for staffing will depend upon the functions assigned to them, the propensities and personalities of the associated biology departments, the suitability of the stations for marine research, and the accessibility of the stations. As all the stations have a common objective, a definite degree of association is necessary for co-operation in common problems; but it is imperative that each station be given freedom to follow in the main its own line of fundamental research.

At most of the stations, including Plymouth, the main bearing of the research has been zoological or planktonic. Prof. F. E. Fritsch[3] has directed attention to the field of research in Great Britain on the benthic flora, and the need for combined work by zoologists, botanists and physiologists on benthic problems. In this regard Fritsch points out that the larger staff at Plymouth—and, we can add, the accumulative knowledge of chemical and physical factors in the environment—points to Plymouth as the centre for this work. It has, however, perhaps been overlooked that an extensive bionomical survey[7] has been made of the littoral algæ in the Port Erin locality which, along with the similar survey[8] of the fauna, places the Port Erin station in a strong position for further development.

Freshwater Biology

In the development of biology in the future it is clear that freshwater biology is of increasing importance. The development of the research station of the Freshwater Biological Association at Wray Castle is following closely that of Plymouth in marine biology, and a glance at its publications[9] shows that, besides pure freshwater problems, fundamental researches are being carried out as well as the training of senior students. Freshwater biology is of great importance in the training of teachers in biology, since most teachers are located in inland situations and can more easily obtain living freshwater than marine material for their pupils, who, moreover, can collect the material for themselves. The bulk of biology students in most universities are destined to become teachers, therefore every university will in the future sooner or later need some kind of laboratory adjacent to the university where freshwater problems can be studied. Those universities in inland situations—and indeed many schools—may very well find a freshwater station more useful than a marine station; and a freshwater station can easily be improvised and equipped at relatively low cost.

Colonial and Foreign Marine Biological Laboratories

The correspondence in *Nature*[1,2] has shown that for the training of marine biologists for tropical fishery posts, and research—and for general experience—a marine laboratory situated in the tropics would be of great value. There can be little doubt that most universities would welcome the opportunity of sending students and staff to such a tropical laboratory.

But so far the possibility of establishing a marine laboratory in a sub-polar locality has not been explored. It is likely that results of as great, or even greater, general interest would result from researches at such a station both on scientific and especially fishery economic problems. We know very little of the living conditions of marine organisms in latitudes of extreme cold, as expeditions to those parts have necessarily been mainly concerned in bottling their catches. New technique would be required and would be produced.

The Icelandic and White Sea fisheries present large economic problems, but general biology offers a wider and almost unknown field. The Danes, Russians (especially Gurganova[10]), as well as the British in the "Discovery" Investigations, have approached the problems, and would be interested in a station of this kind, which might indeed have an international character.

A site in Iceland or the east coast of Greenland, in addition to any the Russians may establish in the region of the White Sea, would, it is hoped, be accessible by air in post-war years; it would offer as great attractions as the tropics to adventuresome researchers.

[1] *Nature*, 152, 47 (1943).
[2] *Nature*, 152, 136 (1943).
[3] *Nature*, 154, 144 (1944).
[4] *Nature*, 154, 300 (1944).
[5] *J. Mar. Biol. Assoc.*, VII, 2, 155 (1904 and 1931).
[6] *J. Mar. Biol. Assoc.*, 15, 753 (1928).
[7] L.M.B.C. Memoir XXX. Manx Algae. By M. Knight and M. W. Parke (1931).
[8] *Proc. and Trans. Liv. Biol. Soc.*, 50, 5 (1936-37).
[9] Freshwater Biol. Assoc. Memorandum on Post-War Development, 13 (1944).
[10] *Explor. des Mers d'U.S.S.R.*, Fasc. 6, 5 (1928), and fifteen other papers.

RIPENING EFFECTS OF EMANATION FROM FRUITS

BECAUSE the emanation from ripe fruits will accelerate the ripening of unripe fruits, it is in general undesirable to store together fruits of many varieties which have normally different rates of ripening, as the early ripening varieties may induce an undesirable hastening of the ripening processes in longer keeping types. It is of interest, therefore, to note that R. M. Smock[1] finds that the stimulating effects are greatest with emanations from apples past their climacteric, while the post-climacteric apples are themselves almost unaffected by emanations from ripe apples. Sometimes the emanation induces in adjacent fruits well-defined symptoms of ethylene injury[2], but *Penicillium expansum* growing in the store does not produce sufficient ethylene (or other stimulating substance) to affect the ripening of apple fruits.

Immature pears put into store straight after picking produce only very small amounts of ethylene, but their ripening and respiration can be stimulated by ethylene and then they themselves produce ethylene[3].

So great can the stimulating effect of these emanations from ripe fruit be that in order to prevent, partially at least, accelerated ripening of the main bulk of fruit in a store, isolated early ripening individuals are frequently removed from store by hand picking. R. M. Smock[4] finds, however, that oiled paper wraps are helpful in protecting apples against emanations of other apples, but that this procedure is not so effective as the removal of ethylene from the air of the store; and this removal can be effected by the use of brominated active charcoal, prepared by fixing 5 c.c. bromine on 40 gm. of coconut shell charcoal.

[1] Smock, R. M., *Proc. Amer. Soc. Hort. Sci.*, 42, 128 (1943).
[2] Smock, R. M., *Proc. Amer. Soc. Hort. Sci.*, 40, 187 (1942).
[3] Hansen, E., *Proc. Amer. Soc. Hort. Sci.*, 43, 69 (1943).
[4] Smock, R. M., *Proc. Amer. Soc. Hort. Sci.*, 44 134 (1944).