

bounded by these lines, the whole of the skeleton is formed by the regular, small-meshed network; while the inner, less dense portion which has a whiter look, narrows gradually downwards as shown in fig. 3, until it entirely disappears from the wall of the diminishing central funnel. There is no trace of it round the greatly reduced opening on the under surface of the segment of the cup which is represented in figs. 3 and 4. In this specimen, as in that represented in Pl. I. and also in d'Orbigny's original, the lowest portion of the calyx-tube immediately above the spreading base, is partially covered with a chitinous-looking layer of variable height, and marked by roughly concentric lines which somewhat obscure the calcareous network beneath. It is merely a thin superficial skin, however, and is evidently of no special importance, or it would be universally present.

The pentagonal figure indicating the position of the articular ridges on the radials is still visible in the section shown in fig. 4, which corresponds to the upper surface of the fragment represented in fig. 3; and the openings of the central canals are also traceable. This would indicate that the greater part of the calyx-tube is composed of elongated radials. One of these canals is seen in nearly longitudinal section in the portion of the lower half of the cup which has been removed to expose the view given in fig. 3. But it is not traceable beyond the limit of the whiter, less dense portion of the skeleton. I strongly suspect, therefore, that this indicates the position of the lower surface of the radials; and the analogy of all other Crinoids would lead to the conclusion that the small portion of the calyx-tube between this and the spreading base consists of closely anchylosed basal plates, the presence of which was taken for granted by Sir Wyville Thomson.<sup>1</sup> There must certainly be a chambered organ, from the fibrillar envelope of which the axial cords of the rays and arms originate (Pl. Vc. fig. 2, A); and one would naturally expect it to be situated at the lowest part of the calyx-tube. This narrows rapidly downwards, and its interior is marked by five vertical ridges corresponding with the radials in position. They are fairly distinct at the level of the section shown in Pl. V. fig. 4; but they become less marked as they proceed downwards, and, being composed of the whiter, less dense network, disappear together with it. They extend upwards to the edge of the cup at the intermuscular notches; though they are much less distinct on some of the radials than on the others. They thus occupy the position of the ventral radial furrows which are often so marked on the interior of the central funnel of the calyx in other Crinoids (Pl. X. figs. 1, 4, *vif*; Pl. XII. fig. 15; Pl. XX. fig. 8; Pl. XXX. fig. 3).

From the facts detailed above, we may, I think, assume with tolerable certainty that the tubular body-chamber of *Holopus* is not composed of a "pièce centro-dorsale sessile" as stated by de Loriol;<sup>2</sup> but that it consists of basals and radials like the calyx of any other Crinoid. I cannot quite make out whether de Loriol employs the word "centro-

<sup>1</sup> *Loc. cit.*, p. 407.

<sup>2</sup> Paléont. Franç., *loc. cit.*, p. 188.