

are shown in Pl. VIII. figs. 4 and 5. What I have to communicate concerns their origin, provided I am right in identifying the dumb-bell shaped bodies whose description will be given later on along with the filaments. Bowerbank, Schmidt, and Kölliker found in many of the specimens characterised by the presence of filaments certain round bodies, and it has been supposed by the last named naturalist that these bodies give rise to the filaments. F. E. Schulze, on the contrary, maintains that there can be no question as to any such connection; he finds these bodies too, but is inclined to consider them to be unicellular algæ, the more so as he has observed them in phases of division more or less complete. I am uncertain whether the bodies I am about to describe, which are represented on Pl. VIII. fig 2, are identical with those of F. E. Schulze and Kölliker. I believe them, however, to be so, since the corresponding description of Schulze is thoroughly applicable to them, and also because I found some of them on the point of dividing into two halves; but even if identical, I am yet more inclined to adopt the opinion of Kölliker, and to ascribe to them a certain connection with the filaments. I observed these round bodies in my *Cacospongia dendroides*, and comparing them with the heads of its filaments, was struck by their mutual resemblance. Not in every case, however; for, beginning with forms characterised by the thickness of their walls and indistinct central differentiation through numerous intermediate stages, I came to forms with walls far thinner, and, in their central contents, recalling very much the drawings Schulze gives of his conjectural algæ in *Hircinia* (*loc. cit.*, pl. iv. fig. 15). An attentive examination of their walls shows that they are provided with a small thickening, which appears to correspond exactly with the spot where the thread of the filament separates from its head. In a couple of cases, I think, I have also seen these bodies, when grown thin-walled, still in connection with the thread; but even if this were not an optical illusion, it seems to occur pretty seldom, and we have also to suppose that the further differentiation of the filamental heads—provided that they are identical with our round bodies—takes place only after the head has separated from the thread. The final phase of this development consists in the bursting of the wall so that the internal contents escape. It is represented by corpuscles which, when out of the capsule, present a great variety of size, some so small that they appear to be merely points, others so large that they are readily to be discerned by a magnifying power no higher than 200–250. In some cases these corpuscles appear to have linear or even fusiform outlines. This, however, is very rare; they almost always have a very definite dumb-bell shape, so that if such a body were to be imagined as growing in length a typical filament would result. But if this really occur, it apparently does not take place immediately, the corpuscles having the faculty of multiplying previously by division; sometimes, but not often, a cross division has been observed, sometimes a star-like one, sometimes a longitudinal one. As the result of this division, a new generation of corpuscles of the same form may again occur. As to their internal structure, I can state that, as in the filamental heads, their walls consist of concentric layers; a