

warm-water and oceanic fish-species to a closer investigation, and for studying them at various seasons. As a means of control and comparison, measurements on a large scale, according to Petersen's method, would be very important. Although our material is very abundant, it is insufficient for the purpose of distinguishing various size-groups among the fishes. That such groups occur among the deep-sea fishes is plainly indicated by our measurements of *Cyclothone* (see Fig. 473, p. 620), which show a binodal curve for individuals of *Cyclothone signata* from 500 metres, and a multinodal curve in the case of *C. microdon*. At 500 metres the average size is about 35 mm., and at 1500 metres about 60 mm. Perhaps there is another group in depths between the two mentioned. Regarding the meaning of the nodes in these curves I must confess myself ignorant.

From the coast banks of Africa we have a series of measurements of *Dentex macrophthalmus*, which for the sizes between 17 and 24 cm. show a very regular size-distribution of the fish captured.

Future investigations of the fish-fauna of the coast banks may lead to good results by starting from the study of such forms as occur also in the North Sea, for instance the hake (*Merluccius vulgaris*). Their growth might then be subjected to a comparative study on a long stretch of coast through many degrees of latitude and under exceedingly various conditions. The same method might also be applied in the case of the southern pelagic clupeidæ: the sprat, the pilchard, and the anchovy.

ABUNDANCE OF MARINE ANIMALS

On dry land we can, to a large extent, examine the yield of the soil, weighing and measuring the crops, and keep count of animals of economic importance. As regards the yield of the sea our experience is merely of a relative kind. From generation to generation a certain amount of knowledge has been accumulated as to the quantities of various fish that have been captured, but the number of animals actually living in the sea is unknown.

Many scientists have undoubtedly often had to acknowledge that biology would be raised to an essentially higher level, if it were possible to arrive at absolute figures denoting the numbers of individuals inhabiting the sea, instead of merely the relative figures which are now obtained through the study and comparison of various catches.