similar in other colonial Zoantharia, but in Madreporaria is apparently more complex, due, doubtless, to a lack of regularity in the position of the blastozooids and to the modifications necessitated by the presence of a calcareous exoskeleton. In *Leiopathes glaberrima*, for example, the zooids are frequently separated from each other by a considerable interval; they are irregular in size, and a close examination shows that very young ones are scattered here and there, which are only recognisable as slight rounded prominences, without a mouth or tentacles; others show a depression in the centre of the prominences, and those still further advanced show the rudiments of tentacles. In transverse vertical sections the zooids are seen to be connected together by tubular outgrowths of their cœlentera, running along the axis of the branch between the zooidal tissue proper and the cellular sheath of the sclerenchyma. The zooids are imperfectly separated from one another by vertical mesoglœal partitions which do not reach the sheath of the sclerenchyma, thus leaving a free communication between the cœlentera of adjoining zooids. In such sections passing through a very young zooid the elevation of the surface ectoderm, which indicates the position of the new zooid, is seen to correspond with a dilation in the cœlenteron. This dilation is situated in the narrow lateral out-

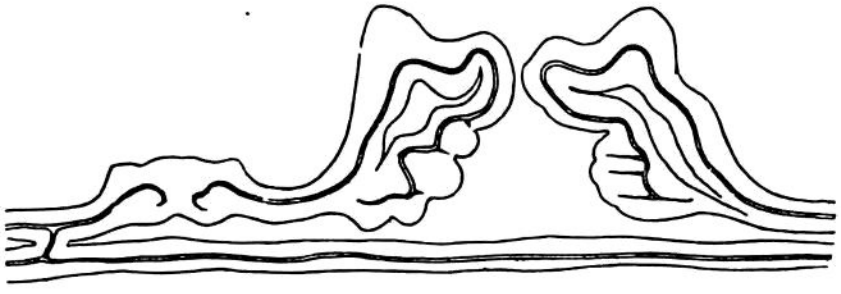

FIG. 18.—Diagram of the formation of new zooids by means of buds (*Leiopathes*).

growth, passing on to the next adult zooid, and at a point not far from the mesoglœal partition separating the tissues of the two adults. A diagrammatical representation of the arrangement is shown in fig. 18. In *Leiopathes* apparently a new zooid may be added at any point along the branch, its cœlenteron being at first a dilation of that of one of the adults. This type of budding gives rise to great irregularity in the size of the individual zooids on a branch. Sometimes large and small zooids appear to alternate with one another, but more usually the sequence is irregular. Pourtalès called attention to this feature in *Leiopathes glaberrima* (*cf.* Pl. IV. fig. 9). I have noticed it also in *Antipathella subpinnata* and other forms, but it appears most marked in *Leiopathes*. In *Antipathella subpinnata* the zooids in the basal two-thirds of a branch are usually very regular in size, the new zooids being apparently introduced chiefly between zooids of the newer portion of the colony. In the unbranched species *Stichopathes pourtalesi*, according to the observations of Pourtalès, large and small zooids alternate with considerable regularity. Ova were observed in the large ones, and Pourtalès suggests that the smaller ones may differ in sex. In all the species of Antipathidæ I have yet examined the zooids