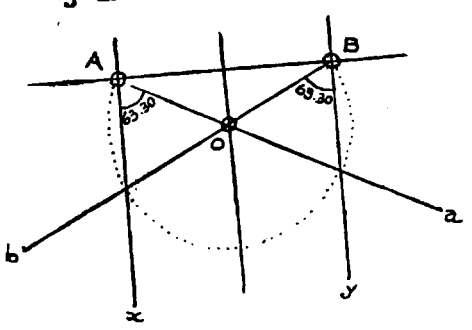
PRACTICAL HINTS TO HYDROGRAPHIC SURVEYORS.

TO PLOT A STATION POINTER FIX GRAPHICALLY.

It may happen during the course of a survey that it is necessary to plot a Station Pointer Fix graphically; for instance, the writer remembers having once left the ship at an early hour of the morning to carry out a day's sounding and forgotten to take his station pointer with him ! The following description of a quick method of graphically plotting the angles observed between the three objects may therefore be of interest.

Fig: I.



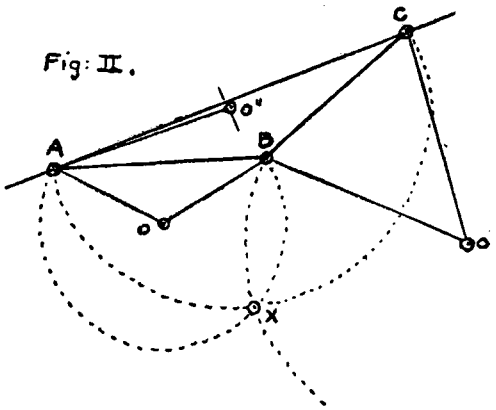
(1) In Fig. I, assume that an angle 63°30' has been observed between the objects *A* and *B*. Join *AB* and draw perpendiculars *Ax* and *By* to *AB*. At *A* protract the angle *xAa* (on the same side of *AB* as the observer is situated) = the observed angle 63°30'.

Do the same at *B*, and the point *O* where *Aa* and *Bb* intersect is the centre of the circle with radius *OA* or *OB* containing the angle 63°30' between *A* and *B*.

Alternatively plot the line *Aa* only, and where this cuts a line perpendicular to and bisecting *AB* will be the required position of the centre of the circle.

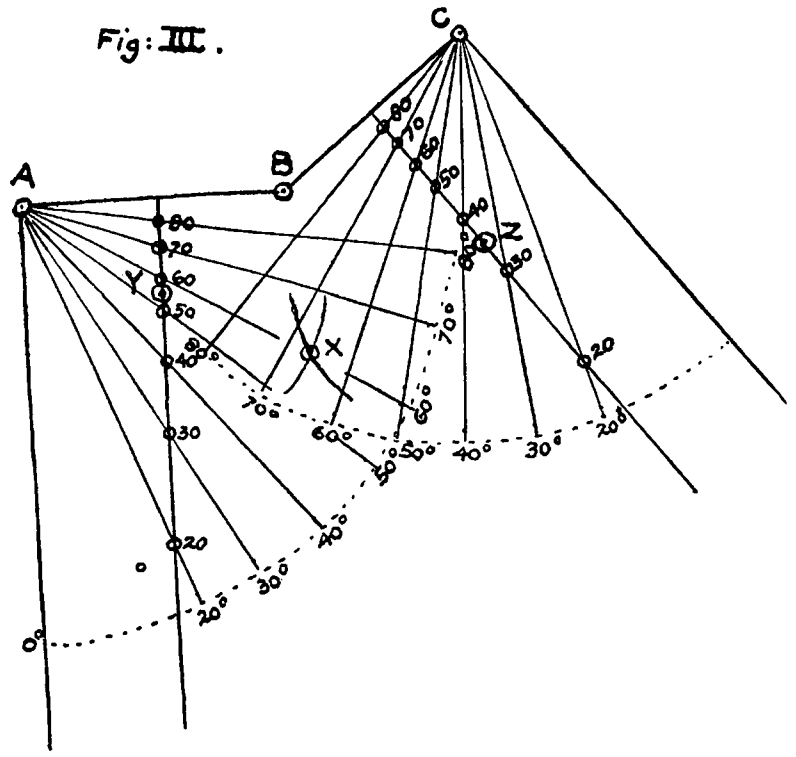
(2) Proceed in the same manner to plot the arc of the circle containing the observed angle between *B* and *C*, in Fig. II, assumed to be 25°30'. The point *X* where the arcs of the two circles cut is, of course, the position of the observer.

Fig: II.



(3) As a check to the plotting, the arc of the circle containing the whole angle between *A* and *C*, in this case 63°30' + 25°30' = 89°00', can be drawn in a similar manner thus giving three cuts at the position *X*. In this case, however, where the angle is nearly 90° and, therefore, the lines *Aa* and *Cc* cut at a very oblique angle, the alternative method described in (1) should be used to plot the centre of the circle.

(4) In order to reduce to a minimum the amount of protracting required while the ship or boat is actually sounding, it is in practice advisable before getting under way to plot the centres of the circles containing angles of 10°, 20°, 30° etc. (or smaller if necessary) between the objects selected for fixing, then, by interpolation, the required centre of the circle containing the observed angle can quickly be found and the arcs drawn.



Thus in Fig. III, if an angle of 55° is observed between *A* and *B* and of 35° between *B* and *C*, by interpolation *Y* and *Z* will be found to be the centres of the two circles and by sweeping two small arcs the position of the observer at *X* will be quickly plotted.

NOTE. — On the sounding board actually used, only the centres of the series of circles and the bisecting lines joining them would be shown, leaving the rest of the area clear for plotting the positions of the fixes as described.

J. D. N.

AZIMUTH LANTERN

designed by COMMANDER LUISONI, Head of Hydrographic Section, Argentine Navy.

When it is necessary to determine the "fundamental azimuth" of a side of a triangulation the problem presents no difficulty, particularly with reference to the light, because it is sufficient to place the lantern roughly in the centre of the station, the error of bisection at such a great distance being very small.

But the problem changes completely when the distance is short (about 1,500 metres - 1640 yds.).

A few years ago I was commissioned to define a series of fundamental astronomical control points, with the determination of azimuths, along the Argentine coast. The orders allowed for a maximum stay of a fortnight at each station; the staff at my disposal was very limited and consisted of an assistant, a wireless operator, a cook and a seaman.