

NEW ZEALAND MOLLUSCAN SYSTEMATICS WITH DESCRIPTIONS OF NEW SPECIES: PART 7

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Abstract. In this part sixteen species are added to the New Zealand Recent fauna, and of these, eight are either new species or new subspecies, and seven are representative of genera not recorded previously from the Recent fauna of these seas — they are *Cantharus*, *Claraxis*, *Gegania*, *Latiaxis*, *Pictobalcis*, *Terebra* and *Volva*.

The Pleistocene muricid, *Pterynotus zealandicus* (Hutton), previously considered extinct, is now known to occur living in shallow water, both at the Poor Knights Islands and at Whangaruru, and the record by Hedley (1916) of a Kerguelen species, *Trophon albolabratius* (E. A. Smith) from Macquarie Island is confirmed.

Family PLANAXIDAE

Genus **Hinea** Gray, 1847

Type-species (monotypy) *Planaxis mollis* Sowerby = *Buccinum brasilianum* Lamarck, 1822.

Hinea brasiliana (Lamarck, 1822)

- 1822. *Buccinum brasilianum* Lamarck, Hist. Anim. s. Vert. 7: 272.
- 1823. *Planaxis mollis* Sowerby, Gen. Shells 2, pl. 208, fig. 2.
- 1913. *Planaxis (Hinea) brazilianus*: Suter, Man. N.Z. Moll.: 194.
- 1927. *Planaxis brazilianus*: Finlay, Trans. Proc. N.Z. Inst. 57: 376.
- 1952. *Hinea brasiliana*: Powell, Rec. Auckland Inst. Mus. 4 (3): 174.

Suter (1913) admitted this species to the New Zealand fauna, citing Bay of Islands as locality but with no authority, and Finlay (1927) rejected the record for lack of more positive evidence of New Zealand occurrences. However, in these "Records" (1952), the writer recorded a dead shell from the Great Barrier Island, and another, a living example, taken at Whangaroa in 1924. The writer can now report the establishment of the species, in large numbers, in a small bay on the Rangiawhia Peninsula, Northland east coast. This colony was discovered by Mr Michael Spencer of Whangarei in December 1968.

Family MATHILDIDAE

Genus **Gegania** Jeffreys, 1884

Type (monotypy) *G. pinguis* Jeffreys, 1884 (= *Tuba* Lea, 1833, non Fabricius, 1822).

The species described below, adds a genus and species to the New Zealand Recent fauna, but a similar shell, of the subgenus *Tubena* Marwick, 1943, is known from the Awamoan lower Miocene of Allday Bay, near Oamaru. The type species of *Gegania*, which is from 816-1230 fathoms (1126-2249 metres) off Galway Bay, Ireland, is of similar appearance to the New Zealand Recent shell, but is smaller, only 8.5 mm in height, has fewer, wider spaced spirals, and is crossed by numerous axial threads, that are more prominent in the interspaces. Marwick's subgenus *Tubena* differs from the typical genus in being umbilicated.

Gegania valkyrie sp.n

(Fig. 1)

Shell rather broadly conical, thin, white, with gently rounded whorls, broadly and weakly angulated at the periphery of the body-whorl. Aperture squarish, with a thin outer-lip, and a straight vertical pillar, with a thin broadly reflected outer edge, slightly effuse below. Protoconch small, planorbid, of about one whorl, that is strongly tilted. Post-nuclear whorls delicately sculptured with spiral cords; at first with 4 narrow cords above a weak angulation at less than one third whorl height, and 2 stronger cords below it, increased by interpolation, to 8 above and 4 below the angulation, on the penultimate. The whole surface is crossed by numerous fine axial threads that weakly crenulate the spirals, and stronger corded sculpture continues over the base, which is imperforate.

Height 14.25mm, width 9.0 mm.

Locality: E.S.E. of the Poor Knights Islands, 329m.

Holotype: presented to the Auckland Museum by Mr C. Wormald.

The species is named after the trawler M.V. 'Valkyrie', which was engaged in the prawn survey of 1969, from which source, this and other species attributed to Mr Wormald were obtained.

Family ARCHITECTONICIDAE

Genus **Philippia** Gray, 1847Subgenus **Psilaxis** Woodring, 1928

Type-species (OD) *Architectonica (Philippia) krebsii* Mörch.

Philippia (Psilaxis) oxytropis A. Adams, 1855

1855. *Philippia oxytropis* A. Adams, Proc. Zool. Soc. Lond.: 317.

1863. *Solarium (Philippia) oxytropis*: Hanley, Thes. Conch. 3:236, pl. 253, figs. 46,47.

1931. *Philippia manifesta* Iredale, Rec. Aust. Mus. 18:229,235, pl. 25, figs. 9,10.

1938. *Philippia manifesta*: Powell, Rec. Auckland Inst. Mus. (3), 168.

1970. *Philippia (Psilaxis) oxytropis*: Robertson, Pacif. Sci. 24(1): 66-83.



Figs. 1-9. 1. *Gegania valkyrie* Powell, sp. n. Holotype, Auck. Inst. Mus., 14.25 x 9.0mm, off Poor Knights Islands, 329m. 2, 3, 4. *Claraxis* cf. *illustris* Iredale, off Mayor Island, 82m, 3.75 x 9.1mm. 5. *Balcis* (*Pictobalcis*) *articulata* (Sowerby), near Bland Bay, Northland, 26.0 x 8.0mm. 6. *Volva* (*Phenacovolva*) *longirostrata* (Sowerby), Poor Knights Islands, 46m, 62.5 x 7.5mm. 7. *Notocochlis sagittata hancockae* Powell, subsp. n., Holotype, Auck. Inst. Mus., 11.8 x 11.9mm, Urupukapuka Island, Bay of Islands. 8, 9. *Tonna luteostoma* (Küster, 1857), coast south of Parengarenga Harbour, 98.5 x 84.0mm.

The type locality for *oxytropis* is New Caledonia, and that for *manifesta* is Sydney Harbour, New South Wales.

Robertson (1970, loc. cit.) recognised two closely allied Indo-Pacific species, *radiata* (Röding, 1798) and *oxytropis* A. Adams, 1855, citing as the main distinguishing character, the size of the protoconch, which was stated to be the larger in *oxytropis*. Both species were recorded from New Zealand, by Robertson, on the basis of shells from Takou Bay, Northland east coast.

However, examination of series from this same locality shows both extremes in protoconch size, plus others of intermediate sizes, making it impossible to consider the Takou shells to represent more than one species. Adams' *oxytropis* is selected as the more applicable name for the New Zealand shells, since the colour pattern lacks radiate triangular extensions of the subsutural colour band, which is the characteristic pattern in *radiata*.

Genus *Claraxis* Iredale, 1936

Type-species (OD) *Claraxis illustris* Iredale, 1936

The shell recorded below adds a genus and a species to the New Zealand Recent fauna. The type species comes from 45 fm (82 m) off Crowdy Head, near Manning River, New South Wales, and the New Zealand examples, respectively, are from off the south end of Mayor Island, Bay of Plenty in 82 m, and between Mokohinau Island and Hen Island in 101 m.

Claraxis cf. *illustris* Iredale, 1936

(Figs. 2-4)

1936. *Claraxis illustris* Iredale, Rec. Aust. Mus. 19(5): 327.

Shell depressed, lenticular with a sharp and strongly projecting, crenulated peripheral keel, that is hollow internally. Suture narrow but deeply channelled. Post-nuclear dorsal surface covered by dense, delicately beaded, spiral lirae, and two widely spaced stronger spirals, with a third forming the single peripheral keel. Ventral surface with a wide umbilical cavity, more than one third the width of the shell; the whole densely sculptured with beaded cords, those within the umbilicus the stronger.

Height 3.75 mm, width 9.1 mm. Off Mayor Island, 82 m.

Height 4.00 mm, width 8.5 mm holotype; N.S.W., 82 m.

Height 6.75 mm, width 13.0 mm. Off Jibbon, N.S.W., 85 m.

Neither the holotype nor the New Zealand examples are fully grown, but one from 85 m off Jibbon, New South Wales, with a diameter of 13 mm appears to be the adult of the species. If this surmise is correct, then upon maturity, the spire becomes relatively higher and the umbilical cavity constricted to steep-sided over its last volution.

A second member of the genus is *Solarium asperum* Hinds, 1844, from Straits of Macassar.

Family EULIMIDAE

Genus **Balcis** Leach, 1847Subgenus **Pictobalcis** Laseron, 1955

Type-species (OD) *Eulima articulata* Sowerby, 1834.

Balcis (Pictobalcis) articulata (Sowerby, 1834) (Fig. 5)

1834. *Eulima articulata* Sowerby, Proc. Zool. Soc. Lond. : 8.

1886. *Eulima articulata* : Tryon, Man. Conch. 8: 269, pl. 68, fig. 12.

1955. *Pictobalcis articulata* : Laseron, Aust. Zool. 12 (2) : 98, pl. 3, fig. 12.

This species can now be added to the New Zealand fauna, on the basis of several shells, in fairly fresh condition, found by Mrs. J. Waldron of Whangarei, washed ashore on several occasions, in rocky bays along the Northland east coast. The subgenus differs from *Balcis*, a plain porcellaneous-white shell, in having an intricate colour pattern.

Shell very large for the family, solid, narrow, with a very tall, many whorled spire, of straight outlines; body-whorl bluntly rounded at the periphery. Surface smooth and highly polished, interrupted at about two-third whorl intervals, by broad flattened varices. Colour opaque porcellaneous-white, strikingly maculated, the basic pattern consisting of a central band of chestnut, from which narrow chevrons extend, top and bottom, almost to the sutures; in front of each varix there is a diffused vertical stripe of purplish-brown, and a second band of chestnut, also with chevrons, encircles the lower base; interior of aperture white, with the external pattern showing through.

Height 26.0 mm, width 8.0 mm. Near Bland Bay, Northland.

Height 23.0 mm, width — . Australia; type.

Height 21.0 mm, width 5.8 mm. Shellharbour, New South Wales.

Localities: Australia (type; probably Moreton Bay; Shellharbour, New South Wales (Laseron); New Zealand, coast between Bland Bay and Whangamumu (Mrs J. Waldron).

Genus **Venustilifer** Powell, 1939

Type-species (OD) *Hypermastus bountyensis* Powell, 1933

Venustilifer bountyensis (Powell, 1933)

1933. *Hypermastus bountyensis* Powell, Proc. Malac. Soc. 20(5) : 235.

1939. *Venustilifer bountyensis* : Powell, Rec. Auckland Inst. Mus. 2(4) : 234.

1940. *Venustilifer secundus* Powell, Trans. Proc. R. Soc. N.Z. 70(1) : 235.

This genus, which was thought to belong to the Stiliferidae, now proves to have more in common with the eulimid genus *Mucronalia*.

Two specimens, taken alive from the test of a cidarid echinoid in 329 m, E.S.E. of Poor Knights Islands, prove the genus to be ectoparasitic, like some species of *Balcis* and *Mucronalia*. Although there is a small fleshy frill at the base

of the proboscis, it is rudimentary, compared with that of *Stilifer*, a truly parasitic mollusc, that becomes deeply embedded in the body of its host, with only the protoconch protruding. It was noted by Mr. C. Wormald, who collected the Poor Knights specimens, that they were free living, nestling on the test of the echinoid, and were easily picked off.

It appears that the Poor Knights examples represent the adult of a somewhat variable species, that includes the narrower *secundus* form within its range. Hitherto all the material has been immature, white, semitransparent, empty shells. The Poor Knights examples show the species to be of much larger size than the respective types of *bountyensis* and *secundus*, and to possess a striking colour pattern, consisting of broad spiral zones of dark reddish-brown on a whitish semi-transparent ground; a narrow white line submargins the suture, followed by a wide dark zone, then a white zone of similar width, extending to a little below middle whorl height; from there to a little below the lower suture is a second dark zone, followed by a light brown base to the columella, which is white, bordered on each side by a dark-brown line. The peg-like protoconch is always tilted and partly immersed to a varying degree. The genus *Mucronalia* differs in having the peg-like protoconch always erect, and with more numerous post-nuclear whorls, that assume an elongate-cylindrical form.

Height 3.40 mm, width 2.60 mm. Off Poor Knights, 329 m.

Height 1.84 mm, width 1.34 mm. Off Bounty Islands; type of *bountyensis*.

Height 1.65 mm, width 1.28 mm. Off Three Kings Islands; type of *secundus*.

Family OVULIDAE

Genus *Volva* Röding, 1798

Subgenus *Phenacovolva* Iredale, 1930

Type-species (OD) *P.nectarea* Iredale, 1930 = *Bulla birostris* Linnaeus, 1767.

Volva (Phenacovolva) longirostrata (Sowerby, 1828) (Fig. 6)

1828. *Ovulum longirostratum* G. B. Sowerby, Zool. Journ. 4(14) : 160.

1932. *Volva birostris* (non Linnaeus, 1767) : Schilder, Proc. Malac. Soc. Lond. 20(1) : 56.

This record adds a family, genus and species to the New Zealand Recent fauna. The material was found by Mr T. Ayling of Auckland in May, 1969, at the Poor Knights Islands, where the species was obtained living on gorgonians, at a depth of 150 feet (46 m).

Shell moderately large, the body long and narrow, greatly produced at the extremities into long, slender, recurved canals. Inner and outer lips smooth, the latter with a rounded callused edge. Colour pale flesh-pink, labrum white, and the extremities tinged reddish-brown along the dorsal surface.

Length 62.5 mm, maximum width 7.5 mm.

For further reference to this species see Cernohorsky (this volume, p. 126).

Family NATICIDAE

Genus *Notocochlis* Powell, 1933

Type-species (OD) *Notocochlis migratoria* Powell, 1933.

Three fresh but empty shells, found in beach drift at Urupukapuka Island, Bay of Islands, closely resemble the widespread Australian *sagittata*, but present differences in both the form of the funicle, and in the colour pattern.

Notocochlis sagittata hancockae subsp. n.

(Fig. 7)

Shell about the same size, general appearance, and coloration as typical *sagittata* but with the following differences:— In the typical subspecies the funicle is short and broadly crescentic, with the bounding groove hemispherical, and the umbilicus widely open, exhibiting its spiral form; also the colour pattern resolves into five spiral zones. In the New Zealand subspecies the funicle is long and narrowly crescentic, bounded by a narrow, shallow groove, that ends above, in a deep, narrow umbilicus, partly hidden by the notched, and bridging, parietal callus. Also the sagittate colour pattern is restricted to three spiral zones of pale reddish-brown crescentic markings, connected by thin lines, into an undulating axial series.

Height 13.5 mm, width 12.0 mm paratype.

Height 11.8 mm, width 11.9 mm holotype.

Height 9.25mm, width 8.25 mm paratype.

The writer is indebted to Mrs M. Hancock of Whangarei, finder of the Urupukapuka shells, both for permission to describe this subspecies, and also for her donation of the holotype to the Auckland Museum.

Family TONNIDAE

Genus *Tonna* Brunnich, 1772

Type-species (monotypy) *Buccinum galea* Linnaeus, 1758

Tonna cumingii (Reeve, 1849)

1849. *Dolium cumingii* Reeve, Conch. Icon. 5: pl. 8, figs. 13b, 13c.

1849. *Dolium deshayesii* Reeve, Conch. Icon. 5: pl. 8, fig. 13a.

1904. *Dolium magnificum* Sowerby, Proc. Malac. Soc. Lond. 6: 7, text fig.

1919. *Tonna cumingii*: Hedley, Rec. Aust. Mus. 12 (11): 331.

1931. *Parvitonna perselecta* Iredale, Rec. Aust. Mus. 18: 216, pl. 23, fig. 17.

1938. *Tonna maoria* Powell, Rec. Auckland Inst. Mus. (23): 166, pl. 40, figs. 5, 6.

1961. *Tonna chinensis* 'Deshayes' (non Dillwyn, 1817), Ripplingale and McMichael, Queensl. and Gt. Barrier Reef Shells: 75, pl. 8, fig. 18.

When the writer described *Tonna maoria* (1938, loc. cit.), on the basis of a single specimen from Houhora Heads, Northland, it was compared with Reeve's *cumingii*, noting that the New Zealand shell had fewer and stronger cords, as well as a different colour pattern. Since then additional material from Northland show

these alleged differences to be untenable, and that such variations are common to similar New South Wales and Queensland shells, that are found in collections under the names of *chinensis* (Dillwyn, 1817), *cumingii* (Reeve, 1849), or *perselecta* Iredale, 1931.

The name *chinensis* (Dillwyn, 1817) was based upon "*Buccinum Australe seu Chinense*" in Chemnitz (Conch. Cab. 11: 85, pl. 188, figs. 1804, 1805), but the true identity of that species yet remains to be satisfactorily established. However, reference of *chinensis* to the small *Tonna* in question is negated by the fact that Chemnitz gave the height of his shell as '7 zoll' = 183.12 mm = 7 3/16 inches, a size greatly in excess of the largest *cumingii*, the height range of which is between 67 and 91 mm. Further Chemnitz's figure, as well as his description, indicate that there is an intermediate rib in all interspaces, but in *cumingii*, only occasional intermediate threads occur, and these are confined to the shoulder area.

A Northland specimen from Tokerau Beach, Doubtless Bay, is almost uniformly dark reddish-brown, except for oblong light-buff spots, arranged in distant, flexuous, axial series, and this colour form is identical with one trawled off Tin Can Bay, Queensland.

Height 91 mm, width 66 mm. Tin Can Bay, Queensland.

Height 87 mm, width 63 mm. Bundaberg, Queensland.

Height 68 mm, width 51 mm. Doubtless Bay, Northland.

Height 61 mm, width 50 mm holotype of *maoria*.

The type locality for both *cumingii* and *deshayesii* is Philippine Islands.

***Tonna luteostoma* (Küster, 1857)**

(Figs. 8,9)

1857. *Dolium luteostomum* Küster, Conch. Cab. 3:66, pl. 38, fig. 2.

1855. *Dolium luteostomum*: Tryon, Man. Conch. 7:261, pl. 1, fig. 6.

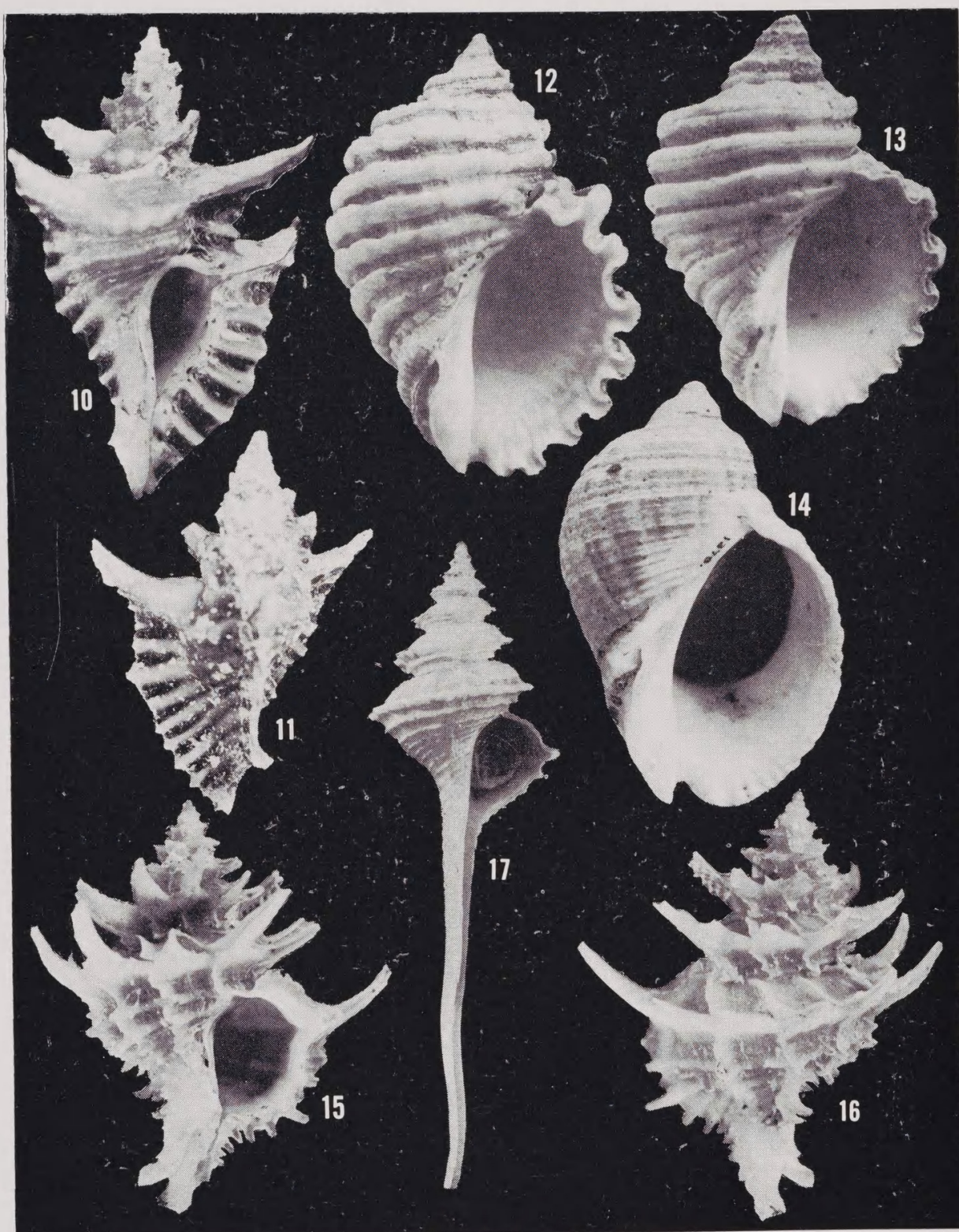
1954. *Tonna luteostoma*: Kira, Colour, Illst. Shells Jap: pl. 22, fig. 8.

This well known Japanese *Tonna* can now be recorded from New Zealand, on the basis of two beach shells, both in good condition, but not actually taken alive; they were cast up upon a little-frequented sandy beach, just south of Parengarenga Harbour, and found there by the late Mr. A. E. Brookes, probably about 1925.

The shell resembles *cerevisina* Hedley, 1919, but is always of smaller adult size, has a lower spire, bluntly raised shoulder, more deeply channelled suture, and deeper, wider, more square-cut interspaces to the corrugations, and this gives a strongly dentate appearance to the outer-lip, compared with the weak corrugations of *cerevicina*. Also, the uppermost spiral ridges in *luteostoma* are heavier than the rest, and an interstitial riblet is usually present between the first three ridges down from the suture. The colour pattern also, differs in *luteostoma*, in that the reddish-brown maculations are more numerous than in *cerevicina*, and are more evenly distributed.

Height 122.5 mm, width 94.0 mm average sized Japanese example.

Height 98.5 mm, width 84.0 mm. South of Parengarenga, Northland.



Figs. 10-17. 10, 11. *Pterynotus* (*Pterochelus*) *zealandicus* (Hutton), off Poor Knights Islands, 9-18m, 31.75 x 19.75mm. 12-14. *Thais orbita* (Gmelin). 12. Shellharbour, New South Wales, 59.0 x 41.0mm. 13. Reotahi, Whangarei Heads, 67.0 x 47.0mm. 14. Motutara, west coast Auckland, 66.0 x 42.0mm. 15, 16. *Latiaxis wormaldi* Powell sp. n. Holotype, Auck. Inst. Mus., 22.75 x 19.75mm, off Poor Knights Islands, 329m. 17. *Columbarium* (*Coluzea*) *wormaldi* Powell, sp. n. Holotype, Auck. Inst. Mus., 71.0 x 21.2mm, east of Poor Knights Islands, 549m.

Family MURICIDAE

Genus **Pterynotus** Swainson, 1833Subgenus **Pterochelus** Jousseaume, 1879

Type-species (OD) *Murex acanthopterus* Lamarck, 1816.

Pterynotus (Pterochelus) zealandicus (Hutton, 1873) (Figs 10, 11)

1873. *Typhis zealandica* Hutton, Cat. Tert. Moll. N.Z.: 2.

1913. *Murex angasi* (non Crosse): Suter, Man. N.Z. Moll.: 404.

1962. *Pterynotus (Pterochelus) zealandicus*: Fleming, Trans. R. Soc. N.Z. Zool. 2(14): 115.

This well known Castelecliffian upper Pleistocene species, the type of which is from the Tainui Shellbed of Wanganui, can now be confirmed as a member of the Recent fauna, on the basis of examples, taken alive, at depths of between 9 and 18 m, off the southern end of the Poor Knights Islands, and also at 6 m off Henry Island, Whangaruru. The specimens were live taken, by Mr W. Palmer of Whangarei.

The shell varies in colour from light brown, with reddish-brown spiral streaks, to bright salmon-pink, with dark reddish-brown patches in the hollows of the axial lamellae. The operculum is yellowish-brown, leaf-shaped, with the sharp terminal nucleus on the inner side, the initial whorl lying at about 45° to the pillar, after which the excentric growth accretions gradually bring the axis to near vertical. The animal is cream coloured, deepening to bright yellow towards the foot. The cephalic tentacles are moderately long, close together at their base, rather sharply pointed, and ledged on the outer side, with a conspicuous black pigmented eye, situated at about one third back from the tip.

Height 31.75 mm, width 19.75 mm.

Genus **Trophon** Montfort, 1810

Type-species (OD) *Murex magellanicus* Gmelin, 1790 = *Buccinum geversianum* Pallas, 1774.

Trophon albolabrat E. A. Smith, 1875

1875. *Trophon albolabrat*: E. A. Smith, Ann. Mag. Nat. Hist. 16: 68.

1877. *Trophon albolabrat*: E. A. Smith, Phil. Trans. R. Soc., London for 1879 (issued separately, 1877), 168: 170.

1916. *Trophon albolabrat*: Hedley, Aust. Ant. Exped. (c), 4(1) 60.

When *Trophon mawsoni* Powell, 1957 (B.A.N.Z. Ant. Exped. 6(7): 142) was described, it was noted that the species was identical with the shells upon which Tomlin (1948, B.A.N.Z. Ant. Res. Exped. 5: 228) based his Macquarie Island record of *albolabrat*, but it was erroneously assumed that Hedley's 1916 Macquarie Island record also referred to *mawsoni*. Subsequent examination of Hedley's Macquarie Island material which was shore-collected, proved that his specimens are identical with the Kerguelen species, and so *albolabrat* must be reinstated in the Macquarie Island faunal list.

The two species are readily distinguishable; the shallow-water *albolabrat* has rounded whorls, and is sculptured with crisp spiral cords, 5 on the spire-whorls,

and the whole surface is overridden by very numerous axial lamellae, 40-50 on the body-whorl, the points of intersection being imbricated; in the deeper-water *mawsoni*, the whorls are lightly shouldered, and the spiral cords, 4 on the spire-whorls, are overridden by fewer, stronger, and non imbricated lamellae, 20-28 on the body-whorl.

Subfamily THAISINAE

Genus **Thais** Röding, 1798

Type-species (SD Stewart, 1927) *T. lena* Röding, 1798 = *Nerita nodosa* Linnaeus, 1758.

(Synonym : *Dicathais* Iredale, 1936. Type (OD) *Buccinum orbita* Gmelin, 1791).

Thais orbita (Gmelin, 1791)

(Figs. 12-14)

1784. *Buccinum succinctum* Martyn, Univ. Conch. 2, fig. 45 (not validated by I.C.Z.M. opin. no. 479).

1791. *Buccinum orbita* Gmelin, Syst. Nat. ed. 13 : 3490 (based upon Martyn, fig. 45).

1829. *Purpura scalaris* Menke, Verz. Conch. Samml. Malsburg : 34.

1913. *Thais (Stramonita) succincta* : Suter, Man. N.Z. Moll. : 423.

1927. *Thais scalaris* : Finlay, Trans. Proc. N.Z. Inst. 57 : 427.

1936. *Dicathais orbita* : Iredale, Rec. Aust. Mus. 19(5) : 325.

This is the common rock-shell which, in New Zealand, at different times, has been called either *succincta* or *scalaris*. However, Gmelin (1791) introduced the name *Buccinum orbita* for Martyn's *succincta*, and since the latter was not one of the Martyn names validated by opinion 479 of the International Commission on Zoological Nomenclature, then *orbita* is the name to be used for the New Zealand shell. Martyn, followed by Gmelin, cited New Zealand as type locality for the species, but Iredale (1936, loc. cit.) considered that an error in localization had been made, and that Martyn's figures were of a Sydney shell. The vernacular name for the Sydney shell is "cart-rut shell", referring to a common variation of the species, exactly like Martyn's figures, in that the spiral cords are few and massive, separated by narrow, deeply channelled grooves. However, the "cart-rut" form occurs in New Zealand also, but is rare, the usual form being much smoother, with low cords and intermediate threads, but there is no doubt that both forms are mere extremes in a variable species, that extends from Victoria to New South Wales, Norfolk Island and New Zealand.

Three figures are given, one of the normal New Zealand form (Fig. 14), and two of the "cart-rut" form, one from New South Wales (Fig. 12) and the other from Whangarei Heads, New Zealand (Fig. 13).

Family MAGILIDAE

Genus **Latiaxis** Swainson, 1840

Type-species (monotypy) *Pyrula mawae* Griff. Cuv. = *P. mawae* Gray, 1834.

(Synonym : *Lamellatiaxis* Habe and Kosuge, 1970. Type (OD) *L. (L.) marumai* Habe and Kosuge, 1970).

The species described below is the first member of this warm water Indo-Pacific genus to be found in New Zealand waters. It is named for Mr C. Wormald, who found the type specimen, which he generously donated to the Auckland Museum.

***Latiaxis wormaldi* sp. n.**

(Figs. 15, 16)

Shell of moderate size, broadly biconical, with the spire shorter than the aperture plus canal. Sculpture consisting of sharply raised lamellae, coronated at the medial angle into long upcurved hollow spines, and on the base, there are 6 spiral ribs, all of which are scabrous, or weakly spinose, at each lamellose axial intersection. Anterior canal almost closed, and with a fasciolar ridge that bears a spinose series of former canals. Coronate spines and axial lamellae 10 on the last whorl. Colour light pinkish-brown, the spines and lamellae pale buff; interior of aperture pinkish-brown.

Height 22.7 mm, width 19.75 mm.

Locality: E.S.E. of Poor Knights Islands, 329 m.

The species is nearest related to *marumai* Habe and Kosuge, 1970 from the South China Sea; both have the spines as outgrowths from axial lamellae. The New Zealand shell differs from *marumai* in the lack of subsidiary spiral cords between the coronated periphery and the lower suture.

Family COLUMBARIIDAE

Genus ***Columbarium*** von Martens, 1881

Subgenus ***Coluzea*** Finlay, 1927*

Type-species (OD) *Fusus spiralis* A. Adams, 1856.

(*Decision pending for suppression of *Coluzea* Allan, 1926; see Bull. zool. Nomencl. 26(1): 42-50).

The New Zealand shells belonging to the taxon *Coluzea* are now considered to be very closely allied to the wider ranging Indo-Pacific genus *Columbarium*, and at most would seem to qualify for subgeneric status only, under that genus. Both taxa have an identical operculum, that is broadly wedge-shaped, tapered, with straight sides, ending in a sharply pointed terminal nucleus; as well as closely similar radulae, consisting of a tricuspid central tooth, and a simple, stout-based curved and sharply pointed lateral on each side. The only obvious difference between the two taxa is in the protoconch, which is paucispiral, smooth and bulbous in *Columbarium*, but flattened on top and carinated in *Coluzea*.

The genus *Columbarium* is Recent in the Indo-Pacific, mostly in deep water, ranging from south east Africa to Japan, Australia and northern New Zealand, as well as fossil in the Maestrichtian and Paleocene of Europe, upper Eocene and upper Miocene of southern Australia, and lower Eocene of the southern United States; the subgenus *Coluzea* has a New Zealand range, which extends from the lower Oligocene to the present, and occurs also in the Eocene and lower Oligocene of Europe, and Recent in South Africa.

Columbarium (Coluzea) wormaldi sp.n.

(Fig. 17)

1963. *Coluzea mariae* (non Powell, 1952): Dell, Trans. R. Soc. N.Z., Zool. 3(20) : 211, pl. 1, fig.4.

This species has the broadly conical short spire of *mariae*, but the whorls are shallow, vertically compressed, and with a more prominently flanged peripheral keel, that has fewer and more spinose tubercles. Except for the broad low spire and shallow, vertically compressed whorls, the species resembles *spiralis* rather than *mariae*, so far as the style of sculpture is concerned.

Shell moderately large, with a broad, vertically compressed spire, and a long almost straight canal, that is about two thirds the total height of the shell. Whorls with a flat smooth subsutural area, followed by a convex broader area, bearing 4 weak smooth spiral cords, to the periphery, which is below middle whorl height, and is in the form of a sharply projecting flange, sculptured with regular, broad-based and pointed spines, 12 to 14 per whorl; between the peripheral keel and the lower suture there is a minor keel, that is undulating to subnodose, and on the base there are 5 or 6 narrow but strong spiral cords, that continue from there in diminishing strength over more than half the length of the canal, the remainder of the canal being smooth. Colour white, under a pale olive periostracum. Operculum wedge-shaped as described above.

Height 105.0 mm, width 28.7 mm, spire angle 47° . Off Cuvier Island.

Height 71.0 mm, width 21.2 mm, spire angle 54° . Poor Knights: holotype.

Height 58.5 mm, width 18.0 mm, spire angle 57° . Poor Knights: paratype.

Height 44.0 mm, width 16.0 mm, spire angle 54° . Poor Knights: paratype.

Spire angle variation.

spiralis 34° - 39° : *wormaldi* 47° - 59° : *mariae* 53° - 62° .

Localities: East of Poor Knights Islands, 549 m (holotype); 23 miles (36.8 km) north east of Cuvier Island, 260-270 fm (476-494 m) (Dell, 1963).

Holotype: presented to the Auckland Museum by Mr C. Wormald.

Family BUCCINIDAE

Genus **Cantharus** Röding, 1798

Type-species (SD, Cossmann, 1901) *C. tranquebaricus* Gmelin = *C. globularis* Röding, 1798.

The species described below is almost certainly a *Cantharus*, and this adds a genus as well as a new species to the New Zealand fauna. Unfortunately the material consists of only empty shells, and none has fully mature apertural features, but the style of protoconch, adult sculpture, strong lirations within the outer-lip, and most significantly, the thick densely lamellose periostracum, all point to *Cantharus*.

Cantharus aldermenensis sp.n.

(Fig. 22)

Shell of moderate size, ovate-fusiform, with gently rounded whorls; similar in form to a *Buccinulum*, but without the characteristic parietal tubercle of that genus. Proto-

conch bluntly papillate, of 2 smooth globose whorls, the second whorl rather eroded in the best preserved specimen, but evidently ending with a short brephic stage of closely spaced axials, crossed by weaker spirals. Post-nuclear sculpture of numerous broadly rounded axial folds, overridden by broad, rather flattened spiral cords, separated by deep linear grooves; the whole surface covered by a thick densely axially lamellose periostracum. The axials number from 16-20 per whorl, and the spirals 5-6 on the spire whorls. Outer-lip thin, not quite mature in available material, but strongly lirate within the aperture. Parietal callus without a pad or tubercle. Colour dull white under the pale yellowish-brown periostracum.

Height 16.0 mm, width 7.0 mm, holotype.

Locality: East of the Aldermen Islands, 366-475 m, clustered in crevices of a piece of waterlogged wood, but none with the animal.

Holotype: Presented to the Auckland Museum by Mr C. Wormald.

Subfamily PISANIINAE

Genus **Ratifusus** Iredale, 1929

Type-species (OD) *Ratifusus adjunctus* Iredale, 1929.

Ratifusus adjunctus Iredale, 1929

(Fig. 23)

1929. *Ratifusus adjunctus* Iredale, Rec. Aust. Mus. 17(4) : 183.

This is a new record for New Zealand, making the second Recent species of the genus for these waters. The type locality for *adjunctus* is off Montagu Island, New South Wales in 50-60 fathoms (91-110 metres). The species differs from *reticulatus*, the other New Zealand species, in being more slender, with less prominent varices, and the spiral sculpture more in evidence than the axial, which is restricted to weak irregularly disposed growth lines; in consequence, the regular sculptural reticulation, so characteristic of the early spire-whorls in *reticulatus*, is absent in *adjunctus*. The coloration differs also; *reticulatus* is almost uniformly reddish-brown, but *adjunctus* is creamy-white, irregularly blotched with orange-brown, resolving into spiral zones, one below the periphery and the other on the base.

Height 16.0 mm, width 5.0 mm holotype of *adjunctus*.

Height 19.0 mm, width 7.0 mm. Off Poor Knights Islands.

Locality: E.S.E. of the Poor Knights, Islands, 329 m. one example, attached to a piece of waterlogged wood; C. Wormald, May, 1969.

Subfamily BUCCINULINAE

Genus **Penion** Fischer, 1884

Type-species (monotypy) *Siphonalia dilatata* = *Fusus dilatatus* Quoy and Gaimard, 1833.

Penion benthicola delli subsp.n.

(Fig. 24)

Shell solid, dull creamy-white, close to *benthicola* but with the whorls weakly angled below middle whorl height, producing a wide steeply descending shoulder slope, and coarser spiral sculpture; 15-16 cords per centimetre on the penultimate whorl,

compared with 20-30 for typical *benthicola*; the axials vary between 15 and 20 for both *benthicola* and *delli*. Also the whorl outlines in *delli* are not so strongly convex, nor are they so deeply excavated at the neck, and the anterior canal is less twisted.

Height 102 mm, width 38.0 mm holotype of *b.benthicola*.

Height 83.5 mm, width 32.0 mm holotype of *b.delli*.

Height 75.0 mm, width 29.0 mm paratype of *b.delli*.

Locality: E.N.E. of the Poor Knights Islands, 366-475 m.

Holotype: presented to the Auckland Museum by Mr C. Wormald.

All available shells are dead, inhabited by hermit crabs, and have attached to their external surface, numerous calcareous bases, produced by the capulid *Malluvium calcareus* (Suter).

Family MARGINELLIDAE

Genus **Marginella** Lamarck, 1799

Subgenus **Volvarinella** Habe, 1951

Type-species (OD) *Volvarinella makiyamai* Habe, 1951. (= *Longinella* Laseron, 1957; non Gros and Lestage, 1927).

Marginella (Volvarinella) wormaldi sp.n. (Fig. 25)

Shell large for the subgenus, broadly fusiform, smooth and highly polished. Spire with a bluntly rounded apex, and lightly convex whorls, tall, about four-fifths height of the aperture. Body-whorl long, but medially inflated, then gradually contracted to a rounded unnotched anterior end. Aperture rather long but moderately wide. Outer-lip thin edged but slightly rimmed and reflected; evenly arcuate in profile; inner edge smooth, entirely without denticles. Columella with 4 distant plaits, the lower two more oblique than the upper ones. Colour pale olive-buff, except for a white anterior end; the buff area with 3 distinct bright reddish-brown spiral bands of squarish maculations, the middle one weakest, and the uppermost only, visible on the spire whorls.

Height 9.3 mm, width 4.25 mm holotype.

Height 8.7 mm, width 4.00 mm paratype.

Locality: E.N.E. of the Poor Knights Islands, 293-439 m.

Holotype: presented to the Auckland Museum by Mr C. Wormald, who has the paratype in his collection.

Family VOLUTIDAE

Genus **Iredalina** Finlay, 1926

Type-species (OD) *I.mirabilis* Finlay, 1926.

Iredalina mirabilis Finlay, 1926 (Figs. 18-21)



Figs. 18-21. *Iredalina mirabilis* Finlay, off Poor Knights Islands, 439-475m. Figs. 18, 19. ♂, 122+ x 37mm. 20, 21. ♀, 125 x 37mm.

- 1926. *Iredalina mirabilis*: Finlay, Proc. Malac. Soc. Lond. 17: 59.
- 1933. *Iredalina finlayi*: King, Trans. Proc. N.Z. Inst. 63(3): 347.
- 1950. *Iredalina mirabilis*: Powell, Rec. Auckland Inst. Mus. 4 (1): 81.
- 1951. *Iredalina mirabilis*: Dell, Rec. Canterbury Mus. 6(1): 57.
- 1954. *Iredalina mirabilis*: Powell, Rec. Auckland Inst. Mus. 4(4): 239.
- 1954. *Iredalina aurantia*: Powell, Rec. Auckland Inst. Mus. 4(4): p.239.
- 1956. *Iredalina aurantia*: Dell, Dom. Mus. Bull. 18: 123.
- 1956. *Iredalina mirabilis*: Dell, Dom. Mus. Bull. 18: 123.
- 1963. *Iredalina mirabilis*: Dell, Trans. R. Soc. N.Z., Zool. 3(20): 214.
- 1967. *Iredalina mirabilis*: Beu, Trans. R. Soc. N.Z., Geol. 5(3): 113.

The present writer concurs with both Dell (1963, loc.cit.) and Beu (1967, loc.cit.), in their respective conclusions, that there is only one variable species of *Iredalina*, and that *finlayi*, based upon a lower Pliocene fossil, as well as the Recent *aurantia*, are synonymous with *mirabilis*.

Nevertheless there are some inexplicable factors that are worthy of note. For instance, off the South Island east coast, the more abundant form is the short-spired inflated *aurantia*, and very few of the narrow tall-spired *mirabilis* have been taken in that area, but off the Northland east coast only the slender *mirabilis* form has

been taken. However, the northern *mirabilis* form differs from the typical southern form in having distinct anterior spiral lirations, which are absent from most southern shells, although invariably present in the broader *aurantia* form.

Dell (1956, loc.cit:123) suggested that the two shell shapes could indicate sexual dimorphism, but examination of five living examples recently trawled in 439-475 m off the Poor Knights Islands, all of which were of the slender *mirabilis* shape, showed that three of them were males and two females. The caricelloid apical spine is very well developed in these northern shells, as shown in the figured examples.

Height 140 mm, width 48 mm holotype of *mirabilis*.

Height 109 mm, width 49 mm holotype of *aurantia*.

Height 125 mm, width 37 mm ♀. Off Poor Knights Islands: figs. 20,21.

Height 122 mm, width 37 mm ♂. Off Poor Knights Islands: figs. 18,19.

Family TEREBRIDAE

Genus *Terebra* Bruguière, 1789

Type-species (subsequent monotypy, Lamarck, 1799). *Buccinum subulatum* Linnaeus, 1767.

Terebra circumcincta Deshayes, 1857

(Fig. 26)

1857. *Terebra circumcincta* Deshayes, Journ. de Conchyl. 6:77, pl. 3, fig. 9.

1860. *Terebra circumcincta*: Reeve, Conch. Icon., monog. *Terebra*, pl. 15, sp. 70.

1885. *Terebra circumcincta*: Tryon, Man. Conch. 7:13, pl. 11, figs. 8,9.

1969. *Terebra circumcincta* Cernohorsky, Veliger 11(3): 213.

This record, based upon two living specimens dredged in shallow water at the Bay of Islands, adds a species and a genus to the New Zealand Recent fauna. The type locality for the species was given as 'Red Sea', but the correct location is probably Queensland, since a specimen in the British Museum (Natural History), presumably a syntype, and labelled "Coll.Cuming (ex Stutchbury) Port Curtis, is mounted on a card, along with the holotype. The species has not been recorded from New South Wales, so the New Zealand occurrence shows a considerable southward extension of its range.

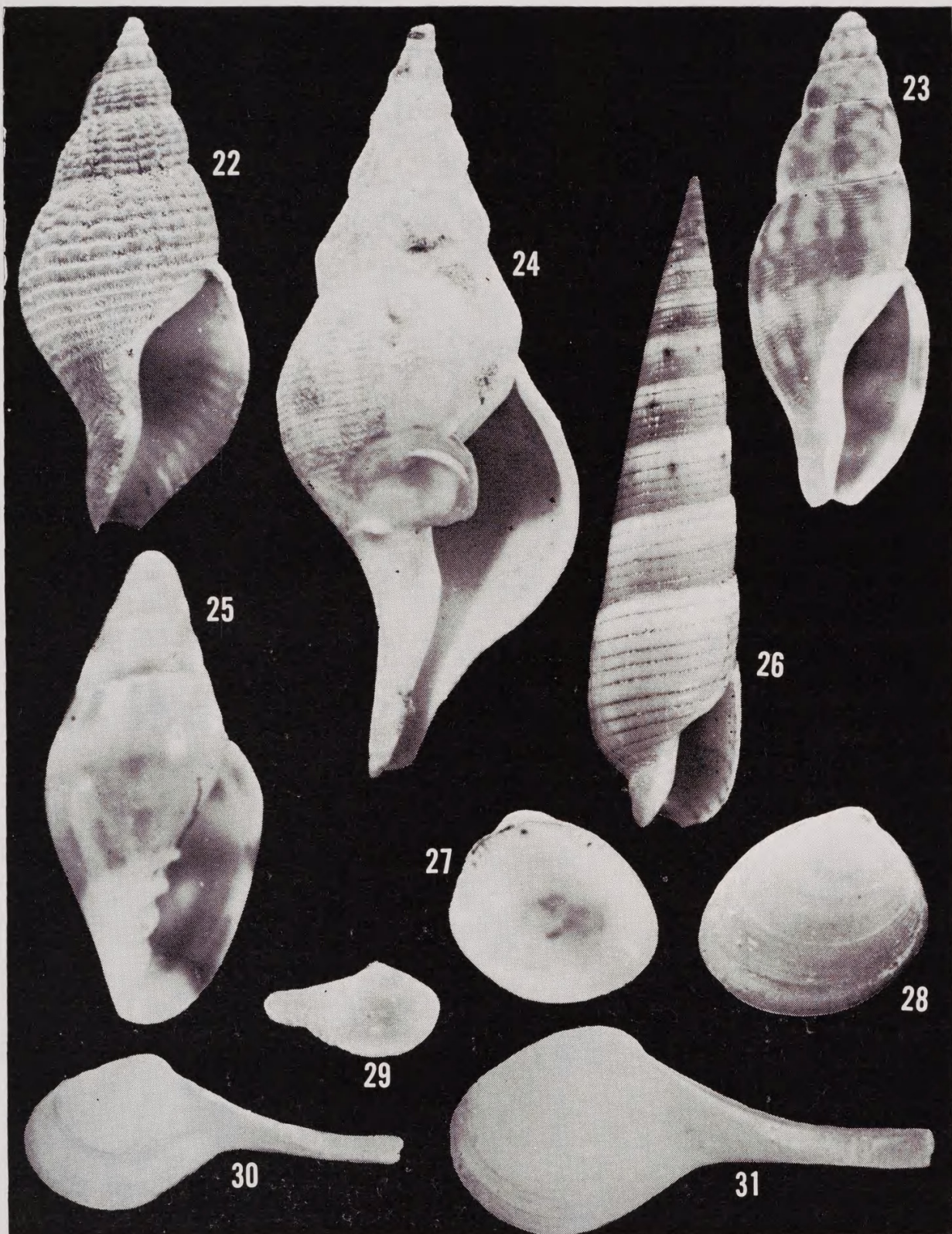
Shell of moderate size, tall and slender, with almost flat-sided spire-whorls. Sculpture consisting of narrow, deeply incised, spiral grooves, which are rendered punctate by bridging growth threads, that are much weaker, to obsolete, on the resultant broad flat cinguli; the spiral grooves number 4-6 on the spire-whorls and 11-12 on the body-whorl and base. Colour of Bay of Islands specimen, ivory, with revolving series of small rusty-brown spots, at the second row of grooves down from the suture.

Height 50.1 mm; width — syntype?

Height 38.0 mm; width 8.0 mm holotype.

Height 31.75 mm; width 7.6 mm. Bay of Islands.

The writer is indebted to Mrs M. Hancock of Whangarei, finder of the Bay of Islands specimens, for the opportunity of examining and photographing the



Figs. 22-31. 22. *Cantharus aldermenensis* Powell, sp. n. Holotype, Auck. Inst. Mus., 16.0 x 7.0mm, east of Aldermen Islands, 366-475m. 23. *Ratifusus adjunctus* Iredale, E.S.E. of Poor Knights Islands, 329m, 19.0 x 7.0mm. 24. *Penion benthicola delli* Powell, subsp. n. Holotype, Auck. Inst. Mus., 83.5 x 32.0mm. E.N.E. of Poor Knights Islands, 366-475m. 25. *Marginella (Volvarinella) wormaldi* Powell, sp. n. Holotype, Auck. Inst. Mus., 9.3 x 4.25mm. E.N.E. of Poor Knights Islands, 293-439m. 26. *Terebra circumcincta* Deshayes, dredged, shallow water, Bay of Islands, 31.75 x 7.6mm. 27, 28. *Nucula nitidulaformis* Powell, sp. n. Holotype, Auck. Inst. Mus., 4.4 x 4.0 - 4.5 x 2.75mm, east of Aldermen Islands, 366-475m. 29-31. *Cuspidaria fairchildi* Suter. 29. Off Mayor Island, 175m, 19.0 x 8.75mm. 30, 31. Off Aldermen Islands, 366-439m. 30. 47.5 x 20.0mm. 31. 67.0 x 27.0mm.

specimen figured, and also to Mr W. O. Cernohorsky for information concerning the type specimens.

Family HYDATINIDAE

Genus **Hydatina** Schumacher, 1817

Type-species (monotypy) *Bulla physis* Linnaeus, 1758.

(Synonym: *Hydatoria* Iredale, 1936, Type (OD) *Bulla cinctoria* Perry, 1811).

Hydatina albocincta (Van der Hoeven, 1839).

1839. *Bulla albocincta* Van der Hoeven, Tijdschr. nat. phys. 6(4): 245, pl. 10.

1850. *Bulla (Hydatina) albo-cincta*: A. Adams, Thes. Conch. 2: 566, pl. 120, figs. 17,18.

1893. *Hydatina albocincta*: Tryon, Man. Conch. 15: 388, pl. 45, figs. 29,30.

1961. *Hydatina cinctoria* (non Perry, 1811): Rippingale & McMichael, Queensl. and Gt. Barr. Reef Shells: 151, pl. 21, fig. 2.

1964. *Hydatina albocincta*: Shikama, Select. Shells World Illust. Colours 2: pl. 1, fig. 13.

A fine specimen of this four-banded *Hydatina*, in fresh condition, complete with periostracum, cast ashore at Tutukaka, Northland, was found by a Whangarei collector in April, 1970.

Diversity of opinion exists among authors concerning the correct name to be used for this well known shell, some preferring *cinctoria* (Perry, 1811) to the more frequently used *albocincta* (Van der Hoeven, 1839). Perry's illustration is badly drawn, and the colour pattern in olive-green and white zones, the latter margined with brown, is unlike anything the writer has seen. The interpretation usually credited to *albocincta*, that of a shell with four wide dark-brown zones on a white ground, is the one here followed, and one that fits the Tutukaka shell exactly. The normal range of the species is Japan to Australia.

Height 52.0 mm, width 46.0 mm. North Australia.

Height: 33.5 mm, width 27.75 mm. North Australia.

Height 32.5 mm., width 26.5 mm. Tutukaka, Northland.

The writer is indebted to Mrs H. Hancock of Whangarei for the opportunity of seeing the Tutukaka shell.

Family NUCULIDAE

Genus **Nucula** Lamarck, 1799

Type-species (monotypy) *Arca nucleus* Linnaeus, 1758.

Nucula nitidulaformis sp.n.

(Figs. 27,28)

Shell small, obliquely ovate, inflated, pearly-white under a pale yellowish periostracum. Surface smooth, except for dense extremely fine radial lirations, more distinct over the lower half of the shell. Hinge rather solid, with 8 anterior and 10 posterior teeth, separated by a narrow, spoon-shaped, anteriorly oblique chondrophore. Ventral margin finely crenulated.

Length	height (upright)	height (transverse)	thickness (2 valves)
4.4 mm	4.0 mm	4.5 mm	2.75 mm sp.n. <i>Holotype</i> .
4.8 mm	4.5 mm	4.9 mm	2.9 mm sp.n. <i>Paratype</i> .
5.0 mm	5.0 mm	5.9 mm	2.0 mm <i>nitidula</i> .
7.8 mm	7.9 mm	8.4 mm	4.0 mm <i>nitidula</i> .

Locality: East of Aldermen Islands, 366-475m.

Holotype and *paratype* presented to the Auckland Museum by Mr C. Wormald.

The species stands nearest to *nitidula* A. Adams, 1856, which differs in being more obliquely elongated, less inflated, without radial sculpture, and with more hinge teeth on the anterior side.

Family CUSPIDARIIDAE

Genus *Cuspidaria* Nardo, 1840

Type-species (monotypy) *Tellina cuspidata* Olivi, 1792.

Cuspidaria fairchildi Suter, 1908

(Figs. 29-31)

1908. *Cuspidaria fairchildi*: Suter, Trans. Proc. N.Z. Inst. 40: 372.

1913. *Cuspidaria fairchildi*: Suter, Man. N.Z. Moll.: 1036.

1956. *Cuspidaria fairchildi*: Dell, Dom. Mus. Bull. 18: 38.

1963. *Cuspidaria fairchildi*: Dell, Trans. R. Soc. N.Z. Zool. 3(20): 207.

Dell (1963, loc.cit.) remarked upon the enormous size attained by this species in the archibenthal zone, citing two examples from the Bay of Plenty in 340 fm (622 m), with lengths of from 39 to 40 mm. Even larger examples, from the same area and depth, were obtained by Mr C. Wormald, during the 1969 prawn investigation, the largest having a length of 67 m.

At first sight it would appear that these extra large shells differ from the smaller shells of the shallower waters of the shelf, in having the rostrum equal to the length of the body of the shell, and that the body is decidedly oblique to the alignment of the rostrum. In juvenile examples of only 3 mm in length, the rostrum is barely one third the length of the body, and in intermediate sized shells, comparable with the holotype, the rostrum is half the length of the body, which up to this stage is not oblique to the rostrum. In other words, irrespective of depth, there is a gradual lengthening of the rostrum from one third the length of the body in the juvenile, to a rostrum and shell-body of equal length in the fully adult.

Length 67.0 mm, height 27.0 mm, thickness 20.0 mm. Aldermen Ids., 366-439m.

Length 47.5 mm, height 20.0 mm, thickness 13.7 mm. Aldermen Ids, 366-439 m.

Length 19.0 mm, height 8.75 mm, thickness — Mayor Id. 175 m.

Length 13.0 mm, height 6.0 mm, thickness 4.4 mm. Flat Point, 137 m, holotype.

Localities: South east of Aldermen Islands, 366-439 m (C. Wormald); between Aldermen Islands and Red Mercury Islands, 622 m (R. K. Dell); off Mayor Island, Bay of Plenty, 150-175 m; off Flat Point, North Island, East Coast, 75 fm (137 m) (holotype).



Powell, A. W. B. 1971. "NEW ZEALAND MOLLUSCAN SYSTEMATICS WITH DESCRIPTIONS OF NEW SPECIES: PART 7." *Records of the Auckland Institute and Museum* 8, 209–228.

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