

AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Hedley, Charles, 1903. Scientific results of the trawling expedition of H.M.C.S. "Thetis," off the coast of New South Wales, in February and March, 1898, Part 2: Mollusca. Part II. Scaphopoda and Gastropoda. *Australian Museum Memoir* 4(6): 327–402, plates xxxvi–xxxviii. [8 October 1903].

doi:10.3853/j.0067-1967.4.1903.1502

ISSN 0067-1967

Published by the Australian Museum, Sydney

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MOLLUSCA.

PART II.

By CHARLES HEDLEY,

Conchologist, Australian Museum.

SCAPHOPODA AND GASTROPODA.

MOLLUSCA.

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SCAPHOPODA AND GASTROPODA.

(Plates xxxvi., xxxvii., xxxviii.)

SCAPHOPODA.

DENTALIUM, *Linné.*

DENTALIUM THETIDIS, sp. nov.

(Fig. 61.)

Stations 13, 49.

Shell white, rather thin, tapering and very little curved. Sculpture: seven elevated ribs run the whole length of the shell, those on the concave side are stronger and wider apart than the others; each interspace is grooved by a dozen fine even striæ, faintly crossed by growth lines; towards the aperture one or two interstitial riblets arise. Anal orifice simple. Length, 8 mm.; diameter of aperture, 1 mm.

This species apparently belongs to the group of *D. octangulatum*, among which the fine dense longitudinal striæ distinguish it.

The example described and two fragments occurred in 63-75 fathoms off Port Kembla. A second specimen occurred in 41-50 fathoms off Cape Three Points.

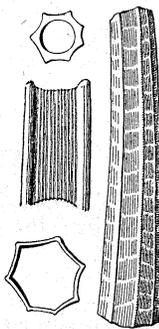


Fig. 61.

DENTALIUM LUBRICATUM, *Sowerby*.

Dentalium lubricatum, Sowerby, Thes. Conch., ii., 1860, p. 97, pl. ccv., f. 56.

Stations 13, 49.

Several specimens were obtained from 63-75 fathoms off Port Kembla, of which the largest is 32 mm. long; and from 41-50 fathoms off Cape Three Points.

DENTALIUM VIRGULA, sp. nov.

(Fig. 62.)

Stations 13, 37, 49, 57.

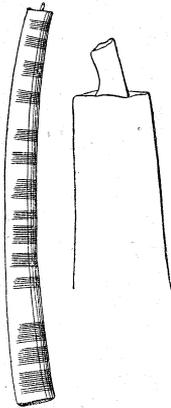


Fig. 62.

Shell small, a little curved, slightly tapering, slender, in section circular, polished, with minute growth rings at irregular intervals, solid at the apex, thin at the aperture; milk-white opaque rings alternate with pale orange translucent ones. Supplementary tube a small round pipe excentric to the direction of the shell and arising in the centre of the apex. Length, 10.5 mm.; breadth at aperture 1.1 mm., at apex 0.62 mm.; diameter of tube, 0.2 mm.

This species belongs to the subgenus *Episiphon* of Pilsbry and Sharp.*

Numerous examples were taken in 63-75 fathoms off Port Kembla; in 41-50 fathoms off Cape Three Points; in 54-59 fathoms off Wata Mooli; and in 50-52 fathoms off Botany Bay.

CADULUS, *Philippi*.CADULUS SPRETUS, *Tate & May*.

Cadulus spretus, Tate & May, Trans. Roy. Soc. S.A., xxiv., 1900, p. 102; Proc. Linn. Soc. N.S. Wales, 1901, p. 420, pl. xxv., f. 52.

Stations 13, 49, 57.

This species also extends to New Zealand. Mr. A. Hamilton, of Dunedin, has sent me specimens which he dredged in 5 fathoms off Anchor Island, Dusky Sound, N.Z.

* Pilsbry & Sharp—Man. Conch., xvii., 1897, p. 117.

Plentiful at 63-75 fathoms off Port Kembla ; 41-50 fathoms off Cape Three Points ; and 54-59 fathoms off Wata Mooli.

GASTROPODA.

Order DIOTOCARDIA.

Class ZYGOBRANCHIA.

Family SCISSURELLIDÆ.

SCHISMOPE, *Jeffreys.*

SCHISMOPE ATKINSONI, *Ten. Woods*, sp.

Scissurella atkinsoni, Ten. Woods, Proc. Roy. Soc. Tas., 1876 (1877), p. 149.

Schismope carinata, Watson, Chall. Rep., Zool., xv., 1886, p. 119, pl. viii., f. 6.

Station 49.

Two specimens from 63-75 fathoms off Port Kembla.

SCISSURELLA, *D'Orbigny.*

SCISSURELLA AUSTRALIS, sp. nov.

(Fig. 63.)

Station 49.

Shell large, thin, trochiform, spire gradate, base tumid, narrowly perforate. Colour white. Whorls five. Sculpture: the upper surface of the last whorl has about 64 curved oblique lamellate riblets; on the spire the ribbing is finer and closer and is crossed by fine spiral threads which appear on the lower whorl in broken

lengths. On the base there are about twenty-five coarse, widely spaced radii, most prominent around the umbilicus, which they enter. On the outer circumference of the base are interstitial radii, crossed by half-a-dozen spiral threads. Fasciole enfolded by broad margins. Height, 2.5 mm.; major diam., 3.0 mm.; minor diam., 2.5 mm.

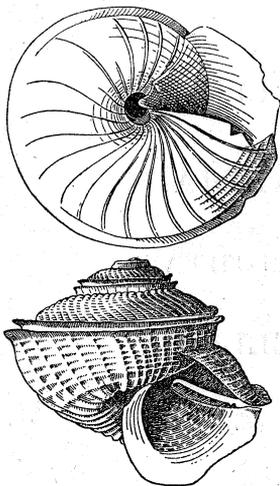


Fig. 63.

The novelty is similar in size, shape and general appearance to *Scissurella equatoria*, Hedley,* but differs by having the base sculptured by a few distant coarse radii instead of dense fine riblets. The lip of *S. australis* does not project in a lobe over the base like that of *S. equatoria*.

My material is too scanty to pronounce on the persistence of these features and their systematic value.

In the Australian Museum is an imperfect specimen of a fossil *Scissurella* from Muddy Creek, apparently identical with *S. australis*.

A few imperfect specimens were obtained in 63-75 fathoms off Port Kembla.

Family FISSURELLIDÆ.

PUNCTURELLA, Lowe.

PUNCTURELLA HARRISSONI, *Beddome*, sp.

Cemori harrissoni, Beddome, Proc. Roy. Soc. Tas., 1882 (1883), p. 168.

Puncturella henniana, Brazier, Proc. Linn. Soc. N.S. Wales, (2), ix., 1894, p. 177, pl. xiv., f. 14.

Station 13.

One specimen from 41-50 fathoms off Cape Three Points.

* Hedley—Mem. Aust. Mus., iii., 1899, p. 551, f. 61.

Family COCCULINIDÆ.COCCULINA, *Dall.*

COCCULINA MERIDIONALIS, sp. nov.

(Fig. 64.)

Station 49.

Shell small, thin, elevated, slightly asymmetrical. Colour white. Apex smooth inrolled, caducous on the largest shell. Summit a little within the posterior margin. Posterior slope steep, a little concave; anterior slope long, arched. Sculpture: fine dense concentric threads. Length, 3.25 mm.; breadth, 2.25 mm.; height, 1.6 mm.

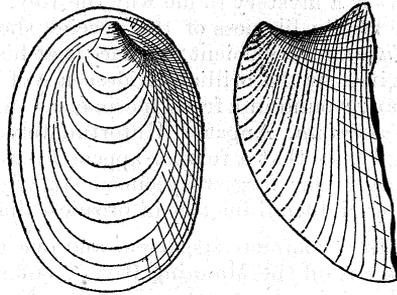


Fig. 64.

Three examples from 63-75 fathoms off Port Kembla.

Class AZYGOBRANCHIA.

Family STOMATELLIDÆ.GENA, *Gray.*GENA STRIGOSA, *A. Adams.*

Gena strigosa, A. Adams, Proc. Zool. Soc., 1850, p. 37. *Id.*, Pilsbry, Man. Conch., xii., 1890, p. 39, pl. lv., f. 31, 32, pl. ii., f. 8-16.

Station 55.

A few specimens from 11-16 fathoms off the Crookhaven River.

Family TROCHIDÆ.

MINOLIA, *A. Adams.*

MINOLIA ROSULENTA, *Watson, sp.*

Solarium rosulentum, Watson, Chall. Rep., Zool., xv., 1886, p. 136, pl. viii., f. 12.

Stations 28, 33, 49.

It is a mystery to me why the Rev. B. Watson, who recognised the family likeness of this species, should finally judge it to be a *Solarium*. Sufficient evidence that his decision must be reversed is given by the brilliant iridescence of the aperture, the apex and of any wound in a fresh specimen. It is nearly related to *Minolia pulcherrima*, Angas. Unfortunately the shells before me are empty, so that a further appeal to the soft parts cannot yet be made. Our largest specimen slightly exceeds the type in size, being eight millimetres in broadest diameter.

Three complete specimens and one fragment were taken in 22 fathoms off the Manning River; one specimen occurred in 24-27 fathoms in the north end of the Newcastle Bight; and one in 63-75 fathoms off Port Kembla.

MINOLIA TASMANICA, *Ten. Woods.*

Margarita (Minolia) tasmanica, Ten. Woods, Proc. Roy. Soc. Tas., 1876 (1877), p. 143.

Minolia tasmanica, Pilsbry, Man. Conch., xi., 1889, p. 263, pl. lxi., f. 38, 39, 40.

Stations 28, 33.

My determination of this species is based on comparison with co-types kindly lent me by the Rev. H. D. Atkinson. Tate and May* unite this with *M. vitiliginea*, Menke, but I agree with Pritchard and Gatliff in maintaining it as different.† The keel on the shoulder of the whorl is the only character that separates this from *M. angulata*, A. Ad.

* Tate & May—Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 404.

† Pritchard & Gatliff—Proc. Roy. Soc. Vict., xiv., 1902, p. 133.

From 22 fathoms off the Manning River, and from 24-27 fathoms in the north end of the Newcastle Bight.

MINOLIA BELLULA, *Angas*.

Minolia bellula, Angas, Proc. Zool. Soc., 1869, p. 48, pl. ii., f. 11.

Station 28.

One specimen from 22 fathoms off the Manning River.

MINOLIA ARATA, *sp. nov.*

(Fig. 65.)

Stations 37, 44.

Shell turbinate, widely umbilicate, rather thin. Colour pale yellow, with purple disposed in dots on the shoulder and stripes on the base. Whorls five, tabulate above, angled at the shoulder, thence rounded, last in slight contact with its predecessor; sutures impressed. Sculpture: the flat sutural shelf of the upper whorls is ornamented by fine regular radial riblets; obliquely descending the slope these riblets crenulate the upper spirals and gradually vanish on the last whorl into faint irregularly spaced growth lines. On the upper whorls are five spiral cords, between which are smaller threads, in their turn separating still finer lines. The last whorl is encircled by ten strong keels whose interstices are occupied by small and smaller threads as before. Apex elevated, of two whorls small and glossy. Umbilicus wide and deep, penetrated by five elevated spiral ridges beaded by longitudinal sculpture. Aperture circular, slightly oblique, peristome entire, simple, sharp, within brilliantly nacreous, nacre edged with a thin brown and a broader yellow non-nacreous margin. Major diam., 9.5; minor diam., 7.5; height, 7 mm.

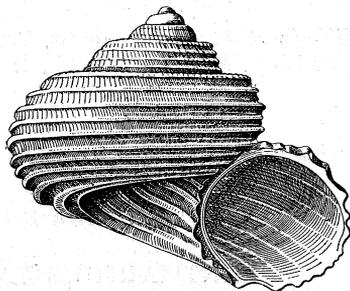


Fig. 65.

This species is allied to *M. pulcherrima*, Angas, and *M. rosulenta*, Watson, than which it is of duller hue and of weaker radial sculpture.

Another member of this genus which I have lately been able to add to the fauna of New South Wales is *M. phillipensis*, Watson,* taken in 100 fathoms, 16 miles east of Wollongong.

Taken by the "Thetis" in 50-52 fathoms off Botany Bay, in 49-50 fathoms off Coogee, and recently by Mr. G. H. Halligan and myself in 100 fathoms, sixteen miles east of Wollongong. On the "Challenger" dredging entertainment of 3rd June, 1874, Mr. J. Brazier obtained a young specimen from 45 fathoms, five miles east of Sydney Heads.

G I B B U L A, *Risso.*

GIBBULA TASMANICA, *Pettersd.*

Gibbula tasmanica, Pettersd, Journ. Conch., ii., 1879, p. 103.

Id., Pilsbry, Man. Conch., xi., 1889, p. 237, pl. xl., f. 20.

Station 49.

One dead shell in 63-75 fathoms off Port Kembla.

GIBBULA STRANGEI, *A. Adams.*

Gibbula strangei, A. Adams, Proc. Zool. Soc., 1867, p. 217. *Id.*

Pilsbry, Man. Conch., xi., 1889, p. 231, pl. xxxii., f. 61, 62.

Station 65.

One living specimen from 11-16 fathoms off Crookhaven River.

CANTHARIDUS, *Montfort.*

CANTHARIDUS FASCIATUS, *Menke, sp.*

Phasianella fasciata, Menke, Synop. Meth. Moll., 1830, p. 141.

Cantharidus fasciatus, Pilsbry, Man. Conch., xi., 1889, p. 139, pl. xl., f. 28-33.

? *Bankivia lugubris*, Gould, Proc. Boston Soc. Nat. Hist., viii., 1861, p. 18.

Stations 27, 33, 49.

A dead shell from 22 fathoms off Manning River and another from 24-27 fathoms in the north end of the Newcastle Bight; a third from 63-75 fathoms off Port Kembla.

* *Trochus (Solariella) philippensis*, Watson—Chall. Rep., Zool., xv., 1886, p. 73, pl. vi., f. 10.

CANTHARIDUS PICTURATUS, *H. & A. Ad.*, sp.

Leiopyrga picturata, *H. & A. Ad.*, *Ann. Mag. Nat. Hist.*, 1863, p. 19.

Cantharidus picturata, Pilsbry, *Man. Conch.*, xi., 1889, p. 140, pl. xlv., f. 46, 48.

Station 33.

A dead shell from 24-27 fathoms in the north end of the Newcastle Bight.

CANTHARIDUS DECORATUS, *Philippi*, sp.

Trochus decoratus, Phil., *Zeitsch. Mal.*, 1846, p. 102.

Cantharidus decoratus, Hedley, *Proc. Linn. Soc. N.S. Wales*, xxvi., 1901, p. 19.

Station 55.

One specimen from 11-16 fathoms off the Crookhaven River.

Family TURBINIDÆ.CALCAR, *Montfort*.CALCAR FIMBRIATUM, *Lamarck*, sp.

Trochus fimbriatus, Lamarck, *Hist. Nat. Anim. s. vert.*, vii., 1822, p. 12.

Astralium fimbriatum, Kesteven, *Proc. Linn. Soc. N.S. Wales*, xxvii., 1902, p. 2, f. 1.

Station 49.

The genus *Calcar* is better known by the name of *Astralium*, Link. Concerning the memoir in which Link's description was contained, Mörch writes: "Of this work, which appeared as a University program, only a few copies comparatively were distributed, the greater number having been preserved in the stores of the University."*

It is obvious that *Astralium*, Link, cannot honestly be said to have been published in 1807. Probably as a published name *Astralium* should date from Hermannsen's article in the Proceedings of the Zoological Society of London for 1851, p. 231.

* Mörch—*Proc. Zool. Soc.*, 1862, p. 226.

Unless the rules of zoological nomenclature are to be broken, *Calcar* must be used instead of *Astralium*.

Two immature shells from 63-75 fathoms off Port Kembla.

Family LIOTIIDÆ.

LIOTIA, *Gray*.

LIOTIA ANNULATA, *Ten. Woods*.

Liotia annulata, Ten. Woods, Proc. Roy. Soc. Tas., 1877 (1878), p. 121. *Id.* Tryon, Man. Conch., x., 1888, p. 111, pl. xxxvi., f. 20. *Id.* Tate, Trans. Roy. Soc. S.A., xxiii., 1899, p. 225. *Id.* Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, pp. 398, 460.

Stations 13, 49.

Two examples were taken by the "Thetis" in 63-75 fathoms off Port Kembla, another in 41-50 fathoms off Cape Three Points; it was also dredged in 100 fathoms off Wollongong by Mr. G. H. Halligan and myself.

LIOTIA TASMANICA, *T. Woods*, var. SCALARIS, var. nov.

Liotia tasmanica, Ten. Woods, Proc. Roy. Soc. Tas., 1875 (1876), p. 153. *Id.* Hedley, Proc. Linn. Soc. N.S. Wales, (2), ix., 1895, p. 465, figs.

Station 55.

Northern examples differ from the typical southern forms by being elevated and scalariform, with a narrower umbilicus. This variation I propose to distinguish as var. *scalaris*. In deep water individuals, as usual, the sculpture is sharper and more prickly than in shallow water shells.

One example was taken by the "Thetis" from 11-15 fathoms off the Crookhaven River. Also dredged by Mr. G. H. Halligan and myself in 100 fathoms, 16 miles east of Wollongong.

LIOTIA DISJUNCTA, sp. nov.

(Fig. 66.)

Station 13.

Shell small, turbinate, broadly umbilicate. Colour pale brown. Whorls three, of which the first one and a half are embryonic; last whorl rapidly increasing and descending, at last becoming loose, angled at the periphery, at the base and at the umbilical margin. Sculpture: above are numerous closely packed strong

radial ribs, which project as denticules from the periphery. Between the basal and peripheral angles the ribs descend perpendicularly and are crossed by fine spiral threads. Crossing the base the ribs ascend the umbilicus. Aperture simple, oblique, circular. Height, 1.1 mm.; maj. diam., 1.5 mm.; minor diam., 1.1 mm.

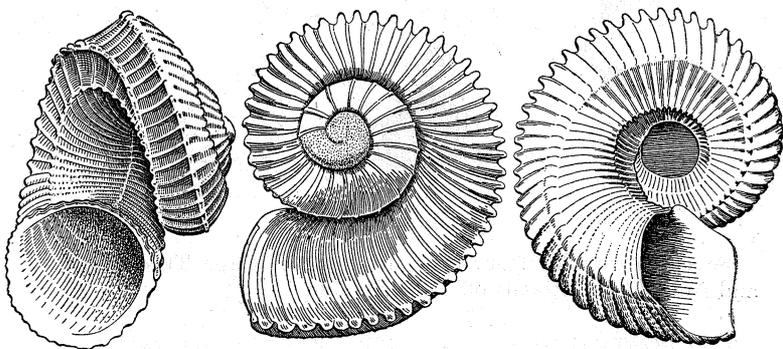


Fig. 66.

The minute size, simple aperture and uncoiling of the last whorl distinguish this species.

A whole shell and a fragment occurred in 41-50 fathoms off Cape Three Points.

LIOTIA MICANS, A. Ad., var. *ANGASI*, Crosse.

Cyclostrema micans, A. Ad., Proc. Zool. Soc., 1850, p. 44. *Id.*
Tate, Proc. Roy. Soc. S.A., xxi., 1897, p. 44.

Liotia angasi, Crosse, Journ. de Conch., xii., 1864, p. 343, pl. xiii.,
f. 4.

Station 28.

One specimen from 22 fathoms off the Manning River.

Family CYCLOSTREMATIDÆ.

CYCLOSTREMA, *Marryatt*.

CYCLOSTREMA *INSCRIPTUM*, *Tate*.

Cyclostrema inscriptum, Tate, Trans. Roy. Soc. S.A., xxiii., 1899,
p. 216, pl. vii., f. 3 a, b.

(Fig. 67.)

Stations 13, 49.

This species is not determined with certainty, for I have no good specimens for comparison, and the measurements do not

precisely agree. The example drawn is 1.9 mm. in major diameter, 1.5 mm. in minor diameter, and 0.9 mm. in height.

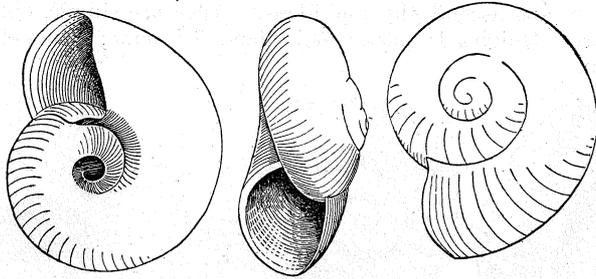


Fig. 67.

Several examples from 41-50 fathoms off Cape Three Points, and from 63-75 fathoms off Port Kembla.

CYCLOSTREMA ANGELI, *Ten. Woods*, var. *CREBRES-
SCULPTUM*, *Tate*.

Cyclostrema crebresculptum, *Tate*, *Trans. Roy. Soc. S.A.*, xxiii., 1899, p. 219, pl. vii., f. 5.

Stations 13, 49.

A few examples from 41-50 fathoms off Cape Three Points, and from 63-75 fathoms off Port Kembla.

CYCLOSTREMA PORCELLANUM, *Tate & May*.

Cyclostrema porcellanum, *Tate & May*, *Trans. Roy. Soc. S.A.*, xxiv., 1900, p. 101. *Id.*, *Proc. Linn. Soc. N.S. Wales*, xxvi., 1901, p. 397, pl. xxvii., f. 93.

Station 13.

Numerous specimens from 41-50 fathoms off Cape Three Points.

CYCLOSTREMA JOHNSTONI, *Beddome*.

Cyclostrema johnstoni, *Beddome*, *Proc. Roy. Soc. Tas.*, 1882 (1883), p. 148. *Id.* *Tate*, *Trans. Roy. Soc. S.A.*, xxiii., 1899, p. 215, pl. vii., f. 7a, b.

Station 49.

Two specimens from 63-75 fathoms off Port Kembla.

Order MONOTOCARDIA.

Class TÆNIOGLOSSA.

Family LOTORIIDÆ.LOTORIUM, *Montfort.*LOTORIUM PUMILIO, *sp.nov.*

(Fig. 68.)

Station 28.

Shell ovate conic, small, thin, smooth and glossy. Colour reddish-yellow, with occasional chocolate spots, aperture pale yellow. Whorls five, plus a two-whorled protoconch. Sculpture: varices eight; fine close longitudinal plications occur on the uppermost whorls, which as the shell increases become more widely spaced and less pronounced, finally on the penultimate and last whorl they degenerate into a row of peripheral nodules, which are absent from the ventral side of the body whorl; spiral ornament consisting of fine close flat-topped riblets, on the last whorl 40, on the penultimate 20, varying in size, separated by narrow interstices; the growth lines are nearly obliterated from the riblets but persist in the interstices as microscopic scales. Protoconch low, turbinate, two-whorled, furrowed by two spiral incised lines, one on the shoulder, the other on the periphery. Suture distinct waved by the varices and longitudinal plications. Epidermis thin, closely adherent, without frills or tags. Outer lip sharp, a little expanded, very faintly dentate, not lirate within. Inner lip with a sharply defined rather thick callus; in the hollow of the columella are a few indistinct ridges, and an obscure tubercle appears in the posterior angle. Canal short, open, recurved. Length, 16; breadth, 8.5 mm.

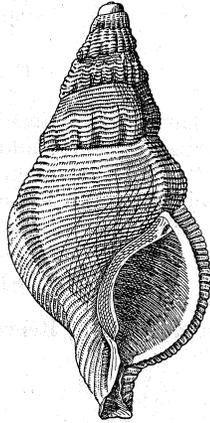


Fig. 68.

This species appears to be the smallest of the genus. The nearest relation is *L. bassi*, Angas, with which it agrees in the small number of whorls, colour, sculpture and general appearance,

but from which it is easily distinguished by the slender form, small size and absence of liræ within the lip. Tryon* follows Schmeltz† in regarding *Triton fraterculus*, Dunker, ‡ as a synonym of *T. bassi*, Angas, but it seems to me that the description of *T. granulatum*, Dunker, suits *T. bassi* better than does that of *T. fraterculus*. A recent addition to the Lotoriidæ of New South Wales is *L. nodocostata*, Tate & May, which I dredged in 100 fathoms sixteen miles east of Wollongong.

A single living specimen was dredged in 22 fathoms off the Manning River.

LOTORIUM PARKINSONIANUM, *Perry*, emend. sp.

Septa parkinsonia, Perry, Conchology, 1811, pl. xiv., f. 1.

Triton fusiformis, Kiener, Coquilles Vivantes, 1842, p. 36, pl. v. fig. 2.

Stations 13, 49.

A few apices of this species were procured in 41-50 fathoms off Cape Three Points, and in 63-75 fathoms off Port Kembla.

Family CASSIDIDÆ.

CASSIDEA, *Bruguiere*.

The generic name *Cassidea*, proposed by Bruguiere,§ and supported by Perry and Swainson, has been generally overlooked, but it is certainly entitled to precedence over *Semicassis*, which if cited as of Klein must be rejected as prelinnean, but if as of Mörch, is more than half a century younger.

CASSIDEA TURGIDA, *Reeve*, sp.

Cassis turgida, Reeve, Conch. Icon., v., 1848, Cassis, pl. x., f. 25.

(Plate xxxvi., fig. 1.)

Stations 48, 56.

The "Thetis" took a large shell 100 mm. in length, thin, with rounded whorls and brown zigzag markings on a white ground. It is with diffidence that I record it under the above name, as it lacks the denticules on the lip and exceeds Reeve's figure in size.

* Tryon—Man. Conch., iii., 1881, p. 11.

† Schmeltz—Cat. Mus. Godeff., iv., 1874, p. 107.

‡ Dunker—Malak. Blatt., 1871, p. 166.

§ Bruguiere—Encycl. Meth., Vers., i., 1792, p. 414.

In dealing with such protean forms as the members of this genus, it seems preferable to allow considerable latitude for variation than to erect a new species upon scanty material.

From 55-56 fathoms off Wollongong, and 79-80 fathoms off Botany Bay; one specimen from each locality.

CASSIDEA RECURVIROSTRUM, *Gmelin*, sp.

Buccinum recurvirostrum, Gmelin, Syst. Nat., xiii., 1790, p. 3477.

Cassis recurvirostrum, Reeve, Conch. Icon., v., 1848; Cassis, pl. vii., f. 16.

Station 13.

Gmelin's name was founded on a drawing by Lister of a shell from Barbadoes. It is improbable that Reeve correctly identified this with an Australian species. Means are wanting to disentangle the complicated history of the species, and it suffices to say that the one figured by Reeve is that before me.

From 41-50 fathoms off Cape Three Points.

CASSIDEA PYRUM, *Lamarck*, var. THOMSONI, *Brazier*.

Cassis thomsoni, Brazier, Proc. Linn. Soc. N.S. Wales, i., 1875, p. 8.

(Plate xxxv., figs. 2, 3.)

Station 13.

Brazier's type of this species is in the Australian Museum. It differs from *C. pyrum* var. *paucirugis*, Menke, by the multiplication of the grains on the shoulder.

From 41-50 fathoms off Cape Three Points; one specimen.

Family DOLIIDÆ.

DOLIUM, *Lamarck*.

DOLIUM VARIEGATUM, *Lamarck*.

Dolium variegatum, Lamarck, Hist. Nat. Anim. s. vert., vii., 1822, p. 261. *Id.* Tryon, Man. Conch., vii., 1885, p. 262, pl. iii., f. 13, 14.

Stations 35, 41, 46.

A few specimens from 22-38 fathoms off Port Hacking, 52-71 fathoms off Wata Mooli, 50-66 fathoms off Jibbon.

Family AMPHIPERASIDÆ.

PEDICULARIA, *Swainson*.

PEDICULARIA STYLASTERIS, sp. nov.

(Figs. 69, 70.)

Stations 44, 48.

Shell variable in shape, according to the irregularity of the perch. Colour rose-pink. Sculpture: on the earlier convolute whorls are fine spiral threads obliquely cut by growth lines, upon the compressed sides are coarser and more distant spiral threads. The apex is conical, five-whorled, with the usual cancellate sculpture, completely buried in the adult shell. Aperture roughly

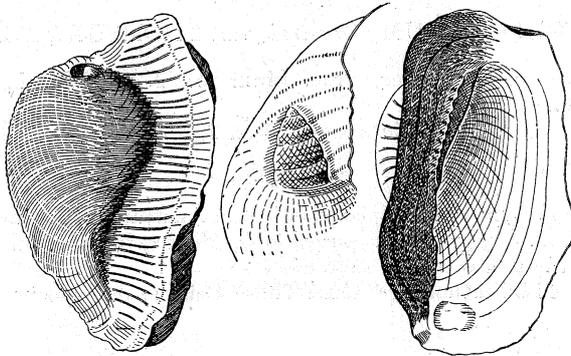


Fig. 69.

oblong, irregularly lobed, with an anterior and posterior canal more or less developed. Columella expanded, longitudinally ribbed, anteriorly with a deep set line of denticles; just within the anterior margin is a muscle scar. Length of aperture, 6 mm., breadth, 3 mm.; height from back to base, 4 mm.

This shell, representing a genus new to Australia, occurred on branches of *Stylaster sanguineus*, Val. (fig. 70), obtained off Wollongong at a depth of 55-66 fathoms, and again off Coogee in 49-50 fathoms. Mr. H. Mort has shown me a specimen he collected on the beach at Long Bay, near Sydney. The removal of a *Pedicularia* from a branch of *Stylaster* exposes a shallow

excavation. This scar is probably owing rather to arrested development at a point surrounded by normal growth, than to the actual removal of matter.

In an erratic group like these commensals, it is difficult to seize on features of specific discrimination. Judging from literature, *P. stylasteris* appears to differ by its denticulate columella and buried apex from others of the genus; some weight may attach to the difference of the host.

The host lends its colour to the commensal, and there is a probability that different *Pedicularia* may be confined to different hosts. *P. sicula*, Swainson, is said by Philippi* to be attached to *Corallium rubrum*. *P. japonica*, Dall., occurs on *Gorgonia*.† According to the same author,‡ *P. decussata*, Gould, lives on *Madrepora*, as does an unnamed species figured by Dr. J. D. Macdonald.§ Mrs. J. G. Waterhouse, of Sydney, has shown me examples of *P. pacifica*, Pease, from Niue, Central Pacific, attached to *Distichopora coccinea*, Gray, a host already named by Schmeltz.||

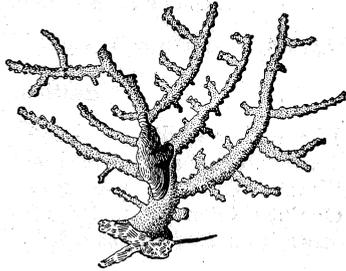


Fig. 70.

Family STRUTHIOLARIIDÆ.

STRUTHIOLARIA, Lamarck.

STRUTHIOLARIA SCUTULATA, Martyn, sp.

Buccinum scutulatum, Martyn, Univ. Conch., i., 1789, pl. 55.

Struthiolaria scutulata, Tryon, Man. Conch., vii., 1885, p. 134, pl. xii., f. 39, 40.

Stations 28, 52.

This species is the type of the genus *Tylospira*,¶ a division which appears to me hardly worth subgeneric rank.

One specimen from 19-20 fathoms in the Shoalhaven Bight; another from 22 fathoms off the Manning River.

* Philippi—Moll. Sicil., i., 1844, p. 92.

† Dall.—Am. Journ. Conch., vii., 1871, p. 122.

‡ Dall.—Bull. Mus. Comp. Zool., xviii., 1889, p. 238.

§ Macdonald—Trans. Linn. Soc., xxii., 1856, p. 243.

|| Schmeltz—Cat. Mus. Godeff., iv., 1874, p. 141.

¶ Harris—Brit. Mus. Cat. Tert. Moll. Austr., 1897, p. 222.

ZEMIRA, *H. & A. Adams.*ZEMIRA AUSTRALIS, *Sowerby*, sp.

Eburna australis, Sowb., Conch. Illustr., 1841, Eburna, f. 5.

Stations 28, 33.

I have already discussed the systematic position of the species and concluded that it would be naturally placed in the *Struthiolariidae*.* This view was subsequently endorsed by Prof. Tate.

One specimen from 1-3 fathoms in the Newcastle Bight; another from 22 fathoms off the Manning River.

Family TRICHOTROPIDÆ.

LIPPISTES, *Montfort.*LIPPISTES TORCULARIS, *Ten. Woods*, sp.

Cingulina torcularis, Ten. Woods, Proc. Linn. Soc. N.S. Wales, ii., 1878, p. 263.

Trichotropis torcularis, Hedley, Rec. Austr. Mus., iv., 1, 1901, p. 22, f. 2.

Lippistes torcularis, Hedley, Proc. Linn. Soc. N.S. Wales, xxvii., 1902, p. 24.

Stations 13, 28.

One example from 41-50 fathoms off Cape Three Points, and another from 22 fathoms off the Manning River.

SIRIUS, *Hedley.*SIRIUS BADIUS, *Ten. Woods*, sp.

Raulinia badia, Ten. Woods, Proc. Linn. Soc. N.S. Wales, ii., 1878, p. 264.

Sirius badius, Hedley, Proc. Linn. Soc. N.S. Wales, xxv., 1900, p. 88, pl. iii., f. 8.

Station 37.

The genus is allied to *Lippistes*, but differs by the projection on the columella and by a different protoconch.

Two specimens from 50-52 fathoms off Botany Bay.

*Hedley—Rec. Austr. Mus., iii., 5, 1899, p. 118.

CROSSEA, *A. Adams.*CROSSEA CARINATA, *sp. nov.*

(Fig. 71.)

Station 49.

Shell minute, smooth and glossy, turbinate. Colour cream. Whorls four, parted by impressed sutures, last bluntly keeled at the periphery. Sculpture: dense spiral microscopic striæ. Base rounded. Umbilicus narrow and deep, surrounded by a callus funicle which expands anteriorly to join the lip in an angular lobe. Aperture subcircular, lip simple. Height, 1.7 mm.; major diam., 1.8 mm.; minor diam., 1.46 mm.

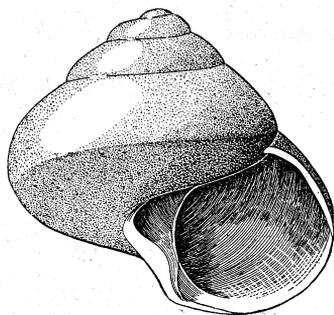


Fig. 71.

Two specimens off Port Kembla in 63-75 fathoms. Also taken by Mr. G. H. Halligan and myself in 100 fathoms sixteen miles east of Wollongong.

Family CERITHIIDÆ.BATILLARIA, *Benson.*BATILLARIA AUSTRALIS, *Quoy & Gaim., sp.*

Cerithium australe, Quoy & Gaimard, Voy. Astrolabe, Zool., iii., 1834, p. 131, pl. lv., f. 7.

Station 27.

Two dead shells from 22 fathoms off the Manning River.

BITTIUM, *Gray.*BITTIUM GRANARIUM, *Kiener, sp.*

Cerithium granarium, Kiener, Coquilles Vivantes, v., 1842, p. 72, pl. xix., f. 3.

Cerithium lacertinum, Gould, Proc. Boston Soc. Nat. Hist., vii., 1861, p. 386. *Id.*, Sowerby, Conch. Icon., Cerithium, 1865, pl. xviii., f. 129.

Stations 27, 55.

From 22 fathoms off the Manning River, and from 11-15 fathoms off the Crookhaven River.

ATA XOCERITHIUM, *Tate*.

ATA XOCERITHIUM SEROTINUM, *A. Ad.*, sp.

Cerithium serotina, A. Ad., Thes. Conch., ii., 1855, p. 861, pl. clxxx., f. 102.

Cerithium tubulus, Dunker, Mal. Blatt., xviii., 1871, p. 152.

Station 36.

One specimen from 20-23 fathoms off Botany Bay.

Family TRIPHORIDÆ.

TRIPHORA, *Blainville*.

TRIPHORA TASMANICA, *Ten. Woods*.

Triforis tasmanica. Ten. Woods, Proc. Roy. Soc. Tas., 1875 (1876), p. 28. *Id.*, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 388, f. 7.

Triphora tasmanica, Hedley, Proc. Linn. Soc. N.S. Wales, xxviii., 1903, p. 612, pl. xxxii., fig. 22.

Stations 13, 48.

One specimen from 55-56 fathoms off Wollongong; another from 41-50 fathoms off Cape Three Points.

Family VERMETIDÆ.

VERMETUS, *Mörch*.

VERMETUS WAITEI, sp. nov.

(Fig. 72.)

Station 49.

Shell small, solitary. Whorls four, first three prostrate, coiled in one plane, adherent to each other and their common base, last

free, spiral, suberect. Colour white. Penultimate whorl square in section, along each angle runs a sharp elevated rib, towards the aperture these ribs converge together on the superior side and frequently continue as sharp lamellæ to the aperture. Between the ribs the surface is sculptured by crescentic growth striae. Aperture circular, expanded, trumpet-mouthed, slightly notched above the spiral ribs; sometimes two or three former apertures persist as variceal rings on the last whorl. Length of shell, about 3.25 mm.

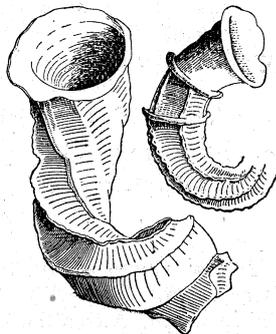


Fig. 72.

This species, whose exact generic position requires to be verified, is named in honour of my colleague Mr. E. R. Waite, who obtained the collection here described.

Several specimens adherent to larger shells were taken in 63-75 fathoms off Port Kembla.

Family TURRITELLIDÆ.

TURRITELLA, Lamarch.

TURRITELLA SUBSQUAMOSA, Dunker.

Turritella subsquamosa, Dunker, Mal. Blatt., xviii., 1871, p. 152.

Turritella acuta, Ten. Woods, Proc. Roy. Soc. Tas., 1875 (1876), p. 143 [not *P. acuta*, M. C. Mayer, Journ. de Conch., vii., 1859, p. 298, pl. xi., f. 7].

Turritella oxyacris, Tate (*nom. mut.*), Trans. Roy. Soc. S.A., xxi., 1897, p. 41.

Turritella lamellosa, Watson, Chall. Rep., Zool., xv., 1886, p. 474, pl. xxix., f. 6.

Stations 13, 37, 49.

Dunker's name, which certainly refers to this species, has not been previously recognised in Australia. Schmeltz erroneously reduces it to a synonym of *Torcula declivis*, Ad. & Reeve.* The shell appears to be common and widely distributed on our continental shelf.

* Schmeltz—Cat. Mus. Godeff., v., 1874, p. 107.

The "Thetis" took it off Cape Three Points in 41-50 fathoms, off Botany Bay in 50-52 fathoms, and off Port Kembla in 63-75 fathoms. It was dredged by a Museum expedition in 1880 in 35 fathoms off Broughton Island, Port Stephens, and this year by myself in 100 fathoms sixteen miles east of Wollongong.

TURRITELLA PHILLIPENSIS, *Watson*, emend.

Turritella philippensis, *Watson*, *Chall. Rep.*, *Zool.*, xv., 1886, p. 479, pl. xxx., f. 1.

Stations 13, 32.

A few young shells from each locality are thus doubtfully determined. The habitat of the type is written by *Watson* "Port Philip, South Australia," meaning, of course, Port Phillip, Victoria. The error is repeated in the derived specific name, which I now correct.

Off Cape Three Points, 41-50 fathoms, and off Cape Hawke, 10-12 fathoms.

TURRITELLA SINUATA, *Reeve*.

Turritella sinuata, *Reeve*, *Conch. Icon.*, v., *Turritella*, 1849, pl. xi., f. 62.

Stations 28, 33, 49.

In 22 fathoms off the Manning River, in 24-27 fathoms in the north end of the Newcastle Bight, and in 63-75 fathoms off Port Kembla.

TURRITELLA SOPHIÆ, *Brazier*.

Turritella incisa, *Ten. Woods*, *Proc. Linn. Soc. N.S. Wales*, ii., 1878, p. 262 [not *T. incisa*, *Reeve*, *Conch. Icon.*, v., *Turritella*, 1849, pl. xi., f. 63].

T. sophia, *Brazier (nom. mut.)*, *Proc. Linn. Soc. N.S. Wales*, viii., 1883, p. 227.

Station 28.

The type of this species is preserved in the Australian Museum, but appears to have suffered a fracture of the lip, losing thereby the peculiar sinus, which is yet indicated by the curved growth lines behind the lip. The "Thetis" procured a second specimen, of a deep claret colour, 12 mm. long, from which one or more basal whorls have been broken away. This imperfect material is insufficient for the desired comparison with *T. occisa*, *Watson*.

Reeve's T. incisa, reported as taken by *Strange* in deep water outside Sydney, has not been found again.

Off the Manning River in 22 fathoms.

TURRITELLA PARVA, *Angas*, sp.

Torcula parva, Angas, Proc. Zool. Soc., 1877, p. 174, pl. xxvi., f. 17.

Stations 37, 49.

A few specimens were taken off Port Kembla in 63-75 fathoms and one from 50-52 fathoms off Botany Bay. Two examples were received in 1880 from 35 fathoms off Port Stephens.

While on the subject of *Turritella*, I may mention in reference to Miss Donald's recent paper* that *Turritella smithiana*, Donald, and *T. crenulata*, Donald, described as from the neighbourhood of Sydney, are not Australian, but probably Atlantic forms. *T. godeffroyana*, Donald, is *T. tasmanica*, Ten. Woods, non Reeve, and *T. atkinsoni*, Tate & May; over the latter Miss Donald's name has four months' priority. If I have understood that species, *T. quadrata*, Donald, is the common Tasmanian form, which I have not seen from the coast of New South Wales; while *T. sinuata*, Reeve, is the common form in New South Wales, and does not extend to Tasmania.

Family SOLARIIDÆ.

SOLARIUM, *Lamarck*.

SOLARIUM MAXIMUM, *Philippi*.

Solarium maximum, Philippi, Zeitsch. f. Malak., 1848, p. 173.

Id., Conch. Cab., Bd. ii., Abth. 8, Solarium, 1853, p. 6, pl. 1, f. 2, 3.

Stations 13, 28, 49.

(Fig. 73.)

This is the species locally recorded† as *Solarium lævigatum*, Lamarck. Pelseneer‡ investigated Gould's genus *Agadina* and showed that though the original species was probably founded on the Pteropod *Limacina antarctica*, S. P. Woodward, the other species so unhappily added by H. & A. Adams are larval Gasteropoda, and concludes:—"But to what streptoneural

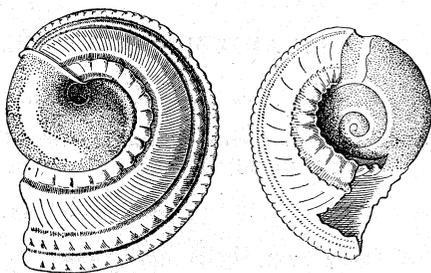


Fig. 73.

* Donald—Proc. Mal. Soc., iv., 1900, pp. 47-55, pl. v.

† Whitelegge—Pro. Roy. Soc. N.S. Wales, xxiii., 1889, p. 260.

‡ Pelseneer—Chall. Rep., Zool., xxiii., 1888, p. 37.

Gasteropods do these larval "*Agadina*" forms belong? The marine left-handed Gasteropods are not, indeed, very numerous. But it must be remembered that some Gasteropods, with right-handed spirals, have their initial portion or nucleus twisted to the left. This is not improbably the case with the larval forms in question, for the left-handed twisting of the operculum in all likelihood corresponds to the right-handed twisting of the shell."

A series of *Solarium* showing the early stages, included in the "Thetis" collection, has provided the solution of Pelseneer's problem.

The protoconch of *S. maximum* is white, smooth, sinistral, turbinate, three-whorled, whorls slightly elevated, narrowly umbilicated, with circular, expanded and reflected aperture. With sudden change in colour, texture and sculpture, the adult shell is built on the expanded lip. The protoconch is completely inverted with regard to the adult, so that the larval umbilicus is at the summit of the full grown shell, and the spire of the embryo forms the centre of the umbilicus of the adult. The diameter of the protoconch is about 1.5 mm.

My drawings show the basal aspect of a shell with half an adult whorl, the umbilicus of which is forming round the embryonic apex; also a slightly older shell viewed from above.

Stripped of the adult shell, this protoconch conforms to the figures and description given by Pelseneer of his "*Agadina*, n.sp."

The larval shell of *Solarium* appears to have been discovered by Dr. Jousseau, who described it at a meeting of the Société Zoologique de France.* For this type of apex Dautzenberg and Fischer have proposed the term "anastrophic."†

A few specimens were taken off Port Kembla in 63-75 fathoms, off Cape Three Points in 41-50 fathoms, and off the Manning River in 22 fathoms.

SOLARIUM STRAMINEUM, *Gmelin*, sp.

Trochus stramineus, Gmelin, Syst. Nat. xiii., 1790, p. 3575.

Solarium stramineum, Hanley, Thes. Conch., iii., 1863, p. 242, pl. v., f. 95, 96, 97.

Stations 37, 49.

A few young shells were taken off Port Kembla in 63-75 fathoms, and off Botany Bay in 50-52 fathoms.

* Jousseau—Bull. Soc. Zool. France, vii., 1882. Procès Verbaux, p. xxx.

† Dautzenberg and Fischer—Mém. Soc. Zool. France, ix., 1896, p. 57.

OMALAXIS, *Deshayes*.

OMALAXIS MERIDIONALIS, sp. nov.

(Fig. 74.)

Station 13.

Shell small thin rotate, flat above, shallow concave beneath, sides perpendicular. Colour white. In its broken state there remain two whorls and the protoconch. Whorls almost square in section, with a keel projecting at the upper and lower corners. Sutures channelled. Sculpture: above, the upper outer keel stands up from the surface and is constituted by a double bead row; latterly two smaller beads intervene between larger ones. A single narrow bead row runs along the inner margin close to the suture. On the base a single broad elevated bead row forms the outer keel and a narrower row runs along the inner margin. On the side are three evenly spaced raised threads. The space between the bead rows is transversely striated by growth lines. Protoconch tilted, but not sufficiently so to conceal the whorls either from above or from below. Major diam., 4.5 mm.; minor diam., 3.6 mm.; height, 1.25 mm.

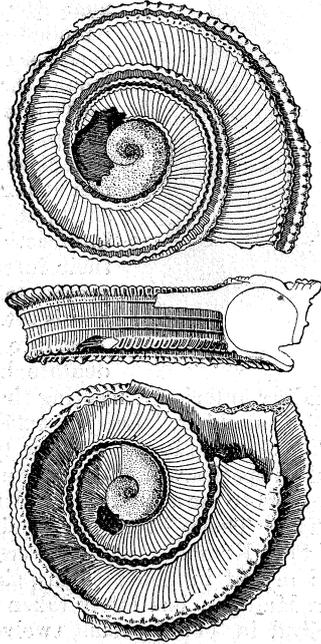


Fig. 74.

The "Thetis" took a very young specimen of an *Omalaxis*, a genus heretofore unknown in Australia. As it was too small to deal with, I have used for my type a broken specimen of an *Omalaxis*, perhaps but not certainly the same species, which was previously dredged in Port Stephens.

From 49-50 fathoms off Cape Three Points.

Family MATHILDIIDÆ.MATHILDA, *Semper*.

MATHILDA DECORATA, sp. nov.

(Fig. 75.)

Station 49.

Shell small, broad, turreted. Colour pale brown. Whorls four and a half besides the protoconch. Sculpture: a few fine spiral threads ornament the otherwise smooth base, which is bounded by a double smooth cord. On the periphery are two projecting keels which mount the spire; above these are two minor cords, and the suture is bordered by another but plain cord. About twenty-five radial riblets arise outside the basal border and mount perpendicularly to the summit of the shell; they produce a bead at each point of intersection with the four spirals and cut their interstices into square meshes. The protoconch is large, of more than one whorl, and is set on edge at one side of the summit. Aperture subquadrate, outer lip simple, dentate by the sculpture. Columella ex-

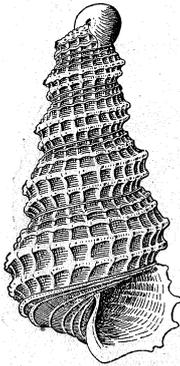


Fig. 75.

panding anteriorly, meeting the lip at an angle. Behind it is an umbilical chink. Length, 4.25 mm.; breadth, 2 mm.

This species is closer to the type of the genus than other Australian species which have been referred to *Mathilda*. The apex suggests to me a relationship with *Solarium*.

The "Thetis" took one specimen (the type) in 63 to 75 fathoms off Port Kembla. Others were procured by Mr. G. H. Halligan and myself in 100 fathoms, sixteen miles east of Wollongong. Mr. Halligan has lately taken a larger specimen than here described in 111 fathoms, twelve and a half miles east of Cape Byron.

Family LITIOPIDÆ.DIALA, *A. Adams*.DIALA MONILE, *A. Adams*, sp.

Alaba monile, *A. Adams*, Ann. Mag. Nat. Hist., (3), x., 1862, p. 296.

Diala monile, Smith, Proc. Zool. Soc., 1875, p. 538; *Id.*, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 388.

Station 13.

This species has already been recorded from the coast of New South Wales by Brazier.*

One dead shell from 41-50 fathoms off Cape Three Points.

Family RISSOIDÆ.

RISSOINA, *D'Orbigny*.

RISSOINA CRETACEA, *Ten. Woods*.

Rissoina cretacea, Ten. Woods, Proc. Linn. Soc. N.S. Wales, ii., 1878, p. 265.

(Fig. 76.)

Station 28.

A drawing of the type specimen, preserved in the Australian Museum, of this hitherto unfigured species is here presented.

Two examples occurred in 22 fathoms off the Manning River.



Fig. 76.

SCROBS, *Watson*.

It is to be regretted that Watson did not maintain his first opinion and advance *Scrobs* as a full genus, since by doing so he would have preserved the specific name of his second species. His *Eulima eurychades*† seems to me also to belong here, as Tate has already suggested. Tryon‡ reduced *Scrobs* to a synonym of *Amphithalamus*, Carpenter.§ Since Tryon himself rejects Carpenter's first species as insufficiently known, it cannot in the present state of our knowledge be safely used as the type of a genus.

SCROBS JACKSONI, *Brazier*, sp.

Rissoa (Scrobs) badia, Watson, Chall. Rep., Zool., xv., 1886, p. 612, pl. xlvi., f. 3 [not *Alvania badia*, A. Ad., Ann. Mag. Nat. Hist., (3), viii., 1861, p. 300; nor *Rissoa badia*, Petterd, Journ. Conch., iv., 1884, p. 138].

* Brazier—Trans. Roy. Soc. S.A., ix., 1887, p. 123.

† Watson—Chall. Rep., Zool., xv., 1884, p. 522, pl. xxxvii., f. 7.

‡ Tryon—Man. Conch., ix., 1887, p. 317.

§ Carpenter—Ann. Mag. Nat. Hist., (3), xv., 1865, p. 181.

Rissoa (Amphithalamus) jacksoni, Brazier, Proc. Linn. Soc. N.S. Wales, (2), ix., 1895, p. 695.

Station 49.

One specimen from 63-75 fathoms off Port Kembla.

SCROBS SCROBICULATUS, *Watson*, sp.

Rissoa (Scrobs) scrobiculata, Watson, Chall. Rep., Zool., xv., 1886, p. 611, pl. xlvi., f. 4.

Station 49.

One specimen from 63-75 fathoms off Port Kembla.

SCROBS PYRAMIDATUS, sp. nov.

(Fig. 77.)

Stations 13, 35, 37, 49, 57.

Shell small, ovate, very solid, smooth and glossy. Colour variable, either entirely clear hazel-brown or passing through dull white, and cinereous to heliotrope; the coloured shells usually ivory white on the base and aperture. Sculpture: faint spiral scratches crossed by equally faint growth lines. Whorls four, rounded, last slightly gibbous; first one and a half (? protoconch) spirally grooved, ending in an obscure varix. Suture distinctly impressed. Periphery angled more or less sharply. Base inflated. Aperture ovate, entire, free, simple. The distortion of the last whorl has crumpled a furrow between the aperture and the last whorl, which on the axial region enlarges as a false umbilicus. Height, 2.1 mm.; breadth, 1.4 mm.

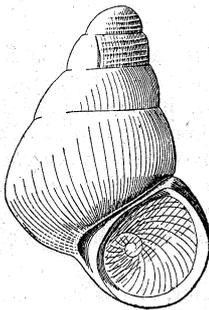


Fig. 77.

This seems a common form, and one characteristic of the continental shelf. It occurred alive in abundance at several of the following stations: 54-59 fathoms off Wata Mooli (type), 50-52 fathoms off Botany, 43-75 fathoms off Port Kembla, 41-50 fathoms off Cape Three Points, and 22-38 fathoms off Port Hacking.

SCROBS BICOLOR, *Petterd*, sp.

Rissoa bicolor, Petterd, Journ. Conch., iv., 1884, p. 137. *Id.*,
Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 391,
pl. xxvi., f. 63.

Stations 13, 28, 33, 37, 49.

From 41-50 fathoms off Cape Three Points; 22 fathoms off the
Manning River; 24-27 fathoms in the north end of the Newcastle
Bight; 50-52 fathoms off Botany Bay; and 63-75 fathoms off
Port Kembla.

SCROBS SALEBROSUS, *Frauenfeld*, sp.

Alvania salebrosa, Frauenfeld, Reise der Novara, Zool. ii., 3, 1868,
Moll., p. 11, pl. ii., f. 15.

Station 49.

One specimen from 63-75 fathoms off Port Kembla.

ANABATHRON, *Frauenfeld*.ANABATHRON CONTABULATUM, *Frauenfeld*, emend.

Anabathron contabulata, Frauenfeld, Reise der Novara, Zool., ii.,
3, 1868, Moll., p. 13, pl. ii., f. 20.

Station 49.

Two dead shells from 63-75 fathoms off Port Kembla.

EPIGRUS, gen. nov.

A genus of the *Rissoidea*, allied to *Scrobs*. Shell tall, slender,
smooth, cylindrical. Aperture oblique, appressed; apex large,
often protuberant.

Type: *Rissoa ischna*, Tate = *Rissoina cylindracea*, T. Woods.

Other species are *E. dissimilis*, Watson, *E. xanthias*, Watson,
E. petterdi, Brazier, *E. verconis*, Tate, and *E. simsoni*, Tate &
May. This genus has puzzled all writers that encountered it.
Tenison Woods placed my type with hesitation in *Rissoina*. Boog
Watson referred my second species with serious doubt to *Eulima*,
my third to *Mucronalia*, and Petterd assigned my fourth to
Rissoa. Such want of harmony sufficiently indicates the need
felt for the introduction of this genus.

EPIGRUS ISCHNUS, *Tate*, sp.

Rissoina cylindracea, Ten. Woods, Proc. Linn. Soc. N.S. Wales, ii., 1878, p. 266 [not *Rissoa cylindracea*, Krynicky, Bull. Soc. Imp. Nat. Moscou, ii., 1837, p. 60].

Rissoa ischna, Tate (*nom. mut.*), Trans. Roy. Soc. S.A., xxiii., 1899, p. 233.

(Fig. 78.)

Station 49.

This species has not yet been figured, a drawing of the author's type of *Rissoina cylindracea*, Ten. Woods, preserved in the Australian Museum, is therefore here inserted. *E. ischnus* and *E. dissimilis* are much alike in shape. Knowing the latter only by the figure, and thinking that the extra whorl of the former accounted for the difference in size, I suggested to Prof. Tate that the two names stood for different growth stages of the same shell. Misled by me, he adopted this view.* Mr. H. L. Kesteven has, however, recently taken and identified *E. dissimilis*, which, set beside half grown *E. ischnus*, proves perfectly distinct. To make this matter clear, I have sketched *E. dissimilis* (fig. 80) and *E. verconis* (fig. 79) to the same scale as *E. ischnus*, drawn above.

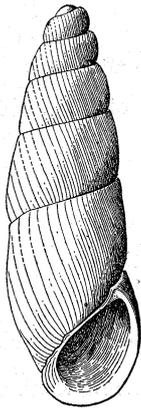


Fig. 78.

I have not been able to compare *Eulima tasmanica*, T. W. † with this species, to which it is said to be related, if not identical.

One half grown shell from 63-75 fathoms off Port Kembla.

EPIGRUS VERCONIS, *Tate*, sp.

Rissoa badia, Petterd, Journ. Conch., iv., 1884, p. 138 [not *Alvania badia*, A. Adams, Ann. Mag. Nat. Hist. viii., 1861, p. 300].

Rissoa verconis, Tate, Trans. Roy. Soc. S.A., xxiii., 1899, p. 233. *Id.*, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvii., 1901, p. 392, pl. xxvii., f. 86.

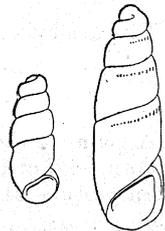


Fig. 79. Fig. 80.

Station 49.

One specimen from 63-75 fathoms off Port Kembla.

* Ten. Woods.—Proc. Roy. Soc. Tas., 1875 (1876), p. 29.

† Tate—Proc. Linn. Soc. N.S. Wales, 1901, xxvii., p. 459.

Family CALYPTRÆIDÆ.

CALYPTRÆA, *Lamarck*.

CALYPTRÆA CALYPTRÆFORMIS, *Lamk.*, sp.

Trochus calyptræformis, Lamk., Hist. Nat. Anim. s. vert., vii., 1822, p. 12.

Calyptræa calyptræformis, Tryon, Man. Conch., viii., 1886, p. 122, pl. xxxv., f. 96-9.

Station 49.

Peron, who discovered this species at Maria Island, Tasmania, described it as "une coquille intérieure, qui me semble devoir constituer un genre nouveau, voisin des *Trochus*, et dont une espèce assez semblable se retrouve fossile à Grignon près Paris."*

The genus or subgenus *Calyptræopsis*, proposed by Tate,† does not seem to differ from *Sigapatella*, created by Lesson for the reception of this species.‡

A few specimens from 63-75 fathoms off Port Kembla.

Family XENOPHORIDÆ.

XENOPHORA, *G. Fischer*.

XENOPHORA TATEI, *Harris*.

Xenophora (Tugurium) tatei, Harris, Brit. Mus. Cat. Tert. Moll. Austr., i., 1897, p. 254, pl. vii., f. 7a-b.

Stations 49, 57.

A broken shell, 30 mm. in diameter and apparently half grown, corresponds with actual fossil shells from Muddy Creek, with which I have compared it. This identification adds to the recent fauna another Tertiary survivor.

From 63-75 fathoms off Port Kembla ; from 54-59 fathoms off Wata Mooli ; and lately taken by Mr. G. H. Halligan and myself in 100 fathoms sixteen miles east of Wollongong.

* Peron—Voy. Terres Austr., i., 1807, p. 302.

† Tate—Trans. Roy. Soc. S.A., xvii., 1893, p. 330.

‡ Lesson—Voy. Coquille, Zool., ii., 1830, p. 389.

Family NATICIDÆ.NATICA, *Lamarck*.NATICA BEDDOMEI, *Johnston*.

Natica beddomei, Johnston, Proc. Roy. Soc. Tas., 1884 (1885), p. 222.

Natica effosa, Watson, Chall. Rep., Zool., xv., 1886, p. 439, pl. xxviii. f. 3.

Station 28.

One specimen from 22 fathoms off the Manning River.

NATICA SAGITTATA, *Menke*.

Natica sagittata, Menke, Moll. Nov. Holl. Spm., 1843, p. 10. *Id.*, Philippi, Conch. Cab., ii., Abth. 1, Natica, 1852, p. 108, pl. xv., f. 14. *Id.*, Watson, Chall. Rep., Zool., xv., 1886, p. 433.

Station 28.

Two shells from 22 fathoms off the Manning River.

Family EULIMIDÆ.EULIMA, *Risso*.

EULIMA MUNITA, sp. nov.

(Fig. 81.)

Stations 13, 57.

Shell pyramidal, imperforate, axis slightly curved, broad at the base, tapering to a sharp and slender point, thin, translucent and glossy. Colour white, the contained animal lending to the lower whorls a purple and to the upper an orange tinge. Whorls eleven, flattened, contracted at the suture and subangled at the base. The varices project as prominent buttresses: they

are irregularly disposed and may or may not continue from whorl to whorl. The surface is sculptured with shallow, sometimes punctate grooves. Aperture large, oblique, subquadrate, thin; outer lip thin, everted; inner lip spreading a callus sheet on the body whorl; columella broad, rather straight, deeply inserted. Length, 8 mm.; breadth, 3.75 mm.

A few living specimens were taken in 41-50 fathoms off Cape Three Points; off Wata Mooli in 54-59 fathoms.

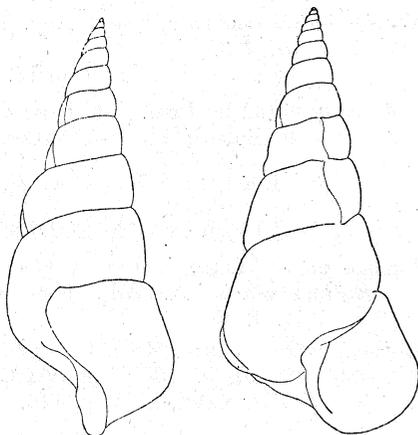


Fig. 81.

EULIMA AUGUR, *Angas*.

Eulima augur, Angas, Proc. Zool. Soc., 1865, p. 56. *Id.*, Sowerby, Conch. Icon., xv., 1866, Eulima, pl. vi., f. 47. *Id.*, Tate, Trans. Roy. Soc., S.A., xxii., 1898, p. 80.

Eulima proxima, Sowerby, Conch. Icon., xv., 1866, Eulima, pl. vi., f. 48 (*vide* Tate).

Station 37.

One example from 50-52 fathoms off Botany Bay.

MELANELLA, *Bowdich*.

Dall has suggested* the separation of the humpbacked Eulimas under the name of *Melanella*, Bowdich, 1822, a name which precedes *Eulima*, Risso, 1826.

MELANELLA COMMENSALIS, *Tate*, sp.

Eulima commensalis, Tate, Trans. Roy. Soc. S.A., xxii., 1898, p. 82, pl. iv. *bis.*, f. 2.

Station 13.

Previously collected, as noted in the original description, from Port Stephens.

Three examples from 41-50 fathoms off Cape Three Points.

* Dall—Bull. Mus. Comp. Zool., xviii., 1889, p. 376.

MELANELLA INDISCRETA, *Tate*, sp.

Eulima indiscreta, Tate, Trans. Roy. Soc. S.A., xxii., 1898, p. 82, pl. iv. bis., f. 3.

Station 13.

Already noted by Prof. Tate from Port Stephens.

A single specimen from 41-50 fathoms off Cape Three Points.

LEIOSTRACA, *H. & A. Adams*.LEIOSTRACA LODDERÆ, *Hedley*.

Eulima vitrea, Petterd, Journ. Conch., iv., 1884, p. 136 [not *Eulima vitrea*, A. Ad., Thes. Conch., ii., 1854, p. 799, pl. clxix., f. 35].

Eulima lodderæ (Tate, MS.), Lodder, Proc. Roy. Soc. Tas. 1898-1899 (1900), p. 135; repudiated, Tate, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 446.

(Fig. 82.)

Station 13.

Shell acicular, smooth, glossy, transparent or opaque, without varices. Colour: the opaque or semitransparent shells are milk-white, with a dull opaque band above the sutures, next above which is an indistinct, often interrupted orange line; another orange line runs round the periphery of the last whorl and tinges the outer lip. Whorls twelve, with straight sides, parted by a linear suture. Base attenuated. Aperture rather oblique, narrowly pyriform, effuse anteriorly, posteriorly subchannelled, a thin callus on the body whorl, columella slightly curved, thickened within. Length, 7.7 mm.; breadth, 1.2 mm.

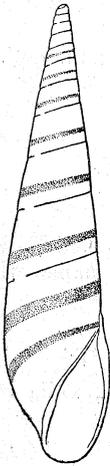


Fig. 82.

This species has a general resemblance to *L. bivittata*, H. & A. Ad.,* but as that is described as having from nine to ten whorls in a length of 14 mm., I consider it distinct. Mr. W. F. Petterd has kindly identified my specimen as his *Eulima vitrea*, of which the description suits a half grown *L. lodderæ*. The decision of Tate & May† that *E. vitrea*, Petterd, is *Leiostraca bivittata* seems to me not in accord with the proportions noted for each. Other allied species are *Leiostraca samoensis*, Crosse,‡ longer, and in proportion much

* H. & A. Ad.—Thes. Conch., ii., 1854, p. 804, pl. 170, f. 18, 19.

† Tate & May—Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 381.

‡ Crosse—Journ. de Conch., xv., 1867, p. 300, pl. xi., f. 3.

broader, and *Eulima acerrima*, Watson,* which has the same number of whorls as *L. subtilis* in half the total length.

A few specimens from 41-50 fathoms off Cape Three Points. A small series taken by Mr. A. U. Henn in $10\frac{1}{2}$ fathoms off Bow Reef, near Cape Sidmouth, North Queensland, possesses a third orange line around the base, but otherwise so closely agree that I regard them as belonging to this species.

PSEUDORISSOINA, *Tate & May.*

PSEUDORISSOINA EXIGUA, sp. nov.

(Fig. 83.)

Station 13.

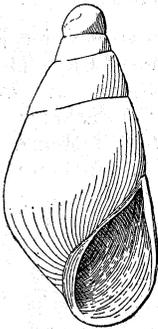


Fig. 83.

Shell small, smooth, glossy, solid, imperforate, ovate. Colour white. No sculpture. Whorls three, plus a swollen heterostrophe two-whorled protoconch, last whorl exceeding the remainder of the shell, subangled at the periphery. Aperture pyriform, slightly oblique, outer lip simple, columella broad, reflected, margins united by a callus. Height, 1.25 mm.; diam., 0.6 mm.

Six specimens from 41-50 fathoms off Cape Three Points.

STILIFER, *Broderip.*

STILIFER BRAZIERI, *Angas.*

Stylifer brazieri, Angas, Proc. Zool. Soc., 1877, p. 173, pl. xxvi, f. 12.

Station 48.

A shell containing the animal shows this species to possess an operculum, a feature at variance with the generic characters. If I have correctly identified the species, the original figure is a bad one. If respect were paid to it, and if the illustrations of small shells of this author were not known to be untrustworthy, the subject of this notice would be described as new.

A single specimen from 55-56 fathoms off Wollongong.

* Watson—Chall. Rep., Zool., xv., 1886, p. 513, pl. xxxvi., f. 1.

Family PYRAMIDELLIDÆ.

TURBONILLA, *Risso.*TURBONILLA SCALPIDENS,
Watson, sp.

Odostomia (Turbonilla) scalpidens,
Watson, Chall. Rep., Zool., xv.,
1886, p. 489, pl. xxxii, f. 1.

(Fig. 84.)

Stations 13, 35, 37, 49, 57.

A few specimens at each locality from 41-50 fathoms off Cape Three Points, 63-70 fathoms off Port Kembla, and 49-54 fathoms off Wata Mooli; 50-52 fathoms off Botany Bay; 22-38 fathoms off Port Hacking.

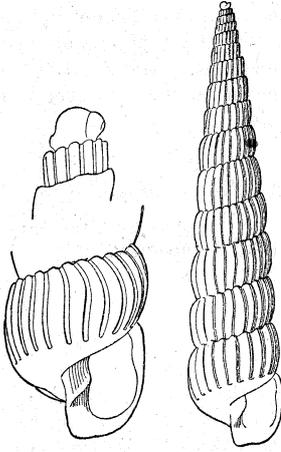


Fig. 84.

SYRNOLA, *A. Adams.*SYRNOLA MACROCEPHALA, *sp. nov.*

(Fig. 85.)

Station 49.

Shell smooth, subulate, slightly tapering, last whorl rather suddenly increasing, and sharply angled at the periphery. Colour pale straw, base and a subsutural band white. Apex apparently heterostrophe, following whorl swollen, next narrower; as the whorls progress they become slightly flatter. Whorls nine, parted by a deeply channelled suture. Aperture with a single slight fold. Length, 6 mm.; breadth, 1.5 mm.

A single specimen with a broken lip from 63-75 fathoms off Port Kembla.

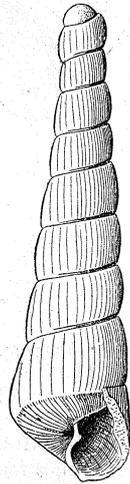


Fig. 85.

MYXA, *gen. nov.*

A genus of the Pyramidellidæ, umbilicate, with few whorls, no columella fold, and the lip produced anteriorly.

Type *M. exesa*.

This genus might be taken for *Niso*, if it were not for the heterostrophe apex; so that it bears the same relation to *Niso* as *Eulimella* does to *Eulima*.

MYXA EXESA, sp. nov.

(Fig. 86.)

Station 13.

Shell small, thin, translucent, smooth, conical. Colour white. Whorls slightly rounded, four and a half, besides a few whorled perpendicular heterostrophe apex. Suture channelled, periphery keeled, base flattened. Umbilicus broad and deep, infundibuliform, angled at the margin. Aperture elliptical, produced anteriorly in a spout. Length, 1.6 mm.; breadth, 0.8 mm.

Several specimens from 41-50 fathoms off Cape Three Points.

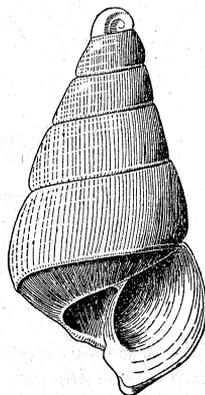


Fig. 86.

ODONTOSTOMIA, Jeffreys.

As the name *Odostomia* and *Odontostomia* are generally misunderstood, it may be well to here recall that Dall has pointed out* that *Odostomia* was proposed by Fleming† for certain land shells, and that strictly speaking it is a synonym of *Pupa*. *Odontostomia* was introduced by Jeffreys‡ in connection with a single species, the *Turbo plicatus* of Montagu.

ODONTOSTOMIA NUGATORIA, sp. nov.

(Fig. 87.)

Stations 13, 49.



Fig. 87.

Shell small, oblong. Colour white. Whorls four, plus a tilted heterostrophe apex. Spire subgradate. Sculpture: each adult whorl bears numerous stout projecting perpendicular ribs crossed by fine spiral grooves. Aperture subquadrate, plication more apparent in immature shells; columella reflected, lip anteriorly effuse. Base more or less perforate. Length, 2.2 mm.; breadth, 1.0 mm.

A few specimens from 41-50 fathoms off Cape Three Points, and from 63-75 fathoms off Port Kembla.

* Dall—Trans. Wagner Inst., iii., 1892, p. 248.

† Fleming—Edinburgh Encyclopædia, vii., 1813.

‡ Jeffreys—Malacological and Conchological Magazine, Part ii., 1839, p. 34.

Family SCALIDÆ.S C A L A, *Humphrey*.S C A L A M O R C H I, *Angas*.

Scala (Cirsotrema) morchi, Angas, Proc. Zool. Soc., 1871, p. 15, pl. i., f. 7 [not *Scalaria morchi*, Sowerby, Conch. Icon., xix., 1873, *Scalaria*, pl. x., sp. 76 = *Scalaria (Psychrosma) erronea*, Tapparone-Canefri, Journ. de Conch., xxiv., 1876, p. 155].

Stations 28, 33, 57.

This species exceeds the size indicated by its author, one of the "Thetis" specimens reaching ten whorls in a length of 11.5 mm. Tapparone-Canefri rightly pointed out that Sowerby's figure and description do not suit Angas' species, but, before burdening literature with a new name, he ought to have ascertained if that figure was based on fact or fiction.

From 22 fathoms off the Manning River, from 24-27 fathoms in the north end of the Newcastle Bight, and from 54-59 fathoms off Wata Mooli; in each case a single specimen.

Class STENOGLOSSA.

Family OLIVIDÆ.A N C I L L A, *Lamarck*.A N C I L L A O B L O N G A, *Sowerby*.

Ancillaria oblonga, Sowerby, Spec. Conch., 1830, p. 7, f. 38, 39.

Station 48.

One specimen from 55-56 fathoms off Wollongong.

O L I V E L L A, *Swainson*.O L I V E L L A B R A Z I E R I, *Angas*.

Olivella brazieri, Angas, Proc. Zool. Soc., 1877, p. 172, pl. xxvi., f. 6.

Station 28.

Angas described and figured this from an immature example. The "Thetis" collection shows the species as attaining a

length of 14.5 mm. and a breadth of 5 mm. in $5\frac{1}{2}$ whorls. It much resembles *O. leucozona*, Adams & Angas, from Tasmania, a smaller but proportionately broader shell. The records of *O. leucozona* from New South Wales are, I believe, erroneous.

Several specimens from 22 fathoms off the Manning River.

Family MARGINELLIDÆ.

MARGINELLA, Lamarck.

MARGINELLA KEMBLENSIS, sp. nov.

(Fig. 88.)

Station 49.

Shell narrowly biconical, solid, glossy, with an elevated spire, blunt at the apex. Colour milk white. Whorls five, swollen at the shoulder, thence flattened to the suture, and there somewhat constricted. Aperture narrow, almost linear, rounded and effuse anteriorly. Outer lip ascending at its insertion, strongly varixed, bearing within a single tubercle at a third of the length from the posterior end; columella with four widely spaced, well developed folds. Length, 5.2 mm., breadth, 2 mm.

Three specimens from 63-75 fathoms off Port Kembla.

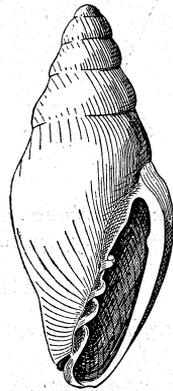


Fig. 88.

MARGINELLA TURBINATA, Sowerby.

Marginella turbinata, Sowerby, Thes. Conch., i., 1846, p. 385, pl. lxxv., f. 70, 71. *Cryptospira turbinata*, Jousseaume, Rev. Mag. Zool., (3), iii., 1875, p. 238.

Station 49.

Three specimens from 63-75 fathoms off Port Kembla.

MARGINELLA LÆVIGATA, Brazier (emend).

(Fig. 89.)

Marginella lavigata, Brazier, Proc. Linn. Soc. N.S. Wales, i., 1876 (1877), p. 225. *M. lavigata*, Hedley, Rec. Austr. Mus., iv., 1901, p. 123, pl. xvi., f. 5.

M. valida, Watson, Chall. Rep., Zool., xv., 1886, p. 267, pl. xvi., f. 3 (young).

Stations 13, 28, 37, 49, 57.

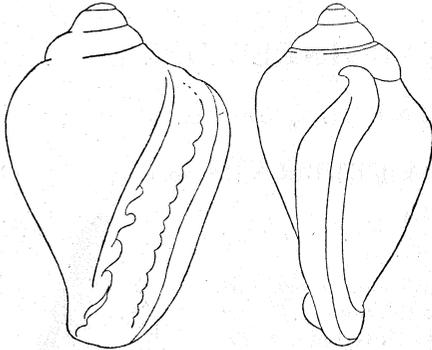


Fig. 89.

Specimens of this, from 24 fathoms off Cabbage Tree Island, Port Stephens, in the Museum were labelled by Mr. J. Brazier as "*Erato angistoma*," Gray,* which it certainly is not. Probably that species ought to be expunged from our list.†

Numerous specimens from 63-75 fathoms off Port Kembla, and a few from 43-50 off Cape Three Points,

from 22 fathoms off the Manning River, from 50-52 fathoms off Botany Bay, from 54-59 fathoms off Wata Mooli.

MARGINELLA OCHRACEA, *Angas*.

Marginella ochracea, Angas, Proc. Zool. Soc., 1871, p. 14, pl. i., f. 6.

Egouena ochracea, Jousseume, Rev. Mag. Zool., (3), iii., 1875, p. 197.

Stations 13, 22, 49.

Numerous specimens from 63-75 fathoms off Port Kembla, and from 22 fathoms off the Manning River, from 41-50 fathoms off Cape Three Points.

MARGINELLA MUSTELINA, *Angas*, sp.

Hyalina (Volvarina) mustelina, Angas, Proc. Zool. Soc., 1871, p. 14, pl. i., f. 5.

Marginella stanislav, Ten. Woods, Proc. Roy. Soc. Tas., 1876 (1877), p. 133. *Id.*, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 362, pl. xxvi., f. 82.

Station 49.

In support of the above novel synonymy, it may be remarked that this species is subject to much variation. The length ranges

* Gray, in Sowerby—Conch. Illust., 1841, f. 51.

† Whitelegge—Journ. Roy. Soc. N.S. Wales, xxiii., 1889 (1890), p. 250.

from 7·5 to 5 mm.; the colour pattern from the ornate form figured by Angas to pure white; while the lip may be smooth as described by Woods, or denticulated as stated by Angas. The name *stanislas* may be retained in a varietal sense for the large white form which in warmer latitudes is restricted to deep water.

In 63-75 fathoms off Port Kembla.

MARGINELLA STILLA, sp.nov.

(Fig. 90.)

Station 49.

Shell drop-shaped, solid, glossy, with slightly elevated spire. Colour: the dorsal surface cream, varix and ventral surface white. Whorls four. Aperture narrow; outer lip with a strong varix, mounting to the suture of the penultimate whorl, within finely denticulate, columella with four well developed teeth. Length 5, breadth 2·5 mm.

M. agapeta, Watson, which I have not seen, must resemble this, but that has a different shape and three columella plaits. There is a variety of *M. stilla* in which the spire is more depressed than in the type figured, so that the length of the shell hardly exceeds that of the aperture.

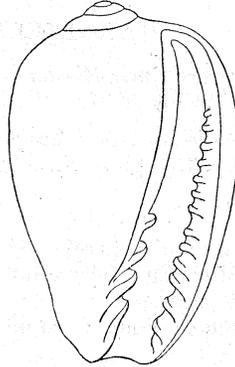


Fig. 90.

Apparently this is a common and widely distributed species on the continental shelf. The "Thetis" took it in 63-75 fathoms off Port Kembla, and it was previously obtained in 24 fathoms off Cabbage Tree Island, Port Stephens.

MARGINELLA STRANGEI, Angas.

Marginella strangei, Angas, Proc. Zool. Soc., 1877, p. 172, pl. xxvi., f. 8. *Id.*, Hedley, Proc. Linn. Soc. N.S. Wales, xxvii., 1902, p. 18, text figure.

Stations 28, 49.

From 22 fathoms off the Manning River, and from 63-75 fathoms off Port Kembla. Previously taken in 24 fathoms off Cabbage Tree Island, Port Stephens.

MARGINELLA ANGASI, *Brazier.*

- Marginella angasi* (Brazier), Crosse, Journ. de Conch., xviii., 1870, p. 304. *Id.*, Crosse, *loc. cit.*, xix., 1871, p. 324, pl. xii., f. 3.
Granula angasi, Joussemae, Rev. Mag. Zool., (3), iii., 1875, p. 247.

Stations 13, 22, 49.

This species ranges north at least as far as the Thirteenth Parallel. Watson incorrectly refers to this as having a single columella fold; the only difference apparent to me between his *M. pachia** and *M. angasi* is that the former is twice the size of the latter.

Off Cape Three Points in 63-75 fathoms, and off Port Kembla in 41-50 fathoms, off the Manning River in 22 fathoms.

MARGINELLA PUMILIO, *Tate & May.*

- Marginella minutissima*, Ten. Woods, Proc. Roy. Soc. Tas., 1875 (1876), p. 27.
M. pumilio, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 363, pl. xxvi., f. 79.

Station 49.

Tate and May reject the name of Tenison Woods as preoccupied by Michelin; I have not been able to ascertain where Michelin's name appeared.

One specimen from 63-75 fathoms off Port Kembla.

MARGINELLA MULTIPLICATA, *Tate & May.*

- Marginella multiplicata*, Tate & May, Trans. Roy. Soc. S.A., xxiv., 1900, p. 91. *Id.*, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 364, pl. xxvii., f. 88.

Station 49.

An immature specimen from 63-75 fathoms off Port Kembla.

MARGINELLA NYMPHA, *Brazier.*

- Marginella nympha*, Henn & Brazier, Proc. Linn. Soc. N.S. Wales, (2), ix., 1894, p. 168, pl. xiv., f. 2.

Station 13.

Two specimens from 41-50 fathoms off Cape Three Points.

* Watson—Chall. Rep., Zool., xv., 1885, p. 265, pl. xvi., f. 5.

MARGINELLA CRATERICULA, *Tate & May*.

Marginella cratericula, Tate & May, Trans. Roy. Soc. S.A., xxiv., 1900, p. 91. *Id.*, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 363, pl. xxvi., f. 74.

Stations 28, 49.

One example from 63·75 fathoms off Port Kembla ; another from 22 fathoms off the Manning River.

While on the subject of *Marginella* I may remark that in the use of *M. ovulæformis*, Tate & May,* were anticipated by *M. ovuliformis*, D'Orb.† I therefore suggest for the Tasmanian shell the epithet *Marginella ventricosa*.

MARGINELLA WHANI, *Pritchard & Gatliff*.

Marginella whani, Pritchard & Gatliff, Proc. Roy. Soc. Vict., (2), xiii., 1900, p. 137, pl. xxi., f. 5, 6.

Station 49.

The "Thetis" shells are 6·5 mm. long and 3 mm. broad, whereas the type is 11 mm. long and 5 mm. broad. Except for the difference in size, the New South Wales shells answer well to the original figure and description. In several cases, e.g., *Volvula rostrata*, A. Ad., specimens from New South Wales are dwarfs compared to those from the southern States. Mr. A. Hamilton tells me that he has remarked analogous cases in New Zealand.

From 63·75 fathoms off Port Kembla ; previously taken in 24 fathoms off Cabbage Tree Island, Port Stephens, and recently by Mr. G. H. Halligan and myself in 100 fathoms sixteen miles east of Wollongong.

MARGINELLA OLIVELLA, *Reeve*.

Marginella olivella, Reeve, Conch. Icon., xv., 1865, pl. xxv. f. 140 [not *Marginella olivella*, Ortmann, Rep. Princeton Univ. Exped. Patagonia, iv., 1902, p. 225, pl. xxxv., f. 3.]

Marginella simplex, Reeve, Conch. Icon., xv., 1865, pl. xxii., fig. 115 [not *Marginella simplex*, F. E. Edwards, Mon. Eocene Moll., Gt. Brit., Part 3 (Pal. Soc. viii.), 1854, p. 143, pl. xviii., fig. 8a-c].

* Tate & May—Trans. Roy. Soc. S.A., xxiv., 1900, p. 91.

† D'Orbigny—Moll. Cuba., ii., 1853, p. 101, pl. xx., f. 34-5.

Cryptospira infelix, Jousseaume, Rev. Mag. Zool., (3), iii., 1875, p. 238.

Stations 28, 33, 49.

A few specimens from 22 fathoms off the Manning River, 24-27 fathoms in the north end of the Newcastle Bight, and 63-75 fathoms off Port Kembla.

Family VOLUTIDÆ.

VOLUTA, Linne.

VOLUTA UNDULATA, Lamarck.

Voluta undulata, Lamarck, Ann. Mus. Hist. Nat., v., 1804, p. 157, pl. xii., f. 1a, b.

Voluta undulosa, Peron, Voy. Terres. Australes, i., 1807, p. 302.

Station 25.

The bibliography of this species is extensive; most of the earlier references are given by Deshayes,* and most of the later by Pritchard and Gatliff.†

One living specimen from 42-48 fathoms off Newcastle.

VOLUTA FUSIFORMIS, Swainson.

Voluta fusiformis, Swainson, Appendix to Bligh's Catalogue, 1822. [Reprinted, Exotic Conchology, 2nd Ed., 1841, p. 37.] *Id.*, Sowerby, Thes. Conch., ii., 1844, p. 208, pl. liv., f. 100.

Voluta sowerbyi, Kiener, Coq. Viv., 1839, *Voluta*, p. 47, pl. 1. [fide Crosse, Journ. de Conch., xix., 1871, p. 297], not *Voluta fusiformis*, Kiener, 1839.

Stations 22, 34.

A few dead shells from 36-39 fathoms off Port Jackson, and from 26-40 fathoms in the Newcastle Bight.

VOLUTA MARMORATA, Swainson.

Voluta marmorata, Swainson, Exotic Conchology, 1822, pl. i.

Station 13.

One specimen alive from 41-50 fathoms off Cape Three Points.

* Deshayes—Hist. Nat. Anim. s. vert., x., 1844, p. 401.

† Pritchard & Gatliff—Proc. Roy. Soc. Vict., x., (2), 1898, p. 280.

VOLUTA MAGNIFICA, *Chemnitz*.

Voluta magnifica, Chemnitz, Conch. Cab., xi., 1795, p. 8, pl. 174, 175, f. 1693, 1694.

Station 25.

The statement of Chemnitz that this species inhabits Norfolk Island was copied by subsequent authors, but is, I believe, incorrect.

Alive from 42-48 fathoms off Newcastle.

VOLUTA MAMILLA, Gray.

Voluta mamilla, Gray in Sowerby, Thes. Conch., i., 1844, p. 207, pl. 1, f. 57, 58. *Id.*, Dautzenberg, Journ. de Conch., xlix., 1901, p. 10, pl. ii. f. 1.

Voluta mammilla, Sowerby, Proc. Zool. Soc., 1844, p. 149.

Stations 37, 44.

A specimen from station 37 is larger than any record, being 293 mm. (11½ inches) long and 155 broad; the weight is 12½ oz. For its size the species is thin and light.

Mr. J. Milligan described* this shell as used by the blacks of Circular Head, Tasmania, for carrying water in the same way that the Queensland Aborigines employ *Melo*.

Alive from 50-52 fathoms off Botany Bay, and dead from 49-50 fathoms off Coogee.

MICROVOLUTA, *Angas*.MICROVOLUTA AUSTRALIS, *Angas*.

Microvoluta australis, Angas, Proc. Zool. Soc., 1877, p. 35, pl. v., f. 2. *Id.*, Brazier, Ann. Rept. Austr. Mus. for 1881 (1882), p. 20, 21. *Id.*, Tryon, Man. Conch., iv., 1882, p. 105, pl. xxxi., f. 151, 152.

Voluta minima, Sowerby, Thes. Conch., v., 1887, p. 300, pl. 515, f. 86.

Stations 23, 49.

Taken in 16-19 fathoms in the Newcastle Bight, and in 63-75 fathoms off Port Kembla. Brazier has also reported it from 35 fathoms off Broughton Islands, and from 24 fathoms off Cabbage Tree Island.

* Milligan—Proc. Roy. Soc. V.D. Land, 1854, p. 159.

Family MITRIDÆ.MITRA, *Lamarck*.MITRA STRANGEI, *Angas*.

Mitra (Caucilla) strangei, Angas, Proc. Zool. Soc., 1867, p. 110,
pl. xiii., f. 4.

Stations 37, 49.

Mitra franciscana, Ten. Woods,* is very closely allied to this.

Several specimens from 63-75 fathoms off Port Kembla, and one from 50-52 fathoms off Botany.

TURRIS, *Montfort*.TURRIS TASMANICA, *Ten. Woods*, sp.

Mitra tasmanica, Ten. Woods, Proc. Roy. Soc. Tas., 1875 (1876),
p. 136.

Station 49.

I submitted a specimen, dredged by Mr. G. H. Halligan and myself in 100 fathoms, sixteen miles east of Wollongong, to Mr. W. L. May, who, having compared it with the type, writes (27 July, 1903):—"The shell (from Wollongong) is just about the same form as ours (*i.e.*, the Tasmanian), though smaller; it however differs considerably in detail, it has flatter and more tabulated whorls, and the whole shell has a sharper, more clean cut appearance. The ribs are about the same, only more distinct, but whilst in our shell the cross sculpture consists of fine close striae, this has sharp little keels, separated by an appreciable interval, and therefore very much less numerous. It might perhaps be considered a distinct variety."

Two young shells from 63-75 fathoms off Port Kembla. Previously dredged off Cabbage Tree Island, Port Stephens.

* Ten. Woods—Proc. Roy. Soc. Tas., 1876 (1877), p. 133.

*Family FUSIDÆ.*FUSUS, *Lamarck.*

FUSUS WAITEI, sp. nov.

(Pl. xxxvii.)

Stations 12, 56.

Shell large, fusiform, spire gradate. Colour dull white. Whorls exceeding eight; angled at the shoulder, thence concave to the suture. Sculpture: broad rounded ribs, numbering fourteen on the last whorl, project boldly at the shoulder, descend perpendicularly and vanish gradually on the base. These and the rest of the shell are crossed by equally spaced strong spiral cords. Under the lens growth striæ are seen to roughen the whole surface. Aperture oval, on the inner lip the surface is excavated and smoothed. Canal long, open, sinuate. Length, 150 mm.; breadth, 60 mm.

The nearest ally appears to be *Fusus crebriliratus*, Reeve,* than which the novelty is larger, broader, and has more developed ribs.

One specimen, the type, from 79-80 fathoms off Botany Bay; and another from 23-34 fathoms off Cape Three Points.

*Family FASCIOLARIIDÆ.*FASCIOLARIA, *Lamarck.*FASCIOLARIA AUSTRALASIA, *Perry*, sp.*Pyrula australasia*, Perry, Conchology, 1811, pl. liv., f. 1.

Stations 41, 44, 56.

This species has not hitherto been found upon this coast. Verco has stated that:—"The shell which has hitherto been considered as *F. fusiformis* among local collectors is only a comparatively smooth variety of *F. coronata*." The usual acceptation of *F. fusiformis* was in my mind when I wrote† that *Pyrula australasia*, Perry, was *Fasciolaria fusiformis*, Valenciennes.

* Reeve—Conch. Icon., iv., Fusus, 1847, pl. v., f. 20.

† Hedley—Proc. Linn. Soc. N.S.W., xxvii., 1902, p. 27.

Off Coogee in 49-50 fathoms; off Wata Mooli in 52-71 fathoms; and off Botany Bay in 79-80 fathoms.

FASCIOLARIA AUSTRALASIA, var. CORONATA,
Lamarck.

Fasciolaria coronata, Lamarck, Hist. Nat. Anim. s. vert., vii., 1822, p. 120. *Id.*, Kiener, Coq. Viv., Fasciolaria, 1840, p. 9, pl. ix., f. 1. *Id.*, Verco, Trans. Roy. Soc. S.A., xix., 1895, p. 107, pl. iii. f. 3 (radula).

Station 46.

Off Jibbon in 50-66 fathoms.

Family BUCCINIDÆ.

SIPHONALIA, *A. Adams.*

SIPHONALIA MAXIMA, *Tryon.*

Siphonalia maxima, Tryon, Man. Conch., iii., 1881, p. 135, pl. 54, f. 355.

(Pl. xxxviii.)

Stations 13, 41, 44.

Tryon's figure and description are both unsatisfactory. The species attains greater size than he indicates; a decollated shell before me, of which $8\frac{1}{2}$ whorls remain, is 237 mm. long and 100 mm. broad, thus exceeding the original dimensions by about two inches. In general shape narrow fusiform; whorls of the spire angled in the middle, the angle cut into 12-14 sharp projecting nodules. On last whorl the angle occurs above the flattened periphery, base excavated. Ground colour cream on which chocolate appears everywhere in dots or lines. On the base these gather into obscure bands; between the peripheral nodules and on the tip of the canal the chocolate appears in darker patches. Entire surface covered with flat topped spiral riblets parted by wide and shallow furrows. Outer lip denticulate at the edge by external sculpture, liriate within. Inner lip a mere smear of callus. Canal broad, open, varying from nearly straight to flexed in an S curve.

The series at my disposal is imperfect, but so far as it goes it leads me to dissent from the following opinion so emphatically expressed by Prof. Tate* and endorsed by Pritchard & Gatliff:†

* Tate—Trans. Roy. Soc. S.A., xiv., 1891, p. 257.

† Pritchard & Gatliff—Proc. Roy. Soc. Vict., (2), x., 1898, p. 273.

"After lengthened study of considerable material and having traced up specimens of *S. tasmaniensis*, from three-fourths of an inch in length to those of seven inches, I have no hesitation in regarding *S. maxima* as the senile stage of *S. tasmaniensis*." In all stages *S. maxima* appears to me to be of more slender proportions, though absolutely larger, the whorls to have a more acute angle with fewer bolder nodules, and the canal to be longer and more bent.

The species seems to be not distantly related to *Megalatractus aruanus*, Linn.

Alive from 41-50 fathoms off Cape Three Points; dead from 52-71 fathoms off Wata Mooli, and 49-50 fathoms off Coogee. In 1891 the Museum received specimens taken alive off Broken Bay by the Deep Sea and Trawling Syndicate.

CYLLENE, *Gray*.

CYLLENE LACTEA, *Adams & Angas*.

Cyllene lactea, Adams & Angas, Proc. Zool. Soc., 1863, p. 422.
Id., Hedley, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 19,
pl. ii., f. 10.

Station 33.

One dead shell from 24-27 fathoms at the north end of the Newcastle Bight.

FASCINUS, gen. nov.

A genus of the *Buccinidae* related to *Hindsia*. Animal unknown. Shell oblong, with a large protoconch and four adult whorls. Sculpture: coarse spirals crossed by delicate radials. Spire unbroken by varices, but a well developed varix stands behind the aperture. In the posterior angle of the mouth a tubercle, on the columella no plications. Canal broad, short and open.

Type, *F. typicus*, Hedley.

Without the aid of the soft parts this genus cannot be finally classified. In several respects it recalls *Colubraria*, but lacks the varices on the upper whorls. Again, it shares some aspects of *Nassa*, but the pattern of its sculpture is foreign to that group. The large apex and absence of columella plications sever it from *Hindsia*.

FASCINUS TYPICUS, sp. nov.

(Fig. 91).

Stations 49, 55.

Shell oblong elevated, rather thin. Whorls four (excluding the protoconch) wound obliquely, contracted at the suture. Protoconch dome-shaped, smooth, glossy, of two whorls, the first minute, the second large. Colour uniform pale yellow. Sculpture: the earlier whorls have each three elevated spiral keels, the upper smaller; below the periphery of the last whorl is another large keel, followed by a series of successively diminishing close spirals. The spiral sculpture is overridden by fine widely spaced radial threads. Aperture fortified by an expanded varix of the *Lotorium* pattern. Throat smooth. Canal short, slightly recurved. Length, 6.25 mm.; breadth, 3 mm.

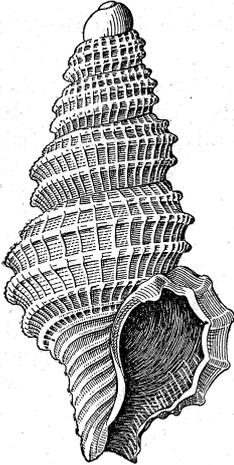


Fig. 91.

One (the type) from 63-75 fathoms off Port Kembla; a young shell 11-15 fathoms off the Crookhaven River. Also dredged in 100 fathoms by Mr. G. H. Halligan and myself sixteen miles east of Wollongong.

*Family NASSIDÆ.*N A S S A, *Lamarck.*NASSA JACKSONIANA, *Quoy & Gaimard, sp.*

Buccinum jacksonianum, Quoy & Gaim., Voy. Astrolabe, Zool., ii., 1832, p. 452, pl. xxxii., ff. 28, 29 [not *Buccinum jacksonianum*, Kiener, Coq. Viv., ix., 1834, p. 64, pl. xix., f. 3—*vide* Deshayes, Hist. Nat. Anim. s. vert., x., 1844, p. 184, footnote].

Stations 13, 22, 33, 35, 37, 49, 57.

The variety taken by the "Thetis" is small and solid, apparently the form described by Tenison Woods as *Nassa tasmanica*.*

* Ten. Woods—Proc. Roy. Soc. Tas., 1875 (1876), p. 150.

Abundant in all stages of growth from 41-50 fathoms off Cape Three Points; from 63-75 fathoms off Port Kembla; from 22 fathoms off Manning River; from 54-59 fathoms off Wata Mooli; from 50-52 fathoms off Botany Bay; from 24-27 fathoms in the north end of the Newcastle Bight; and from 22-38 fathoms off Port Hacking.

NASSA PERITREMA, *Ten. Woods.*

Nassa peritrema, Ten. Woods, Proc. Linn. Soc. N.S. Wales, iv., 1880, p. 21, pl. iv., fig. 5, 5a.

Stations 28, 33.

One specimen from 22 fathoms off the Manning River, two from 24-27 fathoms in the north end of the Newcastle Bight.

Family COLUMBELLIDÆ.

COLUMBELLA, *Lamarck.*

COLUMBELLA FILOSA, *Angas, sp.*

Æsopus filusus, Angas, Proc. Zool. Soc., 1867, p. 111, pl. xiii., fig. 6.

Stations 33, 57.

From 24-27 fathoms at the north end of the Newcastle Bight; and from 54-59 fathoms off Wata Mooli.

COLUMBELLA ATTENUATA, *Angas.*

Columbella attenuata, Angas, Proc. Zool. Soc., 1871, p. 14, pl. i., f. 4.

Stations 33, 49.

From 24-27 fathoms at the north end of the Newcastle Bight; and 63-75 fathoms off Port Kembla.

COLUMBELLA LINCOLNENSIS, *Reeve.*

Columbella lincolnensis, Reeve, Conch. Icon., xi., 1859, pl. xxix., f. 184a, b.

Stations 13, 28, 48, 57.

From 41-50 fathoms off Cape Three Points; from 22 fathoms off the Manning River; from 54-59 fathoms off Wata Mooli; and from 55-56 fathoms off Wollongong.

COLUMBELLA ANGASI, *Brazier.*

Columbella interrupta, Angas, Proc. Zool. Soc., 1865, p. 56, pl. ii., ff. 9, 10 [not *Columbella interrupta*, Gaskoin, Proc. Zool. Soc., 1851, p. 3].

Columbella angasi, Brazier, Proc. Zool. Soc., 1871, p. 322.

Station 59.

One specimen from 54-59 fathoms off Wata Mooli.

COLUMBELLA PLURISULCATA, *Reeve.*

Columbella plurisulcata, Reeve, Conch. Icon., xi., 1859, pl. xxxvi., f. 233.

Station 41.

This species is an addition to the Australian fauna. I owe the recognition of it to Mr. Stephen Pace, who kindly identified a specimen of it I collected in Middle Harbour. I have since taken it on the beach at Dudley, New South Wales.

One dead shell from 52-71 fathoms off Wata Mooli.

Family MURICIDÆ.

MUREX, *Linneé.*

MUREX DAMICORNIS, sp. nov.

(Fig. 92.)

Stations 44, 49, 52.

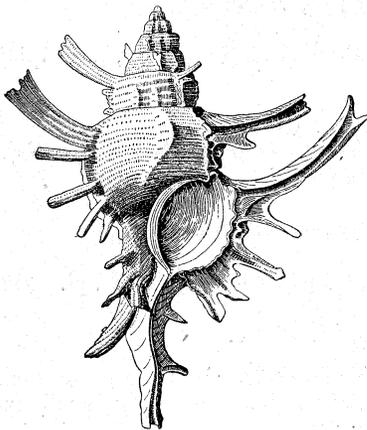


Fig. 92.

Shell fusiform, thin, spire elevated. Colour drab-grey, with a purplish tinge on the varices. Whorls six, exclusive of the protoconch, rounded, flattened above the shoulder, contracted at the suture. Sculpture: on each whorl are three varices which follow obliquely down the spire. Each varix has at the shoulder a long, simple, upcurved, broad, flattened, hollow spine, bi- or trifid at the tip; from its base springs a short spine, followed by three separate short spines. On the canal are three

similar small spines. The last whorl has one, the others two, intervariceal tubercles. The whole surface is overrun by close, spiral, squamose threads, which multiply by intercalation, and become finer on the last whorl. Protoconch smooth, elevated, two-whorled. Aperture round, posteriorly with a tubercle followed by a deep notch, outer lip advanced beyond the varix, crenulated with double denticules on the inner edge. Columella broad, arched, its edge projecting. Canal long, upcurved, slit narrow. Length, 56 mm.; breadth (without the spines) 23 mm.

Murex cervicornis, Lamarck, was recorded by Brazier* as taken by Messrs. H. Prince and T. Haylock off Sydney Heads in 90 fathoms. The specimen referred to is now in the Australian Museum, and certainly belongs to *M. damicornis*. The only other mention of *M. cervicornis* on our coast† no doubt refers also to this species. *Murex cervicornis* ought, therefore, to be erased from the list of New South Wales Mollusca, and *M. damicornis* substituted for it.

The novelty may be classified as intermediate between *M. axicornis*, Lamarck, and *M. reticornis*, Martens.

Dredged in 49-50 fathoms off Coogee; in 19-20 fathoms in the Shoalhaven Bight; and in 63-75 fathoms off Port Kembla.

MUREX DENUDATUS, Perry, sp.

Triplex denudata, Perry, Conchology, 1811, pl. vii., f. 2. *Id.*, Hedley, Proc. Linn. Soc. N.S. Wales, xxvii., 1902, p. 26.

Murex palmiferus, Sowerby, Proc. Zool. Soc., 1840, p. 142. *Id.*, Reeve, Conch. Icon., iii., Murex, 1845, pl. iv., f. 20.

Station 55.

Mr. J. H. Gatliff‡ prefers to call this species *Murex abortivus*, Perry. To my mind the figure of that indicates a species of a different group of *Murex*.

One specimen from 11-15 fathoms off the Crookhaven River.

TROPHON, Montfort.

TROPHON LAMINATUS, Petterd.

Trophon laminatus, Petterd, Journ. Conch., iv., 1884, p. 136.

* Brazier—Austr. Mus. Cat., xv., 1893, p. 54.

† Angas—Proc. Zool. Soc., 1877, p. 179.

‡ Gatliff—Vict. Nat., xix., 1902, p. 75.

Murex laminatus, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, pp. 352, 453, pl. xxiii., f. 3.

Stations 13, 37, 49.

Judging from an apparently adult example, 7·5 mm. in length and 3·5 in breadth, this species seems to me more suitably placed in *Trophon* than in *Murex*.

A few examples occurred in 63-75 fathoms off Port Kembla; off Botany Bay in 50-52 fathoms; and one in 41-50 fathoms off Cape Three Points.

TROPHON SIMPLEX, sp. nov.

(Fig. 93.)

Stations 13, 35, 37, 49, 55, 57.

Shell small, regularly fusiform. Colour cinnamon-brown, paler at the apex and canal. Besides the two-whorled protoconch there are three adult whorls which are rather long and rounded. Suture impressed. Sculpture: on the spire are—first two then three—strong spirals which on the last whorl increase to about eight. The longitudinals commence on the antipenultimate as close, bold ribbing, imitating varices; in some individuals the radial sculpture fades away on the later whorls; in other instances, as in the shell figured, strong longitudinals cross the spirals, producing nodules at the junction. Behind the aperture a strong outstanding varix occurs. Aperture oval, neither ridged nor furrowed within, inner lip projecting a narrow rim free from the body whorl. Canal long, straight and open. Length, 8 mm.; breadth, 3·8 mm.



Fig. 93.

One or two examples each from 63-75 fathoms off Port Kembla (type); 41-50 fathoms off Cape Three Points; 50-52 fathoms off Botany Bay; 54-59 fathoms off Wata Mooli; 11-15 fathoms of Crookhaven River; and 22-38 fathoms off Port Hacking. Also taken by Mr. G. H. Halligan and myself in 100 fathoms sixteen miles east of Wollongong.

K A L Y D O N, *Hutton*.

KALYDON PAIVÆ, *Crosse*, sp.

Trophon paivae, Crosse, Journ. de Conch., xii., 1864, p. 278, pl. xi., f. 7.

Trophon hanleyi, Angas, Proc. Zool. Soc., 1867, p. 110, pl. xiii., f. 1.

Trophon australis, Ten. Woods, Proc. Roy. Soc. Tas., 1875 (1876), p. 136.

Trophon assisi, Ten. Woods, Proc. Roy. Soc. Tas., 1876 (1877), p. 132.

Trophon squamosissima, Ten. Woods, Proc. Roy. Soc. Tas., 1878 (1879), p. 33.

Peristernia paiva, Tate, Trans. Roy. Soc. S.A., x., 1888, p. 154.

Stations 28, 33, 55.

Considerable variation occurs in this species. In the typical form the shell is solid, short and broad, angled at the shoulder by eight well developed longitudinal ribs, the aperture purple or white with a row of nodules within; it lives on rocks at low water. Another aspect of the species is a long, slender, thin shell, the longitudinal ribs evanescent, and aperture white without nodules; this one inhabits mud flats. *Trophon squamosissima* is an extreme form from deep water.

From 22 fathoms off the Manning River; 24-27 fathoms in the Newcastle Bight; and 11-15 fathoms off the Crookhaven River.

TYPHIS, *Montfort.*

TYPHIS SYRINGIANUS, sp. nov.

(Fig. 94.)

Stations 13, 27, 28, 35, 49, 57.

Shell small, rather solid, ovate. Whorls five, shelved at the shoulder. Colour pale brown. Sculpture: altogether twenty double varices, each composed of two evenly spaced elevated folds which fuse at the base, and, uniting in an arch above, project a short, backwardly bent pipe, at the shoulder. In the hollow between each double varix occurs the scar of a former aperture. Fine growth lines extend over the whole surface. Protoconch elevated, smooth, of a whorl and a half. Aperture oval, peristome continuous, produced within the varix; canal short, hardly curved. Length, 9; breadth, 5.5 mm.

The species here described has been mistaken by Tenison Woods,* and several subsequent writers, for the South African *T. arcuatus*, Hinds. The latter is described† as five and one-half lines long, which dimension considerably exceeds the Australian shell.

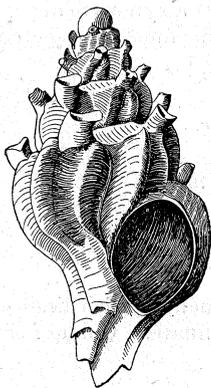


Fig. 94.

* Ten. Woods—Proc. Roy. Soc. Tas., 1876 (1877), p. 132.

† Hinds—Proc. Zool. Soc., 1843, p. 19.

It appears from the figures* which Hinds gave that the Australian shell differs from *T. arcuatus* by more numerous, closer and more upright folds, shorter and straighter canal, duller colour and less prominent apex.

The literary history of this species and the next has been related in full by Brazier.†

A doubtful Australian *Typhis* is *Murex (Trophon) fruticosus*, Gould,‡ ascribed to New Holland in the original description,§ and finally placed by its author in *Typhis*.|| Tryon includes Gould's species as a synonym of *Murex noduliferus*, Sby,¶

Dredged off Cape Three Points 41-50 fathoms (type); off the Manning River 22-23 fathoms; off Port Hacking 22-28 fathoms; off Wata Mooli 54-59 fathoms; and off Port Kembla 63-75 fathoms.

TYPHIS PHILLIPENSIS, *Watson* (emend).

Typhis cleryi, Sowerby, Thes. Conch., iii., 1866, p. 320, pl. 284, f. 14 [not *Murex (Typhis) cleryi*, Petit, Revue Zool., iii., 1840, p. 327].

Typhis philippensis, Watson, Chall. Rep., Zool., xv., 1886, p. 162, pl. x., f. 4.

Station 27.

The example figured by Watson was shorn of many tubes. On the ground that the Brazilian species called *T. cleryi* by Petit had previously received a name from Broderip, Tryon proposed to resume the name *T. cleryi* as of Sowerby for the Australian species. By the modern zoological rule of once a synonym always a synonym, Sowerby's inherently defective name must be rejected.

From 22-23 fathoms off the Manning River.

PURPURA, *Bruguiere*.

PURPURA SERTATA, sp. nov.

(Figs. 95, 96.)

Stations 13, 37, 49.

Shell small, solid, biconical, profusely ornamented with lines of erect scales, spire tabulate, canal produced, sinuate. Colour: the

* Hinds—Zool. Sulphur, ii., 1844, pl. iii., f. 1, 2.

† Brazier—Austr. Mus. Cat., xv., 1893, p. 72.

‡ Gould—U.S. Explor. Exped., xii., Moll., 1852, p. 234, pl. xvii., f. 287.

§ Gould—Proc. Boston Soc. Nat. Hist., iii., 1849, p. 143.

|| Gould—Otia, 1862, p. 245.

¶ Tryon—Man. Conch., ii., 1880, p. 110.

scales white, the shell pale purple. Whorls three, plus a five-whorled sinusigera protoconch. Sculpture: there are seven or eight obscure longitudinal ribs, marked by the scales in perfect shells, and apparent only on worn specimens. Along the angle of the shoulder runs a line of subtubular imbricating scales, each expanding an erect hood, from under which issues the succeeding scale. Beneath are six spiral lines of much smaller scales, each connected by lamellæ, with the scales above and below. Between the suture and the shoulder are two similar lines. The protoconch is of the "sinusigera" type, with four keels on the last whorl, two of which ascend the spire; the two first whorls smooth, the others crossed obliquely by numerous delicate lamellæ which cross the keels; the aperture

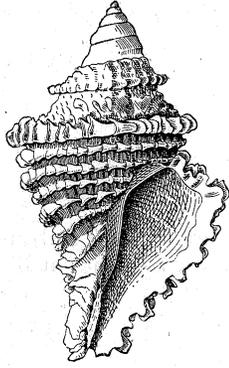


Fig. 95.

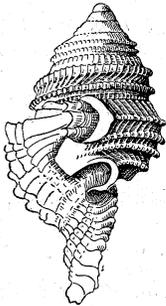


Fig. 96.

is thickened and reflected, a peripheral tongue intervenes between two deep bays, within which the adult sculpture develops. Length of specimen figured, 6.5 mm.; breadth, 4.5 mm. Another and worn specimen—length, 9 mm.; breadth, 4.5 mm.

Probably the largest of the series before me is still immature, and I have, therefore, refrained from describing the aperture. Though similar sculpture is described by Watson in *Murex aedonius*, by Pritchard and Gatliff in *Coralliophila wilsoni*, and prevails in *Trophon flindersi*, Ad. & Angas, it appears to distinguish the present species among *Purpura*. Had not my material included the protoconch, I should have referred the species to *Murex*, but the sinusigera apex claims for it a place in *Purpura*. I share the opinion of my friend, H. L. Kesteven, who, referring to the protoconch of *Purpura tritoniformis*, concludes that:—"Since the only three embryos of this extraordinary type that have been followed to their later stages have proved to be those of *Purpura*, such an apex may surely be taken as a guide to the generic position."* The sculpture of this sinusigera distinguishes it specifically from those already known.

Purpura is regarded as characteristic of the zone between tide marks; I do not know that it has before been noted from so deep as 100 fathoms.

* Kesteven—Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 537.

A few specimens occurred off Port Kembla in 63-75 fathoms; off Botany Bay in 50-52 fathoms; and one embryo off Cape Three Points in 41-50 fathoms. Mr. G. H. Halligan and I dredged one shell in 100 fathoms sixteen miles east of Wollongong.

PURPURA TRITONIFORMIS, *Blainville*.

Purpura tritoniformis, Blainville, Nouv. Ann. Mus., i., 1833, p. 221, pl. x., f. 10. *Id.*, Kesteven, Proc. Linn. N.S. Wales, xxvi., 1902, p. 533-8, pl. xxix.

Stations 52, 55, 56.

From 11-15 fathoms off the Crookhaven River; 19-20 fathoms in the Shoalhaven Bight; and 79-80 fathoms off Botany Bay.

Family TEREBRIDÆ.

TEREBRA, *Bruguiere*,

TEREBRA FICTILIS, *Hinds*.

Terebra fictilis, Hinds, Thes. Conch., i., 1844, p. 183, pl. xlv., f. 109, 110. *Id.*, Hedley, Proc. Linn. Soc. N.S. Wales, xxv., 1900, p. 509, pl. xxvi., f. 14.

Terebra assimilis, Angas, Proc. Zool. Soc., 1867, p. 111, pl. xiii., f. 8.

Station 28.

One dead specimen from 22 fathoms off the Manning River.

TEREBRA BICOLOR, *Angas*.

Terebra bicolor, Angas, Proc. Zool. Soc., 1867, p. 111, pl. xiii., f. 7.

Station 33.

A few dead shells from 24-27 fathoms at the north end of the Newcastle Bight.

Family PLEUROTOMIDÆ.

PLEUROTOMA, *Lamarck*.

PLEUROTOMA VEPRATICA, sp. nov.

(Fig. 97.)

Stations 13, 37, 49.

Shell small, thin, slender, fusiform, prickly, spire pagodiform. Colour uniform pale brown. Whorls six, plus a five-whorled

embryonic apex. Sculpture: except the prickles and ridges, the whole surface is microscopically granulated; ten sharp projecting radial ribs, interrupted by the broad anal fasciole, ascend the spire obliquely; along the periphery of each whorl runs a broad spiral shelf, beneath it are two similar but lesser spirals, the lowest of which is half buried in the suture, and above it are three rapidly and successively diminishing spirals; these radials and spirals enclose deeply sunk lozenges, at the point of intersection upwardly directed prickles arise; the anal fasciole is marked with crescentic striæ; on the base and canal are a dozen spiral threads. Apex of five whorls sharply differentiated from the adult shell, sculptured with close delicate, crenulate, radial riblets.

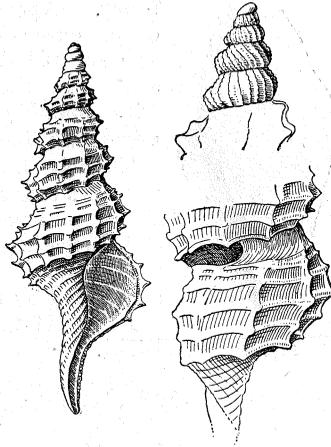


Fig. 97.

Slit sutural, broad and deep. Aperture pyriform, narrowing gradually to the canal, lip sharp, no callus on the columella. Canal very long, open, sinuate. Length, 10 mm.; breadth, 4 mm.

The prickly sculpture, deep sutural slit, slender recurved canal and peculiar apex distinguish this from any other Australian Pleurotomoid. Some features of it recall the American *Ancistro-syrinx*.

My drawings show a shell not quite adult, the sinus of an adult but broken specimen, and the apex of a third individual.

A few specimens were procured in 63-75 fathoms off Port Kembla; off Botany Bay in 50-52 fathoms; and one off Cape Three Points in 41-50 fathoms. Another was obtained by the Australian Museum Expedition in 1880 off Cabbage Tree Island, Port Stephens, in 24 fathoms. The species also occurs in Torres Straits.

BATHYTOMA, *Harris & Burrows.*

BATHYTOMA BICONICA, sp. nov.

(Fig. 98.)

Station 52.

Shell solid, biconical, slightly angled at the shoulder, of more than six whorls. Colour apparently flesh-tint. Sculpture:

below the shoulder the shell is furrowed by numerous fine spiral grooves, crossed by arcuate growth lines, above the furrows are broader and fewer. Aperture narrow, sinus sutural and deep, outer lip (broken in my example) appears to have curved far forward, columella angled in the centre, spreading broadly and with a small anterior plication. Length, 18 mm.; breadth, 8 mm.

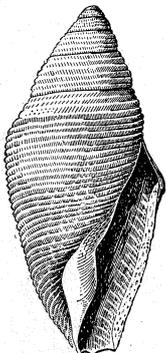


Fig. 98.

Though the single available specimen is too worn and faded to afford particulars of the colour, protoconch, &c., I am induced to describe it because it adds a genus as well as a species to our fauna. In ascribing it to *Bathytoma*, I am guided by the account given by Harris.*

From 19-20 fathoms in the Shoalhaven Bight.

LEUCOSYRINX, *Dall.*

LEUCOSYRINX RECTA, sp. nov.

(Fig. 99.)

Stations 13, 35, 37, 49.

Shell pagodiform, thin, tall and narrow. The last whorl has a median cylindrical area, angled above and below. The keel along the lower angle is buried by the suture of the following whorl; that along the upper angle projects more and ascends the spire to the protoconch, where it suddenly ceases. Above the upper keel the whorl slopes to the suture, below the lower the base is concavely excavated. Colour pale yellow. Whorls four, plus the protoconch, wound obliquely. Sculpture: the topmost whorl is undulated by about sixteen broad radial ribs, which disappear on the next whorl. Fine and coarse spiral threads alternate over the whole surface, and are crossed by fine growth lines. Protoconch exsert, white, smooth, two-whorled. Aperture broad, lip simple, no apparent sinus, canal short, open, straight. Length, 6 mm.; breadth, 2.5 mm.

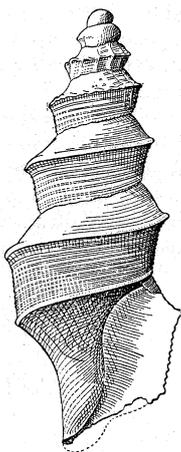


Fig. 99.

Pleurotoma (Surcula) staminea, Watson,† appears a near ally of this species.

* Harris—Brit. Mus. Cat. Tert. Moll. Austr., 1897, p. 48.

† Watson—Chall. Rep., Zool., xv., 1886, p. 286, pl. xx., f. 3.

A few specimens from 41-50 fathoms off Cape Three Points; from 22-36 fathoms off Port Hacking; from 50-52 fathoms off Botany Bay; and from 63-75 fathoms off Port Kembla.

DRILLIA, *Gray.*

DRILLIA DILECTA, sp. nov.

(Fig. 100.)

Stations 13, 37, 49, 57.

Shell small, solid, narrowly fusiform, tricarinate, shoulder sloping, base contracted, canal short, straight. Whorls five, plus a smooth, elevated, two-whorled protoconch. Colour pale yellow. Sculpture: on the body whorl are three peripheral spiral keels, on the spire two such keels on each whorl; on the base are numerous, and on the shoulder three or four, revolving threads. The interstices of the spirals are occupied by the broken lengths of close, fine, longitudinal, raised threads, which united describe a double curve. Aperture simple, presumably undeveloped in the examples to hand. Length, 7 mm.; breadth, 2.5 mm.

This species is in general appearance most like *D. tricarinata*, Ten. Woods, from which its longitudinal sculpture easily divides it. That feature recalls *Pleurotoma violacea*, Hinds, a larger and proportionately broader shell.

A few specimens were taken off Port Kembla in 63-75 fathoms; off Cape Three Points in 41-50 fathoms; 50-52 fathoms off Botany Bay; and 54-59 fathoms off Wata Mooli. My type is chosen from a better example dredged off Cabbage Tree Island, Port Stephens, in 24 fathoms.

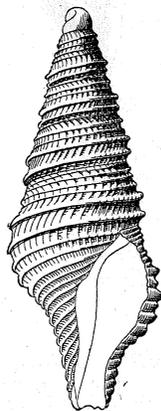


Fig. 100.

DRILLIA NENIA, sp. nov.

(Fig. 101.)

Stations 13, 49, 57.

Shell small, narrow, angled at the shoulder, glossy. Whorls five, plus a smooth, tilted, globose, two-whorled protoconch. Colour pure white. Sculpture: curved, stout shouldered ribs, twelve on the last whorl, mount the spire obliquely, become obsolete anteriorly, and terminate abruptly at each anal

fasciole; the whole shell covered by fine, close, microscopic growth striae. Base contracted. Canal short. Aperture narrow, anal notch deep, with raised, subtubular margin, columella slightly arched, overlaid by a thick callus sheet. Length, 6.6 mm.; breadth, 2.5 mm.

A few examples were taken off Port Kembla in 63-75 fathoms; off Cape Three Points in 41-50 fathoms; off Wata Mooli in 54-59 fathoms; and off the Manning River in 22 fathoms. A better specimen selected for illustration was procured in 24 fathoms off Cabbage Tree Island, Port Stephens.



Fig. 101.

DRILLIA COXI, Angas.

Drillia coxi, Angas, Proc. Zool. Soc., 1867, p. 113, pl. xiii, f. 15.

Station 28.

Tryon* has united this to *D. sinensis*, Hinds, but the feature of "sutura granosa-carinata" proper to *D. sinensis* is absent from *D. coxi*. The original description was drawn up from small and faded shells. When fresh the species is buff, sprinkled with chocolate; one example in the Australian Museum attains twelve whorls in a length of 33 mm.

From 28 fathoms off the Manning River.

DRILLIA WOODSI, Beddome.

Drillia woodsi, Beddome, Proc. Roy. Soc. Tas., 1882 (1883), p. 167. *Id.*, Tate & May, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 368.

Drillia howitti, Pritchard & Gatliff, Proc. Roy. Soc. Vict., xii., 1899, p. 101, pl. 8, f. 2. *Id.*, Hedley, Proc. Linn. Soc. N.S. Wales, xxv., 1891, p. 722.

Station 28, 37.

One specimen from 50-52 fathoms off Botany Bay; and two from 22 fathoms off the Manning River. Previously taken off the Broughton Islands, Port Stephens, in 24 fathoms.

DRILLIA SPADIX, Watson, sp.

Pleurotoma (Drillia) spadix, Watson, Chall. Rep., Zool., xv., 1886, p. 310, pl. xxvi., f. 6.

Station 49.

One specimen from 63-75 fathoms off Port Kembla.

* Tryon—Man. Conch., vi., 1884, p. 201.

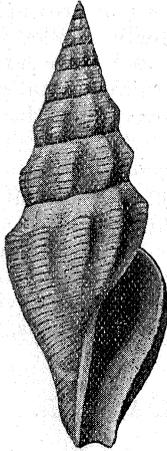


Fig. 102.

DRILLIA PROSUAVIS, nom. mut.

Pleurotoma (Drillia) suavis, Smith, Ann. Mag. Nat. Hist., (6), ii., 1888, p. 305. [not *Drillia suavis*, Hervier, Journ. de Conch., xliii., 1895, p. 141.]

(Fig. 102.)

Station 13.

The "Thetis" example was procured in the type locality. I have identified the species by an excellent drawing of the type in the British Museum made by Mr. J. Green, and kindly forwarded by Mr. E. R. Sykes.

Off Cape Three Points in 41-50 fathoms. A specimen is in the collection from 24 fathoms off Broughton Island.



Fig. 103.

DRILLIA MULTILIRATA, *Smith*, sp.

Pleurotoma (Drillia) multilirata, Smith, Ann. Mag. Nat. Hist., (4), xix., 1877, p. 496.

(Fig. 103.)

Though not included in the "Thetis" collection, the species is here introduced for the sake of publishing the accompanying figure of the type from the pencil of Mr. J. Green. The habitat attached to the original description is "?Port Jackson," but it has not been recognised here.

DRILLIA TRICARINATA, *Ten. Woods*.

Drillia tricarinata, Ten. Woods, Proc. Linn. Soc. N.S. Wales, ii., 1878, p. 265. *Id.*, Hedley, Rec. Austr. Mus., iv., 1891, p. 23, f. 3.

(Fig. 104.)

Stations 13, 22, 37, 49, 57.

The shells procured by the "Thetis" show the type to have been founded on an immature shell. The original description may be amended by the following particulars. Whorls five,

with a two-whorled protoconch. Surface entirely microscopically granulated. Behind the aperture is a gradually swollen varix, in which the rounded sinus is obliquely excavated. The entrance of the sinus is narrowed by a thick parietal pad of callus and the thin incurved corner of the outer lip. On the columella is spread a thick sheet of callus. Length, 9 mm. ; breadth, 3.75 mm.

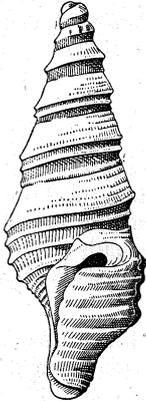


Fig. 104.

A few specimens from off Port Kembla in 63-75 fathoms; off Cape Three Points in 41-50 fathoms; off Wata Mooli in 54-59 fathoms; off Botany Bay in 50-52 fathoms; and off the Manning River in 22 fathoms. Also collected previously off Cabbage Tree Island, Port Stephens, in 24 fathoms.

D A P H N E L L A, *Hinds*.

DAPHNELLA VESTALIS, sp. nov.

(Fig. 105.)

Stations 13, 37.

Shell ovate, rather solid, angled at the shoulder, constricted at the base. Colour white. Whorls five, plus a two-whorled protoconch. Sculpture : rounded spiral cords, the longitudinal series amounting to about twenty on the last whorl and eight on the penultimate, crossing and knotting a spiral series amounting to about thirty-seven on the penultimate ; the longitudinals vanish at the base and are effaced behind the aperture. Suture channelled. Protoconch smooth. Aperture wide, lip simple and without sinus. Length, 8 mm. ; breadth, 3.75 mm.

This species is nearest to *D. hayesiana*, Angas,* from which it may be distinguished by having no sinus, a denser ornament, and by being smaller and proportionately broader. *D. hayesiana* is compared by its author to *Clathurella reticosa*, Ad. & Angas,† an alleged Australian species, probably founded on an imported British specimen of *Clathurella purpurea*, Montagu.

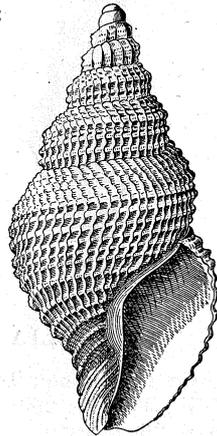


Fig. 105.

* Angas—Proc. Zool. Soc., 1871, p. 17, pl. i., f. 17.

† Adams & Angas—Proc. Zool. Soc., 1863, p. 420.

Taken by the "Thetis" off Cape Three Points in 41-50 fathoms; and off Botany Bay in 50-52 fathoms; previously off Cabbage Tree Island, Port Stephens, in 24 fathoms.

DAPHNELLA BRENCHLEYI, Angas, sp.

Clathurella brencleyi, Angas, Proc. Zool. Soc., 1877, p. 37, pl. v., f. 12.

(Fig. 106.)

Station 13.

A few examples taken by the "Thetis" differ from typical specimens from Port Stephens by being paler, with slighter longitudinal sculpture. They are also smaller, measuring 12 mm. in length and 4.5 mm. in breadth.

Owing possibly to worn material, the sculpture is not well described in the original diagnosis. I find the entire shell to be girt with flat topped spiral ridges, parted by deep, sharp grooves, about twenty-seven of such are borne by the last, and about twelve by the penultimate, whorls—including three or four on the fasciole. The surface of the elevation is cut into oblique, close-set gemmules. These are repeated within the deep interstice by a minute gemmule thread. The eight whorls counted by Angas include a two-whorled, finely punctate, grooved protoconch.

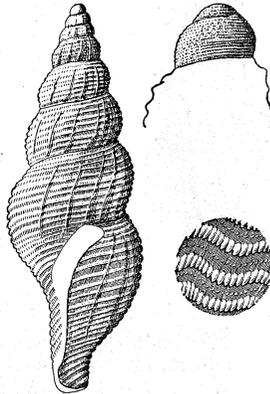


Fig. 106.

From 41-50 fathoms off Cape Three Points.

DAPHNELLA ANGASI, Hedley, nom. mut.

Clathurella sculptilis, Angas, Proc. Zool. Soc., 1871, p. 17, pl. i., f. 19, [not *Daphnella sculptilis* (Tate); Harris, Brit. Mus. Cat. Tert. Moll. Austr., 1897, p. 61].

Station 13.

A single specimen from 41-50 fathoms off Cape Three Points.

DAPHNELLA BRAZIERI, *Angas, sp.*

Clathurella brazieri, Angas, Proc. Zool. Soc., 1871, p. 18, pl. i., f. 22.

(Fig. 107.)

Stations 13, 28, 35, 37, 49.

The figure and description of this species are not good. Indeed, without the aid of a specimen identified by Brazier, I should have failed to recognise the species. It seems well, therefore, to introduce here a figure and redescription derived from a specimen dredged off Port Kembla.

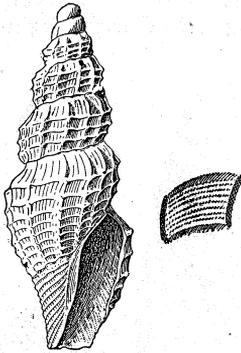


Fig. 107.

Shell elongate, fusiform, thin, angled at the shoulders of each whorl. Colour dull white. Whorls four and a half, plus a two-whorled protoconch. Sculpture: wave-like longitudinal ribs, amounting to thirteen on the last whorl, curve across the sutural shelf, are sharply angled, and project at the shoulder, thence descend perpendicularly to the base, where they disappear. These are over-ridden by spiral cords, on the upper whorls three, on the last twenty, crowded below and widely spaced above. The meshes of the major sculpture are occupied by microscopical, dense, spiral threads, ornamented by minute

gemmules, which give a dusty appearance to the shell. Protoconch exsert, of two whorls, smooth and glossy. Aperture wide, lip simple, straight; sinus broad and shallow, canal abbreviated. Length, 7 mm.; breadth, 3.5 mm.

Off Cape Three Points in 41-50 fathoms; off the Manning River in 22 fathoms; off Port Hacking in 22-38 fathoms; off Botany Bay in 50-52 fathoms; and off Port Kembla in 63-75 fathoms.

MANGELIA, *Risso.*MANGELIA TENUILIRATA, *Angas, sp.*

Clathurella tenuilirata, Angas, Proc. Zool. Soc., 1871, p. 17, pl. i., f. 18.

Stations 13, 49.

From 41-50 fathoms off Cape Three Points; and from 63-75 fathoms off Port Kembla.

MANGELIA GRANULOSSISIMA, *Ten. Woods*, sp.

Clathurella granulossisima, *Ten. Woods*, Proc. Roy. Soc. Tas., 1878 (1879), p. 37. *Id.*, *Tate & May*, Proc. Linn. Soc. N.S. Wales, xxvi., 1901, p. 370, pl. xxiv., f. 34.

Stations 28, 49.

The "Thetis" shells are larger, and with less developed ribs than Tasmanian shells.

From 22 fathoms off the Manning River; and from 63-75 fathoms off Port Kembla.

Class OPHISTHOBRANCHIA.

Family ACTÆONIDÆ.

ACTÆON, *Montfort*.ACTÆON AUSTRINUS, *Watson*.

Actæon austrinus, *Watson*, Journ. Linn. Soc., xvii., 1883, p. 286. *Id.*, *Chall. Rep.*, Zool., xv., 1886, p. 628, pl. xlvii., f. 2.

Stations 13, 37.

From my recollection of the type I should think that *Fossarus bulimoides**, *Ten. Woods*, represents the young of this species.

Pritchard and *Gatliff* suppose that this species is identical with *Turbonilla casta*, *A. Ad.*† I venture to suggest that in the absence of specimens a superficial resemblance has misled them.

Two specimens from 41-50 fathoms off Cape Three Points; and one from 50-52 fathoms off Botany Bay.

Family TORNATINIDÆ.

TORNATINA, *A. Adams*.

TORNATINA EXSERTA, sp. nov.

(Fig. 108.)

Station 28.

Shell small, narrow, subcylindrical; spire drawn out, last whorl slightly medially constricted. Colour uniform milk-white.

* *Ten. Woods*—Proc. Roy. Soc. Tas., 1876 (1877), p. 148.

† *Pritchard & Gatliff*—Proc. Roy. Soc. Vic., xv., 1903, p. 211.

Whorls four, plus the protoconch. Suture channelled. Sculpture: dense microscopic spiral striæ, decussated by obscure growth lines; to the unaided eye the shell is smooth and glossy. Outer lip inserted far back, its edge arcuate. Inner lip spreading, a callus on the bodywhorl, columella plication weak. Length, 6.5 mm.; breadth, 2 mm.

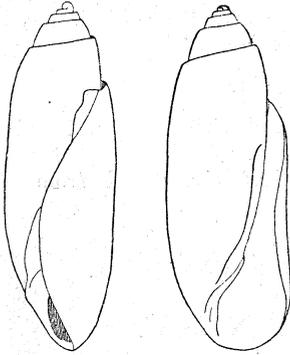


Fig. 108.

This species apparently is nearest to *T. hojmani*, Angas,* a species I have not yet identified. As the figure of that differs in its proportions from the measurements given in the text, it is probably inaccurate. If it is at all natural, the two species are distinct, the novelty being a narrower shell, with a longer spire.

One specimen from 22 fathoms off the Manning River.

VOLVULA, *A. Adams.*

VOLVULA ROSTRATA, *A. Adams, sp.*

Bulla rostrata, *A. Adams*, *Thes. Conch.*, ii., 1850, p. 596, pl. cxxv., f. 154.

(Fig. 109.)

Station 49.

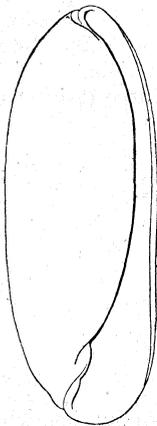


Fig. 109.

Specimens from New South Wales are always smaller than southern examples. When the species is fully grown it is less rostrate at the summit than in juvenile stages. For comparison with the following species, I add an outline sketch of a South Australian example, 7 mm. long, determined and sent by the late Prof. R. Tate.

Two shells from 63-75 fathoms off Port Kembla. Mrs. H. Forde has gathered this species at Pambula.

* Angas—*Proc. Zool. Soc.*, 1877, p. 40, pl. v., f. 20.

VOLVULA TRAGULA, sp. nov.

(Fig. 110.)

Station 49.

Shell small, thin, semiopaque, oblong-acuminate. Colour milk-white. Sculpture: everywhere finely, spirally grooved; medially the grooves are almost effaced, posteriorly about half-a-dozen are deeply incised. Faint longitudinal growth lines are perceptible. The aperture is as long as the shell, posteriorly it narrows to a canal, anteriorly is broad and effuse. The inner lip terminates in a spike posteriorly. The columella forms at the base a broad auricular lobe, with a thickened edge. Neither umbilicus nor umbilical furrow are present. Length, 4 mm.; breadth, 1.65 mm.

The present is readily distinguished from other Australian *Volvulae* by the sharp point of the posterior end.

Two shells from 63-75 fathoms off Port Kembla. There is a series in the Australian Museum dredged off Watson's Bay. I obtained it in 1901 in 15 fathoms off South Palm Island, Queensland, which gives the species a range of sixteen degrees of latitude.

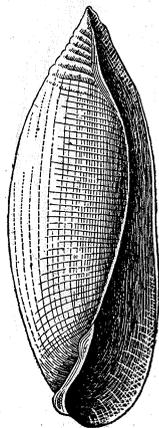


Fig. 110.

Family SCAPHANDRIDÆ.CYLICHNA, *Lovén*.

CYLICHNA THETIDIS, sp. nov.

(Fig. 111.)

Stations 28, 49.

Shell narrow, elongated, cylindrical, thin and glossy. Colour white. Sculpture: growth lines hardly perceptible, encircled by fine, close, incised lines; almost effaced medially, and wider spaced posteriorly. The crown concave, with a narrow axial perforation, partly roofed by a callus arch. Aperture as long as the shell, narrow above, expanded and effuse below; lined

on the inner side by a sheet of callus ragged at the edge. Columella thickened, with a prominent fold, behind which a furrow runs up under the lip callus. Length, 11·5 mm.; breadth, 4·5 mm.

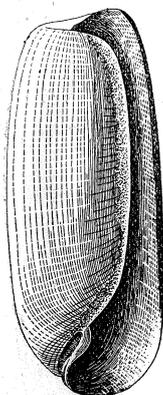
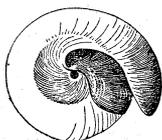


Fig. 111.

The narrowly perforate summit easily distinguishes this from *C. arachis*, Q. & G., the only Australian shell likely to be taken for it.

The Chinese *C. involuta*, A. Ad.,* appears to resemble it more.

The "Thetis" procured this off the Manning River in 22 fathoms; and in 63-75 fathoms off Port Kembla. I have taken it on the beach in Middle Harbour.

CYLICHNA PROTUMIDA, sp. nov.

(Fig. 112.)

Stations 13, 35, 37, 49, 57.

Shell narrow, long in the waist, inflated rather suddenly at the anterior third, rounded anteriorly, obliquely truncated at the vertex. Colour pale yellow. Sculpture: faint growth lines are cut at right angles by fine, sharp, incised, spiral lines, which are more or less obliterated medially, but distinct posteriorly. Aperture the full length of the shell, posteriorly enlarged, and leaning in towards the axis, medially constricted to a slit, and posteriorly opening in a pear-shaped expansion. The body whorl is overlaid by a sheet of callus. Columella slightly curved, broad inner margin subdentate, outer reflexed. Vertex pierced by a narrow, deep, axial perforation. Length, 5·4 mm.; breadth, 2·3 mm.

This is the species recorded † from Watson's Bay by Brazier as *Cylichna pyramidata*, A. Ad. ‡

The "Thetis" took a few specimens off Cape Three Points in 41-50 fathoms; off Wata Mooli in 54-59 fathoms; off Botany Bay

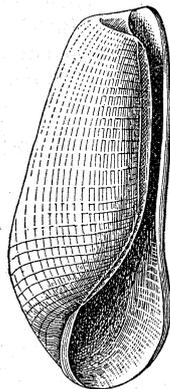


Fig. 112.

* A. Adams—Thes. Conch., ii., 1850, p. 595, pl. cxxv., f. 149.

† Brazier—Rec. Austr. Mus., i., 1890, p. 85.

‡ A. Adams—Thes. Conch., ii., 1850, p. 595, pl. cxxv., f. 149.

Limacina inflata, Pelseneer, Chall. Rep., Zool., xxiii., 1888, p. 17.

Stations 13, 49.

Abundant off Cape Three Points in 41-50 fathoms; and off Port Kembla in 63-75 fathoms.

LIMACINA TROCHIFORMIS, *D'Orbigny*, sp.

Atlanta trochiformis, D'Orbigny, Voy. Amer. Mérid., v., 1836, p. 177, pl. xii., ff. 29-31.

Limacina trochiformis, Pelseneer, *loc. cit.*, p. 29.

Station 49.

Two specimens from 63-75 fathoms off Port Kembla.

LIMACINA BULIMOIDES, *D'Orbigny*, sp.

Atlanta bulimoides, D'Orbigny, Voy. Amer. Mérid., v., 1836, p. 179, pl. xii., ff. 36-38.

Limacina bulimoides, Pelseneer, *loc. cit.*, p. 30.

Station 13.

From 41-51 fathoms off Cape Three Points.

Family CAVOLINIIDÆ.

CLIO, *Linné*.

CLIO VIRGULA, *Rang*, sp.

Creseis virgula, Rang, Ann. Sci. Nat., (1), xiii., 1828, p. 316, pl. xvii., f. 2.

Clio virgula, Pelseneer, *loc. cit.*, p. 48.

Stations 13, 49.

Several specimens from 41-50 fathoms off Cape Three Points; and from 63-75 fathoms off Port Kembla.

CLIO ACICULA, *Rang*, sp.

Creseis acicula, Rang, Ann. Sci. Nat., (1), xiii., 1828, p. 318, pl. xvii., f. 6.

in 50-52 fathoms; off Port Hacking in 22-38 fathoms; and off Port Kembla in 63-75 fathoms. On the occasion of the "Challenger" entertainment, it was received by Brazier from 75 fathoms five miles east of Sydney Heads.

CYLICHNA ARACHIS, *Quoy & Gaimard*, sp.

Bulla arachis, Quoy & Gaimard, Voy. Astrolabe, Zool., ii., 1835, p. 361, pl. 26, f. 28-30.

Cylichna arachis, Pilsbry, Man. Conch., xv., 1893, p. 318, pl. 27, ff. 92, 93.

Stations 13, 49, 57.

Numerous specimens from 41-50 fathoms off Cape Three Points; a few from 54-57 fathoms off Wata Mooli; and one from 63-75 fathoms off Port Kembla.

Family HYDATINIDÆ.

APLUSTRUM, *Schumacher*.

APLUSTRUM BRAZIERI, *Angas*, sp.

Diaphana brazieri, Angas, Proc. Zool. Soc., 1877, p. 175, pl. xxvi, f. 20 (bad).

Aplustrum brazieri, Hedley, Proc. Linn. Soc. N.S. Wales, xxvii., 1902, p. 16, pl. iii, f. 36.

Station 13.

Several specimens from off Cape Three Points in 41-50 fathoms.

Family RINGICULIDÆ.

PUGNUS, *Hedley*.

PUGNUS PARVUS, *Hedley*.

Pugnus parvus, Hedley, Rec. Austr. Mus., ii., 1896, p. 106, pl. xxiii., f. i. *Id.*, Pilsbry, Man. Conch., xvi., 1896, p. 234, pl. 74, f. 7.

Station 13.

Several specimens were obtained off Cape Three Points in 41-50 fathoms.

Family PHILINIDÆ.PHILINE, *Ascanius*.

PHILINE TERES, sp. nov.

(Fig. 113.)

Stations 13, 49.

Shell small, thin, globose, much inflated. Whorls two, last

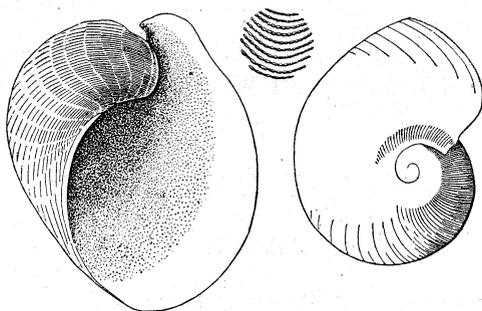


Fig. 113.

large, rather oblique, contracted below the vertex. Spire concave. Sculpture: microscopic, dense, spiral strings of oval beads, interrupted by growth lines. Colour white. Interior smooth, polished. Columella edge curled, behind it an umbilical groove. Inner lip broadly arched below, sharply recurved above. Outer lip above detached from the whorl and reaching forward. Length, 3 mm.; breadth, 2.5 mm.

The small size, rotundity, curvature of the inner lip and free lobe of the outer one are features which distinguish this species.

A few specimens from off Cape Three Points in 41-50 fathoms; and from off Port Kembla in 63-75 fathoms.

Class PTEROPODA.

Family LIMACINIDÆ.LIMACINA, *Cuvier*.LIMACINA INFLATA, *D'Orbigny*, sp.

Atlanta inflata, *D'Orbigny*, *Voy. Amer. Mérid.*, v., 1836, p. 174, pl. xii., f. 16, 17.

Clio acicula, Pelseneer, *loc. cit.*, p. 51.

Stations 13, 57.

A specimen from 41-50 fathoms off Cape Three Points; and another from 54-59 fathoms off Wata Mooli.

CLIO STRIATA, Rang, sp.

Creseis striata, Rang, Ann. Sci. Nat., (1), xiii., 1828, p. 315. pl. xv., f. 7.

Clio striata, Pelseneer, *loc. cit.*, p. 54.

Station 13.

One specimen from 41-50 fathoms off Cape Three Points.

CLIO SUBULA, Quoy & Gaimard, sp.

Cleodora subula, Quoy & Gaimard, Ann. Sci. Nat. (1), x., 1827, p. 233, pl. viii. d, ff. 1-3.

Clio subula, Pelseneer, *loc. cit.*, p. 57.

Stations 13, 49.

Several specimens from 41-50 fathoms off Cape Three Points; and from 63-75 fathoms off Port Kembla.

CLIO PYRAMIDATA, Linné.

Clio pyramidata, Linné, Syst. Nat., Ed. xii., 1767, p. 1094. *Id.*, Pelseneer, *loc. cit.*, p. 63.

Stations 13, 49.

Several specimens from 41-50 fathoms off Cape Three Points; and from 63-75 fathoms off Port Kembla.

CAVOLINIA, Abildgaard.

CAVOLINIA TRISPINOSA, Lesueur, sp.

Hyalaea trispinosa, Lesueur, Dict. Sci. Nat., xxii., 1821, p. 82.

Cavolinia trispinosa, Pelseneer, *loc. cit.*, p. 76.

Station 13.

One example from 41-50 fathoms off Cape Three Points.

CAVOLINIA LONGIROSTRIS, *Lesueur*, sp.

Hyalaea longirostris, Lesueur, Dict. Sci. Nat., xxii., 1821, p. 81.

Cavolinia longirostris, Pelseneer, *loc. cit.*, p. 79.

Stations 13, 49.

Several specimens from 41-50 fathoms off Cape Three Points; and from 63-75 fathoms off Port Kembla.

Class N U D I B R A N C H I A T A.

Family ÆOLIDIIDÆ.G L A U C U S, *Forster*.GLAUCUS ATLANTICUS, *Forster*.

Glaucus atlanticus, Forster, Voy. Resolution, i., 1777, p. 49. *Id.*, Bergh, Chall. Rep., Zool., x., 1884, p. 16. *Id.*, Hedley, Proc. Linn. Soc. N.S. Wales, (2), vi., 1891 (1892), p. 576.

Station 40.

Floating on the surface three miles off Wata Mooli.

Class H E T E R O P O D A.

Family ATLANTIDÆ.A T L A N T A, *Lesueur*.ATLANTA TURRICULATA, *D'Orbigny*.

Atlanta turriculata, D'Orbigny, Voy. Amer. Mérid. v., 1836, p. 173, pl. xx., ff. 5, 11. *Id.*, Smith, Chall. Rep., Zool., xxiii., 1888, p. 40.

Stations 13, 49.

A few specimens from 41-50 fathoms off Cape Three Points; and from 63-75 fathoms off Port Kembla.

ATLANTA ROSEA, *Eydoux & Souleyet.*

Atlanta rosea, Eydoux & Souleyet, Voy. Bonite, Zool., ii., 1852,
p. 377, pl. xix., ff. 16-20.

Stations 13, 49.

A few examples from 41-50 fathoms off Cape Three Points;
and from 63-75 fathoms off Port Kembla.

ATLANTA INFLATA, *Eydoux & Souleyet.*

Atlanta inflata, Eydoux & Souleyet, Voy. Bonite, Zool., ii., 1852,
p. 378, pl. xix., ff. 21-28.

Station 49.

Two shells from 63-75 fathoms off Port Kembla.

Family PTEROTRACHÆIDÆ.FIROLOIDA, *Lesueur.*FIROLOIDA DESMARESTI, *Lesueur.*

Firoloida desmarestia, Lesueur, Journ. Acad. Nat. Sci. Phil.,
i., 1817, p. 39, pl. ii., f. 1. *Id.*, Smith, Chall. Rep., Zool.,
xxiii., 1888, p. 22.

Station 58.

Two specimens from the surface two miles off Wata Mooli.

EXPLANATION OF PLATE XXXVI.

- Fig. 1.—*Cassidea turgida*, Reeve, var., from a specimen 101 mm. long. This figure is accidentally foreshortened.
- Fig. 2.—*Cassidea thomsoni*, Brazier (type).
- Fig. 3.—*Cassidea thomsoni*, Brazier, another specimen taken by the "Thetis."



Fig. 1.

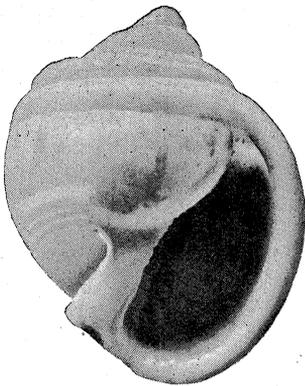


Fig. 2.

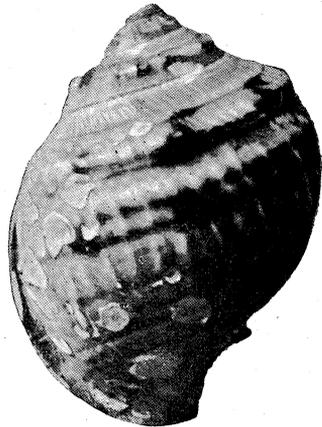
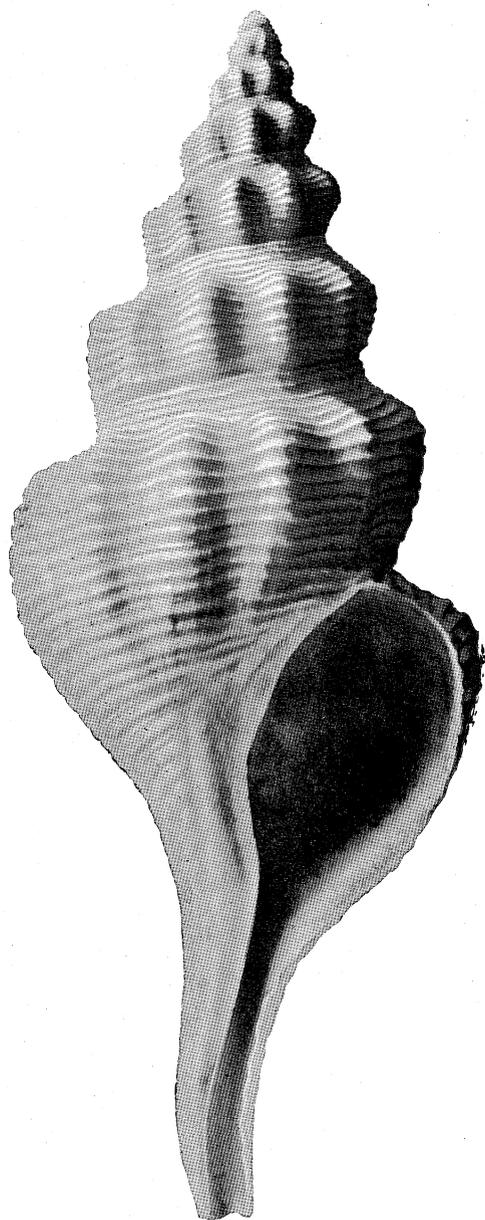


Fig. 3.

EXPLANATION OF PLATE XXXVII.

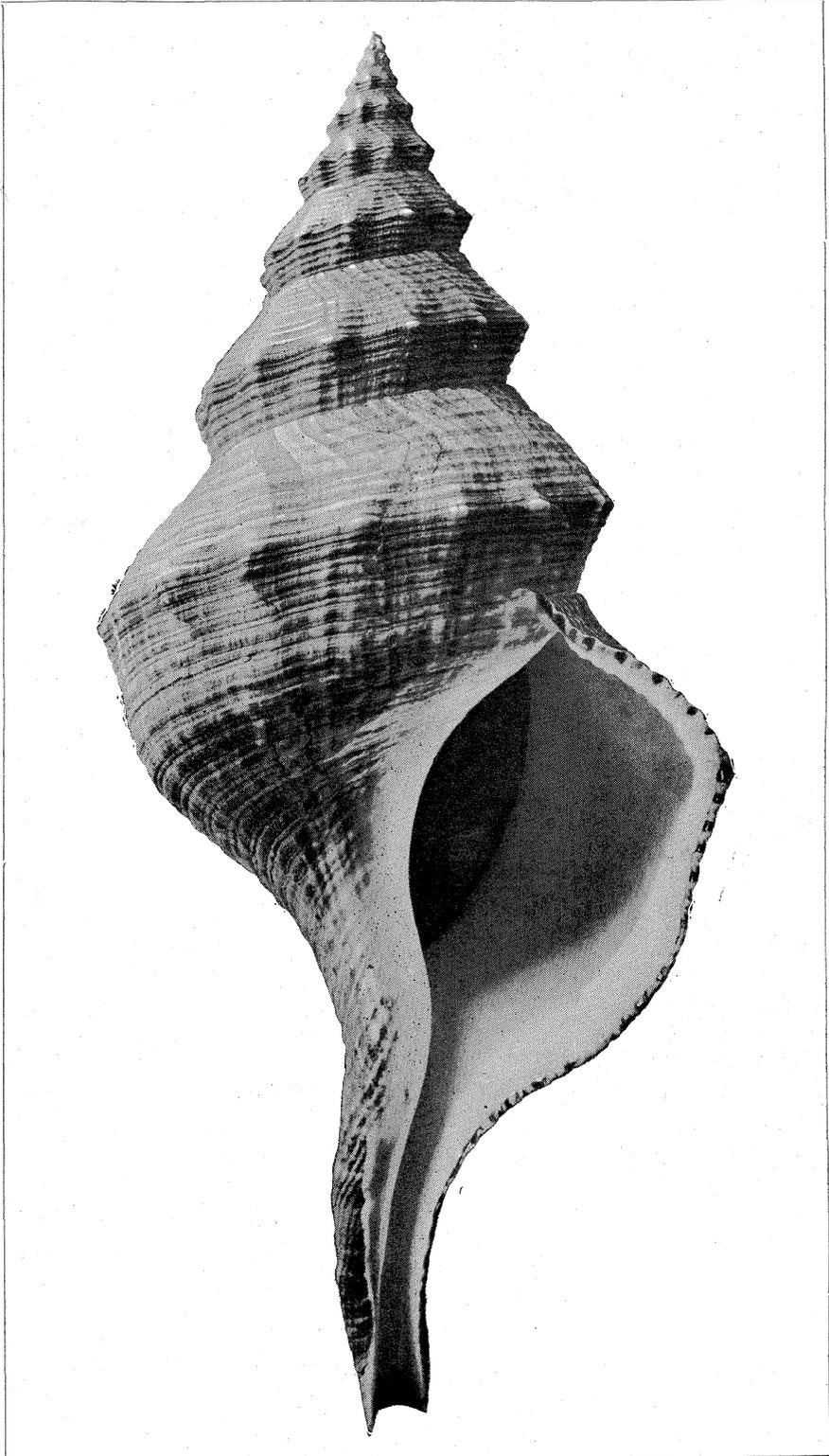
Fusus waitei, Hedley (type).



EXPLANATION OF PLATE XXXVIII.

Siphonalia maxima, Tryon.

From a specimen 240 mm. long.



H. BARNES, JUNR., Photo.

NOTICE TO BINDER.

**Australian Museum Memoir, iv., "Thetis Expedition,"
part 6, pages 389, 390. Cancel the pages supplied with
the published part and substitute those herewith.**



Fig. 102.

DRILLIA PROSUAVIS, nom. mut.

Pleurotoma (Drillia) suavis, Smith, Ann. Mag. Nat. Hist., (6), ii., 1888, p. 305. [not *Drillia suavis*, Hervier, Journ. de Conch., xliii., 1895, p. 141.]

(Fig. 102.)

Section 13.

The "Thetis" example was procured in the type locality. I have identified the species by an excellent drawing of the type in the British Museum made by Mr. J. Green, and kindly forwarded by Mr. E. R. Sykes.

Off Cape Three Points in 41-50 fathoms. A specimen is in the collection from 24 fathoms off Broughton Island.

DRILLIA MULTILIRATA, Smith, sp.

Pleurotoma (Drillia) multilirata, Smith, Ann. Mag. Nat. Hist., (4), xix., 1877, p. 496.

(Fig. 103.)

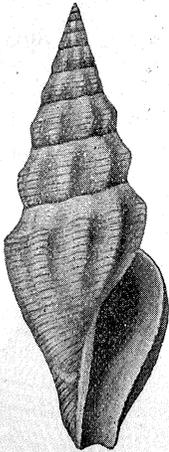


Fig. 103.

Though not included in the "Thetis" collection, the species is here introduced for the sake of publishing the accompanying figure of the type from the pencil of Mr. J. Green. The habitat attached to the original description is "?Port Jackson," but it has not been recognised here.

DRILLIA TRICARINATA, Ten. Woods.

Drillia tricarinata, Ten. Woods, Proc. Linn. Soc. N.S. Wales, ii., 1878, p. 265. *Id.*, Hedley, Rec. Austr. Mus., iv., 1891, p. 23, f. 3.

(Fig. 104.)

Stations 13, 22, 37, 49, 57.

The shells procured by the "Thetis" show the type to have been founded on an immature shell. The original description may be amended by the following particulars. Whorls five,

with a two-whorled protoconch. Surface entirely microscopically granulated. Behind the aperture is a gradually swollen varix, in which the rounded sinus is obliquely excavated. The entrance of the sinus is narrowed by a thick parietal pad of callus and the thin incurved corner of the outer lip. On the columella is spread a thick sheet of callus. Length, 9 mm.; breadth, 3.75 mm.

A few specimens from off Port Kembla in 63-75 fathoms; off Cape Three Points in 41-50 fathoms; off Wata Mooli in 54-59 fathoms; off Botany Bay in 50-52 fathoms; and off the Manning River in 22 fathoms. Also collected previously off Cabbage Tree Island, Port Stephens, in 24 fathoms.

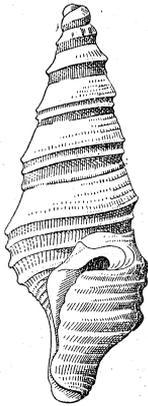


Fig. 104.

DAPHNELLA, *Hinds*.

DAPHNELLA VESTALIS, sp. nov.

(Fig. 105.)

Stations 13, 37.

Shell ovate, rather solid, angled at the shoulder, constricted at the base. Colour white. Whorls five, plus a two-whorled protoconch. Sculpture: rounded spiral cords, the longitudinal series amounting to about twenty on the last whorl and eight on the penultimate, crossing and knotting a spiral series amounting to about thirty-seven on the penultimate; the longitudinals vanish at the base and are effaced behind the aperture. Suture channelled. Protoconch smooth. Aperture wide, lip simple and without sinus. Length, 8 mm.; breadth, 3.75 mm.

This species is nearest to *D. hayesiana*, Angas,* from which it may be distinguished by having no sinus, a denser ornament, and by being smaller and proportionately broader. *D. hayesiana* is compared by its author to *Clathurella reticosa*, Ad. & Angas,† an alleged Australian species, probably founded on an imported British specimen of *Clathurella purpurea*, Montagu.

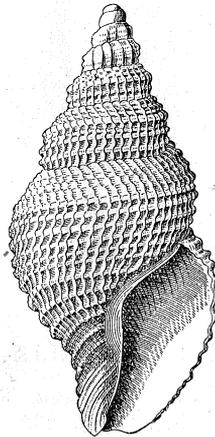


Fig. 105.

* Angas—Proc. Zool. Soc., 1871, p. 17, pl. i., f. 17

† Adams & Angas—Proc. Zool. Soc., 1863, p. 420.