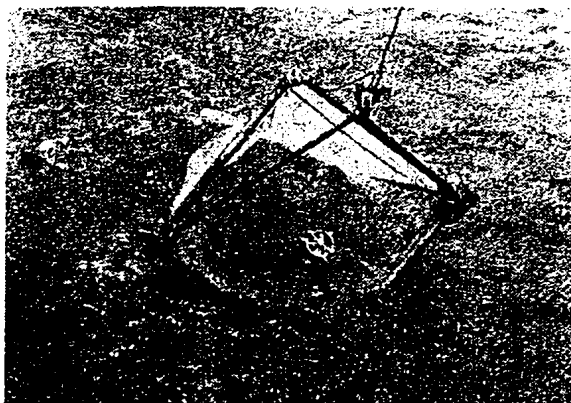


collar the filtering portion has four straight quadrants which run parallel to the frame, each 10 cm long and 51 cm wide. This portion is joined to the filtering cone of four quadrants each of 140 cm long and 50 cm wide. The cod end of the filtering cone is cut to accommodate a collecting bucket of 7.5 cm diameter through a collar of 8 cm sail cloth. Each quadrant is overlapped to give strength at the seams and is reinforced by nylon tape. Over the tape, 8 mm thick nylon rope is fixed to act as a rib rope, the free end serving to secure the net to the frame and the cod end to the bucket.



*Square frame seen from below with groove for easy rigging of the net, added in this model*

The strain of the tow due to the drag of the net is taken by the rib-ropes. Ordinary polythene bottles are adapted to serve as collecting bucket for this net.



*The modified H. T. net in action*

The rigging of the net was made easy by replacing the press button arrangement of the H. T. net by grooved tubes. The pivot arrangement is more efficient because of the introduction of a swivel plate.

Reference:

Tranter, D. J. and P. E. Smith 1968. Filtration performance in zooplankton sampling. *Monographs on Oceanographic Methodology*, 2.

Addendum:

Subsequently, Lalithambika Devi and Balakrishnan have found that this net could also be used as a vertical closing net with slight modifications. The length of the cylindrical portion is increased from 10 cm to 50 cm and the junction between the cylindrical and conical portions is reinforced with a band of 6 cm wide sail cloth. Twelve brass rings are stitched around the middle of the sail cloth so that the puckering line could be passed through them. The total length of the net is thus increased from 150 cm to 190 cm. The length of the bridles those carry the weight is increased from 70 cm to 220 cm so as to leave a clearance of at least 10 cm between the bottom of the collecting bucket and the weight. The bucket is tied to the weight to prevent it from being lifted off when the net is hauled.

6. *Australian Clarke Bumpus sampler* — D. J. Tranter.

The Australian Clarke Bumpus sampler used in the Cochin Backwaters was an end

product of some improvements made on the original Clarke Bumpus sampler described by Clarke and Bumpus (1940).

Changes and modifications were made on the Clarke-Bumpus sampler by Paquette and Frolander (1957) and later to assure more reliability, strength and precision modifications were again made by Tranter (1965). Subsequently Tranter made further modifications on the sampler used at IOBC. They are the following:-

1. A flaring collar is attached to the tube of the after section behind the propeller to reduce the velocity of the water flow. The length of the collar is  $4\frac{1}{2}$ " and increases in diameter from 5" to 6".
2. Two large fins were attached to the tail frame (length 31") on a lateral plane to assure more stability.
3. The original Australian Clarke-Bumpus sampler had a net 20" long and here it was reduced to  $17\frac{1}{2}$ " due to the addition of flaring collar.

#### References:

Clarke G. L. and Bumpus, D. M. (1940). The plankton sampler - an instrument for quantitative plankton investigations. *Limno. Soc. of America Spec. Pub.* No. 5.

Robert G. Paquette and Herbert F. Frolander (1957). Improvements in the Clarke-Bumpus plankton sampler *Extrait Du Journal Du Conseil International pour L'Exploration De La Mer* Vol. XXII, No. 3, 1957.

Tranter D. J. (1965) The Australian Clarke-Bumpus sampler and calibration Tank. *CSIRO Aust. Div. Fish. Oceanography* 16P (Th. pap. No. 19).

#### 7. Simple underway sampler and its performance — M. Sakthivel.

A simple underway sampler was fabricated locally to make plankton collections from a regular passenger vessel, "M. V. Laccadives" which was not equipped for Oceanographic research. The instrument was made of mild steel plate. It has a total length of 66 cm and three main parts. They are Nose cone, Speed Reduction Chamber and Net Chamber.

The cone (length 25 cm Fig. 1 C5) is the front part of the instrument. The anterior opening has a diameter of 4 cm. This gradually widens at an angle of  $7^\circ$  inclination to the axis towards the posterior end. As a result the diameter of the posterior end of the nose cone is  $2\frac{1}{2}$  times greater than the anterior opening. The gradual increase in diameter tends to reduce the speed of flow of water. As a result the damage caused to plankton organisms is reduced. There are two fins attached to the upper side of the nose cone with two holes for attaching bridles. Two rectangular weights are attached to the lower side of the nose cone. A small phytoplankton sampler with a total length of 17 cm (having a nose cone in front with a mouth opening of 1.3 cm diameter and a net chamber behind) was fitted to the bottom of the main sampler.

The Speed reduction chamber (length 11.0 cm Fig. 1. C6) is cylindrical in shape with 12 cm diameter. The front end is welded on to the nose cone and the joint is sloped. The posterior end has flanges on four sides with four holes for nuts and bolts by