

Shallow Water Sampler

A modified version of Hale's water sampler coupled with Secchi disc is described. The sampler with the capacity of 1,250 ml. can be successfully used for collecting the samples from known depths in the unmodified conditions.

For chemical analysis of water, specially for the estimation of dissolved gases like O_2 & H_2S , the technique of water collection by a Hale's water sampler and its shortcomings as described by Welch (1948) were studied. The main limitations in the sampler were:

1. Water begins to enter the unit as soon as it is lowered below the surface.
2. Proper working of the unit once it is in water and the filling time, except in very shallow water, cannot be known definitely by the operator.

The above limitations have been overcome by suitable modifications in the new unit, details of which are illustrated in Fig. 1 (A).

The sampler is lowered into the water from the boat or a platform (in case of fixed stations) by means of a graduated rope. The pressure tubing (pt) which is connected with the reservoir bottle at one end is also lowered simultaneously. The upper end of the tube is kept clipped tightly to check any release of the air through it. This mechanism prevents the entry of the water in the upper levels. The clipped end of the tube is put in the conical flask or an ordinary bottle 2/3. filled with water. As soon as the sampler reaches the desired depth the clip is loosened slowly. Release of air bubble through the tubing indicates that the sampler has started working. Soon after the bubbles cease to come, the sampler is hauled up slowly. The water collected in the bottle no. 1 need not be transferred but either be treated with Winkler's reagents for estimation of dissolved oxygen or used for some other estimation. Water collected in the reservoir bottle (No.2) would suffice for the estimation of other constituents.

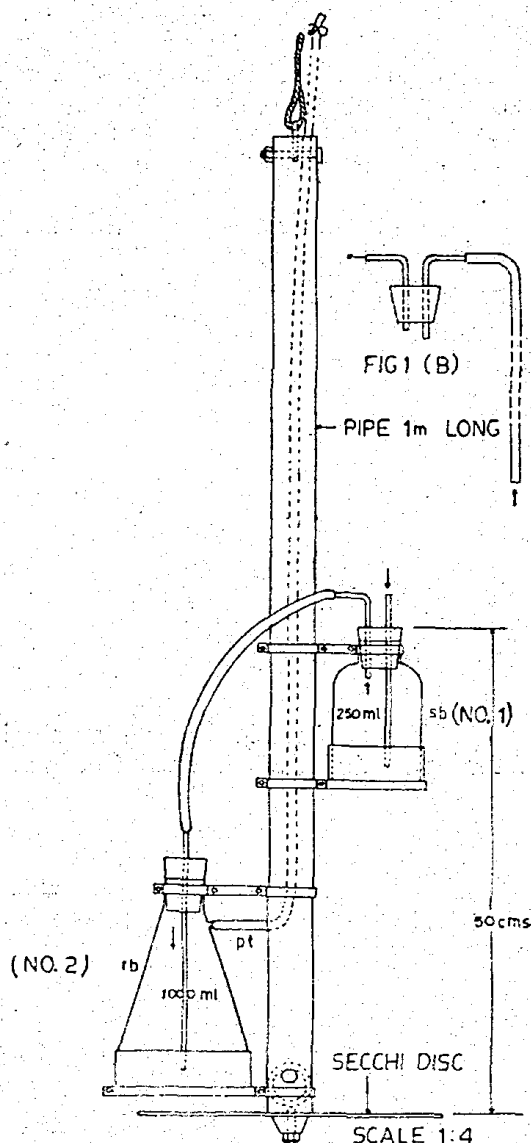


Fig. 1. (A) Shallow water sampler (Front view);
 rb—Reservoir bottle (No. 2)
 sb—Sample Bottle (No. 1)
 pt—Pressure Tubing
 Fig. 1.(B) Modified design of Inlet tube

The unit collects samples from levels other than very near the bottom quite satisfactorily. But when it is intended to collect samples from the bottom or 50 cm. above it, an inlet tube with modified design has to be used. It is observed to be handy and time saving to replace the original rubber cork of bottle No. 1 with the one already provided with the modified inlet tube (fig. 1 B,) and operate in the same way.

It may be seen that complete assembly has a Secchi disc as its base. While the unit is lowered to the desired depth, the limits of light penetration can also be studied with the help of secchi disc used herein. Besides it helps in preventing the inlet tube from getting choked with mud, in case of collection of water samples from near the bottom.

Nearly 25 field trials of the sampler were made in the estuaries of Mandovi and Zuari rivers at depths ranging from 1.0 to 10 metres. The results obtained were very satisfactory. It was also observed that the unit fills up samples from depths faster than at upper levels.

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Reference

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