

LETTERS TO THE EDITORS

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Marine Biological Research in Great Britain

THE letter published in *Nature* of July 29 from Prof. F. E. Fritsch opens an important subject which has been in the minds of a number of zoologists during the past few years, and it is one in connexion with which some of us would be extremely glad to see action taken on the lines which Prof. Fritsch indicates. Whatever this action may be, it is essential to realize from the outset (as Prof. Fritsch does) that nothing short of one or more teams of full-time workers will meet the case adequately; the problems involved are too numerous and too complex to make a part-time attack on them any longer profitable. One can envisage valuable part-time assistance for the team, but a nucleus of full-time workers is indispensable.

It is not clear whether Prof. Fritsch has more in mind the benthic communities which exist between tidemarks, or those below tidemarks—presumably both. In fact, the need for new advances is very great in both fields, but the methods required for offshore work are very different from those appropriate between tidemarks, and undoubtedly different groups of workers should tackle the two aspects. As my own particular interest is in the intertidal zone, I should like to offer a comment referring to this belt, leaving the development of the offshore theme to others more competent to deal with it.

My own approach to British shore ecology has been through foreign waters, beginning with the Great Barrier Reef Expedition in 1928–29, extending to other tropical coasts, and including ten years in South Africa, where one sees a complete transition from sub-tropical to almost sub-antarctic conditions. During the years 1931–40 I was able, with the assistance of a dozen collaborators, to carry out a preliminary general survey of the South African coast, covering a distance of more than 1,800 miles, which was visited at about a hundred localities altogether¹. Having done this, we naturally wished to compare our results with those arrived at in other countries, but it is very striking how little there is with which *direct* comparison is possible, despite the existence of a considerable literature. We reach, therefore, the rather astonishing conclusion that the intertidal region of South Africa (almost unknown, ecologically, in 1930) is probably, at the moment, better known, in its broad outlines, than any stretch of coast of comparable length in the world. The work from another area most nearly comparable with it is that of Fischer-Piette from the French and Channel coasts; one can piece together a rather imperfect picture for the coasts of North America (especially the Pacific coast); there are the accounts of coral reefs; but many regions of the world are unknown altogether, or known from one or two isolated papers only. A *general* picture of the tidal belt round the British coasts does not exist, in spite of our detailed knowledge of particular localities. This will be partly remedied so far as Algæ are concerned when surveys carried out during the present War are published; for animals there is an immense amount of work still to be done.

It is important to emphasize, in this connexion, that we shall never get a satisfying picture of the British coasts until we can fit them, in their due relation, into the larger picture of the world as a whole. Advances in the ecology of large areas have affected the land, fresh water, and the oceans much more than the tidal region; and a preliminary general statement covering intertidal biology in the world as a whole is very much needed. The need for relating Britain to this general picture can best be illustrated by a specific example. The South African survey mentioned above began as an attempt to solve the problem presented by the action of ocean currents on the coasts of the thirty-mile-long Cape Peninsula, a region of special zoo-geographical interest. It was immediately discovered, however, that this problem was literally insoluble until some sort of picture of the South African coast as a whole had been obtained; once the latter was available, the Peninsula became intelligible. Similarly, Britain will probably never become fully intelligible until its relation to the rest of the world is better understood than at present.

I do not wish to imply that future developments in Britain need necessarily repeat the particular type of work already done in South Africa. It has been pointed out that geographically Britain is a much more difficult and confused region than South Africa, unlikely to give clear-cut results, and that the amount of work needed to obtain the results would be out of proportion to their value. However this may be, it will be agreed by most people that a great deal of further work of *some* types is needed on the British coasts.

I should like, therefore, to develop Prof. Fritsch's thesis to this extent, that we need three things, involving three different modes of attack, and each of them demanding a team of full-time workers. These are (a) further work on the British coasts between tidemarks; (b) further work on the continental shelf of the British region, below tidemarks; and (c) an attempt to make a preliminary world-statement, based on a carefully selected series of samples, all seen by the same workers. As a matter of fact, there exist fairly detailed plans covering certain parts of the programme just outlined, and it would seem desirable that those most immediately concerned should consult together as to the best means of giving effect to such plans.

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¹ A general account of this survey is in the press and due to appear in the next issue of the *Annals of the Natal Museum*; earlier parts of the work are described in a series of papers in that journal, and also in *J. Linn. Soc. (Zool.)*, *Trans. Roy. Soc. S. Africa* and other periodicals.

WE have read with interest Prof. F. E. Fritsch's letter on marine biological research in Great Britain¹, in which he stresses the need for the co-operation of botanists and zoologists in the investigation especially of marine benthos and refers to the difficulties and limitations experienced by investigators in universities at a distance from the sea.

We should welcome the new developments which Prof. Fritsch envisages as desirable at Plymouth. It seems to us that, whether or not these materialize,