

median sagittal plane, but it is necessary to notice that this rolling-up is ventral or "endogastric."¹ The greater part of the shell is covered by the mantle, except at the two orifices indicated above. In *Spirula reticulata* (Fig. J) the shell extends further forward, under the integuments, than in *Spirula peronii* (Pl. III.), the three last septa being hidden.

The shell is entirely covered by a periostracum continuous over the whole surface. The external face of the shell is not smooth, as in the majority of internal shells, but irregularly reticulated (Fig. K) in *Spirula peronii*, *Spirula reticulata*, and in all the dry shells I have been able to examine (in the mesh of this reticulum is another slighter reticulation formed by a fine broken line). On the last whorls this reticulation is not recognisable except upon a little more than the half of the convex face. On the concave face, especially in the first portions of the spire (Pl. II. fig. 7), there is a median external band of thickening.

The *septa* have a curved surface, with the convexity directed towards the summit of the spire (Pl. II. figs. 5, 6). Their structure shows that they are attached to the internal face of the shell by a thin margin directed forwards. They are therefore distinct formations, but it is scarcely probable that they are much more recent than the portions of the shell to which they are immediately adjacent, for in the specimen of *Spirula reticulata* studied, the last chamber was, so to speak, without depth (see Fig. J, vi); the septum was then formed near the free margin of the shell. At the level of the first septum a constriction is observed (Pl. II. fig. 7), less and less marked further on, which leads one to suppose that during the first stages of its existence the successive openings of the shell were somewhat narrowed.

The *initial chamber* is spherical with a larger diameter than those which immediately follow.² This "apical chamber" is the true primitive embryonic shell; it follows from its form that the young *Spirula* had (as is likewise observed in the earliest stages of Dibranchiates) a spheroidal visceral mass (episoma) with a complete external shell (see Fig. D). The form and the relations of the shell to the mantle must only have been changed later on, with growth, after the manner indicated by the figures D to F above.

The *siphuncle* is situated on the concave side ("ventral" for the later chambers) of the shell, and attached to the wall of that side (Pl. II. fig. 7). The various segments (portions comprised between two successive septa), especially in the last whorls, are inflated in the half turned towards the opening (Pl. II. fig. 5; Pl. V. fig. 1). Each segment is directly continuous with the septum which is "anterior" to it (that is to say, formed after it) or situated nearer the opening (Pl. II. fig. 5). The septa do

¹ The other Molluscs with rolled-up univalve shells present, when they have not undergone torsion, a dorsal or "exogastric" rolling up, e.g., adult *Nautilus*, embryonic *Patella* and *Fissurella*.

² Certain authors call it "ovisac"; it exists not only in other Dibranchiates (Belemnitidæ, &c.), but also in the Ammonites.