

The first available illustrations of this species (*Operculina complanata*), namely, the figures given by d'Orbigny with the "Tableau Méthodique," and his Model, No. 80, represent a shell about a quarter of an inch in diameter, of the thin complanate form, umbonate at the centre, and with smooth exterior; composed of about three rapidly widening convolutions, the segments of which are extremely numerous and much curved. These, therefore, may be regarded as the typical characters of the test.

In a subsequent description of the genus *Operculina* by the same author,¹ it is stated that the spire is non-embracing; but this is by no means correct, for even in the present species, which often presents an almost completely evolute appearance, the earlier convolutions are always more or less embracing, and sometimes the alar extensions of the margins of the segments are sufficient to create a very marked thickening of the central portions of the test. The number of segments in each circuit of the spire differs considerably in different individuals, and has been recognised by some authors as a basis of "specific" grouping.

The condition of the exterior of the test with reference to superficial ornament is also a point of extreme variability. In any large collection of specimens there are always a number that are smooth externally like the d'Orbignian type (Pl. CXII. figs. 3, 4); but commonly by far the larger proportion of the shells present a surface-decoration of raised granules or tubercles. These are sometimes minute, and scattered over the surface of the segments (fig. 10), sometimes in rows along the septal lines, forming a sort of sutural limbation (figs. 6, 7), and sometimes of larger size, and developed chiefly near the centre of the shell on both faces (fig. 9). More rarely the sutures are marked by bright spots of clear shell-substance, which appear like punctations, but are in reality level with the surface, neither elevated nor depressed.

It has been the custom to distinguish the granulose forms specifically from those without surface-markings. It may possibly be convenient to preserve some distinction, but it can only be an artificial one; for the smooth, the partially ornamented, the granulate, and the more strongly papillate varieties form collectively a single continuous series, which it is impossible to divide, except by comparative characters of no real zoological value.

The list of synonyms is probably far from complete, but the drawings of specimens referred to the present genus by palæontological writers are in many cases too small and ill-defined to be identified with any certainty.

Operculina complanata and its granulose modifications are abundant in the Red Sea and in the tropical and subtropical regions of the North and South Pacific, at depths ranging from the littoral zone to 30 or 40 fathoms; and less common down to 420 fathoms, which is the greatest depth at which they have been observed. I can find no record of their occurrence in any part of the Atlantic.

They occur in the Maestricht Chalk, and are plentiful in the Nummulitic limestones of Central Europe; they are also occasionally, though not so frequently, met with in later

¹ For. Foss. Vien., p. 117.