floating than active. A comparison between Porpita, Velella, and Physalia on one side, and the Diphyidæ and Physophoridæ on the other side, cannot fail to convince any one who has seen any of these animals alive of the truth of this general statement. When describing, in the sequel, the North American Hydroids in detail, I shall have an opportunity of showing that the subdivisions founded upon the differences here noticed among these animals are genuine sub-orders, and neither orders nor families.

Though I have not the remotest doubt that the Tabulata (*Figs.* 81 and 82) are genuine Hydroids, I am not quite so confident that the Rugosa (*Fig.* 80) also belong

Fig. 80.

GONIOPHYLLUM PYRAMIDALE,
(*Copied from M.-Edwards & Haime.*)

Upper figure, view from above; lower figure, profile. Fossil of the Silurian period. Comp. Lucernaria, p. 111, *Figs.* 75 and 76.

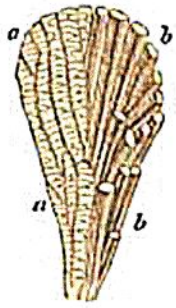
Fig. 81.

MILLEPORA ALCICORNIS, Lmk.

Transverse section of a branch of the Coral stock, magnified.

a a Pits of the Hydroids, with their successive floors. It is very difficult to obtain sections of the pits occupied by the smaller Hydroids.

Fig. 82.



BEAUMONTIA EGERTONI,
(*Copied from M.-Edwards & Haime.*)

Fossil of the Carboniferous period. It resembles so closely the living Pocillopores, that it certainly belongs to the same sub-order.

to this class. I have not had sufficient opportunity of studying the Rugosa anew, since I have known the acalephian affinities of the Tabulata, to feel justified in expressing a decided opinion upon that point. I will therefore simply present my reasons for believing that the Rugosa belong to the same class as the Tabulata. The cavity occupied by the animal is divided by horizontal floors, evidently built successively as in course of its growth the animal rose higher and higher, and these floors are continuous from wall to wall across the whole width of the cavity of the Coral; and wherever there exist radiating partitions, they rise only from the surface of these floors, without extending through them to any other floor above or below. No Coral known to be the solid frame of a Polyp has such a structure. On the contrary, in Polyparia the radiating partitions of the individual cavities occupied by distinct animals extend uninterruptedly from top to bottom of their cavities, and if there exist horizontal floors, these stretch only across the intervals between two radiating partitions, and never across the whole cavity occupied by the Polyp. The radiating partitions of the Rugosa, beside being limited to successive floors, present another striking peculiarity, never observed among the Polyps,—they are arranged in fours, or multiples of four. This quadri-