

ART. XIV.—*Notes on the Victorian Fossil Selenariidae,
and Descriptions of some New Species (Recent and
Fossil).*

By C. M. MAPLESTONE.

(With Plates XXIV., XXV.).

[Read 8th October, 1903].

In the course of my examination of our Tertiary Polyzoa I found considerable difficulty in arriving at the correct names for some of the species of the family Selenariidae which references to the original descriptions did not remove, but rather increased, owing either to some of them not being satisfactorily described, or having been described from worn specimens, or the same name being given to different species, or the same species being described under different names.

The following is an endeavour to disentangle the confusion existing. I will first of all deal with those species which have been recorded as fossil.

Lunulites parvicella, T. Woods. T.R.S. S.A., 1879, p. 10.

The figures given by Dr. MacGillivray and Tenison Woods show the zoaria to be from 2 to 10 millimetres in diameter, but I have found fragments, which evidently belonged to zoaria of comparatively enormous size, 100 to 120 millimetres in diameter.

L. canaliculata, McG. T.R.S. V., 1895, p. 45.

This differs from the former species in the vibracular cells being in single linear series between the zooecia and not irregularly scattered as in that species.

L. rutella, T. Woods. T.R.S. S.A., 1879, p. 9.

L. aperta, T. Woods. T.R.S. S.A., 1879, p. 7.

L. aperta is merely a very much worn specimen of **L. rutella**.

L. biformis, McG. T.R.S. V., 1895, p. 46.

In specimens that I have of this species the central zooecia are entirely closed up, as is the case in some other species of this

family, and the partial filling up of them, which Dr. MacGillivray describes, is merely an intermediate stage in the closure, and there are not two forms of zooecia as implied in the description.

L. angulopora, T. Woods. T.R.S. S.A., 1879, p. 7.

This is not found fossil. It is living in New South Wales. The form described by Dr. MacGillivray (T.R.S. V., 1875, p. 46) as “?L. angulopora” is not this species. I have some small fragments of that form, which I have not been able to place, indeed I doubt if they belong to this family.

L. magna, T. Woods. T.R.S. S.A., 1879, p. 7.

This is referred by Mr. Waters (Q.J.G.S., 1885, p. 295) to the genus *Microporella*. I have not seen this species; it is not recorded for Victoria. It occurs in the Mount Gambier and Aldinga deposits.

L. guineensis, Busk. B.M.C. II., p. 98.

This has been recorded by Mr. Waters from Curdie's Creek. I have not found it in any of the material examined by me.

Capularia canariensis, Busk. Crag Polyzoa, p. 87.

I have found this in our Tertiaries, and Mr. Waters records it from Aldinga, S.A. These last two species should probably be united. In Miss Jelly's catalogue, *L. guineensis* is given as a synonym of *C. canariensis*.

Selenaria maculata, Busk. B.M.C. II., p. 101.

S. alata, T. Woods. T.R.S. S.A., 1879, p. 11.

Also living on the Australian coasts.

S. punctata, T. Woods. T.R.S. S.A., 1879, p. 9.
(Pl. XXIV., Fig. 2).

S. fenestrata, Haswell. Pr. Linn. Soc. N.S.W., 1880, p. 42.

This species is not found fossil. Dr. MacGillivray quotes Haswell's species as a synonym, but it is very doubtful whether it be so, as all that Haswell says about it is that it differs from *S. maculata* “in the presence of two small fenestrae on the

front of each cell." He gives no figure. T. Woods described this species from a recent form from New South Wales, and he does not record it as fossil. The fossil form described and figured by Dr. MacGillivray is a very much larger one, the zooecia being four times as long and four times as broad as that described by T. Woods. I had assumed Dr. MacGillivray's identification to be correct, and I only discovered my mistake upon receiving from Mr. Whitelegge some specimens of the recent form, in answer to my request for some to compare with the fossil, because my specimens were not quite perfect; the vibracular areas were broken away. The dimensions of the zooecia of the fossil are 0.5 millimetre wide, 0.7 millimetre long; those of the recent form are 0.15 millimetre wide, 0.17 long, or only about one-sixteenth the size of those of the fossil. T. Woods' figure of *S. punctata*, though it shows the zooecia upside down, shows that they were very small, and Dr. MacGillivray, in his description of the fossil, says that "it differs from *S. maculata*, to which it is closely allied, in the *large* size of the zooecia and the stellate pores below the aperture." He must have overlooked the fact that Woods spoke of the small size of the zooecia as compared with those of other species, and Mr. Waters seems to have followed him in his identification, both evidently considering the two pores as being the principal, if not the only, characteristic separating that species from others. Two similar pores occur not only in this species and in the fossil, but also in two other forms which are described in this paper.

***S. marginata*, T. Woods. T.R.S. S.A., 1879, p. 9.**

S. squamosa, McG. T.R.S.V., 1895, p. 48.

Lunulites initia, Waters. Q.J.G.S., Aug., 1883, p. 442.

Dr. MacGillivray, in his monograph of the Tertiary Polyzoa of Victoria, on page 48, describes a species as new, under the name *S. squamosa*, giving as synonyms *S. marginata*, T. Woods, and *Lunulites initia*, Waters. He says he was inclined to refer it to *S. marginata* as Mr. Waters had done, though as the description given by Woods disagreed with it in many particulars, and was so imperfect as to make the identification doubtful, he gave the species a new name; but, unfortunately, he gave it the same

name (*squamosa*) that Woods gave in 1880 to a species described by him in the Palaeontology of New Zealand, Part IV. (Corals and Bryozoa), p. 29, fig. 29, which is quite different. Now, although Woods' descriptions and figures are not very satisfactory, because he misunderstood the structure of the Selenariidae, I think his name (*marginata*) should stand for Dr. MacGillivray's *S. squamosa*; at the same time Woods' *S. squamosa* cannot stand, because it is evident that this species is the same as one he described in T.R.S. S.A., 1879, p. 8, as *S. cupola*, which name has been recognised by authors, and he has also described in the same paper as *S. exigua* one which I consider to be the same species; he says it is similar to *S. cupola*, and was "worn." This species (*S. cupola*) presents a very variable appearance according as it is either in a perfect condition or more or less worn; but I have no hesitation in uniting Woods' *S. exigua* and *S. squamosa* with it, one of the principal characteristics of which is the regular radiating series of the zooecia, for, though Woods in his description of *S. squamosa*, says "zooecia irregularly disposed," the figure shows them to be as regular as those of *S. cupola*.

In retaining the name *S. marginata* I would apply to it the description given by Dr. MacGillivray of his *S. squamosa* and its varieties. *Lunulites initia*, Waters, I consider to be merely a young form of this species.

***S. concinna*, T. Woods. T.R.S. S.A., 1879, p. 10.**

Also living on the Australian coasts.

***S. cupola*, T. Woods. T.R.S.V., 1895, p. 49.**

S. cupola, T. Woods. T.R.S. S.A., 1879, p. 14.

S. squamosa, T. Woods. N.Z. Pal., pt. iv., Cor. and Bry., 1880, p. 29.

S. exigua, T. Woods. T.R.S. S.A., 1879, p. 8.

The position of this species has been discussed in the remarks upon *S. marginata*, but I would note that I have a specimen of it in which the zooecia have two projecting points or spines on the outer or distal margin. Though Dr. MacGillivray's figure of this species shows that the marginal zooecia have an irregular distal border, indicating probably the presence of spines, he does

not figure nor mention any spines on the zooecia generally, but, through the kindness of Professor Spencer, I have been enabled to examine the specimen from which Dr. MacGillivray's figure was drawn, and on some of the inner zooecia there are traces of spines, so that probably my specimen is a perfect form, and all the others more or less worn.

S. petalooides, D'Orbigny.

Lunulites petalooides, D'Orbigny. P.F.T.C., vol. v., p. 353, pl. 705, figs. 6-9.

Mr. Waters has, in Q.J.G.S., 1883, p. 442, recorded this as from Muddy Creek, and quotes *S. cupola*, T. Woods, as a synonym, but, as Dr. MacGillivray shows, this is an error, because in *S. petalooides* the zooecia are distinct behind, which they are not in *S. cupola*. I have a specimen of *S. petalooides* from the Beaumaris deposit, in which the outline of each zooecium is distinctly seen on the dorsal surface.

In my remarks upon *S. punctata* I have said that it is not found fossil, and that there is an enormous difference in the size of the zooecia of this and the fossil form. I have lately had a quantity of Polyzoa, dredged by Dr. Verco in South Australian waters, for examination, among which were several specimens of a form allied to *S. punctata*, in which the zooecia are intermediate in size between it and the fossil, namely, 0.3 millimetres wide and 0.2 to 0.25 long; and since then I have received from Mr. Whitelegge another form from Wollongong, N.S.W., in which the zooecia are about the same size. All these forms have two pores in the front wall of the zooecia, but that is the only characteristic in common; in all other respects they differ from one another. I have therefore considered it advisable to re-name the fossil form *S. magnipunctata*; the South Australian form I have named *S. bimorphocella*, in allusion to the two sizes of zooecia in the adult form; and the Wollongong form *S. partipunctata*, as the vibracular cells are not completely covered with punctures, leaving to the N.S.W. (Port Jackson) form the name *S. punctata*, by which it was originally described by Woods.

The following are the descriptions of these four species, and I wish to state that I have used the term "thyrostome" (oral aperture) as it has been applied by Dr. MacGillivray, not only to

the aperture in the membranous layer (ectocyst), but also to the aperture in the calcareous layer (cryptocyst), though for the latter the term "opesia" would be more correct.

S. magnipunctata, nom. nov. (Pl. XXIV., Fig. 1).

S. punctata, McG. T.R.S.V., 1895, p. 47.

" Waters. Q.J.G.S., Aug., 1883, p. 440.

" Waters. A.M.N.H., Sept., 1887, p. 201.

? *S. fenestrata*, Haswell. Pr. Linn. Soc. N.S.W., 1880, p. 42.

" Zoarium discoid, convex; zooecia in irregularly radiating series, wider above, lamina finely granular, inferior and lateral parts depressed, rising to the aperture below which on each side is a large stellate pore; aperture large, rounded above, straight or slightly hollowed below; vibracular cells large, with a distinct margin, cribiform. Posterior surface of zoarium with radiating convex ridges, with large round pores, and separated by deep furrows, at the bottom of which are raised lines" (McG.).

Localities.—Lower beds Muddy Creek (T. S. Hall); Mitchell River and Jimmy's Point (J. Dennant).

I have given Dr. MacGillivray's description, as it is evidently from a better preserved specimen than mine, of which, however, I have figured four zooecia to compare with the other figures; all the figures are drawn with the camera lucida to the same scale.

S. punctata, T. Woods. T.R.S. S.A., 1879, p. 9.

(Pl. XXIV., Fig. 2).

Zoaria small, discoid, massive, convex or roundly conical, from two to four millimetres in diameter. Zooecia ovate (0.15 millimetre wide, 0.17 long), irregularly arranged. Thystome arched above, nearly straight below; two small pores below it. Vibracular cells much larger than the zooecia, very finely punctate, with a very prominent anvil-shaped articulation, inside the opening, for the vibraculum. Dorsal surface ribbed, with round pores.

Localities.—Port Jackson and Port Stephens, N.S.W., and Princess Charlotte Island, Queensland (T. Whitelegge).

This is distinguished by the uniformly small size and great convexity of the zoarium, the small zooecia and by the vibracular

cell being very much larger than the zooecial cells. I have not seen the vibracula, there are none preserved upon the specimens I have. This is the form, as before stated, which Woods described as *S. punctata*, it is not found fossil, and I have described it from my specimens as, in his description, he has mistaken the distal end of the zooecium for the proximal and the vibracular cells for ooecia.

S. bimorphocella, nov. sp. (Pl. XXIV., Fig. 3).

Zoaria discoid, up to 1 cm. in diameter, slightly convex. Zooecia, 0.3 mm. wide, 0.2 long, imbricate, in very regular linear series, the distal margin being nearly a semicircle, the lateral and proximal margins are formed by the distal margins of the adjoining zooecia. In some of the larger (adult) zoaria, there are on the margin one or two rows of zooecia more than double the size of those in the other portion of the zoaria, about 0.4 mm. long, and the same wide, and on the extreme margin there are some large, apparently imperfect, zooecia with very large trifoliate apertures, which are seen when they are incinerated. The thyrostomes are arched above and nearly straight below, the membranous layer is raised (especially in the larger zooecia) into a convex elevation below the thyrostome. The two pores in the calcareous front wall are very rarely perceptible through the membranous layer. When incinerated the thyrostome in the normal zooecia are seen to be arched above, with a broad curved sinus below, in the angles of which are two round pores, so close to the proximal margin that sometimes it is either broken away, or not calcified, so as to resemble the thyrostome of *S. maculata*; but in the larger zooecia they are arched above and nearly straight below, the two pores are stellate and at some distance from the proximal margin. The vibracular cells are ovoid, closely punctate, the vibracula thick and nearly straight (only a portion is shown in the figure). The edge of the zoaria is covered with small granulations. Dorsal surface ridged, with numerous large round pores.

Locality.—St. Vincent's Gulf, S.A., 17 fathoms (Dr. Verco); Fossil, Jimmy's Point (J. Dennant).

This is separated from the other forms by the presence on the margin, of adult zoaria, of one or two rows of zooecia more than

twice as large as the normal ones, also by the very regular imbricate arrangement of the small zooecia, and the form of the vibraculum. Since I determined this species I found in the Jimmy's Point deposit some fragments of zooaria which agree exactly with the recent form, and show on the margin the characteristic large zooecia.

S. partipunctata, nov. sp. (Pl. XXIV., Fig. 4).

Zooecia discoid, 5 mm. in diameter, very convex, nearly hemispherical. Zooecia irregularly hexagonal, 0.3 mm. in diameter, the upper angles being rounded. Thystome arched above, proximal margin sometimes slightly incurved and having a convexity below. The two pores in the calcareous front wall are hardly ever perceptible through the membranous layer. Vibracular cells ovoid, much longer than broad, closely punctate, but the punctures are confined to an oval area, the extreme proximal portion and sides being smooth, with a projection at each upper angle; vibracula very long, slender, flexible and minutely ringed. In an incinerated specimen the proximal margin of the thyrostome is seen to have a broad mucro or projecting plate; the pores are stellate. In some zooecia near the margin the mucro is of different construction, it is triangular, with the sharp point projecting, and it is apparently connected with the front wall only at each proximal angle, below the level of the zooecial front wall, leaving a narrow space or slit between them, and there is a raised ridge above the thyrostome. In the zooecia on the extreme margin the calcareous front wall has, instead of two small pores, two large lenticular openings, causing them to assume an appearance similar to that of *Caleschara denticulata*.

Locality.—Wollongong, N.S.W. (T. Whitelegge).

This is separated from the other forms by the mucro in the thyrostome, the very long slender vibracula, and the form of the front wall of the marginal zooecia.

The three following species from South Australia have not been described before, and I have recently found one of them fossil.

S. hexagonalis, nov. sp. (Pl. XXIV., Fig. 5).

Zoarium discoid, 8 to 15 mm. in diameter, slightly raised in the centre. Under surface with radiating and bifurcating ridges

which, when incinerated, show one or two irregular rows of small pores. Zooecia hexagonal, with margins raised. Thystome large, nearly circular, with a narrow raised granular border. The zooecia in the central portion of the zoarium are sometimes covered with a granular calcareous growth, leaving two or more elongated openings on the face. Vibracular cells large, irregularly oval, with wedge-shaped perforations radiating from the median line.

Localities.—Investigator Strait, S.A., 15 fathoms; Royston Head, Yorke's Peninsula, S.A., 15 fathoms (Dr. Verco); Fossil, Jimmy's Point (J. Dennant).

In the shape of the zooecia this somewhat resembles *S. marginata*, T. Woods, but the form of the thystome is different, and the vibracular cells are large and oval, instead of being very small. I have figured a portion of an incinerated specimen, which shows the peculiar manner in which the older zooecia are closed, or nearly so, by calcareous growth.

I had found some fragments of this in the deposit from Jimmy's Point, and had put them aside for further examination; on comparing them with the recent form, I find they agree with it in every particular.

Lunulites patelliformis, nov. sp. (Pl. XXV., Fig. 6).

Zoarium thick, oval, much raised, one end sloping very abruptly; very large, 28 to 40 mm. long, 25 to 35 mm. wide, and 15 to 25 mm. high. Zooecia disposed in regular radiating lines, elongate, sides parallel, distal margin arched, proximal incurved, margins raised, granular or crenate, a more or less developed broad mucro in the proximal margin of some of the zooecia. Four small circular communication pores on the lateral walls in a transverse row near the upper surface. Vibracula in single longitudinal series between each row of zooecia; vibracular area elongated, slightly broader distally; vibracular mandible narrow, slender, with an acute apex. Under surface of zoarium with radiating ridges covered with an epidermis, when incinerated the calcareous layer is seen to be granulated, and there are disclosed a number of very large pores, varying considerably in size, irregularly placed, but sometimes longitudinally disposed, and

also irregular cross lines dividing them into areas probably corresponding to the margins of the zooecia.

Localities.—St. Vincent's Gulf, and Backstairs Passage, 17 to 22 fathoms; Investigator's Strait, 15 to 20 fathoms (D. Verco); Newcastle, N.S.W. (T. Whitelegge).

L. repandus, nov. sp. (Pl. XXV., Fig. 7).

Zoarium thin, nearly circular, but with irregularly waved margins, much raised, apex central and slope of sides uniform, 24 to 33 mm. in diameter, 8 to 14 mm. high. Zooecia in radiating rows, very irregular in shape, margins raised, thyrostome very irregular in shape. Vibracula scattered, area elongated, very large, broader distally; mandible 1.5 mm. long, thick, with pointed apex. Under surface of zoarium with radiating ridges covered with epidermis, but when incinerated they show two rows of pores, and only a few cross lines or divisions; surface smooth. There are about ten circular communication pores situated distally on each side of the zooecia.

Localities.—Investigator's Strait, 15 to 20 fathoms; Royston Head, Yorke's Peninsula, 15 fathoms (Dr. Verco).

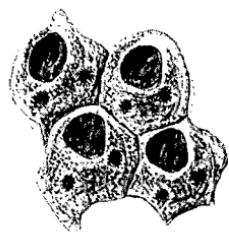
This is very near the last described species, but the zoaria are very much thinner, the zooecia are not so regular in shape, the vibracula are very much larger, and disposed irregularly.

ADDENDUM.

Since writing the above I have found in the Otway deposit two specimens of another new species of *Selenaria*, which I now describe, in order to make these notes as complete as possible.

Selenaria otwayensis, n. sp. (Pl. XXV., Fig. 8).

Zoarium small, oblong or oval, very convex, 5 mm. long, 3 mm. wide, and 2 mm. high. Zooecia in linear series, distinct; front surface orbicular, concave, granulated, with raised margins. Thyrostome arched above, sides nearly straight, proximal margin slightly incurved. In the older zooecia this margin is extended distally so as to form a long tongue, and ultimately the front wall is entirely closed up. Vibracular cells in linear series between the zooecia, smooth, with an auricular opening in the



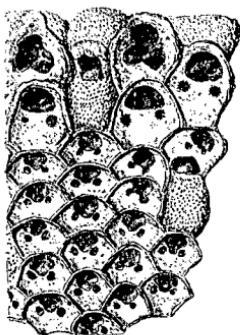
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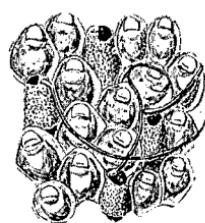
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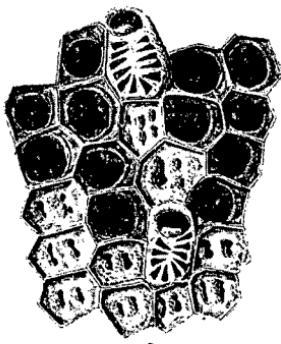
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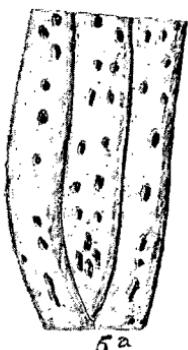
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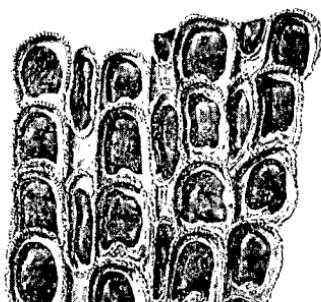
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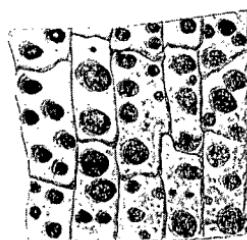
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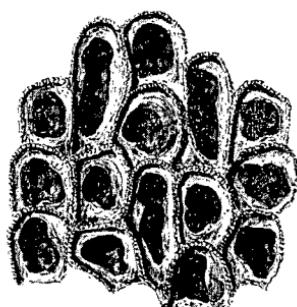
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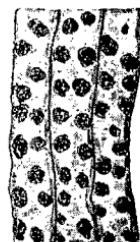
6^b



6^c



7



7^a



7^b



7^c



8

proximal part and an uncalcified space in the distal part. Under surface of zoarium irregularly ridged.

Locality.—Cape Otway (J. Dennant).

This is a very distinct form. One specimen is oblong, with the corners rounded, the other is oval; the front wall of the zooecia is nearly circular and somewhat resembles that of *S. marginata*, but the very peculiar vibracular cells separate it from all other species. It has two openings, the proximal one being auricular in shape, and probably that in which the vibracula were articulated. It is also a very good exemplification of the closing up process which takes place in some species; each of the specimens shows cells partially and entirely filled up, and in the small portion figured there are several partially, and one entirely closed.

EXPLANATION OF PLATES XXIV. AND XXV.

- Fig. 1.—*Selenaria magnipunctata*, nom. nov.
 „ 2.— „ *punctata*, T. Woods.
 „ 3.— „ *bimorphocella*, n. sp.
 „ 3a.— „ „ (incinerated).
 „ 4.— „ *partipunctata*, n. sp.
 „ 4a.— „ „ (incinerated).
 „ 5.— „ *hexagonalis*, n. sp. (incinerated).
 „ 5a.— „ „ (dorsal surface).
 „ 5b.— „ „ (vibraculum).
 „ 5c.— „ „ (communication pores).
 „ 6.—*Lunulites patelliformis*, n. sp. (incinerated).
 „ 6a.— „ „ (dorsal surface).
 „ 6b.— „ „ (vibraculum).
 „ 6c.— „ „ (communication pores).
 „ 7.— „ *repandus*, n. sp. (incinerated).
 „ 7a.— „ „ (dorsal surface).
 „ 7b.— „ „ (vibraculum).
 „ 7c.— „ „ (communication pores).
 „ 8.—*Selenaria otwayensis*, n. sp.

All figures are magnified 50 diameters and reduced to 25.