

says the lichens are also nothing but fungi and algæ together ; still, they form a systematically independent subdivision, owing precisely to their double nature. I do not know whether botanists are right in separating systematically the lichens, but this question is of no consequence to us ; I do not, however, believe the comparison just mentioned to be fortunate. The lichens represent an extreme instance of that kind of symbiosis which v. Beneden calls "mutualismus." The symbiosis of filaments with sponges is even not so much a commensalism as an indubitable parasitism. In the case of mutualism, the beings constituting the whole undergo such modifications in their structure that a separate existence becomes impossible. There are to be found no deviations in the organisation of sponges attacked by filaments, as compared with that of closely allied forms devoid of them. Microscopic preparations of *Hircinia variabilis* and *Cacospongia scalaris* show no differences apart from the presence and absence of filaments. There are, accordingly, absolutely no grounds for supposing that *Hircinia*, having got rid in some manner or other of filaments, would be no longer able to live. It is also quite obvious that the phenomenon under consideration is not commensalism, but parasitism. Beginning with forms like the Challenger specimen of *Cacospongia collectrix*, where filaments are represented but very scantily, we come through all possible intermediate stages to the forms which, as in the case of the Challenger specimen of *Cacospongia irregularis*, are so overloaded with them that the parenchyma is almost entirely replaced by these curious organisms ; all this, now that the independence of the filaments is no longer doubtful, seems to me a decisive proof in favour of the opinion held for many years by Carter, that in the filaments we have really to do with nothing but parasites. This conclusion alters the matter. There are instances in which the diagnosis of parasites involves the mention of the host they inhabit. This does not occur, however, except in connection with certain modifications in the structure of the parasite, rendering it impossible for it to inhabit another host ; but nobody would characterise the host systematically by reference to its parasites, and should we adopt the family of Hircinidæ as a family represented by forms with filaments in the parenchyma, we should be equally obliged to subdivide the species *Homo sapiens*, according to the presence or absence of *Tania solium*, into two systematic groups. Hence I propose the dissolution of the family Hircinidæ, and the location of its representatives in other groups, according to more positive characters.

The question as to the nature of the filaments, whether plants or animals, is therefore beyond the domain of spongiology ; but since it is of great general interest, I venture to communicate here what I was able to make out in this direction during the examination of the Challenger material. As to their structure, I must refer the reader to the statements of F. E. Schulze. I was able to discern all he has seen, but was unable—in spite of the excellent homogeneous immersion system ($\frac{1}{2}\frac{1}{4}$) of R. Winkel—to make out anything more as to their organisation. The comparative size and shape of the heads