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Australia*

By
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TWO NEW SCLERACTINIAN CORALS FROM AUSTRALIA

By

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Plates XVI-XVIII

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Several years ago two new species of the reef-building coral genus *Coscinaraea* were discovered nearly simultaneously in the extreme eastern and south-western parts of Australia. The writer is indebted to Mrs. Lois Marsh and Mr. E. P. Hodgkin, of the University of Western Australia, and Mr. R. W. George, of the Western Australian Museum, for a suite of specimens of *C. marshae*, and to Mr. K. E. W. Salter, of the University of Sydney, and Mr. F. A. McNeill, of the Australian Museum, for specimens, photographs, and other data on *C. mcneilli*, and to Dr. D. F. Squires, of the American Museum of Natural History, and Mr. E. de Villa, of Sydney, for photographs of the type of the latter species.

The two new species described below occur at the extreme southern limits of hermatypic corals in eastern and south-western Australia. The most southerly occurrence of *Coscinaraea* known to this time is at Rundle Island (23° 30' S.) on the Great Barrier Reefs (Wells, 1955, p. 25, and chart), about 600 miles north of Sydney and where the winter minimum temperatures are about 17° C. The genus has not been previously reported from north-western or western Australia.

In eastern Australia the writer (1955) has noted the occurrence of a few reef coral genera as far south as Sydney: *Montipora*, *Cyphastrea*, *Turbinaria*, *Stylocoeniella* and *Plesiastrea*. To this short list is now added *Coscinaraea mcneilli* n.sp., from Manly Cove and vicinity, in waters where the temperature range is from 12° C. in June to 24.5° C. in January.

From Western Australia comes *Coscinaraea marshae* n. sp., represented by a number of specimens from Rottneest Island off Fremantle (32° S.) southward to Cape Naturaliste and Geographe Bay (33° 30' S.). The winter minimum temperatures here are considerably higher and within the normal tropical range (about 18° C., according to E. P. Hodgkin) and the coral fauna is richer than that of approximately the same latitude at Sydney (34° S.). The following species, in addition to *C. marshae*, are found: *Favites abdita* (Ellis and Solander), *F. magnistellata* (Milne-Edwards and Haime), *Platygyra* sp. cf. *P. lamellina* (Ehrenberg), *Montipora* sp. cf. *M. multiformis* Bernard, *Turbinaria* sp. cf. *T. danae* Bernard, *Pocillopora damicornis* (Linnaeus), *Oulophyllia crispa* (Lamarck), *Goniastrea benhami* Vaughan, *Plesiastrea urvillei* Milne-Edwards and Haime, *Tubastrea aurea* (Quoy and Gaimard), *T. diaphana* (Dana), and *Homophyllia australis* Milne-Edwards and Haime. Notable is the absence here, as well as in the vicinity of Sydney, of species of the protean but more tropical genera *Acropora* and *Porites*. *Plesiastrea urvillei* and *Homophyllia australis* are exceptional in that their northern limit seems to be at or near Houtman's Abroghlos (29° 30' S.) in the west, but they extend down and around the southern coast of Australia (type locality of *H. australis* is Port Lincoln, South Australia), the northern coast of Tasmania, and north probably as far as Moreton Bay, Queensland (27° 30' S.). There is a specimen of *H. australis* in the Australian Museum (No. 12630) labelled as coming from Lord Howe Island. This record needs verification.

Family SIDERASTREIDAE

Genus *Coscinaraea* Milne-Edwards and Haime, 1848

Crossland (1941) discussed the type species, *C. monile* (Forskål), and its synonyms, and figured Forskål's type specimen. The writer briefly considered most of the Recent species in 1954 (p. 446). *C. monile* and *C. labyrinthica* (Audouin) are confined to the Red Sea and Indian Ocean; *C. ostreaeformis* van der Horst (Wells, 1954, p. 446, pl. 155, f. 5, 6, and Matthai, 1948, pl. 8, figs. 30-36 (as *C. monile*)) is a deep-water form in the Indo-Pacific; and *C. columna* (Dana) and *C. fossata* (Dana) have been found only in the Pacific.

Coscinaraea mcneilli n. sp.

Plate xvi, figs. 1-3

Corallum a broad expanded thamnasterioid plate attached basally or laterally to the substratum in the mode of a bracket fungus, up to 10 mm. thick. Lower surface non-epithecate, common wall solid and imperforate, covered with relatively broad, rounded, granulated, equal costae with narrow interspaces; the fine costal granules or spinules are scattered over the costae rather than forming regular rows. Dimensions of holotype (a piece from a large colony): 9 x 16 cm. Colony-formation by circumoral budding, new centres grouped in roughly

concentric rows separated by very low collines. Over parts of the calicular surface collines appear to be absent. Calices shallow, 2-3 mm. in diameter, their centres 3-4 mm. apart. Septa numbering 15-20, of which 12-15 extend to the columella, equal and thick midway between centres, thinning evenly towards the columella, imperforate, strongly spinulose beaded laterally and marginally. Over the low walls and collines the septa number 20-26 per centimeter. Columella small, trabecular, papillate at surface, not as sharply differentiated from inner coarse beads of septa as it is in most species of the genus. Corallite walls, except the basal wall, scarcely differentiated and represented by two or three vague vertical rows of synapticulae.

This species groups with *C. monile*, *C. columna* and *C. ostreaeformis*—species in which collines are weakly developed. It differs clearly from the first of these in the smaller calices (7-9 mm. in *C. monile*) and growth-form, from *C. columna* by its larger calices in which nearly twice as many septa reach the columella, and from *C. ostreaeformis* by its deeper calices (calices may be protuberant in *C. ostreaeformis*) and proportionally finer septa. The bracket growth form is much like that of the quiet-water form of *C. columna* described by the writer from the Marshall Islands (1954, pl. 179, f. 2). This growth-form is well shown in an underwater photograph (Pl. XVI, f. 3), taken by E. de Villa, of the entire colony some 60 centimetres long from which the holotype piece was broken.

Material.—Holotype: Australian Museum No. G13638 (this is the specimen figured by Gillett and McNeill, 1959, p. 51, f. 41); paratype: A.M. No. G13639 (small piece of this in the U. S. National Museum).

Occurrence: Sydney Harbour (Port Jackson), New South Wales. Holotype from Fairlight, a small bay near Manly, depth 25 feet, collected by E. de Villa, aqua-lung diver. Paratype from about same depth nearby off North Headland, collected by W. Gibson, aqua-lung diver.

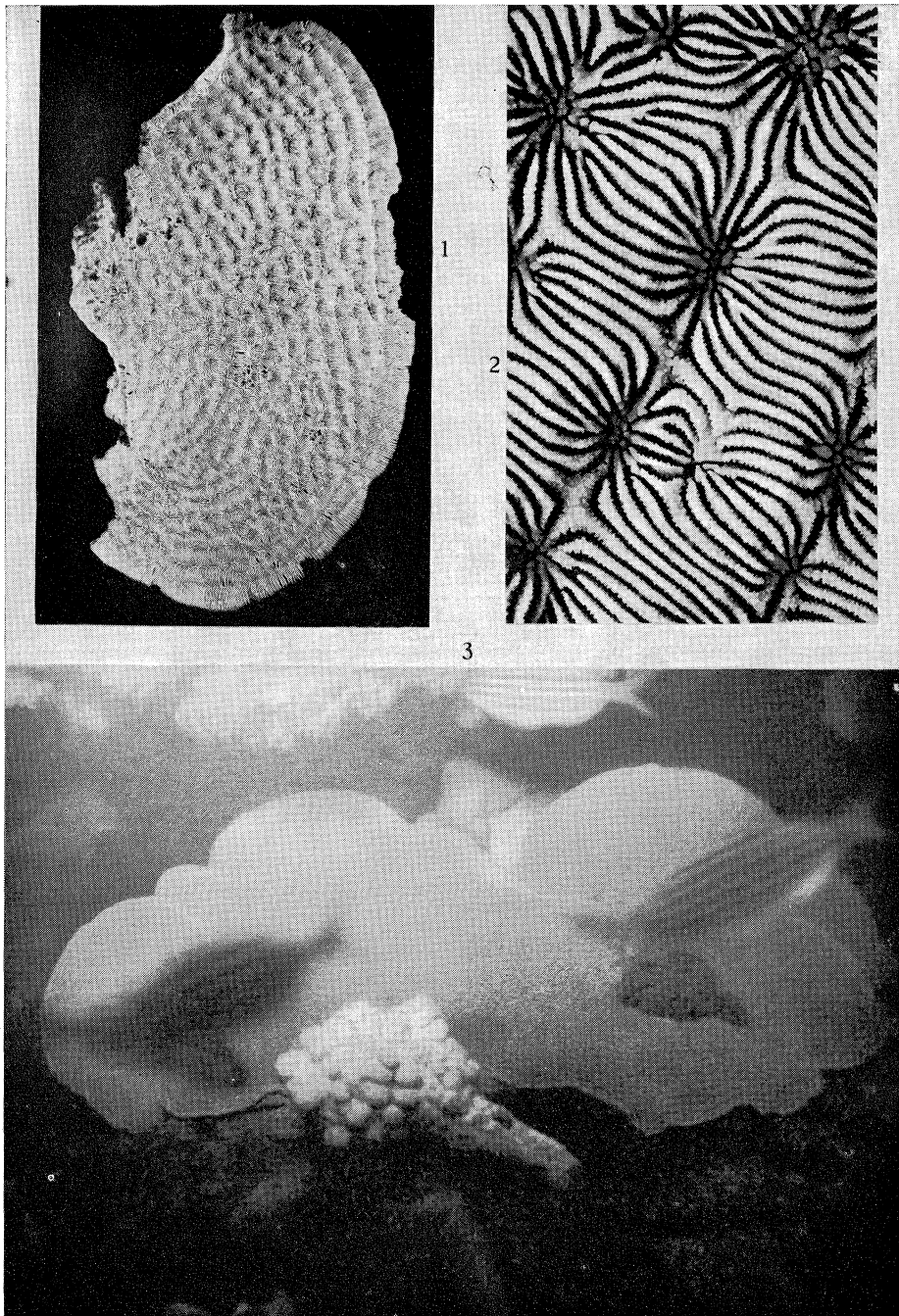
***Coscinaraea marshae* n. sp.**

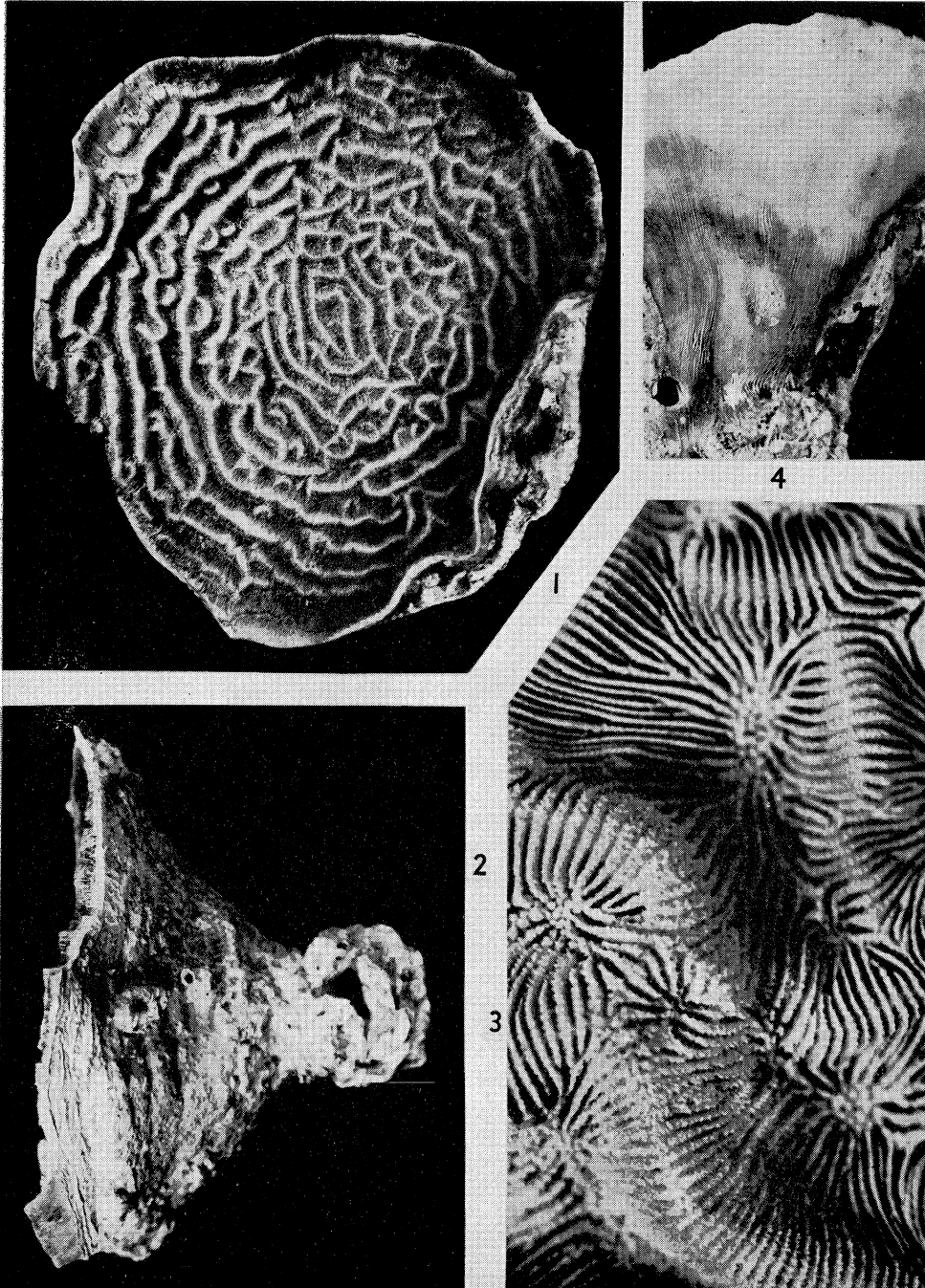
Plate xvii, figs. 1-4; plate xviii, figs. 1-3

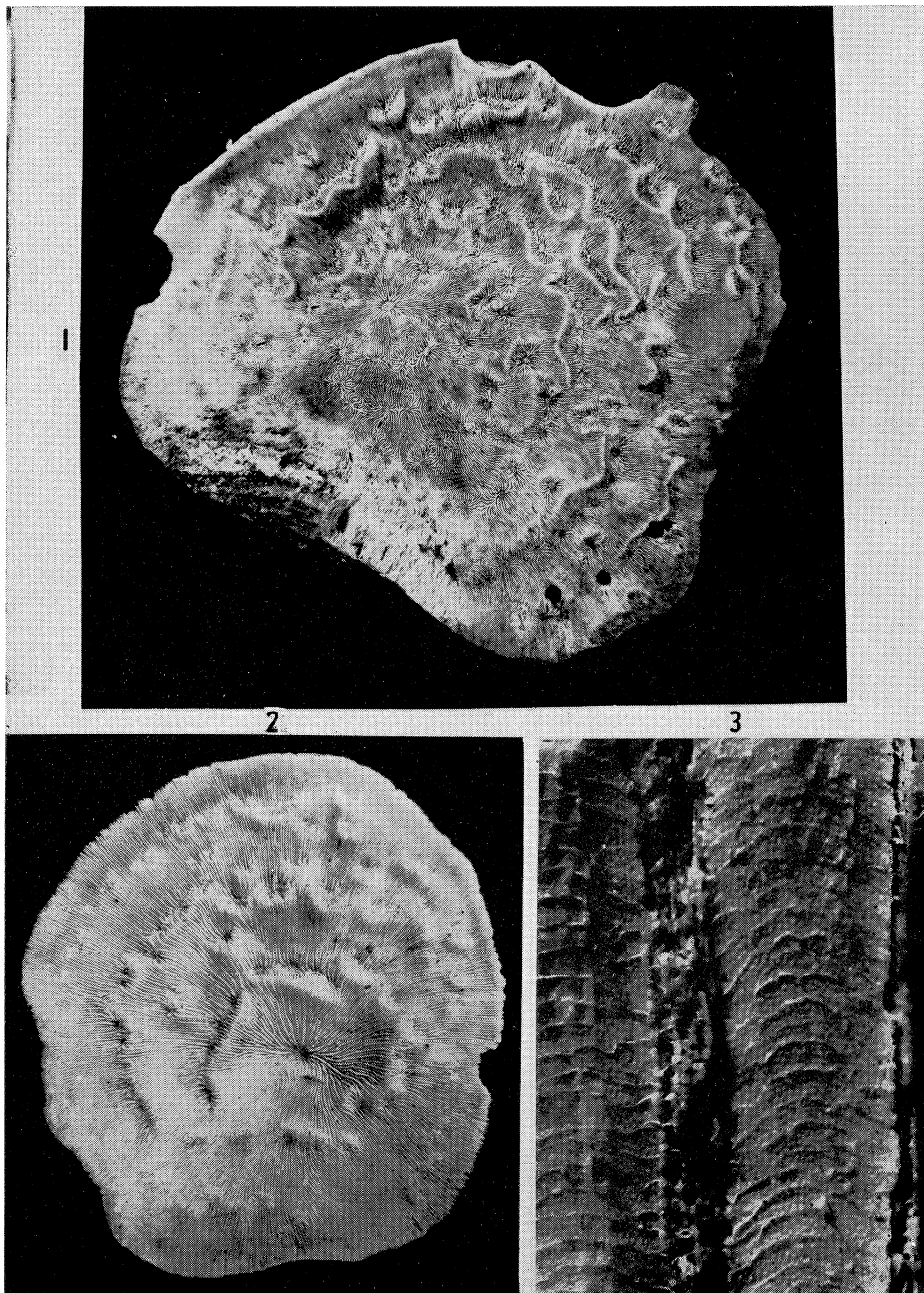
Corallum open caliciform, attached centrally by a stout stalk. Old colonies expanded laminar, very thick centrally, with nearly even calicular surface. Common wall of lower surface solid, imperforate, about 2 mm. thick peripherally, non-epithecate, with sharp, equal, faintly beaded costae corresponding to all the marginal septa. Colony-formation by circumoral budding, resulting in short, irregular series in earlier stages, tending to become long, nearly continuous and concentric with the margin. Series 7-10 mm. wide, separated by high, rounded collines over which the septa dip steeply to the valley floors. Depth of valleys about 4 mm. Marginally the collines are asymmetric in profile, steeper on the outer side, giving the valleys an outward-looking aspect. One or two centimetres in from the margin, however, they are nearly symmetrical. Over the collines the septa are equal, numbering 25-30 per centimetre. Calicular centres are 6-8 mm. apart, with lamellar or trabecular linkage. Septa of higher cycles unite irregularly with those of lower cycles so that about half (15-18) extend to and join the columella. Columella small, trabecular, with a few surface papillae, sunk in a shallow pit below the inner ends of the major septa. Corallite walls represented only by a few synapticulae (pl. XVIII, fig. 3). Dissepiments thin, convex. Compared with other species of the genus the septa are thin, and imperforate as in *C. mcneilli*. Living polyps yellow-brown to brown.

At first glance the habit and aspect of this handsome species suggest *Leptoseria*, but the septal structures are those of *Coscinaraea* and other siderastreids. The serial nature of the calices groups it with the other more or less meandrine species, *C. fossata* and *C. labyrinthica*. In neither of these, however, do the series show anything approaching the more or less regularly concentric arrangement of *C. marshae*, in which the valleys are proportionally wider and more open; the septa, also, are much thinner and less perforate than in most other species, and generally narrower than the interspaces rather than two or three times as wide. This is the only species with a distinctly and consistently caliciform growth form.

Although the caliciform corallum and mode of colony-formation are constant in the specimens examined, there is a wide variation in the development of the collines and the spacing of the calicular centres. The holotype—diameter 17 cm., height 10 cm., concavity 3.5 mm. (pl. XVII, figs. 1, 2)—is at one end of the range, with highly developed, roughly concentric, high, narrow collines and centres 5 mm. apart. At the other end is a colony 24 cm. in diameter, 9 cm. high, with a nearly flat (concavity, 1 cm.) calicular surface, very low, relatively broad collines and centres spaced 6-8 mm., resembling *C. mcneilli* but with very thick corallum. A thin corallum 17 cm. in diameter and 6 cm. high (pl. XVIII, fig. 1) also has a nearly flat calicular surface, with low, relatively narrow collines developed on the inner side of the widely-spaced (5-15 mm.) calicular centres, especially near the margin where the aspect is much like that of *Leptoseria* or *Mycedium*. These three specimens would appear to be as many species, but they are interconnected by nine other specimens.







Material.—Holotype: Western Australian Museum, No. 104-58; paratypes: W.A.M.: Nos. 52-29, 59-59, 100-58, 101-58, 102-58, 103-58; Australian Museum (1); U.S. National Museum (2).

Occurrence: Western Australia at various localities between Fremantle and Geographe Bay; holotype and paratype No. 101-58: Point Clune, Rottneest Island, depth 10 feet; paratypes Nos. 102-58, 103-28: Cathedral Rocks, Rottneest I.; paratype 59-59: 1.5 miles off Dunsborough, Geographe Bay, depth 25 feet ("from a crevice in a rocky ledge"); paratype No. 52-59: Eagle Bay, Cape Naturaliste, depth 30 feet ("in a rock crevice"); paratype No. 100-58: Woodman Point near Fremantle; paratypes (2 specimens, one in Western Australian Museum, one in Australian Museum): Cathedral Rocks, Rottneest I.; paratype (Dept. Zoology, Univ. Western Australia): Cape Vlaming, Rottneest I.; paratypes (2 specimens in U. S. National Museum): Rottneest I.

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EXPLANATION OF PLATES

PLATE XVI

Coscinaraea mcneilli n. sp.

- Figs. 1, 2: *C. mcneilli*, holotype (A.M. G13638), calicular surface, x 1/2; calices, x 6. Photographs by courtesy of D. F. Squires.
- Fig. 3: *C. mcneilli*, entire colony from which holotype piece was taken, *in situ*, depth 25 feet, Fairlight, Sydney Harbour. Width, about 60 centimetres. Photograph by E. de Villa.

PLATE XVII

Coscinaraea marshae n. sp.

- Figs. 1, 2, 3: *C. marshae*, holotype (W.A.M. 104-58): 1. Calicular surface, x 1/2; 2. lateral aspect, x 1/2; 3. Calices, x 6.
- Fig. 4: *C. marshae*, paratype (W.A.M. 101-58): exterior of part of small colony, showing costate common wall, x 1.

PLATE XVIII

Coscinaraea marshae n. sp.

- Fig. 1: *C. marshae*, paratype (W.A.M. 103-58): *Leptoseria*-form, calicular surface, x 1/2.
- Fig. 2: *C. marshae*, paratype (W.A.M., Cathedral Rocks): young colony, *Leptoseria*-form, x 1/2.
- Fig. 3: *C. marshae*, paratype (W.A.M. 59-59): natural vertical section, lateral faces of septa, synapticalae, and endotheca, x 4.