

NOTES

NEW SAMPLERS FOR
COLLECTION OF SEA MUD

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To obtain specimens from marine environment, water sampling devices such as NANSEN's sampler and sediment sampling device such as a gravity-core sampler are used for geological or ecological examinations in oceanic or aquatic fields. Those samplers are able to collect a reasonable amount of specimens for the above studies. These devices are all considerably heavy and operated by means of a rope with the help of a winch, permitting the raising and lowering of the device.

During our screening studies for microorganisms producing antibiotics, sea mud was found to be a good source^{1,2)}. Small amounts were sufficient to isolate a great variety of microorganisms.

Since a small sized sampler would be adequate and since a more convenient sampler is needed for easy and frequent collection of sea mud, the following devices were made and used successfully.

Type A—Mini Sediment Sampler
(Figs. 1~3)

A chamber of boat type (R), of which

half of the top is covered by lid (L) and another half is opened to serve as a mouth (M), can be rotated by the spring (B). At first before use, the chamber is fixed by hook (H) in the up-side down position as shown in Fig. 1. The hook is connected to the bent-arm (A). When this arm reaches the bottom of the sea or lake, it is pushed up, and the hook is released. Then, the spring rotates the chamber (R) and the mouth of chamber scoops mud into the chamber. The opened mouth of the chamber is closed by plate (P) as shown in Fig. 2. A bird's eye view of the sampler is shown in Fig. 3 with an indication of size in cm. With the help of a handy winch like that used in GUNDERSEN's model³⁾, the sampler can be brought up or down by use of a fishing line. This sampler is able to collect 20~30 g of mud (wet weight).

Type B—Conical Head Sampler
(Fig. 4)

A cup (C), of which the bottom has a conical shape is closed by the lid with a spring (S1). The cup is connected to weights (W1 and W2, changeable, if necessary) by a screwed rod (N), connecting to a cylinder, in which CO₂-bomb (B) is held by a spring (S2). A screwed needle (N2) is positioned at the bottom. When the cup reaches the bottom of a lake or sea, the conical head settles into the mud, and the lid is lifted up to introduce mud into the cup. At the same time, bomb (B) goes down to needle

Fig. 1.

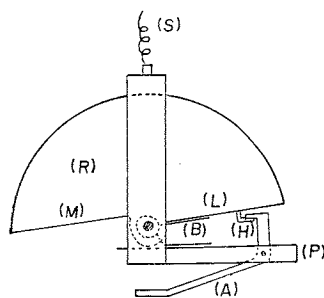


Fig. 2.

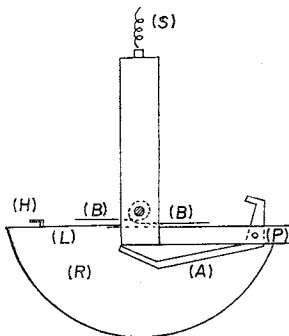


Fig. 3.

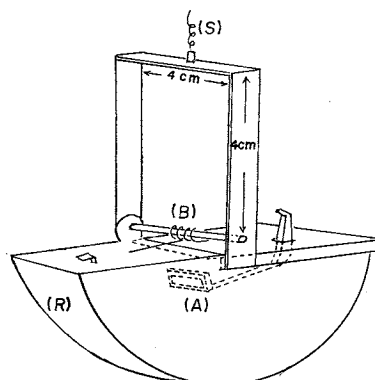
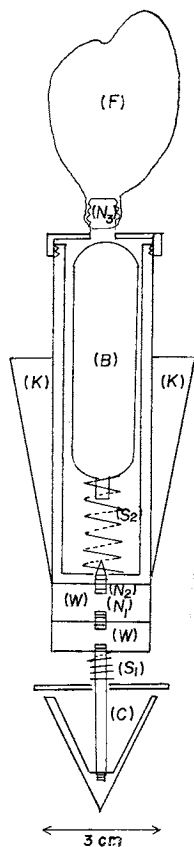


Fig. 4.



(N2), and the needle opens the bomb to emit CO_2 . The released CO_2 gas is led to nodule (N3) where a balloon is inflated. This balloon can serve as a float to bring the whole sampler upward to the surface on the lake or sea.

Type A sampler is preferably used for sampling at depths less than 100 meters, whereas the type B sampler is more convenient at deeper locations without the need to handle rope or string which are troublesome and time-consuming during collection of sample.

These handy small samplers are useful not only for isolation of microorganisms at the bottom of a lake or sea, but also for collection of sedimented mate-

rials which may give various informations to other areas of interest such as fisheries.

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References

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