

From the embryogenetic point of view the Gymnotoca are characterized by the *Trochosphaera*-larva, like the Arthropoda by the *Nauplius*-embryo.

The phylogenetic table of the Gymnotoca given by M. Giard in 1876 may be compared with the genealogical tree of the Trochozoa prepared by M. Roule in 1889, and, according to the author, the only essential alteration consists in the adoption by the latter of Hatschek's term Trochozoa.

In attempting to homologize the schizocœle of the higher Gymnotoca with the enterocœle of the more archaic forms (*Sagitta*, Brachiopoda), the fact that the original mesodermic cells in the schizocœlian types originate from the endoderm, at the margin of the prostomium, in points perfectly homologous with those in which the endodermic diverticula are formed in the enterocœlians, led the author at first to regard the latter as representing the primitive state, of which the derived (condensed) form is realized in the Mollusca and Annelida. His later researches have enabled him to generalize this interpretation and to formulate the following empirical law :—

“When, in the development of allied animals, an organ originates either by invagination or folding of a cellular lamella (*Wolfian process*), or by the formation of a solid cellular mass which is afterwards cleft or hollowed by a cavity, the latter mode of formation must be regarded as a condensation of the former.”

This formula may be applied to the Gymnotoca not only in the question of the two forms of mesoderm, but also in the comparison of the *archigastrea* (*Sagitta*, Brachiopoda) and of the derived modes of gastrulation in the formation of the ventral nervous system by a furrow (*Salmacina*, *Protodrilus*) and by thickening &c. With regard to the nervous system and to the ectoderm generally the author states that in no Annelid examined by him has he seen anything like the syncytium described by M. Roule. The contours of the ectodermic cells can always be shown by suitable reagents.—*Comptes Rendus*, January 15, 1890, p. 90.

On the Fauna of Mountain-lakes. By Dr. F. ZSCHOKKE.

The faunistic investigation of three neighbouring alpine lakes of the Rhaetic Alps, the dividing chain between Vorarlberg and Graubünden, gave the following results :—

a. *Lake of Partnun*: elevation 1874 metres; length 450, breadth 200, depth 35 metres; temperature 9°·5–10°·5 C. The basin is enclosed by lofty rocky walls in the midst of the limestone mountains; its bottom consists partly of fine mud, partly of coarse gravel. A green Algal vegetation is rather luxuriantly developed in the lake, while the banks are scantily covered with plants. Almost throughout the whole summer the basin receives a great influx of

snow-water. The surface is frozen over in the first half of November to open again at the beginning of June.

Animal inhabitants:—*Vorticella microstoma*, Ehr.; *Planaria abscissa*, Ijima; *P. subtentaculata*, Dugès; *Dorylaimus stagnalis*, Duj.; *Scenuris variegata*, Hoffm.; *Lumbriculus variegatus*, O. F. Müll.; *Lynceus quadrangularis*, O. F. Müll.; *L. sphaericus*, O. F. Müll.; *Cypris compressa*, Baird; *Cyclops tenuicornis*, Claus; *C. elongatus*, Claus; *Hygrobates longipalpis*, Konicke; *Limneria histrionica*, Bruz.; *Pachygaster tau-insignitus*, Lebert; *Cirrhenurus* spec., Dug.; *Rhyacophila vulgaris*, Pict.; *Chironomus plumosus*, Linn.; *Chironomus*, 5 sp., Meig.; *Tipula* sp., Meig.; *Corethra* sp., Meig.; *Pisidium fossarinum*, Cless.; *P. Foreli*, Cless.; *Limnæa truncatula*, Müll.; *L. ventricosa*, Moq.-Tand.; *Cottus gobio*, Linn.; *Phoxinus laevis*, Ag.; *Rana temporaria*, Linn.; *Triton alpestris*, Laur.

b. *Lake of Tilisuna*: elevation 2100 metres; length 270, breadth 150, depth 15 metres; temperature 11°–12° C. The lake lies more open than that of Partnun, partly in Bündnerschiefer, partly in crystalline rock. The subsoil is composed chiefly of coarse pebbles. Vegetation in the water inconsiderable, on the bank tolerably luxuriant. This basin also receives a great influx of snow-water. The periods of freezing and breaking-up agree nearly with those of the Partnun lake.

Animal inhabitants:—*Vorticella microstoma*, Ehr.; *Planaria polychroa*, O. Schm.; *Dorylaimus stagnalis*, Duj.; *Scenuris variegata*, Hoffm.; *Lynceus quadrangularis*, O. F. Müll.; *L. acanthocercoides*, Fisch.; *Cypris compressa*, Baird; *Phryganea pilosa*, Oliv.; *Hydroporus piceus*, Heer; *Chironomus plumosus*, Linn.; *Chironomus* sp., Meig.; *Pisidium nitidum*, Jenyns; *Limnæa truncatula*, Müll.; *Fredericella sultana*, Gerv.; *Cottus gobio*, Linn.; *Phoxinus laevis*, Ag.; *Rana temporaria*, Linn.

c. *Lake of Garschina*: elevation 2189 metres; length 200, breadth 100, depth 3 metres; temperature 15°–16° C. It lies quite open in the midst of fine Alpine meadows. Its bottom consists of fine mud; the surrounding rock is a Bündnerschiefer, rich in Fucoids. Algal vegetation much developed in the lake. The influx of snow-water ceases entirely in the summer; the basin is then fed only by springs. The ice-covering breaks up only at the end of June.

Animal inhabitants:—*Epistylis plicatilis*, Ehr.; *Vorticella microstoma*, Ehr.; *Calidina parasitica*, Gigl.; *Microstoma lineare*, Oerst.; *Planaria abscissa*, Ijima; *Polycelis nigra*, O. F. Müll.; *Dorylaimus stagnalis*, Duj.; *Clepsine bioculata*, Sav.; *C. marginata*, Sav.; *Scenuris variegata*, Hoffm.; *Lumbriculus pellucidus*, Dupel; *Lynceus quadrangularis*, O. F. Müll.; *Cypris compressa*, Baird; *Cyclops serrulatus*, Fisch.; *Diaptonus castor*, Jur.; *Gammarus pulex*, Linn.; *Limnesia histrionica*, Bruz.; *Pachygaster tau-insignitus*, Lebert; *Perla alpina*, Pict.; *Cloë* sp., Pict.; *Sialis lutaria*, Linn.; *Phryganea varia*, Fab.; *P. pilosa*, Oliv.; *P. ruficollis*, Pict.; *Notonecta lutea*, Müll.; *Hydroporus nivalis*, Heer; *H. erythrocephalus*, Heer; *Chironomus*, 4 sp., Meig.; *Corethra* sp., Meig.; *Pisidium fossa-*

rinum, Cless.; *P. ovatum*, Cless.; *Limnæa truncatula*, Müll.; *Cottus gobio*, Linn.; *Phoxinus lævis*, Ag.; *Rana temporaria*, Linn.; *Triton alpestris*, Laur.

The results here communicated were obtained in August 1889, during a long zoological excursion, which was unfortunately much interfered with by unfavourable weather. The examination of the three basins referred to, which are so different in every respect, will be continued for several years. At the same time the investigations will be extended to some other lakes of the Rhætic Alps, especially to the Lünensee, on the Seesaplaner. In this way it may be possible to obtain a complete picture of the Lake-fauna of a definite, narrowly bounded Alpine region, and at the same time to approach more closely to certain biological questions. The faunistic and biological results of 1889 are described in detail in a report which appears in the 'Verhandlungen der Naturforschenden Gesellschaft in Basel.'

Protozoa and Rotatoria were this time not particularly collected; but these groups will be studied in future years. The lists of the other groups must also be greatly enriched.—*Zoologischer Anzeiger*, No. 326, January 27, 1890, p. 37.

On the Actinian Genera Ægir and Fenja.

By Prof. F. E. SCHULZE and Dr. D. C. DANIELSSEN.

In a 'Notice on the Actinida of the Norwegian North-Atlantic Expedition,' published in the Annual Report of the Museum at Bergen, Dr. Danielssen described two new genera, allied in appearance to *Peachia* and *Edwardsia*, but in which a complete intestine was said to pass from the mouth to the posterior extremity of the body, to open there in a functional anal pore. In a communication to the 'Gesellschaft Naturforschender Freunde zu Berlin,' on the 19th February, 1889, Prof. F. E. Schulze expressed some doubt as to the validity of these descriptions, and suggested that the forms in question might possibly have been examples of species of the family Edwardsiidae which had been cut in two by the dredge. In answer to this suggestion Dr. Danielssen wrote to his critic, and a portion of his letter was read by the latter at the meeting of the same society on the 16th April last. Dr. Danielssen says:—

"You must not forget that I am an old zoological fisherman, who has worked with the dredge for fifty years, and that during this time I have met with hundreds and hundreds of animals which were mutilated in one way or another. From many years' experience, therefore, I can perfectly well distinguish such specimens from uninjured ones. And if your supposition were correct, and I had had to do with the torn-off anterior parts of animals, then, even if a mistake had been at all possible, the lower extremity of the animal must show a constriction which would at once strike the experienced observer. Such a constriction, in fact, does occur in certain injured



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