PRACTICAL HINTS TO HYDROGRAPHIC SURVEYORS

FOREWORD.

On board most Surveying Ships will be found "local" fittings and ideas which often simplify, or are even improvements on, the Text Book methods of conducting a Marine Survey.

Unfortunately, owing to the nature of their work, the Surveying Ships of the different nations seldom meet and their officers therefore have little opportunity of personally exchanging ideas.

Excellent as many of these ideas are, many officers are diffident of putting them on paper, and it is with the object of encouraging them to do so and thus give the benefit of their ingenuity and experience to their fellow workers in the field of Hydrography that it is proposed to insert a chapter on "Practical Hints to Hydrographic Surveyors" in each future number of the *Hydrographic Review.*

The Directing Committee invites the co-operation of all Surveyors, not only by sending them short articles for publication under this heading, but also by expressing their personal views on or enquiries regarding those which have already appeared. It is thus hoped to institute "discussions" on the subject of Practical Hydrography amongst the Surveyors of the world through the medium of the *Hydrographic Review,* with the consequent benefit to all concerned.

J. D. N.

A HINT TO TOPOGRAPHERS.

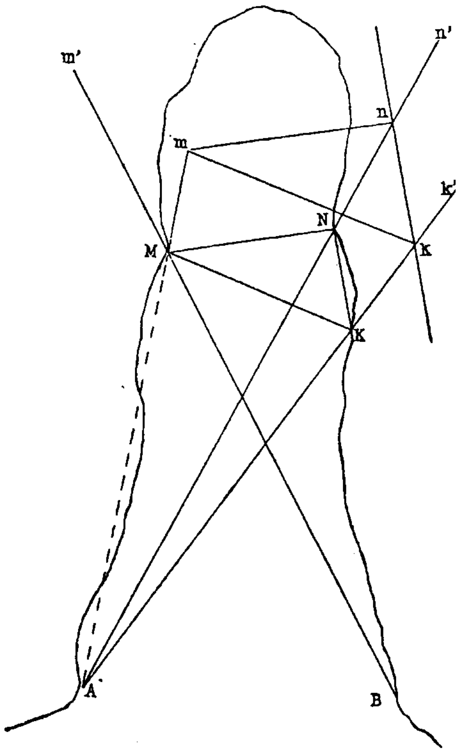
by EARL F. CHURCH.

(Extract from the *Bulletin of the Association of Field Engineers,* U. S. Coast & Geodetic Survey, Washington, June, 1931, p. 98).

The problem consists of the location of three unknown points with a check from two given points, by means of orienting lines only and without any intersections from the known points. I believe the following discussion, together with the accompanying diagram, is sufficient explanation:

Conditions. — The instance where the problem was almost invaluable was in running into a bay in which there were no triangulation stations for plane-table sheet from triangulation or traversing outside the bay. The point A will see the right-hand side of the bay and B will see the left side, but no intersections can be obtained on points on either side. Traversing into the bay from A and B is difficult or perhaps impossible on account of the steep rocky shore line.

Method of Procedure. — Let the rodman put a flag at each of the three points favorable for setting up the plane-table back in the bay. Two of these points, which we call N and K, are on the right-hand side of the bay, for instance, and are visible from A. The other, called M, is on the left side and is visible from B. Set up the plane-table at A and draw orienting lines An' and Ak' toward the points N and K respectively. Then set up at B and draw orienting line Bm' toward M.



Next set the table up at the flag *K*, orienting on *A*. Then draw a long orienting line toward the flag *N* at any convenient place as *kn*. It must be kept in mind that the intersections *k* and *n* of this line with *Ak'* and *An'* are not the actual points *K* and *N* on the sheet, for *K*, the place of set-up, has not been located.

Next set up the table at the flag *M*, orienting on *B*. Resect upon the flags *N* and *K*, using the arbitrary points *n* and *k* as the corresponding points on the sheet. This gives a location of *M* at some point, as *m*, not on the line *Bm'*. But, as a matter of fact, the point *M* really lies on the line *Bm'*. Now with the fiducial edge, draw a line from *A* to the arbitrary point *m*. (This is not an observed line for *A* and *M* are not inter-visible.) The point *M*, where *Am* cuts *Bm'*, gives the true location of *M* upon the plane-table sheet.

Next sight upon *N* and *K*, locating them by intersections with *An'* and *Ak'* from the point *M*; the check, then, is the parallelism of the line *KN* with the orienting line *kn*. Or, locate *N* by an intersection from *M* with the line *An'*; construct *NK* parallel to the orienting line ***nk***, locating *K* by its intersection with *Ak'*; then check by a resection upon *K* from *M*. The geometric proof is obvious.

CANVAS CURRENT DRAG

by Rear Admiral J. D. NARES.

The attached drawing shows details of a Canvas Current Drag used by the writer in H. M. S. *Merlin* when carrying out a long series of current observations in 1920. It was designed on board and constructed by the ship's carpenters and when tested with the Ekman Meter was found to give very accurate results.

The apparatus consists mainly of two surfaces of canvas each 3 ft. 0 in. long and 2 ft. 6 in. wide stretched at right angles to one another by means of wooden spreaders. The centre stave is of wood, one inch square and 5 ft. 00 inches in length — round the bottom end of which is secured a 7 lb. weight of sheet lead. The wooden spreaders are of slightly smaller dimensions than the centre stave and just strong enough to keep the canvas wings flat when wet.

The " Float" consists of a broomhandle, round which are lashed sufficient strips of cork to just support the Drag (*) with only the top of the Float above water, to which is secured a small white flag and also the end of the Current Line.

The "Current Drag" is suspended from the Float by means of a hemp line one inch in circumference, the length of which can be varied according to the depth at which the observations are required.

(*) *The Float should be as small as possible in circumference in order that it will not be affected by the wind or form a check to the movement of the Drag, should the strength and direction of the current at the depth at which the observations are being taken be different to that at the surface.*