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## New Carboniferous Polyzoa

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### Notes

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46. *New CARBONIFEROUS POLYZOA.* By Professor J. YOUNG, M.D., F.G.S., and J. YOUNG, Esq., F.G.S., Hunterian Museum, Glasgow University. (Read June 24, 1874.)

[PLATES XL. & XLI.]

THE specimens described in this paper were found by one of us in the limestone shales near Glasgow, and recognized as new to Scotland; but we were not prepared to find that, in all the literature accessible to us, neither figures nor descriptions of similar forms occurred.

ACTINOSTOMA FENESTRATUM, gen. et spec. nov. Pl. XL. figs. 1-4, and Pl. XLI. figs. 12-16.

The habit of this fossil closely resembles that of *Fenestella*, several species of which (*F. membranacea*, *F. plebeia*, *F. oculata*, *F. multiporata*, *F. nodulosa*) occur in the same strata. The frond was erect, and poriferous on one face only. The fenestrules are oblong; and the following measurements give the variations in size:—

Longitudinal	4	.....	5	..	6	.....	}	in 0·1 inch.
Transverse	..	6 (calculated)	8	..	9 (calculated)			

As these differences are accompanied by variations in the thickness of the branches, it is probable that the specimens represent different stages of growth. The dissepiments, though for the most part at right angles to the branches, occur also at various angles; they are about half the thickness of the branches which they connect. The interstices on the poriferous face are angular, not carinate, but set with tubercles, one for every two pores. These tubercles, consisting, like the rest of the polyzoarium, of an outer dense and an inner softer calcareous tissue, have the appearance in worn specimens of an apical pit or foramen. The non-poriferous surface of the branches and dissepiments is rounded, smooth, and finely tuberculated.

The pores, or cell-apertures, are at different levels relatively to the ridge of the interstices. None are situated on the dissepiments; but those which are close to the roots of the dissepiments are on a level with the interstitial ridge: the intermediate apertures are lower, or nearer to the dorsal surface; and some even look obliquely across the fenestrules. All encroach on the fenestrules. The thin lip of the circular aperture is simple in worn specimens; but in well-preserved examples it is slightly prominent and shows eight radial denticles, which arch inwards, their length being one third of the diameter of the aperture. They are in contact by their bases, whose breadth is nearly equal to the length of the denticle. Close to one end of the cell, separated from it by little more than the thickness of the cell-wall, is a second circular orifice, whose diameter is about one third of that of the cell. The two apertures lie in the same plane generally; but when the cell projects, as in fig. 3 at *a*, the

two apertures are at an angle to each other; but the smaller never overhangs the larger. A thin calcareous partition separates the larger and smaller cavities, which are very frequently laid into one large pyriform space by destruction of the partition.

Locality: limestone shales, Capelrig and Hairmyres, East Kilbride.

GLAUCONOME STELLIPORA, spec. nov. Pl. XL. figs. 5-11.

Stems nearly cylindrical, branching irregularly, bearing two rows of alternate cells with prominent circular orifices, over which eight radial denticles converge, as in *Actinostoma*, a smaller orifice being placed at one end of the cell, on the side of the prominence, and separated from the larger aperture by an interval which never exceeds one third the diameter of the larger cell. The stem is ornamented with a sinuous mesial ridge; and sinuous ridges likewise pass from cell to cell: all these ridges are finely tuberculated, or, more correctly, beaded. The non-poriferous face is traversed by longitudinal parallel ridges, which are also finely tuberculated. Occasionally a larger cell occurs in the angle of the branches; but the small size of the fragments hitherto obtained renders it impossible to say whether they are of frequent occurrence; they are possibly ovicells.

Variety *a*, *spinosa*. Figures 9, 10, Pl. XL., show strong tuberculations, the intervals being smooth; and fig. 11 shows these tubercles as almost spines. Where they are abraded a central pit is suggested by the unequal wearing of the denser outer and softer central tissue.

The branches present three modifications: they are short and poriferous; they bear cells on the sides, and terminate with blunt ends; or they have, as shown in fig. 5, two terminal cells close together, the branch being probably continued past these cells by outgrowth of the axis between them.

Locality: limestone shales at Hairmyres, Robroyston, Gare, and Boghead.

It seems best to retain all these forms with radiated oral denticles and with no ascertained fenestration under the genus *Glaucanome*. There is a possibility of these forms, or at least some of them, acquiring fenestration, in which case they would be referred to *Actinostoma*.

As to the affinities of the fossils described, we are not in a position to give a final opinion. The Carboniferous Polyzoa are usually placed under the *Cyclostomata*; but the second, smaller aperture (figured in the accompanying plates) suggests another reference. Two interpretations of these openings are possible. The smaller might be that for the projection of the polyzoon, and the larger (closed with membrane during the life of the animal) might answer to the perforated surface of the test in *Lepralia* and other living genera. Against this view may be set the small size of the orifice, its frequent displacement, by which the animal would project at various

angles, the calcareous septum, which separates the two cavities, and which we believe to have existed during life, and, lastly, the mode in which surface and apertures sometimes become obscured by an adventitious growth. In the 'Geological Magazine' we lately drew attention to a thin layer which incrusts many of the Polyzoa, and which an imperfect investigation showed to contain sulphuric acid. Whether of sulphate of lime with or without magnesia and silica, this layer, when present, wholly conceals the smaller orifice, and has gradually encroached on the larger, so as to leave at last a small central orifice, which in the end is sealed by a button of the incrusting substance. We conjecture this layer to have been begun during the life of the Polyzoa, the central opening being that through which the products and ministers of decomposition, infusoria, rotifers, and the like, may have had passage. It certainly was deposited before the waste of the skeleton had begun, since favourable specimens reveal the marginal denticles. This accident of preservation is conclusive for the larger aperture as that of the polyzoal cell. The smaller plainly cannot be regarded as that of the ovicell; the only other structure to which it can be compared is an avicularian appendage; and if this view be correct, some, at least, of the palæozoic Polyzoa would belong to the order *Cheilostomata*, thus adding another to the list of persistent ordinal types.

[For the explanation of Plates XL. and XLI. see the end of the following paper, p. 688.]