

1922

Some New Paleozoic Glass-Sponges from Iowa

A. O. Thomas
State University of Iowa

Let us know how access to this document benefits you

Copyright ©1922 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

Recommended Citation

Thomas, A. O. (1922) "Some New Paleozoic Glass-Sponges from Iowa," *Proceedings of the Iowa Academy of Science*, 29(1), 85-91.

Available at: <https://scholarworks.uni.edu/pias/vol29/iss1/11>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

SOME NEW PALEOZOIC GLASS-SPONGES FROM IOWA

A. O. THOMAS

Fossil sponges of any kind are relatively rare in the Paleozoic rocks of Iowa and especially so if we except the questionable forms generally relegated to the Receptaculitidae.

Briefly stated the record stands about as follows: in the Maquoketa beds are a few zones in which *Hindia parva* Ulrich is fairly common; in the dolomitic Hopkinton beds of the Silurian are rare examples of *Astylospongia christiani* M. and W.; in certain Devonian horizons are examples of the thick-walled, convexo-concave *Astraeospongia hamiltonensis* M. and W.; in the same system the shells of occasional brachiopods and molluscs show considerable evidence of the ravages of a tiny boring sponge belonging to the genus *Clionolithes* and there is record of similar depredations on Mississippian brachiopods; the Burlington limestone has furnished one Dictyosponge, *Lyrodictya burlingtonensis* Hall and a specimen of *Belemnospongia fascicularis* Ulrich; and lastly Ulrich has described a species of *Lasiocladia* from the Keokuk limestone.

Recurring to the Receptaculitidae, the large discs of *Receptaculites oweni* Hall, the so-called "sunflower coral" of the lead and zinc miners, are abundant in at least two zones of the Galena dolomite in the vicinity of Dubuque and at other localities where this part of the Ordovician is exposed. Of less common occurrence but associated with *R. oweni* and belonging to the group are specimens of *Ischadites iowensis* (Owen). Fragments of a Receptaculites, close to *R. occidentalis* Salter, are found in the Silurian. Another Silurian receptaculoid form is *Cerionites dactylioides* (Owen); in places the rock is crowded with representatives of this species and whatever their habits or lineage may have been they lived in dense groups whose numbers suggest prolific sponge colonies similar to those of the Tennessee Silurian.

The remarkable glass-sponge colonies of the Upper Devonian of New York and Pennsylvania are without their equivalents numerically anywhere in North America as far as known. Indeed these remote ancestors of the beautiful Venus' Flower Basket of our modern seas are but meagerly represented paleontologi-

cally outside of the New York Chemung'. There are a few doubtful ancestors of Ordovician age and a derelict or two from the Silurian, one from New York and one from England. The *Cyathodictya oblonga* of this paper adds another of Silurian age. The Mississippian record is more remarkable for the wide distribution of the few forms known than for populous colonies such as inhabited Upper Devonian beds; the Burlington limestone species mentioned above was found in Iowa and up to the present paper was the only glass-sponge ever reported from the state. The Jurassic and Cretaceous have yielded some more or less obscure species. Since the Cretaceous, as well as during most of the epochs before then, the glass-sponges have occupied the deeper waters beyond the continental shelves. For the fascinating history of the glass-sponges the reader is referred to an article by Doctor John M. Clarke¹ which appeared recently. For detailed descriptions and beautiful illustrations access should be had to a monograph on them by James Hall in collaboration with Doctor Clarke².

The occurrence of two new species, one of them belonging to a new genus, in the Paleozoic rocks of Iowa is here offered as a brief contribution to the subject. The first of these belongs to one of the more primitive stocks of the glass-sponges which Clarke assigns to the genus *Cyathodictya*. The other does not belong to any of the described genera but is nearest, perhaps, to the general type of *Ceratodictya*. Both apparently are *Lyssacine* hexactinellids and are placed in the family *Dictyospongidae*.

CYATHODICTYA OBLONGA n. s.

Plate I, Figs. 1, 4

Species based on a single elongate, obconic specimen which is attached by one side to a block of buff-colored, compact, and finely crystalline dolomite. The reticulum is preserved as fine linear impressions or casts over the entire surface. The aperture is concealed by the matrix and the body is somewhat flattened toward the upper end. The sponge expands gradually for about one-third its length above which the sides are nearly parallel until just before reaching the aperture where there is a slight but appreciable tapering. The pattern of the reticulation consists of

¹ The Great Glass-Sponge Colonies of the Devonian: their Origin, Rise, and Disappearance. *Jour. Geol.* vol. 28, pp. 25-37; 1920.

² A Memoir on the Paleozoic Reticulate Sponges constituting the Family *Dictyospongidae*. Albany, 1898.

a fine mesh of small oblong quadrules whose longer dimension is up and down the surface and the pattern is without variation over the exposed part of the specimen. Transversely the quadrules average about twenty-two to the centimeter while vertically the number is between eight and nine to the centimeter, hence the length of each quadrule is about two and one-half times its breadth. The transverse lines are more wavy than the vertical ones. On the expanding lower part new lines come in between the others at irregular intervals. There is no evidence of a basal tuft.

Length of specimen 125 mm., width at the midlength 34 mm., greatest thickness of the part above the matrix 14 mm.

Position and Locality: Middle Silurian or Niagaran beds, near Hopkinton, Iowa. Collected by Samuel Calvin. It is museum number 2800.

IOWASPONGIA n. g.

Large vase-shaped or fusiform sponge. Surface marked by prominent, sharp-edged, horizontal annulations separated by broadly concave interannular spaces. It has no nodes or protuberances. Aperture and tip unknown.

It is of the general type of *Ceratodictya* of Hall and Clarke.

IOWASPONGIA ANNULATA n. s.

Plate I, Figs. 2, 3, 5

Descriptions based on three incomplete specimens whose interiors are filled with the plastic shale of the matrix.

Body large, vase-, or spindle-shaped, approximately circular in cross-section. Upward expansion rapid in the lower part, then gradual, with evidence of becoming narrower above. Body marked by sharp and prominently elevated annulations which are farthest apart about the middle and become progressively closer together both apically and basally.

Specimen *a* is 130 mm. long, 158 mm. in greatest diameter, and 91 mm. in diameter at the lower end. It has eight annulations, the circumferences of which as well as the width of the interannular spaces gradually increase upward for the first five rings, while the remaining rings and spaces have nearly equal circumferences and widths respectively. When complete the individual was close to a foot in length.

Preservation is such that only a carbonaceous stain or film is

left to represent the reticulum — traces of which are so faint that the character of the mesh is not clear.

Specimen *b* is 203 mm. long and 135 mm. in greatest diameter. It has been partly flattened and distorted by pressure at time of burial; parts of eight annuli are preserved; they are less prominent and farther apart than in specimen *a*, due, in part at least, to the imperfect preservation. The surface of the specimen is nearly all covered with a black carbonaceous film except for patches of iron sulphide, presumably iron pyrites; the pyrite seems partly to coat the surface as a thin film intimately mingled with the carbon or just beneath it. On the metallic surface of the pyrite may be detected very fine vertical ridges, two or three in the space of a millimeter, and obscure traces of cross lines. These may represent the reticulum.

Specimen *c* consists of a fragment of the rapidly expanding basal part of another individual. It shows parts of six annuli with long gentle lower slopes and short abrupt upper slopes. They average from crest to crest a width of nine millimeters. Fine concentric lines occur on the upper slopes of some of the rings and there are a few striae on the lower slopes at right angles to the lines on the upper slopes. These seem to represent what remains of the reticulum. The inner surface of the cavities or molds from which this and the other two specimens were taken would very likely show the pattern of the reticulum had they been saved by the collectors. The dimensions of specimen *c* are: diameter at smaller end 62 mm., at larger end 100 mm., height about 35 mm.

Position and Locality: Upper Devonian, Lime Creek shales in the blue plastic clay some thirty or forty feet below the marly horizon at the pit of the Rockford Brick and Tile Company, Rockford, Iowa. Specimens *a* and *b* were obtained at this pit by Mr. C. L. Fenton who has kindly submitted them to the writer for study. Specimen *c* was collected at the same pit at the horizon of *Lingula fragilis* by Mr. C. H. Belanski. It is University museum number 2801.

Except for some fine specimens obtained by Barrois in the Upper Devonian beds of Brittany, France, and described by Hall and Clarke in their Memoir, this is the only species reported from this horizon outside of the New York-Pennsylvania area.

PALEONTOLOGICAL LABORATORY,

STATE UNIVERSITY OF IOWA.

PLATE I

Figs. 1, 4. *Cyathodictya oblonga* Thomas.

Fig. 1. A part of the surface of the holotype, x $2\frac{1}{2}$.

Fig. 4. A view of the holotype, natural size.

Silurian; Hopkinton, Iowa. Collected by Samuel Calvin.

Figs. 2, 3, 5. *Iowaspongia annulata* Thomas.

Fig. 2. A view of specimen *c*, x .55, tilted to show the annulations. Note the difference between the upper and lower slopes of each ring.

Fig. 3. Specimen *b* illustrating the tapering toward the lower end and the slight narrowing upward. This individual is somewhat distorted and flattened; x about .4.

Fig. 5. Specimen *a* showing the sharp-edged annuli and the concave interannular areas. Note the gradual tapering and the progressive decrease in width between the rings; x about .5.

The three specimens are regarded as cotypes. They were collected in the plastic blue shale of the Lime Creek beds at the pit of the Rockford Brick and Tile Company, Rockford, Iowa. Specimens *a* and *b* collected by C. L. Fenton and specimen *c* by C. H. Belanski.

