

unfrequently assuming oval, compressed, subangular, or altogether irregular forms. Colour brown; shell-wall very thin, composed of light-coloured sand-grains, fitted together accurately and firmly with reddish-brown cement. Diameter from  $\frac{1}{10}$ th to  $\frac{1}{20}$ th inch (0.4 to 1.3 mm.).

*Thurammina papillata* is a very variable species, and the foregoing summary of its typical characters is based upon average specimens, such as that represented in Pl. XXXVI. fig. 7. In order to arrive at a correct estimate of its morphological range, some of the more important deviations from the typical structure may be briefly described.

Normally the test is free; nevertheless in localities where the species is abundant small specimens are not unfrequently met with in the sessile condition shown in fig. 11, and in these the shape is more or less modified to suit its altered external relations. Occasionally two or three spheres are found attached to each other, as in fig. 15. Such specimens appear to be the result of the adherent growth of several independent tests, which do not assume a corporate existence as a single polythalamous organism; or, in other words, the polythalamous condition depends upon mere superficial adhesion, and not upon the division of the sarco le into segments connected with each other by proper stolons, and forming a corresponding shelly investment.

Sometimes, though very rarely, on breaking a sphere, a second smaller chamber is found in the interior. An example of this sort is represented in fig. 12, and primordial chambers from other specimens, with the papillæ projecting in the form of tubes of various lengths, are shown in figs. 13 and 14. The occurrence of such specimens is exceedingly interesting as a point of analogy between *Thurammina* and *Orbulina*.

The external contour of the test is influenced by other circumstances besides its occasional adherent growth, and the most common departures from the normal spherical form are either in the direction of mere asymmetry (fig. 10), or of elongation in one direction, so as to produce an ovate test (fig. 8), the latter being more especially noticeable in large specimens. These remarks apply mainly to recent tests. The Jurassic examples of the species present much greater diversity of contour, and comparatively few of them show any degree of external symmetry.

The oral papillæ vary in number from half a dozen to a hundred or more, and it by no means follows that the largest test has the most numerous apertures; often quite the reverse is the case. They are sometimes placed with a certain degree of regularity as to their distance apart (fig. 7), and in rare instances are arranged in lines (figs. 9, 10); but in a general way they are scattered over the surface of the test, apparently without law or order. In some specimens, especially amongst those of medium or small size, one of the papillæ is more or less elongated, so as to form a tubular neck, like that of an ectosolenian *Lagena*, as in figs. 9, 10, 11, and 15. The papillæ are probably, as a rule,