

simple base. In this way a double spine (V-shaped) is formed, and later, by a continual increase in the thickness of the sclerenchyma, the originally simple spine becomes converted into two, which at first are recognisable on account of their close proximity, but which tend to become more and more isolated. It will thus be seen that drawings of the spines, in order to be of value in the identification of species, must be taken from certain more or less limited areas. On this account many of the drawings of Pourtalès are not satisfactory, because they represent the arrangement at the apex of a branch, where, as already stated, the specific features of the spines have not yet been assumed. In most Antipathidæ with moderately long pinnules it is necessary to pass over half an inch at any rate before the normal characters obtain regularity. In the illustrations of the arrangement of spines accompanying the present Report, I have, wherever possible, examined a branch or pinnule from the apex downwards, selected an area which seemed to have "normal" spines, and then finally figured that portion of it which seemed to show best the arrangement of the spines on the axis. All are drawn to scale, and the details have been filled in by the aid of an eye-piece micrometer. The amplification is always given, and this should be borne in mind for purposes of identification, as it gives a clue to the diameter of the axis,—an important point in such cases.

#### RETROGRESSIVE DEVELOPMENT.

The life-history of a zooid may be divided into two cycles, the one a progressive metamorphosis and the other a gradual retrogression leading to atrophy. It appears, however, that the retrogressive changes do not affect all species in the same way. In the Schizopathinæ, where new zooids are usually added at the apex of a branch, the first signs of retrogression are frequently to be found at a point some distance above the base. This consists at first in a greater isolation of the individual zooids. It sometimes happens, as in *Schizopathes affinis* (Pl. IX. fig. 2), that only the terminal portion of a branch presents the normal arrangement of zooids. In the lower portion the zooids gradually become more and more isolated, and at the same time the body of the zooid becomes so much reduced, that before the base of a branch is reached, all that remains is a pair of tentacles projecting beyond the cœnenchyma; these appear to retain their original form for a very long time. In other cases (*e.g.*, *Schizopathes crassa*) the individual zooids appear to remain functional for a longer period, and the retrogression may only be observable on the stem and basal portion of the colony. In *Schizopathes* and *Bathypathes*, however, the body of the zooid always appears to be lost first, and the tentacles remain for a considerably longer period to indicate its position. In the Antipathinæ the retrogressive changes take a different course. In many species the formation of new zooids as buds from the stolon-like out-growth of the cœlenteron of an adult, keeps up the supply of functional zooids in a given area for a longer period than would other-