

MOLLUSCA FROM THREE HUNDRED FATHOMS,
OFF SYDNEY.

By C. HEDLEY, Conchologist, and W. F. PETTERD.

(Plates xxxvii. and xxxiii.).

Various excursions have reaped a superficial knowledge of the Mollusca of our Continental Shelf. In a recent issue of these Records a collection was described which Mr. G. H. Halligan obtained in one hundred and ten fathoms off Cape Byron. A haul made by the same gentleman and one of us in one hundred fathoms off Wollongong, supplemented the collections trawled by the "Thetis" Expedition in from twenty to eighty fathoms between Jervis Bay and the Manning River.

It was evident that at a greater distance from the coast, in deeper and colder water, another fauna would appear. To search this zone the writers organised a dredging trip. We were greatly aided by the kindness of Mr. H. E. Farmer, who, on behalf of Messrs. Bullivant, generously placed at our disposal a reel and five hundred fathoms of wire rope. A serviceable steamer of seventy-four tons, the "Woy Woy," fitted with steam winding gear, was engaged for the trip. We enjoyed the company and assistance of Dr. R. Pulleine, Messrs. E. R. Waite, G. A. Waterhouse, F. E. Grant and A. R. McCulloch. The weather on the chosen date was excellent. Taking our departure at 8 a.m. on March 27, 1905, from mid-channel between Port Jackson Heads, we set a due east (true, not magnetic) course, and ran by the patent log, twenty-seven and a half miles. On sounding no bottom was got at two hundred and fifty fathoms. Estimating the depth at three hundred fathoms, we put the bucket dredge over and paid out most of our wire rope. A full load of sandy mud, coloured green by glauconite, rewarded us. The temperature of the mud when it arrived on board was 60° F.

Before again sinking the bucket we fastened a dredge to its taper end by forty fathoms of rope. This length allowed the dredge to follow on the ocean floor a track different to that of the bucket. If tied closer it would in pursuing the same path have only collected material already crushed by the passage of the bucket. Both bucket and dredge returned with a satisfactory load, but a final descent of the dredge alone proved a failure.

While dredging we had drifted inshore and estimated that the second haul was in a depth of two hundred and fifty fathoms, at a distance of twenty-three miles due east of South Head. We returned to port after an absence of twelve hours.

The study of the Crustacea was undertaken by Mr. F. E. Grant, and his paper¹ has already appeared.

The Corals have been examined by Mr. J. Dennant, who will shortly publish an account of them.

An Elaspod Holothurian was determined by Mr. T. Whitelegge as *Pannychia moseleyi*, Theel. There was also a fine Sea-pen of the genus *Kophobelemnion*. Representatives of other groups have been handed to various specialists and it is hoped that further reports on them may appear. The types of all new species described in this article are presented to the Trustees of the Australian Museum.

The decided change of fauna between the one hundred fathom level and the zone touched by our dredge, appears to us to indicate that the animals obtained grew below the warm southerly current.

About twenty-five miles south-south-west of the position of our dredging lies the "Challenger" Station 164 B., where, in four hundred and ten fathoms, a large series of mollusca are reputed to have been obtained. A large proportion of these were well-known Atlantic species. This incongruous mixture has been considered by Crosse² and other writers as clear evidence of error. One of us has discussed³ the matter at length and recommended the rejection of the whole tainted haul.

Perhaps the most important result of our excursion is the re-discovery of about half of the new "164 B" shells, but none of the European species occurred with them. It is evident that the "Challenger" collectors had mixed gatherings from different oceans, and while those here recognised are rehabilitated, the balance had best be carried to a suspense account awaiting further investigation.

It is no longer possible to check the "Challenger" results by dredging at 164 B, because the submarine telegraph cable to New Zealand crosses the place.

More than a hundred species of shells are contained in the collection, some are fragmentary, or for other reasons cannot be determined. The following is a list of those identified.

¹ Grant—Proc. Linn. Soc. N. S. Wales, xxx., 1905, pp. 312-324.

² Crosse—Journ. de Conch., xliii., 1895, p. 257.

³ Hedley—Proc. Linn. Soc. N. S. Wales, xxvi., 1901, p. 22.

- Amusium thetidis*, Hedley.
Adacnarca squamea, Hedley.
Astele glyptus, Watson.
Bathytoma agnata, Hedley and Petterd.
Bittium fuscocapitulum, Hedley and Petterd.
Bulla incommoda, Smith.
Bullina scabra, Gmelin.
Cadulus spretus, Tate and May.
Cancellaria scobina, Hedley and Petterd.
Capulus devotus, Hedley.
Carditella angasi, Smith.
Cardium pulchellum, Gray.
Carinaria australis, Quoy and Gaimard.
Cassidea pyrum, Lamk.
Carolinia gibbosa, Rang.
 ,, *inflexa*, Lesueur.
 ,, *longirostris*, Lesueur.
 ,, *quadridentata*, Lesueur.
 ,, *tridentata*, Forskal.
 ,, *trispinosa*, Lesueur.
Cerithiopsis cacuminatus, Hedley and Petterd.
Chlamys asperrimus, Lamarck.
Clio pyramidata, Linne.
 ,, *subula*, Quoy and Gaimard.
 ,, *virgula*, Rang.
Cocculina tasmanica, Pilsbry.
Columbarium pagodoides, Watson.
Coralliophila lischkei, Dunker.
Cuna delta, Tate and May.
Cuspidaria angasi, Smith.
Cuvierina columnella, Rang.
Cyclostrema johnstoni, Beddome.
Cylichna ordinaria, Smith.
 ,, *protumida*, Hedley.
 ,, *thetidis*, Hedley.
Cymatium kampyla, Watson.
Cyrilla dalli, Hedley.
Daphnella vestalis, Hedley.
Dentalium erectum, Sowerby.
Drillia coxi, Angas.
 ,, *crossei*, Smith.
 ,, *tricarinata*, Ten. Woods.
 ,, *woodsii*, Beddome.
Ectorisma granulata, Tate.

- Emarginula superba*, Hedley and Petterd.
Euthria tabida, Hedley.
Hemithyris colurnus, Hedley.
Leda inopinata, Smith.
 ,, *miliacea*, Hedley.
 ,, *ramsayi*, Smith.
Limea murrayi, Smith.
Limopsis tenisoni. Ten. Woods.
 ,, *erectus*, Hedley and Petterd.
Mangelia emina, Hedley.
 ,, *watsoni*, Smith.
Marginella agapeta, Watson.
 ,, *allporti*, Ten. Woods.
 ,, *brazieri*, Smith.
 ,, *cratericula*, Tate and May.
 ,, *laevigata*, Brazier.
 ,, *ochracea*, Angas.
 ,, *stillia*, Hedley.
 ,, *strangei*, Angas.
Mathilda decorata, Hedley.
Monilea arata, Hedley.
 ,, *oleacea*, Hedley and Petterd.
 ,, *philippensis*, Watson.
Murex licinus, Hedley and Petterd.
Nassa jacksonensis, Quoy and Gaimard.
Pleurotoma casearia, Hedley and Petterd.
Polinices subcostatus, Ten. Woods.
Poroleda ensicula, Angas.
Poromya undosa, Hedley and Petterd.
Rissoa filocincta, Hedley and Petterd.
Rocheffortia acuminata, Smith.
 ,, *lactea*, Hedley.
Scala morchii, Angas.
Terebra lauretanae, Ten. Woods.
Tiberia nitidula, A. Adams.
Trophon carduelis, Watson.
 ,, *laminatus*, Petterd.
 ,, *simplex*, Hedley.
Turbonilla constricta, Smith.
Turritella godeffroyana, Donald.
 ,, *incisa*, Reeve.
 ,, *philippensis*, Watson.
 ,, *sinuata*, Reeve.

Venericardia cavatica, Hedley.
Verticordia rhomboidea, Hedley.
Voluta undulata, Lamarek.
Vulpecula miranda, Smith.
 „ *tasmanica*, Ten. Woods.
Xenophora tatei, Harris.

The new and noteworthy species include the following :—

COCCULINA TASMANICA, Pilsbry, *sp.*

Acmaea parva, Angas, var. *tasmanica*, Pilsbry, *The Nautilus*, viii., 1895, p. 128 ; *Nacella tasmanica*, Tate and May, *Proc. Linn. Soc. N. S. Wales*, xxvi., 1901, p. 411, pl. xxvii., f. 89-90 ; *Cocculina meridionalis*, Hedley, *Mem. Austr. Mus.*, iv., 1902, p. 331, f. 64.

The presence of an inrolled often caducous apex directed the assignment of this species to *Cocculina*, and as that genus had not been reported from Australasia, the shell was by one of us described as new. Mr. W. L. May pointed out the similarity between *N. tasmanica* and *C. meridionalis*. After interchange of specimens we agree that they are identical. Mr. H. Suter, who holds a co-type and joined in the discussion, arrives at the same conclusion. The species has recently occurred in deep water off the New Zealand coast.

MONILEA OLEATA, *sp. nov.*

(Plate xxxvii., fig. 1).

Shell rather large, thin, regularly turbate, base flattened, periphery subangled, spire elevated. Whorls seven, gradually increasing, regularly rounded except a narrow flat step below the suture. Colour beneath white, above pale cinnamon with darker radial streaks on the last whorl. Entire surface glossy, as if well oiled. Sculpture : closely scored by sharp spiral cuts, which are deepest about the periphery, fainter midway up the whorl and vanish from the base and from the first four whorls. On the penultimate whorl between the insertion of the lip and the suture, there are sixteen of these impressed spirals. The flat interspaces are obliquely crossed by faint irregular growth lines. Aperture very oblique ovate, upper insertion carried far forward, connected with the lower by a thin dull film of callus. Lip quite sharp, within a white edge is followed by a brown border and that again by a nacreous layer. This sequence again appears along the interior

suture. Umbilicus a broad open funnel, penetrating to the initial whorl, margined by a beaded funicle which ends in an expansion on the columella base. The interior of the umbilicus is spirally scored like the periphery, and is undercut at the junction of each whorl. Height 12 mm.; major diameter 16 mm.; minor diameter 13 mm.

A single perfect specimen from two hundred and fifty fathoms, twenty-three miles east of Sydney.

EMARGINULA SUPERBA, sp. nov.

(Plate xxxvii., figs. 7 and 8).

Shell large, elevated, oval, rather thin, apex much incurved and overhanging at five-sixths of the length. The sides are arched so that the shell only touches a plane surface by its extremities. Colour, exterior gray, interior white. Fissure deeply slit. Sculpture: about sixty sharp elevated radiate riblets which frill the interior margin and are parted by narrow deep interstices in which arise fine secondary riblets. A concentric series of numerous dense imbricating scales traverse both ribs and furrows. Slit fasciole elevated, two thin erect walls include fine close curved transverse scales. The interior of the fasciole is marked by a heavy streak of callus. Length 24 mm.; breadth 18 mm.; height 9 mm.

A single specimen from two hundred and fifty fathoms.

This is the largest Australian species, and only two or three species in the world exceed it in size.

CYCLOSTREMA JOHNSTONI, Beddome.

Cyclostrema johnstoni, Beddome, Proc. Roy. Soc. Tasm., 1882 (1883), p. 168; *Id.*, Tate, Trans. Roy. Soc. S. Austr., xxiii., 1899, p. 215, pl. vii., f. 7 *a, b*.

Two specimens of this Tasmanian species from three hundred fathoms, are the means of adding it to the fauna of this State.

TIBERIA NITIDULA, A. Adams, sp.

(Plate xxxviii., fig. 13).

Syrnola nitidula, A. Adams, Ann. Mag. Nat. Hist., 1860, (3), vi., p. 335.

Pyramidella nitidula, Sowerby, Conch. Icon., xv., 1865, Pyramidella, pl. v., f. 35.

Odostomia (Obeliscus) nitidula, Watson, Chall. Rep., Zool., xv., 1886, p. 487.

"This species," remarks Dr. W. H. Dall,⁴ "is very widely distributed, both in area and depth." Its range extends from Japan to the Mediterranean and West Indies, but it has not been recorded before from the Southern Hemisphere. In our collection it is represented by a single specimen 7 mm. long, taken in two hundred and fifty fathoms.

RISSEA FILOCINCTA, *sp. nov.*

(Plate xxxvii., fig. 2).

Shell small, opaque and rather solid, broadly ovate, narrowly perforate. Whorls five, of which one and a half compose the protoconch, ventricose, the earlier whorls angled above, the last rounded, rapidly increasing, not descending at the aperture, sharply constricted at the sutures. Sculpture: protoconch smooth, in adult shell the radials first predominate, gradually grow denser and finer and are at last exceeded by the spirals. The body whorl carries twelve sharp, erect, wide spaced spirals, of which the upper are latticed by forty-two radial riblets proceeding from the suture and fading at the periphery. Twenty stronger radial ribs, whose interstices are traversed by five spirals, cross the penultimate whorl. The remaining whorl and a half has twenty-one coarse, wide set radials, with a spiral thread above and below. Aperture perpendicular ovate, fortified by a thick outstanding varix. Length 3 mm.; breadth 1.7 mm.

Several specimens from both hauls.

BITTIUM FUSCOCAPITULUM, *sp. nov.*

(Plate xxxviii., figs. 10 and 11).

Shell rather large, thin, broad at the base, with straight sides, tapering to a sharp point, angled and contracted at the base. Colour pale purple, granules white, protoconch chocolate brown. The individual drawn has fifteen whorls in a length of eleven mm., but a larger decapitated example is thirteen and a half mm. for

⁴ Dall—Bull. Mus. Comp. Zool., xviii., 1889, p. 334.

eleven remaining whorls. Sculpture : the adult shell commences with simple ribs springing from the surface above and below and projecting at the periphery. The gradual appearance of spiral sculpture depresses the ribs in the middle and elevates them above and below in angular tubercles. Finally the ribs break up into bead rows, the last whorl having a smooth central belt through which runs a spiral thread, on either side lie first a large and then a small bead row, containing about nineteen grains to a whorl ; no varix is present. The suture is impressed and sinuous. Protoconch sharply differentiated by substance, colour and sculpture, of four whorls with a double keel and delicate radial riblets, terminating in a deep bay above a long and narrow lobe. The concave base meets the periphery at a sharp angle and is ornamented by a few shallow, wide spaced concentric grooves. Aperture oblique, subquadrate ; lip sharp, simple, the short canal is merely a deep sinus. Length 11 mm. ; breadth 3 mm.

A few dead shells.

After *Bittium granarium*, the novelty is one of the largest Australian members of the genus. The presence of a sinusigera protoconch is of interest, but we have not sufficient data to now discuss its teleological significance.

CERITHIOPSIS CACUMINATUS, *sp. nov.*

(Plate xxxvii., fig. 4).

Our broken specimens, though exhibiting features sufficient to separate them from known species, do not supply the material for a complete description. Shell very long, slender and gradually tapering to an inflated two-whorled protoconch, each whorl overhanging its successor pagoda-wise. Colour grey. Whorls at least nineteen. Sculpture : each whorl carries about thirteen longitudinal folds which taper upwards and do not continue from whorl to whorl. Three spiral belts and intervening shallow furrows of corresponding width develop beads on the radials. The lowest chain of beads is the most prominent, and those above diminish in succession. Beneath the largest bead row is a narrow revolving double thread. The beads are more polished than the interstices. Towards the summit the spiral sculpture fades away, a sutural furrow persisting longest. The first two adult whorls have only radial ribbing. Length of imperfect specimen 10 mm. ; breadth 2 mm.

The slender tapering spire and triple row of unequal beads marks the species as clearly different from Australian co-generic forms.

Two specimens from two hundred and fifty fathoms.

CYMATIUM KAMPYLA, *Watson, sp.*

Nassaria kampyla, Watson, Journ. Linn. Soc., Zool., xvi., 1883, p. 594; *N. campyla*, Watson, Chall. Rep., Zool., xv., 1886, p. 405, pl. xiv., f. 12; *Lampusia nodocostata*, Tate and May, Trans. Roy. Soc. S. Austr., xxiv., 1900, p. 90; *Id.*, Proc. Linn. Soc. N. S. Wales, xxvi., 1901, p. 355, pl. xxiii., f. 2; *Lotorium nodocostatum*, Kesteven, Proc. Linn. Soc. N. S. Wales, xxvii., 1902, pp. 463, 479, f. 1 and 4.

A full series taken in each haul by the "Woy Woy," and reference to a "Challenge" co-type, enables us to connect the immature shell described by Tate and May with the adult form discovered by the "Challenger." All codes of nomenclature agree that an author is not permitted to alter a name once published, the first form of the specific name is therefore here adopted. The change from "kampyla" to "campyla" proposed by Dr. Watson would be particularly inconvenient for an index.

CORALLIOPHILA LISCHKEANA, *Dunker, sp.*

Rapana lischkeana, Dunker, Index Moll. Mar. Jap., 1882, p. 43, pl. i., f. 1, 2, pl. xiii., f. 26, 27; *Purpura sertata*, Hedley, Austr. Mus. Mem., iv., 1903, p. 382, f. 95, 96; *Id.*, Pritchard and Gatliff, Proc. Roy. Soc. Vict., (n.s.), xviii., 1906, p. 44.

Several specimens, one alive, of this Japanese species were captured at two hundred and fifty fathoms. This series connects the adult with the young shell described as *Purpura sertata*.

MUREX LICINUS, *sp. nov.*

(Plate xxxvii., fig. 6).

Shell rather small, short, broad, angled at the shoulder, obliquely biconical. Canal short, open. Apex acute, bent away from the

shell's axis. Colour pale brown, inner lip light purple. Whorls six and a half, rapidly increasing. Sculpture: numerous varices, eight to the last whorl, beset the shell. They are low, but erect, feebly denticulate, descend obliquely from the shoulder to the base, above the shoulder converge very obliquely to the suture across an excavate unribbed space. On the upper whorls they fade rapidly, becoming extinct on the penultimate. The inter-variceal spaces are traversed by stout spiral ribs divided by broad deep grooves, about a dozen appearing behind the aperture, no scales occur on ribs or in grooves. Outer lip expanded, smooth within, denticulate without, edged with concentric frills. Inner lip straight below, arched medially, its margin expanded, free. Length 17 mm. ; breadth 13 mm.

A single living specimen from two hundred and fifty fathoms, which may not be adult.

PLEUROTOMA CASEARIA, sp. nov.

(Plate xxxvii., fig. 5).

Shell thin, slender, fusiform, spire keeled and turreted, base contracted. Whorls seven, including a whorl and a half of protoconch, parted by linear rather oblique impressed sutures. Colour varying from pearl grey to pale orange, usually cheese colour. Sculpture: the protoconch is glassy with rounded whorls, the adult smooth and somewhat glossy though duller than the protoconch. The periphery is sharply produced into a projecting keel, the fasciole set with pointed radiating tubercles, of which the penultimate whorl bears eighteen, these tubercles continue upwards, diminishing proportionately to the protoconch, but downwards they degenerate on the last whorl to imbricating scales. The unarmed keel slightly rises at its termination, bringing the shelf above it nearer to the horizontal. The fasciole ends in a deep and narrow slit, Canal open, produced, bent a little to the right. Under the lens, delicate growth lines appear which diverge acutely above and below the keel, crossing the base they are flexed. Aperture narrowly pyriform, a callus spread on the inner lip. Length 13 mm. ; breadth 5 mm.

Several specimens were obtained.

BATHYTOMA AGNATA, sp. nov.

(Plate xxxvii., fig. 3).

Shell fusiform, biconical, solid, each spire whorl prominently

angled at its centre by a tuberculate keel. In the series before us the proportion of length to breadth varies considerably. Whorls eight, including a protoconch of a whorl and a half. Colour pale cream with an evanescent purple tinge in the aperture. Sculpture: the suture is slightly puckered by small radiating folds which run out before reaching half way to the keel. Along the keel are prominent wide spaced tubercles, numbering on the penultimate about seventeen, each truncated in front and sloping at the back to the base of its predecessor. Behind the aperture these sometimes degenerate into crowded imbricate scales. Below the keel the radial sculpture is resumed at indistinct forwardly curved riblets. Fine raised spiral threads extend from the tip of the canal to the protoconch. In the hollow supra-carinal shelf they are small and close together; below the keel, amounting on the last whorl to about forty, they are wider spaced, often alternating in size and tend to be knotted by the radials. Protoconch smooth and very glossy, dome shaped, a whorl and a half, ending with a sinus. Aperture narrow, perpendicular. Outer lip very deeply insinuate at the keel, then sweeping forward in a full curve. Columella broad, heavily calloused, excavate above, swollen and twisted below. Length 17 mm.; breadth 11 mm.

Several specimens from two hundred and fifty fathoms.

The lines of specific distinction appear to be drawn narrowly in this genus and to depend chiefly upon sculpture. The novelty appears intimately related to *Pleurotoma* (*Genotia*) *engonia*, Watson,⁵ differing by the sharper keel, more elevated tubercles and generally coarser sculpture.

It was evident from literature that in size, shape and substance our species made a near approach to certain Tertiary forms named by Prof. R. Tate. We therefore sought the opinion of Mr. J. Denant on their inter-relationship, who very kindly replied, 14th March, 1906, as follows:—

“The *Bathytoma* submitted is allied to *B. pritchardi*, Tate,⁶ from the Gippsland Miocene, and to *B. fontinalis*, Tate,⁷ a common shell in the Oligocene beds at Spring Creek. From the first it is

⁵ Watson—Journ. Linn. Soc., xv., 1881, p. 405; *Id.*—Chall. Rep., Zool., xv., 1886, p. 300, pl. xx., f. 7.

⁶ Tate—Journ. Roy. Soc. N. S. Wales, xxvii., 1893 (1894), p. 175, pl. x., f. 4.

⁷ Tate—*Loc. cit.*, p. 175, pl. x., f. 4.

distinguished by its sharper keels, plain sutures, and far finer ornament; and from the second by its less ornate keels, as well as by the convexity of the posterior sutural areas. Of the two remaining species in Victorian Tertiary strata, *B. decomposita*, Tate, has a much shorter spire, while *B. angustifrons*, Tate, is characterized by rounded keels and overlapping sutures. The recent species is thus easily separable from any of its fossil congeners."

TEREBRA LAURETANÆ, *Ten. Woods.*

(Plate xxxvii., fig. 9).

Terebra lauretanæ, Ten. Woods, Proc. Linn. Soc. N. S. Wales, ii., 1878, p. 262.

This unfigured species has hitherto been known only from a single specimen, the type now in the Australian Museum, which has ten whorls in a length of twenty millimetres. A fine specimen with sixteen whorls in a length of forty-one millimetres was taken in three hundred fathoms, and provided the material for the illustration now presented.

CANCELLARIA SCOBINA, *sp. nov.*

(Plate xxxviii., fig. 12).

Shell small, solid, biconical, tabulate, imperforate, rough sculptured. Colour grey (? bleached). Whorls five, including the protoconch, each with a broad concave shelf on the summit, perpendicular at the sides and contracted at the base. Protoconch papillate, smooth, a whorl and a half wound obliquely to the axis of the main shell. Sculpture: sharp crested wave ribs traverse the whorls obliquely, between and parallel to these are fine growth lines; on the last whorl the ribs amount to fifteen. The radials are crossed by spiral raised cords, which develop a tubercle at the passage of each radial, between each cord one or more raised threads. Aperture oblique, subtriangular. Columella with three plaits, the upper very oblique. Inner lip overlaid with a microscopically granular callus; outer grooved internally. Length 8 mm.; breadth 5 mm.

The new species can best be compared with a Port Curtis form provisionally identified as *C. australis*, Sowerby, than which the

novelty is less harshly sculptured, has a different protoconch, and is smaller in proportion to the number of whorls.

One dead specimen from three hundred fathoms, another from two hundred and fifty fathoms.

CARINARIA AUSTRALIS, *Quoy & Gaimard*.

Carinaria australis, Quoy and Gaimard, Voy. Astrolabe, Zool., ii., 1833, p. 394, pl. xxix., f. 9, 13; *Id.*, Smith, Challenger Rep., Zool., xxiii., 1888, pt. lxxii., p. 35; *Id.*, Vayssiere, Result. Camp. Scient. Prince Monaco, fas., xxvi., 1904, p. 22, pl. i., f. 11, 16; *Id.*, Verco, Trans. Roy. Soc. S. Austr., xxix., 1905, p. 171.

Our single specimen adds a genus and a species to the fauna of this State. After a lapse of more than seventy years, during which no examples were reported, it was retaken within a few weeks here and off the South Australian coast.

AMUSIUM THETIDIS, *Hedley*.

(Plate xxxviii., figs. 18 and 19).

Amusium thetidis, Hedley, Austr. Mus. Mem., iv., 1902, p. 304, f. 49.

No complete specimen of this species has been taken. Both the "Woy Woy" hauls produced a series of separate right valves, and on a right valve the species was founded. In their company appeared a series of separate *Amusium* left valves of corresponding size and shape, but of discrepant sculpture, one of which is here figured. In related forms the exterior of the right and left valves are differently ornamented, so pending the proof of attached valves, we accept these left valves as the missing halves of *A. thetidis*.

LIMEA MURRAYI, *Smith, sp.*

Lima murrayi, Smith, Proc. Zool. Soc., 1891, p. 444, pl. xxxv., f. 26.

Limea acclinis, Hedley, Rec. Austr., Mus., vi., 1905, p. 46, f. 10.

The figure of *L. murrayi* indicates radial ribs divergent along the median line, a feature not mentioned in the description. Partly in reliance on this, and partly prejudiced against the Australian habitat by the European species reputed to have occurred with it, *Limea acclinis* was distinguished as new. Having now recognised several of the "Challenger" 164 B mollusca and confirmed their Australian habitat, we would withdraw *L. acclinis* as a probable synonym of *L. murrayi*, and follow the description of the latter where it conflicts with the illustration.

LIMOPSIS ERECTUS, *sp. nov.*

(Plate xxxviii., figs. 14 and 15).

Shell small, solid, nearly equilateral, less oblique than usual, comparatively high and short. Colour white. Sculpture: about twenty concentric reverse-imbricating folds, the inner weaker and more wide spaced, crossed by faint radiating riblets. Small pits and interlocking tubercles are set round the inner bevelled margin but ascend only half way from the ventral edge. The teeth are disposed in two series, parted by a blank space, anteriorly about seven, nearly perpendicular, posteriorly about six, passing from oblique to horizontal. Area extremely deep, with a narrow median chondrophore. Height 4 mm.; length 3.7 mm.

The unusual depth of the area, and diverse inclination of the anterior and posterior teeth, differentiate this from other Australian species.

Two separate and worn valves from two hundred and fifty fathoms.

POROMYA UNDOSA, *sp. nov.*

(Plate xxxviii., figs. 16 and 17).

Shell small, oblong, moderately inflated, anterior end rounded ventral margin produced, posterior end rather square, dorsal margin rather straight. A low oblique wave ridge, preceded by a shallow hollow, runs from the umbo to the posterior ventral angle, where it projects. Umbo prominent, inflated, the space in front of it deeply excavate. Abrasions exhibit a smooth nacreous white shell beneath the thin pale yellow epidermis. The latter carries dense minute warts, increasing in size towards the margin,

and disposed in radiate and concentric lines. Interior brilliantly pearly, the muscle scars indistinguishable in our specimen. The inner ventral margin faintly minutely crenulated. Length 5·5; height 4·8 mm.

This appears to most resemble *P. cymata*, Dall,⁸ from the west tropical Atlantic, than which it seems to be shorter, with a more feeble and oblique fold.

Two odd valves from two hundred and fifty fathoms, and fragments of larger specimens from three hundred fathoms.

⁸ Dall—Proc. U.S. Nat. Mus., xii., 1889, p. 289, pl. viii., f. 4.



Hedley, Charles and Petterd, W. F. 1906. "Mollusca from three hundred fathoms, off Sydney." *Records of the Australian Museum* 6, 211-225.
<https://doi.org/10.3853/j.0067-1975.6.1906.1001>.

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