

with the external medium. They occur in several species of *Actinometra* in which the centro-dorsal undergoes very little modification, as for example in *Actinometra pectinata*. The small centro-dorsal of this species, as I have shown elsewhere,<sup>1</sup> retains its cirrus-sockets and its discoidal form, but has five minute openings round its margin; and these lead into spaces between its ventral surface and the lower surface of the radial pentagon, which are formed by the apposition of depressions in each of these surfaces respectively. But sections through the calyx of this type show that the radial spaces leading inwards from these marginal openings terminate internally against the inner portion of the ventral surface of the centro-dorsal, and are completely shut off from the radial axial canals enclosed between the rosette and the inner faces of the radials. There is, therefore, no such communication between the body-cavity and the exterior as the presence of these radial spaces might be supposed to indicate. They are precisely homologous with the interarticular pores in the stem of *Pentacrinus*, which lead inwards some little way, as described in Part I., but are in no communication with the central canal of the stem.

It is worth notice that in one fossil species, *Actinometra lovéni*,<sup>2</sup> from the Gault of Folkestone, the centro-dorsal approaches the *Phanogenia*-condition. It is an almost pentagonal plate, scarcely above the level of the radials, from which it is separated by narrow clefts, just as in *Actinometra typica* (Pl. I.VII. fig. 1), and in *Actinometra nobilis* (Pl. LXV. figs. 3-5), and from the close resemblance of the calyx to that of these and similar species which are nearly all inhabitants of quite shallow water (20 fathoms or less), it would appear that the portion of the Gault Sea in which *Actinometra lovéni* lived cannot have reached any great depth.

## B. THE CHAMBERED ORGAN.

Reference has been made above to the radial axial canals which are enclosed between the rosette and the radials, and sometimes reach the ventral surface of the centro-dorsal. Their character and relations were minutely described by myself in 1879, in my memoir on *Actinometra*.<sup>3</sup> They were shown both in longitudinal and in transverse sections, and figures were also given illustrating their openings on the under surface of the radial pentagon, together with the pits corresponding to these openings on the upper surface of the centro-dorsal in *Antedon rosacea*. They were clearly distinguished from the five cavities within the central capsule which were first discovered by Dr. Carpenter.<sup>4</sup> He

<sup>1</sup> *Trans. Linn. Soc. Lond.* (Zool.), 1879, ser. 2, vol. ii. pp. 89, 90, 102, 103.

<sup>2</sup> See P. H. Carpenter, On some Undescribed Comatulæ from the British Secondary Rocks, *Quart. Journ. Geol. Soc.*, 1879, vol. xxxvi. p. 51.

<sup>3</sup> *Trans. Linn. Soc. Lond.* (Zool.), 1879, ser. 2, vol. ii. pp. 77, 78.

<sup>4</sup> *Phil. Trans.*, 1866, p. 738; and On the Structure, Physiology, and Development of *Antedon rosaceus*, *Proc. Roy. Soc.*, 1876, vol. xxiv. pp. 218, 219.