the horse, is 100 to 112u long by 63u wide, according to most writers; Wolffhuegel says the eggs from Argentine specimens are 80u long by 25u wide, a discrepancy that calls for further investigation.

The egg of the horse lungworm, Dictyocaulus arnfieldi (Fig. 6) is 80 to 100u long by 50 to 60u wide and contains an embryo when deposited. These eggs hatch in the lungs and the larvae ascend the trachea, passing out in

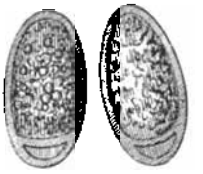


Fig. 8. *Oxyuris equi*. Eggs. x 200. From Railliet, 1893.

the manure. The larvae (Fig. 6) are 400 to 490u long by 14 to 18u wide, with a thin transparent caudal appendix.

The eggs of the horse ascarid, Ascaris equorum (Fig. 7) are almost globular, 90 to 100u in diameter, and are not segmenting when deposited. The eggs of the pinworm, Oxyuris equi (Fig. 8), are 85 to 95u long by 40 to 45u wide, asymmetrical, somewhat flattened on one side, and provided with a clearly defined structure resembling an operculum or lid at one end. The eggs of the viviparous pinworm of the horse, Probstmayria vivipara, a species occurring in the United States, Europe and elsewhere, are elongate oval, 58 to 100u long by 40 to 75u wide.

Tobogganing on Parnassus

Third Annual Excursion of the Helminthological Society of Washington

Seymour Hadwen

Tick, tock, tuck!
Hadwen is in luck!
Here's a pretty little tick
Sent in by Doctor Tuck!

Marion Hall

Because is a woman's reason.
I mention the fact, my dear,
For it happens to be the reason
That accounts for your being here.

N. A. Bobb

Nematode, nematode,
Wilt thou be mine?
You shall not live in horses,
Or cattle, or swine,
But feed upon roses
And lilies so white,
And have a new Latin name
Every third night.

B. H. Ransom

Ding, dong, bell!
Won't you please to tell
How to keep my pigs from worms
And raise them strong and well.

Albert Hassall

Sing a song of sixpence
And one about a medal.
It gives the weary rhymester
Another line to peddle.
Now the medal's come to hand,
It surely is a gem.
Hurrah for Doctor Hassall!
May he get a lot of them!

C. A. Pfender

There's the X upon the ten-spot,
There's the X of double-cross,
There's the unknown X of mathematics,
And the Xtra fare—a total loss—,

There's the teacher's X for rotten answers,
And the eX- for what you used to be,
But the X that's shining in the X-ray
Is the X that appeals to me.

W. H. Hoffman

Baby bye, here's a fly.
Let us soak him in the eye!
How he crawls up the walls—
Hope he slips and falls!
Let us break his six long legs,
Root out pupae, larvae, eggs.
Let us cry: "Swat the fly!"
Tell them, babe, good bye!

Maurice C. Hall, Senior Zoologist, U. S. Bureau of Animal Industry

(His name is becoming a household word not only in this country but throughout the world, and since his portrait and commentary about his achievements in the realm of parasitology is running in the pictorial section of many of the metropolitan dailies we see no impropriety in introducing to you, our readers—Maurice C. Hall, scientist, poet, editor.—Ed.)

R. W. Hegner

Toll the Vorticella bells!
The Ameba now is dead!
Balantidium, in its grief,
All its cilia has shed.
Toll the Vorticella bells!
The Ameba's dead and gone!
Gone, but not forgotten quite—
Its synonyms will still live on.

SUMMER SORES

I have a patient, a very valuable yearling filly, with cuts on shin bones of both rear limbs. Wounds are not very large. I am having trouble in keeping excessive granulations down. Quite a little bunch persists in springing up from both wounds. Red in color.

I have cauterized them a number of times. I wish to get this colt cured, with clean limbs. Will you please inform me what line is best to follow?—L. S. L., Ohio.

Reply: It is very probable that the stubborn granulations on the colt's legs are due to some constant form of irritation, which should be removed.

I am wondering if you are not dealing with a summer sore infection, due to flies, and think the best way to handle granulations of this kind is to touch them up with formalin until a leathery covering has been produced and repeat only after the eschar has fallen away. Formalin is preferable, in dealing with excessive granulation, to cauterization with the hot iron or other chemical agents.

The number of deaths in the human from cancer for each 100,000 population each year in Europe is 76.6; Australia 73; America 65.7; Asia 54.4; Africa 33.4. Cancer was almost unknown in Japan until it became Europeanized but cancer now claims as many victims as it does in England.

D'Herelle reports the successful immunization of buffalo in Indo-China against hemorrhagic septicemia by the use of an attenuated virus prepared by growing the B. bipolaris in artificial medium.

The value of farm animals in the United States was $4,145,600,000.00 in 1919; $2,998,500.00 in 1920; and $1,937,000.00 in 1921. The decline from 1919 to 1920 was largely due to a decrease in the number of beef cattle, sheep and hogs and the decline from 1920 to 1921 was due to lower prices.

An extensive paratyphoid infection in guinea pigs was controlled by immunization with a paratyphoid bacterin. This would suggest that the same condition in larger animals may be controlled by the use of properly prepared bacterin.

Zootechnics

Edited by E. MERILLAT, M. D. V.

WHITE WASH PREPARATIONS

1. Take a half bushel of unslaked lime and slake it with boiling water, covering during the process to keep in steam. Strain the liquid through a fine sieve or strainer, and add to it a peck of salt previously dissolved in warm water, 3 lbs. of ground rice boiled to a thin paste and stirred in while hot, one-half pound of Spanish whiting, and 1 pound of clean glue previously dissolved by soaking in cold water, and then hang over a slow fire in a small pot hung in a larger one filled with water. Add 5 gallons of hot water to the mixture, stir well, let it stand a few days covered from dirt. It should be applied while hot, for which purpose it can be kept in a kettle or a portable furnace. Coloring matter may be added as desired. When a less durable whitewash will answer, the above may be modified by leaving out the whiting and glue and omitting the boiling. It need not be applied hot and may be applied with a spray pump.

2. Slake 25 lbs. fresh lime in sufficient water to make a paste, sprinkle in 15 lbs. of flowers of sulphur, add 30 gallons of water, and boil for an hour. Then add enough water to make 50 gallons and apply with a spray pump, using a Bordeaux nozzle. This is in some favor as a disinfectant.

3. Take 20 lbs. of unslaked lime, 3 lbs. of common salt, and 1 lb. of alum. Slake the lime with boiling water until the consistency of thin cream. To increase the antiseptic properties of the wash, add one-half pint of crude carbolic acid to each bucketful.

4. To half a bucketful of unslaked lime add two handfuls of common salt, and soft soap at the rate of 1 lb. to 15 gallons of the wash. Slake slowly, stirring all the time. This quantity makes two bucketfuls of very adhesive wash, which is not affected by rain.

5. Slake lime with water, and add sufficient skim-milk to bring to the consistency of thin cream. To each gallon add 1 oz. of salt and 2 ozs. of brown sugar dissolved in water. The germicidal value of Nos. 4 and 5 may be increased by adding one-fourth pound of chloride of lime to every 30 gallons of wash.

6. Slake quick lime with enough water to make a thick paste. While it is slaking add a pint of melted lard or other grease and a cupful of salt to a bushel of lime. Add enough water to bring the solution to the consistency of thin cream and strain through a piece of burlap. For chicken house or barn where milk is not made it is advisable to add four ounces of some coal tar disinfectant to every gallon of mixture.

7. There are on the market preparations that make excellent whitewash and that are not expensive. In many cases these are better than the poorly prepared, home-made mixture.

—Hoard's Dairyman.

ECONOMY IN DELIVERIES BY HORSE AND WAGON

Cheaper Than Fords, Tea Company Finds

Figures in favor of the horse for delivery service continue to pile up among business houses that keep account of costs. The Jewel Tea Company, which is using 783 horses and 286 light motor cars, has found that the cost per day for each horse and wagon is $2.61, including depreciation, while the operating cost of the Ford car is $4.13, according to records furnished to the Horse Association of America.

Delivery horses and light draughters sold well on Thursday at Fiss, Doerr & Carroll's auction mart, the demand indicating that a good many other concerns are having about the same experience as the Jewel Tea Company. Two sales will be held as usual at the big arena in East Twenty-fourth street. For tomorrow's auction some attractive offerings in fresh western work horses have been listed. —N. Y. Times.

The Missouri Association of the Poland China Swine Breeders have raised $30,000 for promotion purposes. Pure-bred breeders like other successful business men have found that it pays to keep their name before the public.

OVER 2,000 THOROUGHBREDS REGISTERED WITH JOCKEY CLUB

Followers of racing and all others interested in the thoroughbred will be pleased to learn that there is a marked increase over last season in the number of thoroughbred foals registered this year with the Jockey Club. Two thousand one hundred and seventeen foals were registered this year as against 1,823 last year and 1,737 in 1913. This is proof that the interest in blooded stock production is on the increase and that the pendulum is swinging back to normal after a period of depression.

HORSE AND MULE TWINS

The film I am enclosing herewith is of twins, one of which is a horse colt and the other a mule. They were born April 10, out of a mare shown in the photograph belonging

to John Vanderventer, who lives about three miles from Mount Pulaski, Illinois. The delivery was affected without any difficulty and both of the colts have developed normally until now, July 2. C. M. Merriman.

Mount Pulaski, Ill.

The number of cattle on farms is gradually increasing, according to the investigation made by the United States department of agriculture.

The first colt foaled by Man o'War, the superhorse, was born at the stables of the owner, Samuel D. Riddle, Lexington, Kentucky, February 22, 1922. It is a bay filly, spry, healthy and out of Masquerade.

According to the estimates by the Department of Agriculture, the American people are rapidly developing their demands for milk and its products. The average per capita consumption of milk in 1921 was 49 gallons and exceeds all previous records.

There were 11.1 per cent more breeding sows on farms in the United States on April 1, 1922, than on April 1, 1921. The increased number was due largely to the excessive corn crop in 1921.

DOG BAITING

Although 48 States have dog laws designed to protect sheep, many of them are so poorly planned or so poorly enforced that dogs still do much damage to flocks, especially in the farming States where flocks are small and dogs are plentiful. There is need for improvement in these laws, but, says the United States Department of Agriculture, a poor law that is enforced with energy may produce better results in sheep conservation than a much better law that is half-heartedly enforced. Dogs keep many men from going into the sheep business, which is probably a greater setback to the industry than the actual damage done by them.

—U. S. Clip Sheet.

Comment: If the sheep industry goes flooey from any cause, whether it is the changing agricultural situation; the miserable wool market; the fact that American people just won't eat mutton on a large scale; or the demoralized foreign markets, blame the dog. Tax him, harass him, kill him off, and everything will be serene with the sheep man. It is assumed that the department of agriculture knows lots of fellows who are just itching to go into the sheep business but are deterred and others who have given up in despair, on account of dogs. The fact that whole train loads of sheep have come on the market that did not bring enough to pay the freight and that there have been two or three clips hardly worth the cost of handling is nothing. It's the dogs. Raus mit 'em.

A ewe patient of mine gave birth to five lambs, all of which died within 24 hours.—J. A. S.

The International Horse Show, Olympia, London, June 17-24, is reported to have been one of the most brilliant events of this kind ever held in England.

Wollman has found that the fly contaminated with typhoid bacilli may remain infective as a carrier for at least three weeks. If such contaminated flies are allowed freedom, they usually purify themselves in from eight to ten days.

TUBERCULOSIS AN ECONOMIC RATHER THAN HEALTH MENACE

Bovine tuberculosis is a scourge, an ugly, ugly scourge. It takes a big toll in milk and meat, both as regards quantity and quality; it strikes right into the heart of the hog industry; and some children become infected with it. It is, however, becoming evident that it menaces man more from the financial losses incurred than from the danger of contracting tuberculosis from cows; and it is furthermore becoming obvious that the fear once entertained or suspected that the cow was responsible for more of the tuberculosis of humans than even the most radical would now dare to claim, has done a great deal of good in bringing the disease within the control of systematic regulations.

The admitted fact that it does infect some human beings, no matter how few, is one of the reasons why it should be eradicated but it is not the only one. The reason that concerns us most and upon which we as veterinarians should use as the rule and guide of our faith is the fact that it produces subnormal animals and subnormal animal products which are unprofitable to the producer and of low value to the consumer. It is now much more consistent to preach that the milk of a tuberculous cow, if the disease were to be allowed to go on unchecked, would be more dangerous from the standpoint of its low food value than from that of directly causing tuberculosis; and that production of milk or even meat, which is already too low from perfectly healthy animals, is very unprofitable among those enfeebled with such a serious constitutional ailment as tuberculosis.

The facts we should know and upon which we should prepare our themes are:

1. Pulmonary tuberculosis or any tuberculous infections in adults by bovine bacilli are very infrequent.

2. Osseous and articular forms are generally of the human type (Parks).

3. Generalized tuberculosis of humans due to the bovine type is rare.

4. Cervical adenitis and abdominal tuberculosis in infants is the most common form due to the bovine bacillus.

5. The repression of human tuberculosis depends more upon the control of human sputum than that of the milk supply (Calmette).

Some cases of typhoid carriers have been found to be due to persistent infection of the gall bladder. The spread of typhoid infection from such cases is overcome by removing the gall bladder.

Zilva, Golding, Drummond and Coward report that the lack of Vitamine A is not the sole determining factor in the occurrence of rickets in pigs. However, Vitamine A is essential in the growth and development.

Who Are These Veterinarians?

(One year's subscription to Veterinary Medicine for the first two correct answers received within ten days. Missouri veterinarians excluded from the contest.—Ed.)

The analysis of urine from horses affected with azoturia does not reveal or indicate an inflammatory disturbance of the kidney, according to Hayden and Tubangui.

Bulletin 342, Agricultural Experiment Station, California, by Thompson and Voorhies on "Hog Feeding Experiments," contains a wealth of authenticated data every veterinarian should read. Among the general conclusions we quote:

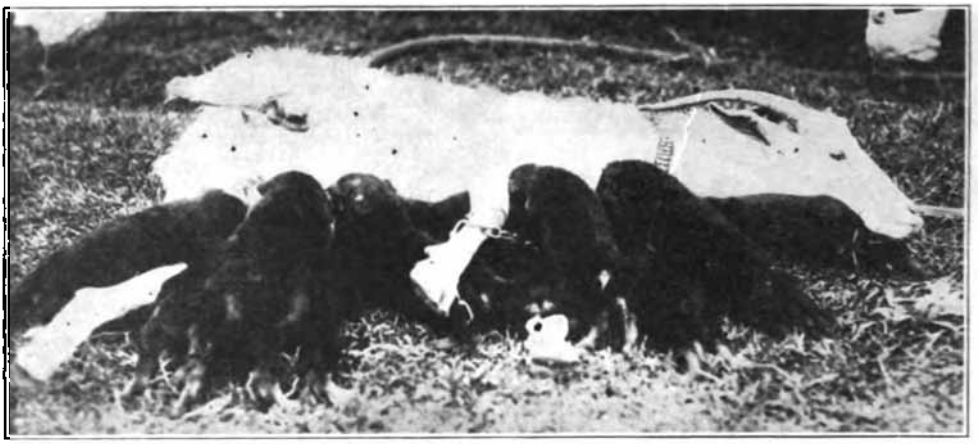
1. "Pigs having access to self feeders eat more grain daily on the average than those fed by hand."

2. "Pigs on self feeders grow evenly. When hand fed, the larger pigs usually grow relatively faster than the smaller.

3. "Self feeders reduce the cost of labor and make it possible for less feed to produce a pound of gain than is true of hand feeding.

4. "Self-fed pigs gain faster than hand-fed."

TRYING TO GET OUR GOAT



Referring to the goat and pup illustration we reproduce from the April issue, Dr. W. L. Williams, Emeritus Professor, New York State Veterinary College, Cornell University, writes:

"I can understand how one pup can suck a she-goat (are you sure this one is not a billy) or even two might suck at one time, but how in the devil eleven pups can find mammae along the ventral surface of a caprine female from her chin to the perineum is more than one not up on goats can follow.

"There is another confusing passage where it is stated that the goat 'allowed the pups to nurse standing up.' Which were standing: the goat or the pups? If the goat was standing up will you please explain whether Oklahoma pups have 'rubber necks' with which they can reach a goat's teats or whether the millionaire furnished the 11 pups with 44 stilts?"

The most apocryphal incidents are sometimes full of truth and precept. At least this is the case with the remarkable she-goat, the story of which was not half told in the brief caption of our April issue. The illustration was intentionally left to mutely convey its subtle distinctions. But since the very authenticity of the narrative is attacked and our defenseless heroine is ruthlessly assailed and the story she tells falls upon blind and even unbelieving eyes, we just must come to her rescue and relate the whole truth, and here it is:

Our heroine, first of all is a supershegoat, not one of the ordinary kind that forages in the alleys for a living, we want our readers to understand. We say "super" because there is no degree above the superlative to distinguish her from the ordinary run of goats. She has a maternal instinct that is wonderful, almost beyond human comprehension. Mind you, she maintains a prandial discipline that is beautiful to behold and which can only be appreciated by people of past generations when children obeyed their parents and ate what and when they were told.

When dinner is ready in this goat's home, like good children, the puppies all take their places at the "table," crowding a little but always in good order. Each one knows its place and its turn. But as the accommodations are limited through no fault of her own, two of them eat at the time and when (note the fineness of this) she thinks (thinks, mind you) these two have had enough of her copious nourishment she strokes them backward (notice the uppermost hind leg in the act of stroking) and thereupon leaves two more crawl forward to the teats while the two stroked away return to the tail end of the line, there to await their turn again. The nursing process continues thusly until every pair of appetites is satisfied or, until the food supply is exhausted.

But this is by no means all. When the meal is declared over, the White Wyandotte chick, waiting patiently in the background with a countenance even the unbeliever will admit is one of pleasant anticipation, steps forward and picks up whatever dripping its mammalian chums have dropped. There is no waste in this disciplined home.

As regards the matter of nursing while the goat is standing the reader is left to whittle his own criticism after a study of the dimensions involved.

All of which reminds us of old Doc Yak, the hero of Sidney Smith's cartoons running in the newspapers a few years ago. When one of Doc's whoppers was being challenged as the height of improbability he placidly stroked his goatee and declared thoughtfully: "Well boys, that's my story and I'm going to stick."

Canine, Feline and Avian Practice

Ovariectomy of Small Animals Simplified

Dr. William Fink, Newburgh, New York

VETERINARIANS in small cities who have canine work along with their country and estate business, who do not maintain hospitals, as was formerly the custom, sometimes find it inconvenient to handle their ovariectomy cases. The following method adopted since giving up hospital may be used to advantage by practitioners in a mixed practice. With the aid of an improvised operating table made of an ordinary kitchen table with an extra top about the same size hinged on one end of the table, and with folding legs on the under side, making a very practical operating table. On each of the four corners of the extra top, fasten a ¾-inch ring with metal or leather fasteners, and with soft cord or pieces of bandage, bitches can be spread out on the table in position for operating. The cords are fastened by a loop above the hock and elbow joints, and the other end fastened to the ring on the table. When the animal is secured, the table is elevated to the desired height by the hinged legs that fold under the extra top. If anaesthetic is used, this can be administered, and operator proceed with operation.

The technique of operation on bitches secured by this method can be performed in a few minutes and the animal returned to the owner to keep at home for twenty-four hours, after which it can be returned to the office of practitioner for the removal of the sutures; occasionally the owner may remove the sutures. The patient suffers no inconveniences whatever from the operation while under the owner's care, and is no bother to the veterinarian for care or keep. Bandaging or dressing are unnecessary encumbrances and hindrance to the healing of the wound.

When the animal is secured on the table, clip the hair and paint with iodine the area where the incision is to be made. Make the incision through the skin only, not more than one-half to three-quarters of an inch in length. By the use of two pair of small nose forceps, the muscular tissue of the abdominal wall is separated by spreading until the peritoneum comes into view, and with a little pressure of forceps a small opening is stretched to make opening large enough to observe internal organs or omentum and intestines. So far, very easy, is it not?

The next step requires a little practice, and would advise veterinarians interested in this method to secure an animal that can be sacrificed, and perform the first operation on a "quiet" one.

The "next step" referred to in the above paragraph is performed with an ordinary long handle button hook or a short shoe hook, about four inches long. This is inserted into the abdominal cavity and passed under one of the horns of the uterus or Fallopian tubes. It is not necessary to see the Fallopian tubes to pick them up; just pass the hook down along the inside of abdominal wall, then inward and under the tubes or vice versa, down toward the colon and outward and hook will pass under the organ. With a little practice you can determine when you have a "bite." With little traction, bring the extremity with ovary out through the opening and with compression forceps hold it until ovary has been excised. Either drop it back into cavity and secure other tube, the same way, or draw it further into view until bifurcation appears, and secure opposite horn with button hook and then replace the first tube. This will not "crowd" the opening. Passing probe or sound into uterus through the vagina to locate the tubes is unnecessary, as the hook finds them quite easily.

When the operation has been completed on both horns, the opening can be closed by one continuous suture of linen thread and a curved needle. Start three-quarters of an inch from either side of the incision, and go to the same distance on the opposite side, taking in muscular tissue and skin, drawing suture snug to cause suture to make a fold over incision. No

dressing or bandage is necessary, and bitch can enjoy her own home surroundings until the day when suture can safely be removed. In come cases, the suture can be removed next day with equally good results as when the suture is left longer. The owners are better satisfied and I dare say the canine pets are much happier than when operated on by old methods which require three, four, or sometimes five sutures or double sutures, and longer wounds that always did open and suppurate for several days or weeks, leaving a large scar, after they are in the hospital for a long period, subjected to the diseases and infections of kennel life—a detriment to the veterinarian and disgust of the owner.

For the veterinarian in the small cities and towns, this method will help save a lot of time and trouble harboring the patients, and if the assistance of a member of the family or friend can be secured, a hard task will be made easy.

Doubtless there are skeptics who will criticize some part of the operation as described, and will say: "Yes, there is another fellow who does the operation while standing on one leg, with a hand tied behind his back." Try it! Get a button hook and keep at it until it is trained to the trick of finding the Fallopian tubes; develop the sense of touch and if you can't perform ovariectomy on a bitch in less than three minutes, I will send you a hook that is guaranteed to do it in less than sixty seconds—an educated hook that has been in use for twenty years.

The same method applies to operation on cats, by flank incision—a small incision that requires no suture to close the wound. This operation is also performed with the silly little button hook. By spreading the tissues of the abdominal wall with the small end forceps instead of cutting through to the peritoneum, the operation is made almost bloodless. It seems wonderful how the wounds heal in twenty-four hours without the aid of an antiseptic or dressing of any kind.

On very young animals you will also find that they do not seem to suffer nearly so much when a few drops of cocaine are administered as when an anaesthetic is used. Also, it does not seem to make a particle of difference if the animals have been fed the same day, although in our practice we try to have all the cases come on two evenings of the week, and unfed since the morning of the day of operation.

Cats and kittens must be anaesthetized to handle successfully. The operation through the flank by the same method of spreading muscle tissues and operating through small opening. When released, the skin incision is not opposite the inner wound, and does not always require suture. When it is necessary, an ordinary sewing needle and white cotton thread are sufficient for purpose of uniting the skin only. Do not use antiseptics, as you will have trouble.

Sterilize instruments by dry heat or boiling point for a few minutes, and paint the surfaces lightly with tincture of iodine, permitting it to evaporate.

AN ENZOOTIC INFECTION IN TURKEYS CAUSED BY B. PARATYPHOSUS[3]

The infected turkeys revealed on clinical examinations inappetance, dyspnea and somnolence. The autopsy revealed a serofibrinous pericarditis, necrotic foci in the myocardium, peritonitis, necrosis of the lungs, swelling of the spleen, in other birds also catarrhal enteritis and in one, superficial extensive ulcerations with regenerative tendency. The microscopical examination, the biological tests and infectious experiments proved that the causative agent was the B. paratyphosus.

BRINE POISONINGS IN CHICKENS

Joehnk observed a brine poisoning among chickens. They were fed with a mixture of brine and flour. Up until noon of the following day 29 chickens became affected, of which 21 died and 8 had to be killed. The birds which have not eaten as much, especially the young chickens which were kept from the food by the older birds, showed only thirst. The symptoms were paralysis of the extremities and wings, convulsions and very slight respiratory activity.

White diarrhea in chicks is one of the most destructive diseases of chickens and is responsible for extensive losses each year in various sections of the country. The cause of this disease is the B. pullorum and hens may be carriers, the infection occurring in the ovaries and may be incorporated in the egg. Carrier hens usually give a positive agglutination test and by this method the extent of the disease can be reduced and in some instances eliminated.

Otitis Externa of the Dog

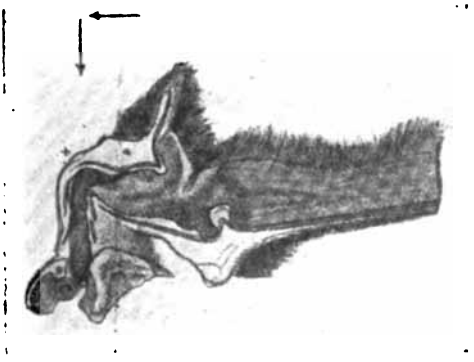
By Dr. Hans Heusser

DR. HEUSSER comments on the frequency of this complaint in the dog, and states that one out of every ten dogs brought to the clinic of the University of Zurich was suffering from disease of the ear.

As causes of the malady he calls attention to the fact that in the horse and man the passage of the ear is only a wide and slightly bent tube, whereas in the dog a sharp right-angled bend (Fig. 1). In the free pendant ear (Fig. 2) there is a cartilaginous plate situated at this bend in the wall of the medial passage, the antitragus or lower ear valve, which hangs over the opening into the ear (as the epiglottis does in the larynx) and closes the passage in the pendant ear like a valve. By drawing the external ear upwards and outwards the bending in the passage is straightened, and at the same time the cartilaginous plate goes back and a straight sound may be passed up to the drum of the ear (Fig. 3).

A further predisposing cause is the disposition of the external ear—the so-called "droop" or "hang" of it. Dogs with long, drooping ears are the chief sufferers, whereas short or crop-eared dogs are most free from the complaint. The otitis here is due to the fact that in long-eared dogs, as a result of pendency of the external ear, there is a kinking and narrowing of its lumen and a contact of the internal skin surfaces, and in the movements of the animal a rubbing together or chafing of these places (Fig. 4).

Another cause of otitis mentioned by Moller and others is the hindrance to evaporation and



circulation of air in pendant ears and the decomposition of wax and epithelial cells. As bearing on this, if the ears be bandaged down tightly not only is an inflammation of the ear not cured, but considerably worsened.

Fig. 2—Right pendant ear of a dog in the natural position seen from the ventral surface.

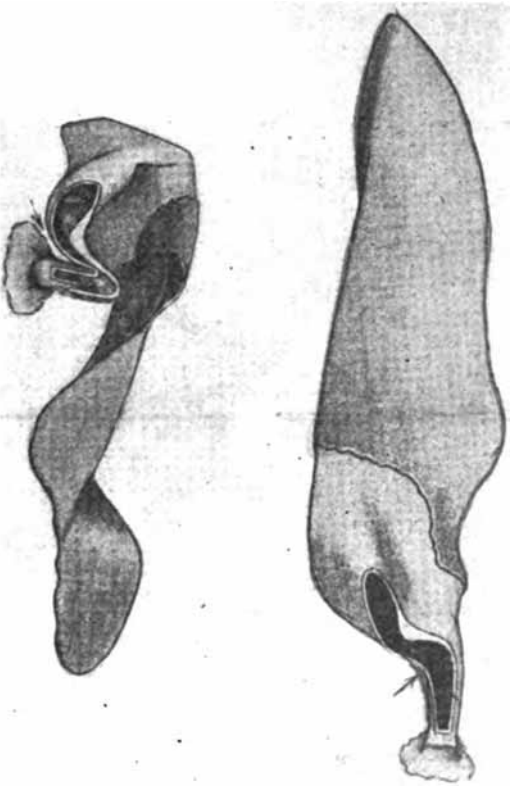


Fig. 2 Fig. 3

Half natural size. Tubus partly opened. Marked kinking of the same and ear valve.

Fig. 3—Ear of the same dog stretched out, seen from the ventral side. Kinking of the tube greatly reduced; ear valve obliterated. Half natural size.

Long hair hinders the circulation of air more than short hair, and, as a result, it is very possible there is increased temperature inside the external ear and its passage, and in this way there is a favorable influence on the disease in long, wolly-haired subjects. Although only about 15 per cent of all dogs are long haired, yet 30 per cent of these were found to be the subjects of otitis.

As further factors a number of inflammatory conditions of the external skin—dermatitis, eczema, and exanthema—are prevalent in the dog. In 1917, out of 1,600 dogs brought to the clinic 229 had otitis and 253 skin diseases due to eczema. In most cases the skin disease was the cause of the otitis. Collections of dirt, skin scales, and ear wax, are doubtless frequently big factors in the development of otitis, and they are most prevalent in a dry, hot summer.

Chemical decompositions, bites, and distemper, give rise to catarrh of the ear. Otitis may be due to parasites (dermatophagus auriculi felis or dermatoptes cuniculi). Cadiot describes a parasitic otitis due to symbiotes auricularum. Foreign bodies in the ear are often so far in as not to be discernible, and comprise awns of grass and splinters of wood.

Fig. 4

The therapeutic measures in otitis are in principle those applied to the treatment of eczema. First of all a thorough cleansing of the ear passage and external ear is necessary, which is effected by means of cotton wool and forceps, by which all skin debris is removed. Dry treatment produces better results than intensive moistening of the affected skin. The secretions are removed with dry lint or wool; if thready exudate is present a damp tampon of wool is best. Dry crusts and scabs must be softened by a mild, non-irritating ointment. Washing out the ear with a special syringe is seldom necessary. The passage in the dog, as a result of its bending, can only be incompletely cleansed mechanically, and, on the other hand, any fluid brought into the ear stagnates in the depths of the passage and can scarcely be completely removed. Eventually fat soluble fluids, such as spirit, ether or benzene, should be used to wipe out the ear, especially if dirty, sticky skin deposits are present. Afterwards dusting with a mild disinfectant powder, such as boric acid, is recommended. In cases of obstinate discharge, or where foreign bodies have penetrated the depths of the passage, splitting and clearing of the tubes is recommended. Under local anaesthesia or general narcosis the lower half of the ear being shaved, and after introduction of a sound into the passage, the skin, subcutis, parotis, and the auditory meatus, is split up to its most internal bony part.

After putting on the wound clamps, and eventual arrest of hœmorrhage, it is easy to survey and clear out the whole extent of the passage. A tampon fixed by a few sutures is then inserted and removed in two or three days. The wound is treated as an open one. The operation is well borne.

In general the treatment of otitis demands much attention, patience and thoroughness. In fresh cases our aim is effected in a short time, whilst the treatment of old anad neglected cases is almost useless.—Wiener Tierarztliche Monatsschrift (G. M. Vet. Jour.).

An unnamed fatal infectious enteritis of chickens has prevailed for several years in Holland. The disease is probably caused by a short, non-motile Gram negative bacillus that occurs in the intestinal lesions and the blood of diseased fowls. The disease is controlled by the use of a bacterin containing the causative agent, an anti-serum.

"The idea of consultation is based upon confidence. It is a dutiful as well as a practical idea. It presupposes sincerity and virtue. Without morality for a foundation, the art of consultation is lost."-(Dr. Jacob Helmer, Jour. Comp. Med., Nov., 1899.)

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

HONEY LOCUST. DELICIOUS HOLLY. PRICKLY ASH.

I am sending some specimens of limbs and pods and berries taken from trees growing in a cow pasture. A number of these cows have been affected with the following symptoms—extreme nervousness, dilation of pupil of eye, diarrhoea. They seem to recover when taken out of pasture for a few days and given a hypodermic of morphine in acute cases. Then generally they do not have another attack for two or three months.—O. M. N., Miss.

Reply: The plants are as follows: The one seeded honey locust (Gleditsia aquatica). This plant, so far as I know, is perfectly harmless. Cattle very frequently feed upon the pods of the related species without injury, in fact, they obtain some nourishment from the pods of the plant. I do not, therefore, regard this as injurious.

The second plant I find is a deciduous holly (Ilex decidua) which, so far as I know is not injurious. However, I wish to call attention to the fact that several other species of holly contain the principle ilicin, and the black bark vomit (Llex cassine) was used by the Indians to make what they called their "black drink" and medicine for clearing the head and stomach.

Another specimen sent is prickly ash (Xanthoxylum Clava-herculis). This plant is not poisonous, although it is a very strong cathartic. It contains an alkaloidal principle.

The plant with the juicy fruit I do not recognize. Undoubtedly you will find some of the Carolina laurel cherry (Laurocerasus caroliniana) in the woods. This is a native shrub of Western Asia and is widely naturalized in the south. It is used for making cherry laurel water, and the bark has a bitter taste, resembling that of bitter almond. The medical principle it contains is a sedative narcotic, and the plant itself contains a considerable amount of amygdalin which is converted into hydrocyanic acid. The plant must therefore be regarded as poisonous.

You also sent a specimen of a kind of buckthorn (Bumelia) which so far as I know, is not poisonous, and one of an evergreen creeping vine, which I am unable to identify, as it is not Gelsemium or yellow jessamine (which should be common in the same woods) because the plant you sent has tendrils. The plant with the thick pods is a member of the trumpet family and is known to botanists as Bignonia capreolata, a well known creeping vine with beautiful flowers. This, of course, is not poisonous, so far as I know.

I am, therefore, inclined to think any poisoning which may occur here is probably due to the seeds of the holly or the prickly ash, or possibly the black juicy fruited shrub which I do not recognize.

WILL NIGHTSHADE POISON GOSLINGS?

One of our members was told that when her goslings ate nightshade they would be poisoned and die and she asked me concerning this matter, and I have been unable to find anything along this line. Is it possible that nightshade is poisonous enough to kill goslings?—A. S. B., Iowa.

Reply: There are several nightshades (Solanum) black henbane (Hyoscyamus) Jimson weed (Datura) all of which are indiscriminately referred to as nightshade. Our common nightshade is Solanum nigrum the fruit of this is not very poisonous. I am however inclined to think that the leaves of any of the above plants contain a sufficient amount of the poisonous principle Solanin in some cases hyoscyamine to make them poisonous. The amount varies in different plants, a considerable quantity of the plant (Solanum) in some cases has been consumed without injury. Some cases of poisoning have however been recorded. I have not had any experience with goslings and nightshade. It may be that they are more sensitive than other plants.

There are a good many cases of poisoning from this plant on record. The characteristic symptoms are about the same in man and animal. They are stupefaction, staggering, loss of speech, feeling and consciousness and sometimes convulsions. Fortunately few cases are fatal.

SHEEP SORREL

Would you please tell me the kind of weeds these are, and if poisonous to cattle. Please let me hear from you by return mail. Thanking you in advance, I remain—T. G. V., Iowa.

Reply: Sheep Sorrel (Rumex acetosella) is a smooth perennial usually growing from six to twelve inches high having horizontal creeping root stocks. The leaves are hastate (the upper narrow and the flowers on somewhat drooping pedicle, dioecious). This weed is thin, and especially common in gravelly, sandy and clay soil and is widely distributed in North America. This is related to the dock which contains the principal rumicin which is sometimes used for the destruction of parasites of the skin.

Species Contains Oxalic Acid

The species of Rumex contains oxalic acid. In the leaves of the common sheep sorrel the oxalic acid is both free and in combination with calcium and potassium. The related European garden sorrel (Rumex acetosa) is used in Europe, especially in Switzerland, to obtain oxalic acid of commerce.

Avoided by Horses and Cattle

Everyone has, of course, observed that cattle or horses carefully avoid eating sheep sorrel or the dock. Evidently these plants are distasteful to them. The records of poisoning from these plants are not very complete; there are, however, a few obscure notes stating that the weed, sheep sorrel, poisoned horses.

I suspect, however, if there is any poisoning at all it must have been caused by the plant itself. We have a fairly good and complete record of poisoning from dock in some experiments that were made in western Canada a few years ago, which would seem to indicate pretty clearly that the dock and especially all species of Rumex must be regarded as poisonous.

It is also worthy of note that other plants having considerable quantity of oxalic acid are very poisonous. I refer especially to the field sorrel (oxalis). One case came to my attention in which a child died with most excruciating pains from eating some of the plant and yet it is true that many persons have consumed the leaves of some species of oxalis apparently without injury. Very likely the poisoning depends upon the amount of free oxalic acid in the plant and the readiness with which this oxalic acid is broken up when it is consumed as food.

Queries and Answers

FERTILITY OF OLD DOGS

If it is not asking too much of you would ask you to write me personally as I am in need of the information sought for, the particular cases being under my care for some time now and I do not wish to prolong the suspense on the part of my clients.

1. In the first place I have a Boston Terrier (male) that has developed a case of chronic bronchitis and to which I referred you to some time ago. I do not wish to ask anything in reference to this trouble as I am going to dispose of him as soon as I use him for mating. He is ten years old and has seen hard times in the way of abuse being pretty well broken up and disfigured. Yet as he has been a valuable show dog I wish to use him during the mating season and I have been wondering as to the possibilities of him being fertile. Of course I do not suppose anyone can tell unless the Spermatozoan was examined, but I want to ask if in your opinion a dog is usually fertile after ten years of age.

Reply: 1. The Boston terrier dog, which you mentioned, should continue to be fertile, providing its general health were better than your letter seems to indicate. Of course, all bull dogs have a very short life and must be regarded as very old at ten years. Most dogs, however, remain fertile until they begin to emaciate from senility.

BRAIN DAMAGED BY HEAT STROKE

A draft mare, weighing 1,600 pounds, about twelve years old, showed signs of being overheated by working in a team during last June. Her temperature was 108° F. and had evidently been running high during a few hours before she was finally unhitched and submitted for treatment. There being no water available, we rubbed her body with pieces of ice held in the hand, as was recommended by a contributor to Veterinary Medicine last year as the best substitute for shower baths where water is not plentiful. After an hour of this treatment the temperature was reduced to 103° F., when the mare stood up and staggered a half-mile to shelter. She was given digitalin and strychnin hypodermically, and swabs were applied to the feet to prevent laminitis.

After three days in the barn, she seemed to be as well as ever, but as time went on it was found that she never lies down, only occasionally falling down when sleeping. She is inclined to hold her head down while in the harness and to lean heavily forward in the collar. She shows a tendency to lean the body against her team-mate when driving on the road, and when turned out will sometimes circle about much like a blind horse. She does not seem to be capable of doing hard work, although her appetite is good and all of her organs seems to be in good order.—J. K., Nebr.

Comment: This is clearly a case of damaged brain, due to the hyperpyrexia incident to the heat stroke. It is not likely that she will ever improve. Such an animal should be clipped during the summer and worked prudently during hot days. She will henceworth be very susceptible to another attack.

CHRONIC PRURITIS

I have a seven-year old gelding under my charge that has the habit of taking kicking spells at night and sometimes trying to bite himself. The owner reports that this has been going on for two years. I have seen him take spells that would not end until he was bathed in perspiration. He could be calmed by petting him over the body but as soon as I would leave the stall the kicking was resumed. Having been unable to determine what was the cause of this remarkable trouble I sent blood specimens to a laboratory but the report was negative. What is the trouble with this brute? —W. L. D., Kansas.

Reply: The one consolation is that these troubles are as puzzling to everyone else as this case has been to you. Itching spells that annoy horses to the point of making them kick violently and to bite or rub at certain parts of the body are common enough, but so far as we know there is no satisfactory explanation for the symptoms. Despite the fact that parasites are suspected it never happens that such a cause can be demonstrated even after years of itching. That is to say, the itching con-

tinues indefinitely without the cause becoming apparent. On the contrary, the mystery deepens.

There is nothing more mysterious in pathology than the abnormal sensation known as itching when no extraneous agency can be directly incriminated. There are only a few known agents that cause itching by local contact with the skin among which are toxalbumins of plants, insects, and parasites, but the internist suspects that there are certain conditions in the blood (e. g. bile acids) that may cause the nerve endings to transmit this sensation.

A number of successive saline cathartics, a low protein diet and lots of grooming will help matters and when the itching spots can be located painting them with tincture of iodine will give the patient comfort for a long while.

STOCK COLIC MEDICINE

I have been trying to figure out a remedy for colic, impactions, etc., for the horse that could be dispensed to the layman at a reasonable profit.

I submit the following remedy for your approval, pro or con, at your earliest convenience.

Using barium chlorid, two ounces, as a purge; fluid extract of cannabis indica, one-half ounce, to allay pain, and crude petrolatum qs. ad. 16 ounces, to be given as a drench at once.

Do you think the barium chlorid would be too strong and irritating to give with this dilution? I have searched the materia medica and can find no place where barium chlorid is given in drench with this dilution.

If you do not believe the above would be satisfactory, I would be glad to have a prescription which you know is satisfactory, and appreciate your kindness very much. I desire a remedy that will purge an animal in at least three or four hours.—C. J. C., North Dakota.

REPLY: Barium chlorid as a drug for use by laymen for colic is not very advisable. Such remedies are invariably used when not indicated and leave disaster behind them.

As a stock colic remedy to leave with horse owners, I would select an entirely different and more simple remedy, for example:

Barbadoes aloes .....4 drams
Aromatic Spirits of Amonia.....4 drams
Essence of Peppermint.....4 drams
Water .....8 ounces to 1 pint

This is always a good stomachic, antacid

and analgesic remedy. If it is repeated in a half hour, you will note that a horse has a fairly good dose of purgative. If repetition is not necessary, the four drams of aloes will do no harm.

MIXED INFECTION BACTERINS FOR NECROTIC ENTERITIS AND SWINE PLAGUE

What success are veterinarians having with mixed infection bacterins? I have used sulphated copper and charcoal for necrotic enteritis without good results but believe that I should be giving this medicant in larger doses. I would appreciate information about the proper dose of copper sulphate for hogs.

Until now, I have had better results with potassium permanganate in the dilution of 64 grains to the pint and then giving this at the rate of two ounces for every 25 gallons of water or swill. Should it be given strongly? —C. J. H., Iowa.

Reply by Dr. Kinsley:

Generally speaking, the veterinarians report good results from the use of mixed infection bacterins. Whether or not good results are obtained from the administration of this product will of course depend upon how it is used.

In infected herds all exposed swine should receive at least two injections 5 to 7 days apart. Infected swine should be given two or three injections 5 to 7 days apart. In conjunction with the bacterin treatment it is, of course, advisable to restrict the diet providing only semi-solid or liquid foods. If it is possible, sour milk or preferably semi-solid buttermilk should be provided as a drink as the diluent for making slops.

Copper sulphate is usually prescribed as follows: Dissolve 1 lb. in 50 gal. of water and give the solution in the place of water. A 50 lb. pig can readily consume one dram of copper sulphate daily, without any damage, and this is a useful agent. The permanganate solution that you have prescribed is of sufficient strength but most practitioners prefer the copper sulphate solution as previously mentioned.

GOULARD'S EXTRACT

What is Goulard's extract? I called an old veterinarian in consultation the other day and he advised the use of this preparation on the leg of a valuable horse I had been treating. I have never heard of this drug and was too timid to expose my ignorance.—Anon.

Reply: Goulard's extract is an official preparation; the United States dispensatory would have enlightened you. It is chemically, liquor plumbi subacetatis, and was used a great deal as a cooling lotion by the old veterinarians. They usually made it themselves by dissolving oxide of lead (litharge) in vinegar.

ERGOT

Please advise how to get rid of abortion from ergot in cows. Have vaccinated them but it did not help.—L. H. R., Minn.

Reply: It is a little difficult to answer this letter. Presumably the diagnosis is incorrect. If the abortion is caused by the fungus Ergot (Clavicips purpurea) vaccination will not help. It is not likely, however, that ergot will be found in the grass at this time of the year; unless old hay was used it was not the cause. However, there are a number of other plants which cause abortion like the Pasque flower (Anexmone patens var Wolfgangiana), which is common in Minnesota. Probably also some of the buttercups are common which may produce abortion. I would advise you to look through your pasture pretty carefully.

BERTEROA SUSPECTED OF BEING POISONOUS

I am sending you under separate cover a specimen of plant for identification and information as to whether it is of a poisonous nature. The horses having received three feeds of new hay, containing about ten per cent of this weed exhibited the following symptoms: stiffness of the limbs, temperature elevated one to two degrees, appetite remained fairly good. Their attitude resembled that of a horse with laminitis.—H. C. G., Mich.

Reply: The specimen sent for identification is one of the mustards (Berteroa incana) a weed which has been introduced in recent years with clover seed and is more or less widely scattered in the northern states. It is not known to be poisonous although, of course, many members of the mustard family are pungent. The poisoning must have been due to something entirely different than the mustard which was sent to me, but the laminitis might be due to digestive disturbances which such weeds cannot produce.

There are 115 cow testing associations in Wisconsin, containing 3,500 members who own approximately 55,000 cows. It is plain that the work of these associations results in weeding out a large number of unprofitable cows.

WEED ASTER

In separate package I am sending a piece of weed which a client claimed to have poisoned geese. I have cut off about two feet from the part I am sending you. It has just one single stock. I did not believe it to be very poisonous at all. If it is, refer me to it in your manual of Poisonous Plants.—S. P. H., Ia.

Reply.—The plant sent is a species of aster, and probably not poisonous, at least no cases have ever been reported. It is possible that the client has failed to find the Whorled Milkweed which looks somewhat similar but has milky juice.

If this occurs in the yard it is very likely that it may have produced the poisoning you mention in your letter. At any rate the plant you sent is not poisonous.

LAYING HENS NEED OYSTER SHELLS AND GRIT

"Laying hens require oyster shells and limestone grit at all times as well as mash containing animal feed," said Prof. J. G. Halpin in an address at the poultry school at the Ohio Experiment Station.

This statement was based on an array of valuable data gleaned from years of experimental work at the Wisconsin Experiment Station. The data showed conclusively that failure to provide shells and grit for the laying hens is disastrous to profitable egg production, though contrary to popular belief this failure does not appear to cause soft shelled eggs.

In order to get pullets in the habit of eating oyster shells and grit at an early age, it is the practice of the Experiment Station to keep these essentials before the birds during the brooder stage. When the pullets are out on range a quantity of the shells and grit are put on ground near the colony house.

A GOOD UTERINE STIMULANT

℞ Cotarnin hydrochlorid ..... 30 grs.
Hydrastin hydrochlorid
Ergotin aa ..... 5 drs.
Quinine hydrobromid ..... 2 ozs.
Fiat shart. No. 30.
Sig. Give a powder night and morning.

To tone up the uterus in any of the many conditions such treatment is required postpartum, as well as during the treatment of chronic metritis.

For small animals the prescription should be reduced about one-tenth.

Looking Backward

A Look Into the Past Unfetters the Mind, Gives a Clearer Conception of the Present, and Tends to Strengthen Our Confidence in the Future

There were mammals on earth 40,000,000 years ago.

Fifty thousand years ago, the cow was already playing an important role in the affairs of man, if not many thousand years before.

It was the horse that enabled the Huns to overrun the Roman Empire and extend their possessions to the Rhine during the fifth century, A. D. The Huns were a great horse-owning nation, were good horsemen and their horses are described as having been of high quality.

Abou Bekr, veterinarian to the Sultan of Egypt, El Macer, wrote a book on diseases of the horse and equestrian matters, and was held in high esteem by his contemporaries.

The patron saint of horses, Saint Eloi, born in 588 A. D., performed marvelous cures in connection with the sick. The deed of the Saint in shoeing a vicious horse has been many times reproduced in art. The legend is that the horse, being difficult to shoe, he removed the limb and shod the foot, the leg was then restored to the body.—(Early History of Veterinary Medicine.)

There were horses on earth 40,000,000 years ago according to the teachings of modern paleontologists. 250,000 years ago the horse was used for food by man and 50,000 years ago it was already undergoing domestication. Since the beginning of history 15,000 years ago it has been the salvation of man and nations.

In the introductory paragraph of a work on veterinary materia medica written by Dr. James White of London, England, in 1825, the author said: "It is much more desirable to preserve health by attention to the prophylactic or preventive part of medicine than to the curative part," exploding the prevailing notion that the idea of prevention rather than cure originated with the present generation.

Artificial impregnation of mares was practiced by the Arabs for many centuries.

It is said that the first book on equine anatomy was published by Jean Heroard, born in Paris, at 1561. It was entitled "Osteology of the Horse" and was dedicated to Henry IV.

In 1683, Andrew Snae, farrier to His Majesty, the King of England, published a book entitled "The Anatomy of An Horse," which contained a full description of all the anatomical parts of the body.

The Chicago Veterinary Society, organized in 1895, is the oldest muncipal veterinary association with an uninterrupted history in this country.

Ancient Greece, that is the Greece of Xenophon, had the highest standard of veterinary practice that ever existed among the Romans. Vegetius, the great Roman veterinarian and author, attempted to raise the standard by studying meat literature.

Paracentesis abdominalis was practiced by the ancient Greek veterinarians.

LEST WE FORGET

The veterinary officers holding high positions who participated in the Second Battle of the Marne before Chateau Thierry during July, 1918, are: Capt. Williams, division veterinarian, 1st division; Lieut. Moffitt, division veterinarian, 2nd division; Capt. Pollard, division veterinarian, 3rd division; Major Mitchell, division veterinarian, 42nd division; Major Steele, division veterinarian, 26th division; Capt. McAuslin, division veterinarian, 4th division; Capt. Wood, division veterinarian, 28th division.

Major Jewell commanded as corps veterinarian of the 1st army corps under which these divisions operated.

KENTUCKY PROSPERITY

Oftimes the veterinarian gets an expression to the effect that "the horse is a thing of the past." From reports reaching the offices of VETERINARY MEDICINE there is every indication that such statements are erroneous and misleading.

It is both encouraging and interesting to learn from veterinarians in the larger cities of the United States that practice since the first of the year has been exceedingly good, and that the horse has furnished his share of this business. Among veterinarians who report a prosperous 1922 are Doctors C. A. Miller and E. Calldemeier of the firm of Miller and Calldemeier, Louisville, Ky. These two practitioners formed a partnership six years ago. Both are graduates of the Chicago Veterinary College. Dr. Miller was a member of the class of 1890, Dr. Calldemeier graduated in 1911. Both have been engaged in practice in Louisville since leaving college. Recently they built a thoroughly modern and up-to-date hospital. It is fully equipped. A special operating room for small animals is maintained. A motor ambulance for both large and small animals is constantly in use. Doctors Miller and Calldemeier are well and popularly known throughout the Kentucky and Southern Indiana section.

Dr. F. M. Kearns, a member of the 1911 Chicago Veterinary College class is an associate of the firm.

Dr. H. O. Chapman, formerly of Marengo, Illinois, has moved his office and equipment to Genoa, Illinois, to exploit better prospects.

Dr. H. D. Chamberlain, of Belvidere, Illinois, has been named county veterinarian by the Boone County (Illinois) farm bureau.

Dr. H. B. Hickman, Pilot Grove, Missouri, was married to Miss Lurline Pile, Dallas, Texas. They will reside in Pilot Grove.

Dr. Louis I. Helfand, a graduate of the University of Pennsylvania and of the Agricultural College of Ohio State University, is now associated with the Alexander Laboratories. He will act as representative of the firm in the eastern territory. His headquarters are at 215 Pleasant street, Hammonton, New Jersey.

Dr. J. B. Gingery, of Iowa City, Ia., was stricken with acute appendicitis while attending the local association meeting at Iowa City, and was taken hastily to Muscatine for an operation where the surgeons report his condition as critical.

Dr. H. A. Wilson, state veterinarian was unanimously elected president of the Missouri Veterinary Medical Association at the recent annual meeting held at Kansas City.

Dr. and Mrs. W. B. Craig, of Indianapolis, announce the marriage of their daughter, Marion Elizabeth, to Dr. T. Victor Keene, July 6, 1922.

Dr. Thuriman M. Dick was elected city veterinarian of Little Rock, Arkansas, at a recent meeting of the council of that city. Dr. Dick is a graduate of the Ohio State University. His principal duties will be that of inspecting the dairies which supply that city with milk.

Dr. J. H. Knapp, of Arkansas City, Kansas, displays his confidence in the future of the veterinary profession by building an up-to-date veterinary hospital at 214 South A street in that city. The building is of brick and stucco and an ornament to its environs.

Terre Haute Veterinary Hospital Destroyed By Fire

The large veterinary hospital and equipment of Dr. Frank E. Ward and Sons, at Terre Haute, Indiana, was totally destroyed by fire June 28, with a loss of $5,000, only partly insured. All of the animals were saved with the exception of two dogs, that could not be reached on account of the rapid spread of the flames. The misfortune is met with the determination to build a larger and more modern plant that will meet current requirements.

Discussions, News, Personals

MISSOURI VALLEY ASSOCIATION REPUDIATES ITS KANSAS CITY ACTION

The three-day annual meeting of the Missouri Valley Veterinary Association, held at Omaha, July 10-11-12, was well attended and marked by the presentation of some splendid papers, one, A Further Report on Vitamines, by Dr. R. F. Bourne, and A Paper on Animal Parasitism, by Dr. B. H. Ransom, being particularly interesting and worthy of mention.

The discussions of the excellent papers read at the meeting were lacking in interest and disappointing or altogether absent, and although the number present was nearly up to the usual big attendance of the Omaha meetings of this association, the number who attended the sessions was relatively small and interest-lacking.

The big fight on certain of its members that this meeting inherited from the semi-annual meeting in Kansas City last winter detracted disastrously from interest in the program and judged from a scientific aspect killed the meeting.

The fight in Kansas City last winter grew out of business rivalry between firms dealing in veterinary supplies. The veterinarians against whom the charges were preferred were promptly suspended and their firm condemned. When the trial of these members for final expulsion came up at Omaha the charges were withdrawn and the accused members vindicated without a dissenting vote.

The resolution on this subject, which we give below, was not an approval of the methods of the American Veterinary Supply Company but a condemnation of the methods and circumstances under which the charges were preferred. That is, the welfare of the association was sacrificed to business rivalry.

The fight, though now peacefully settled, was a most unfortunate one for the Missouri Valley Association. It is not likely to long survive it. It is more than probable that this splendid association will be dissolved within a year or two. It most certainly will if the fight is renewed at Kansas City next February.

Resolution Vindicating Dr. Jungerman and Associates

Whereas: your executive board in meeting assembled is of the opinion that unjust accusations have been fostered against our good members, Doctors G. F. Jungerman, Arthur Trickett, R. E. Naylor, W. G. Keehn and T. B. Huff, and

Whereas your executive board being now in possession of facts making it feel that complete exoneration of these members should be given.

Therefore, be it resolved by your executive board that all resolutions of censure and charges preferred be withdrawn, the members preferring the charges being willing, and that this resolution be understood as a complete vindication and exoneration of members Jungerman, Trickett, Naylor, Keehn and Huff. We hereby ask this association to adopt this resolution by an affirmative vote.

A motion that the resolution be adopted prevailed.

Dr. H. B. Treman, Rockwell City, Iowa, was elected President of the Association for the ensuing year and Dr. R. F. Bourne was re-elected Secretary.

There are about 28,000 herds of cattle on the waiting list in the United States to be tuberculin tested with a view to being finally accredited.

Reindeer herds in Alaska are being encouraged both for their economic value as meat producers for export and for food and clothing for the Eskimo.

A LETTER FROM HOLLAND

I suppose it will be a surprise to you to hear that I am at present in Europe.

Arrived home there Christmas and found my parents and relatives in the very best of health and the conditions, it seems to me, are better than before the war; people live better.

I was nine days in Germany and traveled along the Rhine and saw the soldiers of the allies and saw gallant boys.

The Germans are as happy as ever and it seems that they have fun all the time. Saloons

are very busy and everything is very cheap. With U. S. money a fellow is assured a good time there.

Foot-and-mouth disease has been so bad here that there are still a great number of cattle with heaves and lameness. They don't seem to know much here about T. B. eradication. The United States is much more advanced in that respect but then there is such a great number of cattle tuberculous that it would be almost impossible.

In company with a Dutch veterinarian I saw a cow with tuberculosis of the prescapular lymph gland in the living animal.

I believe that the veterinarians are better educated here than in the United States because they must go to school more years than we, but in spite of this the Europeans are a great deal more annoyed with quackery than the people of the United States.

I am planning to leave Holland February 25 for London and start for America from Liverpool on the big steamer Olympic on March 1 and will be glad to be back to the land of my adoption. Yours respectfully, C. H. Haasjes, D. V. M.

BIOLOGICAL PRODUCTS THE PRACTITIONER'S FRIEND

Biological products are coming to the front more and more, the more one uses them under certain conditions, the more one likes them. Usually a practitioner is called in after Tom, Dick and Harry have exhausted their stock of wonderful remedies. Then as a last resort, they call a veterinarian. It frequently occurs that nothing can be done to save the life of the animal as it is nearly dead, just waiting to be buried. Here is where we fail. To give anything at all is often a mistake, for if you had not given that dose of medicine, the animal would have lived. It was so exhausted that the exertion caused through the administration of a dose of medicine was simply too much and therefore brought the end just a little sooner. A great many practitioners have come to the rescue in some such cases with biological products. Then because they did not get results they condemn their own treatment as being no good, and use no more.

I am not a paid contributor, but if I can do any good, I take pleasure in doing so, not after I am dead. To some of you who read this Journal but are skeptical about biological products, try Beebe's influenza vaccine in influenza and distemper; try Mulford's anti-

epinephrin serum in pyemia. I would no sooner practise without biological products than I would without boots. One never knows when an interesting case in which they can be used will be met and in numerous cases where necessary, the vaccine and heart tonics are all that is required. It is proved beyond a doubt that the preventive inoculation in black leg is the only satisfactory management. How frequently suppurating wounds yield to biological treatment. Besides, it is the cheapest treatment, providing accurate diagnosis is made.

We find sometimes a condition following influenza where the temperature will run up as high as 108 F. By giving antipyretics and laxatives, in a couple of days it will be down to normal. The animal will become well again for possibly one month or even more, and then relapse. Repeat the former treatment and they get normal again. Now, this condition is quite common. I have found antinephritic serum (Mulford) to be a specific. A specific how? In the course of two or three weeks abscess formation occurs on different parts of the body, not at the seat of inoculation because it was given intravenously. I have had them come on withers, abdomen, flank, behind the forearm, etc. After these are opened and evacuated, complete recovery takes place. I have known some to have no further trouble for five and six years. With such results, one can not help but have faith in biological products.

J. L. Clark.

Russell, Manitoba.

Thirty per cent of all cattle in Missouri are cows of beef breed and twelve per cent are dairy cows. The dairy cows have increased two per cent during the last year.

The death rate of horses in Missouri was fifteen per thousand during 1921.

Water increases the egg yield. It has been determined that many flocks of hens have less than one-half of the amount of water they need for body maintenance and egg production.

Henderson and Amos report the use of air forced into the Fallopian tube in the human to overcome collapse or slight adhesions due to infection. How applicable would such a procedure be in collapse of the bovine Fallopian tube?

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 3 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

FOR SALE

FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

VETERINARY PRACTICE FOR SALE—Large territory. Practice running $6,000 a year. May be just what you want. Address 3035, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

FOR SALE—Rapidly growing practice in East Central Iowa. Town one thousand; both churches; pure bred section; large territory; no competition; collections exceptionally good; cheap rent. Leaving state. Price, three hundred dollars, including large drugs and office fixtures. Possession at once. Car and instruments optional. Address No. 687, care of VETERINARY MEDICINE.

FOR SALE—Will sacrifice complete modern equipment. Opportunity for graduate veterinarian desiring outfit for himself. Reason for selling, death of husband. Address, Mrs. A. F. Reichmann, Armour, S. Dak.

FOR SALE—Bound volumes of VETERINARY MEDICINE: 1910, 1912, 1913, 1915, 1916, 1917, 1918. $4.00 per volume. Address VETERINARY MEDICINE.

FOR SALE German Police Pups. Pedigreed. Fine stock. $30.00 up. Shipped on approval. Imported dogs at stud. Dr. H. O. Helmer, Cooperstown, N. D.

POSITIONS, LOCATIONS, ETC.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

POSITION WANTED—As assistant by a veterinarian. 14 years' practical experience in city and county practice. Lately employed by the U. S. B. A. I. Will go anywhere. References. Address No. 688, care of VETERINARY MEDICINE.

FOR SALE—Paying mixed practice in Northern Illinois. Good roads. Good pay. Good prices. $150 for quick sale for practice, drugs and office fixtures. Address No. 689, care of VETERINARY MEDICINE.

Veterinarians—I offer a few of fine training and experience—and anxious for connection with firms, schools, etc., also as assistants. Any available positions open for Graduate, Experienced, referenced Veterinarians. No charge for service. F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

ASSISTANT WANTED—A live wire, honest, honorable and industrious. In Central Illinois. Address No. 690, care of VETERINARY MEDICINE.

MISCELLANEOUS

LET US TAN YOUR HIDE—Cow and Horse hides for fur coats and Robes. Cow and Steer hides into Harness or Sole Leather. Catalog on request. We repair and remodel worn furs; estimates furnished. The Crosby Frisian Fur Co., Rochester, N. Y.

"QUICK COLLECTIONS"—Everywhere. Live wire firm! Established 27 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

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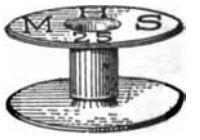

STOLL STAY-THERE EAR MARK

The identification tag for animals that IS satisfactory. Used by the B. A. I., most states, and hundreds of veterinary practitioners. Write for sample and price. An ear mark for every purpose. M. H. STOLL. Colorado Springs, Col.

Dr. Wm. Moermond has opened an office for practice at Eberly, Iowa.

Dr. Albert Conley, formerly associated with Dr. L. M. Davis of Winner, S. D., has moved to Gregory, S. D., to enter practice.

Dr. R. S. Christman, Marysville, California, sustained a total loss of his supplies and equipment when a fire, June 17, gutted his office before the fire department could get into action.

Dr. Z. A. Oviatt has purchased the practice of Dr. W. V. Ellis at Hubbard, Iowa, and has moved there with his family to begin work at his chosen occupation. He is a graduate of Ames.

Dr. G. A. Scott and son, of Waterloo, Iowa, are building a new veterinary hospital, which is to be equipped with every modern appliance for the treatment of animals. The structure is 30x60 and built of brick and tile. Dr. G. A. Scott is one of the pioneer veterinarians of the Middlewest, educated his son to succeed him and displays his confidence in the future by leaving behind a monument to his achievements.

Dr. E. W. McCrone, assistant state veterinarian of South Carolina, died in a Columbia hospital of typhoid fever on June 27th. Dr. McCrone was 46 years old and leaves a wife and one son nine years old. The body was sent to the old home at Haddam, Kansas, for interment. Dr. McCrone was graduated from the Kansas State Agricultural College in 1903, receiving a B. S. in Agriculture. He returned and was graduated from the same institution in 1907, receiving a degree in veterinary medicine. He had been in South Carolina a year and a half.

Dr. Edward M. Lang, 4131 West Broadway, Louisville, Kentucky, is building a new veterinary hospital to be completed August 1. The building is fireproof, of brick and concrete construction, and is modern in every way. It is 30 x 120 feet, has stalls, kennels, offices, and operating conveniences. It has a capacity of twelve horses and ninety dogs. The operating room is finished with white enamel tile, conveniently arranged and will be thoroughly equipped.

CAESAREAN SECTION IN BITCH NINETEEN PUPS

Subject: Shepard Police dog, "Melra."

History: Twelve hours later, with delivery of three puppies. Two weeks premature.

Symptoms or condition: Bitch had very feeble or practically no expulsive power, could not lie down on account of extreme size and too weak to stand, could only sit dog fashion. Pups delivered were dead, but well developed and normal except, dropsy of allantoic fluids.

Treatment: Although the bitch had delivered three pups there was no apparent reduction in her size, and due to the extreme weakness and enormous size of her I advised the owner that I believed that an operation would be the only possible means of saving her and that that would be unfavorable.

So everything in readiness with the animal having ½ gr. Morphine ¾ hour before, we proceeded to operate at 9:15 P. M., June 9, 1922. Ether being used as general anaesthetic, taking very little of same to produce surgical anaesthesia.

Strict asepsis was followed through the entire operation, and it being necessary to open both cornua of uterus.

The operation being finished and bitch made comfortable I proceeded to count the number of pups, which I will say was so great I could

not keep count at time of removing them, and the number was sixteen besides the three delivered naturally before the operation, making nineteen in all, well developed, normal pups.

The bitch was given 5 c.c. Camporated Oil before the operation and 5 c.c. following the operation, also gave 15 c.c. Flavisol in the peritoneal cavity, following the next day with the same amount, and 5 c.c. of Camphorated Oil three times a day the same day. The animal was allowed some light food June 10th which she took, but she was very weak and could not stand alone, improvement was rapid and bitch made a complete recovery in ten days.

Immediately following above operation, I operated a Small White Puddle bitch, which had been in labor for four days. This bitch had one pup, and it lay with hind quarters in one cornua and head in the other with front feet in body of uterus and pelvic cavity. The feotal membranes being completely sloughed away, with that characteristic greenish discharge present.

This bitch made a complete recovery and both are doing fine at present writing.—H. Meade Hamilton, V. M. D., Muncie, Indiana.

Dr. Richard L. Kramlich, 59 years old, a graduate of the University of Pennsylvania, died in Allentown, Pa., following a long illness.

Dr. Norton Dock has been appointed a member of the Ohio state board of examiners, vice Dr. Reuben Hilty resigned.

Dr. J. Aubery Lane (colored) has been appointed field veterinarian for the board of agriculture of Ohio. He is a graduate of the veterinary department of the Ohio State University.

Dr. R. A. Andrews, humane officer of Salem, Oregon, when called to the telephone early in the morning a few days ago, a voice greeted: "Hello, doc, some low-down cuss left his horses standing out all night on Ferry Street. Didn't even have a blanket on 'em. Cold, too. Can you do something about it?"

Stepping into his bunkers hurriedly the doctor filed out to Ferry Street and found that the objects of this brutality were wooden horses of a merry-go-round, waiting to be used on the following day for the benefit carnival of the Salem hospital.

"Well, I'll be ——," said the doctor, as he turned around to search for the practical joker who had dared to take such liberties.

ASSOCIATION MEETINGS

MISSOURI STATE MEETING

The annual meeting of the Missouri Valley Veterinary Medical Association at Kansas City, June 28-29 was pronounced the best in the history of the association, from the standpoints of attendance, general interest and accomplishments, and much credit is due the officers of the association and Chairman Eagle of the committee of arrangements for the achievement. The literary program given at the Coates House on the 28th was featured by the following contributions all of which were discussed at length:

Hog Cholera Immunization, Thos. B. Hume; Diseases of Dogs, A. Trickett; Revision of Ethics to meet the Needs of the Modern Veterinarian, Fred C. Cater; Accredited Herd Plan, Ralph Graham, H. A. Wilson and E. L. Young; The In's and Out's of Tuberculin Testing, E. B. Ward; Differential Diagnosis of Poultry Diseases, E. R. Beaudette; The Psychology of Collections, J. B. Nourse.

The clinic program was held at the fair grounds at Independence on the 29th. It was an outdoor clinic designed to portray operations as they are done in the field, and in this and all other connections was a pronounced success. The day was ideal, the cases numerous and casualties nil. Among the operators were Moore, Flynn, Jungerman, Staddler, Brown, Merillat and others.

A barbecue lunch of grilled spare ribs (Yum Yum) was served at noon.

The ladies were entertained with a theater party, an automobile tour of the boulevards, a visit to Electric Park and a luncheon by Mrs. Folse at the home of the secretary.

MICHIGAN STATE MEETING

The summer meeting of this live association which is becoming known as one of the outstanding annual events of the country was held at the M. A. C., East Lansing, June 28, 29, 30, when a program covering an unusual scope was carried to a large attendance. Much credit for the success of meeting is due to President Wurm and Secretary Runnels who have shown an untiring interest in planning a good program and bringing it to a successful end.

The seventh annual meeting of the Tennessee board of veterinary examiners met at Nashville, June 14, to effect its annual organi-

ASSOCIATION MEETINGS

zation and examine candidates for license. The personnel of the board as re-organized is as follows: Dr. F. R. Youree, Lebanon, president; Dr. S. H. Woods, Murfreesboro, vice-president; Dr. Wm. Bell, Nashville, treasurer.

SECOND IDAHO ANNUAL

The second annual meeting of the Idaho Veterinary Medical Association was held at Boise City, Thursday, May 11. The official announcement indicates that the following program was carried out:

"Some Points in the Co-operation of the Medical and Veterinary Profession in Relation to Public Health," by F. W. Almond, M. D., State Medical Adviser; "The Relation of the Veterinary Department of the University of Idaho to the Students of Animal Husbandry," by B. L. Taylor, veterinarian of the university; "Arsenate of Lead Poisoning in the Payette Valley," by R. D. Hurd; "Chronic Impaction of the Rumen," by J. H. Weber; "Traumatic Pericarditis in the Cow," by S. E. Nelson; "Canine Distemper," by R. W. Smith; "Local Occurrence of Anthrax in Cattle," by A. G. Moore; "Bovine Sterility and Its Treatment," by H. R. Groome and J. E. McCoy; "Hemorrahagic Septicemia in Sheep," by A. J. Powell; "Dourine in Horses and Its Clinical Diagnosis in the Field," by A. J. DuFrene; "Pitfalls of the Veterinarian," by J. H. Plank; "State and Federal Co-operation and Its Relation to the Private Practitioner," by W. A. Sullivan, of the United States Bureau of Animal Industry; "Mastitis in the Cow," by F. H. Hostettler. J. D. Adams, Temporary Sec'y.

At the annual banquet of the Chicago Veterinary Society, June 13, which is the oldest municipal association in this country, the principal speakers of the evening were: Dr. A. T. Kinsley, president, and Dr. N. S. Mayo, secretary of the American Veterinary Medical Association, and D. M. Campbell, editor of Veterinary Medicine. The secretary of this association is Dr. J. B. Jaffray, 1522 Albany Ave., Chicago.

Twenty-five veterinarians attended the meeting of the Southwest Missouri Veterinary Medical Association at Neosho, June 1. A clinic was held at the veterinary hospital of Dr. D. B. Morgan. Interesting and instructive papers were read and discussed. Among those in at-

ASSOCIATION MEETINGS

tendance were: State Veterinarian Wilson, Drs. Ward, Berry, Houser, Hodges, Whitlock, Crumbaugh, McCartney and Rice.

NORTH CAROLINA VETERINARY MEDICAL ASSOCIATION

A meeting featured by a number of nationally known veterinarians and a big barbecue was held by this association at Ashville, June 28-29. Among the speakers were Professor John W. Adams of the University of Pennsylvania; Dr. J. A. Kiernan, chief of the tuberculosis eradication division of the United States bureau of animal industry; Dr. Maurice C. Hall, editor of the department of parisitology of Veterinary Medicine; and Dr. B. F. Kaupp, of the North Carolina State college. Dr. J. P. Spoon, of Burlington, is the secretary and Dr. J. H. Rollins, of Rockingham, is president.

Stark County, Ohio, veterinarians maintain a live, active association as all counties should, meeting not only in the larger cities like Canton, Massillion and Alliance, but in the village communities where the impelling influence of publicity has a telling effect. The society was recently entertained by Dr. and Mrs. R. S. Gerber, of Dalton.

The state association of Texas met at the A. & M. College, College Station, on June 21-22, for a bumper meeting, well attended and featured by contributions, addresses and clinics of current interest.

At a meeting of the officers of the Ohio State Veterinary Medical Association at the home of President Cliffe, Upper Sandusky, June 15, resolutions were passed condemning extortion in hog-cholera work and deploring the increase in hog-cholera throughout the state. Those present were: G. W. Cliffe, president, Upper Sandusky; C. B. Frederick Canton; H. Fulstow, Ottawa; W. E. Clemens, Granville; F. E. Anderson, Findlay; Reuben Hilty, Toledo; Harry T. Morris, Dayton; R. J. Cramer, Youngstown; F. L. Lambert, Columbus; C. W. Fogle, Leipsic; C. H. Case, Akron; and W. F. Wise, Medina.

President Cliffe entertained the visitors at a luncheon given in their honor.

ASSOCIATION MEETINGS

KENTUCKY SUMMER MEETINGS

The Kentucky Veterinary Medical Association, on invitation of the University of Kentucky, held their summer meeting at the experiment station at Lexington, July 12-13.

Dr. U. G. Houch, of the United States department of agriculture, talked on matters pertaining to bureau activities. Professor J. J. Hooper, of Lexington, gave a good talk on breeding and the care of dairy herds. On the second day, the chief feature of the meeting was a demonstration on abortion and sterility in all classes of animals by Dr. J. F. DeVine, editor of the department of cattle practice in VETERINARY MEDICINE.

The sessions were held at the Lafayette Hotel and the demonstration at the stock judging pavilion of the college of agriculture.

Chas. W. Fisher, Sec'y.

NEW IOWA ASSOCIATION

Dr. J. H. Lynch was elected president and Dr. W. A. Snell, secretary of the new Pocahontas-Buena Vista Veterinary Association, organized by the graduate veterinarians of these two Iowa counties at Albert City, June 1st. The next meeting will be held at Fonda and will be featured by a picnic dinner in which, of course, the ladies will participate.

THIRTY-SECOND NEW YORK STATE ANNUAL

At the thirty-second annual meeting of the New York State Veterinary Medical Society, July 26-28, held at Syracuse, the following interesting program was carried out:

Abortion, Septic Metritis, Pyometra, Cystic Ovaries and Sterility in Cats, Dr. R. H. Spaulding, White Plains; Management of a Small Animal Practice, Dr. A. E. Merry, Syracuse; Hemorrhagic Septicemia in Cortland County, Drs. E. V. Moore and J. L. McAuliff, Cortland; Demonstration of the Physical Examination of Poultry, Dr. J. W. Fuller; Organization of Veterinarians in New York State, Dr. W. E. Frink, Batavia; State Organization for the Control of Disease in Live Stock, Dr. T. R. Munce, Director, Pennsylvania Bureau of Animal Industry, Harrisburg, Pa.; New York Organization for the Control of Disease in Live Stock, Hon. B. A. Pyrke, Commissioner of Farms and Markets, Albany; Holstein Friesian Association Sale Regulations for the Protection against Disease, E. R.

ASSOCIATION MEETINGS

Zimmer, Secretary, Syracuse; The Cattle Industry of New York State; Its Relation to the Administration of Disease Control in Live Stock, H. S. Bigler, President New York State Holstein Friesian Association. Tuberculin Test Technic, Dr. H. W. Turner, Pennsylvania Bureau of Animal Industry, Harrisburg, Pa.

Demonstrations on the various tuberculin tests and reactions were given by Drs. Turner, Faulder, Derrick, and others.

COLORADO SEMI-ANNUAL

The semi-annual meeting of the Colorado Veterinary Medical association, consisting of a three-day session, was held at the Colorado agricultural college at Ft. Collins on June 1, 2 and 3. In the business session, the chief item for discussion was legislation, since the Colorado legislature will be in session before the next meeting of the association. The legislative committee was directed to prepare a bill, regulating the sale of tuberculin within the State. It was also directed to prepare a measure limiting the sale of biological preparations capable of spreading disease to licensed veterinarians.

On the question of the reorganization of the American Veterinary Medical Association and the unification of all veterinary organizations, a committee presented the following resolution, which was adopted:

Whereas there is apparent necessity for a larger organization of the veterinary profession, and

Whereas we believe the affairs of the American Veterinary Medical Association can be more equitably managed by initiating and giving representation to state and district associations, and

Whereas we believe this representation of these associations will create a more democratic organization; capable through a greater interest by the practitioner, of accomplishing much for the profession through united action, and

Whereas all business and professions are progressing only in direct ratio to their efficient organization, and

Whereas there has already developed manifest interest in the necessity of reorganization through various associations and represented at present by a special committee of the American Veterinary Medical Association.

ASSOCIATION MEETINGS

Now, therefore, be it resolved, that the Colorado Veterinary Medical Association in convention assembled do hereby approve of the reorganization program as outlined by this committee to its fullest possibilities and lend our united support to its accomplishments at the next meeting of the A. V. M. A.

Under the title of "Antivivisection and Modern Medicine," Dr. G. W. Stiles, Bureau Pathologist, at Denver, discussed the value of animal experimentation in the development of medicine. He pointed out that without animal experimentation, medicine would lapse into the dark ages.

Two cases of actinobacillosis, one a considerable outbreak, were discovered by Dr. E. E. Tobin. The diagnosis had been made at the agricultural college. The inference was that this disease may be more common than we suspect.

The subject of poultry diseases was efficiently handled by Dr. F. R. Beaudette, poultry pathologist of the Kansas agricultural college. He not only covered the subject from a theoretical point of view, but also discussed a large number of clinical cases which were presented.

Dr. A. T. Kinsley, president of the A. V. M. A., discussed swine diseases, both from the theoretical and clinical standpoint.

Dr. R. F. Bourne exhibited a small pig, which had previously been fed eggs of ascaris lumbroides. The pig showed typical signs of thumps, and the presence of pneumonia with many hemorrhages, post mortem. The larvae of the ascarid were demonstrated in the bronchial mucous. Dr. Bourne also showed moving pictures, illustrating the life history of the ascarid of swine, which had been loaned by the U. S. department of agriculture for this purpose.

A considerable number of animals showing various genital diseases was exhibited and discussed by Dr. H. E. Kingman.

The annual banquet and ball, which is a usual feature of this meeting, was held at the new Women's Building at the Colorado agricultural college on the evening of June 2.—I. E. Newsom, Secretary-Treasurer.

The Texas State Veterinary Medical Association held its twelfth annual meeting at the A. & M. college, June 21 and 22, College Station.

MILK FOR SCHOOL CHILDREN

The value of milk to school children is shown by a report of a school in Toronto.

At a. m. and p. m. recesses each child was given half a pint of milk through a straw. The average gain in 40 days was three pounds. The highest was eight and a quarter pounds. There was a marked improvement in appearance and disposition. Attendance was more regular, interest increased, improvement in concentration and hand control. The spirit of emulation was noted to be greater than before. All seem happier and fewer are listless. More generally alert, eyes brighter and skin clearer, more active in play and more interest in life.

(Dominion Medical Monthly.)

Twenty counties in Nebraska are working under the "area plan" of tuberculosis eradication. Over 40,000 cattle were tested in this campaign during March and April. Of these 3.8% were reactors.

Dr. Flynn, small animal specialist, of Kansas City, showed the members of the Missouri Veterinary Medical Association that we all have much to learn about the simple matter of handling small animals.

ZELL-STRAUB LABORATORIES ARE BUILDING NEW PLANT

Veterinarians will be interested to know that the Zell-Straub Laboratories have purchased land on the edge of Chicago on the Chicago & Northwestern Railway, the site for their new biological and chemical laboratories. Construction of the buildings is under way and it is expected that they will be finished by the middle of September or sooner.

The location is ideal for the purposes that the new plant is intended. It is virtually in the country where no dust or other features occur that are objectionable in the production of biologics. A switch track from the Northwestern line is on one end of the property.

The plant will be arranged in accordance with the most modern methods of production and the equipment is to be of the newest types for biological and chemical laboratories. The production of biologics is to be extended so as to include various serums; the line of pharmaceutical specialties is also to be extended.

Business offices are to be maintained in the Masonic Temple but the production of all products will be carried on in the new buildings on the northwestern side of the city.

Dr. Walter Shearer, graduate of the Indiana Veterinary College has moved from Plainfield, Indiana, to Rushville, where he has opened up a veterinary office.

Dr. C. G. Cridler, of Mt. Sterling, Kentucky, was elected assistant state veterinarian by the live stock sanitary board of that state.

Dr. C. H. Newton, deputy state inspector and a prominent practitioner, formerly of McGhee, Arkansas, has moved to Yuma, Ark.

The Fordney tariff bill proposes an increase tariff on microscopes and other scientific instruments. Educational institutions are not exempt from paying tariff on such equipment. It is hoped that the proposed bill may be amended, in order that educational institutions will not be hampered by the increased price of technical equipment.

Dr. Adolph O. Franke, 44 years old, committed suicide at his home on West 77th Street, New York City, May 23. Dr. Franke practiced in New York for a number of years. The reason for his suicide is not known.

The Holland National herd of goats is comprised of 250,000 head, probably having a value of not less than $100 each. The milk goat conference was recently held at Roermond, Holland at which time various problems concerning the goat industry were extensively discussed.

Dr. L. B. Gloyne, Health Commissioner of Kansas City, Kansas, recently issued a permit for the sale of milk and its product from 9 goats. This is the first permit authorizing the sale of goat milk in Kansas.

There has been an increased demand that the temperature of pasteurization of milk be increased to at least 145°F. for thirty minutes. The volume of cream on milk begins to decrease when the temperature of pasteurization is above 144°F. This fact is going to cause the public to antagonize pasteurization because the cream on the bottle of milk is an index of its richness.

VETERINARIAN GAINS HIGH PLACE IN HUMANE WORK

Dr. Elkan H. Yunker, a widely known veterinary surgeon of Philadelphia, who has been connected for several years with the Bureau of Animal Industry, has been appointed field representative for the Pennsylvania Society for the Prevention of Cruelty to Animals, to cover the entire state in the interests of humane work in its relations with the public health. So far as is known this the first time in the history of the humane movement in this country that a trained technical man has been selected for such a position, and it is expected that great benefit will result from his appointment.

Dr. Yunker will address farmers' institutes, county fairs and other assemblies, to urge the practical advantages of consideration of the health and comfort of horses, cattle, sheep and fowls; economic and humane methods of transportation, disease prevention and sanitation. He will also aid in the establishment of other S. P. C. A. organizations and assist those already formed. Leading veterinarians are in strong accord with the new plan of the Penna. S. P. C. A. and will support Dr. Yunker in his campaign to improve the conditions of farm and town animals, especially those destined for food.

The Pennsylvania Society was the first organization for animal relief to be founded in the state and the second in the country. John W. Salmon, a life member, originated the spindle coop, with automatic water and feed trays, for shipping poultry, which has gained Pennsylvania the reputation of transporting fowls more hygienically and humanely than any other state in the union. The Pennsylvania Society is also practically the founder of the veterinary school of the University of Pennsylvania, having solicited the first fund to be raised for that purpose.

Dr. C. F. Milleson, a graduate of the Iowa State College, 1922, has located at Newton, Iowa, for practice.

The annual meeting of the Veterinary College Alumni Association, of New York University, took place at the college building on June 3, at 2 p. m. A banquet was held at Cavanaugh's in which a large number of the veterinarians and their families participated.

1st—Certified milk, produced from accredited tuberculin tested cattle and under rigid sanitation, which should be almost on a par with surgical cleanliness.

2nd—Raw milk from cows tested for tuberculosis at least once a year, and produced under reasonably clean methods and surroundings.

3rd—Pasteurized milk from cows not tested, and produced under questionable methods.

According to Bulletin 1052 of the U. S. Department of Agriculture, the finishing of poultry for slaughter is done most effectively at the packing center because the shrinkage in fattened birds that are shipped is excessive.

"COLLAR CURE" FOR SEROUS SACS OF THE SHOULDERS

In the October issue of VETERINARY MEDICINE, 1920, page 494, there was an article on serous sacs of the shoulders of horses, to which I offer no criticism, other than that I have had better results during the last thirty years from a more popular method than the one described.

Years ago I operated and advised a rest of ten days to two weeks, when one day a farmer came along during spring seeding who ignored my advice and continued to keep a patient I had just operated upon, in harness every day, with the results that the shoulder did well, in fact better than the others which I had kept idle.

Since that time I have operated upon scores with the same good results and now instead of insisting upon rest I insist on keeping the collar on, and not more than five per cent of my cases have not done well.

I make a vertical incision two inches long about four inches below what seems to be the lowest part of the sac, and find as a rule it will not be much, if any, below the abscess cavity. Sometimes by inserting the finger, a certain amount of tissue that forms around the serum can be removed. The collar keeps the serum from accumulating much better than idleness. Any antiseptic will do but I have formed the habit of using copper sulphate solution—one ounce to a quart—with a little carbonate of iron to color.

I am an exponent of the "collar on" methods of treating these injuries and would like others to try it.—D. T. A., Ont.

INDIA VETS

(Continued from Page 440)

can apply powdered indigo—a substance which the simple fellow believes to be infallible—to the wound. He also earns an occasional rupee for examining a horse which is about to change hands. The "salutri" is "free from vice," as they say of horses. He does not drink; he takes no interest in gambling; he does not dissipate his earnings; he is fond of his dusky children; and he seldom seeks amusement. In fact, the native vet is thoroughly content with his lot.

TOBACCO A USEFUL DRUG

(Continued from Page 443)

bacco has often proved most satisfactory improvement. In such instances, tobacco has often proved to be one of the most acceptable appetizer and remenatory stimulant that one could give the animal.

In regard to the dose we must consider that the toxic effects of tobacco depend on the nicotine which it contains. Since this may vary from one half to five percent, the practitioner should select a suitable kind of tobacco (plug tobacco for boluses) and carefully note the effects. We have often given two, ten percent plugs of Star tobacco in the form of a bolus to a medium sized dairy cow in 24 hours, without ill effects. Sometimes the milk will have a slight odor and taste for two or three milkings. Two to three ounces of tobacco leaves in 24 hours may be considered a full dose for a robust cow. Give highly bred small Jerseys less. These doses should be repeated only once—until the veterinarian is able to judge the danger symptoms as well as the results obtained.

Sheep and goats often eat leaf tobacco readily. It makes a desirable after treatment in many obscure conditions, causing malnutrition and cachexia, for example in lung worm and stomach worm infestation. The same can be said in poorly nourished calves that are afflicted with intestinal parasites. Tobacco must not be considered as a specific in such cases, but as a useful after treatment.—C. H. Schults.

Mrs. Ida M. Sprinkle, wife of Dr. W. B. Sprinkle, M. D. and mother of Dr. W. C. Sprinkle, D. V. M., the practicing veterinarian of Oakland, Indiana, died June 9, at their home in that city.

SEPTEMBER
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD, CHICAGO

PROMINENT AMERICAN VETERINARIANS

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It is THE Clear Serum which, **in its finished state,** has to pass all **B. A. I.** tests—and in addition is subjected to rigid microscopic examinations and animal inoculation tests.

It is **THE** Clear Serum that has made such a success that other Serum Companies have been **compelled** to come out with Clear Serums of **various** kinds.

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VETERINARY MEDICINE

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Veterinary Medicine

Vol. XVII SEPTEMBER, 1922 No. 9

TRACTOR FARMING ALMOST A THING OF THE PAST IN THE NORTHWEST

This is only a part of the horse effectives on the farm of Hoffman Bros., Aberdeen, Saskatchewan, found plowing in one field by the reporter of Veterinary Medicine in July. The camera could not take them all and behind these are the reserves and the growing colts—the provisional replacements for coming years, produced at a cost that does not perceptibly swell the budget of the establishment.

On the Trail of the Tractor

A TRIP from Chicago into the Northwest as far as Saskatoon which takes one through the big-farming districts of North America as well as through the more congested regions of Illinois, Wisconsin and Minnesota where dairying and dairy-type breeding has reached a very high degree of refinement, probably the highest in this country, made with the view of determining first hand by observation and interview, the prevailing attitude of the modern farmer toward tractor farming, enables Veterinary Medicine to announce to its readers that the information gathered is of an exceptionally favorable character. In short, horse-farming is not becoming a thing of the past as predicted a few years ago but is regaining a popularity that is setting the horse more securely in the affairs of the agricultural industry than ever before. Everywhere among the experienced the tractor lacks popular approval as a profitable motive power for field work. And in many, many places it has had its carnival of glory to be abandoned as a thing to shun, as a horrible monument of ill-spent years of despair, wasted energy and financial calamity.

The journey beginning at Chicago traces its course through Milwaukee, Fond du Lac, Oshkosh, Marshfield, St. Paul, Emerson, Winnipeg, Portage la Prairie, Brandon, Regina, Hanley and Saskatoon, and the return journey was through the famous farm lands of southern Saskatchewan and North Dakota from Regina, Moose Jaw, Rathburn, Wilcox, Estevan, Portal, Minot and Hankinson to Minneapolis and thence to Chicago via La-Crosse, and Madison.

The observations were made by daytime trips on railroads and by auto through the fertile districts between Regina and the international boundary, during which many farmers were interviewed. At places the reporter impersonated a tractor salesman, at other times an organizer of stallion companies and in some instances posed as a neutral to bring out the desired information as a mere incident of a friendly conversation. And paradoxical as it may seem not a single exponent of tractor farming was found, and the only prospect for the sale of a tractor was met near Condie, Saskatchewan where two boys in the twenties were waiting for their father to retire so that they could replace their horses by machinery. The father had become wealthy at horse farming and expressed great anxiety for the success of his boys on account of this ambition, having been a witness of many a bankrupt victim of the tractor in his neighborhood while he was quietly piling up wealth with his reliable horse effectives.

During a day run on the Trans-Canada limited from Winnipeg to Regina, lasting from 10:45 A. M. to 7:35 P. M. a distance of 350 miles not a single tractor was seen in the fields

although everywhere farmers were busy cultivating the summer fallow. Large horse units were in evidence on all sides and no tractor marred the scenery. On the next day between Regina and Hanley one farmer was however seen plowing stubbles with a Fordson, and upon arrival at the most northern destination, the climax of the whole situation was strikingly shown in the amazing fact that there was no tractor exhibit at the Saskatoon Fair, one of the principal annual events of this kind in the province, while horses and horse races were attracting the usual old fashioned crowds in the old fashioned way.

In North Dakota and Minnesota with harvest in full sway only two tractor-drawn binders were seen as against hundreds of horse drawn ones, and in Wisconsin and Illinois where the farms are smaller the hard-boiled farmer who knows the severe limitations of farm income was found to be wary of the situation and in most instances was tolerating the tractor because it amuses the boys and keeps them on the farm. None of them, not even the young men, claim that it pays to replace the horses by automotive power. No, horseless farming is not becoming a reality, it is waning, waning fastest where it has been in operation the longest.

STOCK BIOLOGICS

There are many veterinarians practicing today who entered the profession before very much was known about the relations of bacteria to the cause of disease and who have had the opportunity to study the development of bactericidal therapy from the very beginning, from the chemical therapy of other decades to the present day serum and vaccine systems.

Practitioner Was Handicapped

When Wright preconized a method of treating diseases with bacterial vaccines and the method seemed to promise a new and successful enemy of disease-producing organisms, the practitioner was at first dismayed because it was thought that the treatment would require skillful bacteriological work and an unusual laboratory equipment. The new method found the great majority of practitioners without any particular training of this kind, and the first treatments were necessarily left to laboratory workers and clinicians in large hospitals, where facilities for the production of biologics were available. From the success of these enterprises, practitioners began to realize that it was their duty to give their patients the benefit of this new therapeutics. At the same time they realized their helplessness through lack of laboratory training and knowledge of bacteriology, appreciating that this treatment depended, first, on a correct diagnosis, not only of the particular disease at hand but also upon the knowledge and skill required to prepare the treatment—the bacterin. How to overcome the results of this failing became the problem of the day to all practitioners; it seemed that a new science was to be learned.

Manufacturer to the Rescue

Here the manufacturer came to the rescue by taking from the practitioner the work of preparing vaccines and producing stock preparations.

But this met only one requirement—the remedy. The next was to make the diagnosis. Here again, commercial acumen came to the rescue and produced products that would not only apply to a particular causative organism, but to two or three combined so that a good quality of guess work would answer in lieu of a correct diagnosis.

From the viewpoint of scientific therapeutics this would seem to be a return to the old shotgun nostrum. The justification is found in the fact that animal therapy must either be cheap or it must be denied to animal patients, and it need not be repeated that the bacteriological work required to make the correct diagnosis and manufacture a treatment therefrom is today and always will be entirely too costly a procedure for general veterinary practice. It is only in exceptional cases of valuable animals affected with chronic conditions that the autogenous vaccines can be utilized in the treatment of domesticated animals, and while it might be very desirable for the veterinarian to aspire to that state of ultra-refinement that characterizes therapy in the large medical hospitals where every need can be supplied without delay and with a certainty of correctness, it is nevertheless a truth absolutely incontrovertible that the veterinarian must forever be denied this splendid system as a routine therapeutic measure for his patients. The alternative is the stock vaccine—the shotgun vaccine if you will—produced with great care by manufacturers who are compelled to maintain high standards of reliability through commercial competition.

Producers Assume a Sacred Responsibility

Since the veterinary profession has accepted biologic therapy as a means to an end that

could not otherwise be attained those in whom confidence is placed have assumed a great responsibility and must therefore survive or perish in obedience to the immutable laws that annihilate fakers and their fakes from the realm.

Abuses Few

That there have been some abuses in this connection is conceded, but that these single and isolated incidents are soon detected to the discomfiture of the over-zealous exploiter is also well known.

The opponents of bacterin therapy among veterinarians are few and the exponents are legion, a fact that reflects great credit to the manufacturers of these products but which also indicates since there are opponents that the whole industry depends in a great measure upon cultivating the confidence of the practitioner by making the industry 100% pure, that is, making it entirely free from premature statements not proved by properly conducted experiments.

VETERINARIAN TO BE DIRECTOR OF THE ARMY VETERINARY CORPS

COL. C. F. MORSE, M. C.
Director of the Veterinary Corps

LT. COL. JOHN A. McKINNON, V. C.
Who Will Succeed Col. Morse

Colonel Morse leaves the veterinary corps immeasurably better organized than he found it. His skill in handling men and his genius for organization had been of incalculable benefit, and the present efficiency of the corps, as compared with the condition in which he took it in charge, will constitute an enduring monument to his ability as director and as an exponent of a better veterinary service. Colonel Morse was not welcome to the veterinary corps, particularly by veterinarians in civil life, solely because he was not himself a veterinarian, but his ability and his fairness, and more than all his achievements, obliterated every objection and raised him very high in the regards of all veterinarians, both in and out of the army. He leaves the directorship with the best wishes of every one who has its interests at heart, and especially of the war-time volunteers who learned for the first time the advantages of working under a command that is at once fair and masterful.

Lieutenant-Colonel John A. McKinnon has been transferred to Washington and assigned

to the army medical school, the understanding being that when Colonel C. F. Morse is relieved from duty as head of the veterinary corps and transferred from Washington, that Colonel McKinnon will succeed him, and the veterinary corps will, for the first time since its organization, have a veterinarian at its head.

Colonel McKinnon is not so well known in the veterinary profession as some of the other army veterinarians, largely for the reason that he has spent twenty years in the Philippine Islands. During the war he was chief veterinarian of the A. E. F. in Siberia. In 1919 he was detailed to Chicago and took the course in meat and food inspection at the army veterinary school there. His record is that of a highly efficient veterinary officer. He is a graduate of the Ontario Veterinary College and in 1911 took a post-graduate course at the University of Toronto.

DARWIN, SPENCER, HUXLEY, ET AL

It is quite l'ordre de jour to severely question the unproved theories promulgated by these old authors. The theory of evolution and especially that far-fetched one about the transformation of species are now quite commonly refuted by deep-thinking men and the best students of natural history.

It is more in order today in the light of our feebleness to teach that what is, always was, insofar as the minds of men can tell and that the theory of origin of species which Darwin tried to impose upon the scientific world is quite as great a mystery as life itself. It is becoming evident that the conclusions of these famous authors lack the kind of proofs the scientific men of today insist upon; that their conspectus was drawn from such narrow observations that it should be set aside as ill-founded and premature; and that it was but another dream about the problem of our origin which has not come true.

Surely, the outstanding fact that there has been no new species of animal develop in the memory of man nor any relaxation of the unknown biologic law that so stubbornly preserves their identity, seems sufficient grounds to challenge a theory that has always lacked even an iota of confirming evidence, after observations running back from these days of the modern laboratory and elaborate research expeditions into the remotest ages.

In short, no story has yet been written into the pages of modern natural history that is better than the one laid down in Genesis.

HELIOTHERAPY

Active influences in therapeutics are given more consideration than formerly. Little was known concerning light excepting for its relation to vision and the possible effects upon the skin until the advent of the roentgen rays. It has been demonstrated recently that sunlight is a potent influence in preventing or relieving the condition ordinarily known as rickets. Some few years ago, it was demonstrated that subacute or chronic tuberculosis in the human could in many instances be relieved by proper exposure of the tuberculous subject to the rays of the sun. More recently it has been demonstrated that some diseases of joints and bones in the human were noticeably benefited and some cases relieved by exposure to sunlight.

Young of Cambridge, has demonstrated the sensitiveness of albumins to the action of sunlight. When more definite information of the influence of light upon albumins is revealed, heliotherapy will be of value in the treatment of disease.—A. T. K.

THE SENSE OF DIRECTION

That there are special senses other than those we understand well, seem to be a fact no profound student of physiology will question, but these additions to the sensorium are so ill-defined that it has always been found convenient to dismiss them as instincts.

The homer instinct of the family cat shows with striking exactness that this creature has a special sense of direction second only to the homer pigeon.

A professor of Adelbert (Ohio) College in recent observations found that when a family cat is taken four to five miles from home they return by a direct bee-line route without a moment of hesitation but that they seldom return if carried more than 16 miles. Enclosing them in a box or sack through which they can not see does not embarrass this wonderful sense, and if they are chloroformed before departure or enroute their return is quite as certain although somewhat delayed. The chloroformed cat on being released will circle about for a time but finally finds its bearing and returns quite as promptly as if nothing had happened. The ability to accomplish this is due to a kinesthetic sense which is highly developed by such animals as cats and homer pigeons.

Dr. E. A. Schmoker Tells the Whole Story on One Page

Editors' Personal Page

The man who fights desperately for a hobby is usually a bore.

Learn to cull chickens, learn to caponize cockerels and learn to test milk and cream for butter fat before complaining that the field of veterinary science is diminishing.

If you have never felt the sensation of having critics to the right of you, critics to the left of you, critics to the rear and critics fore, you have never been the secretary of a veterinary association.

A professional journal that serves best is the one filled with the plans and actions of the most successful men in the field. It comes to its readers not as an authority in itself but brings to them the best authority obtainable.

"All pain is purely imaginary," says the Christian Science doctrine and yet in the face of this fundamental precept the press of this religion is waging a desperate war against vivisection.

Help your state university. Its influence is needed in every home. Help make it more and more democratic and remember it is your university.

Veterinary schools will be the foundation of our future just as they have been the foundation of our past. We should guard against all influences within and without the profession that would tend to destroy or weaken them.

Johne's disease is becoming rather widespread. New centers of this disease have recently been found in the central states. According to Beech and Hastings, it is possible to detect this disease by the use of Johnin, the reaction being a systemic disturbance, evidenced by rise in temperature. A careful study of this disease should be made by all practitioners.

How long shall we continue the improper use of the word "vaccination"?

Some men are intelligent but not intellectual; there is a difference.

If Congress had been called into special session for the expressed purpose of wrecking what is left of the army, it could hardly have done a better job. As destroyers of morale the legislative department of the national government easily wins the championship.

There is a difference between achievement and accomplishment. Skill in art is an accomplishment but is not an achievement until put into successful practice. Accomplishment may only be the knowledge of how to do things, while achievement is always the finished product.

There is nothing to fear about the future of such a cheap motor power as the horse until something cheaper is invented. Price is the all powerful force that will finally shape matters and nothing else.

GREAT MEN OF HISTORY

H. G. Wells has accomplished the monumental task of naming the six great men of history with such good judgment that no argument thus far advanced even threatens to dethrone them. They are Buddha, Asoka, Jesus of Nazareth, Aristotle, Roger Bacon and Abraham Lincoln.

Here is our choice of the six great veterinarians of history, any one or all of which we shall dethrone on better arguments than we can produce to retain them forever in the hall of fame: Vegetius, Bourgelat, Nocard, Dieckerhopf, Percival Robinson, J. G. Rutherford.

Our choice of the six great American veterinarians is: Stalker, Huidekoper, Law, Bell, Hoskins and (help us select the sixth).

Important News and Announcements

E. Delancy of the North Dakota Farm Bureau addressed the state veterinary association of that state on "The Horse Industry" July 18, in which he submitted statistics substantiating his claim that the horse is of greater importance to North Dakota agriculture than ever before.

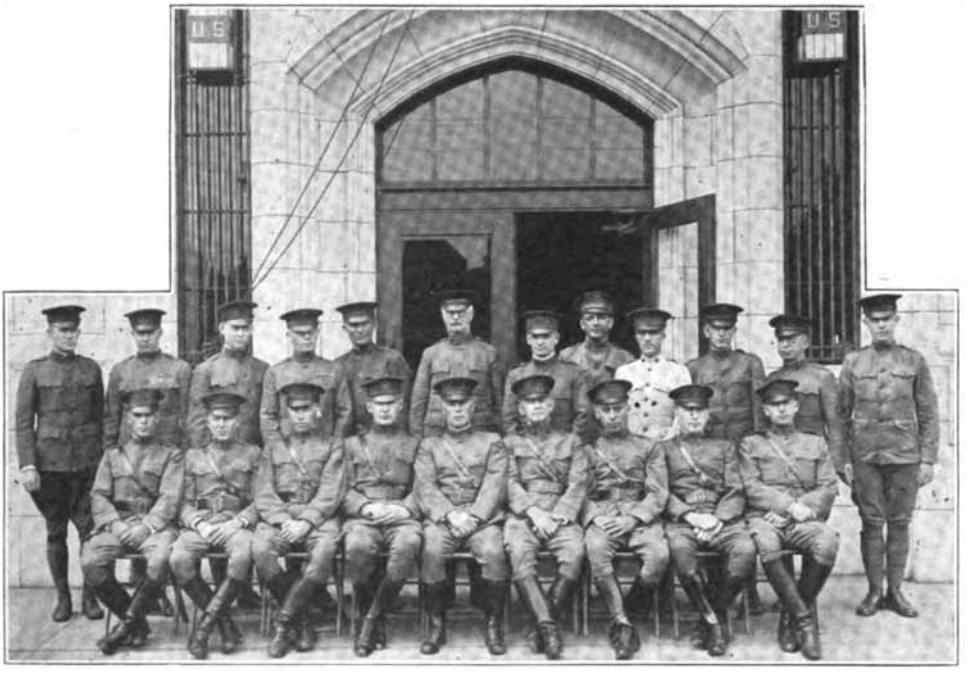
Tuberculosis in cattle can not be kept under control, much less eradicated, if grade animals and single cows owned by families are omitted in the clean-up of any territory. Whole areas therefore, like townships and counties, should be cleaned up rather than scattered herds, if the work is to be of permanent value and handled in the most economical way, says the United States department of agriculture.

"The repairs on two of our trucks cost $2,000 last year which would have kept 20 wagons up in good shape," says an official of the Consolidated Ice Company, of Pittsburgh.

Professor John W. Adams, of the Veterinary department of the University of Pennsylvania will be the official veterinarian of the horse show at the Delaware State Fair, September 4, 1922, at Elsmere.

Dr. G. A. Roberts, after two years of professional work in Brazil, South America, has returned to the United States, in company with Mrs. Roberts. They arrived in New York, July 24, and after a visit to their former home in the South, will attend the meeting of the A. V. M. A. at St. Louis.

THE RECENT GRADUATE CLASS OF THE ARMY VETERINARY SCHOOL AT CHICAGO, ILLINOIS



From left to right, seated: 1st Lt. James L. Barri ger, V.C.; 1st Lt. Howard N. Beeman, V.C.; 1st Lt. Robert P. Kunnecke, V.C.; Capt. Horace S. Eakins, V.C. (Instructor); Maj. Geo. A. Lytle, V.C. (Instructor in Charge); Capt. Jos. N. Hornbaker, V.C.; 1st Lt. Jos. H. Dornbleser, V.C.; 1st Lt. Samuel G. Kielsmeier, V.C.; 1st Lt. Raymond T. Seymour, V.C.

Standing: Staff Sgt. Frank Japcynski (Instructor); Sgt. Nicholas Rule; Staff Sgt. John R. Flahive; Sgt. Ephraim H. Edgar; Cpl. Martin F. Kelly; Tech. Sgt. Mac C. Brooks; Staff Sgt. Richard C. Hansen; Pvt. 1/c Frank Krokel; Pvt. Louis Carlsen; Pvt. 1/c Floyd I. Miller; Staff Sgt. John A. Shannon; Staff Sgt. A. R. Schaefer (Instructor).

Purely Practical

Informative Hints from Those Who Know and Do

Young pig vaccination is one of the pitfalls of swine practice.—Fitch.

"Too frequently post vaccination troubles are diagnosed as hog cholera merely because the autopsy reveals petechiation of various organs."—Cahill.

To give a powder to a horse load it into a balling gun and administer as if it were a ball. There will be none lost.—Faucett.

Much the best way to wash out a sore eye in the horse is to irrigate the conjunctival sac via the lachrymal duct. The stream flows evenly over the cornea and the winking distributes the solution everywhere.

Every time a hen goes broody put a band around one of her legs. This will very materially help in the culling process to select the non-profitable hens.

Serum treatment of dog distemper is as a rule helpful and will immunize exposed animals for a short period. It is good practice to thus immunize all dogs taken into a hospital for treatment no matter what may be the nature of their ailment.—Brumley.

The best medical treatment for canine distemper as described by Professor Brumley of the Ohio State university consists of iodin, 1/25 grain; creosote ¼ grain; dichromate of potassium 1/20 grain; made into tablets. The dose is from ¼ to 3 tablets, given every six to ten hours.

TO PREVENT RECURRENT COLICS IN HORSES

℞ Chlorazene ..... 6 grs.
Sodium bicarbonate ..... 4 drs.
Sodium sulphocarbolate ..... 1 dr.
M. et sig.

To be given after each meal for horses that suffer frequently from colics due to gastric indigestion.

Leg weakness in chicks can be prevented by the use of semi-solid buttermilk and cod-liver oil.

A strong hypochlorite solution is a valuable agent for the rinsing of milking machine teat cups and tubes.

Plow up the hog lot each year and raise some valuable pasture crop instead of allowing it to become worm and germ ridden.

Carbon tetrachlorid has solved one of the hardest problems of small animal practice.—Brumley.

HERD TREATMENT FOR NECROTIC ENTERITIS OF SWINE

The following treatment has given a reader of VETERINARY MEDICINE such good results that we are describing it herewith for the benefit of those interested in this serious, fatal affection:

1. Isolate the sick and destroy the hopeless cases.
2. Divide the others into two groups if possible:—the thrifty and the unthrifty. Weak and unthrifty hogs will do better when not harassed by vigorous ones. Put them all in clean, hygienic surroundings.
3. Give mineral oil (e. g. Polarine) at the rate of one ounce per pig in dry feed as a preparatory treatment.
4. Administer copper sulphate solution as follows: A 11% solution (1 lb. to the gallon of water) is given in slop at the rate of one ounce to every 300 pounds of live weight, twice a day for five days.
5. After five days administer the following powder: Copper sulphate, iron sulphate, and fenugreek, of each one pound; gentian, three pounds, hyposulphite of sodium, four pounds; soft coal 90 pounds. Grind into a powder in a feed grinder and administer in an open trough with a little chop feed spread over the top to induce them to begin eating it.
6. Follow by giving a small amount of this powder in the open trough each day.
7. Allow access to plenty of fresh water.

I. N. H.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

The Psychology of Collections

By J. B. Nourse, Kansas City, Missouri
Attorney Credit Men's Association of Kansas City

THERE are two outstanding organizations devoted to commercial work in this country. The one is the National Association of Credit Men, with a membership of 30,000 wholesale houses, and the Commercial Law League of America, with a membership of 10,000 attorneys.

The National Association of Credit Men as perfected is a wonderful organization in assisting the credit men in their work of passing upon credits and handling their collections and adjustments. It maintains offices through local organizations in most of our communities.

This organization maintains an interchange bureau which makes on interchange of credit information as secured from the ledger books of the establishments. It maintains an organization for the upbuilding of credit men and the building up of a co-operative spirit among credit men.

It maintains an organization in the nature of an adjustment bureau for the collection of accounts and the handling of adjustments and insolvent estates and an investigation and prosecution committee which investigates all complaints as made covering commercial fraud in any instance in which the committee is convinced that the fraud should be prosecuted. The prosecution is carried out under the direction of the association.

Foster High Ideals

This organization in the building up has been a powerful factor in assisting in the establishment of the federal reserve system. It has been a powerful factor in making our various state laws uniform. It has been a great service in placing such laws as the fictitious name law, the bulk sales law and the bad check law upon the statutes of a large number of states. The organization is a powerful influence in keeping the bankruptcy act on the statute books and maintaining a high standard in the administration of bankruptcy estates. The investigation and prosecution work of the association has gained world-wide prominence and has been complimented not only by commercial interests but by governmental departments.

The Commercial Law League of America, an organization of commercial lawyers, maintains an organization to create efficiency in the handling of collections and adjustments and to develop a better class of attorneys willing to handle such items. The organization has been an influence in co-operating with the association in the establishment of uniform state laws and in keeping the bankruptcy act upon the statutes and maintaining uniform rates for the handling of collections, for displacement of any attorneys who are found not to be reliable and in maintaining an interest in the law lists. By this term, we mean the lists as prepared of attorneys qualified and able and ready to handle collections. These law lists bond the attorneys and guarantee prompt and efficient and honest service from the attorneys so listed.

Collection a Profession

Collection is no longer a haphazard business. The credit man has now become a professional man and has been placed in such a position by his house that his work is one of the important factors. He must co-operate with the other departments, and while permitting the business to be upbuilt, he must at the same time keep the losses to the house at a very minimum percentage.

The Matter of Jurisdiction

In the handling of a collection, there are factors to be considered and these must become almost second nature. An example is the jurisdiction of our courts. In Missouri, we have the justice court with a jurisdiction up to $500 in the city and from $300 to $350 in the smaller communities. A justice of the peace can be found in every township. After the jurisdiction of the justice court has been reached, all matters then go to our circuit

court or district courts with unlimited jurisdiction. The justice court through the statute may secure service and have the case ready for trial within ten days. The circuit court or district court requires a much longer time. The person passing the credit may save many, many months by judging the jurisdiction of the courts and keeping the accounts within the jurisdiction.

Look Out for Mortgages and Exemptions

Another factor always to be considered is the chattel mortgage and conditional sales contract. A person may have considerable assets but the chattel mortgage or conditional sales contract may place them entirely out of reach of the individual extending credit without security. This holds true especially in the case of the farmer or the smaller dealer.

Another factor always to be considered is the exemption. Our law has always respected the necessity of an individual having some property so that he may not be a charge upon the state, and as a fundamental principle, every head of a family is given certain exemptions which in our state approximate a homestead of $1,500 in the country and $3,000 in the city and at least $300 of personal effects.

Credit an Essential

It is recognized in our business world that credit develops business and credit must be extended. Collections after the extension of credit become a necessary part.

In the handling of collections, a collection policy must be adopted. It is recognized that a certain time is granted for the payment of an account. After that date, the payment becomes in default and the policy of the individual or of the house must govern as to the action that is to be taken. Some houses and some individuals maintain that the pressing of a claim immediately after the same becomes due leads to a loss of friendship. Others maintain that prompt payments leads to a feeling of good will and really creates business, whereas business would be stopped if the account were outstanding.

Bring in Returns But Make No Enemies

The successful applications of a broad constructive policy in collection requires the same skill and forethought as the working out of sales, advertising, buying and credit policies. Bringing in the money without making enemies or losing business is the aim of every collection plant and its success depends upon the tactful persistence with which the policy of the house is carried out. A system which works with clock-like precision, massing the details of operating any collection office into groups for the purpose of standardizing operations will produce collection department results at a minimum of expense.

The individual handling his own collections should be the same on a smaller scale. The collection system is not something to be installed and successfully operated in all its details without change and adaption. Usually it is the result of gradual developments, changes and improvements introduced here and there as new and unexpected matters arise. If there is no carefully planned system for the handling of collections, one which is geared to the general policies and the growth of the concern using it, there is a resort to haphazard methods with the usual outcome of haphazard results.

The Attribute of a Successful Collector

It is impossible to outline any one collection system that may be fitted exactly to the needs of all business. The successful collector must have the same qualifications as a credit man. He must be of an investigative turn of mind, should have an agreeable yet indomitable ob-

Group of Veterinarians in Attendance at the University

stinacy. An investigative turn of mind indicates caution, deliberation, vigilence and sagacity, while agreeableness, courtesy and respect are affirmative business building characteristics. These virtues when tempered with tenacity produce the positive qualificaions of a good collection man. In addition to his technical knowledge of collection psychology, the character, instinct, likes and dislikes, desires, ambitions, habits of thought and action peculiar to people who buy or secure service on credit, knowledge of law and of the market. One must study and train in all lines. Knowledge of merchandising often helps a collector in interesting a dealer in closing an overdue account; knowledge of how to find out the grievance or supposed grievance of a debtor and to bring that person to a good frame of mind; knowledge of how to figure costs and profits; a knowledge of how to answer the various excuses all help.

Some Fundamental Principles of Collecting

The various principles underlying collection effort are the securing of information of customers, the acqainting of one's self with the habits of living, buying, paying and thinking. Experience teaches the principle of habit, the importance of securing and holding the attention, the value of appeals to instinct and ambition and the value of suggestion. From the earliest times, human motives of thought and action have been substantially the same. Open discussions often arouse opposition when indirect suggestion will bring a response. Hence, a collection man having the general mental operations of a man's mind, will work with the trend of the person's thought rather than against it. Grouping of debtors is very valuable and a simple process of grouping debtors into classes according to the degree of promptness is most desirable, and after this classification, the business of applying persuasion or pressure begins. Frankness, without bluster, a swift and determined advance from step to step of collection procedure with occasional appeals to self-interest and pride, together with a steady pressure for payment, will do much to convince a delinquent that he has met his master and that further resistance will be too expensive to risk. It is no more difficult to use these appeals in correspondence than in interview. The collection correspondent must write much as he would talk, except that he will be much more brief. There is added value in the more distinct impression on the minds of a sales prospect when a series of sales letters are varied in form and appearance. Collection results are likewise effective by variation in type and appearance of the collection appeal. The basis of a successful system of collections is the constant reminder of the debt. A repeated suggestion that payment is due must be made. The second is to refuse payment. The object is to occasion in the debtor's mind a gradual remembrance of the debt and ultimately an absolute conviction of his duty in the matter.

Stages in Collections

Often the stages in collection procedure have been divided as: First, **Notification**; second, **Reminder**; third, **Reproach**; fourth, **Discussion**; fifth, **Resale** or **Suit.**

The second step, or reminder, is to the effect that the obligation may have been overlooked. The reminder must be always courteous and may follow various forms.

The third or reproach stage begins with letters to replace printed notices, appeals to pride and sense of obligation. Acceptances, drafts,

(Now turn to page 581)

of Minnesota Short Course, July 12, 13 and 14, 1922

Diseases of the Udder

By J. N. Frost, Ithaca, New York

MASTITIS

THE subject of mastitis is one that is of vital importance to the practitioner and consumer as well as to the cattle owner.

In the wild state, the udder supplied sufficient food only for the young but under domestication, the udder of the cow has been developed to furnish a food supply for the human being. Now that the value and reputation of the animal and its offspring is dependent upon its ability to produce milk, the udder is receiving more attention. Likewise, the attempts to force the animal in production is causing the development of an organ which is more readily affected by disease.

Chiefly a Cow Disease

Mastitis is more prevalent in the cow, not alone because of great forcing and consequent increase in the size of the udder, but also because of the extensive milk cistern and large teat orifice.

In discussing the subject of mastitis we have confined ourselves to the diseases of the cow's udder and have divided them into two classes —the medical and surgical diseases. We will consider first the medical.

The udder is a secreting gland made up of two principal parts, namely, the parenchyma or secreting part and the connective tissue or interstitial framework.

The parenchyma or secreting part is formed of many small canals, lined with a single layer of cuboidal epithelium. These canals unite to form larger canals also lined with epithelium and finally empty into the milk cistern which in turn may be emptied by suction or pressure through the teat canal.

The canals of the parenchyma are surrounded by the interstitial connective tissue which contains the nerves, blood vessels and lymph spaces.

The secretion of milk usually commences with the termination of the first pregnancy, or abortion, but occasionally one sees the virgin heifer giving milk. The active secretion is stimulated by the sucking of the young or by the massage of the milker.

Causes of Mastitis

The principal cause of mastitis is infection with the other causes that are usually given acting as predisposing factors. Cold floors, high protein feed and bagging up, which is done before sales or shows and which many claim will produce mastitis, may, by lowering the resistance of the udder, give the infection a better chance to develop. We have tried to develop mastitis by feeding cotton seed meal but so far have been unsuccessful.

The infection may enter in three ways. The principal way is up through the teat canal but it may also enter through an abrasion or wound of the skin or by metastasis through the lymph or blood stream.

The source of infection is most likely the discharge from a retained membrane, infected genital tract or a case of fouls. Dirty stable floors and filthy paddocks may be the source in some cases. Metastasis from a septic uterus is sometimes the source of the trouble and is especially liable to result in a purulent or gangrenous form of mastitis.

The use of milking tubes, quills and such material by the owner is almost sure to result in infection unless he has been thoroughly instructed in the care necessary in the use of these instruments.

Forms of Mastitis

Mastitis is divided by some authors into catarrhal, interstitial, parenchymatous, purulent and gangrenous forms. To these may be added tuberculosis, actinomycosis and necrobacillosis of the udder.

There are very few cases where a cow has a so called acute catarrhal or interstitial mastitis and recovers without the development of the parenchymatous inflammation. In other words the acute catarrhal and interstitial forms are generally the initial stages of the more serious inflammation of the parenchyma.

Symptomatology

Many consider mastitis as a disease of the fresh cow only. Of course it is more common at this time, when the udder is more highly congested and there is quite liable to be a retained placenta, or a metritis with the discharge running down over the udder.

Mastitis is a disease which may attack the calf soon after birth, before the udder has developed to any extent, or it may involve the udder of the dry cow.

The first changes in a mild mastitis are quite liable to be overlooked unless the first few

streams at each milking are drawn into a wire covered pail. This will detect any small clumps of coagulated milk or blood which would otherwise be overlooked.

The first symptoms in the more acute forms of mastitis are chills, staring coat, increased pulse, respiration and temperature, lameness due to pressure of the hind legs against the inflamed part, or to pyemic arthritis or tendo-vaginitis, edema, swelling, heat and pain in the udder.

The changes in the milk itself vary considerably with the individual cases. It may contain only coagulated clumps of casein, maybe thin and watery, of a yellowish color, or show redness due to hemorrhage. This red color, when present, is quite likely to denote streptococcic infection. One has to be careful to distinguish between the red discoloration due to streptococcic infection and that due to ruptured blood vessels and hemorrhage seen in the heavy milker or heifer soon after calving. In the discolored milk due to congestion and hemorrhage, the character of the milk is not changed.

The secretion of milk may cease entirely and an exudate of pus be present. This would be the purulent form of mastitis which is often caused by the owner using a dirty milking tube or quill and is also seen frequently in the dry cow and the young calf. In these cases we frequently have stenosis of the teat and the resulting abscess formation.

Purulent mastitis is sometimes accompanied by pneumonia in a cow which is being forced for a test or production. As a result we are liable to have prostration and death in a few hours due to toxemia caused by the resorption from the intestinal tract as well as the lung and udder.

In gangrenous mastitis the disease may run a very rapid course and the animal die in less than twenty-four hours after the onset of the disease. When the disease is confined to one quarter it may be more mild and the quarter slough off without the absorption and death. Gangrenous mastitis results from an infection with a virulent organism which involves the blood vessels and shuts off the circulation to that portion of the udder.

The udder becomes blue or dark in color, pits easily on pressure, is cold and clammy and not painful to pressure, while the secretion is dark, having considerable odor. The general symptoms are rapid, very weak pulse, with short jerky breathing and a subnormal temperature. Sometimes the animal is down, unable to rise and practically unconscious.

The symptoms of tuberculosis of the udder are not definite and a diagnosis can be made only by finding the bacteria in the milk. The udder becomes hard, firm and indurated and usually is not painful unless accompanied by other infections.

Actinomycosis of the udder is not common in this country. The symptoms consist of hard, firm swellings, smaller in size than in tuberculosis, with the abscesses more liable to rupture through the skin.

In necrobacillosis of the udder, the symptoms are those of an acute infection. The disease is more liable to appear in a stable where the disease has been present in the intestinal tract or feet of some animal.

Sequellae

As local sequellae of mastitis we may have stenosis of the teat or complete occlusion, chronic induration or thickening of the interstitial tissue with a resulting atrophy of the parenchyma, complete or partial atrophy of all the structures of the gland, and abscess formation.

As general sequellae we may have paralysis, encephalitis, bronchitis, pneumonia, toxemia, septicemia, pyemia, with abcess formation in the internal organs, or more commonly pyemic arthritis and tendo-vaginitis.

Prevention

One of the first things necessary in the prevention of mastitis is the education of the owner or herdsman as to the causes of the disease. At the same time get him to throw away the milking tube which he, probably, has hanging by a string on some nail in the stable ready for use.

At the time of parturition, the cow should be provided with a clean disinfected box stall or better still, be allowed to calve out doors. The hind parts should be kept washed with soap and water or a mild antiseptic to prevent discharges from running down the udder. Likewise, retained placenta if not removable should be cut off near the vulva. Grease and salves, as applications to the udder, should be avoided when possible as they tend to collect dirt and filth.

When the cow is in the milking stable she should be confined in a well bedded stall with some form of partition between her and the next cow to prevent injury to the teats and udder from the neighbor.

Clipping the udder lessens the chances of feces becoming lodged there while washing with soap, water and antiseptic, as practiced in certified dairies to lessen the bacteria count of the milk, may also lessen the cases of mastitis in the herd.

In milking the first two or three streams, which contain the greatest number of bacteria and of which the milk is usually discarded in a certified dairy, so as to lessen the bacteria count, should be milked into a pail or pan covered by a wire screen. This will detect an early or a mild form of mastitis that would otherwise be overlooked as any clots of fibrin, casein or blood will be caught in the wire. It also aids in detecting chronic cases which may be spreading the infection slowly to the whole stable. This allows one to begin an early treatment of the case, which to my mind is very important.

If there are any cases of mastitis in the stable, these cases should be milked last, leaving the diseased quarters until after milking the well in the individual cases. The milk from a diseased quarter should not be drawn on the floor but into a pail of antiseptic solution.

The time the infection is most likely to enter the teat is just after milking when the teat is relaxed. Usually the end of the teat is wet with milk at such a time and this small drop of milk serves as an excellent media for the development of bacteria and with the sphincter relaxed the infection may enter the teat.

Dipping the ends of the teats in antiseptic after milking cuts down the chance of infection from this source. Care should be taken, however, not to have the antiseptic too strong or it may cause sore teats and thereby increase the danger of infection. By using a shallow pan all four teats may be dipped at once so the process is not expensive either in time or in money.

Next, the litter under the hind feet should be scraped into the gutter before the cow is allowed to lie down, so that any milk which may have sprayed over the edge of the pail will not remain to increase contamination. Then sprinkling of the gutter with lime or ground limestone would not only lessen the danger from that source but would also increase the value of the manure.

The practice of allowing cows which have a more or less abundant discharge from an infected uterus to stand in the milking stable should be discontinued. Likewise the flushing of a cow which has a badly infected uterus should not be allowed.

In preventing infection of the virgin udder of young animals they should not be allowed to suck each other's udders as this is usually the source of the infection.

Bacterins Are Preventive

Bacterins play an important part in preventing infection of the udder. If the animal has been given a course of bacterin treatment while dry or about the time the udder is beginning to enlarge, the chances of mastitis are greatly lessened. After using a bacterin we may give two or three injections of living culture. If possible, it is better to have a bacterin made from cases of mastitis occurring in the same herd.

Treatment

The advance in the knowledge of the treatment of mastitis has been exceedingly slow. While some of the crude methods of the older treatments have been discarded as useless, others are still retained as highly important.

In 1876, Dr. Law in "The Farmers' Veterinary Adviser" recommended the use of plenty of elbow grease or massage, frequent milking, and the suspension of the udder with a suspensory and an analgesic. These features are still considered highly important in the treatment of acute udder diseases.

The modern line of treatment calls for a physic, diuretic, hot or cold applications to the udder, suspensory bandage, frequent milking, antiseptics and bacterins.

In the choice of physics we may use the slower acting drugs, as salts or aloin, or the more active ones like arecoline, eserine or pilocarpine. The use of the latter saves some time and in severe cases may save life.

As a diuretic, potassium nitrate is generally used in two or three ounce doses and repeated daily. Some veterinarians depend entirely upon this drug in large doses to cure the disease, apparently with good results in mild cases that are not of long standing.

When it comes to the use of hot or cold applications to the udder, one may make his own choice as the results are about equal with either. There is a little more tendency to abscess formation with the use of hot applications. Personally, we prefer the cold applications but we are quite likely to be ruled by the weather; using the cold in warm weather and the warm applications in cold weather. This pleases the owner as he is liable to think the

application of cold water in zero weather a rather harsh treatment. In moderate weather I believe one is likely to find that cold applications are more faithfully applied than warm. On the ordinary farm the procuring of hot water is liable to interfere with the family wash and the cow goes untreated.

The application of heat can best be accomplished by the use of a suspensory bandage and packing the udder with cotton which can be soaked in hot water after the bandage is applied.

Antiphlogistine or agents of a similar character may be used to apply heat as may the electric lamp or the high power mechanism called the electric baker. The latter would not be practical for most practitioners.

The application of cold can be brought about by the use of the hose in those stables that have a water supply. Lacking this, the results may be obtained by the use of a piece of rubber sheeting, a rubber lap blanket, or an oilcloth in the form of a suspensory bandage which is filled with water to which cracked ice may be added if desired.

The suspensory bandage is important, not only for the aid it gives in keeping agents in contact with the udder, but because it aids in establishing a normal circulation and relieving the congestion of the udder. This is brought about by suspending the weight from the back bone and pelvis, thereby relieving the tension upon the blood vessels so that they will assume their normal course and position. We have been able with the use of the suspensory bandage to increase the milk supply of a normal test cow ten to twelve pounds a day.

These bandages may be made in a number of different ways. A simple way is to take an ordinary feed sack, placing it under the udder between the hind legs and then tieing or sewing a bandage to the diagonal corners across the pelvis.

Frequent milking is important as it helps to flush out the bacteria from the milk cistern and prevents the absorption of this toxic material.

Antiseptics may be used in three ways. First by elimination through the milk; second, by injection into the milk cistern; and third, by external application.

The use of antiseptics which are eliminated through the milk and thus disinfect the udder, is new compared to the other methods of treatment. It gives good results in acute cases but it not of very great value in old standing cases where the udder has become thickened with new formation of tissue.

There are a number of drugs that are eliminated through the milk but with many their germicidal action is not strong enough or they cannot be given in large enough doses to be eliminated sufficiently in the milk to do much good.

About the time methylene blue was so highly praised as a cure for absortion we began using it as an antiseptic in mastitis. In the milder forms of mastitis it was found to give good results but was not of sufficient strength for severe infections. (Allen.)

It is claimed by many that urotropin is eliminated through the milk as formaldehyde but this is not true. It is eliminated as urotropin which is not an antiseptic. There are two possible causes of this error; either the milk was allowed to become acid before it was tested for formaldehyde, or a test employing the use of an acid was used. In this way the urotropin in the milk would be broken down, formaldehyde would be formed and, of course, would give a positive test.

Formalin has given us the best results as an antiseptic which is eliminated through the milk. It may be given in one ounce doses twice daily and will be found in the milk two hours after giving it and will continue to be found in the milk for forty eight hours. It may be given in oil, milk or water but one should take the precaution that it is well mixed in order to avoid irritation to the throat. It may also be given in capsule but when so given we should be sure that there is a supply of water in the stomach or the solution may be sufficiently strong to cause irritation of the stomach wall.

Occasionally we find a cow in which the administration of formalin seems to cause a loss of appetite. This can generally be overcome by giving a tonic for a few days.

Another antiseptic, which is eliminated through the milk, is **acriflavine**. It may be given intravenously or intramuscularly. The dose, when given intravenously, is about 150 cc of a 1 to 1000 solution. Intramuscularly, it may be used 1 to 500 and dose decreased to 75 cc. It may be found in the milk one-half hour after injection and continue to be found for at least twenty-four hours.

Injection of antiseptics into the milk sinus is not highly satisfactory except in cases of catarrhal mastitis. Acute inflammation of the parenchyma causes a closure of the milk ducts and acini by the swelling and edema which is

produced. The exudates that are formed likewise help in blocking these ducts so that antiseptics that are injected into the teat canal do not reach the greater part of the diseased area.

External application of antiseptics is an old method of treating mastitis. It appears to be more particularly useful in treating old cases where the udder has become hard and firm. Most of the agents used are rubefacients as well as antiseptics and produce some results by increasing circulation and leucocytosis. Tincture of iodine, spirits of camphor, turpentine and oil or lard, and many other agents are used. An ointment which we use frequently is made as follows:

Vaseline, 2 pounds.
Spirits of Camphor, 2 ounces.
Spirits of Turpentine, 2 ounces.
Oil of peppermint, ½ ounce.
Carbolic acid, ½ ounce.

Bacterin Treatment Fails

We have already referred to the use of bacterins for the prevention of mastitis. In the treatment, we have failed to get results in the acute cases where there is a general systemic disturbance from the infection in the udder but this is what we should expect. When the disease has been of long standing and has become a purely local condition, we may expect results from the use of bacterins.

Milk a Vaccine

We generally begin the bacterin about the third day in mild cases and about the fifth day in more severe cases. Here also, as in the preventive treatment, we may follow the use of bacterins with vaccines. The milk drawn directly from the udder may be injected hypodermically as it is a vaccine, although of unknown strength. There is danger of abscess formation in a small percentage of cases with this method.

Following the Duncan idea, one may use the milk internally, either with or without combining it with an antiseptic.

In the treatment of purulent mastitis there is a call for surgical interference. When a quarter has become filled with pus, the quickest way to drain it is to amputate the teat. If the owner objects to having a three teated animal, a longitudinal incision may be made in the teat at its base. We then wash out the quarter with a normal salt solution or with peroxid to remove the pus and then inject a 1 to 1000 solution of acriflavine in glycerine.

Gangrenous and tuberculous mastitis, actinomycosis and necrobacillosis of the udder also call for surgical interference in the removal of half or all of the udder.

COW-POX

This is a common disease of dairy cattle but the organism causing it is unknown. The pustular stage is often overlooked by the herdsman and not much attention is paid to the disease until the pustules have ruptured and a dry scab formed. Several pustules which may have formed close together may rupture at one time forming a large sized scab.

Frequently mastitis develops as a result of cow-pox, either by metastasis or up the teat canal, with a cow-pox or secondary organism which may be present in this disease.

In preventing the spread of this disease the cow should be milked by a separate milker or else milked last. The hands of the milker should be washed before and after milking each animal and the stall of each thoroughly disinfected.

In treating the disease the scabs are removed and the pits treated with equal parts of tincture of iodine and glycerine.

There are a number of diseases similar to cow-pox which cause trouble with the udder. One of these which has been quite common in our locality is caused by a streptococcus and affects the skin of the udder but not the teats.

It spreads rapidly through the herd and while it produces mastitis in only a small per cent of cases, it does cause a very sore udder. It appears first as a moist area on the skin from one to two inches in diameter. Later the skin becomes dry and necrotic and sloughs with a core leaving a deep pit which heals slowly.

In treating we have had good results by swabbing the wound with tincture of iodine and using an autogenous bacterin on the whole herd.

DERMATITIS

When the udder of the cow is exposed to cold and moisture the skin frequently becomes inflamed and fissured. Wet milking, particularly in the winter, may produce the same condition.

Dermatitis is also produced in the fresh cow by the enlarged and inflamed udder rubbing against the thigh or coming in contact with a damp, cold floor. When the teats become fissured as a result of dermatitis, milking causes

bleeding and considerable pain to the cow so that she may be made a kicker.

Dermatitis usually responds to the use of antiseptics. However, it is better to use antiseptics which do not contain water. The antiseptic we have found most useful is equal parts of zinc oxide and glycerine, sometimes adding just enough tincture of iodine to cover.

NECROSIS OF THE SKIN

Necrosis of the skin of the udder is often produced by the bacillus necrophorus and usually affects the skin between the two halves of the udder forming more or less of a thick, hard scab. An odor like that in foot rot is also produced. This disease responds very readily to washing with 1 to 2 per cent formalin in water.

HEMATOMES OF THE UDDER

Hematomes of the udder are most often produced by the animal being bunted by a stable mate. It does not ordinarily affect the gland or the milk secretion but results in a blood clot forming under the skin. This in turn may become infected by metastasis, resulting in abscess formation.

The treatment is the same as for hematome on any other part of the body. Generally it is better to open freely and pack, following with antiseptic treatment.

WOUNDS OF THE UDDER

The wounds of the udder may be superficial, involving only the skin, or they may be deep, involving the glandular tissue. They may be self-inflicted by sharp duclaws or they may be caused by other animals stepping on the udder as the cow is lying down. In the cow at pasture they may be caused by barb wires, thorns or sharp pieces of wood.

In the treatment, if the gland is not involved, the loose pieces of skin may be cut away and the injury treated as an open wound. If the gland is involved it is better to suture as carefully as possible in order to prevent the flow of milk through the wound. After suturing, the edges of the wound may be more firmly held in position by strips of adhesive tape. The latter may be used also to hold an antiseptic pack on the wound.

WOUNDS OF THE TEATS

Wounds of the teats may be produced by thorns, barb wires, dog bites, etc., while the animal is at pasture, or by being stepped on in the stable These wounds may be simple, involving only the skin, or they may involve the milk duct or the external opening. The process of milking hinders the healing of teat wounds and also causes pain, so that in many cases the animal becomes difficult to milk and the owner resorts to the use of a milking tube. When loose pieces of the skin are present without the teat canal or the end of the teat being involved, they may be cut away and the wound treated with antiseptic wash or powder. If the duct is involved it is better to suture as soon as possible, first producing local anesthesia so that the suturing may be done carefully. A row of catgut sutures may be placed in the lining membrane with a row of silk sutures through the skin and subcutaneous tissue.

An injection of quinine and urea, 4 per cent solution in normal salt, into the tissues surrounding the wound will produce anesthesia for four or five days and the owner will not be so likely to use a milking tube and infect the whole quarter. As a dressing we may use strips of adhesive tape to hold a pack over the part.

A dressing we like better is made by soaking a small strip of gauze or cotton in collodion in which has been dissolved a few grains of iodine crystals.

After allowing the gauze to dry for about a minute it is wrapped around the teat and makes a fine, clean dressing that will stay in place even while the animal is being milked.

By the time sensation is re-established in the teat the wound should be healed sufficiently so that the milking tube is not necessary.

Wounds at End of Teats Often Serious

When the wound involves the end of the teat, especially the external opening, it becomes very difficult to withdraw the milk as a scab generally forms and the owner invariably uses a tube.

Intubation Carries Infection

In doing this he generally carries some infection up into the milk canal and an infected quarter results. Sometimes the scab may be removed, the end of the teat softened and the milk started by soaking in a cup of warm antiseptic, preferably a carbolic acid solution as that produces a slight local anesthesia. It is often difficult to get the owner to spend the time to soak off the scab. He prefers to use a tube and that generally means the loss of that quarter.

Prevent Closing by Wadding the Meatus

If the swelling is so great that the milk cannot be removed without the use of the tube,

after draining the quarter we use a plug in the end of the teat to prevent the orifice from closing. A great deal of care must be taken in using the plug or it will cause just as bad results as the tube. For disinfection of the tube or plug we like the use of spirits of camphor. One may leave the owner an ounce vial of camphor and by tying a fine silk thread to the plug it may be dropped into the bottle and corked. This method will leave the plug to be reinserted as nearly sterile as by any means we have been able to devise.

When the plug is taken from the solution the alcohol evaporates, leaving a fine coating of camphor over the surface which is more likely to keep it sterile until inserted.

Thoroughly Disinfect the End

The end of the teat should be thoroughly disinfected, the scab removed and the opening soaked in spirits of camphor. Then before inserting the tube or plug a small amount of Iodex or other antiseptic salve is placed over the end of the teat and the plug pushed through this. Then the whole end of the teat is enclosed in a cotton pack soaked in the collodion solution in order to keep out further infection. At the same time it is well to put the animal on formalin internally to keep down the infection in the udder and teat as much as possible.

This becomes quite a long task for the owner to follow twice a day until the wound is healed, but he is usually willing to spend some time rather than to have a three-teated cow, especially if you can offer a fair percentage of recoveries.

In place of the plug a clove or a burned match may be used but the plug carefully used has always given us better results and there is no danger of its being drawn up into the teat as sometimes happens with the clove or match.

TEAT FISTULA

Teat fistulas are of two kinds: the congenital and the acquired. Most of the congenital fistulas are in the hind teats and instead of being true teat fistulas they lead to an extra section of the udder. Very often the external opening is marked by a small rudimentary teat.

The acquired fistula is generally the result of a wound which injures the milk duct while the animal is in milk and the presence of the milk secretion prevents the tract from healing.

The treatment of milk fistula is best undertaken while the animal is dry. Where the congenital tract is marked by a rudimentary teat, the removal of the teat with a pair of shears may be all that is necessary to heal the opening of the fistula. It is safer, however, to cauterize the tract for an inch or two from the opening with a hot wire so that the pressure of the fluid secreted in the gland when it becomes active may not break down the newly-formed adhesions.

In the treatment of the acquired fistula, it may be cauterized the same as the congenital or it may be opened and the lining membrane dissected out and the wound sutured.

ATRESIA OF THE TEAT

Atresia of the teat is a congenital condition in which the opening fails to appear, so it would occur only in the heifer with first calf. The obstruction is simply a thin layer of skin that may be easily punctured. By forcing the milk down in the teat the point where the opening should be is plainly seen. It may be punctured with a hypodermic needle, a trocar, or it may be cut with a knife. The herdsman should be instructed to milk out every half hour to keep the opening from closing, or a plug may be inserted for the first twenty-four hours.

STENOSIS OF THE END OF THE TEAT

Stenosis of the end of the teat may result from injury or from local infection. The latter is most often the cause. The "bagging up" which is used during a show or before a sale is a predisposing cause as it produces considerable congestion of the part. The milker notices first the end of the teat swollen, sensitive, and a red scab forming. He usually thinks it is the result of being stepped on, but such is not the case.

Condition Infections

It is a mild form of infection which may spread rapidly to a number of cows in the same dairy involving one or more teats of each. It is quite rapidly spread by the milking machine. The milk is withdrawn with difficulty and the milker may want to use the milking tube. In so doing he may spread infection to the whole quarter.

Formalin Indicated

In treating we give large doses of formalin to prevent the infection from spreading up the teat to the udder. The milk may be withdrawn by first softening the scab by soaking it in a cup of hot antiseptic or, if necessary, the tube may be used under antiseptic precautions. If

this does not keep the opening from closing a plug may be used with the same precautions and dressing as described under wounds of the teat. Taken early the stenosis may be relieved by burning lightly with a caustic. This will overcome the local infection and makes the milking less difficult. As a caustic for this purpose we use the chromic aluminum applicator (chromic acid 50 per cent) which is just about the right size for the end of the teat and gives us good results.

Surgery Sometimes Required

If the stenosis in the end of the teat becomes permanent, resulting in a hard milker, it is necessary to enlarge the opening. This may be done by means of a dilator or a sound to stretch the external orifice but a more sure way is to enlarge the opening with some cutting instrument. A teat bistuory with a knife in the side may do but we prefer the Kny teat tumor extractor which cuts out a circular piece. The end of the teat should be thoroughly cleaned and disinfected before operating and the instruments sterilzed.

It is well to give the animal an antiseptic that will be eliminated through the milk. Care should be taken not to cut too large an opening or the teat is liable to milk too easily and become a leaker. If it is cut until the milk will flow in drops on the end of the teat it is usually enough and the contraction which takes place in healing will be sufficient to prevent the teat from becoming leaky.

Operate When Quarter Is Full

To keep the opening from becoming closed from blood clots and scabs we like to operate while the quarter is full of milk. Then have the herdsman milk out a stream or two every twenty minutes or half an hour. A sterile piece of large-size silk thread may be inserted for the herdsman to remove at the next milking and in this way be sure that blood clots or scabs do not close the opening.

SPIDER TEAT

The so-called spider in the teat is a form of stenosis near the base of the teat. It is a productive inflammation of the lining of the canal resulting in a mass of fibrous connective tissue forming. It is usually caused by a mild infection of the teat canal with or without injury. Sometimes it develops while the animal is dry, especially if the animal is dried off too rapidly while there is a little infection in the udder.

Iodine Sometimes Helpful

When it is first forming it results in slow milking but as the growth becomes larger it may cause a complete obliteration of the duct at that point. In the early stages the growth may be checked and even decreased in size by painting a ring around the teat at that point with tincture of iodine.

In the surgical removal of the spider it may be done in two ways, either through the teat canal or through an incision in the skin. If the canal is not completely closed, we prefer to remove it through the teat canal by means of the teat tumor extractor. By forcing the cutting edge above the tumor and cutting down upon the closed shaft, at the same time holding the tumor between the thumb and fingers, it can be removed without injuring the rest of the teat canal.

If there is complete obliteration so that the teat tumor extractor cannot be forced above the tumor, then an incision may be made through the skin down upon the tumor and the latter dissected out, after which the incision is sutured as described under wounds of the teat.

OBLITERATION OF TEAT CANAL

Obliteration or closure of the teat canal may be brought about as described above under spider or it may be due to the formation of a thin membrane between the milk cistern and the teat canal. This membrane develops before the first freshening period or during the time while the animal is dry. It may be thin and easily broken down or it may be so dense and firm that it cannot be ruptured.

In correcting this condition it may be possible to force a sound or a trocar through the membrane and then use a teat bistuory to enlarge the opening sufficiently to let the milk through.

Another form of obliteration of the teat canal is seen where the whole canal is closed from the external opening to the milk cistern. This is brought about in the old cow by infection while being dried off, but it is more often seen in the heifer with the first calf. In these heifers it has its start in the calf when the quarter becomes infected and pus forms as a result of the young animals sucking each other after being fed milk. This is one reason for advising individual stalls for calves or else confining them in stanchions for a short

time after each feeding of milk.

In the heifer the teat canal should not be distinguished from the rest of the teat but in a case of obliteration the canal feels like a hard, firm tube when the teat is rolled between the thumb and fingers.

Treatment is of no value in these cases and the quarters involved are allowed to dry up. Cold showers may relieve congestion in the gland but secretions cease as soon as the milk cistern becomes filled.

LEAKY TEATS

In these cases the milk flows from the teat whenever the udder becomes distended. The condition may be corrected by using an intradermal needle and injecting a few drops of Lugol in several points close to the orifice. This may need to be repeated two or three times.

Another method which helps if the sphincter is not too widely dilated, is to soak the teat in 5 per cent tannic acid in glycerin. When the teat is small, we use a rubber finger cot partially filled with the solution and placed over the teat. Cotton soaked in the solution may be bandaged on in other cases.

AMPUTATION OF THE TEAT

Amputation of the rudimentary teat is performed in the young animal in order to make the udder more symmetrical. It is a simple operation requiring only the removal with sharp scissors, washing with a mild antiseptic and painting over with tincture of iodine. Care should be taken, however, not to get too deep and injure the glandular tissue.

Indicated as a Drainage Expedient

Amputation of the teat is also performed in those cases where there is abscess formation in the cistern or the glandular tissue and the pus cannot be forced out through the swollen teat. General septicemia is likely to result if the pus is not drained out from that quarter and the best drainage can be obtained by amputating the teat up near the udder where the opening is large. That quarter can be of no further value so it can do no harm to remove the teat.

Mattress Suture Enlarges Opening and Arrests Hemorrhage

The hemorrhage may be controlled by passing sutures through the skin and connective tissue as well as the lining membrane and back through to the skin. This makes a mattress suture and serves to enlarge the opening into the milk cistern. As many of these sutures may be used as necessary to control the hemorrhage from the vessels. The pus may then be washed out through the opening which is at the bottom of the abscess.

ABSCESSES BETWEEN GLANDULAR TISSUE

There is a condition which may be mistaken for abscess of the udder but which does not involve the glandular tissue. An abscess may form in the supermammary lymph gland or between the two halves of the udder and produce considerable swelling but the flow of milk is not decreased and the character of the milk is not changed. These abscesses may be opened on the posterior side of the udder or they sometimes point down between the two halves of the udder and may be opened there. After opening, care should be taken that pus is not discharged over the ends of the teats and the infection pass up the teat canal. It is well to disinfect the teats frequently to prevent this infection of the quarters

GANGRENOUS MASTITIS

Gangrenous mastitis differs from the other forms in that the part becomes cold, pits upon pressure, is dark bluish in color, and the secretion of milk ceases. In its place there is a watery, flaky exudate. It is very common in the ewe and is often associated with stomatitis in the young lamb. Whether the mastitis is the cause of the stomatitis or the stomatitis the cause of the mastitis has not been definitely decided.

Gangrenous mastitis is quite likely to produce septicemia and early death of the animal. If only one quarter is involved the skin over the part may become necrotic, the glandular tissue slough out and the animal make a recovery.

About the only treatment for gangrenous mastitis is the removal of half or the whole of the udder. This may be done under local anesthesia by injections along the median line and then injecting about two inches laterally from the teats. If one prefers, general anesthesia of chloral or chloroform may be used.

The principal blood vessels of the udder are the external pudic arteries and veins which come down through the so-called inguinal canal, and the milk vein which passes anteriorly along the belly.

An incision is made first on the median line,

(Now turn to page 568)

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.
Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

Treatment of Pneumonia and Metritis in the Bovine

EVERY country practitioner is acquainted with the fact that in the past the treatment of pneumonia in cattle has been anything but satisfactory; the milder cases responding but the more severe cases usually terminating fatally. After having repeatedly experienced during the past twenty-five years outbreaks of pneumonia in cattle which I was absolutely helpless in checking and in which treatment seemed of little avail, I feel that I am in a position to know how any information that anyone may give to the country practitioner that will aid him in successfully combating this disease, will be received. Again, practitioners know only too well that what has been true of pneumonia in cattle has been equally true with severe cases of metritis and metroperitonitis in the bovine. Hence, this article is addressed to the rural practitioner.

Stock Yards Pneumonia

In treating pneumonia in cattle no matter what our medication may be we never think of treating a case without using hemorrhagic septicemia bacterin or the mixed infection bacterin, which contain also the septicemia organisms. The reason for this is that from clinical experience, I am of the opinion that most severe cases of pneumonia are dependent largely upon the group of organisms that produce hemorrhagic septicemia, or the so-called stock yard pneumonia. We repeatedly see how readily fatal pneumonia may be produced in cattle by exposure or shipping and how in such cases these organisms predominate. As to the ultrascientific aspects of this argument, I have no concern. My concern has always been to save the stockman's cattle, being quite willing to resort to anything that would do it. It is common knowledge that clinical results often precede scientific explanation and where it does it is good enough for me. In treating all pneumonias in addition to our stimulation, it is our custom to give an injection of bacterin night and morning for the first two or three days and then an injection daily for the next few days. But if the animal is not responding, we do not hesitate to double the dose on the third or fourth day. Let the theory of bacterin be what it may as to their being useful only in chronic conditions and at set intervals. We are thoroughly satisfied from clinical experience that bacterin is positively useful in acute infections and that they should be used more as we would use a drug rather than at arbitrary intervals.

Metritis

In cases of metritis that are nearly always occasioned by retained placenta, there are but two problems involved. First treating the uterus; second, sustaining the physical condition of the animal For the latter we rely upon mixed metritis bacterin, given as we give bacterin in pneumonia and a preparation that has served us well, containing hyposulphite of soda, ginger, nux vomica and fenugreek.

As to the handling of the uterus, there are two things to keep in mind. One is to cleanse the uterus without doing it injury and the other is to keep down putrefaction. In cleansing the uterus, I personally prefer, when I can, a thorough irrigation and syphoning out until it is literally cleansed, using either a normal salt solution or a bicarbonate of soda solution, beginning about twenty-four hours after abortion or parturition has taken place and continuing daily where it is practicable until the uterus is free of all material, so far as possible, that may invite putrefaction or until it has involuted so that it is impossible to pass the hand through the cervix, when vaginal douching, uterine capsules and gentle massaging where practicable, every day or two, is resorted to if necessary. However, the necessity of prolonged treatment is very rare when the case has had proper attention from the onset. After each douching something should be placed in the uterus and spread about over

the membranes, if they are still intact, to lessen decomposition or the work of the secondary invaders until the uterus can be douched again. A mixture that is light and satisfactory may be made of boric acid, iodoform and thymol. This may be put in a capsule, the lid of the capsule removed and after it has been carried into the uterus, its contents spread around where desired. Where a uterus has been neglected and putrefaction is rampant, under no conditions should anyone attempt to douch such a uterus.

To those who are interested in the details of douching the uterus or when one should be douched or not douched, I would be glad to mail them a reprint of an article that covers that question rather thoroughly, but as it has already appeared in the April, 1918, number of this Journal, I think it too lengthy to repeat.

ETHER TREATMENT FOR MASTITIS

"I have used ether treatment (for mastitis) in quite a number of cases and find in this experience that in cases that have a high fever the results are good, while those with a low temperature do not respond as well. I use one to four ounces and generally three, four or five treatments."—Plank, Report Id. S. V. M. A., 1922.

"I have had quite an experience with the ether treatment and find it very successful. I have used straight ether injected right into the teats without any bad results at all, and have used as high as two ounces."—Nelson, Ibid.

"I have tried the ether treatment in two different cases. For the equipment I used the regular milk-fever outfit. In the first case I had the water too hot and the ether went right up into the gland and burned the tissues badly. In the next case I started with warm water until the ether began to vaporize and then gradually increased the heat until the ether began to boil, and thus got good results. At first the udder was sore but after the ether vapors began to take effect it could be handled roughly without causing any pain.—White, Ibid.

SURGERY JUSTIFIED IN RIGID CERVIX

There is no particular danger in operating if instruments and hands are reasonably clean and great care is taken not to cut so far forward as to open into the peritoneal cavity. In other words, there is not much danger in severing the two outer rings of the cervix. Usually when these are severed it is an easy matter to effect dilation. But if the cervical canal must be severed the entire length, it is well to have one hand in the rectum to guard the knife. It is our custom to always carry a hooked knife, similar to the small castrating knife. It is the only knife we use in obstetrical work. This knife is particularly handy because it can be placed where we wish to make our incision begin and draw it back. We always make the incision through the superior wall of the cervix, about in the center, to assure drainage. If the one incision is not sufficient others are made on each side of the first one, taking care that they too are sufficiently superior to drain. After the fetus has been delivered it is well to swab the wounds with some mild antiseptic and, if it is not convenient to see the case again, vaginal douching with sufficient force to irrigate the cervix daily for a time is advisable.

If inertia of the uterus is retarding dilation as is frequently seen in abortion infected uteruses, drugs, forcible dilation and a lot of good judgment are indicated. As to internal medication up to the present, drugs have given us no definite results.

TUBERCULOSIS WORK TOO COSTLY

"Without any reflections on anyone and without going into the financial details I will simply say that tuberculosis eradication work is costing too much money for the amount of testing done. The cost of testing per cow is, in some states at least, ridiculously high. This work must be speeded up or many of our cows will be dead of old age before we get them tested and the cost of testing must be reduced or the project will almost bankrupt the government and all of the states before it can be completed." D. F. Lucky, Mo. Val. Vet. Assn.

DOSE OF QUININE AND UREA FOR TICK FEVER

Since publishing an article on a system of medication for tick fever, I have received many inquiries, many of whom failed to enclose self addressed stamped envelopes, with reference to the dosage and method of administration of quinine and urea hydrochlorid.

I usually give from 25 to 50 grains of quinin and urea hydrochlorid dissolved in one ounce of water subcutaneously, making three or four injections with this solution. I next dissolve one grain strychnin in two or four 3 of water and inject it subcutaneously. Do not use arecolin or eserin.

Cases that are down on the ground and

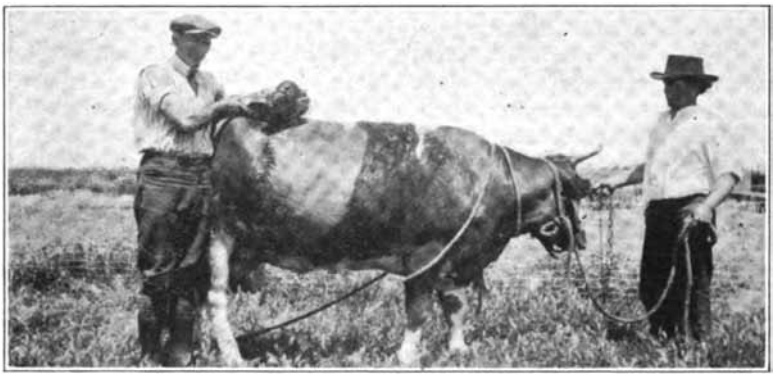
showing pronounced hematuria can be made to rise and recover.

Waynesboro, Miss. G. E. ELLIS.

CESAREAN SECTION IN A COW SUCCESSFULLY PERFORMED

I was called to examine a pure-bred Guernsey cow for pregnancy one month over-due She had not had an estral period since bred, ten months before and was not "springing."

The vaginal examination revealed a ceiled cervix. On rectal exploration I located a corpus luteum in the right ovary and a gravid horn with an ill-defined mass lying low. I made a provisional diagnosis of mummified fetus, but thought also it might be a tumor.



A month later when the condition had not changed I pronounced the case one of mummified fetus.

On four or five different occasions I attempted to press out the corpus luteum but failing to abort her in this way I decided to await results in hope that nature would come to the rescue.

Finally, however, I decided to perform cesarean section. The operation was done May 15, 1922.

Technic

The right flank was clipped and disinfected cocaine injected subcutaneously and the cow cast in a pasture lot. An incision was made through the abdominal wall but I experienced some difficulty in bringing the fetus through, and when this was accomplished the uterus was incised and the fetus delivered. It was well developed, covered with hair and weighed 14½ pounds.

The placental fluids were all absorbed and the fetus dried up. The recovery was uneventful and the cow came in heat 21 days later. She showed no evidence of ill-health either before or after the operation.

Manteca, California. A. J. Whitaker.

DON'T

Don't put milk on window ledge to save ice.

Don't place milk in open, unclean vessels exposed to air and flies.

Don't use milk over twenty-four hours old for the baby.

Don't mix old and new milk.

Don't have janitor take in milk, unless he puts it into an icebox.

Don't fail to wash bottles with scalding water.

Don't fail to return empty bottles promptly.

Don't economize on ice. Ice is cheaper than milk.

Don't fail to keep milk cold.

Don't forget that good milk is good food.

There were almost one hundred billion pounds of milk produced in the United States in 1921.

The Department of Agriculture estimates from the reports of 6,500 farms that the calf births increased about 9 per cent in the first quarter of 1922 compared with the same period for 1921.

Ayers and Mudge have shown that streptococci are frequently found in the udders of normal cows and that the same species of streptococci are also present in cases of mastitis. They further state that there is no reason to believe that streptococcus mastiditis is pathogenic for man when consumed in milk.

IMPETUS GIVEN TO FIGHT ON CATTLE TUBERCULOSIS

As the possibility of eradicating tuberculosis in cattle becomes apparent to a greater number of people, the campaign against the great live stock plague gains impetus. States and counties that had given little thought to this work from the economic standpoint are now taking it up in a businesslike manner, says the United States department of agriculture, because they can see the possibility of ending for all time this drain upon their live stock resources.

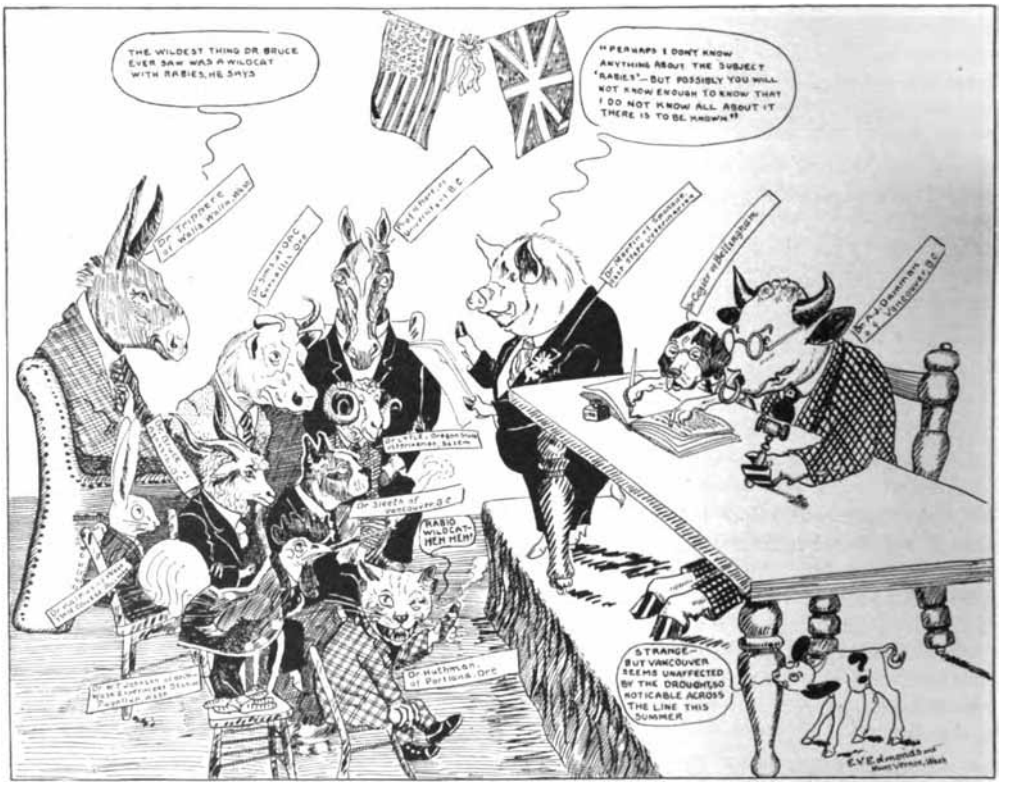
The latest state to fall into line for practical tuberculosis eradication work is Louisiana. On June 29 the legislature passed a bill authorizing the state live stock sanitary board to cooperate with the United States department of agriculture, and providing an indemnity fund of $15,000 a year for two years. A small amount of eradication work had been done there before, but because no money was provided for paying indemnities for slaughtered animals almost no progress was made. Since the state has only a light infestation of tuberculosis, estimated by the bureau of animal industry at 1 per cent, it should require only a few years of such appropriations to free the cattle entirely.

Massachusetts, a state that has been spending money to fight tuberculosis of cattle since 1894, recently passed a law enabling the state bureau of animal industry to cooperate with the United States department of agriculture. About $60,000 a year will be provided to pay indemnities on the cooperative basis with the federal government.

—U. S. Clip Sheet.

The shortage of funds for accredited herd work is to be met in Ohio by urging farmers to waive compensation for animals slaughtered until the next session of the legislature.

There are now 675 accredited herds in Virginia according to a report from State Veterinarian Ferneyhough. This state is said to have the largest percentage of accredited herds and the smallest percentage of tuberculous cattle of any state in the Union.



A Message from the Oregon, Washington and British Columbia Veterinary Medical Associations

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Insanitary Conditions and Losses of Hogs

The losses of swine due to parasitic invasion and other diseased conditions resulting from microbian infections of various kinds due to insanitary conditions, are enormous.

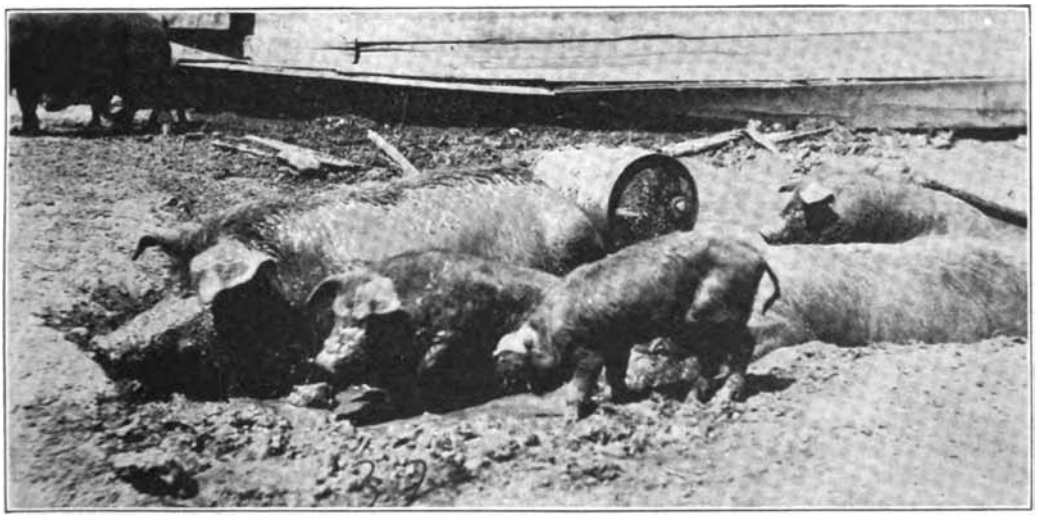
Recently some eighty head of hogs were carefully examined on a farm in central Missouri in which there had been about thirty deaths of spring pigs. The older hogs on this premise had been simultaneously immunized with serum and virus and were probably immune to hog cholera.

The first symptoms evidenced in the pigs consisted of thumping and more or less discharge from the nostrils. Later there was weakness, emaciation and diarrhea. The attending veterinarian conducted some autopsies which revealed some hemorrhages in various tissues and the possibility of a low grade filterable virus was suspected. As a result of the autopsy findings, the spring pigs were given the serum and virus treatment but the deaths continued.

The accompanying illustration evidences the primary source of the trouble. These hogs were probably affected to a slight degree with the filterable virus but the principal disturbing factor was the round worm and particularly the larval form, which had invaded the lung and produced marked disturbances.

The accompanying illustration shows a walker adjacent to the barn. This mud hole contained about one foot of semi-solid mud including the drainage from the barn yard and it will be noted that the hogs are making use of it and it is very probable that this was the principal source of the parasitic infestation on the pigs on this farm.

Note the accumulated trash in the lot and the appearance of a pig affected with ascariasis. This pig survived the primary invasion of the lung with larval ascarids and is now showing the combined effects of the larval ascarids in the lung and adult ascarids in the intestine. Note the general attitude and



A street urchin on taking his first look into a hog lot declared "Well the fellow dat named 'em hogs named 'em right" and when told the pork was made from the things he saw wallowing around in the filth added "Never again for me; Izzy is not such a chump as I thought."

When the veterinarian preaches cleanliness to the hog breeder, although it may not just now be fully appreciated, he is doing a service that will not only check disease but will also prevent the word "pork" from becoming as impolite in table conversation as the word "hog" itself. All of which inspires the thought that it might be well to begin to look askance toward the esthetic possibilities of hog production.

appearance. This pig is not more than two-thirds the size that it should be and it is emaciated and weak.

Ascariasis is responsible for extensive losses of swine each year. The swine losses due to these parasites can be prevented by eliminating the adult ascarids from the intestine of sows and freeing their skins of ova and embryo prior to placing them on clean quarters for farrowing and by keeping pigs in lots or pastures that have not been occupied by swine for at least one year. The hog lots and feeding pens should be cleaned frequently, all refuse and trash being properly disposed of. A valuable service can be rendered by veterinarians by disseminating knowledge relative to the life history of the ascarids to the swine producer.

HOG CHOLERA PREVALENT

According to reports, hog cholera outbreaks are rather numerous and quite widespread throughout the central states. More swine were immunized during the first seven months of 1922, according to the reports of practicing veterinarians, than for a like period of any preceding year. The losses of swine from hog cholera infection have not been unusually large this year, particularly if the number of outbreaks is taken into consideration. The small losses for the present season must be attributed to the prompt action of the state sanitary authorities and the practicing veterinarians. If the immunization of swine is continued at its present rate, there will be a serious serum shortage before the season is over.

Immunization Widely Practiced

There are probably two reasons why immunization of swine has been practiced on such a large scale this year. First, the price of swine is high in comparison to the price of corn and with the present rates for the price of swine and price of corn, swine feeding is going to be profitable. A second reason why so many swine have been immunized is probably due to the large number of outbreaks of hog cholera which has been a stimulus for the swine producer to insure his swine against loss by the use of anti-hog cholera serum and virus.

Other Diseases Menacing

There has been a variety of diseases in swine this year and in some cases the diagnosis has been rather difficult. There has probably been more disturbance resulting from the round worm or ascarid than in previous years. In order that good results be obtained by the use of serum and virus, it is advisable for the veterinarian to carefully investigate conditions in swine prior to immunization. Some serious results have followed the administration of serum and virus to pigs that were extensively infested with round worms. In other instances the losses after the use of serum and virus have been excessive because of the prevalence of infectious necrotic enteritis at the time the serum and virus were used. Bad results from improper feeding after immunization against hog cholera are less frequent than in former years. This latter fact is gratifying and indicates that veterinarians have been successful in educating swine producers to properly feed and care for their swine after the use of serum and virus.

Use Sufficient Virus

If the practitioner will carefully determine the condition of swine and particularly those that are apparently healthy prior to immunization, many of the so-called breaks will be prevented. It is always advisable to use a sufficient dose of serum and virus, particularly virus. Many of the difficulties encountered in herds after vaccination could have been avoided by the use of not less than two and probably three to five cubic centimeters of virus.

Diet Before and After Immunization

The preparation of swine for immunizing by withholding the feed prior to the injection of serum and virus and the restricted diet after immunization, is of great importance and should be emphatically impressed upon the care-taker. Swine affected with infectious necrotic enteritis should not be given the simultaneous treatment.

Give No Virus While Necrotic Enteritis Exists

If such herds are treated they should be given the serum alone and infectious necrotic enteritis properly treated, and when the animals have recovered from the enteric disturbance they should be given the simultaneous treatment. The administration of serum and virus and bacterin will frequently prevent future difficulty that would not be avoided by the use of serum and virus alone. Some practitioners believe it is good practice to use bacterins on all herds that are immunized against cholera.

Growths on the Mammae of Sows

Figures one and two display a common condition of sows which require surgical treatment. Figure one shows a nodular tumefaction involving one mammary gland. The enlargement is about the size of a cocoanut. Figure two shows a growth of irregular outlines invading two mammae, and is so large and pendulous as to mechanically interfere with locomotion.

These conditions being due to infection and fortunately circumscribed within the limiting capsule of the gland are easily removed surgically. They are now so common it seems advisable that a technique that will become standard be worked out.

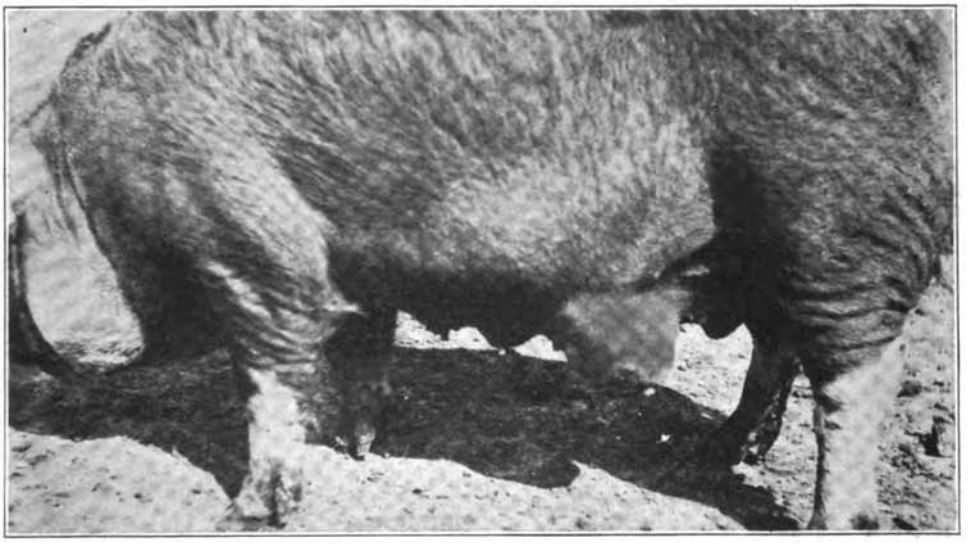


Fig. I. Small Symmetrical Growth Involving One Mamma

Once the growth prevents the gland from functioning, no matter whether the entire gland is invaded ablation is indicated and should not be postponed. The longer it is postponed the more serious the operation will be, on account of the increased vascularity. The ablation should always be total. There is nothing ever gained by attempting to preserve a mamma by extirpation of a growth within the gland.

Hints on Ablation

The sow should be anesthetized with chloral given per rectum in the form of an aqueous solution. The dose is from three to four drams dissolved in a pint to a pint and a half of cold water. This is injected after emptying the rectum of fecal matter. It is best to give it twenty minutes before beginning the operation.

The patient is secured by stretching the legs forward and backward with ropes and controlling the head with a snout loop. A good procedure that is meeting with much favor consists of tying off the gland with sutures as near the level of the abdomen as possible but without stretching the ventral skin too much. The object of tying off at some distance from the growth is to leave a good strip of skin outside of the suture line after the excision is made, yet this must be done without stretching the skin enough to cause a wide gaping wound after sloughing has occurred.

The best suture is that described by Zecha on page 263 of the June issue but in lieu of this an ordinary tug suture may be used. The growth is pulled away from the body with large tumor forceps and the suture line marked out to follow the contour of the belly. The stitches should be short enough to assure perfect strangulation of the tissue within each of them when drawn taut, and to prevent bleeding or slipping of the cut ends into the subcutaneous space beneath. Subcutaneous bleeding is pitfall of tying off operations of any kind and in the case of mammae ablations where the surrounding skin is so loosely attached to the body it can prove very annoying

and even serious. To further prevent this, which is the only serious accident that can occur, the growth is excised a good distance from the suture line. That is, a strip of skin an inch or even two inches wide is left dangling outside the suture to slough off.

Carefully worked out the operation is without hazard and bloodless.

Fig. 2. Large Irregular Growth Involving Two Mammae

Technic of Cesarean Section

By H. W. Wilson, Helena, Arkansas

Place the sow on any improvised table, such as barn door on saw-horses or barrels; tie the two fore-feet and under hind leg together and administer an anesthetic. Hyocin 1-20 grains morphin 1¼ grains and cactin ½ minumo hypodermically, twenty minutes before operation is started will prepare the way for an easy general anesthesia with ether. One to three grains of morphin, according to size, is very good. Chloral hydrate, 1 to 16, per rectum (one dram per 100 lb.) has been used with varying results. In cases of relaxation of the sphincter ani difficulty is experienced in retaining the solution. If patient is too weak to resist handling, don't risk profound anesthetic. Just give a whiff when pain is manifested. It has been my misfortune to be compelled to do this operation without the aid of an intelligent assistant to administer the anesthetic, however, by picking out some cool-headed man, you can turn the patient over to him with less risk, if you tell him to give only one to two teaspoonsful each time the patient shows signs of distress, but don't allow an unskilled assistant to get profound anesthesia even in strong patients.

Shave an area between the last rib and external angle of the illium immediately below the lumbar vertebrae, as large as 10 to 12 inches wide and 18 to 24 inches long, paint with tincture of iodin and cover with large linen towel previously rung out of antiseptic solution. Then overlap this towel three or four inches on all of its border with more towels so that the entire side of the patient is covered. Make a bold incision downward and forward through the towel and abdominal wall to the peritoneum which should be done with as few incisions as possible, two to three strokes should carry from two and a half to four inches deep, depending on how fat the sow is. Open peritoneal cavity and by palpation determine whether or not

fetus can be expelled through vagina without incising the uterine horns. Small-sized birth canal, or badly swollen fetus, besides monstrosities, are some of the reasons for hysterotomy, but degenerative changes in the uterine wall, caused by emphysemia of the fetus are best handled by hysterotomy. Hysterotomy is done by grasping the gravid cornua nearest the opening and bringing it out to the top of towels, where incision is made near the body of the uterus, which is very short.

Examination of the other cornua may reveal other fetus, which should be gently pushed through the opening made by incision in first cornua, or where this is too slow or impossible, another incision must be made in the opposite horn by bringing it to the top of the primary opening and laying on the towels. By making the incisions in the cornua after it has been placed on top of the towels, all fluids are prevented from entering the abdominal cavity. Fetal membranes should not be expelled if not done easily. However, a milking motion often removes considerable of this refuse. What is left in the horn will be expelled in a few hours.

Suture the incision of the cornua, using catgut, Lembert sutures, before making any incision on the other cornua. After replacing the horns and uterus suture the peritoneum with a continuous suture of catgut and close the external opening with six or seven interrupted linen or silk sutures, through the skin, fat and

This figure illustrates an incision that is slightly too horizontal.

muscles. Dry with cotton and paint with tincture of iodin, after which cover with layer of pine tar.

HOG LOT CAN BE MADE ATTRACTIVE AND SANITARY

The accompanying cut showing two purebred spotted Poland China sows and their litters, the property of Dr. R. C. Mills of Redfield, Iowa, illustrates the possibility of producing and maturing of from 8 to 12 pigs per sow for each farrowing. The secret of successful swine production is, first, proper breeding methods; second, proper feeding, and third, provision of sanitary surroundings. The swine production in the United States would be increased 50 to 80% by observing these three general rules.

FEEDING BROOD SOWS

Because of the excessive losses of pigs during the spring of 1922, there will be an unusually large number of sows bred for fall farrowing. Success in swine production is largely dependent upon the proper care in breeding and feeding. Brood sows that are provided a proper diet will produce better pigs than one that is not properly fed.

The ration for a sow from the time she is bred until farrowing should maintain her in a good thriving condition. Pregnant sows should not be fattened. Ground oats, barley or mill feed with a little corn is a good ration for pregnant sows. Pasturing on alfalfa, clover, etc., in addition to the grain ration is of great value to brood sows as pasturing insures exercise. The ration of sows, particularly those that are heavy milkers, should be reduced a few days before farrowing time and a limited ration should be provided for the first ten days after farrowing.

Scour in pigs and most of the digestive disorders can be prevented by properly dieting the sow.

The sow's ration, when the pigs are ten days old, should be increased until a maximum

milk flow is obtained, and such a ration should be maintained until the pigs are weaned. After the pigs are weaned, the sow should receive a ration that will tend to fatten slightly. This being particularly true in those cases in which the raising of the litter of pigs has reduced the flesh of the sow.

Many further suggestions might be made by the veterinarian to the hog breeder, along the lines of feeding. Of particular importance, is the feeding of the boar during the breeding season.

THE HOG CHOLERA MENACE

"Hog cholera was introduced into America about 1833, and until now has caused greater losses in swine than all other diseases combined. In 1921 the losses were estimated at $15,000,000."

"It appears to sweep the country in cycles of about ten years. The last general outbreak was in 1913 and 1914."

"It would be reasonable to anticipate on outbreak of the disease this year or next. According to available information all the serum produced would only immunize ten per cent of the hogs should there be an extensive outbreak."

"I am not throwing a scare, but it is possible that within the next few years the entire country might witness an outbreak of hog cholera which would deplete the greater percentage of the herds of the country."

—Dr. H. B. Brooks, Hamburg (Ia.) Reporter.

SWINE DYSENTERY

Purdue agricultural experiment station has reported the findings of a condition they have provisionally named swine dysentery. Although there may become minor differences, the symptoms and lesions as described are in the main the same as the symptoms and lesions of the condition that is usually known as infectious necrotic enteritis.

The specific cause of swine dysentery has not been identified. The B.suipestifer was found in many of the cases, but the investigators do not believe that it was the primary causative factor. It is hoped that the investigations will be continued and further definite knowledge relative to this important disease will soon be forthcoming.

"The chief difficulty in the control of hog cholera in 1921 was due to the failure of swine raisers to immunize their herds until hog cholera had appeared."—B. H. B.

It has been estimated that there were 12,424,000 brood sows on farms in the United States on April 1st, 1922. An increase of 11.1% over the number on the same date in 1921.

Tetanus toxin is rendered non-toxic when subjected to the action of formol in diffused light. This non-toxic tetanus toxin retains its immunizing property. This finding is interesting and probably a safe and an efficient method of immunization against tetanus with the non-toxic toxin will soon be forthcoming.

"Do you want to vaccinate your hogs? If so, come to the vaccination school," announces an Iowa farm adviser, while one in Illinois advertises, "Hog Serum Service. Hog cholera outbreak in the county means more service by the farm bureau and more money saved by its members."

Albiston has recently reported the occurrence of pulmonary actinomycosis in shoats from four to five months of age. It has been suggested that the pigs became infected by drinking milk from cows affected with mammary actinomycosis. It has generally been assumed that actinomycosis is not readily transmitted from one animal to another and these findings are of considerable interest.

IMMUNIZATION BEST INSURANCE

The safe procedure, we believe, is the better policy and recommend the following: The veterinarian can recognize the different swine ailments and should therefore be charged with the vaccination of all swine. In those cases where hog cholera exists on a farm all suckling pigs should be given the serum alone treatment and this should be followed up with the simultaneous treatment about two weeks after weaning. All pigs on all farms where cholera does not exist should be given the simultaneous treatment about two weeks after weaning. The intraperitoneal injection of serum has many advantages and this method is probably most desirable for the immunization of pigs. There is no doubt that the simultaneous treatment with anti-hog cholera serum and virus is the cheapest insurance a swine breeder can obtain and it is much more economical to have the swine immunized when small, two weeks after weaning, than after the swine become larger.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

BLOOD INOCULATIONS CONTROL FOOT-AND-MOUTH DISEASE

Mortality Lowered

The injection of blood from animals recovered from foot-and-mouth disease has proven satisfactory in the malignant form of foot-and-mouth disease during the outbreak in the Canton Lucerne. Good results were especially observed in case the injection was made at the earliest time; that is, as soon as the first cases of the disease have been observed. Such blood injections are indicated in all cases when the disease takes up the malignant form and extends over a large territory. The injection resulted in a milder course of the disease and therefore a reduction in the mortality (death rate among uninoculated animals 23.05%, in inoculated animals 2.2%).

The milk yield was also favorably influenced by the injection of the blood. Furthermore it was possible to permit the use of the milk for consumption at a much earlier time on account of the more rapid course of the disease and the possibility of an earlier disinfection of the stable.

Death Bleeding the Preference

For the preparation of the blood the death bleeding of the animals with subsequent meat inspection should be preferred to the partial bleeding from the jugular vein. Such animals should also be tuberculin tested and a careful examination be made prior to bleeding. It is recommended to use the mixture of blood from several animals. In case of prevalence of the disease in large areas, it is indicated to provide a laboratory for the production of such blood.

Sometimes a Disadvantage

The subcutaneous injection on both sides of the animal with subsequent massage of the point of inoculation is preferable to the injection of the blood on one side. Inasmuch as by such procedure the appearance of inoculation abscesses is prevented or reduced to a minimum. A disadvantage of such inoculations aside from the abscess formation is that frequently there is a delayed development of the disease in the herd as a result of the passive immunity produced by the injection.

The injection does not protect the animals from complications but if they do develop they are of a milder character. The blood examinations reveal that the principal cause of the slow sedimentation of the red blood cells in the cattle blood is due to the slight agglutinating qualities of the erythrocytes.

SEDIMENTATION OF THE RED BLOOD CELLS IN DIAGNOSING PREGNANCY IN MARES

Fahraeus in his experiments on the stability of the suspension of the red blood corpuscles in man found that the rapidity of the sedimentation of the corpuscles in the blood of healthy men is slow and quite constant, but that during pregnancy it is enhanced to such a degree that the increased rapidity of the sedimentation may be of diagnostic importance. Stoss conducted similar experiments with horses which indicated that pregnancy in the mare exerts no influence on the rapidity of the sedimentation of the red blood corpuscles. The fluctuations in the pregnant animals are within the borders of non-pregnant animals. Therefore, the sedimentation phenomena cannot be utilized in mares as a diagnostic means of pregnancy.

SYMPTOMS OF OPEN UTERINE TUBERCULOSIS

As open cases of uterine tuberculosis we must accept all cases of tuberculosis of the uterus, Fallopian tubes and of the peritoneum, both in cases of general infections as well as in cases of localization in any of these parts, provided that the uterine secretions proved on bacteriological examination to contain tubercle bacilli. The open cases of uterine tuberculosis occur in association with other forms of tuberculosis most frequently with the pulmonary form. In the majority of cases, however, it is confined to these organs. In uterine tuberculosis the rectal examination may reveal changes in the uterus, Fallopian tubes, the ovaries and in the peritoneum. Changes in the pelvic lymph glands are only exceptionally found. Changes of a tubercular nature are indicated by an enlargement and stiff or nodular con-

sistence of the uterus, nodular and bead string-like consistence of the fallopian tubes, enlargement and hardening of the ovaries and nodules on the peritoneum. The cervix in uterine tuberculosis may be either closed or more or less open. The external symptoms for open cases of uterine tuberculosis are irregular, and abnormal sexual desire especially in association with the drop of the pelvic ligaments. A discharge from the uterus of a mucopurulent character containing whitish yellow flakes. Both of these symptoms or only one may be present and should be considered as a suspicion towards open uterine tuberculosis. In the presence of one or both of these symptoms a rectal examination should be made for the determination of changes in the internal organs as described above. Should such an examination reveal changes in any of the organs or on the peritoneum even without an indication of an involvement of the corresponding lymph glands, the presence of uterine tuberculosis should be considered as established. The absolute diagnosis, however, depends in all cases on the bacteriological findings in the uterine secretions.

SOME OBSERVATIONS ON PREGNANT COWS

The gravid uterus attains at the end of the second month a weight of about 1 kg. At the third month the weight 1-3 kg. (average weight 2.175 kg.); in the fourth month 2.5-9 kg. (4.998 kg.); in the fifth month 6-15 kg. (10.993 kg.); in the sixth month 8-25 kg. (16.535 kg.); in the seventh month 20-32 kg. (24.533 kg.); in the eighth month 32-45 kg. (38.180 kg.); in the ninth month until the termination of pregnancy 40-80 kg. (52.480 kg.), in the tenth month 53.850 kg.

The determined weights of the fetuses for the second half of the pregnancy were for the sixth month 1-8 kg. (3.985 kg.); in the seventh 8-15 kg. (10.333 kg.); in the eighth month 15-20 kg. (19.170 kg.); in the ninth month 20-40 kg. (28.800 kg.); in the tenth month 30-40 kg. (32.500 kg.).

The number of placentomas does not increase after the end of the second month in the gravid horn, whereas in the non-gravid horn they no longer increase from the end of the third month. The total number of placentomas in both horns fluctuated between 42 and 132 with an average of 70 to 110 as the outside limits. In the gravid horn the number of the placentomas proved to be 38-90. In the non-gravid horns 0 to 55.

Thre is no change in the Fallopian tubes during pregnancy. In general the ovaries become heavier with the age of the animal. The corpura lutea neither increased nor decreased in weight during pregnancy. The specific gravity of the allatonic fluid increases during pregnancy, that of the omnionic fluid remains almost unchanged, although the latter takes up more or less of a slimy consistence towards the end of pregnancy.

VALVULAR HEMATOMES ON THE ARTERIO-VENTRICULAR VALVES

Blood cysts occur on the valvular apparatus of the heart in man as well as in the various animals. The material used by Kowanz for his investigations originated from horses and dogs which died a natural death, or which were destroyed on account of disease, age, malnutrition, etc. Cysts were demonstrated in twenty-two horses (8.76%) out of 251 examined and in 25 cases (5%) out of 500 dogs. Most frequently they were found to be poppy seed to hemp seed sizes; more rarely they attained the size of a pea. The endocardial covering is smooth and lustrous. The histological examination reveals a nodular, cellular-fibrous structure of the cysts which must be considered as the result of a preceding organization process. Yellowish pigmented flakes are indicative of broken down red blood corpuscles; thrombi are also present and may be surrounded by a calcareous border. Kowanz succeeded also in establishing a connection with the surface of the ventricle. The formations, therefore, indicate the development of the cysts from hematomes which originate from the ventricular cavity.

Frankenstein is of the opinion that infants are not capable of forming anti-bodies and therefore vaccine therapy in them amounts to nothing more than parenteral protein body therapy. If this is universally true then, wouldn't it be possible to immunize infant pigs against hog cholera?

According to Edmonds and Kammlade, corn when sound and properly fed with legume roughage is satisfactory feed for horses.

1. Schw. Arch. f. Tier. Vol. 63. No. 8.
2. Munch. Tier. Woch. 1921. No. 38.
3. Inaug. Dissert. Giessen, 1921.
4. Archiv. f. Wiss. u. Prakt. Tier. Vol. 47. No. 4.
5. Deut. Tier. Woch. 1921, pg. 153.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Poultry Parasites

THE eggs of most of the flukes occurring in poultry are of the usual elliptical shape and provided with an operculum at one end. Some of the egg sizes in microns are as follows: Typhlocoelum obovale (duck, trachea, bronchi, lungs, etc.), 154 to 180 by 90; Tracheophilus sisowi (duck; air passages of lungs), 122 by 63; Opisthorchis simulans (duck; biliary canals), 28 by 16 to 18; Metorchis xanthosomus (duck; biliary canals), 27 to 32 by 14; Echinostoma revolutum (duck, goose, swan, chicken; intestine; U. S.), 94 to 114 (Fig. 1); E.recurvatum (duck, chicken; intestine),

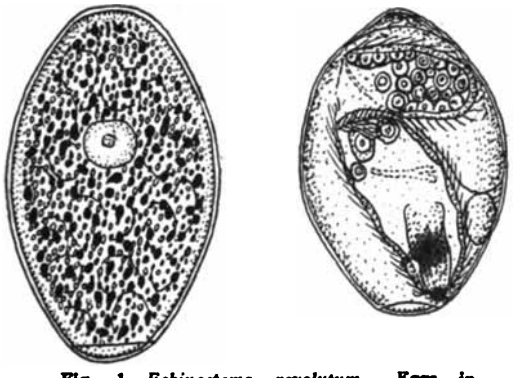


Fig. 1. *Echinostoma revolutum.* Eggs in various stages of development. x 34. From Johnson, 1920.

110 by 80; Hypoderaeum conoideum (duck, goose, chicken; intestine), 95 to 108 by 61 to 68; Prosthogonimus cuneatus (chicken, peafowl; bursa of Fabricius; U. S.), 22 to 27 by 13 to 16; P.ovatus (chicken; bursa of Fabricius and oviduct), 22 to 24 by 13; P.intercalandus (chicken; oviduct and body cavity), 29 by 15; P.pellucidus (chicken; bursa of Fabricius and oviduct), 27 to 29 by 11 to 13; P.japonicus (chicken; probably bursa of Fabricius), 24 by 12; Strigea gracilis (duck; intestine), 110 by 67; Cyathocotyle orientalis (duck; ceca and small intestine), 100 by 65.

Some fluke eggs are not of the conventional shape given above. The eggs of Catatropis verrucosa (Fig. 2) are elliptical, 23 microns long by 11 microns wide, with a filament 160 microns long at each pole; this fluke occurs in the cecum and rectum of the goose. The eggs of Bilharziella polonical are elongate anteriorly and have a small terminal spine posteriorly; this fluke occurs in the blood vessels of the duck.

There are many species of tapeworms which occur in the intestines of poultry. A very small number of these belong to the group of bothriocephalid worms and as such have thick-shelled eggs with an operculum or lid at one end. Such an egg has already been figured in a previous paper for a related worm, Diphyllobothrium latum, one of the dog tapeworms. Schistocephalus solidus, a tapeworm from the intestine of the duck, has similar eggs, the eggs being 44 to 54 microns long by 35 to 38 microns wide.

The eggs of tapeworms belonging to the family Hymenolepididae have several thin, transparent shells or membranes, as a rule. In the case of Choanotaenia infundibulum (chicken, turkey; U. S.), the eggs are oval, with a thin membrane next to the onchosphere, then a thick, smooth membrane, and then one or two very thick outer membranes, 60 to 65 microns long by 40 to 45 microns wide, and with a delicate appendage at each pole. The eggs of Hymenolepis anatina

Fig. 2. *Catatropis verrucosa.* Eggs. x 215. From Neumann, 1909, after Dujardin.

(duck, swan) have the characteristic shape figured here (Fig. 3) and are 125 to 175

microns long by 90 microns wide. The eggs of H.tenuirostris (duck, goose) are almost cylindrical and 85 microns long (Fig. 4). Usually these tapeworm eggs are globular or subglobular to elliptical. The diameters of the eggs are given here in microns for the following species: H.carioca (chicken, turkey; U. S.), 36 to 75; H.exilis (chicken), 56 to 65; H.cantaniana (chicken, turkey, peafowl; U. S.), 45 to 60; H.columbae (pigeon), 36; H.collaris (duck, goose), 42 to 44; H.megalops (duck; U. S.), 45 to 57; H.venusta (duck), 47 by 30; H.sagitta (duck), 44 by 34; H.setigera (goose), 53 by 28; H.fedtschenkowi (chicken), 75 by 50; Drepanidotaenia lanceolata (goose, duck), 50 by 35 (Fig. 5); Monopylidium gallinarum (chicken), 35; Amoebotaenia sphenoides (chicken; U. S.), 42 (Fig. 6); Metroliasthes lucida (turkey, chicken, guinea fowl; U. S.), 75 by 50 (Fig. 7).

Fig. 3. *Hymenolepis anatina.* Egg. Enlarged. From Braun, 1897, after Schmidt.

Fig. 4. *Hymenolepis tenuirostris.* Egg. x 240. From Krabbe, 1869.

Fig. 5. *Drepanidotaenia lanceolata.* Egg. x 300. From Stiles, 1896, after Railliet.

Fig. 6. *Amoebotaenia sphenoides.* Egg. x 374. From Meggitt, 1914.

The eggs of tapeworms belonging to the family Davaineidae also have thin, transparent shells or membranes and are very similar to those of tapeworms belonging to the Hymenolepididae. Those of poultry tapeworms are usually globular or subglobular, but sometimes elliptical. The diameters of the eggs are given here in microns for the following species: Davainea proglottina (chicken; U. S.), 35 to 40 (Fig. 8); D.tetragona (chicken, turkey, guinea fowl; U. S.), 25 to 50 (Fig. 9); D.friedbergeri (turkey), 34 to 38; D.bothrioplitis (chicken), 25 to 40; D.echinobothrida (chicken; U. S.), 25 to 50; D.cesticillus (chicken, turkey, guinea fowl; U. S.), 36 to 42 (Fig. 10), according to some writers, or 65 by 50, according to others; D.microcotyle (duck), 40; D.vigintivasus (chicken), 55.

The family Anoplocephalidae is represented by the species Bertiella delafondi parasitic in the intestine of the pigeon. The egg (Fig. 11) of this worm has 2 thin shells outside of the onchosphere and is 55 to 65 microns in diameter; the piriform apparatus, noted in a previous

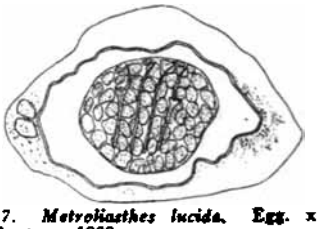


Fig. 7. *Metroliasthes lucida.* Egg. x 758. From Ransom, 1900.

paper as present in eggs of cattle tapeworms belonging to this same family, Anoplocephalidae, is not present.

The family Fimbriariidae is represented by the species Fimbriaria fasciolaris, parasitic in the duck and goose. The egg has thin shells and is 37 to 45 microns long by 21 to 23 microns wide.

Fig. 8. *Davainea proglottina.* Egg. Enlarged. From Stiles, 1896, after Blanchard.

The eggs of nematodes belonging to the superfamily Spiruroidea are usually elliptical and contain embryos when deposited. Most of the following species occur in the digestive tract, usually embedded more or less in the tissues. Oxyspirura mansoni and O.parvovum

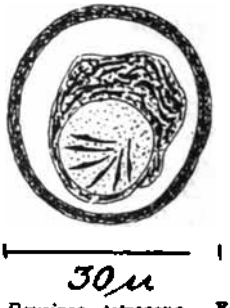


Fig. 9. *Davainea tetragona.* Egg. From Lopez Neyra, 1920.

occur in the eyes, but the eggs pass through the lachrymal ducts and are swallowed, escaping in the droppings. Filaria gallinarum is a

spirurid, not a Filaria, but its description does not permit of its assignment to a genus of spirurids at present. The dimensons of some of these spirurid eggs in microns are as follows: Filaria gallinarum (chicken), 40 by 24; Oxyspirura mansoni (chicken, turkey, peafowl; U. S.), 50 to 65 by 40 to 45 (Fig. 12); O.parvovum (chicken), 33 to 45 by 25 to 30; Streptocara pectinifera (chicken, guinea fowl), 33 by 20; Gongylonema ingluvicola (chicken; U. S.), 50 by 36; Dispharynx spiralis (chicken, guinea fowl, pigeon), 36 to 40 by 19 to 21; Cheilospirura hamulosa (chicken; U. S.), 30 by 20; Tetrameres fissispina (duck, turkey, chicken, pigeon), 50 by 28; T.confusa (chicken, turkey, pigeon), 33 by 24; T.gigas (duck), 50 by 21; Physaloptera bulbosa (peafowl), 44 by 26.

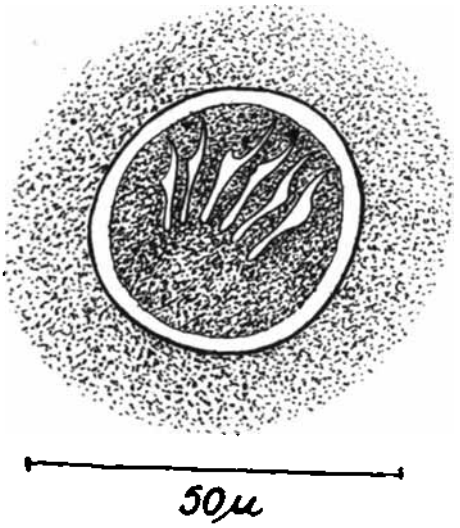


Fig. 10. *Davainea cesticillus*. Egg in capsule. From Lopez Neyra, 1920.

The eggs of nematodes belonging to the superfamily Strongyloidea are usually thin-shelled and elliptical and are usually segmenting when deposited. The dimensions in microns

Fig. 11. *Bertiella delafondi*. Egg. Enlarged. From Johnston, 1918.

of some of the eggs of worms in this superfamily are as follows: Trichostrongylus tenuis (chicken, duck, goose; cecum), 66 to 75 by 35 to 42; Ornithostrongylus quadriradiatus (pigeon; intestine; U. S.), 70 to 75 by 38 to 40; Epomidiostomum orispinum (goose; esophagus and proventriculus), 95 by 55; E.anatinum (duck; gizzard), 74 to 80 by 48 to 50; Syngamus trachealis (chicken, turkey, peafowl; U. S.), 85 to 90 by 50, with operculum at each end (Fig. 13); S.bronchialis (goose, duck; larynx, trachea and bronchi), 80 to 90 by 60, with an operculum at one end. The eggs of Amidostomum anseris (goose, duck; esophagus, proventriculus and gizzard) are 84

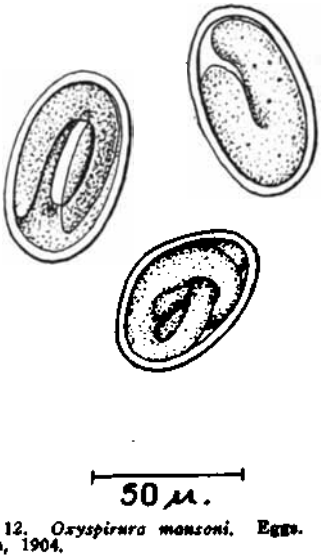


Fig. 12. *Oxyspirura mansoni*. Eggs. From Ransom, 1904.

microns long by 50 microns wide and contain an embryo when deposited.

The eggs of the worms belonging to the family Heterakidae of the superfamily Oxyuroidea are usually thick-shelled and are usually

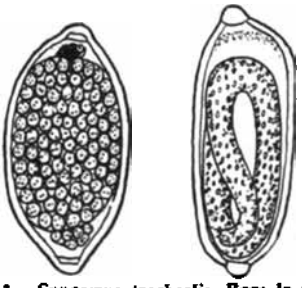


Fig. 13. *Syngamus trachealis*. Eggs in various stages of development. Enlarged. From Neumann, 1909, after Railliet.

not yet segmenting when deposited. The dimensions of some of these eggs in microns are as follows: Heterakis papillosa (chicken, turkey, guinea fowl, peafowl, duck, goose; ceca; U. S.), 63 to 71 by 38 to 48 (Fig. 14); Ascaridia perspicillum (chicken, turkey, guinea fowl; intestine; U. S.) 75 to 80 by 45 to 50;

A.lineata (duck, chicken; intestine), 80 by 50; A.columbae (pigeon; intestine; U. S.), 60, 68, 72 and 80 to 90 microns long, according to various writers, by 40 to 50 microns wide. A member of the same family, Subulura differens (chicken, guinea fowl; intestine), has eggs which are almost spherical, 59 microns long by 50 microns wide, containing embryos when deposited.

The worms belonging to the superfamily

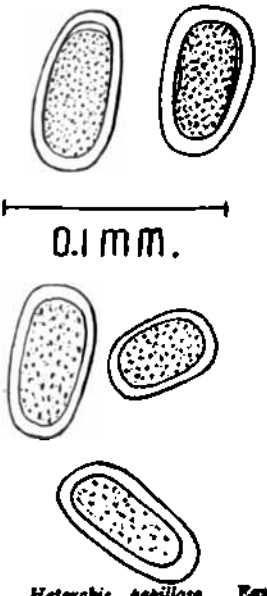


Fig. 14. *Heterakis papillosa*. Eggs from uterus. Adapted from Lane, 1918.

Trichuroidea have lemon-shaped eggs as a rule. The dimensions in microns of the eggs of some of these worms are as follows: Capillaria retusa (chicken, guinea fowl; intestine and ceca), 45 to 65 by 18 to 24, or by 28 to 32, according to some writers; C.collare (chicken; intestine), 66 by 30; C.meleagris (turkey; intestine and ceca), 54 to 56 by 25 to 27; C.contorta (duck; esophagus and crop), 48 to 56 by 21 to 28 (Fig. 15); C.anatis (goose; intestine

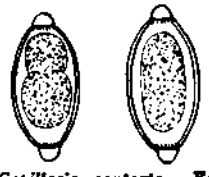


Fig. 15. *Capillaria contorta*. Eggs. x 300. From Railliet, 1893.

and ceca), 42 to 46 by 24 to 25; C.dujardini (pigeon; intestine), 53 to 56 by 28 to 32; C.strumosa (chicken; esophagus and trachea), 60 to 66 by 28.

The eggs of the following nematodes are somewhat oblong and truncated and have tuberculated or pitted shells: Hystrichis tricolor (duck; esophagus and proventriculus), 85 to 88 by 36 to 40; Eustrongylides elegans (duck; esophagus and proventriculus), 60 to 70 by 33 to 38 (Fig. 16); E.tubifex (duck; intestine), 65 to 75 by 44; E.papillosus (duck, goose; espohagus), 68 by 36.

The eggs of the echinorhynchs or thorny-headed worms of birds are elliptical and thick-shelled, similar to those previously described for such worms from other domesticated ani-

Fig. 17. *Filicollis anatis*. Egg. x 340. From Luehe, 1911, after Marval.

mals. Two species of echinorhynchs which occur in the intestine of the duck, goose and swan are Polymorphus minutus, with eggs 91 to 110 microns long by 26 to 30 microns wide, and Filicollis anatis (Fig. 17), with eggs 56 to

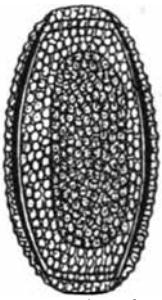
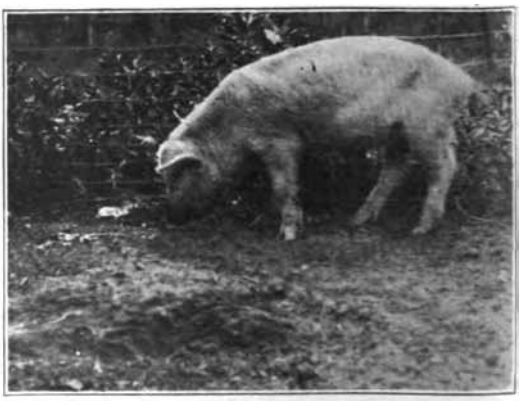


Fig. 16. *Eustrongylides elegans*. Egg. Enlarged. From Jägerskiöld, 1909.

60 microns long by 26 to 30 microns wide, according to some writers, or 62 to 70 microns long by 19 to 23 microns wide.



Ascarids? Yes

Zootechnics

Edited by E. MERILLAT, M. D. V.

ANOTHER INCENTIVE TO TEST CATTLE FOR TUBERCULOSIS

An announcement of more than usual interest to practicing veterinarians and to farmers who employ them has recently been made by the National Live Stock Exchange. This organization, which includes in its membership all of the big packers as well as many of the smaller packers, recommends that all its members pay a premium of ten cents per hundred above the market price agreed upon in the sale transaction on all carloads of hogs shipped from counties certified by the federal and state sanitary officials as free from tuberculosis, when such a shipment is accompanied by a sworn statement from an authorized veterinarian to the effect that the consignment of hogs was bred and fed within the confines of the said county and stipulating further that the hogs to the owner's knowledge have not been exposed to the germs of tuberculosis.

The Chicago packers have agreed to this and have gone one step further than the national organization recommended by agreeing to pay this ten cent bonus on individual shipments of hogs bred and fed on farms where the herds are accredited, if the owner or owners request a special kill on such a consignment and provided the hogs on postmortem examination do not show lesions of tuberculosis. It is understood that the bonus is to be paid on hogs from an accredited county or area without their being subject to the postmortem inspection check.

This spirit of cooperation on the part of the packers should be commended, even though they have nothing to lose and much to gain by the plan. Their proposition is certain to be helpful in furthering the accredited herd and county wide projects for tuberculosis eradication which are now so well under way in nearly all states.

F. B. Hadley, D. V. M.

Madison, Wisconsin.

The Commissioner of Health of Chicago estimates that the losses from rats in that city are no less than a million dollars per month.

Excess of protein in the feed of mother rats produces metabolic and nervous disorders in the suckling. Some of the derangements in young pigs, calves and colts may be due to a similar excess protein in the feed of their mothers.

A rather extensive outbreak of rabies in coyotes occurred in Washington recently. The biologic survey has been active. In trapping and poisoning the coyotes in the district where the outbreak occurred. Some new cases were reported recently and it is feared that the disease may become widespread as it did in 1915.

NEW MILK ORDINANCE FOR KANSAS CITY

The local veterinary association of Kansas City is at present cooperating with the food and health department of that city, in an attempt to apply the North milk ordinance. Dr. North was called to Kansas City in 1921 to make an extensive milk survey and recommendations for the future regulations of the milk supply to that city. The ordinance that North recommended and which has been adopted with slight modifications by the council, stipulates that the milk be of two general groups. First, pasteurized and second, whole raw milk. It is further stipulated that cows producing whole raw milk must be given a monthly clinical examination and all cows showing any abnormality and particularly of the udder, must be removed from the herd. The outcome of the conference and the enforcement of this ordinance is anticipated with interest.—A. T. K.

FILLED MILK LAW UPHELD

The Wisconsin Supreme Court has upheld the constitutionality of the Filled Milk law prohibiting the manufacture and sale of filled milk in that state. The decision is of exceptional interest in that it not only puts a stop to a questionable industry that prospered at the expense of the dairy interests but also

because it upheld the power of the legislature to prohibit all things which jeopardize the public health.

In concluding its review of the case the court says: "The principle of allowing these compounds to be manufactured and sold will lead from 'filled' milk to 'filled' butter and from 'filled' butter to 'filled' cheese and finally we may have the 'synthetic' cow taking the place of this domestic animal on the farms. Vegetable fats, cheap, but lacking in essential elements of vigorous life will take the place of butterfats of demonstrable value. A great industry of the state will decline a victim of 'national advertising' of cheap and deceptive substitutes."

BIOLOGICAL SURVEY DISCOVERS TWO NEW RACES OF SKUNKS

Two hitherto unrecognized geographic races of skunks of the genus Conepatus, the hog-nosed type, have been described by the Biological Survey, of the United States Department of Agriculture. This general kind of skunk ranges for the most part from southern South America north to southern Arizona, where it reaches its northernmost limits. One of the two new forms, known as the Arizona hog-nosed skunk, is found in southern New Mexico and Arizona; the other, the Nelson hog-nosed skunk, is native to Mexico.

The fur of the hog-nosed skunk is not so valuable as that of the ordinary black skunk owing to the poorer texture and to the fact that the tail and much of the back are white. This type of skunk is better equipped for rooting than others because of the greater length and strength of its snout, and it is probably useful in the control of certain insects.

(U. S. Clip Sheet)

Air-Born Contagions

A clew as to how diseases such as influenza may be spread broadcast may be taken from a recent report of the United State weather bureau which states that dust from the Sahara Desert was found to have settled thickly on the deck of a vessel 250 miles away and has even been observed on ships at the distance of 1,500 miles from shore.

Bishopp and Laake have determined that the ordinary house fly may travel a distance of 13.14 miles; Screw worms 15.1 miles, and L. caesar 3.5 miles. The distance traveled was determined on some other flies, the result being obtained from a study of 234,000 marked flies. Two factors were found to determine their dispersion after liberation, desire for food and a suitable place for ovipositing.

Whipping cream should contain from 25 per cent to 30 per cent butter fat. It should be cool, sweet and unpasteurized.

More than 100 scrub bulls have been replaced by pure-breds in Virginia during the last two months according to a report from the U. S. department of agriculture.

Each bull elk has two teeth of such high selling value that thousands of these game animals are ruthlessly killed in the Yellowstone National Park region every year for no other purpose than that of obtaining these trinkets.

Good, pure draft fillies can be produced more satisfactorily when provided with good pasture and legume roughage. Good pastures are absolutely essential in the production of good horses.

The average milk production of all cows kept for dairy purposes in the United States is estimated to be 3,250 lbs. a year; that of the dairy cows of Holland, 7,785 lbs.; of Switzerland, 6,950 lbs., and that of Denmark 5,666 lbs.

Chevo has been selected as a name for the flesh of the goat. This name was the choice out of 2,500 names submitted to the Goat Raisers' Association of Texas. Every veterinarian should memorize this name and call on his butcher for chevo when he wants goat meat.

There is a bill pending in Congress known as the "Filled Milk" bill. The import of this bill is to prohibit the interstate shipments of skimmed milk and vegetable oil matter to appear as whole evaporated milk. This bill favors the dairy interests and should be supported by veterinarians.

Blathewick and Long have found that the consumption of quantities of lactic acid in milk or milk products results in the formation of strongly acid urine. The increased acidity of the urine was found to be due to an excretion of acid phosphate. The lactic acid appears to have been completely oxidized as there was no evidence of its excretion.

Canine, Feline and Avian Practice

Differential Diagnosis and Treatment of Poultry Diseases

By R. F. Beaudette, Manhattan, Kansas

Roup

I. Symptoms:
1. Cheesy exudate in eye.
2. Diphtheritic membranes in mouth, throat, etc.

II. To Be Differentiated From:
1. Nutritional disease.
2. Coccidial roup.
3. Sod disease.

III. Flock Treatment:
1. Isolation of sick birds.
2. Thorough disinfection of premises.
3. Elimination of predisposing factors.
4. Epsom salts.
5. Potassium permanganate in drinking water.

IV. Individual Treatment:
1. Removal of exudate.
2. Application of antiseptics.

Fowl Cholera

I. Characterization and Symptoms:
1. Short duration.
2. High mortality.
3. Elevated temperature (109-112° F.)
4. Profuse diarrhea (droppings yellow or green).
5. Cyanosis of comb and wattles.

II. Post Mortem:
1. Enlarged and congested liver, spleen and kidneys.
2. Hemorrhages on heart and intestinal mucosa.
3. Ureters distended with urates.
4. Lungs congested or pneumonic.
5. Mouth and pharynx filled with mucus.

III. To Be Differentiated From:
1. Fowl typhoid.
2. Botulism.
3. Nutritional disease.
4. Blackhead.
5. Coccidosis.
6. White diarrhea.

IV. Control:
1. Isolation or destruction of affected birds.
2. Thorough disinfection.
3. Epsom salts (teaspoonful to the bird).
4. Potassium permanganate in drinking water.
5. Vaccination.

Fowl Typhoid

I. Characterization and Symptoms:
1. Short duration.
2. High mortality.
3. Elevated temperature (109-112° F.).
4. Usually diarrhea (droppings green).
5. Anemic comb and wattles.

II. Post Mortem:
1. Liver friable with grayish points of necrosis.
2. Intestines pale, catarrhal or congested.
3. Kidneys congested.
4. Heart pale with grayish points.

III. To Be Differentiated From:
1. Cholera.
2. Botulism.
3. Nutritional disease.
4. Coccidiosis.
5. White Diarrhea.

IV. Control:
Same as cholera.

White Diarrhea (Bacillary)

I. Characterization and Symptoms:
1. A disease of baby chicks.
2. Very high mortality.
3. Diarrhea (droppings white).
4. Constant peeping.
5. Unthriftiness (short back and pot bellies).

II. Post Mortem:
1. Unabsorbed yolk.
2. Intestines catarrhal and congested.
3. Liver usually yellow or congested.
4. Congestion of lungs.

III. To Be Differentiated From:
1. Coccidiosis.

IV. Prevention:
1. Disinfection of incubators and brooders.

2. Hatching eggs from known healthy stock.

V. Eradication:
1. Agglutination test.

VI. Treatment:
1. Sanitation and isolation of affected chicks.
2. Feed only buttermilk or sour milk.

Coccidiosis

I. Characterization:
1. A disease of young chicks (2 weeks to 3 months).
2. Diarrhea (droppings white).
3. Unthriftiness and emaciation.
4. Occasionally fibrinous conjunctivitis.

II. Location of Lesions:
1. Ceca.
2. Small intestines.
3. Liver.
4. Eyes.

III. To Be Differentiated From:
1. White diarrhea.
2. Intestinal parasitism.
3. Fowl typhoid.
4. Cholera.
5. Roup.
6. Nutritional disease.
7. Blackhead.

Tuberculosis

I. Characterization:
1. A disease of older birds.
2. Long duration.

II. Symptoms:
1. Emaciation and unthriftiness.
2. Diarrhea.
3. Lameness.
4. Anemic comb.

III. Cardinal Features:
1. An adominal disease.
2. Lesions in organs rather than lymph glands.
3. Caseation rather than classification.

IV. Location of Lesions In Order of Frequency:
1. Liver; 2. Spleen; 3. Intestines; 4. Ceca; 5. Mesentery; 6. Gizzard; 7. Lungs; 8. Kidneys; 9. Ovary; 10. Skin.

V. To Be Differentiated From:
1. Nutritional disease.
2. Intestinal parasitism.
Ante-morten.
Post-mortem.
3. Air-sac mite infestation.
4. Rheumatism.
1. Blackhead.
2. Nodular taeniasis.

V. Eradication:
1. Keep only birds under 1 year of age and on new ground.
2. Kill all visibly affected birds.
3. Intradermal test.

Blackhead (Entero-Hepatitis)

I. Characterization and Symptoms:
1. A disease of young turkeys.
2. Diarrhea (droppings yellow).
3. Emaciation and unthriftiness.
4. Elevated temperature.
5. Cyanosis of comb.

II. Location of Lesions:
1. Ceca.
2. Liver.

III. To Be Differentiated From:
1. Cholera.

IV. Treatment:
1. Sanitation and isolation.
2. Crude catechu in drinking water.

Botulism (Limberneck)

I. May Occur After:
1. Feeding spoiled canned goods.
2. Rains followed by hot weather.

II. Symptoms:
1. Limberneck.
2. Bright red comb.
3. Subnormal temperature (92-104° F.).
4. Mucus in mouth.
5. Loosness of feathers.
6. Diarrhea.

III. Post Mortem:
1. Catarrhal enteritis occasionally hemorrhages.

IV. To Be Differentiated From:
1. Cholera.
2. Fowl typhoid.
3. Nutritional disease.
4. Intestinal parasitism.
5. Wry neck.

V. Prevention:
1. Careful feeding.

VI. Treatment:
1. Epsom salts.
2. Antitoxin.

Nutritional Disease

1. Symptoms:
1. Cheesy mass in eye.
2. Subnormal temperature.
3. Cyanosis or anemic comb.
4. Emaciation.
5. Diarrhea.

II. Location of Lesions:
1. Eye.
2. Esophagus.
3. Kidneys.

III. To Be Differentiated From:
1. Roup.

2. Coccidial roup.

IV. Treatment:
1. Add greens to ration.

Bumblefoot

I. Symptoms:
1. Swelling of sole of foot.
2. Lameness.

II. To Be Differentiated From:
1. Scaley leg.
2. Sod disease.
3. Tuberculosis.
4. Rheumatism.

III. Treatment:
1. Surgical.
2. Removal of predisposing factors.

Sod Disease

I. Characterization and Symptoms:
1. Chicks usually affected.
2. Blisters on top and between toes.
3. Lameness and distortion of toes.
4. Head occasionally affected.

II. To Be Differentiated From:
1. Bumblefoot.
2. Roup.
3. Coccidiosis.
4. Pox.

III. Treatment:
1. Kerosene.

IV. Prevention:
1. Avoid sod.

Parasitic Diseases

Internal Parasites:

A. Tape Worms

I. Symptoms:
1. Emaciation and unthriftiness.
2. Occasionally wry neck.

II. Treatment:
1. Start starving birds in morning.
2. Epsom salts in evening.
3. Medication in morning: Turpentine 1 to 2 drams with olive oil, or oats 1 pint, corn 1 pint, lye 1 teaspoonful, cook 2 hours and feed.
4. Epsom salts 3 hours later.

B. Round Worms

a. Large round worms (small intestines).
b. Small round worms (seca).

I. Symptoms:
1. Same as for tape worms.

II. Treatment:
1. One pound of tobacco stems cooked in water for 2 hours and incorporated with one-half the usual ration.

C. Gape Worms

I. Characterization and Symptoms:
1. A disease of young chicks.
2. Unthriftiness.
3. Extension of head in gasping for breath.

II. Treatment:
1. Tracheal injections of 1 c.c. of a 5% aqueous solution of sodium salicylate.

D. Air-Sac Mites

I. Symptoms:
1. Emaciation and unthriftiness.
2. Anemia of comb.

II. Eradication:
1. Kill all visibly affected birds.
2. Disinfection of premises or removal to new ground.

External Parasites:

A. Lice

I. Treatment:
1. Dust with sodium fluoride; or
2. Sodium fluoride dip (1 oz. to gal. of water).

B. Mites

a. Scaley leg.

I. Treatment:
1. Wash parts with soap and water.
2. Medication: Caraway oil 1 part and olive oil 4 parts; or sulphur 1 part and lard 9 parts.

b. Depluming mite.

I. Treatment:
1. Same as for scaley leg.

II. House-Spray for Mites:
1. Dissolve ½ pound of soap in 1 gal. of water and add 2 gal. of kerosene. This to be mixed with 17 gal. of water to use as spray.

* Outlines of an address delivered before the Missouri Vet. Med. Assn., June 25, 1922.

Must Have Abundance of Minerals and Grit

Every chicken must have an abundance of mineral in some form. I differentiate between grit and shells. There are a great many people who want to find something that will do both. It is a good deal like a man who will find a cow that will produce a lot of milk and a lot of beef. It can't be done. The hen that lays the eggs can't produce a lot of meat. The mineral that acts as good grit or teeth for that chicken is not going to be a good form of calcium carbonate. The things that will be digested will not make a good grit. In our grit we insist on mica or granite or something containing a large amount of silica. We prefer oyster shells or clam shells for a lime shell. I also give chickens an abundance of ground bone.

—Prof. Phillips.

Filaria in the Blood of Dogs

By Oscar Schreck, New Haven, Conn.

THERE are three kinds of parasites that gain access to the blood-vessels and thus mingle with the blood, namely, Filaria immitis, Spiroptera sanguinolenta, and the Strongylus vasorum.

The Filaria immitis is white in color, the male from four to six inches in length and the female eight to ten inches. The mouth is surrounded by papillae. The body tapers to its posterior extremity, which is supplied with eleven papillae on each side. This parasite is met with in the right heart, and larger blood-vessels of the dog, and has a wide distribution in the blood (embryos).

The parasite is of considerable interest. Filaria, whose embryos circulate in the blood, in all cases, require the intervention of some blood-sucking creature to assist in their distribution, as the mosquito, sand-fly, louse or flea. How the parasite passes from these blood-sucking creatures into the dog has not been altogether satisfactorily traced, but it has been proved by Grassi and Noe, no doubt, that the filaria of the dog is found in its larval condition in the flea, mosquitoes, etc.

Except in one or two favored localities every dog in the Fiji Islands falls a victim sooner or later to these filarieae, but it is somewhat strange that bitches resist them longer than the male dogs. I am of the opinion that the ova acquired by the fetus from the blood of a pregnant bitch may prosper and develop after birth of the pup. Filariae are also common among dogs of Ceylon. It is said that Filaria immitis exists in about one-half of the dogs in China.

The adult parasite lives in the heart of the dog, and numerous embryos are expelled by the matured females and taken up by the mosquitoes from the peripheral blood, and their life cycle continues. The embryos may be found in the peripheral circulation during the night and disappear into the deeper circulation during the day.

Pathology and symptomatology: The symptoms of filariasis, aside from the presence of the larvae in the blood, vary much in different animals, or I may say individual cases.

It is well known that infested animals with numerous larval filariae in their blood, may for years show no symptoms and be apparently in excellent health. The symptoms to which they would naturally give rise are either those of interference with the due performance of the cardiac function, marked nervousness, epileptiform convulsions, etc. A peculiar barking cough which ends in a sort of spasmodic hawking up of frothy mucous, with distressing dyspnea and syncope is also seen in some cases, followed later by vomiting, emaciation and anemia. The animal maintains his appetite at first but later the appetite dwindles and there is a cough, heart irritability, weak pulse, visible mucous membranes anemic, increased flow of urine, and in some cases paralysis, or a dropsical infiltration of the abdomen, and depending members, due in part to the feeble contraction of the heart, rendering it incapable of carrying on the circulation perfectly. These distressing symptoms do not usually manifest themselves in puppies of less than six months, though the baby filariae are easily detected in the blood.

Spiroptera Sanguinolenta

Synonym: Filaria sanguinolenta.

Male, one and one-half to two inches in length. Female one and one-half to three inches long, of reddish color. The body is attenuated at both extremities and the tail is somewhat curved. This parasite is found in the stomach and esophagus of the dog and frequently forms tumors in the walls of these organs. The cockroach orientalis is the intermediary bearer of this parasite.

The worm was first known only as found in the circulating blood, no recognition being made of the species. From the fact that these larvae were met with in the blood of infested animals, the name, Filaria sanguinolenta, was attached. But later, when the worm was recognized, it was found that the proper habitat of the worm in animals was in the lymph passages, usually one of the lymph vessels (large) of the thoracic duct, and bronchial lymph glands.

It is also found in the walls of the stomach and mucous membranes of the esophagus. The female generally gives birth to the larva in large numbers. These are carried along the lymph vessels by the current and eventually are poured into the blood vessels. The establishment of a positive diagnosis of filariasis is made by the discovery of these larvae in the blood of the animal examined. Strong

analogy exists in the similar establishment of the mode of transmission of the Filaria immitis of the dog by mosquitoes, etc.

Pathology and symptoms: The symptoms of filariasis in the dog aside from the presence of the larvae in the blood vary much in individual cases. It is known that infested animals with numerous larval filariae in their blood, may for years show no symptoms and be apparently in excellent health. In the very few cases seen and reported, it presented no special symptoms except rapid emaciation.

Strongylus Vasorum

Synonym: Hematozoon subulatum.

Is of rose color, male from 14 to 15 m.m. in length. Female 18 to 21 m.m. in length. The body is attenuated at both extremities. This parasite is found in the right heart and pulmonary vessels. They reach the minute vessels of the lungs by way of the circulation and form in some cases transparent nodules, which may be mistaken for tuberculosis nodules.

Their presence is difficult to recognize except by autopsy and at times the embryos. which measure from 70 to 80 micromillometers in length, may be found in the mucous from the animal's mouth during life.

Treatment: It is needless to enumerate all the remedies which have been employed in the treatment of filaria; nothing appears to have ever been really efficacious. Tonics may be needed in the anaemia which is apt to come on in the course of filariasis. Thymol has been lauded as almost a specific, but in many cases reported it has been apparently of no value. Such conditions must be met with individually and symptomatically.

Comment: An important lesion caused by the larval stage of the above parasites, omitted by the writer, is that of thrombosis or embolism, due to irritation and inflammation of the internal coats of the blood vessels infested quite frequently found in the colic artery.

Case Report

I was called to see a performing Dalmation, seven years old, weight about eighty pounds, and owned by an animal trainer, having a trained animal show at a local theatre. The owner stated that the animal appeared in perfect health, but was losing weight, and doing three shows a day till three days ago.

On examination I found the animal weak and somewhat dull, with a slightly staggering gait, and a slight dragging of the hind limbs, a sort of dragging the toes along on the floor. Conjunctiva and other visible membranes anemic, with labored breathing. Appetite good, up to the day I was called; posterior limbs down to the hock joints were infiltrated, and would pit on pressure. Pulse irregular and somewhat intermittent, temperature 102.2°; valvular insufficiency was suspected and owner so informed. As the animal was constipated, I gave a mild purge; this the owner wished me to do, as he seemed to think the trouble was constipation and nothing else, but he could get no results from his own treatment of the case. I was to return on the following morning to the theatre, and at the same time look at another dog. During the afternoon I was again called (3 p. m.) and found the animal out in back of the theatre, with the caretaker, as the owner was at this time doing his trained animal act. The animal showed symptoms of abdominal pain, and unable to get on his feet, and when raised would at once fall over on his side. During this seizure, the animal retained consciousness perfectly; but during this period the visible membranes were of a chalky color, the features contracted as in great pain, and the body was cold.

I gave a hypodermic injection of morphine for the pain, which kept the animal quiet till

This is John W. Scott of Philadelphia exhibiting his imported Airedale that recovered from a fractured spine under the treatment of Dr. H. B. Balthaser of that city. The unique treatment was described in the July issue.

six p. m. when the same symptoms reappeared. I repeated the morphine, but the animal died that evening.

Autopsy: Abdominal cavity contained nearly one quart of serous exudate. All organs normal, anti-mortem clot in right auricle extending into valve. On removing clot, eight long worms were found. They measured six, seven, and ten inches. Body of the worms tapered to its posterior extremity, and was supplied with papilla on each side. Pronounced the same as Filaria immitis. This dog was raised and trained in South America and had been traveling from city to city for over a year.

CANINE DISTEMPER

I have been having an outbreak of infectious condition of puppies here that seems to be different from anything I have ever seen before.

It occurs in puppies from two to four months of age or older. The symptoms are: Loss of appetite, temperature 104° to 105° F., and slight discharge from the eyes. The respiration varying in the same patient, at times very rapid and labored and at other times apparently normal. There is extreme weakness in most cases, with a great thirst; they will lap water constantly if allowed to. The mortality high, in fact I have not seen any recover. They die in from a few days to a week.

The autopsy showed a very pronounced hemorrhagic condition throughout. The lungs in different stages of congestion, with surface covered with irregular petechiae, heart enlarged and flabby, liver enlarged, engorged and friable, intestines show hemorrhagic spots of varied sizes externally and petechiae on the mucous coat, kidneys and bladder.

They do not respond to any kind of treatment and all die in spite of anything I have been able to do.

Kindly advise me as to the diagnosis, prophylaxis and treatment—H. M. H., Ind.

Reply: You are dealing with a very virulent form of distemper. At least, it is quite customary to diagnose such conditions under this blanket term.

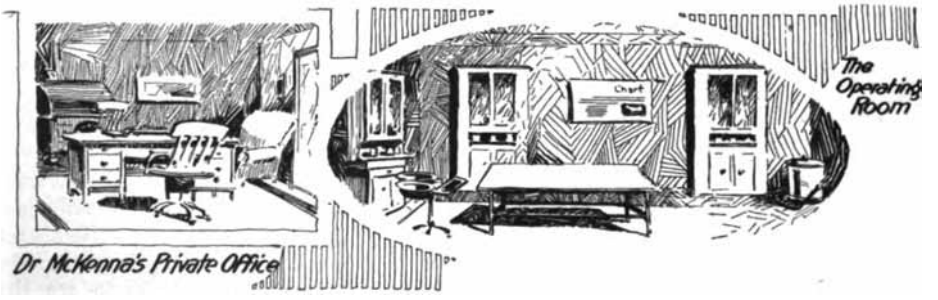
The mortality you describe is by no means exceptional as we are constantly in contact with outbreaks that kill 100%.

The standard system of handling such outbreaks is that of immunizing exposed animals with serum, using 20 to 30 cubic centimeters of serum at intervals of 48 to 72 hours, until three doses have been given. The sick animals receive the same dose at intervals of 18 to 24 hours.

The best prescription we have yet used for canine distemper is one recently advised by Dr. Brumley consisting of iodin, 1/25 grain; creosote, ¼ grain, potassium dichromate, 1/20 grain. This is given every six to ten hours and the dosage prorated according to the size of the dog. A very small dog would take only ½ this dose and a very large one might take three times as much. Give them nothing but cod liver oil as nourishment during the acute stage.

CANINE PLUTOCRAT GETS A GOLD CROWN

Dr. Jobson of Grays Inn Road, England, makes a specialty of canine dentristry and is caught by the camera setting a gold crown for a bull-terrier.



Views of Dr. J. F. McKenna's Veterinary Hospital, Fresno, California

Small Animal Practice*

O. V. Brumley, Columbus, Ohio

Professor Small Animal Practice, Ohio State University

TWENTY-FIVE years ago when it was my privilege to become associated with the veterinary profession, practice was confined principally to large animals and the horse was the animal that received the most of our attention. Cattle practice was of minor importance and rarely were the other animals considered. Since that time the practice of Veterinary Medicine has been modified to a great extent so that instead of the veterinarian restricting himself to caring for the various diseases of large animals we find him paying more attention to some of the other animals, especially dogs, cats and the various breeds of poultry. This means to us as veterinarians that there is a growing demand for our services in taking care of practically all classes of animals, and as a result of this, we must look the situation squarely in the face and prepare ourselves for such an emergency. This change in our professional activities has taken place more or less gradually until the past few years. During this latter period several things have occurred to bring about a more rapid change. The automobiles and automobile trucks have reduced practice to a certain extent upon certain classes of animals.

This is especially true in the larger cities, where horses were used exclusively for local transportation, deliveries, pleasure, etc. However, in spite of this change, my prediction is, we will find veterinary practice better in the near future than it ever has been in the history of the profession. It is generally known that all professions and business have just gone through a period of depression and reconstruction with a much brighter outlook just around the corner. In support of this optimistic statement we feel safe in saying there are several factors contributing to make it a reality in the near future.

Several Agencies Make Outlook Hopeful

In the first place, progressive, live veterinarians, who are trying to elevate the profession from every angle; the public has begun to realize that the men of our profession can be educated, trained for service, and are equally as efficient in our profession as the physician is in his. We are all glad to see this change wrought, and no doubt but that all of us can look forward to the future and see better service, better appreciation of service and a more hopeful outlook all around, because the veterinarian himself is willing to do something to get out of the rut.

In the second place the value of live stock, now low, will increase during the next few years, even the price of good horses will keep pace fairly well with other animals, so that from an economic and business standpoint the owners realize the necessity of expert advice and treatment for animals when sick. This is especially true with all meat producing and pet animals, and isn't it true that our calls are becoming more frequent in caring for these animals than formerly?

In the third place the education of the laity. Just to what degree this has been a benefit to the veterinarians is somewhat problematical, but we all must admit that the extension of the telephone, rural delivery of mail, the electric lines, better roads, have been a great uplift to the rural communities, and consequently given these people a much broader view of things, and have materially increased their respect for the advice and professional services of the veterinarian. We will also admit that there is still chance for improvement along this line, and we hope to see the day that the laity will refuse to have anything to do with the uneducated, unprofessional man. Education of the public to the importance of expert service is in our opinion of the greatest value to the profession, and we are all happy to see progression along this line. We believe education is the basis of all development.

In the fourth place, people are becoming more attached to small animals and consequently there is a great increase in the number of animals kept simply for pleasure. Several years ago veterinarians were hardly ever called upon to treat this class of patients, but at present we find a large share of the practice in cities made up of so-called small animal practice. This practice is very remunerative, and am pleased to note that it is gradually extending to the smaller cities and rural communities.

What constitutes a small animal practice?

* Address delivered at the University of Minnesota Short Course for Veterinarians July 14, 1922.

There seems to be a division from a professional standpoint and perhaps it is the beginning of specialization in veterinary medicine. We should include all the small domestic animals, particularly dogs, cats and birds (including all breeds of poultry). In the cities perhaps dogs and cats represent the majority of cases while in rural communities poultry would predominate. We do not wish to go on record as advising specialization in small animal practice so much as taking advantage of our local conditions and take care of all classes of patients. To those who are interested in small animals it offers an excellent field for study, development and is very remunerative.

In this connection we wish to call your attention to the great possibilities for giving advice and for practice in the poultry industry. The veterinarian must accept the newer conditions and adapt himself to them in every way.

Income Can Be Doubled

We sincerely believe our annual income can be doubled in a short time by taking advantage of all the possibilities in our respective communities. All communities have small animals.

It would seem that the veterinarian in his particular locality should make a survey of all the animals in order to find out the number, species, and the possibilities from a professional and business standpoint. This survey would give us some valuable information and would determine whether or not we were doing our share of professional work and also what the possibilities would be for future development. Personally, we believe there is much that can be done in treating this class of patients in practically every community in the country. The poultryman has been inclined to take his disease problems to the county agents mainly because he can get a sympathetic hearing from them. A prominent poultry expert from another state informed me that he had been devoting a great deal of his time consulting with people along the lines of diseases of poultry and he was surprised to know from them their local veterinarian did not take any particular interest in their problems.

It would seem that unless we devote more time and attention to this phase of veterinary practice more of it will be done by those employed to do other lines of work. This work should be kept in the profession.

Poultry Industry Offers Great Prospects

Most people do not realize the importance of the poultry industry in their respective community, county or state. An individual fowl might not amount to very much considered by itself but when we realize that practically every farm in the community has a flock from 50 to 1000 fowls on it, in the aggregate in each community, county or state, it represents a large and growing industry.

Now from the veterinarian's standpoint it would seem that we should take a greater interest in and make a study of this industry in our respective communities in several ways.

In the first place, a study of the industry from the standpoint of breeds and breeding would be of considerable importance so that your advice would be in demand in assisting your patrons with their problems along this line. The question of breeding of fowls is just as important as other animals on the farm.

In order to improve the industry better individuals must be selected and eggs obtained from those known to be high producers of this article, or the fowls themselves for market, in case of market breeds.

In the second place, the selection of layers or culling of flocks should be considered. There is no reason why the veterinarian should not take care of this work. Bulletins can be obtained which explain fully this operation, and with a little experience there should be no difficulty in carrying it out successfully. When you are on the farm looking after the other livestock, this question could be brought up and discussed with the owner. It is very largely a matter of suggestion and education.

In the third place, hygiene and sanitation as applied to flocks of birds should be considered. The principles are the same as applied to other conditions, but the owners should be advised relative to the proper housing of birds, the probable number for each house, window and air space, sunlight, etc., all of which are important in keeping the flocks in a healthy condition. They will need advice also in regard to proper methods of disinfection, etc.

In the fourth place, a study of the various diseases of fowls is particularly important at this time. As has been stated on previous occasions the diseases represent the real difficulty to successful poultry husbandry.

Depends on Our Own Ambitions

It is surprising how rapidly these things

develop when they are taken seriously and we devote our time and energy to them. You will find the county agricultural agents willing to cooperate on all these problems. Our experience has shown that if we take responsibility and assume the right attitude there will be no difficulty in securing hearty cooperation with the state and federal agents in our communities so that mutual benefit will result.

You will please pardon these general remarks, on the ground that we wanted to impress upon you the importance of considering veterinary practice in a broader sense than what it was formerly thought to be, and that small animals are going to be more valuable to us in our professional work than they have been in the past, depending, of course, upon the interest we care to take in them and how successful we are in treating them.

The Equipment for a Small Animal Practice

Certain equipment is considered essential in small animal practice. We would recommend first of all a clean, well equipped office and if possible a waiting room similar to those used by physicians. This should be provided with comfortable, neat furniture, well lighted and ventilated. In other words, a pleasant place for our patrons to wait in. Pleasing pictures with up to date literature will add a great deal to keep up the tone of the office and the morale of those waiting. Current veterinary and agricultural literature should be well represented. Keep office orderly and clean.

Instruments

Secondly, sufficient instruments and in proper order with some adequate way of sterilization. We think an ordinary copper boiler of small size would answer the purpose. Be sure that all instruments are thoroughly sterilized before using. An elaborate outlay of instruments is not necessary.

Cages

Thirdly, provision should be made for a few, clean, well lighted and ventilated cages. These should consist of an isolation cage or cages to take care of infectious cases. A few cages to house the regular patients. All of these cages should be kept clean at all times and painted occasionally. The painting will clean and disinfect them.

Microscopes, Etc.

Generous use of some reliable disinfectant is also recommended. Three per cent liquor cresolis compositus. Hot water.

Lastly, we do not believe it possible to do satisfactory work in small animal practice without certain diagnostic instruments. A microscope, phonendescope, etc., should be available at all times. They should be in use every day in a small animal practice.

Importance of Diagnosis

This is the most difficult thing in small animal practice. It is the keynote to successful treatment.

A careful, thorough examination should be made in all cases in order to establish, if possible, a definite and accurate diagnosis. We are inclined to be rather lax in making our examinations and apply treatment before definite conclusions are arrived at.

In small animals especially, there are many diseases and conditions which are rather obscure and unless we are very careful, mistakes will occur, which may lead to the application of wrong treatment, or unsatisfactory results. This is discouraging to practitioner and owner.

At any rate unless the examination is made thoroughly and a definite diagnosis is made, it is impossible to give a correct prognosis and apply rational treatment. The diagnosis cannot always be established even after the most thorough examination.

Feeding Small Animals

The feeding of small animals is very important, and we should make a careful study of the subject. In many conditions dieting is one of the most important things to be considered in the treatment. Many small animals suffer from too much food rather than an insufficient amount. Large number of cases need only restricting diet for several days. On the other hand, nourishing and concentrated foods are required in animals recuperating from many diseases. Eggs, beef extract, salmon, lean meat, mush, oatmeal and milk constitute the common foods for weak and undernourished animals. The ordinary dog biscuit as sold on the market can be used as the regular food, and varied with other foods as the case demands. Our experience has shown that indiscriminate use of table scraps, trimmings from meat, left over from restaurants, etc., is often dangerous on account of preformed toxins, infection, foreign substances such as glass, etc., which may produce serious results.

Dieting and selection of foods for our small patients is just as important as medication. Very sick dogs and cats require special care regarding foods. Often they will eat certain

things and refuse others. This must be determined and a diet fixed accordingly.

Mix the Diet

The diet should be a mixed one in which all the essential food stuffs are duly represented. Meat may occasionally, under exceptional circumstances, be safely and wisely given as the exclusive diet; usually it can be allowed only in limited quantity, but in no case must it be permanently withheld. Vegetables are to be regarded as correctives rather than as foods. Of all the cereals, wheat ground moderately fine and used to make bread, biscuits and porridge is the best. Oatmeal and cornmeal answer a good purpose, especially in winter. Milk is useful, but not in large quantities at a time, nor continuously. Bones under due precautions serve an excellent purpose. Some of the patent foods are also good.

Variety the Idea in Feeding

Whatever foods be employed, variety is of the utmost importance. The less exercise a dog gets, and the more unfavorable his surroundings, the greater the care necessary in regard to food in all except its nutritive qualities. With the hard worked animal, the latter is of the greatest moment.

Quantity More Important Than the Interval

The actual quantity consumed within a given period is of more consequence than the intervals at which food is given. As a rule, twice in twenty-four hours will be quite sufficient, with many exceptions in favor of one daily meal.

In all matters relating to feeding, the circumstances under which the animal lives, and its individual peculiarities, must be carefully considered.

Cats, when given the freedom of the kitchen and the table scraps require very little attention in regard to feeding, especially if they have plenty of exercise. However, when they are kept in closer confinement, more attention must be given their diet. Milk is not only the traditional diet of the cat, but also forms one of the principal articles of food for it. The milk should be perfectly fresh, as sour milk is apt to produce digestive troubles, especially diarrhea.

Specially prepared foods are being sold on the market which seem to be very satisfactory. Small enamel pans are preferred for giving the food in, because they can be sterilized easily by placing them in a large pan or bucket with water and kept at the boiling point for 15 to 20 minutes. We have found it to be absolutely necessary to religiously clean and sterilize all feed pans to avoid serious conditions in these animals.

A study should be made of the feeding of our patients. Many times it is necessary to change the food often and to tempt them with choice bits of meat or other food. Feeding of the sick animals is a very important adjunct to the regular treatment.

CANINE DISTEMPER

In considering the diseases of small animals, it is somewhat difficult as there are a great many of primary importance. However, I believe that Canine Distemper with its complications stands out as one causing the practitioner the most difficulties. Therefore, with your permission will state some facts as far as possible concerning this disease.

During the past years we have been very much interested in canine distemper for a number of reasons. It is one of the most difficult diseases to handle from a number of standpoints.

Mortality High

First, the mortality of the disease is quite high, therefore, many times discouraging both from the standpoint of the owner and the veterinarian. We have had the experience of mild cases, even after the most carful treatment and nursing, rapidly grow worse and succumb to the disease while on the other hand many severe cases will rapidly recover.

This keeps us in doubt relative to the outcome of all cases and makes the prognosis difficult.

Diagnosis Not Easy

Secondly, the diagnosis is often in doubt. The disease in its early inception is difficult to recognize on account of the many forms it assumes. The fact that the early indications might be symptoms emanating from the nervous system, the digestive tract, respiratory tract, skin or some other portion of the animal's body makes the diagnosis difficult in many cases and may be overlooked until more general or prominent symptoms develop.

Distemper is an acute, infectious, communicable disease which in most cases affects young dogs.

Most Common Disease of Dogs

This is one of the most common diseases affecting dogs and is known in every country where dogs are found. It is particularly a

disease of young animals, the majority of dogs contracting it at some time during the first year of their lives. Whole litters of puppies, or all the animals in a kennel may become affected at one time. It occurs in districts as an enzootic. In cities it is more prevalent than in the open country. The season of the year has some influence on its prevalency and distribution, the fall and winter months being most productive of the disease. Highly bred animals are more commonly affected than those bred by natural selection.

Etiology in Dispute

There seems to be considerable difference of opinion in regard to the exact etiology of dog distemper. Some claim it to be produced by a specific microorganism (Bronchoseptiicus canis), while others think it is due to a filtrable virus. In each case evidence has been produced which seems to substantiate the claim made. Two distinctive factors are recognized from a clinical standpoint: (a) A primary infectious agent which produces the marked initial symptoms of the disease. (b) Secondary organisms which produce many varied and serious complicating conditions. A large number of organisms have been isolated from animals affected with distemper, but so far they have proved to be simply secondary invaders.

Infection May Be Indirect

Natural infection takes place in several ways. It may be either direct or indirect, the animals coming into immediate contact with each other, or through intermediary agents, the virus being taken into the digestive tract with the food or drink. There are a number of factors which tend to favor the development of the virus, such as influence of any kind which reduces the general resistance of the animal, in the way of poor food, insufficient food, colds, etc., or various diseased conditions interfering with the assimilation of food. Puppies with weak constitutions are especially susceptible. The development of the disease is ordinarily in animals from three months to one year of age.

Old Dogs More Resistant Than the Young

Older animals are very seldom affected and if so take the disease in a mild form.

This may be explained by the immunity the dog possesses or by having had the disease in a mild form. House dogs which have been pampered and petted, or those of the finer breeds are more susceptible, and usually take distemper in a more severe form.

It has been determined quite conclusively that the specific virus produces an acute or peracute condition with a high temperature followed in a few days by a secondary change due to other bacteria resulting in various complications, such as occur in the skin (pustules), respiratory passages, digestive tract, nervous system, etc.

Symptoms

There is quite a variation in the symptomatology depending upon the form which the disease takes. The most prominent manifestations are those of an infectious catarrh involving the membranes of the eye, the respiratory and digestive systems. The catarrhal symptoms are often complicated with those of severe disturbance of the brain and cord, pustular eruptions on the skin, and very frequently bronchopneumonia. For clearness in the description of the symptoms it is best to consider them under the following headings, depending upon the part affected:

1. The period of incubation is usually from three to five days. This period will vary considerably, depending upon various factors.

Some few cases have been known to develop the disease in two to three days, while in others it required two to three weeks. The peracute type of distemper is ushered in by marked constitutional disturbances, such as great depression, fatigue, total loss of appetite, a very high temperature (106°-107° F.) which in the course of several hours drops to normal, and later to sub-normal. This form of the disease takes a very rapid course, the animal soon passing into a comatose state.

2. In a large number of cases conjunctivitis is a prominent symptom. The discharge from the eyes is at first serous changing in a short time to thick mucus or white or yellowish pus. Involvement of the cornea and other structures of the eye take place in many cases. The entire eye or eyes may be destroyed.

3. Vomiting is an early symptom in a large number of cases. The vomitus consisting of mucus, particles of food, bile, etc. Rather rapid involvement of the digestive apparatus takes place until in many cases we find a marked gastro-enteritis. The discharges have a characteristic odor.

Concluded Next Issue

Queries and Answers

DIFFUSED CHRONIC MASTITIS

I would like suggestions on the following case. I was called one evening to see a large Holstein cow that had calved that morning. The udder was greatly enlarged and caked. On trying to pass a four-inch milk tube, I came in contact with a firm substance in the milk cistern, and not in the teats. All four quarters were alike. I could not get a drop of milk from any of the teats.

This cow, one year ago, when fresh, had a quantity of pus milked from the udder, and then went dry in a short time.

My diagnosis at that time was interstitial mastitis. A fibrous tissue had entirely closed the openings to the teats. Was my diagnosis correct?

What would you recommend in the way of treatment? Would amputation of the udder be the proper procedure in a case of this kind? —C. J. C., Nebr.

Reply: Your conclusion is probably correct. On account of the previous attack of mastitis the function of the mammae is practically suspended.

There is no help for such a case. Such an animal should be fattened for the butcher since any treatment that would effect a partial cure would still leave her unprofitable as a milk producer.

LIFE CYCLE OF THE WARBLE-FLY—CATTLE GRUBS

What is the life cycle of the grub found under the skin of bovines in the spring? Some claim it is taken into the alimentary canal and then passes through the tissues to the skin of the back while others claim the black grub fly deposits the egg when they bite the cattle during the summer.—C. J. H., Iowa.

Reply: Warbles of cattle were once thought to localize in the skin of the back from the esophagus where the larvae developed after the eggs were swallowed, but this has been shown to be erroneous. It is now known that the eggs hatch at the place deposited and that the larvae penetrate into the subcutaneous connective tissue by the way of the hair follicle and then travel to the submucous space of the esophagus and back again to the place where the grub is found. The eggs are laid during June or July, hatch in five to seven days, reach the esophagus in three to four months and then are found fully developed grubs along the back during the month of January or February. The latest literature on the subject is by Shannon, Cornell Veterinarian, July, 1922.

POST PARTURIENT ATROPHY IN A MARE

The subject about which I desire information is a 1400 pound Clydesdale mare that foaled two weeks over-due. The delivery was delayed on account of the mare becoming cast crosswise in the stall. The delivery was blocked for hours by the partition with the fetus only two-thirds extruded, and was only effected after the mare's body had been straightened out in the stall. She stood up thirty minutes after delivery, staggering but otherwise well. This was April 15th. At this writing (July 14th) the superficial gluteus, the biceps femoris and the semimembranosis are badly atrophied and the leg at the level of the gastrocnemius is two inches smaller in circumference than the opposite side.

The mare is not exactly lame but shows weakness and a faltering gait. When I last saw her she was working in a potato scuffler which the owner said was the first work she had done.

Is this a spinal trouble or simply muscular atrophy from the straining? What is the best treatment and the prognosis?—H. R. M., Man.

Reply: The case you describe is a very interesting one but not entirely unusual. The trouble always follows a delayed delivery and is due to severe bruising of the nerves of the lumbo-sacral plexus, which supply the muscles involved. The recovery of this mare will depend entirely upon the amount of damage the nerves have sustained and will in no way be dependent upon any treatment that can be administered either locally or internally.

They usually recover from five to six months

but when some of the nerves have been damaged beyond repair it is possible that some of the atrophy may be permanent.

The management of this mare should be that of careful but continuous exercise and the feeding program should be one that will keep up a good state of health. For the sake of doing something in a medicinal way, nothing would be better than nux vomica or strychnin.

CEREBRAL FORM OF HEMORRHAGIC SEPTICEMA

I am describing a case I diagnosed as "cerebral form" of hemorrhagic septicemia. As we do not have much septicemia here I would like to know if I am right.

The subject is a seven months old Herefcrd calf that was kept in a dark and slightly damp stall day and night with two other calves which died two days previous to the death of this one; all showing the same symptoms.

These calves have never received any feed except milk and a little meal and hulls left by the cows.

Temperature: 103, breathing about normal, pulse about 70, bowels normal in color and movements, urine normal in color and appearance, clamping of jaws, frothing at mouth, blindness and falling over feed-troughs and other objects. Death occurs in forty-eight hours after symptoms are noticed, postmortem lesions: hemorrhagic spots the size of a pin head to a small button are found on the heart and around the chordae tendinae; rupture of capillaries of the mucous membrane of the intestines and bladder. The spleen and kidneys seemed normal. The blood looked normal but would not coagulate very readily if at all. I did not examine the brain. As client skinned one of these calves and had several scratches on his hand, I would like to know if there is danger of infection. If so state symptoms and treatment for man as doctors here know nothing about it. Also would like to know if there could be any danger in peeling peaches with the knife used in skinning the animal, after the knife had been boiled.

Reply: Your diagnosis of hemorrhagic septicemia is as good a guess as any from a clinical standpoint. The danger of using the knife is entirely removed by boiling for twenty minutes. The disease does not affect humans.

The thyroid and superenal glands are said to be of considerable importance in metabolism.

INJURED BULL

Last spring I bought a registered bull calf in Illinois, and had him shipped to me. On arrival he was so stiff he could hardly get out of the crate. Most of the stiffness seemed to be in his front legs. His knees were a little swollen and he "toed" outward with his front feet. I thought it was stiffness from shipping.

I kept him staked out for a while near my place, but in a few weeks sent him to pasture. He seemed to improve the first few weeks, but when the flies became bad and the pasture short, the stiffness accentuated. During the past few weeks we have had plenty of rain and cool weather which seem to be helpful to him.

What would you advise? I have a fenced lot that I could keep him in near my hospital and could attend and grain him every day. Or do you think it would be better to just let him run on this pasture?

Please give me detailed directions as to just what you would do with him if he were yours. He will be one year old September 21, 1922.—H. C. G., Okla.

Reply: We believe the bull did sustain injury while shipping, and that the trouble he is having may be traced to that cause.

A good physical examination of his legs, if he is reasonably quiet, should enable you to locate the seat of the trouble.

We have no doubt, in view of his age and general health, that he will improve as he grows older. He should be given a good balanced ration, including plenty of minerals to help build up his skeleton.

LAME PACER

I am writing you in regard to a pacing horse which I have had under treatment. This horse became lame sometime in March. When I first saw him he had an enlargement of the synovial sack on the outside of the hock, with some fever in it. I first prescribed your anodyne liniment with very little relief. Then used M. A. C. Last I used iodix; now they are using patent medicine, "Save the horse," but he still hitches in that leg. Seems to go better after they warm him up and will jog five miles in good shape. The enlargement is about the size of my fist and soft. It is outside and extending around in front of hock.

Is there anything you could advise in this case? Would like to get him in trim for the fall races.—L. S. L., Ohio.

Reply: I would suggest that all effort to get him up to racing form this fall should be abandoned. It is not very long from now until the fall months and as such injuries as you describe are sure to become worse under severe training and racing, it is very seldom that a veterinarian gets very much credit for trying to keep such a horse going by palliative treatment.

It seems to me it would be better to advise your client to let you give this abnormal region a little sensible puncture-firing as soon as all of the irritation from previous blistering has disappeared, and then give the animal at least six weeks of absolute rest. At the end of that time, I am quite sure that there will not be any return of lameness unless my estimate of the lesion you describe is incorrect.

This will, of course, bring your period of convalescence to the first of August, which would give you mighty little time for preparing a horse, let down so completely, for the fall races.

POTASSIUM PERMANGANATE IN NECROTIC ENTERITIS

In the treatment of necrotic enteritis I have the best results with potassium permanganate, 64 grains to the pint and then use two ounces of the solution to every 25 gallons of swill. I would like, however, to know if the dose could be increased with safety.

Reply. The dose of potassium permanganate for a hog is from one to two grains according to the size. They should be able to take this amount twice a day. Your mixture allows only eight grains to every 25 gallons of slop which means that there is only one medicinal dose of two grains to every four and a fourth gallons. A hog will of course consume that much slop in a day, but it is not advisable to mix such an unstaple compound as potassium permanganate with organic matter except for immediate use.

Mayor Kiel, of St. Louis, announced the removal of the humane society from the control of the dog pound in St. Louis because the humane society declined to deliver impounded dogs to the medical schools where they were to be used for scientific purposes. The humane society filed suit, attempting to restrain the city officials from disposing of impounded dogs to medical institutions.

PSEUDO-RABIES IN DOGS

There is an unknown disease in this section, that is attacking dogs and I am writing to ask if you can tell me what it is and what remedy to use.

The dogs affected seem all right until the attack comes on, and between attacks nothing wrong can be detected. They seem to be terribly frightened and in great pain. They bark, yelp as if in pain, and try to seek cover under buildings. The attack lasts only a short while and may recur in an hour or two or after a lapse of twenty-four hours. Some dogs have left home when one of these attacks was on and did not return for two or three days, when they came back apparently all right. None of them have attacked any other animal or any person and all have recovered without any treatment.

If you can tell me anything about this from this description, please let me have an early reply.—W. M. N., N. C.

Reply: A disease similar to that which you mention sometimes occurs in dogs from intestinal parasites and has been described under the name of pseudo-rabies. A similar state is also caused by teething and is described by some authors as "dental rabies." A good worming out will generally cure the former, while the latter get well without treatment.

THUMPS IN HORSES

I am desirous of obtaining some information regarding a condition I frequently meet in this country among horses, and on which I can find very little literature, viz., "Spasms of the Diaphragm" or "Thumps," as it is commonly termed.

Last summer I had occasion to treat quite a number of horses during the hot weather for spasms of the diaphragm, and all responded nicely to treatment. The particular case I have in mind and one which I need some light is a black driving horse, weighing about 1,100 pounds, and 8 years of age. On March 12, 1921, this horse was brought to the hospital following a severe drive, being nearly exhausted, stumbling at every step and just barely able to travel. Pulse was very weak, respiration labored, mucous membranes highly injected, temperature 101, and thumping severely. The animal responded nicely to treatment and left the hospital in three days.

On the 11th instant [February 11, 1922] the owner called me to his farm to see the same horse for the same condition. I found the mucous membranes highly injected, pulse weak, respiration labored, temperature 101.5, but no thumping. However, he stated that the horse had been thumping the night previous, and in the morning. I also learned that the horse had a light attack about two months ago, and also one about two years ago. As the owner has been feeding a rather heavy corn ration with little hay I attributed this attack to indigestion and advised a complete change of feed.

I would like to know if once an animal has thumps, recurrence of the condition is common, causes, immediate and subsequent treatment, especially in the way of treatment how to handle the above described case.

In the way of treatment I have used camphorated oil intramuscularly, atropin sulphate, lobelin sulphate followed with tonics. I have also used chloral hydrate per orum. I believe I get best results from camphor. I have not tried morphin.

I might also state further that I have observed several cases showing symptoms very similar to tetanus, i. e., nervousness, muscular twitching, jaws locked, stiffness in movement, and in some apparently blindness.

Any information you might give me on this subject will be greatly appreciated.—H. A. B., Louisiana.

Reply: Thumps in horses is always due to something that overwhelms the vital forces. It is most commonly caused by feeding horses too much concentrated food and too little roughage and particularly when subjecting them to violent exercise with a full stomach.

It is also a fact that a horse once affected with this trouble is more susceptible to it again, because most of them have a dilation of the stomach.

The best treatment for this trouble to be atropin. The cases you describe as having shown nervous symptoms are undoubtedly due to a toxemia emanating from the undigested contents and would call for good active purgation.

Severe paratyphoid infection in infants may be manifested by tetanic spasms. A similiar condition has been observed in pigs that were infected with the paratyphoid bacilli.

A fatal bacillary dysentery in lambs exists in some sections of the British Isles. The causative factor is a bacillus probably belonging to the colon group. The losses due to this disease varies from 5 to 30%. Lambs from 1 to 14 days of age are most susceptible.

RESPIRATORY STENOSIS IN A HERD OF COWS

Will you please give me your advice on the following condition which I find to be existing in a client's herd of cattle: A 3-year-old jersey heifer with a severe rhinitis, indicated by difficulty in respiration which seems to be due to a thickening of the nasal mucous membrane, and by the discharge that is constantly coming from her nose in varying amounts, and differing at time as to character, but in the present stage a sero-purulent with a slight admixture of blood. There is also a serious discharge from the eyes which in other respects seem normal. She shows no constitutional affects now, and is giving a good flow of milk. The farmer informs me that she was much worse a few weeks ago, even so bad she could hardly travel with the rest of the cows, being unable to breathe through the nose at all, and losing very rapidly in flesh. The improvement seems to be due to her having been taken from the pasture and kept in the stable. This animal was similarly but not quite so badly affected last summer, but apparently became normal when put in winter quarters.

There are two other animals in this same herd now beginning to show these symptoms but in the less severe form—one a two, and the other a four-year-old.

The owner of these cattle bought a bunch of heifers about seven years ago, and one of them had this same difficulty in breathing when he got them. Is there any connection—what is the probable cause, and line of treatment you would advise? —C. F. B., Pa.

Reply:—We are unable to make a positive diagnosis of the cases you describe but offer the following suggestion on your future examination of them. Respiratory stenosis occurs in bovine from the following causes.

1. Pus collections in the sinuses from dental troubles or from dehorning.

2. Tuberculosis or other infections affecting the retropharyngeal glands.

3. Pulmonary parasites invading the sinuses and nasal fossae.

4. Actinomycosis or other growths, and traumatisms of the nasal septum or alar cartilages.

It would be advisable to first test these animals for tuberculosis before making any investigation as to the other causes, and then submit the throat and nasal fossae to a thorough physical examination.

CULLING HENS

I would like to know something in a general way about the culling of hens. Our county adviser does this kind of work here and I think it by right should be the work of the veterinarian.—J. M. K., Ohio.

Reply: County advisers instruct farmers in culling their hens and in this connection are doing mighty good work. Why not attend his demonstrations. We know of no better way of answering your query than by quoting word for word and article in Hoard's Dairyman entitled "The 'how' of Culling," by J. B. Hayes.

"The safety in culling lies in the fact that each hen in the flock has been kept under the same conditions of feed and care. One can naturally conclude that the best will still come highest to one's expectations regardless of what that management may have been. This statement may refute some of the arguments that have been raised against culling practices. If it takes knocks to make a system successful, culling has proved its worth.

Possibly two points should be considered in connection with every flock. The first is the age. Age does have an effect upon production in that under most conditions a fowl will produce the largest number of eggs during the pullet or first laying year. A very commendable method is to accept the practice of banding all pullets in the fall with either colored bands, with numbered bands or marking with a toe punch, so that hens will be kept just two years. Cull in the fall and keep the best ones over for the second year for breeding purposes. Too many old hens that have outlived their usefulness compose many farm flocks. A system of marking will eliminate this possibility.

Poultry should also be considered as a growing crop with a definite growing season. Early hatching means early development and the production of high priced eggs.

To simplify the entire method only four points will be considered. These four are fundamental and must be used together as the indication of a hen's production. This is especially true in the consideration of just fair producers.

1. A hen's head indicates health and vigor which means production. Eliminate all hens with long snaky heads, with poorly developed combs and sunken eyes. The other extreme, of course, beefy, masculine heads also with sunken eyes is not desired. Too much of their feed goes toward the production of meat. The producers have neat heads, with no surplus of accumulated fat around the eyes or face and prominent eyes. One should look from the back of the head and see the eyes standing out prominently like shoe-buttons. When we find this vigorous, alert appearance in the head we find a producer.

2. Pigmentation or loss of color from the eye, beak and legs. This test eliminates any of the white skinned fowl with white, blue, or black shanks. It applies to all others.

We will notice in chicks that these three sections are rich yellow in color. When the pullets start producing the color fades. The first noticeable point is the eyelid. It will then fade from the beak outward from the head and finally from the legs. When we find this faded appearance with the type of head described it means a long time producer.

The color will return in broody hens. We can in this way determine how long the hen has produced and what length of vacation she took. If the hens showing signs of broodiness are collected each night when eggs are collected and placed in a slat bottomed coop, more eggs can be obtained. It is also well to band them on each visit to the broody coop and those showing a large collection of bands can be sold. They spend too much time on vacation.

3. Moulting. A hen changes clothes when through work. If one decides to moult during July or early in August she has given a short laying season and a low record. The early moulting hen, aside from a short season, is generally a slow moulter and loses times in this way. A hen moulting in September, October, or early November has produced over a long season, moults quickly, and seems to concentrate on all that she does. It is ordinarily not advisable to retain a hen in the flock that moults before August or September and to keep all those moulting rapidly in September, October and November. Particular emphasis should be placed on the rapidity of the late moult, for a hen may be so depleted physically by the heavy production that she may not be worth consideration for the following year.

4. Capacity. Along the underline of every fowl is a bone called the keel. On either side of the vent are two others called the pelvic bones. As an indication of capacity measure the finger width from the keel to the pelvic

bones by placing the hand flat in this space. Poor producers are limited in this section to the width of two or less fingers' width.

The pelvic bones should be thin, straight, and pliable. Poor producers generally have thick bones, greatly curved inward or are not pliable. This test might be comparable to the thickness of the skin on a cow.

Present laying condition is indicated by distance between the two pelvic bones. If the abdomen is soft and pliable and there is room for two or more fingers between the pelvic bones, the hen is at that time in laying condition.

Consider the four points in judging every hen. The very best are easily spotted but it takes some study and practice to correctly judge the in-between bunch that is on the fence between keeping and selling."

—J. B. Hayes, Hoard's Dairyman.

VOLAR FLEXION IN CALVES

Please advise me about the diagnosis of two calves. They are unhealthy in every way, and of bad appearance. They seem to be crippled all over. They do not get up well and stand on the toes of hind feet with lower joints flexed. They are about two months old and are growing worse. No fever. They have had discharge from the eyes. It seems like rheumatism.

Please tell me what to do for them.—A. T. Q., Tex.

Reply: Your diagnosis of rheumatism is not bad. The treatment should be good care, a balanced ration and the administration of medicinal doses of sodium salicylate.

It sometimes happens that young animals affected with this disease become so badly deformed that it is necessary to straighten their legs by performing tenotomy, but in the case of ordinary cheap calves such an operation is hardly justified.

It is not possible, or at least not practical to differentiate para-typhoid baculli into human and animal types.

Experimental animals such as guinea pigs, rabbits and white mice, are susceptible to the virus of foot-and-mouth disease.

The rapid development of icterus in some cases appears to indicate a breaking down of red blood cells in the blood stream.

SUPPURATIVE LYMPHANGITIS

I am treating a mare weighing about one thousand pounds, which started like a case of lymphangitis.

Half of the udder and the lymph vessel down the inside of the right leg were swollen. The temperature was 104° F., breathing accelerated, pulse about 60, full and strong. The pressure from bathing the leg caused quite a little pain. She had little or no appetite.

Treatment. An aloetic cathartic and also the usual sedatives and diuretics were administered.

The leg was bathed twice a day with hot water, then wiped dry and a mild liniment applied. She was kept quiet and allowed plenty of fresh water to drink.

since the acute symptoms disappeared.

Since the acute symptoms subsided I gave Fowler's solution in one ounce doses three times daily and potassium nitrate in dram doses three times daily and also some sulphate of iron and potassium dichromate in five drain doses three times daily. She does not seem to improve except as to her appetite which is now good and she seems to feel good in general.—Anon.

Reply: You are dealing with a case of suppurative lymphangitis. In your patient the infection started in the inguinal lymphatics and there is no doubt that there is and has been almost from the start a large abscess in the inguinal region and all the drugs in the pharmacopea will not correct the condition. However, a scalpel properly used will quickly right the ailment.

Plainly speaking, you will have to make a good liberal opening, usually one to four inches in length is required to properly drain this region, and permit the escape of sloughed tissue. Before you make this incision, just examine the inside of the thigh region of a normal animal and locate the large superficial veins which should be avoided in making the incision.

Do not think because the tissue at this point is firm and hard that there is no pus. You may have to go through three or four inches of tissue to strike the abscess which is always a large one. However, so much time has elapsed in your case that the pus may be partly absorbed or it may be inspissated.

A tick, the Ixodes holocychus, is capable of producing a progressive paralysis in animals. It has been shown that even one of these ticks may produce paralysis and death.

Looking Backward

A Look Into the Past Unfetters the Mind, Gives a Clearer Conception of the Present, and Tends to Strengthen Our Confidence in the Future

THE A. V. M. A.

It was Nashville in 1897.

F. H. Osgood, of Boston, was the president.

Sesco Stewart, of Kansas City, was the secretary and was re-elected.

D. E. Salmon, chief of the United States bureau of animal industry, was the president-elect.

The officers of the association served without compensation.

The president recommended that the annual dues be reduced to $3.00.

A. T. Peters, of Lincoln, Nebraska, was elected vice-president.

The cost of publishing the proceedings was estimated at $1,150.00.

W. H. Dalrymple read a paper on "The Veterinary Field in the South."

C. A. Cary presented the subject of osteoporosis of horses.

Dr. Dalrymple recommended the desirability of dividing the association into sections. The recommendations were adopted 12 years later.

Editor Mohler already in the bureau service was stationed at San Diego, California.

Twenty-three applicants were elected to membership, among whom were E. M. Ranck, G. R. White and M. Francis.

The association had 328 members in good standing and the annual dues including a copy of the annual report was five dollars. Later they were reduced to three dollars.

Among the prominent members present who are now living were: A. H. Baker, Tait Butler, C. A. Cary, W. H. Kelly, W. H. Lowe, M. H. McKillip, S. B. Nelson, W. B. Niles, A. T. Peters, E. H. Shepard, and W. L. Williams.

OTHER NEWS—25 YEARS AGO

G. A. Johnson was appointed city meat inspector of Sioux City, Iowa.

W. L. Williams passed the examination of the New York State board of veterinary examiners.

Leonard Pearson was appointed dean of the veterinary department of the University of Pennsylvania.

E. H. Pritchard succeeded T. L. Armstrong as president of the Indiana Veterinary College.

John W. Adams was made professor of surgery and obstetrics of the veterinary department of the University of Pennsylvania.

The New York State Veterinary College received a public appropriation of $30,000 for maintenance.

The city board of health of Philadelphia came out strongly in its annual report against the sale of milk in bottles.

In a political shakeup in Kansas N. S. Mayo lost his position as professor of veterinary science in the agricultural college.

The governors of Illinois and of Tennessee both appointed non-graduates to the office of state veterinarian in these states.

C. J. Marshall was among the applicants who took the examination for the position of city veterinarian of Philadelphia.

The Royal Veterinary Society and Academy of Italy publish an article about the parasiti-

LOOKING BACKWARD 25 YEARS

cide properties of carbon bisulphid in the treatment of bots.

M. E. Knowles was appointed state veterinarian of Montana by Governor Smith. One of his first official acts was a recommendation to establish a quarantine against the neighboring states to prevent the spread of sheep scab.

C. J. Sihler, government inspector in charge of the Kansas City meat inspection service, was transferred to Tennessee to take charge of hog cholera eradication work. S. E. Bennett was transferred from Milwaukee to Kansas City to fill the vacancy.

D. S. White, Ohio State university, replying to the state cattle commissioner who wanted rigid tuberculosis regulations enacted prematurely, said that the danger from milk and meat was not as great as is claimed by some and that the tuberculin test is not reliable enough to warrant the wholesale slaughter and waste its advocates encouraged.

Nieman, a German bacteriologist, announced that the blood serum of nanny-goats mixed with tubercle bacilli would cure tuberculosis in humans, and Edgington, colonial bacteriologist of South Africa, claimed to have discovered the microbe of rinderpest.

Dr. J. J. Smith, a graduate of the American Veterinary College, in the class of 1879, contracted anthrax while in attendance upon some cattle and horses affected with that disease at Chambersburg, Pa., and died September 7, 1899. Dr. Smith was regarded as one of the best veterinarians of his day.

The bureau of animal industry was created by act of Congress May 29, 1884. Among its cardinal achievements are: (1) eradication of pleuro-pneumonia; (2) eradication of foot and mouth disease; (3) eradication of tick fever from wide areas; (4) control of hog cholera; (5) an elaborate system of meat inspection; (6) discovery of the anthelmintic properties of carbon tetrachlorid.

The one outstanding satisfaction derived from looking backward arises from the fact that the past also had its imperfections.

CALCAREOUS LIVER IN A MARE

I desire some information as to a horse, which I was called on to treat yesterday. Just what I may call it? Is it secondary or primary and what would cause such a condition?

History: The owner claims for the past three years that the animal suffered ten day or two week intervals; that she would get up and would not eat well, but showed no pain. Then after this would flesh up again and work as good as ever.

She was a mare ten years old, weight 1100 pounds, and always has lived under good surroundings. Three weeks ago she was turned out to pasture. Yesterday she was caught up as they noticed she was falling off in flesh.

When I saw her she was down but we managed to raise her.

All the symptoms she had resembled those of an acute case of tetanus: her tail elevated, arched up on the toes, pulses wiry and a temperature of 107°. She seemed to be sore all over, but on palpation in region of the liver seemed no more sore to the touch than on the head. The eyes were so bruised that they did not indicate much, but the mucous membrane of the mouth was cynotic. She could not open the jaws and sucked water through the teeth. There was no enlargement in the region of the liver. I gave her a grain of strychina and believe hastened her death.

Post Mortem: The stomach was loaded with bots. The liver weighed forty pounds and was hard and its capsule was grey or rather granite color and the cut surface was spotted. It cut like cement just starting to set. The pancreas was also calcified and appeared much like the liver. There were no parasites present anywhere except in stomach. The blood was nearly black.—H. O. C., Ill.

Reply: In our opinion, the cause of death was cirrhosis of the liver, the cause of which might have been parasites or bacterial invasion of that organ.

Occasionally horses suffer from tuberculosis of the liver and your reference to the calcified condition suggests this possibility, although you do not state whether the calcification was of the character usually found in that disease.

Dr. B. H. Brooks, of Riverton, Iowa, reports that an outbreak of hog cholera can reasonably be expected this year.

Discussions, News, Personals

LOOKING AHEAD*

By J. S. Koen, Bloomington, Illinois

"One of the greatest blessings of mankind is that we are not permitted to lift the veil that obscures our view and prevents our knowing what the future has in store for us. . . ."

"The clients of yesterday were trained only by experience; the client of today is a different individual. He also has enjoyed the benefits of a college education and has had years of scientific training, during which time he acquired more veterinary knowledge than the veterinarian of yesterday. To serve him you must show far greater training, knowledge and ability than he. . . ."

"You must be physician to the horse and the cow; the sheep and the swine; the dog and the cat; the chickens and the pets; and in addition you will be required to become a skilled animal surgeon. . . ."

"Two forces have preyed upon the farmer to the detriment of ourselves. One has been the traitorous commercial veterinarian who for the purpose of lining his pockets with gold has been willing to sacrifice the interests of the profession and the public. The other is the overzealous county agent who would have the farmer believe they no longer need the services of the veterinarian. These two forces have preyed upon the farmer with false propaganda until in some instances his confidence in the veterinarian has been shaken. But the destiny of the veterinary profession rests not in the hands of a few traitors within our ranks nor a few county agents without. The treachery of those who have been honored by the profession is proving a stimulus for closer cooperation among us. The false propaganda will fail as the public comes to know the truth. Our destiny is in our own hands. . . .

"The practitioner will always be the backbone of the profession. Upon him rests the great burden of our professional existence. . . .

"The bureau veterinarians represent a second group. Their work is of a high order and the opportunities for advancement are many. I

*(Excerpt from an address delivered at the commencement exercises of the St. Joseph Veterinary College, 1922.)

(Now turn to page 583)

LIEUTENANT LLOYD J. BROWN, V.C., DIES AT FT. DES MOINES

Lieutenant Lloyd J. Brown was born at De Groff, Ohio, February 15, 1887. He graduated from the Centralia, Kans., high school in 1906 and from the Kansas City Veterinary College in 1910.

In 1917 he entered the United States Army and crossed with the American Expeditionary Forces as an officer of the Third Division.

Following the Armistice, he was sent to Germany with the 3rd Army. Returning to the United States he chose to remain with the army and at the time of his death, June 22, 1922, was stationed at Fort Des Moines, Iowa.

His death came as a great shock to his family and friends. He had returned to duty after a sick leave of some weeks, perhaps too soon for his strength, collapsed while on duty and died in the army hospital of heart failure.

The funeral services were held Sunday afternoon, June 25, 1922, at the Congregational church, at Centralia, Kans. The funeral march was played by the Centralia band, music by a mixed quartet. Dr. J. M. Lawson, a former classmate, sang "No Night There." The burial at the Centralia cemetery was conducted by the Armstrong-Moyer Post, of the American Legion, with full military honors. Veterinarians attending the funeral were: Dr. L. T. Richards, of Parsons, Kans.; Drs. Lawson and

Crandall, of Seneca, Kans.; Dr. H. C. Gale, of Clyde, Kans.; Drs. C. H. Burdett and Cecil Wilhart, of Centralia, Kans.

Dr. Melville Thompson Seay, assistant state veterinarian, of Clemson College, S. C., died at Columbia, June 19, from infection following a wound sustained while swimming, and was buried at Glenwood Cemetery, Washington, D. C. Dr. Seay was an officer of the veterinary corps, A. E. F., and is a member of the American Legion.

Dr. John Shull, of Trenton, New Jersey, said to have been the oldest veterinarian in the United States, died at his home in that city, July 9, 1922, at the ripe old age of 97 years. He was an officer in the army during the Civil War with the rank of captain.

Dr. J. F. Kyle, of Springfield, Ohio, died at the City Hospital of that city July 14, from injuries sustained when a team of horses ran away with a mowing machine which he was operating on his farm near that city.

The oldest known living thing is a Bo-tree in Ceylon, planted 245 years B. C. It is 2,167 years old and was planted as a twig taken from the tree under which Buddha (568-488 B. C.) received his spiritual awakening.

Major J. R. Shand, station veterinarian at Fort Oglethorpe, Ga., is on leave and is touring the northern states in company with his wife, visiting friends and relatives and will include the A. V. M. A. meeting at St. Louis in his itinerary. Major Shand graduated from the Chicago Veterinary College in 1907, entered the military service soon after and has spent most of his professional life in the Orient.

Dr. J. H. Cock dairy herd inspector for the health board of Kansas City has resigned to accept a position with the B. A. I. with station at Omaha.

Dr. W. B. VanCleave of Christman is veterinarian for the Vermillion (Illinois) county farm bureau, and will take charge of the tuberculosis work of that county.

Dr. P. O. Cooper of Friend, Nebraska, and Miss Agnes Stewart, daughter of Mr. and Mrs. Hugh Stewart, were united in marriage July 12, 1922.

CHIEF VETERINARIAN OF THE PHILIPPINES ON VISIT TO THE UNITED STATES

Dr. Albert Youngberg, who is the chief veterinarian of the bureau of agriculture of the Philippine islands, in company with his wife, is spending a long vacation in the states visiting friends, institutions and associations throughout the country. They left the Philippines in March and will not return until October of this year, and are including many places and events in their itinerary. Dr. Youngberg was graduated from the Ohio State university in 1907 and is a son of the late Dr. Albert Youngberg, of Minnesota, who was well known to the veterinary practitioners of the Northwest during three decades.

Dr. F. D. Sexton, of Chicago, has opened an office at Clintonville, Wisconsin. He is graduate of the McKillip Veterinary College.

Dr. P. L. Cady, retiring president of the Missouri Valley Veterinary Association, in his annual address predicted a shortage of veterinarians in the near future, unless something is done to increase the attendance in the veterinary schools.

Dr. C. C. Wang, a native of China, who graduated at Ames this year, will return home to help establish a veterinary school in his country. He returns proud of his diploma and license to practice in Iowa.

Dr. Abner Stafford has moved from Huntsville, Mo., to Renwick, Ia., where he has become associated with Dr. Overbaugh. Both are graduates of the St. Joseph Veterinary College.

Dr. W. R. Latta, formerly a practitioner at Orangeberg, S. C., and later city food inspector of Savannah, Ga., has moved to Martinsburg, Ind., where he has opened an office for a general practice.

Smyth and Bricker report the occurrence of 123 cases of anthrax in the employees in 76 tanneries during a period of 12 years. During this time there were approximately 13,500 men employed in the 76 tanneries. During one 5 year period, the morbidity rate from anthrax alone was almost 2%.

DISEASES OF THE UDDER

(Concluded from page 522)

being careful to keep between the two halves of the udder.

There are but few nerves and blood vessels on the median line and if the dissection is done carefully the amount of pain and hemorrhage is slight. After the two halves are divided you can work around the superior border of the gland with blunt scissors or the hand until the blood vessels are reached. These should be ligated securely and then severed. The separation can then be continued around the outside of the gland and downward toward the teats. If the external pudic artery has been ligated there is but little hemorrhage when the milk vein is severed; the latter may be easily ligated if thought necessary. A skin incision is then made about two inches laterally from the teats and the gland drops out. The cavity is packed and sutured. If the whole gland is involved, the other half is removed by the same procedure.

ASSOCIATION MEETINGS

UNIVERSITY OF MINNESOTA SHORT COURSE

The short course for veterinarians held in conjunction with the semi-annual meeting of the state association and given by the University of Minnesota, July 12, 13 and 14, 1922, at University Farm was attended by about 250 veterinarians for whom a program of exceptional interest was provided. Among the contributors outside of the state who participated were: Dr. J. G. Rutherford, Ottawa, Ontario; Professor J. N. Frost, Cornell university; Dr. B. H. Ransom, United States bureau of animal industry; Professor O. V. Brumley, Ohio State university; Dr. H. Lothe, Waukesha, Wisconsin; Professor L. Van Es, University of Nebraska; Dr. E. A. Cahill, Zionville, Indiana; Dr. H. Jensen, Kansas City, Missouri, and Dr. L. A. Merillat, Chicago, Illinois.

MICHIGAN STATE MEETING

The summer meeting of Michigan State Veterinary Medical Association held at the agricultural college, East Lansing, June 28-30, 1922, has been pronounced the best ever, thanks to the "pep" injected into the ceremonies by its ambitious, untiring officers.

The first day was devoted to a literary pro-

(Continued on Page 573)

ASSOCIATION MEETINGS

gram containing a wealth of subjects of current interests, among which are: "Azouturia and its Treatment" by Dr. L. C. Palmer of Brooklyn; "Forage Poisoning" by Dr. B. A. Perry, Hastings and discussed by Dr. G. M. Thorndyke of Alto; "The Horse Situation in Michigan" by Dr. Judson Black of Lansing; "Laminitis and its Treatment" by Dr. E. V. Cavell of Northville and discussed by H. H. Carpenter of Detroit; "The Mallein Test" by Dr. M. Olthouse of Jackson and discussed by Dr. Lee Davisson of Manchester.

On the afternoon session of the same day the session was featured by papers and discussion by Dr. G. W. Cronkite of Saginaw; J. C. Whitney of Hillsdale; F. E. Stiles of Battle Creek; F. K. Hanson of Lansing; C. C. Dauber of Sturgis and F. M. Blachford of Brighton. Professional and sanitary questions predominated.

Addresses entitled "My part in My Husband's Practice" made by Mrs. J. E. Wurm of Pigeon and Mrs. C. C. Schafer of Linden were the chef d'ouvres of the day.

The events of the second day beggar description. It was a day of entertainment, emulation, contests, pandemonium, carnival and over-eating. There was a game of indoor baseball between practitioners and "scientifics," a contest for supremacy as to who was the biggest liar, who was the fattest, the skinniest, the handsomest and the homeliest man in attendance; a prize for he who came the longest distance by auto and for the one who brought the largest family.

(The capable secretary evidently desiring to remain a resident of Michigan has not officially announced the winners of these several contests.)

The thirds day's session was opened by an address by President David Friday of the Michigan agricultural college after which the literary program was continued with the following papers: "Acute Interstitial Enteritis of Fowl" by Dr. E. T. Hallman, discussed by Dr. J. H. Strafseth both of the M. A. C.; "Pathology of Lymphangitis" by Dr. F. W. Lambie of Midland, discussed by Dr. A. McKercher of Lansing; "Milk Inspection" by T. H. Broughton, director of the bureau of diarying, state department of Agriculture, Lansing, discussed by Dr. E. J. McLachlan of Jackson.

In the afternoon Dr. U. G. Houck, assistant

ASSOCIATION MEETINGS

chief of the bureau of animal industry, Washington, D. C. gave an address on "The History of the Bureau of Animal Industry," and Dr. E. P. Shafter, inspector in charge of the federal meat inspection service at Detroit spoke on "Meat Inspection with Particular Reference to Small Municipalities"; and Professor H. R. Smith live stock commissioner, National Live Stock Exchange, Chicago, discussed the subject of "National Tuberculosis Eradication Campaign."

Dr. H. J. Stafseth demonstrated typical reactions to the tuberculin test in fowls and Professor L. H. Cooledge demonstrated the hydrogen-ion method of determining the keeping qualities of milk at the Bacteriology building Thursday and Friday mornings.

The ladies were entertained by luncheons, receptions and picnics and a nurse was provided to care for the children, lest anything be missed.—Official Reporter for VETERINARY MEDICINE.

The Veterinary Medical Association of Oregon, Washington and British Columbia, met in joint convention at Vancouver, B. C., July 21-22, 1922. The attendance was sixty with a program of exceptional interest, a detailed report of which will be published in a future issue. (See page 526.)

MAINE VETERINARY MEDICAL ASSOCIATION

The members of the Maine Veterinary Medical Association met at New Meadows Inn, Bath, Wednesday, July 12, 1922.

The members and their wives arrived from different parts of the state at noon and sat down to a shore dinner for which the Inn is justly famous. The dinner was followed by a social hour on the lawn.

The ladies then departed on a shopping tour, which was unique in the history of such tours, as they spent no money, the stores were closed.

The meeting was then called to order and much routine business disposed of.

Dr. R. E. Libby, of Richmond, and Dr. J. W. Baker, of Fort Kent, were elected to membership.

The association endorsed the proposed anesthetic law which the Blue Cross Society of America is endeavoring to legislate, this proposed law will make it unlawful to per-

ASSOCIATION MEETINGS

form any painful, major or minor operation on any animal without the use of a general or local anaesthesia

Dr. J. B. Reidy gave an interesting and instructive report on the tuberculosis eradication conference at Hartford, Conn., last month. It was the opinion of medical research men present at that meeting that bovine tuberculosis could under the present system of testing be entirely eradicated from cattle.

Dr. P. R. Baird presented a paper on "Fracture of the Os Suffraginis."

Attorney Cyril M. Joly gave a talk on "Rights and Liabilities of the Veterinarian." This talk showed that the speaker was well versed on the subject and held the close interest of the members present, in recognition of which Mr. Joly was elected to honorary membership in the Association.

Drs. A. Joly, A. J. Neal and Pres. C. F. Davis were appointed a committee to investigate reported irregularities in applying the tuberculin test for interstate shipment.

After a lengthy discussion it was voted that a committee of five be appointed to meet and confer with government and state officials in an effort to evolve new policies in regard to tubercular eradication. It was the concensus of opinions of those present that the public should pay for the tuberculin test as they are ones to receive the protection and benefit.

Mr. H. M. Tucker, of Augusta was elected to honorary membership.

Next meeting to be held Oct. 11, in Augusta. —P. R. Baird, Secretary.

SECOND INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY POSTPONED

Information has been received from Prof. E. Perroncito, President of the Second International Congress of Comparative Pathology, that this congress which was to have convened at Rome, Italy, September 20, 1922, has been postponed because of unforeseen circumstances that make it impracticable to hold the meeting this year. It is probable that arrangements will be made for the convention of the congress at Rome in the spring of 1923. The date of meeting when decided will be given in a later announcement.

ASSOCIATION MEETINGS

THE FREE-TEST MENACE

The New York State Veterinary Medical Association passed resolutions at its annual meeting, July 26, deploring the transgression of state and federal authorities upon the field of the practitioner, the full text of which will be published in the October issue.

NORTH DAKOTA VETERINARIANS HOLD TWENTY-FIRST ANNUAL CONVENTION AT FARGO

The North Dakota Veterinary Medical Association held a very enjoyable and interesting session on the days of July 18th and 19th. The place of meeting was at the Veterinary Building of the Agricultural College.

The principal speakers on the program were Dr. C. P. Fitch and Dr. W. L. Boyd, of the University of Minnesota, and Dr. J. N. Frost, of New York. Dr. Fitch spoke upon the subject of "Bovine Infectious Abortion." Dr. Boyd handled the subject "Sterility," and Dr. Frost discussed "Diseases of the Udder." These eminent authorities presented their respective subjects in a clear, concise manner and each address was followed by lively discussion.

Illustrated Lecture by Boyd

Dr. Boyd made use of a set of lantern slides to illustrate part of his lecture and also demonstrated the method of diagnosis and treatment of sterile cattle upon a group of six animals taken from the college herd. A pure bred Belgian mare was also examined for sterility.

Dr. W. F. Crewe, state veterinarian, and Dr. H. H. Cohenour presented an excellent report on the progress being made in the tuberculosis eradication work being carried out in the State and a general discussion followed this report.

The following officers were selected to head the association for the following year: Dr. Vego Mikkelson, of Starkweather, President; Dr. A. F. Elliott, of Milton, Vice-President; Dr. R. S. Amadon, of the Agricultural College, Secretary, and Dr. B. C. Taylor, of Hillsboro, Treasurer.

The meeting was adjourned late in the afternoon of the 19th, and many of the members went out to the fair grounds to view the exhibits of the North Dakota State fair, which was being held the week of the 17th to the 22nd.

All in attendance at the meeting expressed

ASSOCIATION MEETINGS

great satisfaction with the program presented and plans are already under way for a program of equal quality next year.—R. S. Amadon, Secretary.

The South Carolina Association of Veterinarians held their thirteenth annual meeting in Charleston as a surprise to the oldest member, Dr. Benj. McInnes, who has been practicing in Charleston for many years.

The meeting was well attended and some very instructive papers were read and discussed.

The banquet in the evening was enjoyed by many ladies as well as the members.

The second day was given up to trips over the city, to the beaches and surf bathing.—M. R. Blackstock, Sec'y.

The Wisconsin State Veterinary Medical Association held its semi-annual meeting of 1922 at Marinette, July 19. About fifty members were present among which were State Veterinarian Dr. O. H. Eliason, Dr. T. H. Ferguson, Dr. T. J. Purcell, Dr. A. T. Olson, Dr. B. A. Beach, Dr. J. P. Kline, Dr. J. Tomesson and Dr. D. R. Edwards. The banquet held in the evening was featured by an illustrated lecture on tuberculosis by Dr. Purcell. The officers are Dr. H. E. Horei, of Augusta, president, and Dr. O. H. Eliason, of Madison, secretary-treasurer.

The Northwestern Illinois and Southwestern Wisconsin Veterinary Medical Association held a meeting and picnic for its members, their families, and visitors, at Krape's Park, Freeport, Illinois, Tuesday, August 15. The officers of this association are: Dr. B. F. Swingley, president, and Dr. Roy E. Kluck, Forreston, Illinois, secretary-treasurer.

The Florida State Veterinary Medical Association met at Orlando July 7 and 8 when plans were laid to secure the enactment of laws regulating veterinary practice in that state. Florida is one of the few remaining states without regulatory laws.

Dr. V.Mikkelson of Starkweather was elected president of the North Dakota Veterinary Medical Association at the recent annual meeting held at Fargo. The other officers of the

ASSOCIATION MEETINGS

association are: Dr. A. F. Elliot, Milton, vice president; Dr. R. S. Amadon, Agricultural College, Secretary; and Dr. B. C. Taylor, Hillsboro, treasurer.

Drs. C. P. Fitch and W. S. Boyd, of the University of Minnesota, and Dr. J. N. Frost, of Cornell University, participated in the program of the North Dakota Veterinary Medical Association at Fargo, July 18 and 19.

NEW YORK CITY ASSOCIATION

Mr. I. C. Brenner, advertising manager of Veterinary Medicine, was the speaker of the evening. His talk was a resume of his acquaintance with veterinary matters when he made a tour of the United States in the interests of the journal he represents. While on this tour he called on over 8,000 veterinarians. Speaking of present conditions he cited some of the observations of the editorial staff who think the live stock situation is improving in the Middlewest and who wish to appeal to the profession to work side by side with the stock owners. It is their conviction that stock raising is promising and that the heavy draft horse will not be replaced by the tractor. Mr. Brenner believes that the veterinary business is as good as any other at this time.

Dr. George Goubeaud reported similar cases which he thought were poliomyelitis.

Roaring in a Dog

Dr. H. K. Miller reported a police dog that seemed to be affected with a laryngophlegia similar to roaring horses. Under excitement during the last two weeks it shows a dyspnoea much the same as horses affected with laryngeal hemiphlegia. The case is under observation and will be operated upon if the condition proves to be chronic.

Accidental Chiropractics

Dr. George Gannet reported a remarkable case of a collie dog apparently hopelessly paralyzed that was suddenly cured by an accidental fall, indicating, he says, that the trouble had been due to a vertebral luxation.

Anesthesia in Dogs and Cats

Dr. A. Slawson discussed the subject of etherization of dogs and cats, pleading for the universal use of ether in all operations, even in the castration of males. He believes that ether is humane and safe, and a prevention of shock. The one necessary precaution in cats

ASSOCIATION MEETINGS

is to see that the bowel movements are free. "Never wrap a cat in a blanket nor press upon the chest, but hold its legs and administer the anesthetic slowly," said the speaker, "and be sure to give only a milk diet for two weeks."

He ligates the horns with cat-gut and does not recommend the emasculator, dresses the wounds dry and removes the stitches after five to six days.

Dr. E. B. Ackerman anesthetises cats in a glass cabinet. He puts the cat in the cabinet, soaks a sponge with ether and drops it in, and finds that by this method there is no stage of excitement, and that the state of anesthesia is easily observed.

Rickets with Spinal Pressure

Drs. Miller and Zepp exhibited a Dane dog five months old suffering from paralysis of the legs. The muscles were atrophied and the epiphyses enlarged. The dog had been under observation for eight weeks during which time the temperature had varied between 100° and 101° Fahr. The bowls were generally normal and the appetite good. During the eight weeks there was an improvement lasting two days during when it stood up for a short time, only to fall down again.

It has been treated for rickets, including, vitamine B, tonics and electricity. Dr. Reid-Blair pronounced the case one of rickets with spinal pressure.

Supernumerary 1st Premolar in a Horse

Dr. Ackerman also reported a horse that had two wolf teeth on the same side of the jaw, extracting one, only to find another a few days later, located just above the first one.

Major Jewel Represents the Veterinary Corps

Major C. H. Jewel of the veterinary corps of the army spoke on the advantages of the reserve corps service now open to civilian veterinarians, urging the veterinarians of the 2nd corps area to send their applications to him at Governor's Island.

Acute Jaundice in Horses

Dr. W. H. McKinney and President McKellar reported outbreaks of a hyperpyretic condition in several stables that seemed to be acute jaundice. The ailment attacks suddenly, the temperature is very high and the mucous membranes very icteric. The cases gradually recover.

(May Meeting)

The regular monthly meeting of the New York City Veterinary Association was held at the Veterinary College, Wednesday evening, May 3, 1922.

Dr. Wilfred Lellmann, professor of pathology, veterinary department, New York university, read a wonderfully interesting paper on internal secretions.* Dr. Lellmann has kindly consented to read a series of papers on this relatively new subject as it is all together too technical to attempt to review the literature on it in a paper that would be suitable for an evening program. After reading his paper he explained extemporaneously in detail some of the present theories on the subject and also showed some photographs and sketches, qualifying reports of experimental data. Drs. C. W. Shaw, George Berns, Hermann Kock and Victor Carabba commended presentation.

Dr. Berns spoke quite enthusiastically of the possibilities of endocrin gland therapy clearing up many of the obscure ailments of the lower animals, such, for instance, as osteoporosis. Speaking of the dose of thymus extract, essayist stated that children take a half grain three times daily for a time, when it may be increased. Older children, he said, take proportionally larger doses. Small doses of sodium iodid were also said to have beneficial

(Continued on Page 586)

(Concluded from page 513)

sight drafts, follow-up drafts and all in order in the stage and it is well to remember that the telephone is very effective during the reminder and reproach stage.

The fourth or the discussion stage usually comes after the account has been placed in the hands of the collection man himself. He will endeavor to find out what is the trouble, draw out some explanation of delinquency and finally decide what final action shall be taken for the disposition of the account. At this stage, the customer may be resold or the customer may have to be traced or some defective remittance taken care of or some alleged complaint adjusted.

Finally the account comes to the unfriendly stage of a collection in which it must be placed as a matter of sale or placed with an attorney for final suit. This is one of the most important stages, and when placed in suit, if all of the previous information which has been gathered in the other stages and prior to the opening of the account has been gathered together, it makes it possible for quicker action on the part of the attorney, and the quicker the action, the more effective it will be.

Too much importance cannot be placed upon the information given the attorney. The facts are all familiar to you. The character of the person is familiar to you. The property or assets of the person are familiar to you. Lay all of these facts before the attorney at once. This will save many accounts, save much time, and let the attorney devote his energy to actual collection rather than devoting his time to covering ground already covered by you. The quicker an account is placed the better the chance.

In handling a collection, it is possible through the Credit Men's Association, through the commercial lawyers, through the various law lists, to secure attorneys who are prompt, who are bonded, who are efficient, and with the protection given, the final loss of the account may be very small and the balance turned back to the capital of the individual or the firm through a collection of the old account would be very material.

Such an organization as yours might develop a system similar to the other organizations and through your secretary place all of your collections so that in course of time there will develop for you attorneys throughout the state available for your protection and for the collection of your accounts.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

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FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

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VETERINARY PRACTICE FOR SALE—Large territory. Practice running $6,000 a year. May be just what you want. Address 3035, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

FOR SALE—Rapidly growing practice in East Central Iowa. Town one thousand; both churches; pure bred section; large territory; no competition; collections exceptionally good; cheap rent. Leaving state. Price, three hundred dollars, including large drugs and office fixtures. Possession at once. Car and instruments optional. Address No. 687, care of VETERINARY MEDICINE.

FOR SALE—Will sacrifice complete modern equipment. Opportunity for graduate veterinarian desiring outfit for himself. Reason for selling, death of husband. Address, Mrs. A. F. Reichmann, Armour, S. Dak.

FOR SALE—Bound volumes of VETERINARY MEDICINE: 1910, 1912, 1913, 1915, 1916, 1917, 1918. $4.00 per volume. Address VETERINARY MEDICINE.

FOR SALE German Police Pups. Pedigreed. Fine stock. $30.00 up. Shipped on approval. Imported dogs at stud. Dr. H. O. Helmer, Cooperstown, N. D.

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POSITION WANTED—Graduate Veterinarian desires position in Ohio as practitioner. Later partnership or purchase of practice. Give full details, stating salary. Best of references given. Married. Address 691, care of VETERINARY MEDICINE.

FOR SALE—Paying mixed practice in Northern Illinois. Good roads. Good pay. Good prices. $150 for quick sale for practice, drugs and office fixtures. Address No. 689, care of VETERINARY MEDICINE.

Veterinarians—I offer a few of fine training and experience—and anxious for connection with firms, schools, etc., also as assistants. Any available positions open for Graduate, Experienced, referenced Veterinarians. No charge for service. F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

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(Concluded from Page 565)

would recommend after 15 years of experience with the B. A. I. that each of you spend at least one year in this service regardless of your intentions thereafter. You will find it an experience of estimable value to you. . . .

"Teaching forces need to be strengthened and enlarged. Within a short time there will be a demand for teachers we will not be able to fill. . . ."

"The commercial field holds out many opportunities for veterinarians of character who are strong enough to resist the temptations that beset one in that line of endeavor. . . ."

"I also see a tendency toward the employment of county veterinarians, not to supplant the local practitioner but rather to supplement his efforts and bring about a closer co-operation between him and his clients."

SUMMER SORES

Rogers in Revue Veterinaire (April 1922) reports that he has found a cryptococcus so constant in summer sores examined that he regards it as the causative agent, but Monnier in a report to the Societe Central de Medicine Veterinaire, without absolutely repudiating these findings, defends the classic facts that the larva of the Habronema musca is found in the great majority of these granulating wounds. He recommends applications of biniodide of mercury as the best treatment.

DEATH CAMAS POISONOUS TO CATTLE

Death camas, of which there are four principal species in the range country of the West, although causing heaviest losses among sheep, are also poisonous to horses and cattle. Under range conditions cattle are seldom poisoned. Horses are frequently made sick, but deaths are rare. A few cases are known where persons have been fatally poisoned by the weed. Children have eaten the bulbs out of curiosity and adults have gathered the plant, mistaking it for the edible sego. The United States Department of Agriculture has not found a remedy for poisoning by death camas, but the deadly species are now recognized, and ranchers may safeguard their flocks.—U. S. Clip Sheet.

The famous public ram of the department of agriculture on the Government Sheep Farm in eastern Idaho is making a high record in prepotency, and is pronounced by stockmen as being equal to the best of the breed.

ASSOCIATION MEETINGS

THE A. V. M. A. CLINIC

On August 30th and September 1st, the A. V. M. A. expects to hold the largest and best veterinary clinic ever held in the United States. Dr. Huggins, veterinarian of the B. A. I. at East St. Louis, and agents of the Stock Yards Company, are arranging accommodation for both the large and small clinics.

The material for the clinic will be so planned that all will be able to see without crowding, and the program will be carried out on a prescribed schedule.

Dr. H. E. Kingman, director, and Dr. S. L. Stewart, assistant director of the large animal clinic, are men who do things. Dr. Flynn, the Kansas City small animal specialist, is going to give the canine practitioner an up-to-date clinical entertainment.

It is expected that those who are not particularly interested in the clinics will attend sessions of the section on sanitary science and police, of education and research at the Planters Hotel during the clinic hours.

In the past, clinics have been thought unsatisfactory because of the inability of the demonstrator to display his work to the whole audience. Realizing this condition, President Kinsley changed the plan to overcome this obstacle. An effort will be made at St. Louis to reestablish the old custom of holding clinics at each meeting.

Those planning the program believe that the arrangement will interest and please the practioners in attendance.

HEMORRHAGIC SEPTICEMIA IN CATS

Three cats disclosed in association with a serious general disturbance inappetance, vomiting, diarrhea, convulsions and died in from two to four days. In two of the carcasses the autopsy revealed a pronounced reddening and swelling of the mucous membrane of the small intestines, swelling of the mesenteric glands and spleen, pulmonary edema, serous pericarditis and punctiform hemorrhages on the epicardium. In the third carcass the lung and the liver revealed lentil sized grayish yellow diffusing foci. Smears made from the internal organs of all three carcasses revealed bipolar bacteria in great numbers. Cultures in pure form were also obtained from the various organs which proved pathogenic to mice.

ASSOCIATION MEETINGS

effect on some of the internal glands and is noted particularly in reducing blood pressure. Thyroid extract has a splendid effect in some cases of gout.

Dr. Reid Blair spoke of how potassium iodid has been so long used for goitre. He has under his care an Aberdeen terrier, which has been treated by him at different periods for the past three years. The dog is now nine years old. When he has periods of exceptional distress from his goitre, the doctor prescribes one grain of potassium iodid twice daily, keeping it up for about three weeks. This usually gives relief for two or three months or longer.

Dr. Carabba reported having treated several cases of dropsy in dogs with thyroid extract, being followed with pronounced benefit.

Dr. Adolph Eichorn spoke of some experiments with pituitary extract, showing its powerful effect on non-striated muscles, large doses producing violent colic in the horse.

Under case reports, Dr. C. W. Shaw reported a dog with a growth in the axillary region, supposed to be cancer.—J. F. DeVine.

*Dr. Lellmann's paper will appear in an early issue of Veterinary Medicine.

The Hudson Valley Veterinary Medical Society will hold its next meeting at Catskill, New York, August 9, 1922. The Secretary is Wm. H. Kelly, of Albany.

At the Short Course for veterinarians given by the University of Minnesota in July, the managing editor of VETERINARY MEDICINE brought out the fact that since the beginning of authenticated history the nations which did not take full advantage offered by the horse industry either perished from the earth or became second rate nations as the penalty for their lack of foresight.

"The swine raiser who attempts to correct sickness with nostrums in non-immune hogs is in no small measure responsible for much of the hog cholera."—B. H. B.

Prompt work of Dr. E. F. Moran, of Ironwood, Michigan, resulted in the stamping out of a bad outbreak of hog cholera caused by the importation of infected hogs into his district.

EVERSION OF THE UTERUS IN A COW

The subject was a nondescript cow about five years old, this being her second birth. I was informed by telephone that the cow calved all right, but had not passed her afterbirth, and was asked if I would come the next day to remove it.

I arrived at mid-day and found her in the recumbent position, unable to rise, and the uterus everted. The placenta had all come away, and as the lacerations did not extend quite through the muscular coat, no sutures were used.

It was a most annoying case to treat as nothing was handy because one had to be sent two miles to get sheets, and the water used to cleanse the uterus, although not polluted, was not pure. The owner himself was disgusted and wanted to slaughter the poor brute. But deciding to treat the case, the uterus was thoroughly washed with soap and weak creolin solution, and then wrapped in a clean sheet.

When the cleansing was finished, the work of returning the uterus began. When I pushed a wee portion in one way, a greater portion would be forced out on the opposite side. I found that I was not making much progress and was about to give up in despair when I got hold of some plain cotton-seed oil and poured it over the thing and tried again. The results far exceeded my expectations. It glided quite gently through the vagina into its position. The hand was introduced to straighten out any folds which might cause a tendency to strain. I noticed, however, that hemorrhage was taking place as my hand and arm was covered with blood when withdrawn.

The cow was now suffering from shock, trembling all over. I had to get a man to put his hand in the vagina while I washed mine, to prepare a hypodermic injection of one-half grain of atropin, which I administered subcutaneously in the region of the neck, and I gave fluid extract of ergot (one ounce in a quart of water per orem), then examined to see if the uterus was still in place. On satisfying myself on that point, I sutured the vulva with tape, left some ergot to be given in one-half wineglassful doses every two hours if bleeding occurred. Only one dose was given, as she soon rose and walked downhill to be turned on the pasture.

The next day she drank heartily and was eating fairly well. Four ounces of Epsom salts were given in a twenty-four ounce bottle of

water, three times that day. The following day I removed the sutures as there was no straining. She had a slight elevation of temperature, for which she was given acetanilid and potassium nitrate on the tongue three times a day.

Ernest F. Jardine.

Basseterre, St. Kitts, B.W.I.

TRAUMATIC PERICARDITIS

By Doque

A Holstein cow in my herd went off her feed during the summer of two years ago for five days. Examination disclosed nothing of importance excepting a temperature that ranged from 103 to 106. Treatment of Tinct. Aconite 15m. and Flext. Bella. Rad. drams one every two hours during day. She was down greater part of this time lying principally on right side well up on Sternum.

Morning of sixth day she arose and went to pasture with rest of herd.

Some months later an abscess formed on inferior part of left flank and discharged a bloody pus for four weeks. Treatment consisted of antiseptic washes. She was pregnant and calved on time and did fine.

She was bred again but aborted at six months but did not miss a meal. Was bred again July 30, 1921. Morning of February 8, 1922, she did not go to the rack in feed lot but stood as if asleep, on being approached she seemed to be surprised and ran to the rack and ate with the rest of cows. After eating I put her in stanchion and examined her. Temperature 103, Respiration, slightly accelerated. Heart, strong and very fast. Pulse, weak. Rumen slightly impacted. Peristalsic wave and murmur absent. Left elbow extended from chest far as possible. Dull heavy sound, on percussion over right lung. Inhalations held several seconds before exhaled accompanied with a grunt. Would eat small amounts of silage and drink some water. On being turned into feed lot she would stand with anterior parts elevated and with head to ground walk backwards. Treatment consisted of natol and linseed oil until she had been given one and one half gallons. Salts, aloes, camboge, calomel, flext, nux vomica, ammonium carbonate powdered gentian, six gallons tepid water with one pound sodium chloride through canula into rumen. Physostogmin and pilocarpin, strychnin and arecolin were given hypodermatically, in broken doses. None of these would establish peristalsic wave or murmur, but I got good results from strychnin and veratrin, one half grams of each. During all of this time there was no defecation.

Also given rectal injections of one gallon warm water and soap every two hours during day for three days.

Morning of February 15th edema of inferior submaxillaris had developed.

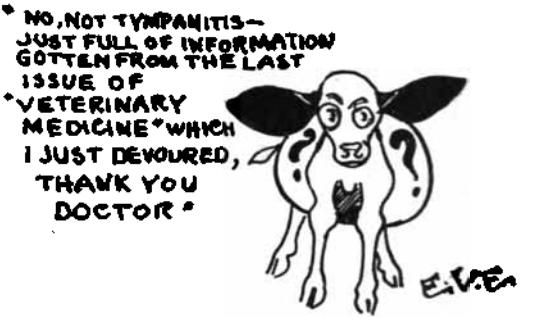
No treatment whatever was given on the 15th and 16th. Morning of February 17 the long looked for and expected characteristic splash was established. I destroyed her and on autopsy a nail three inches long was found sticking in heart firmly held by its head in rumen. The reticulum contained various other scraps of iron and tin. The pericardium was firmly adhered to left wall of thoracic cavity and to diaphram and rumen. The heart, pericardium and contents weighed thirty-nine pounds. The exudate had that peculiar strong odor with which we are all familiar.

Good hens may be profitably kept for the laying of eggs for two or three years and they may be kept even longer for breeding purposes.

EPIZOOTIC EYE INFECTIONS IN CATTLE

Sokolowski describes an infectious eye disease which occurred during the last summer among the cattle of various Alpine districts, and which manifested itself as an infectious keratitis. Approximately 30% to 50% of the pasturing animals became affected. The animals have their eyes closed and the lids are edematous. The animals resist the touching of the eyes and the opening of the eyelids. The eye secretion is first clear, later as a rule purulent. According to the depth of the cellular infiltration, the cornea reveals either a cloudy, milk-white or even a pus-yellow infiltration. The conjunctival and sclerotic blood vessels are strongly injected. The cornea feels softer to the touch and shows changes in its volume and curvature; epithelial disc formations, ulcers and abscesses are often present; so much so that perforations and suppurations may entirely destroy the eye. As a rule animals recover within fourteen days without any treatment. According to Sokolowski the infectious agent is contained in the secretions of the eye. The transmission occurs from animal to animal and through intermediate carriers. Deutsch. Oester Tier Woch.

AND THE NICE THING ABOUT IT, OUR LOGORRHEA IS NEVER FATAL



An Inspiration from Dr. E. V. Edmonds, Mt. Vernon, Washington

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Dr. H. K. Cleaver, 42 South 8th Street, Reading, Pa., who has been the victim of a nervous collapse, due to overwork, is gradually recovering and hopes to resume practice very soon.

Dr. B. F. Barber of Fondo, Iowa, has made a wide reputation as a breeder of Poland-China hogs, Holstein-Friesian cattle and Belgian horses.

Dr. J. A. Carlson of Bagley, Iowa, has moved to Davis City.

Dr. R. J. Donohue, state veterinarian of Washington accompanied with Mrs. Donohue and daughter has just completed an 1,800 mile trip through the Okanogan and Methlow Valley country of that state during which he supervised more than 1,000 tuberculin tests. Ninety per cent of the dairy breeders of that district are having their herds tested.

The anti-vivi-sectionists are causing considerable agitation at the present time in Colorado and sufficient signers have been obtained on petition so that the matter of rigid anti-vivi-section laws will be determined by referendum.

The medical and veterinary profession in that state are using all legitimate means to give the proper information regarding the anti-vivi-sectionists propaganda.

OCTOBER
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD, CHICAGO

A Magazine for the Veterinary Profession

$4.00 the year

VOL. XVII No. 10

Your wish of YESTERDAY has come true TODAY

YESTERDAY—

You wished for a sure-enough **dependable** Anti-Hog Cholera Serum, with all the good left in and the bad taken out—and sold at a reasonable price.

You wished for a Serum that you would be **proud** to use in the presence of your clients.

You wished that a really practical and satisfactory **CLEAR** Serum was available.

You wished for a **refined** Serum embodying all the good qualities of "Bloody" Serum, but with none of the disadvantages of that product.

You wished for a **CLEAR** Serum that had **actually made good** right out in the field.

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FORT DODGE CLEAR Serum is **THE** Clear Serum that has been used right out in the field for several years—upon thousands and thousands of swine—and has never failed to make good.

It is **THE** Clear Serum, in the production of which, practically **none** of the antibodies are lost or discarded.

It is **THE** Clear Serum which, **in its finished state, has to pass** all B. A. I. tests—and in addition is subjected to rigid microscopic examinations and animal inoculation tests.

It is **THE** Clear Serum that has made such a **success** that other Serum Companies have been **compelled** to come out with Clear Serums of various kinds.

MAKE NO MISTAKE—Use Clear Serum this year—But

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VETERINARY MEDICINE

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Vol. XVII CONTENTS FOR OCTOBER No. 10

Veterinary Medicine

Vol. XVII OCTOBER, 1922 No. 10

IN SPORT THE HORSE STILL REMAINS SUPREME

An exciting moment during the polo match between Princeton and Yale in which the Tigers beat the Sons of Eli. The victory gives Princeton both the outdoor and indoor polo championship in the intercollegiate field.

(Int. News Photo)

The 59th A. V. M. A. Annual

The fifty-ninth annual meeting was a success.

President Kinsley made good his promise to have a good meeting.

He promised a practitioner's meeting and supplied one that met the approval not only of the practitioner but of all concerned. It was a good meeting for all. All were pleased, all were well instructed and all departed satisfied that they had come.

It was probably the best meeting in thirty years if not of the entire annals of the association. It deserves the distinction of being a meeting at which the administrating forces were so skillfully marshalled as to turn threatened pandemonium into complete harmony which, to say the least, was quite an achievement in view of the pre-convention rumors afloat throughout the country. The A. V. M. A. is saved; it is not on the rocks as many expected, and although much remains to be done to root its popularity into every soul there is a friendly feeling that everyone in office is willing to sacrifice personal gain for the general good. With a sweet taste in everyone's month there is little to fear for the immediate future.

The attendance was not large, in fact it was away below the average of Middlewest meeting, but this can be accounted for by the prevailing hard times and the railroad strike. Then probably many practitioners stayed away feeling they owe their best allegiance to the state associations and could not make additional sacrifices to attend one that had been thought dilatory in the matter of attending to their material needs. Counting members and visitors the attendance was about 600, which all things considered, is not a bad showing.

The program was filled with well selected contributions and unlike several years past, the reporters with few exceptions were there to read them.

The sections on general practice carried out a program that was a classic, the one on sanitary science and police is reported to have met the highest ideals and the clinics will go down in history as the "best ever."

For the first time those interested in small animal practice conducted both a literary and clinic program of their own, and although the by-laws do not provide for such a section the success of this enterprise arbitrarily created to meet a popular demand, presages a con-

stitutional amendment to legalize the departure.

The question of whether to include a clinic or not in the annual program should now be settled for some years to come. It is not a new question; the clinic has always had its exponents and opponents, but in no case to our recollection have the latter been able to carry out a popular meeting without this feature, and in every case when a good orderly clinic was held the meeting was pronounced a success. The feature is restful, invigorating, sometime exciting and always very instructive. It always pleases the membership, and we believe that all opposition will henceforth break down from lack of popular support.

While it would be unjust to attribute the success to anything but good team work on the part of all the officers, Muldoon, Kingman, Flynn and Rives seem to be entitled to especial mention for their administrative ability, and Boyd, De Vine and Lucky for their instructive lectures at the cattle clinic.

The Question of Reorganization

The complaints from the membership that the association had become undemocratic and of little benefit to the majority, were well taken care of in the report of the committee on reorganization, which was unanimously adopted. Instead of precipitating a controversy that might have caused discord for several years, this committee submitted some sound recommendations for future study, and a copy of a new constitution and by-laws to be distributed among the members with a view of its final adoption in 1923. The personnel of the new committee of five members, with Dr. John R. Mohler as chairman appointed to make the final report next year, seems to have inspired universal confidence in the wisdom of the forthcoming action.

Another innovation that did much to create harmony was the recommendation of the executive board to combine the offices of secretary and editor. Both Secretary Mayo and Editor Mohler had resigned to make the way clear for this change and the only serious contest of the whole meeting arose when the many admirers of the editor, without his approval, endeavored to induce him to retain the office for another year.

The New Officers

Dr. W. H. Welch of Lexington, Illinois, was elected president; Col. J. A. McKinnon, director-elect of the veterinary corps of the army, Washington, D. C., 1st vice-president; Dr. J. H. Ferguson, Lake Geneva, Wisconsin, 2nd vice-president; Dr. M. C. Baker, Montreal, Quebec, 3rd vice-president; Dr. George Hart, University of California, 4th vice-president; Dr. E. P. Flower, New Orleans, Louisiana, 5th vice-president; Dr. Cassius Way, New York City, member-at-large of the executive board; and Dr. M. Jacobs, Knoxville, Tennessee, treasurer.

The appointment of Dr. H. Preston Hoskins, Detroit, Michigan, as secretary-editor by the executive board, was officially approved by the association.

PORCINE TUBERCULOSIS

The extent of the loss occasioned by tuberculosis in swine is not appreciated by the producer. According to the reports there are about 12 per cent of swine that are slaughtered at official establishments that are affected with tuberculosis. The loss occasioned by tuberculosis is second only to hog cholera. These enormous losses could be prevented. The following instructions promulgated by the agricultural ministry of Denmark in 1905 is indicative of the methods recommended for prevention of the losses due to porcine tuberculosis:

1. Hogs must never get milk or creamery wastes that have not been heated to 80°C. (176°F.).

2. They must never get unboiled colostrum, household milk or milk from cows with diseased udders.

3. Hogs must not enter the cow stable nor root in the cow manure.

4. They must never eat the carrion of animals or poultry.

5. They must never obtain butcher's waste, either of cattle, hogs, calves or poultry. All feed of this nature must be boiled or buried.

6. Never employ tuberculous animals for breeding purposes. Be cautious, therefore, in buying breeding animals, especially at auctions, where no guaranty or pedigree is given

7. Never buy sucking pigs fattened with raw cow's milk.

8. Clean and disinfect thoroughly the stable every time a set of hogs leaves it after being fattened.

9. Disinfect the hog stable at least twice a year.

10. Provide good ventilation and abundant light for the stable and goods runs for cows, sucking pigs and shotes.

Observe these rules and tuberculosis will disappear.—A. T. K.

AUTOTHELASIS IN COWS
(Self-sucking)

Every year brings out the usual crop of inquiries about self-sucking cows. The subject is generally thrashed out in agricultural papers but the discussions are always along the lines of mechanical appliances to prevent the habit and seldom mention the matter of cause. Autothelasis is a deficiency disease sometimes resulting in pica according to our observation, and is generally curable by proper medication and dietary changes. Of five cases held under observation three responded, one developed licking disease and died of emaciation, while the others responded to dietetic treatment with free access to minerals consisting of common salt, bone dust and sulphate of iron in one case; common salt, ground oyster shells and sodium phosphate in another; and common salt, calcium carbonate and sodium phosphate in the others.

In short, autothelasis generally yields to a narrow ration with free access to minerals of which a combination of common salt, ground oyster shells and sodium phosphate is a good example. The mineral compound sold under the trade of Vitamineral should answer the purpose. While this regimen is effecting the cure by slowly removing the cause, the best mechanical appliance to use is a well-fitted bridle equipped with a common snaffle bit.—E. M.

WHAT WE KNOW ABOUT CANCER

"We know that, if an early cancer is completely removed, it will not return. The disease can be cured.

"We know that there is a time when every cancer can be cured, for it first exists in what is known to scientific men as a 'precancer.'

"We know that cancer is at first a lump or sore that can be felt with the fingers or seen with the eye; or gives definite warning which, if we knew how to interpret, could be cured.

"We know that nine cancers out of every ten do not cause pain in the early, curable stage—this is unfortunate.

"We know that cancer starts as a result of a long continued irritation. If the irritation is removed, cancer will not develop.

"We know that cancer develops at the edge of a scar where a scar and normal tissue meet. If the scar is removed, the cancer will not develop.

"We know that certain definite symptoms precede every cancer just as surely as wind clouds precede a rain storm; and the time is coming when these symptoms will be heeded."

The late Dr. John B. Murphy, world famous surgeon of Chicago, once said: "It is the time and not the extent of the treatment that determines the final outcome of cancer."—Chicago Health Bulletin.

BOVINE AND HUMAN TUBERCULOSIS

Commenting on an exaggerated, scare-head statement before Parliament by Sir Watson Cheyne that about 60 per cent of the various forms of disease in children were due to infection from tuberculous cattle by means of milk, The Lancet, an ardent champion of a purer milk supply, asks, "Do the facts as ascertained support such statements as these?" and reviews a monograph by Dr. F. Harbitz, professor of pathology at the University of Christiania which exposes an entirely contrary opinion.

The former is an excerpt from a speech delivered to secure an appropriation from Parliament while the latter is a sane relation of facts obtained by years of observation and experimental work in search of the truth.

Professor Harbitz has published maps of Norway which show that human and cattle tuberculosis so far as prevalence is concerned do not run parallel, and says without equivocation that tuberculosis of cattle does not perceptibly affect the frequency in man. At the agricultural college at Aas, although the cows were saturated with tuberculosis and the milk was consumed raw a period of over 43 years by the staff and their children, yet no case of tuberculosis occurred among the children. He finds proof lacking as to the antagonism of the two types to each other and is skeptical about the claim that the bovine type produces a mild form of the disease and holds to the opinion that the quantity of virus absorbed, the localization, and the patient's age are more significant than the type of bacilli.

Furthermore, Dr. A. Lankester, referring to his work on tuberculosis in India, supports the view that "In this country (India) surgical tuberculosis which is very prevalent in many areas, is entirely independent from infection from bovine sources."

"Dirty as a pig" is slander, for pigs in their native state are clean animals and they would be clean when domesticated if they had their choice.

PUBLICITY ESSENTIAL TO THE VETERINARIAN'S SUCCESS

Although the veterinary practitioner is actually being backed into obscurity by the prevailing ethics that forbid him to indulge in any kind of advertising, the farm bureau, who in many instances has shown little regard for the welfare of the struggling practitioner, is free to and does get into the limelight a great deal of the time through the local press. Articles which often contain portraits of the farm adviser with reading material below showing how he and the federal veterinarian of the district are co-operating to do this and that are seen on every turn, while the practitioner who probably brought the very first message about veterinary science to the neighborhood is struggling against big odds to keep body and soul together.

"Farm bureau treats 90,000 hogs"; "Farm adviser eradicates hog-cholera from the county"; "Farmers saved thousands in hog-cholera vaccination"; "County agent, John Doe, working with Dr. Jones, of the federal department of agriculture, testing the Brookside herd," etc., etc., are but a few of the many headlines we glean from the public press.

The wisdom of these movements is not under discussion here. It is the incongruity of the situation we deplore. It is a case in which a well advertised enterprise is gaining ascendency over one that obscures itself with self-imposed restrictions.

The day has not arrived and should never be allowed to arrive when we should throw our traditional ethics aside for the purely commercial conduct of those encroaching upon our field. We love our profession; we approve of its ethics and we do not want to become a wholly unaltruistic trade. But if we stand idly by, while being obscured by intruding agencies the enterprise we have succeeded in developing into a profession, will become less and less inviting to prospective recruits and will then rapidly deteriorate to a trade into which anyone who wishes may enter.

Unless those who train men for the veterinary profession can show concrete reasons why students should enter the colleges for the veterinary degree it is not likely that many will enter. To get recruits the profession must remain a definite, a real entity, recognized as such by society and not as a mere side-line wherein its personnel plays a secondary role.

To hold the ground we have won we must advertise and we must advertise in the way that will not bring us into the realm of mere trades. Our worth is not known. It must be made known. We must advertise by organizing everywhere. Every locality should have an organization, every state should have a powerful one, and all of these should be marshalled by a big national body that will wield an influence strong enough to take a masterful hand in combatting any harmful trend. Anything less than this means drifting, drifting means oblivion.

—Courtesy of Secretary Carl Cozier.

SECOND ANNUAL MEETING OF THE NORTHWESTERN VETERINARY ASSOCIATION. Vancouver, B. C., July 21-22, 1922.

Editors' Personal Page

There is no wisdom nor profit in discord.

Just how bad would men become if they were not watched?

No tremendous institution has ever been built up without the aid of a sound advertising program. Makeshift experiments are a waste.

What is the matter with the A. V. M. A.? Nothing. Kinsley innoculated it with the bacterin of harmony and Lynch grafted it with an endocrin gland that will make it grow.

Discriminating linguists use the word "tuberculous" and not "tubercular" in referring to tuberculosis. A disease may be tubercular without being tuberculous.

Too often we hear the big men of the profession knocking one another in one breath and advising the struggling practitioner to do the opposite in the other.

Dr. Ferneyhough, state veterinarian of Virginia, speaking before the American Veterinary Medical Association at St. Louis, said, "It is unethical for the veterinarian holding public office to belittle or ignore the one who gives his life's work to the practice of his profession."

The slogan "Get the last tick" appears to have stimulated tick eradication in Texas. A recent report shows that over six million cattle have been dipped. This indicates progress and is quite significant to the cattle industry.

Competitors that boost each other progress, and those that condemn, censure or belittle their competitor have a questionable reputation in their community. If you can not boost your competitor and your profession, say nothing and change your occupation.

Knocking as a regular practice doesn't pay.

The man who gets ahead is the one who works more hours and harder than the average.

VETERINARY MEDICINE is not a mere archive for technical material. It is a magazine for the veterinarian that aims to "Hew to the line and let the chips fall where they may."

"I have no patience in the long run with the idea that we should shorten our hours of work and add to our leisure and loafing period," says Dean Waters of the Kansas College of Agriculture.

"Dispensing the official drugs is preferable to prescribing proprietary remedies," says Dr. Quitman, "because it keeps the practitioner studying the materia medica."

An ex-druggist, now a prominent veterinarian, confessed on the floor of the meeting of the A. V. M. A. at St. Louis that he had put up hundreds of prescriptions that contained nothing the doctors prescribed but the water.

"There are at least three kinds of fools in the world: educated fools, ignorant fools, and d—n fools. I saw a college professor, a hod-carrier and a dairyman each buy a pound of oleomargarine the other day. Classify them yourself."—Hoard's Dairyman.

New York City and Pittsburgh veterinarians are quarreling about the matter of advertising in the telephone directory on the grounds that our code of ethics prohibits. Obviously veterinarians are beginning to wonder why those who sell supplies may indulge in all kinds of spectacular advertisements while those who deliver them to the patient must hide sub rosa under the cloak of an antiquated code.

Purely Practical

Informative Hints from Those Who Know and Do

For round worms in chickens try tobacco dust mixed in the feed.—Hart.

To anesthetise a hundred pound hog use a rectal injection of four ounces of chloral hydrate dissolved in a pint of cold water.—Dykstra.

Equal parts of turpentine, ether and chloroform is the best mixture for intra-tracheal injections for lung worms.—Symms.

Egg eating hens are cured by feeding tankage, meat scraps or any animal proteins together with plenty of grit and ground minerals.—E. M.

Castor oil well rubbed into the skin has a remarkably wonderful curative effect on dogs affected with follicular mange.—Quitman.

Sodium salicylate is a good drug to give internally for catarrhal mastitis because it is in part eliminated by the mammary glands and thus exerts a disinfecting influence.—Dean Klein.

Herron, a prominent dog specialist, of Chicago uses kerosene to the exclusion of all other remedies for all kinds of parasitic skin infestations. The kerosene is allowed to evaporate for a week in an open jar before using.

CURATIVE PRESCRIPTION FOR FOLLICULAR MANGE

(Demodex mange)

℞

Kerosene 8 oz.
Linseed oil, 8 oz.
Phenol, 1 oz.
Sulphur flor., 4 oz.
Oil of tar, 1 oz.

Mix, shake well and apply after cleaning the body well of encrustations. Allow the application to gradually wear off and repeat only when necessary.—Marsteller.

Dimmock recommends atoxyl intravenously for strongyli.

Ninety percent of diseased dogs are infested with parasites.—Marsteller.

The lethal dose of oil of chenopodium for dogs is one half a cubic centimeter per kilogram of body weight.—Hoskins.

ABSORBENT LIQUID

℞

Tincture iodin, 2 oz.
Gum camphor, 3 oz.
Gasoline, q. s., 16 oz.

Shake, and apply with a brush. Indicated for curbs, bursitis, tendonitis, etc.—R. F. Reeds.

A GOOD HEALING OIL

℞

Phenol.
Creolin.
Columbian spirits, of each 8 oz.
Castor oil, q. s., 1 gal.

Apply three times a day. Will repel flies.—R. F. Reeds.

HEALING PASTE FOR SORE TEATS

℞

Castor oil, 8 oz.

Bismuth subnitrate, q. s. to make a soft paste.

M. Sig. Useful also for galls, ulcers and flexion crevices of horses.—R. F. Reeds.

FOR STHENIC FEBRILE CONDITIONS

℞

Fluidextract of aconite, 10 minims.
Fluidextract of belladonna, 30 minims.
Fluidextract of bryonia, 1 dram.
Sodium salicylate, 2 drams.
Distilled water to make 1 ounce.

M. Sig. Dose one-half ounce to be repeated as required, for pleurisy, laminitis, lymphangitis, pneumonia, etc.—R. F. Reeds.

TRANSPARENT DRESSING FOR WOUNDS

Lieutenant Mombet of the remount depot at Merignac, France, in the Revue Veterinaire, August, 1922, describes a unique method of bandaging wounds with a transparent bandage.

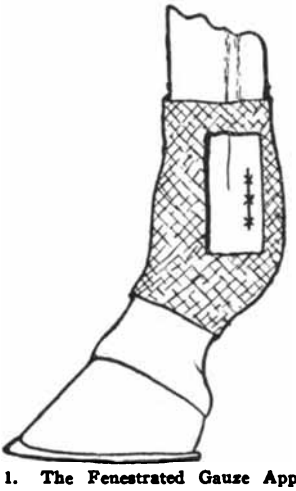


Fig. 1. The Fenestrated Gauze Applied.

that will not only protect the wound from contamination but enables the surgeon to observe the healing process without the disturbance incident to frequent removal of the protective dressing.

The wound is wrapped with a thick gauze

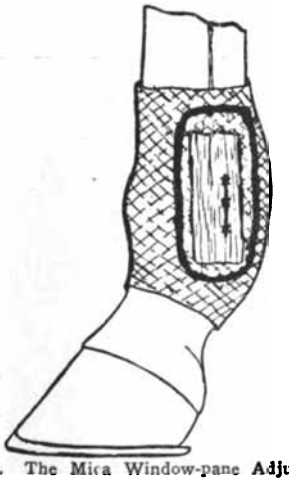


Fig. 2. The Mica Window-pane Adjusted.

into which a fenestrum has been cut. A piece of mica larger than the fenestrum is then laid over the opening and covered with a second fenestrated piece of gauze to hold it in place The whole is then retained by wrapping up the region in such a way as to leave the mica exposed.

The author states that the mica will at first become opaque from sweating but this soon

Fig. 3. The Window Complete.

disappears as the moisture is absorbed by the surrounding dry gauze. The accompanying figures illustrate the procedure.

DISCOVERS CULTURE MEDIUM FOR VIRUS OF FOOT-AND-MOUTH DISEASE

According to report of Titze in Archiv.f. wiss.u.prakt.Tier and the Berl.Tier.Woch.No.4, 1922, he has successfully prepared culture media in which he is able to cultivate the causative agent of foot-and-mouth disease. The formula is still a secret and is only given out to high officials, but from one of his works it can be seen that physically it resembles the lymph of the aphthous blister. He has been able to carry the cultures through four generations. The medium becomes cloudy after 24 to 48 hours and that the cloudiness is caused by the growth of the "organism" was proved because the artificially cultured medium as antigen with blood of recovered animals gives positive reaction.—Borros.

The big gap between the producer and consumer must in some way be narrowed. When a breakfast food costing from $20 to $30 a ton reaches the consumer in packages it costs $500 a ton.

Important News and Announcements

The splendid article by Professor J. N. Frost on "Diseases of the Udder" in the September issue should have been credited to the Short Course for Veterinarians given by the University of Minnesota in July, where it was read as a contribution to the regular program.

Mr. I. C. Brenner, the versatile advertising manager of VETERINARY MEDICINE, is making another touring trip through the country in behalf of the journal. He will write interesting news items from time to time, making

comparisons between conditions now and those he found during his famous 57,000 mile journey five years ago. The photograph reproduced was taken at the office of the journal on the day of his departure, August 31.

VETERINARY CORPS NEWS

Col. Gerald C. Griffin, V. C., U. S. A., having been found incapacitated for active duty by an examining board on account of disability was retired July 24.

Major Chas. H. Jewell has been assigned to the headquarters of the 2nd corps area as assistant to the corps surgeon and in addition to attending veterinarian at those headquarters, Forts Slocum and Woods and coast defenses of eastern and southern New York and Sandy Hook.

First Lieutenant Edward M. Curley is transferred from the general intermediate depot at Chicago to Fort Des Moines for duty as station veterinarian.

First Lieutenant Paul R. King is transferred from the Panama Canal department to the general intermediate depot at Chicago on completion of the present tour of foreign service.

Col. Charles D. McMurdo is retired from active service after more than 32 years of active service to take effect December 22, 1922.

Major Robert J. Foster is on temporary duty at the surgeon general's office, Washington, D. C., after a long service in Germany as chief veterinarian of the American forces on the Rhine. On his way home he visited England to observe the operations of the veterinary service of the British army. He attended the meeting of the A. V. M. A. at St. Louis, August 28-September 1, where he read an interesting paper on the new organization of the nation's military forces.

CAMERA SNAPS A CLASSIC

The pleasure of being a good horseman as well as a good veterinarian is illustrated in the above figure of Dr. John F. DeVine of the Goshen Laboratories (right) and Mr. and Mrs. David Rothensie of Montgomery, N. Y., returning to the DeVine stables after the hunt that followed the festivities of the Orange county (N. Y.) fair in August.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

uggestions for the Prevention of Live Stock Loss During Transportation

W. J. Embree, M. D. C., Chicago, Ill.
Chief Veterinarian, Western Weighing and Inspection Bureau

HE history of our meat supply commences on the farm. In past years much it ended there but with the advent of our rge market and packing centers and the imovement of our railroad facilities it became ual for a large percentage of our market anials to be subjected to a railroad journey. Since the first live stock was loaded in stock ars we have had to contend with a death loss uring transportation which seemed to inrease from year to year.

In 1917 a small force of veterinarians were mployed by the Western Weighing and Inpection Bureau, for the purpose of examining lead and crippled animals at our large westrn markets; this force has been increased till t now includes about forty veterinarians and ighty lay inspectors at fourteen western marets.

From the investigations made by these men many interesting things have been developed and we now wish to appeal to the country practitioner to carry a few of these ideas to the farmer and shipper so that they may profit by these findings and do their share to decrease loss in transit.

We first wish to call your attention to the picture of the lungs of three hogs.

This cut is from a photograph of the lungs of three hogs which were about the same age and weight at the time of death. The one at the left represents a lung of a hog that was raised on the range where it had to rustle for itself, and therefore, took plenty of exercise.

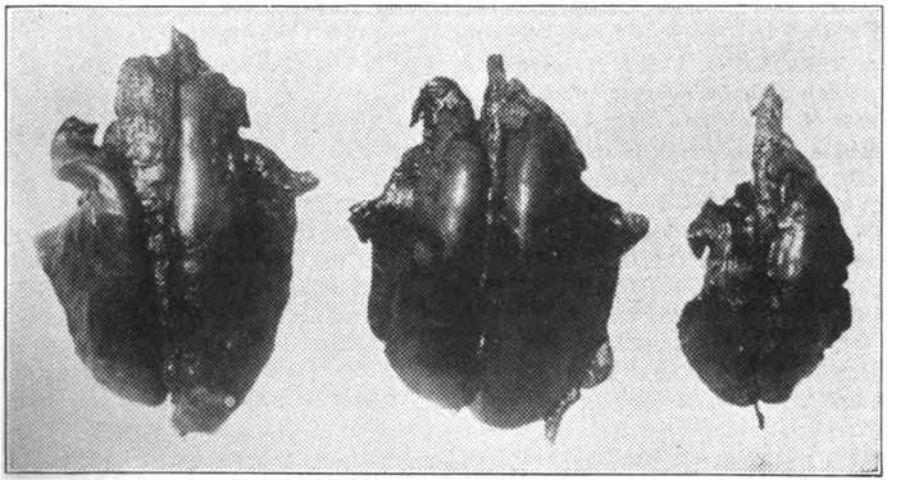


Fig. 1. Showing Lungs of Hog of Same Weight Vary in Size.

The second are lungs of a hog fattened on the range—that is, had to rustle for part of its food but supplied with some of it. It did not take as much exercise as the range hog, but it exercised enough to develop a strong pair of lungs.

The third figure are the lungs of a hog fed under the usual Corn-Belt conditions. That

is, the hogs are placed in a feed lot soon after weaning time and supplied with all the food necessary to make them fat.

The pens may be large or small, but the hog when supplied with abundance and fed so as to produce the largest amount of meat on its body in the least number of days does not exercise to any great extent and grows fat and plethoric. This kind of treatment develops the digestive organs at the expense of the organs of respiration and circulation, and these organs (the heart and lungs) only develop sufficiently to meet the requirements of the condition under which the animal lives.

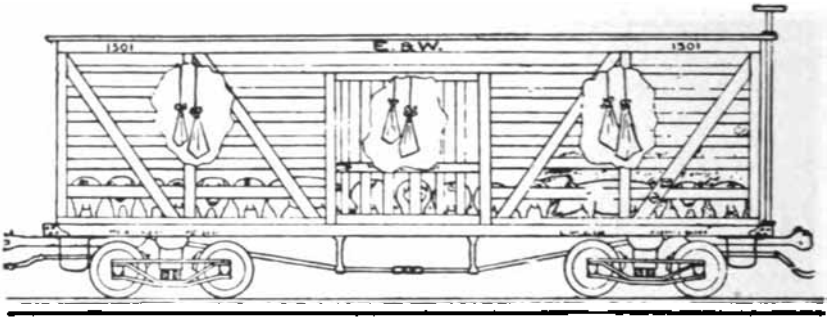


Fig. 2. Ice Hung from Roof for Cooling Hog Shipments

Lung Capacity of Pen-fed Hogs Subnormal

The function of the lungs is to purify the blood of the body and in the hog perspiration (sweating) being almost impossible a large part of the excess moisture and heat of the body passes off through them. A hog with undeveloped lungs will therefore suffer more quickly and severely in hot weather than one in which they are well developed.

We do not wish to say that all pen-fed hogs have as small lungs in comparison as shown in the figures, but we believe that hogs that are fattened quickly do not develop more than 60 or 70 per cent of the lung space they should normally have. In other words the heart and lungs are developed sufficiently to keep them alive while at home, but are not in condition to keep them alive when they are subjected to the unusual exertion of being rounded up, assorted as to size, hurdled into wagons or driven on the road for the purpose of transporting them to market. It is this hog with the poorly developed heart and lungs that comprises a large percent of in-transit losses. The strain on these vital organs starts the minute the hog is exerted in removing it from the home pen, then it is subjected to excitement of the trip to the loading point which may be made in the most careful manner, but it is impossible to subject a fat hog to this trip without causing it to take more exercise than it has taken at any one time since it was a small pig. This exertion causes the heart to increase in action and the blood vessels of the lungs dilate and become congested. The hog pants and becomes short of breath, and if it is not immediately placed in a cool, quiet place where it can become normal, it will die of acute congestion of the lungs or other lung disease.

Preventive Measures

Much can be done by the shipper to prevent the loss of these delicate fat hogs in hot weather. They should be rounded up quietly at home, hauled to the loading point and quietly driven into a sand bedded car that has been previously sprinkled or wet down as short a time as possible before the train starts. They should not receive a full feed the day of shipment nor should they be fed in the car. Great care should be taken to see that they are not overcrowded and whenever and wherever possible place ice in the car hung in bags from the roof.

For many years shippers have used ice hung in the roof of the car for the purpose of making hogs more comfortable during transit in hot weather. The Western Weighing and Inspection Bureau did not originate this idea but they saw the advantages in so handling shipments of hogs in hot weather and are taking the liberty to advertise it so that it will be called to the attention of other shippers and used by them. In 1920 we instructed all live stock inspectors working at the western markets of Chicago, St. Louis, Kansas City, St. Joseph, Omaha, Sioux City, St. Paul, Denver, Ft. Worth, Wichita and Oklahoma City to report to this office the names and addresses of all shippers who iced their hogs in transit. In

s way we procured information that showed 1 shipments of hogs were iced during the mmer months of 1920 from which 17 dead gs were removed making a ratio of about e dead hog to every 11 cars shipped.

The names of these 184 shippers were placed a circular and sent back to them thanking em for the attention they had given their gs and asking them to call the attention of y shippers in their neighborhood to what ey had done and see if they would not take e same precaution when they shipped hogs hot weather.

During May and June, 1921—613 cars were ed from which 40 dead hogs were removed owing a great increase in icing of hog cars. his made a ratio for these two hot months about one dead hog to every 15 cars. Following the 1921 work further we find that dur- g the hot season of that year namely the onths of May, June, July, August and September, 1,127 cars were reported iced by our spectors from which 66 dead hogs were reoved making a ratio on the whole movement of about one dead hog to every 17 cars.

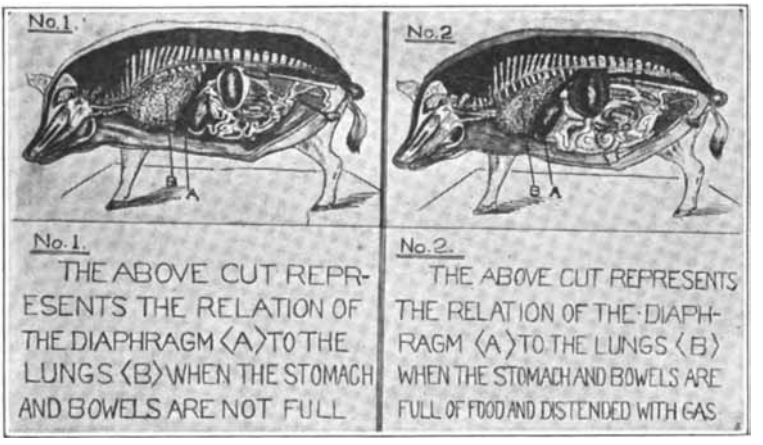


Fig. 3

During these hot months it is not unusual to ave a ratio of one dead hog to every four cars here ice is not used, therefore, you can plain- see that something was present to decrease ie death rate in these cars that were iced. Complete figures for 1922 are not yet avail- ble but what few we have obtained show approximately the same ratio as 1921.

Hanging Ice the Most Lasting

As to the manner of icing we do not wish say that ice must be hung in the car in order to gain advantage from it. We have noted good results from laying it on the floor but we have also noted that where ice was placed loose on the floor of the car it did not last near as long as where it is hung up in bags. A few hot hogs coming in contact with ice placed on the floor of the car will melt it very fast and it will only last for a few hours. On the other hand a small amount of ice, say 300 pounds, distributed in six bags hung in the roof of the car, has been found on actual test to last for thirty hours in hot weather. This would cover an ordinary trip. In addition to this when it is placed on the floor of the car only a few hogs could gain advantage from it without it was all over the car. When it hung up to the roof the drip from these ice bags is scattered all over the car by the swinging and movement of the car and the cool air from the ice will settle downward, decreasing the temperature in such a manner so that all of the hogs regardless of size will get equal advantage.

It is unnecessary to say that ice bags are not a cure for all shipping loss for if the hogs are tired and hot and panting when placed in the car some of them would be likely to die even they were packed in ice; but the hanging of ice in the car will give them all a better chance to return to normal and will assist them to quiet down more quickly.

Some shippers have told us that they had less shrink where their hogs were iced in hot weather. This is a logical conclusion for the reason that if the hogs are cool and comfortable eliminations from the body will not be as great as if the animal is restless and hot and

these body eliminations are what constitute shrink in transit.

Feeding in Cars Wrong

A very serious cause of the loss of hogs in transit, especially if they are fat, is the feeding of them immediately before or after they are loaded into the car.

This is often done with the intention of decreasing shrinkage but the increased danger of loss is likely to have the opposite result.

The above diagram has been prepared with the intention of giving some idea why hogs that have their stomach and bowels full of food suffer more in hot weather than when empty.

When a hog eats its fill in the feed lot under normal conditions it will find a quiet place and sleep while during digestion, but as is impossible in the excitement of transportation fermentation and gas formation occurs with the result indicated in No. 2, Fig. 3.

From this explanation you can see that when the stomach and bowels are full and distended they will take up more room than when empty. The abdominal wall will distend somewhat but great pressure will be exerted on the diaphragm and as it is pushed forward the lungs and heart are compressed forward into the chest which cannot distend on account of the ribs. This pressure can become so great in bad cases of indigestion that the lungs cannot expand and death results.

The figure at the right is intended to show how the diaphragm is forced forward hampering the work of the heart and lungs. When this happens in hot weather when the lungs have plenty of work to do (they being the principal organ in the hog for reducing body temperature) the animal will suffer greatly and the over-worked portion of the lungs may become congested and death results. A large percentage of animals that die in transit show this condition to a greater or less degree.

Losses Reduced

Loss in transit has been greatly reduced. Since 1917 concentrated efforts have been made by various interested organizations. Most of our large railroads of instituted departments for the prevention of loss in transit to work in connection with the Inspection Bureau and the American Institute of Meat Packers and its allied organizations have closely co-operated and much assistance has also been received from the American Farm Bureau Federation.

By the assistance of these and other organizations many thousands of circulars have been distributed and the results have been very gratifying. The following tabulation shows the hog receipts, dead, and ratio for the month of June at eleven western markets for three years:

	Receipts No. Head	Dead Head	Ratio No. dead to total received
June, 1920.....	2,188,012	7,157	1 to 300
June, 1921.....	2,139,155	4,279	1 to 500
June, 1922.....	2,432,650	3,961	1 to 600

We have many other statistics that show that conditions are improving, but space will not permit the use of them.

Such observations and investigations as we have been able to make lead us to believe that a large part of loss in transit can be prevented if the shipper will do his part when taking animals to loading point and placing them in the car and most of these shippers are anxious to receive any information that will assist them in reducing loss in transit.

No one of us can do much, but if we will each do our share and pass the information along the line greater saving of food will result.

OPERATION FOR UMBILICAL HERNIA IN MALE SHOTES

I notice in VETERINARY MEDICINE an article fully and completely describing a new method for handling umbilical hernia. The plan recommended seems such a good one I shall try it at the first opportunity, but I note that it is not practical for male shotes.

My method of handling these is to clamp the hernia as usual with an iron clamp, then I make an incision along the median line behind, two inches long, expose the penis by dissection and loosen it from its tissue attachments within the dimensions of the incision and amputate it as far forward as possible.

The after-care is no different than in other similar operations.

West Point, Iowa. L. A. Schmidt.

Horses should be watered before giving a feed of grain. Grain requires gastric digestion and if horses are permitted to drink soon after a feed of grain, a portion of the ingested grain is washed into the intestine and is not properly digested.

Report of the First Poultry Clinic Held by the A. V. M. A.

FOR the first time in its long history the American Veterinary Medical Association featured poultry diseases by a poultry clinic held in connection with the general clinics of the 59th annual meeting at St. Louis, August 30, 1922.

This section was in charge of Dr. B. F. Kaupp, poultry investigator and pathologist of the North Carolina Experiment Station, who was assisted by Dr. E. W. Saunders, St. Louis; Dr. H. R. Schwarze, United Serum Laboratories, St. Louis; Dr. G. G. Graham, Jensen-Salsbury Laboratories, Kansas City; and, G. P. Plaisance and C. D. Wilkins of the Scientific Laboratories, Purina Mills, N. C.

A FOWL TYPHOID DEMONSTRATION

The first demonstration was that of fowl typhoid, produced from the germs (Bacterium sanguinarium) isolated in studies made by the poultry pathology research laboratories of the North Carolina Experiment station.

The history of this outbreak was given as follows: On examining the premise five dead birds were found in the house. It was noted that the chickens had been eating carcasses which further examination showed were full of maggots. The sick birds showed salivation, great prostration, many too weak to walk, others with staggery gait, some sitting down with heads resting on the ground, and still others with head and neck curved forward under the breast, much the same as in limberneck. However, examination of the inoculated culture medium the next morning showed clearly it was a very violent and virulent outbreak of fowl typhoid.

A vaccine was hurriedly made and all of the sick birds given 1 cc. of an emulsion made by washing the growth off the agar with physiological salt solution (0.85 per cent) and this emulsion subjected to a water bath at 60 degrees C. for sixty minutes. A few of the birds found in another coop were also vaccinated. The next day an autogenous vaccine made from the first dead birds was used. It was grown in bouillon and heated in water bath at 60 degrees C. for 60 minutes. All were vaccinated including one turkey, eleven waterfowls, and twelve pigeons. The young birds including chicks in brooding were vaccinated twice, the chicks receiving one-half dose. The adult fowls located where the disease made its appearance were vaccinated twice.

The first day one chick was dead and eleven more were taken to the hospital, and on the second day two more were dead.

It required six days for the vaccine to check the outbreak and it appeared that the period of incubation is about three days under field conditions. It required four days to produce immunity. In another outbreak among old birds only, the vaccine prepared in a similar manner stopped the disease at once and had decided curative action on the sick. In this outbreak, only a few of the sick birds recovered as a result of the vaccination.

On the fifth day, three of the birds were placed in the hospital and given treatment by vaccination. They were later returned to the flock.

It was observed that a few hours after the vaccine was given the temperature dropped. The first vaccination of 1 cc. of the vaccine made from stock cultures was followed with 2 cc. of a twenty-four hour bouillon growth vaccine and in two days with 2 cc. of an autogenous vaccine made from agar slant cultures.

A number of cases were reported as regards to symptoms, diagnosis lesions, bacteriological findings and the results obtained from vaccination.

Summary

The clinical symptoms including the cloacal temperatures and respiration were studied in thirty-four cases, of which 25, or 73%, died and came to autopsy, and nine, or 27%, recovered. That is, sick birds not vaccinated all died, while 27% of those that were sick and vaccinated recovered. Only birds from four to five months of age were attacked and the disease was arrested by vaccination. The outbreak was a virulent one and spread rapidly. It was first thought to be limberneck, but the reading of the inoculated nutrient agar slants the next morning showed it to be fowl typhoid.

Vaccine was hurriedly prepared and in the afternoon the sick birds and part of the first flock attacked, then the only one, were vaccinated. The following day autogenous vaccine was used on three pens affected, but it required four days to secure immunity and make progress in arresting the disease. The last bird

died two weeks after the outbreak began.

Two vaccinations were given all young fowls and three to four to the sick birds. Two vaccinations were given the adult birds and the balance of adult fowls were given one injection each of 1 cc. vaccine. In all 673 range chicks were vaccinated, 467 adult fowls, 11 waterfowls, consisting of 9 ducks and 2 geese, one turkey and 12 pigeons, a total of 1,160.

Symptoms

The symptoms as observed in this outbreak and among young fowls is as follows: In the initial stages the symptoms will be overlooked if the birds are in any way frightened. Observed from a safe distance they seem dozy, which, of course, must be differentiated from sleepiness. When startled they show an abnormal facial expression, the head displays nervousness, and if driven they showed weakness in the gait. These symptoms progressed until prostration was complete. In advanced stages they would sit for a moment with head and tail down and on moving showed great weakness. Loss of flesh was very rapid. They became partially comatosed and if sitting the head fell forward till the beak touched the ground. At this stage there is a complete loss of the use of the neck muscles and they could not walk. Death came without a struggle or after a spasm. The appearance is unkempt and a sulphur-colored liquid discharge from the bowel.

Gross Pathology

At autopsy the carcass is usually observed to be in an emaciated or poor condition. There may be present edema or swelling, especially in the chest in the region of the heart or the thin, liquid effusion may be so great as to extend over the liver. The fluid in the heart sac may be increased in quantity. More rarely there may be abdominal hemorrhage.

The liver was always enlarged and blood dripped from the sectioned surface. It is friable and tears easily and accounts for internal hemorrhage. The kidneys were congested and the sectioned surface shows a grayish color indicating degeneration. The heart was congested as shown by the blood vessels standing out full and red. The heart presents a parboiled appearance. The spleen is normal in size.

Macroscopic Pathology

Degeneration is marked in all of the organs, as the liver and kidneys. This in some instances is terminating in the dissolution of the cells of the organ.

Congestion, both in the veins and arteries, is always observed in the liver, kidneys, and heart. This accounts for blood dripping from the cut surface of the liver.

The whole microscopic picture is one of intense toxic poisoning.

Five other outbreaks were reported showing the value of vaccination in checking the disease.

A DEMONSTRATION OF THE PRODUCTION OF DEFICIENCY DISEASE

Chickens and pigeons were given a feed mixture containing millet, Kafir corn, Canada peas and wheat. This mixture had previously been heated at 40 pounds steam pressure for one hour. This destroyed all the vitamins. To this there was added polished rice (like that for table use) and tapioca. In thirty days the pigeons came down with typical symptoms of deficiency disease due to the lack of water soluble B, a condition of polyneuritis. The first symptoms are those of nervousness, later when the bird was excited its head would turn to one side and at times over the back.

Note in Fig. 1, the inability to handle wings properly, head thrown back. This bird was given thirty grains (2 grams) wheat germs and on the following day had recovered. If it had

TABLE I
CLASSIFICATION OF VITAMINS

Solubility	Name	Function	Source
Fat A	Antiophthalmic	Growth promoting Prevents ophthalmia	Butter, milk, egg yolk, green leaves, glandulas especially the kidneys and liver, cod liver oil, small amounts in yellow corn, doubtful in white corn.
Water B	Antineurotic	Growth promoting Prevents beri beri and polineuritis	Eggs, milk, fresh vegetables, fruits, alfalfa, clover. More abundant than "A" except in milk and germs of seeds.
Water C	Antiscorbutic	Prevents scurvey	Fresh and canned tomatoes, oranges, lemons, sprouted grains, raw milk from cows on fresh pasture.
Fat D	Antirachitic	Prevents rickets, regulates calcium, phosphorus assimilation and deposition	Cod liver oil and green feeds.

not received a feed furnishing the lacking vitamins, it would have been dead by that time.

Fig. 2 shows a pigeon which was in a similar condition as the pigeon in Fig. 1, and recovered in 24 hours after receiving 30 grains wheat germs.

Table I gives the classification of vitamins.

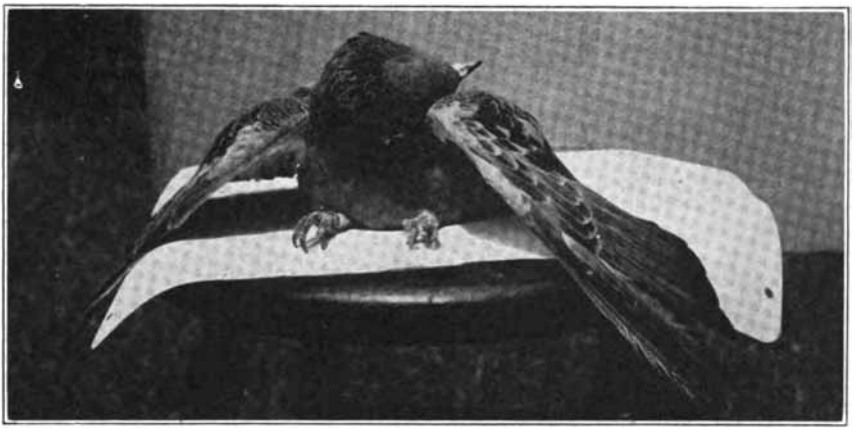


Fig. 1. The condition in this pigeon was produced by feeding on grain not containing vitamins. It is a case of deficiency disease or polyneuritis.

Study this table carefully and see that your feeding has a sufficient supply of those feeds supplying fat soluble A and D and water soluble B. It is quite possible that future experiments will show fat soluble D to be essential to fertility in breeding hens and is now known to be essential for proper growth of chicks. There may be many other feeds that contain these vitamins which time and experiments alone will tell.

VITAMIN DEFICIENCIES

The part which a deficiency of substances called vitamins plays in the growth of animals and birds and the relation between these deficiencies and paralytic diseases of animals and birds has received more attention during the past two years.

Vitamins are supplied only in the feed. It is important then to recognize those feeds low or totally deficient in vitamins so that normal rations can be compounded. Where an adequate ration of grains is fed, supplemented with good pasture or succulent fresh, leafy vegetables or legume hay of high quality there is little danger of vitamin deficiencies.

On the other hand, when a preponderance of a single grain is fed in combination with a poor quality of hay or without supplementary feeds, the effects of vitamin deficiency will be apparent. The exclusive use of corn, especially white corn, or a too large proportion of corn in the diet will bring results definitely related to the deficiency of vitamins.

It is true that corn is low in calcium and does not supply the proper animo acids for growth, but it is a rich carbohydrate food. With experimental animals, the addition of calcium salts and casein to a corn diet delays the onset of vitamin deficiency symptoms but does not prevent their occurrence. The effects of vitamin deficiencies are cumulative and certain. Good proteins and minerals in the diet act as "vitamin sparers" but are not substitutes for vitamins.

Slow growth is perhaps the most common of the less pronounced symptoms of vitamin deficiencies. Of the more readily recognized symptoms, there is the roughened condition of the hair of animals and poor feathering of birds; low egg production and poor fertility of eggs, stunted pigs and chicks, small litter, abortion and dead pigs and less common, but never-

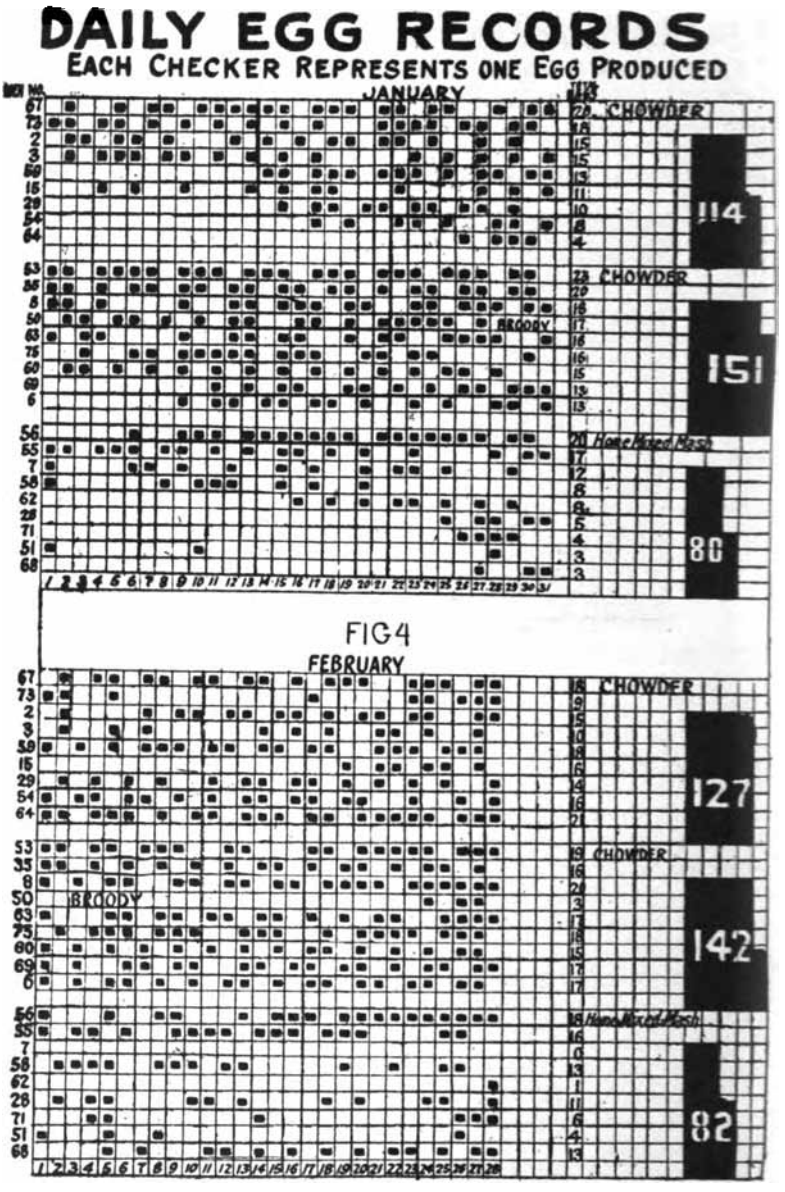
Fig. 2. This pigeon was in same condition as the pigeon above and was given 30 grains wheat germs which supplied the missing vitamins. He is now well.

theless actually occurring, conditions of paralysis and ophthalmia. Recent work indicates that many of the rations fed to young chicks are deficient in the vitamin that protects against so-called leg weakness.

It is not with total deficiency of vitamins that the feeder must be most concerned but with partial deficiency, for total deficiency is probably not often met with.

Experimentally, polyneuritis in fowls is produced on a diet of polished rice; on tapioca or on a diet that has been autoclaved to destroy the antineuritic vitamin. These latter diets may be adequate in all other essentials of a normal diet. Where the deficiency of vitamin is associated with an excess of other factors, particularly of carbohydrates, the onset of deficiency disease is rapid.

Vitamin deficiency is of more common occurrence in poultry feeding than is generally recognized. Some rations advocated by men of prominence have been found very deficient in vitamin when tested for their value as egg producers. (The chart (Figs. 3 and 4) illustrating egg production brings out this fact very clearly.)



Figs. 3 and 4. A chart illustrating the difference in egg production of feeds ample in vitamins and feeds not ample in vitamins. Those flocks receiving sufficient vitamins in the feed laid more eggs than those curtailed.

As a part of preventive veterinary medicine, the veterinarian should give thought to the part which a deficiency of vitamins play in the etiology of disease. These unknown chemical substances, acting as they probably do in the role of stimulators, enable the animal body to build up a resistance to infection from bacteria. Vitamins are not a fad, are not the most essential factor in nutrition, but are so essential that the animal organism cannot do without them.

An interesting chart was presented (Figs. 3 and 4) in which two tests were made on laying hens where proper vitamins as well as mineral, protein, carbohydrates and fat were supplied by the ration designated as chowder and a control designated as home-mixed mash deficient in vitamins.

A DEMONSTRATION OF LIMBERNECK

True limberneck is due to the Bacillus botulinus and is called botulism. Of this organism three kinds or types are recognized, types A, B, and possibly C. The germ gives off a severe toxin, poisoning the brain and spinal cord, causing loss of the use of the muscles of the neck, the neck then becoming limber from which it gets its name of limberneck. The germs live in decaying animal and vegetable matter from which fowls become infected and contract the disease. Fowls contract the disease only through eating the food containing the germs.

In this demonstration three fowls were used, one was given one-half cc. or seven drops of the liquid from the bouillon culture of the B. botulinus, a second was given fifteen drops, and a third fifteen drops of the liquid toxin and thirty drops of B. botulinus antitoxin.

The antitoxin was prepared by repeated inoculations of increasing quantities of the B. botulinus toxin to a horse and after a few weeks drawing and preparing the blood from this horse as in the preparation of other antitoxins. The bird called the control and receiving the toxin and serum at the same time remained well and the one receiving seven drops toxin only came down in eighteen hours, and the one receiving fifteen drops toxin came down in fifteen hours with typical symptoms of the disease and died.

Some other diseases must be distinguished from true limberneck or botulism, among them being ptomaine poisoning, acute fowl typhoid, and some other blood diseases.

Following this demonstration Dr. Saunders told of a germ resembling in many respects the B. botulinus and which he has called the Botuloid organism. This germ he said caused a disease similar, if not identical, with the infantile paralysis of children and said children got it by eating lunches infested by the larva of the green fly. The mother fly must eat of material containing the germs at least three hours before the eggs are laid. The germs are carried through the egg to the larva and the larva cause the disease. He said while true limberneck was always fatal unless treated, fowls with this infection may resist it or may get well. There was shown fowls, a guinea pig, and monkey with this disease.

Those who are always trying to dig graves for others often have no time left to do something for themselves.

METHODS OF DIAGNOSING AND RECOGNIZING TUBERCULOSIS OF FOWLS

A coop of chickens known to be affected by tuberculosis was exhibited. These birds had been previously injected with bovine tuberculin. One drop was injected into the skin of the wattle.

A bird passed around showed a doughy swelling, a typical reaction.

Tuberculin made from the avian strain of the tubercle bacillus was recommended. A hen with abdominal cavity opened was passed around. This showed the small, hard, white tubercles imbedded in the liver substance and in the spleen.

THE ELIMINATION OF WHITE DIARRHEA

A coop of hens infected with the organism of white diarrhea, or Bacterium pullorum was exhibited. The organism had been isolated from the ovaries of some of the hens of this flock.

A fowl was passed around showing the condition of the ovary of a hen infected. The abdominal cavity was laid open to expose the ovary. The ovary was still functioning to a small degree and showed two ova with nearly mature yolks. There were a dozen or more blighted yolks that had undergone degeneration, small, shrunken, irregular in shape, dark in color, containing a putty-like material and attached by long, slender threads to the body of the ovary.

Breeding hens that are infected can be told by the Widal test and eliminated. All chicks a month old that have not passed through the disease should be put on new ground with new house and start a new uninfected flock. All chicks passing through an attack of white diarrhea should be toe punched or otherwise marked and later be sold for food purposes.

The editorial staff acknowledges the valuable co-operation of Professor Kaupp, chief of the poultry clinic, without whose assistance the publication of this detailed report would not have been possible.—Managing Editor.

Spraying of dairy cows during the fly season with an efficient fly repeller increases the amount of milk and is regularly practiced by good dairymen.

"Passing The Buck"

Edward M. Boddington, Attorney for The Associated Serum Companies of America

THE honest truth would prevent much of the present criticism that is occasionally brought onto the veterinary profession and commercial houses occasioned by hasty conclusions and "passing the buck" and blaming the United States licensed producers of the product for the losses attributed to hog cholera immunization.

Taking into consideration that phase of veterinary practice which has to do with the administration of anti-hog-cholera serum and hog-cholera-virus, and we must, at the outset, realize the fact that many authorities, the bureau of animal industry included, recognize numerous distinct diseases in swine other than hog cholera. "Flu" is the newest acquisition to the list of hog diseases, having been recently recognized by the bureau of animal industry as a separate and independent disease from hog cholera. Infectious enteritis, infectious necrotic enteritis, infectious pneumonia, swine plague, "flu" and others with which the veterinary profession are as yet not familiar, are represented as distinct and often concurring causes of swine mortality. Certainly anti-hog-cholera serum is not recommended to prevent anything but hog cholera. Where you find other lesions and conditions existing following a so-called "break," it is unfair to your profession and unfair to the biological house and unfair to the owner of the hogs to condemn the product because, in your opinion, it failed to cure or prevent all the diseases that the particular hog or herd of hogs was susceptible to at the time of vaccination.

Case at A. V. M. A. Clinic Illustrates Point

It is interesting to note a diagnosis made on August 31, during the postmortem of a hog at the excellently conducted clinics of the A. V. M. A. at St. Louis. A hog was posted and had what may have been satisfactorily diagnosed as one or all of the three following conditions, dependent upon the viewpoint of the diagnostician, i. e.:

1. Multiple abscesses of not less than two weeks' duration in the lungs.
2. Hemorrhagic septicemia in a sub-acute form.
3. Acute hog cholera following vaccination with anti-hog-cholera serum.

This hog was apparently normal and had a normal temperature when vaccinated. What conclusions would you draw from such findings following field vaccination? You might call it a "break" and blame the serum. This would be ignoring the physical factors and doing not only the veterinary profession but the commercial houses and the hog owner an injustice. You frequently do find complication of diseases following so-called "field breaks." Anti-hog-cholera serum is only designed and represented by the producer for the prevention of hog cholera. Upon finding conditions as above indicated, a few veterinarians have charged serum companies with negligence in the preparation of the serum but such charges have never truthfully prevailed. It is one thing to charge negligence in the manufacture of a biological product and it is quite a different thing to prove negligence.

Envisage a Case in Court

Under conditions following a "break" if the farmer were advised that the serum killed his hogs, naturally he would seek redress in court for his losses. Consider for a moment the stage setting on the day of trial. The veterinarian who made the erroneous finding and gave the erroneous advice sticks to his story and diagnosis. Testimony is adduced that the hogs died and they were worth so many dollars, and the thoughtful judge sustains a demurrer and the case is dismissed. Or the judge, who is mistaken about the rule of law which applies in such cases and erroneously believes that negligence can be inferred, permits the case to go to the jury. The defendant company shows every detail of production and testing of such product under government supervision and authoritative veterinarian opinion is adduced diametrically opposed to the conclusions reached by the practicing veterinarian as to the cause of the death of the hogs. The jury of course returns a verdict in favor of the farmer and against the serum company. WHY? Not upon the facts in the case but because the judge erred in his idea of what constitutes negligence, and the jury believing there must be some liability or it would not be checked up to them, finally finds in favor of the plaintiff farmer and against the defendant biological company for the full loss claimed.

The Common Law and Some Court Decisions

Let us pause a moment and consider that rule of common law regarding negligence

which is as old as the Anglo-Saxon race: "Negligence cannot be presumed. It must be proven." All cases where a U. S. licensed plant has been involved where the jury found in favor of the plaintiff have been reversed in the court of last resort of the state in which such case was tried. The Court of Appeals of Missouri followed this pioneer rule and said: "The mere fact that hogs died from the use of anti-hog-cholera serum and virus in the way it was intended to be used, does not establish negligence in its manufacture." The Supreme Court of Iowa said (162 N. W., 620). "Plaintiff had the burden of showing defendant's negligence and that such negligence proximately caused his alleged losses," The Iowa Court said in reference to the serum business: "The business is well hedged about by the safeguards of governments, both state and national; adventurers cannot engage in it, as only men of competent experience can obtain license therefor; the plants are subject to continuous official inspection; the power of governmental departments over them is practically unlimited. It is greatly to the interest of the public that effort and experimentation go on; a great degree of success has been attained." The Supreme Courts of Iowa, Missouri, Washington, Virginia, and many local state judges have unerringly held that a case staged as above indicated does not establish any liability whatsoever against a serum company. The mere fact that hogs die following vaccination does not predicate or establish any negligence on the part of the manufacturer of the serum used. Past history discloses that the farmer, following ill timed advice not only loses his hogs as a true result of the complications indicated in the above and kindred "field breaks," but the farmer loses his time, energy, money and court costs and finally loses his respect for the originator of the erroneous law suit idea. Of course the biological producer loses the veterinarian as a customer, is advertised as a defendant for a while and loses some business in that community, but such producer is finally vindicated by winning the law suit on its merits.

Veterinarian Loses Prestige

What does the veterinarian lose by a mistaken diagnosis and "passing the buck" as herein indicated? The veterinarian loses the good will of the stock owner, is advertised in his community as "not knowing his stuff" with a resultant loss of clientele, and is known to other biological houses as one who endeavored to frame a law suit, not necessarily intentionally but from following the course of least resistance, and acting under his first implse. In other words, the veterinarian has damaged himself and his profession beyond measure by reason of "passing the buck."

Truth the Best in the End

A true statement of facts and conclusions based thereon is far better than a false one in any science or profession, even though the truth isn't as popular as the "rosy" possibilities of recovery for losses sustained in a law suit. In the end, "passing the buck" for animal losses off onto a U. S. licensed commercial house amounts to a condemnation of your own Government and its scientific safeguards for your protection to prevent the barter and sale of any contaminated, dangerous or harmful product. "Passing the buck" as herein indicated, instead of relating the truth, will ruin a veterinarian's business in the long run and will not cause that spirit of co-operation to prevail which is essential to the triangular factors involving the live stock industry of the country, that is, the veterinary profession, the U. S. licensed biological producers and the farmer.

A PLEA FOR ALCOHOL

Hardly a day passes that I do not need alcohol. In almost every prescription one would like to use it, but is forced to substitute something less efficacious.

Some ten prescriptions in your little book, "Veterinary Prescriptions," contain alcohol, and one would have to be an expert pharmacist to know how and when to use the denatured alcohol now on the market at the modest price of $1.00 per pint.

I have attempted to obtain a permit for one gallon of alcohol from the state prohibition authorities, but they insisted upon my filling so many forms, attorneys' signatures, and judges recommendations, that it is obvious to me they deliberately obstruct one from obtaining it without actually refusing.

I corresponded, filled out forms and appealed before notaries for three months and eventually realized that it was all a waste of time on my part.

Here is a matter for the A. V. M. A. to take up. I for one, am disgusted with myself, using water instead of alcohol and am tired of the poor results one obtains as a result of this impractical legislation, which has only proven beneficent to the bootlegging fraternity.—Old Virginia.

A CASE OF CUTANEOUS GLANDERS

The horse, whose left hip is shown herewith, was an ordinary work horse used in a single delivery wagon. The character of the deliveries was such as to require a great deal of backing with the well-loaded wagon. The breechment caused an ugly, sloughing sore (a sitfast), to develop on the left hip. When the slough was cast off it left a depression of the same size that showed no tendency to cicatrize as promptly as such wounds should, but instead became the center of a remarkable pustular area that widened slowly but surely. The pustules were of different sizes and when ripe discharged a creamy pus. There were no san-

guinous pustules. The process seemed sub-acute. Glanders was not suspected until a few days later, when a pustule appeared on the costal region along the cartilages of the false ribs and another in the tibial region that did not seem to have continuity with the initial seat of the trouble.

The horse was given intra-palpebral malleination with positive results. The reaction was pronounced and persisted for several days. The photograph of the eye was taken at the end of the third day. During the second day the swelling was larger and the discharge more profuse than is shown in the illustration.

Chicago, Ill. C. O. Kroener.

PREPOTENT PRECOCITY IN A JERSEY CALF

Please find enclosed a photograph of a two months old registered Jersey heifer calf showing an unusual udder development for an

animal of that age. Its mother is a two-year old, with a butterfat record of 300 pounds. The owner of these youthful prodigies is H. S. Stein, Fort Madison, Iowa.

West Point, Iowa. L. A. Schmidt.

GRASSHOPPER POISONING KILLS CATTLE

In investigating the cause of death in a herd of cattle, of which 15 had died and others were fatally ill, Dr. B. F. Davis, state veterinarian of Wyoming, with the aid of L. E. Walter, state chemist, discovered that the deaths were due to arsenical poisoning. Undigested food in the stomachs was found to contain lethal amounts of this drug and the source was found to be a grasshopper poison that had been used to kill these pests.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.

Mastitis and its Treatment

NOTWITHSTANDING that mastitis seems to be a subject on which much has been written scarcely a day passes that our mail does not bring us an inquiry as to just how to handle mastitis in practice. Those who write us do not seem to be interested at all in its pathology, evidently having read sufficient of that phase of the subject, but they put it to us something like this: "How do you handle your different types of cases in your own practice?" This brief article or statement consequently, is written for those who are interested largely or solely in the treatment of mastitis. I will attempt here to outline a method that is based on years of experience in an extensive cattle practice.

The So-Called "Caked" Udder

The handling of mastitis will depend somewhat upon the character of the particular case to be treated. The rural practitioner is well aware that he is sometimes called to give advice as to the treatment of udders in deep-milking cows that have recently freshened, where there is more of a congestion than a true inflammation. The udder is very large, the skin red and one or more quarters may be hard or "caked" as it is commonly termed. The milk may be bloody or contain clots of casein. We do not look upon those cases as infectious, and advise bathing with warm water, milking several times daily and very gentle massaging with some non-irritating ointment.

For these cases we use an udder and teat ointment which contains zinc oxide as a base in which is incorporated iodin and aconite. This is a soothing rather than an irritating preparation.

Do not use pressure enough to rupture the capillaries, which are already so filled as to be ruptured easily and cause a sanguinous condition of the milk. After each bathing and milking it is well to cover the congested area with ointment.

Internal Medication

Withhold all feed excepting something light and laxative. See that the bowels are loose and, if necessary, give a mild cathartic, containing salines, carminatives and stimulants. Never give large drastic doses of salts to a cow. It is far better to repeat the cathartic in 10 to 12 hours if necessary. In addition to this we always give a preparation containing a large amount of hyposulphite of soda and a full dose of ginger and nux vomica. The hyposulphite of soda being eliminated by the udder is assisted by the stimulant and the diuretic action of other drugs.

This treatment usually relieves congested udders in 36 to 48 hours.

Suspend With Many-Tailed Bandage

If the udder is very large and pendulous, so much so that it has broken some of its attachments to the abdomen, which naturally interferes with its circulation, it is well then to support the organ with a broad many-tailed bandage tied over the back and rump, padded well around the teats with cotton or bran so as not to cause necrosis from pressure, otherwise any attempt to sling an udder is not advisable since at best it is not an easy or practical thing to do, but a suspensory will be of an advantage to an unusually heavy and pendulous udder and in such cases should be used.

Treatment of Infectious Mastitis

In the case of infectious mastitis the affected animal or animals should be isolated at once so as to prevent the spread of the infection in the stable and the herd.

Disinfect the entire stable at once so as to safeguard the other animals. Scrub the platforms with hot sal soda solution. It is well to milk the infected quarter or quarters into a pail containing an antiseptic and so avoid recontaminating the stables. Medicate each case the same as outlined for congestion of the udder.

Local Treatment

As to local treatment, if it is practical to have the affected quarters bathed with very warm water, massaged and milked almost constantly during the day for the first three or four days, this is by far the best method.

We then advise frequent applications of a stimulating liniment such as the ordinary cream or white liniment. This stimulates the circulation and with thorough massaging helps to break down semi-organized tissue. At night apply a thin coating of the ointment, rubbing it in thoroughly.

An ointment that we prefer is one composed of Churchill's iodin, aromatic sulphuric acid and oil of wintergreen, incorporated in a lanolin base.

If this practice can be followed faithfully, results are so positively satisfactory that the owners of valuable cattle never object to the attention or trouble.

We realize, however, that where dairying is not the important factor on a farm, or where help is scarce, or the owner has perhaps but the one animal and can give it attention only at night and morning, that the procedure outlined above is not practical. Such cases are treated by first giving a cathartic and liberal doses of the preparation before mentioned night and morning. We apply the above mentioned ointment generously, rubbing it well into the affected parts each day for three days and then every other day as often as may be necessary. Mild or recent cases even under this meagre attention usually respond in a week or so. Chronic or aggravated cases, of course, require more prolonged treatment.

Differentiation Not Always Easy

The differentiation between the two common forms of mastitis—parenchymatous and strepticoccic or interstitial—is sometimes very readily made and other times not. The parenchymatous form is characterized largely by discoloration of the glandular secretions and it is said that organisms of the colon type are frequently, if not constantly, associated with this form.

Strepticoccic mastitis may be very acute, painful and sudden in its onset or there may be small infected areas in the udder several days before the veterinarian is called, the milker reporting possibly that the animal had shown some uneasiness while being milked for the past few days. Consequently, in practice we do not always attempt to make a differentiation.

Biologic Treatment

As to bacterins, like in our pneumonias in cattle, we prefer the mixed bacterins because they insure much better results in the case of an error in diagnosis or in mixed cases.

We give mastitis mixed bacterins in every cast of mastitis where it is practicable night and morning for the first two or three days. If the case is not responding by this time we double the dosage, giving but one injection a day for a few days and then perhaps every two or three days until the udder has apparently recovered. The more chronic type, where animals are not so valuable or the individual case less severe, bacterial treatment every two or three days, coupled with good medication, is usually quite satisfactory.

Hints on Prognosis

As is generally known, the quarters which suffer severe infection often "go dry," and the question as to whether or not such quarters will ever function again normally, will depend solely upon how the case responds to treatment and whether the gland suffers permanent damage.

A fair barometer for the veterinarian to go by when asked if he thinks a quarter will come all right when the animal freshens again, is what he finds upon manipulating the quarter. If the gland is soft throughout and he cannot detect any hard or indurated areas, he is pretty safe to predict that when the animal freshens again the function of the gland will be restored. This is so in an overwhelming majority of cases, even though the quarter seems to have considerably atrophied.

In the case of very valuable animals, particularly show animals, where the owner is fearful that the quarter will be so affected as to show asymmetry, it is well to advise daily massaging during the period when the cow is dry, with some simple preparation, such as equal parts of olive oil and alcohol. By so massaging, the affected gland gets more stimulation than the unaffected gland and is therefore aided in developing equally with the others.

We occasionally see a case that apparently recovers but keeps recurring in a sub-acute form sufficiently often to be very annoying. Such cases should be well blistered during the dry period and receive a thorough treatment of bacterins and internal medication, keeping in mind that this treatment is far more effective when the udder is not active.

In suppurative mastitis, surgical draining is, of course, indicated. If considerable of the gland is involved around the milk sinus, a simple way is to amputate the teat, which gives free drainage and insures no further annoyance by health authorities.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Diseases of Swine*

By Edw. A. Cahill, V.M.D., Indianapolis, Ind.

IT IS quite generally agreed that there is no problem confronting the veterinary profession at this time which is more serious than the control of the diseases of swine. That these diseases are more prevalent than for many years is generally appreciated, and the problem exists mainly because of lack of unity among the profession as to the exact nature of these diseases and methods for their control.

The seriousness of this problem is enhanced because of the fact that for a period of approximately ten years after the discovery of anti-hog cholera serum the control of the infectious diseases of swine did not constitute a serious problem and it was at that time the concensus of opinion that hog cholera was the only serious disease of swine and that if this were controlled other diseases would have little or no significance.

Problem More Serious Than Formerly

During the past four years this condition has been rapidly changing and methods which were efficacious previously now seem ineffective as a result of which the percentage of sick swine and unsatisfactory results following their treatment has assumed serious proportions. In times past the simultaneous treatment for hog cholera could be administered to healthy swine with results which were entirely satisfactory. Likewise, anti-hog cholera serum could be administered to animals in herds where the disease existed, and in the majority of cases the losses were a negligible factor. More recently under the changed conditions above referred to there are many instances where apparently healthy swine have sickened subsequent to immunization and where anti-hog cholera serum when administered to sick swine has failed to check the losses. On account of these changed conditions an enormous amount of investigational work has been conducted in an effort to determine the cause for this condition. The conclusions arrived at by different investigators have varied considerably, as a result of which much has been said and written which instead of clarifying the situation only serves to make it the more complex.

Chaos Not Yet Removed

The discussions on the subject have at times been more acrimonious than enlightening and one can hardly dispute the statement that at the present time the subject of diseases of swine is in a state of utmost chaos. There are those who still believe that the only serious disease of swine is hog cholera and attempt to treat all outbreaks of disease accordingly. Such efforts have been entirely without success and have served to cause doubt as to the reliability of the simultaneous treatment. There are others who diagnose certain diseases which have long been recognized but whose existence as entities have been questioned by some.

This divided opinion has been further intensified by some who for various reasons have originated new diseases regardless of the fact that the justification for the same were as a rule not well-founded. The rapidly increasing difference of opinion has led to the only possible result, viz.: uncertainty and chaos in the minds of the general practitioner.

This in itself would be serious enough, but as in all important matters where professional opinion is divided and results are not obtained our uncertainty is reflected in public opinion.

Opinions Too Varied

There never was a time when unified professional opinion and ability to control swine diseases was as necessary as at the present when the subject of farmer vaccination is being agitated on all sides.

Vaccination by Farmers

The rapidly increasing demand for farmer vaccination may be attributed to two factors: first, the stock owner has been or thinks that he has been overcharged by veterinarians who had immunized his swine; and secondly, the inability of the veterinary profession to elim-

* Read at the University of Minnesota Short Course July 13, 1922.

inate post-vaccination trouble, or even explain our failure to obtain results. I am certain that in many instances our inability to control these conditions is responsible for more farmer vaccination agitation than is the fee which has been charged.

It is being said by farmers in every state in the Corn Belt that they could vaccinate their own hogs without greater losses than has followed the work of their veterinarians. Such a belief is unwise and there can be no doubt that farmer vaccination would be followed by much greater losses than have occurred in the past. It is quite probable however that this feeling on the part of the public can be destroyed and public confidence regained only by our proved ability to understand and control swine diseases.

The duty to become more proficient is therefore incumbent on every veterinarian who indulges in swine practice, not only for his own benefit but also for the good of the entire profession, since it is but natural that when any class of individuals fails to obtain the results for which he expends money that he will look elsewhere for relief. Unless we can demonstrate our ability to accomplish these results better than the laity and unless this can be done in the very near future it seems quite probable that the agitation for farmer vaccination will increase rather than decrease regardless of what else we may do.

A BRIEF ON THE COMMON SWINE AILMENTS

It is manifestly impossible in the time which is allotted for such a discussion to properly present a comprehensive study of the diseases of swine and it is felt that this is not necessary since in the opinion of the writer the difference between success and failure to control swine diseases is dependent upon a true appreciation of a few factors which are apparently responsible for most of our confusion and which differ from the classic textbook teachings of swine diseases. In order that our attention may be correctly focused on these factors a short review of the history of swine diseases seems essential.

Epoch-Making Discovery of Dorset

A decade or more ago it was believed that two microorganisms were of great importance in so far as they applied to swine diseases. One of these, the Bacillus suisepticum was considered responsible for swine plague, which was then believed to be extremely prevalent. The other, Bacillus suipestifer, later referred to as the hog cholera bacillus, was believed to be the causative agent of hog cholera. A short time later our opinions regarding swine diseases were modified considerably due to the epoch-making discovery of Dorset and his coworkers that hog cholera is caused, not by B. suipestifer, but by a filterable virus.

It was then assumed that these two organisms, B.suisepticum and B.suipestifer together with others which are normally present in the flora of the respiratory or intestinal tracts were not as significant as formerly supposed and that they were capable of causing pathological changes only if they acted symbiotically with hog cholera virus.

Discovery Begat Immunization

With the discovery of the filterable virus of hog cholera came the discovery of a method of producing an immune serum capable of immunizing against hog cholera. From an economic point of view this discovery was of paramount importance because it has resulted in the protection of thousands of swine which would otherwise have died from cholera. History shows that the practical application of many important discoveries, particularly those of medicine, is retarded by the extreme enthusiasm with which the discovery is received, since we invariably hope for and expect more from such discoveries than the possibilities justify.

The attitude adopted by our profession following the discovery of the cause and means of preventing hog cholera has been no exception to this general rule.

Mistaken for a Panacea

Not content with the wonderful ability of anti-hog cholera serum to control hog cholera, the most serious of all swine diseases, we allowed ourselves to believe that it would act as a panacea for all swine diseases. We were pleased to believe that if we controlled hog cholera that other diseases would have little or no significance and that B.suisepticum, B.suipestifer and associated organisms would be incapable of causing pathological changes unless associated with the filterable virus of hog cholera. For several years this belief was apparently substantiated because of the fact that most sick swine proved to be affected with hog cholera and in the majority of cases anti-hog cholera serum controlled the losses. For several years subsequent to the acceptance

of this belief there were occasional cases in which the serum failed to control the losses or in which apparently healthy animals became sick after immunization.

"Breaks" Were Not Understood

These cases represented but a small percentage of the herds treated and unfortunately were seldom carefully investigated since they were considered as failures of the serum or virus to obtain the desired results. In other words these cases were spoken of as hog cholera breaks and while a small percentage of such cases might be explained in this manner it is to be regretted that more study was not given to such cases. In the light of recent developments there is now every reason to believe that we were unknowingly dealing with typical cases of the diseases which before the discovery of the filterable virus had been considered of great importance and which during the past few years have assumed serious proportions.

During the past four years these cases have become exceedingly numerous and it has been observed that many animals which were apparently healthy at the time of immunization have developed post-vaccination sickness and that in other cases anti-hog cholera serum when administered to sick swine failed to check the losses, particularly in herds where intestinal and pulmonary symptoms and lesions were pronounced. It thus became obvious either that the serum treatment was not as effective as formerly or that swine might be affected with disease other than cholera.

Experiments Clear the Situation

Since that time an enormous amount of work has been conducted by investigators to determine which of these conditions prevailed and while there still remains much to be learned it can be stated that the results of the experimental work which has been conducted combined with the knowledge obtained by field investigations and results obtained in practice offer considerable information which is essential to the successful control of swine diseases.

Itemized Conclusions

The following conclusions drawn from these varied sources are of paramount importance and are indispensable to the successful control of swine diseases:

1. Hog cholera still continues to be the most serious of all diseases of swine.

2. Hog cholera immunization has not lost any of its effectiveness and is as valuable now as at any previous time. Any propaganda or beliefs which lessen the confidence of the public in this valuable immunizing procedure will naturally reduce the number of immune animals and increase the percentage of susceptible swine, thus constituting a serious menace to the livestock industry.

It matters not whether this result be brought about by the so-called standpatter who still insists that all extensive losses of swine are caused by hog cholera or whether it be brought about by irresponsible persons holding erroneous beliefs as to the existence of disease, the presence of which has not been proven. There is a happy medium which must be adopted by those who would successfully control swine diseases.

3. That diseases other than cholera do exist and are both widespread and serious, particularly since it is frequently difficult to differentiate between these and hog cholera and since failure to properly differentiate frequently causes discredit to be thrown upon hog cholera immunization.

4. That lesions formerly considered diagnostic of cholera are known to exist in other diseases and that because of this differential diagnosis is difficult and frequently erroneous.

5. That swine more than any other specie of animals possess an uncanny ability of harboring chronic pulmonary or intestinal lesions although appearing perfectly healthy.

6. That most post vaccination troubles in swine are due to causes other than cholera and that autopsy reveals chronic lesions which were present at time of vaccination. This should not eliminate the occasional true cholera break which does occur.

7. That hog cholera should always be suspected regardless of symptoms or lesions if the affected animals are susceptible to cholera. Conversely if the affected animals have been properly immunized and they display the syndrome of other diseases they should be treated for such since treatment for cholera will be devoid of results and will destroy confidence in the simultaneous treatment.

8. That the majority of our profession have been negligent in so far as they have failed to attach sufficient importance to the question of sanitation.

9. That parasitic infestations in swine are rapidly increasing and must receive our serious consideration since in addition to the

damage for which they are directly responsible, they so devitalize the system that bacterial infection is simplified.

HOG CHOLERA

While this disease still continues to be the most serious of all swine diseases experience during the past few years has conclusively demonstrated that cholera is not as easily diagnosed as was formerly supposed. Some have maintained that cholera is a lesionless disease and while this opinion has not been generally accepted it msut be conceded that the disease is devoid of typical specific lesions which are never observed in other diseases.

The Moot Question of Postmortem Lesions

Many have felt safe in making a diagnosis of hog cholera provided postmortem examination evidenced the presence of petechial hemorrhages throughout the body or button ulcers on the intestinal mucosa, or both. This erroneous attitude is undoubtedly responsible for more of the chaos and uncertainty which now applies to swine diseases than any other factor.

Petechiation Not Pathognomonic

The only lesions that can be attributed to the filterable virus are those of an acute septicemia, viz.: petechiation, but unfortunately this same condition becomes manifest in animals suffering from other conditions and petechiation is an extremely prevalent condition in septicemias caused by streptococcus, B.pyocyaneous, B.paratyphosus B., B.suisepticum, et al.

Petechia are also observed in animals which have been subjected to extremes in temperature; in those which have been fed on excessively oily or acid material, and in those which have been fed on a ration too rich in proteins, as well as in individuals suffering with parasitic infestations.

It should require little discussion to convince one in view of these circumstances that while petechia are the most constant lesion observed in swine affected with hog cholera that a diagnosis made on this widely prevailing phenomena is most insecure and undesirable and that there is no one lesion in cholera sick swine which can be accepted as conclusively diagnostic.

I would ask you to visualize the condition which you observe on autopsy of a cow affected with hemorrhagic septicemia and to ask yourself if this same condition were present in swine how frequently it might be mistaken for hog cholera.

Button Ulcers Also Deceptive

A second pathological change which is frequently responsible for an incorrect diagnosis in swine is the presence of button ulcers. At one time it was believed that hog cholera could be diagnosed in the presence of this pathological condition. It has, however, been quite conclusively proven that button ulcers are caused by bacteria normally present in the intestinal flora and that they are not caused by the filterable virus.

Those whose experience permits them to autopsy large numbers of pigs know that button ulcers are observed alike in cholera sick, cholera immune and susceptible swine. In swine button ulcers are frequently observed following any intestinal infection although the remainder of the herd remains well and may later be demonstrated to be susceptible to hog cholera.

Diagnosis Requires Careful Study of the Whole Situation

What then is the present status of the lesions formerly considered diagnostic of hog cholera? In so far as button ulcers are concerned it may be said that although these are frequently observed in swine affected with hog cholera a diagnosis cannot be made on this point since the ulcers are due to the action of certain bacteria ordinarily present in the intestinal tract and may be observed in swine not affected with hog cholera. In so far as petechia of the various organs are concerned these may be present in swine affected with hog cholera or they may be present in animals affected with numerous other diseases or conditions. A correct diagnosis of hog cholera is beset with many difficulties and it can safely be made only by a thorough study of the history, symptoms and post mortem lesions. Most careful investigators are at this time of the opinion that more dependable information for diagnostic purposes is obtained by an extremely thorough study of the symptoms and history than by placing too much dependence upon post mortem lesions. While the post mortem lesions of cholera closely resemble those found in other diseases the history and symptoms are distinctly different. In view of these circumstances greater consideration should be given to a thorough study of the history and symptoms without lessening our post mortem investigation.

Hemorrhagic Septicemia

Although the existence of this disease as an entity is not conceded by all investigators the majority are now in accord in believing that it does exist as an entity and is extremely prevalent. Hemorrhagic septicemia is not a new disease but a new name for swine plague which prevailed so extensively a decade ago. The cycle of this disease is clearly defined.

Virulence Changes

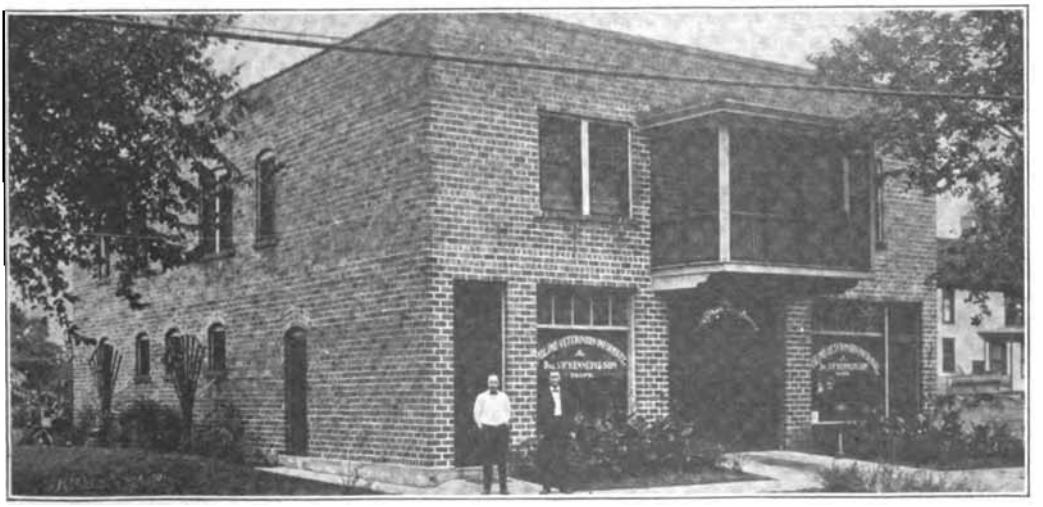
Previous to the discovery of anti-hog cholera serum this disease was widespread and acute in character. Gradually its virulence and incidence waned and only chronic cases were seen, while during the past few years the causative agent has developed enhanced virulence and the disease has become extremely prevalent and acute. The symptoms and lesions of uncomplicated hemorrhagic septicemia in swine are almost identical with those in other species. If this disease is not recognized and is erroneously diagnosed as hog cholera alarming and extremely undesirable results generally follow the administration of the simultaneous treatment.

Hemorrhagic Septicemia and Other Devitalizing Influences Responsible for Breaks

Many so-called breaks subsequent to hog cholera immunization are due to the activities of B.suisepticum, the causative agent of this disease. Autopsies held upon apparently healthy animals in affected areas reveal a startling condition since many such animals are affected with a small localized area of infection. This small area which is glazed in appearance and heavily infiltrated with a serous exudate remains localized until some devitalizing condition results in the liberation of B.suisepticum followed by an acute attack of hemorrhagic septicemia.

The devitalization may be brought about by several conditions such as shipment, exposure to inclement weather, unsanitary surroundings, improper housing or feeding. One of the most common of these, however, is the administration of hog cholera virus in the form of the simultaneous treatment. When any of these devitalizing conditions are superimposed upon this latent infection an acute attack of disease generally follows.

If it were possible for all of us to destroy and autopsy a considerable number of apparently healthy animals and observe this chronic affection of the apical lobe skepticism regarding this disease would rapidly disappear and if after such an autopsy the remainder of the apparently healthy herd could be subjected to the simultaneous method of hog cholera immunization and the results noted there would be fewer who would diagnose the resulting conditions as hog cholera breaks and more who would more accurately diagnose these as hemorrhagic septicemia.



VETERINARY ESTABLISHMENT OF DR. S. R. KENNEDY & SON
3713-3715 Fifth Avenue, Moline, Illinois.

Too frequently post vaccination troubles are diagnosed as cholera merely because autopsy reveals petechiation of various organs. As pointed out septicemia or other conditions as well as cholera while in recently immunized animals petechiation is not abnormal even though the animals remain well. If such cases are carefully investigated the symptoms are generally negative to cholera and lesions which are indicative of other conditions can generally be observed. Not infrequently our diagnosis is incorrect, not for want of lesions but because of our unwillingness to definitely appraise them.

Clinical Picture Differs From That of Cholera

The clinical picture both anti and post mortem of animals affected with hemorrhagic septicemia is sufficiently different from the clinical picture of hog cholera that there seems little justification in most cases for an erroneous diagnosis. Hemorrhagic septicemia is characterized anti-mortem by a rapid onset, fluctuating temperature, by intense coughing and labored breathing, by a unilateral or bilateral nasal discharge, retained appetite, except in the case of marked prostration, and on post mortem by petechiation of various organs and progressive, extensive pathological changes in the lungs.

Hog cholera on the other hand is typified by progressive infection which gradually affects the entire herd, an elevation of temperature which does not fluctuate and by a peculiar breaking or knuckling at the hocks, which is not observed in other diseases, although this ought not to be confused with staggering from intense weakness which may be observed in any disease. In cholera inappetence is generally marked while diarrhoea is fairly constant. Unless there be a secondary pulmonary infection animals affected with this disease show a marked absence of cough, nasal discharge or labored breathing.

Petechiation is the only post mortem lesion which can be attributed to the filterable virus. Lung lesions or intestinal lesions are proof positive of secondary infections.

Petechiation Differs in the Two Diseases

Although petechiation cannot be depended upon for diagnostic purposes there are a few fine points of differentiation which are of significance in septicemias other than hog cholera. In other septicemias petechiation tends to be irregular in size and outline and to vary from pin point size to large splotches. In uncomplicated hog cholera the petechiation consists of small circumscribed areas uniform in size and shape with a tendency to be pronounced and clearly defined in two specific places. These are the crest of the illeocecal valve and the lympathic glands.

In hog cholera the lympathic glands are generally enlarged, quite dark and upon cross section reveal clean cut, isolated, circumscribed petechia, whereas in other diseases caused by bacteria the lymphatic glands tend to become enlarged and engorged with little tendency for circumscribed petechiation.

Necrotic Enteritis

So far as is known at this time this extremely prevalent disease has no specific etiological agent but may result from the activities of several of the bacteria ordinarily present in the intestinal flora. At least two of these B.paratyphosus B. and B.suipestifer are known to be capable of causing this condition but this ability is greatly enhanced after the normal resistance of the host is lowered by any devitalizing condition.

Like other bacteria these organisms develop enhanced virulency and become so pathogenic that at times the disease becomes highly infectious although ordinarily it is sporadic in type.

Since necrotic enteritis is not difficult of diagnosis the important factor connected therewith is the fact that this disease may and does exist as an entity in swine not affected with hog cholera and animals so affected must be handled in a manner entirely different than those affected with hog cholera.

Parasitism Must Be Considered

This condition undoubtedly results from parasitic infestation more frequently than is generally appreciated and for this if for no other reason parasitism in swine deserves our serious consideration. The disease is characterized first by an acute enteritis affecting the intestinal mucosa and associated lymphatic glands.

Following the passive congestion there is a thickening of the entire intestinal tract which at times becomes so intense that the lumen may be almost occluded. Secondary invaders now become active and are responsible for the necrosis which follows.

Concluded in November issue

Anti-Hog Cholera Serum and Virus Dosage

N THE early days of simultaneous immunization of swine against hog cholera, the dosage of serum and virus used was relatively small. In the usual vaccination of swine, 20 to 25 cc. of serum and one-half to one cc. of virus was considered sufficient to produce the desired results. This dosage was successfully used for some years. After the practitioner had been immunizing swine for some time with good results and the stock men had begun to have considerable faith in the immunization against hog cholera, so-called breaks began to occur and became rather frequent.

The Question of Breaks

Some investigators were of the opinion that the breaks were the result of insufficient serum; others maintained that the dosage of virus used was too small. It was advised that the dosage of serum should be increased. The increased dosage of serum gave the desired results for some time and it appeared as though a method had been perfected by which swine losses could be prevented. In reviewing the history of the immunization of swine against hog cholera, it is evident that for a few years after the introduction of anti-hog cholera serum, the principal disease in shotes and mature swine was hog cholera and that when the small dosage of serum and virus that had been used in immunizing was sufficient to protect in the majority of herds against uncomplicated cholera. During this time hog cholera was considered the only disease of importance in swine and the basis for the diagnosis of hog cholera was the occurrence of any disease in swine that resulted in death.

The so-called break that occurred in herds that had been simultaneously immunized, was probably hog cholera, in only a relatively small percentage of herds, other infections or complications being responsible for the larger portion of these accidents. Soon after the large dose of serum and virus was advised, the so-called breaks again began to occur. The losses of swine after immunization was of such common occurrence in some localities that the use of serum and virus was almost discarded. About this time, more careful investigations revealed the fact that swine were subject to a variety of disorders, among them being diseases or conditions caused by the B. bisepticus, B. suipestifer, and many other microbian agents. It was evident that a more accurate diagnosis of the diseases of swine was necessary if the swine losses were to be diminished. As an outgrowth of the investigations and findings of the so-called hog cholera breaks, it is now known that there are a variety of diseases that may cause severe sickness and even death in swine. This fact is being recognized generally, and practitioners are making a more careful study of the outbreaks in herds of swine before they prescribe or advise treatment.

Dosage Still in Dispute

As to the actual dosage of serum and virus required to protect against hog cholera, there is still some dispute. If a good virulent field virus was used in the production of anti-hog cholera serum and a like virus was used for the simultaneous immunization, then it is probable that the original small dosage of serum and virus would be sufficient to protect swine against hog cholera as it usually occurs in the field. According to the present regulations governing the production of anti-hog cholera serum and virus, it is not possible to use field virus for the hyperimmunization of swine that are to be used for the production of anti-hog cholera serum. It is possible that the virulency of the virus may be varied by its long continued passage through selected pigs in compliance with the regulations and thus the serum produced from such virus may also be less potent; therefore, it seems justifiable to use a larger dose of serum. And, applying the same principle, a larger dose of virus should be used. The best results are obtained by the use of from 3 to 5 cc. doses of virus, rather than 1 to 2 cc., the minimum dose, required. It does not follow that large doses of serum will protect swine against any infection, except hog cholera, neither do we believe that the large dosage will prevent the complications that sometimes follow immunization, but from field reports it is evident that the larger dose of serum and virus diminishes the possibility of the occurrence of hog cholera in swine that have been simultaneously treated with virus.

Bull nose in pigs is usually associated with insanitary pens and lots and can usually be prevented by providing sanitary quarters.

STOCK HOG PROBLEMS

A large number of stock hogs are being shipped in the corn belt for feeding purposes. The successful handling of stock hogs is one of the most important problems of today. Veterinarians are frequently called to advise as to the care of shipped stocker pigs. The greatest losses occurring in this class of swine are usually due to diseases other than cholera and dietary disturbances. If the stock hogs were not stale when purchased at public markets or country points and if properly immunized there will rarely be any loss if a proper ration is provided and weather conditions are favorable.

When to Immunize

Whether or not the pigs should be immunized before shipping to destination, depends upon circumstances. If the pigs are obtained in a community where there is no hog cholera and the length of time necessary for shipment to destination is relatively short, it is possible that immunization at destination would be quite successful. If, however, there is cholera in the community from which the pigs are obtained or two or three days are required in transit to destination, then it would be advisable to have the pigs simultaneously treated before shipping.

Ration a Factor

The ration to provide recently immunized swine, and particularly stocker pigs, is of the greatest importance. Such swine should receive a restricted diet and preferably of ground oats, barley or mill run feed. Disastrous results have been observed in apparently healthy stocker pigs that have been immunized with known potent serum and virulent virus and then permitted to become engorged with corn. It has been demonstrated that the influence of anti-hog cholera serum when used in conjunction with virus can be offset by improper feeding.

The cause of the losses in shipped stock hogs is difficult to determine by the local practitioner because the lesions of hog cholera and other diseases are usually prevalent. The diagnosis in these cases, we believe, should be guarded and in only unusual and outstanding instances can a positive diagnosis of hog cholera be made. In some shipments it is not difficult to recognize hemorrhagic septicemia, or necrotic enteritis as a primary or at least complicating factor.

It is difficult to suggest definite methods of procedure in shipments of stocker pigs in which losses are occurring. It seems advisable to make a careful study of the diet, and see that a restricted diet of proper foods are provided.

Identify and Treat the Complications

When complicating diseases are identified, it is advisable to provide treatment for the same. Some few practitioners have maintained that all losses of stock hogs after shipment are due to the filterable virus and maintain that good results are always obtained by the administration of anti-hog cholera serum in preventing further losses. The facts are that the apparently good results from the use of anti-hog cholera serum are due to the proteids of the serum and not to anti-bodies that would neutralize a filterable virus. Practically the same results would have been obtained by the use of normal blood serum. If there are indications of hemorrhagic septicemia in "shipped in" stocker hogs, then, we would suggest the use of hemorrhagic septicemia or swine plague bacterin.

If there are intestinal disorders and particularly of the nature of necrotic enteritis, mixed bacterin in repeated doses in conjunction with intestinal antiseptics and a ration containing sour milk or lactic acid will be of considerable value.

UNUSUAL HOG-CHOLERA "BREAK"

History: About 180 four to five week old pigs were treated with anti-hog cholera serum and virus in May. The pigs were thrifty and apparently healthy when they were treated and there was no evidence of disease until about the middle of August. These pigs had the usual care and the surroundings were good excepting for the presence of a pond to which the pigs had free access. These pigs were run on pasture and recently they have been given a ration of corn and tankage and, generally speaking, have been making satisfactory gains. Two or three were noted to be off-feed about the middle of August, and from that time until September 10th, eight died.

Symptoms: Inappetence was the first evidence of disease. The affected pigs appeared gaunt but were rather active and did not have a tendency to lie in their beds. A bronchial cough was a common symptom of all affected pigs. The temperature was variable, but a high temperature was noted in only one affected gilt. Some affected pigs were isolated and made a complete recovery although they

became quite thin and noticeably emaciated. Most of the affected pigs lingered for from four to six days and then died.

Autopsy Findings: The one pig that had a high temperature (108°F) was destroyed and evidenced the lesions usually associated with hog cholera, viz.,—tumefied, congested and hemorrhagic lymph glands, petechial hemorrhages in the lung, bladder and kidneys. The lesions of other pigs that were autopsied consisted of a general icterus, enlarged spleen and an excessive quantity of a sero-gelatinous exudate in the serous cavities. There were some lesions due to the strongylus paradoxus and practically all of the shotes autopsied were infested with the intestinal round worms (ascarids).

Will some of our readers suggest a diagnosis and recommend treatment for the above herd of swine?—K. T. A., Mo.

SWINE SHOULD BE SORTED

Breeding, raising and feeding of swine is profitable when properly managed. Proper classification is one phase of swine management that is not given proper consideration by the majority of producers. It is the rule rather than the exception to find fattening hogs, shotes, breeding sows, and suckling pigs all in one lot. To obtain the best results and the greatest financial returns it is necessary to provide separate lots for swine of different sizes. Suckling pigs can not be expected to thrive and do well when there is a mixture of large fattening hogs and growing shotes in the same lot and particularly when they are all given the same ration.

Successful Breeders Classify and Re-classify

On the best regulated breeding and feeding farms the pigs are classified as soon as they are weaned, separating those desired for breeding purposes from those to be used for feeding. Some feeders prefer to even re-classify their feeding lots, claiming that they have found it profitable to market pigs that are all practically the same size and color. The feeding of the different classes of pigs will be essentially different.

The fattening hogs should be given a fattening ration, whereas, the breeding hogs should be given a growing ration. It is always advisable to properly identify pure-bred pigs that are to be kept for breeding. Different tags are available for this purpose, the choice of which will depend entirely on the breeder.

The practicing veterinarian should consider himself a missionary to spread the gospel of better swine management.

WHY PIGS COUGH

Cough is a sudden expiration following a full, deep inspiration and is a common symptom occurring in a variety of respiratory disorders. Coughing may be induced by the inhalation of foreign bodies, smoke, dust, cold air, parasites, etc. A short, hacking cough usually indicates a disturbance of the pharynx. Repeated coughing evidences laryngeal irritation. A moist, deep cough is significant of disturbances of the bronchial tubes. A series of expulsive respiratory efforts or spasms of coughing, associated with a wheezing respiration, are indicative of parasitic pneumonia. A thorough clinical examination of the lung of swine is not practical, excepting to a limited extent in bacon hogs.

One of the most common causes of coughing in swine this season of the year, is inhalation of dust. This is particularly a fact in shotes weighing from 80 to 100 lbs. Excessive coughing in pigs ranging from one to three weeks of age during the fall season is most frequently the result of irritation caused by larval ascarids. A variety of microbian agencies are capable of producing sufficient irritation of the bronchial tubes to result in more or less disturbances evidenced by coughing. Excessive coughing is an outstanding symptim of "Flu."

Many inquiries are received asking for the treatment of swine in which the principal symptom enumerated is cough. It is extremely difficult to prescribe in such cases without some definite knowledge as to the cause of the disturbance.

Generally speaking, we would suggest that wherever it is possible pigs be maintained on pasture, in order to avoid dusty beds and lots. If it is not possible to keep the lots and beds free from dust, the frequent sprinkling with some mild antiseptic has been found of value in diminishing the occurrence of respiratory troubles in swine so maintained.

Prevention of cough due to the presence of larval ascarids in the lung depends upon the elimination of the ascarids from the sow prior to farrowing and the placing of such animals in clean quarters that have not been previously occupied by swine.

Pulmonary strongylosis, a condition usually manifested by a deep, moist cough and a

wheezing respiration, is rather difficult to overcome, because the parasites are usually located in the smaller bronchioles and are protected by mucus and inflammatory products. It has been demonstrated that inhalation medication of medicaments that will facilitate the elimination of the abnormal content of the bronchioles is of value. It is necessary to observe sanitary precautions in conjunction with treatment.

CONVULSIONS IN YOUNG PIGS

Will you give me some information relative to the following case? The subject is a two year old, 500 pound, pure-bred big bone Poland China sow. This sow was purchased as a bred sow by the present owner in December, 1921. She farrowed eleven pigs in March, 1922. These pigs were all apparently normal excepting three which were deformed and were dead at the time of farrowing. The other eight pigs suckled and appeared to be doing nicely until the second day after farrowing when they had convulsions. The convulsive fits occurred while suckling or immediately thereafter and six of the affected pigs died promptly. Two of the pigs were sick for several days and ultimately recovered and by careful feeding these two pigs have made a good growth.

The sow was bred on April 12th, and she was kept in a woods pasture in which there was ample good spring water, good grass and there was a patch of oats, wheat and rye to which she had free access. Once or twice weekly she was given a feed of dry corn or oats. Ten days before farrowing, this sow was placed in a rather large lot where there was an abundance of grass and she was fed a bran slop and oats, and given clean water to drink. She farrowed eleven pigs on August 5th. These pigs were all apparently normal at the time of farrowing but they all developed convulsions and died the second day after farrowing.

Three other brood sows have been kept under the same conditions and fed in the same way but there has been no loss of pigs in their litters.

What is the cause of this trouble? How can it be prevented? Should this sow be kept for breeding purposes? Any information that you can give will be appreciated.—J. A. D., S. C.

Reply: Your very interesting letter describing the unusual loss of pigs from one particular sow is received.

The fact that this sow farrowed deformed pigs in March would indicate that the sow's genital organs are diseased, or at least there had been some rather marked disturbance during the period of pregnancy. Many of the slightly deformed animals are, no doubt, due to placental infections that are not sufficiently active to destroy the fetus and result in abortion. Frequently in such cases the remaining young within the uterus will be infected and although they may appear normal at the time of birth, their vitality and vigor are not sufficient and they can not withstand any external injurious influences and soon die. It would seem that the feed was not a factor as there were no losses in the litters of three other sows kept in the same pasture and fed in the same way. However, the fact should be kept in mind that some animals have a depraved appetite during the period of pregnancy and this particular sow may have eaten quantities of some weed or plant that is not ordinarily consumed by swine and poisonous products may have been eliminated in the milk and thus poisoned the pigs.

It may be that this particular sow produces an excessive quantity of milk. One of the most common causes of the loss of little pigs is an over-supply of milk, particularly for the first week or ten days after farrowing.

In conclusion and summarizing the above, it would seem that the loss of pigs from the particular sow in question were due to either some diseased condition within the sow which in turn may be due to faulty breeding, or there is some disturbance in the food; the milk from the sow either containing injurious products or being excessive in quantity.

It is probably possible to prevent a recurrence of such conditions. It would be advisable to closely observe the sow and determine whether or not she eats any unusual plant or weeds and if she does she should be placed in a dry lot and fed a proper ration. It is further suggested that about ten days before farrowing time that this sow be given a restricted ration of not more than one-third or one-half of the usual amount necessary to maintain her. This limited ration should be continued for about ten days after farrowing. It would also be advisable to see that there are no errors in breeding.

Dysentery and fatal diarrhea in pigs are usually due to dietary disturbances, induced by improper diet of the sow.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

Spurious Parasites in the Feces of Animals

A SPURIOUS parasite may be defined as anything which is not a true parasite, at least in the host in which it is found, but which has been regarded as a parasite in that host or which may be mistaken for a parasite of that host.

Some of these spurious parasites are true parasites of hosts other than the one in which they are found; thus Oxyuris compar, reported by Leidy from the small intestine of the cat, is probably O. ambigua from the large intestine of the rabbit, the cat having eaten the rabbit intestine a short time before the death

Fig. 1. Dark fibre cells of banana, showing arrangement resembling tapeworm strobila. Enlarged. From Stiles and Hassall, 1902.

of the cat and of the finding of the worm in the small intestine postmortem.

A second group of spurious parasites is composed of non-parasitic animals which have been eaten and subsequently found in the digestive tract or feces of the animal which ate them; thus various insect larvae have often been regarded as parasitic, though many such cases deal with insects incapable of such

Fig. 2. Seed of Indian mustard, *Brassica juncea*. Enlarged. From Beal, 1910.

parasitism and often found to be dead and partly digested when carefully examined.

A third group of spurious parasites consists of portions of the host structure, such as ciliated tracheal cells which have been regarded as causative organisms in whooping cough, or lymphatic glands and pacchionian bodies which have been regarded as hydatids.

A fourth group of spurious parasites, and one of especial interest in connection with

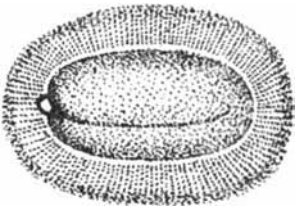


Fig. 3. Seed of shepherd's purse, *Bursa bursa-pastoris*. Enlarged. From Beal, 1910.

spurious parasites in feces, is composed of plant and animal material which may be mistaken for parasites and parasite eggs. Plant material is especially liable to be mistaken for parasites owing to its greater content of indigestible substances as compared with animal material. Aside from bones, which are usually readily recognizable, there is comparatively little in the way of animal material which passes the digestive tract undigested, but the high content of cellulose and related substances in plants furnishes an abundance of undigested materials which may simulate parasites, and numerous seeds and spores simulate parasite eggs.

Fig. 4. Seed of daisy fleabane, *Erigeron ramosus*. Enlarged. From Beal, 1910.

Fig. 5. Seed of bird's foot trefoil, *Lotus corniculatus*. Enlarged. From Beal, 1910.

Among the objects commonly present in feces and frequently mistaken for parasites are plant hairs. These are usually mistaken for nematodes of some sort, the hair being somewhat pointed at its free end and sometimes having a structure slightly suggestive of a strongyle bursa at the end originally at-

tached. The writer has known these hairs to be mistaken for nematodes by a man of several years experience in the field of parasitology, and has called attention to one case in which such a plant hair was reported as a trichina larva in the blood. The homogeneous structure of these hairs and the lack of any internal structures resembling those in nematodes should be sufficient to distinguish them from worms. Fibrous connective tissue

Fig. 6. Pollen-spore of a pine, *Pinus insignis*. Enlarged. From Campbell, 1902.

Fig. 7. Cell of yeast fungus, *Saccharomyces cerevisiae*, containing 4 spores. Enlarged. From Campbell, 1902, after Reess.

may sometimes be mistaken for nematodes. but here also the lack of any internal organization resembling that of nematodes enables one to differentiate these structures. Numerous structures belonging to the fibro-vascular bundles of plants may simulate nematodes. but the presence of a spiral marking throughout or of regularly pitted markings along a cylindrical structure is suggestive of plant material. In case of doubt, always examine the object for the internal structure which should be present if it is a nematode.

Various substances simulate tapeworm segments. One which was reported years ago by Stiles and subsequently by various writers, and which the writer has seen on several occasions, consists of banana fibres (Fig. 1), which may have an arrangement very similar to a small tapeworm. Blanchard has noted a case in which a piece of peach skin was determined as a fragment of hydatid cyst.

Fig. 8. Ripe spores of corn smut, *Ustilago maydis*. x 600. From Campbell, 1902.

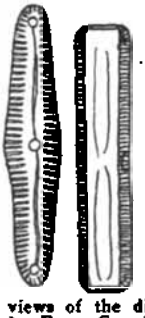


Fig. 9. Two views of the diatom *Pinnularia viridis*. Enlarged. From Campbell, 1902.

Of the things which may resemble flukes

Fig. 10. A diatom, *Navicula* sp. x 500. From Campbell, 1902.

the pulp vesicles of the lemon and orange deserve mention. Pulp vesicles of the lemon are commonly present in lemonade and may pass intact in the feces of persons who have recently drank lemonade. The superficial resemblance of these vesicles to flukes has been mentioned by a number of writers, including Leuckart, Stiles and Ransom, in connection with cases of mistakes in identification of parasites. The lack of any internal structure

Fig. 11. A pelagic diatom, *Planktoniella sol*, viewed from above. x 125. From Campbell, 1902, after Schuett. This is actually disk-shaped.

in any way resembling that of a fluke should be sufficient to prevent one from mistaking pulp vesicles for flukes. Careful washing to remove fecal matter, mucus, etc., is a great aid in determining the true nature of supposed parasites. As a matter of fact, such mistakes in identification are usually made as a result of total unfamiliarity with parasites or as a result of snap judgment.

The spurious parasites which are of most practical importance are the numerous objects, mostly plant material, which occur in feces and which resemble parasite eggs. To differentiate such material several tests may be applied. Such spurious parasites are frequently very different in size from the eggs which they resemble, and an accurate measurement will often show that they are not the eggs they are supposed to be. Plant material as a rule is more dense, more often colored, and shows less cell structure internally than do parasite eggs. Cestode eggs may be definitely determined by the presence of the 6 hooks

of the onchosphere. Fluke eggs usually show an operculum or lid at one end. Nematode eggs are very variable in size and shape, but they usually contain an embryo or else cells in process of division, and the shell is definitely delimited from the egg content to an extent which is not true of the external coat and the content of a plant spore. In a general way it is true here as elsewhere that other things may look like the thing you are in search of, but the thing itself is unmistakable when you find it. A parasite egg is evidently a parasite egg; it doesn't merely look like a parasite egg. Doubtful eggs are usually to be regarded as not eggs. As a final test of the matter one may sometimes use chemical reagents to differentiate plant material from animal material. The addition of tincture of iodin to a slide will color starches blue. By adding sulphuric acid and iodin cellulose substances will be colored violet or black, and nematode eggs will be colored black with a

Fig. 12. A division stage in a gonidium of one of the green algae, *Pleodorina californica*. Enlarged. From Campbell, 1902, after Shaw.

light areole where the shell shows at the periphery. Various stains have been used to stain plant material and leave worm eggs standing out against a stained background. Among these stains are magenta, used by Giles, methyl green, used by Looss, Orange-G, used by Taylor, and gentian violet, used by Fauntleroy and Hayden. It is rarely necessary to resort to such elaborate technic to determine whether material is parasitic if one has been properly instructed in the subject of making fecal examinations, but when one must learn the art unaided, such devices are sometimes of value.

There should be little occasion to confuse the seeds of the higher plants with parasite eggs, as the seeds are usually much larger and are densely opaque. A distinctive structure of seeds is the micropyle, the aperture at which the young plant starts to grow from the seed. However, such confusion does arise and the Veterinary Record for October 3, 1914, reports a case in which small brownish objects in the feces of a patient were regarded as parasite eggs and subsequently found to be vanilla seeds, the patient being accustomed to drinking a certain brand of cocoa which was found to contain such seeds. Strawberry seeds are frequently mistaken for parasitic material. As illustrations of the superficial resemblance between seeds and parasite eggs, there are figured here the seeds of Indian mustard (Fig. 2), superficially resembling an ascarid egg of some sort; the seed of shepherd's purse (Fig. 3), which if cleared to show this structure might resemble an echinorhynch egg or a nematode egg; the seed of the daisy fleabane (Fig. 4), which in outline

Fig. 13. A unicellular plant, *Chlorococcum* sp., the one on the right showing division. x ca. 1000. From Campbell, 1902.

is very similar to a whipworm egg; and the seed of the bird's foot trefoil (Fig. 5), to show the micropyle characteristic of seeds.

A related body which is often found in feces in the spring is the pollen-spore of the pines, this pollen being distributed in clouds on a windy day and occurring over wide areas about pines. The pollen-spore (Fig. 6), has a 3-part structure, consisting of a central body and 2 wings, and is practically unmistakable.

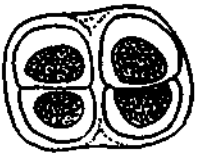


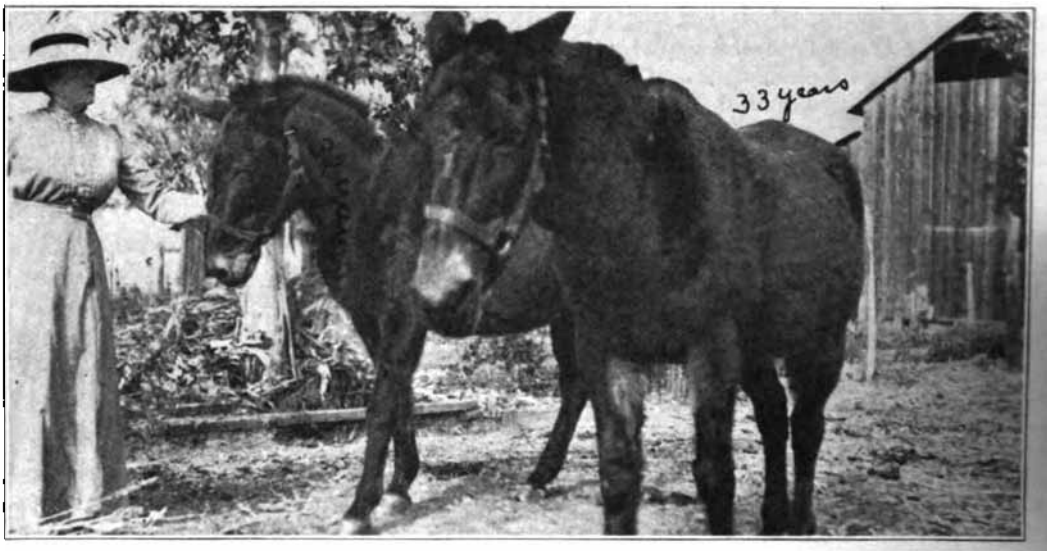
Fig. 14. One of the Schizophyceae, or blue-green algae, *Chroöcoccus turgidus*, showing 4 cells surrounded by a gelatinous envelope. x 500. From Campbell, 1902.

Various fungi produce cells or spores which call for some consideration as to identity the first time one sees them in feces. As illustrations there are figured here a cell of the yeast fungus (Fig. 7) and some ripe spores of the corn-smut (Fig. 8).

Unicellular plants, belonging to the large group of algae, are frequently found in feces owing to their occurrence in water supplies of domestic animals. Some of these are figured here. Two of the diatoms figured (Figs. 9 and 10) have somewhat the outline of whipworm eggs, but have a quite different internal organization and have the distinct and delicate striation which is characteristic of the diatoms; the other diatom (Fig 11) has a slight resemblance to the well known figures of the

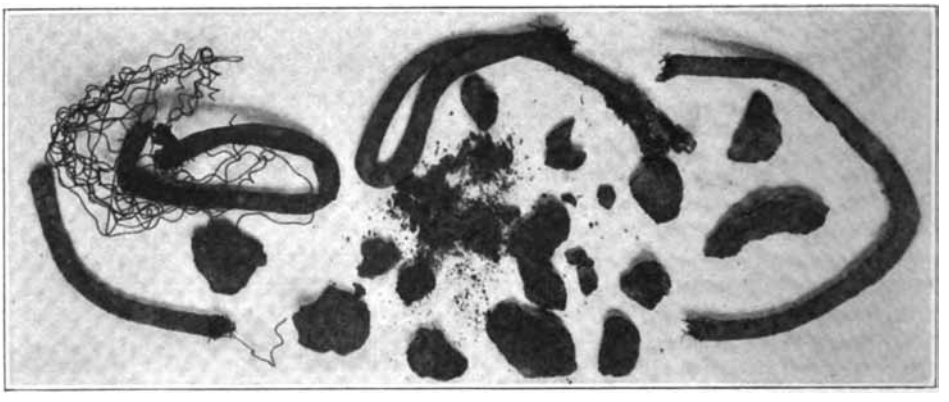
Now turn to page 668

EARNED THE PRICE OF SEVERAL TRACTORS



This pair of mules are owned by Mr. W. S. McFadden, formerly of Kansas City. He worked them twenty-eight years and says they are good for ten years more. He drove them from Kansas City to California and will match them against anything of their weight in a pulling contest regardless of age. Dr. E. E. Poupart vouches for the authenticity of the story.

CATHETER LEFT IN THE BLADDER OF A GELDING.



The above illustration is of a catheter and accumulated calcareous encrustations removed from the bladder of a gelding by Dr. K. J. McKenzie, Northfield, Minn., exhibited at the clinic of the Short Course for Veterinarians given at the University of Minnesota, in July.

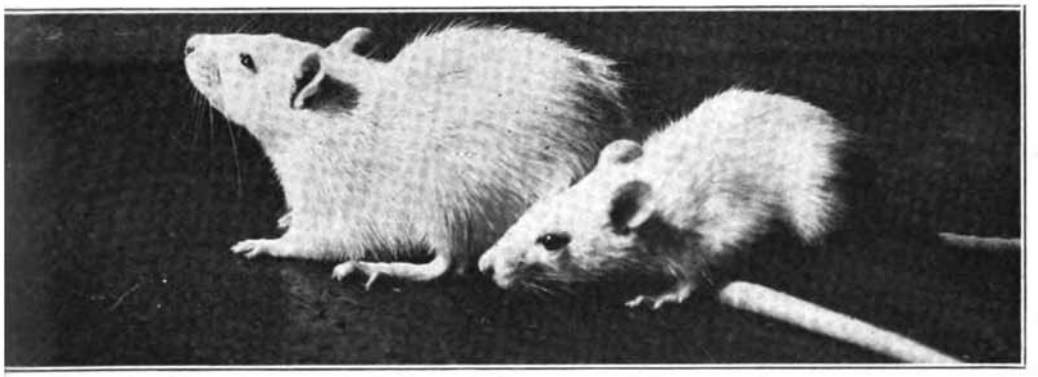
The patient in question was a gelding that had been cathetrized by an empiric during an attack of azoturia. According to the history obtained from the owner, the empiric while attempting to withdraw the urine became excited but without announcing that the instrument had slipped out of his reach returned to town for another one to complete the operation. With the new catheter the hidden one was evidently driven into the bladder in the futile effort to accomplish the purpose of evacuating it. No urine was withdrawn, and the "doctor" left the scene after giving an unfavorable prognosis.

The horse did not die, however, but instead, made a good recovery and suffered no inconvenience for a period of six months when symptoms of distressed urination began to appear. For this new trouble Dr. M. R. Higbee was called. He diagnosed the case as cystic lithiasis and recommended the operation that disclosed the facts of the case.

Zootechnics

Edited by E. MERILLAT, M. D. V.

RATS DEMONSTRATE VALUE OF MILK AS FOOD



The Department of Agriculture has on exhibition milk fed rats and others to show the difference this vital food makes in the growth of animals. In the accompanying photograph, the bigger fellow is milk-fed, and the other one is not.

—The Gilliam Service.

ITAMINS ARE FOUND ESSENTIAL TO GROWTH

Pigs, calves, chickens and for that matter oys and girls, may have a balanced ration and t fail to grow, said C. H. Hunt, nutrition emist, who has scores of small animals on eding tests at the Ohio Agricultural Experi- ent Station to determine the vitamin con- nt of various articles of food. Stunted owth, several diseases, and even death, he ids, may be due to a lack of one or more of e vitamins.

Vitamins are found in the natural foods, ich as milk, meat, vegetables, etc. Polished e, and other cereals from which the hulls are moved in the course of their preparation for od, potatoes, oleomargarine, and the like, e deficient in these essentials to growth. A enu of white bread, potatoes, rice and but- rine will not produce growth. If butter be pplied instead of its substitute, and meat, ilk, vegetables and fruit be added, though more be eaten, the effect on health and owth will be immediate and great.

If a variety of plain food is provided there ed be no fear of a deficiency of vitamin. It only when the diet is restricted to a few ticles that ill may result.

GLASS STOMACH INDICATES DIGESTIBILITY OF FOODS

It is now possible to determine the digestibility of the protein in foods and whether or not it is necessary to cook them, without conducting feeding tests, thus saving much time and expense, say the specialists of the bureau of chemistry, United States department of agriculture, who have adapted a chemical method to this work. The method is carried out by the use of laboratory apparatus that might be called an artificial stomach, since by its use it is possible to imitate at least a part of the digestive processes.

Tested with HCL and Pepsin

The proteins to be tested, those from beans, for instance, are placed in glass containers in a dilute solution of hydrochloric acid similar to that found normally in the stomach, the proper quantity of pepsin is added, and the mixture is placed in an incubator where the temperature is kept at the same point as that of the human stomach, about 37 degrees centigrade. After a certain number of hours the contents of the container are sampled and analyzed. The digestive effect is measured by the ratio of what is known as amino nitrogen

to total nitrogen. By running through cooked and uncooked protein from beans it is possible to determine which is the more easily acted upon by the chemicals in this artificial stomach, and, consequently, by the stomach itself.

Then with Trypsin

After the feed has been acted upon by the pepsin and hydrochloric acid, it is treated with trypsin and a dilute alkaline solution, as nearly as possible like the digestive juices found in the small intestine. This second process tells the investigator what the probable digestive action on any particular food will be in the intestine.

Test Indicates Relative Digestibility

In the human or animal body there are, of course, other factors that enter into the digestion of food or feeds, but the "artificial stomach" will tell if one protein is more digestible than another and whether it is more digestible when cooked or raw. It does not tell what kinds of protein are contained in a food or whether the variety is sufficient for all the needs of the body.

BOVINE TUBERCULOSIS ERADICATION

Less than 10 years ago, says the United States department of agriculture, the eradication of bovine tuberculosis seemed a staggering undertaking. One reason that rapid progress seemed impossible was that the subcutaneous-test method ordinarily used was slow. But since that time the use of other methods that are much more rapid, the ophthalmic and the intradermic, have made it possible to clean up areas as large as counties in a few weeks with a relatively small force. The only possible way to eradicate tuberculosis in the light of our present knowledge is to find the diseased animals and properly dispose of them more rapidly than the disease can be spread; that is the big problem, and it means testing great numbers of animals.

NEW MAP SHOWS EXTENT OF CATTLE TUBERCULOSIS IN U. S.

Tests of thousands of herds throughout the country have enabled the United States department of agriculture to make a map showing the approximate percentage of cattle in various States and counties infected with tuberculosis.

In nearly half the country, largely in the South and Southwest, it is shown that less than 1 per cent of the cattle have the disease.

In other parts of the country the infection runs from 1 to 15 per cent, and in still other localities, aggregating more than 50,000 square miles, more than 25 per cent are believed to be tuberculous.

The figures are based on five years of systematic testing, and should prove of value in directing eradication work.

AREA PLAN OF TUBERCULOSIS ERADICATION INCREASES

The plan for eradicating tuberculosis in cattle from entire areas, such as counties, is daily growing in popularity according to reports coming to the United States department of agriculture. The idea has taken hold in Michigan and is spreading rapidly. Already five counties have been freed of the plague, and reports from the inspector in charge for the government show that the boards of supervisors have appropriated money and made provision for co-operating with state and federal forces. When one country joins the ranks for eradication its action stimulates others to follow. The prospect for ultimately ridding the country of the disease never looked so promising as at present, say those in charge.

Dairymen in the 45 cow-testing associations in the 9 western states now own 9,484 cows that have made more than 40 pounds of butterfat in a month. Not many years ago a 40-pound cow was a rarity. There is much room for improvement, however, in the general run of herds in all parts of the country, says the United States department of agriculture.

BADLY TUBERCULOUS AREAS MAY BE FREED FROM DISEASE

In the region that includes the New England States, New York, Pennsylvania, and New Jersey, there is extensive interest in the eradication of bovine tuberculosis. At the Eastern States conference on the subject, recently held, much information of value to dairymen and cattle breeders was presented by state and federal sanitary officials. Their estimates, based upon the results of actual tests of a large number of herds, show that in some parts of this area nearly 30 per cent of the dairy cattle have the disease. It seems to be most prevalent in the thickly populated states of Connecticut, Massachusetts, and Rhode Island, but infection is extensive in New York, New Hampshire, and Vermont. Pennsylvania and New Jersey herds have about 9 per cent of diseased cattle, while Maine has only 2.7 per cent.

To these states, as well as many others, tuberculosis is a serious economic problem, but since the disease makes herds unprofitable or greatly reduces their efficiency, it pays to get rid of it. Keeping up a herd of diseased cows is just as hopeless as it is to maintain a factory or other business at a loss from year to year. Many a dairyman in this area has been financially ruined without knowing the real cause.

Since the plan for getting rid of the disease in definite areas has been carried out with such success in so many counties, there is reason to believe that even in the badly infected localities it is possible to eradicate the plague and keep it out.

BETTER-SIRES ENROLLMENT PASSES THE 8,000 MARK

With the growing understanding of the utility value of pure-bred live stock and especially pure-bred sires, the list of persons enrolled in the "Better Sires—Better Stock" campaign is rapidly increasing. The middle of August it passed the 8,000 mark, signifying that many persons have filed statements with the United States department of agriculture that their live-stock breeding operations will be conducted henceforth on a pure-bred-sire basis. This includes all classes of domestic live stock, including poultry.

In some counties of limited area the number of farms is relatively small. Gordon B. Nance, county agent of Oldham county, Ky., points out, however, that although his county has only 1,086 farms, 10 per cent of the farmers have signed enrollment blanks, which signifies active participation in systematic live stock improvement work. Other counties in which 10 per cent or more of the farmers are using pure-bred sires exclusively are: Pulaski county, Va., 52 per cent; Kittitas county, Wash., 18 per cent; Greene county, Ohio, 13 per cent; and Orange county, Va., 10 per cent. In this connection the United States bureau of animal industry points out that the proportions are for all farms and that the percentages for farms in which live stock is the principal market product probably would be much higher.

MORE PIGS RAISED BY SOWS PUT ON BALANCED RATION

Sows put on balanced rations raised 71 per cent more pigs than those receiving the same management but fed on low protein rations in a "Save the Pig" campaign carried on by extension workers in Kansas last spring. Farrowing records were kept by 53 farmers. According to a report received by the United States department of agriculture, 263 sows on 29 farms received corn and a protein supplement of either tankage, skim milk, alfalfa, or linseed-oil meal. These 263 sows farrowed 2,669 pigs, an average of 10 to a litter; of these pigs, 1,713 were weaned, an average of 6.5 pigs per litter. On 11 farms, 166 sows received mostly corn rations, farrowing 1,194 pigs, an average of 7 to the litter; of these pigs, 1,645 were weaned, an average of 3.8 pigs to a litter.

CATTLE-DIPPING RECORD AGAIN BROKEN IN TEXAS

Texas broke its own cattle-dipping record when in July 6,783,503 dippings in that state were recorded by the bureau of animal industry, of the United States department of agriculture. The figure is more than 150,000 greater than the dippings for June, which, as recently announced, broke all records for progressive tick eradication since the work began in 1906.

There are nearly 10,000 vats in operation, of which more than 200 were built during July. The rapid progress being made in eradicating ticks is the result of thorough preparation and the excellent spirit of co-operation among the state and county officials, cattle owners, and representatives of the United States department of agriculture.

FOXES HEAD LIST OF PUREBRED ANIMALS IMPORTED LAST YEAR

In the list of importations of purebred animals for which the United States department of agriculture issued certificates of pure breeding during the last fiscal year foxes stood at the top in numbers, dairy cattle were next, with dogs a close third. Beef cattle, horses, and sheep, formerly imported in large numbers, were almost in the same class with cats. Very few horses have been brought in during recent years, and the number of beef cattle and sheep has decreased partly on account of foot-and-mouth disease, which existed in England a part of the year. However, since the war fewer farm animals of all kinds have been coming into this country.

The total number of all kinds brought in during the year was 2,639. There were 967 foxes, all from Canada; 761 dairy cattle, mostly from the Channel Islands and Canada; 591 dogs, a large part of them from England, Germany, and Canada; 151 horses; 87 beef cattle; 62 sheep and 20 cats.

SEEING IS BELIEVING—TUBERCULOSIS

One of the most encouraging features of the campaign against bovine tuberculosis that is now being pushed in Nebraska is the fact that farm and county officials who are frankly skeptical on the subject are visiting the market every few days to see the final disposition of the cattle condemned in their communities.

Some Saunders county men here this week to keep tab on a bunch of "reactors" from their farms were given an object lesson that convinced them thoroughly that the war on tuberculosis is not only desirable but that it is absolutely necessary in the interest of economy as well as in the interest of the public health.

When stock growers, standing on the killing floor of the packing house, see with their own eyes the diseased organs of cattle taken from their own farms; when they are shown by officials of the Bureau of Animal Industry that apparently healthy cows are so badly diseased that their carcasses must be tanked, these men realize the loss that tuberculosis is to them as well as the menace it is to the country.

The work of cleaning up the herds of the state is progressing steadily, not perhaps as fast as it should, but satisfactorily in view of the great lack of information on the subject and the need for popular education along this line. It will progress still more rapidly if more of the county officials and stockmen affected will take the trouble to follow the condemned or suspected cattle to market and witness for themselves what disposition is made of them.

No more important work is done by the Omaha Live Stock Exchange than the activity in tuberculosis eradication under the direction of Dr. Spencer and with the intelligent cooperation of the stockmen of the state there is every reason to hope and believe that this work will finally result in the practical elimination of this great scourge from the herds of Nebraska.

—Omaha Drover's Journal.

YOUNG CARIBOU BULLS MAY IMPROVE REINDEER HERDS

The possibility of improving the grade and weight of the reindeer in Alaskan herds by crossing them with caribou is being considered by the biological survey, United States department of agriculture. A reconnaissance has been made in Mount McKinley National Park to determine the best locality for capturing later in the season a supply of young caribou bulls to be used in the breeding experiments.

The average dressed weight of several thousand reindeer carcasses shipped from Alaska was about 150 pounds each. In certain parts of Alaska, including Mount McKinley National Park, there is a form of native caribou the bulls of which are reported to attain maximum dressed weights approximating 400 pounds, and it is claimed that some are even heavier. Relationship is very close between our native caribou and the Alaskan reindeer, which are descended from stock imported from Siberia. It is believed, therefore, that crossing the two will result in greatly improving the grade of the reindeer, perhaps doubling their weight.

Our biggest and most profitable enterprise is that of helping to make agriculture a paying industry.

There are 216 fox farms in the United States, on which there is being raised over five thousand silver foxes for breeding purposes and for fur. The foxes on these farms have an estimated value of over four million dollars.

Canine, Feline and Avian Practice

Small Animal Practice*

By Dr. O. V. Brumley, Columbus, Ohio
Professor of Small Animal Practice, Ohio State University

Concluded from September issue

DISTEMPER—(Cont'd.)

4. The nose becomes dry and hot. The nasal discharge is at first serous but later thicker and muco-purulent in character. Sneezing and sniffling due to the rhinitis is a very prominent symptom. The discharge accumulates around the nasal openings in the form of crusts. The infection travels down the respiratory passages either to produce laryngitis, bronchitis or as happens in many cases a bronchopneumonia.

5. Various nervous phenomena accompany most cases of distemper. Dulness and depression is shown at the beginning of the disease, and it may be all that the animal will show. However, in a great many cases, the nervous symptoms develop early in the course of the disease and are manifested by excitement, restlessness, yelping, cries, even simulating symptoms of furious rabies. Spasms, twitching of muscles in various parts of the body are frequent. The opposite condition of paralysis is very common, especially, as a sequel to the primary condition.

6. A pustular exanthema of the skin is found in a large number of cases. Small, red spots appear along the abdomen on the inner surface of the thighs, around the eyes and on the internal surface of the external ear. These spots in a day or so are transformed into small pustules. They rupture, leaving small, ragged surfaces, and covered with a scab.

7. The initial high temperature is usually followed by a remittent or subnormal temperature.

The temperature is not always a good indication of the actual condition of the patient. The animal becomes emaciated, weak, the action of the heart disturbed as the disease progresses. The membranes become pale and the animal shows marked evidence of the severe infection.

It is important to understand that many cases of distemper develop irregularly. This fact makes it difficult in many cases to arrive at a positive diagnosis. We have seen many cases where it was impossible to make a correct diagnosis during the early stages of the disease.

Prognosis

This is not favorable even in the milder forms of the disease. We have found it very difficult to give the owner a satisfactory prognosis. It is well to guard the prognosis in all cases.

Treatment

It is very essential in distemper to supply the patient with easily digested, nourishing food. Perhaps the best food is raw meat chopped fine, or scraped into a pulp. Patients will be tempted by this food when they will not eat anything else. In cases where the appetite is lost and in order to maintain the animal's strength, beef broth is most excellent.

This may be given with warm milk, or milk with egg beaten up in it. Other foodstuffs may be given, depending upon the progress of the case, and the needs of the patient. In the digestive form of the disease only small amounts of liquid food should be given via mouth. Rectal feeding with warm milk and meat broth is recommended in these cases. I find diet very important in all cases of distemper.

The animals must be well protected from exposure to extremes in temperature, or cold draughts of air. They should be placed in a clean, moderately warm, well ventilated room. The bedding should be kept clean at all times. Supply fresh water at frequent intervals. Nursing plays an important part also in treating this disease.

If it can be done I think many cases of distemper will make better progress at home. However, it often happens the owner is in no position to give them sufficient care and atten

*Address delivered at the Short Course for Veterinarians given by the University of Minnesota, July, 1922.

tion and in this case it is necessary to take them in the hospital. There is a wide divergence of views on this subject and treatment must be carried out according to the conditions in the individual case.

Owing to the many forms of the disease and its complications, treatment must be essentially symptomatic. However, there are certain fundamentals we think should be applied in all cases.

Serum Treatment: We have been using serum with some degree of success. It is administered in 20-30 c. c. doses every 18-24 hours The dose should be reduced as the animal shows improvement. I do not wish to start a discussion relative to the merits or demerits of serum in these cases. But after using it quite extensively over a period of two years, treating possibly 2,000 to 2,500 cases, we feel safe in saying it reduces the mortality considerably.

Medical Treatment: A combination made up of iodine 1/25 grain, Creosote ¼ grain and potassium dichromate 1/20 grain has been used with considerable success as it is a powerful antiseptic for the respiratory and digestive tracts. This is given ½ to 3 tablets at a dose depending on the age and size of the dog. Repeat dose every 6 to 10 hours. Stimulants, such as minute doses of strychnine sulphate will be found useful to maintain the general processes in the body. Many preparations could be mentioned which have been used for this disease. No doubt but what many of you have been using certain preparations with some degree of success. We believe, however, if we keep in mind thse fundamentals and then apply symptomatic treatment when it is needed, the mortality rate can be diminished considerably. We have had quite a number of preparations presented to us for trial which carried the claim of being specifics. So far we have found none that deserves such distinction.

Immunization Seems Possible

We should, I believe, encourage the immunization of young dogs. I do not claim that complete immunity can be established in all cases but we have found that many young animals can be immunized and in others the severity of the case can be reduced. For a short period of immunity, when it is necessary and more convenient, we have been admin'stering three doses of the serum, using 20-30 c. c, 48-72 hours apart.

We believe for general prophylaxis it is more satisfactory to use the bacterin given in at least three doses, three to five days apart.

The immunization should be encouraged especially in dogs that are exhibited at the various shows.

In conclusion wish to say that distemper is a formidable disease and will tax the ingenuity of the veterinarian to protect the patients and give efficient and satisfactory service at all times.

Considerable tact is necessary in handling irregular cases and conditions as they present themselves.

Just a Word on Parasites

One more brief statement and then I will have finished. Practically all dogs from puppyhood to maturity are infested at some time with parasites. This statement is especially true in regard to internal parasites. We should make an examination of all dogs as a routine measure to determine the presence or absence of parasites and if present determine the species. This is easily accomplished by a mocroscopical examination of a small amount of fecal material. We find that it is impossible to successfully eradicate the parasites without knowing the species present.

The treatment applied will depend upon the kind of parasites present. In this connection, I wish to report that carbon tetrachlorid has given us excellent results in removing hook worms from dogs. Its use has demonstrated its superiority over any of the other anthelmintics used to date. It has several things to recommend it. 1st. Can be given in quite large doses without any danger of toxic effect. 2nd. It has proven to be more efficient than any of the other drugs used. 3rd. It is inexpensive. Hook worm disease is quite serious in our small patients and when found by microscopical examination prompt measures should be taken to combat it.

Similar statements can be made relative to skin diseases. We do not believe it possible to diagnose these diseases without the aid of the microscope. There are so many variations in the skin lesions in even a single form of mange that one cannot determine the condition definitely by microscopic examination.

I would recommend especially a careful examination microscopically in order to make a positive diagnosis in any form of parasites in our small patients. Some might say it is not a practical proposition but we do not think it can be done in any other way to obtain maximum efficiency with our treatment.

WORMS, PSEUDO-RABIES, DISTEMPER CONVULSIONS, DEATH

A large collie, ten months old in good condition began to show signs of nervousness by running and howling. He was very much excited and barked with a slightly changed intonation. Each attack was followed by a state of exhaustion. He would run up and down the stairs, bark and feared any noise. Sometimes the attack would not occur for several days and at others there would be two or three spells in a single day.

He was treated for worms with oil of chenopodium, chloroform and castor oil, on an empty stomach with good results.

Three weeks later he was sick again and another veterinarian who called, because I was in the hospital, pronounced it distemper. Five days later when the dog was brought to me again I found the temperature 104° Fahr., pulse 135 and respirations 45, slight cough, anorexia, kidneys and bowels sluggish, coat staring, muco-purulent discharge from the nose and pimple-like eruptions over the body. I administered serum and sodium cacodylate (10 cc of the former and three grains of the latter) and repeated in three days, and arsenates and nuclein three times a day with castor oil for the bowels. Improvement was marked with the exception of the eruptions. The appetite returned and the dog seemed well.

Two weeks later he had another nervous spell that left him exhausted for some time but following this everything was normal for three weeks when he began to be seized with one convulsion after another and finally one proved fatal.

I have had a hound, a pointer, and an Airedale act much the same way recently and am puzzled to account for the circumstance. The distemper symptoms occurred only in the collie.—G. A. F., Va.

Reply: Fits of barking and running in dogs are invariably attributed to worms by dog fanciers and canine specialists, although it is indeed doubtful if such is always the case. It has not even been proved that worms ever cause such mental conditions although it is becoming apparent that worms and their larvae do take some remarkable liberties in the living body of their host and might as a consequence be suspected of causing almost anything. French veterinarians speak of pseudo-rabies caused by dentition as a possible cause of these states.

From the large number of inquiries about this disorder and the lack of any proof as to the cause indicated there is a field here for fruitful investigation.

The symptoms displayed during one of the phases of this collie's sickness being clearly those of distemper leads one to suspect that these might be but complications of that disease.

A CASE OF FELINE BOTS

Enclosed herewith please find a parasite for identification.

I was called out this morning to see a cat said to be suffering from an abscess on its side. Upon examining the animal I found her to be a female tortoise-shell cat, in rather poor condition. On the right side of the thorax, in about the region of the fifth rib, was a pronounced swelling, with a small opening from which there was a mucopurulent discharge. The swelling was about the size of a large-sized hickory nut, and was apparently only under the skin. I enlarged the opening slightly, and squeezed out the accompanying parasite, one which I do not recognize or recall ever having read about. Can you please tell me what it is?

There is a similar parasite that is often found under the skin in rabbits. It appears to drop out when the cold weather comes on, and a supposition among the hunters is that the rabbits on account of this parasite, are only edible during the real cold weather.—M.J.H., N. J.

Reply, by Maurice C. Hall. The specimen in question is a larva of one of the bot-flies belonging to the family Estridae and belongs in the genus Cuterebra, using this generic name in its broad sense and disregarding the later genera which have been separated from the genus Cuterebra on the characters of the adult flies. The structure of the larvae in this group has not yet been sufficiently studied to permit of satisfactory identifications as regards the restricted genera or the species. The larvae of this genus are parasitic in the Rodentia (rodents) and the Lagomorpha (hares and rabbits), as a rule.

They are occasionally reported from cats and I have summarized the records of this sort in a paper published in the Journal of the American Veterinary Medical Association for July, 1921. Since the publication of that paper we have received from Dr. Kinsley an additional specimen collected from the cat, by Dr. A. Trickett, at Kansas City, Missouri, and another specimen collected from the cat by Dr.

Murray V. C. Howes, at Portland, Oregon.

The paper referred to reported a total of over nine cases of Cuterebra in the cat from the United States, and the two cases just noted, together with your case, shows that this parasite has been collected in this country in over twelve cases.

The belief among hunters to which you refer, that rabbits are not edible in the summer owing to the presence of these larvae, is a very common one, but it is hardly in accord with the general principles of pathology or with meat inspection practice. A localized lesion involving the skin and subcutaneous tissue and not accompanied by evidence of systematic disturbances due to infection, toxins, irritation, etc., would hardly warrant the condemnation of meats and in the absence of anything other than one or two of these larvae it would appear that such infested rabbits are edible.

Probably the belief that these rabbits are inedible is based on esthetic grounds which would probably be sufficient to develop that practice of avoiding the use of a meat which was itself cheap and easily obtained unless free from these larvae.

AIR EMBOLISM IN A PUP

I am writing you about a seven weeks old Irish terrier pup that had its rudimentary claws, on inside of fore legs, removed with scissors by a dog fancier and about five minutes later began to breathe very heavily and groan as if in pain .

The owner brought the pup to my office and about one hour after operation the pup died.

Post-mortem examination showed heart entirely empty and both lungs were completely congested, more solid than liver, with no other abnormal conditions.

I would be very glad to hear from some member of the staff of the journal as to what had occurred. Pup was perfectly healthy before operation.—E. L. B., N. J.

Reply: The death of the pup described, while not common, does occur in dogs following painful operations, such as amputation of the tail, dew claws, or ears. In all cases as you have yourself found, there were no post-mortem lesions to serve as a guide and for want of a better explanation we have always attributed these conditions to air embolism. You know it only requires a very small bit of air in an open vein to produce death if it finds its way to the heart.

We think, therefore, if you diagnose this case as a death from air embolism you are at least on safe ground until somebody can give you a better explanation.

LENGTH TO AMPUTATE AIREDALE TAILS

I would like to know how long a stump should be left in amputating the tail of Airedales, at what age the operation should be performed and the best method of procedure? —H. M. G., Ill.

Reply by G. P. Frost: The approved length of amputating the tails of Airedales is one joint less than one-half of the tail. This will give the proper length no matter at what age the operation is performed. The operation is done in the usual manner of amputating the tails of dogs.

GRANULOMA OF THE CONJUNCTIVA

I have a patient, a dog, where the haw has covered at least one-third of the eye; both eyes are affected. I cannot find the operation for removal of same in any literature. Would you outline briefly the operation, stating your usual success?—J. A. T., Va.

*Reply. You are informed that the usual way to remove these granulating growths on the membrana nictitans is to anesthetise the eye with a local anesthetic solution, pass a thread through it with a small, curved needle, draw upon the thread, and snip off the growth as deep as possible with a small, curved scissors.

A small animal hospital costing $75.000.00 is under construction by Dr. R. G. Qwen, 186-188 Farwell avenue, Milwaukee, Wis. It is to be equipped with baths, swimming pool, laboratory and all that goes to meet the highest refinement in such establishments.

Leg weakness is usually found in young, growing chicks, and is caused by insufficient exercise and excessive feeding. This condition is manifested by weakness, particularly in the hock joint, permitting the leg to bend in any direction. It is readily cured by forced exercise and diminishing the diet.

There will be a little bleeding but this is never serious. Just set the dog aside for a few minutes and the bleeding will stop.

Queries and Answers

ESERIN OR ARECOLIN FOR CHOKE?

Please tell me which to use in the case of choke in horses, eserin or arecolin?—D. E. I., S. W.

Reply: A good dose of one to one and a half grains of eserin has always given us the best results in horses affected with esophageal obstruction. It is of no use, however, when the obstruction is formidable as in the case of large jabots, but never does any harm. In simple choke with ordinary horse forage the relief is sometimes quite prompt.

PERSISTENT MASTITIS

I have a condition in a cow patient that is puzzling and am writing you to obtain information through your query and answer column.

The cow, about the fifth month of lactation and pregnancy, one morning showed traces of blood in the form of clots in the right rear teat. Milk examination revealed small nodule at base of teat on inner aspect of the sinus, which showed no sensitiveness to pressure. Temperature, respiration, pulse, normal.

Several days later, I was called to see the cow and was shown milk from the other three teats, which had been in the cooler all night and exhibited the following condition and appearance to wit: Cream, thin, pale, collected in islands, floating in "whey"; "curd" precipitated on bottom of receptacle in lumps and granules. No odor, no disagreeable taste, in either the fresh or the overnight milk. The cow was tested for tuberculosis with negative results.

I then injected two doses of mastitis bacterin at intervals and heard no more from the case until lately.

The cow calved and on the ninth day the milk showed same condition, except the hemorrhage and a variation in that the cream collected in a very tough layer, the curd settling to bottom in lumps and granules as usual.

Injected mastitis bacterin again, but with no good results. Changed feeds, balanced the rations, purged with salts; administered mineral salts, formaldehyd, urotropin, all to no purpose, so am now searching for help.

If you or one of your efficient correspondents can and will relieve my ignorance, I would be everlastingly obliged. S. B. S., La.

Reply: You are dealing with a very bad case of infectious mastitis, probably streptococcic mastitis. It seems to me that you have carried out a line of treatment that is sensible in every way and could hardly be improved upon.

Our stereotyped plan of treating such cases is to give a good, brisk purgative, follow up with proper medicinal doses of formalin in oil, and administer mixed infection bacterin, and in addition, milk out frequently and gently.

In more severe cases injections of flavines given every second day will help. There are veterinarians nowadays who are using injections of pure ether, with good results. This, however, is something we have never personally used, and are giving it to you second-hand. On the other hand, the merits of flavines for this purpose is not questioned.

VERMINOUS BRONCHITIS

I am bothered a great deal with lung worms in calves in this region and would like a brief discussion as to the method of control and the best treatment. Mature animals are sometimes affected but they seem to resist the infestation while many of the calves die from what seems to be pneumonia on post mortem examination.—L. A. R., Ill.

Reply:—Lung worms in calves are common during the dry-pasture months, August and September, when the bronchi, bronchial tubes and air cells often become literally choked with the Strongylus micrurus, a fine thread-like worm. There is no way of preventing infestation where calves are allowed to run with the herd in the old dry pastures. It is best to keep the calves in the stable the first year or provide them with a virgin pasture that has not been contaminated by the adults of the herd. When the parasites are deep seated nothing will dislodge them, although irritating vapors inhaled or liquids injected into the tracheal may cause paroxysms of cough that will expell some of them. As a whole medica-

tion is not a pronounced success. Turpentine and creosote are probably the best agents to use.

CONTRACT NOT TO PRACTICE IN COUNTY

Can you give me any information regarding the following? A partnership is formed between two practicing veterinarians. A contract is drawn, including a clause reading: "At dissolution of partnership, one of the partners will not enter into practice in said county." No specified time.

Cannot the one who said he would not enter into practice by signing the contract, reenter into practice in the same county without a great deal of fear by the law from the other?

Such is the condition existing between myself and a practitioner here—I will certainly appreciate any information you may be able to give me. I intend to enter into practice as a competitor to the gentleman holding the above contract and I would be pleased to know as to the extent of trouble he might cause, if any.

Reply: Your old partner, who holds the contract mentioned is, of course, in a position to bring action against you for any damage that might be shown to accrue out of your activities. Whether it is fair or not, it is, nevertheless, true that the defendant in these cases generally wins. It seems to me that it would be advisable for you to consult a lawyer, who, after reading the contract you have signed, would be in a better position to advise.

WATERING HORSES

Should horses be watered immediately after a grain ration? D. A. S., Minn.

Reply:—No. They should never be watered for at least an hour after having eaten a full grain ration. A few swallows of water after meals will do no harm while several gallons would displace the chyme to the intestines before the process of chymification is complete. Watering horses after meals is one of the reasons horses suffer so often from colics.

Hay, on the contrary, being digested largely in the intestinal tract may be washed back with large drafts of water almost immediately without doing harm.

Dr. G. W. Winslow has moved from Sheldon, N. D., to Grand Forks, where he has purchased a going practice and hospital.

Don't Risk a Serum Shortage!

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THE CAUSE OF RINGBONE AND SIDE BONE

Do your experts believe as we are being taught that diet has an etiological bearing on ringbone and side bone of horses? In what particular way does deficiency in diet content cause the production of bone tissue?

Reply: It is not likely that diet has much to do with the cause of sidebone and ringbones because all herbivora do not have them. The fact that these osseous diseases do not affect all herbivora seems to indicate that they are due to something inherent in solidungulata.

INJURED STIFLE

I have a case wherein a boar tusked a horse in the stifle joint, opening the joint and making an extremely sore and lame horse. Considering the size of the wound, there is very little swelling, but intense (lameness) pain and the horse is falling off in flesh very fast. What are the best drugs and method to use in such a case?—W. H. L., Ind.

Reply: I have no doubt from the description of your case that you are dealing with a real case of infected open joint, although you do not state whether or not the wound is discharging synovia. If this is the case, there is very little hope for your patient.

The best agent known today for injecting into open joints is one of the flavines, either proflavine or flavisol.

If this could be worked into every part of the joint capsule, it is sometimes possible to turn the tide of such a case.

JENNETS, JACKS, MULES, ET AL.

1. Why does a jennet not breed? 2. How would you breed to get a jack? 3. If a male mule is bred to a mare will she conceive? 4. How does urine get from the bladder to the umbilicus? 5. How could a solution be forced to the liver?—C. H., Ia.

Reply 1. Jennets do breed if in good health and bred to the male of the species. 2. Breed a jack to a jennet and trust to luck that the issue will be a male. 3. No. 4. Through the urachus. 5. Through the umbilical vein.

The Arkansas State Veterinary Medical Association, co-operating with Dr. J. H. Bux, state veterinarian, have planned a "veterinary day" at the Arkansas State Fair, October 9-15, for the benefit of farmers and stockmen.

THE CAUSE OF HEAVES

What is the cause of heaves? I recently attended a veterinary meeting where this matter was discussed but did not get the drift of the theories brought out. G. M., Pa.

Reply: Heaves in horses is analogous to the distressed respirations of the old cornet player. It is caused by overtaxing the tissues that comprise walls of the pulmonary air-cells. They dilate and even break down under pressure, and in this damaged state retain air that can not be expelled by normal respiratory efforts. We do not believe in the nervous theory of heaves. With us it is physical injury.

PLANTAR FLEXION IN CALVES

Please advise me as to the diagnosis of two calves that are healthy enough except that they cripple over on the hind feet, standing on their toes, and have a bad discharge from the eyes. Is this rheumatism?—A. R. C., Ala.

Reply: Deformations of this character are common affections of young animals. It is more common in colts, however, than in calves. The only remedy in chronic cases is to correct the deformity by performing tendonotomy and supporting the legs with appropriate braces while the surgical gap is filling in.

NECROSIS OF THE INFERIOR MAXILLA
(Removal of the Sequestrum)

A seven-year-old thoroughbred mare has an enlargement the size of a hen's egg opposite the first molar of the lower jaw, from which some pus is escaping. The condition has existed for months. Being intractable she was cast to make an examination. As the teeth were sound a diagnosis of necrosed bone was made. An incision was made along the whole length of the enlargement and with the aid of a curette a sequestrum an inch and a half long was removed. The wound healed promptly in two weeks. What is the cause of such a condition? E. F. J., B. W. I.

Reply:—The mare had a necrosed jaw from a bit injury, a condition that is very common in horses bitted with curb bits and in polo ponies or other horses whose mouths are roughly handled with the reins. It starts as a periostitis at the seat of the bit and generally ends by the exfoliation of a small, elongated spicula, but in other cases the inflammatory process involves greater areas and tumefies the whole ramus and causes exfoliation of a large segment.

SOME POINTS ABOUT SILAGE

Why does silage mold? Is it a good food for dairy cows? Does silage injure the teeth? H. S., Wis.

1. Silage molds chiefly from leaks in the silo, from air pockets due to uneven tamping, and from a lack of moisture. Leaks are usually due to ill-fitting doors but occur from crevices anywhere. When these leaks can not be closed they may be less harmful by covering them up with building paper as the silo is being filled. It is the custom of some to unroll a roll of building paper over them from below upward as fast as the silo fills up. In the case of door-leaks the roll should overlap the door area a foot or more on each side. By suspending such a roll on a round stick and suspending it with sash cord to the door-rod above the one just put in it is a simple matter to thus cover up all leaks of this kind.

2. Corn-silage is a good roughage for cows, but must not be thought of as a balanced ration. Silage of any kind must enter into the ration as an equivalent of the material use in making it, and no more. For example, corn silage is equivalent to corn and corn fodder, plus its succulency. It lacks the proteids required to complete a proper ration for any special animal.

3. So far as we have been able to observe silage does not damage the teeth.

FORAGE POISONING IN A MARE

The owner reported mare, eight years old, off feed and sluggish on afternoon of September 5. On September 6 the following symptoms were observed: difficulty in standing and could not move easily. At this time the temperature was 105° F., and pulse 60. She was inclined to stand still or move in a circle. When placed near a building or support, she would lean heavily against it. During the morning of the 6th, the mare went down and remained in a comatose state, dying during the night. Autopsy revealed no lesions, save congestion of the meningeal vessels.

What is the diagnosis and best line of treatment for such conditions? J. H. B., N. C.

Reply: The mare you describe, is undoubtedly a victim of some form of forage poisoning, and in view of the rapid course of the disease, was probably a fatal case from the beginning.

The best treatment for such conditions we know today is rapid purgation, a dose of eserin or arecolin, followed by an aloetic ball, to-

gether with the abstraction of a considerable amount of blood from the jugular vein. This treatment sometimes cures the milder cases.

There is nothing surprising about the lesionless condition of the mare, revealed at the autopsy, because animals dying so quickly have not been sick long enough to produce macroscopic lesions.

CAPPED HOCK

What do you consider the best treatment for capped hock? C. C. M., Okla.

Reply: The best treatment for a new capped hock, in which the enlargement is due to fluid, is to lance it at the lowest point, under strictly aseptic precautions, keep the opening from admitting infection by proper wadding with antiseptic plugs, remove the plug twice a day and gently squeeze out the accumulated serum, all of the while keeping the horse in a standing position, in all about twenty days. This treatment will cure any capped hock of recent occurrence.

One that has become hard from thickening of the sac wall is difficult to cure. By repeated blisters of biniodid of mercury and keeping the horse in a big box stall that is well bedded to assure against any additional bruising when lying down, it is possible to reduce these enlargements to a considerable extent, but often the prevention of physical injury is very difficult to carry out, and the continued injury prevents recovery.

WANTS TREATMENT FOR MASTITIS

I am writing to ask you if there is any satisfactory treatment for garget. Several of my clients having a lot of trouble, one having seven cows affected. Some cows seem to get only a light attack of it, while others get very stiff in their movements. The appetite is good, but almost all dry up.

Some have it only in one quarter and others in all four. I have never had very good results in treating such cases and will be very thankful for any assistance you could give me. Would this be any form of contagious mammitis?—C. A. K., Ont.

*Reply: The treatment for mastitis that seems to be giving the best results is active purgation, formalin in oil internally twice a day, the administration of mixed mastitis bacterins, frequent milking, and in bad cases, injections of the affected teats with flavisol or acriflavine.

It seems that the injection of the milk sinus

with any of the flavine compounds is proving to be a real boom in the treatment of mastitis, and at least should not at this time be omitted. All mastitis should be regarded as contagious and the patients should be handled in the way to prevent its spread to other animals. See page 609.

ETIOLOGY OF SUMMER SORES

What is the cause of summer sores? Is it true that flies are the carriers of the parasite that is said to be found in these annoying sores?—B. J., La.

Reply:—Summer sores develop from parasite infestation of existing wounds by flies, both the common house fly (Musca domestica) and the stable fly (Stomoxys irritans). Railliet and Henry have classified the parasite as a spiropteres of the genius Habronema. According to these authors the larvae pass from the wound to the stomach where they develop to maturity. The adult yields embryos which pass off with the excrement whence they penetrate the fly larvae (maggots). The adult fly thus infested deposits the undeveloped parasites in the wound, completing the cycle. These findings have not been confirmed in this country.

As the ascarid ova are in the old hog lot and pasture and on the skin and teat of the sow, clean uncontaminated lots should be provided for the sow previous to farrowing and she should be thoroughly scrubbed to remove all ova, prior to placing in clean quarters.

Virus should not be used in swine affected with necrotic enteritis. If swine are simultaneously affected with hog cholera and necrotic enteritis, it is advisable to use anti-hog cholera serum and prescribe for the necrotic enteritis. It may be necessary to use serum and virus about one month after the serum treatment alone.

"Baka," a trotter bred in Austria has been sent to the United States to test the showing he can make among American bred horses. He is eligible to the 2:10 class and will be trained and driven by Fred Edman in some of the later events of the trotting season, having arrived too late to get into condition for the early events of the Grand circuit.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Snow of the Mountain

Would you please tell me what kind of a weed this is and if it is poison?—L. J., Ia.

Reply: The specimen sent in is what is known as Snow on the Mountain (Euphorbia marginata), a well-known plant of the west, common in western Iowa, and especially common in the Rocky Mountain region from Texas to Montana. This weed like all other spurges has a milky juice and the milky juice is more or less acrid. Dr. Chestnut is authority for the statement that in Texas the milky juice of this plant is used to brand cattle, and it is said that the honey obtained from the plant is acrid, so it cannot be used.

There are Many Species

Dr. White, in his Dermatitis venenata, has this to say of the species of the genus:—"More than one hundred species of Euphorbia, or spurge, grow in the United States, either indigenous or immigrants from Europe. Of every species Loudon says the juice is so acrid as to corrode and ulcerate the body wherever applied; and of **E. resinfera**, from which the official euphorbium is obtained.

Is Used for Warts

Van Hasselt states that the juice of several species is used by quacks to remove warts, freckles, as depilatory, etc.; and that the application of the juice, powder and extract produces not only erysipelatous, pustular and phlegmonous inflammation, but even gangrene. In one case mentioned the whole abdominal wall became the seat of gangrene.

Of our native species Bigelow says that the juice of several was used in his day to destroy warts, and Gray describes them all as containing an acrid, poisonous juice. The most active of them are **E. corollata, E. ipecacuannae,** and **E. lathyris.** The first of these, commonly called snake-milk, has been used for blistering purposes, and the dispensatory states that the bruised root will vesicate the skin.

Troublesome to Handle

Mr. Cheney informs me that the juice of **E. ipecacuanhae** is quite troublesome to many who collect and handle it; and Bazin states that the dust of **E. lathyris,** growing both in Europe and in this country, causes redness, painful swelling and vesicles upon the workmen employed in handling it.

Dr. Millspaugh says it causes brilliant, staring, wide-open eyes, dilated pupils; death-like pallor of the countenance; retching and vomiting; violet purgation, stools frequent, copious and in some cases bloody, irregular pulse; whole body cold and rigid, followed by heat and perspiration. M. M. E. Sudour and A. Caraven-Cachin state that emesis always precedes purgation, and that the seeds have an irritating action upon the mucous membrane of the intestinal canal, principally in the larger intestines. They divide the effects into three stages: (a) the cold stage, including vomiting and diarrhea; (b) the stage of excitation, including nervousness, vertigo and delirium; (c) the state of reaction, including heat and copious sweat.

ACTION OF POISON IVY

E. D. Brown (Jour. of Therapeutic Pathology, Vol. 17-335) conducted some experiments to ascertain the action of poison ivy. He placed a centimeter square of leaf to the arm and held it in place with adhesive plaster. In some cases there was a reaction in 24 hours. Tincture made from the leaf also caused a reaction. He obtained a fixed oil which is probably the taxicodendrol of Pfaff. Every case where reaction occurred it was found when once poisoned that the person became more susceptible later.

NOTES ON DERMATITIS VENENATA

(Oak Dermatitis)

An interesting article in the British Journal of Dermatology and Syphilis (Vol. 34-65) states that a French laborer was poisoned by carrying the wet branches of a recently cut sapling on the right shoulder. The same evening the right cheek, ear and both hands began to smart and become painful. The following day the parts were red and swollen with an intense itching, and finally the whole of the genital region developed an eruption in

which exudation and encrustation occurred. Several persons in the village were effected the same way when handling freshly cut oak. After study of the problem and the exclusion of certain other plants the author concludes that the poisoning was due to oak.

VITAMINS AND THEIR RELATION TO HEALTH AND DISEASE

Dr. A. D. Emmett (Therapeutic Gazette, Vol. 46-17) has brought together some interesting facts on vitamins and their relation to disease. The subject is discussed under appetite, growth and digestive disorders, spleen, teeth, etc. The various vitamins are discussed under "Food Hormones are Important." Food hormones when less in quantity may cause alterations in the metabolism of the cells. Appetite is poor and digestion retarded and assimilation lessened. The patient should be given a good supply of vitamins. The author recommends concentrated pharmaceutical products, such as cod-liver oil and such fat soluble vitamins as butter, or the products prepared from brewer's yeast.

CLOVER MILDEW A SERIOUS MENACE

Clover mildew is known to botanists as Eryphe communis and is common everywhere in the U. S., especially in the northern districts. A recent letter issued by the plant disease survey of the U. S. department of agriculture indicates that there is an epizootic of the disease. I have seen it in every clover field I have entered this year. Naturally the question arises whether it is injurious to live stock. My opinion is that it is poisonous.

Irritate Intestinal Mucosa

May I say that mildew of various kinds has produced a form of irritation which acts injuriously upon the mucous membranes of the intestinal tract, the mouth. In addition hay containing it will be very dusty. Therefore it seems to me the presence of this mildew over the country is a serious menace. Fungi of various kinds are responsible for troubles. I quote from J. R. Mohler with reference to clover rust:

"Several attempts have been made by the writer to determine the exact cause and also to transmit the disease to other animals by direct inoculation, but with negative results. Suspicion, however, has been directed by various observers to the uromyces and the red and black rusts that occur in clovers. These

fungi cause very severe irritation of the lining membrane of the mouth, producing sometimes a catarrhal, at other times an aphthous, and occasionally an ulcerous stomatitis.

Renders Hay Worthless

I have this comment to make on the trouble from the mildew. This species is abundant and often causes serious trouble; it certainly renders the hay nearly worthless to be fed to animals. It often, no doubt, gives rise to a stomatitis such as is described for other fungi.

FOOL'S PARSLEY

A correspondent from Kansas sends a specimen of what appears to be Fool's Parsley (Aethusa cynapium). Fool's Parsley is said by a correspondent to be poisonous to stock in New Mexico. It is a well known annual European plant with white flowers, much divided leaves and petiole dilated at the base, which has become naturalized in eastern North America. Its distribution is given as Nova Scotia, New England to Pennsylvania and New York.

Plant Poisonous

The plant contains the alkaloid Cynapin, and a coniin-like alkaloid. One physician in England regards the plant as non-poisonous, even recommending it as a pot herb or for salad uses. On the other hand, numerous cases of poisoning have been recorded.

The following may serve as an illustration which is recorded by Dr. Millspaugh from a statement made many years ago. He records the experiments made on animals. Seven ounces of juicy leaves were given to a strong dog and the esophagus tied; twenty minutes thereafter the dog became sick. He stretched out his limbs, and lay on his stomach and could not be aroused. The pupils were scarcely dilated, the pulsations of the heart were slow and strong. The extremities were agitated by convulsive movements; the animal threw himself from one side to the other, and died an hour after taking the poison.

The postmortem examination showed that the heart was contracted and the stomach was found to be full of poison. In domestic animals it causes stupor, paralysis and convulsions. The common name indicates that it is sometimes mistaken for parsley with injurious results.

LOOKING BACKWARD

The segregation of the sick from well animals was first urged by Columella, 55 A. D. Columella was a Roman citizen born at Cadiz at the beginning of the Christian era. He wrote twelve volumes on agriculture of which two were devoted to veterinary science.

In dealing with animal plagues Columella said, "The diseased must be separated from the sound, that not so much as one may come among them which may with contagion infect the rest."

Columella discussed the control of sex and referred to the views of Democritus Abderites who 500 years earlier or B. C. 456 wrote that male and female produce can be obtained at will by binding up one or the other testicle, females being produced by the left and males by the right organ. These teachings of Democritus are still, after 2500 years being repeated and is believed by many today, although repeated experiments have shown it to be an error. Democritus was a famous Greek philosopher and a student of Socrates.

Columella described mad itch in cattle and called it the worst of bovine plagues. Curiously enough he ascribed its cause to eating fodder tainted with the vomit of hogs. At the present time this malady, which is probably hemorrhagic septicemia, is frequently seen in cattle that eat the rejected cuds of hogs fed on green corn fodder. The cuds ferment rapidly in hot weather and seem a delectable tidbit for the cattle turned into the hog lot to clean up the feeding ground where hogs are given green corn stalks. Columella probably referred to these cuds, errors in transcribing and translating by those unfamiliar with the condition likely account for his saying "vomit of sick pigs."

Ruffus (12th century) was the first veterinarian to adopt a definite nomenclature for the diseases of animals. He listed over seventy diseases under definite names based upon some characteristic feature. Many of these names are in use today.

Another paragraph reads: "If he treated an ox or an ass for a severe wound and cause it to die, he shall give the quarter of its price to the owner of the ox or ass.

ECHOES OF THE ST. LOUIS CONVENTION

(By Brenner)

Past presidents of the A.V.M.A. at the convention were: Drs. Brenton, Moore, Cotton, White, Butler, Torrance, Mohler and Cary.

"Well done," was the general opinion of Ex-president Kinsley's conduct in office.

"Congratulations," was the greeting of the assemblage to President-elect Welch.

The total registration was little in excess of 500. This included the women and visitors. An even 100 women were registered.

To those eminent cattle specialists, Devine of New York and Ferguson of Wisconsin, must go the honor of being the "beau brummels of the convention."

Dr. Devine of New York, 6 ft. 4 in., was the tallest man present. Dr. A. F. Ezzell of Bloomfield, Mo., 5 ft. 3, weight 123 pounds, was the smallest man there.

Dr. C. M. Merriman of Mt. Pulaski, Ill., Dr. A. K. Merriman of Latham, Ill., and Dr. R. W. Merriman of Ames, Iowa, brothers, represented an interesting trio.

Among the more distinguished looking members present were Dr. Mohler of Washington, D. C., Dr. Jenneman of St. Louis and Dr. Tait Butler of Memphis.

It was the twenty-ninth meeting for Dr. Brenton of Detroit, the twenty-sixth for Dr. G. A. Johnson of Kansas City and the twenty-sixth for Dr. and Mrs. A. H. Baker of Chicago.

Iowa State College was well represented in Drs. Stange, Bemis and Bergman, Dr. D. S. White was present from Ohio State, Drs. Moore, Udall and Milks from Cornell, Dr. Klein from the University of Pennsylvania, Dr. C. A. Cary from Alabama Polytechnic school, Dr. Craig from the Indiana Veterinary College, Drs. Francis and Marsteller from the Texas Agricultural College, Dr. Dykstra from the Kansas State Agricultural College, Dr. Kingman of Colorado.

We saw this sextette at the St. Louis meeting: Drs. Tait Butler, C. A. Cary, A. T. Peters, W. H. Kelly, Mark Francis and A. H. Baker.

They were at the Nashville meeting just twenty-five years ago.

Illinois sent by far the largest delegation.

The most prosperous looking practitioner there was Dr. Walters of Tulsa, Okla. They say that "oil and practice mixes well in Oklahoma."

Canada was ably represented by Drs. Torrance, McGilvray, Watson, C. M. Baker and Villeneuve.

The Ladies' Auxiliary elected Mrs. G. A. Johnson of Kansas City, president, Mrs. Lambert of Ohio, secretary, Mrs. Marsteller of Texas, first vice president, Mrs. Augler of Paxton, Illinois, second vice president, and Mrs. H. P. Hoskins of Detroit, treasurer.

Among the early arrivals were Fitch and Charlie Cotton of Minneapolis, Ward Beebe of St. Paul, Mayo of Chicago, Turner and Munce of Pennsylvania, Jacob of Tennessee, Cahill and Craig of Indianapolis, Hernsheim of Chicago, Klein of Philadelphia, Leon Cloud of Texas, Koen of Illinois, Cassius Way and Adolph Eichhorn of New York, Quitman and Enos Day of Chicago, Kinsley of Kansas City, Hoskins of Detroit, Sigler of Indiana and Brock of Dallas, Texas.

Des Moines, Omaha and Montreal were bidders for the 1923 meeting, Montreal finally winning out.

From the army came Major Foster and Capt. Kelser of Washington and Lieut. Dean, Jefferson Barracks, St. Louis.

Familiar faces were those of Faust of Poughskeepsie, N. Y., "Daddy" Moore of St. Joseph, Mo., Dr. Ticehurst of Tenafly, N. J., and Dr. McKeller of New York City.

Among those absent were: Geo. Berns of Brooklyn, Ben Pierce of Springfield, Mass., Marshall of Pennsylvania, Peter Bahnsen of Georgia, Butler of Montana, Davis of Wyoming, Shepherd of Cleveland, Cooley of Cleveland, Brumley of Ohio, Williams of New York, Higgins of New York, Eliason of Wisconsin, Dalrymple of Louisiana, Dunphy of Michigan, Lamb and Glover of Colorado, Robinson of Providence, R. I., Haring of California.

Among the commercial exhibitors were Parke-Davis, Mulford, Lederle, Zell-Straub,

Haussman-Dunn, Sharp and Smith, Globe Laboratories. The Eagle Company, Ft. Dodge, Serum Company, Swan-Myers, Haver-Glover, Becton-Dickinson, Denver Chemical Company, Alexander Eger, Liberty Laboratories, the Borozone Company, Standard Laboratories, Westmoreland Chemical and Color Co., Pitman-Moore, Corn States Serum Co., Frank S. Betz Co., G. D. Searle Company, Veterinary Specialty Manufacturing Company and Jensen-Salsbery.

Among the State Veterinarians there were: Julian of Indiana, Laird of Illinois, Cary of Alabama, Ferneyhough of Virginia, Simons of Kentucky, Cotton of Minnesota, Hershey of South Carolina, Flowers of Louisiana, Munce of Pennsylvania, Wilson of Missouri and Cloud of Texas.

Dr. John Eagle of Kansas City was the best dancer present.

Dr. E. Calldemeier of Louisville, Ky., was the busiest man there.

Dr. J. A. Wende of Buffalo, N. Y., recently discharged from the government hospital at Hot Springs, Ark., was "among those present."

The heavyweights included Dr. Rives of East St. Louis, 275 pounds, Dr. Morin of McLean, Ill., 265 pounds and Dr. Bell of Nashville, Tenn., 240 pounds.

Dr. G. D. Ingram was there from the much talked of town of Muscle Shoals. Dr. Ingram reports that Muscle Shoals is growing in leaps and bounds and that general practice is developing accordingly.

From California came Dr. Hart of Berkeley and Dr. Sinai of Stockton. Dr. B. J. Symms was there from Corvalis, Oregon and Dr. Moore and daughter came all the way from New Orleans.

Dr. H. M. Wilson, formerly of Illinois and now president of the Arkansas State Veterinary Medical Association, was a congenial visitor.

At the regular gathering of the serum salesmen, Goebel of the Quality Company of Kansas City and Blowers of the Eagle Company, headquarters at Galesburg, Ill., were awarded trophies for having sold the most serum for the 1922 season.

The question box conducted by Dr. Kinsley at the smoker was "the best ever."

SAYS NEWS ITEM A MISREPRESENTATION OF FACTS

"In the August issue of VETERINARY MEDICINE on page 428 you will notice the note 'North Dakota is going Iowa one better. It is sending out experts among the farmers to show them how to treat all of their animals, not only the hogs.' I would appreciate it very much if you could find the source of this statement and let me have it. It may have been meant at one of the county agents or perhaps at the extension veterinarian who preaches animal disease control work from one year's end to the other. I make no bones about the fact that I get away from practice for a week or two now and then and do this work but we are very careful that we do not overstep ourselves, and the county agent leader, Mr. John Haw, is very insistent that the county agent refrain from infringing on the rights of professional men, merchant, or anyone else. A man is warned just once and if there is a continuation of such practice in our state the agent must hunt a position in some other state. We are doing our best to rectify any grievance that may exist and it is for this reason that I ask my question and take VETERINARY MEDICINE to task."

C. H. Vestal.

Comment: The position VETERINARY MEDICINE takes is that of deploring half-baked veterinary instruction, believing that such movements accrue to no one's benefit. We also believe that honest publicity in this connection will result in the proper orientation of the farm adviser in agriculture just the same as the veterinarian has had to orient himself in the doman of animal husbandry through years of hard work. We compliment Dr. Vestal and the farm adviser mentioned for the position they take in regards to the rights of the professional man and merchant because this is precisely our objective.—Ed.

When animals eat and then chew their cud —that's cow; when banqueters eat and then chew the rag—that's bull.

A few days ago we overheard a man who occupies a high position refer to another whose name is well known to everyone, as a four-flusher, and then a few moments later we heard this same man make a long speech on the "Wisdom of co-operation among practitioners." "Consistency, thou art, etc."

Discussions, News, Personals

FORT DODGE COMPANY EXTENDS ITS OPERATIONS

In order to meet a constantly increasing demand for their products, particularly clear anti-hog cholera serum, and also to assure against a shortage of serum that occurred during the summer months of this year in spite of their enormous output, the Fort Dodge Serum Company have enlarged their production facilities by taking over the plant of the Utah Serum Company of Ogden, Utah. The plant is already in operation under the new management.

KADERABECK & WILLIAMS SUFFER FIRE LOSS

The large veterinary establishment of Kaderabeck and Williams, 16 South Fifth street, Fort Dodge, Iowa, together with nearly all of its animal effectives was destroyed by fire September 14. Nine of the twelve horses in the hospital perished and among them was the valuable race-horse "Carl D." The loss of $12,000.00 was only partially covered by insurance. Dr. Kaderabeck was president of the Iowa State Veterinary Medical Association in 1921 and was one of the pioneer anti-hog cholera serum producers in the country, being with Dr. Baughman the original promoter of the Fort Dodge plant.

MILK TESTING BY THE PRACTITIONER

In the July issue of VETERINARY MEDICINE the editorial on milk testing by the veterinarian comes to my notice. Although I feel small in the profession I have during my eight years of practice carried out a plan that I feel will benefit others in regards to how a veterinarian can be of greater service to his community by actually managing dairies, keeping in touch with herds, barns, care, feeding, breeding and in fact all of the different things that go to make up successful dairying.

During these few years by having followed just such suggestions as you mention I have succeeded in improving dairying in this community in a progressive and scentific way. The idea I wish to convey is that the veterinarian can become the ex-officio manager and advisor to his clientele as well as veterinarian. The plan presuppose:

1. Tuberculin testing.
2. Babcock butterfat test of each non-tuberculous animal of the herd. Instruction of how to take samples and keep records.
3. Feeds and feeding. Instruction in rationing that is profitable and which is made up as far as possible from home grown feeds, and with special reference to the protein, carbohydrate, fiber, fat, mineral and vitamin requirements.
4. Sanitation of barns. Instruction of ventilation and lighting, natural and artificial, whitewashing, disinfection and quarantine; and the importance of good health of heavy producing animals developed a great cost and trouble.
4. Breeding. Instructions to beginners and the pitfalls of breeding for heavy producers.

The practitioner can put himself in a position to do a great deal of good to his clients by simply augmenting the broad knowledge he possesses on these subjects with a study of details that will make him the only outstanding expert in his community.

Newberg, Wis. George Emil Milke.

LAIRD SUPPORTS THE PRACTITIONER

Dr. F. A. Laird, chief veterinarian of Illinois, has issued an order that hogs vaccinated by farmers and intended for exhibits at county fairs must be accompanied by a certificate issued by a licensed veterinarian. The farmer must make affidavit to the veterinarian as to the amount of serum and virus used and the conditions about the farm. The veterinarian issuing the certificate must visit the farm and personally examine the herd. Where a veterinarian has vaccinated the hogs he must make similar inspection and affidavit of health.

Dr. J. T. Hernshiem, who needs no introduction to anyone who attends veterinary meetings, local, state or national, is now manager of the Veterinary Specialty Mfg. Co. of Chicago, and is devoting his time to the exploitation and improvement of the products of this well-known establishment. The perfection of operating tables for both large and small animals is his hobby.

THE STUDY OF LIVE STOCK AT FAIRS

The advice given to farmers by the United States department of agriculture to take advantage of the fairs for the study of live stock is also good advice for the veterinarian. Valuable information may be obtained by making a serious study of the exhibits of all the different species and breeds and especially by keeping in close touch with what is transpiring in the judging arena. By displaying an inquisitive mood it should not take the veterinarian long to learn all about the major and minor points insisted upon by discriminating judges. A good working knowledge of stock judging is an attainment the veterinary practitioner has too long neglected, and in view of the present trend of practice it is one that will in a great measure determine our status.

CLOSED OPERATION FOR VENTRAL HERNIA

The following seems to be a good operation for inguinal hernia in young colts from one to ten days old. I was called to see such a colt some time in April that had a hernia as large as a two-gallon bucket. The colt was in great pain. It was all right when born, but the owner said that after it had fallen from a high bank he noticed the hernia in a few minutes. I saw this colt five hours after it happened. There were two openings in the abdominal muscles. I laid the colt on his back returned the intestinal and closed the opening by taking three stitches through the muscles and skin, without making any incision. This seems to be a safe operation if antiseptically handled and is worth trying again as the patient recovered without complication or recurrence.—W. O. G., Va.

IS HEALTH OFFICER, TOO

County Agent A. A. Burger of Cedar Falls and M. L. Bowman of Waterloo, also gave short addresses on bovine tuberculosis and the effect on humans who drink milk from tuberculous cows.—Cedar Falls Record.

Comment: In view of the fact that "the effect on humans who drink the milk of tuberculous cows" is a disputed question even among the most learned men on the subject it would seem that this is one phase of veterinary science that the farm adviser might trust to the public health service at this time, while dairymen are trying to eke out a living by producing milk against odds. The caption is ours.

RABIES VACCINE EFFECTIVE

I would be pleased to have you publish the following report of an outbreak of rabies which, in my opinion, is of interest because it shows the necessity for close inquiry as to when animals were actually exposed to infection, as well as the value of the single dose rabies vaccine.

About March 5, 1922, a stray dog, showing clinical symptoms of rabies, passed through Avondale, Pa., and fought with several dogs, one of which was owned by Mr. Howard Brosius. This dog was severely bitten. The stray dog disappeared and all trace of him was lost.

On April 8, the Howard Brosius dog developed rabies, fought with several other dogs in the community and also attacked a cow. The cow was severely bitten on the head.

The cow and all of the dogs known to have been exposed to infection from the Howard Brosius dog, were given canine rabies vaccine, single dose treatment, (Mulford), from two to four days after this exposure.

Of the total number of animals vaccinated, three dogs developed rabies in from 4 to 6 days after having been vaccinated. The remainder of the animals, including the cow, failed to develop rabies.

As it is impossible to cause rabies by injecting the particular product used under the skin of an animal and the fact that these animals developed rabies in from 4 to 6 days after having been injected, shows that the vaccine could not have caused the disease.

I wanted, however, to know more about these cases and upon investigation, it was found that the animals that developed rabies, subsequent to vaccination, were owned in the vicinity of the Howard Brosius premises and were animals that had been exposed to the original stray dog that passed through Avondale about March 5. At least 5 weeks had elapsed between date of their first exposure and date of vaccination, and in about 6 weeks, after being exposed to the stray dog, these dogs developed rabies.

I am strongly in favor of using the single dose rabies vaccine as a prophylactic and look forward to the day when it will be required that all dogs be licensed and immunized against rabies. However, my experiences show that the single dose treatment is not only a prophylactic but will also prevent the development of rabies in animals that have actually been exposed, if the treatment is given

within a reasonable time after exposure.

A single injection is probably all that is necessary for small animals and two treatments (10 cc) for horses and cattle. However, I have no hesitancy in using two and three injections on the small animals and two to five or more on the large animals at one to three day intervals. I have had no bad results.

One of the vaccinated dogs, that has come through without developing rabies, was severely bitten about the head, neck and throat, besides other smaller wounds on the body. One large ugly lacerated wound in the vicinity of the angle of the inferior maxilla opened into the buccal cavity and was very hard to heal.

The wounds received treatment in about 12 to 18 hours, but the dog was not vaccinated until the third day after exposure. This dog received three single dose treatments. Two full doses (10 cc) were given as the first treatment and the other single (5 cc) dose treatment was given in two doses at three day intervals. A total of 20 cc was given.

The cow referred to in this report is worthy of special mention because three doses of the single dose treatment held this animal in spite of the fact that she was badly bitten about the head. I gave 15 cc the first dose and 10 cc each the second and third doses at intervals of two and three days, totalling 35 cc in all.

In very severely bitten cases, I have no hesitancy in using two (10 cc) or more doses for dogs and three or more doses, (15 cc) for cows and the other larger animals, for the first treatment.

Avondale, Pa. J. T. Quarll.

Dr. F. A. Laird, chief veterinarian of Illinois, served in the capacity of official veterinarian at the state fair of that state held the week of Sept. 16.

Dr. Walter Stirling has purchased the practice of Dr. T. J. Wilson at Parkston, South Dakota, and has moved to his new location.

Dr. E. L. Sidwell has moved from Kampsville, Ill., to Jerseyville, as a permanent location for practice, and to give his son better educational advantages.

Dr. H. O. Wilson of Stanley, N. D., has moved to Minot for greater opportunities.

Dr. J. W. Tooley, owing to poor health, has relinquished his large practice at Fond du Lac, Wis., to his associate, Dr. H. W. Helm. Dr. Helm is a Chicago graduate and was formerly located at Seymour, Wis.

Dr. L. G. Hart of Chippewa Falls, Wis., has moved to Menomonie, Wis., taking over the former practice of Dr. J. D. Lee.

Dr. H. E. Beister returns to Ames from the University of Illinois to again become an instructor in the veterinary division of the Iowa State college of agriculture.

Dr. J. D. Corson of Mt. Morris has moved to Genoa, Illinois, where he will divide his time between practice and management of his father's large stock farm.

Dr. Allen G. Fogle of the state veterinarian's office of Ohio has became the all around fly-casting and bait-casting championship of Columbus and central Ohio by having won over all entries at the state fair tourney.

Dr. Carl A. Wank has completed the erection of a veterinary hospital at 614-616 South Seventh street, St. Joseph, Mo., modern in every way and representing an investment of $15,000.00.

Drs. Denison and Burgess of Bemidji, Minn., are building a new three-story hospital, 100x60, to be completed October 1. The building is of concrete tile and of attractive design.

Permits for the sale and manufacture of oleomargarine in Canada given as a war measure will be terminated March, 1923.

Association Meetings

New York State Veterinary Medical Society

The thirty-second annual meeting was held at the State armory, Syracuse, N. Y., July 26-28, 1922.

President D. H. Udall called the meeting to order on the morning of July 26. After the routine of the business meeting, committee reports, etc., had been taken care of, the president read his address, which dealt largely with the present status of the veterinary profession, its responsibility and its outlook; all of which was optimistic.

Major Jewell and Colonel Hulen Speak for the Veterinary Corps

Major Chas. H. Jewell of the United States Army was asked to speak in reference to the officers reserve corps. Major Jewell's remarks were an appeal to the members of the veterinary profession to join. He explained how men with years of experience and high standing in the profession could aid materially the advancement of the veterinary profession by becoming members of the corps at this time.

Later in the day Colonel Hulen also made a forceful address on the same subject; all of which must be gratifying to those who have seen the rather slow and difficult evolution of the standing of the veterinary profession in the U. S. army. But perserverance and ability have gradually brought about a rightful recognition.

Professor Pierre Fish also spoke briefly on the subject and with telling argument pointed out that when we give encouragement to our army we are doing a service to our country.

This subject, of course, is never discussed in public without paying the just tribute to our lamented Dean Hoskins, who did more to raise the standing of the veterinary profession in the army than any other person living or dead. Longfellow was right when he said, "The pleasures of the many,

May be oftimes traced to one,
As the hand that plants the acorn,
Shelters armies from the sun."

Small Animal Practice

The first paper of the afternoon was by Dr. A. E. Merry, Syracuse, N. Y., his subject being, "Management of a Small Animal Practice." This paper was discussed by Dr. George Little and Dr. A. Slawson, speaking particularly of the use of serum and bacterins in canine distemper. All these small animal men seem very positive that serum and bacterins are very important agents in treating canine distemper. Dr. Slawson always gives a large dose of serum with the first dose of bacterins. He believes it usually takes about a month for immunity to develop. Consequently, the first treatment should be begun if possible, before the animal is exposed.

Hemorrhagic Septicemia of Cattle

Hemorrhagic septicemia in Cortland County was the subject of a paper prepared by Drs. E. V. Moore and J. L. McAuliff of Cortland, N. Y. Dr. McAuliff read the paper and it is one that any one interested in cattle practice can well afford to read with great care. It gives valuable particulars as to the character of hemorrhagic septicemia, its infectiousness and how when the organisms are made more virulent by passing through acute cases, may and do infect native cattle or in other words, those that have not yet been exposed to shipment, but that have been in the herd perhaps for a long period.

Their experience in this extensive and in many ways unusual outbreak seems a strong support for the theory that this group of organisms naturally inhabits the bovine without being pathogenic, but when the resistance of the animal is lowered by exposure or otherwise, they at once become pathogenic and likewise virulent and dangerous to exposed animals. Another important thing associated with this report and which the profession should be grateful to these young men for is the careful way in which they attempted to prove or disprove the value of biologics in the control of this outbreak; all of which pointed conclusively and positively as other practitioners have found out—notwithstanding arguments on experimental data to the contrary—that bacterial treatment is an effective way and the way to handle this disease.

The three types of the disease were encountered in these different outbreaks. That is, the pulmonary, exanthematous, and the nervous. Their report of thirty-three autopsies was complete and interesting. In the case of sick animals they gave 100 mils of serum intravenously each day usually for three days. About 55 per cent of the sick animals recovered under this treatment. Bacterins were used on the rest of the herds, one injection apparently checking the disease. However, eighteen cases in four herds developed after one injection, but none after the second injection.

This important paper was discussed by Drs. Charles S. Chase, E. V. Moore, J. W. Benner and J. F. DeVine.

Demonstration of physical examination of poultry by Dr. J. W. Fuller was then given and the meeting closed for the day.

Mayor Walrath Addresses the Meeting

The dinner was held on the evening at the Hotel Onondaga, ladies and non-members attending. After the dinner Mayor Walrath of the city of Syracuse, gave an address of welcome. The mayor's pleasing manner and his evidence of good fellowship was delightfully received and responded to by Dr. E. L. Volgenau of Buffalo, in a truly splendid way. His remarks were serious, opportune and dignified. After thanking the mayor for his cordial welcome, he explained why we were at the conference and the important role that the veterinary profession plays in public health matters and our civil liberties. Such an address does the profession good. This is the type of man that should represent the profession on public occasions. The lay people go away with more respect and a better idea of a profession that has been kicked about altogether too much and not always represented by men weighted down with ability or personality.

T. E. Munce Explained Pennsylvania Methods

The meeting on the second day was opened by an address by Dr. T. E. Munce, director, Pennsylvania bureau of animal industry. His subject being, "State Organization for the Control of Diseases in Livestock." Dr. Munce presented charts and explained in detail the methods in operation in Pennsylvania, which is generally recognized as one of the model, if not the model, states in the control of animal diseases.

Commissioner Pyrke Champions Cause of State Rights

The same subject as applied to New York state, was handled by Hon. B. A. Pyrke, commissioner of farms and markets, Albany, N. Y.

He reviewed the situation in New York and showed that he had given the matter much thought. He seemed to have a clear knowledge of the whole situation. He believes that the state should work more and more to the end of taking care of their own troubles and rely less upon the federal government. The thing we liked about his address was that he could give reasons. We predict that with good counsel, Commissioner Pyrke will in time be of real service to the solving of these problems in New York.

Optimistic Address by President Bigler

"The cattle industry in New York; its relation to the administration of disease control in livestock," was discussed by C. F. Bigler, president of the New York State Holstein-Friesian association. Mr. Bigler's address was a good one, full of logic and full of hope. He seems to be the kind of a man to be the head of such an organization. He is anxious to rid our herds of disease without destroying the dairy industry. He believes that all the populace of the state could help to do it and believes in giving liberal indemnities.

Secretary Zimmer Preaches Wisdom of Honest Sales Methods

Mr. Bigler was followed by Mr. E. R. Zimmer, secretary of the New York State Holstein-Friesian Sales association. Mr. Zimmer impressed one as a business man and a fellow that wants to adopt every precaution in protecting, so far as possible, the buyers and sellers of Holstein cattle. The many rules that have been adopted with particular reference to the health of cattle by this sales company, are positively commendable and he made it plain that his association stands ready to adopt any others that are best for the cause.

Chief McLaury, Despite Trials, Has Faith

The last speaker of the morning was D. W. McLaury, chief of the bureau of animal industry, Albany, N. Y. Mr. McLaury reviewed some of the trials and vicissitudes that the chief of this bureau has the pleasure of wrestling with. He seems to take consolation in the fact that Solomon and Moses, with all their wisdom and inspiration, did not escape the dissatisfaction of all the people of their time. Having had a taste of his trials we know how to sympathize with him. But while rummaging over Biblical lore, it might be well to remember that he who had faith was thrice blessed and that calm usually follows the storm.

Tuberculin Test and Other Clinics

The afternoon was given over to a demonstration with about twenty cattle of the tuberculin test technic conducted by Dr. H. W. Turner, Pennsylvania bureau of animal industry.

The following morning clinics were held, Dr. J. N. Frost, performing a rumentomy; Dr. W. W. Williams, an amputation of the cervix, and Dr. W. L. Williams exhibiting the genital organs of the cow in health and disease, by specimens that had been procured at the laboratory.

New Society Organized

On the afternoon of the last day, there was held a sort of supplementary meeting which was styled the first annual meeting of the "Society for the Study of the Diseases of the Genital Organs."

Sutherland Simpson, M. D., of Cornell University, was the first speaker, his subject being, "The Functions of the Endocrine Glands." It was a splendid discussion. The doctor put special emphasis on the things that we do not know concerning these glands and predicted that when accurate knowledge is once obtained on the subject that it will be one of the most important branches of the science of medicine.

The next was a paper that had been prepared by Dr. C. J. Marshall, Philadelphia, Pa., on the "Opportunities of the Practitioner in the Treatment of Sterility." He stressed the importance of the work and the necessity of many men properly preparing themselves to do this work.

Following Dr. Marshall, Dr. F. W. Andrews of Mount Kisco, N. Y., read a paper on the "Use of Pituitary Extract in Disease of the Genital Organs." The doctor having used this drug on several cases of retained placenta, believes that it is of great value in post parturient conditions, where there is atony of the uterus and recommends that the profession try it out thoroughly.

"Nymphomaniac Cystic Ovaritis" was the title of the paper prepared by Dr. W. L. Williams, Cornell university, and Dr. W. W. Williams, Springfield, Mass. The paper dealt with the possibilities of pituitary extract and adrenalin in the treatment of cystic ovaries that do not respond to massaging. The authors said they have not done enough experimental work to recommend how it can best be used or the exact dosage.—J. F. De Vine.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

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FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Winfield, Kans.

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PRACTICE FOR SALE—With all modern equipment, including residence and hospital. Located in Central Illinois, in the Corn Belt district. Have been in practice in this location for 17 years. Retiring to move on my farm. The city has 18,000 inhabitants. Some dog practice. Address No. 697, care of VETERINARY MEDICINE.

FOR SALE—Practice in Central Kansas. $1200 to $2000 per month. Will sell equipment, consisting of Ford car, operating table, drugs, instruments, and other supplies, and give five-year lease on building for $3000—one-half cash. Wonderful proposition for anyone wishing to step into a large practice. Hospital well equipped for small animals. Address No. 700, care of VETERINARY MEDICINE.

FOR SALE—Veterinary practice in West Texas. Big territory. No competition. County seat, population 3,000. For particulars write Dr. C. E. Richardson, Clarendon, Texas.

FOR SALE—Veterinary practice in Southern Alabama. Large live stock center. One of the best in state. Bargain to quick buyer. Address No. 699, care of VETERINARY MEDICINE.

FOR SALE—Good practice. $3,500 to $4,000. In a rich farming country. In the "Thumb" of Michigan. Price, $4,000 for home and office, including stock of drugs. Reason for selling: Going into another business. If interested, address No 695, care of VETERINARY MEDICINE.

FOR SALE—Veterinary practice. Ran $2,500 to $3,000 last year. Large territory. Price $250.00. Address Dr. James H. McCoy, Colfax, Washington.

FOR SALE—Growing practice in alfalfa belt of Mississippi. Town 6,000. No competition. Rock roads. Three railroads. Dairy and stock center. Address No. 694, care of VETERINARY MEDICINE.

FOR SALE—Large, general practice in small city in Northwestern Pennsylvania. No competition. Plenty of work and good prices. Sell on inventory. Leaving these parts. Address No. 693, care of VETERINARY MEDICINE, if you mean business.

FOR SALE—Excellent delta practice. Mostly hogs and mules. Runs $600.00 per month. Unlimited territory. Little competition. Collections, 100%. In a live and progressive farming section. Desire to sell drugs, instruments and equipment. Other business interests require my time. Address No. 698, care of VETERINARIAN MEDICINE.

(Continued on page 668)

POSITIONS, LOCATIONS, ETC.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

WANTED—Established practice in Minnesota or Eastern North Dakota. Can pay cash, or will consider position with drug or serum company. Address No. 692, care of VETERINARY MEDICINE.

MISCELLANEOUS

"QUICK COLLECTIONS"—Everywhere. Live wire firm! Established 28 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

NICKEL PLATING—Every Veterinarian has some instrument which needs replating. Send them to us. We will make them like new at a moderate cost. Nelson Plating Co., Morris, Illinois.

PRINTING

BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

WEST VIRGINIA ANNUAL

The annual meeting of the West Virginia Veterinary Medical Association was held at the Chancellor Hotel, Parkersburg, West Virginia, on July 26 and 27, 1922, when a program covering an unusual scope was carried to a large attendance, all officers being present.

The regular order of business was carried out, and a fine clinic was held at the hospital of Dr. J. C. Callander, Parkersburg, West Virginia.

Dr. Neff, who is in charge of tuberculosis eradication work in West Virginia, was present, and also four of his assistants. Dr. Neff clearly defined his work here and also the co-operation of practitioner and federal employees which he says we must have for the success of both.

The visiting ladies and members were entertained by a banquet and moonlight sail on the beautiful Ohio River. All voted that this meeting was the best ever held by this association. It was also rumored about that a midwinter meeting might be held in Charleston, West Virginia, when our legislative body is in action, to try for a few new veterinary laws badly needed in our state.

New officers elected for the ensuing year were: Dr. Ernest Layne, President, Huntington, West Virginia, and Dr. J. J. Cranwell, Secretary-Treasurer, Fairmont, West Virginia.

J. J. Cranwell, Secretary-treasurer.

NORTHWESTERN ILLINOIS AND SOUTHWESTERN WISCONSIN ASSOCIATION

The Northwestern Illinois and Southwestern Wisconsin Veterinary Medical associations at the annual picnic held at Krape's Park, Freeport, Ill., held August 15, passed the following resolutions:

Be It Resolved That we the signers, members of the Northwestern Illinois and Southwestern Wisconsin Veterinary Medical association, now in regular meeting assembled at Freeport, Ill., do hereby pledge ourselves to buy supplies that are manufactured insofar as possible by a concern that is ethical in its dealings with the medical professions and adheres to a policy of sales to licensed men only or preferably to graduates only.

Be It Further Resolved that each and every one of us shall do our duty in reporting evidence of ethical violations to the secretary-

treasurer of this association, so that a record of the same may be compiled for the information of its members.

The annual meeting of this association will be held at Freeport, Ill., October 11 and 12, 1922, at Dr. Swingley's hospital. There will be a clinic, literary program and banquet and a large attendance of both members and visitors is expected.

ONTARIO VETERINARY MEDICAL ASSOCIATION

The annual meeting was held at the reception room of the Harris abattoir, Toronto, August 9 and 10. President J. A. Campbell presided, and brought out in his address that the association was now paying attention to the subjects that are pertinent to the success of veterinary practice. The following is a partial list of the contributions and contributors:

"The Relation of Sweet Clover to an Acute Disease of Cattle," by F. W. Schofield; "Better Sires," by R. Wade; "Hog and Bacon Grading in Canada," by Thos. Olsen; "The Necessity of More Observation by the Average Veterinarian," by C. H. Higgins; "The Relation of the Poultry Industry to the Veterinarian," by Robert Barnes; Swine Diseases, by T. P. White; "Practical Hints on Surgical Restraint and Technique," by C. J. Spencer; "Surgery in Poultry Practice," by J. Dunn; "The Horse: Canada's Cheapest Horsepower," by Wayne Dinsmore, and others.

Dr. Torrance spoke on hog diseases and stated that the losses from cholera in the whole dominion last year was less than $5,000.

D. A. Devine of Toronto was elected president and J. S. Glover also of Toronto the secretary-treasurer.

NEW HAMPSHIRE VET. MED. ASSOCIATION

At the annual meeting of the New Hampshire Veterinary Medical Association Dr. R. W. Smith, state veterinarian, was unanimously elected president. Dr. Smith has served as secretary and treasurer for the association since it was organized in 1915. Dr. John E. Marston of Manchester was elected vice president and Dr. Herbert S. Perley of Hanover, secretary and treasurer.

The business of the meeting consisted of the election of officers and the presentation of the following program:

1. "Anthrax Control Work in the North

Country," by Dr. A. L. Edmunds, Franklin, N. H. Discussed by Dr. C. F. Hill, Lancaster; Dr. Guy E. Chesley, Rochester; Dr. A. F. Hill, Littleton; Dr. R. W. Smith, Concord.

2. "Tuberculosis Eradication Work from the Practitioner's Point of View," by Dr. F. F. Russell, Concord, N. H. Discussed by Dr. H. M. Lewis, Nashua; Dr. C. E. Swail, Colebrook; Dr. H. S. Perley, Hanover; Dr. E. A. Crossman, Boston, Mass.; Dr. F. V. Dederick, Keene.

3. "Side-lights on the Hartford Conference," by Dr. R. W. Smith, Concord, N. H.

The following resolution was presented and unanimously adopted by the association:

The members of the New Hampshire Veterinary Medical Association do hereby place themselves on record as being in hearty accord with the federal government and the state authorities in their work of the eradication of tuberculosis and do hereby pledge themselves to co-operate with the authorities for the successful carrying on of the work.

Remarks were made by Dr. E. A. Crossman of Boston and Commissioner of Agriculture A. L. Felker.

H. S. Perley, Secretary.

The annual meeting of the Northwestern Wisconsin Veterinary Medical Association will be held at Appleton, October 18, 1922. The officers announce a good program. Dr. Wm. Madson, of Appleton, is the secretary.

Dr. H. B. Ropp, of the firm of Ropp and Dannley, of Ashland, Ohio, was elected president of a new veterinary association recently organized in that city under the name of the North Central Ohio Veterinary Medical Association. Dr. C. C. Wadsworth, of Mansfield, was chosen secretary; Dr. W. F. Wise of Medina, vice-president, and Dr. M. C. McClain, treasurer.

The Northwestern Nebraska Veterinary Medical Association is the name of a new organization born at Wayne, Nebraska, August 16. Dr. S. S. Gibson, of Randolph, was chosen president and Dr. R. W. Heckeet, of Harington, secretary-treasurer. The meeting was well attended and the project enthusiastically supported. The first regular meeting will be held at Wayne, October 19.

The Mississippi Valley Veterinary Medical Association, which is one of the pioneer locals of this country, held its regular semi-annual meeting at Galesburg in August. Dr. A. T. Peters, of Peoria, Dr. M. T. Lair, of Alexis, and Dr. H. C. Wadleigh, were the principal speakers.

CLASSIFIED ADVERTISEMENTS

(Continued from page 664)

POSITION WANTED—Graduate, ten years' experience. General and canine practice. Also tuberculosis eradication with B. A. I. Sober and industrious. Address No. 702, care of VETERINARY MEDICINE.

FOR SALE—Veterinary practice. Nearest competitor, 12 miles. Splendid farming country. Practice all round horses, cattle, hogs. Good oiled roads, every direction. Building frame 40x20, on leased lot. Lease on lot paid to Sept. 1, 1923. Good reason for selling. Price $650.00, cash. Address No. 703, care of VETERINARY MEDICINE.

FOR SALE—Rapidly growing practice in Northern Indiana. Large territory. Good roads. Good collections. Will sell practice and good line of drugs reasonable. Address No. 704, care of VETERINARY MEDICINE.

FOR SALE OR LEASE—Veterinary practice and equipment in one of the most prosperous sections of Georgia. Well established and paying. Business runs about $6,500.00 a year in normal times. Mostly white farmers. Good class of live stock and good pay. For particulars address Dr. R. W. Jones, Veterinary Division, State College of Agriculture, Athens, Ga.

FOR SALE—Practice amounting to $5,000 a year. In good dairy section of Wisconsin. Property valued at $3,000, for rent or for sale. Good reason for selling. Address No. 701, care of VETERINARY MEDICINE.

Concluded from page 623

bothriocephalid tapeworm egg, but this diatom is flat, whereas the tapeworm egg is almost spherical. Various cells of algae are figured as figures No. 12, 13, and 14 to show the superficial resemblance of these cells to parasite eggs. The presence of chlorophyll in most of the algae is sufficient to distinguish them from parasite eggs.

NOVEMBER
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD, CHICAGO

A Magazine for the Veterinary Profession

$4.00 the year

VOL. XVII — No. 11

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You wished for a sure-enough dependable Anti-Hog Cholera Serum, with all the good left in and the bad taken out—and sold at a reasonable price.

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VETERINARY MEDICINE

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Vol. XVII CONTENTS FOR NOVEMBER No. 11

Veterinary Medicine

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The Veterinary Situation in Soviet Russia

THE Recueil de Medecine Veterinaire is running a continued article on the veterinary situation in soviet Russia extracted from a report of a Polish veterinarian (M. Kasimir Zagrodski) who was sent to Moscow by his government to study the contagious disease problem. The article is extremely interesting in that it portrays the foolhardiness of people who would set aside with impunity the world's scientific achievements in their mad search for Utopia.

Veterinarians Few

The report shows that in all of Russia there are fewer than 3,000 veterinarians and that many of these are victims of famine, misery or their political convictions. All veterinary service is in the hands of the government and the old administration has been placed under the commissioner of agriculture who directs a central veterinary council of his own selection. Theoretically, this personnel receives its pay from the government which consists of a monthly allowance of food-stuffs. The allowance is 12 pounds of bread, 15 pounds of rye flour, three to six pounds of herring, five to seven pounds of beans and two liters of oil, but as even this meager allowance is seldom forthcoming they take their toll from whatever clients they can get and in whatever form possible.

Qualifications More Political Than Technical

The qualification is the "red diploma" obtained by such educated veterinarians who have seen fit to change their political notions to conform with the bolshevik dream and from political henchmen without special aptitude, chosen for their loyalty to the red cause. "But already." the report goes on to state, "the government is beginning to realize than an employe no matter how "red" he may be is a mighty poor asset for the state when assigned to a duty he is not qualified to fill." But in spite of this the soviet government favors only those who are willing to fight for the communistic ideals.

Laboratories and Libraries Destroyed

The scientific laboratories and institutes including equipment and libraries that existed before the bolshevik regime have either been abandoned, destroyed or stolen and what was left of the wreck has for no good reason been transferred from Petrograd to Moscow.. Now in despair, it has however been decided to establish "The Veterinary Experimental Institute" but until now its service is practically nil, and although there have been created (on paper) a serum plant, a section of parasitology, one on pathological anatomy and another for meat inspection, all these are in the embryonic stage and do not promise to accomplish anything worthwhile for the present generations of Russians.

Recognize Glanders as a Menace

At Moscow a "central microbiologic station" has been established for the army chiefly for the purpose of combating glanders among horses of the red army. This "laboratory" is located in miserable quarters:—dirty, dark, without fuel and water and with no technical material whatever. In all laboratories the conditions are deplorable. One can well imagine the condition of the horses of this so-called army in view of the fact that even before the war and during the campaigns, glanders was such a veritable scourge that the allies did not risk to export them for their use but went to North and South America and Australia for their remounts. During 1920 on account of the dearth of material and accommodation it was only possible to produce 12,000 doses of mallein for the whole of Russia and conditions have not improved. That the need of combating the disease all over the country is recognized is shown in the establishment of 10 substations at different parts of the country, but in these country stations the conditions are even more pitiful than in the large cities, and in winter all operations must cease on account of lack of fuel.

This year a veterinary museum was opened at Moscow formed by a collection in use before the war. This is worth a visit as it is truly a unique exhibition of ruins that once represented culture, science and art.

Imaginary Veterinary Schools

There are now four of the old veterinary schools (without teachers) in the whole country and four new ones have been established (on paper), one at Moscow, one at Petrograd, one at Omsk and one at Kiev. Teachers are being sought and in lieu of veterinarians it is contemplated to organize mixed faculties of veterinarians and zootechnicians, and curricula in which veterinary science will be but an insignificant part, designed to hastily recruit the experts required and to distribute "red diplomas" independent of the purely veterinary knowledge the recipients might possess.

Professors Scarce

The professors like everyone else suffer much from famine and obtain their perquisites very irregularly. They are scarce and if a bolshevik is asked "Where do you get your professors?" they reply, "From the street."

All of Russia is actually a prison of which each individual is an inmate. The ideal of each may be reduced to three desires: (1) Not to die of hunger; (2) Not to freeze to death in winter; and (3) Not to fall into the hands of the Tcheka.

Live Stock Industry Deplorable

With all of this in view, it is hardly necessary to say to those familiar with the problems of animal husbandry that the live stock interests of Russia are approaching a catastrophe that is not only dangerous for that country but also for all contiguous ones or for that matter for any country that would court free economic relations with it.

Unless Russia heeds the warning that it can not turn its horses and other live stock over to the tyranny of disease and slip-shod breeding, it is doomed. It will go the way of all big nations in history that failed to foster their breath-giving industry—live stock.

To our friends who are so timorous as to deplore the attitude we take toward those farm bureau movements that are detrimental to the best interests of the practicing veterinarian, we have but one reply:

Any agency that disturbs the industrial and social order of the day can not expect smooth sailing even though in the end it may do good. To wiggle under the lash without even a show of opposition while a steam roller is looming up to complete the work of destruction is our notion of zero in editorial policy.

DEFINITE POLICIES SHOULD BE ADOPTED BY THE VETERINARY PROFESSION

Whether it is the fault of the national association or not it is nevertheless a fact that we are a profession that is just drifting along without any fixed policies through which the people might indentify our objectives. Thus far we have only been an aggregation of men grabbing at whatever appears in sight as a means of justifying our existence. The time seems to be at hand when a change in this connection should be made. It would seem advisable to adopt some definite program as regards to our relations with agriculture, our relations with public health movements, state and federal medicine, the status of the practitioner, veterinary education, welfare of the civil and military employees of the government, vivisection and humane societies, and last, but not least, as regards to the matter of more publicity for our enterprise.

HORSE ASSOCIATION CHARGED WITH UNFAIRNESS

A very amusing thing happened at the St. Louis meeting of the national association. A member, who is also editor of a publication devoted to agriculture, openly charged the horse association of being so unfair and untruthful that he has not been able to use any of its literature for publication. The charges, although serious enough from the standpoint of moral ethics, were allowed to lapse when the accuser, on being asked for some facts to substantiate his indictment, made such a miserable failure of the reply.

The event was hardly noticed and would not be given space now had we not been reminded by a correspondent occupying a high position that, while the charges were more amusing than serious, it was unwise for an association like the A. V. M. A. to allow such an indictment to be written into the records without a discussion that would reflect the true sense of the meeting.

Our correspondent is assured that no great harm has been wrought, for the reason that those interested in promoting sound agriculture by encouraging the use of the horse as against the motor truck and tractor do not

expect any sustained support from the agricultural press until the horse industry is in a position to expend as much for advertising as the automotive interests, which will never be. The horse exponents with their paltry stipends working against organized capital with its millions are resigned to their fate in this connection, and know they must pin their faith in developing a sense of reason by campaigns of circularization and not in any support the public press will give them. The charges are amusing because they remind one of the driver of a steam roller who would whine because an ant was encroaching upon his right-of-way.

Ask the country banker and not the agricultural press if the Horse Association of America is guilty of misrepresentation.

OUR NORTHWEST COLLEAGUES ARE LEADERS

Members of the veterinary profession in the far northwest are playing an important part in the promotion of animal husbandry by taking an active interest in the live stock fairs of that section of the country.

At the Spokane Interstate fair, Robert Prior, a practitioner from Benton City, Washington, was official handicapper and presiding judge of the races and A. R. Galbraith, the well known veterinarian of Garfield, Washington, was judge of the horses on exhibition and also official starter of the races.

At the Walla Walla fair, H. A. Tripper, a practitioner of that city, was president of the fair association and Drs. Prior and Galbraith served in the same capacity as at Spokane, while Doctor Fuller was the official veterinarian.

At the state fair of Washington, held at Yakima, Prior was superintendent of live stock and had charge of the races of which Gailbraith was the official starter. P. G. MacKintosh of Yakima, well known as a leading practitioner of the Northwest, had charge of the horse department, R. J. Donohue, state veterinarian, had charge of the dairy division and Dr. L. C. Pelton of Olympia, who is director of the live stock division of the state department of agriculture, was the official veterinarian.

This bit of news should make Middlewest and Eastern veterinarians envious of their Northwest colleagues and their achievements in this connection are something worthy of emulation everywhere. No one is better fitted to occupy such positions than the veterinarian who strives to qualify for them, and no form of publicity will tend to place the veterinary profession in its just and proper light before society than the esprit de corp that brings our personnel into such places of prominence and responsibility. Such news spells progress and indicates in the most striking manner possible that insofar as the Northwest is concerned veterinary science is in safe hands.

THE BRUTALITY OF THE TRAINED ANIMAL ACT

Although it is not generally believed, animals trained for vaudeville and other exhibitions are often severely punished, brutally handled and even tortured to bring them under submission and control. Fear, force and punishment are the animal trainer's resources. In the training quarters and behind the scenes the trained animal act is as obnoxious to the sensitive observer as it is pleasing to the unsuspecting audience. It is a subtle form of cruelty that might well be omitted from our pastimes, not only because of the brutality required to make animals amusing but because to those who understand animal psychology it is hardly more than a cheap form of deception that displays more fear than animal intelligence. It should go the way of the arena and the cock-pit, and is not defended by anyone who knows that the training quarters for such acts are little less than torture chambers.

STEP OVER TO THE RIGHT SIDE

As the dairy industry according to the highest authorities is not self-supporting and as serious-minded economists are bending every effort to overcome so critical a situation, the time is opportune for the veterinary profession to studiously refrain from putting obstacles in the way of those who are trying to improve matters by increasing the popularity of milk and milk products. In this connection the dairyman is in the same position as the exponents of the horse. As Hoard's Dairyman says, "The cow is a good producer but she has a hopeless business manager." In other words the dairyman has no one to advertise the merits of his products on the same scale as the manufacturers of milk substitutes, just as the horseman finds himself overwhelmed by paid advertisements of tractors and motor-trucks. Milk is the product of an unorganized industry, milk substitutes of an organized one, and the same relations apply to the horse and motor power. The one, through the sheer merit of its products, ekes an existence, the other thrives largely through

widely advertised misrepresentation of facts.

Ask yourself seriously to which side you belong, and look down at your audience and notice which side is applauding when you speak about the harmfulness of milk and other animal foods.

OBSCURITY OUR GREATEST MISFORTUNE

Since the days of Vegetius the Roman veterinarian who wrote the first scientific veterinary book of record and who told his emperor that the treatment of animals was not to be regarded as a low occupation because it conserves precious property for the state, there has never been a time when the indispensibility of veterinary science to civic progress has been appreciated by the people. On the contrary, throughout this extended period, veterinary science has done its big share towards the civilization of the world with the people almost unconscious of its existence and never fully informed of its achievements nor of its importance in the development of civic welfare.

The situation today is the same as it always has been. There are big men now, big as measured from the standpoint of successful statesmanship, who would, and in fact do, treat veterinary science as something too insignificant to merit encouragement or notice. There are even some men in animal husbandry occupying positions of influence who are indifferent to the appeals of the veterinary profession for more perquisites and recognition and who believe it safe to leave the health of animals in the hands of the educated agriculturist.

Impressions of this character should be circumvented in some way, should be taken hold of and handled, not only for our own self-preservation but also for the preservation of the people themselves. No important nations have ever been greater than their live stock industry makes them, either directly or indirectly. In a nation like ours it is the fundamental resource that enables our people to live and to prosper. It supplies food, clothing and other necessities and still leaves a big surplus to trade for things we want from other nations. To abandon such an industry to become the prey of disease is appalling to contemplate since it would make a fundamental industry a gamble—an unprofitable hazard.

The nation needs veterinary science, and it needs it so much more than most of our public men comprehend that our main program for the next decade is to attempt what all of our predecessors since Vegetius have failed to achieve—that is, drive home the chain of thought that success of the nation depends upon agriculture; that successful agriculture depends upon animal husbandry; that successful animal husbandry is not possible without advanced veterinary science; and finally that veterinary science depends upon the prosperity of the individual veterinarian.

The welfare of the individual veterinarian must first be provided for. If the practitioner, the official or the professor is not prosperous, veterinary students will dwindle in numbers, schools may close their doors for want of patronage and the whole profession decline into a state of hopeless mediocrity. Those charged with public veterinary education have a big responsibility that can not be safely shouldered for any great length of time without bringing the matter of our unfortunate obscurity to the attention of the thoughtful and through them to the masses.

WOOD ALCOHOL—BEWARE OF "HOOTCH"

The head of the department of Pharmacology of Harvard University Medical School writes in a bulletin on the subject of wood alcohol as quoted in Pharmacal Advance (Vol. 51, p. 14):

"It cannot be too strongly emphasized that there is not a single property of wood alcohol except its poisonous effects, by which anyone but a chemist can distinguish between purified wood and ordinary or 'grain' alcohol. The appearance, odor, and taste of the two are so strikingly alike that even chemists who have had much experience with them are unable by these properties to distinguish between them with certainty. The difficulty is, of course, greatly increased when essences, flavors or coloring matters are added, as is the case in the spurious drinks now being offered for sale.

"When ordinary alcohol is taken into the body it is rapidly converted into water and carbonic acid gas, which are harmless substances, always present in the body, and any excess of which is promptly eliminated by the kidneys and lungs. Wood alcohol, on the other hand, instead of being changed into harmless substances which are easily eliminated, remain in the body as such for a considerable time, and is then slowly converted into another poison—formic acid—the acid which is found in ants. These poisons, and perhaps a third formed

from the wood alcohol, formaldehyd, attack the brain and other organs and cause death or blindness. Toxicity is an inherent quality of wood alcohol."—L. H. P.

AGRICULTURAL PROBLEMS OUR PROBLEMS

It will not profit anyone to lift a finger against agriculture because everyone is directly concerned in its welfare. Every man, woman and child of this and every other nation, every trade and every line of human endeavor depends upon it for the breath of life they enjoy and while many are given to look upon agriculture as the soundest of industries it is in fact one of the most precarious of occupations. It is a precarious occupation because unlike other industries it has no power to charge off the cost of production from the selling price of its finished products but instead must take what is offered and then just make the best of whatever profit or loss accrues. And all of the while its products are being grown it is at the mercy of the elements (frosts, storms, hail, droughts, floods), at the mercy of plant scourges or of animal diseases.

Relative Costs a Misfortune

And beyond all of these things of purely current interest we are face to face with the uncanny fact that with a decline of agriculture as a stable industry nothing but national decline seems possible. Scientific agriculture is new. It is, in this country, only thirty years old. The land until now has simply been "mined" of its elements much of which in turn has been dissipated in the form of waste and luxuries. The value of the land has decreased while the selling price through increase in population has reached unreasonable proportions, that must now serve as the basis upon which to make calculations as to what should be a just and proper return for the capital and labor required to keep it producing. Farm products are at prewar prices while farm necessities remain unreasonably high. It takes ten bushels of wheat to buy a ton of coal and in some districts much more. It takes nearly two tons of corn to purchase a ton of middlings with nothing charged for cartage to and from the farm. If a farmer stepped on a train at the platform where he delivers milk for 10 cents a gallon and drank a glassful for his dinner in the dining car he would pay for it at the rate of $2.40 a gallon. These unexaggerated facts might be related ad infinitum to show still more forcibly that agriculture is threatened with distress.

"Mine" Land to Make a Living

What have these economic monstrosities to do with scientific agriculture? Everything. While the farmers of this country did ignore the agricultural colleges for a long time they never lacked interest in the experiment stations, but being always faced with depressing influences of commerce they quite naturally have been compelled to concern themselves more about the question of making a living by "mining" the land than about the troubles of its future occupants after soil-fertility has been destroyed. Whether we are but a terrestrial species that will become extinct by destroying our means of existence cannot be of much concern to the farmer so long as the country in which he lives surrounds him with conditions which prevent "permanent agriculture" from becoming a reality instead of a mere dream.

Scientific agriculture must be practical. It must at once presuppose a decent living for the present generation of farmers while the fertility of the soil is being preserved for the salvation of future ones; and unless some relief from existing conditions is forthcoming, agricultural and then national decline is inevitable.

Dangers Well Known

Anxiety in this connection is not new. Knowing men have sounded the danger signal for years, but their appeals are still unheeded, and while such agencies as the farm bureau, the bureau of markets, extension work of universities, experiment stations, and the agricultural bloc of congress have been created, obviously with good intentions, their impotence is shown in the continued state of distress American agriculture finds itself today.

Our Welfare at Stake

The situation concerns the veterinarian, directly, materially, seriously. The fight for better farm conditions is our fight as much as it is the farmers' fight. It concerns everyone, but a profession like ours whose prosperity runs parallel with agriculture should be as much interested in a change for the better as the farmer himself.

It seems strange to those not as closely allied to agriculture as we are, that the veterinary profession is sometimes found arrayed in movements the other is combating in the interest of self-preservation. This is not as it should be. We belong to agriculture and nowhere else. It is time for us to stop and think. Instead of looking idly on at the stalled band-wagon in which our profession belongs we should help push it along. We should not hold it back.

BOOK REVIEWS

Diseases of the Small Domestic Animals, by O. V. Brumley, professor of surgery and director of clinics at the Ohio State university. Published by Lea & Febiger, Philadephia & New York.

Professor Brumley's new book is a timely contribution to veterinary literature because it supplies instruction the practitioner needs to meet the current trend of practice toward the small species of domestic animals. The book contains 672 pages 8x10 and is well written and edited. It is an easy book to read both on account of the type and the arrangement of the subjects. It is arranged in short paragraphs condensed to make it cover the broad field with few omissions of subjects on which the practitioner is likely to seek information, either practical or scientific.

Brumley's new book should become a standard work and a popular one with the practitioner because the author throughout displays his characteristic attribute of hitting the mark without quibbling and without juggling with a sea of words to no useful purpose.

The book has been on our desk for several months during which time it has been read with a great deal of pleasure and profit. In fact our editorial staff have come to the point of accepting it as authority on matters appertaining to small-animal diseases. Its terminology is classical, its pathology sound and without speculative tendencies, its symptomatology contains some mighty instructive syndromes, and the treatments have the earmark of having been used and found useful.

Veterinarian's Handbook of Materia Medica and Therapeutics (Second Edition) by D. H. Udall, professor of veterinary medicine and hygiene, New York State Veterinary College, Cornell University. Published by The MacMillan Company, New York.

The second edition of Professor Udall's vade mecum is a 180 page cloth bound book with pages 6½x4 inches. The dimensions are small but the contents are voluminous. It contains about as much material as could possibly be compressed between two covers of that size. After a careful reading it leaves the impression of being "a condensed encyclopedia of useful veterinary knowledge." It stretches across the whole field of veterinary practice from the pharmacy to the autopsy.

The book is full of useful tables—on solutions and solubility of drugs; on the dose ratio for the different methods of administration; and on that of the different species; on the period of estrum in the mare, cow, ewe, sow and bitch; on the duration of pregnancy, the sucking period, the brooding period of fowls and a calender that enables the reader at a glance to determine the day parturition will arrive in any animal bred on a given date. Such tables contain details few men can remember and being grouped into one small book they are of exceptional value.

In the chapter on drugs the author is to be complimented for having omitted the stereotyped pharmacodynamics that usually feature such compilations to no good purpose and for having confined himself chiefly to therapeutic and pharmacal uses and dosage.

In the treatment of disease the omissions can be charged off on account of space and the mistakes, if any, can probably all be explained as purely matters of opinions. As a whole this chapter is a splendid compend for ready reference on treatment that will not lead anyone very far away from modern orthodoxy in therapeutics.

The four pages on the determination of age do not add to the value of the book for the reason that no one ever consults such tables and besides in this case the arrangement is masked with a special code that is not easy to decipher.

The table on pulse, temperature and respiration rates of the different animals will be appreciated and that on Fahrenheit and Centigrade equivalents the practitioner will find very useful because the equations by which transpositions are made are usually forgotten and generally puzzling.

The chapter on clinical diagnosis is a good outline for the veterinarian to follow but it should have ended without having incorporated the subject of diagnosis of lameness—a subject that tricks every intruder even where the space allowance is unlimited.

Every veterinarian should have this little book lying within reach on his desk or hung up in the pharmacy where it will prevent guess work and save lots of precious moments.

Hunting's Art of Horse-shoeing (Fourth edition) by Major A. B. Mathinson of the Royal Army Veterinary Corps Militia and former Commandant of the Army Veterinary School of Farriery. Published by Bailliere, Tindall and Cox, London.

This book, which is just off the press of these

well-known publishers, is cloth bound and contains 224 pages. Like all the previous editions it is a book for the horseowner, the horse-shoer and the veterinary student, as well as for the veterinarian. It has always been appreciated by the veterinary practitioner and teacher of this branch of the veterinary art, because it contains the strong convictions of an author whose expertness is not questioned and whose writings have stood up while others were being forgotten. Hunting's doctrines were revolutionary only to those who did not practice his precepts, and they were appreciated most in the shop where too few of such books are studied.

The edition seems to be even more comprehensive than the others that preceded. It has been enlarged to complete it as a textbook and the new author without changing the general style or diction has injected some new thoughts and ideas which easily make it the best work on the subject we have at our disposal.

THE LOCAL ASSOCIATION MOVEMENT GROWING

To those who follow the general trend of affairs in the veterinary profession it is obviously unnecessary to draw attention to the tendency to practitioners to get together for mutual benefit. The municipal, the county, the bi-county, the tri-county and the district associations contemplated and in operation throughout the country, once rare organizations are now very numerous, and the movement is having a telling effect on veterinary progress. The promotional effect of these small bodies is greater in respect to the questions that actually concern the practitioner than that of those whose influence extends over larger areas.

They bring neighborhood veterinarians together to solve neighborhood problems. They turn competition into co-operation; discord into friendly relations, and at the same time give an ethical publicity to veterinary service that the larger associations have never been able to supply. The big meetings in large cities get only feeble notice in the daily press when they are not entirely ignored and such announcements which do get into print are read only by uninterested urban readers, while the small associations by reason of meeting in smaller centers are widely advertised directly to readers who are interested in knowing what the profession is doing for them and who ofttime learn for the first time that there is really a veterinary profession.

The local associations are also doing a good work in digging out obscure practitioners who have never acquired the association habit and men who by reason of having led a life of seclusion have not kept up with the times. They create a thirst for more knowledge among the indifferent and cultivate the habit of studying and in many cases bring out candidates for membership in the state and national associations.

VETERINARY MEDICINE has frequently mentioned the need of increasing the number of these societies and has also emphasized the fact that it is only through these media that the actual employer of veterinary service can be brought to the full realizations of what the profession really is and what it is doing for the public.

The above is prompted by a letter from Dr. P. T. Engard, Marysville, Ohio, announcing the organization of a new local. It is published verbatim as a portrayal of the general trend:—

"Twenty two veterinarians, all practitioners, of Clark, Madison, Union, Champaign and Logan counties met at the office of Dr. Cluskeep, Urbana, Ohio Friday, September 1 to organize an association for the purpose (1) of securing legitimate publicity for their profession (2) to promote a fraternal spirit among the individual members and (3) to bring to all the members a greater interest in and knowledge of the various diseases of all species of animals in their communities and the most satisfactory manner of handling them.

"Dr. Harry Moss of Dayton, secretary of the state association addressed the gathering on the purpose of an organization and the benefits to be derived. The talk was very interesting and struck a responsive chord in every one present.

"The organization was completed under the name of the Veterinary Medical Society of the 1st District with a view of becoming the pioneer of fifteen other societies throughout the state.

"The following officers were elected: Dr. Engard, Marysville, president; Dr. Melvin, Belle Center, secretary-treasurer; Dr. Halloway, St. Paris; Dr. Kettler, Milford Center; Dr. Wildason, Springfield; Dr. Dingman, London, Dr. Reiter, West Mansfield; Dr. Shaw, Urbana, were elected to represent their respective counties.

The idea initiated in this association to organize in each congressional district seems sound and worthy of emulation in other states insofar as conditions permit and once in operation over wide areas the veterinary profession will take on a new life in many places it seems to be sleeping and will in a short time result in the exploitation of every veterinary possibility.

There will always be found some men who will stubbornly refuse to participate for one reason or another. These will be the goats—the hopeless outlaws—who deserve nothing better than to be pointed out as such

Editors' Personal Page

There is only one way to go, and that is ON.

An education, like a horse, is a good thing if put to work.

"While a mule is kicking it cannot pull, and while it is pulling it can not kick."—J. Ogden Armour.

"Eradicate tuberculosis now, before it is too late," says J. R. Mohler, chief of the United States bureau of animal industry.

The happy medium between self-imposed obscurity and display advertising that may degrade is one that should by right prevail in our quasi-commercial profession.

"If those who feign to teach the farmer how to farm knew as much about farming and farm conditions as the farmer himself they would modify many of their messages," says a leading farm paper.

The state veterinarian of one of the western states, in a recent address before a large audience, is reported to have said "Ten per cent of deaths in children under five years old are caused by drinking milk from cattle having this disease" (tuberculosis), which is our idea of the height of exaggeration and zero in diplomacy. If we can not eradicate tuberculosis without joining the Ananias club, let's quit.

HOG CHOLERA IMMUNIZATION ONLY A MEANS TO AN END

Masked under the big problem of immunization, the other measures of control are too often entirely omitted in the case of hog cholera. The prompt resort to quarantine, shifting quarters, reliable disinfection, and proper disposal of carcasses that should always characterize police measures in any serious outbreak of a highly elusive contagious disease are too often neglected through our blind faith in immunization. The eradication of hog cholera does not differ from other contagious diseases in this respect and until this fact is fully comprehended and heeded by all concerned the scourge is destined to ravage the hog industry with an increasing ratio year after year.

When logorrhea becomes complicated with embolophasia there is no hope.

Vague theories can never replace stern realities with any degree of safety.

"After God had finished making the rattlesnake, the toad and the vampire he had some awful substance left with which he made a knocker."—Dog World.

WHY WE DO NOT EAT MUTTON

Mutton has never been a popular food among the American people, although relished more than beef by European epicures. An inquiry made to an English chef as to the cause of this situation elicited the information that we have never cultivated the taste for mutton because mutton as dressed and served in this country until recently has an offensive taste that made it unpopular, and that even when dressed properly cooks invariably make the meat unpalatable by cooking it too fat. "Mutton with the fat well trimmed before cooking is quite a different morsel," this expert says.

PUTS BLAME WHERE IT BELONGS

"Tuberculosis is a house disease, using the word house to include homes and working places. Bad housing conditions breed disease. Outside workers who are properly housed and fed rarely have consumption; fresh air and sunlight are its natural foes," says the Chicago Health Department bulletin, which should remind us that our problem of eradication of this disease in animals is subject to the same influences. Just how successful a campaign of eradication can be made that does not also include better housing, feeding and care, the influences of fresh air and sunlight, is to say the least, very problematical. The wholesale slaughter of reactors only attacks one of the causes—the bacterium—it will not improve the resistance of those that survive, unless followed with a hygiene more strict than it seems possible to impose on the American stock owner today.

Purely Practical

Informative Hints from Those Who Know and Do

"Sanitary measures will aid in keeping farms free from hog cholera and other swine infections."—R. G.

EYE LOTION

A cheap and useful eye lotion for general use may be prepared as follows: Add four grains of chinosal to twelve ounces of a saturated solution of boracic acid.—Reeds.

The testicles of boars can be conserved in hernia operations by simply pleating the tunica vaginalis longitudinally from the inguinal ring downward and fixing the pleat with sutures.—J. C. D.

This is the time of year when sheep should be culled and all inferior ewes removed from the flock and handled to whatever advantage it is thought best. There is no economy in wintering ewes that failed to breed, that have defective udders or bad teeth, or in any way seem to be on the decline. The spring clip will not pay the cost.

Collinson, an English veterinarian in the Veterinary Journal, recommends a mixture of antipyrin, spirits of tannin and alcohol as the best treatment for all kinds of bursal enlargements and synovial distentions, including bog spavin. The mixture is injected into the synovial capsule in quantities from 10 cc to 60 cc and a smaller quantity between the skin and the sac.

For umbilical hernia in small animals including pigs, Dr. Quitman recommends the unique procedure of simply placing a cork into the opening and retaining it by suturing a fold of skin over it from each side. In other words, a cork truss held in with sutures.

R. E. Kluck disposes of the perplexing problem of handling the penis and sheath in umbilical hernia of male pigs by tying off the sac with a strong ligature passed beneath the sheath and penis behind the hernial opening with a needle and then around the front of the sheath orifice.

Several correspondents have reported good results from thyroid extract in chorea of dogs. The dose is from three to four grains three times a day for ten days.

Veterinarians in England are loud in their praises of the proprietary drug, Tenaline, as a cure for tapeworm infestation in dogs. Paradoxical as it may seem this drug will kill and expel tapeworms in twenty minutes.—R. V.

Cod-liver oil is highly effective in causing the deposition of lime salts in rachitic bones. Cocoanut oil and butter fat contain calcium depositing properties but in smaller amounts than cod-liver oil.

The dose of chloral hydrate to anesthetise hogs by rectal injections, recommended by Professor Dykstra, is four drams, instead of four ounces, as published on this page in the October issue.

The prognosis of distemper is especially grave when there are nervous complications, when the intestinal tract is severely affected or when there is pneumonia. It is more fatal in very young and very old dogs than in those between these two extremes.

The one thing we know better than any other about dog distemper today is that it is a disease with an awful array of complications, most of which we understand as badly as the disease itself.

HOW TO PHYSIC CHICKENS

When it is desired to purge out a chicken or a flock of them the best agent to select is sulphate of magnesia. Four ounces to a quart of drinking water is the proper allowance for each 25 birds. To get them to partake of this libation, pen them up without food or water for fifteen to eighteen hours and then give them access to the solution. After drinking their fill they should be fed sparingly with mash for a day or two. The treatment can be repeated in a week if necessary.

Important News and Announcements

VETERINARY CORPS NEWS

Lieut.-Col. Jos. R. Jeffries has been found incapacitated for active duty by a retiring board and has been retired from active service. Colonel Jeffries is one of the old army veterinarians who has seen service under all the conditions which characterized the development of the veterinary corps during the past two decades. He served in France during the war and had charge of the veterinary service of the remount depot at St. Nazaire during the ugly epizootics of influenza.

Maj. Robt. C. Musser is relieved from duty at Camp Dixon, N. J., and has been assigned to the Chicago intermediate depot for duty as depot veterinarian and will also serve as assistant commandant of the army veterinary school.

It will be regretted by his many friends that Maj. Geo. A. Lytle has been ordered to Walter Reed General Hospital, Washington, D. C., for observation and treatment.

First Lieut. Frank H. Woodruff, on temporary duty with the 6th Field Artillery, Montauk Point, N. Y., will accompany that organization on its march to Edgewood Arsenal, Md., where he will become station veterinarian.

Major W. R. Peck has been assigned as veterinary personnel officer at the surgeon general's office, vice Lieut.-Col. Ray J. Stancliff, who has left for his new station at San Antonio, Texas.

The occasion of Col. C. F. Morse's relief from duty as director of the veterinary corps, a position he occupied since 1922, was marked by a meeting of all the veterinary officers on duty in Washington and surrounding territory and the presentation of a loving cup inscribed "Presented to Lieut.-Colonel C. F. Morse, M. C., U. S. A., by officers of the veterinary corps in appreciation of his services as director, 1918-1922." The presentation was made by Capt. R. A. Kelser.

Dr. B. C. Davis, of Carrolton, was elected president of the Missouri State Veterinary Medical Association at the annual meeting at Kansas City, instead of Dr. H. A. Wilson as previously announced.

The Southwestern States Veterinary Medical Association will hold its fall meeting November 20-21, 1922, at the Patton Hotel, Chattanooga, Tenn. A fine program has been arranged and a large attendance is expected.—J. I. Handley, Sec'y.

The United States Civil Service Commission announces a competitive examination for junior bacteriologists (veterinary) on November 22, to fill a vacancy in the bureau of animal industry carrying a salary of $1,500 a year. Information as to scope and places may be obtained on application to the commission at Washington, D. C.

It is reported that Congressman McKenzie of the 13th Illinois district, who will be chairman of the House military committee, is opposed to giving commissions to veterinarians serving in the army.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION

The fortieth annual meeting of the Illinois State Veterinary Medical Association will be held at the Lexington Hotel, Chicago, December 5, 6 and 7, 1922, when one of the broadest and most interesting programs of its history will be carried out. Among the reporters already assured are U. G. Houck, of the federal bureau of animal industry; C. H. Higgins of the Lederle Antitoxin Laboratories, New York City; Maurice C. Hall, senior zoologist of the United States department of agriculture; W. H. Welch, president of the American Veterinary Medical Association; Edw. E. Cahill of the Pitman-Moore anti-hog cholera serum laboratory, Indianapolis, Indiana; E. L. Quitman, Chicago; T. Ferguson, Lake Geneva, Wisconsin; H. Preston Hoskins, A. V. M. A.; R. E. Kluck, Forreston, Illinois; Robt. Graham, and L. E. Card of the University of Illinois, and others.

Some Facts About the Horse and Horse Practice*

By L. A. Merillat, Chicago, Ill., Managing Editor, Veterinary Medicine

WE often make the hackneyed remark that the horse is man's best friend without much thought of the force of what we are saying and without really intending to pay the high tribute it actually conveys; and always without a true appreciation of what the horse has done for our historic and prehistoric ancestors and of what it is doing for us today.

A Contemporary of the Remotest Human Species

The horse was among the animals contemporary with the earliest man, ages and ages ago, before the beginning of history, but very few attempts have been made to compile facts about the actual role it played in our destiny. During vast periods so remote that they make all recorded history seem like a thing of yesterday the horse may be found taking its place in the affairs of posterity. This species of terrestrial beast was so numerous during the Cainozoic age, 40,000,000 years ago that its remains afford one of the best means of establishing facts about the living things which inhabited the earth during periods of time so great that the mind can not perceive them.

Played a Cardinal Role With Each Known Human Species

About 250,000 years ago, the most remote period to which the existence of man can be traced with any degree of accuracy the horse constituted the chief source of food supply for the human inhabitants—the Heidelberg man (Homo Heidelbergensis) the first known human species, and which was a contemporary creature among the animal inhabitants of the earth of that time. The Neanderthal man (Homo Neanderthalensis) the second species recognized, lived 50,000 years ago and used the horse for some of the purposes for which we (Homo sapiens) have been utilizing it from the earliest dawn of authenticated history until the present day.

Enabled Man to Take Ascendency Over All Living Creatures

While all this may seem legendary and more like fiction than reality, proof of it is not lacking in the excavations of the modern school of paleontologists. And furthermore it does not require any stretch of the imagination to venture the opinion that during the ages while man was only scattered here and there in small groups, he led a very precarious existence, harassed by the voracious animals that overran the earth at that time. At some unknown period during these eons of time, while man was still more the hunted than the hunter, it seems to have been his good fortune to have found among the beasts of the earth, one that could be domesticated and put to such good use that it became the means by which man subsequently took ascendency and absolute control over all living things on earth, after ages of actual struggle for existence, on a parity with other beasts of the field and forest.

The Cromagnon man who inhabited the Mediterranean basin for unknown centuries and developed a very high degree of civilization before it was inundated by the Atlantic ocean, left evidence of having used horses and of having held them in high esteem, in the fact that the horse was one of the commonest themes of the carvings they left behind when these great prehistoric people met their tragic

*Read at the Short Course for Veterinarians at the University of Minnesota, July, 1922.

fate. (Possibly the flood referred to in Genesis.)

Prevented the World From Being Manless

It is obvious, therefore, that the feeble tribute we pay to the horse today is but a small show of the appreciation we owe, in the light of the established facts about the period when men were few and animals plenty, when the former were kept hiding in fear of the animal hordes, and lived from a supply of food that was uncertain and irregularly obtained. In fact, to give the horse all the credit that is due it, through all the ages we must begin by attributing our very existence to this species of animals and by admitting that without the horse the world today would probably be a manless world. The Heidelberg man did not domesticate the horse, but used it for food only and although he had a period of nearly two hundred thousand years in which to accomplish domestication, he failed to subdue the animals of the earth and was finally exterminated by them. The Neanderthaler likewise failed to effectually domesticate the horse and he, too, disappeared after a period of fifty thousand years. The Homo sapiens, which is ourselves, began the domestication of the horse before the beginning of authenticated history, more than fifteen thousand years ago and coincident therewith began his ascendency to the level of his present status. If any of us had survived until now without the horse we would be only sparely distributed and confined to regions where conditions would be favorable to protect ourselves from annihilation by beasts. The horse while undergoing the slow process of domestication, offered our primeval ancestors the first good means of sustenance, the first good means of defense and offense, and the first sustained food supply. Man and the horse showed something in common from the beginning. To borrow the word from the biologist they were then and are now symbiotic and the alliance proved to have been the first impetus to civilization and subsequently its very salvation by having brought all common enemies under subjugation. The one served a useful purpose for the other and both lived on through age after age to see many other species decline, perish and become forever extinct. The bovine species which was domesticated later, played a more important role in agriculture than the equine and should be credited with having enabled man to live in greater numbers in smaller areas, but it was the horse that afforded these first big groups or communities of men a protection against the encroachment of surrounding enemies, and to the nomads a means of shifting from place to place in search of food and better prospects.

Has Been Indispensable to Society Since History Began

Since the first days of authenticated history, some 15,000 years ago, the part played by horses in the development of races and nations is too well known to require repetition, emphasis or discussion. No one will deny that the horse is a part of all history of man's activities, civil and military. From the beginning until now, from the days of the cave dwellers to the mansions of today, the horse has been one of the big impelling forces of progress.

Built and Destroyed Nations

The influence is most strikingly shown in the study of nations. The horseless nations

TO THE RESCUE OF CIVILIZATION IN 1918

Marshals Joffre and Foch at the head of the French Army on the Champs Elysees.

and those which have not taken the best advantage the horse offers have perished from the earth or have remained unprogressive throughout the centuries, while the equestrian nations survived or fell before better horsemen.

Carthage, the wealthiest and most luxurious republic of all times, used horses. Although history has placed great stress about the maritime prowess of the Carthagians it is now known that the secret of their riches which the Romans had never understood was their trade with the interior of Africa by means of caravans of horses and camels that plied back and forth across the Sahara desert and developed wealth entirely independent of their jealous neighbors.

It would be a long story to relate all the extremely interesting things that could be said in this connection, but let us not omit that the Roman Empire was prosperous and powerful or impotent and decadent in strict obedience to its horse strength, portraying a condition that seems to be developing in the United States today. The people previously industrious, moved to the large centers of population at the expense of agriculture which was taxed beyond endurance, and thus destroyed its horse effectives to the point that made the nation easy prey for the Hun, a great horse owning nation that had been developing unnoticed at its very portals. It was the horse that enabled the Huns to carry out plans of a military campaign that soon extended their possessions to the Rhine. Attila, king of the Huns, conquered with horses and he met his first defeat at Troyes for lack of them, when he invaded the interior of France in the year 451 A. D. without sufficient means of transportation for his large army, and in October, 1918, fifteen centuries later, the Americans almost met defeat in the hands of his successors, the Germans, because its horse transport service broke down almost completely. It is well known to only a few, perhaps, although the information is contained in official reports, that if the German defenses had not broken down from internal obstacles that the American First Army would have had to retreat from the Argonne or suffer defeat because it was practically immobilized from shortage of transport animals. And then, General Allenby, with the British Army in 1918 retrieved the Holy Land to the Christians with cavalry after having been under control of the Mohammedans for fourteen centuries.

The part that the automotive industry played in the World War has been heralded without limitation but how often have you seen the statement that the ratio of horses to man in the allied armies was greater during the World War than in any previous war in history and yet such is the fact.

Horsemanship a Barometer of National Supremacy

A gradation of nations on earth today from the standpoint of strength, wealth and achievement in agriculture, science, arts, and literature, as far-fetched as the statement may seem, is but a differential scale of horse exploitation. In one group is Great Britain, whose people are the greatest of horsemen on earth today; then France, where refinement in horse breeding is the best and horsemanship

SUPPLANT "SHIPS OF THE DESERT" WHEN ALL OTHER TRANSPORTS BREAK DOWN

In the Mesopotamia campaign in 1918 when camels, unable to stand the tyranny of war, died by scores, the horse enabled the British Army to capture Jerusalem. International Photo

of the highest order prevails; then the German Empire before the World War, the home of the greatest military organization ever conceived by man and the country of sound agriculture; finally the United States, whose exploration and development without the horse would have been a matter of centuries instead of mere decades.

A striking example of a lagging civilization is seen in the inhabitants of North America. When away back in the darkness of unknown centuries the inhabitants of North America were segregated from those of the Eastern hemisphere they were left stranded without horses and thus lived through ages in a state of semi-savagery, helpless to take any advantage of the wonderful resources that lay under their feet, and until a few short years ago horse owning nations came over and developed the wealthiest nation of all times—the United States.

In another group we might name Russia, a country with a large horse population but one that was undeveloped, unrefined, and less useful than the others, and which at the moment of great need became so pestered with disease it became worthless, and it seems safe to predict that this unfortunate country at this moment will rehabilitate or decline further according to what use it seems inclined to make of its horses. Spain, Italy, China, Japan and the Balkans occupy a place on the scale that seems very much in keeping with the status of their respective horse industries.

Can a Horseless Nation Actually Prosper?

This brings us the mood of reflecting over the horseless transportation and motor power of the day in this country. The enormous investment in automotive transportation today is staggering to contemplate in the face of the fact that within a few short months nearly every dollar of this investment will be dissipated into rust-ridden junk. The serious-minded may well ask if we are digging enough wealth from the ground to meet this appalling loss dollar for dollar. If we are, our nation will live; if we are not, then we may be at the threshhold of a period of decline that will rapidly drag us among the second-rate nations, if not like the Roman to ultimate disintegration.

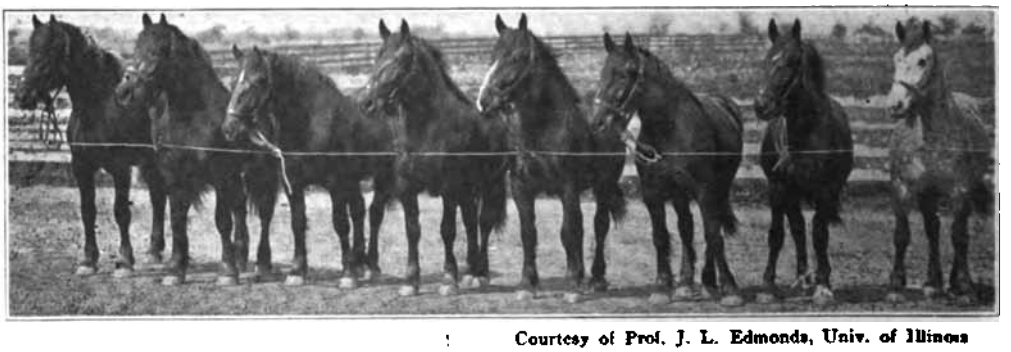
It will take more than confidence, egotism or patriotism to overcome the immutable law that no man, nor no nation can spend more than it makes without suffering the consequences. In business as we use the word, the consequences of such imprudence is called bankruptcy; in the evolution of society it forecasts decay and is exemplified in the lost nations like Babylonia, Egypt, Carthage, Rome and some modern nations, whose names for prudence sake, I shall leave to your imagination.

When we take up the cudgel for the horse and against the horseless, like the Horse Association of America is doing, our motives are not impelled by any sentimental feeling for a species of beast; it is for society, for posterity, for the nation and for you.

Types Dethroned by Automotive Power

I shall not take up your time to relate in detail the different estates the horse has occupied during the brief history of our country and from which it has been successively dethroned. We all know about the saddle horse of our forefathers before the days of roads; about the interurban coach when roads had

THE BULWARKS OF AGRICULTURE AND THE NATION



Courtesy of Prof. J. L. Edmonds, Univ. of Illinois

If agriculture, which is hardly self-supporting even under the most favorable conditions, supplants the horse with a more costly motive power, it is a safe guess that we are destined to become a second-rate nation. During last year, Iowa spent more for automobiles, not including tractors, than the total value of its corn crop.

been built; about the historic pony express that negotiated the great plains before railroads; the horse drawn street car for intramural transportation when large cities grew; about the heavy harness horse, de luxe and ordinary, that served the city family; the pole-team, the four-in-hand, and the tandem, of the wealthy horse lover; about the buggy horse, the wagon horse, the livery horse of every community, and about the cavalry of our frontier, all of which have either entirely or partly disappeared from among the current needs of man and been replaced by horseless substitutes. To the loss of these we are resigned and insofar as our present lives are concerned we need not expect their return.

It would be a misrepresentation of too well established conditions to claim the contrary although there is no doubt in my mind that future generations will see the horse restored to estates from which it is now dethroned, because it is the profit accruing from a given motor power that will govern the trend in time and not promotional propaganda of other interests.

Types Retained

The horse of today and of the immediate future are the farm horse, the heavy draft horse, the milk wagon horse, the horse of the lumber woods, and the mule of the mines, the saddle horse de luxe, the polo pony, the hunter, the thoroughbred, the trotter, the cow-boy's mount, and the transport and cavalry horse of the army. These seem like fixtures and to these we must turn our attention.

The Farm Horse

The farm horse is now struggling against the tractor for existence, against a nation-wide propaganda, backed by millions and the best selling brains available, and it must be admitted, with telling effect, despite the fact that tractor farming has not paid and does not promise to pay even where all conditions are ideal, but in this connection the horseless motor power is meeting with a closer scrutiny because here it must make good in actual dollars and cents actually earned. Its worth must be real and not imaginary. It must make profits from products produced and not from products handled, and for the first time is found in a fair, open competition against the horse. The competition is not over at this moment although it seems the tractor is meeting odds it will not be able to overcome. The high initial cost and rapid depreciation of tractors compared with the low initial cost and slow depreciation of horses is something that even the millions invested in tractor production may not be able to circumvent. Then the need of horses for work for which the tractor is not adapted, the waste of roughage that horses eat, the manure they produce, the need of them for teaming purposes when the roads are impassible for motor vehicles, the possibility of profits from breeding are so many determining influences in favor of horse farming.

One Good Word for the Tractor

Let me try to give the tractor its dues, judged from my own personal experience. A farmer who is "well off," who can afford to invest the money without hardship, owes himself a tractor, a small tractor, just like he owes himself an automobile, the cost of which he can charge up to profit and loss. Farming is such real drudgery that anything that will make it less arduous is welcome and justified from the standpoint of personal comfort. Speaking only

MISS MATHILDA ELSEN AND HER MOUNT "THE SHEIK"

Faithful to the cause, Miss Elsen who is cashier in the accounting department of Veterinary Medicine and an accomplished equestrienne, is a familiar figure on the bridle-paths of Chicago parks, enjoying the time-honored pastime that never wanes.

of small farms, a small tractor that is well used, well cared for and carefully stored away when not in use and which is utilized to plow in busy seasons, to draw the binder on hot days and to buzz the cord wood in winter is not a bad thing for any farmer to possess. It pays for itself in morale but not in material earnings. It may keep the boy on the farm during the years he is so susceptible to wanderlust.

But all of the morale is lost if there are no horses to take up the work where the tractor leaves off or when at critical moments it breaks down. There is a despair in a breakdown in the midst of a busy day on a farm that those who have never farmed can not comprehend. A half day lost may mean the loss of five loads of hay or even the loss of a crop. To illustrate, I recalled a few seasons ago the loss of ten acres of corn from a leaky radiator. I was dragging a harrow and cultipacker while the farm hand was following with the planter. During the forenoon of a given day the tractor was laid up and stopped the whole operation for six hours, long enough to have planted the whole field. During the night it rained, and it rained for days afterward just enough to make the field too wet to finish. This was on the 20th of May. The field was not planted until the 6th of June, too late for our farm with the result that an early frost nipped the crop and gave us a field of soft crop as the only reward for a summer's work.

It is true that a tractor covers more ground than a team of horses, even a large horse unit, but instead of being a blessing as we are given to believe this is often ruinous and the best argument, insofar as farming is concerned, against the tractor as a dependable power unit, because a breakdown means a total and not only a partial suspension of the operation at hand, as would be the case if a horse fell sick.

Things the Tractor Interests Do Not Tell the Farmer

The main trouble with the tractor is that it can not be split up into different units like an equal horse power in horses. No one knows as well as the small farmer what it means to have one team on the corn cultivator, one probably on the mower and still another on the tedder or rake, all at the same time, and then the convenience in a few moments to bring these all together into single unit for discing or plowing. This is beyond the possibilities of the tractor.

Then in making comparisons in the investment between horse and motor power the ex-

"MAN O' WAR" THE SUPERHORSE OF THE AMERICAN TURF

Coupled with his performances, the type, conformation and general makeup of this remarkable horse portrays the horse situation in the United States better than words can tell, insofar as the thoroughbred is concerned.
International

ponents of the latter very studiously omit to refer to the enormous cost of tractor-drawn farm implements as compared with the horse drawn ones, and they are quite as studiously silent at first about the fact that the purchase of a tractor is but a part of the essentials needed to put it into practical operation. The whole array of farm implements must be replaced, if not at once, within a very short time, because the ordinary horse drawn implement is not only too small to drag about in a field but its construction will not stand the strain. This applies to harrows, discs, cultipackers, drags, cultivators, grain drills, binders, mowers and even farm wagons. It so happens as a consequence that the tractor enthusiast after paying for the tractor finds himself spending enormous sums for very perishable implements, year after year, until an entirely new assembly has replaced the old, durable horse drawn ones. It seems to me that the farmer who is lured into tractor farming without carefully taking into account all of its pitfalls is paving the way to be enslaved by the manufacturers of farm implements. I say enslaved because a return to the horse would again be impractical without again buying horse drawn implements. This situation finds its counterpart in the motorized city delivery system. Once the horses, harness, wagons and miscellaneous paraphernalia has been disposed of and the stable has been gutted of its stall and transferred into a garage it is not found expedient to reestablish the old system. In spite of the fact that the motor delivery was more costly the added expense is made up by delivering at greater distances and by attaching it to the ultimate price of the merchandise handled. I do not, therefore, look forward to a return to the horse in this connection any more than to the return of the driving horse to replace the family or business automobile, during the era that directly interests us, nor until, years hence, dire necessity makes us feel the tyranny of extravagance —the sting of spending more than we earn.

It is not necessary to read in a lot of statistics to confirm these statements and opinions since they would not be questioned even by the most ardent champions of the tractor, but it would not be amiss to mention in a general way the observations of Professor O. G. Lloyds of the experiment station at Purdue, in which 37 farms using horses only showed an average annual profit of $800 to $900 over an equal number of farms using tractors and horses.

Comparisons Are Manifestly Unfair

The actual figures given to compute relative costs of motor and horse deliveries are camouflaged with unfairness, if not with deliberate misrepresentation. Although in no case has it ever been claimed that the motor is the cheaper, the figures very conveniently fail to account for the enormous expense of maintenance-of-way. For a paltry license fee of a few dollars the public assures to motor vehicles a right-of-way

THE ENGLISH DERBY OF 1922

When "Captain Cuttle" with Jockey Donohue up won the English Derby this year there were twenty-six other entries behind him. This, together with the masses that crowded Epsom Downs to witness this annual turf classic, tells a true story about the popularity of the horse on the "other side." International

without any additional cost. Property owners in cities maintain streets for them and farmers build their roads at a cost so high it sometimes amounts to confiscation of estate, and unfortunately, as Secretary Dinsmore of the Horse Association of America has shown, these roads have been built and are being maintained in a way as to be impractical for horse drawn vehicles. Is it then a wonder that trucks can compete with railroads in freighting and with horses in draying? If the cost of constructing roads and maintaining them were prorated among those who use them the differential figures would tell a true story.

The truck horse in cities has been replaced, not entirely, but almost to the point of complete annihilation and just now we are trying to take encouragement from desultory instances of horses now being purchased by firms that had previously pinned their faith in the truck and have found it too expensive for all kinds of work. This show of improvement in the horse situation must, however, not be taken too seriously. It may be misleading. The motor interests may meet all the requirements of delivery, including that of cost, in the near future and no review of the situation would be instructive and complete without reference thereto. The need of a cheaper truck that can also be operated cheaper is now under consideration. Lower speed, lower power and low-geared trucks which will make for lower fuel consumption and longer life are under contemplation and until the greatest possibilities of mechanical engineering have been reached in this connection, it would be futile to indulge in the purely sentimental prophecy in which we are so prone to seek consolation and refuge.

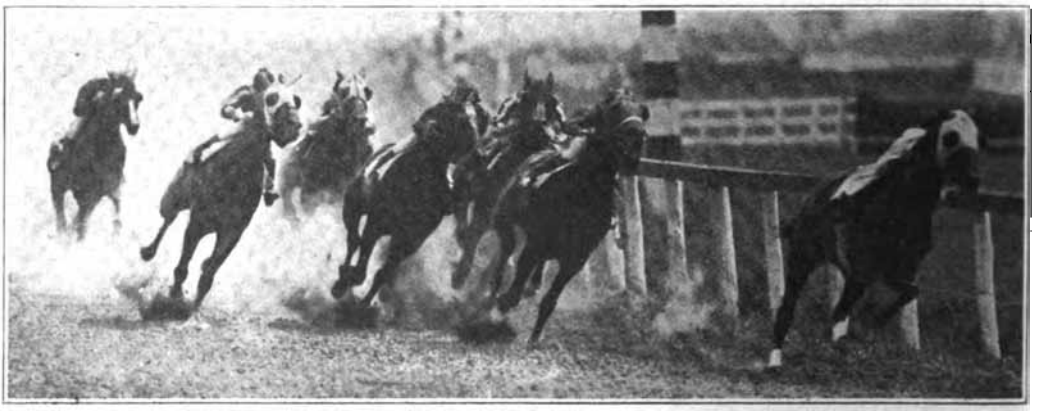
Light Delivery Horses

The light delivery horse which seems to endure the crucial test best of all is the milk wagon horse. Here is a type that still remains a permanent part of the scenery on city streets and from recent interviews with those interested, there is no movement to replace it at this time, except in isolated cases, where electric wagons are being used. As a whole, the large milk distributors of large cities seem more determined than ever to retain the horse for their purpose and are demanding a larger and better horse than formerly. The large department stores offer no great encouragement although some of them use both wagon and draft horses in considerable numbers. There is little or no evidence of a wholesale return to the old system.

In the newspaper industry, horse deliveries are still popular and some of the large dailies show no inclination to replace them entirely. The Chicago Daily News, the Chicago Tribune and the Chicago American all retain a good supply of horses and continue to believe in them. The American Railway Express, I regret to say, is on the uncertain list. Although they have large stables and have been exponents of horse delivery, they are replacing some of their horse effectives at this time with tractor drawn trailers.

In summary, as regards city horses compared with the situation of the last five years, it is safe to say that the horse is holding its

JUST ONE OF THE MANY EVENTS OF THE AMERICAN TURF



This is a six furlong race at Aqueduct illustrated here to show the large size and sturdiness of the thoroughbred horses being bred in America today. International Photo

own, losing out in some places and gaining slowly in others.

Horses of Pleasure and Sport

There is no decline whatever in the interest shown toward these classes. On the contrary, entries in horse shows in this country and in Europe are more numerous than ever and the devotion to them is increasing. The hunter, the saddle horse, the thoroughbred and the light harness horse seems to be attracting more attention than ever. City parks are teeming with saddle horses these autumn mornings, the racing stables were never larger, and the trotter is still the biggest attraction at the county fair. It was once predicted that the race horse and the trotter were doomed because there was no longer any outlet for the surplus, but this prediction has not come to pass as all kinds of pleasure and sport horses are of better quality and speed than ever, and the interest in them is a healthy growing one, again illustrating the symbiosis referred to in a preceding paragraph. Highly civilized man just will not tolerate segregation from this remarkable quadruped.

The Army Horse and Mule

Reference has already been made above about the role the horse and mule played in the World War and will not again be repeated, other than to warn our country against pinning its faith in the propaganda that would eliminate horse transportation from the tables of military organization. In reply to the old jest of war days: "Who won the war?" my answer is: "The horse and the mule." When men are dying on all sides, when results hang in the balance, when the camion, the lorry and the truck are ditched or out of fuel, when tanks are mired in the mud, when artillery is immobile and must go forward, there is always the horse and the mule to drag them out, to bring up the men, the ammunition, and the rations, to turn turmoil and defeat into victory. This is no outburst of oratory. It is unexaggerated fact and related here to warn the nation and you about the significance of lifting a single finger against an industry that is at once the making of a nation in peace and one of its best defenses in war.

A Few Words About Horse Practice

The recruit of the veterinary profession is not a good horse doctor. He is less skillful in handling this species than his predecessors. Men who could acquit themselves well in a horse practice amid horses, from the common plug to the $100,000 trotter, from the broncho to the park hack, from the roadster to the ponderous stallion, are becoming extinct. Men like Roscoe Bell, George Berns, W. L. Williams, M. H. McKillip, A. H. Baker, Joseph Hughes, Charles Cotton, C. C. Lyford, and others, are no longer in the active ranks, and

A PURELY AMERICAN PASTIME

The harness race has been an American sport for many decades and although it was predicted that the automobile would soon sound its death-knell there has been no decrease in the interest shown toward this class of racing. The type of horses and the appointments shown in this illustration reflect the spirit that dominates this sport as the races close for the year. International Photo

they are missed. Their messages are missed in our current literature and their skill is missed at our association clinics. These men knew the horse, they understood his management in health and in disease, and they developed a skill in surgery that has no parallel today. The canine specialist may be the exception yet his operations are spare as compared with those of the old equine specialist while the horse was in full bloom.

The young veterinarian, who now must master so many different subjects, quite naturally does not handle the horse as well, and as a consequence the whole domain of animal surgery has, as a whole, made less progress than the other branches. While it is farthest from my mind to discount the accomplishments of the veterinarians now entering the realm of practice, it is, nevertheless, apparent that the low economic value of the surgical operations on the average cow, hog, sheep, or dog has had a deteriorating effect on animal surgery. The higher value of the individual horse inspired practitioners of the past to greater efforts.

Horse Practice Still the Most Important

Speaking at random, rural horse practice constitutes from 30% to 45% of the practitioner's work, depending upon the location. In some localities it is much less and in others much higher. These figures, I believe, are a fair estimate of the average. It is, therefore, obvious that horse practice should not be neglected in any respect for the reason that in handling the diseases of horses, both medical and surgical, the individual salvage still averages higher than in other species and also because the horse is still the best subject to keep us skillful both in the diagnosis and the treatment of animal diseases. The immunization of hogs and the administration of vaccines and bacterin at wholesale for large fees have turned our minds away from many little services we once depended upon to justify our existence.

Then we are passing through a period when live stock sanitation is attracting much of our attention at the expense of the old domain we previously thought sufficient to exploit the treatment of individual animals. That is to say, with our minds all flustered over herd propositions we scarcely pay any attention to the individual, especially to the individual horse. Collar galls, scratches, quarter cracks, shoulder slips, spavins, splints, poll evil, and many other common ailments, are less attractive than before and such surgical operations as median neurectomy, ovariectomy, roaring operation, cryptorchidectomy pedal tenotomy, quittor operation, et al if not already among the lost arts in many communities are being performed with much less confidence and skill than formerly.

Why Horse Practice Has Waned

On account of a manifestly diminished expertness in handling its problems, horse practice has waned. Furthermore, the fact that horses are no longer agglomerated at the hitching posts every Saturday night, nor at church every Sunday morning, has reduced the spread of contagious diseases to the minimum. Each farm today is virtually a quarantine station so far as the horse is concerned, and in the country where the tractor does the plowing and in cities where the motor vehicle does the airline work and the heavy traction the horse formerly was called upon to negotiate, many common horse infirmities have become a thing of the past. There are fewer diseases and those extant occur in a degree of severity often thought not sufficiently grave to justify the expense of professional services. What I wish to convey is the fear that we are passing into a period wherein the infirmities of the horse which once maintained the integrity of the veterinary profession will be submerged by quackery through our lack of attention to them. The loss will be ours. It will not be felt by the live stock interests because the losses will be isolated losses, too widely distributed to attract much attention to the need of curbing them.

Drifting to Other Fields

In other words, the profession the pioneers built up, through attention to small details is drifting into bigger and more inviting fields, while the old realm is being neglected. I believe now as always before that to remain listed among the profession it is essential that we religiously incorporate into our practice every little service it is possible to render in medicine, in surgery and in hygiene of every species of animals no matter how trivial. We should castrate the calf, the pig, and the cockerel; we should treat the collar gall; the corn and the spavin; and we should strive to cultivate the impression that we can do these things at a profit to both self and client. It is mighty easy to allow the great fund of income-producing and wealth-saving services we are capable of rendering shift into other hands, for the reason that the bornes of veterinary science are just what we make them and are not sharp-

ly defined like those of other professions. We can contract our realm or we enlarge it in ratio to the energy and tact we put into our work, and on this account, horse ailments should in no manner be neglected in the veterinary college, in the field of practice nor in the clinics and programs of associations.

Horseless Programs Deplored

I am prompted to say this because during the past two years there have been a number of horseless clinics any number of programs in which the horse did not figure at all. This is quite a contrast to an event that occurred at Atlantic City, New Jersey, in 1901 when our old friend the late Dr. J. C. Michener brought a cow into the clinic of the A. V. M. A. to the surprise and dismay of the audience, and then and there, went on record as the first veterinarian in this country to exhibit a cow at a public clinic.

As the "cowless" program of 1900 was unwisely superseded by the "horseless" one of 1922 I beg to close these remarks by complimenting the University of Minnesota for its wisdom of providing a place for the horses on the program of this conference and I assure you that I am mighty proud to have been chosen to pay this feeble tribute to an animal that is at once the maker and savior of nations and of men—the horse.

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Is Shinnery Poisoning Hemorrhagic Septicemia?

By E. J. Foreman, Trinidad, Colo.

ON the mountain ranges of southern Colorado and northern New Mexico where oak grows in abundance, there is, and has been as far back as the memory of the oldest cattle-men of the district recall, an annual loss of cattle of varying degree of severity, occurring at about the same time each year, depending somewhat upon the character of the season. It may appear suddenly following sharp temperature changes, especially if accompanied by frost. This is true even though grass is abundant. Very dry seasons seem to favor an outbreak and yet we find it at times quite severe when weather conditions are normal, and in fact some deaths occur every year.

Outbreaks Chiefly in Mountain Pastures

Owing to the fact that it usually follows the turning out of cattle from the lower ranges into the mountain pastures, and because the cattle may be seen browsing freely on oak and in seasons when grass is not abundant and oak forms a large part of the animals' diet the disease seems more severe, cattlemen believe the oak responsible for the condition, calling it "Oak Fever" or "Oak Poisoning."

Bulletin number 767 of the United States department of agriculture, entitled, "Oak Leaf Poisoning of Domestic Animals" quotes the Breeders' Gazette of September 1, 1909, as follows: "Stockmen grazing cattle in the national forests in the southwest, especially in Colorado and New Mexico, have suffered serious losses during the present summer through the cattle eating oak leaves. In that section of the country the season has been unusually dry and grass extremely scarce. To eke out the scanty forage supply the cattle have browsed on the scrub oak which covers large portions of the range. Ordinarily the stock does not browse much on the oak and the little they do get, taken with the other food, is not injurious, but when, as in the present season, the oak browse furnishes a large proportion of the daily food of the cattle, the results are serious."

Breeders' Gazette in Error

The Gazette is in error when it says, "Ordinarily the stock does not browse much on the oak." All cattle men familiar with our mountain ranges know that when oak buds and leaves are young, the cattle are very fond of them and eat them greedily, making them a considerable portion of their daily food no matter how abundant grass may be. After the buds are gone and the leaves grow tough and bitter with age, it is eaten very little. It is a recognized fact also that this disease varies

but little in time of its annual visitation and length of duration. It usually appears during the latter part of May or first of June and disappears in from four to six weeks, depending apparently upon the character of the season, and date of turning into the mountain pastures, cattle from the lower ranges.

Occurs When Cattle Are Transferred to Higher Ranges

As a rule the cattle men have winter ranges on the flats and run their cattle in the mountain ranges during the summer months. The cattle are usually driven from the lower to the higher ranges during the month of May and it is not long after this that the first cases are encountered. In an instance that came under my observation a few years ago, a herd of approximately three hundred cattle were driven from their winter range on the flats to the mountain pastures where both grass and oak were abundant and in which a large number of cattle were already grazing. In a very short time, this disease appeared and within a few days twelve steers died and a number were sick. The remarkable thing about this was that all of the sick and dead cattle were of the herd that had just been moved from the lower range, while not a single case developed in the animals that had been in the mountain pasture for some weeks.

Exclusive Oak Diet Poisonous

I have noted that where feeding experiments have been conducted and oak made the exclusive diet over an extended period, sickness and death have resulted, but if as small an amount as one to three pounds of other provender were added to the ration, no harm resulted from such feeding and animals experimentally made sick would recover. In fact it was found that oak and grass combined made a valuable food.

There is never a time on our mountain ranges when there is no grass or other provender available. There are many seepage places where the snow water from above comes to the surface and irrigates areas where luxuriant growths of grass is to be found. At these places cattle may be seen grazing while a few yards distant on the mountain slopes, they may be seen just as greedily browsing on oak. Then, too, the disease is found in seasons when grass is abundant.

During the month of June, 1921, a cattleman just across the Colorado line in New Mexico, lost forty cattle from "Oak Poisoning" out of a herd of approximately one thousand, following closely their entrance into the mountain pasture from a lower range where they had been on winter feed. At that time grass was abundant as it was an exceptionally good grass year.

Simulates Hemorrhagic Septicemia

Six years ago, I was called to a ranch in northern New Mexico where about twenty thousand cattle are kept, to determine if possible the cause of an annual loss of cattle on that range. I remained at the ranch twelve days examining and treating sick animals and making autopsies wherever conditions permitted. Some of the dead animals appeared to have died quickly, while others had lingered for some time. Some of the sick animals exhibited difficult breathing, staring coat, slimy dark colored feces, occasionally blood-stained. swellings on throat or dewlap, sunken eyes more or less reddened. Others would exhibit no other symptoms than inappetence, rough coat, sunken eyes and weakness. The animals would graze in a half-hearted manner, with some drooling and apparent partial loss of the muscular function of tongue and throat. Postmortem lesions varied only in extent of tissues showing hemorrhagic infiltration and varying degree of intestinal involvement. In fact, the symptoms exhibited by the sick and the postmortem lesions clearly indicated hemorrhagic septicemia. I have noted with interest, that investigators have found the symptoms of oak poisoning and postmortem lesions to resemble markedly those of hemorrhagic septicemia.

To quote bulletin number 1618, United States department of agriculture: "Bacilli which resemble closely the organisms of hemorrhagic septicemia are widely distributed in nature. They have been found in the soil, upon various plants, in stagnant water and upon the moist nasal membranes of normal calves and hogs." To quote further: "Some writers think that after the organisms have become virulent enough to cause an outbreak among animals, and the infection has been overcome, they will return later to their previous harmless stage."

Poisoning May Be Only a Contributing Factor

Accepting these theories as being reasonable, knowing that sudden disturbances of cattle, through shipping, driving, fatigue or diet,

favor the development of hemorrhagic septicemia, is it unreasonable to believe that the tannin or some other substance in the oak diet might be the disturbing factor responsible for the transformation of the bacillus from a nonvirulent to a virulent one and that instead of the oak being the cause of the disease or the cause of death through poisoning, it is merely a contributory cause, or factor?

Bacterin Treatment Stops Losses

The year following the investigations recounted above, disease developed in a herd of cattle recently driven from a low range to the mountains in eastern Las Animas County, Colorado, twelve having died within a few days and others were sick. Symptoms and postmortem lesions were same as those given of previous year. They were eating greedily of oak although grass was abundant. I advised the immediate administration subcutaneously of hemorrhagic septicemia bacterins and this was done, giving a double dose to sick animals, to be repeated in three days. These animals remained on the same range after vaccination, returning to their previous diet of oak and grass, yet no additional cases developed and but one of the sick animals died.

In the western part of Huerfano County, Colorado, there was a serious outbreak of this disease, near the foot of the Spanish Peaks. Five lots of cattle were treated with bacterins, two cc being given as a prophylactic and double that amount to sick animals. The sick animals were thrown into an alfalfa field where they could graze on growing alfalfa. The sick animals all recovered and no new cases developed in the treated herds.

The next year a man running seven hundred cattle a few miles west of Trinidad, Colorado, which had been driven about twenty miles from a flat pasture to the mountains, reported that his cattle were dying. A number were sick at this time and I found two that had recently died. Postmortem lesions same as in previous cases. We treated the entire herd with bacterins with the result that no new cases developed and a loss of two of the sick ones.

Last year a cattleman running a large number of cattle near Stonewall, Colorado, reported that he was losing some of his purebred herd from oak poisoning. He knew it to be oak as he had lost cattle from it for many years and was familiar with it. I went to his ranch and autopsied two animals, finding same lesions as in all previous cases. There were but five animals sick at this time. All were treated with bacterins as in previous cases with similar results: no new cases developed. The sick animals recovered but they were unthrifty during the entire year. This man was so impressed with the success of the treatment that this summer he treated this same herd before he turned them into the mountain pastures with the result that up to date no cases have developed, although it did appear in some range cattle that were not treated and in the same pasture.

Near La Veta, Colorado, a friend running cattle at the foot of the Spanish Peaks complained to me of a loss that he experienced yearly due to oak. I advised him to administer hemorrhagic septicemia bacterins to his herd before he turned them on the mountain range. He did so and did not lose an animal that year. These cattle were similarly treated this year and to date disease has not appeared in his herd although others are suffering losses in the same locality.

Another interesting case: A cattleman running 583 cattle in the foothills near Trinidad, Colorado, administered bacterins to 105 of them in December, 1921. In May of this year the remainder were treated with the exception of 49, which, owing to the chute breaking down, were allowed to go untreated. Disease soon appeared among the 49 untreated animals, twelve of which died, but no cases developed in the treated animals, although they intermingled in the pasture.

Stagnant Water the Probable Carrier

Seepage water that forms cool, stagnant pools in the canons or on the mountain slopes, largely supply the drinking water for the herds and is a possible source of infection. However, my experience with this disease, covering various outbreaks, more or less widely separated geographically and covering a period of several years, has thoroughly convinced me that the disease from which many cattle die annually on the mountain ranges and called "Oak Poisoning" and "Oak Fever," is hemorrhagic septicemia.

Results Indicate Disease Can Be Checked

The remarkable results I have had from the use of bacterins, both as a curative and prophylactic agent, would indicate that this annual loss is one that could be avoided. If these results had been secured in one or two in-

stances, or in any one year, there might be reason to believe that the disease had spent itself and subsided of natural causes and that bacterins played no part in its termination, but as the cases cited in this article were distributed over a period of several years and covering a large territory, that on treated cattle in the same pastures with treated animals continued to die and that in no cases did treated animals develop the disease while a great percentage of sick animals recovered after treatment, I am compelled to believe the bacterin treatment responsible for the splendid results obtained. It is further evident that if cattle were treated before they were turned into the oak pastures, this loss would not occur. Owing to the fact that we do not know the length of time immunity is conferred by the administration of bacterins, I advise annual treatment and although this entails some labor and expense, I am sure that results will justify the means.

Comment: A fatal disease of cattle that has been called oak poisoning is frequently seen among the sand dunes of Northern Indiana where scrub oaks abound. In the fall of the year when pastures are dried up or over-grazed and cattle, as a consequence, are driven by hunger to eating oak leaves, they often sicken and even die before the cause is discovered. It is known in this section however that the leaves must be consumed in considerable quantities to do any damage. Casual browsing has never been known to cause poisoning. The symptoms are great thirst, loss of flesh and staggering gait, and sick animals removed to the stable and fed ordinary feeds recover promptly. —Ed.

Compulsory tuberculin testing of cattle which naturally becomes a part of the "Area Plan" of eradication now championed by federal authorities and state authorities of several states, is meeting with less opposition than in years gone by when any attempt at arbitrary tuberculin testing by public officials was stubbornly resented and made progress impossible.

It is not disputed that compulsory pasteurization of skimmilk, whey and butter-milk would help a great deal to control tuberculosis of farm animals, but just why this is not insisted upon as a preliminary control measure instead of waiting until animals grow up with the disease and then go to the expense of testing and slaughter, is difficult for the uninterested bystander to comprehend.

TICK PARALYSIS

Dodd has recently briefly described in the Journal of Comparative Pathology and Therapeutics, a condition that occurs in cattle along the eastern coast of Australia, as tick paralysis. The name "Tick Paralysis" has been selected to designate this disease because, according to Dodd, a tick Ixodes holocyclus has been definitely incriminated as a direct or indirect causative factor.

Tick paralysis is very similar to loin disease, a condition that occurs in cattle in the Gulf States and was described in detail in VETERINARY MEDICINE, July, 1921. There are apparently some variations in "tick paralysis" and loin disease. Tick paralysis is said to primarily affect young animals and loin disease is largely confined to mature animals. Vomition is described as a common symptom in tick paralysis, but is rarely observed in loin disease. Both conditions are characterized by a progressive motor paralysis, dullness and diminished appetite or inappetence.

That ticks are capable of producing paralysis is substantiated by the fact that a tick paralysis in man and some lower animals has been reported from Montana and other sections in the Northwest and was said to be caused by a tick Dermacentor venustus. Ixodes ricinus occurs in some of the Southern States and it is possible that the Ixodes holocyclus may occur in the section where loin disease exists, but we believe it has not been identified, although investigations have been under way for some time.

EXTIRPATION OF THE CLITORIS IN A MARE

The author performed an extirpation of the clitoris in a five year old mare which as a result of nympomania was absolutely useless. The result was remarkably good. The mare which previously broke up all vehicles became very docile after the operation. The author is of the opinion that the expiration of the clitoris should be attended before ovariotomy is decided upon. Similar good results were obtained by other veterinarians who performed extirpation of the clitoris in mares which could not be used for riding or driving.—S. Dahlstedt (Svensk. Veter., 1921, p. 72).

Diseases of Swine

By Edw. A. Cahill, V.M.D., Indianapolis, Ind.

(Continued from September)

NECROTIC ENTERITIS—Continued

Characterized by Emaciation

The necrosis may involve large areas of the intestinal tract which eventually become dry and leathery in appearance. Clinically the disease is characterized by progressive emaciation and the inability on the part of the affected individual to assimilate its food through the necrotic or dried intestinal mucosa, resulting in progressive and intense emaciation. This entire syndrome spoken of as necrotic enteritis is practically the same condition as described by Salmon and referred to as Salmonellosis hence it is not a new disease.

Mixed Infection

There is little or no justification for the existence of this expression although two infections may occur simultaneously in swine as in all other species. As in a diphtheretic throat and in a tuberculous lesion bacteria other than the specific organism is found so may we find extraneous bacteria entirely devoid of significance in the body of sick swine. So-called mixed infections prove upon proper investigation to be either hog cholera, hemorrhagic septicemia or necrotic enteritis, or a combination of these.

A diagnosis of mixed infection is a blanket covering ignorance which lowers us to the level of the charlatan whereas the diagnosis of a specific disease puts the professional man on a pinnacle which the laity will not even approach. Our treatment like our diagnosis should be specific—not shotgun in character.

"Flu"

This is another diagnosis which would be much better out of our professional vocabulary. With one exception all investigators who have studied this condition have denied its existence while many have isolated B.suisepticum in pure culture from supposed cases. The concensus of opinion at this time is that so-called "flu" is a peracute form of hemorrhagic septicemia and should be treated as such.

Botulism

Some months ago the veterinary world was startled by the publication of an article which left the impression that most post vaccination trouble in swine was botulism and that the condition might be brought about by contaminated serum and virus. The consequences of such a condition if proven would be so serious that they could hardly be estimated.

Investigations Show Resistance High

Extended investigations which have since been conducted by the writer and others indicate clearly and conclusively that swine are much more resistent to botulism than other animals and that there is no danger of anti-hog cholera serum or hog cholera virus containing botulinus toxin.

Differentiation Not Difficult

One need not fear his ability to differentiate between botulism and other diseases of swine since the clinical picture of the former disease is entirely unlike that of any of the diseases which are prevalent. The symptoms are entirely of the nervous system and in a manner resemble tetanus. There exists considerable doubt as to the existence of this disease in swine except in cases where the animal has been artificially infected.

There Is No New Disease of Swine

From the above it is quite apparent that we may safely assume that there are no new diseases of swine which are of particular significance and that our efforts can be concentrated on the control of hog cholera, hemorrhagic septicemia and necrotic enteritis.

These three diseases, like most other infectious disease, have a well defined cycle and the diseases are prevalent, and the symptoms and lesions acute, in proportion to the virulence possessed by the organism which is responsible for each disease.

Cholera Occurs in Cycles

To illustrate: Hog cholera generally travels in cycles of approximately seven years. It was extremely prevalent in 1907 and 1908, in 1913 and 1914, and in 1921 and 1922. Between these years the virulence of the disease gradually

diminished and the incidence of the disease was extremely low; then, after a period of years it again gradually increased until it again assumed epizootic proportions. The same condition applies to hemorrhagic septicemia and necrotic enteritis. These diseases also travel in cycles, although their period of ascendency and quiescence is not quite so clearly defined as in the case of hog cholera. These like most infectious diseases are not difficult to diagnose when their incidence is high and the symptoms typical, but their diagnosis becomes increasingly difficult when they become subacute and atypical in character. At the present time it is necessary that we be fully capable of diagnosing hemorrhagic septicemia and necrotic enteritis in order that these diseases may not be diagnosed and treated as hog cholera, since satisfactory results are rarely observed under such conditions. There is equally great danger of low-grade hog cholera accompanied by atypical symptoms and lesions being diagnosed and treated as necrotic enteritis or hemorrhagic septicemia. Both of these errors have and are being made and it is such errors which preclude the possibility of successful treatment, or of retaining public confidence.

Baby Pig Immunization Not Recommended

It is a notorious fact that necrotic enteritis and hemorrhagic septicemia are most frequently diagnosed in sections of the country where baby pig immunization is practiced and it is equally well known that in those sections the treatment following such diagnosis is not entirely successful. Conversely hemorrhagic septicemia and necrotic enteritis are far less frequently diagnosed in sections of the country where swine are never immunized until they reach forty pounds weight, yet when these diseases do appear they are readily diagnosed and in such sections the affected animals respond to specific treatment in a satisfactory manner. The answer should be plain and it is easily proven by animal inoculation. Such inoculations when accompanied by a thorough investigation prove that many such cases are in reality low-grade hog cholera although they are treated for other diseases. Without desiring to open a discussion on baby pig immunization, which is a controversial point, it may be said that the preponderance of experimental evidence still indicates that baby pig vaccination is not entirely dependable, while practical investigation indicates that many cases of low-grade cholera in pigs vaccinated as babies are diagnosed as other diseases on account of atypical lesions. It seems advisable therefore that in so far as possible the immunization of baby pigs should not be practiced and that whenever this practice is necessary that such individuals should be revaccinated at a subsequent date.

Hygiene a Vital Factor

While it is generally appreciated that the organisms responsible for necrotic enteritis and hemorrhagic septicemia are normally present in the body of many healthy individuals and become pathogenic only when the vitality of the host is lowered it is likewise true that these diseases are to a large degree continually propagated by improper surroundings such as insanitary hog wallows and feed lots which are used continuously over a period of years. These latter conditions maintain a continuous source of infection both for the organisms responsible for these diseases and for parasitic infestations. The practitioner who does not devote a reasonable portion of his time to eliminating such conditions is falling considerably short of doing his full duty. Likewise a proper survey of the housing facilities and the diet which affected animals are receiving is of the utmost importance. Many cases which clinically cannot be distinguished from hog cholera or other acute septicemia are known to be due to the condition now referred to as protein poisoning which is characterized by intense prostration and thumps. It is common experience that in many such cases the only treatment which is required is a complete change of diet and the elimination of highly nitrogenous food.

Attention to Details the Objective

In conclusion, I would urge you to realize that the main difference between success and failure in the control of swine diseases lies in the observation of small details. The boast should be not how many animals can be vaccinated in a day but how little trouble follows a day's vaccination. The expert whose services are always in demand for consultation fully appreciates that his consultant has had an opportunity to observe all that is necessary to make a diagnosis, yet in spite of this the one is frequently successful where the other fails. This is possible because the one has long since learned the value of observing closely the most minute details of history, symptoms and lesions and to appraise each for its true worth. In addition to this he fully appreciates the value of making a diagnosis only after he has

made a careful survey of the sanitary conditions, housing and feeding. When the practitioner learns the value of making such a survey part of his routine procedure and insists on examining in a most deliberate manner the apparently healthy swine which he intends to immunize, or sick swine which require diagnosis and treatment he will be amply repaid. Such a diagnostician will minimize post vaccination troubles and obtain therapeutic results which are denied his hurried confrere who cannot take time to handle such matters properly. The result is increased prestige and the proof that swine practice can be both successful and profitable.

Swine Breeding Problems

By A. T. Kinsley, Associate Editor

SWINE production is one of the most important live stock problems in this country. The constantly increasing population requires an increased food production and it is not probable that there will be an over-supply of swine produced in the near future. The number of brood sows has been materially increased; in fact, there was over ten per cent more brood sows on farms in the United States in the spring of 1922 than there was in 1921. During this same period the total increase of swine has been estimated to be less than 8% which is indicative of a low breeding efficiency. The average number of pigs farrowed according to limited statistics obtained by publishers of swine papers is nine plus. As nearly as can be estimated, the average pig production per sow each year is slightly less than eight; that is, the breeding efficiency is less than 50%.

It would be more economical for the swine producer to improve the method of breeding and feeding of swine rather than increasing the number of broodsows. The majority of sows produce two litters each year. If the breeding efficiency were increased to 80% the average production per sow would be 14 plus. At the present rate of production, of approximately 8 pigs per year per sow, 7,500,000 sows are necessary to produce 60,000,000 swine. If each sow produced 14 pigs per year, that is an 80% breeding efficiency, it would only require 4,285,700 brood sows to produce 60,000,000 swine. Thus, by increasing the breeding efficiency to 80% the same number of pigs could be produced by 60% of the sows that are now required.

Pig Crop Can Be Increased

It is now time for the breeding of sows for the production of spring litters of pigs. It would be possible to increase the pig crop from 25% to 50% by a more careful selection of breeding swine; by proper methods of feeding the breeding swine and by attempting national methods of breeding. It is not only the privilege but the duty of the veterinarian to advise live stock producers on breeding problems.

Selection of Breeding Animals

The producer of swine has three outlets for his surplus; that is, he may dispose of the excess for stockers, for breeders or as fattening hogs for pork. Most breeders do not consider it necessary or economical to use pure-bred sows in the production of hogs for market. However, all breeders do recognize the value of a pure-bred sire and the usual market hog is the product of a pure-bred boar and a grade sow.

The most important factors to be considered in breeding for the production of market hogs is the selection of prolific females, good feeding qualities and early maturity. It is advisable to select pure-bred boars. The breeding of the boar can be determined by the pedigree. Other things equal, boars should be selected from large litters, as such is indicative of healthy dams and prolific breeding. The sire should have the proper conformation and have good action and a gentle disposition. Pure-bred sows selected by the pure-bred breeder should show the proper breeding according to pedigree and have the proper conformation. In addition she should have ten or twelve well developed teats and be of a good disposition. Care should be exercised in the selection of breeding animals to avoid intensive inbreeding.

The Care of Breeding Animals

Boars should be kept separate and in the summer time they should be provided with a small pasture and supplied plenty of fresh water. The winter care should include warm housing with ample bedding and a maintenance ration. A common mistake of breeders is that

of keeping their herd boar too fat. Another very important consideration for health and prolonging the productivity of boars is requiring them to take ample exercise. Boars should not be kept in small pens. If a large lot or pasture is not available, feeding should be done in one end of the pen and the water supply kept in the opposite end, thus necessitating the taking of exercise to obtain feed and water.

Narrow Ration for the Boars

During the non-breeding season the boar should receive a maintenance ration. From two weeks to a month prior to the breeding season, the boar should be provided with a narrow ration. Ground oats, barley, skim milk, semi-solid buttermilk or mill run feed is a splendid combination, particularly if supplemented with any green foods. In the big type hogs, it is of course advisable to supply extra quantities of mineral ingredients.

Bulky but Not Fattening Ration for Sows

Sows for breeding purposes should not be fattened. As soon as gilts are selected for breeding purposes they should be given a ration containing relatively small quantities of fat forming elements. It is advisable to provide such animals with food stuff that is rather bulky, during the early stages of development and thus cause the digestive organs to become sufficiently large that they can successfully care for the increased ration during the suckling period.

For a period of two months, after the sow is bred, she may receive limited quantities of fat forming foods, such as corn, but for the last month of the period of gestation, such animals should be given a narrow ration and this ration should be diminished about one week before farrowing. For the first twenty-four or forty-eight hours after farrowing, unless the sow is extremely nervous, she should be given no feed but plenty of water. Then a limited ration should be provided until the pigs are about ten days of age, when the ration can be gradually increased, reaching a maximum when the pigs are about three weeks of age.

Allow Sows to Exercise

Sows should be given ample exercise and provided with pasture during the summer. They should be amply housed during the winter. Exercise is essential for high production in brood sows.

Methods of Breeding

Age for mating. The proper age for mating swine is a question of considerable interest and importance. From general observation it would appear that mature animals of about the same age generally produce the best results. It is said that there may be some difficulties, particularly in farrowing when young sows are mated with aged boars. The mating of aged sows with young boars gives fair results, although a mature boar may produce stronger pigs and a larger litter. Another important question confronting the breeder is the length of time that sows or boars can be profitably kept for breeding purposes. According to the results of most breeders, it would appear that sows are profitable breeders for about five years, during which time they should produce two litters annually or ten litters in all. The length of time that a boar can be maintained as a profitable breeder will depend upon the proper selection of sows to avoid the disadvantages of intensive inbreeding. Boars that have been properly cared for and used are usually serviceable for at least five years.

Gilts should not be bred until they are practically mature. The large type swine, such as the Poland China and Durocs do not become mature until they are at least one year of age and these swine should not be bred until they are ten or eleven months of age. Smaller type swine mature at an earlier age and can be successfully bred when they are about six or seven months of age. The age at which a boar can be put into service varies according to breed. In large type swine the boars should not do general service until they are one year of age and even at that age the service should be restricted. Boars of the smaller type breeds can be put to limited service when they are six months of age.

Breeding Crates. Some sows will not take the boar during the estral period and others are bred with considerable difficulty. Sows are of no value as breeding animals unless they produce pigs. Fractious sows diminish the vitality of the boar. It is sometimes desirable to breed a small sow to a large boar or a large boar to a small sow. These various breeding difficulties are largely overcome by the use of a breeding crate. There are many types of breeding crates but the most important feature that should be provided is that the sow be in a natural position when confined in the crate. If a breeding crate is not provided a chute or

small pen should be arranged to prevent over-exertion on the part of the boar.

Single Service. One of the contributing factors in the production of small litters and excessive loss of recently farrowed pigs has been pasture breeding. It is not infrequent for a boar running with sows to make ten or fifteen services in a single day. Excessive service in pasture breeding is an important factor in the production of small litters and low vitality pigs. A single service is sufficient for the breeding of healthy animals and if animals are not healthy they should not be used for breeding purposes.

A small pen should be provided for the boar and into which the sow can be driven for breeding purposes, unless a crate is available, and when the boar has made one good service the sow should be removed. It is true that individual service breeding requires some time but it will increase the pigs' production.

Formalin, Internally, a Dangerous Drug

Many articles have appeared during the past few months on mastitis in cattle. Very naturally, the practitioner who is in a cattle country thoroughly devours these; as the results obtained in treating these cases have always been more or less discouraging. About the most honest author I have ever read on this subject is Doctor Williams in his work on obstetrics. He says frankly that treatment of these cases is more or less unsatisfactory.

To read some of the recent articles, one who does not know, would think that wonderful progress has been made. I grant that we know a little more than formerly, but the results are still none too encouraging. I realize that the treatment I condemn is advocated by men who are widely known and whom I greatly respect. However, I have tried out this drug on a large enough number of cases to satisfy myself as to its harmfulness.

Formalin has been recommended in one ounce doses in a quart of oil, milk or water and to be repeated twice a day for several days. In my opinion, this is one of the best ways to ruin a cow's digestion. In many cows, it will not only cause severe indigestion but constipation that is almost impossible to correct, even in doses of only two drams given in a quart of water.

Let me say to those who have not had wide experience with formalin that I do not believe it a safe drug to give in water. I have discarded it entirely. I can not say that formalin will give any better results than some other drugs that are not harmful. Why, therefore, use a dangerous drug?—H. Frederick.

Comment by Dr. DeVine:

I think my opinion would be best expressed by my article published in the Journal last month on mastitis. You will note that in the treatment of mastitis, I make no mention of formalin. My reason for this is that formalin has not given me the same satisfaction that it apparently has others. Consequently, I made no mention of it. I think, however, in the treatment of mastitis I would be a little more optimistic than Doctor Frederick, since in the treatment I outlined in my article last month fully eighty per cent of our cases make a satisfactory recovery.

The crux of the situation rests largely on whether or not we can educate our clientele to begin treatment early, before the gland has suffered too much destruction. The next important factor, aside from medication, is to enthuse or inspire the owner or herdsman to give thorough attention to the cases. Half-hearted attention often results in failure and so lessens faith in the treatment. It is our custom to demonstrate to the owner or attendant just how we wish treatment carried out and what we mean by thorough massaging. Thorough massaging does not simply mean a careless and indifferent rubbing of some preparation on the udder. It means a vigorous manipulation of the udder so as to work out as much of its offensive contents as possible and at the same time excite excess circulation. Bacterins for the first few days are essential.

Dr. Louis I. Helfand, who has recently moved from Hammonton, N. J., to 3700 Federal St., Camden, N. J., has been appointed first lieutenant in the National Guard of Pennsylvania and placed on the staff of General Shanon of the 56th Infantry Brigade.

The demonstration of filterable virus in the blood of swine that had been simultaneously treated with serum and virus one year previously suggests the possibility that induced hog cholera immunity is a relative condition and not absolute and positive.

SOMETHING NEW ON THE CONTAGIOSITY OF FOOT AND MOUTH DISEASE

Dr. Charles Lebailly, director of the bacteriological laboratory at Caen, France and whose work on foot and mouth disease is well known to all those who keep in touch with the developments about this scourge which has been ravishing the live stock of Europe since the war, discloses the results of experiments he has made on the "Duration of the Contagious Period of Apthous Fever" that shed entirely new light on the subject and will have a great bearing on the measure subsequently used to combat outbreaks. In order to avoid misquoting the author by a mere extract of the report of his work that appeared in the Recueil de Medecine Veterinaire, August, 1922, we submit the article verbatim:—

"Classic treaties and current opinions agree that foot and mouth disease cases are contagious during several weeks, and the regulations of sanitary police impose a quarantine of at least fifteen days after the last case has recovered. It is therefore very important in combating outbreaks to determine as correctly as possible the extent of the period during which affected animals are capable of transmitting the disease. This question also presents a matter of capital interest to experimenters:

"The experiments which I report herewith were made in the stable, chiefly on Norman cattle, young or adults, excluding cows during lactation on which through quite natural reasons it has not yet been possible for me to experiment. The virus used came from an outbreak in the neighborhood of Caen during December, and has been preserved by passing it through receptive animals. The disease resulting from this virus, breaks out from the third to the seventh day.

"If from the time the temperature commences to rise until the vesicles rupture a receptive bovine is placed in contact with the artifically inoculated subject, it invariably contracts the disease. The temperature rises in 48 to 60 hours and a classical infection develops.

"If on the contrary, I wait until four days after the first vesicle appears (which in general is the time the fever and salivation begins) and only at this moment introduces a receptive animal it does not contract the disease, although the contact is complete, the two animals are tied on the same ring for six hours, eat from the same manger, drink from the same vessel, lie on the same litter, and the exposed animal continues to occupy the stall. And besides no disinfectants whatever were used, and the stables were of the same kind found on farms where the disease is given a free course. The animals were given every chance to contract the disease from the walls, the stalls and the litter used during the preceding days.

"Furthermore, the sick animal during the period of contact showed the rueful and classic aspect of the disease; the ulcerous apthae were covered with a gray coating, the epidermic shreds were still detaching, the mouth drooled a frothy discharge and the typical suction sounds occurred periodically.

"It is the current opinion that the disease is highly contagious at this stage and that the animal and all the object it soils must be disinfected. Besides, in the places those experiments were made during eight months no disinfection whatever was permitted, and the experimental animals were introduced into the stables four days after the appearance of the vesicles. Nevertheless, under these conditions, I was never able to produce the disease. It goes without saying that the experimental animals were receptive ones, proved fifteen days later by inoculation with virus or by direct contact with an affected animal during the virulent period of the disease.

"And it appears to me that two periods in the evolution of the disease should be distinguished. The first is the incipient period during which it is impossible to diagnose the disease by observation except by the elevation of the temperature. From this starting point of thermic rise, even of a few tenths degrees the animal spreads the disease everywhere it passes and without suspicion that others are spreading it in the same way.

"The second period on the contrary, the one that strickens and attracts attention of the most unsuspecting observers, does not merit the attention it has inspired. This stage is the most painful one for the animal but after they have drooled for four days they are incapable of transmitting the disease.

"The conclusions resulting from my experiments are that the propagation occurs only from sick animals during the period of incubation and invasion and only for a very short time. The observations also explain the measures taken after an outbreak is well developed have proved so worthless. Those radical measures like slaughter can therefore give no

(Now turn to page 709)

The Solubility of Thymol and Its Lethal Dose for the Horse

Thymol is regarded as an excellent anthelmintic for man, but its use is limited partly by its feeble solubility in water and partly by the dangers of rapid intoxication if fats (in which it is soluble) are ingested with it.

It could be employed for the same purposes in animals, but the dose must first be determined and it is utile to understand its solubility.

Solubility: On consulting different authors in search of the coefficients of solubility of thymol one is struck with the variation in the figures obtained:—1 to 333 (Kaufmann); 1 to 1100 (Gilkinet); 1 to 1200 (Douvault); 1 to 3000 (Wurtz). This variation from 1 to 10 shows plainly the need of revising these figures.

To determine the solubility of a non-volatile body in any kind of solvent, a saturated solution is prepared by filtering out the undissolved portions and then a given portion of the filtrate is evaporated and the residue weighed.

In a volatile substance like thymol the methods of Fournieux are generally used. From this test we determined its solubility is as follows:

(a) In distilled water..... 1 to 1280
(b) In a solution of NaCl 7.5 to 1000 1 to 1280
(c) In a solution of NaCl 45 to 1000 1 to 2560
(d) In a maceration of hay, oats and straw and a mixture of these.... 1 to 3840
(e) In the stomach contents of a horse ..... 1 to 1280

It seems that the solubility curve is governed by the concentration in different ions; it can not be represented by a straight line but probably by a curve of the second degree.

Toxic Dose: Eight horses were used to determine the lethal dose. Each day one of the horses received a dose of thymol and the doses were increased each time. Each horse came every eighth day in order not to bring about an accumulative action. The drug was given in the form of electuaries on account of the large volume of the dose. In the case of the large doses it was necessary to divide them among three or four electuaries.

Only one horse suffered ill effects from doses under 45 grams and that was a non-fatal colic. At 45 grams which represented .095 grams per kilo of body weight the horse showed paralysis of the hind legs, and at 100 grams representing from .211 to .246 grams per kilo of body weight, paralysis was the universal result. One horse died but on postmortem examination it was found to be affected with an old pericarditis which was thought to be a contributing cause of the fatality.

Home of President W. H. Welch of the American Veterinary Medical Association, Lexington, Illinois

. As a rule the paralytic state appeared an hour after administration; the animals appeared drunk, lost equilibrium, staggered and held the heads low, sometimes falling over. The maximum intensity of the symptoms was reached usually during the second hour. There was always a lowering of the temperature. At the autopsy held, gastric irritation was pronounced at the areas touched by the drug.

The author concludes that the toxic dose of thymol for the horse is about 100 grams or 210 to 250 milligrams per kilo of body weight. As a measure of prudence horses weighing from 400 to 500 kilos should not receive more than 80 grams, but in view of the fact that horses drink only 25 to 30 liters of water in a day it would not be possible for more than 20 grams to dissolve during 24 hours. It would seem useless to give larger doses than 10 grams and that just before drinking to assure all is dissolved, and none is left to accumulate and cause irritation.

The solubility now being established it would seem useful to carry similar experiments to the other domestic species.—Veterinaire-Principale (Lt. Col.) Brocq-Rousseu, Director of the military laboratory of veterinary research, Paris. Excerpt from Bull. de la Societe Veterinaire.

The Toxicology of Ergot

By Prof. L. H. Pammel, Ames, Iowa

WALTER W. BONNS in the American Journal of Botany, 9:339-352, has made a study of ergot. The purpose of the study was to determine the physiological properties of ergot in cultures. The chief interest of the work has therefore centered in the physiologically active constituents of the organism in culture. The best work on the chemistry and toxicology of ergot is that of Barger, Dale and Ewins. I have referred to some of this work in this Journal. Dr. Bonns gives a resume of the active principles as follows:

"(1) Ergotoxin ($C_{35}H_{41}O_6N_5$), an amorphous alkaloid yielding crystallin salts, which in very small doses produces ataxia, dyspnea, salivation, gastro-intestinal irritation, and gangrene. The latter is caused by constriction of the arterial circulation which this alkaloid effects.

"(2) Histomin (ergamin, B-iminazolydethymlamin, $C_5H_9N_3$), a powerful uterine stimulant and blood-pressure depressor.

"(3) Tyramin (parahydroxyphenylethylamin, ($C_8H_{11}ON$), functioning as the powerful blood-pressure-rising principle in ergot pextacts.

"(4) Acetylcholin ($C_7H_{17}O_3N$), a depressor of blood pressure.

"The standard physiological rests of ergot extract for pharmaceutical use are made for the first three of the above named constituents. Histomin action is determined by subjecting freshly excised guinea pig's uterus, suspended in Ringer's solution, to the standard ergot dose, which is added to the solution, the resulting muscular contraction being recorded on a kymogram apparatus. For the tyramin test, cats, dogs or rabbits are used, the drug being injected intravenously and the rise in blood pressure being recorded. Tests for ergotism are most generally made upon the comb of the domestic fowl. Injection is intramuscular. The action generally occurs within an hour, evidenced by a very distinct bluing of the comb and sometimes of the wattles. Attendant symptoms are restlessness, drooping of the head and tail, diarrhea, and inability to stand normally erect.

"Forty-two grams of substrate yielded 10.86 grams of dry weight of material for percolation. On the basis of dry weight the total fungus was estimated as not to exceed 2 per cent of the total dry weight used in extraction. Test of the extract from this source in standard dose produced no distinctive bluing of the comb of a white leghorn cock, and only a slight indication of increased blood pressure in a rabbit."

The extracts made from the cultural material resembles that from natural ergot, only somewhat slightly lighter in color. Tests were made as follows:

"Blood pressure tests were made on the rabbit and cat. Negative results were obtained on a rabbit with both fungus extract and standard U. S. P. ergot extract. On cats the latter produced increase of blood pressure characteristic of standard ergot preparations. The extract of the fungus culture effected a lowering of pressure but showed no pressure increase.

"A uterine muscle-contraction test was made on guinea pig. Contraction resulted from the

addition of standard U. S. P. ergot extract, 1-10,000. This represents 1 gram of powdered ergot per 10,000 cc. solution. Other contractions were obtained with extracts from the culture in strengths of 1-3300, 1-5000, and 1-7000, respectively.

"It is clear that there was present in the extract a principle causing uterine contraction and ranging in strength about from 1/3 to 7/10 that of standard ergot preparations."

In regard to ergotism there were slight color changes in the comb of the cock. On the whole the test was regarded as negative.

SUGGESTION ON FISTULA OF THE WITHERS AND POLL-EVIL

Arthur Abendshien, D. V. M. Turon, Kansas.

I have been reading your articles on surgery and find them very interesting. However, in my opinion, you do not discuss operations on the teats of cows as much as I wish you would. We have trouble of every description with the teats of cows and I am at a loss to know what to do with them, so if you know of a book describing all the teat operations would be pleased if you would write me.

I want to say that the book on "Fistula of the Withers and Poll Evil" has sure been a great help to me. I have operated upon over 100 cases in this last year, and I have never seen the like, the way they recover. Out of the 100 or more cases there are but two that look unfavorable. However, my method of operating is just a little different than the methods described.

Technic: First will say that I have no operating table and neither do I have my patients brought to me. About one hour before operating I give two or two and one-half ounces of chloral hydrate per os. then about three-quarters of an hour later I inject some local anesthetic into the regions of the withers so the skin will not be so sensitive. It seems as though the skin incision is the only part of the operation the animal objects to, and by using a local anesthetic they rarely object to that. I have the horse led into a light, clean double stall, a rail put alongside the horse so as to crowd it close to the partition. A long flat box about two feet high is placed by the side of the horse for the operator to stand upon. An assistant, usually the owner, uses the twitch, and I hasten to say that I never let them twist it very tight as it is unnecessary. The twitch is not put on until I am ready to make the skin incision.

The field is prepared in the ordinary manner. If it is covered with pus and dirt, and looks as if it could be made more septic, I find it pays to clean it and to employ means to disinfect it before operating.

Regarding instruments and trays, solutions, etc., I find it advisable to place all the apparatus together with several quart bottles of water in the pressure sterilizer before operating. I find that from one-half gallon to three quarts of water is about all I need for the operation except to wash the blood from the horse and clean up after the operation.

When ready to operate I start the incision at the usual place and carry it well forward. This I do quickly with a sharp knife so that it is not so painful. I then split the ligament, peel it loose and cut it off close to its attachment to the vertebra. I take one-half of the ligament at a time, never the whole ligament. As soon as I have the one side out I take the other side out in the same manner. I then examine the cavity for shreds of the ligament. After all are removed the cavity is packed with gauze from the sterilizer. I seldom suture the wound unless it is bleeding freely, which I find seldom occurs while the horse is in the standing position.

The blood is now washed from the horse and it is put in a clean stall for twenty-four hours, the gauze removed if it is not already out and the cavity filled daily with a powder consisting of three drams of iodoform and eight ounces of boric acid. The animal is turned out to pasture, and when brought up to feed the feed box placed upon the ground. The hair is kept clipped away from the wound. These cases take from forty to ninety days to recover.. The average horse is ready for work in about seventy-five days.

You will note that I use no drainage tubes. I have found them unnecessary for country practice as the cavity drains well if the horse eats from the ground.

A word regarding your forceps for holding the ligament; I find they are just a little light and slip easily.

As to the sequels of this operation I believe they will all get along all right if the operation is carried out as I have described above; however, I might say that if the animal does not eat from the ground the pus will have a tendency to gravitate down into the muscular structures. Also, if the hair is not kept clipped from the wound margins it will prevent free drainage and cause pus to collect and the neck to swell and become thick for a time.

In mentioning the technic for the operation I failed to say anything about the hands. I always wash them in mercuric chlorid solution, coat the finger tips with iodin, and then anoint the hands with camphorated oil. I find if I apply an ampoule of camphorated oil on my hands, rubbing it in well, the blood will not stick to them.

I wish to close by saying again that the little text on "Fistula of the Withers and Poll Evil," in my mind, and the minds of a large number of my clients, is about the best text I have ever had.

SPONTANEOUS RECOVERY FROM INTESTINAL PERFORATION

I often note reports of unusual cases in VETERINARY MEDICINE that prompt me to send the following from my own experience. It is a case of a two-year old colt that sustained a rupture of the abdominal wall and intestine with discharge of ingesta through the wound that recovered in spite of all theory and book information to the contrary. This case reminds me of the impression I gained from my alma mater where we were taught that a fistula of Steno's duct was a formidable affliction. My first case of salivary fistula of this particular order healed while I was searching through my text books for the modus operandi.

The colt in question sustained an abdominal trauma that manifested itself by a swelling the size of two fists located six inches to the right of the umbilicus. It was hard, hot and painful. The slippery condition of the barnyard from ice led me to suppose the injury resulted from a fall when turned out to water.

Fomentations and liniments were applied and a provisional diagnosis of ventral hernia was made. A week later the lump was so painful the colt had to be cast to make an examination. In the recumbent position the swelling reduced somewhat and was found to be soft in the center. Being none too certain as to the diagnosis, now that there seemed to be abscess formation, I did not operate.

A few days later the owner reported that the lump had broken and that almost everything imaginable was running out of it. On arrival to make an investigation into this remarkable report, I found fecal matter gushing out in a stream the size of two fingers every minute or two and the swelling was four times larger than before.

To my surprise the temperature was normal and on exploration of the channel I found an opening that would admit three fingers running right into the bowels. There was some pus in the musculature that I evacuated with a scalpel. The whole affair was so necrotic that it seems hazardous to attempt any surgical treatment. My decision was to leave the wound alone until it contracted enough to make closure with sutures feasible.

I did not hear from the case for eight weeks at which time I was informed that everything was healed up fine and that the colt had beat me out of a job. The owner however reported that the colt was subject to attacks of colic which, of course, following the stereotyped teaching for such cases, were attributed to adhesions and cicatricial stenosis. The colic attacks continued, some were severe and some so mild that no veterinarian was called.

As one of these attacks fortunately proved fatal I found the long-sought opportunity to hold an autopsy. I am not asking any one to make a guess as to the condition found because it would sure be too far from the facts disclosed. There were no adhesions and it was with great difficulty that I found traces of a scar on the colon in the region of the abdominal wound, and if any adhesion had ever existed there certainly were no traces left to indicate it.

The cause of the colic was a hair ball slightly larger that a croquet ball, located in the large colon.

Churubusco, Ind. C. O. Smith.

Goat breeders are attempting to develop strains of goats that will not shed and thus permit of the production of a longer fleece. The longest record fleece is 41½ inches and the record growth up to the present without shearing is forty-three months.

Anthelmintic Medication for Worms Outside of the Digestive Tract

By Maurice C. Hall, Associate Editor

THE term anthelmintic is usually applied to drugs intended to destroy worms in the lumen of the digestive tract, but it may also be applied to drugs intended to destroy worms in the lumen of other organs, such as the air passages of the lungs, or to worms in various tissues, including the blood, or in cavities, such as the peritoneal cavity. This latter group of anthelmintics has been discussed in a paper by Ransom and Hall (1912). As yet we have but few drugs of value against worms situated outside of the lumen of the digestive tract, and but few worms are as yet known to be susceptible to successful attack by these drugs.

The cases in which worms not in the lumen of the digestive tract are amenable to anthelmintic treatment may be briefly summarized as follows:

LIVER FLUKE MEDICATION

The liver fluke of sheep may be successfully removed by means of male fern and its derivatives and to a lesser extent by kamala and its derivatives. The male fern treatment, which has received recognition in practice in Europe only during the last few years, was first proposed by Grassi and Calandruccio (1884; 1885) almost 40 years ago. It was favorably reported on by Perroncito (1885; 1886), all of these Italian authorities detailing experiments which showed the value of the treatment in killing flukes. Over 20 years later, another Italian, Alessandrini (1908), reported experiments showing that male fern would kill flukes, and 3 years later Borini (1911), reported success with this drug against the liver fluke in sheep and cattle. This same year, French investigators, Railliet, Moussu and Henry (1911), confirmed the findings of the Italian investigators. Following this, male fern derivatives were marketed as proprietary remedies by French, German and Hungarian firms. Floris (1907; 1908) reported that carbon bisulphid is effective in removing **Fasciola hepatica**, but no one appears to have investigated his claims. Marek (1916) came to the conclusion that kamala was more effective in destroying liver flukes than was male fern, but later (Marek, 1917) he concluded on the basis of further experiments that the best treatment for liver flukes was by means of the administration of male fern derivatives in lipoid solution. Such a lipoid-soluble preparation is now being marketed in Europe. The efficacy of male fern and kamala against **Fasciola hepatica** evidently depends on the blood-sucking habit of the fluke, as the lancet fluke **Dicrocoelium dendriticum**, which also occurs in the bile ducts, but is not a blood-sucker, is not affected by these drugs. According to Marek (1916), the active phloroglucin derivatives of male fern and kemala are absorbed in the intestine and carried to the liver in the portal circulation, and are there taken in by the liver flukes as they feed on blood.

BLOOD FLUKES IN HUMANS

The human blood flukes, more especilly **Schistosoma haematobium**, but apparently **S. japonicum** and **S. mansoni** also, may be destroyed by anthelmintic treatment. According to Cawston (1921), **S. bovis** may be destroyed in the same manner. Joannidès (1911) reported injections of salvarsan as curative in 8 cases, but Conor (1911), Fulleborn and Werner (1912), and Day and Richards (1912) have been unable to confirm his findings. Diamantis (1917; 1918) found emetine of value in destroying blood flukes, and though his findings were not substantiated by Morel and Maldonado (1918), they have since been substantiated by the work of Mayer (1918), Erian (1918), Balfour (1920), Day (1921), Tsykalas (1921) and others in thousands of cases. This drug, emetine, has been given intravenously, subcutaneously and intramuscularly in the treatment of venal distomiasis. Christopherson (1918) proposed the use of tartar emetic intravenously for the treatment of this disease, this drug having been used previously in intravenous injections for the treatment of rats infested with the trypanosomes of nagana and surra by Plimmer and Thompson (1907), sleeping sickness by Broden and Rodhain (1908) of American leishmaniasis by Vianna and Machade (1913), and of Mediterranean and Indian leishmaniasis by other workers subse-

quently. Christopherson's findings in regard to the value of the treatment in venal distomiasis were confirmed by the findings of McDonagh (1918), Wiley (1918), Low (1920), Cawston (1920-1921), Christopherson and Newlove (1921), Day (1921), Lasbrey and Coleman (1921) and others. Cawston (1921) finds that both emetine and tartar emetic are effective against **Schistosoma haematobium S. mansoni** and **S. bovis.** Day (1920) believes that emetine is indicated in preference to tartar emetic for small children, persons with veins too small to inject readily, persons intolerant of tartar emetic, those in whom an error of technique has resulted in abscess formation and in cases complicated by amebiasis. He also finds colloidal antimony effective and to be preferred to tartar emetic for treating children. Cawston(1921) prefers emetine to tartar emetic for children and young persons. Recently, Wilson (1922) has reported favorably on the rectal administration of tartar emetic, a method which saves time, is free from risk, and causes less nausea and vomiting. The drug is absorbed by the veins of the intestine, thereby coming in contact with the worms in the blood.

VALUE OF MEDICATION NOT KNOWN

Little is known as yet with regard to the value of anthelmintics against other flukes outside of the lumen of the digestive tract. According to a review, Ando (1918) has had good results in the treatment of infestations with the lung fluke, **Paragonimus westermanni,** by means of tartar emetic, but no details of these studies are available to us. Low (1920), believes that this drug will be of value against **P. westermanni, Clonorchis** and other flukes, but evidence in regard to such efficacy appears to be lacking as yet. It may be surmised that where flukes lie in the blood, as do the blood flukes, or feed on blood, as does **Fasciola hepatica,** anthelmintic treatments for their destruction will probably be developed, but that flukes which are encysted, as **P. westermanni** or **Agamodistomum suis,** or which do not feed on blood, as **Dicrocoelium dendriticum,** will be distinctly more difficult to destroy by anthelmintic treatment, though the possibility of accomplishing their destruction in this way is by no means out of the question. **D. dendriticum** might be amenable to anthelmintics eliminated in the bile.

CESTODE MEDICATION

In the case of the cestodes outside of the lumen of the digestive tract, little has been accomplished as yet in the way of anthelmintic treatment. For the most part, such cestodes are larvae encysted in tissues, and while the growth of these larvae shows that they absorb solid and fluid material from their host, the growth is slow and it is evident that the absorption is very slow, a feature which promises little for the success of anthelmintic treatment. Zürn (1882) was unable to find a drug that would destroy the gid parasite in the brain of sheep in the course of 24 years' experiments along this line. Hall (1909) and Moussu (1910) found repeated doses of male fern ineffective in gid in sheep, the parasites being found alive after the conclusion of the treatment. Feletti (1894), de Renzi (1908) and Dianoux (1909) have reported cures of a total of 6 cases of cysticercosis in man following repeated doses of male fern. Moussu (1910) was unable to cure a similar case of cysticercosis in a pig by this treatment. De Renzi (1908) reported the cure of 2 cases of hydatid disease in man by the administration of repeated doses of male fern, but Dévé (1911) was unable to obtain similar results in cases of hydatid infestation in rabbits. Dévé and Payenneville (1914) found repeated injections of neosalvarsan intravenously of no value in preventing the development of hydatids in rabbits. Recently Dévé and Payenneville (1922) have reported the same negative results with novarsenobenzol.

Of the adult cestodes occurring outside of the lumen of the digestive tract, we find such forms as **Thysanosoma actinioides** in the bile ducts. Curtice (1889; 1890) was unable to find a satisfactory treatment for these worms in tests with pumpkin seed, pomegranite-root bark, koosoo, kamala, male fern, and worm seed. Styles (1902) found arsenic of no value against fringed tapeworm. Ransom and Hall (1912) were unable to destroy these fringed tapeworms by means of repeated doses of carbon bisulphid or of male fern.

The findings in many of the cases dealing with the treatment of intestinal and of somatic taeniasis are somewhat vague or uncertain and it is necessary to reserve judgment in these cases as regards the efficacy or inefficacy of the treatment. Undeniably the results obtained in attempts at treatment to destroy tapeworms outside of the lumen of the digestive tract are inferior to those obtained in the case of certain flukes. Probably these tapeworms are less susceptible to anthelmintic treatment than are the flukes in question, but more work is necessary along this line.

NEMATODE MEDICATION

The nematodes outside of the lumen of the digestive tract, like cestodes so situated, are less amenable to anthelmintic treatment than are the trematodes. The reason for their resistance does not appear to be the same as in the case of the cestodes. Many of these nematodes are not encysted and some of them must feed on blood or lymph. While the nematode cuticle may be thought to be more resistant than the corresponding structure in flukes or tapeworms, it must be borne in mind that certain drugs will destroy nematodes in the lumen of the digestive tract in cases where the same drugs entirely fail to show any adverse effect on flukes or tapeworms similarly situated. The reverse of this is, of course, true. It appears, therefore, that we must consider the action of anthelmintics as more or less specific and that the question of penetration is of little moment, whereas the finding of a suitable drug is of prime importance. In a general way it may be said that other things being equal it is no more difficult to remove or destroy one kind of worm than to remove or destroy any other kind. With a suitable drug the removal or destruction is easy; without such a drug it is difficult or impossible. The present literature on the treatment of infestations with nematodes outside of the lumen of the digestive tract has little in the way of definite positive results to record as yet and can only be briefly summarized here.

TREATMENT OF TRICHINOSIS

In the treatment of trichinosis, recommendations of various drugs have been made largely on the basis of clinical improvement or cure, without reference to whether the worms present in the muscles were affected or not affected by the drug. On such a basis McNerthney and McNerthy (1916) found salvarsan of value, Kahn (1917) found thymol of value, and Rosique (1917) found grey oil of value. But Eisenhardt (1918) found that thymol did not prevent the development of trichinae, and Romanovitch (1912) found salvarsan devoid of action. In trichinosis there are several factors present, and a given treatment may leave the larval worms in the tissues unaffected and at the same time aid the patient by the elimination of adult worms from the lumen of the intestine, by neutralizing toxins, etc. As an illustration it may be noted that Salzer (1916) found the use of serum from recovered patients valuable in the treatment of other patients and claimed that the use of such a serum in animals would prevent the development of trichinosis. Schwartz (1917) tested these claims and found that trichinae would develop in animals regardless of the use of serum. Hall and Wigdor (1918) also carried out tests along this line and although they confirmed Schwartz's findings to the effect that trichinae would develop in spite of the use of serum, usually lived longer than untreated animals. They concluded that the serum of animals which had recovered from trichinosis probably had anti-bodies which were of service in neutralizing certain worm toxins responsible for part of the pathological conditions. Von Linden (1917) claims that severe trichinosis can be prevented in guinea-pigs and rabbits by feeding them copper preparations, check animals becoming heavily infested. This claim requires confirmation. At the present time we know of no drug that has been definitely ascertained to kill trichinae in the muscles.

TREATMENT OF FILARIDS

Aside from trichinae, the worms which have received the most attention from the standpoint of medical treatment are the filarids. The papers on this subject do not indicate that much of a definite and positive nature has yet been established. Schultz has reported success in killing the adult **Loa loa** in the connective tissue of man, together with the larvae in the blood, by the administration of a 1 per cent solution of collargol in dessertspoonful doses three times a day for over a year. Thiroux and d'Anfreville (1910) report the disappearance of **L. loa** in a patient treated with aniline tartrate. Morlot and Zuber (1914) report the disappearance of this worm following injections of neosalvarsan. Rogers (1919) and Das (1920) have reported favorably on tartar emetic in infestations with **Filaria bancrofti**, but Low and Gregg (1920), Macfie (1920) and Low and O'Driscoll (1921) report unfavorably on this drug, Macfie's cases including infestations with **F. bancrofti, F. perstans** and **L. loa.** Low and O'Driscoll found emetine also ineffective, and though Mühlens (1921) has seen filariae disappear from the blood after emetine, he regards this as spontaneous or accidental, another case showing no results after emetine, tartar emetic and neosalvarsan. Siebert (1920) found that filariae disappeared in the case of an undetermined species of filarid after treatment with picric acid and refers to Scheube (1910) as having seen the microfilariae of **F. bancrofti** die in the blood after the administration of

potassium picrate. Ikegami (1920) reported that after 2 injections of arsaminol (Japanese salvarsan) in the case of one patient, the microfilariae disappeared from the blood and the urine became clear; no chyluria or other symptoms reappeared in over a year. Curasson (1920) reports that he treated 3 carrion crows of Senegal, all harboring microfilariae in the blood, with injections of galyl. The microfilariae disappeared from one bird for 9 days and then reappeared; no adult worms were found postmortem. The microfilariae became rare and less active in the second bird; 2 adult worms were found dead in the abdomen postmortem. No microfilariae were found in the third bird for 12 days; 1 worm, apparently dead, was found in the abdomen postmortem. Macfie (1920) treated 23 patients infested with Guinea worm, **Dracunculus medinensis**, by means of intravenous injections of tartar emetic; the worms and embryos died and could either be extracted safely or allowed to become absorbed. Jeanselme (1919), Montpellier and Ardoin (1919), and Grey (1920) report similar good results in infestation with Guinea worm from the use of injections of novarsenobenzol.

The foregoing indicates that as yet we lack adequate evidence establishing any drug as effective in the treatment of cases of infestation with **Filaria bancrofti**; that we may have a satisfactory treatment for **Loa loa**, though more work must be done to establish this; and that we apparently have satisfactory treatments for **Dracunculus medinensis**.

In a paper read before the last meeting of the American Veterinary Medical Association, Hall and Shillinger reported some tests of intravenous injections of carbon tetrachlorid and of tartar emetic for the destruction of **Strongylus vulgaris** in aneurisms in horses. While these tests were inconclusive, the findings of a dead worm in an aneurism in one case suggests that further work along this line might result in the development of a satisfactory treatment for the destruction of these worms.

Are you familiar with the milk product called semi-solid buttermilk, a product made by a condensing process that transforms buttermilk with all its nutritive elements to the consistency of lard, that keeps well and that can be utilized on the farm where milk is needed? It contains the lactic acid, the vitamins, the protein and the minerals of milk. It is not a milk substitute; it is milk itself, minus the butterfat.

LICE IN CATTLE; DIPPING VAT CONSTRUCTION; DIPPING SOLUTIONS

We have considerable trouble with lice, especially among the younger animals and as the herd is very large (600 head), we do not find it practical to treat those animals individually but would prefer to build a dipping vat. I would appreciate it greatly to have you send me some information on the building of a suitable vat and I would furthermore be pleased to receive a suggestion as to the most suitable solution for dipping animals affected with lice.—E. A. J., Wash.

Reply by Dr. Maurice C. Hall: With reference to dipping cattle for lice, I am noting below some of the more important features, partly abstracted from Imes's bulletin, and partly matter which has been ascertained since the publication of that bulletin.

Cattle in the United States are infested with one species of the biting lice, Trichodectes scalaris, and with three species of the sucking lice. Hematopinus Eurysternus Linognathus vituli and Solenopotes capillatus, the last-named being reported from this country for the first time by Bishopp in 1921. S. capillatus has been found in Washington, Oregon, Texas, Maryland, New York and Vermont, the earliest record of collection covering specimens from Texas in 1910. It is evidently well established and widely distributed.

Sodium Fluorid an Effectual Agent

Where only biting lice are present it is possible to control them effectively by the application of sodium fluorid as a powder or as a spray or dip. Bishopp and Wood report that one application of this substance was entirely effective in destroying these lice on cattle when applied as a spray containing 1 ounce, or even as little as ½ ounce, to the gallon. It was also effective when applied as a powder in the following ways: Using 6 ounces of a mixture of sodium fluorid, 1 ounce, and flour, 5 ounces; using 3 ounces of sodium fluorid applied with a shaker and then worked into the hair; or using 1 ounce of sodium fluorid applied with a bellows dust gun. The present writer would urge that caution is necessary in applying sodium fluorid to cattle, as in one case where a herd of cattle were treated by the application of sodium fluorid as a powder, there was a severe inflammation of the anus, vulva, perineal region and base of the tail. It would

seem to be advisable to avoid putting sodium fluorid on or near mucous surfaces, owing to the irritant nature of this compound.

Eggs Survive Longer Periods

When animals are treated it should be borne in mind that lice and their eggs are dislodged from cattle at times and that while the lice die in the course of 7 or 8 days, the eggs may survive for longer periods. It is, therefore, advisable to thoroughly clean the premises occupied by infested animals at the time they are treated, and disinfect the premises with coal-tar creosote dips. After being dipped, animals should be removed to clean premises, if the old premises are not disinfected, and not returned to the old premises for about 20 days.

Short Nose Sucking Louse More Resistant

The short-nosed sucking louse, H. eurysternus, is more resistant to treatment than are the long-nosed sucking louse, L. vituli, and the biting louse, T. scalaris. The last two can often be eradicated with one dipping in arsenical dip or coal-tar creosote dips, but the first-named requires two treatments and may require three, especially in the case of infested bulls. Where all three of these species are present, animals should be dipped a second time about 15 to 16 days after the first dipping. They should then be examined at frequent intervals, and if live lice are found the animals should be dipped a third time about 16 days after the second dipping.

Dipping Solutions

The dips which may be used against cattle lice include the arsenical dip, the nicotine dip, with or without the addition of flowers of sulphur, and the coal-tar creosote dips.

The formula for making 500 gallons of arsenical dip is given by Imes as follows: 4 pounds caustic soda (85 per cent pure), 8 pounds white arsenic (99 per cent pure) in fine powder, 8 pounds sal soda crystals, 1 gallon pine tar, and water to make 500 gallons. Place the caustic soda in a clean iron container, add 1 gallon of cold water, and stir until the caustic soda is dissolved. Then add the arsenic, a pound or two at a time, as fast as it will dissolve without causing the solution to boil, stirring all the time. When complete, dilute to about 4 gallons, add the sal soda and stir until dissolved. After the solution has become cold, add water to make it exactly 5 gallons.

Emulsify the pine tar as follows: Dissolve ¼ pound of dry caustic soda or concentrated lye in 1 quart of water, add 1 gallon of pine tar, and stir until the mixture brightens to a uniform thick fluid somewhat resembling molasses. It should mix perfectly with water when allowed to drip into it.

Since the amounts given will make 500 gallons of dip, 1 gallon of the arsenical stock solution and 1 quart of the tar stock will make 100 gallons of dip when added to approximately 99 gallons of water.

That part of the dipping vat below the dip line should be filled about three-fourths full of water; then dilute the emulsified tar with about three or four times its volume of water and pour it evenly over the entire surface of the water throughout the length of the swim; add the arsenical solution in the same manner; then add sufficient water to bring the liquid in the vat up to the dip line, stirring thoroughly. This dip is commonly used cold, but the temperature should range between 65° and 90° F.

Nicotin Dips

Nicotin dips when diluted should contain not less than 0.05 per cent of nicotin. They are usually used warm, preferably with a temperature of 90° to 95° F. in the dip, and should not be heated above 110° F. Sulphur is sometimes added in the proportion of 16 pounds of flowers of sulphur to 100 gallons of diluted dip, and this appears to aid in preventing reinfestation by remaining for some time on the skin of the animal.

Coal Tar Solutions

Coal-tar creosote dips should be used in accordance with the directions on the container. When diluted for use they should contain not less than 1 per cent by weight of coal-tar oils and cresylic acid; the dip should not contain more than 0.4 per cent nor less than 0.1 per cent of cresylic acid, but if there is less than 0.2 per cent of cresylic acid, the coal-tar oils should be increased sufficiently to bring the total of the tar oils and cresylic acid in the diluted dip up to 1.2 per cent by weight. These dips may be used warm or cold, but the temperature should not exceed 95° F.

Directions for the construction of dipping vats are given in Farmers' Bulletin 909, copies of which may be obtained from the United States Department of Agriculture on application.

The possibility of immunizing susceptible children against diphtheria by the combined use of diphtheria toxin and antitoxin has been demonstrated. The immunity procedure should be more lasting than when produced by the antitoxin. No doubt, a similar method will be devised for immunization against tetanus.

Queries and Answers

ACCIDENTAL LOSS OF TEAT

A client of mine had a good milk cow accidentally cut one of her teats off through the upper part of the milk sinus.

It was a clean job and she freshened several days after the accident. The milk now flows from the teat all the time. There is no swelling and the wound around is healing nicely.

The owner says this is a good cow and he wants to keep her three-teated. I would like to find some way to permanently dry up that quarter so that the next time she comes in she will not have milk in that quarter.

I would like some treatment if there is any that would do this without danger of injuring the whole udder and will greatly appreciate any information that will enable me to accomplish this.—R. M., Ia.

Reply: The quarter will finally dry up and in succeeding freshenings the gland will cease to function. There is no drug besides the proverbial camphorated oil that will tend to help the drying-up process.

If you can prevent the quarter from being seriously inflamed by strict attention to the cleanliness of the wound, so much the better. The secretion of milk will slowly diminish and then finally cease.

Should this prove to be a case that stubbornly persists in secreting it will be necessary to extirpate the gland surgically. That, however, we do not believe will be necessary.

LYMPHANGITIS—ELEPHANTIASIS

Can you give me any information as to reducing the swelling in a horse's leg, after he has had a very prolonged attack of elephantiasis?

The acute stage of the disease has passed and the horse is able to use his leg all right, but it still swells up and exudes a yellowish fluid. I have successfully treated many cases of lymphangitis but have so far been unable to entirely cure this one and I would greatly appreciate any suggestions as to the treatment.—W. M., N. C.

Reply: It may be very difficult to reduce the swelling of this case, for once that such swellings have been organized into connective tissue, there is very little benefit derived from either external or internal treatment. The condition is especially grave when there is an oozing of amber colored serum through the skin.

The very best treatment you could give externally would be a saturated solution of sugar of lead, applied frequently, together with repeated showering with cold water. Internally, we have never found anything better than circulatory stimulants, such as digitalis or strophanthus. Such stimulants could be administered with wine of colchicum and nitrate of potash. Iodid of potash is recommended, but it is entirely too expensive to use for the treatment of an ordinary horse.

PARTURIENT COLLAPSE AND HEAT EXHAUSTION

A grade Holstein in excellent flesh and condition, 10 years old, aborted during the seventh month of gestation and expelled the afterbirth with the delivery.

She was lying flat on the right side, frothing at the mouth. The pupils were dilated, the temperature 108 degrees Fahr. and the pulse 120. There was twitching of the muscles of the face, eyes and neck, and she could not rise.

One hour after inflating the udder and a stimulating treatment of nux vomica internally and camphorated oil hypodermically there was some improvement; she attempted to rise and drank a pail of water, and the temperature dropped to 104. Fifteen hours later she was exposed to an hour's rain that chilled her body and lowered the temperature to 99. She was then loaded on a stone boat and brought into the barn, and given a good bedding. The udder was inflated again and nux vomica and belladonna administered every two and a half hours. Thirty-six hours later she drank water and ate, but as she was becoming weaker she was destroyed.—J. E., Wis.

Reply: This is evidently a case of collapse, probably atypical milk fever, that might have recovered under more favorable circumstances. The treatment administered was good with the exception that she should have been spared the exposure to the tyranny of outdoor influences.

CONSERVING THE TESTICLE IN HERNIA OPERATIONS OF BOARS BY THE PLEATING METHOD

I have successfully operated on two valuable boars for scrotal hernia with perfect conservation of the testicles and believe readers of the Journal will be interested to know that the operation insofar as boars are concerned is much more simple than we have heretofore expected.

Instead of making an excision of a part of the tunica vaginalis and suturing the breach to reduce the lumen below the inguinal ring as recommended by Murphey, I just pleated in the tunic at this point and fixed the pleat with a continuous catgut suture. It is needless to say that the operations were preceded by a good disinfectant of the inguinal skin, and that the contents were safely replaced before proceeding. I used chloral anesthesia per rectum as recommended by Professor Dykstra.

The boars were given a very low diet for several days to empty the bowels and were put on a small allowance of slop for eight days after. I used no dressing except a wound varnish of collodion over the skin sutures.

I would like your surgical department to advise me as to the universal safety of such a procedure, recognizing that two successful cases might deceive one as to the real value of the method.—J. C. D., Ill.

Reply: Success is always the best proof of the value of an operation, and while two cases may not be sufficient assurance as to the actual value, such results are worthy of notice. The safety of this operation over those which open up the vaginal canal lies in the fact that a recurrence of the hernia would not be complicated with prolapse of the bowels through the wound. The "pleating operations" for hernia in animals of any species is always the one of choice because serious complications seldom occur. They either cure or fail as an operation, but never kill the patient. There might, however, be a hazard in this operation in scrotal hernia that does not exist in others. The sutures may be drawn too tight and cause strangulation of the testicles or they may be left too lose and allow the bowels to descend.

There is one point, however, about such operations that deserves mention here, and that is the wisdom of conserving ruptured animals for breeding. The scrotal hernia of domestic animals is usually of the congenital variety and therefore probably hereditary.

TUBAL GESTATION IN A MARE

The mare in question was pregnant for the fourth time. Arriving at the term of parturition she was found to have discharged the fetal liquids and although making expulsive efforts nothing could be found in the passages, nor at arm's length in the genital organs, but on the left side of the abdomen after proper orientation a part of the fetus could be indistinctly felt. A diagnosis of extra-uterine gestation was made and it was expected to find a mummified fetus. The mare was killed and the autopsy disclosed that the left horn was larger than the right one, having a diameter of eleven centimeters while the left had a diameter of only five centimeters. The left horn was seven centimeters longer than the right. The left horn was insensibly confounded with the oviduct, the separation being more noticeable internally. The first part of the oviduct was darker in color than the uterus and presented a number of longitudinal folds. In the other part where the chorian began, the folds were more numerous and finer. Nearer the fetus the folds diminished in size and disappeared entirely toward the upper part. The union between the chorion and the dilated oviduct seemed to be macroscopically normal. The left ovary was smaller than the right. The oviduct as it passed toward the uterus was dilated where it entered the horn. The part of the oviduct that replaced the uterus was 2.59 meters along the large curvature. The fetus was well developed and weighed 62.5 kilograms. The umbilical cord was not twisted. The authors relate this case because of the prevailing opinion that tubular extra-uterine gestation seldom continues to the full term on account of the inelastic oviduct which ruptures and lets the fetus drop into the addominal cavity earlier in the period to become mummified.—Tijdschrift voor Veeart. Feb. 1922.

(Continued from Page 698)

better results than surveillance and segregation of the first places involved.

"In the epidemic period, animals that have drooled for four days are of less concern than those which are to all appearances healthy. The latter should always be quarantined before introducing them into a new herd."

EPISTAXIS IN A COW

I have a cow patient that was affected with epistaxis three times during last year. How should this be treated without resorting to tracheotomy?—D. E. I., S. W.

Reply: Administer from one-half to a dram of ergotin, bathe the head with cold water if the cow is docile, and as a last resort plug up the nostril. It would be well to look well into the cause of this periodical bleeding, since nose-bleed is always symptomatic in animals. There is a chronic lesion of some kind, somewhere that must first be located before any curative treatment can be planned.

WOUND ON FLEXION OF HOCK

I would appreciate it very much if you would help me out in a case I now have on hand—a case of exhuberant granulations from wire cut on anterior surface of hock, five-year-old mare. The growth, which is about six inches square and about two inches thick, stays raw and refuses to heal over. The owner is not so particular about the growth but wants it to heal so as not to be raw. The doctor, from whom I bought my practice, used a caustic arsenical paste two different times, each time it removed a layer about one-half inch thick and the second application was absorbed to the extent that it nearly killed the mare. The owner said she was terribly sick for several days, so I hesitate to use any more of that stuff. I thought perhaps you could suggest some application that would toughen and heal the surface which has a tendency to bleed whenever touched. I am using common white lotion at present until I hear from you. There is no lameness present.—E. R. B., Wis.

Reply: The granulations on this hock have been given entirely too radical treatment. The wound in front of the hock must, of course, by nature of its location always heal with more or less permanent enlargement, but this enlargement can never be reduced in size by the application of powerful chemical agents, because these only prevent the granulations from maturing, but instead transfer a healthy healing process into what is really an ulcer by destroying the vitality of the cells. No matter how these cases are handled, it is an actual fact that the milder the treatment, the better is the final result. Put up for your client some good, decent bland, not too astringent, healing powder. Have it peppered on two or three times a day, and let the case sink or swim on that treatment.

Veterinary Medicine is no believer in caustic for the treatment of granulation tissues. When they actually need control the best way is to cut them off and thus not devitalize the healing process. The white lotion treatment that you are using at present is not bad, and it would have been better if you would have used this simple compound from the beginning and nothing else.

COUNTER-IRRITANT FOR PNEUMONIA IN HORSES

What is the best counter-irritant to use for pneumonia and pleurisy of horses? Is it advisable to use any at all? What is the prevailing notion in this connection? I have been out of practice for several years and am probably behind the times.—J. M. S., N. Y.

Reply: If you must use a counter-irritant, Coleman's mustard made into a thin paste with cold water is the best. There are many of the younger practitioners who discount the use of counter-irritants entirely, while many of the older ones believe that such treatment is very effectual. At a meeting of the New York City association it was pretty well agreed among the old, experienced horse practitioners that mustard plasters have real benefit.

NUTRITIONAL EYE DISORDER OF CATS

I have an interesting but confusing case; not knowing the exact treatment, I am looking for help.

A small cat, about one year old, with a history of not eating, has a false membrane over the eyes.

On examination the false membrane is found to be the third eyelid or membrana nictitans, only covering part of the eye. A small whitish discharge; no temperature, and animal sleeping a great part of the time. I have had other cases where they are very uneasy and cry most of the time. Treatment has been physic and tonics.

What would you call this disease and the best treatment? Would it be poisoning of some kind?—M. F. W., N. Y.

Reply: The symptoms mentioned in your letter of recent date are sometimes, or rather frequently I might say, observed as a result of nutritional insufficiency,—what we hear spoken of now as lack of vitamins. It is seen in cats receiving insufficient meat in their diet, or in those fed largely on cooked liver.

Such cats make a rapid recovery when fed raw hamburger steak and about two to four drams daily of orange juice; probably any other fruit juice would do equally well.

Unless you know from the history of this case that the diet is at fault, we suggest this treatment.

ECHINACEA

What is echinacea? And will you please tell me something about its virtue? I know it is a much lauded agent but I do not find it listed in the materia medica I have. I would like some information about its dosage and therapy in the different animals.—A. L. J., Texas.

Reply by Dr. E. L. Quitman: Medical name, Echinacea (non-official); Botanical name, Echinacea augustifolia; Synonyms, Nigger-head, Sampson-root, pale purple coneflower. This plant is a native of the prairie region of America, west of Ohio. It was introduced into medicine by the Eclectics School.

Echinacea is said to be an effective alterative in all septic diseases; aside from its alterative action, it is a cardiac stimulant though not ranking with digitalis or strophanthus.

A fluid extract and a tincture are made. Dose of fluid extract: Human, 2 to 30 minims. Dogs, same though 15 minims are rarely exceeded. Horse, one-half to four ounces. Cattle one to four ounces. Best results are obtained in acute septic conditions by small or moderate doses repeated every two hours. The larger doses are used more in subacute or chronic conditions and usually repeated every four hours.

Therapy: Canine distemper, septicemia, pyemia, furunculous and septic febrile conditions in general in all animals. Omphalophlebitis, etc.

ESOPHAGEAL DILATATION

I have under my care a gelding, six years old, weighing about 1,600 pounds, which is troubled with severe spells of choking at intervals of from three to four weeks. About June 14, he became ill with indigestion and along with the first symptoms, also showed slight symptoms of choke, which disappeared almost immediately. Then on June 17, upon his recovery from indigestion, when he was allowed to graze on a mowed lawn of white clover he became severely choked in about ten minutes, making it necessary to use hypodermics to relieve him. He was then fed shelled corn bran and oats mixed and hay, and about July 7 became choked again, but recovered without treatment. He was then fed shelled corn and bran (wet) and sheaf oats and hay, and on August 14 became severely choked on the sheaf oats. August 16, he choked on the corn and bran (hypodermics being necessary in both these cases). He was fed corn, oats, and bran, dry, through a small opening in the feed box, so he could get but little at a time, but on the 27th of August he again became severely choked on the grain feed. Hypodermics were again used. He was then fed corn and bran (wet) with hay and green corn stalks. On September 7, he choked on the green corn.

This horse is in good condition and to all appearances in perfect health. He has been treated for worms and bots, has never had a probang used, never choked before on any kind of feed, and is not a greedy eater. F. J. L., Mich.

Reply: The gelding is affected with a jabot located in the thoracic portion of the esophagus, from which he will never recover. There may be a great variation in the intervals between the attacks, but in spite of everything, they will recur until finally one will prove fatal.

The seriousness of esophageal dilatations depend a great deal upon their shape. If they are elongated, horses may live for years without suffering a fatal attack of choke. On the other hand, if they are spherical it is never very long before an incurable impaction occurs.

TREATMENT OF CHOREA AND DISTEMPER

I wish you would give me the best known remedy for chorea as I have some valuable dogs that have chorea. Also, please give me the best treatment for distemper. We have an epidemic of distemper in the dogs here.—W. O. G., W. Va.

Reply: The best medical treatment for distemper is given on the Purely Practical page, of the September issue of VETERINARY MEDICINE.

As regards the treatment of chorea, canine specialists report some good results by the administration of thyroid extract hypodermically. The dose is three to four grains, three or four times a day, for ten days. If there is no change in the symptoms at the end of that time, the case may be regarded as hopeless.

Then again, in regards to distemper, good results are obtained from serum treatment. You can procure dog distemper serum from any manufacturer of biologics.

MYSTERIOUS STIFFNESS IN A MULE

I have a client with a mare mule five years old with following symptoms. She cut the right foot about ten months ago, on outside of foot extending down in hoof about one-half inch. The wound healed up with usual treatment, but about one month later she became stiff in both hind legs; then in both fore legs, and also in her neck.

At present, she is not able to raise her head above line of body. She will appear better for a few days and then gets back in about the same condition. I saw her one month ago, administered aloes and staphylococcic bacterins and placed her on Fowler's solution of arsenic three times a day and have had no benefit accrue.

Please advise treatment and diagnosis. I first suspected tetanus, but after a careful examination excluded that and am afraid to venture a diagnosis. Will appreciate any suggestions at an early date.—J. H. M., Texas.

Reply: Your case is quite as much of a puzzle to us as it is to you. There are cases of emprosthrotnic tetanus that behave much the same as this mule, but the duration is too long to entertain that diagnosis. It would be well to examine the poll for incipient poll-evil. Many cases of this disease annoy patients for months before even showing any local symptoms.

A LUNG AFFECTION IN LAMBS

I have sheep that are dying on pasture with the following symptoms and would like to have your opinion as to what is the matter with them: Back arched, step short and stiff with the fore legs, lie down a short time and then get up again, eat and drink all right. It is mostly the lambs that are affected. The flock as a whole are in good shape. On post-mortem examination all the organs are normal in appearance except the lungs which are solid in the lower areas. I suspected stomach worms but found none postmortem.—H. S. S., Kans.

Reply: It is possible these lambs are affected with hemorrhagic septicemia, but only a laboratory examination would confirm such a guess. If you sent specimens to Dean Dykstra of the veterinary department of your state university we are sure he will set you right in this matter.

BUCCAL WARTS IN DOGS

I have a dog patient that has its mouth peppered with wart-like tumors, some small and some as large as a pea. They do not seem to cause much inconvenience other than slight drooling. What is the nature of these growths and what should be done for them?—W. A. C., Vermont.

Reply: Warty growths on the buccal mucous membrane of dogs is a common affliction. They are seldom serious and often disappear spontaneously. The treatment to recommend is snipping them off with a scissors. If very numerous a few may be removed at the time. We have always touched up the bleeding spots with a pencil of nitrate of silver to partially control the bleeding and at the same time destroy any abnormal tissue left by the scissors.

NECROTIC INFECTION OF THE PREPUCE

I wish you would give me information about the treatment of necrotic infection of the prepuce of rams and bulls. Has this any connection with granular vaginitis?—L.A.S., Iowa.

Reply: There is no relation between the variety of necrotic conditions affecting domestic animals and granular vaginitis. The many manifestations of disease due to the B. necrophorus are all special entities that are not to be confused with other entirely different conditions.

To handle such diseases the source of contamination must first be eliminated. There is no better local treatment than solutions of copper sulphate and any other such attention to individual lesions as their character and physiognomy would suggest.

SUMMER SORE

A mule was brought to my attention one month ago with a denuded area on the outside of the metacarpal region, extending from the fetlock to the carpal joint. The condition began with a bursatti on fetlock joint and because of the mule gnawing the wound, was extended. Different lines of treatment have failed to produce results. The following have been tried: Formaldehyd and alcohol, equal parts; chloramine T. solution; flavisol; white lotion. There is only a slight amount of granulation tissue and what there is it serves to fill out the contour of the leg. It is reddened and fairly smooth and very slight suppuration. Your suggestions on this case will be gratefully received.—J. H. B., N. C.

Reply: The case you describe is, of course, one of summer sores and requires above all things that all flies be kept away from this animal and all of the droppings disposed of promptly to prevent reinfection. It is also a good practice to administer a vermifuge of chenopodium to rid the alimentary canal of the larvae which carry the infection.

As a local application, we prefer a 1—500 solution of bichloride of mercury in vinegar applied as a lotion three or four times a day, and follow each application with a dusting powder, consisting of burnt alum, 50 parts; naphthalin, 25 parts; air-slaked lime, 10 parts, and boric acid, 15 parts.

It will be necessary also to put a cradle on the mule's neck or some apparatus to prevent biting or improvise any means that may suggest itself to you to avoid physical injury to the wound.

Formaldehyd is all right for small summer sores and has many exponents, but in my mind it has never done much good for the large sore.

A summer sore is an infection with a larvae of a parasite carried to the wound by flies and any treatment, to be successful, must, first of all, cope with this situation. Otherwise, there is no alternative but that of waiting until cold weather.

CALVES COUGH, PURGE AND GO BLIND

I am writing to you for information in regard to calves on a certain farm in Wisconsin. It may be a condition that you are answering every day, but I can assure you that I am up in a tree and don't know what to do. I have called in veterinarians from surrounding territories but have been unable to check the malady or to find out what is causing the trouble.

It is a pure-bred Guernsey herd and up to last January we have had no trouble with the calves and have raised a number of them. Beginning in January the young calves started to cough but did not refuse their feed, and they would keep this up for two or three weeks and even longer. Their condition was fine and to look at them a person would say that they were in the best of health. Suddenly they would start a marked diarrhea and the temperature would rise to 104.6-105.6 degrees. They breathe heavily and rapidly and die in most cases in 36 hours after the diarrhea starts. Three out of the five cases that died were totally blind a few days before the

diarrhea stage. At the present time there are three blind calves that were well until four or five weeks ago, and then became totally blind, but are taking their regular amount of food, and the only condition that is abnormal is the coughing.

On postmortem examination—liver, kidneys normal, intestinal tract congested, inflamed. Lungs marked congestion of lower lobes, bronchi as well as trachea.

We have used many treatments, but to date have had no success. If you can give me a little light on what I am up against I certainly will appreciate it. If there is more history or any other information needed, let me know.—S. L. P., Wis.

Reply by Dr. DeVine: After reading your letter, I feel that you are not dealing with the regular type of any ordinary ailments affecting calves, at least none with which I am familiar. I have seen cases of poisoning both by arsenic and by corrosive sublimate that had many of the symptoms that you describe.

Aside from the complete blindness, I saw a condition about a year ago in a herd that simulated very closely what you describe, excepting that the disease seemed to be more acute.

Illustrated by a Parallel Case

Unless the symptoms of a malady are strikingly characteristic, an attempt to make a diagnosis without seeing the animal or animals and taking into account the many, many things that must be studied under unusual conditions, is not very satisfactory. To illustrate, I was called to a farm in consultation last year where there was not a living calf notwithstanding that there were about sixteen cows of breeding age. Every calf that had been put into the calf barn sooner or later became sick, usually with a cough, discharge from the eyes and nose, perhaps later diarrhea and in a few days marked prostration and death. Finally, the attending veterinarian suspecting septicemia hemorrhagic began treating the sick calves with bacterins. Most of them responded to the treatment like magic. In some cases those that were lying prostrated were up and about the next day and in the course of a week or ten days back to an apparently normal condition, only to relapse again perhaps in a month or six weeks. My impression from all that the attending veterinarian stated was that his diagnosis was correct.

But upon examining the calf barn, I gave as my opinion that no calf could live in it any length of time as it seemed to me to be an ideal refrigerating room, no ventilation, located between the two main barns with a northern exposure only and windows up under the roof, so to speak, with no chance for sunlight.

New Quarters Corrects Evil

After improvising a better calf barn all calves remained healthy. To test out the old calf barn again a couple of the least valuable calves were put in it at the age of three or four weeks. In a short time they developed the same symptoms notwithstanding that the whole place had been thoroughly disinfected and aired. A calf was allowed to die and the postmortem appearances indicated and the laboratory diagnosis was septicemia hemorrhagic.

INTRAPERITONEAL VACCINATION OF POULTRY

Is there any objection to vaccinating poultry intraperitoneally, if an assistant holds the bird on its back, one hand on breast, the other holding legs, and operator grasping abdominal skin and muscles with fingers and thumb of left hand, pulling up on same and passing needle through in region of gizzard? A few feathers may be plucked if necessary.—L. A. S., Ia.

Reply by F. R. Beaudette: In regard to the intraperitoneal injection of vaccine, I see no additional advantage of this method over the usual subcutaneous method. To be sure, more rapid absorption would take place, but it is a question as to whether this is an advantage. In the immunization of laboratory animals in the production of immune sera the intraperitoneal method of injection is used only when an immune serum is desired in a short time. This, however, does not insure a high immunity or even a lasting one. It would appear to me that slower absorption would give a higher degree and a more lasting immunity.

The users of Lipo vaccines claim that by its slower absorption a more lasting immunity is produced without severe local or constitutional disturbances. It should also be remembered that subcutaneous injection of avisepticus vaccines sometimes produces a necrotic area around the site of inoculation. This is evidence of its irritating nature and such a vaccine could hardly be recommended for intraperitoneal injection.

I believe that Doctor Van Es, in working with commercial vaccines for hemorrhagic septicemia in fowls, obtained no better results by intraperitoneal injection over subcutaneous injection.

If an avisepticus vaccine produced a necrotic area at the site of inoculation, which is sometimes the case, then the intraperitoneal might be justified, if harmless, when dealing with birds which are expected to be used for food purposes in a short time, as a necrotic area would no doubt depreciate the value of a dressed carcass.

In regard to the ease of making the injection, the subcutaneous method is much easier.

DRIED VERSUS WHOLE MILK

The health officer of our city has asked me to obtain information on the relative food value between dried milk and the common market variety. Does dried or powdered milk contain vitamins and is the fat altered in any way to make it less available as a food constituent? A. S. J., Tex.

Reply: The best information we can give you on this important subject is from Dr. T. Leary, of the Tuft Medical School, in an article that has recently appeared in the Bulletin of the Chicago School of Sanitary Instruction, which we reprint herewith as an answer to your query: "The changes produced in milk by powdering are: (1) Slight loss in acidity; (2) soluble salts of calcium are converted into insoluble salts affecting the action or rennet; (3) lactose is unaffected; (4) albumin and globulin are partially coagulated, caseinogen is not coagulated, but all observers seem to agree that it is more readily digestible after heat; (5) chemical changes in the fats are slight, the fat globules of reconstructed milk are generally larger than those of fresh milk; (6) ferments are destroyed; (7) dried milks differ in their capacity for reconstitution; (8) rennet reaction—the curd produced by rennet in reconstituted milk is flocculent and finely divided, in contrast to the firm, tough, cohesive clot produced in raw milk.

"According to reports by various scientists who have made careful studies of the subject, it is asserted that the fat soluble vitamin 'a' and the watered soluble 'b' are so abundant in milk that the loss in dried milk, even from oxidation, is not vital; however, there is a loss of the anti-scorbutic vitamins (water soluble 'c')."

Dried milk is, therefore, a good food and is to be recommended as a substitute for whole

milk when the latter can not be supplied in the proper state of preservation and purity. It is always relished by children if not forced upon them in too large quantities, and experts tell us that it deteriorates with age in cans and becomes less palatable. It does not keep indefinitely.

WHY HORSES LIKE THE S. S. IRISHMAN

Capt. John Gardner of the S. S. Irishman who is known by the sobriquet of "The Cattle King of North America" and who earned the reputation of transporting horses oversea with a minimum loss during the war without a veterinary service, when interviewed to determine the cause of his success said: "I figure that a horse is much like a human being when he is at sea and gets sea sick in the usual way. The veterinary doctors, when they had a sick horse, put medicine down their throats, while I, having no pills or medicine, just pour a quart of whiskey in a pail of water and let them drink it. They always pick up and soon find their sea legs."

STRAW HATS AS ROUGHAGE FOR COWS

An old gentleman in Long Island, who owns a cow with no special qualities that warrant description, fed her a trunk-full of antiquated straw hats representing the vintages of some years past. As the furnace was not running it occurred to him, in the spirit of economy, that they would make at least one good feed for the source of his milk supply.

The next morning bossie did not feel well and by noon seemed to be "all in." He called a veterinary doctor and what happened is best told in the old gentleman's own words. "The doctor asked me what's the last thing I fed her. I told him it was straw. What kind of straw, he asked gruffly. When I replied straw hats he looked disgusted, gave the cow a little pill and asked me for 15 dollars. 'The next time' he said 'you want to feed your cow straw hats, use panamas. The regular ones are hardened with shellac which is not good for a cow's digestion.' He mounted his Lincoln, Jr., leaving me a dying cow, a trunk full of straw hats and $15.00 to the bad."

Zootechnic Notes

By E. Merillat, Associate Editor

Have your clients prepare their sows for the fall farrowing by feeding a ration of ground oats, barley or chops and sour milk or semi-solid buttermilk.

Rye pasture should be avoided for dairy cows as it gives an unfavorable flavor to milk.

Packers in nearly every market center are paying a higher price for tuberculin reactors. This will stimulate tuberculosis eradication.

The feed cost for developing dairy calves until they become producers should be carefully considered by the grade breeder. The feed consumed from the time of calving until the calf has matured and is producing, varies from $100 to $150.

Parathyroidectomy usually results in tetany, particularly in females during the estral period. This condition can usually be prevented by the intravenous injection daily of Ringers' solution for a period of thirty or forty days.

A ten gallon can of fresh, whole milk was pasteurized by the Jonas Neilsen system in South Africa and shipped to London, England, where it was carefully examined and found to be free from harmful bacteria, and by exhaustive tests it was found to have good keeping qualities.

Dairy bulls may be given the same ration as a dairy heifer for the first six months of life, after which time he should be given a more liberal allowance of feed than is required by the heifer.

"In thirty-seven states, comprising 46.2% of the area of the United States and containing more than 40% of the cattle of the entire country, there is less than 1% of them affected with tuberculosis," says Dr. Kiernan of the United States bureau of animal industry. With this thought in mind the advice of Chief Mohler to the live stock interests to eradicate tuberculosis "before it is too late" seems mighty sound. In other countries where the percentage of diseased animals is high the problem is an entirely different matter.

There are approximately 183,000,000 head of live stock in the United States. The value of these millions of animals is placed at $5,000,000,000.00 by John R. Mohler, chief of the U. S. bureau of animal industry.

When dogs are brought from the far northern regions into the populated districts of the temperate zone they invariably become victims of canine distemper in such a virulent form that few of them survive.

Missouri still leads all other states in tuberculosis eradication work. State Veterinarian Wilson reports 205,792 head of cattle and 19,734 herds under state and federal supervision. Among the last 19,372 tested only 122 reacters were found.

IOWA CHOLERA LOSS FIVE MILLION

The loss from hog-cholera in Iowa during the past year is placed by good authority at 74% higher than in 1920 and 86% higher than in 1918. To be exact, 536,521 died from the disease, according to the report of the United States bureau of animal industry for 1921-22. and to make matters still worse, the year has not been characterized by an epidemic. The toll was the regular one such a disease can exact under the circumstances the Iowa authorities have allowed to develop in the hog-cholera situation. With no adequate co-operation between forces to which the responsibility falls and with the farm bureau playing fast and loose with the wild experiment of "farmer immunization" it is a wonder that the loss is not even higher.

The startling increase of 86% over 1918 without a virulent state-wide outbreak is a serious indictment to the pell mell Iowa system of hog-cholera control, and should presage a return to the old order without much delay.

CORN

Corn is the great energizing, heat giving, fat-furnishing feed for animals on the farm. No other cereal yields, on a given space and with a given expenditure of labor, so much food in both grain and forage. On millions of farms successful animal husbandry rests on this imperial crop.

As a grain crop in the United States, in acreage, in total yield, and in value, it exceeds all other cereals combined.—Henry and Morrison. Univ. of Wis.

POULTRY INDUSTRY JUST AN INFANT IN THIS COUNTRY

There are still millions of eggs imported from Europe and the Orient which might be supplied from our farms; there are still millions of our people who eat fewer eggs than they would like to, owing to the high prices; and then there are still tremendous possibilities in the matter of increasing the consumption of eggs and poultry by demonstrating relative food values. In view of these fundamentally sound prospects there should be little fear that the poultry industry will slump from over-production for years to come.

WE STILL IMPORT FOOD ANIMALS

That we are still not a self-supporting nation is shown by the enormous amount of food animals and eggs we import from foreign countries. During the year ending June, 1922, we imported 176,831 head of cattle, 3,068 hogs, 97,344 sheep and 788 goats for slaughter. They came from Mexico and Canada.

During the same period we imported from Canada, South America and other countries 1,911,465 pounds of beef; 2,664,375 pounds of other meats; 836,088 pounds of canned and cured meats; and 127,754 pounds of other products subject to inspection by the federal bureau of animal industry. The number of eggs imported from China and other countries runs into the millions.

FEEDING DOGS

Healthy adult dogs should be fed twice a day and growing pups three to four times daily, according to Dr. Little in the National Humane Review. The best feed for adult dogs, according to this author, are; Raw beef, cooked beef, cooked lamb, boiled fish, dog cakes, stale bread, toast, zweibach, wheat biscuits, shredded wheat, cream of wheat, boiled onions, carrots, beans, spinach, asparagus, peas, garlic, raw eggs, milk, malted milk, sour milk, buttermilk, pot cheese, meat soups, creamed soups of vegetables.

The prohibited foods are: Haslet, liver, pork, chicken, raw fish, oatmeal, corn meal, rice, potatoes, boiled eggs, scrambled eggs, fried eggs, omelets, cakes and candies.

The diet for growing pups should be: Raw beef, cooked beef, cooked lamb, cooked mutton, puppy cakes, wheat crackers, shredded wheat, cream of wheat, boiled onions, beans, spinach, garlic, soups of cereals, milk, sour milk, malted milk.

FORECASTS LARGE SUPPLY OF POULTRY AND EGGS

The United States department of agriculture predict cheaper eggs and poultry for the coming winter owing to the large number of farmers who have increased their flocks since a new impetus was given the poultry industry by the high price and stability of its products that prevailed during the past few years. The 5,000,000 cases of eggs reported to be in storage will supply the market until January when the new crop begins to fill the demands.

OUTLOOK PROMISING

The outlook for the veterinarian is much brighter than it was one year ago, as reflected through the number of feeder cattle, sheep and swine that have been shipped to country feeders. During the first eight months of 1922, there have been 2,369,169 feeder cattle, 1, 481,632 feeder sheep and 408,756 feeder swine shipped from market centers for feeding and stocker purposes. This is an increase of 35.8% of cattle, 35.2% of sheep and 18.8% of swine above the 1921 shipments of the same classes of animals.

The demand for feeder cattle and swine during August was encouraging, as it showed an increase of 40% of feeder cattle compared with the 1921 shipments, and 29% above the five year average. There was an increase of 36% in stocker swine shipments during August, 1922.

It is almost universally predicted that the price of hogs will fall to the five cent mark during the late fall and early winter months on the grounds that the ratio between the price of hogs and corn has been an inverse one too long to last. It is, however, very probable that conditions have changed since the five cent hog and fifty cent corn ratio was an established fact. Freight rates for example will enable the farmer to deliver his corn to the market in the form of pork cheaper than in the form of a raw product.

INCREASING DEMAND FOR FARM HORSES

Dr. A. T. Kinsley, of Kansas City, president of the American Veterinary Medical Association, believes that there will be an increasing demand for good draft and saddle horses. The automobile will not drive the horse out of existence. It is conceded, he says, that the horse is the logical and economical power on the average American farm.

The automobile and motor truck have displaced the horse to a considerable extent in farm work. Therefore, it cannot be denied that, although there has been a steady demand for horses, especially in parts of the East and South, power vehicles have restricted the use of horses.

But Dr. Kinsley's observations are confirmed by conditions. The horse has been put back on many jobs. There is work which the horse can do better and cheaper than the motor vehicle. There is work which only the horse can do.

According to present indications, there should be an increasing demand for good horses, and not only on the farm, but in commerce. In fact, the horse is returning to his old work with many business concerns, and even in the large cities.—Morris (Pa.) News.

FLUSHING EWES

Does so-called flushing actually cause increased reproduction in a flock of sheep and in what particular is the ration increased in the attempts to get results? One of my clients is about to turn the rams with his flock and having heard about flushing has asked me for information.—M. S. D., Ohio.

Reply: According to the United States department of agriculture increasing the ration of ewes at breeding time helps in two ways: It increases the twin yield and the number of conceptions. Flushing is really more than increased feeding according to good sheepmen of the small farm area of the country, and it is not new. It is merely a measure taken to improve the health and vigor of breeding ewes after a summer of foraging, often on dry pastures. In dry seasons everyone knows how short pastures can get and how stock not given a supplement rationing during this period run down. In the case of sheep this comes at the time breeding begins and unless something is done to improve the vigor, a low crop of lambs results. Sheepmen have always recognized the

need of putting the ewes in good condition before or at the time the rams are turned in. The ration for this purpose should be grain ration of, say, corn and oats with a high-protein roughage, like alfalfa or soy-beans. When the fall pasture is good or has been restored by rains, graining alone will help but it is our experience that the fall pasture in the middle states and east is lacking as a balanced ration for any animal and must not, therefore, be depended upon too much in flushing. That is to say, even if the pasture seems good, graining and additional legume roughage is advisable. Flushing really means the good care and the good feeding, that is required to give ewes during breeding to assure good results.

EXPLAINS VITAMINS AT ROTARY SESSION

Dr. Albert T. Peters, head of the Vitamineral Products Company, explained the vitamin theory of life to the Rotarians this noon at the regular meting of the club.

"In the days of our grandmothers," the doctor said, "there was no necessity for wondering about vitamins, but since the introduction of so many artificial foods and new-fangled things for the table, there has come a demand for a study of the life-giving properties of foods. Grandmother set a good table and the food she served was life-giving. It was old-fashioned food, and good food. But these days of white flour and other fads have taken many of the vitamins out of food. Whole wheat flour like grandma used to bake with, contains many more vitamins than the flour which we customarily use."

Dr. Peters spoke principally of vitamins in cattle rations, explaining that vitamins and minerals are necessary to cattle feeding, particularly in the dairy field. "Each year we read in the newspapers about heavy losses sustained by cattle raisers and hog raisers because the young animals die or the mothers are weakened. Most of this damage could be prevented by properly balanced rationing."—Peoria (Ill.) Star, Sept. 15, 1922.

Dr. B. L. Lake assistant manager and veterinarian for the Sinissippi Farms, Oregon, Illinois, owned by former Governor Frank O. Lowden has been appointed county veterinarian of Whiteside County of that state. Dr. Lake is a graduate of the Chicago Veterinary College, a veterinarian of the first rank and a loyal supporter of the profession.

Looking Backward

Cattle were the first means of exchange or money. The Roman "pecuniam" is derived from "pecus," which means cattle.

From the very beginning every one allied with agriculture has been a loyal supporter of the experiment stations and all concerned have always shown a wholesome respect for their work and achievements. On the contrary, the agricultural colleges themselves were looked upon with suspicion for many years, and had to win their way against a deep-rooted derision that was difficult to overcome. Both are now impelling forces, everyone applauds.

That there were veterinarians as early as 2100 B. C., and that they were subject to governmental regulation is indicated in the deciphered laws of Hammurabi who ruled Assyria at that time. One of the paragraphs of the code reads "If a doctor of oxen and asses has treated either ox or ass for a severe wound, and cured it, the owner of the ox or ass shall give to the doctor one-sixth of a shekel for his fee."

As the practitioner's knowledge of swine pathology increases and his experience and astuteness as a diagnostitian of swine is accentuated we hear less about "mixed infection" in swine as an euphonious excuse for grouping diseases we could not at the time separate. Vegetius (450-500 A. D.) described a disease as "malleus" that appears to have included mange, strangles, pneumonia, glanders and farcy. It was said to be contagious. Be it remembered that Vegetius ridiculed the idea that disease was an evidence of divine wrath. He ascribed it to contagion and like Columella advised quarantine. He was also an exponent of good hygiene, having said, "It is better by diligence and care to preserve health than to administer remedies to the sick."

Mixed infection or "mixed humors" also served Ruffus, chief veterinarian to the Goth King of Rome, Barbarossa, as a cloak behind which to retreat when in doubt. In the closing years of the 12th century he described what appears to be strangles, influenza, glanders and farcy and perhaps also sore throat as a single disease due to a mixed contamination, sometimes incurable but always contagious.

NORTHWESTERN OHIO VETERINARY MEDICAL ASSOCIATION

The 15th semi-annual meeting was held at the Elks' Home, Norwalk, September 21st. The program as listed in the announcement consisted of a business session, clinic at Fulstow & Fulstow's hospital and a number of papers, among which were "Diseases of Small Animals," by W. H. Hobbs; "Problems in Swine Immunization," by E. E. Manter; "Diagnosis and Technique of Sterility," by L. H. Smith; "Clinical Diagnosis of Poultry Diseases," Alvin Broerman. The officers of the association are: C. E. Inskeep, Urbana, president; H. E. Ash, Bowling Green, vice president; and P. H. Fulstow, Norwalk, secretary-treasurer.

CALIFORNIA ANNUAL

The annual meeting of the California State Veterinary Medical Association was held in Los Angeles, California, June 5 to 7, inclusive. The program consisted of clinics and papers, all of which were completely rendered.

Monday morning a general clinic under direction of Dr. W. R. Carr assisted by Drs. G. W. Closson, M. Johnson, C. F. Litton and others, was held at the hospital of Drs. W. R. Carr, C. A. White, and R. M. Leaf on large animals which was full of interesting subjects and created great interest.

The afternoon program was held at Normal Hill Center and interesting papers were read by Drs. John L. Tyler, C. F. Litton, J. P. Iverson, state veterinarian, and Dr. M. Rosenberger, also Dr. R. J. Bell. "Breeding problems from the dairyman's standpoint" was exceptionally well rendered and pointed out the dairyman's side of this most important question—as was the paper by Dr. J. L. Tyler.

The second day meeting contained such subjects as "The Garbage Hog" by Dr. L. V. Hurt, "Hog Cholera Virus and Its Biologic Characteristics" by Dr. Robt. Jay, "Antisera Aggressions and Prophylaxis" by Dr. J. G. Jackley and the treat of the meeting in an exhaustive paper by Dr. A. T. Peters of Peoria, Illinois—all of which brought out very instructive and interesting discussion.

A banquet for members and ladies was held at the Virginia Hotel, Long Beach, at which Dr. L. M. Powers, M. D., gave a most interesting talk on "The Veterinarian and His Relation to the Public Health."

The morning of the third day was devoted to a small animal clinic under the direction of Drs. C. A. White and T. H. Agnew, assisted

by Drs. F. H. Bescoby, W. A. Boucher and Kron.

The afternoon program consisted of papers by Dr W. L. Curtis "Foxtail Infections in Small Animals" and "Rabies and Its Control" by Dr. J. F. McKenna—both of which being important questions in California, brought out much useful information.

The election of officers resulted in Dr. John L. Tyler, Huntington Park, being elected president, Dr. Oscar Kron, San Francisco, for vice president; Dr. J. P. Bushong, Los Angeles, for secretary, and Dr. Jas. Boyd, Milpitas, for treasurer.

San Francisco was selected as the next meeting place first Monday in June, 1923. The meeting adjourned with everyone expressing the opinion that this had been the best meeting ever held.

Dr. J. P. Bushong, Secretary.
906 Lindsay St., Los Angeles, California.

THE MONTANA ANNUAL MEETING

The annual meeting of the Montana Veterinary Medical association was held at Billings July 26 and 27, 1922. About thirty-five veterinarians were present.

The morning session of the first day was devoted to business and an address by the retiring president, Dr. C. H. Stevens. The afternoon and evening sessions were occupied with a number of very interesting and instructive addresses and papers. A very successful clinic was held under the general direction of Dr. N. B. Smith, during the forenoon of the second day. The association was given a dairy lunch at the Yellowstone Creamery, followed by an address by Mr. V. E. Sampsel, president of the Yellowstone Creamery Company. After lunch a clinic was held at the Yellowstone Packing Company on reactions to the tuberculin test. At the afternoon session several papers were read, and the new business of the association was transacted, including the election of officers. The evening of the second day was devoted to the annual banquet, followed by a musical program and a number of snappy after-dinner talks. A feature of the evening was a short visit from the Hon. C. W. Pugsley, assistant secretary of agriculture, who was in Billings for a short time on a trip across the state.

In connection with this meeting a conference of federal inspectors and state district deputies was held, to discuss the co-operative work in eradication of tuberculosis.

The following addresses and papers were delivered: "Purification of Farm Water Supplies by Cholorination," Dr. R. C. Main, city health officer of Billings; "Feeding, in its Relation to Disease," Dr. W. J. Butler, Helena; "Coccidiosis in Cattle," Dr. E. D. Nash, Helena; "Hemorrhagic Septicemia in the Buffalo in Yellowstone National Park," Dr. Neil Plank, U. S. bureau of animal industry; address by W. L. Stockton, president of the Montana Dairymen's association; "Production of Clean Milk," R. J. Posson, market milk specialist, U. S. bureau of animal industry; "Review of Report of the Tuberculosis Conference in Chicago," Dr. Rudolph Snyder, U. S. bureau of animal industry; address by Mr. V. E. Sampsel, president of the Yellowstone Creamery company; "Epithelioma of the Eye in Hereford Cattle," Dr. M. E. Knowles, Helena; "Veterinary Problems of the Summer Range," Dr. A. C. Morrow, Dillon; "The County Agent and the Veterinarian," Dr. H. Welch, Bozeman.

The officers elected for the coming year were: O. L. Devore of Bozeman, President; W. E. Heath of Columbus, Vice-President, and H. Marsh of Helena, Secretary-Treasurer. The 1923 meeting will be held at Helena.

Helena, Mont. H. Marsh, Sec.-Treas.

NORTHWESTERN VETERINARY MEDICAL ASSOCIATION MEETS IN VANCOUVER

The Northwestern Veterinary Association, comprising the Oregon State Veterinary Medical Association, Washington State Veterinary Medical Association and the British Columbia Veterinary Association, met in convention on July 21-22, 1922, in the Vancouver Hotel, Vancouver, B. C.

There were about sixty members in attendance. Dr. Damman, president of the B. C. Association presided.

The program was a full one taking up two days. There was no banquet, the association deeming it more important to give the time to the consideration of papers. A semi-social feature of the occasion was a bus ride around Marine Drive to the university grounds at Point Grey. A number of the members were accompanied by their wives.

The discussions were particularly good both for interest and keen discrimination.

One of the noteworthy features of the convention was an address at the evening session by the Canadian Minister of Agriculture. He showed a comprehensive appreciation of the value of veterinary science and left no doubt

that the Canadian veterinarians have a good friend in his office while he occupies it.

Want A. V. M. A. in 1925

Among the matters brought to the attention of the whole association were the interest of the whole Northwest in having the A. V. M. A. in Portland, Oregon, in 1925. There were also resolutions concerning the activities of county agents in certain localities, activities of certain state and federal authorities as well as of certain biological houses, and another was for the elevation and wider recognition of the veterinary profession.

The place of meeting next year was the subject of quite an animated discussion. There was quite a sentiment in favor of holding the next meeting in one of the more inland towns to favor the Idaho association which has recently been reorganized and has expressed a wish to come into the Northwestern association, but it was finally voted to hold it in Portland, Oregon, trusting that the Idaho veterinarians can arrange to come that far.—Carl Cozier, Secy.-Treas. Washington Ass'n.

The twenty-seventh annual meeting of The United States Live Stock Sanitary Association will be held at the LaSalle Hotel, Chicago, Illinois, December 6, 7 and 8, 1922. The meeting of the second day will be a joint one with the Illinois State Veterinary Medical Association which will adjourn on that day to participate in the program.

NORTHWESTERN ILLINOIS AND SOUTHWESTERN WISCONSIN ASSOCIATION

The annual meeting of this local association was held at Freeport, Illinois, October 11-12. The literary program was held at the city hall, the clinics at B. F. Swingley's hospital and the banquet at the Brewster Hotel.

The contributors to the program were: R. E. Kluck, J. G. Jones, T. E. Lotz, L. B. Swingley, W. L. Hollister, J. E. Roub, E. L. Quitman, N. S. Mayo, C. A. Zell, and L. A. Merillat.

Dr. Zell gave an instructive demonstration on field microscopic examinations, illustrating to what extent a practitioner can make use of the microscope for preliminary diagnostic work. Doctor Mayo demonstrated the value of Butyn as a local anesthetic for large operations, such as the radical operation for poll-evil and fistula of the withers of horses. The anesthetic was pronounced a success by Doctor Merrillat who performed the operation.

Doctor Quitman discussed various therapeutic subjects and demonstrated a new operation for umbilical hernia in pigs and dogs, and R. E. Kluck performed his new operation for umbilical hernia in male hogs both of which are described elsewhere in this issue. Page 677. Raising a cow's body to replace a prolapsed uterus by Lotz and the sterility demonstration by J. G. Jones were among the other many important features of the program.

ONTARIO COLLEGE INSTALLED AT GUELPH

The Ontario Veterinary College commenced the 1922 term in its new quarters on College Heights, Guelph, on October 1. Since its inception in 1862, the college has been in Toronto and it was felt by some that the move to Guelph would be an uprooting of old traditions. However, there is no doubt that the present move is a wise one, and traditions, being things of the spirit rather than of the body, will continue to flourish around the new building even as they did in the old.

The college is now situated in an eminently suitable position in the heart of a prosperous agricultural district and enjoys the advantage of being in close proximity to the magnificent group of buildings and campus of the Ontario Agricultural College. The veterinary college itself is completed and the hospital nearly so. These buildings are fully modern throughout in arrangement, in facilities and in equipment and lack nothing requisite for successful instruction in veterinary science.

Animal husbandry, chemistry, botany, physics, biochemistry, public speaking and journalism have been added to the veterinary curriculum from that of the agricultural college.

BLUE CROSS SOCIETY APPEAL TO THE STATE ASSOCIATIONS

The movement already on foot for two years to secure the enactment of veterinary anesthetic laws in the several states by the Blue Cross Society having been unanimously approved by the national association, the society through its president Miss Maud Phillips is now organizing the Blue Cross Interstate Veterinary Committee to be composed of the total personnel of the anesthetic committees the state associations will be urged to appoint. A draft of a law covering the salient points of such legislation will be sent to the different associations with a request that a special com-

mittee be appointed to approve, supplement or change it to suit local conditions. With such approval a matter of fact the society will then undertake the monumental task of having it enacted into a law by the several state legislatures.

It is evident the Blue Cross Society is being ably advised in the matter of avoiding the pitfalls of any proposed legislation of this kind that did not follow the dictates of reason, modern technical knowledge and sound practicability.

Although keenly interested the veterinarian's support can only be advisory in character and cautiously passive for the reason that the man who will have the last word—the owner—will scent a scheme to exact a bigger toll in veterinary fees, and the empiric one to curb his activities. Any organized opposition from either sources would be difficult to overcome.

MONSARRAT LOSES A FINGER

Dr. William T. Monsarrat of Honolulu, H. I., had the misfortune to lose a finger while dressing wounds of a bear at the Kapiolani zoo a few days ago.

According to reports the doctor proceeded to administer surgical attention to the bear without going through the formality of restraining his patient, having been assured of the animal's docility by the keeper. The bear, however, did not appreciate the good intentions and promptly showed its fondness for human flesh by biting off the end of one finger. The bear died.

Dr. Charles W. Fisher of Danville, Kentucky, besides being a veterinarian of prominence is also a horse trainer of no mean reputation. He owns several fine saddle horses and other stock which he keeps on his estate near Danville, among which is the sensational colt "Fashion Peavine" that not only carries away blue ribbons from the local fairs but which is also a vaudeville prodigy, counting, telling the time of day and answering questions like veteran horses of that kind.

The doctor also owns a trained goat—a white milking goat—that he has trained to walk the rope, which, together with the colt, he exhibits for charity.

Amylobacter clasticus, a bacterium that splits up starch into glucose and butyl alcohol is suspected of being the causative agent of diabetes.

SCIENCE TO THE RESCUE

"Teddy," an aristocratic canine of Cincinnati, condemned to death as a mad dog by Judge Woeste, was given a stay of execution on the plea of Dr. R. B. Blume, chief veterinary officer of the health department of that city, that the dog could be rendered harmless in so far as rabies is concerned, by vaccination against that disease. Science, therefore, goes on record for the first time for having saved the life of a dog under these circumstances.

The photograph shows Dr. Blume vaccinating the dog while Henry Diekmeyer, the official pound-master is holding the leash.

Mrs. William F. Flanary, wife of Dr. Flanary, of St. Charles, Minn., died at their home on July 4, after a long illness.

Dr. C. M. Heath has moved from Lone Rock, Wis., to Watertown, to continue practice. He has been at Lone Rock for nine years and during the war served overseas as a veterinary officer.

Dr. J. D. Ray of the Kinsley Laboratories. Kansas City, Missouri, spent the month of August in North Carolina and Florida.

Dr. Guy A. Roberts and Mrs. Roberts just returned from Sao Paulo, Brazil, where the Doctor has been employed by the Government since 1919.

Dr. J. H. Cock is in the serum-virus control work at Hooper, Nebr. The Doctor was previously employed by the Kansas City, Missouri Board of Health.

Dr. Burton R. Rogers, of Chicago, addressed the staff of the Mayo clinic at Rochester, Minnesota, during July, on "The relationship between human and animal tuberculosis, with suggestions for its prevention and control."

Dr. C. A. McKim of Windsor, Colo., visited his mother in Kansas City during August. The Doctor is in general practice in the sugar beet section of Colorado.

Dr. E. C. Lahr of Sabetha, Kansas, is disposing of his property and will soon journey to California where he will make his future home.

Dr. Hugh McConnell of Independence, Mo., was in British Columbia during August on a hunting trip.

Dr. R. L. Strohl, of Oblong, Ill., has been appointed county veterinarian of Crawford county.

Drs. C. L. Wrinkle and F. H. Saunders have purchased the practice of Dr. J. H. Eddy at Stockton, California, and will operate under the name of Wrinkle & Saunders.

The practice is a very large and lucrative one, established by Dr. Eddy more than thirty years ago. The hospital has been remodeled to meet the needs of a larger canine practice. In every connection their business is far above expectations.

Dr. Wrinkle is a war-time veterinary officer and was chief meat inspector of Spokane, Washington, for three years before taking up his present duties.

T. P. Hill has opened up an office for practice at Almond, Wis. Doctor Hill was formerly an assistant to V. P. Norton of Wisconsin Rapids.

VIRGINIA SUMMER MEETING

The Virginia Veterinary Medical Association met in semi-annual session in Blacksburg, Virginia, on July 13, as guests of the Virginia Polytechnic Institute. At one o'clock on that afternoon the meeting was called to order by second vice-president Dr. G. W. Rawson, of Charlottsville. The meeting was opened with invocation by Rev. W. C. Taylor, one of the college chaplains. Next following this was the address of welcome by Dr. Julian A. Burruss, president of the college. Dr. Burruss was very generous in his welcome of our profession to the institute, giving us the keys, as it were, with full authority to appropriate to our use all the pleasures and facilities the college could afford. Dr. T. M. Owen, a former vice president of the association, made the response to the address of welcome, which was done in his usual pleasant and gracious manner.

Following this, Professor H. L. Price, Dean of the school of agriculture, explained the work of the school in its relation to the entire institution and the lines of endeavor under the heads of residential, research and extension. Dean Price explained in detail the effort that is being made to extend, or carry the institution to the farmer that he may receive through the extension department these things which are discovered in the experiment station and taught to the students in the classroom.

The work of the experiment station along research lines, particularly animal husbandry and poisonous plant found in pasture, was explained by Dr. A. W. Drinkard, director. This address was very interesting and of great benefit to all present. Dr. Drinkard gave the results of experiments conducted with poisonous plants as found in the pastures of Southwest Virginia, particularly the mountain coves, covering three plants known as wild hemlock, Dutchman's breeches, and squirrel corn.

Dr. J. I. Handley, of Atlanta, gave a very strong address on ethical methods of advertising. He gave us many questions to ponder upon during our leisure hours.

At four o'clock in the afternoon an auto excursion was enjoyed which carried the guests to our dairy barns, experiment station, and to the new shops building. At six o'clock a picnic supper was served on the college campus by Dr. and Mrs. Chrisman to the members of the association.

Following the business session, Dr. H. H. Adair, of Bristol, reported on several very in-

teresting cases, as did Dr. C. W. Boone, of Roanoke.

The following morning at nine o'clock, with President Willis in the chair, Dr. A. J. Burkholder, of Indiana Veterinary College, gave a very strong talk on the field preparation of pathological specimens for laboratory diagnosis. This address filled a long felt want and our practitioners were greatly pleased with his suggestions.

Dr. M. Jacobs, of the University of Tennessee, gave an interesting address on several of the new diseases making their appearance in his and adjoining states under the head of some observations of practical interest. The practitioners greatly enjoyed his discourse and found it very helpful.

Dr. J. W. Adams, of the University of Pennsylvania, gave his clinic which continued until six o'clock in the afternoon. This was one of the most interesting and instructive features of the program. The members were all loath to leave at the time of the departure of their trains. They all expressed that this feature was one of the most helpful that they had attended in many years.

On Friday, the 14th, at 12 o'clock, the association gave a luncheon in the college dining hall. Several tables were attractively arranged by Mr. Owens, college steward. With the assistance of several of the students taking the summer school work, Mr. Owen distinguished himself by serving in a delightful manner.

The following gentlemen responded to toasts: Dr. Adams, University of Pennsylvania; Dr. Jacobs, University of Tennessee; Dr. Burkholder, Indiana Veterinary College, and Dr. Handley, Atlanta, Ga.

President Dr. H. S. Willis, of Gordonsville, and Dr. G. C. Faville, of Hampton, gave interesting talks and many of the younger members would have been called on had it not been for the fact that a clinic previously arranged for 1:30 compelled us to adjourn. Several of the members attending the association were accompanied by their wives who were our guests at the luncheon.

Dr. J. G. Ferneyhough, our state veterinarian and former president of the association, acted as toastmaster.

The time and place of our next meeting was decided upon, Richmond, Va., January 11-12, 1923.

Over 26,000,000 head of cattle passed through the dipping vat in Texas since the first of May.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY

The thirty-eighth semi-annual meeting of the Veterinary Medical Association of New Jersey was held at Asbury Park on July 13th and 14th with headquarters at the Hotel Marlborough.

There was a large attendance of members, their wives and friends.

A very interesting program and social time was enjoyed.

A delegation of officers from the U. S. army explained the officer's reserve corps and requested a few veterinarians to join. The association took action to co-operate with the army, relative to seeing that New Jersey furnished her quota of reserve veterinarians.

Mr. C. D. Cleveland, of Eatonstown, presented the statistics of the dairy industry in New Jersey, to the association. His talk caused a long discussion on milk problems with special reference to pasteurization and tuberculin testing.

Mr. Hunter, of Annandale, gave a talk on swine problems as confronted by a breeder.

Dr. Cassius Way of New York covered the subject of breeding problems very thoroughly. He thinks immunity to abortion is established. New outbreaks are due to new infections. The most difficult condition he and his assistants feel they have to deal with is inflammation of the genitals. He demonstrated the use of a forceps to attach to each side of the cervix to draw out the cervix for examination.

Dr. Wm. Gall told the association the system he used in eradicating tuberculosis from Matawan's milk supply. He said 14% of the cows supplying Matawan were tuberculous.

Dr. Way made the statement that glandular tuberculosis of bovine origin is as rare in New York today as glanders, due to pasteurization, tuberculin testing, and certification of milk. The pasteurization of certified milk is now being contemplated.

Cow Serum Prevents Calf Scours

Dr. E. A. Smiley, of the staff of the Rockefeller Institute for Medical Research, read an article on the experiments carried on by Dr. Theobold Smith and his assistant, Dr. Little, on the significance of colostrum to the new born calf and the use of cow serum as a substitute.

These experiments seemed to indicate that colostrum checked the prevalent trouble of calf scours. Cow serum given per orum

seemed to be a good substitute while serum per orum and intravenously gave excellent results. These are new experiments that may prove of great benefit to the stock industry. These papers together with further experiments are to be printed in the Journal of Medical Research.

Dr. B. M. Lyon, of Pearl River, gave the history of the discovery of single dose vaccine against rabies in dogs. He gave great credit to the Japanese that first prepared it.

From the experiments carried out in the U. S. and the trials given this single dose method in actual outbreaks it appears to rank with the smallpox and hog cholera vaccine in efficiency.

An orchestra concert and singing given in the Ocean Grove auditorium were enjoyed by some; others enjoyed the dancing on the pier, while others took in, or were taken in by the various amusements common to the seashore resorts. A dip in the ocean and a stroll along the board walk was enjoyed by all.

The 39th annual meeting will be held in Trenton, N. J., on the second Thursday in January with headquarters at the Trenton House.—P. B. Silvester, Sec'y.

Dr. F. A. McKim of Buffalo, Minn., has moved to Isanti, Minn., to enlarge his sphere of operations. He is a graduate of Chicago and Ames.

Dissolution of partnership of the well-known veterinary firm of Wilke and Sarde of West Plains, Mo., is announced. Doctor Wilke has purchased his partner's interests and will operate under the name of the Wilke Veterinary Hospital. Both Drs. Wilke and Sarde were officers of the veterinary corps during the late war.

The University of California has established a field laboratory at Etna Mills, Siskiyou county to study an unknown disease affecting the cattle of the northern counties of that state. The investigation was undertaken at the request of the Northern California Counties association.

An outbreak of anthrax in Sutter county, California, reported by R. S. Christian, the local veterinarian at Marysville, was promptly controlled by vaccination and appropriate sanitary measures.

Resolutions Passed by the New York State Veterinary Medical Society

STATE MEDICINE

Whereas, interest in control of disease has led to extensive development of local, state and federal organizations for this purpose, their combined activities falling under the general term "State Medicine," and

Whereas, within the past few years the course of applied veterinary medicine has been transformed in its relation to the state, and

Whereas, fear that much of the service of the practitioner might be abolished has contributed to a decreased interest in veterinary science which has led to both public and private loss, therefore

Resolved, that the New York State Veterinary Medical Society, recognizing the wisdom and necessity of conserving both state and private effort in disease control, suggests the desirability of a better understanding to the end that progress be not slackened through apprehension or distrust.

Resolved, that this resolution be transmitted to the A.V.M.A. with a suggestion that the control of disease in animals depends on the services of the private veterinary practitioner, with a further suggestion.

That the national association assume a more definite policy in the preservation of this vanishing group and

That it be more adequately represented in the journal of the association.

THE SCOPE OF VETERINARY PRACTICE

Whereas, within the past few years the work of the practitioner of veterinary medicine has undergone a radical change through the demand for herd prevention and control of all forms of disease, and individual emergency cases demanding immediate attention are less frequent, and

Whereas, officials, agricultural representatives and others are sometimes advised that certain incidental phases of this work, such as tuberculin testing, vaccinations, etc., are not desired by the average practitioner because they interfere with his emergency work;

Resolved, that it is the opinion of this society that such incidental routine forms an important and essential part of the public service of the average practicing veterinarian, and

That in many cases it constitutes an important and essential source of income, and

That with few exceptions he is in position to give such service, and

That those interested in fostering the extension of veterinary service beyond the immediate areas of large towns should not be deceived by such advice.

RELATIVE TO VETERINARY PRACTICE

Whereas, leaders of animal husbandry of the state proclaim that the greatest hindrances to the prosperity of animal industry are the losses caused by disease, and

Whereas, the live stock owners have come to realize the necessity of having competent veterinary service immediately available when needed to safeguard them against the destructive effects of diseases in their flocks and herds, and

Whereas, the accumulation of knowledge in sciences included in veterinary medicine has made it necessary for those who enter the profession to devote many years to study and to expend much money in securing the required training in the nature of animal diseases and methods for their control, and

Whereas, the limited number of animals in a farming community, and the great variety of diseases from which they suffer, require the veterinarian to perform all the work in the locality for the restricted animal population, precluding the possibility of practitioners specializing to any appreciable degree, and,

Whereas, it has been the practice in recent years of the State and Federal Governments to take over tuberculin testing, free of charge, that the local veterinarians were trained to do as a part of their professional duties, and,

Whereas, this beginning of state veterinary medicine is discouraging young men from entering the profession, which will soon leave animal owners without veterinarians for the great majority of the diseases for which they need such service, and,

Whereas, cattle owners are anxious to have efficient veterinarians and are willing to pay for professional services for which they themselves profit, and,

Whereas, it is not believed that the agricultural interests desire the services of the practicing veterinarians to be restricted or abolished, therefore be it

Resolved, that the New York State Veterinary Medical Society request the Commissioner of Farms and Markets to assist the animal

owners by permitting the local veterinarians to do as much of the live stock sanitary work as possible, and further be it

Resolved, that this Society ask the Commissioner of Farms and Markets to recommend tuberculin testing by accredited practitioners at the expense of the owners, thereby encouraging more efficient veterinary service for the agricultural districts and reducing greatly the expense of such work to the state, and further be it

Resolved, that the Federal Bureau of Animal Industry be requested to co-operate with the Commissioner of Farms and Markets to arrange proper inspection of the tuberculin tests to the end that the cattle owners will be assisted in the elimination of tuberculosis from their herds by the receipt of such indemnities for reacting animals as the State and Federal Governments may be willing to provide, and further be it

Resolved, that this Society pledges to the Department of Farms and Markets and to the Federal Bureau of Animal Industry its honor and loyalty in making and reporting all tuberculin tests and other reportable conditions, and that it will exert its every effort to assist the State and Federal authorities to bring to justice any practitioner of the State who violates the sacred obligation of professional honor in the conduct of his work, and further be it

Resolved, that copies of these resolutions be sent to the Commissioner of Farms and Markets, to the Secretary of Agriculture, to the Chief of the Federal Bureau of Animal Industry, to the Veterinary Journals of the country and to the Agricultural Press of New York State.

Dr. W. F. Hayes, of Farmersville, Tex., had his office equipment destroyed by fire on August 4th.

A prospective successor to the doctor is announced by Dr. and Mrs. Snyder, Blue Springs, Missouri—a boy, born August 23.

Dr. C. B. Olney, of Libertyville, Illinois, has been appointed county veterinarian of Whiteside county.

Blackleg in sheep is rare in this country according to J. R. Mohler, chief of the U. S. bureau of animal industry.

Drs. J. L. Robinson and V. J. Robinson of Atlantic, Iowa, with Dr. Sceli of the Ralston Serum, have purchased the Diamond Serum Company's plant and interests of Des Moines, Iowa, with immediate possession. Drs. J. L. Robinson and Sceli have moved to Des Moines and are now operating the plant.

Dr. V. J. Robinson will continue the practice at Atlantic formerly conducted under the firm name of Robinson and Robinson.

Milk inspection was first urged by Galen 131-201 A.D.). Having prescribed ass's milk for a patient he stipulated that the animal should first be inspected as to its health. Galen in his voluminous writings shows familiarity with the writings of the Byzantine Greek veterinarians who lived 600 years before his time.

Dr. Walter Lawson, Hollister, California, about to retire at the age of 70, writes an interesting letter from which we quote a few paragraphs worth repeating:

"Your advice in regards to the use of the stomach tube is O. K. I have used it since 1904, getting my first tube from Dr. Phillips of St. Louis. I use it for horses, cows and dogs.

"In parturient paresis I use hot water to raise the temperature to normal, which no drug will do and find that this cures cases when inflation of the udder has failed.

"Pure air, good food and water, and breeding from sound, healthy stock are the best preventions of disease.

"I shall always take an interest in veterinary work during the remaining years of my life, and find that your journal gives the best advice of any writers I have read."

INBREEDING TESTS CONTINUED

After 15 years of inbreeding and cross-breeding experiments with guinea pigs, in which more than 34,000 animals were used, the United States department of agriculture is continuing the investigations with poultry and swine, making use of many facts developed in the tests with the smaller animals. Six pens of white leghorns have been set aside for the purpose, and it is planned to breed continuously within each pen, using one male bird each year. A similar test will be carried on with five pairs of Poland Chinas and four pairs of Tamworth hogs. This experiment will make possible a later comparison of crossing within a breed and between two breeds with inbreeding.

It has been estimated that there are sixty million fifty thousand stock hogs in the United States, which is an increase of over four million (or 7.2%) over last year. The increase in Kansas and Nebraska was approximately 20%.

Missouri is doing some intensive tuberculosis testing. It has been announced that all cattle in at least three counties will have been tested once and herds in which reactors were found retested by Jan. 1, 1923.

Dr. B. M. Troxel announces his removal from Green Ridge, Mo., to Tipton, Mo., where he will estabilsh a practice. Dr. Troxell graduated at the Kansas City Veterinary College with the class of 1912.

What is reported to be one of the most up-to-date small animal hospitals in the United States is under construction at Dallas, Texas for Drs. W. G. Brock and N. F. Williams of that city. Dr. Brock attended the A. V. M. A. meeting at St. Louis and spent some time inspecting small-animal hospitals there and in Kansas City.

Dr. Edwin J. Davidson, of Grand Forks, North Dakota, died at the age of 52 years at his home in that city, July 16. Dr. Davidson was a graduate of the Chicago Veterinary College and was a resident of Grand Forks for 40 years. When graduated he was the medalist of his class and upon entering practice not only developed a large business but identified himself with uplifting movements. He was president of the veterinary examining board of North Dakota, and an assistant state veterinarian. He was a brother of Dr. Geo. H. Davidson, of Rugby, N. D., and W. T. Davidson, of Saskatchewan.

Wm. Radcliffe, a registered non-graduate veterinarian of Waynesburg, Pa., was drowned while wading in the Monongahela River at Masontown, Pa., August 23, 1922. He was 72 years of age, was a native of Shropshire, England, and in early life associated with Gypsies and race horses. He spent many years in the British and U. S. armies and navies and travelled in many parts of the world, finally accidentally settling in Pennsylvania. He leaves a widow and one daughter. He was a great entertainer as a song and dance artist, and made life a continual round of pleasure.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

FOR SALE

FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Wellington, Kans.

FOR SALE—Veterinary hospital and practice in Portland, Oregon. Good place for two or three good, live men. Reason for selling: other business opportunities. Address Dr. T. B. Carter, 408 E. 6th St., Portland, Ore.

FOR SALE—Practice. Hospital and residence in best farming district of Colorado. Town of 6,000. Practice established ten years. For particulars write Dr. I. A. Phinney, 945 North Cleveland Ave., Loveland, Colorado.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

FOR SALE—Good practice. $3,500 to $4,000. In a rich farming country. In the "Thumb" of Michigan. Price, $4,000 for home and office, including stock of drugs. Reason for selling: Going into another business. If interested, address No 695, care of VETERINARY MEDICINE.

FOR SALE—Practice in Central Kansas. $1200 to $2000 per month. Will sell equipment, consisting of Ford car, operating table, drugs, instruments, and other supplies, and give five-year lease on building for $3000—one-half cash. Wonderful proposition for anyone wishing to step into a large practice. Hospital well equipped for small animals. Address No. 700, care of VETERINARY MEDICINE.

FOR SALE—Practice and equipment. Dairy section, county seat in Wisconsin. Big territory. Priced right. Address No. 709, care of VETERINARY MEDICINE.

POSITIONS, LOCATIONS, ETC.

ASSISTANT WANTED—For Texas location. Must be honest, single, hard worker, and a good practitioner. State qualifications and salary expected, in first letter. Address No. 705, care of VETERINARY MEDICINE.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

POSITION WANTED—Graduate grade "A" school. Twelve years' experience. City and country practice and B. A. I. Industrious, clean habits, good appearance. Address No. 707, care of VETERINARY MEDICINE.

LOCATION WANTED—For partnership in city of 10,000 or more. In Middle West states. We would consider purchasing an established practice. Address No. 706, care of VETERINARY MEDICINE.

WANTED—Will buy hog cholera serum plant. Give full description and price in first letter. Address No. 711, care of VETERINARY MEDICINE.

POSITION WANTED—Graduate veterinarian. Eleven years' practical experience. Inspection, transportation, postmortem, hog cholera, tuberculin testing, general and canine practice. Prefer central west or northwest states. Best references. What have you to offer? Address No. 710, care of VETERINARY MEDICINE.

POSITION OR ASSOCIATION WANTED—Graduate Colo. Agri. College, Dept. of Vet'y Science. Class 1921. Unmarried. Experienced about one year and a half. Good habits, etc. Referenced. Take position with manufacturing plant, serum company or with general practitioner, as assistant or partner. Registered in Colo. and Iowa. Can take board examination any state. Age 25. Address 3107, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

FOR SALE—Pammel's "Manual of Poisonous Plants." Price $7.50. Address orders to: Prof. L. H. Pammel, Iowa State College, Ames, Iowa.

MISCELLANEOUS

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"Tissues are primarily aggregates of agglutinated cells." Loeb.

According to Edmonds and Kammlade, corn when sound and properly fed with legume roughage is a satisfactory feed for horses.

It has been reported that a cure for sleeping sickness in the human and allied diseases in lower animals has been found. The cure is a drug and is designated "Beyer 205."

The average egg consumption in the United States is one-half egg for each person per day, according to the department of agriculture. The egg production this year exceeds that of any previous year. It has been estimated that there will be approximately 22 billion eggs laid in the United States in 1922.

H. G. Wells' story of the flora and fauna of the earth places the welfare of man at the mercy of entomology, bacteriology and fertilization of the soil. New conquests between sub-kingdoms of plant and animal life are continually springing up to adapt themselves to changes in temperature, food and moisture.

Induced aseptic inflammation of a cow's udder causes the same changes in milk that streptococci infection does. It would therefore appear that abnormal milk is not necessarily due to streptococci infection. It has also been found that there may be serious udder disease without strepticocci infection.

Brenner, who is traveling through the middlewest at this time in the interest of VETERINARY MEDICINE, largely with the object of collecting some first hand field information about the changes in veterinary practice since he made his famous tour five years ago, writes that he finds it almost impossible to get subscriptions for the reason that everyone he meets is already a subscriber.

The 300 egg hen like the 40 pound cow is often a disappointment, both from the standpoint of prepotency and production when removed to a new environment and put to the crucial test of "delivering the goods" at a profit, because parlor-coops or stables, pampering and extensive, forced-feeding, yield deceptive results

H. W. MacKinnon, one of the associate editors of the Canadian Veterinary Record, has moved from his former location on Prince Edward Island to Duluth, Minn., where he has opened an office for practice. Doctor MacKinnon is prominent among Canadian veterinarians. He was an officer in the veterinary corps of the Dominion during the war and has two years of overseas service to his credit.

An epidemic of Malta fever among goats is reported to have broken out in the region of Phoenix, Arizona. A positive diagnosis of 18 cases is said to have been made by the government laboratories at Washington. The epidemic is in the charge of State Veterinarian Hight and Federal Veterinarian Schneider.

F. K. Voss, a prominent Wisconsin practitioner, located at Antigo, has completed the erection of a fine, commodious veterinary hospital, 36x60 and complete in every respect.

Captain Wm. S. MacKintosh, of the Royal Dick Veterinary College, has accepted the appointment of government veterinarian in Uganda, East Africa.

Captain MacKintosh is a brother of Dr. Peter MacKintosh of Yakima, Washington, who is a graduate of the McKillip veterinary college of Chicago and the Royal (Dick) college of Edinburgh.

DOCTOR BOWMAN DIES OF INJURIES IN AUTO ACCIDENT

F. C. Bowman, 38 years old, a prominent veterinarian, of Williamsburg, Iowa, died at the St. Luke's Hospital, Cedar Rapids, September 1, from injuries sustained when an automobile in which he was riding swerved into a telegraph post while turning a sharp curve in the road. The collision said to be due to incompetence of the driver, threw the doctor against the windshield with such force as to fracture his skull.

Doctor Bowman was born at Maquoketa, Iowa, and after graduating at the Chicago Veterinary College in 1907 located at Williamsburg, where he enjoyed a successful business career and above all the good will of all who knew him. He leaves a widow, Mrs. Stella Bowman, and two children, Forest Clyde, aged 11, and Kathryn Ann, aged 10, besides both parents and five brothers.

Dr. R. E. Gow, former state veterinarian of Arkansas, has been interested in cattle ranching in New Mexico for some time. The doctor was in Kansas City recently.

Dr. L. W. Rowles, formerly of Topeka, Kansas, is now located at Grantville, Kans., where he is engaged in stock farming and general practice.

Dr. O. W. Noller, formerly of Alma, Kansas, is now located at 626 Quincy Street, Topeka, Kans.

Dr. J. E. Bingham, of Topeka, Kansas, treated several hundred hogs with anti-hog cholera serum and virus, near Lakin, Kansas, in the Arkansas Valley.

Dr. R. E. Walden, of Lennox, S. Dak., found it necessary to discontinue practice temporarily, because of a severe attack of tonsilitis.

Dr. O. E. Troy, of Raton, New Mexico, recently purchased a carload of breeding sheep in Wyoming. The doctor has a large ranch in New Mexico.

PROFESSOR PAIGE DIES SUDDENLY

Professor James B. Paige, head of the veterinary department of the Massachusetts agricultural college, died suddenly at Waverly, Mass. Sanatorium, October 5. Although suffering from ill health for a long time, his death was unexpected. Professor Paige was born in Massachusetts in 1862, graduated from the school in which he was a teacher at the time of his death, and also from the veterinary department at McGill University. He also took post-graduate work at Munich, Germany, and was appointed professor of veterinary science in the agricultural college in 1891, a position which he held until his death. He leaves a widow, a daughter and two brothers, and a wealth of friends and admirers in the veterinary profession throughout the nation.

Dr. Louis I. Helfand, who has recently moved from Hammonton, N. J., to 3700 Federal St., Camden, N. J., has been appointed first lieutenant in the National Guard of Pennsylvania and placed on the staff of General Shanon of the 56th Infantry Brigade.

Dr. J. C. Van Ferney, of Scotland, S. Dak., and Miss Lydia Sneider, daughter of Mrs. Henry Sneider, were united in marriage August 30, 1922.

Dr. W. A. Cornell, previously associated with Dr. Norden of Lincoln, Neb., has moved to Emerson, Nebraska, to practice. Cornell is a graduate of the Kansas City Veterinary College and was an oversea veterinary officer during the war.

Dr. Thomas Fraser, of Richmond, has been appointed secretary of the Virginia board of veterinary examiners. Vice-president Dr. H. Bannister resigned. Dr. Fraser's position as member of the board was filled by the appointment of Dr. H. H. Adair.

Dr. J. B. Huff, of the Aurora Serum Company, sustained painful injuries a few days ago when a car he was driving stopped suddenly from a defective gear and plunged him over a ten-foot embankment. Although picked up unconscious and badly bruised the attending surgeons have predicted an early recovery.

Although the college is no longer in existence the alumni association of the Kansas City Veterinary College reflects a college spirit that would do credit to a going institution. Its quarterly bulletin is always overflowing with interesting up-to-the-minute news. The officers of the association are: W. T. Spencer, president; P. Simonson, vice president; and A. T. Kinsley, secretary, treasurer and editor.

OLD ARMY VETERINARIAN DIES

Dr. Wm. J. Waugh, of Washington, Pa., died suddenly of apoplexy at the fair grounds, August 16, after examining four race horses injured in transportation from New York. He was 65 years of age, a native of Pennsylvania, graduated from the Ontario Veterinary College, March 31, and later spent 15 years as regimental veterinarian, third cavalry, U. S. A., but resigned and entered private practice. He leaves three daughters and three grandchildren. His wife died about two years ago.

He was a member of the A. V. M. A., Pennsylvania State Veterinary Medical Association, and an Inspector in the Pennsylvania B. A. I. He was active in the masonic fraternity and a member of the city council of Washington. He was a very popular man and his funeral was largely attended.

DECEMBER
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD, CHICAGO

A Magazine for the Veterinary Profession

$4.00 the year

VOL. XVII No. 12

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Veterinary Medicine

Vol. XVII DECEMBER, 1922 No. 12

Editorial

THE VETERINARIAN AND THE ANTIVIVISECTIONIST

When the veterinary profession arrays itself unalterably against movements intended to cultivate kindness and consideration in the handling of animals it is taking the wrong position and when it discounts the need of curbing brutality it is displaying a very poor quality of sportsmanship towards the creatures that maintain it.

It does not matter whether the creature at hand is an elephant, a tiger, a monkey, a dog, a horse, a rabbit or a guinea pig, it deserves fair play in our hands and we individually and collectively should see that it is accorded fair play in the hands of others.

That there has been some unnecessary pain and misery inflicted on experimental animals will hardly be denied and that some experimenters and some research workers in the past have been prone to forget about the pain their work requires them to inflict is also undeniable.

The laboratory worker, whether he is employed in a large laboratory or labors in his own private work-shop, who handles living animals with no greater show of sentiment than the undertaker handles a corpse, invites opposition to the kind of work he is doing no matter how necessary it may be; and the one who terrifies animals for no other reason than that of re-demonstrating established facts for the gaze of the curious, is now regarded as a passing non-essential person.

BUT, it is unfortunate for dumb brutes that antivivisectionist movements until now have been advocated only by a group of radical fadists who show no inclination to separate themselves from the silly antivaccinationists, the anti-meat-eaters, and the agitators against modern medical science, to the end that they excite a stubborn opposition to their main purpose from fair-minded men, who, unlike themselves, are willing to accept proved scientific facts at their par value.

The veterinary profession is opposed to indiscriminate, unnecessary and cruel vivisection. It stands for fair play for animals whether they are doing their bit as beasts of burden, beasts of sports, beasts for exhibition or as experimental animals in the laboratory, but it also wants justice to the cause of necessary experimental pathology. In other words, it is willing to act as referee but will never array itself as a radical exponent of either side of the vivisection controversy.

When the antivivisectionists have segregated their activities from those of the radical anti-medical fadists they will have made a long step forward and will then be in a position to invoke the universal support of the veterinarian. In short, the veterinarian is in sympathy with the humane idea but not with the anti-medical propaganda. The one has a noble motive, while the other is a meaningless agnostic tirade. The one will get nowhere with such a mill-stone hanging to its neck.

NOSTRUMS FROM ABROAD

When the next congress convenes American manufacturers of chemicals will have to renew their efforts to protect the market from being flooded with a motley array of foreign medicinal agents that are ready for shipment to these shores, as the work to make us independent in the matter of synthetic drugs and dyes since we declared war against Germany has been sacrificed by congress failing to heed the pleas of our manufacturing chemists for fair play. It seems that we are at the threshhold of a period when we may expect to be flooded with all kinds of synthetic agents, ambiguously captioned, described under formulas that are never understood by and mean less to the therapist, and exploited with catchy advertisement which, in our blind confidence in foreign made drugs, make us easy victims of products that are often little more than worthless.

American veterinarians have always shown a great confidence in the remedial agents, coming from our European confreres, that are used and recommended by them, but it can not be denied that this confidence has been abused

by European manufacturers and jobbers taking advantage of the high opinion we have shown towards their scientists to send us a mess of drugs we should long since have thrown into the discard. That we have been duped for years is more than a mere suspicion; it is said on good authority that when a coal tar derivative is worthless as a dye it can always be called a medicine and sold to Americans. Don't bite on these baits, but pin your faith in the home product, and help our chemists in their campaign for justice.

FREIGHT AND PASSENGER TRUCKS ON THE PUBLIC HIGHWAYS

Attention has frequently been called to the unfairness of constructing and maintaining public highways at enormous cost and then turning them over to the mercies of carriers of freight and passengers for private gain without compensation to the people. Such conveyances, whether operating as common carriers or purely for individual gain, compete against carriers who construct and maintain rights-of-way at their own expense and in addition pay taxes for the ground and material used.

Owners of abutting property in towns and cities are paying exorbitant sums for street pavements only to see them wrecked in a short time by heavily laden trucks thundering over them at too high speed; farmers are paying for bonds, and interest thereon, for the construction of roads that are riddled with impassable chuck-holes before the bonds are due; and the states and the nation are working out programs of road construction running into the billions to be collected by direct and indirect taxation without any apparent plan of making the largest beneficiaries pay their just share.

Even with this enormous subsidy studiously withheld from publicity, the exponents of the automotive industry have had a hard time to juggle statistics in a way to make a satisfactory showing against horse transportation.

The Horse Association of America is bringing this unjust subsidy to the attention of the legislatures of many states, and the public utilities commissions of some states are analyzing the situation with a view of curbing a trend that is so manifestly unfair to the many and a blessing to only a few. The changing situation is graphically illustrated in a decision just handed down by the public utilities commission of Colorado in the case of a man who was refused a franchise to operate a passenger line between two cities on grounds best stated in the commission's own words:

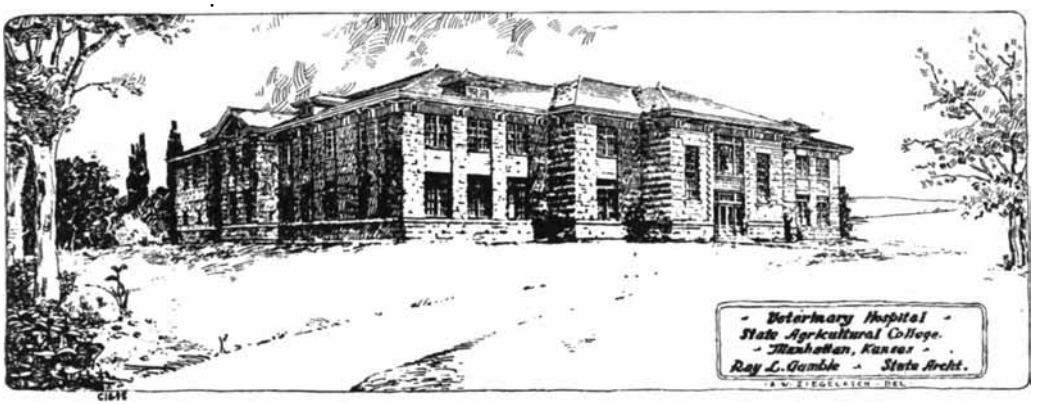
"Public conveniences and necessity by which must be understood the convenience and necessity of the people at large, as contradistinguished from the convenience and necessity of a very small number of persons who seek to derive a profit from the farmers' and city home owners' investments in roads, never contemplated that the truck driver should destroy them, after contributing little or nothing toward the cost of construction.

"When the taxing laws of this state (Colorado) are so amended that the truck driver operating over state highways shall contribute his due proportion to the cost of construction and maintenance of our highway, then, and not until then, can this commission regard his use, under proper conditions and restrictions, as of equal benefit to the people with the moderate use thereof by the ordinary taxpayer."

The whole truth about automobiles and all forms of vehicles propelled by internal combustion engines is that they have never paid, but on the contrary continued year after year to exact a toll for existence that was until now unheeded by the public. The popularity of the automobile, and the desire of everyone to own one, entirely overshadowed the matter of cost to the individual and the probable effect the development of such an industry would have on the country in general. According to the opinions of the best students of economics the industry has lured millions that should have gone into other channels, other development projects, and now to lure still more wealth it proposes to use billions of public funds to build roads. Road building, like the automobile itself, is popular with the people and will continue, but the industry that has already taken nearly all of the people's surplus wealth should now be made to pay its just share of the cost.

The millions already spent on roads and the billions in prospect must come out of the soil, and while it is hoped the soil will yield enough wealth to pay the bills, these must henceforth be prorated justly among the beneficiaries.

"Practitioners of veterinary medicine, if you do not interest students in taking a veterinary course, there will soon be a shortage with the result that laymen will want short courses so that they may do their own veterinary work. For the good of the live stock industry, such a situation should not arise."—(K. S. A. C. Veterinary Alumni News).



KANSAS ENLARGES ITS FACILITIES FOR VETERINARY TRAINING

There is approximately $10,000,000,000 of the total national assets invested in live stock. The annual loss from death is about $250,000,000. If the loss from sickness were added to these appalling figures, there should be no other argument needed as to the wisdom of encouraging the advancement of veterinary science. But veterinary science will not advance much unless veterinary practice remains attractive to men of quality, and in turn men of quality will not enter a profession that is a subsidiary of other agencies.

The big job that now seems sharply cut out for the veterinary profession is to bring the public into a comprehensive understanding of its significance and to emphasize to those who should know better, that it is not an enterprise to shunt about with impunity.

Through the courtesy of Dean Dykstra we are able to display in no uncertain manner the confidence this progressive state is showing in the future of veterinary science, by reproducing herewith the architects' plans of a new veterinary hospital under construction at the cost of over $100,000. The new building is located about 50 feet northwest of the present veterinary building. It will have a frontage of 175 feet and a depth of 146 feet, and will be provided with all needed laboratories and accommodations for the different species of animals, together with the necessary class rooms required for clinical lectures and demonstrations.

This enterprise is important. It not only fills a need for better facilities to educate veterinarians but is a timely inspiration for other states where veterinary science is not receiving the kind of public support that will assure the future protection of the vast wealth invested in live stock. Kansas again is showing the foresight that has so frequently distinguished it from other states since it became a sovereign commonwealth.

This physical expansion does not, however, tell the whole story. The curriculum has been broadened to include farm poultry production, diseases of poultry and diseases of small animals, and the young blood of its faculty is exerting a powerful influence in the matter of making veterinary practice popular, in bringing the advantages of a veterinary education to the attention of prospective students and in showing the need of a larger enrollment to forestall a backward trend.

The enrollment of the present session is sixty-nine, of which 21 are seniors, 18 juniors, 13 sophomores, 9 freshmen, 3 specials and 5 six-year students.

MODERN ETIOLOGY NOT ALL BACTERIOLOGY

Everyone now admits that there are agencies other than bacteria to consider in the study of etiology. Today there is a greater inclination than previously to study not only the bacteria but also the fertility of the field into which they become implanted. Systemic or organic enfeeblement from poor nourishment, improper balance of ration, over-work, exposure to extreme tempeatures, bad hygienic surroundings, or any other agency that tends to lower the resistance of all or any part of the body, are so many conditions receiving especial attention in the study of modern medicine. In other words, the etiology of the past is the etiology of the moment, plus bacteria and other parasites which thrive wherever they find a favorable home, but which are inocuous under other circumstances.

THINGS WORTH KNOWING ABOUT BEES

The recovery of general business has extended everywhere into the mysterious civilization of the insect world, including the activities of bees. Bees speeded up their work so much in 1922 that they yielded a larger amount and a better quality of honey than ever before if the report of the United States department of agriculture is correct.

We often use the expression "Busy as bees" without realizing just how busy bees really are. They toil from sunrise to the last glim of light after sunset at the height of their activity and survive only two months of this arduous existence when they are replaced by others born to take their places in the ranks. They work until their wings are worn out and die on they way loaded with nectar they have gathered. They foolishly work themselves to death and leave the fruits of their labors for others to consume, like the man who works himself into an untimely grave and leaves his fortune for others to squander.

When a boy spreads his bread or wheatcakes with honey the amount represents many bee-loads of nectar, for to make a pound of honey bees have to carry 37,000 loads from the fields to the hive. Like in many human actions nine-tenths is preparation and one-tenth realization, since after this infinite patience and elaborate preparation all vanishes down the human throat in the twinkling of the eye.

When autumn arrives there is rest for some and only death for the many. The queen and some of the workers will survive the winter. In the spring these survivors will houseclean the hive and build new comb-cells in which the queen will lay her eggs to restore the numerical strength of the swarm for the approaching season. The workers which survive the winter are divided into two squads in the spring, the one gathers food while the other serves as nursemaids for the babies. Workers are sexually deficient females (hybrids) a condition obtained by a special order of restricted diet, while the queens and drones are sexually perfect through a special diet that produces a full development. The man-bees, or drones, are of little use except as professional husbands, dodging work, bluffing, loafing, "showing off" and feigning to work but never gather enough food for their own sustenance. They gorge themselves, on the contrary, with honey brought in by the womenfolks.

The life of a bee is an existence of no permanence, brief and seemingly futile; they never seem to get anywhere. A philosopher might wonder if this, is not also true about the activities of man.

T. A. Kragness, D. V. M.
Chief Bee Inspector of Illinois.

VOTE AGAINST COUNTY AGENTS

Election returns received from South Dakota indicate that at least four counties of that state have voted to reject their county agent. In Hand county, where a fight was staged on the issue, the proposition to support the county agent was rejected by a good majority. Jones county rejected the proposition by 47 votes. In Yankton and Jerauld counties, according to a Sioux City daily, "the matter of giving support to county agents was not popular with the voters."

It seems a pity that a project starting out with such high aims and opportunities should have been marshaled in such a manner as to actually incur the opposition of a majority of the people it is designed to help. Greed, encroachment upon the rights and prerogatives of others, strife for sordid commercial advantages, misleading publicity that is obnoxious alike to both the commercial and scientific mind, attempts to make good without regard to the matter of qualification are but a few of the reasons why this big movement to help agriculture is meeting organized opposition instead of arriving nearer and nearer to the goal of universal support.

When those in command can see their way clear to travel the scientific instead of the commercial road to success, like the experiment stations of the country are doing, they may reasonably expect to gradually endear themselves to the people and to fix their project solidly into the wheels of society, but as VETERINARY MEDICINE has so often tried to point out, an enterprise that shunts aside the existing order with impunity will find a rough and rugged road to travel.

Commerce and science do not synchronize. They won't work in double harness—the one pulls the other down and makes it useless.

In 1921 there were food products valued at $672,975,000 imported into the United States, according to the report of the United States department of agriculture.

DENIES TRAINED-ANIMAL ACTS BRUTAL

I want to take exception to your article in the November issue about the brutality of the trained animal acts. I can see that the writer of this editorial does not know much about the training of animals. Some animal trainers to be smart may whip or torture animals but such trainers never have well-trained animals as they will not work when trained that way. One must reward with kindness, sugar, feed, etc., to make an animal work well. There are many balky horses, for example, that were made balky because the man who trained them (or rather tried to train them) used punishment.

I have seen veterinarians castrate animals, operate on fistulas and do other major operations at clinic, torture more than all the animal trainers ever did and you say nothing about it. Such infractions seem all right but when a trainer comes along and cracks his whip you want to put him out of business. I have never seen men as cruel as the average veterinarian and many of them know enough about submission to put a bandage on a leg with the use of a twitch.

I have trained animals since I was twelve years old and have never seen one that could be trained by brutality as you say. At this time I have about twenty head of trained animals from geese to dogs and horses and can show that any one of them will leave its feed and come to me for a lump of sugar. You strain at a gnat and swallow a camel. Look at some of the veterinary colleges and around the clinic and you will find more to write about than at the training quarters of the animal trainer.

Danville, Ky. C. W. Fisher, D. V. M.

B. A. I. SYSTEM POPULAR

The system of swine sanitation worked out by the U. S. department of agriculture and put into operation in McLean county, Illinois, is attracting attention in many other places. The roundworm scourge which the system aims to eliminate is one of the important causes of swine losses.

Briefly the system consists in thorough cleaning of the farrowing pens, scrubbing the sows before they are put into the clean pens, keeping the sows and litters strictly in the clean pens until they are hauled out to worm-free pastures, where they are kept away from contaminated hog lots until the pigs weigh 100 pounds, after which they are past the greatest danger from worm infection. The working plan may be obtained without cost by any one who will write to the department of agriculture, Washington, D. C.

BELLADONNA POISONING

The editors of the Therapeutic Gazette (Vol. 46-203) from the Lancet, state there are two points in regard to belladonna poisoning, in the capricious way in which it affects its victims. The use of plaster may cause rash, and loss of power of accommodation. Atropin is rapidly absorbed and rapidly secreted by the urine. The poison works itself off in sleep. The various species of Datura produce substances which in their action are isomers of atropin and hyoscyanmin. Datura poisoning is rare in the United States and in Europe, but in Cairo, Egypt, it is, next to alcoholism, the most common form of poisoning.

GRADUATE COURSE OF THE INDIANA VETERINARY COLLEGE

The Indiana Veterinary College at Indianapolis announces its third graduate course for practitioners for the last two weeks of January, 1923. The growing popularity of this course speaks well for the plan of this old established college to give a short, intensive and concise course that will meet every need of veterinarians in practice by men especially selected as to their qualification in their respective specialties. The course in former years included diseases of swine and swine problems; bovine gynecology; bovine practice and equine medicine and surgery. This year the course we are informed will be enlarged to include diseases of small animals and of poultry to be given also by nationally known specialists.

The course affords the opportunity to obtain an intensive instruction on all matters of current importance in the least possible time and at the least possible expense. It is a worthy departure on the part of this institution and deserves patronage. At this moment when veterinary practice is undergoing revolutionary changes and much is expected of the veterinarian along lines for which he has not been especially trained, a great deal depends upon the attitude taken towards graduate work. In short, if we do not qualify in the new phases of veterinary science there is the danger that someone else will replace us.

Our future depends a great deal upon how well we patronize these courses, the associations, and the short courses given by our various universities. By attending them we thwart intrusion upon our calling; by neglecting them we leave a big gap open.

PUTS BLAME ON THE COW

In your November number on the editorial personal page under the caption of 'Put the blame where it belongs,' a quotation from the Chicago Health Department bulletin is cited and the comments made about sanitation to improve the resistance of cattle to tuberculosis, and the opinion is expressed that the hygiene to be followed is most too great to impose upon the stock owner. Other articles have also appeared in your journal along the same lines, in a way to appear that the veterinarian is greatly discouraged in the attempt to clean up the disease in cattle.

It would seem to me that these arguments are somewhat beside the point, and show a pessimism not warranted by the facts. It is claimed human tuberculosis is a house disease and by analogy bovine tuberculosis is a barn disease. While it is true this disease can be contracted from infected barns, yards, etc., I believe the main factor in the spread of bovine tuberculosis is the tuberculous cow. I have heard even veterinarians claim that if cattle were selected from herds in the hills, which are in the open most of the time, no tuberculosis would be found in such a herd.

Many owners often tell me they have solved the problem of infection, that it is in the silage as most of the reacting cattle taken in the vicinity are fed silage. I tell these owners what I believe to be the facts, namely that you first must have a tuberculous cow in your herd or the barn is infected to produce the disease. I have tested thousands of range cattle in the West, cows in the worst barns one can imagine, as well as in barns as sanitary as science and money combined can evolve, and have come to the conclusion that the real menace to the herd is the tuberculous cow. Not that cleaning and disinfection are to be slighted in any way, but we must not lose sight of the fact that we must get every last tuberculous cow if we are to have clean herds and wipe the disease from cattle in the United States.

To improve the resistance of the cow to tuberculosis, as we do with the human race, is a different matter altogether as we can arbitrarily eliminate the diseased cow, while we cannot do so with human beings. Again, if I am any judge, the evidence of a great amount of resistance to this disease in the cow is wanting I can cite dozens of instances of badly infected herds, kept under the most sanitary conditions possible, many of these herds were never in a barn, so I conclude that the cow does not possess any great resistance to this disease.

One testing cattle as a vocation will come to recognize that there are differences in the virulence of the germ in the different herds. A cow having a local lesion may be with a herd for five years and yet not transmit the disease, but in another the disease is so virulent that in a few months nearly every animal is infected regardless of sanitation. if they mingle together in the herd, apparent healthfulness or any other condition. In fact the very best looking animals may show the worst lesions.

We have cleaned up some of the badly infected herds, thousands of them, and we are getting toward our goal of a tuberculosis free country and need all the encouragement we can get. There should not be any reason why any veterinarian should become a pessimist. Think it over and think in terms of cows and not human beings.

Bath, N. Y. C. C. Walker

From present appearances the State of Washington will be the first one of the 48 states to completely wipe out its bovine tuberculosis.

Minnesota has now definitely planned to adopt the area plan of tuberculosis eradication. It is planned to charge owners for the testing at the rate of 25 cents a head and to pay the indemnities in the usual way.

The distribution of black leg vaccine was discontinued by the United States bureau of animal industry July 1, and the many applicants for this product are now advised to obtain it from manufacturers of commercial biologics.

It is not disputed that compulsory pasteurization of skimmilk, whey and butter-milk would help a great deal to control tuberculosis of farm animals, but just why this is not insisted upon as a preliminary control measure instead of waiting until animals grow up with the disease and then go to the expense of testing and slaughter, is difficult for the uninterested bystander to comprehend.

Editors' Personal Page

There is much more to be learned than we now know, so do not quit reading.

The average man or woman knows little about science and less about scientists.—McKenzie.

In Europe laymen are not allowed to use biologics in the treatment or prevention of disease of live stock.

The absolute triumph of a profession depends more upon the conduct of its individual members, than upon concerted action of the whole.

George Ade speaks of Kenesaw Mountain Landis as a go-getter and of Will Hays as a wound-healer. What an influence two leaders with such attributes could wield among us.

Oh, yes, the theory of evolution is probably as good as any, but it would inspire more confidence in our feeble minds and would have fewer opponents if it had done just a little "evoluting" during the past 50,000 years.

Do you use these words correctly? A **herd** of ponies; a **drove** of cattle; a **flight** of birds; a **band** of horses; a **flock** of sheep; a **school** of fish; a **muster** of peacocks; a **covey** of partridges; a **brood** of chicks; a **swarm** of bees; a **stand** of plovers; a **litter** of pigs, etc.

Is heaves in horses emphysema of the lungs as we have been given to believe or is this classical lesion but an effect of a functional derangement of the diaphragm, a paralysis of the diaphragmatic innervation, like roaring is paralysis of the innervation of the larynx? See article by Simonnet and Medynski, this issue.

"The art of healing has but a single ethic:—to live in charity, doing to others as we desire them to do to us and to all as we have opportunity."—Agustin of Hippo.

Horse practice while not booming is reported to be fair by several city veterinarians interviewed during last month.

Unlike material wealth, knowledge is not the exclusive possession of privileged persons.

One is much more likely to reach Utopia by endearing oneself to others than by the sordid chase.

Did you know that the automobile fatalities were 30 people each day, during 1920?

The old expression "The operation was successful but the patient died" is usually unfair for the reason that a patient as a rule does not die because an operation was performed, but in spite of it.

Well meaning resolutions which die out on the walls of our meeting halls represent just so much energy lost. We should be resourceful enough to make our messages heard and soak in where they will do some good.

If veterinarians preached about the good qualities of milk for children instead of the dangers (at the ratio of say, 50-50) the dairy business might be made to pay and the veterinary practitioner might find something to do.

Just to show how stupid the gynecologists really are some veterinarians are now going over their heads to give pregnant women advanced notice that Bang's bacillus might make them abort if they drank milk from cows affected with abortion diseases. And Barnum thought there was only one born every minute. His estimate was low.

There is an astonishing orthographic variation in the spelling of the immunizing agent against hog cholera appearing in veterinary literature. Some use the form "antihog-cholera serum," some "anti-hog-cholera serum," some "anti-hog cholera serum" and other prefer "antihog cholera serum." As two or more nouns used as a descriptive adjective should be connected by a hyphen the preference goes to "antihog-cholera serum."

Purely Practical

Swine require approximately one part of salt to 450 parts of feed.

Growing animals require salt and mineral supplements for maximum development.

The most palatable form of calcium for cattle and swine is steamed bone meal.

Sub-conjunctival injections of potassium iodid at the strength of one-half percent in sterile water are sometimes helpful in bad cases of periodic ophthalmia.

The mistake usually made in trephining to remove nasal tumors (polypi) is that of perforating the skull into the sinuses instead of the nasal fossa. To remove tumors the openings should be at the "roof" and not at the side of the skull.

In trephining the skull of horses to evacuate collections of pus in the frontal sinus the opening is invariably made too high. To properly drain this sinus the perforation should be made at the point where a line connecting the anterior end of the facial crest crosses the maxillo-nasal suture.

LUBRICATING JELLY FOR STOMACH TUBE

℞

Powdered ulmas	1 oz.
Glycerin	4 ozs.
Water to make	16 ozs.

Dissolve the elm bark in 10 ounces of warm water in a closed vessel for an hour or two, strain and then add the glycerin and water to make the desired quantity. A preservative may be added to prevent decomposition.—Reeds.

There are more forms of pyemic arthritis than is generally supposed.—Fitch.

Sheep suffer more from parasitic diseases than any other animal.

It is more profitable to feed skimmed milk or buttermilk to poultry than it is to pigs.

An occasional horse is observed that will kick by the hour when stabled. Will some one give the cause and remedy for this evil?

Thiosinamin or fibrolysin (Merk), according to a recent observation by Simonnet and Medynski of Paris, will cure a "heavy" horse for five to six months.

The administration of three or four drops of tincture of iodin (10%) in gruel five times a day is said to be an excellent remedy for diarrheal enteritis in calves.

The presence of sugar in the urine is of greater value in the diagnosis of suspected cases of rabies than glandular alteration or Negri bodies, according to Professor Porcher of Alfort.

PROFESSOR EVVARD'S MINERAL MIXTURE FOR SWINE

℞

Common salt (flake form)	30	parts
Spent bone black, bone meal, or bone flour	25	parts
Commercial kainit, potassium chlorid, or wood ashes	12	parts
Flowers of Sulphur		
Air-slaked lime, or limestone (finely ground) aa	10	parts
Glauber's salts	5.7	parts
Epsom salts	5	parts
Copperas	2	parts
Potassium iodid	0.3	parts

Mix and administer ad libitum.

Important News and Announcements

W. LESTER HOLLISTER
President Illinois State Veterinary Medical Association

When a man is elected to the office of president of any one of the big state associations in this country he doesn't need any further scrutiny as to his general deportment as a professional man; he is decorated with the brand of approval and is entitled to the distinction of being called a loyal and devoted colleague.

Hollister did not have to hide among strangers to succeed; he practices today and has always practiced in the town in which he was born—Avon, Illinois—the center of the horse, hog and corn industry of the state. He is 43 years old, a graduate of the Avon high schools (1898) and of the Chicago Veterinary College (1910). In 1918 his practice grew to such proportions that he took on a partner, C. L. Hayes, changing the name of the establishmen to Hollister & Hayes. Besides practicing veterinary medicine these enterprising young men have engaged in the hog-breeding industry and are owners of one of the finest pure-bred Hampshire herds, in that part of the corn belt. the Mississippi Valley Veterinary Medical Association from 1915 to 1922, and has been one of the guiding influences in the organization and development of that well known local association, and was elected president of the state association December 1921, after serving as vice-president for one year and as an active member of important committees since he became a member soon after graduating. During the war he was an officer of the veterinary corps.

FORTIETH ANNUAL MEETING OF THE ILLINOIS ASSOCIATION

The annual meeting of the Illinois State Veterinary Medical Association will be held in Chicago, December 5, 6 and 7, 1922. The headquarters will be at the Lexington Hotel, 22nd street and Michigan boulevard, where the sessions of the first two days will be held. On the third day, December 7, the meeting will adjourn to participate in the program of the United States Live-Stock Sanitary Association at the LaSalle Hotel.

The Illinois, which is the largest state association in the country, always carries out an exceptionally interesting and instructive program, featured by the best talent obtainable. This year the reporters secured are: Drs. U. G. Houck and Maurice C. Hall of the United States bureau of animal industry of Washington, D. C.; Drs. Robert Graham, I. B. Boughton and L. E. Card of the University of Illinois; Drs. A. T. Kinsley and A. D. Glover of Kansas City; Dr. E. Merillat of Wooster, Ohio; Dr. W. J. Embree of Chicago; Dr. T. H. Ferguson of Lake Geneva, Wis.; Dr. C. Schmitt of Dodgeville, Wis.; Dr. Edw. A. Cahill of Indianapolis; Dr. F. A. Laird, chief veterinarian of Illinois; Dr. E. L. Quitman of Chicago; Dr. R. E. Kluck of Foreston, Ill.;

Drs. A. M. Emmett and H. Preston Hoskins of Detroit, Mich., and others.

Members and visitors are invited to bring their ladies to participate in a theater party. All veterinarians visiting Chicago on account of the International Live Stock Exposition and United States Live Stock Sanitary Association are invited to participate in the sessions.

VETERINARY CORPS NEWS

Lieut. Col. William P. Hill, who is known to the veterinary profession as the first chief veterinarian of the American military forces in France during the war, has recently been assigned to duty as commandant of the Army veterinary school at Chicago.

Major Walter Fraser is relieved from duty at Camp Knox, Kentucky, and is ordered to Columbus Barracks, Ohio, for duty as station veterinarian and assistant to the corps area surgeon.

First Lieut. Philip H. Riedel has been transferred from Brooklyn, N. Y., to Fort Bliss, Tex., for duty.

First Lieut. Robert P. McComb is relieved as district veterinarian of Washington and has been sent to Fort Humphrey, Va., for duty.

First Lieut. Harry C. Fullington, of Seattle, Wash., V. O. R. C., has been assigned to the 162nd field artillery and First Lieut. Ernest E. Chase, V. O. R. C., of Portland, to the 361st field artillery.

CONGRESSMAN McKENZIE NOT HOSTILE

President W. H. Welch and Secretary H. Preston Hoskins of the American Veterinary Medical Association; President W. Lester Hollister and Secretary L. A. Merillat of the Illinois State Veterinary Medical Association; President L. B. Swingley and Secretary R. E. Kluck of the Northwestern Illinois Veterinary Medical Association; J. S. Koen of Bloomington; F. D. Yeager of Lena, and J. G. Hayes of Freeport, conferred with Congressman K. J. McKenzie of the House Military Committee at Freeport, Illinois, Friday, October 20, to discuss matters appertaining to the future of the veterinary corps of the army. The meeting was brought about by unfavorable reports as to the attitude of Congressman McKenzie toward veterinarians in the military service and resulted in a mutual understanding of all angles of the situation.

MILITARY VETERINARIANS WILL BANQUET

Invitations are out for all veterinarians of the regular army and veterinary reserve corps and for the discharged veterinary officers of the recent war to attend a formal banquet at the LaSalle Hotel, Chicago, December 7, at six-thirty P. M. Full uniform will be the credential for admission to the banquet room and all eligible are requested to announce their intentions to Lieut. Colonel W. P. Hill, 1819 West Pershing road, Chicago, as early as possible. Several addresses will be made on veterinary military subjects of current interest to the veterinary profession and veterinary service of the army. An all-around congenial evening's entertainment is assured.

In a list of 130 applicants who have accepted appointments in the reserve corps published in the Army and Navy Register September 30 only two were veterinarians. These were W. E. Muldoon, of Manhattan, Kansas, with the grade of major and H. J. Trotheridge, of New York City, with that of captain.

The second annual veterinary conference of the Kansas State Agricultural College will be held at Manhattan during "Home and Farm Week," February 5-10, 1923. The conference will feature diseases of swine.

The Nebraska State Veterinary Medical Association will meet at Lincoln, December 12-13. There will be a literary program of unusual merit and scope, a clinic at the agricultural college, a banquet and an entertainment for the ladies. A large attendance is expected. The officers are: Geo. A. Young, Syracuse, president; C. C. Hall, Omaha, vice-president; C. J. Norden, Lincoln, secretary-treasurer.

The winter meeting of the Minnesota Veterinary Medical Association will be held at the Radisson Hotel, Minneapolis, January 10-11, 1923. Secretary Fitch promises an instructive program and prospects of a large attendance. The officers of this association are: W. L. Boyd, president; A. J. O'Hara, first vice-president; B. L. Cook, second vice-president; C. P. Fitch, secretary-treasurer. The Board of Trustees is Drs. Boyd, Nelson, Lees, Remington and Fitch.

LADIES' RECEPTION COMMITTEE, ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION, 1922

Left to right—Mrs. E. L. Quitman, ChicagoMrs. W. Lester Hollister, Avon; Mrs. W. H. Welch, Lexington; Mrs. J. T. Hernsheim, Chicago; Mrs. L. A. Merillat, Chicago.

OFFICIAL OPENING OF THE NEW ONTARIO COLLEGE

Principal McGilvray sends herewith a hearty invitation to all veterinarians to attend the official ceremonies planned for the opening of the new Ontario Veterinary College at Guelph, Tuesday, December 12 at 2:30 o'clock P. M., and the banquet that will be held on the evening of the same day.

Among the speakers announced are: Hon. E. C. Drury, premier of Ontario, Hon. Manning W. Doherty, minister of agriculture for Ontario, Hon W. R. Motherwill, minister of agriculture for the Dominion; Hon S. F. Tolmie, M. P.; Sir Robert Falconer, president of the university; Dr. R. G. Rutherford, board of railway commissioners, Ottawa; Dr. F. Torrance, veterinary director general, Ottawa; Dr. J. R. Mohler, Reynolds, Ontario agricultural college and others.

The Ohio State Veterinary Medical Association will hold its annual meeting of 1923 at Columbus, January 31 and February 1 and 2. The business session will be held at the Deshler Hotel, January 31 and the banquet, February 1. The rest of the program will be carried out at the veterinary department of the university.

Secretary Moss promises a practioner's meeting featured by the best talent obtainable. It will be a typical Ohio meeting, a social and fraternal treat given for and by Buckeye veterinarians to which everybody from everywhere is invited.

The officers of the association are G. W. Cliffe, Upper Sandusky, president; C. W. Fogle. Leipsic, vice-president; D. C. Hyde, Columbus, treasurer and Harry T. Moss, Dayton, secretary. The executive committee is Drs. W. A. Axby, H. Fulstow and W. F. Wise.

The North Central Iowa Association met at the Chamber of Commerce, Fort Dodge, October 10. Among the contributors were: W. B. Niles, of the United States bureau of animal industry, who spoke on hog cholera immunization; Drs. Stange and Bergman of the state college and J. H. McLeod, of Charles City, who read a paper on municipal milk inspection. C. E. Juhl, of Osage, and G. W. Cady, of Mason City, were also speakers. The Fort Dodge Serum Company entertained the members and visitors at a banquet at the K. C. Hall. J. H. Lynch, of Fonda, is president, and H. J. Shore, of Fort Dodge, is the secretary.

The Eastern Iowa Veterinary Association held its annual convention at Clinton, October 25-26. Sixty-five members were present. A good program was provided and an enjoyable entertainment was given to the members and ladies, including a banquet and dance, featured by the famous film "Out of the Shadows." The contributors to the program were Drs. Roach, McIntire, Haskins, Crow, Morgan, Schrader, Odgers, Buxton, Wolfe, Ahlers and Hell. The officers are J. H. Spence, Clinton, president; C. M. Morgan, Manchester, vice-president; L. B. Graham, Cedar Rapids, secretary-treasurer. Drs. Hell, Crow and Potter constitute the personnel of the executive board.

The Treatment of Heaves With Thiosinamin*

By H. Simonnet and Ch. Medynski, Paris, France

AS THE professional press has called attention to the fraudulent use of thiosinamin (fibrolysin-Merk) by the Germans in masking heaves in horses restituted in accordance with the treaty in Versailles, it was thought interesting to investigate the exact action of this agent. In fact, the question does not limit itself to the restitution animals but can involve animals purchased in central Europe on account of the favorable rates of exchange at this time as well as special types of horses (ponies, etc.) that may be imported into France. Besides, the fraud may become a common practice in the French markets.

In our tests we employed thiosinamin in a solution of salicylate of sodium, 5% at the rate of one gram of thiosinamin to 10 cubic centimeters of the sodium salicylate solution.

The solution thus made is limpid. When cold it is slightly cloudy, but the cloudiness soon disappears when the ampoules are placed in a water-bath at 37° C. for a moment.

The intravenous injections require no special precautions; they produce no disagreeable reaction and when a drop is injected hypodermically, there is no edema.

Clinical Observations

1. A Britain mare, nine years old, affected with chronic roaring and heaves, operated for the former with William's operation, was then treated with intravenous injections of thiosinamin at the rate of one gram every five days during 40 days—from June 1 to July 10.

In spite of the warm weather the mare became useful already for fast work toward June 20, at which time the flank movements were less pronounced, and attenuated to disappear towards the 35th day of the treatment, to the point that an uninformed observer could not have picked out the mare from the other horses in the stable. The coughing was less frequent whether a large allowance of roughage allowance was given or whether the ration was limited to chopped straw and molasses. The discharge showed nothing in particular and was not abundant. The sounds observed by auscultation and percussion were not changed.

At no time was the mare given any drugs reputed as specific against heaves (arsenic, ergot, veratrin, etc.).

Later, the results of William's operation did not remain as good as at first; the mare showing some distress in respiration as a result of the laryngeal paralysis, but neither the cough nor the jerking respirations reappeared and the animal proved useful during six months.

2. Mare, a cross-bred Anglo-Norman, 15 years old, presenting pronounced symptoms of heaves, was treated under the same conditions as the former. July 30, August 3, 8, 13, 18, 23, 28 and September 2, 1921.

She was submitted to moderate work during the period of the treatment, even during hot days. She was strikingly improved in health, gaining 40 kilograms in weight. The cough disappeared toward the last of August and on September 15 the jerking respirations were completely effaced. Later, we lost sight of her.

3. During the same epoch, a Hungarian horse, 10 years old, of light type, used in a delivery service, presented symptoms of acute heaves to the extent of being absolutely useless. Administration of the usual medicaments (arsenic, etc.) having proved ineffectual, it was decided to try thiosinamin before condemning him. The treatment was given August 3, 8, 13, 18, 23 and 28, and on September 2 and 7, 1921.

On September 10, being less than 40 days from the beginning of the treatment the horse was put to work to the great satisfaction of the groom of the stable where the horse was a favorite. The apparent state of recovery continued until February, 1922, when the cough began to reappear.

The jerking respirations had not yet returned but a certain distress could be observed while at work during the succeeding weeks. Towards March 15 the heaves again became manifest and by April 15, seven months after the heave syndrome had disappeared, the same condition as existed before treatment, recurred.

4. The following observation is especially interesting, in that the subject was destroyed on account of an accident several weeks after an apparent cure had been obtained.

A Percheron stallion, used as a draft horse, was so "heavy" that the respiratory sounds caused by the jerking respirations could be heard at a distance. To employ the expression of the owner who understood well the gravity

of heaves, the subject in question "en avait une bonne voie."*

The patient was completely useless, even at a walk and his destruction was the only economic solution of the situation, especially because the general health was getting worse day by day. The appetite was fair but the emaciation was considerable. In spite of these conditions, treatment began October 3.

Within ten days the general condition was improved. The appetite was better and the horse could be used for toeing short hauls around the docks. Thereafter as the horse was able to earn his keep, the treatment ceased to be onerous.

At the end of the first month the improvement was so pronounced that the horse could be used without interruption for draft purposes. During the whole treatment the symptoms found on auscultation and percussion did not vary much. The cough disappeared first, and the nasal discharges were too slight to attract attention. The "heavy" respirations attenuated and disappeared entirely by November 10, which was the 37th to the 40th day after the initial treatment.

This succession in the disappearance of the symptoms was constant in all of the cases we had occasion to observe. During this interval the patients can be considered as cured since they can render the same service as normal horses. This subject worked so hard that it fell a victim of founder to such a degree that it had to be killed.

At the autopsy, the parietal pleura was found normal, the summit of the left lung presented an island of chronic broncho-pneumonia; and both lungs showed lesions of localized, vesicular emphysema on the anterior lobes and along the posterior borders.

The extent of these lesions did not seem to harmonize with the state of the animal at the beginning of the treatment (condition so grave the animal could not work). It seems the trouble was more a functional than an anatomical disorder.

The histological examination showed vesicular, emphymatous lesions characterized by distension of the alveoli, rupture of the elastic fibers, and without indication that either these or the broncho-pneumonia were in the process of healing.

These observations lead to certain conclusions:

From the practical point of view: Thiosinamin produces an improvement in worthless "heavy" horses to the extent that they are made as useful as normal subjects. Although the improvement is not permanent, the subjects can be used at least six months and are then more valuable for slaughtering.

From the view point of the pathogenesis of heaves: In the last case reported the gravest lesions were not in the pulmonary parenchyma. In fact, lesions of emphysema of considerable extent are often found at the autopsy of horses dying from accidental cause or in the abattoirs, which were never suspected of having heaves while living, nor suffered from any physiological hindrance.

On the other hand, the improvement observed, that is to say the disappearance of the cough and jerking respirations and the improvement in the general health, does not seem to be associated with any problematic reconstitution of the pulmonary alveoli. The essential trouble should rather be attributed to the jerking respirations whose cause might be sought in a functional derangement of the diaphragm.

Laulanie has showed experimentally that heaves "Betray sudden suspension of the diaphragm during its respiratory oscillation. It is this sudden cessation of the strength of the diaphragm that is reflected outside by the violent abdominal movements."

In the light of these classic ideas it is reasonable to suppose that thiosinamin acts by exciting the diaphragm through the medium of the phrenic nerves or their central origin, and an experimental and clinical study of its action might clear up the disputed pathogenesis of heaves and pulmonary emphysema. And would it not be possible to connect paralysis of the diaphragmatic nerves, by experimental section, by mechanical compression, through infectious causes, or by intoxication or auto-intoxication, with what is known of the role played by the recurrent nerves in the pathogenesis of roaring?

From the view point of redhibitory vices: After 40 days of treatment and for a period of five months or more the patients present no objective phenomena of the heaves syndromes. The cough ceases with its typical characteristics (dry, freakish, abortive); the jerky respirations which attract the attention of the buyer disappear completely or to an extent that they are not perceived; the character of the discharges are not abnormal; and the only symptoms are those that might be observed by auscultation and percussion. The coexistence of the vesicular murmur and hypersonority in certain points

*Idiom "H—l of a fix."

and the observation of crepitant rales and dry sibilant rales, are the only means by which a practitioner could make a diagnosis in cases thus treated.

But the nine days, accorded by the law of August 2, 1884, and regarded as sufficient time to disclose frauds from potion, secret remedies, etc. with a stramonium base, called "bande noire" (black company) and used by dealers to dupe the innocent, are notably insufficient in the case of a "heavy" horse "plugged" with thiosinamin.

It would be necessary to search for thiosinamin or its vehicle in the organism, which, a priori, would not be possible because the cure apparently lasts for a period of five months or more, during which time the fibrolysin would be eliminated.

The expert could not demonstrate the symptoms furnished by auscultation and percussion and would have to make a differential diagnosis between chronic pneumonia, chronic bronchitis, heart disease and pulmonary emphysema. It is very probable that the buyer would perceive the fraud too late to institute proceeding against the dealer and expert testimony would be of no service.

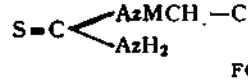
Furthermore is it absolutely logical to declare pulmonary emphysema redhibitory knowing that a "heavy" horse is as useful as a normal one once that the jerky respirations and cough have disappeared, both of which are due to an affection of the diaphragm?

It seems reasonable to disassociate:

1. Pulmonary emphysema, comparable in the horse, as to its clinical symptoms, its anatomo-pathological lesions, and its pathogenesis to that found in man, the dog, the ox and which is not accompanied with labored respiratory movements of the flanks from:

2. A special dysponea of the horse related to a pathological state of the function of the diaphragm (heaves) resulting from some undetermined influence, probably toxi-infectious, reflecting upon the pulmonary parenchyma.

Thiosinamin or allysulphocarbamid, ally-sulphno-urea, allythio-urea with the formula:



FORMULA

It is formed by the action of ammonia on the essence of mustard (isosulphocyanate of allyl. It is obtained by maintaining a mixture of two parts of essence of mustard, one part of absolute alcohol and seven parts of ammonia at 40° Centigrade. The crystals of thiosinamin are deposited in the course of several hours. They are rhomboid, colorless and fusible, bitter, soluble in 30 parts of cold water, more soluble in warm water and very soluble in alcohol and ether and in glycerinated water. Salicylate of sodium, benzoate of sodium, the phenols and especially resorcin increases its solubility in water. Antipyrin in the proportions of one molecule of thiosinamin gives by simple titration at about 30° a liquid syrup very soluble in water that remains unchanged for several months at ordinary temperatures. Heat exerts a destructive action.

Merk's fibrolysin is a mixture of thiosinamin (one molecule) and salicylate of sodium (a half molecule) dissolved in eight parts of water.

*Bulletin de la Societe Centrale de Medicine Veterinaire—Sept., 1922.

FOOD POISONING IN CHICKENS

The following report of a condition occurring in poultry in the practice of Dr. S. L. Stewart of Olathe, Kansas, is of considerable interest. The doctor reports that there was a rather extensive loss of poultry in his community during August and September. The diseased condition occurred in flocks under practically all conditions. The character of the feed and the general surroundings appeared to have no influence upon the prevalence of the disease or its fatality.

Symptoms

The fowls in question first appeared droopy; there was inappetence and within a few hours they would sink to the ground in a prostrate condition and as a rule would die within a few hours. The wattles and comb were generally anemic. There was no general rise of temperature.

Autopsy Findings

After autopsying several of the dead fowls without finding any definite lesions, it was noted that the crop of each bird autopsied contained several larvae. On further examination it was found in this particular outbreak that the larva in question occurred in each instance. On careful investigation of the surroundings in each outbreak, it was possible to find putrefying carcasses of rats, fowls or other animals in which larvae were developing.

Diagnosis

This condition was diagnosed as food poisoning or ptomaine poisoning.

Treatment

By withholding all food for several hours, eliminating the source of larvae and the giving of mild purgatives, practically all slightly affected birds recovered and no new cases occurred. One interesting thing concerning these outbreaks was that in some instances after cooping up the fowls, the disease occurred even two or three days after all possible source of contaminated foods were eliminated.

Comment

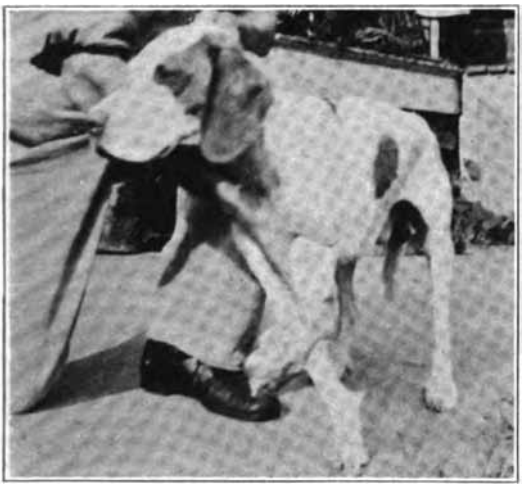
An interesting thing concerning the above outbreak is that Doctor Sanders of St. Louis has published several pamphlets relative to the effects of the larvae of the Lucillia caesar in

which he has given a detailed description of symptoms in fowls in outbreaks similar to the ones above described by Doctor Stewart.

An interesting question is: are the larvae responsible for the condition or is their occurrence merely a coincident?—A. T. K.

BRACHIAL PARALYSIS IN HOUNDS

Paralysis of a fore limb due to some form of violence to the region of the brachial plexus is a common accident in dogs and especially in hounds and field dogs. These injuries are often caused by automobile accidents but in the hunting dogs they are most often traced to collisions with snags, stumps, trees, etc., accidentally hit while running fast. The beagle hound is more often injured in this manner



than the larger breeds of sport dogs for the reason that they work so much in brush and thickets in contradistinction to bird dogs whose theatre of operation is more in the open and whose pace in the hunt is much slower and deliberate than the running hounds: beagles, coon dogs, grey hounds, etc.

The photographs furnished us by Dr. C. W. Cass of Toledo, Ohio, are of a hound affected with this condition. They graphically portray the results of this accident. The limb in Fig. 1 is seen to be completely paralyzed and as a result of secondary bruising from trailing and striking objects while running and walking about, the limb is so painfully excoriated and inflamed it is a serious impediment.

Like similar forms of peripheral paralysis in other animals, particularly horses, the course of the disease depends upon the character of the nervous injury. If the leg nerves are damaged beyond repair the paralysis is permanent, while on the other hand if the injury is such that the nerves axones are still capable of regeneration to the point of restoring their continuity, the muscular action will likewise be restored..

Chronic cases are hopeless and call for amputation. The success of such operations is shown in Dr. Cass' case.

Fig. 2 shows the hound after amputation, which was done at the middle third of the arm

under anesthesia. Two No. 1 H. M. C. (Abbott) tablets followed by a few whiffs of ether were used. The hemorrhage was controlled by torsion of the vessels and offered no difficulty. Ligation did not seem to be necessary.

Fig. 3 show the patient a week later at which time healing was progressing exceptionally well, practically by primary union.

At the end of a month the hound was well, running about apparently ready for the chase.

"What's Wrong With the Veterinary Profession?"

By Edward M. Boddington, Secretary and Legal Advisor for the Associated Serum Compainies of America

THE fact that the veterinary profession is not attracting its proportion of students in preparatory schools and colleges is not only regrettable but is alarming. A few decades at the present rate would mean that the live stock industry of America would soon be without skilled veterinary protection and must suffer serious devastation from disease. A profession must have group and individual possibilities combined in order to attract new energetic blood to its ranks. If public opinion is adverse to a man's profession, be he ever so wise and tactful, he will have tough sleighing. A profession is judged by the sum total of opinions formed by contact and experience with the individual members thereof. Why isn't the veterinary profession attractive to young men in school? There must be something socially, economically or psychologically wrong. The good veterinarian could probably diagnose the case better than an outsider, and we sincerely trust that some will undertake the task for the betterment and welfare of a most necessary and essential profession.

Some Shortcomings Related

A few constructive suggestions from those who have dealt constantly and must ever continue to deal with the veterinary profession might be advanced for your consideration: Inadequate state license laws; low standard requirements for admission to practice; inaptitude and failure of individual practitioners to keep abreast of the times in modern thought; failure of many practitioners to acquire, learn and use improved methods of treatment; tendency on the part of the individual veterinarian to isolate himself; lack of interest in the profession as a whole; that is, failure of many veterinarians to subscribe, pay for and read veterinary journals and new scientific treatises, lack of interest in veterinary associations; the permitting of pamphlet instruction to the laity without in any manner attempting to overcome adverse propaganda; lack of business methods in practice and failure of many to get just business obligations. Some of these general things apply to many individual practitioners.

Patronize the Associations and Journals

If you don't wake up to a larger and bigger service to the public, you will fail to protect yourself and your profession. We believe the veterinary profession is more essential than the practitioner dreams of, and the force to place it where it rightfully belongs in the live stock industry of America must come from within and not without the ranks. The veterinary association is your principal spokesman. The practitioner should take enough interest in his state and national association to support it, not only in a small financial way but to willingly attend meetings for the purpose of raising both theoretical standards and practical standards. The veterinary journals and publications of America are the only monthly universal ties and threads by which the individual practitioner may link himself as a unit with the whole profession. The American veterinary profession should not neglect to use the splendid veterinary journals of the country as a forum for the expression of its thoughts. It is easy to let somebody else run things but the individual members of your profession must be their own marksmen and must do their own shooting. If your environment has lulled you into slumber and solitary confinement, the time is at hand when you must awaken to the many inroads and drawbacks facing your profession and put up the kind of fight which will make the profession the place in society it rightfully deserves.

Advertise

The farmers have gone through an abnormal, chaotic period in economic history, and since the veterinarian is a necessary adjunct to the live stock industry, he has not escaped the effects of the economic storm. It is unethical to advertise directly but if you don't tell the truth about yourself, demonstrate and sell your ability to your clients, you will be forever waiting for busin-

in a theoretical, ethical manner. A chairwarmer also longs, hopes and dreams of success but never attains it. Make the live stock industry of America realize and understand the necessity of veterinary service.

Business Judgment Lacking

As schools formerly neglected to train professional men in the fundamentals of business, there has been a laxity in the business judgment displayed by a large number of veterinarians, and other professional men throughout the country. Common fundamental business judgment must be used by every professional man. It is one thing to charge correctly for the service and treatment, and it is quite another thing to COLLECT a reasonable fee for such service and treatment.

If you don't collect your bills at the psychological moment, time and a cunning desire on the part of some of your clients to get out of paying will not only rob you for your service but will cause the hands of some of your clients to slip down into your own pockets and make you pay for serum and biological products.

A serum or biological house must have cash for their product. Good credit does not pay for the materials used and the overhead in production. A client who can't pay cash or in bankable securities isn't worth having. The failure of many a veterinarian who has contributed his share to the present status of the veterinary profession in the public's eye, can be directly chargeable to the utter lack of businesslike methods. The merchant can only extend credit to a customer who promptly meets his bills. You must sell your learning, experience and the treatment administered, for dollars; otherwise you will be a failure.

Serum Companies Establish Credit Rating

Other professions have business and commercial ratings but the veterinary profession has never been rated. The Associated Serum Companies of America has established an extensive credit rating system. Because of the many losses sustained through insolvency and bankruptcy and the failure of many veterinarians to pay their bills, the association found that a credit system was essential to the welfare.

Financial conditions demand cash and necessitate the sale of serum for cash.

Such a credit system, however, serves two good purposes; it protects the companies by listing the credit rating and standing of the members of the veterinary profession, and protects the honest veterinarian, who pays his bill, from the competition of the one who purchases on credit without any intentions of paying. If your competitor steals his serum, he, of course, can sell it and administer it cheaper than you can because it costs him nothing. The credit system is therefore a great protection to the good veterinarian and will in time eliminate those who are unreliable.

Grievances Cited

We might enumerate a few "business practices" which are common to some veterinarians. Some practitioners are working for nothing—they have $10,000 or $12,000 on their books all the time and can't collect enough money to pay their grocery bills. Farmers in any community soon learn Dr. Jones' weak spot and advise their neighbors to call him in because it doesn't cost them anything. Jones has the business practitioner backed off the map for a few years. But who finally comes out on top—the fellow that has a big clientele and works for nothing, or the veterinarian who collects for his services?

Some practitioners are in the habit of splitting up their credit account of $4,000 or $5,000 with six or eight serum companies and paying as little as possible on each bill to get by, hoping that they may outlive or outwit the six or eight companies which they think they have been fooling. Other veterinarians have credits booked with serum and biological houses of approximately $2,000. They make a payment of, perhaps $500, and in a day or so thereafter endeavor to secure an order for serums and biologics equal to the cash payment which they made. Sharp practices of this character are to be avoided and are only called to your attention to disclose the necessity for the commercial houses to accurately catalog and rate the members of the veterinary profession. We feel sure that we will have the cooperation and assistance of the good first class veterinarians in this regard.

The serum industry has passed the pioneer stage and is now pursuing a purely business policy. We recognize and urge the need of a veterinary profession. We must find a market for our products through the veterinarian, because he prescribes them and your profession is the only safe insurance the live stock industry can afford to support. It needs, however, new life and power from within to give it an important place in that industry.

According to press reports the state board of health of California has passed a regulation compelling the vaccination of dogs against rabies. The regulations provide for tagging of dogs so vaccinated.

Anthelmintic Medication for Parasites in the Lumen of the Digestive Tract

By Maurice C. Hall, Associate Editor.

In a previous paper the writer has summarized, in a general way, our knowledge of anthelmintics for the control of worms outside of the lumen of the digestive tract of man and animals, the definite knowledge on that subject in the fields of human and veterinary medicine not making a total too large for brief consideration in one article. In this paper the subject of drugs for the removal of parasites from the lumen of the digestive tract will be considered, primarily with reference to their use among domesticated animals, with little consideration of the rather large subject of anthelmintics used in human medicine to remove parasites from the lumen of the digestive tract.

We have at the present time quite satisfactory treatments for the removal of many of the common parasites of the digestive tract, the treatments in some cases being established by critical tests and the tests subsequently supported by clinical experience, and in other cases being established by clinical experience and clinical experience subsequently supported by critical tests. On the other hand, there are a number of parasites for which we have as yet no satisfactory treatment, notably the spirurids living partly in the lining and partly in the lumen of the digestive tract, and the tapeworms of birds.

FASTING

In administering anthelmintics by mouth, it is customary to fast the animals to be treated in order to diminish the amount of ingesta in the digestive tract, this ingesta acting as a diluent for the anthelmintic and also affording mechanical protection to worms in some instances. The length of the preliminary fast varies with the nature of the host animal and the location of the worm. A fast of 18 hours has been found to be adequate as a preliminary to treating horses for bots, but it seems necessary to fast a horse 36 hours in order to obtain satisfactory results in treating to remove strongyles from the large intestine. The directions given in regard to fasting should, therefore, be observed. Additional information is needed in some cases as to the length of the fast to be observed, but the directions are as accurate as it is possible to make them in the present state of our knowledge and in many cases a different fasting period, especially a shorter one, is known to give inferior results. Animals may be watered soon after treatment, but should not be fed for two to three hours, as feeding immediately after treatment defeats the purpose of the preliminary fasting.

MASS TREATMENTS VERSUS INDIVIDUAL TREATMENTS

There is always a demand for mass treatments where large numbers of animals are to be treated, and this demand is not limited to the farmer but includes some veterinarians. It is a very natural demand, since the individual treatment of large numbers of animals, especially those where the value of the individual animal, such as a chicken, is low by comparison with the larger domesticated animals, requires a disproportionately large amount of time in the aggregate. The farmer feels that the benefits derived from a treatment of this sort in such cases do not compensate for the expense incurred in paying a veterinarian for such treatments—and in some cases this would be true. For practical purposes, therefore, we may use mass treatments where a certain degree of benefit may be expected and where individual treatments, which would be more beneficial, cannot be used owing to the time and cost factors.

Mass treatments are usually in the nature of treatments by means of substances added to the feed. Animals are usually fasted before such treatments, but the fasting is not for the purpose of emptying the digestive tract, as a rule, so much as to make the animals hungry enough to eat food to which some more or less unpalatable anthelmintic has been added. The presence of the food directly diminishes the efficacy of the anthelmintics, but there is usually some anthelmintic action with suitable drugs and as the food dilutes the anthelmintic and in this way, as well as mechanically, probably protects the mucosa of the digestive tract against irritant action and retards absorption to some extent, somewhat larger doses of the drug may be tolerated than would be tolerated by a fasting animal which was not given feed with th-

drug. On the other hand, it must be remembered that where a drug is mixed with the feed for a number of animals, some animals will eat more than others, and perhaps get more of the drug than can be well tolerated, whereas other animals will find the drug too distasteful and will get too little to be of value. The animals which eat little or none of the medicated feed may be the ones which are most in need of treatment. Mass treatments are most used in the case of poultry, the animals having the smallest value per head and the ones which are kept in the largest numbers as a rule. Chickens and swine are probably the most difficult to catch of the domesticated animals, and swine are probably the most difficult to treat, these things accounting in part for the demand for mass treatments for these animals.

COMPLICATIONS DUE TO LARVAL WORMS PRESENT.

In a paper on the treatment of horses for the removal of worms the writer has called attention to the fact that there are many cases in which worms, especially certain nematodes, migrate through the body of the host or develop in certain tissues for days, weeks or months, and that although anthelmintics may remove all of the adult worms present at the time of treatment, these larval or agamic worms may enter the lumen of the digestive tract soon after treatment and be found there, sometimes, in the case of the horse strongyles for example, as mature worms very soon after treatment. At present the only action that can be taken in this connection is to repeat treatment at such intervals as the life history of the worms indicate as appropriate, or as the clinical condition of the animal calls for it, or as the recurrence of eggs in the feces shows the recurrence of infestation.

PERIODS DURING WHICH WORMS ARE PASSED.

The impression is quite prevalent that almost all worms passed after an anthelmintic come away in the first 24 hours after treatment. This is not the case. They commonly come away for two or three days, and bots may pass for over 17 days after treatment. It is therefore unsafe to conclude that a treatment is a failure because worms did not come away during the first day after treatment. In the treatments given in this paper there is a statement as to the length of time worms have been observed to pass after treatment wherever such information is available. It is quite probable that worms come away under some circumstances for even longer periods than those given.

EXAMINATION OF FECES FOR WORMS PASSED.

Worms embedded in a fecal mass are easily overlooked, especially by persons unfamiliar with worms. The careful veterinarian will disregard the statement of the farmer, stable hand or dog owner who assures him that no worms were passed after treatment. A glance at the feces or a casual poke with a stick or straw can not be depended on to give accurate information. The most satisfactory method of examination is to screen the feces through a screen of suitable size to retain the worms, washing as much of the fecal matter as possible through the screens, and then examining the screen. If this cannot be done, the feces should be thoroughly picked apart in a good light and carefully examined.

TREATMENTS FOR HORSE PARASITES.

Bots: Fast 18 hours. For a 1000-pound horse, carbon bisulphid in capsules; 1 dose of 22 cc. (6 fluid drams); or 2 doses of 15 cc. (4 fluid drams) each with a two-hour interval between doses; or 3 doses of 11 cc. (3 fluid drams) each with an hour interval between doses. No purgation; oil immediately following treatment especially contraindicated. Bots pass for over 17 days. Efficacy, approximately 100 per cent. Carbon tetrachlorid in 25 to 50 cc. doses is approximately 25 per cent effective in removing bots. Other drugs are ineffective.

Ascarids: The same treatment as for bots. Oil immediately following treatment contraindicated. Worms may pass for several days. Efficacy approximately 100 per cent for carbon bisulphid and apparently the same for carbon tetrachlorid.

Palisade worms (Strongylus spp.): Fast 36 hours. Oil of chenopodium, 16 to 20 cc. (4 to 5.3 fluid drams) in capsule, followed immediately by one liter (approximately one quart) of raw linseed oil or by aloes ball. Worms may pass for six days or more. Efficacy, 95 to 100 per cent.

Another treatment: Fast 36 hours. Oil of turpentine, 64 cc. (two fluid ounces), in capsule, followed immediately by a liter of raw linseed oil or aloes ball. Efficacy (ascertained on one animal only), approximately 50 per cent.

Another treatment: Carbon tetrachlorid, 25 to 50 cc. (6.5 to 13 fluid drams), in capsule. No purgation. Efficacy, 100 per cent.

Cylicostomes: The same treatment as for palisade worms. Worms pass for six to twelve days. Efficacy, approximately 100 per cent for chenopodium and oil of turpentine; variable for carbon tetrachlorid—from 100 per cent to less than 50 per cent.

Pinworms: Oil of chenopodium or turpentine as for palisade worms. Worms pass for two days. Efficacy, 100 per cent.

Stomach worms (Habronema spp.): Uncertain. It is probable that carbon bisulphid, carbon tetrachlorid, oil of chenopodium, and possibly turpentine and other drugs will kill the worms free in the lumen of the stomach, but it is difficult to obtain evidence on this subject as worms killed in the stomach are probably digested as a rule. The worms embedded in the mucosa or buried under mucus appear to be adequately protected against the action of these and other known anthelmintics. It has been found by Hodgkins that numbers of these worms may be washed out of the stomach by gastric lavage with the stomach tube. Possibly anthelmintics could be effectively administered in this way. In some cases repeated treatments by mouth or by lavage might remove all or practically all of the worms present.

Tapeworms: The presence of tapeworms in the horse is usually ascertained postmortem and practically nothing is known in regard to treatment. As the worms occur in the stomach, small intestine and large intestine, it would require critical tests, which have not yet been made, to determine the efficacy of drugs against these worms with any degree of accuracy. The indicated drugs for test are those in common use against tapeworms, such as oleoresin of male fern, kamala, etc.

TREATMENTS FOR CATTLE PARASITES

Ascarids: Treatment uncertain as we lack the findings of critical tests of anthelmintics for removing these worms. Hornby finds turpentine in doses of two to four fluid drams in a mixture of two fluid ounces of linseed and castor oils effective when this dose is given on each of two successive mornings to calves and a third dose is given a week later. A single dose of two drams is ineffective and one ounce is too toxic.

Stomach worms (Haemonchus contortus): The copper sulphate solution and the tobacco and copper sulphate solution noted below in connection with stomach worms of sheep are probably of some value in controlling stomach worms in cattle when given in appropriate doses, 100 to 300 cc., but in the absence of critical tests we cannot make very positive statements in regard to this. Carbon tetrachlorid in doses of 100 cc. to calves weighing 80 to 114 kilos (175 to 250 pounds) removed all the stomach worms, but had a toxic effect on the animals, the smaller one being dead the fourth day. Adult cattle have succumbed to doses of 22 cc., but good clinical results are reported from doses of 32 cc. (one fluid ounce) of carbon tetrachlorid in one pint of olive oil for animals weighing 700 to 800 pounds, and in doses of half this amount of carbon tetrachlorid and olive oil for yearlings. At present we have too little evidence and experience on which to make recommendations.

Hookworms: The solution of copper sulphate and tobacco discussed in connection with stomach worms in sheep has been reported as effective against hookworms in sheep and might be effective against hookworms in cattle, especially in repeated doses. Carbon tetrachlorid, in the tests on calves referred to above, removed almost half of the hookworms from one calf and 99 per cent of those present in the other, each calf having hundreds of worms. As noted, the doses given were apparently too large and this subject requires more investigation. Marek has reported satisfactory results from the use of a proprietary composed of lipoid-soluble constituents of male fern.

Nodular worms: Csontos and Pataki report good clinical results from the use of the proprietary remedy referred to above as used by Marek against hookworms. Carbon tetrachlorid, in the tests of calves referred to above removed all the nodular worms from both animals. It is not yet known what dose will maintain this efficacy and at the same time be safe for cattle; the dose given above was too large for safety.

Small trichostrongyles: Nothing is yet known in regard to the removal of these worms from cattle, but carbon tetrachlorid has been found more effective against similar worms in sheep than any other drug yet tested and might prove effective here in suitable doses.

Tapeworms: The solution of copper sulphate and tobacco discussed under the heading of stomach worms of sheep is said to be very effective against tapeworms in sheep. In doses suitable for cattle, perhaps 100 to 300 cc., this treatment might also be effective against tapeworms in cattle.

Tapeworms: Copper sulphate and tobacco solution as for stomach worms. Efficacy, usually 100 per cent. Copper sulphate solution alone will remove some tapeworms.

Sodium arsenite and copper sulphate as for stomach worms.

Treatments which have been said to be effective, but concerning which we have no evidence from critical tests are: Kamalla, one dram to lambs; kousso, two drams to lambs; koussin, two grain doses; oleoresin of male fern, one dram with two to four fluid ounces of castor oil; areca nut, freshly ground, one to three drams to lambs.

Auricular Mange of the Dog and Cat: Canker

THE parasite that causes ear mange belongs to the group Arthopodes, class Arachnides, order Acarines, family Sarcoptes and species Dermatophages. Already in 1836 Hering wrote about auricular mange of dogs, while Huber in 1860 discovered it in the cat and described it under the name of "symbioste du chat."

The parasite is found almost exclusively in the auditory conduit and on the external face of the concha. In the adult state it can be seen with the naked eye in the form of small gray mobile bodies, the male measuring from 0.38 to 0.45 mm long and 0.28 to 0.35 mm thick while the female is 0.49 to 0.56 mm long by 0.38 to 0.42 mm thick.

This chorioptes lives on the surface and does not burrow like the sarcoptes, and besides its buccal organs are not formed to prick through the skin like the psoroptes met with so frequently in the ears of rabbits. The itching produced by them is not due alone to their movements but probably to a toxic substance the parasite secretes and which is capable of irritating the fine skin of the ear. The pruritis is especially intense during the night because the patient is quiet during that time and the activity of the parasite is augmented by the heat.

It causes desquamation of the skin and a pronounced exudation, circumstances favorable for the parasite to nourish itself in the epidermic cells and probably also in the cerumen. The buccal organs are formed so as to stir up the small delicate scales and lift up small fragments into epidermic scabs.

Associated with Otitis Externa

In regards to the frequency of auricular ascariasis, Mecker observed that at the Berlin clinic, 17% of the dogs affected with otitis externa showed the presence of this parasite, and that in researches he never found the parasite in dogs not affected with this disease. He also found that the parasite sometimes causes only pruritis, the otitis being secondary Hebrant and Antoine have often observed it in the cat and Beederlich demonstrated the presence of the Dermatophages auricularis in 30% of the cats presented at the Dresden clinic during 1919-1920.

Extraneous Viability

The duration of life of the parasite outside of the body depends upon the temperature and humidity of the environment in which it is found. It lives two to three times as long in warm humid air as in air warm and dry. At the temperature of the body it is very mobile while in a higher temperature and in a dry medium it dies rapidly.

The Influence of Parasiticides

The effect of antiparasitic remedies on the parasite is varied. Volatile and odorous products, especially ethereal preparations, are the most efficacious. Biederlein is of the opinion that the impression that oleaginous substances exert a favorable medicinal action, is not well founded. He found that the mites lived five days in liquid paraffin. Henry believes that the males resist longer than the females in contact with parasiticide substances and the larvae resists longer than the adults. As regards the eggs they owe their resistance to the thick shell that covers and protects them.

In Vitro Experiments Deceptive

A good many authors have studied microscopically the acaricide properties of most all parasiticides. On this subject Jacobs has found that these experimental results are not in harmony with those observed in practice. It is likely enough that there are factors on the living skin that are capable of exerting a useful effect, as for example in the case of sulphur.

Formerly it was thought that parasites in contact with parasiticides under the microscope were dead when they became immobile.

but it was found later that immobility was not necessarily death. In fact, according to Jacob and Humans parasites that appear to be dead may soon revive when placed in a favorable medium. Jakob especially noticed that lice and fleas that were apparently dead when placed in water soon retrieved their quick movements when dried on filter paper and then re-heated.

Henry found in experimenting on mites of the horse that they could be brought into a latent state that would deceive the novice. This latent state is caused not only by the toxicity of the parasiticide but also by the surrounding temperature. The temperature of the skin is 30° to 32° C., while that in the ear is as high as 36° to 37°. At this high temperature the mites are the most active and the activity decreases proportionately with the temperature, to the extent that at 15° to 10° movements are very limited, and Henry believes that the effect of volatile agents is due more to the reduction of local temperature than upon their toxicity for the parasite. A re-heating will produce new movements that will continue until the real toxic effects begin, bringing on a new latent state that might be considered as an act of defense against the action of the drug.

To differentiate the apparent from the real death it is only necessary to place the mites in a favorable medium for a certain time, when movements will soon become apparent if the death is only apparent. It sometimes happens, however, that the parasite has been damaged to the point that its movements are very limited and that it dies later. To effect this control Henry used arachides oil at 30° to 32° C., in which parasites can live for several days and also nourish themselves as shown by the fact that small drops of oil can be found in their bodies, and that females will deposit their eggs in the oil.

Among the agents capable of rapidly killing parasites in vitro, is coal tar and its derivatives (phenol, creolin, lysol) and the etherized oils.

Veenendaal used a large number of mites taken from the ears of cats to test the parasiticide strength of drugs with the aid of the microscope at laboratory temperature during the warm month of the summer of 1921. A few of the results are tabulated as follows:

1. In oil of cedar, there were movements after three days.

3. In glycerin Idem.

4. In castor oil Idem.

5. In sulphur precipitate there were movements after 20 hours.

6. In alcohol, there were slight movements after 40 minutes.

7. In 3% creolin, there were no movements after three minutes.

10. Saponified cresol, there were no movements after 12 minutes.

11. Benzin, there were no movements after 15 minutes.

12. Hydrogen peroxid, there were very active movements after 30 minutes.

13. Coal tar, there were no movements after three hours.

14. Resorcin, there were no movements in 40 minutes.

15. Phenol, 5% there were no movements after 35 minutes.

The author found that creolin was more active than lysol and that the heated solution was more active than cold.

It is easy to discover the presence of parasites by spreading some detritis under a watch glass, heat it in the sun or incubator and then watch the mites abandon the scabs and pass to the warm glass in the form of small gray objects. Generally the females are more numerous than the males.

The affection often attacks both ears but more often only one. In serious cases the secretion is purulent and abundant and may cause ulcers in the external auditory conduit, tympanum and even provoke otitia media and interna. The ears lose their hair and bleeding ulcerous wounds appear which cicatrize slowly because of the constant scratching.

The treatment that has given the best results is a one per cent solution of carbolic acid in glycerin applied twice daily, wiping out the ear well with pledgets of felt. A three per cent solution of resorcin in alcohol is given as the best treatment of the otitis.

(Excerpt from Revue Veterinaire, Aug.-Sept., 1922)

Hunting on Sunday is prohibited in all States and Provinces east of the one hundred and fifth meridian except Illinois, Louisiana, Michigan, Texas, Wisconsin, and Quebec, and in some States certain days of the week constitute closed seasons throughout the time in which killing is permitted, and hunting is prohibited when snow is on the ground in New Jersey, Delaware, Virginia, and Maryland.

Fright Disease in Dogs

By J. E. Hodges, Maiden, N. C.

THE above term is suggested by the symptoms and is quite universally used in many sections of the South by dog breeders, handlers and the laity in general. Almost every veterinary journal copies some inquiry and most of the dog and sporting pages contain articles concerning it. While the syndrome is not always uniform, the condition that suggests the name is usually present, viz. running, barking, and frequently seeking a dark recess in which to hide and if in the field, running to his master, crouching at his feet and whining as if in fear. Some cases, especially the more advanced ones, will attack anything with which they come in contact.

Syndrome Varied

In some, the attack will begin with a convulsion and end with running, while in others the attack ends with a convulsion from which the dog emerges very nearly normal, except for a slightly bewildered appearance. In still other cases, the convulsions are entirely absent. Some run in a circle, others leave home and do not return for hours or even days. In others the attacks recur every two or three days, and in some, every hour or even oftener. Some dogs show but little change in general appearance, while in others there is rapid emaciation and loss of vitality.

Parasites and Distemper Apparently Not the Cause

A few receiving no treatment will recover, some spontaneously but generally by diminution of severity of attacks, and increase of length of intervals between the attacks. Some die under treatment, though I have lost but one case while treating dogs, not only in my territory, but in a number of other states. The principal theories advanced, attribute the etiology to intestinal parasites or effects of distemper. I have seen it in puppies never exposed to distemper and that had been successfully wormed, in adult dogs not exposed to and immunized against distemper, and in dogs that had recovered from distemper two years ago. I have posted dogs dead from the malady, and found in no case any parasites nor gross pathological lesions, save one, to which I shall refer later.

Line Breeding May Predispose

Setters and pointers seem especially subject to the disease, with collies next, though I have seen it in all breeds with which I have come in contact. I believe a highly nervous temperament, produced perhaps by too intensive line breeding, predisposes the trouble.

Not all dogs showing nervous symptoms and supposed to have "fright disease" are afflicted with it. I have recently had some communications from a veterinarian in New Jersey, regarding two highly bred dogs, belonging to one of his clients. From the history and description of these cases, I am confident that he is dealing with an active, cerebral hyperemia. I have observed a few cases like these in my own patients, where the attacks are almost invariably produced by excitement or exercise. These usually respond to thorough purging and the administration of fluid extracts of hyascyamus, canabis Indica and gelsemium.

Anal Abscess Frequently Found

In regards to the one lesion mentioned above, it is abscess of the anal glands and has been found in about 60% of my patients. Other practitioners have reported that they find it in many of their patients. Where these exist and promptly rupture and evacuate, the recovery is hastened. I have read some reports of eruptions in these cases similar to those of distemper, but the newest thing to that, which I have seen is in one patient that exhibited an intense itching over the region of the crural nerves and branches, which I passed up as a neurodermatitis and which disappears on recovery of the patient.

No Specific Treatment

I have found no specifics and have no set line of treatment for this disease, but treat it symptomatically. Rupturing the anal abscesses, the liberal use of castor oil and mineral oil, chloral, the bromides, gelsemium and lobilin sulphate have saved my patients for me. Less than 5% have shown any recurrence of the symptoms. I would like to hear from someone who has facts, not theories, that will explain the etiology.

Stanhope, Bayne-Jones described an infection in cats due to a streptococcus. This outbreak occurred in a lot of twenty-five cats. The disease was manifested by sneezing associated with a thin, greenish nasal discharge and conjunctivitis. The affected animals became prostrated and usually died in four or five days.

Sequels of Hog-Cholera Immunization

By A. T. Kinsley, Associate Editor

LOSSES of swine after immunization occur quite frequently in certain sections of the country. These losses are unfortunate because they afford an opportunity to condemn antihog-cholera serum. The skeptical attitude of some is not difficult to comprehend if the history of swine diseases and their control is carefully studied.

A method for the production of antihog-cholera serum was announced by Dorset and his associates in 1904. Although antihog-cholera serum was not produced in large quantities for several years after its discovery, it was found to be very effective in the control of the disease. It is also a fact that hog-cholera was very virulent until a few years ago and was the only swine disease thought of at that time. During the last few years there has been a variety of complications observed that occur as sequela, and hog-cholera also occurs as a complication or a sequel of other diseases. The inter-relation of hog-cholera and other swine diseases is conceded by those familiar with field conditions.

Specific Against the Filterable Virus Only

Antihog-cholera serum is a specific in neutralizing the filterable virus, but is of no value in any other disease. A few have advocated that other diseases such as necrotic enteritis and the pulmonary form of hemorrhagic septicemia were modified forms of hog-cholera and recommended the use of antihog-cholera serum and, although the losses may have been temporarily checked, the serum was not effective and after repeated trials in such cases its value even in the control of hog cholera was condemned by some swine producers.

Perplexities Enumerated

After a careful consideration, we submit the following as possible causes of immunization perplexities:

1. Swine not in condition when vaccinated and improper care after vaccination.
2. Swine in the incubation stage of disease.
3. Swine that are contaminated with gas producing microbes obtained from contaminated lots.
4. Faulty technic of administration.
5. Impotent serum.
6. A virulent virus or virus with diminished virulency.
7. Diseases that occur after the swine are immunized and probably have no relation to the immunization.

The foregoing factors are not arranged in the order of frequency of occurrence.

The successful practitioner is one that makes a careful examination of every herd of swine prior to vaccination, in order that he may know the exact condition of the swine at the time that serum and virus are given. He who does not make such an examination cannot know the condition of the herd and difficulties are likely to follow.

Preparatory Conditioning

1. The condition of swine at the time of treatment is a very important factor in the results of immunization. The reaction following the injection of serum and virus in hogs that are properly prepared is usually very slight and frequently is unnoticed. If swine are not properly prepared for the reaction, the losses from digestive derangement may be great.

Swine are properly prepared for immunization by diminishing the feed for three or four days and withholding all feed for twenty-four hours before administration. The best results are obtained by feeding slop during the preparatory period. Swine should receive a very limited ration for several days after immunization and it should consist of slops, skimmilk, semi-solid buttermilk or other like products. It is very probable that the extraordinary losses that occur in stock pigs are due to heavy feeding immediately after immunization.

Sixty percent of one lot of shotes that were apparently healthy at the time of immunization, died within ten days and on investigation it was found that they had been kept in a dry lot on rather a meager ration and after the treatment were immediately turned into a corn field. Digestive disturbances resulted as a consequence of gorging, and heavy losses occurred.

Incubation Stage Sometimes a Hazard

2. An apparently healthy herd may be found to be diseased when the history is ascertained and a careful examination is made. Some of the most extensive losses have occurred in apparently healthy swine that were given antihog-cholera serum and virus on the supposition that they were free from disease. The importance of determining the exact condition of swine

prior to the use of antihog-cholera serum and virus is illustrated by the following mentioned events:

A Missouri practitioner was called to immunize one hundred, sixty-pound shotes, apparently healthy. He was familiar with the surroundings and assumed that there was no hog cholera or other disease of any importance on the premises and assured the owner that there would be no serious effects. On the tenth day, ten shotes were dead and several others off their feed. On examining several of the dead ones, the usual lesions caused by the filterable virus were found, viz: congestion and hemorrhages of various lymph glands, petechial hemorrhages in the lungs, kidney, mucosa of the larynx and bladder. In addition to the above, there were extensive lesions of necrotic enteritis consisting of ulcers and an adherent exudate on the intestinal mucosa. Formerly, such findings would be considered positive evidence of a cholera break. Fortunately, the practitioner in this case had treated two other herds in the same community with serum and virus of the same serial number that remained in good condition.

There is no question but that the loss of these hogs was in part due to the activity of the filterable virus and that the practitioner was at fault for not having discovered the necrotic enteritis before injecting them. It is a well known fact that swine affected with necrotic enteritis should not be given hog-cholera virus.

Hog-cholera in the incubation stage may not be recognized unless a careful examination is made and considerable time is devoted to actual inspection of the herd and study of its history. Great losses may occur from the use of serum and virus during the incubation stage of cholera. In one instance, some sixty swine weighing about 100 pounds were given the simultaneous treatment and two days after, fifteen of them were dead and nearly all of the others showed marked evidence of illness. A careful investigation of this particular herd revealed that the swine were actually sick at the time of treatment. It is not possible to produce hog-cholera in less than five or six days by the use of virus and in those instances in which cholera develops within three days after treatment it is positive that the hogs were previously affected.

Filth Born Conditions

3. Losses are frequently reported in which there are several deaths from 24 to 48 hours after the administration of serum and virus, and in which there is more or less gaseous swelling at the point of injection. The following illustrates this condition and is a report based upon an investigation of four different outbreaks within a period of eight weeks in two different states in 1920, by Dr. J. D. Thrower. The history and outbreak in each of the four herds investigated were about the same:

"Within 48 to 72 hours after vaccination, the practitioner would report the loss of several hogs, with 50%, or more, of the herd showing lameness and general indisposition. Upon arrival on the premises a diligent search for evidences of hog-cholera or other associated infectious swine diseases was without avail. The only note-worthy pathological condition observed was a gaseous tumefaction at the site of infection.

"The hogs being apparently well at the time of vaccination, it naturally seemed to both the veterinarian and the farmer that the serum or virus was at fault, since the enlargements were found only at the site of injection.

"Being confronted with these conditions, it was decided to determine, if possible, the source of anaerobic pathogenic organisms that seemed to be responsible. Several specimens of the diseased tissue were placed in sterile fruit jars and taken to a laboratory. The laboratory findings revealed that suspensions from the tissue produced death in guinea pigs in less than 36 hours, and inoculations in Smith tubes developed an abundance of gas. The anaerobic organisms were recovered from the cultures and were injected into guinea pigs, followed by death in less than thirty hours.

"A bottle of serum of the same serial as that used for vaccinating the hogs, was secured from the veterinarian and subjected to the same laboratory procedure as was resorted to with the tissue specimens, without the recovery of any anaerobic organisms, and appeared to be perfectly innocuous when tested on guinea pigs. This seemed to vindicate the serum, but did not establish the source of the infection.

"A request was then made upon the practicing veterinarians to furnish the laboratory with skin scrapings from the axillary space and the inner surfaces of the thigh of hogs in the infected herds. The desquamated epithelial and skin debris thus acquired was placed in sterile containers and upon receipt at the laboratory, guinea pigs were injected with a suspension, with death resulting in less than thirty hours. Smith tube inoculations with the same cultural and morphological characteristics as the anae-

robe recovered from the diseased tissue of swine that had died in this herd, were recovered.

"The causative agent in such cases may be a member of the Vibrion septique group, the Bacterium Welchii, or the Bacillus aerogenes capsulatus.

"It would seem that these facts would justify the conclusion that the causative agent in these outbreaks was on the skin of the hogs at the time of vaccination, and were probably carried in by the needle point at the time it was inserted.

"It is very questionable if the veterinary profession has at its disposal any efficient skin antiseptic that will destroy these organisms, because all of the anaerobes referred to in this connection are sporulating and consequently highly resistant.

"The unused portion of the serum used in each of the four herds in question was returned to the respective laboratories from which they came, with the suggestion that they be used in immunizing in order that the results obtained might be carefully observed. This was done in each instance with results entirely satisfactory, as all of the pigs lived in each case."

Faulty Technic

4. Most practitioners have developed an efficient technic for the administering of antihog-cholera serum and virus; however, an occasional instance arises in which untoward sequels can be traced to faulty technic. The report of one such instance will illustrate this point:

A practitioner had been called upon to immunize a small herd of swine in the fall of 1917. He had been busily engaged immunizing cattle, horses and mules against anthrax with serum and spore vaccine. He did not sterilize the syringe that he had used in administering the anthrax spore vaccine before using it as a virus syringe. It was fortunate that only a small herd of swine were so treated as there was a one hundred per cent loss. In another instance, a practitioner had used his virus syringe needle to tap an edematous swelling on a mule and without sterilizing the needle proceeded to immunize 8 pure-bred gilts, all of them developing malignant edema at the site of injection.

Impotent Serum

5. With the present regulations for the production of antihog-cholera serum, there is little chance for any licensed serum establishment to market an impotent serum. If a virulent virus is used in conjunction with an impotent serum, cholera will develop in seven to ten days.

A Virulent Virus

6. It is possible that a virus may become attenuated, particularly during the hot summer months when subjected to a high temperature for several days in transit or before it is used. A weak or a virulent virus when used in simultaneous immunization fails to produce a reaction and the swine so treated acquire a passive immunity from the action of the serum.

Generally speaking, antihog-cholera serum and virus is much more constant in potency and virulency and therefore more dependable than the condition existing in swine when immunized.

Conditions Not Related to Cholera

7. Most any condition may occur in immune swine other than hog cholera and unfortunately when these conditions do occur they are sometimes diagnosed as hog-cholera breaks. It is not at all unusual to find swine immune to cholera, affected with hemorrhagic septicemia, necrotic enteritis, flu, swine erysipelas or with various parasites. Such conditions can usually be readily distinguished from hog-cholera and should not be reported as hog cholera breaks. Fortunately, the majority of practitioners, some state and bureau men, now recognize the fact that there are some other diseases affecting swine besides hog-cholera. It is difficult to make a specific diagnosis of swine diseases.

A Word on Diagnosis

The following is a brief general statement of symptoms and lesions of the most important diseases of swine.

Hog Cholera

Usually only a small percentage of the herd is affected at the beginning of an outbreak; a high temperature, inappetence and a tendency to hide in bedding are symptoms indicating hog-cholera. Autopsy reveals congested and hemorrhagic lymph glands, petechial hemorrhages of lung, kidney, bladder and epiglottis.

Flu

High temperature, inappetence, tendency to remain in bedding, thumping, coughing, and a large portion of the herd simultaneously affected are the usual symptoms of influenza. An acute inflammation of the anterior respiratory tract typifies this affection.

Necrotic Enteritis

Appetite fair to good, diarrhea, unthriftiness, emaciation and temperature 104-106° F., are the usual indications of infectious necrotic enter-

itis. Enteritis of varying intensity is the lesion that characterizes this disease.

Hemorrhagic Septicemia

Cough, nasal and ocular discharge, thumping, appetite fair and temperature up to 105° F., typifies the pulmonary form of hemorrhagic septicemia. A typical catarrhal pneumonia, with or without pleurisy, are the lesions that characterize this disease.

Swine Erysipelas

Diminished appetite, dullness, temperature 104 to 106° F., may or may not show locomotory disturbance; sloughing of tail or portion of ears. Autopsy findings reveal very large spleen, tumefied, edematous lymph glands that may or may not show necrosis.

Swine Erysipelas

The following case report will probably be of considerable interest, particularly to practitioners in the section of the country where difficulties are encountered in the diagnosis of swine diseases.

History

One hundred sixty-five spring pigs were farrowed on the farm in question and were given better than the usual surroundings and care. These pigs were all immunized against cholera about ten days before they were weaned. This was on or about the first of July. Each pig received not less than two or two and one-half cubic centimeters of virus and from 30 to 40 of serum. The immunization was done by a veterinarian. About the middle of August, the owner reported that two or three pigs which then weighed about 125 pounds, were not eating as they should. From the middle of August to about the 10th of October, 14 of the above hogs died and three or four others that were affected with the disease, recovered.

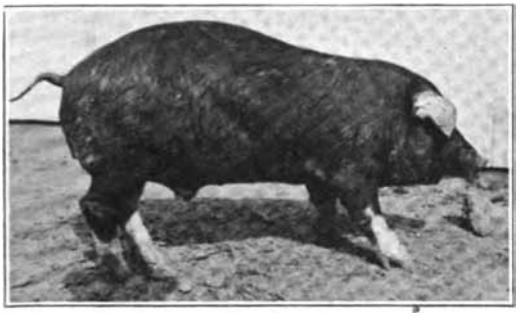


Fig. 1. A barrow that was showing the disease in which the tail was involved. The tail in this particular instance was stiff and showed a line of demarcation near the body where it would soon slough. There also is a slough in the right ear.

Symptoms

The first evidence of disease consisted of a diminished appetite, dullness and depression. These conditions became more intensive and on the second or third day the affected swine refused all food and water and persisted in assuming the decubital position. They evidenced a temperature of from 104 to 106° and some of them showed some disturbances of locomotion. In the cases that recovered, the tail and portions of the ears had sloughed. One particular barrow showed marked involvement of the joints and locomotory disturbances.

In one case there was a discharge from the eyes and in all of the cases there was a slight discharge from the nose. Most of the affected pigs thumped but not excessively. Most of the pigs that became diseased, died on the third or fourth day.

Autopsy Findings

Several of these pigs had been autopsied by the local veterinarian and some of them had been autopsied by other veterinarians that had been called in. Excepting one pig that showed general lesions that are usually attributed to cholera, the outstanding change consisted of a very marked enlargement of the spleen, tumefaction, edema, and a tendency to necrosis of various lymph glands, sloughing of the tail and portion of the ears.

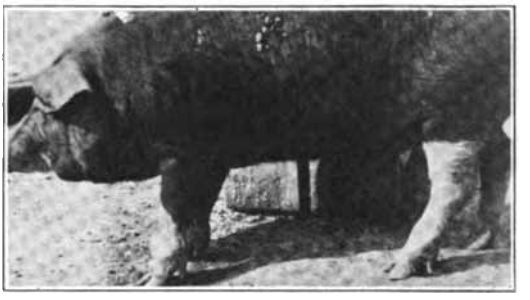


Fig. 2. A case in which the joints particularly of the left front leg are involved although the joints of the legs in this animal were more or less enlarged.

Diagnosis

After a careful consideration of the history, symptoms and autopsy findings, a diagnosis of swine erysipelas was made.

IMPACTION IN SWINE

IMPACTION is not at all uncommon in one or two swine that are maintained in suburbs, but the occurrence of impaction in herds of swine maintained in the country is rather unusual. The following occurred in the practice of Dr. S. L. Stewart of Olathe, Kans.

History

The condition occurred in a herd of 60 shotes, weighing from 125 to 150 pounds. The swine in question were raised on the farm and were running on a blue grass pasture. The condition mentioned occurred in August after three or four extremely hot days.

Symptoms

The first symptom noted by the owner was a general dullness and depression in the swine. This symptom was interpreted by the owner as an indication of hog cholera and he at once called Doctor Stewart, asking that he come prepared to immunize his hogs which he believed were affected with cholera. Upon carefully inspecting the swine in question, it was found that there was a general dullness and depression, the animals refused to eat, and would frequently lie down and would evidence colicky pains by kicking their belly. Some few of them would crawl upon the ground. There had been four or five deaths before the investigation was made. The animals usually died within 48 hours after the first symptom.

Autopsy Findings

After a careful autopsy of two or three cases, the only evidence of disease found, consisted of a marked impaction of the large intestine, with dry blue grass. All other organs were normal and there was no evidence whatsoever of hog cholera.

Diagnosis

Based upon the symptoms and autopsy findings, a diagnosis of impaction was made.

Treatment

All the remaining swine were placed in a dry lot and all feed and water withheld for twelve hours. Troughs and small quantities of soaked, chopped feed, in which there was incorporated one ounce of bovine purgative per pig, were prepared, the pigs were then permitted to consume the feed, after which they were left in a dry lot so the results could be observed. This line of treatment produced the desired results and all animals recovered.

Comment

The occasion for the impaction was due to the fact that the blue grass had been rather luxuriant and green, and the extremely hot weather had caused a sudden drying of the grass and this grass had been consumed in considerable quantity by the pigs. The method employed in this herd deserves special mention. Many practitioners have, in the past, administered anti-hog cholera serum and virus, without first making a positive diagnosis, and had this line of treatment been followed in the herd in question, no doubt, there would have been an excessive loss.

The usual digestive disorders in swine incident to the feeding of new corn have been relatively common during the present season. These difficulties can be avoided by judicious feeding.

Peanut meat, made by crushing peanuts after the hulls have been removed, contains from 45 to 49 per cent of protein. It is an excellent feed when combined properly with other feeds.

The rate of growth of gilts is increased during gestation, however, suckling a large litter of pigs will inhibit the growth and development of young sows.

Soy-beans planted with corn makes a splendid combination after pasturing pigs or sheep. The soy-bean is highly nitrogenous and serves to balance the ration. The corn and soy-beans are most economically harvested by the swine or sheep.

Some swine breeders believe that flushing sows at breeding time will increase the number of pigs per litter. So far as we know, this procedure has not been tested sufficiently to recommend, and it is suggested that veterinarians select a few good breeders in his community and have each breeder keep complete records and report the results to VETERINARY MEDICINE.

Some investigators in some of the southern states report that abortion is rather common in sows that hog down corn and velvet beans. It has been found that corn is eaten first and usually during the early stage of pregnancy and that the velvet beans are consumed later. The beans are exceedingly rich in protein and may be an important factor in the occurrence of abortion.

The Swine Situation

THERE has been a material increase in the number of swine during the last year and, according to reports, the number of swine in the United States is over sixty million.

From the present indications, the 1922 fall pig crop will be in excess of the normal and unless there are unusual losses this will still further increase the number of swine produced during the year. The weather conditions throughout the Corn Belt have been favorable for the fall farrowing and unless something unforeseen develops it would seem that the losses of pigs may, by proper precaution, be reduced to a minimum.

Losses Grouped

The veterinarian has been serving his clients admirably under the existing circumstances but he has been bewildered by statements that have been made from supposed authorities on swine diseases. Certain fundamental facts regarding swine diseases are acceptable and an understanding of them we believe forms the foundation for the control of swine diseases. The veterinarian is interested and concerned in the welfare of his clients and by proper cooperation the 1922 swine crop can be marketed with a limited loss. The losses of swine have been grouped into two periods, as follows: First, the losses occurring from the time of farrowing until the pigs are three weeks of age. Second, the losses that occur after the three week period. This grouping is arbitrary and has been used only for convenience.

Losses of Pigs

The principal causes of the loss of pigs from the time of farrowing until the pigs are three weeks of age are: abortion, dietary disorders, animal parasites, swine plague and hog cholera.

Abortion

Abortion in swine is not as prevalent now as it was in 1919 and 1920; although it still exists and is quite destructive in some sections of the country. From the investigations of abortion disease in swine, it would appear as though there was no specific cause for the trouble. A variety of micro-organisms such as the B.abortus, suipestifer, suisepticus, colon bacillus, pyogenic cocci and others, have been identified with this disease.

Some veterinarians have reported the apparent successful control of abortion disease in swine by immunization of sows at breeding time, or soon thereafter, with a bacterin made from a variety of micro-organisms that have been found associated with this disease.

Dietary Disorders

One of the principal destructive diseases of swine during the first ten days after farrowing, is directly traceable to an erroneous diet of the sow. It has been stated and apparently proven, that sows should be so fed that pigs will not gain in weight for the first ten days after farrowing. Such a ration would consist of not more than one-half of the regular food allowance and it should be of the proper character. It is not advisable to use fermented foods or fat producing foods during this particular time. Scour is the most common disorder of little pigs and is usually of dietary origin, although it may be caused by bacterial infection or parasitic invasion.

Dietary scour in pigs, although of dietary origin soon becomes complicated with bacterial infections at which time the disease is much more fatal. Proper feeding of the sow and the provision of sanitary quarters will largely prevent the losses caused by scour. In accordance with well established principles, it is probable that suckling pigs can be immunized against the effects of bacteria that are usually associated with pig scour. Thus, proper feeding and sanitation, combined with immunization, has according to reports of many practitioners reduced the losses due to pig scour, to a minimum.

Parasitic Diseases

The losses of pigs due to animal parasites are much larger than is usually expected. It is generally believed by investigators that at least ten per cent of the pig crop each year is destroyed by animal parasites. Pulmonary ascaridiasis has been quite prevalent and has been responsible for the majority of losses of pigs, due to animal parasites. This condition is caused by the larval form of the ascarid which invades the lung and produces an embolic, or bronchial pneumonia. The extent of the disease in the animal affected depends upon the number of larva invading the lung. The source of infestation is variable but in general it may be said that the ova or embryo of the ascarid occurs wherever the fecal discharges of swine affected with intestinal ascaridasis are found.

The symptoms manifested in pigs affected

with pulmonary ascaridasis consists of unthriftiness, staring coat, rapid breathing, thumps, and as the disease progresses there will be inappetence and probably diarrhea. The clinical symptoms are not sufficiently distinctive upon which a positive diagnosis can be made; however, the history is of value because this condition will be found more or less prevalent in pigs farrowed by sows that are infested with the adult ascarid, also, in pigs that have access to hog lots that have not been kept in a sanitary condition and particularly if the lots have been used for swine for several successive years.

The lesions found in pigs dead of pulmonary ascaridiasis consist of embolic pneumonia or small bronchial pneumonic centers in various parts of the lung. The related lymph glands are usually practically normal, unless there is an infection with the bipolar organism in which case the bronchial mediastinal glands will be more or less tumefied, edematous, hyperemic and perhaps hemorrhagic.

Ascaridiasis in pigs is easily and effectively prevented by elimination of the intestinal ascarid from the sows, after which they are thoroughly scrubbed, dipped and placed on ground or in lots that have not been previously occupied by swine. This should be done prior to the time of farrowing. The farrowing lot should be so arranged that the young pigs can not gain access to lots and pastures that have been previously occupied by swine. Such isolation should be continued until the pigs are four to six weeks of age, after which time there is little danger of destruction by ascarids.

The treatment of pigs affected with pulmonary ascaridiasis is not very successful. However, we have observed one litter of pigs that were said to be affected with pulmonary ascaridiasis and they were successfully treated. The treatment in this case consisted of inhalation medication in which eucalyptol oil was the medicament. The pigs were confined in a crate for this treatment and were required to inhale the medicated vapors for about fifteen minutes, the treatment being repeated once daily for three days. The vapor medication increased the fluidity of the bronchial secretion, and thus facilitated the discharge of the parasites. This method of treatment can be applied to a large number of swine if they are placed in a reasonably air-tight hog house.

Swine Plague

Swine plague is a disease that must not be overlooked. This disease also known as hemorrhagic septicemia has been discussed in several publications recently and it would hardly seem necessary to again give a detailed description at this time. It might be stated that hemorrhagic septicemia in swine may occur as a septicemic disease, manifested by a high temperature, rapid course, and a varying fatality; pulmonary infection manifested by cough, thumps, difficult breathing, variable temperature depending upon the extent of lung involvement and a varying fatality; other forms of the disease may also occur but the septicemic and pulmonary types are most common and are usually not difficult to identify when the history, symptoms and lesions are carefully considered.

The lesions of the septicemic type of hemorrhagic septicemia consist of petechial hemorrhages beneath the serous and mucous membranes; with or without an enlarged spleen; tumefaction and hemorrhages of the lymph glands, and in some cases discoloration of the skin. The pulmonary form of hemorrhagic septicemia is manifested by an atypical pneumonia in which there is a marked interstitial infiltration. There may or may not be pleurisy. The related lymph glands will be tumefied, edematous, hyperemic and hemorrhagic.

Swine plague or hemorrhagic septicemia in swine can be quite largely prevented by proper immunization with a bacterin prepared from the B.suisepticus. According to reports of some practitioners, this bacterin is also valuable as a curative agent.

Hog cholera is the exception rather than the rule in pigs less than a month of age. A detailed description of this disease is not considered necessary, suffice at this time to say that should hog cholera be identified in suckling pigs it is advisable to administer relatively large doses of serum and virus, and with the distinct understanding that the immunity so produced may be of relatively short duration, and in order to positively protect against a recurrence of hog cholera, such pigs should be re-immunized with serum and virus soon after weaning.

Losses of Shotes and Mature Swine

The losses of swine after they are three weeks of age and until maturity, are due to hog cholera, swine plague, infectious necrotic enteritis, swine erysipelas and "flu."

HOG CHOLERA

Hog cholera is probably the most important disease of swine for it is responsible for the principal losses in shotes and mature hogs. The identification of hog cholera is based upon the history of the outbreak, symptoms of the affected animals and the postmortem findings of swine that are dead. In such cases, the history, if accurately obtained, reveals the source of infection, a period of incubation of from five to seven days and in involvement of a considerable of the herd of swine at the onset. The symptoms manifested in swine affected with cholera, vary in accordance with the virulency of the virus, the resistance of the infected swine and the complications. Generally speaking, cholera hogs evidence a high temperature and inappetence with a tendency to hide in their beds. The course of the disease is relatively rapid, the animal usually succumbs in from a few hours to thirty-six hours after the first symptoms are manifested.

The lesions usually attributed to hog cholera consist of tumefied, congested, hemorrhagic lymph glands, petechial hemorrhages, particularly beneath the visceral pleura, and beneath the mucosa of the bladder and epiglottis. The kidney may or may not be petechiated, the skin may or may not be discolored; the bone marrow may have a changed aspect. These lesions when associated with the symptoms above described and verified by history usually suffice to make a correct diagnosis of hog cholera. The use of serum and virus is common knowledge of practically all veterinarians and needs no further discussion at this time.

It might be advisable to state that virus should not be used in swine in which hog cholera is complicated with infectious necrotic enteritis.

SWINE PLAGUE

Swine plague outbreaks, particularly in shotes and mature hogs, may or may not have an apparent source of infection. The period of incubation is variable, usually a relatively small portion of the herd becoming affected at the beginning. The septicemic type of this disease runs a rather rapid course and the percentage of fatalities is less than in cholera. The description of swine plague as applied to the three weeks old pigs is usually applicable to shotes and mature swine.

NECROTIC ENTERITIS

Infectious necrotic enteritis is a condition characterized by digestive derangements and an associated enteritis. The intensity of this disease varies probably in a direct ratio with the intensity of the inflammation. This disease spreads in a herd less rapidly than either cholera or swine plague, and is usually of a subacute or chronic character. The principal symptom is a diarrhea which is persistent. The affected animal soon becomes gaunt and emaciates rapidly. In some herds the disease is extensively fatal while in other herds there is a small per cent of fatalities.

This disease can usually be readily diagnosed by the fact that it has rather a slow onset, spreads relatively slow in a herd, the pronounced symptom is diarrhea and the lesions consist of an enteritis in which there is an adherent exudate.

SWINE ERYSIPELAS

Swine erysipelas is probably rather wide spread. Swine erysipelas is a bacterial disease and is manifested by discolored areas on the skin, and in the acute form there is a high temperature and general depression. The lesions consist of discolored skin, tumefied and engorged spleen, and vegetation on the cardiac valves.

FLU

"Flu" is apparently a specific infectious disease of swine, although the causative agent has not yet been identified. This disease affects shotes and mature swine. It is manifested by a sudden onset, high temperature and a tendency for the affected swine to hide in their beds. One striking feature concerning this disease is the large percentage of animals that become affected at once. It is not uncommon to observe from fifty to ninety per cent of a herd simultaneously affected. This tends to distinguish "Flu" from hog cholera. The pulmonary involvement in hog "Flu" is a further means of identification of different diseases. The lesions of this disease are not well marked and consist primarily of an inflammatory disturbance of the anterior respiratory tract. No specific treatment has been found that is of value in the control of this disease. The large percentage of affected animals recover and the serious economical loss of this disease is due to the extensive and rapid emaciation.

By a careful survey of the diseases of swine, most veterinarians find that they can now identify the principal fatal diseases and, no doubt, can control the same. A little more detailed study will give further insight to the various diseases of swine and will materially increase the encouragement of the producer.

Powdery Mildew of Clover

By Professor M. H. Pammel, Ames, Iowa.

OUR second crop of clover is badly mildewed. Will there be any danger to stock if we cut it for hay? Will there be any danger if we pasture it? This is something new here and our field is very bad.—W. K. C., Iowa.

There are reports in this territory of mildew on clover. No doubt you are familiar with this mildew and have received reports from elsewhere concerning the same. Will you please inform us as to whether or not any bad effects may come from pasturing it, or whether or not there would be any bad effects from feeding the hay from it?—E. H. McC., Iowa.

This mildew on clover has been usually abundant in Northern United States this year. It truly occurs in an epidemic form and has been quite destructive to red clover. I have observed it this year in many districts of Iowa, South Dakota and Wisconsin.

The amount of red clover infected varies greatly but in every case there was more or less damage and in many cases I was asked whether it was injurious to stock. There can be no doubt that the mildewed clover forage is of an inferior quality, but whether it was injurious to live stock I could not learn. A case was reported to me from the Lake Superior country where the man stated he thought it was injurious. It is certainly not poisonous as the term is understood in veterinary practice.

I looked up this matter when I wrote my Manual of Poisonous Plants and found that some European veterinarians ascribed to this powdery mildew a form of stomatitis and I therefore gave a place to the fungus in the work. It is certain that rust on clover sometimes produces a form of stomatitis.

Roberts and Bitting describe this disease as follows, but which they attribute to moulds. The mildew, however, is not a mould. They may have been indefinite in regard to the use of the term mould. The disease described may have no relation to this mouldy forage.

In regard to stomatitis of cattle, which they attribute to moulds, the peculiar organism causing the disease, if there be one, has not been described. It seems probable that the disease is due to more than one form of fungi which may be present on the pasture. The animals affected are cattle of all ages above 4 months. The disease is not contagious but usually affects a number of animals in a given herd, and always while in the pasture. The fact of a number of animals being affected is due to similar exposure and not to infection spreading from one animal to another. Attempts at direct inoculation have not been successful. The disease occurs in some localities every year, and in others seemingly under special climatic influences. I know a locality where it may be developed at any time by permitting cattle to graze along the roadside. The disease is much more prevalent on permanent blue grass than upon timothy pasture, and is of rare occurrence upon pastures used in a crop rotation. The disease develops in pastures allowed to grow for some little time without being used. It is particularly liable to develop a few days after a good rainfall succeeding a dry period.

The symptoms are: inability to graze, saliva dribbling from the mouth, and frequent visitations to the watering trough, holding the mouth in the water as though it were burned. The animal appears to be hungry but cannot eat. The mouth is red, and lips, gums and tongue swell. Blisters form and these soon give way to ulcers that may remain distinct or run together. In some of the aggravated forms the ulcers may unite so that when the crust comes off, it will make a cast of a lip or the whole of the tongue. The crusts are usually from the size of a dime to that of a quarter. The tongue may swell to such an extent as to protrude from the mouth and the animal be unable to draw it inside. The muzzle may be increased one-half in size.

I may say in conclusion that there is nothing positive up to date as to the injuriousness of this powdery clover mildew. A number of experiments are being conducted by several investigators.

Comment: Both the Ohio and the Tennessee experiment stations have made experiments on the toxicity of red clover mildew and have pronounced it harmless. At the Ohio station it was proved to be harmless to the most sensitive laboratory animals and at the Tennessee station it was fed to large animals for two weeks without ill effects.—Ed.

Bovine Indigestion

By John F. DeVine, Associate Editor.

I meet with a good many cases of indigestion among my bovine patients and confess that I have rather poor success in treating them. Some are of the gaseous type and others take the form of impaction of the rumen. I have had fatal results in several cases after the administration of a proprietary remedy containing barium chlorid and strychnin and am wondering if it is not possible that this combination is responsible. Will you please advise me and outline a proper course of treatment?—H. J., Que.

Reply by Dr. Devine: It is, of course, needless to explain to a practitioner the absurdity of attempting to prescribe specifically for a case or ailment so varied as are the different types of indigestion. For instance, how differently we would treat a case of proteid poisoning in a cow that is being forced for an official record and receiving an excessive amount of oil meal to a case where a cow had followed the threshers to a straw stack. Even to those who are not familiar with cattle practice, it must be apparent at once that the former animal is in great danger of prostration, even often before diarrhea sets in and that stimualtion of the proper kind is quite imperative. I wonder if our older equine practitioners would be offended at a word of warning. I have seen them in the presence of such cases, think at once of strychnin as they naturally would if they were treating the horse instead of the bovine, and the unfortunate part of it is that these men in the past were rarely or possibly never called to treat the big herds. It is the family cow, in the back-yard with the wife and all the little ones looking on with anxiety and after the dose of strychnin has been given the cattle practitioner knows the answer, which is often too pathetic for words. The wife and children from that moment lose respect for the hypodermic syringe.

Stimulation Comes First

If I were asked what I considered the most important factor in treating a case of indigestion in the cow, I think my reply would be, "Stimulation," leaving catharsis or rumenotomy for second thought. In cases of impaction, we use barium chlorid and tartar emetic as a rumen stimulant, but I fear we do not use it as often or think it so specific as many do. I mean by that, that we do not think of relying upon it solely. I know of no better way to tell you how to treat these cases than to outline what we do.

Oils, Nux Vomica, Antiferments

In all forms of indigestion that are accompanied with diarrhea, we immediately administer oil—one to two quarts, depending on the age and size of the animal. We then stimulate with large doses of nux vomica, which we believe is much preferable and safer than strychnin. We give from 2 to 4 drams of fluid extract, depending upon the size of the cow and the amount of depression. We repeat this in anywhere from two to four hours, depending upon the individual case. Where it is practical, we will always use in conjunction with the nux vomica, an alcoholic preparation, either grain alcohol or any form of alcohol that is obtainable.

Veterinarians in this country are allowed from 7 to 40 quarts of alcohol per year, depending upon the form of permit secured. While expensive, still we do not hesitate in our practice to use alcohol on valuable animals. When it is not obtainable we use aromatic spirits of ammonia or ammonia carbonate. We always add to the oil some antiferment such as coal tar derivatives or formaldehyd. If the cases are watched and stimulation pushed, many of them respond, even though they are prostrate and remain so for a day or two.

Large Saline Doses Dangerous

As to the cases of indigestion that are accompanied by constipation of the intestinal tract or impaction and atony of the rumen, if we do not consider the case operable or advisable, we then give a mild cathartic. This statement —"a mild cathartic"—is used advisedly. Large doses of saline are positively dangerous to the bovine. For the ordinary sized cow, our cathartic contains 10 oz. of magnesium sulphate, 4 oz. sodium chlorid, 2 drams powdered nux vomica and 2 oz. ginger. This is followed in two hours by a dose of stimulant the same as outlined above and a tablet of barium chlorid and tartar emetic. The stimulant and a tablet is repeated every two or three hours. The cattle cathartic is repeated about every eight to twelve hours as often as indicated.

Cathartics Help Impactions

We still use the cattle cathartic even though

we believe the trouble lies largely in the rumen, because extensive experience has proven to us that it is the better way. We resort to mild catharsis and considerable stimulation because, again, we are thoroughly convinced that stimulating the digestive tract rather than shocking it is the desirable thing to do. We always include sodium chlorid in our cathartics for its anti-ferment action and the fact that it encourages animals to drink as soon as they eat or drink the least bit, regurgitation and peristalsis usually follow promptly.

Turn Them Out

Years of observation has also so convinced me of a bit of knowledge which, while simple, is often of much advantage and that is that after the animal has had from twelve to twenty-four hours treatment as outlined above, during the season of the year when it is feasible, the weather permitting, recovery will be positively hastened if the animal can be turned in the open into a paddock or field. She may stand listlessly for a long time, but sooner or later she is apt to be attracted by some tempting morsel and browse a bit and from that moment in most cases, indications of recovery are observable.

Feed Cautiously

We then are particularly cautious about the animal's feed and water. Guard her from getting quantities of cold water and any food that is not laxative. Her convalescent treatment usually consists in giving something that will stimulate the digestive tract and keep down fermentation.

A Simple Condiment and Stimulant

A simple preparation that we have found practical and convenient is one containing hyposulphite of soda, ginger, nux vomica, fenugreek and anise seed, given in a drench three times daily. As convalescence advances it will be taken in the feed as the anise is tempting.

Stomachs Not Always the Seat of Trouble.

I think it is generally understood that with cattle their digestive troubles are more frequently located in the stomachs than in the intestines. In other words, the digestive troubles of the ox may be spoken of as reverse to those of the horse. Nevertheless, some have gone too far in ignoring the intestinal tract.

When to Operate

As to the case that should be operated on, here again, the skill and experience of the surgeon will be the determining factor. Where there is extreme fermentation of a fermenting semi-fluid mass, it is safe to say that in the majority of cases some of the contents should be removed by rumenotomy; medication is too uncertain. This is equally true where the rumen is packed full with dry, coarse roughage, such as straw.

Rumenotomy Not a Serious Operation

Rumenotomy is in no sense a formidable operation. Any veterinarian who is even slightly acquainted with surgery can perform it successfully if reasonable precaution is taken in cleanliness and avoiding any of the irritant matter falling down into the peritoneal cavity, provided that the operation is attempted and carried out while the animal is still strong. As a make-shift or the last resort it is bad practice. This operation has been repeatedly described in this Journal and, of course, the technic is laid down in all modern surgical text-books.

Instill Antiferments Direct

Tympany of the rumen is, of course, best relieved through the canula. This is equally true where putrefaction and fermentation are excessive. Anti-ferments, such as formaldehyd, should be injected directly into the rumen through a canula. Formaldehyd may be used in the proportion of one tablespoonful to the quart. We not infrequently inject as much as a gallon of creolin solution, using two ounces to the gallon. Thorough massaging of the rumen through the left flank sometimes seems to be surprisingly effective in exciting activity of the rumen, considering how imperfectly massaging can be applied.

Cows that freshen in the fall produce more milk and butterfat than when they freshen in any other season.

Since the milk-for-Health campaign was begun in Cleveland, Ohio, about one year ago, there has been a 20 per cent increased consumption of milk.

The Kansas Experiment Station has been investigating the quantity of salt consumed by cattle while on pasture. According to the report, the consumption in pounds per animal was: 2.83 for July; 1.8 for August; 1.17 for September and 1.24 for October. The cattle preferred granulated rock salt and block evaporated salt to the harder block salt produced by pressure.

CESAREAN SECTION IN A COW

I was recently called in consultation to help deliver a cow. It was a Jersey, weighing about 1000 pounds. The four legs were out and head was turned back on the right side. Failing to effect a delivery, I suggested an operation as the only chance. We used chloral hydrate as the anesthetic and after making an incision, we lifted the fetus out just as it lay.

This cow was supposed to have freshened some time in May, but failed to come in at proper time. The fetus was dead and had been dead for thirty days or more. It was the largest calf I had ever delivered, measuring forty inches high and six feet and eight inches long, from tip of the nose to the end of the tail. I believe it weighed over two hundred pounds. The cow made a nice recovery.—W. O. G., W. Va.

MALTA FEVER AND ABORTION DISEASE

Some cases of malta fever in humans in Rhodesia (Africa) have been investigated in which the possibility of infection from goat's milk has been eliminated. Investigators have called attention to the fact that there is a close similarity of the B. Meletensis, the causative factor of malta fever, and B. abortus Bang, the cause of abortion disease in cattle. Circumstantial evidence incriminates cows affected with abortion disease in the Rhodesian malta fever cases. However, further investigations are necessary before it can be stated that B. abortus Bang is the cause of malta fever. It would seem as though there should be many cases of malta fever in practically every section of the country because abortion disease is widespread and the B. abortus Bang is of common occurrence in cows' milk.

GROWTH PERIODS IN A COW

Ragsdale & Brady by a series of ingenious experiments and calculations have determined that dairy cows have three distinct growth periods. The first period of maximum growth rate occurs at the fifth month of age the record and the twentieth month, the age at which the third period occurs, has not been positively determined but occurs during the gestation period. If these findings are proven correct for each breed it will not be difficult to produce a maximum development of dairy cows and it would appear as though the maximum growth period age of beef cattle could be determined.

DR. CHAMBERLAIN'S CHAMPION SWISS GOAT

Dr. James Chamberlain, a prominent veterinarian of Washington, D. C., is the owner of the champion milk goat of the capital city. She provides a daily average of eight quarts of milk which goes toward supplying tuberculous patients in Washington hospitals.

EPISTAXIS IN A COW

In your "Queries and Answers" section of VETERINARY MEDICINE I noticed a communication from D. E. I., S. W. relative epistaxis in a cow. Your correspondent may be interested to hear of a somewhat similar case occurring in my practice which on postmortem examination revealed a foreign body in the lung. The case was reported in a paper entitled "Foreign Bodies Penetrating the Reticulum" published in the Ohio State Quarterly, Vol. 9, No. 3.
University of Delaware, Newark.—C. C. Palmer.

MOLDY HAY

Two of my calves are sick. The veterinarian, Dr. Gray of Windom, thinks it is the hay that has caused the sickness. He asked to send it to Ames. Will you have the hay that I am sending examined and let me know if there is anything the matter with it?—F. C. B., Minn.

Reply by Prof. Pammel: The hay is moldy and musty, made up of mostly timothy, some red top, a little wild dropseed grass and some wild barley. No one of the above grasses is injurious, except the wild barley, which is injurious only in a mechanical way. I suspect that the trouble may have been caused by the moldy hay.

Every Practitioner Has at Least One Such Client

The morning of February 1st, 1922, I was called to the farm of a man who said that he had a cow that wouldn't eat, "ate the night before, but wouldn't eat now." He said he gave her a dose of salts (and more salts) two hours before calling me, but it did her no good.

Inquiry disclosed that she had freshened about two months before, went off her feed shortly after, for a few days, had been very greedy since, but failing in milk and flesh.

The cow was a grade Holstein, seven years old, and had been purchased a year before.

While I was conducting the examination, the owner kept up a line of talk that went something like this: "Whatever is the matter? Can't be holler horn, cause she ain't got no horns. Is it holler tail? Her tail ain't sore," pinching her tail, "Has she lost her cud, doc? She don't chaw it any more. Tied a rope of hay onst in a cow's mouth that lost her cud and she chawed alright."

I asked him if the cow recovered and he said: "Naw, she had woom trouble."

On completing the examination, I had found the following: Temperature normal; heart strong but very fast; rumen not distended but of a doughy consistency; no tympany; peristalsic wave and murmur absent; rectum full of feces and covered with a heavy mucous coating and very hard; respirations shallow and of an abdominal nature; pulse weak; eyes bright but conjunctiva injected; mouth contained sticky, pasty saliva; visible mucous membranes cadaverous; ears drooping.

I gave a dose of barium chlorid, tartar emetic and fluid extract of nux vomica, and left a stimulant and tonic to be given every three hours. I also instructed the owner to call me if any change was noticed. On February 3rd, he called me and said that her bowels had moved some, but cow seemed worse and to come out.

On arrival, I found the cow lying on the left side, but well up on the sternum. On arising, she walked to her stancheon very slowly and stiff in all quarters. The examination brought forth the following: temperature subnormal; shivering in posterior parts; respiration almost absent; heart very weak; could barely be heard with stethoscope; pulse venous; jugulars plainly visible at a distance; edema of inferior submaxilaries.

On informing the owner that she had a foreign object of some kind puncturing her heart, possibly a wire or nail, that I could not do anything for her and if he would phone me when she died, I would open her. I could see that he did not believe anything of the kind, but said: "She's plugged, can't you do something to open her up?"

He telephoned me the morning of February 4th to say that he had found cow dead in stancheon at four o'clock the evening before. While removing the left part of the thoracic cavity, the owner kept repeating, "She's plugged, she's plugged, that's what she is, she eat too much cotton seed meal. You'll see. Wire nothing."

On opening up the chest, the heart was found to fill the entire lower part of the cavity with lungs lying on top of it. The owner on getting sight of the heart said: "What's that?" and I told him that was her heart, to which he replied: "Heart nothing, that's her paunch." A bystander said: "Sure, that's her heart, where do you think the heart is, in the back end?"

The heart was adhered to the left wall of the cavity and to the rumen, and diaphragm. In dissecting it out, I cut into a wire that was lying one-half in rumen and balance in heart. The wire was about three and one-half inches in length. On giving the wire to the owner, he exclaimed: "By gum, how did it get there?"

The heart was solid and much enlarged, weighing twenty-one pounds.

As I left, the farmer was saying: "Good Night! Good Night! What do you know about that!"—R. P. B., Mich.

Chinch-bugs threaten to infest the land over the entire Mississippi Valley much the same as in 1887. Over 65 counties of Illinois are already infested and unless measures are taken to combat them, serious losses will occur next year, according to a warning from State Entomologist Flint, of the University of Illinois.

Chinch-bugs reduce the yield of corn, barley, wheat, oats, millet and other grass crops. They do not injure legumes or any crop that is not a grass.

Milk, according to Clayton and Clayton, is one or, if not the best, forms of protein to provide growing chickens and laying hens.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

DIAGNOSIS OF THE SEX OF CHICKEN EGGS

Each breed of pure-bred chickens lay eggs that show a regularity as to weight, e. g. 55 grams for Houdans and 60 grams for Bresses. The sexes can be separated by the simple process of weighing. The heavy eggs are males and the light ones are females. The method is of less service, however, in mixed breeds since the weight of their eggs vary. In Leghorns, Minorcas, Houdans, Bresses or any of the old breeds the results are always satisfactory.—M. Lienhart, Revue Veterinaire, Oct. 1922.

IS THE BACILLUS ABORTUS BANG PATHOGENIC FOR MAN?

Abortion in cattle is in most cases due to the Bang bacillus which is also at times responsible for abortions in swine, goats and sheep. The action of the abortion bacillus has also been established on artificial infections of the mare, dog, monkey, rabbit and guinea pigs. The question whether the Bang bacillus might not be of importance in the premature births and abortions in women has not yet been cleared and is worthy of further consideration. The possibility of such action of this organism is suggested by various observations namely, where perfectly healthy wives of farmers aborted without any apparent cause for the same. Later disclosures, however, revealed the presence of an infectious abortion among the cows on the farms. Likewise the fact that these particular women consumed raw milk from such infected herds. Therefore it is not unreasonable to consider a connection between the infection in cattle and abortions in women. —Klimmer and H. Haupt (Munch. med. Woch., 1922, p. 146).

VACCINATION AGAINST RABIES OF LARGE HERBIVOROUS ANIMALS

The horse was bitten on the nose by a rabid dog. The diagnosis on the dog was confirmed by microscopical examination of the brain and by inoculations of rabbits. The authors vaccinated the horse according to the method of Remlinger. The treatment was commenced twelve days after the horse had been bitten. The horse received three subcutaneous injections at four day intervals of 150 cc of an emulsion consisting of distilled water and rabbit brain (fixed virus) which was kept for 72 hours in ether. For the fourth injection which was undertaken two days after the third they used a brain which was kept in the ether only for forty-eight hours. The horse remained well during a period of observation of nine months, even after the following control test was made. An emulsion was prepared from the brain of the dog affected with rabies of which 40 cc was injected seven days after the last injection of the vaccine. A control horse received 20 cc of the same emulsion subcutaneously and developed in 69 days the characteristic manifestations of rabies. In view of the great value of domestic animals at the present time the authors recommend vaccination in favor of the prescribed slaughtering of the exposed animals.—Finzi and Rondelli (La Clinica Vet., October, 1920).

MILK OR SALIVA INFECTS PUPS WITH RABIES

A number of recent articles refer to the possibility of hereditary transmission of rabies from the mother to the offspring. Among these, an observation by P. Cremona of Turin, Italy, refers to rabies in two very young pups. The bitch fell sick on March 30 and died April 19, with clinical symptoms and laboratory confirmation of rabies. Of four pups that suckled until April 11 one died of dumb rabies at the age of 70 days. The diagnosis was confirmed by the finding of Negri bodies and by the injection of cerebral substance into a rabbit. A second one died at the age of four months from rabies also confirmed and the other two survived.

The author attributes the infection to the milk or virulent saliva infested during the first days of the mother's illness or during the final days of the period of incubation.

As the blood of a dog is virulent a long time before the disease appears and this bitch survived 20 days after falling sick it does not seem that this was an infection via the placental route but that the pups ingested the virus with the milk or saliva.—Clinica Veterinaria, June 1921.

THE TREATMENT OF ATONY OF THE UTERUS WITH PITUITARY EXTRACTS

The authors conducted very extensive experiments with pituitary extract on various species of animals. As a result of their observations they conclude that pituitary extract (pituitrin) is splendid and effective in its action as an ecbolic by its marked stimulation of labor pains. It is not very suitable for inducing artificial abortion in large animals. However, for the purpose of increasing the frequency of labor pains in all stages of parturition it affords very good results; it induces its best action during delivery.—Professor Richter and Dr. Thierfelder (Berl. Tier. Woch., No. 21 and 22, 1922).

ON THE ETIOLOGY OF DECAYED TEETH

Dentists since the early days of bacteriology have believed that caries is an external process —a sort of bio-chemic decomposition of the dental tissues. The current theory in this connection is that carbohydrate material lodging about the surface of the teeth, ferments, forms lactic acid and gnaws out the cavity of decay. According to Howe* this notion is not supported by animal experimentation. In a series of experiments with guinea pigs this author has shown that extensive decalcification of teeth and some parts of the bones can be induced by scorbutic feeding and that an antiscorbutic diet will cause recalcification of teeth and bones thus demineralized.

When guinea pigs were fed a diet consisting of soy beans, rolled oats, dried milk, butter, calcium carbonate, salt and agar, together with an additional roughage of filter paper, for a period of fourteen weeks (without orange juice) the teeth were extensively decalcified and the alveolar process became disintegrated and pus-ridden as in pyorrhea, and despite the fact that the animals had eaten well and gained in weight the joints were enlarged and locomotory impediment was manifest. The femurs and tibias decalcified so extensively that they pulled apart at the epiphyseal line.

When these same animals were put on an antiscorbutic diet (orange juice added) recalcification occurred. Large areas of newly formed bone developed on the jaws, the long bones showed exostoses, and cartilage calcified.

The conditions seem distinct from rickets and show unquestionably that a proper supply of calcium is important and that this salt is the inorganic constituent of foods most likely to be deficient.

Everyone knows that calcium, if not supplied with the food in sufficient quantity, is withdrawn from the teeth and bones to regulate the mineral equilibrium of the whole body and thus produces disorders the cause of which have heretofore been thought to be bacterial:—caries, osteoporosis, arthritis deformans, etc.

*Jour. A. V. M. A., Nov. 4, 1922.

NEOSALVARSAN FOR MALIGNANT CATARRHAL FEVER

On a farm equipped with newly erected, very good and hygienic cattle barns, two animals became sick in July during the period of stable feeding. Both died. The remaining 17 animals were turned out to pasture. After 14 days another case developed and in spite of the change of pasture and drinking water, ten additional animals died up to October. Toward the middle of October the 11th animal became affected. Following the suggestion of the district veterinarian, this animal was subjected to salvarsan treatment. Five and four tenths grams neosalvarsan was dissolved in 200 cc of water and was administered intravenously. On the following day marked improvement was noticeable with complete recovery after one week with the exception of an affection of the eyes which required attention for three months. While the author does not desire to draw conclusions from this case, he is of the opinion that the treatment deserves further consideration.—J. Persson (Svensk. Veter., 1921, p. 326).

THE VALUE OF THE VARIOUS DIAGNOSTIC METHODS IN DOURINE

Based on the investigation of numerous cases and extensive animal experiments the author established the following results for dourine in Italy. No diagnostic value can be attributed to biological tests, the thermo-precipitation, the non-specific reactions of Klausner and Porges, the hemagglutination of Yorke, the protective action of the serum of the patients on infections of rats with nagana, Wassermann syphilis reactions, the lecithin test of Compana and the examination of the urine for sugar.

Whereas the diagnosis is conclusive by microscopical demonstration of trypanosomes in cases of positive precipitation tests, agglutination and complement fixation tests; especially the latter is conclusive. All three reactions do not occur in all

cases simultaneously. It may occur that in some instances the result of the reactions of the three methods are contradicted which makes the diagnosis doubtful. Of the other tests the auto hemagglutination is of doubtful value, whereas the intrapalpebral and the vulvar reaction are of value with the limitation that the outcome of the reactions is greatly dependent on the extracts employed.—Dr. L. Sani (La clinica Vet., 1922, No. 4).

ACTINOMYCOSIS OF THE LIVER IN A TURKEY

A liver of a turkey disclosed numerous nodules on the surface as well as in the parenchyma, surrounded by a connective tissue capsule. They were partly grown into the surrounding organ and contained in part a milk-like fluid and again a granular more or less solid mass of a milkish white to dark orange color. Some appeared as composed entirely of connective tissue appearing as white spots on the dark base of the liver.

Preparations made from the fresh material and stained with Gram and Gram-eosin method revealed on microscopical examination distinctly isolated spores, threads and clubs as well as typical isolated and groups of colonies of actinomyces which possessed a central and peripheral zone. The author further cites recorded cases of actinomycosis in a hen's egg, in the organs of geese, pigeons and chickens which were recorded in Italian literature. He considers the occurrence of such cases more frequent than it is generally assumed and points to their practical importance in confusing them with tubercular and parasitic changes. The publications further suggest that liver actinomycosis occurs with great frequency in the larger animals of Italy.—Dr. Galbusera (La Clinica Vet., No. 4, 1922).

MENINGITIS IN THE HORSE CAUSED BY THE LARVA OF THE HYPODERMA BOVIS

The author examined a larva of the Hypoderma bovis which was sent to him by a veterinarian as having been found under the dura mater of the left portion of the cerebellum. The horse one night became suddenly sick showing symptoms of great distress. Shortly after the animal became quieter and on urging got up although he slightly staggered. The head and neck was held slightly to the right; there was pronounced nystagmus; otherwise no symptoms. The pulse was slightly accelerated. The treatment consisted in the application of ice to the region of the brain. Eight days later the nystagmus disappeared, likewise the weakness of the legs improved. After a month the horse was used for work. At that time only a slight bending of the head with slightly crossed eyes was observed. Five weeks after the first attack the animal again became affected. It laid on its side and could not be made to rise, having lost entire control of the head and legs. There was great restlessness without nystagmus. The animal was slaughtered. As mentioned above the larva was found on the cerebellum. The larva was only slightly attached to the cerebellum.—H. Magnusson (Svensk. Veter., 1921, p. 229).

THYROIDECTOMY IN HORSES

The thyroid gland has been removed in eight horses of various ages. The result was a pronounced retogression in growth determined by accurate measurement of various parts of the body and by successive weighing of the animals. In some of the cases death from cachexia resulted within a few months. In fully mature animals no visible changes occured following the thyroidectomy. Following the operation all animals developed a transitory hyperthermia. Some developed pronounced synovial demas.—Houssay and Hug. (rev. d. Inst. bact. Buenos Aires, Vol. 2, No. 5).

PROSTATITIS IN DOGS

Hypertrophy is the most frequent disease condition of the prostate gland in dogs. Dr. Kracht-Pelejeff attributes the cause of the enlargement of the prostate gland in dogs to four different disease conditions: (1) glandular hypertrophy, (2) pseudo-hypertrophy (hypertrophy of the fibromuscular tissue) (3) cystic degeneration, (4) purulent inflammation.

In all cases the enlargement of the prostate in dogs the author found an inflammatory condition. The inflammation was either catarrhal (desquamative) or purulent. Besides there were always present a proliferation of the connective tissue, involvement of the musculature, the glandular tissue or its epithelia and accompanied by cystic formation.

Lesions of old or fresh hemorrhages were always present. In the cases with proliferation of the musculature an enlargement of the muscle nuclei was found. The latter must be con-

sidered as an indication of a volumetric hypertrophy. Prostratitis may occur in association with carcinomatosis. Inasmuch as the author recognized the carcinoma only on microscopical examination it seems indicated to examine all cases microscopically. Such practice would enable to establish whether prostatitis belongs to the precarcinomatosis affections. Nothing could be added to the etiology of this condition as neither bacteria nor other conditions which would shed light on the cause of this affection were found.—G. Fluckiger (Inaug. Dissert. Bern, 1921).

HYPERTROPHIC ENTERITIS IN A CAT

In Bern and its vicinity the intestines of cats very frequently disclosed an enteritis which is more or less chronic. The processes of new formations which accompany this inflammatory condition lie principally in the connective tissue. The connective tissue of the middle portions of the tuffs; likewise the connective tissue of the submucosa show a proliferation. The author failed to disclose anything to suggest the etiology of this condition. The following pathological changes accompany the enteritis: Emaciation, fatty degeneration of the liver, necrosis of the liver cells, tumefaction of the liver, and hemorrhages in this organ. Lymphadenitis of the mesenteric lymph glands may also occur. The enteritis is frequently the only cause of death. It may be found, however, in autopsies of cats which died from other causes. —S. Stavimirovitch (Inaug. Dissert. Bern, 1921).

GOITRE IN DOGS

The principal pathological changes of the thyroid gland of the dog may be classified as follows:

Enlargement of the follicles without colloid (Struma parenchymatosa). The same is usually accompanied by a disquamation of epithelial cells. The disquamation is very well marked. Inasmuch as the disquamated cells often necrotize this form of goitre may be signified as disquamation of the Struma. The reduction in size of this form appears to result from the disappearance of the disquamated cells and the formation of sclerotic connective tissue. This results in a change of the thyroid in which there is no organ enlargement.

Enlargement induced by the filling of the follicles with colloid. The follicles are very often markedly enlarged so much so that they may become visible even macroscopically.

Cyst formation (Struma cystica) which may originate from two processes, (a) enlargement of the follicle and (b) colliquation necrosis, especially of the sclerotic, connective tissue.

Calcification (Struma petrosa). The deposit of lime occurs without and within the follicles.

Increased vascularity (Struma vasculosa) which may be very pronounced or moderate.

Arteriosclerosis: the intima is usually considerably thickened.

Sclerosis of the connective tissue.

In one case the Struma colloida formed the base for the development of a carcinoma.—N. Nozinic (Inaug. Dissert. Bern, 1921).

TREATMENT OF PURPURA HEMORRHAGICA WITH STRYCHNIN

The author reports two cases of purpura in which he obtained good results from the injection of strychnin solution. In the first case the horse developed the disease seventeen days after an injury of the right metacarpus. The temperature was 40.6, swelling of the fetlock and around the nasal openings. Profuse perspiration and slight dyspnea. On the first day the horse was given intravenously 400 cc of purpura serum. This was followed by a lowering of the temperature and elimination of the dyspnea. The edema became more intense on the extremities and on the abdomen. On the third day the condition became more aggravated in spite of the renewed administration of serum, so much so that on the sixth day it became necessary to perform tracheotomy. The administration of salvarsan two days later failed to improve the condition. On the twelfth day at which time the edema was very extensive and painful, a solution of 0.025 grams of strychnin in 10cc of water was injected subcutaneously. The following day a pronounced improvement with a diminishing of the edema was noticeable. The injection was then repeated. Two more injections were given at two day intervals. Complete recovery followed. In the second case, which is not described in detail, the horse was given 0.006 strychnin three times a day on two successive days. Then a day's intermission and the first treatment repeated. In this case, also, a prompt action of the treatment resulted with complete recovery of the animal.—A. Polman (Svensk. Veter., 1921, p. 68).

Live Stock Poïsoning

By Professor L. H. Pammel, Associate Editor.

SUPPOSED POISONING FROM VELVET WEED

I have had some sudden deaths in a herd of hogs which on postmortem examination showed numerous seeds of the commonly called butter print or button weed in the stomach. These weeds were cut down the day before the trouble occurred. Please advise me if the so-called seeds are poisonous.—H. I. McC., Ia.

Reply by Prof. Pammel: The plant has been regarded as poisonous and is so listed in some books. I have observed that cattle do not eat the weed as a general thing. The plant is related to cotton and is known to botanists as Abutilon theophrasti. The capsules are pointed and I suspect that when eaten in large numbers may be injurious mechanically.

IS WILD FOXGLOVE OR BEARD-TONGUE POISONOUS?

I am sending you a specimen of weed, said to be St. John's weed, for identification and information as to its toxicity. Please let me have your opinion at the earliest possible convenience.—D. C. S., Ohio.

The specimen is one of the native beard-tongues (Pentstemon laevigatus) a member of the foxglove family. The flowers are greenish-white and the leaves opposite. A few species of beard-tongue are widely distributed in eastern North America; others are common in the Rocky Mountains. So far as I know the plants have never been suspected of being poisonous.

The cultivated European foxglove (Digitalis) is related to it and is, of course, poisonous as are also other plants of the family. St. John's wort (Hypericum perforatum) grows in places similar to that of beard-tongue. It is likely if you will look for St. John's wort it will be found in the pasture. The capsules of St. John's wort are erect and not conical and the leaves opposite, and on green leaves fine little dots occur.

CASTOR OIL BEANS POISONOUS

A number of cases of poisoning from the eating of castor oil beans have been reported at various times. It is strange, however, that more cases are not recorded because of the equent cultivation of the plant. I wonder if any of the readers of VETERINARY MEDICINE have any cases of poisoning on record. The following case of human poisoning in Iowa is recorded in the Des Moines Register of Sept. 15, 1922; a Mrs. Kepford of Hawarden, Iowa. who ate a number of castor beans: "Mrs. Kepford ate a number of the beans Saturday and after a few hours was taken violently ill. She continued to suffer from nausea Saturday night. Sunday and Monday and then consented to have a physician called. She rapidly became more seriously ill, the poison spreading through her system and she died Tuesday night."

LOCO POISONING

A. E. Troy (Jour. Am. Vet. Med. Assn., Vol 60-297) in a paper presented at the Denver meeting of the American Veterinary Medical Association, discusses two of the loco weeds; the white loco (Oxytropis lambertii) and the purple and woolly loco (Astragalus mollissimus). This writer found that the loss from the white loco far exceeds that from all other sources combined and it also causes a depreciation of purebred stock. The purple or woolly loco is not so important. The symptoms of loco poisoning in cattle are much more varied than in sheep. Locoed cattle seem to prefer hill tops or rocky hillsides on which the loco weed abounds and here the acute symptoms develop. Locoed cattle become gaunt. The animals will remain in the locoed patch for days.

Dr. Johnson of New Mexico state college says that acute cases of loco poisoning can be controlled by digitalin. The paper is a good one from a practical standpoint.

The Arizona Agricultural Experiment Station has just completed a preliminary experiment to determine whether or not the rayless golden rod was poisonous to animals.

According to the experiment, it would seem that the golden rod is not injurious, at least when consumed in any reasonable quantities.

The kidney worm (Stephanurus dentatus) is of common occurrence in swine in Guina, South America, according to Rousseau.

Queries and Answers

Treatment of Fowl Parasites

WILL you kindly give me the best method of handling intestinal parasites in poultry?

I have been using the tobacco treatment with the objection that the parasites are not killed when evacuated and the birds eat them immediately, thereby causing a reinfestation. We have been very careful in carrying out our clean-up plan but as yet our results are not pleasing.

Is carbon-tetrachlorid effective for fowl parasitism, and if so, what dose and method of administration would be advisable?—C. W. B., Kans.

Reply by Maurice C. Hall: I take it that the tobacco treatment to which you refer is the one proposed by Herms and Beach of the California Experiment Station, the treatment being as follows:

The Tobacco Treatment

For 100 birds, steep one pound of finely chopped tobacco stems for two hours in water enough to cover them; mix the stems and liquid with one-half the usual ration of ground feed; the day previous to treatment withhold all feed, giving only water; after the birds have fasted for twenty-four hours, feed the mash thus prepared, and two hours after it is cleaned up give them one-fourth of the usual amount of ground feed, mixed with water in which Epsom salts have been dissolved, at the rate of eleven ounces for each 100 birds; treatment to be repeated in ten days.

This treatment appears to be most satisfactory for the removal of the large roundworm, Ascaridia perspicillum, from the small intestine and gave good results in the tests reported by Herms and Beach. It has the advantages and the disadvantages of mass treatments. One advantage is that it is unnecessary to handle the individual birds and this effects a saving in time which is considerable in the case of large flocks. The disadvantages are that the prolonged fasting necessary to make the birds eat the tobacco-mash mixture causes a temporary fall in egg production, and some of the weaker birds most in need of treatment for worms, may fail to eat enough of the mash to get the full benefit. Where a single-dose treatment is desired, the California station recommends oil of chenopodium in preference to tobacco, giving one teaspoonful of chenopodium, thoroughly mixed with a moist mash, for each twelve birds. Where individual birds were treated, Hall and Foster found that two cc. of turpentine, given in castor oil, removed 76% of these worms, and that chenopodium in doses of 0.2 cc., given in castor oil, removed 69%.

Rectal Injections of Chenopodium

Up to the present time no satisfactory treatments have been devised for the removal of the cecum worm, Heterakis papillosa, from the ceca by means of drugs administered by mouth. In the experiments reported by Hall and Foster, the tobacco treatment removed 19%, less than one-fifth, of these worms with one treatment. At the recent meeting of the A. V. M. A. at St. Louis, a method for removing these worms was reported in a paper by Hall and Shillinger as being 90% effective in a test on a series of birds. The treatment is by means of rectal injections of oil of chenopodium in a bland oil, such as cottonseed oil. The dose is 0.1 cc. of chenopodium in 5 cc. of cottonseed oil for birds weighing 1.5 pounds; probably double this dose would be effective for birds weighing three pounds or more. The mixture may be made up at the rate of one teaspoonful of oil of chenopodium and six fluid ounces of cottonseed oil, and given at the rate of one-third ounce to birds weighing three pounds or more, with proportionately smaller doses for smaller birds The mixture may be given with a hard rubber syringe, preferably the infant's size syringe. It is as easy to treat birds by rectal injection as by mouth where individual birds are treated. The tip of the syringe should be passed along the floor of the cloaca and the mixture injected slowly.

At the present time it is impossible to make definite recommendations in regard to the treatment of poultry for tapeworms and experiments along this line have yielded unsatisfactory results for the most part. A method of treatment

which has been recommended by Guberlet of the Oklahoma Experiment Station, and which has the advantages as well as the disadvantages of a mass treatment, is as follows: A gallon of a mixture of wheat and oats, to which is added a small tablespoonful of concentrated lye, is cooked slowly for about two hours and allowed to cool; the birds are fasted for about fifteen hours and then given as much of the mixture as they will eat, with plenty of water. Guberlet reported good results from this mixture, but Wickware has recently reported unsatisfactory results from the administration of lye for the removal of tapeworms from poultry.

Reinfestation from Live Worms Passed

The fact that an anthelmintic may not kill the worms it removes, is not an objection to the use of the anthelmintic. The worms which pass alive after an anthelmintic, cannot enter and develop or remain alive in another host animal as a rule, in all probability. On the other hand, the eggs present in worms removed by anthelmintics are probably capable of development as a rule, although careful experiments to determine the facts in regard to this for different anthelmintics have not been made. However, these eggs are least dangerous when first passed from the host animal. The tapeworm eggs must first be swallowed by an intermediate host, the intermediate hosts for chicken tapeworms and tapeworms of related birds including insects, such as the house fly and stable fly, earthworms, slugs and other small invertebrates. The nematode eggs require time for development to the infective stage. Anthelmintic treatment followed by the passage of a large number of worms may enormously increase the number of worm eggs present for a time on a given area, but if the feces are carefully removed for the first two days after treatment in the case of birds, the birds will then profit by the loss of worms and the decreasing soil infestation from the cessation of egg production by the worms.

Carbon Tetrachlorid

As regards the use of carbon tetrachlorid for removal of worms from poultry, we have as yet very little in the way of data on this subject. In a paper read before the Illinois State Veterinary Medical Association last year, Hall and Shillinger reported that chickens were extremely tolerant of carbon tetrachlorid, surviving doses of 20 cc. per kilo of live weight, or approximately sixty-seven times the dose rate for the removal of hookworms from dogs. When the drug was given in doses of two, four and five cc. per kilo, it removed all the large roundworms from the small intestine, and failed to remove any when given at a dose rate of 1 cc. per kilo, the drug being given by means of a catheter passed to the crop. More work is necessary to determine the possible value of this drug for removing worms from chickens. Carbon tetrachlorid is of no value for removing tapeworms of any sort.

GANGRENOUS STOMATITIS OF DOGS

I am getting a number of cases of gangrenous stomatitis in dogs and would like information through the columns of the journal as to the best treatment.—D. R. B., Australia.

Reply

By gangrenous stomatitis we assume you mean the disease which in this country is known as black tongue or dog plague, a disease that is quite common throughout the southern states. It is described as highly contagious by some and others, particularly practitioners in the South, are beginning to believe that it is not a contagious disease at all, but belongs to the deficiency disorders. Brumley pronounces it highly contagious, attributes its spread to dog shows and reports that it has practically annihilated dog breeding in some sections.

The medical treatment recommended by Dr. Quitman in VETERINARY MEDICINE, November, 1921, is as follows: Begin by giving from five to ten grains of sodium cacodylate subcutaneously and then follow with either of these prescriptions internally:

℞

Powdered iodin.....1 gr.
Liquid petrolatum.....1 oz.

Mix. Give a teaspoonful every four hours.

℞

Calomel ..... 2 grs.
Quinin sulphate .....15 grs.
Phenol salicylate .....½ gr.

Mix and make 16 capsules. Give one capsule every three or four hours.

RINGWORM IN DOGS
(Herpes tonsurans)

What is the best treatment for ringworm in dogs? I am getting fairly good results from the ordinary treatment, but would like to have the best known formula for it.—B. A. B., Australia.

Reply

For localized cases there is nothing better than pure tincture of iodin applied after giving

the spots a good washing to rid the surface of encrustations. Generalized cases require more careful attention. These should be given scrubbing baths after clipping the whole body. The bath water should be made alkaline with a small amount of sodium carbonate. The best parasiticide we have found for this purpose is mercuric chlorid solution 1-500 well rubbed in with a fairly rough brush. Mercurial ointment is also very effectual. Iodin ointment made with petrolatum at the strength of 1-16 is the remedy of choice in many of the canine hospitals, but this must always be applied with due regard for the possibility of its toxicity when used over the whole body.

SLIMY MILK

Can you give me any information about the cause of slimy milk? One of my clients who has only a few cows is troubled with a condition of his herd that manifests itself by the milk turning into a slimy state. I have read about this somewhere in VETERINARY MEDICINE but am unable to find it now.—J. U. L., Ind.

Reply

Slimy milk is due to a bacterium that contaminates the stable and utensils. It is not due to a disease of the cows themselves, although they might be carriers through dust and litter that gets into the milk pails. The usual carriers, however, are the utensils through the water used to wash them. The trouble might be at the distributing station where carelessness might prevail in washing the cans.

BOTULISM IN CHICKENS

I was consulted the other day about the death of over a score of chickens that occurred on a farm I was visiting for another purpose. On making a couple of postmortem examinations, I was unable to find any lesions to account for the fatalities, but on inquiring about the feed I learned that the farmer's wife had thrown out into the barn yard a jar of spoiled home-canned string beans that was ravenously devoured by the flock. Is it possible that so many chickens could have died from eating this single quart of spoiled beans?—J. D. C., Ohio.

Reply: The beans, without doubt, were the cause of the deaths and the disease was doubtless botulism. The amount consumed was sufficient to have caused even more fatalities as the toxin of the B. botulinis is very fatal to chickens in very small doses.

PARAPLEGIA IN DOGS

I would like information about a spaniel dog that showed signs of partial paralysis much like a horse affected with paraphlegia. The symptoms were not very pronounced when I first saw him but the owner said they were much worse the morning before. The day following my first examination I found my patient lying on the floor unable to use the hind legs, urine dribbling from the sheath and marked excitability when approached and handled. I took him to the hospital and relieved the bowels of hard fecal matter with an enema. There were convulsions at intervals of fifteen to twenty minutes that would last about a minute. He was very nervous, struggling every time he was handled. I diagnosed the case as spinal meningitis but after noting that the jaws were set and the eyes retracted I thought it was probably a case of tetanus.—C. A. K., Ont.

Reply

This case can be explained as one of distemper with convulsions and paralysis as the complication, that is to say one of the nervous forms of the disease. It was not tetanus because paralysis is not a symptom of that disease, while on the other hand, set jaws and retracted eyes are common enough during the convulsions of distemper.

We head this query paraplegia because practitioners are not ready to give up the idea that transverse paralysis in dogs is not a special entity, in spite of the fact that authorities are content to pass this condition off as a phase of other diseases. Some say it is always due to distemper infection; some like to attribute all cases to worms; some call it purely nutritional; while still others claim it is toxemia originating in the intestinal tract. It seems we do not know all about paraplegia of dogs especially those cases in which the paralysis of the hind legs is the only symptom and which either die finally or slowly recover. The acute cases we call distemper and let it go at that, while the chronic ones we attribute to a variety of causes yet to be proved.

FRIGHT DISEASE IN DOGS

In your October issue there was an article about the disease of dogs that has caused trouble from North Carolina to Texas. It is very common in my part of this state (Arkansas). The laity calls it running fits, barking fits, etc. I believe it is a brain and spinal cord affection after having treated some 50 to 60 cases in a single month.

It is necessary always to make a good preliminary purgation, but now I administer calomel and santonin, one grain of each every two hours and the next day follow with a mixture of fluid extract of cascara segrada, one ounce and elixir iron, quinin and strychnin, two ounces, in teaspoonful doses, three times a day in a forty-pound dog, smaller ones in proportion. This treatment has given me excellent results, but I know of cases that recovered without treatment.

Magnolia, Ark. O. W. Collins, V. S.

DOES A BEE HAVE A FATHER?

Will you please tell me the truth about the statement of a bee-man who insists that bees have a grand-father but no father? If true, as I am assured, how is this explained scientifically?—J. M. W., Ill.

Reply by Dr. T. A. Kragness,

The statement is true as to drones only. It is, however, not true in the case of workers nor of queens. The queen when fertilized by a drone is fertilized for life, or more properly speaking, is impregnated with seminal material that is stored away in a separated pouch for future use. On laying eggs she has the power of fertilizing or not fertilizing the eggs as she lays them. The fertilized ones develop into workers while the non-fertile by a process of intensive feeding makes drones. It is therefore true that the drone does not have a paternal parent because no male participated in its birth, but that it has a paternal grand-parent because the queen does have a paternal parent—a father.

HYDROCELES. BOOK ON THE DOG

Will you please outline briefly how to remove the so-called "water seeds" in castrated mules? Also, tell me the best way to prevent them from forming.

Could you suggest two or three books that I could get for reference work on canine practice? I have Doctor Muller and Glass' Disease of Dogs, second edition. Is there a later edition of that book, and is it necessary to get if one already has a second edition?

Reply

Hydroceles of geldings or mules are amendable to surgical treatment. The patient is cast, the sac separated from the skin, and then cut off with an ecraseur.

liminary examination to exclude hernia. The hydroceles are caused by not making a large enough incision in the tunica vaginalis or in not cutting off enough of this membrane when the animals are castrated.

The only new book on canine practice is Diseases of Small Domestic Animals, by Prof. O. V. Brumley, of the Ohio State University, Columbus, Ohio, published by Lea and Febiger, Philadelphia. It is a very good book for a practitioner and was reviewed in the November issue of the journal.

PHLEBOTOMY IN HEAT-STROKE

What argument can be advanced against phlebotomy in heat-stroke? D. R. B.

Reply

The best possible argument against phlebotomy in the treatment of heat-stroke is that it could not possibly do any good and might prove very harmful. Heat-stroke is an exhaustion of the heat-regulating forces of the organism and is accompanied with such a pronounced embarrassment of the heart that it would seem to be one of the conditions in which loss of blood volume might prove hazardous.

NERVOUS DIARRHEA IN HORSES

How shall I treat horses that develop diarrhea on the road? They are perfectly normal in the stable but while driving, especially on long trips, they purge severely. I have tried powdered opium, catechu and chalk and have also given a course of liquor arsenicalis, attended to the teeth and general health but the diarrhea persists.—D. R. B.

Reply

Our standard prescription for horses affected with this common complaint is powdered opium, one dram; powdered catachu, two drams, and dried sulphate of iron, one dram. This is one dose. It should be given twice a day in the feed. This will control the bowel movements while it is being administered and for a few days after, but the trouble will recur after the medicament is discontinued for a few days. We know nothing that will effect a permanent cure. Thinking that the disorder might be gastro-intestinal catarrh we have turned such horses out to pasture for a whole summer, only to find that the diarrhea is just as bad when grained and worked in the fall. We now call it nervous diarrhea awaiting a better explanation.

PERSISTENT CORONARY SORE

I have horses with persistent sores just above the coronet, slightly granular but highly resistant to treatment. Have tried Quitman's powder on these cases and in fact have used about everything from bad language to Shankey's Hymn book without avail, while an empiric here calls them "slow tumors," rubs on something and clears them up. I will be thankful for advice.—D. R. B.

Reply

Quit swearing, set aside the hymn book and pin your faith in pure formalin nicely patted into the granulations daily until a good leathery covering is produced.

SPECIAL AND CERTIFIED MILK

What is the difference between special milk and certified milk? There is a milkman here who sells "special milk" and advertises his product in such a way as to lead many of his customers to believe that they are buying certified milk. I would like to have the generally accepted definition of these two classes of milk for my own information as our health officer often consults me about such matters.—J. G. D., Ill.

Reply: The term "special milk" has really no real legal meaning. It may refer to milk from a tuberculin tested herd; to milk produced under somewhat more cleanly conditions than ordinary; or it may simply be used as a deceptive advertisement for common, every-day milk.

On the contrary certified milk is a milk produced under certain prescribed conditions which vary only in minor details in different communities. In the first place its production is supervised by a medical milk commission. The herd must be free from tuberculosis and submitted to periodical inspection for disease by a competent veterinarian; and the entire routine of stabling, milking and handling of the milk must be done in such a manner as to keep the bacterial count down to fewer than 10,000 bacteria per cubic centimeter.

The United States department of agriculture will send you on application a bulletin on the subject that contains all the details you will want to know.

Dr. C. S. Lobdell, one of the most prominent practitioners of Indiana, died October 10 at his home in LaFayette, where he conducted a large practice and hospital. His death was due to acute appendicitis. He is survived by a widow and two children.

PURPURA HEMORRHAGICA. FLY REPELLENT. CAUSTIC PASTE. ULCERATION OF THE CORNEA

1. What do you consider the best treatment of purpura hemorrhagica in horses?

2. Can you give me a formula for a fly repellent suitable for spraying about stables and kennels?

3. Also please give me the formula for a good escharotic paste for removing large granulations?

4. What is the best treatment for ulceration of the cornea in dogs?—E. J. C., Australia.

Reply. 1. We believe that the best medication for purpura available today is antistreptococcic serum hypodermically and a flavine solution such as flavisol or proflavin intravenously. We give the former in large doses every second day for three days and then extend the interval to every fourth day. The flavine solution is given every day for three or four days in the jugular vein. Internally we prefer iron and sulphocarbolates for their antiseptic effect on the intestinal tract. Contrary to the generally accepted custom we believe in very careful feed with both concentrates and roughage instead of allowing the patient all it will eat, and prevent the digestive complications which so often kill patients that seem on the road to recovery with frequent small doses of a vegetable oil given per os with a syringe.

2. A number of useful fly repellents were published in the journal during the summer months. Among these we prefer: crude carbolic acid, ½ pint; napthalin 4 ounces; cotton seed oil, ½ gallon; oil of tar, ½ gallon; fish oil, 2 gallons.

3. A good caustic paste is made of equal parts of zinc chlorid; powdered hydrastis; powdered ulmas; powdered gum acacia and powdered ginger; and water to bring the mixture to the consistency of a putty-like paste.

4. Collyria of boric acid and rose water followed by instillations of protargol or argyrol solutions is probably the best treatment for ulcerations of the cornea. Some have claimed that weak solutions of permanganate of potassium are specific.

Dr. and Mrs. C. W. Sass, of Toledo, Ohio, paid the journal office staff a pleasant visit on the 24th of last month as the end of a continuous automobile run of 279 miles from their home. Dr. Sass is a rising young practitioner of Toledo, succeeding his father who is one of the old practitioners of that city.

Zootechnic Notes

By E. Merillat, Associate Editor

The scrub bull puts the burden of making profit on the dairyman. The pure-bred bull takes it off the dairyman and assumes the burden himself.—Hoard's Dairyman.

The communities in which there is a high milk production correspond to the areas in which there is a large number of pure-bred bulls.

The factors determining the value of meat producing animals are: first, the percent of shrinkage in slaughter; second, the quality of the meat, and third, the general appearance of the meat when exhibited for sale.

Milk compounds and various substitutes for milk cannot be sold in the state of Wisconsin, as a law has been enacted and declared constitutional prohibiting the manufacture or sale of such products.

As the graduation of the price of milk according to the bacterial content is not making the headway it should, the production of high grade milk is lagging.

During 1919 the United States department of agriculture inspected food products valued at $13,391,914,000 in 67,453 different establishments at a cost of less than one hundredth of one per cent of this valuation.

The best method of preventing stomach worms in sheep, according to the Oklahoma Experimental Station report, consists of providing for early lambing, feeding the lambs well, rotation of pasture insofar as is possible, and occasionally administering some good vermifuge.

Brintnall, of Mississippi, reports that hemorrhagic septicemia is a relatively common disease of young calves. He says this disease is manifested by a general depression, coughing, more or less of digestive derangement associated with diarrhea, progressive emaciation and weakness. The Doctor says that vaccination can at least be recommended as an insurance against the disease.

Every poultry house should receive a thorough cleaning some time in the late summer to rid them of mites and other external parasites.

Pullets hatched from eggs produced by mature hens have a higher egg production than those hatched from pullet eggs. (Kempster.)

A very serious financial loss is sustained each year by our breeders because from thirty to sixty per cent of mares and a considerable number of the most valuable females of other breeds fail to produce. (W. S. Anderson.)

Sweet clover, like rye, is being found objectionable as pasture for milk-cows on account of an undesirable flavor it produces in the milk.

All egg laying records were broken when Lady Jewel, a white leghorn, had laid 335 eggs as her year test ended at the Washington experiment station. The best previous record was 324 eggs.

The number of sheep in the United States decreased over 40 per cent from 1903 to 1922. At the present time less than one-half of the quantity of wool demanded is produced. The production of wool and mutton will bring good returns to the producer.

Missouri is not only noted for the production of mules and good horses but also for the production of horses with intelligence. Recently it has been reported that a Missouri horse pumps his own water by grasping the pump handle with his teeth.

Michigan produced more than 3,000,000,000 pounds of milk during last year, of which 850,000,000 pounds were consumed as whole milk, 1,700,000,000 pounds made into butter, 90,000,000 used for cheese, 269,000,000 for condensing and 127,000,000 for ice cream. Michigan now stands sixth in milk and dairy production, says the U. S. department of agriculture.

Milk Better Than Mash for Egg Production

Contrary to common recommendations on poultry feeding, no dry mash is required for maximum egg production when sour skimmilk, semi-solid buttermilk or plain buttermilk is fed as a source of animal protein, according to results of experiments being conducted for the second year at the Kentucky Agricultural Experiment Station.

The results have an outstanding value for cornbelt farmers, many of whom have skimmilk and buttermilk available together with an ample supply of grain. The results also indicate that satisfactory results in egg production can be obtained through the use of three feeds including oats or wheat, corn, semi-solid buttermilk or sour skimmilk according to J. Holmes Martin, in charge of poultry work at the station.

Results obtained during the first eight months of the experiment this year are in line with those obtained in a similar experiment last year and show that pullets which received a feed of grain and sour skimmilk produced 110 eggs each during the eight months. This average was one more than that made by each pullet in another pen, the birds of which were fed grain and semi-solid buttermilk. Another pen of pullets that were fed the same grain ration, sour skimmilk and a dry mash that did not contain animal protein ranked third in egg production, each of these birds having averaged 99 eggs during the eight months.

A pen consisting of the same number of birds fed a commonly recommended ration of grain and a dry mash that contained animal protein produced 97 eggs each while birds in a fifth pen that received grain, semi-solid buttermilk and a mash that did not contain animal protein produced 93 eggs each.

The following table in a brief way shows the performance of the pullets in the different pens:

Pen	Ration	Average Production	Feed Cost for Each Doz. Eggs
1	Grain, Mash (20% Meat Scrap)	97 eggs	12.5 cents
2	Grain, Mash (No Meat Scrap) Skimmilk	99 eggs	17.1 cents
3	Grain, Skimmilk	111 eggs	12.9 cents
4	Grain, Semi-Solid Buttermilk, Mash (No Meat Scrap)	93 eggs	17.8 cents
5	Grain, Semi-Solid Buttermilk	110 eggs	12.9 cents
6	Grain, Mash (No Meat Scrap)	29 eggs	27.7 cents

In figuring the feed cost per dozen eggs the regular market prices of feeds were taken which are as follows: Corn 84 cents a bushel, oats 52 cents a bushel, bran $28 a ton, shorts $30 a ton, meat scrap $80 a ton, semi-solid buttermilk $4 per hundred pounds, sour milk 7 cents per gallon.

The same number of pullets in another pen that were fed grain and a mash that did not contain animal protein produced only 29 eggs each during the eight months, this result being considered as striking evidence of the value of animal protein in the ration of the laying hen.

Six pens of 20 White Wyandotte pullets each, of the same age and housed under identical conditions were used in the experiment. All pens were given a grain ration consisting of 70 pounds of cracked corn and 30 pounds of whole oats. The mash fed to three of the pens consisted of 20 pounds each of bran, shorts, corn meal and ground oats while one of the pens received 20 pounds of meat scrap added to this mixture.

With semi-solid buttermilk selling at four cents a pound—a common price—the farmer could afford to pay seven cents a gallon for sour skimmilk, according to the experimental results. In the two leading egg producing pens, the hens which each averaged practically the same number of eggs, the results show that five pounds of sour skimmilk was equal to one pound of semi-solid buttermilk.

In addition to leading in egg production, the 20 pullets receiving grain and semi-solid buttermilk, and the 20 pullets receiving grain and sour skimmilk, also produced each dozen of eggs at the very low cost of feed, this cost being 12.9 cents a dozen or almost thirteen cents. Even this cost is lower than it actually seems, for on this basis the farmer received 84 cents a bushel for his corn, 52 cents a bushel for his oats and 7 cents a gallon for his sour skimmilk. The costs of the other feeds used in the experiment were $28 a ton for bran, shorts $30 a ton, meat scrap $4 per hundred pounds, and semi-solid buttermilk $4 per hundred pounds.

There is ample opportunity in poultry and poultry products in this country. China has been importing millions of eggs into the United States. American hens can produce eggs as cheaply as Chinese hens, and we should use influence in increasing poultry production.

The average egg production in one of the most extensive poultry raising states does not exceed 60 eggs per year. It requires 90 eggs per year to pay the upkeep, therefore, a large per cent of chickens are maintained at a loss.

The entire distance traveled by cattle in pasture is in direct ratio to the size of the pasture and the supply of grass. Cattle may not travel more than one mile in a day or they may travel ten or fifteen miles. It is evident that the shorter the distance traveled, to obtain the necessary food, the greater the gain.

Wenyon reported some very interesting and important experiments in the British Medical Journal, No. 3175, on the trypanisomicidal action of "Bayer 205." It was found that the intravenous injection of 0.005 grammes of "Bayer 205," per Kilogram of body weight of mice infected with virulent trypanasoma equiperdum destroyed the trypanasoma and the mice remained healthy for at least ten weeks. This is a very important discovery providing this agent is efficacious in destroying trypanasoma in man and domesticated animals.

Whole kaffir has been found to be superior to ground kaffir for the wintering of ewes.

The new word "chevon" coined by the Sheep and Goat Raisers Association to designate the meat of goats is derived from "chevre," the French word for goat. It is pronounced sha'-von.

Charles E. Cotton, state veterinarian of Minnesota, and O. A. Eliason, state veterinarian of Wisconsin, report, through the Iowa State dairy association, that over a million dollars worth of dairy cows were purchased in those two states by Iowa farmers during last year.

BLATTENBERG

What has become of John Blattenberg, last heard of feeding horse meat to his colleagues at Columbus, Ohio? Was he murdered, legally executed or did he just die a natural death?

Reply: Blattenberg dead! Mercy, no! He has just begun to live. His temporary silence is due to a new allegiance: Ann Loraine, born in July.

NORTHWESTERN OHIO VETERINARY MEDICAL ASSOCIATION

Seventy-five members of this large local association met in Norwalk, Ohio, September 21, and carried out an interesting literary and clinical program. The business and literary sessions were held at the Elk's club and the clinics at the Fulstow hospital.

Among the contributors from outside of the association's jurisdiction were W. R. Hobbs, of the state university; L. H. Smith, state field veterinarian; F. E. Manter, federal field veterinarian; Alvin Broerman, state bacteriologist, and F. A. Lambert, secretary of the state association. Papers were read on diseases of small animals; immunization of hogs against cholera; clinical diagnosis of poultry diseases; and on the proceedings of the national association at St. Louis.

The annual meeting will be held at Toledo in February. The principal officers are C. E. Inskeep, of Urbana, president; H. E. Ash, of Bowling Green, vice president; and P. H. Fulstow of Norwalk, secretary-treasurer.

ARKANSAS STATE MEETING

The Arkansas State Veterinary Association convened at Little Rock on October 11 with a number of stock men and poultry men present as guests of the association.

A paper prepared by Dr. B. F. Kaupp, poultry investigator and pathologist North Carolina experiment station, was read by Dr. Shull and was very favorably received.

Dr. Hubert Shull of Texarkana brought out many excellent points in the production of clean milk for the home and market at the same time clearly demonstrating the immense services practicing veterinarians may perform in conserving public health.

At the evening session Dr. D. F. Luckey, livestock commissioner, livestock exchange, St. Louis, gave an illustrated lecture on tuberculosis, convincing his audience of veterinarians and stock men that tuberculosis causes considerable economic losses, is a menace to public health and that the merits of tuberculosis eradication work are such as to urge its early eradication. Dr. B. H. Ranson, chief of the zoological division of the United States bureau of animal industry, gave an illustrated lecture on common intestinal parasites of swine, which was very instructive and interesting.

A well prepared paper of Dr. J. S. Schilling of the state college of agriculture on the preparation of material for laboratory examination

prompted considerable discussion illustrating the import of the laboratory in the matter of diagnosis.

President Wilson ably discussed infectious abortion of swine. His experiences corroborating that of others, namely: the importance of quarantine and sanitation.

Dr. H. J. Hayes of Helena briefly discussed barium chlorid and its uses. The president suggested an open discussion in which Dr. Hayes brought up the subject of tetanus discussed by Drs. Luckey, Schull, Kittrell and Wilson. Dr. Wilson brought up and discussed briefly the subject of swamp fever. After the election of Dr. Earl Kittrell as President and J. H. Bux, Secretary-Treasurer, the meeting adjourned.

Joe H. Bux, Secy.-Treas.

NORTHWESTERN WISCONSIN ASSOCIATION

The annual meeting of the Northwestern Wisconsin Veterinary Medical Association was held at Appleton, Octoebr 18. Forty members and visiting veterinarians were in attendance. The program consisted of interesting papers and addresses, and a surgical clinic at the hospital of Dr. Wm. Madson. State Veterinarian Eliason addressed the meeting at length on the subject of area tuberculosis eradication, outlining the work done, the work at hand and that in prospect, and expressed high hopes of ultimate success of the monumental undertaking in a state with such a large and congested bovine population. Better co-operation with the veterinary practitioners and the almost absence opposition from the dairymen were given as outstanding features of the work at this time.

Those in attendance were:

Drs. A. F. Schrage, Plymouth; G. H. Atkison, Waupaca; W. F. Carey, Fond du Lac; C. D. Hemmy, New London; Frances Sexton, Clintonville; C. L. Lee, Iola; J. Tonnessen, Waupaca; E. M. Barnes, Oshkosh; C. A. Fredrich, Neenah; Geo. C. Hill, Oshkosh; L. A. Miller, Kaukauna; R. C. Finkle, Seymour; C. J. Heagle, Seymour; O. N. Johnson, Appleton; R. Kurr, Kaukauna; T. L. Knapstein, Greenville; J. W. Upright, Oshkosh; O. H. Eliason, Madison; F. A. Wilson, Green Bay; E. W. Huenefeld, Brillion; L. A. Walsdorf, New Holstein; E. W. Boom, Oakfield; W. J. Butler, Fond du Lac; J. W. Foley, Fond du Lac; W. F. Schweisow, Ripon; V. J. Laurent, Luxemburg; G. C. Webb, Kewaunee; A. H. Junge, Reedsville; C. F. Van de Sand, Kiel; F. W.

The monkey is the wiliest of surgical patients, but under the influence of a good local anesthetic, even such a painful operation as the extraction of a decayed tooth can be done without provoking any opposition.

Hansen, Wittenberg; B. Royer, Shawano; C. J. Huenink, Cedar Grove; J. H. Klug, Random Lake.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS

The fifth annual convention was held at the Planter's Hotel, St. Louis, August 25, 26 and 27, 1922, President Jas. Fleming, Kansas City, presiding. The national officers who answered the roll call were: N. L. Townsend, New York, vice-president-at-large; T. P. White, Washington, D. C., vice-president Eastern zone; A. A. Swaim, Chicago, vice-president Central zone; J. S. Grove, Oklahoma City, vice-president Southern zone; C. H. Hays, Lincoln, Neb., vice-president Western zone; and L. Enos Day, Chicago, secretary-treasurer.

President Fleming in his allocution made a forceful appeal to the members to maintain an undivided national organization, to remain loyal to the cause and set forth the objectives to be attained, among which are: that of obtaining justice under the reclassification bill, that of improved conditions of retirement, and appropriate compensation for overtime. Vice-president-at-large Townsend deplored the fact that too much attention had been given to the material interests and too little to professional efficiency, and that the "drive" for increased membership was none too favorable in view of the great need of a 100 per cent membership.

Vice-president Swain elaborated on the questions of reclassification, the pitiful distress of the unfortunate victims of protracted illness, vacations for field employees and conditions of retirement for age or disability, giving the impression without committing himself that our government has not decorated itself with the badge of magnanimity, insofar as veterinary inspectors are concerned.

Secretary Day gave an outline of a uniform efficiency rating and promotion project covering a wide range of attributes and qualifications by which candidates for promotion should be scored. These include loyalty, obedience, initiative, personal habits and disposition, resourcefulness, punctuality, adaptability, scientific attainments, and many others. He recommended that the tests should be made by an appointed board approved by the secretary of agriculture. The report brought out such a divergence of opinions that the appointment of a special committee to study the question further was deemed advisable.

Dr. Fleming was re-elected president, Dr. Day, secretary-treasurer, and J. S. Jenison, National Stock Yards, Illinois, was elected vice-president-at-large to succeed N. L. Townsend, of New York. The secretary-treasurer's address in the future will be 1749 West Pershing Road, Chicago, Illinois.

The Hudson Valley Veterinary Medical Society held its annual meeting at the Phoenix Hose House, Poughkeepsie, N. Y., November 15. The officers are Wm. Henry Kelly, Albany, secretary-treasurer; Chas. A. Roig, Poughkeepsie, president, and Chas. A. Kehr, Hopewell Junction, N. Y., vice-president.

Botna Valley Veterinary Association is the name of a new Iowa society organized at Atlantic City October 23. H. Kirk, of Griswold, was elected president; Dr. Norden, of Avoca, secretary, and J. V. Robinson, treasurer. It is proposed to hold a meeting every three months, the first one December 4.

THE NEW YORK CITY VETERINARY ASSOCIATION OCTOBER 4, 1922
EUROPEAN OBSERVATIONS

DR. EICHHORN spoke of the situation as it affects the veterinary practitioner, schools, etc. The veterinary profession seems to be doing well in the European countries he visited. But the schools are seriously injured—short of funds and short of equipment. It is practically out of the question for them to carry on any scientific investigations. However, owing to the prevalence of foot and mouth disease following the war, there has been considerable work done on this particular disease. They have isolated what appears to be the active agent. At least they have perfected a media on which they get a definite growth. It looks as though the determining factor of the plague is in sight. Another thing they have learned is that they can use guinea pigs as diagnostic animals. In the past in determining whether an infection was foot and mouth disease or not, we always thought we had to use calves, but it has now been determined that, by scarifying the feet of the guinea pig and rubbing in the virus, vesicles will develop in twenty-four hours.

Contagious Pleuro-Pneumonia

Contagious pleuro-pneumonia is more extensive in Europe at the present time than it

has been perhaps in twenty years. They have also improved methods of diagnosing in the study of this disease, now using the complement fixation test. This has been made possible by an increased cultivation of the virus. A method of diagnosing, similar to tuberculin testing has also been perfected, getting a temperature reaction as early as the second hour, which is a tremendous advantage in this insidious and ofttimes chronic disease.

Abortion Disease

Contagious abortion is widespread in Europe. The method of control is now universally the same—the injection of the live culture, but by veterinarians only. Laymen are not allowed to use biologics in Europe.

Horses Scarce

As to live stock in general, the number is greatly reduced and very inferior in quality. In many places draft horses are replaced by oxen, doing draying in large places. In Vienna where beautiful horses were the rule, the undernourished, poor specimen now prevails. In Hungary and Czechoslovakia, the livestock is of good quality. This is also true of France. Meat and meat products are scarce throughout Europe. Consequently, meat inspection is very lax. In Germany thousands of dogs are being slaughtered for consumption. There is practically nothing being done in the control of tuberculosis at present.

Agriculture in Distress

Agriculturally, conditions are bad. The large estates have been divided into small parcels for the peasants in certain countries like Roumania, Jugo-Slavia and Russia. This has the disadvantage of lowering agricultural production as the peasant is often wanting in knowledge of agriculture and surely lacking in equipment for large production. Likewise, the lack of capital and utensils prevents the small, poverty-stricken peasant from working his land to its full capacity and its greatest production. This should react in America where agriculture is in the ascendancy, which in turn will mean enhancement of our animal industry. All of this points to the necessity at once of educating veterinarians in America to give proper care to veterinary problems. In Europe there is a custom in vogue at this time to give considerable post-graduate work to the veterinarians, concentrating for one or two weeks on one subject rather than a few days on several subjects. This seems to be a wise innovation.

Dourine

Dourine has become very prevalent in the eastern European countries where it was prac-

tically unknown before the war. This, of course, means that breeding must be interfered with and perhaps the shortest route will be to castrate most of the male animals. Hog cholera is not handled nearly as well as in this country. They have not adopted the simultaneous treatment as we have and the consequence is that the losses are enormous.

Cassius Way Reports A. V. M. A. Meeting

Dr. Cassius Way was asked by the President to give a report relative to the recent meeting in St. Louis. The Doctor reported that the meeting as a whole was a very good one; attendance possibly not quite so large as at some previous meetings, but that it was regarded as a regular practitioner's meeting. The clinic and clinical material were unusually good.

Dr. Way then read a report of the executive committee which was presented to the association relative to the changing of the management of the Journal by electing Dr. Preston Hoskins secretary and editor.

Dr. I. E. Altman reported a dog having a fistula in the scrotum through which urine passed. On autopsy it was found that the fistula had been occasioned by sharp calculus.

The case was discussed by Dr. Harry Miller, who also reported a fistula of the umbilicus of a pup which on operating it was found to originate in the bile duct. The duct was tied off and recovery promptly followed.

Dr. Ackerman reported a dog that bled occasionally from the prepuce. Upon examination a rubber band was found just back of the glans penis. The question of interest is why the band was put there.—J. F. DeVine.

Dr. and Mrs. G. W. Tyson announce the birth of a daughter, July 16, 1922. The young lady's name is June Mae.

Dr. S. E. Hershey, Charleston, West Virginia, who conducts one of the most orderly veterinary hospitals in this country, bears the distinction of being the only alumnus of his alma mater, having graduated in the veterinary department of Kingston (Ontario) university which suspended operations after the first senior completed the curriculum. He is a member of the American, the Missouri Valley and West Virginia veterinary medical associations and served the latter for eight years as secretary and eight as president.

A MESSAGE FROM THE MISSOURI VALLEY VETERINARY ASSOCIATION

President Treman and Secretary Bourne have distributed a circular letter to the members of this association that contains so much sound advice to all veterinarians concerned in association welfare that we take pleasure in reproducing it verbatim for the good of the cause everywhere, and especially to invoke a more active support of association officers from the members.

At our recent meeting in Omaha, we discussed freely some things "for the good of the order". Members were frank to say what they thought regarding our needs and some things that we don't need, with the result, that, those in attendance at least, felt that we were going to buckle up and do better individually and collectively.

Controversies of Commercial Origin Deplored

Because some very disagreeable controversies have found their way into our meetings in the past a few members have dropped out and others have become dissatisfied. The question of disbanding was even given serious consideration, but when it came to a vote the majority showed that they value our semi-annual gatherings too highly to permit commercialism and factionalism to ruin such a splendid educational and scientific organization as ours. While we regret these disagreeable incidents, we feel that it will result in better, bigger and more practical meetings than we have had for several years, besides making for better co-operation and more concerted action upon questions of such vital importance to the veterinarians of the Missouri valley, during this trying period through which we are passing; when of all times we should hang together or as Patrick Henry said "We may hang separately".

The spirit of "Let George Do It" will not keep an association like ours forging ahead doing the good work it ought to be doing. The new officers are determined to keep commercialism and personalities entirely off the floor in future meetings and with the co-operation and participation of the practitioners, the programs will be not only of intense interest but practical in every sense of the word.

Help the Officers

Well then, the case is something like this: (1) When you are asked to help with the program, don't ignore the invitation, but come

back with an acknowledgment at least. You do things differently than the other fellow, maybe better, maybe not, but that doesn't matter. Tell it to the bunch, and start a little argument. Then everyone gets the benefit of the whole mass of ideas, yourself included.

Don't Knock, Pay Your Dues and Attend the Meetings

(2) Don't knock. Someone says, "The Devil lived in Heaven until he started knocking." If you have a petty grievance, leave it at home, preferably at the city dump or weighted down with six feet of good firm real estate.

(3) Keep your dues paid up. We can do a much better job if everyone pays his dues promptly. Perhaps we can even resume publishing our proceedings. At least we can get good outside talent on our programs.

(4) When you come to meetings, come. It has been an almost impossible task to induce the crowd to get into the hall to hear the programs. The new president says he is going to start on time and when he is through with a program as scheduled, quit and let the members visit. Let's help him out. We have adopted a resolution asking exhibitors to close their exhibits during the hours scheduled for the sessions and we believe they will willingly do so.

(5) Write to the secretary and tell him what you would like to have on the program. He will appreciate your help.

(6) We can use good live members no matter in what line of veterinary activity they may be engaged. We don't operate for any one class but for the good of all, so let's don't let any one class do it all and get all the benefits.

H. B. Treman, President.

R. F. Bourne, Secretary.

A diphtheretic enteritis that seems to be due to an acid fast bacillus is raging among the cats of Toledo, Ohio, according to a report from Dr. C. W. Sass, a practitioner of that city.

The Vermont Veterinary Medical Association will hold its winter meeting at St. Johnsbury, January 10 and 11. The officers are P. A. Wakefield, Hardwick, president; K. M. Kennedy, Montpelier, first vice-president; E. L. Miller, Newport, second vice-president; and Geo. Thomas, Wells River, secretary-treasurer.

Looking Backward

A Look Into the Past Unfetters the Mind, Gives a Clearer Conception of the Present, and Tends to Strengthen Our Confidence in the Future

According to Genesis the serpent was the ministrant at the Tree in the Garden of Eden.

The early American physicians had their favorite pills and concoctions, the composition of which they invariably kept a profound secret.

Louis Pasteur, to whose work most all modern thought in medical science reverts, was born at Dole (Jura), France, December 27, one hundred years ago.

Pasteur was educated at Jena university and took his medical degree in l'Ecole Normale, Paris. He made his most important discoveries at Strasburg, Alsace, where preparations for the celebration of the centennary of his birth are under way.

While the name of Pasteur is popularly connected with the discovery of the modern treatment of hydrophobia it is the discoveries he made in bacteriology in general that will make his name live in the ages.

By a strange unanimity, the serpent upon a staff was the symbol of the healing art used by ancient people widely separated from one another. It seems to have been used alike for centuries by the Egyptians and the American Indians on two widely separated continents having no known means of inter-communication.

American medicine got a bad start when Dr. Benjamin Rush, a noted American physician and a signer of the Declaration of Independence, said "Conferring exclusive privileges upon bodies of physicians, and forbidding men of equal talents and knowledge from practicing medicine within certain districts of cities and countries, are inquisitions however sanctioned by ancient charters and names serving as Bastiles of our profession." The distinguished individual also said "We have assisted in multiplying diseases nd increased their mortality."

Atossa, (650 B. C.) daughter of Cyrus, became the mother of Xerxes after Democedes, a Greek physician, had cured her of cancer of the breast.

The early philosophers made medical lore a part of their learning. Hippocrates was among the first to specialize on the healing art alone and to create a special medical literature.

There is no Father of Medicine recorded in the history of the healing art. Medicine was either created or evolved with man himself. Hippocrates lived but yesterday, and before him stretched the vast ages during which the healing art developed.

While the American school of medicine would hardly admit it, many of the first conceptions of medical knowledge were obtained from the Indians. Through friendly relations with Indian practitioners, the whites learned about the curative properties of many native plants for the first time, and many of these plants are now in the pharmacopeia.

The training of physicians and surgeons in this country during the colonial period and early decades of the Republic consisted of association with existing practitioners, reading of their few books and observing their methods, and as the pioneers pushed westward this custom followed into comparatively recent years.

Rome for many centuries had no physicians, holding learning, philosophy and arts more or less in contempt and subordinate to military training. The Roman patricians despised the physician, abhorring all men who made trade of curing the sick. Emperor Justinian (527-565 A. D.) closed all schools of medicine. In 543 A. D. a plague, the fatality of which has never been surpassed, carried off one-half of the population and left barbarism supreme and universal.

VETERINARY MEDICINE celebrated its 18th anniversary last month. The first issue appeared in November, 1905, under the name of the Iowa-Nebraska Veterinary Bulletin.

A CANINE AND FELINE ALLIANCE

Seven motherless kittens find succor in a willing foster-mother.

Dr. W. S. Wilson, formerly of Franklin, Minn., has moved to Buffalo, Minn., to open an office and establish himself in practice.

Peggy and Priscilla are names of the twin girls that arrived at the home of Dr. J. E. Hodges, of Maiden, N. C., August 24.

Dr. E. L. Krieger of Benton Harbor, Mich., has just returned to his practice after an extended trip covering all important points along the Pacific Coast from Vancouver, B. C., to Tia Juana, Mexico.

H. M. Martin, of the Nebraska Experiment Station, has recently published Circular No. 17, in which he maintains that "if the ascaris problem on our hog farms is to be solved, it is very evident that instead of giving medicine to swine, sanitation must be resorted to."

Dr. L. M. Walker, 39 years old, of Decatur, Neb., died at Omaha after a protracted illness, November 2. He was a graduate of the Kansas City Veterinary College, class of 1911; practiced his profession at Decatur until three years ago when he moved three miles south of that city to engage in farming.

Through the death of his father-in-law, Mr. Gideon Ellyson, Lieut. Col. J. H. Goulds, V. C., U. S. Army, becomes principal owner of the Standard Chemical Company of Des Moines, Iowa. Mr. Ellyson was an influential publicist in both local and national circles and was an enthusiastic worker for veterinary corps legislation.

TYLER REMINISCES

Sitting in my office today, I fell to thinking about our so-called "higher requirements for matriculation" in the colleges today and judging from my acquaintance with the average high school graduates of today, I am convinced he would have a hard time to make the grade if not protected by his diploma, but was required to submit to such an examination as I took when I entered the Chicago Veterinary College, in the fall of 1889.

I was required to figure interest, percentage and do problems in fractions and decimals. One example I still remember was: multiply 4 6/7 by 5.9. In grammar, the questions covered the defining of nouns, verbs, adverbs, etc., giving the correct use of some of them in sentences. Spelling and penmanship graded from our papers, and there were many questions in geography. But Pa was strong for grammar and mathematics, the latter especially, no doubt on the presumption that we would all become masters of finance from veterinary practice, and we all thought so, too.—J. L. T., Calif.

EQUINE ANTHELMINTIC

℞

Arsenious acid	30 grs.
Iron sulphate, exsic.	
Tartar emetic aa	2 drs.
Powdered fenugreek	1 oz.

Mix, make twelve powders, and give in feed twice a day for a week, then follow with an aloetic purge.—Reeds.

The problem of controlling tuberculosis in fowls is important and should be given the serious consideration of those in charge of animal health.

"When disease is present in a flock probably the most practical suggestion that can be followed by most farmers is to get rid of all birds about May 1. This gets the spring egg crop and at the same time eliminates the rapid losses which come with warm weather."

The foregoing is quoted from an article entitled "A Great Loss from Tuberculosis," that appeared in the October issue (1922) of Successful Farming. Such statements give an erroneous idea of the significance of fowl tuberculosis as it leaves the impression that this disease in fowls is only of economic importance to the producer and that eggs from tubercular fowls are good enough for the consuming public.

TREATMENT OF STOMACH WORMS IN SHEEP

The copper sulphate treatment of stomach worms in sheep is improved by the addition of tobacco, according to experiments made at the Oklahoma experiment station. The treatment, when tobacco is added, removes from 90% to 100% of the worms, while copper sulphate alone removes only 75% to 95%.

The treatment is given as follows: Dissolve a quarter of a pound of copper sulphate and an equal amount of finely ground tobacco, each in a half gallon of boiling water in separate vessels. Cover and let the solutions stand over night. Mix the two solutions in a non-metallic vessel and add two gallons of cold water. The dose is one and three quarters ounces for lambs under one year old and three and a half ounces for adults.

DISTEMPER—TETANUS IN A DOG

1. I would like some information about a Chinese puppy that was sick and emaciated on arrival here after shipment. The appetite was poor, some sneezing, eyes were discharging, and the dog would shake his head considerably. I diagnosed the case as distemper and administered cod-liver oil. Two days later the bowels were loose and the gait staggering as he walked about in the office. The next day he was worse and died. There were eruptions on the skin.

2. A hound, four months old. The owner thought the dog had a bone in its throat. The dog would walk with the head extended and the legs stiff and would then fall over with the body rigid. The temperature was normal and the pulse 130. Disphagia seemed to be complete. The body was so rigid and the head turned back giving one the impression of a frozen carcass. The eyes were dull but the membrana nictitans did not show and the tail was not rigid, as in a case of tetanus. What is the diagnosis?

Reply: 1. There is no doubt that the Chinese puppy was a victim of a virulent attack of distemper. The case was too advanced at the time of arrival for successful treatment.

2. Tetanus in dogs is more likely to be atypical as regards regional contractures, than in the horse. There may be trismus without a concomitant body rigidity or the reverse may sometimes feature the attack, and the characteristic flipping of the nictitans so conspicuous in horses is not constant. It may be held permanently over the corneal surface or it may not "show" at all. In short, dog tetanus, while most frequently orthrotonic may sometimes localize and

persist in any region. A case that recently occurred in our practice exhibited only trismus—a trismus so rigid that the jaws could not be pried open even a fraction of a millimeter, while the rest of the body remained in a normal state of relaxation.

COLIC CAPSULE

℞

Ammonia carbonate ..... 4 drs.
Powdered nux vomica
Powdered capsicum
Powdered camphor aa..... 1 dr.

Mix and put into No. 7 capsule.—Reeds.

Drs. F. L. Stein and L. J. Desson are building a veterinary hospital at Rochester, N. Y., to cost $30,000. The hospital is a two-story building 45x120 and of fire-proof construction. It has a plate glass front, steel ceilings and tile roof and is divided into waiting room, consultation room, operating room, pharmacy and an X-ray laboratory and with six wards and several runs, together with a special cat department.

Dr. R. A. Branson (Manhattan '11) died at Topeka, Kansas, August 28 from appendicitis. He was a practitioner at Cotton Falls, Kan., and is survived by his widow, a son aged 5, a daughter aged 11, and an infant daughter born a few days before his death. He served as an officer of the veterinary corps, A. E. F., for 18 months.

Dr. A. Kederabek of Fort Dodge, Iowa, is taking the Pasteur treatment for rabies, having had the misfortune of being bitten in the hand by a stray dog. The dog died the following day and the clinical diagnosis was confirmed by a laboratory examination.

FOR BOVINE INDIGESTION

℞

Powdered nux vomica
Powdered ginger aa..... 1 part
Powdered fenugreek ..... 2 parts
Sodium thiosulphate ..... 4 parts

Dose:—One ounce three or four times a day.—Reeds.

Veterinary Welfare*

By N. S. Mayo, Chicago, Ill.

THE welfare and progress of our profession depends ultimately upon the ability and efforts of each individual member. There is no royal road down which progress marches joyously dragging unwilling and lagging members along. It is true that a few hope to make some progress through the efforts of others but their advance is not great. Each individual must make some progress or go backward. There is no standing still.

Responsibility Individual

The welfare and progress of our profession must begin at home. That is with the individual, and every member of our profession should realize the responsibility that is his. He is the representative of our profession in his community and that community will measure the veterinary profession largely by the standard set by the local veterinarian, professionally, ethically, socially and by the service he renders to that community.

Much Depends on Service and Technical Training

Veterinary welfare also depends upon the opportunity for service and the real service that the veterinarian can render to humanity. The pecuniary return is important but there are other things besides money that make for our welfare also.

The first essential to our welfare is the general and technical training of the members of our profession. Upon one's general training, as well as technical, will we be measured, at least in comparison with the so-called learned professions. We know that the standards of training are higher than ever before and that the facilities and equipment are better and much progress is being made in the fundamental training for our profession.

Add to the Fund of Knowledge

Another important factor in the progress of our profession is the increased information available that enables us to better solve the many professional problems that we encounter. Research workers are adding their scientific contributions, that are of great practical value and I cannot omit the splendid work of Dr. Maurice Hall in demonstrating the value of carbon tetrachlorid for the treatment of intestinal round worms in animal and man. Every practitioner can do his part by contributing to association meetings such as this, or sending to the veterinary journals the results of his own research and experience in every day practice. There is room for great improvement here and an opportunity for everyone to contribute to the welfare of the whole.

Co-operate With the Livestock Interests

Another great factor in our professional welfare is the establishment of cordial relations with the farming and livestock industries upon which our profession is dependent. This should be done not only by our individual bearing to others in our daily contact but through various agencies that are working to advance the farming and livestock industries, farm and livestock organizations, county agents, the local press in rural communities, as well as livestock and farm papers of general circulation.

Harmony is absolutely essential to welfare and progress. Just as surely as home life is ruined by quarrels, and controversy, so is professional progress and welfare ruined by strife within our ranks. Nothing in this world is absolutely perfect. If you know of errors that need correcting go at it courteously and fairly, straight to the heart of the matter and every one will appreciate your efforts to make things better in the proper way and you will have the assistance and support of all fair minded men.

Support Associations

Other important factors in our profession's welfare are our professional associations. It is our duty to join such associations and unite our efforts with our professional associates for the advancement of our professional interests in every direction. In union there is strength and by our associations and their work, is our profession judged in the state and nations outside of the community that measures our individual efforts. Every veterinarian should join the local veterinary association, the state association and the national association, for they afford the best opportunities for advancing our interest and promoting our welfare as a whole.

A Prominent New York Veterinarian Performing a Surgical Operation on a Lioness, Under Profound Anesthesia.

Better Times in Sight

Our profession is just emerging, or possibly better said, just beginning to emerge from a serious depression that has affected everyone, not only financially but psychologically. I do not think it has hit us harder than it did the farmer and stockman, but certainly hard enough. Quite a few veterinarians gave up their profession and entered other lines of work; the attendance in the veterinary colleges was greatly reduced, and we all felt blue and "bolsheviki". It was, however, a world wide depression that is gradually disappearing. Such conditions occur at times and there are some of us who recall a more severe period of depression in the early nineties, that still has painful memories. We lived through it and we believe that we profited by the experience.

We believe that times are improving materially and that the outlook for our profession is good. There is no country in the world that is so favorably situated, economically, socially and politically as the United States of America. There is no country in the world where people live as well as we do or have greater opportunities for enjoying the real pleasures of life, so let us be optimists, let us strive to improve ourselves in professional lines by attending association meetings and taking and reading the best veterinary literature available.

Let us be charitable, sympathetic and helpful to others in our profession and outside of it—let us give the very best service possible to our clients—let us do our work to the best of our ability and conduct ourselves as professional gentlemen and the future welfare of our profession will be established beyond question.

*Presented before the annual (1922) meeting of the Missouri Valley Veterinary Association.

- PELVIC INJURY IN A 2:10 PACER

A valuable pacing mare, making the short turn in first lap of a mile race at a 2:10 clip, on a solid track, suddenly quit and had to be practically carried from the track.

Symptoms: Would barely touch toe of right hind to ground. Could be forced to take four or five steps at a time, and would then quit. Rapid breathing, accelerated pulse, great distress, stretched out in stall on left side. The severe pain subsided in about thirty minutes, when mare got on feet without assistance or effort. Marked abduction of limb at each step, with point of toe.

Examination failed to reveal lesions of the limb. Right hip and limb were subjected to hot packs for sixteen hours. An examination at this time revealed no swelling or external lesions, while a rectal examination failed to reveal a fracture. A marked snap or click could be detected on both outward and inward pressure on shaft of ilium about four inches above acetabulum.

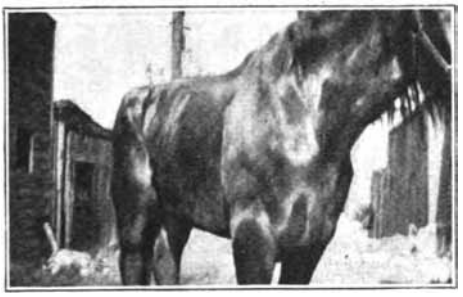
Diagnosis: Guarded.

Treatment: Mare was not allowed to move for two weeks. Hot applications to hip for one week. Patient was ideal in every respect. Did not put weight on right hind for over a week, then she began shifting weight on hind limbs. Two weeks after injury a few steps showed a marked loss of control of the principal adductor and abductor femoral muscles. When limb was in natural position under body, limp was very slight. Next step would show a marked adduction or abduction, then limp was more pronounced and vice-versa. Mare refused to pivot on right hind. Any effort to induce pivoting on right hind produced pain.

A marked click or snap, same as previously mentioned, can be heard on both flexion and extension of the right hind limb. Mare will bear body weight on right hind as readily as on left hind. There is a slight atrophy of the gluteal muscles. Mare takes quite a lot of exercise in large double box stall.

The right anterior iliac spine is about one-half inch higher than the left anterior iliac spine, due to an old injury, of which there is no history.

This injury to the right sacro-iliac articulation, gives this mare a slight hitch in right limb, when going the right way of the track, while going the wrong way of the track she shows a perfect gait, due to the slight shortening of the right hind limb.



Purpura Hemorrhagica, Atypical in That the Initial Swelling was a Hard Tumefaction of the Right Shoulder—J. B. Jaffray.

I am of the opinion that this short right hind stride is responsible for the recent injury as right limb would naturally be more susceptible to injury on a sharp turn to the left at full speed.—L. C. H., Ill.

Reply: Unless there is a pronounced sinking of the affected hip by this time it is very likely the trouble is in the sacro-iliac articulation. Snapping or coarse clicking sounds in pelvic injuries always indicate fracture of the pelvis or desmorrhexis of the sacro-iliac joint. The slight atrophy already observed and the abduction movement of the leg points to an injury of this kind.

A horse as valuable as this one should be rested longer to assure recovery. It would be better to give this horse a rest until next spring with no other exercise than the jogging necessary to keep him fit. Feed well and administer some mineral compound like Vitamineral or a similar compound in the feed continually.

Guess Them For a Year's Subscription. They Are Well Known Men. Illinois Veterinarians Excluded.

BUSINESS OPPORTUNITIES

For Sale, Exchange, Help Wanted, etc., $2.00 for 25 words or less; additional words 8 cents each. Send cash with order. Add 25c extra for correspondence when replies are sent in care of Veterinary Medicine

FOR SALE

FOR SALE—Anti-Fis-Tract is a proven remedy for all fistulous tracts, actinomycosis, chronic abscesses, etc. Full directions. $1.00 per dozen. Charges prepaid. I. G. Wimsett, D.V.M., Wellington, Kans.

FOR SALE—Good practice. Hogs, horses and cattle. Central Illinois. Good oiled roads, every direction. Nearest competitor twelve miles. Price, each $450.00. Address No. 712, care of VETERINARY MEDICINE.

I HAVE A FEW PAIR OF REGISTERED SILver black foxes for sale. This is the center of the black fox industry of the United States. Dr. F. U. Steele, Muskegon, Mich.

FOR SALE—Simplicity Equine Operating Table. Three movement model. Only slightly used. Will sell for $150.00 cash, f. o. b. Central Michigan. Address No. 713, care of VETERINARY MEDICINE.

FOR SALE—Pammel's "Manual of Poisonous Plants." Price $7.50. Address orders to: Prof. L. H. Pammel, Iowa State College, Ames, Iowa.

POSITIONS, LOCATIONS, ETC.

POSITION WANTED—Graduate grade "A" school. Twelve years' experience. City and country practice and B. A. I. Industrious, clean habits, good appearance. Address No. 707, care of VETERINARY MEDICINE.

VETERINARY PRACTICES, POSITIONS, ETC., furnished and handled for sale in 48 states. Physicians, dentists and nurses furnished and located. Drug stores for sale and drug positions in all states. F. V. Kniest, Peters Trust Bldg., Omaha, Neb. (Guaranteed Service.) Established 1904.

POSITION OPEN—For a good, practical veterinarian, at the Hyde Park Dog and Cat Hospital, 1157-9 East Fifty-Fifth Street, Chicago Ill.

WANTED—Will buy hog cholera serum plant. Give full description and price in first letter. Address No. 711, care of VETERINARY MEDICINE.

POSITION WANTED—Graduate veterinarian. Eleven years' practical experience. Inspection, transportation, postmortem, hog cholera, tuberculin testing, general and canine practice. Prefer central west or northwest states. Best references. What have you to offer? Address No. 710, care of VETERINARY MEDICINE.

WANTED—Silver fox. We pay $500.00 each for fine skins. We buy all you supply. Write to us for information as to how to raise the Silver Fox. Duffus Silver Fox Store, 21 West 30th St., New York City.

MISCELLANEOUS

"QUICK COLLECTIONS"—Everywhere. Live wire firm! Established 28 years. William H. Dodd, 87 Nassau St., New York. Don't wait, send us your bills today!

PRINTING

BETTER PRINTING for less money. Send for free samples of letterheads, envelopes, circulars, booklets, cards, etc. They will save you money. Fantus Co., 525 So. Dearborn St., Chicago.

M. J. Hoffman
Taxidermist
999 Gates Ave., Brooklyn, N. Y.
Specializing in the Mounting of Pet Dogs, Cats, Birds and Monstrosities
Game Heads and Rugs Made to Order
Mounted Specimens of All Kinds For Sale

LET US TAN YOUR HIDE.

Horse or Cow hide, Calf or other skins **with hair or fur on,** and make them into coats (for men and women), robes, rugs or gloves when so ordered; or we can make your hides into Oak Tanned **Harness or Slaughter Sole or Belt Leather; your calfskins into Shoe Leather,** colors Gun Metal, Mahogany Russet or lighter shade. Calfskins tanned in the lighter shades of shoe leather, also make **elegant stand and table covers;** great for birthday, wedding and holiday gifts.

LET US FIX YOUR WORN FURS

fashion, repair and reshape them if needed. Furs are very light weight, therefore it would **cost but little** to send them in to us by Parcel Post **for our estimate of cost,** then we will hold them aside awaiting your decision. Any estimate we make calls for **our best work.**

Our illustrated catalog and style book combined gives a lot of useful information. It tells how to take off and care for hides. About **our safe dyeing process** on cow and horse hides, calf and fur skins. About dressing fine fur skins and making them into neckpieces, muffs and garments. About our **sharp reduction in manufacturing prices.** About Taxidermy and Head Mounting.

The Crosby Frisian Fur Company,
571 Lyell Ave., Rochester, N. Y.

Mrs. A. Duval, 32 years old, wife of Dr. A. Duval of Rutland, Vt., died October 7th after a brief illness, leaving the doctor as the only survivor.

ADMINISTRATION OF CHENOPODIUM

I have been using oil of chenopodium and oil of turpentine combined with three-fourths of an ounce of castor oil for intestinal parasites of swine, but I find quite frequently that it causes vomiting, and this same effect is produced when it is given in small doses and also in capsules.

Could you advise me as to how I can disguise it and not interfere with its vermifuge effect? I would prefer to give it with the other oils, thrown back on the tongue with syringe, as this seems to be the most satisfactory method of administration.

Any information to help me out will certainly be appreciated.—C. A. B., Ia.

Reply by Dr. Kinsley

The nauseating effects of the oil of chenopodium can probably be avoided by combining the oil with bland oil; such as, linseed or cottonseed oil in the place of castor oil. It might be suggested further that some aromatic oil such as peppermint or terebinthae may be added, thus overcoming the odor and taste of the oil of chenopodium.

Dr. W. A. Pulver, of Ferndale, Cal., has been appointed state hide and brand inspector for southern Humboldt, to suceed Dr. Frank Rolley, of Fortuna.

Dr. Fred Barta, a graduate of the Kansas City Veterinary College some years ago, has located at Denison, Iowa, taking over the practice and hospital formerly conducted by Hal Simpson. Dr. W. J. Musil, Simpson's successor has moved to Logan, Iowa.

Drs. Wm. L. Gates of Clarkesdale, C. G. Stalling of Drew, and O. M. and E. S. Norton of Greenville, Mississippi, are working out a treatment for black tongue of dogs that promises to be successful.

Drs. Birch and Harrison, of Waukon, Iowa, have dissolved partnership. Dr. Harrison takes over the entire practice there and Dr. Birch goes to Worthington, Minn., his former home

The Texas state association met at Wachahachie, October 26 and 27. The officers are: G. A. Newton, of Bertram, president, and C. H. Williams, of Granger, secretary.

Dr. G. W. Waddell of Marysville, California, died of anthrax contracted while coping with an outbreak of the disease in that region. Dr. Waddell was meat inspector for the city of Marysville. Phillip Walters, a rancher of Sutter county in the same region, who became infected at the time, is reported to be in a serious condition.

Dr. J. C. Dawson, formerly of Vail, Iowa, has accepted a position as veterinarian in charge of the Gail Borden Company at the Pine Ridge Farm near Jackson, Mississippi. Dr. Dawson is a graduate of Ames, enjoyed a large practice at Vail, and was a veterinary officer during the war. He has been active in American Legion circles and was vice-commander of the Vail post.

Dr. C. B. Michels of Evansville, Illinois, has accepted a position with the United States bureau of animal industry with station at National Stock Yards, Illinois.

C. M. Morgan, of Manchester, was elected president of the Eastern Iowa Veterinary Medical Association at the recent meeting of that association at Clinton. F. J. Crowe was elected secretary treasurer, J. H. Odgers of DeWitt, vice-president, and Drs. Potts, Hell and Wolfe members of the executive board.

Geo. P. Statter, of Sioux City, was elected president of the Northwestern Iowa Veterinary Medical Association at the annual meeting in Sioux City in October. P. L. Ellis was re-elected secretary treasurer, J. T. McGilvray of Sioux Falls, S. D., vice-president, and Drs. L. P. Brewster and Will Hawkins were appointed members of the executive board.

Dr. Wm. P. Bossenberger, of Williams, Iowa, who relinquished practice to Dr. L. P. terling two years ago on account of sickness, has resumed work at the old stand, fully recovered in health.

Dr. H. E. Bemis of the veterinary division of the Iowa State college officiated as one of the judges in the endurance ride for saddle horses at Fort Ethan Allen, Vermont, October 16.

Dr. T. P. Haslam has severed his connection with the Globe Laboratories of Fort Worth, Texas. Dr. Haslam will soon complete work for an M. D. degree, and is looking forward to the establishment of laboratories for both human and veterinary biologics.

Dr. J. D. Thrower of the United Serum Company of Kansas City, Kans., was unfortunate in that his house was extensively damaged by fire early in October.

Dr. R. T. Robinson, McMinnville, Tenn., died September 21, at his home in that city from poison self administered. Worry over financial difficulties is given as the cause, in a report reaching this office from one of his colleagues. He leaves a wife and three small children.

Dr. Frank Baker, veterinary meat inspector of Gouverneur, New York, has recently been appointed milk and dairy inspector of that city.

Dr. H. C. Fitch has purchased the practice of Dr. Meier at Missouri Valley, Iowa.

Dr. I. W. Martin has taken over the practice and hospital of Dr. Beverly at Sanborn, Iowa. Dr. Martin is a graduate of Ames.

Dr. D. G. Tepfer (Manhattan '14) has been assigned as government virus and serum inspector at the Fort Dodge plant, Ft. Dodge, Iowa.

Dr. Sivert Eriksen resigned from the University of Illinois to accept the position of chief veterinarian of the Missouri Poultry Farm at Mountain Grove, Mo.

Dr. Walter D. Jensen, brother of Dr. Hans Jensen of the Jensen-Salsbury Laboratories of Kansas City has started the Bio-Chemic Laboratory with offices in Taylor, Nebraska. It advertises serums, vaccines, bacterins and pharmaceutical specialties.

Doctor Jensen was a veterinary officer with the rank of Captain during the war, serving as commanding officer of Army Mobile Hospital No. 1, a unit that operated at Chateau Thierry, St. Miheil and the Argonne, under Maj. M. E. Knowles, commanding the evacuation stations of the 1st Army. These organizations evacuated 23,000 wounded and disabled horses from the battle fields from September 25 to November 11, and conveyed them safely to advanced and base hospitals.

Dr. Frank Baker, veterinary meat inspector of Gouverneur, New York, has recently been appointed milk and dairy inspector of that city.

The French veterinary colleges have not granted a degree, but permission has recently been asked of the French government to confer the degree of veterinary doctor.

Dr. S. L. Stewart, of Olathe, Kansas, reports poultry practice on the increase in his territory. The doctor says that flocks of 1,000 birds or more are the ordinary. Some chickens!

Dr. M. S. Campbell, of Brookfield, Missouri, has recently been having some experience with equine pernicious anemia. The disease is apparently confined to one farm.

Dr. W. B. Welch, of Marshall, Mo., has established a temporary office at Hollister, in the Ozarks, where he has been doing immunization of stocker pigs.

Dr. R. T. Robinson, McMinnville, Tenn., died September 21, at his home in that city from poison self-administered. Worry over financial difficulties is given as the cause, in a report reaching this office from one of his colleagues. He leaves a wife and three small children.

Dr. L. J. McDevitt, a graduate of the McKillip Veterinary College, has moved from Owatonna to Nicollet, Minnesota. He practiced at the former place twelve years and is a veterinari. of wide experience.

The dipping of 12,000 cattle to eradicate scabies in Apache county has been completed, according to a report from State Veterinarian Hight, of Arizona.

Dr. A. H. Schmidt, formerly of Little Falls, has located at Mahnomen, Minn. Schmidt was an officer of the veterinary corps, A. E. F.

Dr. C. H. Johnson of Wahpeton, N. D., sustained serious injuries when a car he was driving overturned into a ditch, pinning him beneath for four hours before he was found. Although unconscious and thought to have been fatally injured, he was pronounced out of danger in a few days, at the Fargo hospital, where he was rushed by occupants of a passing automobile.

General Index for Volume XVII

1922

General Index for Volume XVII, 1922—Continued

General Index for Volume XVII, 1922—Continued

I

J

K

L

M

N

O

P

General Index for Volume XVII, 1922—Continued

Q

R

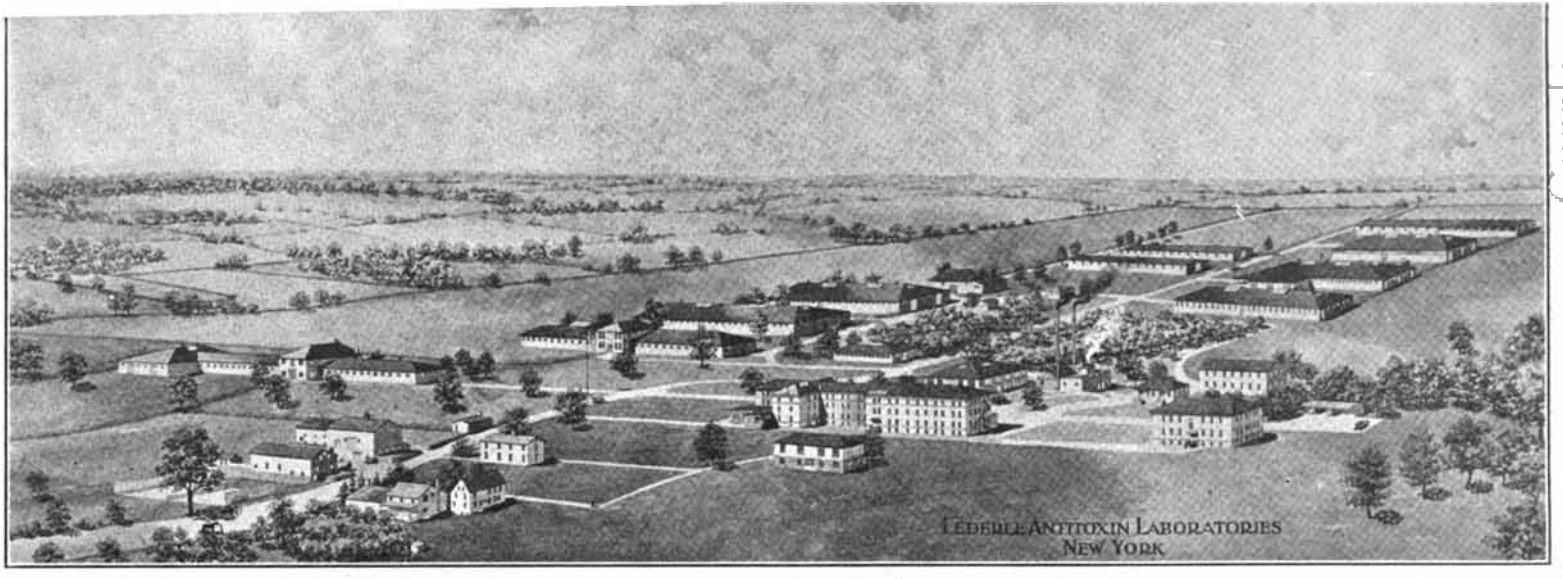
S

General Index for Volume XVII, 1922—Continued

Index of Authors Other Than Associate Editors

Index of Illustrations

Index to Illustrations—Continued



Dr. C. W. Sass of Toledo, Ohio, Exhibits Two Bitches, Vigorous Convalescents From Recently Performed Cesarean Sections.

Dr. John F. Gillespie Extracting a Decayed Premolar From a Lioness at the Prospect Park Zoo, Brooklyn, N. Y., Illustrating a Method of Restraint Safe Both For the Patient and Surgeon.

ASSOCIATION MEETINGS

National Associations

ASSOCIATION	PLACE	DATE	SECRETARY
American Vet. Med. Assn.	Montreal, Que.	1923	H. Preston Hoskins, Box 471, Detroit
Missouri Valley Vet. Assn.	St. Joseph, Mo.	February 13-14-15, 1923.	R. F. Bourne, Ft. Collins, Colo.
Natl. Assn. of B. A. I.			L. E. Day, 1749 W. Persh. Rd., Chi.
Southeastern States V. M. A.	Chattanooga, Tenn.	3rd Mon. and Tues., Nov.	J. I. Handley, Atlanta, Ga.

State Associations

Alabama	Auburn		C. A. Cary, Auburn.
Arkansas	Little Rock		Joe H. Bux, Little Rock
California	San Francisco	June 4, 1923	J. B. Bushong, Los Angeles
Colorado	Fort Collins		I. E. Newsom, Fort Collins
Connecticut	Hartford		Geo. E. Corwin
Illinois	Chicago	Dec. 5-6-7, 1922	L. A. Merillat, Chicago
Iowa	Des Moines	Jan. 16-17-18, 1923	H. D. Bergman, Ames
Kentucky	Owensboro		Chas. W. Fisher, Danville
Massachusetts	Boston	Monthly	H. W. Pierce, West Medford
Michigan	East Lansing		R. A. Runnels, East Lansing
Minnesota	Minneapolis	Jan. 10-11, 1923	C. P. Fitch, U. of M., St. Paul
Mississippi	Clarksdale	Jan. 8-9, 1923	Hugh L. Fry, Jackson
Montana	Helena		H. Marsh, Helena
Nebraska	Lincoln	Dec. 12-13, 1922	C. J. Norden, Lincoln
Nevada	Reno		Stephen Lockett, Reno
New Hampshire	Concord	Feb., 1923	R. W. Smith, Concord
New Jersey		Jan. 11, 1923	P. B. Silvester, Princeton
New York	Syracuse		C. E. Hayden, Ithaca
North Carolina	Asheville		J. P. Spoon, Burlington
North Dakota	Fargo		R. S. Amadon, Agri. Coll.
South Carolina	Columbia		M. R. Blackstock, Spartansburg
South Dakota	Sioux Falls		W. J. Joseph, Iroquois
Texas			C. H. Williams, Granger
Utah	Salt Lake City	October, each year	E. A. Bundy, Ogden
Vermont	St. Johnsbury	Jan. 10-11, 1923	George Thomas, Bradford
Virginia	Richmond	Jan. 11-12, 1923	Wm. Chrisman, Blacksburg
Wisconsin	Marinette		O. H. Eliason, Madison

Local Associations

Botna Valley Vet. Assn.	Atlantic City, Ia.	Quarterly	Dr. Nordan, Avoca, Ia.
Chicago Vet. Soc.	Chicago	2nd Tuesday of each month	J. B. Joffray, Chicago
Hudson Val. Vet. Med. Soc.			W. H. Kelly, Albany, N. Y.
No. Central Ia. Vet. Assn.			H. J. Shore, Ft. Dodge, Ia.
Northern Tier Vet. Club.	Williamsport, Pa.		E. B. Mayer, Canton, Pa.
Philadelphia Vet. Club	Philadelphia	4th Tuesday of month	C. S. Rockwell, 5128 Chestnut, Phila.
San Joaquin Valley V. M. A.	Davis, Calif.	1st Wednesday of month	A. R. Anderson, Jr., Hanford, Cal.
Southern Cal. V. M. A.	Los Angeles	3rd Wednesday of month	J. P. Bushong, Los Angeles.
Southeastern Mich. V. M. A.	Detroit, Mich.	Jan., Apr., Jul., Oct.	H. P. Hoskins, Box 471, Detroit
V. M. Assn. of N. Y. City	338 E. 26th St.	1st Wednesday of month	J. E. Crawford, Far Rockaway
Wash. State Col. V. M. A.	Wash. State Coll.	2nd & 4th Tues. of month	S. Worley, College Sta.
Western Pa. Vet. Club	Pittsburgh	3rd Tuesday of month	Fred Weitzel, Pittsburgh
York Co. V. M. Soc.	York, Pa.	1st Tuesday March, June	E. S. Bausticker, York, Pa.

This ad appeared in the Oct. 21, 1922, Country Gentleman and the November issues of nine other farm and breed publications.

Leading Farmers Speak for the Veterinarian

When you, as a veterinarian, tell the farmer about the folly of self-immunization he takes your advice with a grain of salt—he imagines that perhaps you are prejudiced in your own favor.

When we, as the producers of Pitman-Moore Serum and Virus, give him that same advice he often assumes that we, as distributors through the veterinary profession, are likewise prejudiced in your favor.

But, when leading successful **hog raisers** tell him that **years of experience** have demonstrated that the only **safe** way to immunize is to employ a licensed, graduated veterinarian to do the work, he listens with respect.

In the Pitman-Moore advertisements (now being read by the **million and a half** subscribers of the Country Gentleman and leading Breed Publications) it is the successful hog raiser who tells your story for you.

Therefore, the present Pitman-Moore campaign is the strongest propaganda ever developed for wider recognition of the fact that it is best ALWAYS to employ a licensed, graduate veterinarian.

Are you making these advertisements work for YOU? Are you helping us drive home this message —which means more calls for the veterinarian?

Now turn to page 12.

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