HINTS TO HYDROGRAPHIC SURVEYORS.

TIDAL OBSERVATIONS AT SEA WITH THE DORSEY FATHOMETER

by

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The need for a simple and accurate method of observing tides at sea for tidal control of hydrographic surveys on continental shelves has long been recognized. Methods used by the United States Coast and Geodetic Survey in the past have ranged from direct observations on specially designed staffs floating in iron pipe wells to indirect observations with various types of pressure gages. In general, the methods used have yielded results serving the purpose for which they were designed, but most of the devices are limited to comparatively shallow water.

The accuracy of the results which have been obtained in hydrographic surveys by the Dorsey Fathometer suggested the possibility of using this instrument to observe tides from the surveying vessel while at anchor. A series of observations made recently from the United States Coast and Geodetic Survey Ship *Hydrographer* by the writer illustrates the possibilities of the method. Wherever observations are desired the vessel is anchored for the night with a short scope of chain and over an even, level, bottom, as indicated by the hydrographic survey. Depths are read on the fathometer during the night at intervals of 10 or 15 minutes through the high or low water periods, and at half-hourly intervals otherwise. The instrument can be read to the nearest tenth of a foot, and the tide curve thus obtained shows that there rarely is an observation in error by more than this amount. The accompanying figure shows the observations and tide curve obtained at a station in the Gulf of Mexico 27 nautical miles off the Texas coast in a depth of approximately 70 feet.

It is not suggested that this method will supersede the standard methods in use for establishing the factors for tidal predictions along the coast, but it is apparent that it offers an opportunity to verify the factors used in prediction of tides at distances from shore, and for the purpose of applying tide reduction to soundings in such areas as the *Hydrographer* now is working — the extensive shoal water areas in the Gulf of Mexico on the continental shelf. It is also realized that there are many places where the ocean bottom, due to the irregularities, might not be suitable for such observations. There usually are, however, places of sufficient extent where the ocean bottom is smooth and level, and where tidal observations in the manner outlined above are quite practicable.

It will be remembered that the Dorsey Fathometer was described in the Hydrographic Review, Vol. XII, N° 2, November 1935, pp. 50-53. (See also F.S. BORDEN "Dorsey Fathometer Operating Notes", *Field Engineers' Bulletin* N° 10, December, 1936, pp. 122-123, U.S.C. & G.S.). While it was designed primarily for increased accuracy in shoal water sounding, the instrument has been used consistently by the party on the *Hydrographer* in depths of from 50 to 60 fathoms, and it has been used successfully on occasion to 135 fathoms.

NOTES ON THE USE OF METALLIC TARGETS.

(Reproduced from the *Annales Hydrographiques,* Paris, 1935-1936).

(Translated from the French).

Since 1932 the Hydrographic Expedition in Indo-China has adopted metallic targets of 25 to 30 metres height (80 to 100 ft.) of the same type as those used by the *Service du Cadastre d'Indochine,* for the survey of that part of the coast of Indo-China located to the southward of the mouths of the Mekong. These targets are composed of tubes fitted with cross bars and hafting into each other. The assembly is supported by three or four sets of shrouds.