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II. Wissenschaftliche Mittheilungen.

1. On a fresh-water Medusa of the order Trachomedusae.

By E. Ray Lankester, F. R. S., Professor of Zoology in University College, London.

On Thursday, June 10th, Mr. Sowerby, secretary of the Botanical Society of London, observed in the Tank in the water Lily house, Regents Park, some medusa-like organisms of which he was kind enough to place a large number at my disposal on the following Monday.

The organism proves to be an adult Medusa belonging to the order Trachomedusae and the family Petasidae of Haeckel's system (System der Medusen, I. Theil). It comes nearest among described genera to Fritz Müller's imperfectly known *Aglauiropsis* from the coast of Brazil.

The most obviously interesting matter about the form under notice is that it occurs in great abundance in perfectly fresh water at a temperature of 90° F. Hitherto no medusa of any order has been detected in fresh water except perhaps some stray estuarine forms. It is exceedingly difficult to trace the introduction of this animal into the tank in the Regents Park, since no plants have been recently (within twelve

months) added to the Lily-house and the water is run off every year. Probably a few specimens were last year or the year before present in the tank, and have only this year multiplied in sufficient abundance to attract attention. Clearly this Medusa is a tropical species since it flourishes in water of the high temperature of 90° F.

I have observed the Medusa feeding on *Daphnia* which abounds in the water with it.

The present form will have to be placed in a new genus. I shall not on the present occasion propose any name for this new genus.

It presents the common characters of the Trachomedusae (as distinguished from the Narcomedusae) in having its genital sacs or gonads placed in the course of the radial canals. It possesses the solid tentacles with cartilaginous axis, the centripetal travelling of the tentacles, the tentacle rivets (Mantelspangen), the thickened marginal ring of threadcells at the edge of the disc (Nesselring), characteristic of Tracheline Medusae.

Amongst Trachomedusae the new form finds its place in the Petasidae which are characterized as Trachomedusae with 4 radial canals, in the course of which the 4 gonads lie, with a long tubular stomach and no stomach-stalk.

Amongst Petasidae it is remarkable for the great number of its tentacles which are all solid, and for its very numerous otocysts. Further it is remarkable among all Hydromedusae (Vellate Medusae, that is exclusive of Charybdea, for the fact that centrifugal radiating canals, which are neither more nor less than the elongated otocysts, pass into the velum where they end coeally.

The genus may be characterized as follows:

Mouth quadrifid with 4 perradial lobes.

Stomach long and tubular, projecting a good deal below the disc.

Disc saucer shaped, that is flattened.

Radial canals 4, opening by dilated ends into the marginal canal.

Gonads 4, in the form of 4 oval sacs depending into the cavity of the sub-umbrella from the 4 radiating canals.

Marginal or ring Canal voluminous.

Centripetal Canals (such as those of *Olindias*, *Geryonia* etc.) absent.

Tentacles solid in three sets which are placed in three superimposed horizons.

- 1) a set nearest the aboral pole of 4 large per-radial tentacles. These are the primary tentacles.
- 2) a second tier of 28 (or more) medium sized tentacles placed between these in four groups of seven. These are the secondary tentacles.

- 3) a third tier of 192 (or more) small tentacles placed in groups of six between adjacent secondary tentacles. These are the tertiary tentacles.

Tentacle Rivets (Mantelspangen), connecting the roots of the tentacles with the marginal ring (Nesselring), are connected with all the tentacles of each of the three horizons.

Otocysts, placed along the line of insertion of the velum — about 80—100 in number: from 16 to 25 are placed between successive per-radial tentacles arranged in groups of 2 or three between the successive secondary tentacles.

Velar centrifugal canals — are peculiar to this genus formed by the elongated otocysts which pass into the velum and there end blindly. They possibly correspond in character to the centripetal canals found in other Trachomedusae in the disc, but on the other hand may prove to be ectodermal and not endodermal in origin.

Their presence constitutes the chief peculiarity of the genus and may necessitate the formation of a distinct family or even a sub-order for its reception.

The above characters are derived from examination of a dult male specimens which were freely discharging ripe actively motile spermatozoa.

The sole character which I can give as specific over and above the generic characteres summarized above is that of size. The diameter of the disc does not exceed $\frac{1}{3}$ of an inch.

Locality. — The water Lily-tank in the gardens of the Botanical Society, Regents Park, London.

Very abundant during June 1880. Probably introduced from the West Indies.

To the above diagnosis I would add a few words concerning the otocysts with the minute study of which I am now engaged. It is by no means clear that they belong to the type which the Hertwig's have considered as characteristic of Trachomedusae and Narcomedusae; it appears highly probable that these enormously elongated otocysts are not derived from the gastro-vascular canal system, but are ectodermal cysts and that the otolithic cells are also not endodermal but ectodermal. In structure, and also in development, so far as I have been able to determine from the examination (as yet) of only fresh specimens, the otocysts belong to the type occurring in Leptomedusae, being peculiar only for their elongation and extension within the velum. If this proves to be the case, the new form will form a link between the Trachelinae and the Leptolinae.

June 15th, 1880.

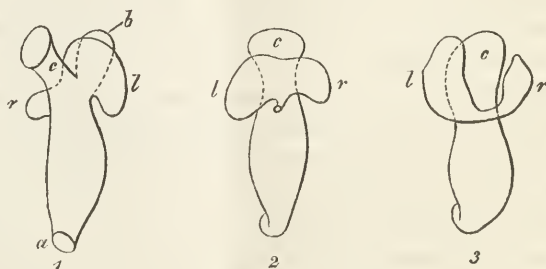
P. S. June 19 th. — I find on careful study of the otoliths and the canals in which they are situated, that the otolith-cells themselves are as in all Tracheline Medusae derived from the endoderm of the marginal canal. On the other hand the canal-like cavity at the base of which each otolith is situated is derived from the ectoderm and is in fact developed after its first commencement by the fusion of a series of vacuolae or vesicular enlargements of the ectodermal (musculo-epithelial cells) of the outer surface of the velum. These vacuolated cells quit the single stratum of cells in which they at first lie and as they fuse with the developing otocystic canal they form a tube which occupies a space between the outer and inner (inferior and superior) layers of ectodermic cells which constitute the velum.

Thus these »centrifugal velar canals« are not **endodermal**, not comparable to canals of the gastro-vascular system but are like the cysts surrounding the otoliths in other Tracheline Medusae (e. g. *Rhopalomena* as shewn by the Hertwig's) of **ectodermal** origin.

2. Bemerkungen zur Entwicklungsgeschichte der Echinodermen.

Von A. Goette, Professor in Straßburg.

Bipinnaria. Als ich im verflossenen Winter an der Zoologischen Station in Neapel arbeitete, legte mir Herr Fritz Meyer eines Tages einige von ihm gezüchtete und präparierte junge Bipinnarien von *Asteracanthion glaciale* zur Ansicht vor. Gleich bei dem ersten Präparat fiel mir eine bisher nirgends erwähnte Bildung der Anlagen des Vasoperitonealsystems auf, so dass ich mich sofort an die mir von Herrn Fritz Meyer in dankenswerther Weise angebotene Durchsicht aller seiner zahlreichen *Bipinnaria*-Präparate machte. Dabei traf ich auf folgende Befunde, welche ich in den hier beigegebenen Holzschnitten wieder-



gebe. Fig. 1 zeigt uns den Darm einer sehr jungen *Bipinnaria* halb von vorn und halb von der linken Seite. Er steigt vom After (a) gerade in die Höhe und endet in dieser Richtung mit einem etwas rück-

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