

# USE OF RANGE-FINDERS FOR HYDROGRAPHIC SURVEYING

by

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Last summer there were issued to the Georges Bank surveying fleet three BARR AND SROUD one-metre navigational range-finders. One was issued early in the season to test its value in fixing the position of an R. A. R. receiving ship and its trailing hydrophone with reference to the station buoy near which the ship was anchored. The range-finder was borrowed by one of the sounding ships and was found to be so useful for other purposes that two additional instruments were issued to the fleet.

Subaqueous sound ranging is not satisfactory when the distance is less than about 1,500 metres, for the recording device has only a second or less to recover from the explosion before the radio report from the hydrophone station arrives, and during that time the recording apparatus must be shifted from the ship's hydrophone circuit to the radio receiving system. Consequently, it is necessary to have some other means for getting the position of soundings while the surveying ship is in the proximity of the hydrophone station. The range-finder, in conjunction with the ship's compass, furnishes this means admirably. The error of a range-finder measured distance of 2,000 yards or less is not likely to exceed 3 % of the distance, especially when measured over the water, and distances of this degree of precision when plotted along good compass bearings should give fixes sufficiently accurate for most work for which R.A.R. is acceptable.

In R.A.R. work, such as was done on Georges Bank, it frequently happens that one receiving ship fails to report a bomb, due to a temporary disarrangement of its receiving or sending gear or to the fact that an intervening shoal interferes with the free passage of the compression wave; sometimes both ships fail. At such times the range-finder and compass save the situation, if one of the receiving ships is in sight and not too distant, and enable the surveyor to continue the line with sufficient control until the sound ranging can be resumed.

When developing the shallow (except the very shallowest) and broken bottom area of Georges Bank, it was found most convenient to operate the two sounding ships as one unit. One ship only used R.A.R. for control and the other ship followed beside the first at a distance equal to the required line spacing. This distance was maintained by means of a range-finder. The following ship heard, by means of its radio, the bomb signal, given at the instant the bomb was dropped, and at that instant got a fix by means of a bearing and distance to the bombing ship. Its line of position was then plotted from the line of position of the bombing ship.

## CONCLUSION.

We believe a range-finder is a most useful instrument on a surveying ship and that many uses will be found for it other than those described herein. Our experience with it has been limited to distances not in excess of 2,000 yards and, accordingly, we think of it as a surveying instrument only to that distance. It may be that its range can be extended for some classes of work; it should be a valuable aid to navigation at much greater distances. It would be very useful for running surveys or reconnaissances.

