

certain differentiation in their centre is also to be discerned, but I am not sure whether this is not the result of an imperfect penetration of the staining fluid into their bodies. Their whole appearance is a "bacterian" one. So much I can state from actual observation. Induced by these observations, I was desirous of pursuing their conjectural transmutation into true filaments. I was, however, unable to accomplish this, and thus corroborate with decisive proof the statement as to the mutual connection of the round algæ-like bodies, the dumb-bell shaped corpuscles and the filaments. Can this be supposed nevertheless? When deliberating over the phenomenon theoretically, I was inclined to answer this question in the negative; for, as remarked before, the dumb-bell shaped corpuscles, having reached a certain size, show in most cases a tendency to multiply, which again cannot be denied with respect to the round bodies themselves. All this would be very strange, if we should identify the former with filamental heads and the latter with filaments themselves; and again, though I have seen single dumb-bell shaped corpuscles of comparatively very large size (0.06 mm.), I never saw them so large that one might regard them really as young filaments; while if they really undergo transformation into filaments, one would expect to find all possible intermediate stages. On the other hand, when examining the corresponding preparations, and comparing the round bodies with the filamental heads and the corpuscles with true filaments, I can give to the above question but one answer—a decided "Yes." But whatever be the fact, I consider it my duty to communicate in a most detailed manner what I have observed, and what may stand in connection with the origin of the filaments, hoping that my statements may be of help to any naturalists who may at some future time enter upon a special research into the nature of these enigmatical formations.

I turn now to a detailed discussion of the systematic value of the properties of the canal system. The diagnoses of the two types of canal system characteristic of *Keratosa* have been already given on pages 4, 5. It has been also stated that the properties of the canal system are in a certain sense antagonistic to those of the skeleton with regard to its composition either of homogeneous or heterogeneous fibres; and again, that according to this latter character the horny sponges do not admit of their subdivision into two main groups, since such a proceeding would have a certain phylogenetic signification inconsistent with the circumstance that the differences in the histological structure of the skeletal fibres of an *Aplysina* and *Euspongia*, and on the other hand of an *Aplysilla* and a *Spongelia*, are of a quantitative and not a qualitative nature. But, owing to the fact that *Aplysina*, through *Verongia* and *Luffaria*, is connected with true Spongidæ, and again that the genus *Aplysilla* is connected, as Vosmaer has lately shown, through *Velinea* with *Spongelia*, the canal system of the sponges first mentioned being constructed upon one type, that of *Aplysilla*, *Velinea*, and *Spongelia*, including other allied genera upon another, one would question whether the *Keratosa* can be subdivided precisely according to the structure of their canal system. This question is again to be answered in the