NOTE II

A METHOD OF IMMERSION OF PANELS FOR ECOLOGICAL STUDIES ON MARINE FOULING AND BORING ORGANISMS

The importance of studies on the biology of marine foulers and borers needs no emphasis since they cause damage to submerged wooden structures resulting in considerable economic loss. In order to study their occurrence, settlement and to assess the rate of destruction to timber, several immersion techniques using iron racks, cages and rafts have been adopted- On the east and west coasts of India, at the Marine Centres of Forest Research Institute (Waltair, Madras, Cohin and Bombay) invetigations have so far been carried out employing the first two methods- Recently, Turner (1966) suggested a raft type to be more suitable to Indian conditions than others. The design employed in all these experiments is meant mainly for large scale and long term investigations. For short - term ecological studies, it was felt necessary to evolve an inexpensive, simple design involving less manual labour.

In this method panels (rough or dressed) to be used may be of any desired length of thickness but those measuring approximately 7" x$\frac{1}{2}$" x4" are convenient to handle. Depending upon the test, panel numbers can be altered, for example, in a recent ecological study on *Limnoria* sp. at Madras (Srinivasan and Chandra Mohan, 1971) sixteen wooden panels of *Toona ciliata*, *Aegle marmelos*, *Terminalia paniculata* and *Xylia xylocarpa* were immersed by this method. More numbers were found difficult to handle by a single individual. in the present design altogether 16 panels in 4 branches with 4 panels in each can be used.

The panels are centre - drilled to receive PVC tube of 1′ in length (0. 5″ dia). Four such side branches are attached along the main PVC tube by folding and nailing them with it (Fig. 1-A and B). The main tube measuring 10′ in length has a hook at one end and an iron weight at the other to keep the test panels well below the lowtide mark. The panels are arranged 1″ apart by means of PVC washers to provide for maximum surface area of attack for marine fungi, foulers and borers (Figs. 1B & 2). In the aforementioned, any one side branch with 4 panels can be cut off at the appropriate place and washers replaced and nailed to keep the other two panels safe.

Either iron ropes, nylon or polythene line may be used for suspension of panels for immersion, but each has its own disadvantage. If iron chain is used the metal gets oxidized and corroded by sea water within 1 - 3 months. Hence, they are often broken even if shortterm submergence is desired. Ropes used in frames are often affected by marine cellulolytic fungi, lose their tensile strength and get severed (Mayers, Prindle and Reynolds, 1960; Meyers, 1968). Nylon though strong has a serious fault in that it is easily frayed by continual rubbing against sharp objects like barnacles. These result in the loss of experimental panels. Polythene line is more expensive than nylon. PVC tubes used in

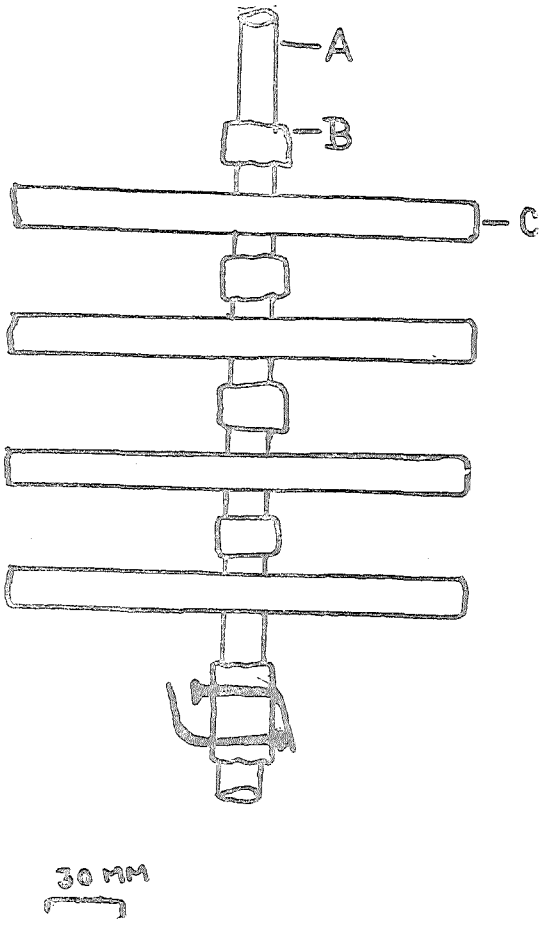
FIG. 1

the present design overcomes the above disadvantage. It also unaffected by marine borers and fungi and hence are preferred over any other material. Since ecological studies usually extend to a period upto one year, the same experimental set up can be used again.

While suggesting a design for immersion, mention must be made regarding certain common precautions in choosing an immersion site. The first consideration is that of tide. The submergence site should be below the low tide mark so that panels are underwater continuously. In partially protected or sheltered bays where ground swells often develop as tides shift, or on coasts where wave action is continuous and severe, panel strings should be placed well offshore. If the panels are anchored where waves crest, the nail joints in the entire set up may get detached resulting in the loss of test panels. Similarly, suspension line should not be anchored haphazardly among barnacle encrusted pilings. Tide and current movements frequently force the panels against the pilings where the line is easily cut by encrusting shells. Coastal areas with heavy maritime traffic should be avoided, panels cannot, for example, be attached to floating buoys.

The above design will facilitate the study of: (1) Settlement and growth of foulers and borers at different depths. (2) Study of the effect of light and colour on their settlement in different substrata. (3) Studies on the components of the primary film diatoms, bacteria, fungal hyphae and spores and the effect of colour, depth and light on them.

Our thanks are due to Dr. G. Krishnan,



Director, Zoological Research Laboratory, university of Madras, Madras -5, for help and encouragement and to the authorities of the Forest Research Institute, Dehra Dun for providing funds to carryout this investigation.

References

Meyers, S. P. 1968 In "Proc First Int. Biodeterioration Symposium", Southampton : 594, Elsevier.

Prindle, B. And Reynolds, E. S. 1960 Tappi 43 (6) : 535.

Srinivasan, V. V. and Chandramohan, K. 1971 In "Symposium on Indian Ocean and Adjacent seas". Marine Biological Association of India Ernakulam (In press).

Turner, R. D. 1966 F. A. O. rept to Govt. of India No. T. A. 2155.

Marine Organisms Scheme,
Madras Centre (F. R. I.),
Zoological Research Laboratories,
University of Madras, Madras-5.

V. V. Srinivasan
K. Chandra Mohan