communication is established between two or more adjoining diverticula, while they are united at the base into a common simple tube or are in open connection throughout their length. If this union occurs between the diverticula belonging to the longitudinal row, it may result in extreme cases in the formation of a longitudinal fold, on which the individual diverticula are only indicated as short boss-like swellings. On the other hand, the long diverticula which occur here and there are sometimes forked, and in this there lies the tendency to form branches.

Where the upper terminal opening with its natural margin is preserved quite uninjured it is closed, just as in *Aphrocallistes beatrix*, Gray, by a transversely stretched narrow meshed lattice-like plate. The latter is usually somewhat concavely incurved and becomes united to the honeycomb-like lateral wall in a compact, somewhat tuberculate margin. As already reported by Oscar Schmidt and Marshall, several such thin lattice-like transverse partitions usually occur in the interior of the tube, but I would call attention to some points of distinction between these internal diaphragms and the terminal sieve-plate of other Hexactinellids. While the narrow-meshed terminal sieve-plate of other Hexactinellids is united all round to the body-wall so that (apart from the sieve-like meshes) a complete closure of the tube results, in this case, a semicircular marginal portion of the internal diaphragms remains unclosed wherever a lateral diverticulum opens into the large lumen of the tube (Pl. LXXXIII. fig. 2). With regard to the occurrence, number, and arrangement of these transverse septa I have found great differences. While some specimens well preserved in other respects possess, apart from the terminal plate, no trace of septa, others show three or more internal diaphragms, but no constant relation to the whorls of diverticula can be recognised, so as to suggest the reduction of the entire tube to series of metameres. I regard it as most probable that during the growth of the tube a temporary provisional occlusion is effected by a transverse sieve-net, and that only after growth has ceased is a terminal regularly constructed lattice-work formed which entirely closes the lumen. While the latter consists of tolerably similar thick round beams, varying from 0·3 to 0·5 mm. in diameter, which surround rounded polygonal meshes of tolerably uniform size, and while freely terminating rays only project here and there into the lumen of the meshes, the transverse septa in the interior of the tube have a somewhat different character, inasmuch as they consist of beams of very various thickness which meet one another to form a network at very diverse angles, in which the mesh-spaces are not rounded but have sharp angles (Pl. LXXXIII. fig. 2).

The microscopic structure of *Aphrocallistes bocagei* agrees essentially with that of the corresponding skeletal parts of *Aphrocallistes beatrix*, as represented by Bowerbank in his excellent figures.[1] The dense network of beams which forms the dividing septa of the six-sided prismatic meshes of the wall consists, as in the case of every dictyonal Hexactinellid framework, exclusively of amalgamated hexacts. These do not

[1] *Proc. Zool. Soc. Lond.*, 1869, pl. xxi. figs. 2–4, and pl. xxii. fig. 2.