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A VERY REMARKABLE SPECIES OF *SPONGOPHYLLUM* FROM THE UPPER SILURIAN ROCKS OF NEW SOUTH WALES.

By R. Etheridge, Junr., Curator.

(Plates iv-vii.)

The subject of the present paper first came under my notice whilst engaged in a geological traverse of the Upper Silurian beds exposed in the course of the Yass River, between the town of the same name and the Devil's Punch-bowl, near the Yass-Murrumbidgee Rivers Junction. The specimens so obtained were subsequently augmented by additions made by Mr. A. J. Shearsby.

Genus Spongophyllum, *Edwards and Haime*, 1851[1]

(Polyp. Foss. Terr. Pal., 1851, p. 425.)

Spongophyllum enorme, *sp. nov.*

(Plates iv-vii.)

Sp. Chars.—Corallum compound, in the form of very large spreading masses with an uneven or undulating upper surface. Corallites very large, separating from one another on percussion, polygonal (quadrangular, pentagonal, or hexagonal), defined at the surface by grooves, and formed by a series of close-fitting invaginated cups, sometimes two and a half inches in diameter. Theca ill developed and often undefined. Calices funnel-shaped, moderately deep, flat bottomed, to some extent flattened around the peripheries, thence shelving inwards and downwards, average diameter one half to three quarters of an inch. Visceral chambers simply defined by the edges of inturned vesicular plates, and by successive repetition forming the general mass of each corallite. Septa numerous but weak, visible only as short laminæ around the edges of each calicular fossa passing for a brief distance on to the central, flat, tabulate area, and sometimes faintly continued over the funnel-shaped peripheral surfaces of the calices. Tabulæ incomplete, consisting of flat or slightly rolling close plates forming lenticular vesicles which pass insensibly into the general body of smaller vesicles forming the peripheral mass of each corallite.

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[1] Emended Schlüter.

Obs.—The large size of the corallum in the first instance, and that of the corallites in the second renders this a conspicuous and striking coral. It is composed of a series of closely abutting polygonal corallites defined on a weathered surface by grooves which are not the external manifestation of corallite walls, but simply mark the boundaries of each corallite, and in some conditions of weathering become exsert. Notwithstanding this close contact the corallites are not firmly united laterally, but remain separate and distinct and on percussion fall apart.

Each corallite is composed of an outer or peripheral zone of superimposed small arched vesicles, which inwardly merge into highly inclined lenticular vesicles forming the sides of the calices and visceral chambers, passing more or less horizontally across the latter, the uppermost forming the bare central tabulate area. The constant repetition of this structure gives rise, in weathered specimens, to a series of irregularly invaginated cups, the largest corallite observed measuring two and a half inches in its longest diameter. Within the boundary grooves the surface of each corallite slopes slightly inwards to form a peripheral area around the central deeper portion, or calice proper, the whole assuming a more or less funnel-shaped appearance.

The weakly developed lamellar septa only extend for a comparatively short distance over the calice floors; the number of lamellæ is unknown.

The tabulæ proper, *i. e.* the floors within the visceral chambers are incomplete, they do not individually extend from side to side, but are formed by lenticular vesicles, and merge into those around the peripheries; this tabulate area is, as a rule from half to three quarters of an inch wide.

Thin sections prepared for the microscope reveal but little more than the features already described, it is, therefore, unnecessary to refer to these in detail. In the transverse section figured, it will be noticed that the short lamellar septa are not traceable on the vesicles surrounding the viseral chambers, and are only seen on the exterior of weathered specimens. Sections taken in both directions display the discontinuous development of the walls. In places there certainly appears to be a wall

proper (Pl. vii., fig. 2), yet again at the junction of contiguous corallites we see only the outer ends of the peripheral vesicles abutting against one another leaving a single dark line resembling a wall; or, the ends of the vesicles facing one another separated by a given space filled with stereoplasmic matter similar to that lining the general cavities of the coral. This deposit sometimes undergoes a further alteration into chalcedonic matter. In weathered examples the ends of the vesicles are visible without any covering whatever.

To neither of our described Australian species *(S. bipartitum*, and *S. giganteum)* is this nearly related, the various parts are on a far larger scale and the development of the septal system is less. It was, at first, very doubtful whether or not to refer the coral to *Spongophyllum*, but no more available genus has presented itself. The only species in any way comparible with *S. enorme* in size is *S. kunthi*, Schlüter[2], but even here the differences are very marked. The vesicular structure closely resembles that of *Omphyma*.

Loc.—Escarpment north-east of Boonoo Ponds Creek, Hatton's Corner, Yass River, near Yass *(R. Etheridge* and *A. J. Shearsby)*.

Hor.—Boonoo Ponds Limestone, Upper Silurian. The limestone is the "coralline" or "fourth" limestone of Prof. T. W. E. David's Yass section[3] or immediately below the Hatton Corner (? Humewood) Limestone[4], the uppermost limestone bed of the Yass River series.

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[2] Schlüter—Verhandl. Nat.-Vereines Preuss. Rheinl. Westf., xxxvii., 1881, pl. viii., figs. 1 and 2.

[3] David—Ann. Rept. Dept. Mines N. S. Wales, 1881 (1882), p. 148, map and sections.

[4] The "Coral-reef" of Jenkins—Proc. Linn. Soc. N. S. Wales, iii., 188, p. 26.

EXPLANATION OF PLATE IV.

Spongophyllum enorme, *Eth. fil.*

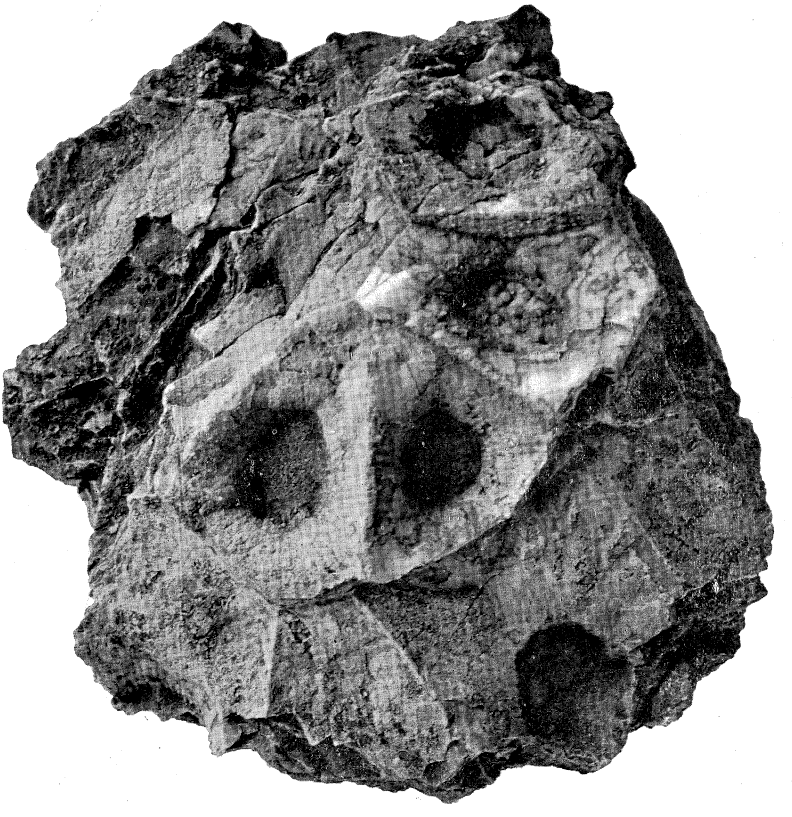
A large weathered specimen, seen from above. The closely fitting invaginated cups are distinctly visible.—Reduced approximately one-third.

H. BARNES, JUNR., photo,
Austr. Mus.

EXPLANATION OF PLATE V.

Spongophyllum enorme, *Eth. fil.*

A weathered but better preserved example than that shown in Plate iv. The corallites are more clearly defined and the septal lamellæ visible.—Magnified approximately one-fourth.



H. BARNES, JUNR., photo,
Austr. Mus.

EXPLANATION OF PLATE VI.

Spongophyllum enorme, *Eth. fil.*

Three weathered corallites viewed laterally; that on the right is one of the largest corallites in the collection.—Nat. size.

H. BARNES, JUNR., photo,
Austr. Mus.

EXPLANATION OF PLATE VII.

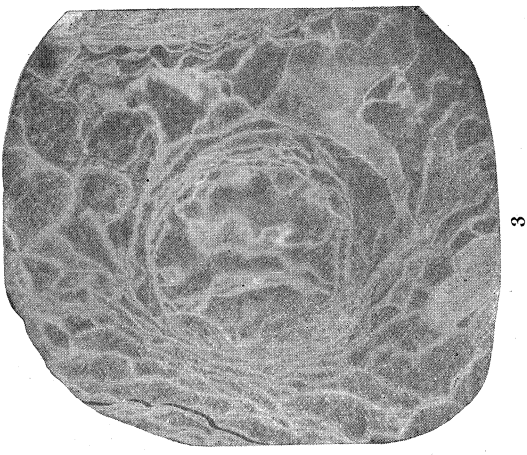
Spongophyllum enorme, *Eth. fil.*

Fig. 1. Longitudinal section of portions of two corallites.—Magnified approximately one-third.

Fig. 2. Transverse section of portions of three corallites displaying their functions with one another, the central tabulate spaces, and peripheral vesicles.—Magnified approximately one-third.

Fig. 3. Transverse section of a single corallite, with the same magnification as that of Fig. 2.

1



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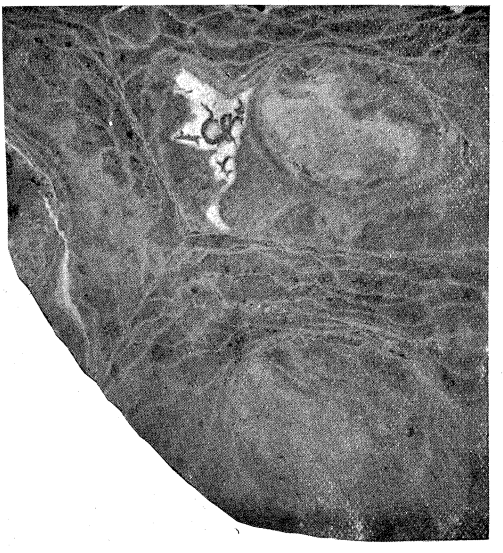

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H. Barnes, Junr., micro.-photo,
Austr. Mus.

CATALOGUE SLIP.

Etheridge, Rob., Junr. **56.33.**

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