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# QUEENSLAND MOLLUSCAN NOTES, No. 1.

By Tom Iredale.*

(Plates XXX-XXXI.)

Twenty years ago, as his Presidential Address to Section D, Biology, of the Australasian Association for the Advancement of Science, at a meeting held in Brisbane, my predecessor, the late Charles Hedley, discussed the Marine Fauna of Queensland, contributing a delightful historical sketch of its investigators, and giving as an appendix a Catalogue of the Marine Mollusca of Queensland. This catalogue has served its purpose well, and it is now time it should be replaced by a more comprehensive and down-to-date list. Such a list I am now compiling, and the present series of notes is explanatory of the additions and emendations to be made.

Immediately upon publication of Hedley's list, Dr. J. Shirley placed on record a large number of "Additions," but these have to be ignored by scientific workers, as they were based upon parcels of shells received from children, and included foreign shells: no discretion was utilised by Shirley, and many marine shells were recorded from inland localities.

Hedley and McCulloch had made a large collection at Murray Island in 1907, and this has never been reported upon. Later, McCulloch collected on the outer portion of the Great Barrier Reef, and Hedley secured many species in his later short trips on the Barrier.

The Rev. Percy Hubbard has been vigorously collecting mostly on the mainland coast near Innisfail, and has brought to light many interesting species. It is noteworthy that the mainland littoral fauna is at present not so well known as that of the reef.

Mr. Melbourne Ward, interested in the study of Crustacea, has never neglected to make good collections of shells from the Capricorn Group, the Torres Straits Islands, and the islands of the Whitsunday Passage. Notes on his collections are here included.

My colleague Mr. G. P. Whitley and I collected vigorously at Michaelmas Cay, off Cairns, in 1926; and calling at Caloundra, South Queensland, on our way back, met with an enthusiastic collector, Mr. C. Nicholson, and made such interesting finds that a note was written on the Caloundra shells. Last spring (1928) I was on Low Island, off Port Douglas, North Queensland, and a separate report is being prepared on the collection there made, but the experience and material has been utilised in this essay.

The Marine Molluscan Fauna of Queensland is composed of three diverse faunulas, the coastal and the reef faunas, the former being divisible into a northern and southern portion. The southern area, which includes Moreton Bay, exposes a faunula very like that of the Sydney district, New South Wales, but with a larger element of tropical forms. The northern area is characterised by mud-living species which range round Cape York and the Gulf of Carpentaria, and as a whole is very distinct from that of the coral reefs lying

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only a small distance from the shore. The coral reef faunula is that of the Indo-Pacific region generally, the species being commonly regarded as identical with those of the Red Sea, Indian Ocean, Philippine Islands, and Polynesia, but more research and more material generally shows slight distinctive features of those of our Coral Sea. However, at present, in most cases identity of species is accepted until the differences are seen to be well marked and constant. It may be placed on record that the marine mollusca of the reefs of the Outer Barrier are providing a large proportion of new records, commonly of shells well known from New Caledonia and other groups to the east. Consequently, numerically the Queensland list is not by any means representative of the fauna living on the coast and reefs. In this essay over one hundred species are added, and fully as many have not been determined exactly yet, mainly from the Michaelmas Cay collection, while the minute faunula is yet untouched.

The beautiful illustrations (Plates XXX-XXXI) have been prepared by Miss J. K. Allan, of the Australian Museum, to whom my sincere thanks are here tendered.

**Solemya terræreginæ** sp. nov.

(Plate XXX, fig. 13.)

Small specimens of this genus not hitherto recorded from Queensland were dredged in 10–12 fathoms off Michaelmas Cay, North Queensland, and in the Australian Museum collection similar small shells were found, which had been collected by Hedley at Goode Island, Torres Strait, Annam River, Starcke River, Green Island, and Masthead Island in 17–20 fathoms, but had always been put aside on account of their small size. In order to record the genus, which also adds a family (and even a super-family according to Dall's classification) to the Queensland list, this small shell is regarded and described as new. Shell small, equivalve, very inequilateral, gaping at both ends. Colour white, covered with a thick shining periostracum which extends a long way past the margins; colour of periostracum pale yellow with darker radials. Both ends rounded, the ventral margin parallel with the umbonal margin, the umbones at about the posterior fourth; riblets obscure, about fifteen in number, ten anteriorly and five posterior. Hinge normal; interior dirty-white. Length 11 mm.; height 4 mm. Periostracum extending 1·5 mm. past the margin of the shell.

**Nuculana caloundra** sp. nov.

(Plate XXX, fig. 17.)

A not uncommon shell on the beach at Caloundra, South Queensland, was recognised as having the shape of *dohrni* Hanley, and it was a surprise to find it had the sculpture of *crassa* Hinds, under which name it appears in Hedley's list.

Shell elongate, beaked, umbones submedian, solid. Colour translucent dirty-white. Sculpture consists of spaced ridges, flattened and rather widely spaced, forty or fifty in number; lunule narrow, radially threaded, and limited by a fine ridge, the rostrum marked by a strong keel and bisected by a similar one, transversely crossed by similar ridges to those of the body of the shell; anteriorly an indistinct angulation occurs. Teeth long, triangular, about sixteen on each side. Length 13·5 mm.; height 7 mm.

## Family ARCIDÆ.

This family continues to offer novelties whenever any series is collected. The Rev. Percy Hubbard sent some shells from Innisfail, and two were not easily located. Then one was found to agree with *Arca crebricostata* Reeve (Conch. Icon., vol. ii, Arca, pl. ix, sp. and f. 61, March 1844: the original locality being unknown), an unexpected addition to the Australian list. This species had not been seen since his description, and is referable to *Anadara* Gray. The other provided an interesting case, as one valve was found to differ in shape and sculpture from the other, and the record of *Arca clathrata* Reeve in the Queensland list was made on one valve. Reeve's species was described from the Philippines, was equivalve, the valves similarly sculptured, and the name is preoccupied and therefore invalid. Consequently, the shell from Innisfail is here described as a new species, and, as it does not seem to fall into any well-known group, the new generic name *Imparilarca* is introduced, *I. hubbardi* being named as type.

**Imparilarca hubbardi** gen. & sp. nov.

(Plate XXX, figs. 1, 2.)

Shell elongate oval, convex, inequivalve, subequilateral, umbones distant, ligament area very large, strongly angulate posteriorly. Colour of dead shells brownish white. Left valve with twenty to twenty-two ribs, which are elevated with deep narrow interstices less than the width of ribs; these are strongly corrugated marginad (that is, towards the margin), nodulous umbonad (that is, towards the umbo), interstices notably concentrically striate, anterior ribs not differing, posterior ones more distant and less corrugated. Right valve with twenty-two to twenty-four ribs, narrow elevated with deep broad interstices more than width of ribs which are smooth, anterior ones showing modified corrugation, strong keel posteriorly, posterior ribbing not crenate. Length 50 mm.; height 35 mm.; depth of conjoined valves 32 mm.

First sent by the Rev. Percy Hubbard, after whom I have great pleasure in naming it, from Innisfail, this species has been found to extend along the whole coast of Queensland from Caloundra to Cape York. It had been determined as *Arca clathrata* Reeve, but the description does not altogether agree, and the name is invalid. Reeve's *chalcanthum* (Conch. Icon., vol. ii, pl. vii, sp. and f. 43, Feb. 1844) from the Philippines belongs to this series, but is decidedly not conspecific, being quite a different shape. Our species is more like Reeve's *rotundicostata* (id. ib., pl. vii, f. 46) from unknown locality, but that species is described as equivalve, and the right valve is figured with nodose sculpture.

A specimen in the Australian Museum from North-west Australia, measuring 65 by 40 by 45 mm., is apparently referable to this species, and shows a blackish brown periostracum between the ribs marginad. This specimen had been compared by the late E. A. Smith with Reeve's types in the British Museum, and it was returned as a new unnamed species.

**Rochefortia excellens** Hedley.

This species was well figured by Hedley (Rec. Aust. Mus., viii, p. 134, pl. xl, figs. 5, 6, 7, 8, May 6, 1912) from Green Island, and it is obviously out of its generic location. Later he identified his species with *Pythina cumingii* A. Adams' (Proc. Zool. Soc. (Lond.) 1856, p. 47: Philippine Islands) and placed it in the genus *Lepton*. It was very common as valves on Michaelmas Cay, and I here propose the new generic name *Barrimysia*, naming *R. excellens* Hedley

as type. It is just as incongruous in *Lepton* as in *Rochefortia*, and I have shown that *Mysella* Angas has precedence over *Rochefortia* Velain, and no Australian conchologist could class the present species under *Mysella*. Another species which needs separation even more is Hedley's *Rochefortia viastellata* (Proc. Linn. Soc. N.S.W., vol. xxxiv, p. 429, pl. xxxvi, figs. 11, 12, 1909), for which I introduce the new genus *Fastimysia*, as the sculpture is very distinctive, and no one would regard it as congeneric with the southern *Mysella*.

## Family CARDIIDÆ.

Many more species than are listed occur in Queensland, and in the genus *Fragum* alone the small specimens collected at Michaelmas Cay provided much study, and, while many more may need description, one only is here offered. For the prickly species of *Fragum*, H. and A. Adams introduced *Ctenocardia* (Gen. Rec. Moll., vol. ii, p. 459, 1857), and the type is here named as *hystrix* Reeve (Conch. Icon., vol. ii, pl. viii, sp. 40, Nov. 1844), as that species was given by Fischer as of Broderip, but the authority is Reeve as above cited. The name is preoccupied by Solander (Cat. Mus. Portl., p. 116, 1786), so I rename the beautiful Reevean species *Fragum* (*Ctenocardia*) *symbolicum* nov. Included in the Queensland list is *Cardium imbricatum* Sowerby (Proc. Zool. Soc. (Lond.) 1840, p. 110, 1841 : Swan River), which is also a species of this group. Sowerby's choice was anticipated by Born (Index Test. Mus. Vindob., "1778," p. 29, 1780), so that the West Australian shell is here renamed *Fragum* (*Ctenocardia*) *perornatum* nov.

### **Fragum whitleyi** sp. nov.

(Plate XXX, fig. 14.)

Shell small, solid, very inequilateral, obese, submedially angulate. Colour creamy white. Sculpture consists of about twenty-six radials, elevated with narrow interstices; the anterior series number sixteen and bear closely set, somewhat flattened, elongate scales which degenerate into circular nodules anteriorly; posterior area a steep slope and carrying ten short ribs on which the nodules are circular; interstices finely latticed; margin sharply toothed by ribs; interior pure white. Hinge-teeth and muscle scars normal. Height 12·5 mm.; breadth 10·5 mm. Not uncommon at Michaelmas Cay. Apparently does not grow much larger.

This delightful little species is named for my colleague, Mr. G. P. Whitley, who has always been of great assistance to me in collecting, especially at Michaelmas Cay, and at Low Island, North Queensland.

### **Pardosinia colorata** gen. & sp. nov.

(Plate XXX, figs. 9, 10.)

A beautiful painted "*Dosinia*" attracted me at Michaelmas Cay, and it was astonishing to find it undescribed.

Shell small, circular, thin, rather compressed, lunule small, narrow, escutcheon obsolete. Colour distinctive, purple-brown zigzag lines radiating from the umbones, breaking into angulate markings which tend to disappear when shell is half grown, when four or five radial rows of broken brown lines, four or five lines in a row, persist; young shells completely coloured. Sculpture consists of fine lamellæ, very closely set at umbones, widening and puckering

laterally, but never becoming much elevated, so that about one hundred may be counted without taking in the umbonal striæ. Hinge broad, shallow, adductor muscle scars small. Pallial sinus very long, reaching nearly across and above the scar. Height 28 mm.; length 30 mm.; depth of single valve 7·5 mm.

**Pardosinia alma** sp. nov.

(Plate XXX, figs. 15, 16.)

Another "*Dosinia*" found at Michaelmas Cay also showed peculiar colouration resembling that of the well-known Venerids, *foreuma* and *embrithes*, classed under *Cytherea* in Hedley's Queensland list.

Shell small, circular, solid, little compressed, lunule small, much impressed, escutcheon ill-defined. Colour distinctive, red-brown blotches arranged radially in four rows, overridden towards the margin by continuous angulate lining, lunule brown. Sculpture consists of regular elevated lamellæ, fifty to sixty being counted before the umbonal smaller, more crowded, ones are reached; these frill a little towards the edges. Hinge fairly broad and deep, adductor muscle scars small. Pallial sinus long and narrow, extending more than halfway across. Height 25 mm.; length 26 mm.; depth of single valve 9 mm.

**Bonartemis stabilis** gen. & sp. nov.

(Plate XXX, figs. 3, 4.)

Apparently the Dosinids have been neglected, as at Caloundra still another undescribed species was collected by Whitley and myself.

Shell small, subcircular, very solid, beaks much incurved, lunule very deeply impressed, heart-shaped, broad, escutcheon long, well defined and bordered. Colour cream with brown, broad, radial splashes four in number. Sculpture consists of coarse but closely set lamellæ, forty in number, till the umbones are reached, where they still exist as coarse and distant lamellæ; on each side the lamellae show a strong tendency to becoming frilled. Hinge rather narrow, very deep and crass, adductor scars large. Pallial sinus very short and angulately narrow, reaching less than halfway across. Height 29 mm.; length 29 mm.; depth of single valve 10 mm.

**Heteroglypta hedleyi** sp. nov.

The name is proposed for the shell from the Nambucca River, Northern New South Wales, described and figured by Hedley under the name *Asaphis contraria* (Proc. Linn. Soc. N.S.W., 1900, p. 731, pl. xlviii, figs. 4-8, May 20, 1901), which differs from *Psammobia contraria* Deshayes (Cat. Moll. Ile Reunion, p. 11, pl. 1, f. 20-21, 1863) from the Isle of Reunion (Bourbon) in shape and sculpture. It does not seem to have much relationship with *Asaphis*, as when Dall so placed it (Trans. Wagner Free Inst. Science, iii, pt. v, p. 981, 1900) he was autoptically unfamiliar with it. Moreover Martens had introduced the name *Heteroglypta* (Beitr. z. Meeresf. Maurit. u. Seych., p. 331, 1880) for it alone.

At Michaelmas Cay valves of a similar shell were found, and these upon autoptical comparison with the southern types were seen to be also slightly different in sculpture and shape; the northern shell is white, more elongate, more inequilateral, the posterior end shortened, ventral edge less rounded,

anterior end slopingly truncate, the sculpture a little finer; the muscle scars are more regular than shown by Hedley, the sinus being normal: measuring 12 x 8 mm., a larger one 14 x 9 mm. This may be named *H. avecta* sp. nov.

From New Caledonia a small cream shell measuring 9 x 7 x 5 mm. is shorter, more obese, posterior end a little attenuate, the posterior angle more acute, sculpture a little coarser, gaping anteriorly and with the ventral edge sinuate, and is here named *H. pansa* sp. nov.

An odd shell is here figured (Plate A, figs. 5, 6) and named *H. saltatrix* sp. nov. It is from Michaelmas Cay, and differs in shape, as otherwise it might be regarded as an aberration. The posterior end is somewhat acutely attenuate, the ventral edge well rounded, anterior edge nearly straight, abruptly truncate; the valve measures 18 x 12·5 mm. The sculpture is erratic; the figure will explain this better than any description. Hedley gave a good description of the species I have named *H. hedleyi*, and divided the shell surface into four panels, and in this shell the anterior panel is subdivided into three. It may be noted that the umbonal sculpture is normal concentric ridging, the peculiarities developing later.

## Family TELLINIDÆ.

This family demands study, as there are scores of unnamed species now accumulated in the Australian Museum and every collection adds to the number. The working out of the genera is a prime necessity, and it will be a difficult task, as so many different types have become associated. Thus I cannot find a place for such a well-known shell as *Tellina rugosa* Born, and this may be due to pure carelessness, as I find that although Born pointed out, when he introduced his species, that his name was preoccupied no correction has yet been made. Fortunately there is an excellent figure given in Martyn's Univ. Conch., pl. 138, 1787, with the name *Cochlea palatam* from China, so that a general name is readily available. The Queensland shells have more pronounced sculpture, are more elongate, and have narrower beaks, and may be later separable. As the species cannot be classed in *Tellina* (s. str.), a different generic name *Quidnipagus* is here proposed, naming Martyn's *Cochlea palatam* as type.

Many smaller species with names may be here added to the Queensland fauna. Two small Tellinids with wavy-line sculpture may be classed together with the new name *Jactellina*, naming *Tellina obliquaria* Deshayes as type; these are *Tellina obliquaria* Deshayes (P.Z.S., 1854, 356; habitat unknown: Sowerby, Conch. Icon., xvii, pl. liv, sp. 321, Oct. 1868), and *Tellina balansæ* Bertin (Nouv. Arch. Mus. Paris., ser. 2, vol. i, 1878, p. 275, pl. ix, f. 10 *a*, *b*: New Caledonia). A species a little different may be here placed temporarily: *Tellina hungerfordi* Sowerby (Proc. Mal. Soc. (Lond.) i, 159, pl. xii, f. 22, 1894: Hong Kong).

Two other small species may be included in a new genus *Obtellina*, the first-named being selected as type, viz: *Tellina bougei* Sowerby (Proc. Mal. Soc. (Lond.) viii, p. 200, fig. in text, Apl. 1909; I. of Monac, New Caledonia); and *Tellina obtusalis* Deshayes (P.Z.S., 1854, 355: Sowerby, Conch. Icon. xvii, pl. xlvii, sp. 281, Oct. 1868).

In the Queensland list appears *Tellina rhomboides* Quoy and Gaimard, and as that name was preoccupied a substitute was necessary, and there was a series of synonyms apparently to select from. An unquoted one, however, in *Tellina clathrata* Deshayes (Hist. Anim. s. Vert. (Lam.) vi, p. 208, 1835, introduced for Quoy and Gaimard's figures, pl. 81, figs. 4, 5, 6, 7) effectually stifled all opposition, as it had appeared before Q. & G.'s letterpress.

**Salmacoma vappa** gen. & sp. nov.

(Plate XXX, figs. 7, 8.)

A Tellinid of the "*Macoma*" style. *Macoma* was founded on the Palæarctic *Tellina balthica* Linné, with which the Australian so-called species have nothing in common save lack of lateral teeth.

Shell of medium size for the family, thin, inequivalve, valves nearly equilateral but strongly twisted, edge of valves markedly sinuous, valves convex, left more tumid than right, beaks subcentral. Colour salmon-cream shading into salmon-pink on umbones and margins. Sculpture consists of fine concentric growth lines more pronounced towards the margins. Hinge with two small teeth in left valve, one bifid, other scarcely so; in right valve, one not bifid. Pallial line advancing across from base of muscle scar towards the other, which in the left valve it does not reach by about 4 mm., but in the right rising higher up and becoming subangulate below the umbo becomes confluent with the opposite muscle scar. Length 33 mm.; height 24 mm.; depth of conjoined valves 16 mm.; right 6, left 10.

Collected by the Rev. P. Hubbard, at Innisfail.

## Family MACTRIDÆ.

Since Hedley's list appeared Smith published A List of the Australian Mactridæ (Proc. Mal. Soc. (Lond.) xi, pp. 137-151, June 1914), and that essay may be here commented upon.

Smith has regarded *Mactra abbreviata* Lamarck (Hist. Anim. s. Vert., v, p. 477, 1818: "Port Jackson") as equivalent and anterior to *obesa* Deshayes. It may be noted that throughout the paper Smith preferred Deshayes' names to those of Reeve, but the latter were published first as accepted by Hedley in his list. In this instance *obesa* was published by Reeve (Conch. Icon., viii, f. 19, March 1854) from Torres Straits, and that would be the correct name for the North Queensland shell. Smith would regard as a variety only the form *meretriciformis*, also introduced by Reeve (loc. cit., f. 18, March 1854) from Port Essington. It would be nearer the truth if Lamarck's species *abbreviata* were regarded as coming from Shark's Bay, Western Australia, as while Lamarck had plenty of shells from that locality he had very few if any from North Queensland. Hedley has included *M. abbreviata* in his Western Australian list, without comment or synonymy.

Under the name *Mactra luzonica* Deshayes, Smith gives localities "Luzon, Middle Harbour and Botany Bay, Sydney (Angas), Queensland (Hedley for *apicina*)."

Reeve's *apicina* (loc. cit., pl. xix, sp. 111, May 1854) appears to be based on an immature specimen from unknown locality, and may be identical with Reeve's *luzonica* (loc. cit., pl. xvi, sp. 81, May 1854) from the I. of Luzon, but the Queensland shells agree better in shape with Reeve's *M. decora* (loc. cit., pl. xvi, sp. 80, May 1854), again from unknown locality, but my specimens lack the coloured rays. From Caloundra, South Queensland, large specimens are commonly seen, and these rather mimic the northern form of *rufescens* in shape but not in sculpture, and is probably the species mentioned by Smith from Queensland under that name.

The hinge-teeth of these shells differ appreciably from those of *M. obesa* Reeve above mentioned, and therefore I introduce the genus *Telemactra*, naming *M. obesa* Reeve as type.

Smith described a new species, *Mactra queenslandica* (id. ib., p. 148, fig. in text), from Sandgate, S.Q., and for this I propose a new generic name *Colorimactra*, and describe an allied species as—

**Colorimactra florens** sp. nov.

(Plate XXXI, fig. 16.)

Shell small, ovately trigonal, a little inequilateral, somewhat compressed. Colour greyish purple, shining, colour zoned through growth lines; deeper near the umbones and then at the ventral margin; inside dark reddish purple, darker and duller internally, shining towards the edges. Anteriorly rounded, the lunule is not well defined save by radial liræ; posteriorly, a strong sharp keel is prominent, the escutcheon in the keeled area being boldly radially lirate; the liræ stopping before the keel is reached but not bounded by any raised line; otherwise the shell is smooth and shining, the almost imperceptible growth lines showing a little strength near the margins. The pallial sinus is short and rounded; hinge-teeth as in *M. queenslandica* Smith.

Length 23 mm.; height 19 mm.; depth of conjoined valves 9 mm.

Collected by the Rev. Percy Hubbard at Innisfail, North Queensland.

Differs from *M. queenslandica* Smith, of which it may be the northern representative, in its stronger posterior angulation and the convex, not concave, lunular anterior side.

When Dall provided a Synopsis of the Genera of Recent and Tertiary Mactridæ (Proc. Malac. Soc. (Lond.) i, pp. 203-213, March 1895) he allowed a subfamily Lutrariinæ with genera *Lutraria* (three sections, *Lutraria, Goniomactra*, and *Lutrophora*), *Tresus, Standella* (with subgenus *Eastonia*), and *Heterocardia. Goniomactra* had been introduced for the Australian *Lutraria impar* Deshayes (Reeve, Conch. Icon., ii, pl. iii, sp. 10, 1854), which is decidedly a distinct form.

Hedley's Queensland list allowed *Lutraria arcuata, elongata, impar, oblonga*, and *philippinarum* with *Standella nicobarica*. The list was a compilation, so that the three names *arcuata, oblonga*, and *philippinarum* are found to refer to the same species, and the best name for that appears to be *australis*, given by Deshayes and first published by Reeve (Conch. Icon., ii, pl. iii, sp. 8, 1854: Moluccas). Gray's *Lutraria elongata* (Mag. Nat. Hist. (Jard.) i, 374, 1837) was anticipated by Muenster (N. Jahrb. f. Min. 435, 1835), and may be here renamed *Lutraria* (*Lutromactra* nov.) *impedita* nom. nov.

**Standella hubbardi** sp. nov.

(Plate XXX, figs. 11, 12.)

The species *Standella nicobarica* of Hedley's Queensland list must bear the new name *Meropesta meridiana*, as, although it has a close resemblance to the Indian shell, when compared it is seen to differ in shape, being higher with the posterior end more rounded, not attenuate, the wrinkled area much less in

extent. The type locality of *M. meridiana* is Lake Macquarie, N.S.W., but the species ranges north to Torres Straits. The genus name *Meropesta* is introduced with that species as type, as it does not appear to be closely related to *Eastonia* (type, *rugosa* Gmelin, from Portugal), and the name *Merope* proposed for the Indian species by H. and A. Adams in 1857 had been used previously by Newman.

The new species now described is a true *Standella*, differing from the type of the genus in form, the anterior side being more produced and the posterior more alternate. It was first collected by the Rev. Percy Hubbard, but I have since collected it at Townsville and the Daintree River.

Shell elongately oblong, thin, posteriorly attenuated, anteriorly rounded, inequilateral, umbones approximate, gaping at both ends. Colour white, covered with a very fine periostracum only noticeable at the posterior end where it is thicker and wrinkled. Superficially the shell is smooth but under a strong lens it is seen to be finely wrinkled. Hinge-teeth exactly as in the type of *Standella;* somewhat delicate and apt to be broken in beach-worn specimens. Pallial sinus very long, rounded, reaching more than halfway across the shell; adductor muscle scars small. Length 45 mm.; height 28 mm.; depth of conjoined valves 16 mm.

**Pharella wardi** sp. nov.

(Plate XXXI, figs. 5, 6, 7.)

A fine bivalve dredged by Mr. Melbourne Ward in the Albany Passage, North Queensland, introduces a new genus into the Australian list as *Pharella*, was proposed by Gray (Ann. Mag. Nat. Hist., ser. 2, vol. xiv, p. 24, July 1884) for *javanica*, and I name this as type.

Shell large, elongate, equivalve, inequilateral, gaping at each end. Colour white, covered with a pale yellowish periostracum which extends a great deal at the edge. A white zone contrasts with a yellowish one, the periostracum much thicker and wrinkled at the posterior end. Shell smooth save for fine growth lines, the anterior end rounded, the posterior end short, obliquely rounded, the ventral margin a little convex, nearly parallel with the umbonal margin. Ligament large, external. Hinge and muscle scars normal. Inside white. Length 72 mm.; height 22 mm.

**Montfortia excentrica** sp. nov.

(Plate XXXI, figs. 14, 15.)

This name will replace that of *Subemarginula clathrata* of Hedley's list, who explained his preference for it (Proc. Linn. Soc. N.S.W., xxxiv, 436, 1909), excusing his rejection of *panhi* Quoy and Gaimard on the grounds of purism. There was no need of excuse as *panhi* Q. and G. is quite different in shape from the Australian shell, and the choice of *clathrata* Ad. & Rve. was unfortunate, as not only did it refer to a distinct species but the name was invalid. Thiele (Syst. Conch. Cab. 578te, lief. (Bd. vii. heft xxxvii) 1917, p. 116, pl. 13, f. 12-13) used *panhiensis* Reeve and placed it in *Hemitoma*, but Swainson's description reads, "Patelliform: the fissure not cut through the shell, but merely forming an internal groove," and this does not apply while the sole species, *H. tricostata* Sw., based on Sow. Gen., f. 6, is a West Indian form, so that we can use *Montfortia* Recluz, of which genus I designated *Em. australis* Q. and G. as type (Trans. New Zeal. Inst., xlvii, 1914, p. 435, July 12, 1915). These tropical forms may not even be congeneric, but as the shell shows distinction I here propose *Montfortista* as a new subgenus, with *M. excentrica* as type.

Shell large for genus, very elevated, laterally compressed, apex excentric. Colour greenish white, interior green with darker lines, spatula whitish. Sculpture consists of strong radials crossed by weaker concentric ridges, forming deep pits; anterior slope steep, posterior a little less. The fasciole is filled in forming an elevated ridge roughened with growth stages and showing a short deep slit at edge; on each side of the fasciole lies a stout radial, and behind this some sixteen radials with a few minor intercalating ones can be seen, the whole crossed by about ten ridges; a faint striation can be seen with a glass of fresh specimens, somewhat more pronounced on the radial ribs. Length 21 mm.; breadth 14 mm.; height 16 mm.

Habitat: North Queensland (type, Michaelmas Cay).

## Family HALIOTIDÆ.

This family still gives concern as it proves to be more numerous in species and groups than has been accepted up to the last few years, and as there is confusion regarding the exact usage of the genus name *Haliotis* I here provide some more names to be used for Australian species. The type of *Haliotis* Linné has been commonly regarded as the palæarctic *tuberculata*, and, if so, our different forms need distinctive names. Montfort designated *H. asinina* L. as type, and this needs consideration.

The commonest species on the coral reefs is that known as *varia* Linné, a name which has been applied to a series of forms. Linné described his species without reference or locality, and the Philippine Island form has been accepted as typical. I here designate that locality as the type locality to provide a basis for work. Dr. Eland Shaw collected a series at Bangaan I., and these do not agree with Australian specimens, being larger, rounded, with less pronounced sculpture, &c. Associated with the small shell is a much larger one which is tentatively determined as *pustulifera* Pilsbry (Man. Conch., xvi, 1890, p. 96, pl. 23, f. 52). The smaller Australian shell may be subspecifically named *Sanhaliotis varia aliena*, the genus *Sanhaliotis* being introduced for these small species, *H. varia* being designated as type. A much smaller shell from Lord Howe Island has also been called *varia*, but it is very distinct and may be called *howensis*. It differs from *Haliotis hanleyi* Ancey in lacking the smooth space which is so characteristic of Ancey's species. This was described (Le Naturaliste, May 1881, p. 414) from the I. Nou, New Caledonia, and as it was not figured has been neglected. The type, now in the Australian Museum, is here figured (Plate XXXI, fig. 1) and agrees with New Caledonian shells collected by Mr. A. F. Basset Hull, and also with specimens from Lifu recorded as *H. jacnensis* Reeve, and also as *H. dringii* Reeve, neither of which species occurs in New Caledonian waters. A valid New Caledonian species was described by Sowerby as *H. crebrisculpta* (Ann Mag. Nat. Hist., ser. viii, vol. xiv, p. 478, pl. xix, f. 2, Dec. 1914), and this I recognised at Michaelmas Cay, North Queensland.

A well-marked little species is here described as *Sanhaliotis dissona* sp. nov. (Plate XXXI, fig. 2). Shell small, elongate, spine depressed. Colour brownish yellow. Sculpture consists of five principal cords separated by intervals of about the same width, the ribs rounded, not scaly, but irregularly nodulose; smaller cords intercalate, and on the last whorl there are half-a-dozen subsidiary ones between the suture and the primary ones. Orifices depressed, oval, fairly close

together; between the orifices and the basal rim four strong cords can be counted. Columella plate flattened, broad, hiding all the previous whorls. Interior yellowish pearl, shining. Length 28 mm.; breadth 18·5 mm. This was also collected at Michaelmas Cay.

## Family TROCHIDÆ.

The species of this family, be they large or small, are always attractive, and much of interest was found at Michaelmas Cay as many species grouped around *T. maculatus* Linné were collected. Of the six species Hedley allotted to *Trochus*—*calcaratus*, *fenestratus*, *hexagonus*, *maculatus*, *niloticus*, and *obeliscus*—one, *hexagonus*, must be rejected as it is based on a misinterpretation only. *Trochus niloticus* must be called *Rochia nilotica*, or, perhaps better, *Rochia pagodus*, while *T. fenestratus* and *T. obeliscus* are transferred to *Tectus*. In addition to *T. maculatus* and *T. calcaratus*, some other species were determined as true *Trochus*, thus *T. obesus* Reeve (Conch. Icon. xiii, pl. xiii, sp. and f. 75, Dec. 1861; loc.?) and *T. crebrigranatus* Reeve (loc. cit. pl. xv, sp. and f. 89, 1861; loc.?), and a third certainly appeared to agree with *T. fastigiatus* A. Adams (Proc. Zool. Soc., 1851, 150; Reeve, loc. cit. pl. xv, sp. and f. 87, 1861; loc.?).

### Genus CALLIOSTOMA.

I have already pointed out that the southern shells so classed have little relation with the true Palæarctic *Calliostoma*, and this conclusion has been confirmed by study of the radulæ by Thiele. I suggested they seemed nearer to *Thalotia* and this appears to be correct. According to a label in the Australian Museum, Hedley's *C. trepidum* is stated to be identical with the earlier *deceptum* of Smith. There are more species of this little group which may be distinguished by the new generic name of *Latifautor*, Hedley's shell being type. Further, the species known as *C. arruense* Watson seems to represent the southern *Thalotia* very closely, and may be separated with the new generic name of *Calthalotia*, Watson's species being type. Another new generic name, *Pulchrastele*, is here proposed for *Astele septenarium* Melvill & Standen, and Hedley's *Calliostoma speciosum*, which may not be that of A. Adams, appears congeneric. These species will be elucidated with figures later, as there are some very beautiful species to be described, and all the species are localised in distribution.

To the species of *Clanculus* must be added *C. gatliffi* Tomlin (Proc. Malac. Soc. (Lond.) vol. xvi, p. 24, fig. in text, April 1924: West Australia, Coral Sea). *Gibbula townsendi* Sowerby must be expunged, as Mr. Hedley told me it was included purely in error.

The species allotted to *Monilea* need redistribution, as that generic name needs rejection. Under *Talopia* can be placed *callifera*, *lentiginosa*, and *belcheri* (since added by Hedley); *nuclea* belongs to *Rossiteria*; *lifuana* to *Talopena*, while *glaphyrella* might be placed there, though not quite typical; *pudibunda* should be omitted at present as the specimens here so named do not belong to the species; for *henniana* I introduce the new name *Conotalopia*, and *tropicalis* may be included here temporarily.

At Michaelmas Cay many specimens were collected of the shell known as *Minolia agapeta* Melvill & Standen, but whose correct name I have shown to be *Monilea apicina* Gould, and for which I introduce the new generic name *Parminolia*, naming this species as type. Probably more than one species is known under that name. There are shells which occurred numerously and had

been collected previously by Hedley, but which do not appear to have been recorded. These are—*Trochus semiustus* Fischer (Journ. de Conchyl., 1879, p. 23; id., 1886, pl. 1, f. 6: New Caledonia), placed by Pilsbry under *Minolia*, but *Conotrochus* suggested, and *Solariella tragema* Melvill & Standen (Journ. Conch., 1896, p. 313, pl. xi, f. 78: Lifu, New Caledonia), under the subgenus *Conotrochus* and generic value proposed. While the latter was placed in *Conotrochus*, the former was obviously congeneric, and, as the name *Conotrochus* is invalid through having been used by Schroeter in 1863 for a Cœlenterate before Pilsbry's introduction, it is necessary to introduce a new generic name. The new name *Vanitrochus* is proposed, Melvill & Standen's species *tragema* being named as type.

The species under *Euchelus* need redistribution as Brazier's *Clanculus granosus* should be transferred back to *Clanculus*, while *Tallorbis* is now recognised for *roseola* Nevill, and *foveolatus* A Adams is more probably a *Herpetopoma;* a new genus *Vaceuchelus* is introduced for *Euchelus angulatus* Pease (Amer. Journ. Conch., vol. iii, p. 283, pl. 23, f. 27, 1867) which is representative of a large series of Euchelus-like molluscs which lack the basal tooth to the columella, and more than one species occurs in Queensland as well as Pease's shell.

## Family TURBINIDÆ.

The Queensland species of *Turbo* (*s. l.*) are difficult to name, while the genera are as puzzling to delimit. Some genera such as those represented by *argyrostomus*, *porphyrites*, *marmoratus*, and the N.S.W. *stramineus* seem easily recognisable, but the names to be used are not so easily determined. The type of *Turbo* is now regarded as *petholatus*, and with it may be classed *militaris* (= *imperialis* of Hedley's list) and *marmoratus*, though the last-named appears at first to differ.

*Senectus* can be used for the *argyrostomus* series, including *concinnus*, *chrysostomus*, *foliaceus*, *gemmatus*, *nivosus*, *speciosus*, *sparverius*, and *tumidulus*. *Lunella* will then come into use for the *porphyrites* series, which may be easily divided into three—*porphyrites* from New Caledonia, *mespilus* Gmelin (Syst. Nat., pl. vi, p. 3601, 1791: Southern Ocean) from East Queensland, and *porcatus* Reeve (Conch. Icon., vol. iv., pl. xi, sp. & f. 52, March 1848) from West Australia and Western Queensland.

The members of the *Senectus* series are difficult to segregate and the names need rectification. Thus I have shown (Proc. Zool. Soc. (Lond.) 1914, p. 669) that *Turbo foliaceus* Philippi, 1846, was invalid, and must be replaced by *Turbo squamosus* Gray (Narr. Surv. Voy. "Fly," vol. ii, p. 359, pl. ii, fig. 8, 1847) described from Port Essington, Northern Territory.

*Turbo concinnus* Philippi (Conch. Cab., ed. 2, p. 44, pl. 2, f. 6, 1847) is unavailable, and *Senectus permundus* nom. nov. is proposed to replace Philippi's name. *Turbo nivosus* Reeve (Conch. Icon., vol. iv, pl. x, sp. 43, f. 43-44, March 1848) from the Philippine Islands is invalidated by Montagu (Test. Brit., vol. ii, p. 326, 1803), and Reeve's species is here renamed *Senectus necnivosus* nom. nov. *Turbo speciosus* was described by Reeve (id. ib., pl. viii, sp. 35, March 1848) from New Holland, sent by Dring, but the name has been used by Megerle (Verh. Gesell. Nat. Freunde Berlin, 214, 1824) so I name Reeve's shell *Senectus perspeciosus* nom. nov.

Another name given by Reeve, *Turbo pulcher* (Proc. Zool. Soc. (Lond.) 1842, p. 185), to another shell collected by Dring, this time from Turtle Island, North Coast, must bear Menke's name *intercostalis* (Moll. Nov. Holl, spec. p. 13, 1843), while Philippi's *Turbo intercostalis* (Conch. Cab., 1846, p. 42), must be renamed *Senectus trossulus* nom. nov.

*Delphinula turbinopsis* Lamarck (Hist. Anim. s. Vert., vol. vi, pt. 2, p. 231, 1822), figured by Delessert (Recueil Coq. Lam., pl. 34, figs. 1, 1*a*, 1841), is obviously the shell from Shark's Bay, West Australia, above determined as *T. squamosus* Gray, an identity not previously recognised.

In Hedley's list *Astralium* was used with four species, *petrosum, nobile, aureum* (typ. error for *aureolum*), and *tentoriiforme*. Since then *Astræa* has been utilised to displace *Astralium* in the broad sense, but more recently *Astralium* has been revived for the *longispina* series, *Astræa* belonging strictly to the New Zealand *heliotropium*.

*Bellastræa* has been introduced for the "*fimbriatus*" series, with which *tentoriiformis* Jonas was associated, but the name of the South Queensland shell, the same as that at Sydney, is *sirius* Gould, the "*fimbriatus*" type not being yet recognised.

When Hedley described his *A. aureolum* he contrasted it with the Neozelanic *sulcatum* as a second member of the subgenus *Cookia*. It appears, however, to be a gigantic relation of the *Bellastræa* group, probably derived from the *Calcar* series, which is represented in Queensland by two or three species.

At Michaelmas Cay I secured two species not previously listed: *Calcar pileolum* Reeve and *Calcar stellare* Gmelin. Reeve's species was first described as *Trochus pileolum* in the Conch. Syst., pl. 217, f. 5, 1842, and the name has been used for other forms such as *rotularia* Lamarck. The true *Trochus rotularius* Lamarck (Hist. Anim. s. Vert., vol. vii, p. 12, 1822), described from unknown locality, is a West Australian shell, and also occurs in North Queensland. There should be no confusion as the beautiful figure given by Delessert (Recueil Coq. Lam., pl. 34, fig. 9 *a*, *b*, 1841) is sufficient to recognise the species by. The primary reference to *Turbo stellaris* Gmelin reads "Syst. Nat. pt. vi, p. 3600, 1791."

Commoner than these at Michaelmas Cay was *Calcar petrosum* Martyn (Univ. Conch., pl. 124, 1787), said to be from "China," but agreeing in detail with our shell, was probably collected by Cook's party in North Queensland or New Caledonia. Pilsbry (Man. Conch. (Tryon), vol. x, p. 234, 1888) associated with this species other shells which are certainly not conspecific.

Another common little shell at Michaelmas Cay was *Leptothyra læta* Souverbie and Montrouzier (Journ. de Conch., vol. xi, p. 277, pl. xii, f. 2, 1863: New Caledonia). I have shown that *Leptothyra* could not be used, and proposed *Collonista* for these shells, and as Montrouzier's specific choice had been anticipated by Philippi (Zeit. f. Mal., 1848, p. 100, 1849), the New Caledonian shell must be called *Collonista costulosa* Sowerby (Thes. Conch., vol. v, p. 213, pl. xiii, f. 161, 1886) introduced to replace Montrouzier's name.

## LEUCORHYNCHIA Crosse.

This genus was introduced by Crosse (Journ. de Conch., xv, p. 320, pl. xi, f. 4, July 1867) for a New Caledonian shell which he named *L. caledonica*.

Twenty years later Tryon (Man. Conch., x, p. 106, pl. 35, figs. 86, *a*, *b*) added a second species, *crossei*, reducing *Leucorhynchia* to subgeneric rank under *Teinostoma*. This was from Singapore, and from the same locality three years later Pilsbry added *L. tryoni* (Nautilus, v, p. 91, Dec. 1891). Then Melvill and Standen increased the number to four with a Lifu species, *L. tricarinata* (Journ. Conch. (Leeds viii, p. 311, pl. xi, f. 75, *a*, *b*, Nov. 12, 1896). Some years ago, I recognised Tryon's species from shell-sand from Shark's Bay, West Australia, and now I report the two New Caledonian species from Michaelmas Cay, thus adding a genus as well as two species to the Queensland list, the genus being also first reported from Australia in this note. Four new species have been recently described by Thiele, 1925.

## Genus LIOTINA.

Under this genus name discordant species are arranged, and this opportunity is taken to provide some better names, both generic and specific. Thus the species *crenata* Kiener typifies a peculiar series which may be called *Dentarene*, while, as it was proposed as a species of *Delphinula*, the specific name is invalid through the prior *D. crenata* Sowerby (Genera Shells, pt. 39, 1833), and it is here renamed *Dentarene sarcina* nom. nov. Another species which may be classed with it is *muricata* Reeve, which also needs renaming as there was a *D. muricata* Calcara (Mem. Conch. Altavilla, 1841, p. 75) before Reeve used it, so I rename Reeve's species *Dentarene munitus* nom. nov. A not uncommon shell at Michaelmas Cay agreed with *Delphinula cidaris* Reeve (Conch. Icon., vol. i, pl. v, sp. & f. 27, Oct. 1843: I. Mindoro, Philippines) save that our shell is more rounded still, the longitudinal ribs not so pronounced, and may be given a subspecific name, *lenullus* nov., the genus name *Globarene* being introduced for it as it has a very small umbilicus and outer lip only thickened, not variced, though the operculum is of the "Liotinid" style.

## Family PHENACOLEPADIDÆ.

One of the most attractive shells on the beach of Michaelmas Cay was a species of *Phenacolepas*, and continuous searching found many specimens representing more than one species. Three species were admitted by Hedley in his list, and I had found a broken piece of a fourth at Caloundra; later Sowerby described *P. mirabilis* (Proc. Malac. Soc. (Lond.) ix, p. 66, fig. in text, March 1910) which was the last-named. Simultaneously Thiele monographed the family in the Conch. Cabinet (Mart. and Chem.) 539e lief., Bd. ii, heft xxxiii, 1909), and added *P. reticulata* from Moreton Bay. Hedley had synonymised Melvill & Standen's *P. linguaviverræ* from Torres Straits with his *P. senta* from Funafuti, but Thiele has allowed these two as distinct. I agree with this, and moreover find that Hedley's species had been described earlier by Gould as *Capulus sagittifer* (United States Expl. Exped., vol. xii, Moll., p. 383, pl. 32, fig. 486, *a*, *b*, 1852: loc. unknown).

When Hedley introduced his *P. senta* he pointed out that the species did not seem congeneric, and Thiele has also agreed that division was necessary, but did not perform the task. The species on the Australian list were undoubtedly of different origin, and allowing *Phenacolepas* for the species around *crenulata* Broderip, the form *cinnamomea* Gould is here made the type of a new genus *Cinnalepeta*. This species is a mud-dweller, and the animal has been described by Hedley (Proc. Linn. Soc. N.S.W., xli, 1916, p. 707, pl. xlviii, f. 17-19, April 4,

1917) and its range is given as Northern Queensland and New Caledonia as well as New South Wales. Upon comparison the New Caledonian shells are found to be larger and proportionately narrower, and with more numerous ribs with much more pronounced prickles. It may be called *Cinnalepeta vagans* n. sp. The shells from tropical Queensland have closer ribs than the Sydney shells, while their shape is different, the apex more posterior. This form will be later figured, but may here be named *Cinnalepeta escensa* n. sp., the type being from the Annam River, North Queensland.

The sculpture, form, and texture of the *senta–linguaviverræ* group is characteristic, and the new generic name *Zacalantica* is here introduced, the species *linguaviverræ* being named as type. There appears to be more than one species in Queensland. The most curious find at Michaelmas Cay was a shell with a much stronger texture and an apex nearly median and not recurved. It was obviously a distinct type and is here named *Amapileus*, the new species here described being named as type.

**Amapileus immeritus** sp. nov.

(Plate XXXI, fig. 8.)

Shell small, conical, apex submedian, thin, translucent, white. The nuclear whorls are about one and a-half, coiled helicoid and flattened, the succeeding sculpture radials begin, faintly at first, strengthening rapidly, about thirty increasing by intercalation to about sixty at the margin; the ribs are sharp, elevated, narrow with wide interspaces which are very finely concentrically striate, only seen with a good lens; margin smooth, thick, not crenulated by the ribs. Length 10 mm.; breadth 8·5 mm.; height 5 mm.

Is apparently related to *P. lævicostalis* Thiele (op. cit., p. 31, pl. 5, figs. 7, 8), described from unknown locality, but is closer ribbed and ribs narrower.

**Collisellina bellatula** sp. nov.

(Plate XXXI, fig. 13.)

A small *Patelloida* was found among the shell-drift at Michaelmas Cay, North Queensland, and later found alive on dead clamshells. In the Australian Museum I find the same species (unnamed) from Kawieng, New Ireland, but the species seems hitherto to have been overlooked.

Shell elliptical, depressed, apex anterior, regularly ribbed, ribs twelve in number, rarely additional ones are developed, edge of shell uneven, strongly crenulate. Colour white, radially lined with brown, obscured in life by coralline growth, inside white, spatula marked with pale brown. Ribs smooth save for growth-lines. Length 14 mm.; breadth 9·5 mm.; height 4 mm. (type); largest specimen 19 x 14 x 6 mm.

Habitat: North Queensland (on the Great Barrier Reef).

I do not know any species that needs comparison. On the reef the form of *Collisellina* I discussed in the Proc. Zool. Soc. (Lond.) 1914, p. 670, was rarely met with but many specimens have been seen, and it must now be named. On account of further knowledge it is here specifically named as *Collisellina paropsis* sp. nov., the type being selected from Michaelmas Cay, a dead shell measuring 30 mm. in length, 23 mm. in breadth, and 9 mm. high. Much larger

specimens occur up to 40 x 35 x 18 mm. The primary ribs number nine, secondary ones intercalating but never numbering many; anteriorly the species is narrowed with three prominent ribs, posteriorly broadening with four stronger ribs, one on each side between these two series being slightly weaker; the ribs are elevated, sharply angular, white; the interspaces marked with black angulate patches; the margin is strongly cut by these ribs. Inside the shell is white, the edge darker, the spatula pale brown speckled with dark-brown spots, a blue tinge often present. The same species appears to occur on New Caledonia, but the Philippine Island *saccharina* is easily separated by its shape, being seven-ribbed, the sides almost parallel. Quoy and Gaimard's *stellaris* is nearer, but it lacks the narrowing of the Australian shell. I am now using Dall's name *Collisellina* (Amer. Journ. Conch., vol. vi, p. 254, 1871) introduced for this group alone as tending to more exactitude in differentiating these difficult species.

**Penepatella inquisitor** gen. & sp. nov.

(Plate XXXI, figs. 17, 18.)

When I proposed *Patellanax* (Proc. Linn. Soc. N.S.W., vol. xlix, pp. 183, 239, Oct. 24, 1924) with *P. squamifera* Reeve as type, I had in view the series of tropical shells now to be treated. I mentioned the series in the British Museum of *cretacea* Reeve, *P. pentagona* (Born) Reeve, *P. stellæformis* Reeve, and *P. pica* Reeve. The specimens mentioned came from Tahiti, Society Group (*gigantea* Lesson), Elizabeth I. and Palmerston I. Representing these localities there are in this Museum many specimens from the Paumotu Islands, which are of course *paumotensis* Gould (Proc. Bost. Soc. Nat. Hist., ii, 150, 1846) and agree well with his figure. Specimens from Samoa agree better with Reeve's *pica* but lack the colouring. Unfortunately there are not shells from *Vanikoro* to confirm *flexuosa* Quoy and Gaimard, but the figure is sufficient to establish it as a member of this series. A very fine species comes from New Caledonia, very flattened, with nine very pronounced broad ribs and a rich orange spatula, which may be called *intraurea* sp. nov.

The Queensland shell may be now described thus:—Shell star-shaped, flattened, apex submedian, seven primary ribs, three anterior and four posterior. The primary ribs have many intercalating ones, rarely one becoming as important as the primary seven, the edge being coarsely denticulate in agreement with the ribs. Colour greenish white, sometimes with a few scattered black spots; inside shining greenish white, spatula indistinct. Length 33 mm.; breadth 30 mm.; height 8 mm.

A smaller elevated form, which may be called *arrecta* (Plate XXXI, figs. 21, 22) is easily separated; in this the primary ribs have become obsolete at a very early age and the edges less crenulate, the ribs much finer. Length 16 mm.; breadth 15 mm.; height 11 mm.; largest 24 x 21 x 12 mm.

This species was found living on clamshells at Michaelmas Cay, North Queensland, the depressed larger form on the outside, usually obscured by coralline growth, the taller smaller form inside the shells. The genus is geographically separated from *Patellanax*, which ranges from New South Wales southward to Tasmania, while the genus *Penepatella* lives on the coral reefs of Queensland and the South Pacific Ocean.

It is even possible that there are two series represented in the mid-Pacific, as while the present species, the New Caledonian, the Vanikoro, and the Elizabeth Island shells, are all small and superficially similar, there is the *pica* series, *cretacea-gigantea*, *paumotensis*, and apparently *kermadecensis*, which are more agreeable with each other in their larger size and anterior narrowing; and in support of this I find Powell describe *Scutellastra tucopiana* (Proc. Malac. Soc. (Lond.) vol. xvi, p. 169, fig. in text, 1925) from the island of Tucopia, a large shell measuring 92 x 73 x 25 mm.

In Hedley's Queensland list there appears *Acmæa costata* Sowerby; this must be expunged as I find the record is based upon the shell here above described. The southern *Patelloida alticostata* Angas probably occurs in South Queensland, as other Sydney forms in this genus range that far north. I have recorded *Patelloida petterdi* Ten.-Woods from Caloundra, and now add *Patelloida submarmorata* Pilsbry, while I have collected other species belonging to this family at Port Douglas, North Queensland, &c., which appear to be undescribed. There is also another limpet living on the coastal littoral of North Queensland which needs study.

**Tenpetasus liberatus** Pease.

Hedley recorded *Capulus intortus* Lamarck from Funafuti, Paumotus, Lifu, Norfolk Island, New Hebrides, and Geraldton, West Australia, and later in the West Australian list (Journ. Roy. Soc. W.A., vol. i, 1915, p. 189) is included the same name citing Pease, Am. Journ. Conch., iii, 284, 1867, in confirmation. Years ago I received the species catalogued from Norfolk Island, and investigated its nomenclature. It was a difficult task, as many of these limpet-like molluscs are superficially similar though their relationship may be distant. However, I found that Lamarck's species was West Indian, it probably had two or three earlier specific names, a generic name *Krebsia* Morch, and that it was certainly neither conspecific nor congeneric with the Pacific form. At the reference to Pease above noted, *Capulus liberatus* was described and figured (pl. 24, f. 2) from the Paumotus, the date of publication being April 2, 1868. This name can be used at present for the shell common at Norfolk Island, and which I collected at Michaelmas Cay, North Queensland, the first record for this State. The type of *Capulus* is *hungaricus* L., whose nepionic stage consists of a regularly coiled smooth helicoid of one and a-half whorls succeeded by a varix, quite unlike the Rissoid nucleus of the Pacific *liberatus*, for which I propose the new generic name *Tenpetasus*.

Hedley had listed in the Queensland catalogue two species as *Capulus*, *calyptra* Martyn and *tricarinata* L. The latter has a generic name, *Amathina* Gray (Proc. Zool. Soc. (Lond.) 1847, p. 157; ex Synops. Contents Brit. Mus., ed. 44, 63, 1842; cf. Iredale, Proc. Malac. Soc. (Lond.) vol. x, p. 302, 1913), and this should be used. The former has again little to do with the true *Capulus*, and it would be best to use a new genus name *Capulonix* for it at once.

The species listed as *Hipponix* by Hedley need similar treatment; the species regarded as *conica* may need description, but there is a genus *Sabia* Gray available for *conica*; the curious species called *barbata* Sowerby 1835 appears to have an older name *Pileopsis pilosus* Deshayes (Mag. de Zool., 2 Jr., Class V, Moll., pl. 9, Dec. 1831), and as it is obviously not congeneric either with *Sabia* or *Hipponix* I here introduce a new genus *Pilosabia* for the Australian form of *P. pilosus* Deshayes.

## Family CERITHIIDÆ.

Here again difficulty is apparent in every direction, generic values being still undefined and specific identities masked in synonymic lumping. It will be a somewhat difficult task to unravel even the major groups, as there is no unanimous conclusion as to the type of *Cerithium*. At the present time it should be noted that there appears in Hedley's Queensland list many specific names which have no legal status. Thus *Cerithium contractum* Sowerby 1855 is included, but Bayle (Journ. de Conch., xxviii, p. 243, 1880) had provided *C. crumena* as Sowerby's name was invalid; at the same time Bayle (p. 246) added *C. proditum* for *Cerithium fusiforme* Sowerby 1855, also invalid. Through Sherborn's Index Animalium, pt. ii, I find many more, and here propose substitutes until revision can be thoroughly undertaken. *Cerithium duffieldi* nom. nov. for *Cerithium granosum* Kiener 1842, not *C. granosum* Borson (Mem. R. Acc. Sci. Torino, xxvi, 327, 1822). The well-known name *Cerithium lemniscatum* Quoy & Gaimard 1834 was anticipated by Brogniart (Mem. terr. Vicentin, p. 71, 1823), and I here propose *Cerithium probleema* nom. nov. for Quoy and Gaimard's species. *Cerithium morus* Lamarck 1822 is not the species so called by Bruguière in 1791, and the typical form of Lamarck's species is here renamed *Clypeomorus penthusarus* nom. nov.; there are many synonyms often cited but these appear to refer to different valid species. *Cerithium mitraforme* Sowerby 1855 is invalid if the genus name is broadly used, as Wood's *Murex mitriformis* 1828 was allotted to *Cerithium* by Wood himself in the same work. The species must be renamed if generic values be revised, but at present the names do not clash, Wood's *Murex mitriformis* being a *Clava*. *Cerithium variegatum* Quoy & Gaimard 1834 is invalidated, and differs from *janellei* Hombr. and Jacquinot 1853, and I rename Quoy and Gaimard's species *Cerithium sejunctum* nom. nov. Again many names have been synonymised, but without much justification, from the series examined. *Cerithidea kieneri* Hombr. & Jacq. 1853, described as *Cerithium*, is here renamed *Cerithidea anticipata* nom. nov., as there is a prior *C. kieneri* Cantraine (Bull. Ac. Roy. Brux. ii, p. 392, 1835).

I was going to add *Cerithium lacteum* Kiener (Spec. Coquilles (Cerithium), p. 58, pl. vii, f. 3-3*a*, 1842), but I find there is a prior *C. lacteum* Philippi (Enum. Moll. Siciliae, vol. i, p. 195, 1836), so instead will add *Cerithium collacteum* nom. nov. for Kiener's species.

Two other names must be amended, viz., *Cerithium taeniatum* Sowerby (Conch. Icon., vol. xv, sp. 119, 1865), which is invalid through the usage of the same name by Quoy and Gaimard in 1834, and I propose *Cerithium complexum* nom. nov. for Sowerby's species. I note it has been synonymised, but I have found that the species are much more distinct in nature than they appear in literature, and have seen half a dozen distinct species grouped under one name.

A better alteration I make in proposing *Cerithium phylarchus* nom. nov. for *Cerithium sowerbyi* Kiener (Spec. Coquilles Viv., Canal, p. 18, pl. vii, f. 2, 1841), which is not *C. sowerbyi* Deshayes 1834. This is a very fine species, quite distinct from *C. cumingi* A. Adams, with which it has been confused. I have not yet solved the problems surrounding the usage of the genus name *Cerithium*.

## Family JANTHINIDÆ.

In Hedley's list only *Ianthina ianthina* Linné appeared. Some years ago I prepared a monographic account of these shells which still remains in manu-

script. I found, unfortunately, that many of the Australian forms needed discrimination and nomination, but here use the conventional terms only. Mr. C. Nicholson looked out for these molluscs for me at Caloundra, and I am able to add two species to the Queensland list, viz., *Iodina nitida* A. Adams (Proc. Zool. Soc. (Lond.) 1868, p. 620, 1869: from 23 deg. N. 152 deg. W. to off Tahiti, Pacific Ocean) and *Violetta globosa* Swainson (Zool. Illus., vol. ii, pl. 85, 1826). The new genus name *Violetta* is introduced with *globosa* as type, as this kind of Violet Snail differs very considerably from both *Janthina* and *Iodina*.

For the *Recluzia* Hedley used the specific name *johnii* Chemnitz; this has been demurred to, and it will be undoubtedly better to use *R. hargravesi* Cox (Proc. Zool. Soc. (Lond.), p. 172, pl. 16, f. 8, 1870) given to a New South Wales form. In the N.S.W. list Hedley preferred *lutea* Bennett, a name given to a tropical mid-Pacific form.

## Family NATICIDÆ.

The variety of species in this family, and the difficulty in separating them without series, compelled their intensive collecting whenever met with, delightful results thereby accruing. While more species will be added to the Queensland list when all the material is worked out, three may here be introduced:—(1) *Natica gaidei* Souverbie (Journ. de Conch., vol. xxii, p. 196, pl. vii, fig. 7, April 1, 1874: Lifu), which is a synonym of *Natica lineozona* Jousseaume (Rev. Mag. Zool., ser. 3, vol. ii, p. 22, pl. ii, f. 3-4, 1874 (before April): hab. unknown) and *Natica notata* Sowerby (Thes. Conch., vol. v, p. 83, sp. 44, pl. 462, f. 168, 1883: New Caledonia). The operculum is sulcate and thus it falls into *Natica* s. str. (2) *Natica arachnoidea* Gmelin (Syst. Nat., pt. vi, p. 3674, 1791, for Chemn. 5, p. 271, pl. 188, f. 1915, 1916: locality unknown) was found alive with a notable brown velvety periostracum suggesting a distinct genus.

When Hedley wrote upon "Some Naticoids from Queensland" (Rec. Austr. Mus., xiv, pp. 154-162, 1924) he utilised *Uber* for the *mammilla* series with horny operculum, but indicated that groups could be utilised, observing: "Those species associated with *U. pes-elephantis*, being large massive shells with a wide umbilicus containing a stout spiral funicle, may be grouped under *Mammillaria* Swainson." *Mamillaria* was written by Swainson (Treat. Malac., p. 345, 1840), and *M. lactea* Sw. for Mart. 189, f. 1922, 1923, and this name was equal to *Natica alba* Gray 1827, and *N. pes-elephantis* Deshayes 1838, the last-named being preferred by Hedley, who included the species in the Queensland fauna on Schmeltz's record of a shell from Port Denison. It is pleasing, then, to report that Mr. Melbourne Ward collected a specimen on the beach at Friday Island, Torres Straits. Apparently the correct name to be used will be *Mamillaria alba* Gray, as the superficies is very different from that of the true *mammilla* series. In the case of *Mammilla* Schumacher, the species show a very large animal not retractile into the shell as is the animal of *pyriformis* Recluz and *flemingianum* Recluz, two typical white "Eggshell Nerites" of the ancient writers.

### **Gennæosinum peleum** gen. & sp. nov.

(Plate XXXI, fig. 12.)

This very distinct form can be shortly described as a finely sculptured *Natica* or a Naticoid style of "*Sigaretus.*"

Shell globose, spire short, somewhat flattened, whorls rather rapidly increasing and descending, umbilicated, mouth lunate, edge sharp. Colour pure white, rather glossy, with three concentric rows of yellow markings sometimes spots, sometimes lines, and sometimes broad V-like markings along the periphery. Sculpture consists of close-set flattened liræ with narrow interstices, on the last whorl, twelve above and about twenty below the rounded periphery, mostly broad liræ above and mostly narrow below; on the antepenultimate and preceding whorls nine liræ are counted. Umbilicus large, open, perspective, funicle running up. Columella straight, a little flattened and recurved anteriorly, medially flattened forming a tooth-like projection from which a funicular rib runs into the umbilicus; above spreading as a glaze on the body whorl and crossing to posterior angle of mouth which is half-moon shaped. Height 14 mm.; width 17 mm.

Habitat: Michaelmas Cay, North Queensland.

**Septa rubecula** Linné.

While adding a species and genus to the Queensland and Australian fauna, this species is of more than ordinary interest. The genus *Septa* was introduced by Perry (Arcana, pl. ii., Jan. 1, 1810) with the sole species *Septa scarlatina*, which is the same as *Murex rubecula* Linné (Syst. Nat., xth ed., p. 749, 1758).

The name *Septa*, as used in Hedley's Queensland list, has been shown to need replacement by *Charonia* Gistel (Iredale, Nautilus, 1913, p. 55), so that this reintroduction is pleasing to me. I found the species at Michaelmas Cay, and Mr. Melbourne Ward at the Capricorn Group. The names in the family Cymatiidæ need much rearrangement, as many generic types are grouped under the name *Cymatium*. *Cymatium labiosum* Wood needs elimination as it refers to the same thing as *strangei* A. Adams and Angas, and, though I once advocated the identity of these two, the latter name should be used for the Australian shell.

**Distorsio anus** Linné.

This well-known species has not hitherto been recorded from Australia, as Shirley's report from "Burketown" is valueless. A series of shells received by Shirley from Burketown, an inland locality, comprised such Pacific species as *Harpa nobilis* Martyn, *Cypræa onyx* L., *Conus bullatus* L., *Conus luteus* L., &c., and were obviously never collected there, nor in Queensland. At the same time Shirley added "*Distortrix cancellatus* Desh., Yeppoon," but there was no such species named by Deshayes, and "*cancellinus*" was probably intended, but the author of that name was not even Deshayes. Furthermore, Hedley had included *Distortrix decipiens* Reeve, which would refer to the same species Shirley had in view. The correct name for this seems to be *Distorsio reticulata* Bolten (Mus. Bolten, ii, p. 133, 1798, based on Mart. 2, t. 41, f. 405, 406) from the Island of Hitoe in the Moluccas.

Family CONIDÆ.

Many more species of Cones exist in the Queensland seas than are listed at present, and I can add eleven, while I have another half dozen which have not yet been satisfactorily located.

**Conus pulicarius** Bruguière, Ency. Meth., Vers., vol. i, 1792, p. 622: Isles de l'Ocean Pacifique.

**Conus catus** Bruguière, Ency. Meth., Vers., vol. i, 1792, p. 707: I. St. Domingo, Martinique, and even Isle de France.

**Conus eburneus** Bruguière, Ency. Meth., Vers., vol. i, 1792, p. 640: Mers des Indes orientales.

**Conus rattus** Bruguière, Ency. Meth., Vers., vol. i, 1792, p. 700: Mers d'Amerique.

**Conus miles** Linné, Syst. Nat., xth ed., p. 713, 1758: in India: only reference is Rumph. mus. t. 33, f. W. = Amboina.

**Conus omaria** Bruguière, Ency. Meth., Vers., vol. i, 1792, p. 743; l'Ocean Asiatique, Madagascar, Manille.

**Conus tulipa** Linné, Syst. Nat., xth ed., p. 717, 1758: no locality given: 1st reference is Rumph. mus. t. 34, f. K, L = Amboina.

**Conus vexillum** Gmelin, Syst. Nat., pt. vi, p. 3397, 1791: habitat not given: 1st reference is Rumph. mus. t. 31, f. 3 = Amboina.

**Conus virgo** Linné, Syst. Nat., xth ed., p. 713, 1758: no locality given: 1st reference to Rumph. mus. t. 31, f. E = Amboina.

Included in Hedley's list are two species whose names need emendation: *Conus cinctus* Swainson (Zool. Illus., ser. i, pl. 110, July 1822) is invalid, through prior usage by Bosc 1801 (Buffon, ed. Deterville, Moll. v, p. 140) and Borson 1820 (Mem. R. Acc. Sci. Torino, xxv, p. 192), and is here renamed *Conus circumactus* nom. nov. The other one is *Conus deshayesii* Reeve (Proc. Zool. Soc. (Lond.) 1843, p. 168, June 1844), which is later than the proposition of the same name by Bellardi and Michelotti (Mem. R. Acc. Sci. Torino, ser. 2, vol. iii, p. 153, 1841), and has been corrected to *Conus cuvieri* by Crosse in a tract "Obs. genre Conus 12," which was issued in the Rev. Zool. 1858, but thus appears in Tryon (Man. Conch., vol. vi, pp. 87, 103, 1884).

**Conus planorbis** Born.

This well-known species has not hitherto been recorded from Queensland and Australia, and the original reference reads *Conus planorbis* Born, Index Mus., Vindob., p. 147, 1778, but this needs rectification. Though this index has a title-page dated 1778, this appears to have been prepared and never altered when the work was not concluded in time. The folio work known as the "Mus. Caes. Vindob." is entitled 1780, and is usually quoted as later than the index. Examination shows that they were simultaneously prepared as each quotes the other; and in the "Explicatio citationum abbreviatum" given in the index appears "Mus. Caes. Vindob. . . . Wien 1779, fol." Throughout the index the fourth volume of Martini's "Konch. Kab." is correctly cited, but that volume was not published until 1780, which proves conclusively that the index did not appear before that year. In view of this it would be best to quote the folio work, as in that place illustrations accompany the descriptions.

**Conus litteratus** L. **v. millepunctatus** Lamk.

Thus Hedley wrote in the Queensland list, but many workers have allowed the species as distinct. When Lamarck (Hist. Anim. s. Vert., vii, 461, 1822)

introduced his species *Conus millepunctatus*, he cited as illustrative "Martini, Conch. 2, t. 60, f. 666" and "Martini, Conch. 2, t. 60, f. 667," the former being his "var. b," the latter "var. c." These are apparently conspecific, and had been given systematic names by Bolten (Mus. Bolten, ii, p. 41, 1798) long before. Bolten had also (p. 47) introduced *Cucullus millepunctatus* for a different species of Cone, so it is doubly necessary to make use of Bolten's earlier name for the accepted *millepunctatus* Lam. The name to be used is *pardus*, as *Cucullus pardus* takes precedence over *Cucullus leopardus*, the former given to Martini's f. 667, the latter to f. 666.

**Conus vermiculatus** Lam.

This well-known species does not appear in Hedley's list, as it was regarded as merely a variety of *ebræus* Linné. I found it at the Kermadecs, but I did not receive it from Lord Howe Island, where *ebræus* was very common, until recently, when it came as a rare shell and was easily distinguishable. I found it at Michaelmas Cay along with *ebræus*, when it was easily seen to be a distinct species, the shape, size, and markings differing. The oldest name for the species is *chaldæus*, as Bolten had introduced *Cucullus chaldæus* (p. 42, 1798) for Martini, 2, t. 63, f. 699-700, the same figures as were later quoted by Lamarck for his species. It may be pointed out that this correction was made as long ago as 1852 (Mörch, Cat. Conch., Yoldi, p. 66) but has been ignored.

**Terebra pygmæa** Hinds.

A curious little shell was described by Hinds under this name (Proc. Zool. Soc. (Lond.) 1843, p. 158, 1844: from Straits of Malacca 17 F.), and though it was figured twice (Thes. Conch., i, p. 184, pl. xlv, f. 112, 1844; Reeve, Conch. Icon., vol. xii, pl. xxvii, sp. and f. 149, June 1860) the generic location was so peculiar that it was no wonder that it was redescribed as *Turbonilla ? princeps* Preston (Journ. Malac., vol. xii, p. 7, pl. ii, f. 33, April 7, 1905) from Ceylon. The recognition of this species from Michaelmas Cay provides the opportunity to give it a genus name, *Terenolla*.

This genus does not appear to belong even to the family Terebridæ, to which must be added some more species for Queensland, but it is difficult to determine the generic names to be used. A specific case is worthy of note, as *Terebra tigrina* Gmelin has been used for a shell which I collected at Michaelmas Cay, and was not on the list. Upon referring back I found that Gmelin (Syst. Nat., pt. vi, pp. 3475 and 3502, 1791) had used the name *Buccinum tigrinum* twice, and the reference to the *Terebra* was the second one, which was of course unavailable. The error had been corrected by Dillwyn (Descr. Cat., p. 644, 1817) more than a century ago, who had provided *B. felinum*, yet no worker had taken cognisance of the correction. The species would apparently fall into Dall's genus *Oxymeris*, but a careful study is necessary to fix the genera in this family, previous attempts having used mechanical features only for this purpose with somewhat disastrous results.

Another species to be added under *Oxymeris* is *Terebra nebulosa* Sowerby (Tankerville Cat. App., p. xxv, 1824: no locality).

Under the genus *Perirhoe* Dall there can be added two species: *Terebra cingulifera* Lamarck, Hist. Anim. s. Vert., vol. vii, p. 289, August 1822, habitat unknown; *Terebra monile* Quoy & Gaimard, Voy. de l'Astrol., Zool., vol. ii, p. 467, 1833, locality unknown but probably Marianes or Carolines.

Under the genus *Hastula* H. & A. Adams two more species must be included: *Terebra cerithina* Lamarck, Hist. Anim. s. Vert., vol. vii, p. 288, August 1822, Timor; *Buccinum hastatum* Gmelin, Syst. Nat., pt. vi, p. 3502, 1791, no locality.

## HARPA Humphrey.

This is the first authentic record, as though Shirley recorded no less than four species—viz., *H. conoidalis* Lam., Torres Straits; *H. minor* Martyn, Torres Straits; *H. nobilis* Martyn, Burketown; and *H. crassa* Mörch, Normanton—both his nomenclature and localities are valueless, two of the latter being inland localities and two of the names being incorrect.

Hedley (Nautilus, vol. xxv, pp. 65-66, 1911) gave some notes on the nomination, pointing out that *Harpa harpa* Linné = *nobilis* Lamarck (Martyn did not use it); *Harpa davidis* Bolten was earlier than *H. conoidalis* Lam., while *Harpa amouretta* Bolten was earlier than *H. minor* Lam. (again not Martyn).

The specimen I collected was juvenile and is regarded as belonging to *H. harpa* L. It may be recorded that when Melvill (Journ. Conch. xv, p. 25, 1916) wrote upon the subject of *Harpa* he carelessly allotted two species to the North of Australia without citing any evidence.

## **Voluta wisemani** Brazier.

This species was described as *Voluta* (*Aulica*) *wisemani* by Brazier (Proc. Zool. Soc. (Lond.) 1870, p. 108: Journ. de Conch, vol. xix, p. 78, pl. v, f. 1, Jan. 1, 1871) from the north-east coast of Australia. The figure was copied by Sowerby (Thes. Conch., vol. v, pl. 513 (Voluta pl. xiv), f. 139, 1887), who accepted the species. No further specimens coming to hand the species was later degraded, and does not appear in Hedley's Queensland list, though the type is preserved in the Australian Museum. It was therefore pleasing to find it living on Michaelmas Cay, and establishing its specific distinction, and consequent addition to the Queensland list. According to Hedley's conclusions it would belong to *Cymbiola*, but that decision needs reconsideration.

Another addition to be made is a true *Cymbiola* named by Gray *Voluta sophia* (Ann. Mag. Nat. Hist., vol. xviii, p. 431, Dec. 1846: Endeavour Sound, North Australia), and figured in Jukes' Voy. "Fly," vol. ii, p. 355, pl. 1, figs. 1, 2, 1847, where the corrected locality "Endeavour River" is given. This species does not occur in the Queensland list, and simultaneously Smith published a note on the allied species (Ann. Mag. Nat. Hist., ser. 8, vol. i, p. 96, 1909), where he gave as localities "Endeavour Straits and Port Essington, North Australia: Warrior Reef and Darnley Island (Petterd)." At the same time he showed that *piperita* was exactly the same as *norrissii* Gray, and regarded *C. macgillivrayi* Cox as a light form, and *C. ruckeri* Crosse as a highly coloured form of *norrissii*, of extralimital distribution only, and that *nivosa* Lamarck was confined to West Australia. Hedley's record of *nivosa* Lamarck from Queensland probably referred to *sophia*, and *nivosa* must be expunged from list, but the record of *ruckeri* Crosse appears to be good.

The irresponsible Shirley suggested the following additions:—"*Scaphella norrissi* Sow., Cape York, and var. *sophiæ* Brazier, Cape York, and *piperita*

Sow., Cardwell." If these were not misidentifications of the same species they might refer to alien specimens, but Mr. Mel. Ward brought in from Friday Island a typical specimen of *sophia*, and it may be recorded that the figure given by Tryon (Man. Conch., vol. iv., p. 87, pl. 25, f. 57, 1882) as *sophiæ* is not the real species.

## Family CYPRÆIDÆ.

Many more species exist in Queensland waters than were listed by Hedley, and a dozen are here added. In this case no attempt to determine the generic divisions has been made, as to a great extent these will depend upon animal characters:—

**Cypræa becki** Gaskoin, Proc. Zool. Soc. (Lond.) 1835, p. 205; Reeve, Conch. Icon., vol. iii, pl. xxii, sp. 125, 1846.

**Cypræa caurica var. oblongata** Melville, Mem. Proc. Manch, Lit. Soc., ser. ix, vol. i, p. 217, pl. 1, f. 8, 1888.

**Cypræa cicercula** Linné, Syst. Nat., xth ed., p. 725, 1758: "M. Mediterraneo."

**Cypræa cribraria** Linné, Syst. Nat. xth ed., p. 723, 1758: no locality cited.

**Cypræa contaminata** Sowerby, Conch. Illus., f. 21, p. 10, 1832: no loc. Ex. Gray MS.

**Cypræa gaskoini** Reeve, Proc. Zool. Soc. (Lond.) 1846, p. 23: Conch. Icon., vol. iii, pl. xxii, sp. 122, Feb. 1846.

**Cypræa globulus** Linné, Syst. Nat., xth ed., p. 725, 1758: "Asia," ex Rumph.

**Cypræa irrorata** Gray, Zool. Journ., vol. iv, p. 80, 1828: Reeve, Conch. Icon., vol. iii, sp. 126, Feb. 1846.

**Cypræa mappa** Linné, Syst. Nat., xth ed., p. 718, 1758: "O. Africæ."

**Cypræa microdon** Gray, Zool. Journ., vol. iv, p. 71, 1828: Reeve, Conch. Icon., vol. iii, sp. 139, Feb. 1846.

**Cypræa nucleus** Linné, Syst. Nat., xth ed., p. 724, 1758: "O. Indiæ or" ex Rumph.

**Cypræa subcylindrica** Sowerby, Thes. Conch., vol. iv, p. 9, pl. xxvii, f. 269, 1870: Indian Ocean, &c.

**Cypræa talpa** Linné, Syst. Nat., xth ed., p. 720, 1758: "Asia," ex Rumph.

**Cypræa pyriformis** Gray, Zool. Journ., vol. i, p. 371, 1824: Sowerby, Conch. Illus., f. 23, p. 7, 1832: Ceylon. Albany Passage, Mel. Wardi, Michaelmas Cay.

Some of these have already been recorded by Shirley, but his records are valueless, as extra-limital species from inland localities were included.

### **Cypræa staphylæa** and **limacina.**

There has been much discussion as to the status of these two. Mr. Mel. Ward collected a series on the Capricorn Group and there prove to be two

distinct entities known under these two names in Queensland, whatever else may be the case. The larger form (*limacina*) is smooth with large spotting and pustules evanescent on the back, the median line being more or less ill-defined; the smaller shell (*staphylæa*) has strong pustulation, the groove on the back deep and very notable; the face, however, separates the shells easily, as in the small species the teeth extend right across the base, whereas the large shell has the teeth confined to the edges of the aperture, a white callus developing laterally on both sides; the teeth appear to number one or two more in the smaller species with more intercalating rugæ; the base, moreover, is entirely brownish red, while on the large species it is white, the teeth brown, the intervals between the teeth cream. I found the small species on Michaelmas Cay and Low Island only, the animal being black, dotted with white. Garrett says the animal of *limacina* is vermilion.

**Xenuroturris legitima** gen. & sp. nov.

(Plate XXXI, figs. 3, 4.)

When Hedley published his Revision of the Australian Turridæ (Rec. Austr. Mus., vol. xiii, pp. 213-359, 1922) he commented (p. 217): "*T. spectabilis* and *T. garnonsi* Reeve form a pair differing in the length of the canal. Similar pairs are *T. tigrina* Lamk. and *T. abbreviata* Reeve; *T. marmorata* Lamk. and *T. cingulifera* Lamk." The former series have a long canal, the latter a short one, and by a peculiar coincidence none of the latter series had been reported from Australia when Hedley wrote. I was therefore delighted to meet with the present species washed up alive on the beach at Michaelmas Cay. It agrees with shells called *T. cingulifera* Lam., but does not agree with Lamarck's description, which was from unknown locality, and specimens so determined prove very different from Mauritius and Polynesia.

Shell large, awl-shaped, mouth small, canal short and broad, fasciole deep, distant from the suture, and followed by a strong ridge which is composed of three liræ. Colour creamy white thickly dotted with pale red-brown spots, the raised ridge being ornamented by darker regularly spaced blotches. Sculpture consists of fine concentric liræ; on the antepenultimate whorl half a dozen can be counted above the ridge and a dozen below, four being more prominent; the last whorl shows the same sculpture throughout, seven liræ predominating; longitudinal sculpture scarcely observable save with a good lens. Columella nearly straight; inner lip with a very thin glaze extending across the body whorl; outer lip rather straight from the suture to the fasciole then from below the fasciole sweeping forward, then recurring to short open canal. Length 57 mm.; breadth 18 mm. Much larger specimen measures 72 x 23 mm. The operculum is leaf-shaped, thick, horny, apex terminal; differing considerably from that of *Asthenotoma* as figured by Hedley (Rec. Austr. Mus., vol. xiii, pl. xlii, f. 4, 1922) and from that of *Turris*, described as *unguiculate*. The short canal obviously differentiates the group generically.

Family MITRIDÆ.

The most troublesome groups of mollusca to-day are those of the best known shells such as Cones, Cowries, Mitres, and "Tritons." Field observation indicates differences in species that recent cabinet lumpers have depreciated, though the earlier splitting conchologists had keenly separated them. It is now

an arduous task to dig out of synonymy the correct name for the species observed. Thus members of different families are lumped under *Mitra*, as was shown long ago by Troschel and more recently confirmed by Cooke from study of the radulæ, and it is a nerve-wracking prospect to disentangle the species. I found local variation as well as individual and probably sexual, yet nevertheless specific values seem easy to establish. The generic groups are somewhat more difficult, as probably many more names are necessary, but here I simply attempt to locate the species found at Michaelmas Cay, as these amounted to some twenty-five species.

The genus name *Mitra* was long used for the red-spotted Mitres as dating from Lamarck, but it was first validly introduced by Martyn (Univ. Conch., vol. i, pl. 19, 1784), and the species *tessellata* is taken as type, a different form from the conventional *Mitra* which must now be called *Mitraria* Rafinesque (Anal. Nat., p. 262, 1815: cf. Iredale, Pro. Mal. Soc. (Lond.) ix, p. 262, 1911). This name was overlooked by Dall (U.S. Nat. Mus. Buil. 90, p. 60, 1915) when he introduced *Papalaria* for the same group.

*Callithea* Swainson (Treat. Malac., pp. 130-320, 1840) was anticipated by Boisduval (Mag. de Zool., v, pl. 122, 1835), and the *stigmataria* group is easily recognised, so for this I propose *Pulchritima* gen. nov. The small sand-living Mitres grouped under "*exasperata-torulosa*" form a little compact series for which I propose the name *Arenimitra*, naming *arenosa* Lamarck as type. The species generally lumped I found to be distinct entities in life, so have to add four to our list. The common species *Mitra scutulata* "Lamarck" must be called *Strigatella discolor* Bolten (Mus. Bolten, ii, 137, 1798, for Chemn. 10, t. 151, f. 1428, 1429), as there is a prior *M. scutulata* Martyn (Univ. Conch., iv, f. 129, 1786-7) earlier than Gmelin's *V. scutulata* (Syst. Nat., pt. vi, p. 3452, 1791).

In the same way the species known as *Mitra digitalis* Chemnitz or Dillwyn must bear the name *Chrysame imperialis* Bolten (Mus. Bolten, ii, 135, 1798, for Chemn. 10, t. 151, f. 1432, 1433) on the same basis, while Lamarck had named the species *Mitra millepora* (Ann. Mus. Paris, vol. xvii, p. 198, 1811) before Dillwyn (Cat. Descr. Shells, p. 559, 1817) legitimatised Chemnitz's non-binomial name.

A beautiful addition to the Queensland list is Martyn's *Mitra sphærulata* (Univ. Conch., vol. i, f. 21, 1784), which must be placed in the genus *Scabricola* Swainson (Treat. Malac., pp. 130-319, 1840). Under *Costellaria* Swainson (Treat. Malac. pp. 130-320, 1840) to be added are: *Mitra intertæniata* Sowerby (Thes. Conch., vol. iv, p. 35, pl. 361 (Mitra, pl. x), f. 154, 1874); *Mitra concentrica* Reeve (Conch. Icon., vol. ii (Mitra, pl. xvii), f. 128, Oct. 1844: I. Amaa); and *Mitra armiger* Reeve (id. ib., pl. xxxv, f. 288, March 1845).

In the genus *Arenimitra*, in addition to *arenosa* Lam. must be added: *Mitra approximata* Pease, Proc. Zool. Soc. (Lond.) 1860, p. 146; *Mitra cadaverosa* Reeve, Conch. Icon., vol. ii, pl. xxi, f. 160, Nov. 1844; *Mitra torulosa* Lamarck, Ann. Mus. Paris, vol. xvii, p. 216, 217, 1811; *Arenimitra michaelis* nom. nov., for *M. exasperata* Reeve Conch. Icon., vol. ii, pl. xxi, f. 162, 1844.

Another species of *Chrysame* H. &. A. Adams (Gen. Rec. Moll., vol. i, p. 171, 1853) to be added is *Mitra tiarella* A. Adams (Proc. Zool. Soc. (Lond.) 1851, p. 133), as determined by British authorities dealing with Lifu shells. It is unfortunate that no reliance can be placed upon these identifications, the only ones many Austral students have, as the types were available to the London

workers, and it would have been very helpful had only necessary care been taken in comparisons.

Two more species have to be added under *Strigatella*, viz.: *Mitra litterata* Lamarck, Ann. Mus. Paris, vol. xvii, p. 220, 1811; *Mitra auriculoides* Reeve, Conch. Icon., vol. ii, pl. 28, f. 228, Jan. 1845. Another addition to be made is *Mitra puncticulata* Lamarck, Ann. Mus. Paris, vol. xvii, p. 198, 1811, a species which Tryon placed under *Mitra* restricted, that is *Mitraria* to-day, but it certainly is not a true "red-spotted Mitre."

There are some other small Mitres to be yet determined from Michaelmas Cay, but mention must be here made that an addition has been made by Melvill, who has described *Mitra* (*Costellaria*) *quæsita* (Proc. Mal. Soc. (Lond.) vol. xvi, p. 219, pl. x, f. 4, July 1925) from North Queensland.

A curious kind of Mitroid shell appears in Hedley's list under the name *Cylindra crenulata* Gmelin. The species was not uncommon at Michaelmas Cay, but with it there was a slenderer species which appears to be unnamed. The genus *Cylindra* was introduced by Schumacher (Essai. nouv. Syst. test, pp. 71-236, 1817), and has been rejected on account of the prior *Cylinder* Montfort (Conch. Syst. ii, 390, 1810); this has been questioned, so it is delightful to record that Sherborn has indexed (Index Animalium ii, p. 1744) a prior *Cylindra* Illiger (Mag. f. Insekt. (Illiger) i, p. 303, 1802) which effectually settles all argument.

Fischer (Manuel de Conch., pt. vii, p. 614, June 30, 1884) provided *Cylindromitra* as a substitute, giving *crenulata* as the example. This can be used, as although there is an earlier *Dactylus* Humphrey (Mus. Calonn., p. 9, 1797) whose tautonymic type is *Voluta dactylus* Linn., the present form may not be congeneric.

**Cylindromitra fastidiosa** sp. nov.

(Plate XXXI, fig. 20.)

Shell elongate, mouth narrow, colour white. It can be best described by comparison with the well-known *crenulata*, but the Queensland form of that shell differs and may be named *C. crenulata toleranda* subsp. nov. (Plate XXXI, fig. 19). The new species is smaller, narrower, and more delicately formed with eight or nine plaits on the columella instead of six or seven; there are forty to fifty spirals instead of thirty, and on the antepenultimate whorl four rows can be counted instead of two; the subsutural row is finely crenulate instead of coarsely reticulate; the colouration seems to be constantly white, whereas *C. c. toleranda* is girdled with pale brownish-yellow blotches with a more open mouth. The type of *C. fastidiosa* is 13·5 mm. long by 5·25 mm. wide, while the immature specimen of *C. c. toleranda* figured measured 15·5 mm. by 6·5 mm., an adult of the latter species measuring 22·5 mm. by 11 mm.

Another species, *Mitra undulosa* Reeve (Conch. Icon., ii, sp. 193, 1844), described from the Philippines, was synonymised by Tryon with *crenulata*, but it is very distinct and has been sent from Broome, North-west Australia.

Shirley recorded "*Cylindra nucea* Meuschen from Bowen," and the species which should be called *Acuticylindra nucea* Gronow (Zoophyl. Gronov. Icon. Explic., pl. xviii, f. 11, 1781: no locality) can be admitted, as it occurs on the Capricorn Group, and differs so remarkably from *crenulata* and *dactylus* that I provide the new genus name *Acuticylindra* for it alone.

**Ecmanis igneus** Gmelin.

A strange shell was determined as *Buccinum igneum* Gmelin (Syst. Nat., pt. vi, p. 3494, 1791, based on Martini 4, t. 127, f. 1217: no loc.); on the same basis Bolten founded his *Triton buccinulum* (p. 125), while Reeve introduced *Buccinum pictum* (Conch. Icon., iii, pl. x, sp. & f. 74. Dec. 1846) for a Philippine shell, which he regarded as the same. It was obviously referable to a genus not hitherto represented in the Australian fauna, and it was found to have a name given to it alone. Thus Möller in the Isis 1832, col. 131, printed a list of mollusca prepared by Schmidt, and therein included a new genus *Proboscidea* for *Buccinum igneum* Lin. Gmelin's edition of Linné's Systema Naturæ was commonly simply cited as "Lin." As Schmidt's name was preoccupied, having been used by Bruguière (Ency. Meth., Vers. Int., p. 96, 1791) as long before as 1791, the substitute *Ecmanis* was provided by Gistel (Nat. Thierr. Schulen, p. x, 1848).

A smaller relation is the shell listed by Hedley as *Pisania crenilarum* A. Adams, which belongs to the genus *Jeannea* Iredale.

## Family FUSIDÆ.

This name was recently introduced to replace the Colubrariidæ, and in the Queensland list two species of Colubraria were included—viz., *antiquata* Hinds and *tessellata* Reeve. Two more of this style of shell have to be added, so that the names may be corrected as follows:—

**Colubraria strepta** Cossmann.

*Triton distortum* Schubert and Wagner, Conch. Cab. (Martini & Chemnitz), vol. xii, p. 138, pl. 231, ff. 4074, 4075: no locality.

Not *Triton distortum* Lamarck, Liste Expl. Ency. Meth., p. 4, 1816.

*Triton tortuosus* Reeve, Conch. Icon., vol. ii, pl. xvii, f. 74, June 1844: I. of Burias, Philippines.

Not *Triton tortuosus* Brocchi.

*Tritonium streptum* Cossmann, Essai Paléoconch. comp., 5th livr., p. 93, footnote Dec. 1903: new name for above.

This is the only species of *Colubraria* on the Queensland list, as *tessellata* Reeve above cited has already been corrected by Hedley to *Caducifer decapitatus* Reeve, and I here propose *Nivitriton* gen. nov. for *Triton antiquatus* Hinds. When Dall (Smithson Miscell. Coll. (qtly. issue), vol. 47, 1904) dealt with this group he allowed the last-named to belong to *Phrygiomurex*, proposed at the same time for *Triton sculptilis* Reeve, but I cannot see any close relationship. This genus and species must be added to the Queensland list.

## Family NASSARIIDÆ.

The species included in this family need subdivision so that the species can be quickly located. The family has been accurst since Marrat "worked" at it, and came to the fatuous conclusion that probably all the forms of the world represented "*one species.*" This result is characteristic of the folly of lumping, as in nature the species are very well defined, and very easy to distinguish, while probably the groups will be as easily circumscribed, when thoroughly studied.

The species name *N. coronatus*, based on *Buccinum coronatum* Bruguière (Ency. Meth. Vers., i, 1792, p. 276) is untenable, as Martyn (Univ. Conch. iii, 1786-7, f. 83) had previously used it. Names of synonyms appear in monographs, but generally these show well-marked differences. There is, however, an even earlier name, *Buccinum fasciolatum* Gronow (Zorophyl. Gronov. 1781, Icon. Expl., p. v, for pl. xix, figs. 7-8), which appears to be an excellent illustration of the species I know.

The species name *crenulatum* must be corrected, as Linné had used this in the genus *Buccinum* before Bruguière introduced it for a species of *Nassarius*. A beautiful little shell from the New Hebrides was called *Nassa eximia* by H. Adams (Proc. Zool. Soc. (Lond.) 1872, p. 14, pl. 3, f. 28), and when I saw it from New Caledonia it seemed a very atypical *Nassa*, so when I collected it at Michaelmas Cay I determined to provide a new generic name, *Allanassa*, for it.

Two other species have to be added:—*Nassa callospira* A. Adams, Proc. Zool. Soc. (Lond.) 1857, p. 102, 1852: I. Burias; Reeve, Conch. Icon., viii, Nassa, pl. x, sp. & f. 66, 1853; *Niotha comtessei* Iredale, Austr. Zoologist, vol. v; p. 347, pl. xxxviii, f. 13, 1929.

## "COLUMBELLID" SHELLS.

The genus name *Columbella* has been used for a heterogeneous series of shells, and restriction would have lessened its usage so much that its disappearance will not cause much heartburning. Bolten's name *Pyrene* has come into use for Australian species, while *Columbella* was left to the American species about *mercatoria* L., its monotype. However, *Pterygia* Bolten had not been scientifically eliminated, so, in order to preserve *Marginella*, Dall, by a curious method of working, fixed on *P. nucella* as type, and thus would have made *Pterygia* equal to and older than *Cylindromitra* Fischer. However, the third species in Bolten's list was *P. vulgaris*, and this species must be regarded as the type of Bolten's genus. Unfortunately this species is Linné's *V. mercatoria*, and consequently *Pterygia* would finally crush the claims of *Columbella* to recognition. This does not greatly concern us as the only species resembling the West Indian *mercatoria* have already been separated as *Euplica* by Dall. In the Queensland list already there are *varians* Sowerby and *versicolor* Sowerby as members of *Euplica*, and now I add two more: *Columbella deshayesii* Crosse, Journ. de Conch., vol. vii, p. 382, pl. xiv, f. 4, June 1859: Oceania?; *Columbella anceps* Hervier, Journ. de Conch., vol. xxxix, p. 309, 1899: Lifu.

A beautiful shell has been identified as *Colombella ligula* Duclos (Illustr. Conch. (Chenu), Mon. Col., pl. 11, f. 11-16, 1840), and for this species I propose the new genus *Graphicomassa*. Other species in the Queensland list will group with this.

Another handsome little shell appears in the Queensland list as *Pyrene cumingii* Reeve; since, Hedley transferred it to *Aesopus* and named a var. *queenslandica*. As a synonym of Reeve's species, Tryon (Man. Conch., vol. v, p. 151, 1883), among other names which do not seem pertinent, cited *Colombella spicula* Duclos (Illustr. Conch. (Chenu) Mon. Col., pl. 16, f. 9-10, 1847), which seems to be the same species and has many years' priority. For this species I introduce the new generic name *Lavesopus*, designating the Queensland form as type; this may be a distinct species, but at present there is not sufficient material to decide.

**Transtrafer longmani** gen. & sp. nov.

(Plate XXXI, figs. 10, 11.)

Shell broadly fusiform, spire short, less than aperture, canal short, surface malleated. Colour white, mouth edged with faded wine colour. Apical whorls one and a-half, elevated, brown, adult whorls five. Sculpture consists of longitudinal varicose ribs crossed by distant encircling beams which form square deep hollows; the shell is very thin in these hollows and translucent, whereas the beams are stout; the varices are delicately edged while forming but do not persist save at the aperture where a series develop fine frills. Columella smooth, the inner lip reflected leaving an umbilical chink. Aperture thickened, varicose, frill-edged, internally ten teeth. Canal short, narrow, open. Operculum purpuroid. Length 27 mm.; breadth 18 mm.

Collected on dead coral blocks at Michaelmas Cay. Since, Mr. Melbourne Ward has collected a fine series in the Albany Passage, some much larger measuring 37 x 25 mm. and having a reddish orange colour, the edges of aperture a deeper shade, interior white. This beautiful shell was first collected in North Queensland many years ago by Brazier, and then lately Hedley had found it, but it had not been recorded. It bears a striking resemblance to the American *Murex vitulinus* Lamarck, the type of *Vitularia* Swainson, and was placed in that genus in the Australian Museum collection. It is closely related to *Murex crenifer* Souverbie (Journ. de Conch., vol. ix, p. 279, pl. xi, figs. 9-10, July 1, 1861), described from Balade, New Caledonia, but in the Australian shell the lamella are more developed, and therefore the window-like depressions much more pronounced. The genus should be placed next to *Coralliophila.*

I have named the species for my friend Mr. Heber A. Longman, Director of the Queensland Museum, as a reminder of many favours.

**Drupina grossularia** Bolten.

Better known under the name *Sistrum digitatum* Lamarck, this curious and handsome coral-living form has not previously been recorded from Queensland and Australia. Previous to the one secured at Michaelmas Cay, Hedley had picked a dead shell up at Bramble Cay, at the end of 1924, one of the last additions he made to his beloved reef molluscan fauna.

Dall gave some Notes on *Drupa* and *Morula* (Proc. Acad. Nat. Sci. Phil., vol. 75, pp. 303-306, 1923), and introduced *Drupina*, with type *Ricinula digitata* Lam., and *Morulina*, with type *R. mutica* Lam., using *Drupa* Bolten for the type *R. horrida* Lam., and *Morula* Schumacher for the series *R. morus* Lam. Dall overlooked Hedley's notes in the Nautilus (vol. xxvii, p. 79, 1913) and mine in the Proc. Mal. Soc. (Lond), vol. xiii, p. 38, 1918. Thus he determined *spathulifera* Blainville as the earliest name for the shell called *hystrix* by Kiener, and Tryon, but Hedley had already recorded *rubuscæsius* Bolten for that species; he considered *reeveana* Crosse as only a purple-mouthed variety of *spathulifera*, but Hedley had shown it was a distinct species that had been named *rubusidæus* by Bolten. He proposed the new name *Morula rhyssa* for *R. fiscellum* Reeve (Conch. Icon. Ricinula, pl. 4, fig. 28, 1846), but Hedley had already named that species *Thais crassulnata* (Proc. Linn. Soc. N.S.W., xxxix, 1914, p. 749, pl. lxxxv, f. 90, Feb. 26, 1915). Dall concluded that *nodus* Bory St Vincent 1816 was prior to *morus* Lamarck 1822 and *papillosa* Schumacher 1817. The author of *nodus* 1816 was Lamarck, not Bory St. Vincent, and I had shown that *uva* Bolten

referred to the same species and should be used. Pilsbry had demurred as he said the figure was a poor one, but overlooked the excellent description which defied any criticism. At the same time I drew attention to Marten's *Semiricinula* introduced for the *muricina* group, and I proposed *Muricodrupa* naming *fenestrata* as type. Neither of these was noted by Dall and he included *fenestrata* in his new group *Morulina*, and apparently would regard *muricina* as a member of *Morula*. As *mutica* may represent a different group from that of *fenestrata*, *Morulina* may be preserved. Dall's *Morulina ceylonica* "resembling *M. nodus* on a minute scale" recalls *ozenneana*, which would be better classed in *Morula* with *nodus* (=*uva*), the type of the latter group.

Many years ago Cooke (Cambridge Natural History, vol. iii, p. 222, fig. 124) figures the curious radula of *spectrum* Reeve, and when he dealt with the radulæ of this group (Proc. Mal. Soc. (Lond.), xiii, p. 106, 1919) he allowed the species in *Morula* without comment. Thiele (Wissen. Deutsche Tief—See Expd. "Valdivia," Bd. 17, heft 2, teil 2, p. 137 (171), figs. 3, 4, text, 1925), finding a similar radula in *siderea* Reeve, has proposed for these the new genus *Drupella*. Hedley regarded *spectrum* Reeve as the same as *elata* Blainville and determined both as *mancinella* Linné, under which name in the genus *Drupa* it appears in the Queensland list. Cooke recorded a normal radula of *Morula* under the name *elata* Blainville, which indicates confusion.

**Coralliophila dorbignyana** Petit.

*Trichotropis dorbignyanum* Petit, Journ. de Conch., ii, p. 261, pl. 7, f. 2, Nov. 15, 1851: Pacific Ocean.

*Purpura orbignyana* Petit, ib. v, p. 37, July 1856.

*Purpura trichotropoides* Souverbie, ib. ix, p. 284, July 1861: ex Montrouzier M.S.: New Caledonia.

This beautiful and distinct species was found at Michaelmas Cay, and it is amusing to read Tryon's conclusions: "is the latter form not yet adult," the latter form being *P. gibbosa* Reeve, which was classed as "a form with the scabrous revolving striæ well developed" of *C. neritoidea* Lam. = *violacea* Kiener. I should say that *gibbosa* was quite unlike Petit's shell, and the latter is nothing like *violacea*, which was also collected. Hedley has included Reeve's *squamulosa* in preference to *violacea*, but the specimens seem to agree better with the latter.

Family OBELISCIDÆ.

Under *Pyramidella* Hedley ranged a series of shells very easily divisible into two major groups. The genus name *Obeliscus* was introduced in 1797 by Humphrey (Mus. Calonn., p. 24) for Linné's *Trochus dolabratus*. Two years later Lamarck introduced *Pyramidella* for the same species, so that it cannot be preserved in any sense. A. Adams utilised the two for the different series now under notice, but Fischer (Man. Conch., 787, 1885) emended this, proposing *Otopleura* with *auris-cati* Chem. alone. Hedley's series can then be allotted thus:—*Otopleura* to cover *auris-cati, gracilis,* and *mitralis*; and *Obeliscus* for the rest—*acus concinnus, pulchellus, terebelloides, tessellatus,* and *turritus*.

Many specimens were collected at Michaelmas Cay and it was found that many species were represented, so that seven may now be added: *nitida, variegata,*

and *propinqua* to *Otopleura*, and *fastigium*, *sulcatus*, *teres*, and *monilis* to *Obeliscus*. All these were described by A. Adams in the Thes. Conch., vol. ii, as follows:—

*Pyramidella nitida* A. Adams, Thes. Conch., ii, p. 815, pl. clxxii, f. 11: Philippines.
*Pyramidella variegata* id. ib., p. 814, pl. clxxii, f. 10: I. Masbate, Philippines.
*Pyramidella propinqua* id. ib., p. 814, pl. clxxii, f. 8: Reetea, Society Islands.
*Obeliscus fastigium* id. ib., p. 809, pl. clxxi, f. 8: I. Bohol, Philippines.
*Obeliscus sulcatus* id. ib., p. 807, pl. clxxi, f. 34: Tahiti.
*Obeliscus teres* id. ib., p. 807, pl. clxxi, f. 31-32: I. Panay, Philippines.
*Obeliscus monilis* id. ib., p. 806, pl. clxxi, f. 12: I. Negros, Philippines.

These determinations may need amendment when series are available, but the names represent different entities and there are still more.

### **Dolabella auricularia** Solander.

A well-known tropical slug has a curious degenerate shell and this was named *Patella auricularia* by Solander (Cat. Portland Mus., p. 154, 1786), Rumph's pl. 40, f. N, being cited as representative, the locality beiug given as Amboyna. A year or more later Martyn (Univ. Conch., vol. iii, fig. 99, 1787) gave an excellent figure, the name selected being *Patella scapula*, also from Amboyna. Under the name *Dolabella scapula* it appears in both the Queensland and New South Wales lists, and, while the former should be now called *Dolabella auricularia* Solander, the New South Wales species is very distinct in life though the shell shows little differentiation. In the southern form, which grows to a larger size, the posterior is not so abruptly cut off, nor is the rim edged with branching papillæ, nor are these so numerous or so long on the rest of the body. It will be fully described and figured at a later opportunity, but in order to save confusion it is here named *Dolabella andersoni* sp. nov., the type from Gunnamatta, Port Hacking.

## QUEENSLAND LAND SHELLS.

I am preparing a Synonymic List of the Land Shells of Australia, and find that the large Queensland shells have generally local distribution, and that probably more forms will be recognised than have been recently listed. It is important, however, to have the exact locality before deciding as to the value of any difference, while series are absolutely essential. The present opportunity is taken to introduce a fine new species which I name—

### **Hadra mortenseni** sp. nov.

(Plate XXXI, fig. 9.)

Shell helicoid, globose elevated, narrowly umbilicate. Colour of early whorls pale orange brown, broad bands of reddish brown developing and becoming deeper in colour, almost black-red just behind the aperture. On the antepenultimate whorl a subsutural line of greenish yellow is well defined, followed by a broad bank of dark red-brown, a narrow line of orange-red, another broader band of dark red-brown, a narrow line of orange-red, and then a broad presutural band of dark red-brown again. The last whorl shows the same colouring above the periphery, which is well rounded, but on the base three narrow lines of dark red-brown alternate with similar lines of orange, and these are succeeded by a

broad band of dark red-brown, then some more lines and round the umbilicus a broad dark band again; the colour is all massed into dark brown behind the outer lip which is well reflected but thin; inside of aperture deep shining lilac. There is superficially no sculpture, but under the microscope a very delicate longitudinal scratching can be discerned. The aperture is a little oblique, columella broad reflected over the umbilicus but leaving a chink. Height 48 mm.; greater diameter 46 mm.; less diameter 36 mm.

The figure of *Helix moresbyi* Angas (Proc. Zool. Soc. (Lond.) 1876, pl. xx, f. 8-9) from Port Denison is recalled at once, but our species has not the peculiarly flattened base of *moresbyi*, and belongs to a different series. It may be near *johnstonei* Brazier (Proc. Zool. Soc. (Lond.) 1875, p. 32, pl. 4, f. 2), which is not a synonym of *incei* as given by Fulton (Journ. Malac., vol. xi, p. 2, 1904) when he reviewed the group *Sphærospira*.

Mr. A. Musgrave, of the Australian Museum, brought back a single dead shell of this fine species and was then instrumental in getting Mr. R. M. Mortensen, after whom this species is named, to collect a series and prove its validity.

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For quick reference the new names proposed in this essay are here listed:—

*Solemya terræreginæ* n. sp.
*Nuculana caloundra* n. sp.
*Imparilarca* n. gen. with type *I. hubbardi* n. sp.
*Barrimysia* n. gen. with type *Rochefortia excellens* Hedley.
*Fastimysia* n. gen. with type *Rochefortia viastellata* Hedley.
*Fragum symbolicum* nom nov. for *Cardium hystrix* Reeve.
*Fragum perornatum* nom. nov. for *Cardium imbricatum* Sowerby.
*Fragum whitleyi* n. sp.
*Pardosinia* n. gen. with type *P. colorata* n. sp.
*Pardosinia alma* n. sp.
*Bonartemis* n. gen. with type *B. stabilis* n. sp.
*Heteroglypta hedleyi* n. sp.
*Heteroglypta avecta* n. sp.
*Heteroglypta pansa* n. sp.
*Heteroglypta saltatrix* n. sp.
*Quidnipagus* n. gen. with type *Cochlea palatam* Martyn.
*Jactellina* n. gen. with type *Tellina bougei* Sowerby.
*Salmacoma* n. gen. with type *S. vappa* n. sp.
*Telemactra* n. gen. with type *Mactra obesa* Reeve.
*Colorimactra* n. gen. with type *Mactra queenslandica* Smith.
*Colorimactra florens* n. sp.
*Lutraria impedita* nom. nov. for *Lutraria elongata* Gray.
*Lutromactra* n. subgen. with type *Lutraria impedita* Iredale.
*Standella hubbardi* n. sp.
*Meropesta* n. gen. with type *M. meridiana* n. sp.
*Pharella wardi* n. sp.
*Montfortia excentrica* n. sp.
*Montfortista* n. subgen. with type *Montfortia excentrica* Iredale.
*Sanhaliotis* n. gen. with type *Haliotis varia* Linné.

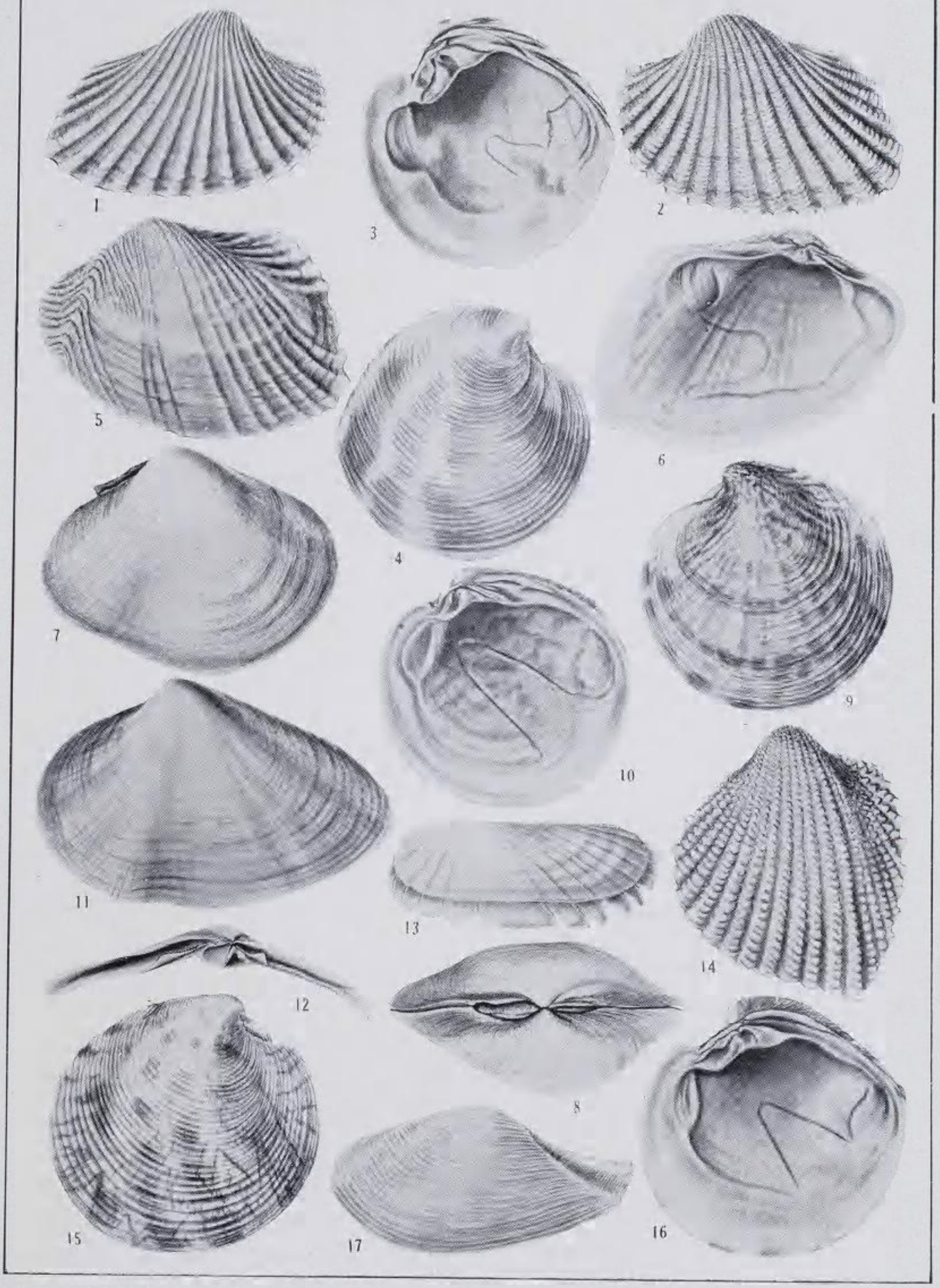
*Sanhaliotis varia aliena* n. subsp.
*Sanhaliotis howensis* n. sp.
*Sanhaliotis dissona* n. sp.
*Lætifautor* n. gen. with type *Calliostoma trepidum* Hedley.
*Calthalotia* n. gen. with type *Calliostoma arruense* Watson.
*Pulchrastele* n. gen. with type *Astele septenarium* Melvill & Standen.
*Conotalopia* n. gen. with type *Minolia henniana* Melvill & Standen.
*Parminolia* n. gen. with type *Minolia agapeta* Melvill & Standen.
*Vanitrochus* n. gen. with type *Solariella tragema* Melvill & Standen.
*Vaceuchelus* n. gen. with type *Euchelus angulatus* Pease.
*Senectus permundus* nom. nov. for *Turbo concinnus* Philippi.
*Senectus necnivosus* nom. nov. for *Turbo nivosus* Reeve.
*Senectus perspeciosus* nom. nov. for *Turbo speciosus* Reeve.
*Senectus trossulus* nom nov. for *Turbo intercostalis* Philippi.
*Dentarene* n. gen. with type *D. sarcina* Iredale.
*Dentarene sarcina* nom. nov. for *Delphinula crenata* Kiener.
*Dentarene munitus* nom. nov. for *Delphinula muricata* Reeve.
*Globarene* n. gen. with type *Delphinula cidaris* Reeve.
*Globarene cidaris lenullus* n. subsp.
*Cinnalepeta* n. gen. with type *Patella cinnamomea* Gould.
*Cinnalepeta vagans* n. sp.
*Cinnalepeta escensa* n. sp.
*Zacalantica* n. gen. with type *Phenacolepas linguaviverra* Melvill & Standen.
*Amapileus* n. gen. with type *A. immeritus* n. sp.
*Collisellina bellatula* n. sp.
*Collisellina paropsis* n. sp.
*Penepatella* n. gen. with type *P. inquisitor* n. sp.
*Penepatella intraurea* n. sp.
*Penepatella arrecta* n. sp.
*Tenpetasus* n. gen. with type *Capulus liberatus* Pease.
*Capulonix* n. gen. with type *Patella calyptra* Martyn.
*Pilosabia* n. gen. with type *Pileopsis pilosus* Deshayes.
*Cerithium duffieldi* nom. nov. for *Cerithium granosum* Kiener.
*Cerithium probleema* nom. nov. for *Cerithium lemniscatum* Quoy & Gaimard.
*Clypeomorus penthusarus* nom. nov. for *Cerithium morus* Lamarck.
*Cerithium sejunctum* nom. nov. for *Cerithium variegatum* Quoy & Gaimard.
*Cerithidea anticipata* nom. nov. for *Cerithium kieneri* Hombron & Jacquinot.
*Cerithium collacteum* nom. nov. for *Cerithium lacteum* Kiener.
*Cerithium complexum* nom. nov. for *Cerithium tæniatum* Sowerby.
*Cerithium phylarchus* nom. nov. for *Cerithium sowerbyi* Kiener.
*Violetta* n. gen. for *Janthina globosa* Swainson.
*Gennæosinum* n. gen. with type *G. peleum* n. sp.
*Conus circumactus* nom. nov. for *Conus cinctus* Swainson.
*Terenolla* n. gen. for *Terebra pygmæa* Hinds.
*Xenuroturris* n. gen. with type *X. legitima* n. sp.
*Pulchritima* n. gen. with type *Mitra stigmataria* Gmelin.
*Arenimitra* n. gen. with type *Mitra arenosa* Lamarck.

*Arenimitra michaelis* nom. nov. for *Mitra exasperata* Reeve.
*Cylindromitra fastidiosa* n. sp.
*Cylindromitra crenulata toleranda* n. subsp.
*Acuticylindra* n. gen. with type *Voluta nucea* Gronow.
*Nivitriton* n. gen. with type *Triton antiquatus* Hinds.
*Allanassa* n. gen. with type *Nassa eximia* H. Adams.
*Graphicomassa* n. gen. with type *Colombella ligula* Duclos.
*Lavesopus* gen. with type *Colombella spicula queenslandica* Hedley.
*Transtrafer* n. gen. with type *T. longmani* n. sp.
*Dolabella andersoni* n. sp.
*Hadra mortenseni* n. sp.

The species to be added to the Queensland list in addition to the novelties may be here listed:—*Arca crebricostata* Reeve, *Jactellina obliquaria* Deshayes, *Jactellina balansa* Bertin, *Jactellina hungerfordi* Sowerby, *Obtellina bougei* Sowerby, *Obtellina obtusalis* Deshayes, *Sanhaliotis pustulifera* Pilsbry, *Sanhaliotis crebrisculpta* Sowerby, *Trochus obesus* Reeve, *Trochus crebrigranatus* Reeve, *Trochus fastigiatus* A. Adams, *Clanculus gatliffi* Tomlin, *Parminolia apicina* Gould, *Vanitrochus semiustus* Fischer, *Vanitrochus tragema* Melvill & Standen, *Vaceuchelus angulatus* Pease, *Lunella porcata* Reeve, *Calcar pileolum* Reeve, *Calcar stellare* Gmelin, *Calcar rotularia* Lamarck, *Leucorhynchia caledonica* Crosse, *Leucorhynchia tricarinata* Melvill & Standen, *Phenacolepas reticulata* Thiele, *Patelloida submarmorata* Pilsbry, *Tenpetasus liberatus* Pease, *Iodina nitida* A. Adams, *Violetta globosa* Swainson, *Natica lineozona* Jouss., *Natica arachnoidea* Gmelin, *Septa rubecula* Linné, *Distorsio anus* Linné, *Conus pulicarius* Bruguière, *Conus catus* Bruguière, *Conus eburneus* Bruguière, *Conus rattus* Bruguière, *Conus miles* Linné, *Conus omaria* Bruguière, *Conus tulipa* Linné, *Conus vexillum* Gmelin, *Conus virgo* Linné, *Conus planorbis* Born, *Conus chaldæus* Bolten, *Oxymeris felina* Dillwyn, *Terenolla pygmæa* Hinds, *Oxymeris nebulosa* Sowerby, *Perirhoe cingulifera* Lamarck, *Perirhoe monilis* Quoy & Gaimard, *Hastula cerithina* Lamarck, *Hastula hastata* Gmelin, *Harpa harpa* Linné,*Cymbiola wisemani* Brazier, *Cymbiola sophia* Gray, *Cypræa becki* Gaskoin, *Cypræa caurica* var. *oblongata* Melvill, *Cypræa cicercula* Linné, *Cypræa cribraria* Linné, *Cypræa contaminata* Sowerby, *Cypræa gaskoini* Reeve, *Cypræa globulus* Linné, *Cypræa irrorata* Gray, *Cypræa mappa* Linné, *Cypræa microdon* Gray, *Cypræa nucleus* Linné, *Cypræa subcylindrica* Sowerby, *Cypræa talpa* Linné, *Cypræa pyriformis* Gray, *Scabricola sphærulata* Martyn, *Costellaria intertæniata* Sowerby, *Costellaria concentrica* Reeve, *Costellaria armiger* Reeve, *Arenimitra approximata* Pease, *Arenimitra cadaverosa* Reeve, *Arenimitra torulosa* Lamarck, *Chrysame tiarella* A. Adams, *Strigatella litterata* Lamarck, *Strigatella auriculoides* Reeve, *Mitraria puncticulata* Lamarck, *Costellaria quæsita* Melvill, *Acuticylindra nucea* Gronow, *Ecmanis igneus* Gmelin, *Colubraria strepta* Cossmann, *Phrygiomurex sculptilis* Reeve, *Allanassa eximia* H. Adams, *Nassarius callospira* A. Adams, *Niotha comtessei* Iredale, *Euplica deshayesii* Crosse, *Euplica anceps* Hervier, *Graphicomassa ligula* Duclos, *Drupina grossularia* Bolten, *Coralliophila dorbignyana* Petit, *Otopleura nitida* A. Adams, *Otopleura variegata* A. Adams, *Otopleura propinqua* A. Adams, *Obeliscus fastigium* A. Adams, *Obeliscus sulcatus* A. Adams, *Obeliscus teres* A. Adams, *Obeliscus monilis* A. Adams.

## EXPLANATION OF PLATE XXX.

Figs. 1, 2.—*Imparilarca hubbardi* Iredale.
Figs. 3, 4.—*Bonartemis stabilis* Iredale.
Figs. 5, 6.—*Heteroglypta saltatrix* Iredale.
Figs. 7, 8.—*Salmacoma vappa* Iredale.
Figs. 9, 10.—*Pardosinia colorata* Iredale.
Figs. 11, 12.—*Standella hubbardi* Iredale.
Fig. 13.—*Solemya terræreginæ* Iredale.
Fig. 14.—*Fragum whitleyi* Iredale.
Figs. 15, 16.—*Pardosinia alma* Iredale.
Fig. 17.—*Nuculana caloundra* Iredale.




Queensland Mollusca.—Iredale.

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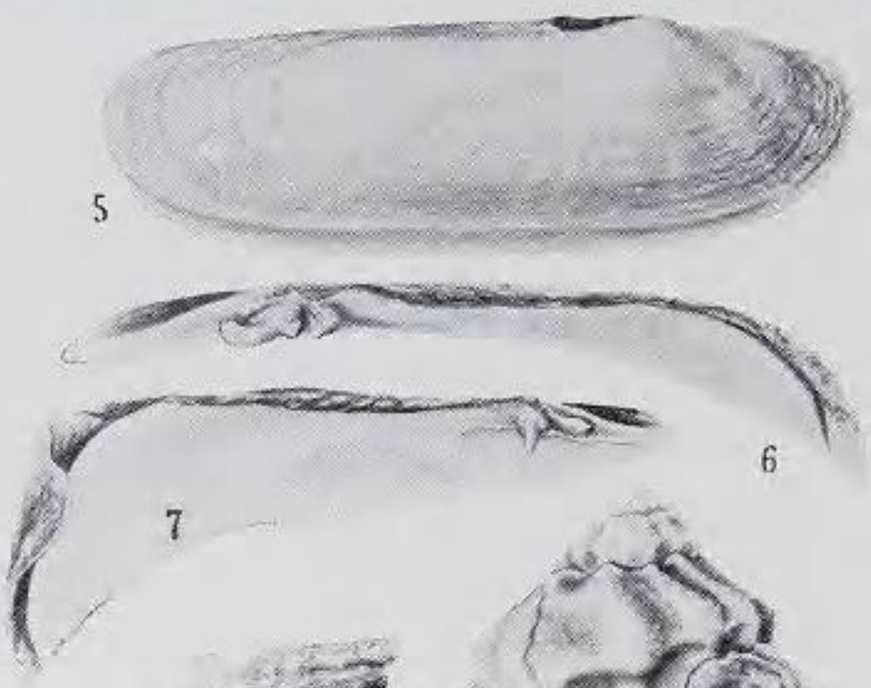
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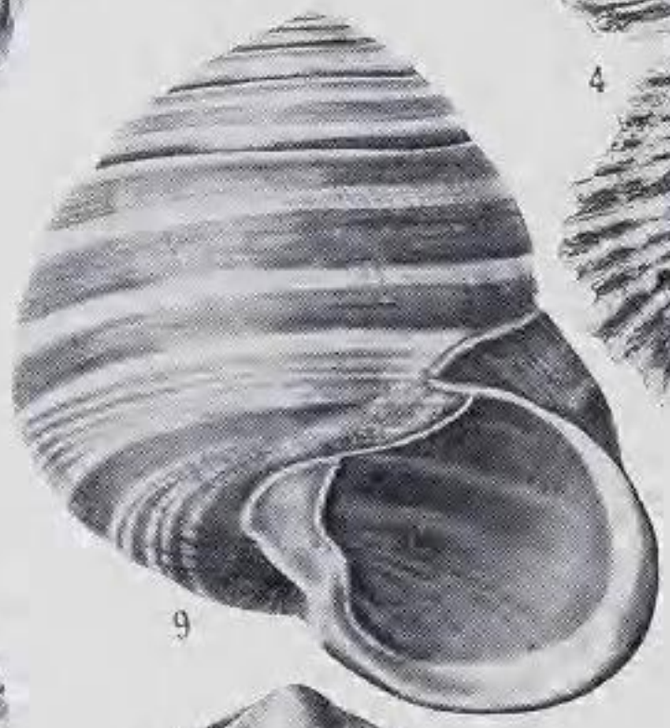
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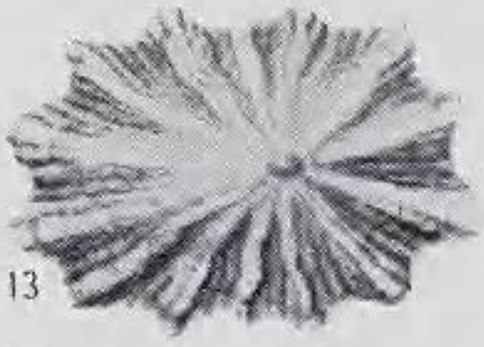
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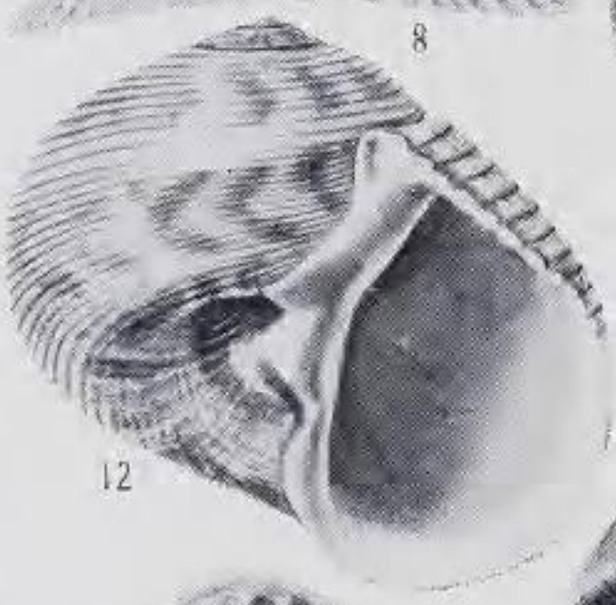
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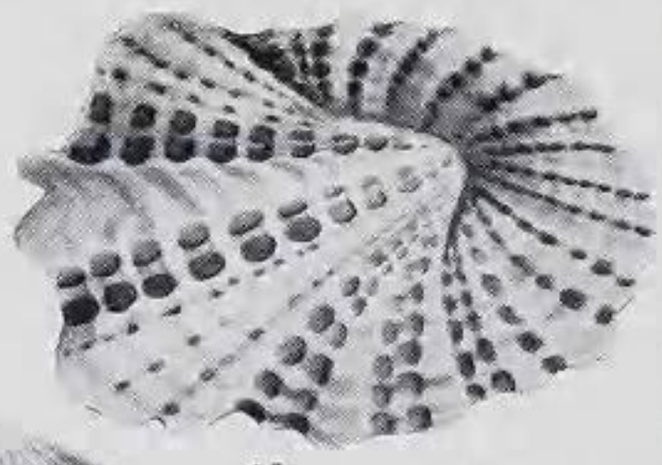
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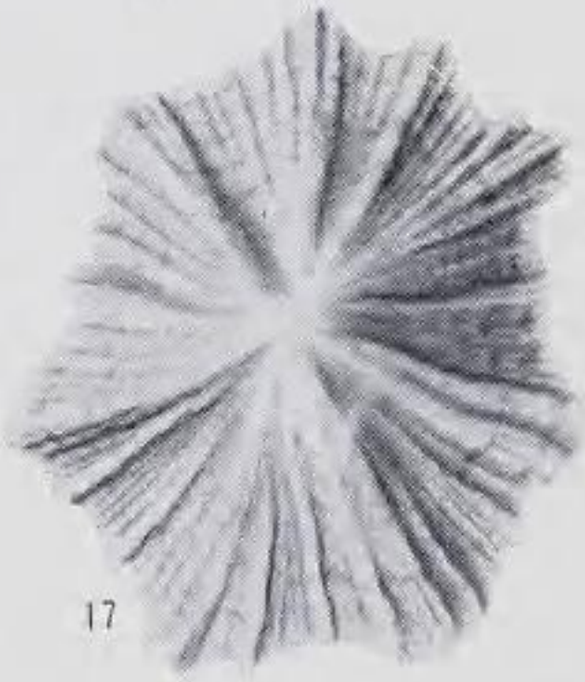
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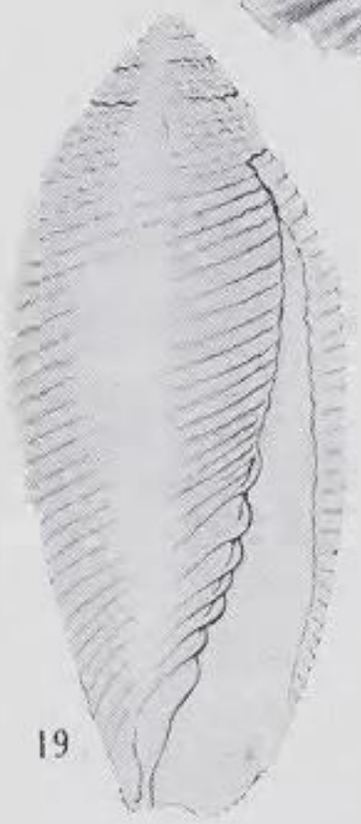
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21 22

Queensland Mollusca.—Iredale.

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EXPLANATION OF PLATE XXXI.

Fig. 1.—*Haliotis hanleyi* Ancey, Type.
Fig. 2.—*Sanhaliotis dissona* Iredale.
Figs. 3, 4.—*Xenuroturris legitima* Iredale.
Figs. 5, 6, 7.—*Pharella wardi* Iredale.
Fig. 8.—*Amapileus immeritus* Iredale.
Fig. 9.—*Hadra mortenseni* Iredale.
Figs. 10, 11.—*Transtrafer longmani* Iredale.
Fig. 12.—*Gennæosinum peleum* Iredale.
Fig. 13.—*Patelloida bellatula* Iredale.
Figs. 14, 15.—*Montfortia excentrica* Iredale.
Fig. 16.—*Colorimactra florens* Iredale.
Figs. 17, 18.—*Penepatella inquisitor* Iredale.
Fig. 19.—*Cylindromitra crenulata toleranda* Iredale.
Fig. 20.—*Cylindromitra fastidiosa* Iredale.
Figs. 21, 22.—*Penepatella arrecta* Iredale.