

THE SILURIAN RUGOSE CORAL *MICROPLASMA*
LOVENIANUM DYBOWSKI FROM
MONMOUTHSHIRE

by D. E. WHITE

ABSTRACT. Specimens of *Microplasma lovenianum* Dybowski 1874 from the Wenlock Limestone of the Usk Inlier, Monmouthshire, are described and illustrated. This is the first record of the occurrence of *Microplasma* in Britain. The diagnosis of the genus is re-stated and a diagnosis of *M. lovenianum* is also given.

DYBOWSKI (1873, p. 340) erected the genus *Microplasma* for fasciculate rugose corals, the septa of which are represented by thorn-like projections (trabeculae). The following species, all of Silurian age, were described and figured (pp. 508–14, pl. 5, figs. 3–6):

<i>Microplasma gotlandicum</i>	from the Baltic islands of Gotland and Karlsö
<i>Microplasma lovenianum</i>	from Karlsö
<i>Microplasma schmidtii</i>	from Karlsö
<i>Microplasma pectiniseptatum</i>	from Gotland

Lang and Smith (1927, p. 478, footnote), in rejecting the views of Schlüter (1889) and Počta (1902) concerning *Cystiphyllum siluriense* Lonsdale and *C. cylindricum* Lonsdale, state that they 'recognise *Microplasma* for compound *Cystiphyllum*'.

Wedekind (1927, pp. 63–64) considered *Microplasma* to be a dwarf form of *Cystiphyllum*, in which only the central part of the internal structure is present. He selected *M. gotlandicum* as the type species. This was the first valid selection.

Prantl (1940) rejected Wedekind's views. He slightly amended Dybowski's diagnosis of *Microplasma* to include the presence of 'spinose ridges on successive dissepimental floors' as well as in the peripheral stereozone. He wrongly considered it to be congeneric with *Aphyllum* Soshkina 1937. The tabulae are complete and widely spaced in *Aphyllum*, affinities of which are closer to the family Tryplasmataidae Etheridge 1907. In the same paper, Prantl described and figured *Microplasma flexuosum* from the Upper Wenlock, eastern part of the quarry 'America', near Budňany, Bohemia. He considered this species to be 'very closely allied with *M. schmidtii*, with which it is perhaps conspecific'. Prantl suggested that *M. schmidtii* and *M. gotlandicum* 'represent only the different ontogenetical stages of growth of the same species'.

In October, 1961, during the resurvey of the One-Inch Newport (249) Sheet by the Geological Survey, Mr. J. D. D. Smith and the author visited a Wenlock Limestone quarry [National Grid Reference—ST/33989839], 550 yd. E. 13° S. of the church, Common Coed-y-Paen, Monmouthshire. Among the fossils collected were two specimens of parts of large fasciculate coral colonies, later identified as *M. lovenianum*. They are described below. A brief note on this occurrence has already been published (White 1965).

[Palaeontology, Vol. 9, Part 1, 1966, pp. 148–51, pl. 22.]

SYSTEMATIC PALAEOLOGY

Family CYSTIPHYLLIDAE Milne Edwards and Haime
Genus MICROPLASMA Dybowski, emend. Prantl

Type species. M. gotlandicum Dybowski; Wedekind 1927

Diagnosis (after Prantl 1940): Rugose coral with phaceloid corallum of thin, cylindrical, scolecoïd corallites. Septa represented by trabeculae projecting internally from a narrow peripheral stereozone; also present on upper surfaces of horizontal skeletal elements. Dissepiments and tabellae not always separately recognizable.

Microplasma lovenianum Dybowski 1874

Plate 22, figs. 1–11

1874 *Microplasma lovenianum* Dybowski, pp. 510–11, pl. 5, figs. 4, 4a

Material. GSM 102583, 102583a–c, and PF 2903–4; parts of a colony from the lower part of the section; GSM 102584 and 102584a–c, parts of a colony from a loose block. Both specimens are from a small quarry, 550 yd. E. 13° S. of the church, Common Coed-y-Paen, Monmouthshire (N.G.R. ST 33989839). They are in the Geological Survey and Museum collections, London.

Diagnosis. *Microplasma* in which dissepiments and tabellae are numerous, closely spaced, irregular, and of very variable size. Peripheral increase.

Description. Corallum phaceloid. Corallites upright, scolecoïd, closely spaced, cylindrical to sub-cylindrical, with occasional deformation when in contact (Pl. 22, fig. 3). Length of protocorallites exceeds 40 mm.; maximum diameter 10 mm. Five hystero-corallites, averaging 3.5 mm. diameter, forming in calice of protocorallites, at 8.5–10 mm. diameter, by characteristic peripheral increase (Pl. 22, figs. 6, 7). Calice steep-sided, depth variable up to 9 mm. Epitheca worn, not clearly seen, thin with trace of transverse and vertical ribbing (Pl. 22, figs. 10, 11). Peripheral stereozone, thickness 0.1–0.15 mm., from which trabeculae project internally (Pl. 22, figs. 4, 5). Internal vesicular structure of small, steeply dipping dissepiments, convex upwards, and incomplete tabellae (tabellae), flat-lying, convex upwards, occasionally difficult to distinguish, with trabeculae present as small, thorn-like projections (Pl. 22, fig. 4).

Discussion: The genus *Microplasma* has not previously been recorded from Britain. The specimens from the Usk Inlier agree very closely with Dybowski's illustrations of *M. lovenianum* from the Baltic island of Karlsö, which are reproduced on Plate 22, figs. 1, 2, and with his description of the species, except that he did not mention trabeculae on the horizontal skeletal elements. However, Wedekind (1927, pl. 19, fig. 6) figured a specimen of *Microplasma* sp. with well-developed trabeculae in this position, and Prantl (1940, p. 105), in his re-definition of the genus, mentioned 'septae reduced to mere spinose ridges on successive dissepimental floors and especially on the periphery ingulfed in secondary tissue'. Therefore it is considered that the presence of trabeculae on the internal vesicular tissue of the specimens from the Usk Inlier does not justify the erection of a new species.

The characteristic peripheral increase of *M. lovenianum* is well seen. In GSM 102583 (Pl. 22, fig. 6), neo-tissue has developed in two calices and the resulting five hystero-

corallites are present in each case in GSM 102583c (Pl. 22, fig. 7). This process takes place quite rapidly as the two sections are approximately 3 mm. apart. This type of increase has been fully described and illustrated by Smith and Tremberth (1929, pp. 370-2, text-fig. 2).

From *M. schmidtii*, *M. gotlandicum*, and *M. flexuosum*, the specimens from the Usk Inlier differ in having a smaller internal vesicular structure. Dybowski's remaining species, *M. pectiniseptatum*, is a form more closely related to the genus *Hedstroemophyllum* Wedekind 1927 than to *Microplasma*.

AGE OF THE GENUS *MICROPLASMA*

Species of *Microplasma* described by Dybowski (1874) were from the 'Silurformation' of Gotland and Karlsö. No horizon details were given. Wedekind (1927, p. 84) mentioned that *Microplasma* is abundant in his middle and upper divisions of the 'Mittelgotlandium' of Gotland, from the upper division of which he figured *Microplasma* sp. (pl. 19, fig. 6). *M. flexuosum* Prantl 1940 occurs in the 'Motoly Beds, ex₂ (Upper Wenlock)', near Budňany, Bohemia. Prantl (1940, p. 108) concluded that '*Microplasma* seems to be restricted to the Silurian (Wenlock-Lower Ludlow)', but suggested the possibility of an extension of its range into the Devonian.

The specimens of *M. lovenianum* from the Usk Inlier occurred within a few feet of the top of the Wenlock Limestone, a horizon which probably corresponds closely to those of the Gotlandian and Bohemian occurrences.

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EXPLANATION OF PLATE 22

Microplasma lovenianum Dybowski 1874. Photographs by Mr. C. A. Friend, Geological Survey and Museum.

Figs. 1, 2. Reproduction of Dybowski's illustrations, 1874, pl. 5, figs. 4, 4a (fig. 4a said to be $\times \frac{1}{2}$, in error, p. 530), from 'der Silurformation' of Karlsö.

Figs. 3-8, parts of GSM 102583, from the Wenlock Limestone, Usk Inlier. 3, part of GSM 102583a. Transverse section showing deformation of corallites in contact. 4, PF 2903. Transverse section showing trabeculae on horizontal skeletal elements and projecting internally from peripheral stereozone. 5, PF 2904. Longitudinal section showing disposition of horizontal skeletal elements and trabeculae projecting from peripheral stereozone. 6, 7, part of GSM 102583 and of 102583a. Transverse sections, approximately 3 mm. apart, showing the development of neo-tissue in two calices (top middle of 6), and the resulting hysterocorallites, five from each calice (top middle of 7). 8, GSM 102583c. Longitudinal section showing hysterocorallites developing from calices of protocorallites.

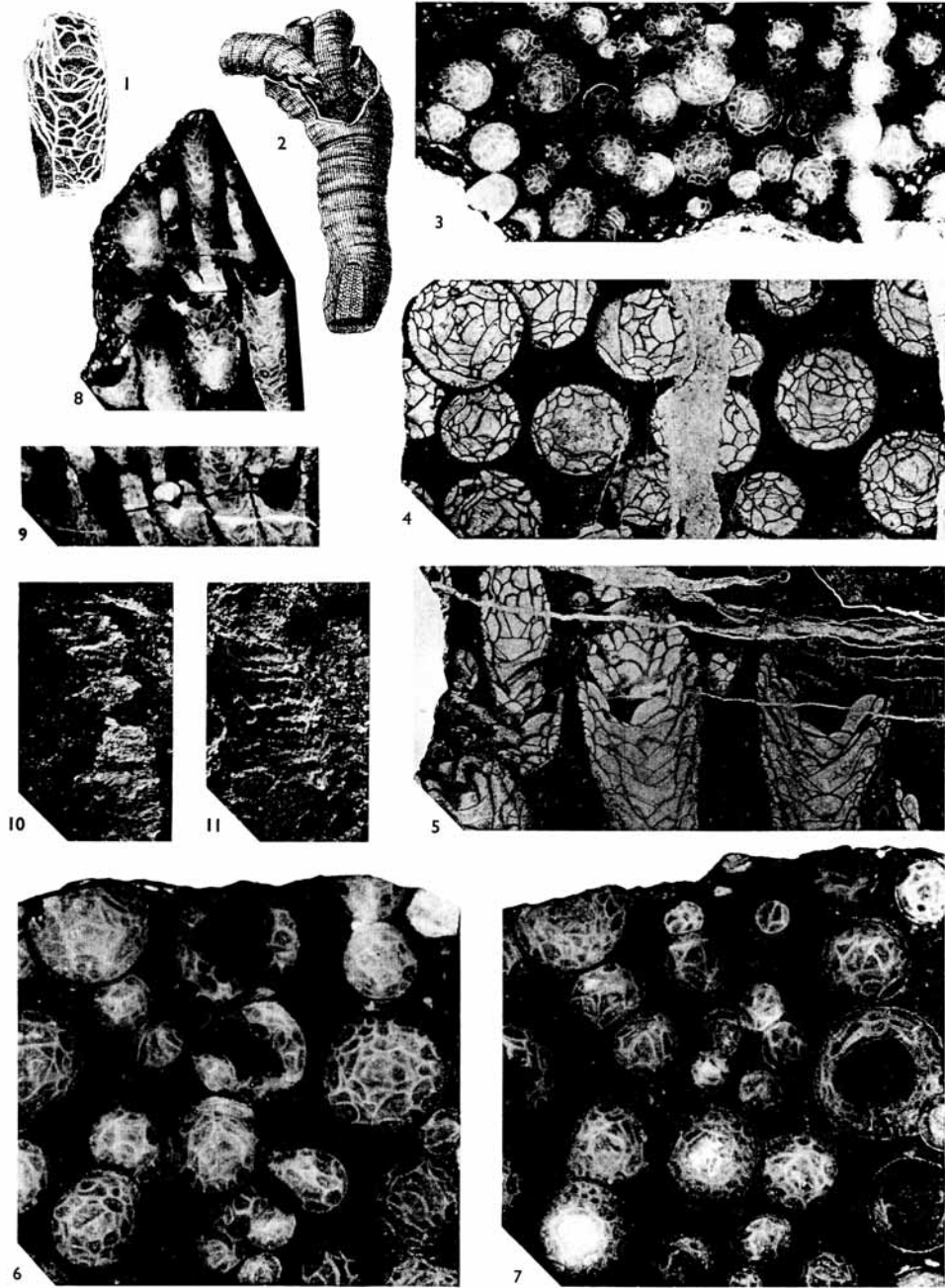
Figs. 9-11, parts of GSM 102584. Horizon and locality as for figs. 3-8. 9, GSM 102584. As for fig. 8. 10, 11, parts of GSM 102584c. Fragments of epitheca, poorly preserved; faint longitudinal ribbing and transverse wrinkles.

Figs. 1-3, 8, 9, $\times 1$, figs. 4-7, $\times 2$, figs. 10, 11, $\times 5$.

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