

Now, so far as concerns the histological identity of both these kinds of elements, this identity finds expression even in the modifications which the pavement-cells undergo under certain circumstances. Usually very thin, and provided with fine-grained protoplasm, the pavement-cells appear sometimes far thicker and their granules much larger and more numerous. I have often observed such modifications, and nowhere better than in *Leucetta vera*, n. sp. (Pl. VIII. fig. 8). Sometimes these coarse-grained cells form the epithelium either of the exhalent or of the inhalent canals; in most cases, however, both that of the exhalent and that of the inhalent canals indiscriminately. Since I always found in the same sponge surfaces covered with common pavement-cells, in addition to the surfaces covered with coarse-grained cells, the supposition that the large granules present a constant constituent part of the cells, characteristic of the species, is not admissible. On the other hand, the character of the modification in the cells in question proves that it stands in immediate connection with the nutritive process, and there being, as I remarked before, no distinction in this respect between ecto- and endodermic pavement-cells, I see in this a new reason for ascribing the nutritive function to the pavement-cells both of endo- and ectodermic origin. I must add that the expression "nutritive function" has been used by me with the meaning "reception of the food," and not inclusive of digestion, all cellular elements of the sponge-organism being probably capable of this latter function. A corollary of the highest importance deduced from the foregoing remarks has already found its application.

Let us now turn from the Sycones to the phylogenetic affinities of the Leucones. There are amongst the Sycones described by Prof. Hæckel a good number of forms which, compared with *Sycetta primitiva*, *Sycandra raphanus*, &c., must be regarded as considerably modified Sycones, the differences pervading the whole plan of their organisation. I speak of the type represented in the Monograph by the species *Sycetta stauridia*, *Sycilla urna*, *Sycilla chrysalis*, *Sycilla cylindrus*, *Sycilla cyathiscus*, *Sycaltis glacialis*, *Sycaltis testipara*, *Sycaltis ovipara*, and *Syculmis synapta*. Every impartial investigator, when comparing, for instance, *Sycandra raphanus* with *Sycilla chrysalis*, would refer them to two distinct genera. "In die bis jetzt bekannten Sycortisformen passt *Sycortis sycilloïdes* nicht gut herein," writes Schuffner, describing a calcareous Sponge of the type of *Sycilla chrysalis*, "es schliesst sich dieselbe in ihrer Zusammensetzung und in dem Bau des Skelets der Radialtuben vielmehr an eine *Sycilla* oder *Sycaltis*-form an."<sup>1</sup> This is my opinion too.

Prof. Hæckel, constant to his principles of classification by the spicules, assigns no systematic significance to these differences of organisation, yet they did not escape him. So he distinguished<sup>2</sup> two types of radial tubes, characterising them by differences in the

<sup>1</sup> "*Sycortis sycilloïdes* does not seem to be appropriately placed along with the hitherto known forms of *Sycortis*. In its composition and in the structure of the skeleton of its radial tubes it is more nearly allied to *Sycilla* or *Sycaltis*." Beschreibung einiger neuer Kalkschwämme, *Jenaische Zeitschr.*, Bd. xi. p. 422, 1877.

<sup>2</sup> Kalkschwämme, Bd. i. p. 319.