

notochord of *Balanoglossus* must be looked for near the anus of *Cephalodiscus*; and so on!

Still the Professor leads us on like a conjuror. The Vertebrata themselves are in the same plight as *Balanoglossus*. We are all Trochophores turned round and turned over — 'L'embryon du Vertébré est un Trochophore renversé'. Can any zoologist venture to contradict such a patent hypothesis? My own impression in reading these conclusions of Professor Roule was that they are of more real service to Science than all the pages preceding them. For if this sort of thing will not serve to put an end to the copious stream of theories of vertebrate origin, involving morphological somersaults and structural contortions, nothing will.

The conclusion of the whole matter appears to be this:

1) That Professor Roule denies entirely the method of mesoderm formation in *Actinotrocha* by localized hypoblastic ingrowths, as described by me. He does this on the strength of his observations upon another species, without having furnished the slightest direct evidence for the origin suggested by himself.

2) That he sweepingly condemns my assertions regarding the structural features of the late larva found at St. Andrews (and with them, those of nearly every other worker who has preceded him, upon Mediterranean larvae), because he has failed to find the same features in the species investigated by him.

3) That, based upon the archaic notion of the homology of the blastopore, he has been led to conclusions regarding the relationship of *Cephalodiscus* to *Balanoglossus*, and of Invertebrates to Vertebrates, which border on the ludicrous.

4) That he has seen fit in his criticism to accuse me of erroneous assertions and exaggerations, and to use other expressions of a very strong nature.

I only ask: — Are the first three 'Science', and is the last in good taste?

Edinburgh, School of Medicine, March 1901.

3. On the Composition and Variations of the Pelvic Plexus in *Acanthias vulgaris*.

By R. C. Punnett, B.A.
(Royal Soc. London, Abstract.)

eingeg. 14. März 1901.

The facts recorded in this paper may be summarised as follows:

1) Considerable variation occurs in *Acanthias vulgaris* with regard to:

- a.* The serial number of the girdle-piercing nerves;
- b.* The number of the post-girdle nerves;
- c.* The number of nerves forming the collector;
- d.* The number and position of the nerve canals;
- e.* The number of the fin rays;
- f.* The number of the whole vertebrae.

2) Asymmetry occurred in an appreciable number of cases.

3) Differences occurred in the two sexes on the following points: The position of the girdle is more rostral in the male than in the female. The post-girdle fin innervation area is greater in the male than in the female, owing to the development of the mixipterygium.

4) The female is, on the whole, more variable than the male.

5) A well-marked correlation exists between

a. The position of the girdle and the number of collector nerves;

b. The position of the girdle and the number of post-girdle nerves;

c. The position of the girdle and the number of whole vertebrae.

6) No correlation was found between the number of the fin rays and the number of fin nerves.

7) At certain stages in ontogeny the number of collector nerves is greater than in the adult.

8) At certain stages in ontogeny the number of post-girdle nerves is greater than in the adult. The most caudal two or three of these form a posterior collector — a structure which is never found in the adult.

The facts recorded have been used as criteria between the two rival theories of limb origin with the following results:

1) To explain the variations on the side-fold excalation theory, it must be assumed that excalation of segments is going on in the collector and pre-collector areas whilst, at the same time, intercalation is taking place in the post-girdle area; or, in other words, that the portion of the vertebral column in front of the girdle is tending to split up into fewer segments, whilst simultaneously that portion behind the girdle is tending to become divided into more segments. Leaving on one side the improbability of two contiguous portions of the vertebral column undergoing at the same time two opposite processes, an examination of the number of whole vertebrae associated with different positions of the girdle lends practically no support to the view that intercalation is going on in this area.

2) On the side-fold excalation theory, an explanation of the variations in the position and number of the nerve canals of the girdle, and of the occasional instances of asymmetry, necessitates the assumption that the pelvic girdle in different specimens is not homologous — an assumption which at present seems unjustifiable.

3) The different variations observed are not discordant with the view that the limb is capable of migrating along the body, on which view it must be supposed that a secondary rostral migration has followed a primary caudal one. Moreover, such a view receives confirmation from the existence of a posterior collector and of a more extensive anterior collector in certain embryonic stages.

4. Berichtigung.

Von Dr. Wl. Redikorzew.

eingeg. 15. März 1901.

Durch Herrn Geheimrath Prof. H. Grenacher wurde ich auf einige Irrthümer aufmerksam gemacht, die ich beim Citieren seiner Arbeiten in meinem Aufsatz: »Untersuchungen über den Bau der Ocellen der Insecten« (Z. f. w. Z. Bd. 68) begangen habe, und die ich im Nachfolgenden richtig stellen möchte.

1) p. 582. Die Platinchloridchromsäuremischung wurde von Grenacher nicht »besonders warm«, sondern nur mit Einschränkungen empfohlen.

2) p. 595. Grenacher schrieb den Retinazellen nicht »zum Theil zwei, selbst drei Kerne« zu, sondern nur einen einzigen.

3) p. 609. Grenacher leugnete die Muskeln im Auge der Arachnoideen nicht, sondern erwähnte dieselben von mehreren Spinnenaugen (*Epeira*, *Lycosa*, *Salticus*).

Heidelberg, März 1901.

5. Orthopteren vom Kuku-nor-Gebiet in Centralasien, gesammelt von Dr. J. Holderer im Jahre 1898.

Von Dr. H. A. Krauß, Tübingen.

eingeg. 16. März 1901.

Von seiner auch auf naturwissenschaftlichem Gebiet so erfolgreichen Durchquerung Centralasiens in den Jahren 1897—1899, die von Turkestan aus über Kaschgar durch die Wüste Gobi zum Kuku-nor-Gebiet (Nordost-Tibet) und von da durch China bis Shanghai gieng, brachte Dr. Holderer hauptsächlich von den Hochsteppen um den Kuku-nor (aus einer Höhe von 3—4000 m ü. M.) eine zwar

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