A SMALL SEDIMENTATION CHAMBER FOR USE ON THE WILD M 40 AND THE ZEISS PLANKTON MICROSCOPES

For quantitative and qualitative work on phytoplankton the UTERMÖHL (1931, 1958) method seems to be the most reliable (for species which may be identified in preserved condition). The method includes the use of an inverted microscope and a sedimentation chamber[1] with thin glass bottom through which the cells are viewed and counted. The chambers which are available from the optical firms have been improved considerably in the last years, and are now delivered in a number of different volumes, but with constant floor area. At our institute, however, there has been a request for small chambers (2 ml) with a smaller floor area than the standard.

In the chamber to be described the floor area is about $\frac{2}{5}$ of the standard chambers (WILD and ZEISS). This gives a further concentration of the material, and permits the whole area to be examined at high magnification (400–500×) within a reasonable period of time. This is often desired when small organisms e.g. coccolithophorids, are to be enumerated. When the whole floor area is examined the possible error due to uneven distribution is eliminated.

The present chamber is made of Perspex with a glass bottom and holds 2 ml volume when covered by a plane glass plate.

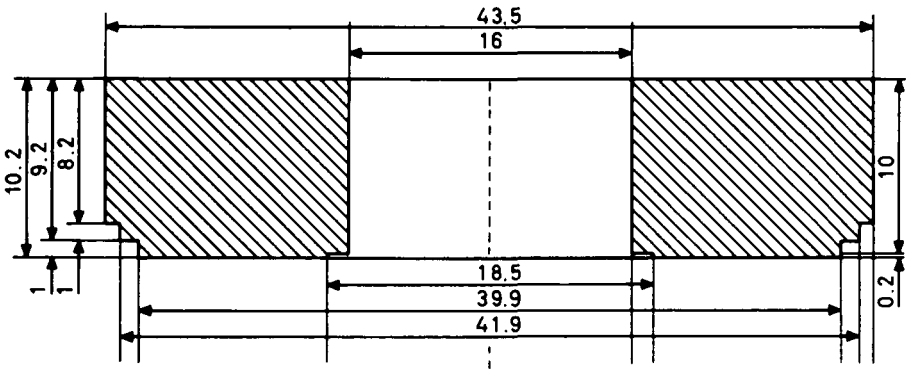

Figure 1. Section of 2 ml Perspex sedimentation chamber showing height and diameters. All measurements in mm.

The main part is the Perspex cylinder which is cut in the lathe to the dimensions shown at Figure 1. The different outer diameters of the lower part of the cylinder make it fit to both WILD and ZEISS plankton microscopes. To fit the bottom glass a 0·2 mm deep groove is cut along the margin of the inner cylinder wall. This wall should be polished to prevent organisms sticking to it.

The glass bottom is a circular cover slip, the thickness of which may be

[1] TUNGATE (1967) has described a sedimentation chamber which can be used with a conventional microscope.

Downloaded from https://academic.oup.com/icesjms/article/33/2/297/800734 by guest on 25 April 2024

chosen according to the use of the chamber, e.g. 0·17–0·19 mm when oil immersion objectives are to be used.

To fix the bottom to the cylinder a glue which is resistent to seawater and the fixing agent is required. Though not tested for a longer period of time, the epoxy polymer EPON seems to have these qualities.

Jahn Throndsen
Institute for Marine Biology, Section B
University of Oslo

Downloaded from https://academic.oup.com/icesjms/article/33/2/297/800734 by guest on 25 April 2024

REFERENCES

TUNGATE, D. S. 1967. "A new sedimentation chamber". J. cons. perm. int. Explor. Mer, **31**: 284–5.

UTERMÖHL, H., 1931. "Neue Wege in der quantitativen Erfassung des Planktons". Verh. int. Ver. Limnol., **5**: 567–95.

UTERMÖHL, H., 1958. "Zur Vervollkommnung der quantitativen Phytoplankton-Methodik". Mitt. int. Ver. Limnol., **9**: 1–38.

A NON-TOXIC WATER SAMPLER FOR SHALLOW WATERS (0–50 m)

Many different types of water sampling devices have been invented in the past years. For samples which are to be used in phytoplankton culture work the water samplers used by the microbiologists seems to be convenient. Usually these are made of rubber as the Cobet sampler or have rubber parts like the ZOBELL (1941) and the "NIVA" (Norsk institutt for vannforskning, 1966) type. Rubber, however, may be toxic to many phytoplankton species and for culture work this has to be considered. The present water sampler is a combined modification of the ZOBELL and the "NIVA" type. It was designed to ensure non-toxic sampling of seawater for serial dilution surveys. In this type of sampler the water will come into contact with glass and silicon only. Simple experiments with cultures of *Monochrysis lutheri* Droop and *Isochrysis galbana* Parke have shown that compared to rubber and plastics, silicon rubber is the most reliable material according to toxity, for the tubes which are parts of the sampler.

The complete sampler (Fig. 1) consists of a sampling bottle mounted on a stainless steel frame which is attached to a hydrography wire.

The sampling bottle, a 250–1000 ml JENA or PYREX bottle, is fitted with a modified wash-bottle head which together with two pieces of silicon rubber tubing constitute the "filling apparatus". When ready for use the bottle is closed to the exterior by a short glass tube connecting the silicon rubber tubes.

The frame consists of a L-shaped piece of stainless steel with two clamps for fixing it to the wire. A trigger mechanism on the top of the frame is constructed as a pair of jaws, the upper jaw is fixed whereas the lower one turns on a screw and its distal end emerges through a slit in the frame close to the wire. It is held in place by a smooth steel spring.

For operation the bottle is placed in the frame and the glass connection of the tubes is placed between the jaws of the trigger mechanism (Fig. 1 A & B), and then lowered to the desired depth. When activated by a messenger weight