As I remarked before, the realisation of this demand necessitates the introduction of subgenera; and I am the more in favour of this because otherwise I see absolutely no possibility of arranging the Keratosa in a manner not conspicuously artificial, while in the contrary case we should obtain a very natural family of Ceraospongiæ with the following quite homogeneous genera:—*Ianthella*, *Darwinella*, *Simplicella* (with two subgenera *Aplysilla* and *Dendrilla*), *Spongia* (embracing forms classed now in the conjectural genera *Euspongia*, *Hippospongia*, *Cacospongia*, *Stelospongos*, and *Coscinoderma*), *Phyllospongos* (with subgenera *Phyllospongia* and *Carteriospongia*, provided that these subgenera are really in a close relationship), *Spongelia* (with subgenera *Dysidea* and *Psammoclema*), *Psammopemma* (supposing that this conjectural genus be not connected with *Spongelia* by intermediate stages), and *Velaria* (including forms referred at the present time to *Aplysina*, *Verongia*, and *Luffaria*, which may perhaps all be elevated to the rank of subgenera); and it is clear that each of these genera either admits of a very sharp diagnosis or evidences its right to be regarded as a genus by series of characters concerning the whole of the organisation. If now the question be asked, why instead of following, in the descriptive part of this memoir, the scheme just exposed, I have yet followed the arrangement of Dr. Vosmaer, the answer will be because the above scheme only partly decides the problem of a natural arrangement of horny sponges, and I myself am of opinion that when new systems are proposed they must be well established in all their parts. The reader will remember that in the foregoing three chapters we met with a large number of contradictions issuing from the present mode of classifying the Keratosa. The scheme in question reconciles most of them; it does not do so, or at least but partly, with respect to what I called *circulus vitiosus*, characterising the mutual affinities of the genera of the group. This *circulus vitiosus* is striking as concerning the genera belonging to different families; it has, however, equally little right to exist as concerning the mutual relationships of the subgenera. It would have been very easy to proclaim the Keratosa as forming but a single family, and to classify according to this the specimens of the Challenger Collection; but by this proceeding we should not have got rid of difficulties concerning questions of course of a more subordinate nature but nevertheless of vital importance; this proceeding would not have decided the problems as to whether subgeneric value can be really ascribed to the characters distinguishing the *Hippospongiæ* or *Coscinodermata*, &c. This is the second, and the most difficult part of the task, and without the help of Palæontology and Comparative Physiology it will be scarcely decided. As must be evident from the above discussions, by the term "subgeneric character" I understand a character containing in it a new principle of organisation, the corresponding representatives of the group being connected by intermediate stages. That *Euspongia*, *Cacospongia*, *Hippospongia*, &c., present each in their organisation what may be called a new principle is clear; but it is by no means evident whether this, their conjecturally main character, be really constant. Should we feel certain that the fossils described as