

of the dry fibrillæ was filled with air. The difference between the thin axial thread and its thick spongin-envelope is the same as in the thinner forms of the so-called homogeneous horny fibres of the Euspongiidæ, Spongelidæ, &c. On the other hand, they recall also the peculiar so-called "filaments" of the Hircinidæ, and this leads us to the question of the true nature of the fibrillæ.

*Nature of the Fibrillæ.*—The first question arising out of the examination of the peculiar fibrillæ of Stannomidæ, and also of the similar "filaments" of the Hircinidæ, is this: Are they produced by the sponge itself? or are they foreign organisms which live in the sponge as parasites or symbiontes? As is well known, this question is not yet decided in the case of the Hircinidæ. Poléjaeff, in his Report on the Keratosa,<sup>1</sup> discusses the nature and the systematic value of the filaments of the Hircinidæ, and the majority of modern spongiologists agree with him when he says that "their nature as independent organisms is clearly established." But of what nature are these "independent organisms?" No zoologist will accept them as animals, no protistologist can regard them as neutral protists, no botanist will acknowledge their vegetable nature! All botanists who have thoroughly examined the filaments of the Hircinidæ, and among these are some great authorities, mainly fungologists, declare decidedly that they are not fungi, and not plants at all. Indeed, neither their chemical nature nor their anatomical structure is that of any fungus or alga, and, although many observers have examined them for a long time and in all possible directions, no one has been able to discover their fructification and development.

Poléjaeff's principal argument in favour of the parasitical nature of the filaments found in the Hircinidæ is as follows:—"F. E. Schulze 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."<sup>2</sup> This argument, in my opinion, has no decisive value. If we apply it to the Chondrosidæ, we might arrive at the following conclusion:—"Chondrilla, characterised by the presence of sphero-stellate siliceous spicules, does not differ anatomically and histologically from *Chondrosia*, which has never been found with these spicules. Therefore these spicules are not produced by the sponge itself, but are independent organisms." On the other hand, the fact that the fibrillæ of the Hircinidæ are not in direct connection with the reticulate horny skeleton of these Keratosa has also no decisive value. For *Darwinella* possesses numerous radiate horny spicules imbedded in the mesoderm, without connection with the ramified tree of the Keratose skeleton; so also have many Halichondrinæ siliceous "flesh-spicules" imbedded in the connective tissue, without connection with the main skeleton.

I am therefore inclined to regard the filaments of the Hircinidæ, and also the similar fibrillæ of the Stannomidæ, as true skeletal fibres, comparable to the elastic fibres in the

<sup>1</sup> Zool. Chall. Exp., part xxxi. pp. 11-16.

<sup>2</sup> *Loc. cit.*, p. 13.