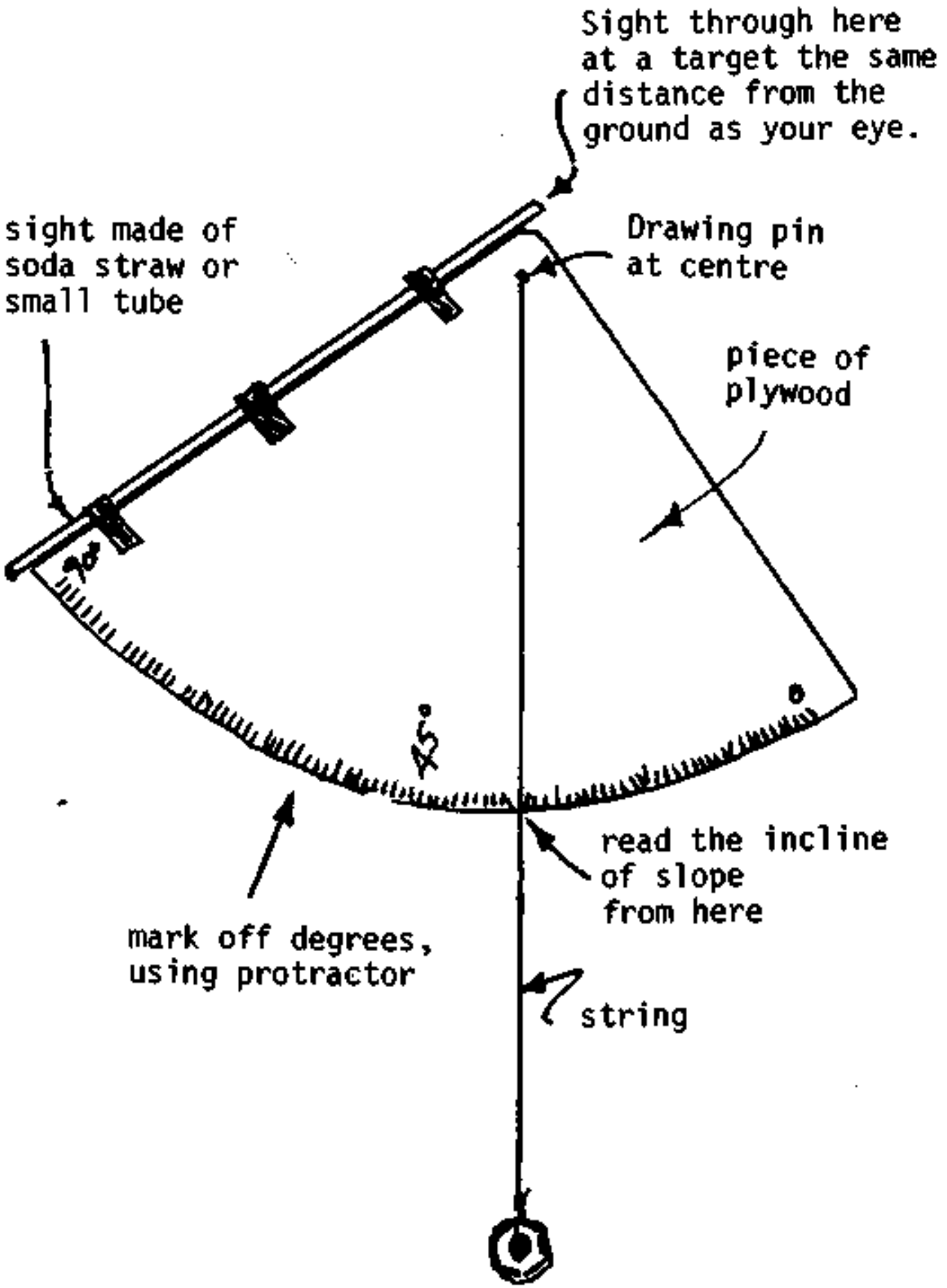
INCLINOMETER

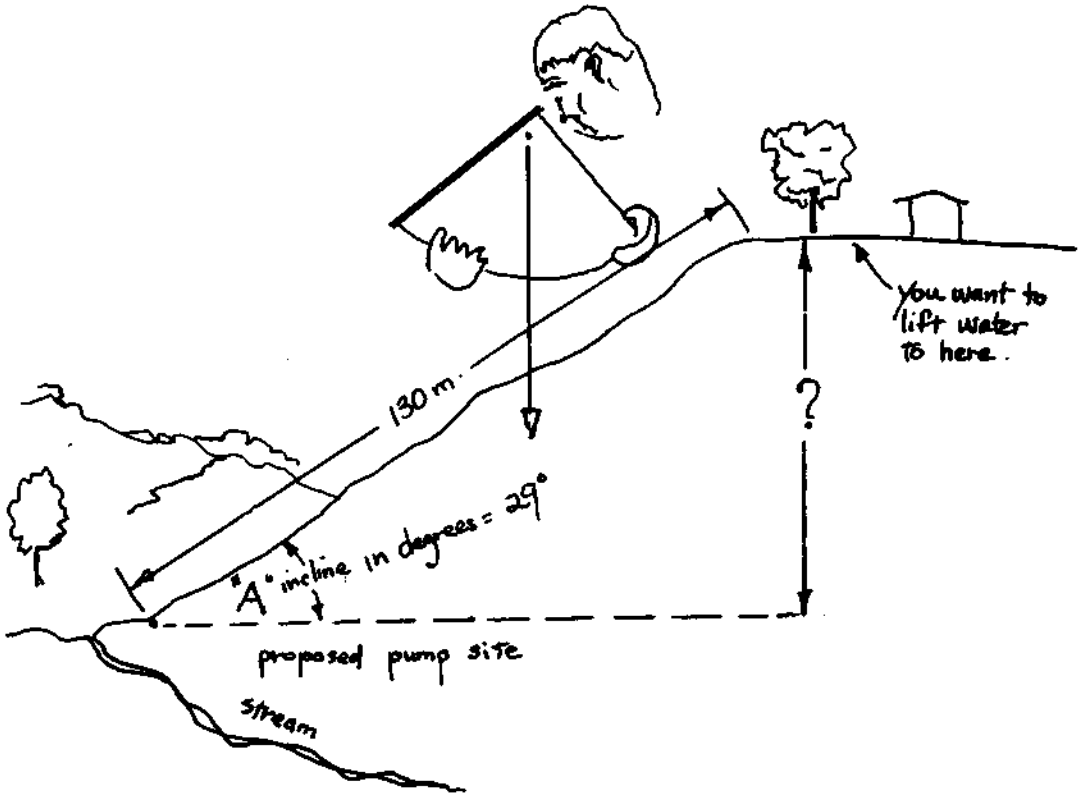
A simple inclinometer can be most useful in making approximate measurements in difficult situations when more precise instruments are not available.

Determine: slopes of hills for classifying land
road grades
heights of trees
widths of rivers
falls for water systems
contours for terracing or planting

To find the approximate elevation of a place above a pump site when you have no surveying instrument:

1. Measure the distance along the slope.
2. Measure the incline or slope of the hill using the home-made inclinometer.


Sight through here at a target the same distance from the ground as your eye.
sight made of soda straw or small tube
Drawing pin at centre
piece of plywood
45°
read the incline of slope from here
mark off degrees, using protractor
string


130 m
?
"A" incline in degrees = 29°
proposed pump site
stream
You want to lift water to here.

3. Compute the height, using a table "Natural Values of Trigonometric Functions". From trigonometry we have the following formula:

$$\text{The Sin of any angle "A"} = \frac{\text{opposite (perpendicular)}}{\text{hypotenuse (distance)}}$$

$$\text{Sin } 29^{o} = \frac{?}{130 \text{ m}}$$

In the table at the back of a math book we find that the Sin of 29^{o} = .4848.

$$.4848 = \frac{?}{130 \text{ m}}$$

$$\text{or } ? = .4848 \times 130$$

$$= 63.02 \text{ m}$$

4. If the hill is irregular, do it in two or more stages.

Suggested by F. Keating, Goroka.

NOTE: degrees slope and percent slope are not the same. 10 percent slope means 10 metres rise in 100 metres. If you don't know Trigonometry, plot your case on a piece of paper with a ruler and protractor.
Or, a rough guide:
Angle in degrees = % slope X.6