

opinion, in spite of objections made by Dr. Marshall,¹ has also been adopted by Dr. Vosmaer.² Prof. F. E. Schulze is indeed the most eminent spongiologist of the present time; Dr. Vosmaer is his pupil, and since I have entirely different ideas on the matter, I must submit it to a most careful examination. There are three questions to be answered, namely, first, whether the filaments form a constituent part of the organism of certain sponges or are independent organisms? second, if they are independent organisms are they to be regarded as parasites? and third, if so, is their presence to be used as a character of systematic consequence?

Do the filaments stand in an intimate connection with the sponge organism, or are they independent beings? We have seen that this question has been answered in the negative by numerous investigators. This negative answer has, however, had either no foundation in fact, or only an ambiguous one, till F. E. Schulze's paper on *Hircinia* appeared. What we read in the *Icones histologicæ* of Kölliker (p. 49) is to be regarded merely as a simple supposition; in the papers of Carter and Hyatt we have indeed to deal with a conviction, but this conviction is far from being contagious. Hyatt states³ nothing more than that the examination of filaments by Dr. Farlow led to no definite results as to their nature. Carter wishes to prove their parasitic nature by the fact that he did find filaments in many non-Keratosæ, and again missed them in notorious Hircinidæ such as *Hircinia campana*. It may be said, however, that, as to the latter argument, the sponges in question have accordingly not been Hircinidæ, and as to the former one, that it is also of no decisive nature, the reliability of the observations upon the point being still questionable. This has been pointed out by F. E. Schulze in his above-mentioned paper (p. 33), and there has been no answer on the part of Mr. Carter. The discovery of O. Schmidt that the filaments, which by their shape vividly recall skipping-ropes, are quite free at both extremities, proved that they had nothing to do with the skeleton, but did not prove their independence of the sponge organism in general. This latter has been made obvious by Schulze, who made out the structure of sponges characterised by the presence of filaments, and found that anatomically and histologically they do not differ from sponges which like *Euspongia* have never been found with filaments. To this statement I ascribe the highest importance. If the filaments have nothing to do with the skeleton, and if again there exist no deviations in histological structure of the corresponding sponges, which deviations, according to the law of correlation, ought to be expected, provided that filaments form a constituent part of their body, there are no grounds to consider them to be part of it. Whether they are algæ or fungi still remains questionable, but their nature as independent organisms is, I think, now clearly established. Schulze himself is also of this opinion, although, with his usual prudence, he states it rather conditionally. Notwithstanding, he is still inclined to ascribe to the presence of filaments a high systematic significance; he appeals to an analogous instance in the vegetable kingdom. He

¹ *Zeitschr. f. wiss. Zool.*, Bd. xxxv. p. 112.

² On *Velinea gracilis*, p. 445.

³ Revision, &c., part ii. p. 546.