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XLII.—On new Carboniferous Polyzoa

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to careful investigations, the class of the Bryozoa* is now also referred).

Further, the type of development of the central nervous system, the axial cord or the *chorda dorsalis* present in many species, the relation of the alimentary tube to the branchial sac (*Amphioxus*), are all exceedingly exact, repeatedly confirmed, and extremely important facts, indicating that the class Tunicata presents the fundamental form from which has been developed the type of the Vertebrata†, hitherto standing isolated in the systems of the animal kingdom.

The entire absence of remains of Tunicata in all geological formations will probably for ever prevent our knowing the transition-forms which united the different kinds of Tunicata with the lowest Vertebrata (*Amphioxus*).

Considering all that has been said, I give Oscar Schmidt's‡ view, according to which the Tunicata form a special class of *Protovertebrata*, the preference over all other opinions.

XLII.—On new Carboniferous Polyzoa. By Professor JOHN YOUNG, M.D., and Mr. JOHN YOUNG, Hunterian Museum, University of Glasgow.

[Plates IX. & IX. bis.]

IN the number of the 'Annals and Magazine of Natural History' for May 1874 we described the structure of the Polyzoan which was named *Millepora gracilis* by Phillips, *Ceriodora gracilis* (Phillips's species), Morris's Catalogue, *Vincularia gracilis* by others; and we showed that the structure was such as to justify the institution of a new genus. We have now examined *Ceriodora rhombifera*, Phillips, and have detected a central axis in it also, this structure being absent in *C. similis* and *C. interporosa*, Phillips. In the two latter species the cells terminate in a mass of cancellated calcareous tissue of varying amount, but never forming a columnar, far less a tubular axis. We prefer therefore to leave them in the genus *Ceriodora*, transferring *C. rhombifera* to our new genus *Rhabdomeson*. After the publication of our former

* Chiefly on the basis of the remarkable investigations of Nitsche on *Alcyonella fungosa*, Pall. See also Mém. Acad. St. Pétersb. vol. xv. p. 50.

† With respect to this, see Hæckel, Gen. Morphol. Bd. ii. p. cxvi et seq., and p. 413 et seq.

‡ Vergl. Anat. 6te Aufl. 1872, p. 248. See also Hæckel, Natürl. Schöpfungsgesch. 4te Aufl. pp. 466, 467, Taf. 12, 13.

paper we sent to Professor Phillips specimens of *Rh. gracile*, and received in reply the following note, among the last which he wrote:—

“April 3, 1874.

“MY DEAR SIR,—I agree with you in referring your beautiful specimens to the three species (*M. gracilis*, *M. rhombifera*, *M. interporosa*) named in my books (‘Yorkshire,’ vol. ii., and ‘Palæozoic Fossils’). Your examples are better than mine were; but I have no doubt of the reference. The axis, which is jointed in your specimens, has probably been examined (small as it is) in transverse sections. The difference of opposite faces in *C.* or *Rh. rhombifera* is very interesting. . . .

“Yours truly,

“JOHN PHILLIPS.”

The appearance of jointing is fallacious, as Prof. Prestwich may ascertain, the specimens having been retained by Prof. Phillips for the Oxford Museum.

RHABDOMESON, Young and Young, 1874.

Rhabdomeson rhombiferum, Phillips’s species.

Ceriopora rhombifera, Phillips.

Stems slender, cylindrical, free; branches of nearly equal diameter, given off at wide intervals, as in *Rh. gracile*, and at right angles to the stem. Cells in quincunx all round the stem; they open at the bottom of depressed areas which are rhomboidal or hexagonal in outline and are bounded by narrow tuberculated ridges, the tubercles on which are larger at the angles of junction; average number of tubercles round each area, sixteen. Here and there depressed pits with quadrangular boundaries intervene between adjacent cell-areas; but they are cæcal, and do not show in transverse sections. Cell-areas more numerous on one face than on the other, in the proportion of 2 to 3, the size of the areas being inverse to their number. Central axis slender, slightly flexuous, and without transverse septa. Cells conical, tapering inferiorly; their casts identical in form with those of *Rh. gracile* (Ann. & Mag. Nat. Hist. 1874, xiii. pl. xvi. B. figs. 3 & 4).

Locality.—Hairmyres, East Kilbride, in limestone shales, and sparingly in every bed which yields *Rh. gracile*.

This species is easily distinguished from *Rh. gracile*: 1, its stem is only half the thickness; 2, the cell-areas are larger and angular; 3, the prominent angular tubercle is wanting;

4, the cell-areas are of unequal size and number on the two faces.

In Plate IX. the two faces are shown, and a transverse section exhibiting the proportions of the central axis. The specimens are in the Hunterian Museum.

In the Explanation of Sheet 23 (Mem. Geol. Survey Scotland) Mr. R. Etheridge, Jun., refers (p. 102) to "a species of *Polypora*, bearing a considerable resemblance to *P. verrucosa*, M'Coy. The portions obtained are fragments of a robust branching coralline, with a nearly circular section, and a generally strong and thick appearance, covered with numerous cell-apertures arranged in alternating lines on the celluliferous aspect, five or six apertures in each oblique line. The cells are very pustulose or wart-like, with prominent raised margins. The interspace between each aperture is occupied by waving striae, and in some few specimens appears roughened. In *P. verrucosa*, M'Coy, the apertures are round, in the present species they are oval; the margins are equal all round, here one is more projecting than the other. It has also a more robust and stronger appearance than M'Coy's species. The reverse presents the peculiar roughened look previously noticed. As it has only, hitherto, been found in fragments, the general habit and nature of the dissepiments cannot be stated. The disposition of the cells and mode of branching are exceedingly like those seen in *Thamniscus dubius*, Schl. (King, Perm. Foss. p. 45, pl. v. fig. 9). In the generic description of *Polypora*, M'Coy (Synopsis Carb. Foss. p. 206) states that the margins of the cell-apertures are never raised. As the margins in the present form are decidedly raised and prominent, might it not be a species of *Thamniscus*? If it be a new species of *Polypora*, I would propose for it the specific designation of *P. pustulata*."

We have received from Dr. Rankin, of Carlisle, specimens of the fossil in question, so well preserved and showing the habit so clearly that we are enabled to give the following description.

Thamniscus? Rankini, sp. nov. Plate IX. *bis*.

Stems free, dichotomous, circular, about $\frac{1}{16}$ inch in diameter; branches in one plane. Celluliferous face equal to two thirds of circumference. Cells arranged in spirals, the left-handed series longer than the right-handed. Cell-apertures circular when entire, becoming oval when worn; lower lip prominent;

margins of aperture tuberculate. Intercellular surface covered with finely tubercular ridges, whose terminations form the marginal denticles. Non-celluliferous aspect finely granular, faintly striate. Cells encroach irregularly on this face (Plate IX. *bis*, fig. 5); and small apertures (fig. 4) seem to represent aborted cells.

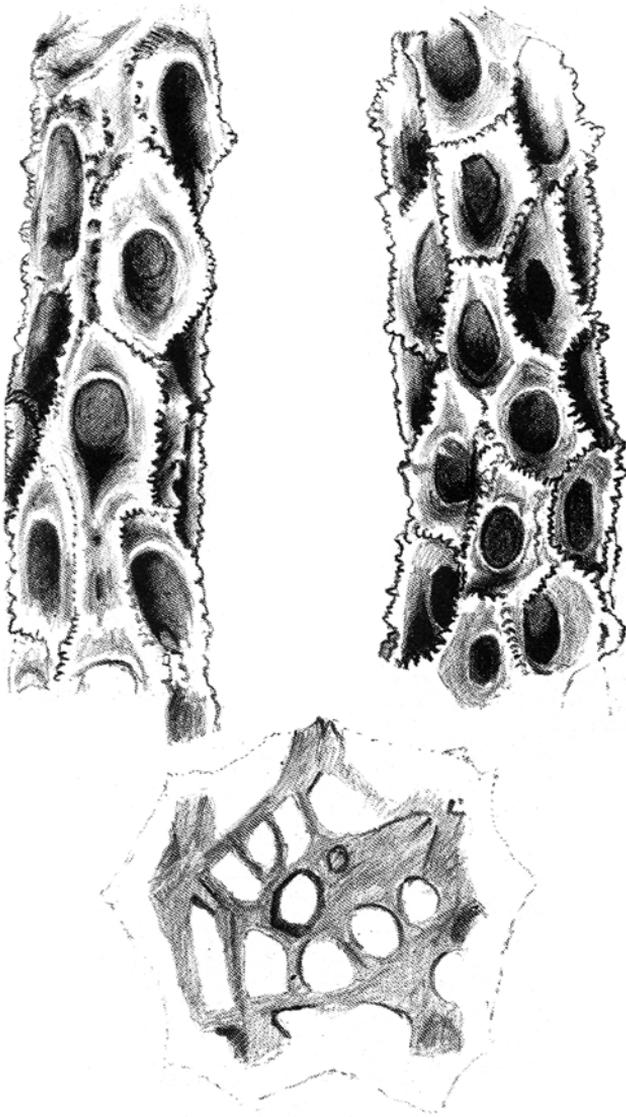
Locality.—Gillfoot, Carluke; Gair; Robroyston: in Upper Limestone shales.

The ornament of a very young branch (fig. 6) has a curious resemblance to that of *Sulcoretipora*. Figure 7 shows one of the apertures at the margin of the non-celluliferous aspect, and the wavy striæ around it.

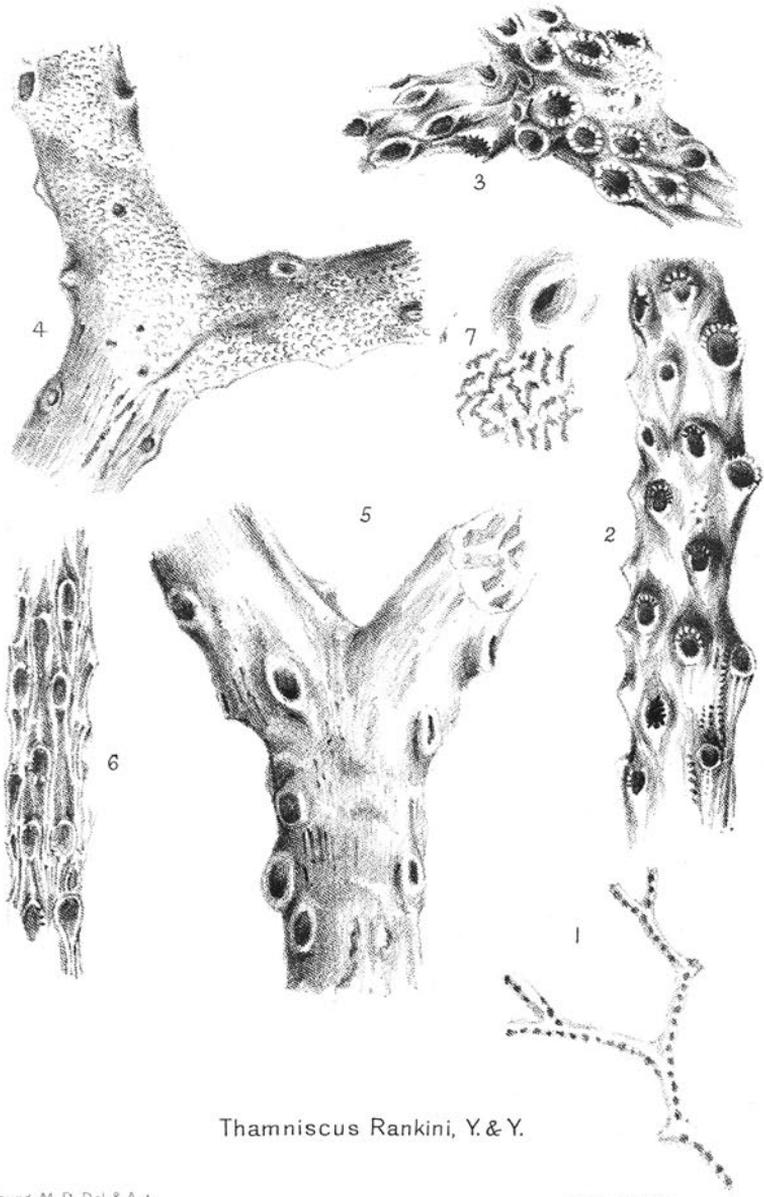
The generic position of the fossil is uncertain. It is not a *Polypora*, since it is not reticulate. *Thamniscus*, King, shows a tendency to reticulation; but the junctions are at small angles. *Synocladia* presents the next step towards the *Fenestella* type. If the gemmuliferous vesicles described by King are essential to his *Thamniscus*, this character is wanting in our species, even in the best-preserved specimens. Longitudinal sections show the cells starting from an imaginary axis, and reaching the surface at various levels; but the tendency to an arrangement in transverse series, seen in fig. 2, is apparent. We have not yet found the base of attachment. Meanwhile, though strongly disposed to regard this fossil as a true *Hornera* or a member of a closely allied genus, we think it safer to leave it in the Palæozoic genus *Thamniscus*, and to name it *Th. Rankini*, after the gentleman to whom we owe the finest examples.

XLIII.—*Note on the Geographical Distribution of the Temnocephala chilensis of Blanchard.* By JAMES WOOD MASON, Professor of Comparative Anatomy, Medical College, Calcutta.

SOME months ago I received from Captain F. W. Hutton, Curator of the Otago Museum, Dunedin, New Zealand, a series of specimens of the freshwater crayfish lately described by him in this Journal under the name of *Paranephrops setosus*, and was astonished to find, in the sediment at the bottom of the jar containing these crustaceans, numerous examples of this remarkable little Trematode (which owes its generic name to the fact that the cephalic end of its body is divided by four fissures into five tentacular processes, and



Rhabdomeson rhombiferum Phil.



Thamniscus Rankini, Y. & Y.