

breeding. In that case they belong to one species, *Mus decumanus* or *Mus norvegicus*. There is no reason to call the rat of Manchuria, even if it differs from the European rat, a sub-species (*Epimys norvegicus caraco*) or even a different species (*Mus caraco*) as has been done. Variation is found everywhere, for the very reason that a species is a population of many genotypes. If one wants a pure genotype one will not find it in Nature, but one may isolate it from the natural stock by breeding the rats scientifically. Therefore in research work it is often advisable either to use the impure species as such or to work with material which has been artificially and thoroughly

hybrids, on the other hand, are numerous, because even the children of a man with brown and a woman with blue eyes must be called hybrids. The groups recognised by anthropology as races certainly are heterogeneous portions of a heterogeneous whole, and their true nature cannot be fully understood without a thorough genotypical analysis.

**Hydrography of the South Atlantic.**

THE cruise of the ex-torpedo boat *Meteor* terminated at Wilhelmshaven at the end of May last, after traversing 67,535 sea miles and crossing the South Atlantic thirteen times between Africa and the South American continent. This is the only survey of the physical and chemical conditions of an ocean on such an extensive scale.

The fourth and final report of the expedition<sup>1</sup> shows that the programme of work, drawn up by the late Dr. Mertz, has been very completely carried out, in spite of difficulties incidental to work of this nature. When the results of the observations are worked up and finally published, they will form a considerable addition to our knowledge of physical oceanography, and in all probability fundamental principles will emerge having applications of practical value. Whether this happens or not, scientific exploration of this nature is an effective way of 'showing the flag,' an exceptional experience for the naval officers employed, and sound training for apprentices and seamen.

Since H.M.S. *Challenger* was sent in 1872 on a voyage of exploration of the conditions and life within the oceans, Germany has added much to our knowledge through the expeditions of the *Valdivia*, *National*, *Planet*, *Deutschland*, and now of the *Meteor*. After the voyage of the *Challenger*, interest in the physical conditions of the oceans centred mainly in the drift of warm Atlantic water towards the north-west seaboard of Europe. Observations, mostly by the Scandinavians, led to the inference that this moved slowly towards the Norwegian coast, the drift being stronger in some years and weaker

in others, and that these fluctuations in strength of the drift ran hand in hand with fluctuations in general weather conditions and affected the fisheries, most of which are seasonal and sometimes fail. It is to be hoped that an investigation, on a scale commensurate with the German South Atlantic Expedition, may sometime be possible in the North Atlantic, and particularly in the area to the westward of France and Ireland. A wide field for inquiry still remains open.

The report deals mostly with the programme of work carried out rather than with the results obtained. Undulatory movements in the water layers below the surface were found by A. Defant, most marked at and below the thermocline. Similar

<sup>1</sup> "Die Deutsche Atlantische Expedition auf dem *Meteor*." IV. Bericht. *Zeit. des Gesells. für Erdkunde*, Berlin, 1927, Nr. 5/6.

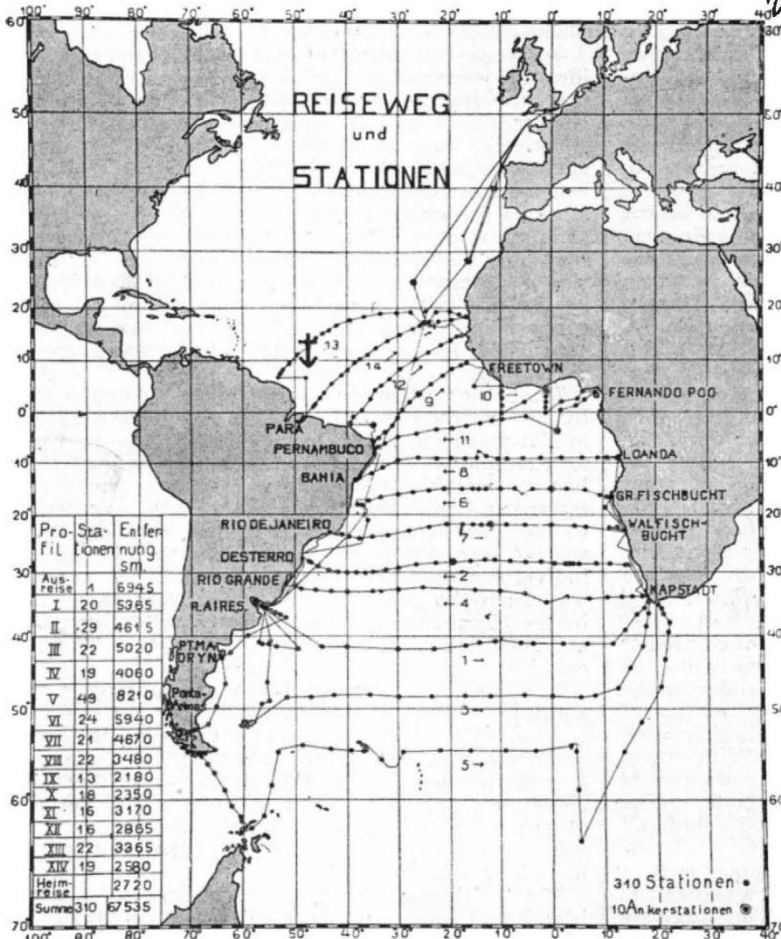


FIG. 1.—Track and hydrographic stations of the *Meteor*. From "Die Deutsche Atlantische Expedition auf dem *Meteor*."

purified, but not with an arbitrary impure portion of the whole impure species.

A taxonomic name represents a phenotype, although it always suggests a genotype. In how far it really represents a genotype may only be detected after scientific breeding. Whether it represents a species may only be decided after a careful study in Nature of the life of the individuals indicated by the name. For these reasons palaeontological names can never be proved to indicate more than phenotypes.

This new species-idea is also of significance in the field of anthropology, for if mankind as a whole be freely interbreeding, then biologically speaking, mankind is only one species. It is a species so much the more because it tends to reduce its own variability by the extinction of some minor races and by other means. Pure lines are absent in man, while

undulations have been observed by Helland-Hansen (see NATURE, Jan. 1, 1927, p. 18) in the North Atlantic. A rise and fall of both temperature and salinity was very marked at depths between 100 and 250 metres at a position shown by an anchor on the track chart (Fig. 1) where the depth was 4350 metres. These undulations appeared to be composed of waves having a period of about  $12\frac{1}{2}$  hours and of shorter waves with a period of  $2\frac{1}{4}$  hours, as a

*calycina* FucKel) in Britain and the devastation caused by this fungus in larch woods led to a scare in the later years of the nineteenth century. In some cases woods were so seriously infested as to justify their removal *en bloc*. Many others which with the knowledge of the disease now available could have been left standing, the seriously attacked trees only being felled, were cut down. Worse still, larch grown in mixture with Scots pine and spruce were ruthlessly

cut out under the mistaken idea that the fungus infection would spread. In other words, that most disastrous occurrence in forestry, a 'species scare,' took place. A much saner view of the position was taken during the early years of the present century. The disease was studied out in the woods, and with the fuller knowledge obtained, many owners ruefully recognised that some of their older standing woods had been reduced in value by 50 per cent. or more owing to the wholesale removal of the larch a score of years or so earlier.

Two primary causes for the widespread attack to which the larch was subjected were established: the unsuitability to the species of many of the soils or localities in which it was planted, and the excessive density of the unthinned plantations. Both were undoubtedly contributory causes to the universal spread of the disease. It was established at the same period, however, that infected trees did not necessarily succumb to the attack; and that a young plantation of a few years' standing in which a considerable portion of the trees were infested would not die. The removal of the worst of the diseased trees should be carried out, the rest being left and kept under observation. There are instances where

such plantations have completely recovered.

A description of this fungus and suggestions for its control are discussed in a *Leaflet* (No. 16) recently issued by the Forestry Commission. It is pointed out that the European larch is chiefly affected, the more recently introduced Japanese larch (*Larix leptolepsis*) being seldom attacked; on the other hand, the West American larch (*Larix occidentalis*) appears to suffer even more than the European.

Under methods of control, the author of the *Leaflet* lays down, quite correctly, the necessity of not planting larch upon unsuitable soils. The dictum applies equally to many species, but is especially necessary in cases where a serious disease has made its appearance in the country: since the planter not only risks losing his own plantation, but his mistake also leads to the infection of neighbouring ones. On the subject of spacing, the author perhaps follows unconsciously the present policy of the Forestry Commission and advocates, in order to reduce the possibilities of attack, wide spacing in the formation of the plantations: "Never less than four and a half feet, or on the better sites five and a half to six feet." This opinion is widely held in Great Britain at the present day. But it appears to be based on two fallacies. First, owing to the fact that the correct mode of thinning larch was not understood as practised in the

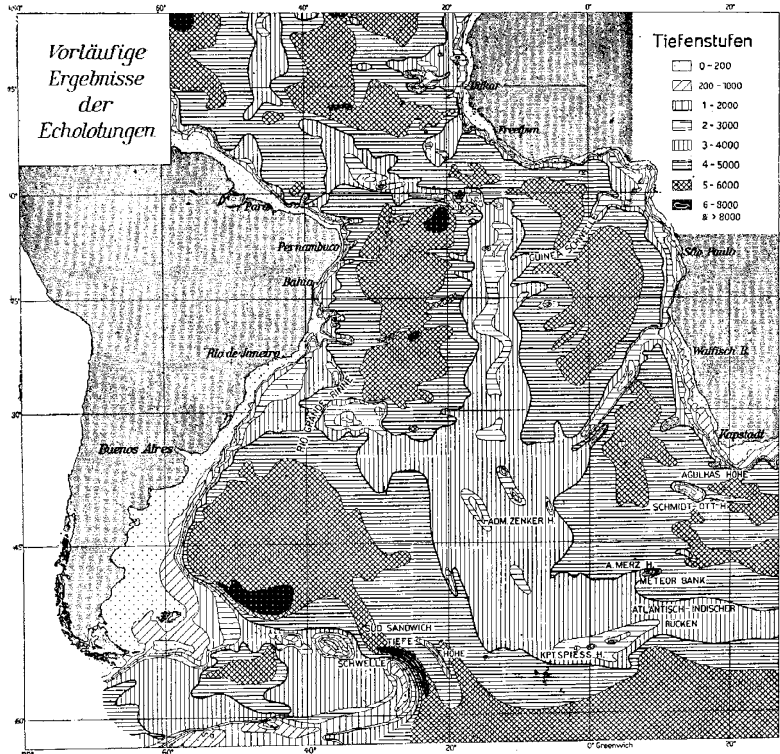


FIG. 2.—Depths of the South Atlantic Ocean from the preliminary results of sonic soundings by the *Meteor*. From "Die Lotungen des *Meteor* und die Nautik."

gross result of which the temperature at 100 metres varied between *circa*  $22^{\circ}.2$  C. and  $24^{\circ}.6$  C.

A separate contribution by H. Maurer<sup>2</sup> deals with the preliminary results of the bathymetric survey in which sonic and direct sounding was employed (Fig. 2).

<sup>2</sup> "Die Lotungen des *Meteor* und die Nautik." *Ibid.* Nr. 7/8.

### Larch Canker in Britain.

THERE is probably no more striking example of the assistance which the botanist, and more especially the forest botanist, can render the forester than that afforded by the history of the larch canker in Britain. The introduction of the European species of larch (*Larix europæa*) in the eighteenth century was followed by plantings, for the time, on a considerable scale. The fact that, owing to the durability and value of the wood, all sizes from an early age (*e.g.* for sheep-net stakes) are utilisable, resulted in the species being planted without reference to the kinds of soil it required, or, as important, in the absence of any working knowledge of the necessary thinnings which the young plantations required. Old ideas and opinions, founded on premises which lack the necessary scientific study of facts upon the ground, are difficult to eradicate.

The appearance of the larch canker (*Dasyscypha*