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The Occurrence of *Melicerita angustiloba* Tenison-Woods (Bryozoa-Cellariidae) in New Zealand Offshore Waters.

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Abstract

PREVIOUSLY known only from the Tertiaries of Australia and New Zealand, *Melicerita angustiloba* Tenison-Woods is described here from material taken in Cook Strait, and off eastern Otago. A checklist of the Recent species of *Melicerita* is provided.

INTRODUCTION

THE genus *Melicerita* ranks as something of a novelty among bryozoologists because of the distinctive frondose, unarticulated type of growth habit exhibited by the five described Recent species and the marked preference of these for the deeper waters of the continental shelf and slope.

Melicerita angustiloba (Figs. 1–9) has a well established fossil history in the Tertiaries of Australasia, its earliest occurrence in the New Zealand area dating from the base of the McDonald Limestone, Oamaru (Whaingaroan, Lower Oligocene). The species reappears in the "Bryozoan Bed" overlying the Takaka Limestone, Tarakohe Quarry, northwest Nelson (Otaian, Middle Oligocene) and subsequently in the Orakei Bay Greensand, Auckland (Altonian, Lower Miocene) (Brown 1952: 166, 167); a final appearance is made in the submerged limestone, off the Three Kings Islands (Waitotoran–Pliocene) (Brown, 1954: 420). In Australia the cellariid is known from Miocene sediments of Victoria and South Australia (Brown, 1952, 1957).

A definite record of *M. angustiloba* in Recent seas has been wanting to date. Examination of material collected from Cook Srtait (58–75 fathoms) and from off eastern Otago (400–430 fathoms) now shows the species to occur in New Zealand offshore waters, and provides new information on certain aspects of its morphology.

SYSTEMATIC DISCUSSION

Suborder ANASCA

Family CELLARIIDAE

Genus *Melicerita* Milne-Edwards, 1836

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Melicerita Brown, 1952: 164–165 (for synonyms); Lagaaij, 1952: 54; Rogick, 1956: 248.

Type Species (by monotypy): *Melicerita charlesworthii* Milne-Edwards, 1836. Pliocene, Coralline Crag, England.

Generic Diagnosis (after Rogick, 1956: 248): Cellariidae with erect, compressed branched or unbranched, but unjointed bilamellar fronds, loosely attached by intertwining radicles. Zooids hexagonal, arranged in transverse rows. Orifice crescent-shaped, dimorphic, larger in ovicelled zooids, the proximal lip developed as a broad plate with two projecting lateral denticles. A pair of accessory denticles frequently occur within the distal margin of the opesia also. Avicularia interzooecial, interspersed throughout the colony or restricted to the margins; sometimes wanting altogether. Ovicell with a semi-elliptical frontal pore.

Melicerita angustiloba Tenison-Woods, 1862, plate 1, figs. 1-6; pl. 2, figs. 7-9.

Melicerita angustiloba Brown, 1952, p. 165, fig. 113 (references).

Melicerita angustiloba Brown, 1954, p. 420, figs. 1, 2.

Melicerita sp. Macken, 1958, p. 104.

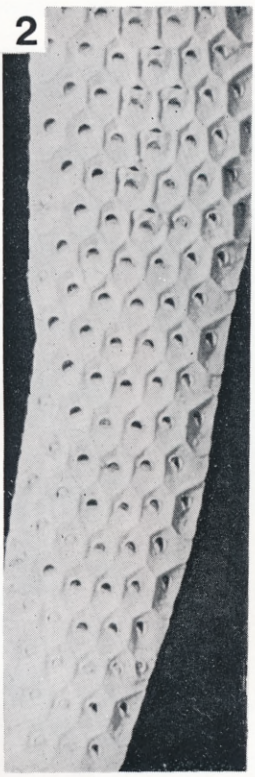
Diagnosis (emended Brown, 1952: 165). Unbranched ligulate *Melicerita,* the orifice sometimes with two stout lateral bars resulting from fusion of the distal and proximal pairs of denticles. Avicularia smaller than the autozooids, situated at the margins of the colony. Ovicells bifenestrate.

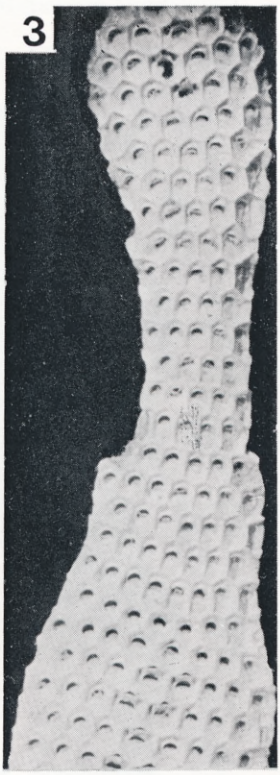
Description: *Colony* erect, comprising flattened bilamellar fronds, expanded distally, curved and tapering towards the base. *Zooids* hexagonal, somewhat alate at the margins; arranged in regular transverse rows, the mural rims elevated and angular. *Orifice* subterminal, crescentic, wider in ovicelled zooids, the proximal lip plate-like, curved, extending upwards frontally, flanked by a pair of inwardly-directed denticles; occasionally fusing with an accessory pair distally to form two stout lateral bars. *Cryptocyst* extensive, pustulose, steeply inclined distally and laterally, flattened and depressed frontally, markedly lobate around the distal margin of the orifice. *Avicularia* interzooecial, occurring sporadically along the margins of the colony, opesia elliptical, oriented obliquely distally, crossbars entire. *Ovicell* mitriform, overlapped by the two adjacent zooids distally, frontal surface pustulose with a large depressed fenestra at each lateral margin, containing small, radiating slit-like pores. *Ooeciopore* semi-elliptical, situated in the angle formed by the intersection of the mural rims. *Radicles* arising near the base of the colony and branching into a tangled mass of rootlets.

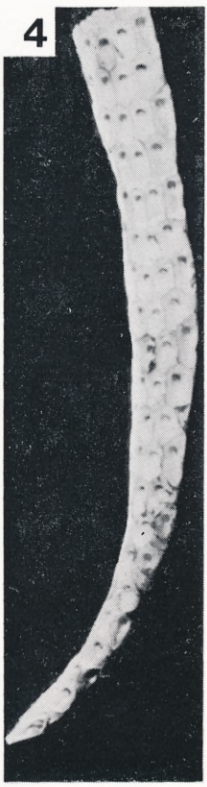
Remarks:

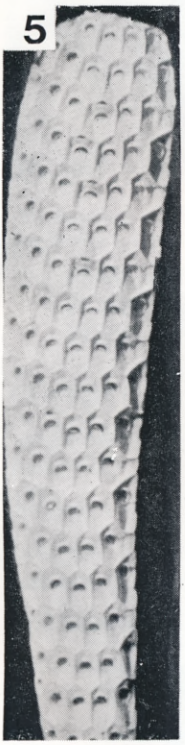
In the present material the length of the mature frond varies between 12 and 38mm, the characteristically crescentic outline of the adult colony being imparted by the strongly-curved proximal region (Fig. 4). The vegetative zone is always extensive (Fig. 2) occupying about two-thirds of the total length of the frond. Distally, the breeding zone (Figs. 2, 5, 7, 9) comprises the broadest part of the mature frond, measuring between 2 and 4mm in the specimens at hand. In one colony (Figs. 3, 8), breeding is followed by a renewal of the vegetative phase; as a result the frond becomes somewhat tapered distally. The abnormally thickened mural rims limiting the seventh zooidal row of this phase (Fig. 8) indicate a temporary cessation of budding; the 11 subsequent rows of zooids comprising new seasonal growth. The twelfth row marks the inception of a second breeding phase and results in a renewed expansion of the frond (Fig. 3).

Polypide degeneration in this species is frequently manifested externally by the growth of calcareous laminae over the zooidal orifices (Fig. 6), especially in the









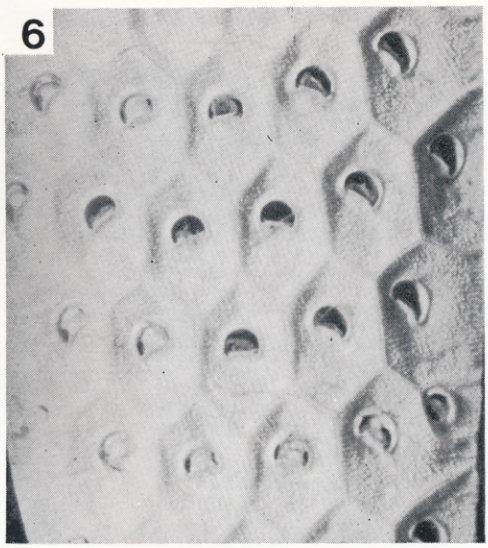
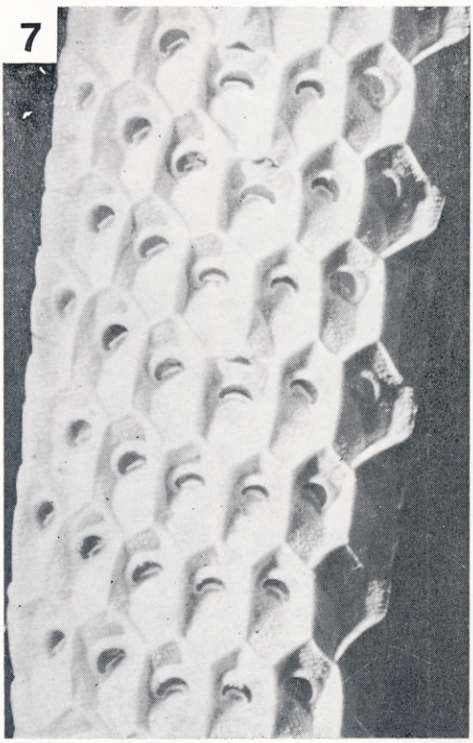


FIG. 1.—Proximal portion of a frond. Note the occluded orifices in the peri-ancestrular region. Off east Otago, 430 fathoms. × 22. Fig. 2.—Part of a frond showing zonation of vegetative (ordinary) and breeding (ovicelled) zooids. Many orifices in the former zone are occluded by calcareous laminae. Off east Otago, 400 fathoms. × 10 (see Fig. 6 for detail). Fig. 3.—Distal portion of frond. The broad breeding zone proximally is followed by a second vegetative zone; interrupted at the seventh row by a resting stage (see Fig. 8). A second breeding zone occurs towards the distal margin, resulting in a renewed expansion of the frond. Cook Strait, 75 fathoms. × 10. Fig. 4.—Proximal-half of a frond, showing the marked curvature typical of its early-formed region. Off east Otago, 420 fathoms. × 10. Fig. 5.—Distal-half of the same frond as in 4. A few ovicelled zooids are present in the anterior region. × 10. Fig. 6.—Same colony as in 2, showing the oral occlusions in detail. × 22.



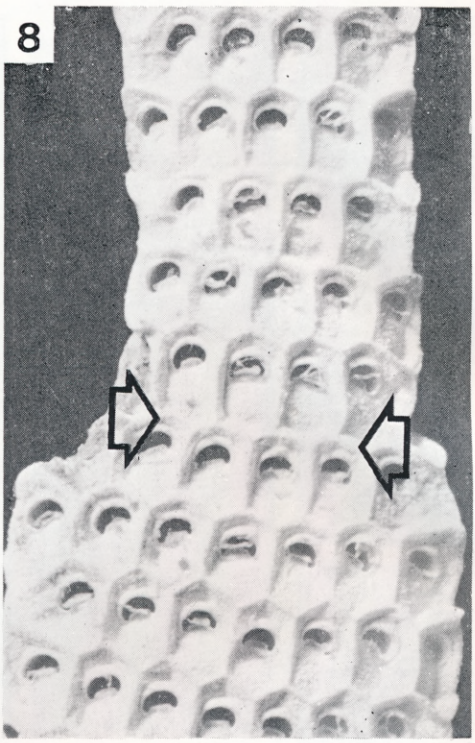


FIG. 7.—*Melicerita angustiloba* Tenison-Woods. Same colony as in 5. To show the extensive area occupied by the ovicells. Note the large frontal fenestrae. × 25.—Fig. 8.—Same colony as in 3. Notice the resting stage of the second vegetative zone as indicated by the abnormally thickened transverse mural rims. × 22. Fig. 9.—Same colony as in 2. Note the ovicelled zooids. Two occluded autozooids are present in the proximal row. × 25.

older, vegetative zones of the frond (Fig. 2). Such occlusions may effectively prevent breakage of the colony across the planes of weakness resulting from the arrangement of the orifices in transverse alignment. Significantly, oral laminae are always developed in the narrow, periancestrular region (Fig. 1); structurally the weakest part of the frond (Fig. 4). Oral occlusions were also noted by Brown (1954: 420–1) in his Pliocene material.

As Brown (1954, fig. 1) has shown, the brood chamber in *M. angustiloba* is a large structure which is overlapped by the two adjacent zooids distally. The conspicuous fenestrae perforating the frontal surface of the ovicell (Figs. 7, 9) are features which have not been observed previously in the fossil material.

Finally, the present deep-water affinities of this species strongly support Brown's (1954: 433) interpretation of the environments in which it occurs as fossil, particularly the basal member of the Whaingaroan Limestone of McDonald's Quarry, Oamaru, and the Waitotoran Limestone off the Three Kings Islands. On the basis of evidence afforded by other Bryozoa, Brown (1954: 433) considered that both of these horizons were deposited in "fairly deep sheltered waters".

Material Examined

I. Cook Strait (Dominion Museum bottom samples).

B.S. 168, 40° 46.2′ S, 174° 27′ E; 75 fathoms. M.V. "Alert", 1/9/1951.
B.S. 170, 40° 42′ S, 174° 10.6′ E; 58 fathoms. M.V. "Alert", 2/9/1951.
B.S. 171, 40° 43′ S, 174° 15′ E; 68 fathoms. M.V. "Alert", 2/9/1951.
G. 577, 40° 44′ S, 174° 34′ E; 75 fathoms. "Galatea", 21/12/1951.

II. Papanui Canyon, ESE Taiaroa Heads, Otago Peninsula. (Portobello Marine Biological Station bottom samples).

67–60, 45° 52′ S, 171° 3′ E; 400 fathoms. R.V. "Munida", 22/5/1967.
67–109, 45° 53′ S, 171° 5′ E; 430 fathoms. R.V. "Munida", 26/9/1967.
67–110, 45° 52′.5″ S, 171° 4′ E; 420 fathoms. R.V. "Munida", 26/9/1967.

Checklist of Recent species of *Melicerita*:

M. angustiloba Tenison-Woods, 1862: 73, fig. 4 (fossil, Mount Gambier, South Australia).

M. atlantica Busk, 1884: 96, pl. 141, fig. 1. South-west Atlantic, 600 fathoms.

M. obliqua (Thornley, 1924): 16, fig. 4. Commonwealth Bay, Antarctica, 110 fathoms.

M. strictoramae Canu and Bassler, 1927: 5, pl. 1, fig. 1. Borneo, 175–230 fathoms.

M. latilaminata Rogick, 1956: 248, pl. 10, figs. B-J; pl. 11, figs. A-F. Off Cape Royds, Antarctica, 58 fathoms.

Acknowledgments

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