

## CHAPTER III.—THE CLASSIFICATION OF THE MONAXONIDA.

## I. THE DATA OF CLASSIFICATION.

That the detailed classification of any group of sponges would be a difficult task, one might be led to suppose on *à priori* grounds alone, from the consideration of the low position which sponges occupy in the animal kingdom, or, in other words, from the consideration of their low degree of specialisation and the consequent scarcity of definite distinguishing characters. No two sponges are exactly alike, and yet all the so-called species in a genus resemble one another so nearly, and are so often still connected by intermediate forms, that the distinction of species often becomes purely an arbitrary question and a matter of individual judgment. The characters of the species do not appear to be nearly so firmly fixed as in higher groups, they seem to be in a very plastic condition, and capable of almost infinite modification according to their surroundings.

This being so it is obvious that we must, for purposes of classification, endeavour to discover those structures in a sponge which are least subject to modification. That external form is useful for this purpose only to a very limited extent, and when the utmost caution is exercised, is now agreed on all hands. If further proof be needed of this fact the Challenger collection supplies it in abundance, and it is perhaps worth our while to give one remarkable illustration.

We shall describe in the systematic portion of the present work a number of species shown by their spicules to belong to three distinct genera, viz., *Cladorhiza*, *Chondrocladia*, and *Axoniderma*, all characterised by the same external form, and that a very remarkable one. In brief, each sponge consists of a small, subglobular or conical body provided with an equatorial zone of long, stiff, supporting processes. To this peculiar external form (*vide* Pl. XX. figs. 2, 4, 5, 7, 8) we have given the name "Crinorhiza form"; all sponges as yet known to possess it come from very great depths and live on a bottom of soft mud or ooze, and there can be no doubt that the long, radiating processes, usually associated with a single vertically descending, central, root-like process, are for the purpose of supporting the sponge and preventing it from sinking into the soft mud on which it lies. We only find the Crinorhiza form in species which live in very deep water; species of the same genera which inhabit shallower water do not possess it.

It would be an easy matter to adduce further instances in support of the same law, namely, that similar external conditions beget similar external forms even in species of distinct genera, but it is needless to multiply proof. Moreover, the external form of one and the same species (as shown by its spiculation) varies greatly, sometimes with no apparent reason at all, as, for example, in *Petrosia similis*, nobis (Pl. III. figs. 3, 4).

We must then look elsewhere than to external form for a guide to classification.