

*Valvulina*, d'Orbigny.

*Valvulina*, d'Orbigny [1826], Münster, Bronn, Reuss, Parker and Jones, Karrer, Carpenter, Brady, M. Sars, Robertson, Schulze, Berthelin, &c.

*Tetrataxis*, Ehrenberg [1854], Möller, Schwager.

*Rotalina*, pars, Williamson [1858], Parfitt, Terquem.

*Valvulina triangularis*, the species portrayed in d'Orbigny's Model No. 25, has been selected by Parker and Jones as the type of a large group of closely-related Foraminifera. The model in question represents a triserial shell, compressed on three sides, and with sharp salient angles, broad and somewhat rounded at the oral end, and tapering to a point at the opposite extremity, the aperture, which is situated on the inner margin of the final segment, being partially covered by a projecting flap or valve.

Modifications of this typical structure take place in two directions. On the one hand, the test, whilst preserving the normal arrangement of the chambers and the characteristic aperture, loses its angular contour and becomes conical or even plano-convex, producing forms like *Valvulina conica* and *Valvulina fusca*; and a further slight deviation from the type occurs in certain fossil species of Palæozoic age, which frequently exhibit more than three segments in each whorl.

On the other hand, the typical structure modified in the opposite direction, that is to say, becoming elongated and columnar instead of widening laterally, furnishes a series of dimorphous forms, in which the earlier chambers preserve the normal triquetrous arrangement, whilst the later ones are disposed in a uniserial line. These varieties, which constitute the subordinate genus *Clavulina*, assert their relationship by retaining the valvular aperture even in the uniserial segments.

The test of *Valvulina* is invariably more or less arenaceous; but unlike that of the LITUOLIDÆ, it often possesses a well-defined, perforate, shelly basis or lining, which is sometimes exposed to view where the exterior has been abraded. The same sort of structure has already been referred to in connection with the allied genus *Textularia*.

The geographical distribution of the genus *Valvulina* is exceedingly wide, in fact the type is met with, in one form or other, in all the great oceans, though seldom at depths of more than five or six hundred fathoms. In the fossil condition it dates back as far as the Carboniferous epoch, having furnished one of the most important groups of minute Foraminifera occurring in the limestones of that age; but it is better known as a Tertiary genus, conspicuous in the Eocene deposits of Grignon and Hauteville.