

APPARATUS FOR TAKING SAMPLES OF SEA WATER

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(Translated from the French).

The following is a description of the construction and method of use of an apparatus for taking samples of sea water at a previously determined depth. This instrument, designed by the writer, has proved entirely satisfactory. It has functioned well in a very strong current and close to the sea bed; it is not a costly instrument, its construction is simple and its manipulation easy; it has been thought, therefore, that the descriptive article which follows might interest readers of the Hydrographic Review.

The apparatus comprises two tubes *C* — *D* soldered together in the form of a cross and permitting free flow between them at the joint. In one of the tubes *C* a piston moves with a slight amount of friction. The piston has a transverse perforation about half way along it so that free passage to the tube *D* may be established or cut off. The tube *D* is open to the sea at one end and at the other connects to a rubber pocket *N*. This pocket is removable but otherwise has no special features. It may be readily purchased commercially (water bottle). The one which we employed had a capacity of about 2 litres.

The apparatus is suspended by a cable of about 3 mm. diam. The cable passes through the piston *B* following its axis of rotation. The cable *A* terminates at one end in a lead weight of about 30 kg. while the other part passes over a small roller *Q*. One complete turn of the drum of the roller reels up or pays out one metre of cable.

When it is to be used in the vicinity of a soft bottom it is advisable to first measure the depth of the soft deposit, using for this purpose the lead weight by itself. The number of turns and partial turns of the drum of the roller will permit a sufficiently accurate estimate to be made of the depth of the layer of soft mud. The information thus obtained suffices for adjusting the apparatus for the sample of water at the desired depth, by making use of the wedging chock *O*.

Before placing the apparatus in the water, the piston *B* is moved up to the extreme top position; thereupon the pin *H* engages in the groove *a* and the entire lower part of the piston obturates the water sampling tube *D*. As soon as it is submerged the entire apparatus orients itself in the current and during the time the apparatus is being lowered to the desired depth no water whatever enters the pocket *N*. The taking of the sample is determined by the drop of the messenger *E*. The shock occasioned by the fall of *E* on *B* causes the pin *H* to disengage from the groove *a*, the weight of *E* causes the piston *B* to fall until the pin *H* engages in the groove *b*. The passage through the tube *D* is then opened and the pocket *N* becomes filled with water under the pressure of the current. After a certain interval (which is a function of the strength of the current and the volumetric contents of the receptacle *N*) the tube *D* is again closed off by the arrival of the messenger *G*, which, by means of the pusher *F* causes the piston *B* to fall as far as the stop *M*. In this position the obturation of the tube *D* is accomplished by the upper part of the piston *B*. When the entire apparatus has been drawn to the surface the sample contained in the pocket *N* is drawn off into an appropriate container.

N.B. It is essential that care be taken that the grooves *a* and *b* are not too deep. A spherical-shaped indentation with the edges rounded off somewhat has given satisfactory results.

AN HARMONIC TIDE COMPUTER

(Reproduced from an article in *The Nautical Magazine*, Glasgow, Nov., 1936, p. 428).

(Note by the Directing Committee: This instrument is designed to carry out mechanically certain of the computations required for the Harmonic Method of Tide Prediction as described in British Admiralty Tide Tables Part II.