

non-segmented or only partially segmented spaces, forming tubular lacunæ, the open ends of which are seen externally in the large, irregular, terminal orifices. The walls, except near the ends of the branching processes, are thick and laminated, and those of the outer faces of the chambers coarsely perforated, as in *Gypsina*. Owing to its parasitic habit, *Polytrema* is often associated with Sponges, and the terminal openings of the lacunæ are not unfrequently armed with a brush of siliceous spicula of various shapes, either entire or broken.

The nature of the red colouring matter of the test of *Polytrema* does not appear to have been specially investigated; but a few preliminary experiments suggest that it is an organic substance, and probably identical with that found by Merejkowsky in a large number of marine organisms, and named by him Zoonerythrine.

The genus is best known by its typical species, *Polytrema miniaceum*, but Carter has described two other specific or subspecific modifications, namely, *Polytrema cylindricum* (Ann. and Mag. Nat. Hist., ser. 5, vol. v. p. 441, pl. xviii. fig. 1, a.-g.), and *Polytrema mesentericum* (*Ibid.*, p. 444, pl. xviii. fig. 3, a.-h.). The former of these is stated to be "erect, cylindrical, consisting of a thick round pillar developed from a slightly expanded base, dichotomously divided at the free end into two short thick branches, which are equal in length and opposite, terminating respectively in an expansion, from the centre of which radiate a number of more or less fragmentary sponge spicules \* \* \* \* \* Cells at the ends of the branches bearing respectively a large aperture, similar in form, position, and margination to that of the cells of *Planorbulina*, which they further resemble in the form of their pore-tubulation," &c. *Polytrema mesentericum*, the description of which is based upon a large "rolled specimen," has a "massive test, composed of more or less erect, thick, meandering laminæ united mesenterically."

The genus *Polytrema* is most abundant within the tropics, but extends as far north as the Mediterranean and the Azores, and southwards to the southern shores of Australia. It is commonest in shallow water or at moderate depths, but is occasionally met with as low down as 900 or 1000 fathoms. Little can be said with certainty as to its occurrence as a fossil. In the index of the *Prodrome de Paléontologie, d'Orbigny* enumerates upwards of fifty species of *Polytrema*, some of which appear under the genus *Cerriopora* in the body of the work, the whole of course being classed with Zoophytes. The geological range of these extends from the Devonian to the later Miocene or Pliocene period. Without a re-examination of the specimens, it is impossible to say how many of the species belong to the genus as at present constituted. In some of the Carboniferous Limestone shales of Scotland and the north of England there occurs a parasitic organism, *Stacheia polytrematoides*,<sup>1</sup> which closely resembles *Polytrema* both as to external configuration and minute structure; and it is by no means unlikely that further research may show that the relationship is even nearer than its name suggests.

<sup>1</sup> See — Monogr. Carb. and Perm. Foram., p. 118, pl. ix. figs. 9-13.