

VII.—ON THE SO-CALLED "AUDITORY-SAC" OF CIRRIPEDES. By Charles Darwin, F.R.S.

IN my work on Cirripedes I have described an orifice, previously unobserved, beneath the first pair of cirri, on each side of the body, including a very singular elastic sack, which I considered to be an acoustic organ. Furthermore I traced the oviduct from the peduncle to a mass of glands at the back of the mouth, and these glands I called ovarian. Dr. Krohn has recently stated that these glands are salivary, and that the oviduct runs down to the orifice, which I had thought to be the auditory meatus. It is not easy to imagine a greater mistake with respect to function than that made by me; but I expressly stated that I could never succeed in tracing the oviducts into actual union with these glands; nor the supposed nerve from the so-called acoustic sack to any ganglion. As Dr. Krohn is no doubt a much better dissector than I am, I fully admitted my error and still suppose that he is right. Nevertheless, several facts can hardly be reconciled with his view of the function of the several parts. To give one instance: if any one will look at the figure of the *Anclasma* (*Lepadidæ*, Pl. iv.), he will see how extremely difficult it is to understand by what means the ova coming out of the orifices (*e*) above referred to, could be arranged in the symmetrical lamellæ which extend up to the summit of the capitulum: it must be observed that the ova are united together by a delicate membrane enclosing each ovum; moreover the cirri in this animal are in atrophied condition, without regular articulations, so that it is inconceivable how the ova can be transported and arranged by their agency.

I have lately received from an eminent naturalist, Prof. F. de Filippi, a paper (*Estratto dall' Arch. per la Zoolog.* 31st Dec. 1861), chiefly devoted to the development of the ova of Cirripedes, in which the following passage occurs:—

"The small size of *Dichelaspis Darwinii* has not enabled me to verify the relationship discovered by Krohn between this problematical organ and the termination of the oviduct; but on the other hand the transparency of the tissues has enabled me to perceive a peculiarity of structure which may help to elucidate the question. Fig. 13 represents what I persist in calling a hearing organ. Within a cavity, the walls of which are united to the surrounding tissues, there is a pear-formed sack or ampulla. On the neck of this ampulla, at *a*, are numerous minute lines parallel to each other and to the axis of the ampulla. I doubted at first whether the appearance of these lines arose from folds in the membrane, and therefore I separated some of the sacks, and I could then better convince myself that these lines correspond with true nervous fibres, thin and simple, embedded in the rather thick, resisting, and transparent substance which forms the walls of the ampulla. This circumstance seems to me to show clearly the sensitive nature of the organ, and hence to

favour Darwin's opinion, who considers them to be organs of hearing."

My object in asking you to publish this note, is to induce some one to attend to this curious organ; to endeavour to discover ova within the so-called auditory sack; for as each cirripede produces so many eggs, assuredly this might be effected without great difficulty. It is, however, possible (as I believe was suggested by Mr. R. Garner at the British Association, but whose paper I have mislaid,) that cirripedes, like certain Entomostraca, may lay two kinds of eggs; one set passing out through the problematical orifices; and another set coming out of the body in sheets, in the manner suggested by me;—namely, the ova collecting under the lining membrane of the sack before the act of exuviation, with a new membrane formed beneath them; so that the layer of eggs becomes external after the act of exuviation. If this view, to which I was led by many appearances, be correct, improbable as it may seem, it ought not to be difficult to find a specimen with the old membrane of the sack loose and ready to be moulted, with the new underlying membrane almost perfect, and with the layer of ova between them. Or a specimen might be found which had lately moulted, with its skin still soft, (and this I believe that I saw) with a layer of eggs still loosely attached to the new lining membrane of the sack.

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VIII.—ON RIBS AND TRANSVERSE PROCESSES, WITH SPECIAL RELATION TO THE THEORY OF THE VERTEBRATE SKELETON. By John Cleland, M.D., Demonstrator of Anatomy, University of Glasgow.

(Read at the Meeting of the British Association at Cambridge, October, 1862.)

WHILE it often happens that, on comparing structure with structure in series of animals, anatomists become aware of close correspondences between objects that to all outward appearance are very different, in the comparison of ribs or transverse processes in the various regions of one animal, or in the series of vertebrata, what strikes the eye at first is their resemblance. They are naturally, in the first instance, assumed to correspond, and only when differences of detail one by one attract attention, is that first assumption put upon its trial and, by different judges, to a greater or less extent, set aside. The amount of palpable resemblance between vertebræ gives an air of simplicity to the question of the correspondence of their parts, when compared with questions which present themselves in connexion with the skull; and while some inquiries as to correspondences of cranial bones are liable to be cast aside as little better than dreams, the legitimacy of inquiring what parts of vertebræ correspond one to another stands beyond all question. It is important, therefore, for the interests of