

of a colony always agree in sex, so that it appears more probable that the irregularity in size in this case is due to the prevalence of a type of budding similar to that which obtains in *Leiopathes*. In the Schizopathinæ, on the other hand, I have failed to recognise any interposition of smaller zooids between those of normal size. A difference in size is often to be seen, it is true, but this only affects the gonozooids and depends on the condition of the reproductive organs. In other respects the regularity in size is most marked (*cf.* Pl. VIII. fig. 1), and contrasts forcibly with the arrangement in *Leiopathes*. In this case new zooids appear to be added chiefly, if not entirely, at the apex of each branch, where there is a thickened mass of tissue as yet undifferentiated.

#### CŒNENCHYMA.

The cœnenchyma consists of the basal portions of the polyps with their connections with adjoining polyps. Its relative importance varies very much in different genera. In the genus *Cirripathes* it forms a sheath around the relatively thick sclerenchyma in which the polyps are imbedded. In this genus the interzooidal areas are divided by means of mesogloæal septa into a number of canals having a course mainly transverse to the sclerobasic axis. These communicate with the base of each zooid in the manner shown in Pl. X. fig. 13. Whether *Stichopathes* agrees with *Cirripathes* in having such a type of interzooidal communication is uncertain. Pourtalès recognised certain more transparent areas in the interzooidal tissue of *Stichopathes pourtalesi*, but did not make sections. The fact that *Stichopathes*, like the branched Antipathidæ, has the zooids arranged in a single longitudinal series, would lead one to suppose that it possesses a similar means of intercommunication between the zooids.

In *Leiopathes* and other genera with a branched sclerenchyma the zooids are usually distributed in a single row on one aspect of the skeleton only. In these cases the fused bases of the polyps form a hollow tube in which the sclerenchyma is formed. The three layers of the polyps are all represented in the cœnenchyma. Externally there is a layer of ectoderm continuous with that of the body-wall of each polyp, in the middle a layer of mesogloæa, and internally a layer of entoderm. At a point opposite the polyps a slender longitudinal mesogloæal septum occurs passing from the mesogloæa for a short distance towards the zooidal cœlentera. This becomes thickened at the free margin, and contains a large central lumen lined by the axis epithelium. In this cavity the sclerobasic axis is formed, which ultimately fills up the whole lumen. Thus the sclerenchyma is contained within a dilation of a free longitudinal septum inserted into the mesogloæa of the cœnenchyma at a point opposite the zooidal surface. The skeletal sheath also includes a layer of entoderm continuous with that of the polyps, which forms the median portion of the floor of their cœlentera.