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AN UNDESCRIBED AUSTRALIAN CYSTIPHYLLID—
MICTOCYSTIS—FROM THE UPPER SILURIAN ROCKS
OF THE MOUNT CANOBALAS DISTRICT.

By R. ETHERIDGE, JUNR., Curator.

(Plates iv.-v.)

To Mr. C. A. Süßmilch, of the Technical College, Sydney, I am indebted for the loan of specimens, and presentation of others to the collection, of a very interesting Cystiphyllid coral from the Upper Silurian rocks in the neighbourhood of the Canobalás. So far as Australian literature is concerned, it is certainly undescribed.

The essential feature of this coral consists of a mass of coarse blister-like vesicular tissue surrounding a series of cylindrical and parallel visceral chambers, apparently without mural investment other than the convex oblique surfaces of the vesicles in question. On the upper or external surface of the corallum these vesicles have a very marked blister-like appearance and are not traversed by radiating or geniculate septal costæ at all.

The visceral chambers are provided with numerous well-developed lamellar septa which proceed almost to the middle of each chamber, cutting through the horizontal tabulate centres; these septa are confined to the visceral chambers, and do not in the least impinge on or pass over the blister-like vesicular tissue; again they do not appear to quite reach the calicinal centre, nor can I distinguish any columelarian structures; indeed there seems to be a small free central tabulate area to each visceral chamber. The tabulæ are on the whole complete, although here and there lenticular vesicles are formed.

The affinities of this coral form a difficult problem. In the first place the vesicular tissue constituting the general mass is essentially that of the Cystiphyllidæ, blister-like vessels closely superimposed on one another. Any further affinity with this family can only be traced to some extent through *Actinocystis*, Lindström, and *Mesophyllum*, Schlüter. In the former the centres of the corallites are septate, but the septal areas small, and I believe not tabulate; the whole of the broad external zones being entirely vesicular in the usual cystiphyllid manner. The visceral chambers also appear to be formed in the same way as

in our present fossil—a longitudinal cavity without mural investment enveloped in cyst-like tissue. The latter genus, *Mesophyllum*, Schlüter (= *Spongophylloides*, Meyer), is but an amplification of *Actinocystis*, by increase of the septal area, corresponding decrease of the vesicular peripheral zone, and a modified pinnate arrangement of the septal lamellæ; as in the former, tabulæ are said to be absent. To sum up, my conception of this coral is that of a loosely constructed compound *Actinocystis* with tabulæ.

Were the question put to me, how does *Mictocystis* differ from *Endophyllum*, as we understand the latter, I would answer, it is possibly very much a matter of degree, although there is more than one marked feature that will serve to distinguish them, thus—In *Endophyllum* the corallites are formed by a series of invaginated ob-cones, the free calicinal edges of which lie over and connect with those of contiguous corallites. To a certain extent, therefore, they possess a kind of spurious mural investment, whilst in *Mictocystis*, as I have already explained, even that does not exist. Again, in *Endophyllum* the vesicular tissue lies between more or less horizontal laminae, the extensions of these invaginated cup-edges, instead of forming a mass of heaped-up cysts. Further, the septa at their distal or outer ends mingle, or are lost in the vesicular tissue, but in *Mictocystis* they seem to be absolutely free of any connection with the vesicular tissue. In fact the septal lamellæ and tabulæ of *Mictocystis* resemble a series of long plugs dropped into cylindrical holes in the tissue.

Dr. C. Rominger described a compound vesicular genus from the Niagara Group of Michigan, called *Vesicularia*,¹ composed of a “superimposed series of calycinal cups, of coarsely blistered surface, which in vertical sections appear as a uniform succession of layers of large, unequal, vesiculate plates, perfectly resembling a vertical section through a *Cystiphyllum*.” The blistered calycinal layers bear pseudo-costal radii, and the margins of the calyces are expanded and confluent without lines of demarcation. At a casual glance there is some resemblance to *Mictocystis*, principally in consequence of the blistered surface, but the invaginated form of the calyces and the lateral extension of the pseudo-costæ at once distinguish the corals from one another. Furthermore, the name *Vesicularia*, Rom., does not stand, having been used as a genus of Polyzoa by Dr. J. V. Thompson between the years 1829-1834.

¹ *Vesicularia*, Rominger, 1876 (*non* Thompson, 1829-34), Geol. Survey Michigan. Report Lower Peninsula, 1873-76, iii., 1876, pt. 2, p. 135.

The following is a description of the genus and species :—

Genus Mictocystis,² *gen.nov.*

Gen. Char.—Corallum compound-cystiphylloid, coarse vesicular tissue enveloping disconnected cylindrical corallites, without proper walls. Septa lamellar, confined to visceral chambers, not impinging on the vesicular tissue. Tabulæ usually complete.

MICTOCYSTIS ENDOPHYLLOIDES, *sp.nov.*

Sp. Char.—Corallum of large size, consisting of a mass of large lenticular vesicles enveloping unequally spaced-apart corallites; surface convex and slightly blistered. Corallites long, cylindrical, with an average diameter of ten millimetres. Calices moderately deep, more or less crateriform at the surface; sides inclined, blistered. No evidence of proper walls or inner mural investment to the corallites (visceral chambers). The latter are surrounded by the vesicular tissue, which is highly developed and composed of large blister-like, arched, inwardly inclined vesicles of different shapes and unequal size, but the lenticular predominating. Septa well developed in and confined to the visceral chambers as simple vertical lamellæ, of one order, and to the number of about twenty-four, extending almost (if not quite) to calicinal centre, but without mingling or revolving, and neither passing over the surface blisters nor extending on to those forming the spurious walls of the visceral chambers. Tabulæ horizontal, close, slightly bent downwards at their peripheries.

Loc.—Junction of Spring and Gap Creeks, Portion 98, Parish Barton, County Ashburnham (*C. A. Süssmilch*—Colls. Australian Museum and Süssmilch).

Hor.—Upper Silurian, Halysites Limestone (Bed A of Mr. Süssmilch's section³).

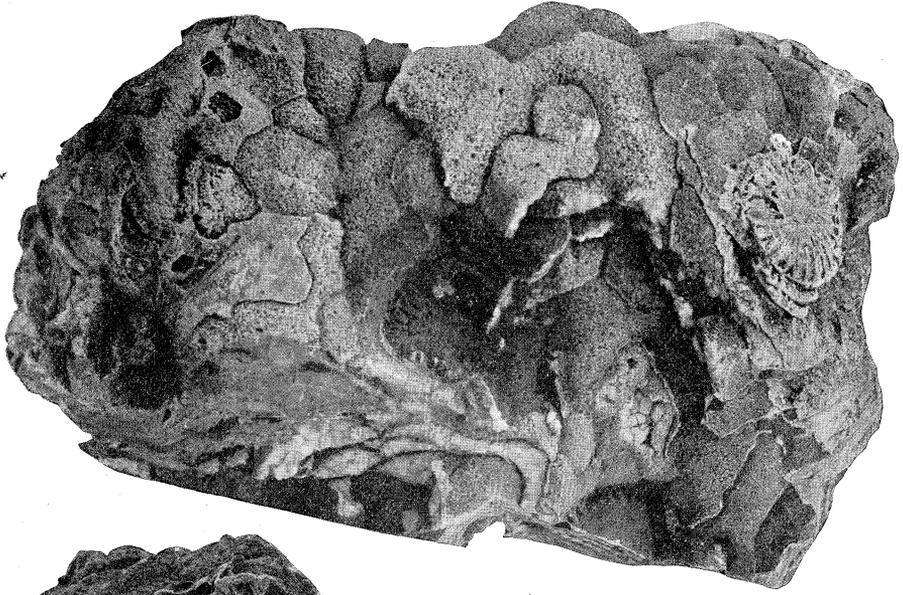
²μικτός=compound; κύστις=a bladder or vesicle.

³Süssmilch—Journ. Roy. Soc. N. S. Wales, xl., 1907, p. 131, pl. xix.

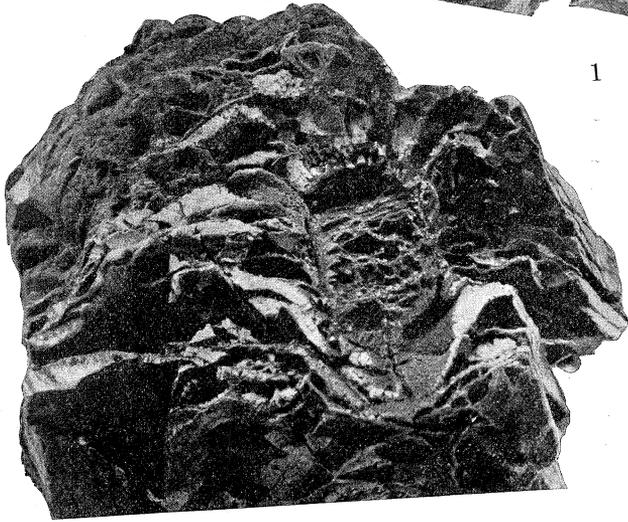
EXPLANATION OF PLATE IV.

MICTOCYSTIS ENDOPHYLLOIDES, *Eth. fil.*

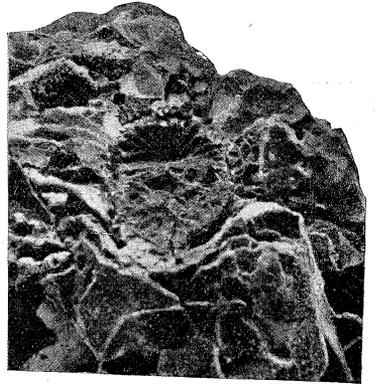
- Fig. 1. Highly weathered example seen from above, displaying the coarse, blister-like vesicular tissue, three corallites and portion of a fourth; septa weathered out may be seen on the right-hand upper corallite, and a tabulate surface in the right-hand lower and central corallites. $\times \frac{1}{3}$.
- „ 2. A similar specimen to that seen in Fig. 1, viewed longitudinally displaying a calice and portion of a visceral chamber with tabulæ, etc. $\times \frac{1}{3}$.
- „ 3. Portion of a visceral chamber surrounded by cysts; in the former septal lamellæ and close-set tabulæ.
- „ 4. The same visceral chamber seen in Fig. 3, but viewed at a somewhat different oblique angle.



1



3



4

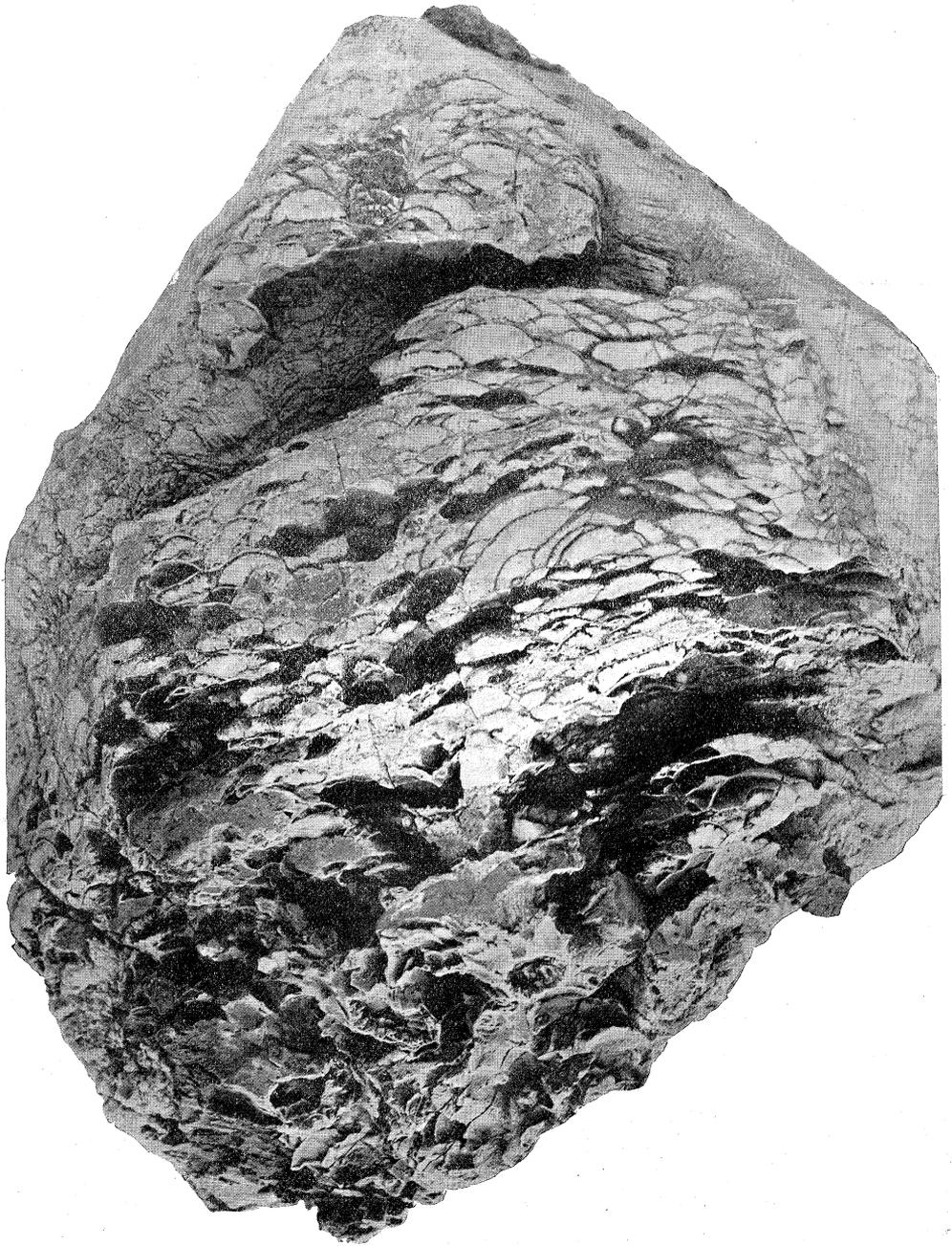


2

EXPLANATION OF PLATE V.

MICTOCYSTIS ENDOPHYLLOIDES, *Eth. fil.*

Portion of a highly weathered corallum seen longitudinally. The blister-like vesicular tissue is excellently shown, and in the centre is the faint outline of a corallite extending from top to bottom of the specimen.



H. BARNES, Junr., photo.,
Austr. Mus.