tive thickness of the horny walls of its fibres—is greater than that between *Verongia* and *Aplysina*.

Verongia.

On page 7 I have stated the grounds which make it, though not very probable, yet not impossible, that the *Luffariæ* have perhaps nothing to do with Aplysinidæ, being only specifically modified *Cacospongiæ*. At any rate—though bearing in mind the necessity for certain concessions to the present state of our knowledge, we must necessarily place the genus in the family Aplysinidæ—the genus, owing to the fact that many of the smaller fibres of the skeleton of some of its representatives must be called homogeneous, is so very closely connected with true *Cacospongiæ* that its diagnosis can only be of a very conditional character. The same must be said with respect to the mutual relations of the genera *Verongia*, Bowerbank,[1] and *Aplysina*. Hyatt characterises his Aplysinidæ "by the regular net-like anastomosis of the fibres, the tendency of this to occur in the same plane, the flatness of the fibres, and the thinness of their walls."[2] He characterises his Dendrospongiadæ, of which the genus *Verongia* is a representative, "by the irregular anastomosis of the fibres of the skeleton, by their rotund form, and by the thickness of the horny walls."[3] As to the regularity or irregularity of the network of the skeletal fibres, the conditional nature of this character is but too evident;—it is well known what approximate expression geometrical outlines find in organised beings; again, as to the flatness of the fibres of Hyatt's Aplysinidæ, this character seems even more doubtful. F. E. Schulze has not only ascertained that the fibres of *Aplysina aërophoba* are all more or less mathematically cylindrical and their transverse section circular, but has also made it probable that the above-mentioned statement of Hyatt is due to the circumstance that the specimens he had for examination were dried, in which state all thin-walled round tubes filled with a fluid mass shrink, and form compressed tubes with transverse sections of elliptical outline.[4] Finally, so far as the comparative thickness of the fibre-walls is concerned, many of the foregoing lines have been written precisely to show that there are thick-walled fibres which show a tendency to become thin-walled, and again, in the *Aplysinæ*, fibres with the contrary tendency; we see therefore that the three characters in question—provided that Hyatt is correct as to the conjectural flatness of the skeletal fibres of the Aplysinidæ—are of a thoroughly conditional nature.

Aplysina.

The diagnosis of this genus having been already given when speaking of the preceding genus, all existing genera of the Keratosa have been presented to the reader, and I

[1] Monogr. of. Brit. Spong., vol. i. p. 209
[2] Revision, &c., vol. i. p. 404.
[3] Revision, &c., vol. i. p. 400.
[4] *Zeitschr. f. wiss. Zool.*, Bd. xxx. p. 399.