

this ring are situated a pair of sense-organs, which I shall speak of as 'ciliated pits.' They lie in the concavity of the lophophore, on either side of the anus. They have the characteristic structure of sensory epithelium, consisting of sense-cell, ganglion, and nerve-fibres. Sars has figured in *Rhabdopleura* a pair of ciliated protuberances in what I hope to show is a homologous position.

"A further concentration takes place in the form of a cord, which runs from the median dorsal part of the nerve-ring two-thirds of the length of the foot along its left side. It is therefore asymmetrical, and lies in the epidermis outside the basement-membrane. Inside this nerve-cord lies an apparently hollow tube. This tube recalls the so-called large fibres of the Chætopoda."

Moreover, during development, Caldwell found the ectoderm became thickened in two regions, viz. in the præoral lobe, and in the form of a postoral ring round the mouth. "The former becomes the future nerve-ganglion; the latter indicates the position of the line of future tentacles and the circumoesophageal nerve-ring of the older animal." From the former, in some species, Caldwell states that a number of nerve-fibres pass forwards to a sense-organ. In one species four eye-spots are present. Further, "along a line at the base of the rudiments of the adult tentacles, the nervous prolongations of the ectoderm have formed a definite ring." A series of remarkable events, however, occurs during the metamorphosis from a free to a fixed life, "the whole præoral lobe with ganglion and sense-organs passes into the stomach," and is there digested. Thus no anterior dorsal sensory part of the central nervous system persists in the adult, the postoral circumoesophageal ring alone remaining, and being in connection with the sense-organs. Similar features were observed by Kleinenberg<sup>1</sup> in *Lopadorhynchus*, the circular nerve disappearing completely with the vibratile organ.

The previous information on this subject has been given somewhat fully because the condition of the specimens procured by the Challenger offers various features both interesting and novel. The central region of the system lies over, *i.e.* on the anal side of, the mouth in connection with the firm basement-tissue, forming the support of the branchial apparatus, and thus it occupies a similar situation to that in *Cephalodiscus*.

On making sections of the region just indicated, and at the level of the hypoderm of the nephridial eminences, but before reaching the lumen of the canal, it is found that the branchial whorls have considerably diminished, though three volutions are more or less present on each side. The oral funnel is still wide, and the second or inner line of the series has on the anal (or neural) aspect the two free flaps formerly mentioned. Each inner edge of the latter shows a well-defined though narrow border of hypoderm with blackish pigment—beneath which is a firm and somewhat thick layer

<sup>1</sup> *Atti d. R. Accad. d. Lincei*, t. vi. p. 15, 1881; and *Ann. and Mag. Nat. Hist.*, ser. 5, vol. ix. p. 67.