

New Zealand Molluscan Systematics, with Descriptions of New Species, Part 1.

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Family PECTINIDAE

Chlamys (*Mimachlamys*) *taiaroa* n. sp. Pl. 35, fig. 1.

Shell resembling *dichroa* in size, shape and coloration, but more inflated and with different sculptural detail. In *dichroa* the radials are strong, broad and flat-topped with channelled interspaces throughout. the concentric lamellae closely spaced, relatively strong but not spinose.

In *taiaroa* the radials are narrowly rounded and channelled only in the early growth stages. After about 25 mm. the radials spread to broadly triangular with the addition of a weak margining radial on each side and one or two secondary radials in each intercostal space. The concentric lamellae are weak, scarcely apparent in the interspaces but forming weak irregular scales on both primary and secondary radials. "*Camptonectes*" striations present but very weak compared with those in *dichroa*. The primary radials range between 15-20 in *taiaroa* and 18-21 in *dichroa*.

Holotype with 19 primary radials on the right valve and 18 on the left. Anterior lug of right valve with six scaly radiate ribs. Colour pink to orange-pink, alternating in intensity in the form of broad concentric zones corresponding with growth stages. Colour stronger and zones more clearly defined on the inside.

Height, 43.0 mm.	Length, 42.0 mm.	Thickness, (2 valves) 16.0 mm.	(holotype)
" 39.5 mm.	" 40.0 mm.	" " 16.0 mm.	(paratype)
" 37.5 mm.	" 36.0 mm.	" " 15.0 mm.	"
" 41.5 mm.	" 38.5 mm.	" " 11.0 mm.	(<i>dichroa</i>)
" 41.0 mm.	" 39.0 mm.	" " 10.0 mm.	"
" 31.0 mm.	" 31.5 mm.	" " 8.75 mm.	"

Locality: Off eastern coast of Otago, 50-70 fathoms (trawled by Captain J. Black, Dunedin).

Holotype: Auckland Museum, presented by Mr. J. G. Smith, Dunedin. Paratype in collection of Mrs. N. Gardner, Auckland.

The Chatham Island shells figured by Finlay (1928, Trans. N.Z. Inst. 59, p. 269, Pl. 42, figs 45-48) do not represent typical *dichroa*, which is quite accurately portrayed in Suter's Atlas, Pl. 52, fig. 1. Finlay's material is finer and more delicately ribbed, but I have two strongly ribbed typical *dichroa* from Kaingaroa, Chatham Islands. There is insufficient material available to determine if there is more than one species of the *dichroa* group at the Chathams.

A series of ten topotypes of *dichroa* from the stomachs of cod taken at Port Pegasus, Stewart Island, are constant in their strong flat-topped radials with channelled interspaces and non-inflated valves.

Young examples of *Chlamys delicatula* Hutton, a species that occurs commonly on the continental shelf of Eastern Otago, somewhat resemble *taiaroa*, but are readily distinguished by their shape, higher than broad, more numerous radials and thicker, stronger shell.

Family MONTACUTIDAE

Genus TAHUNANUIA n. gen.

Type: *T. alata* n. sp.

The shell described below is closely allied to a Victorian species, *Saxicava subalata* Gatliff and Gabriel, 1910 (Proc. Roy. Soc. Vict. N.S. 23, p. 85). These shells, however, have nothing to do with *Saxicava* (= *Hiatella*), nor is Cotton and Godfrey's (1938) location of *subalata* in *Eximiothracia* any better (The Moll. S. Aust. 1, p. 136).

There is a pallial sinus in both *Saxicava* and *Eximiothracia* and it is especially deep in the latter, whereas the "*subalata*" group has an uninterrupted pallial line.

Other features of the "*subalata*" group are a single cardinal in each valve, a long external ligament and an oblique large and very distinct resilifer, seated on the nymphs. A character common to both the Victorian and New Zealand species is a slight radial ridge bordering the inner margin of both adductor scars. The genus seems to be nearest to *Scintillona* Finlay, 1926, but the hinge differs in the large oblique well-formed resilifer, that of *Scintillona* being weak, long, narrow and lying almost parallel to the dorsal edge. Further, the cardinal in the left valve is small, broadly triangular and located close to the dorsal margin. That of *Scintillona* is larger and projects below the hinge plate, but is not so prominent as in *Mysella*.

It may be noted that T. Soot-Ryen, 1951, Antarctic Pelecypods, Sci. Res. Norweg. Ant. Expeds., p. 33) has referred *Mysella* to the *Montacutidae* and that family location seems to be preferable for all three above-mentioned genera.

Tahunanuia alata n. sp. Text fig. 1, 1a.

Shell rather small, thin, dull-white, minutely granulated, ovate-trapezoidal, somewhat inflated arcuately from beaks to posterior-ventral extremity. Beaks nearer to anterior end, which is narrowly rounded and slightly gaping. Posterior end broadly winged with an oblique flattened posterior slope. Hinge-line long and relatively straight, the hinge plate weak anteriorly, deep over the cardinal area and moderate along the posterior dorsal slope. Hinge of right valve with a single deep strongly projecting and forwardly inclined narrow cardinal in front of the umbo, an obliquely triangular functionless space directly under the umbo followed by a conspicuous oblique divergent resilifer with clear cut edges, seated on and occupying most of the nymph. Left valve with a weak broadly triangular cardinal situated on the upper half of the hinge plate in front of the umbo. Ligament long, extending from the umbo to the posterior slope. Muscle scars deeply impressed, narrowly ovate, the anterior one with a radial ridge margining its inner face and a less distinct ridge margining the inner edge of the posterior scar.

Pallial line entire.

Height, 5.5 mm.; length, 10.0 mm.; inflation (both valves), 3.6 mm. (holotype).

Localities: Tahunanui Beach, Nelson (type); off White Rocks, Queen Charlotte Sound, 25 fathoms (Dominion Museum); off Hen and Chickens Islands, 26-30 fathoms (Dominion Museum); off Mayor Island, 45 fathoms, Bay of Plenty (C Williams).

Holotype: Auckland Museum.

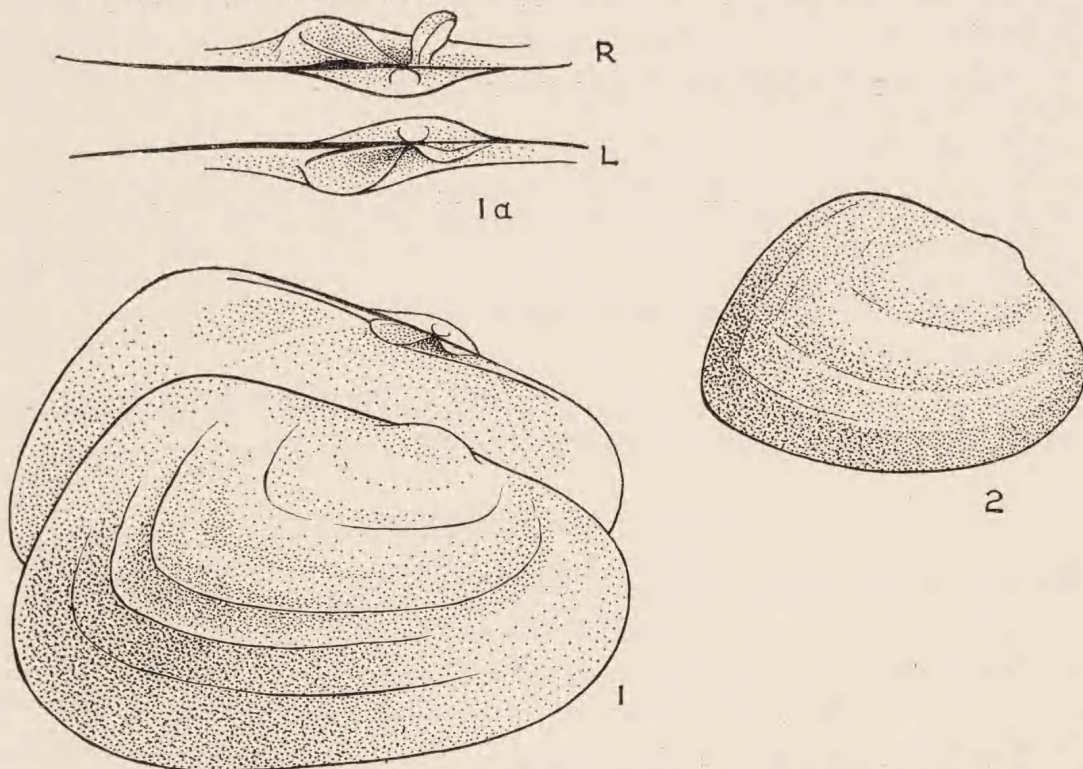


Fig. 1 and 1a. *Tahunanuia alata* n. sp. Holotype, 5.5 mm. x 10.0 mm.

Fig. 2. *Tahunanuia trigonia* n. sp. Holotype, 3.5 mm. x 4.75 mm.

***Tahunanuia trigonia* n. sp. Text fig. 2.**

Shell rather small, thin, dull-white, minutely granulate, trigonal, narrowly rounded anteriorly and broadly winged posteriorly. Beaks at about the anterior third. Somewhat inflated posteriorly by a strong arcuate angulation running from the beaks to the posterior-ventral angle. Hinge plate long and relatively straight, narrow but deeper over the cardinal area. Right valve with a single, strongly projecting, narrow, forwardly inclined cardinal and a conspicuous oblique divergent resilifer, seated on and occupying most of the nymph. In this species the ligament is set in a long narrow groove posterior to the beaks. Muscle scars small, ovate, subequal, the anterior one bounded on the proximal edge by a slight radial ridge.

Height, 3.5 mm.; length, 4.75 mm.

Locality: Perseverance Harbour, Campbell Island, 18 fath. (Capt. J. Bollons).

Holotype: 1 right valve, Powell coll., Auckland.

The species is much shorter and more trigonal than *alata* and has the umbonal-ventral ridge stronger and distinctly angulate.

Family CUSPIDARIIDAE

Cuspidaria willetti Fleming, 1948.

The type locality for this species is Chalky Sound, 14 fathoms, Fiordland. It is now known to me from the following Aupourian localities: Two miles off N.W. end of Motiti Island, Bay of Plenty, from stomach of a tarakihi taken in 35 fathoms (Mr. Gordon Williams); off Opotiki, 20 fathoms (Mr. W. La Roche); trawled, Bay of Plenty (Mr. S. Voss).

Localities for both *trailli* and *fairchildi* are:—

trailli Hutton, 1873

Stewart Island, 14 fathoms (type); Foveaux Strait, 15 fathoms; 96 fathoms, 1½ miles N.N.E. of Mayor Island; off Opotiki, 20 fathoms; off Hen and Chickens Islands, 25 fathoms; off Little Barrier Island, 25-30 fathoms; 1½ miles off Leigh, Hauraki Gulf, 30 fathoms; between Spirits Bay and Three Kings Islands, 95 metres; off Great Island, Three Kings Islands, 98 fathoms.

fairchildi Suter, 1908

Off Flat Point, 75 fathoms (type); 96 fathoms, 1½ miles N.N.E. of Mayor Island; 84 fathoms, 1½ miles N.E. of Mayor Island.

Family HALIOTIDAE

Haliotis (Sulculus) virginea crispata Gould.

1847—*Haliotis crispata* Gould, Proc. Boston Soc. N.H., 2, p. 251.

1890—*Haliotis crispata*: Tyron and Pilsbry, Man. Conch. 12, p. 109, Pl. 16, figs. 87, 88 (copied, U.S. Expl. Exped. f. 248, 248a).

Locality: "Australia"? = New Zealand.

For many years I have recognised two forms of mainland *virginea*: (1) a large southern one, predominantly greenish, with deep spiral grooves and weak meandering radials, which become obsolete as the shell reaches maturity; (2) a small northern one, variously and brightly coloured, the dorsal surface often bright orange, or variegated red and green, with deep spiral grooves crossed throughout by prominent meandering radial folds.

The difficulty has been to decide which form is true *virginea*. Dr. C. A. Fleming during a recent visit to the Australian Museum, Sydney, kindly examined for me the original figures of *virginea* in Chemnitz (Conch. Cab. 10, pl. 166, figs. 1607 and 1608). He affirms that these figures are definitely of the southern form. Mr. Tom Iredale then suggested that Gould's *Haliotis crispata*, described with a query, as from Australia, really represented the northern New Zealand form of *virginea*. This undoubtedly seems to be the case and Gould's original description quoted below fits the northern shell exactly.

"Shell small, very thin and delicate, of an elongated oval and more than usually convex form, the surface marked with fine, regular, equal, revolving threads, and with very delicate, branching, oblique, zigzag ripples, which are almost equally conspicuous in the interior. The spire is prominent, of a little less than three whorls, the apex nearly on the

median line. The perforations are small, rounded, slightly tubular, numerous and crowded, six or seven of them open; and external to the series is a deep canal. The colour is bright brick-red or red-lead colour, having between the canal and the margin a few narrow and distant yellowish-white stripes. The interior is brilliant silvery, and somewhat iridescent. Length an inch and three-eighths; breadth seven-eighths of an inch."

It is desirable to nominate type localities for both subspecies. Gmelin's material was from Cook's voyages and the sources of the collections were Bay of Islands, Queen Charlotte Sound and Dusky Sound. The United States Exploring Expedition visited Bay of Islands, Akaroa and Auckland Islands. I therefore nominate Queen Charlotte Sound as type locality for *virginea virginea* and Bay of Island for *virginea crispata*.

Localities and dimensions of specimens for both subspecies are as follows:—

***virginea virginea* Gmelin, 1790.**

South Island of New Zealand, Stewart Island, Wellington and southern coast of the North Island.

75 mm. x 51 mm. near Dunedin.

75 mm. x 49 mm. Ocean Beach, Stewart Island.

56 mm. x 38.5 mm. Kartigi Beach, North Otago. Normal Otago adults.

55.5 mm. x 36 mm. Croixelle Islands, Nelson.

68 mm. x 44 mm. Lyall Bay, Wellington. (Extra large for Cook Strait.)

42 mm. x 28 mm. Island Bay, Wellington. (Normal Cook Strait adult.)

Other localities: Portobello, Dunedin; Oamaru; Timaru; 4 miles south of Clarence River, Marlborough; Cascade Point, Westland; Kahurangi Point, West Nelson.

***virginea crispata* Gould.**

North Island, Bay of Plenty to North Cape.

40 mm. x 27 mm. Leigh, Hauraki Gulf.

40 mm. x 27.5 mm. Great Barrier Island.

Other localities: Whangarei Heads; Bay of Islands; Doubtless Bay; Waikuku Beach; Tom Bowling Bay; Cape Maria van Diemen.

Family CALLIOSTOMATIDAE

***Venustas punctulata multigemmata* n. subsp. Pl. 35, figs. 2, 3.**

Shell large, thin, tall-spired, pale coloured, sculptured with fine, very numerous gemmulate spiral cords and intermediate threads. Whorls eleven, including a low, minute, smooth protoconch of $1\frac{1}{2}$ smooth whorls. First post-nuclear whorl with two spiral cords, second and third whorls with three cords, fourth with four and increasing to sixteen primary gemmulate cords and about nine plain intermediate threads on the penultimate. Spire tall, almost one and two-thirds height of aperture. Whorl outlines strongly convex, not angled. Colour buff, speckled with light brown on the cords between the gemmules. Some examples with narrow irregular and intermittent light reddish-brown axial streaks.

Height, 54 mm.; diameter, 50 mm. (holotype).

Height, 48 mm.; diameter, 44 mm. (paratype).

Locality: 50 to 70 fathoms off Eastern Otago. Trawled by Mr. J. Black.

Holotype: Auckland Museum.

This is the largest of the *punctulata* series and the finest and most delicately sculptured. It seems to occur abundantly at the type locality and shows little variation. It stands nearest to *punctulata ampla* Powell, 1939, a stronger shell with fewer and coarser spirals, from shallow water, Stewart Island.

Family PLANAXIDAE

Hinea braziliana (Lamarck) 1822.

Suter (1913, Man. N.Z. Moll. p. 194) admitted this species to the New Zealand fauna, citing Bay of Islands but no authority, and Finlay, in his 1926 commentary (p. 376), rejected the record for lack of definite evidence of New Zealand occurrences. However, I can name two records: Great Barrier Island (Rev. W. H. Webster collection, Auckland Museum), a dead shell, and Whangaroa Harbour (collected W. E. La Roche, ca. 1924), one living example, now in my collection, Auckland.

The species is common in eastern Australia, Queensland to Victoria, Tasmania, Lord Howe Island and Kermadec Islands.

Family NATICIDAE

Two extra limital Naticoids and one beach specimen of a New Zealand upper Pliocene fossil deserve mention but, on the present evidence, not inclusion in the Recent faunal list.

Conuber conica (Lamarck), 1822.

Two half-grown, well preserved examples collected by Mrs. I. Worthy at Tauranga Bay, Whangaroa. This is a common East Australian species. At the same time and place a single well preserved example of the Mitrid genus *Arenimitra* was obtained. It resembles *exasperata* Reeve and *arenosa* Lamarck but is much more slender. This also should not be added to the fauna until more are found.

Propesinum umbilicatum (Quoy and Gaimard), 1833.

A single slightly damaged but comparatively fresh example from Stewart Island, collected by Mrs. W. H. Harrison. This is a common Tasmanian species. The Stewart Island shell has the typical colour pattern but a slightly shorter spire than any I have seen.

Eunaticina cineta (Hutton), 1885.

A stained and rather old shell of large size (20 mm. x 17 mm.) picked up in beach drift at Paihia, Bay of Islands, by Mr. L. W. Delph. The species is otherwise known only from Landguard Bluff and Te Piki, uppermost Castlecliffian (Pliocene) New Zealand. The Paihia specimen may have come from some raised beach deposit. The rusty brown staining of the specimen certainly suggests that source.

Family CYMATIIDAE

Charonia capax Finlay.

1913—*Septa rubicunda*: Suter (not of Perry), Man. N.Z. Moll., p. 303, Pl. 43, f. 1.

1926—*Charonia capax* Finlay, Trans. N.Z. Inst. 57, p. 397, Pl. 20, f. 67.

1926—*Charonia capax euclioides* Finlay, Trans. N.Z. Inst., 57, p. 398, Pl. 20, f. 68.

Type localities: Off Otago Heads, 20 fathoms (*capax*) and 40 fathoms (*euclioides*).

When Finlay described *capax* and *euclioides* he had only the holotype of each. Eight additional specimens from the vicinity of the type locality (60-70 fathoms off Eastern Otago) now before me, would on Finlay's criteria separate into seven *capax* and one *euclioides*. However, the slender shape and smaller aperture seem to be entirely resultant from adventitious whorl acceleration caused by injury or deflection to avoid adherent growth. Neither the stronger nodulation nor the narrower shoulder cords, features claimed by Finlay as characteristic of *euclioides*, are, in the present series, restricted to the alleged subspecies. In fact, they seem to represent but one species.

Northern shells tend to vary considerably, with strong rounded nodulation associated with a dark reddish-brown pattern for shallow-water shells. However, those from the deeper waters (continental shelf) from Bay of Plenty northward are pale in colour, like the Otago shells, but mostly strongly nodose.

There is, however, a second species of *Charonia* in northern waters which I previously misidentified as *capax*. This is:—

Charonia rubicunda (Perry).

1811—*Septa rubicunda* Perry, Conchology, London, Pl. 14, f. 4.

1924—*Septa rubicunda*: Bucknill, Sea Shells of New Zealand, Pl. 4, f. 3.

1933—*Charonia* cf. *capax*: Powell, Trans. N.Z. Inst. 63, p. 162.

1937—*Charonia capax*: Powell, The Shellfish of New Zealand, Pl. 14, f. 10.

Type locality: New Holland. Probably New South Wales.

A long series of New South Wales *rubicunda* now enables me to claim this species as an occasional occurrence in Northern New Zealand waters. It is broader than *capax*, has very few nodules on the spire and the whole of the shell is crossed by closely spaced spiral cords with deeply incised interspaces. These cords are somewhat variable in width on the body-whorl, but in all cases they are uninterrupted by nodulation. The coloration is characteristic, a rich pinkish brown with a bright reddish-brown maculated pattern. The outer lip is sharply ledged internally and chequered with clear cut dark reddish-brown rectangular patches alternating with white.

Height (actual), 139 mm. (estimated) 142 mm.; diameter, 84 mm. (1937 figured specimen).

Localities: Near old stone wharf, Pilot Bay, Tauranga, six living examples with eggs taken by Dr. C. E. R. Bucknill, July, 1922 (my figured example, 1937, is one of these); Tairua, near Mercury Bay (Mrs. Stocker).

Monoplex australasiae Perry.

- 1811—*Monoplex australasiae* Perry, Conch. or Nat. Hist. of Shells (London), Pl. 3, f. 3.
 1873—*Triton (Simpulum) acclivis* Hutton, Cat. Mar. Moll. N.Z., p. 13.
 1913—*Septa costata*: Suter (non Born, 1778), Man. N.Z. Moll. p. 305, Pl. 43, f. 2.
 1915—*Monoplex parthenopeum*: Iredale (non von Salis, 1793), Trans. N.Z. Inst., vol. 47, p. 459.
 1926—*Monoplex acclivis*: Finlay, Trans. N.Z. Inst., vol. 57, p. 398.

Finlay (l.c.) advocated the use of Hutton's *acclivis* for the New Zealand shells, stating that they differed from Australian examples in having a longer canal and a different outer lip. However, after examining long series of both New Zealand and East Australian shells I fail to find any constant points of difference. The name *parthenopeum* was given to a Mediterranean shell, but I have not seen specimens. Since both the South African and Japanese forms of *Monoplex* show obvious differences the best course seems to be the adoption of Perry's name, given to a New South Wales shell, for the Austro-neozelanic *Monoplex*.

Particymatium strangei (Adams and Angas).

- 1864—*Triton strangei* Adams and Angas, Proc. Zool. Soc., p. 73.
 1933—*Cabestana? labiosa*: Powell, Trans. N.Z. Inst. 63, p. 159, Pl. 23, f. 9.
 1936—*Particymatium strangei*: Iredale, Rec. Aust. Mus. 19 (5), p. 307.

The New Zealand record is based upon a single well preserved beach specimen from Takapaukura, Tom Bowling Bay. This specimen has suffered injury at two points and this has caused whorl acceleration resulting in an abnormally high spire. The varix on the body-whorl opposite the aperture is an unusual feature, but can be matched in at least one instance in a Kermadec series. These abnormalities undoubtedly influenced Iredale (1936) in doubting the identity of my New Zealand record. Iredale (l.c.) stated that he was misled in accepting the British Museum locality of West Indies for *labiosum* Wood, the locality being unknown and the figure very like the Sydney shell. He then suggested continuing the use of the name *strangei* for the New South Wales shells and noted that Kermadec shells showed no differences.

Mayena australasia vossi n. subsp. Pl. 35, fig. 4.

Shell of similar size to *australasia*, fusiform, sharply shouldered, with two nodulous spiral keels, the uppermost at shoulder the stronger and the lower one at the suture. The nodules are strong, pointed and fewer than in *australasia*, 4-6 between varices. Spire shorter than aperture plus canal, but the canal is almost twice as long as in *australasia*. Colour pale buff, weakly maculated, mostly on the nodules and as a narrow peripheral line. Interior of aperture and labial parietal callus, porcellaneous white. Epidermis buff, delicately and densely reticulated by axial and spiral threads with microscopic short bristles at all points of intersection. In *australasia* the reticulation is more dense, giving a velvety matted texture.

- Height (actual) 81.5 mm. (estimated) 83.0 mm.; diameter 43.5 mm. (holotype).
 Height (actual) 73.5 mm. (estimated) 77.0 mm.; diameter 43.0 mm. (paratype).

Locality: Eight miles east of Mayor Island, 70 fathoms, Bay of Plenty.

Holotype: Presented to the Auckland Museum by Mr. S. Voss, of Tauranga.

This proposed new subspecies seems to be nearest allied to *Mayena australasia benthicola* Iredale, 1929 (Rec. Aust. Mus. 17 (4), p. 174, Pl. 41, f. 4), from the continental shelf, New South Wales. Both have two rows of very strongly developed but sparsely spaced nodules. In *benthicola* the spire is described as being "longer than the aperture" (plus canal) and from the figured holotype there appear to be at least 6-7 nodules between varices. A deep water South Australian relative, *euclia* Cotton, 1945, is a narrower shell with an even higher spire and a longer canal. In *vossi* the spire is considerably shorter than the aperture plus canal, and the nodules are reduced to from 4-6 between varices.

Finlay (1926, Trans. N.Z. Inst. 57, p. 400) described the New Zealand littoral form as *Mayena zelandica*, type from Tauranga, said to differ from the Australian *australasia* in having a subobsolete lower keel and many nodules on the peripheral keel (about 9 between varices in the specimen figured).

In 1933 (Powell, Trans. N.Z. Inst. 63, p. 163) I pointed out that only a few of the New Zealand shells have as many as nine nodules between the varices, the average for eight New Zealand specimens taken at random being 6.875, and for the same number of New South Wales specimens 6.625; the difference is negligible. Further, the majority of New South Wales examples examined have the subobsolete lower keel.

There are two colour forms in *australasia*, one buff to light yellowish-brown indefinitely clouded or marbled with reddish-brown, and the other dark reddish to purplish-brown with conspicuous white patches where the main spirals cross the varices. These two colour forms seem to be distributed irrespective of locality, depth and sex. It may be noted that the dark-brown form tends to obsolescence of the nodular peripheral keel over the last whorl.

The new subspecies *vossi* is a buff form, but another benthic example from 45 fathoms off Mayor Island (S. Voss) is identical with the shallow-water dark brown form.

It appears that whereas the larvae of the littoral form is probably freely transported in surface plankton across the Tasman by means of the East Australian Current, the benthic occurrences are below the effective influence of the current and thus we get comparative isolation in the deeper waters of the continental shelves of the two countries, resulting in local benthic subspecies.

Family TONNIDAE

Tonna dolium (Linnaeus). Pl. 35, fig. 5.

1758—*Buccinum dolium* Linn. Syst. Nat. Ed. 10, p. 735.

1952—*Tonna dolium*: Tinker, Pacific Sea Shells, Honolulu, figures facing p 136.

Tropical Pacific and Indian Oceans.

I now have three New Zealand records of this handsome tropical shell. (1) Tokerau Beach, Doubtless Bay (Mrs. F. Bloomfield, 2/9/1950); (2) Off Whangaroa, in crayfish pots obtained by Mr. Eric

Sanderson, specimen now in collection of Mrs. I. Worthy, Patumahoe, Auckland; (3) Mount Maunganui Beach, obtained during winter of 1950 by a visiting American collector.

I have examined all three specimens, which are in a good state of preservation, especially the Whangaroa one, which was inhabited by a hermit crab. This shell has full colour and a high gloss with no signs of wear and evidently was living at the locality shortly before it was taken.

It is probable that these odd occurrences represent survivors from occasional drift from warmer areas of the South Pacific during abnormally prolonged spells of northerly winds. They possibly reach here in their early post-larval stages with planktonic drift, but occurrences are evidently too infrequent and too sparse for mating and permanent establishment of the species in New Zealand waters.

Two of the three records are from sparsely inhabited areas. The human factor is unlikely to have accounted for the presence of these shells, so the inference is that the species can reach here and survive in these waters.

It seems best to admit the species to the fauna, for its claim is equal to that of other "extra-limital" Northland inclusions in the faunal list: e.g., *Xenophalium royanum* Iredale, *Cymatiloista bolteniana* A. Adams, *Recluzia lutea* Bennett, *Hydatina physis* Linnaeus and a number of others.

Family CASSIDIDAE

***Xenophalium* (*Xenogalea*) *matai* n. sp. Pl. 35, fig. 6.**

A member of the *pyrum* group but small, much more slender, minus nodules and with the columellar callus-plate less expanded, not dilated and restricting the false umbilicus to a very small opening.

Shell small, rather thin, narrowly ovate. Spire about one-third height of aperture. Whorls $6\frac{1}{2}$, including typical protoconch of $2\frac{1}{2}$ whorls. Labial varix recurved, smooth and slightly thickened behind. Pillar with seven distinct but weak oblique plications and the usual ridges bordering the base of the columellar-callus. Callus-plate thick but rather narrow, set tightly to the columellar, the free distal edge bluntly rounded and bridging a small rounded false umbilicus. Surface smooth except for a few spiral incised lines on the spire and on the base. There are about ten spiral lines on the early spire-whorls and four or five rather distantly spaced on the base. The only axial sculpture is in the form of weak irregular axial folds. Colour pale pinkish buff, with a very weak pattern of pale purplish-brown blotches, arranged on the body whorl in five spiral series, the uppermost at the suture.

Height, 45.5 mm.; diameter, 31.0 mm. (holotype).

Locality: Beach Harbour, Breaksea Sound, Fiordland, alive on intertidal mud-flat (A.W.B.P., Nov., 1934, on N.Z.G.S. Matai).

Holotype: Auckland Museum.

The species resembles *pyrum* in colour pattern, lack of labial denticles and in the presence of spiral sculpture, and *labiatum* in its narrow shape, small false umbilicus and thickened labial varix, but is quite distinct from either and cannot be considered hybrid.

Family MURICIDAE

Genus **UTTLEYA** Marwick, 1934.**Uttleya williamsi** n. sp. Pl. 36, figs. 5, 5a.

Shell small, narrowly fusiform. Spire tall, acuminate, a little less than height of aperture. Protoconch high, narrowly conical, of three and a half smooth lightly convex whorls, with a small central nucleus. Post-nuclear whorls three, sculptured with regular, distinct, rounded spiral cords, with linear interspaces. There are 9 cords on the antepenultimate and 11-12 on the penultimate. These cords become obsolescent on the upper and median portion of the last half-whorl, but those on the neck and fasciole, numbering about eight, are strong right to the outer lip. Aperture narrowly ovate, produced below into a short canal, with a broad shallow sinus. Fasciole not defined. Inner-lip smooth, rather wide, well defined and slightly excavated. Outer-lip evenly arcuate and in profile, sinuous, with a broad shallow concavity over the upper half. Colour deep buff, body-whorl broadly spirally banded, two bands with a subequal band of the ground colour occupying the upper half of the body-whorl followed by a second peripheral light band and a final broad band extending to but not over the fasciole.

Height, 10.75 mm.; diameter, 3.7 mm. (holotype).

Locality: 2½ miles north of Mount Maunganui, 18 fathoms, Bay of Plenty. Several from the stomach of a fish; Moki (*Latridopsis ciliaris* Forster), Mr. Gordon Williams.

Dentition: Pl. 36, fig. 5a.

The dried animal in the holotype was extracted with the aid of a wetting agent and a mount of the radula prepared. The dentition is Trophonoid. Central tooth with three long cusps of equal size and length and two half sized intermediates each placed nearer to the outer cusp than to the central tooth. The base of the central is wide and shallow with upcurved extremities.

Operculum horny, very thin, ovate, with subapical nucleus.

The species is nearest to *ahiparana* Powell, 1927, but that species is more slender with more narrowly convex whorls, weaker sculpture and more numerous (19-20) spiral cords on the penultimate.

Holotype: Presented to the Auckland Museum by Mr. Gordon Williams.

Uttleya marwicki n. sp. Pl. 36, fig. 6.

1934—*Uttleya* sp. Marwick. Proc. Malac. Soc. 21, p. 20, Pl. 2, fig. 13.

Shell ovate-fusiform, slender at first but suddenly inflated after the first post-nuclear whorl. Protoconch high, narrowly conical, of three and a half smooth, lightly convex whorls, with a small central nucleus. Protoconch followed by a brephic half-whorl, smooth, except for three distant thread-like varices. Post-nuclear whorls sculptured with distinct rounded spiral cords with subequal interspaces, 8 on spire whorls in holotype (increasing to about 14 obsolescent ones on the penultimate of the large Wellington example): colour buff with a broad white zone

encircling the body-whorl at and below the top of the aperture. In the large Wellington specimen the spirals are obsolete on the body-whorl except for six linear spaced cords on the base just above the fasciole.

Height, 8.1 mm.; diameter, 3.6 mm. (juvenile Holotype).

Height, 20.0 mm.; diameter, 8.0 mm. (Hypotype of Marwick's *Uttleya* sp. 1934).

Localities: Tahunanui Beach, Tasman Bay, Nelson (type); Wellington Harbour, 5-6 fathoms (fragmentary specimen in New Zealand Geological Survey).

Holotype: Presented to the Auckland Museum by the writer.

This Cookian *Uttleya* is apparently very rare. I nominate the juvenile Nelson specimen as holotype since it exhibits the sculptural detail much better than in the large Wellington fragment.

A feature of the species is the sudden inflation after the first post-nuclear whorl and subsequent wide and strongly convex whorls.

Family COLUMBARIIDAE

Coluzea mariae n. sp. Pl. 35, fig. 8.

Shell fusiform, with broadly conic spire and long, straight, tapered canal. Whorls 8, including a smooth papillate typical protoconch of 2 whorls. Spire rather squat, less than half the height of the aperture plus canal; angle 55° , outline strongly keeled just below the middle of the whorls and excavated below at suture. Sculptured with distant sharply raised spiral cords, three above and two below the peripheral carina on spire whorls and about 24 on the base and neck; six of these are stronger than the rest and occupy the base from level with the top of the aperture to the commencement of the neck and canal. All post-nuclear whorls crossed by numerous weak axial folds which crenulate the peripheral carina, forming 23 to 24 blunt tubercles per whorl. The axials become rapidly obsolete over the base. Colour uniformly white.

Height, 81.0 mm.; diameter, 21.5 mm.

Locality: 60-70 fathoms off Eastern Otago (trawled by Captain J. Black, Dunedin).

Holotype: Auckland Museum.

The species is named in honour of Mrs. Black.

Mr. R. K. Dell, of the Dominion Museum, Wellington, informs me that there is more than one species of the *spiralis* group in New Zealand waters. The type of *spiralis* was neither figured nor adequately described. No dimensions were given and the location cited was simply "New Zealand. Mus. Cuming." However, Hutton 1880 (Man. N.Z. Moll., p. 50) synonymised his *Fusus pensum*, 1873 (Kapiti Island) with *spiralis* and Tryon, 1881 (Man. Conch. 3, pl. 85, fig. 593) figured Adams and Reeve's *Fusus spectrum* as a synonym of *spiralis*. The point is that all these references are to a narrow shell with a spire angle ranging between 32° for *pensum* to 42° for Northland "*spiralis*" = *Columbarium suteri* Smith, 1915.

The Otago shell represents a distinct species with a short broadly conic spire (55°) and very numerous peripheral crenulations.

Family COMINELLIDAE

***Cominella virgata brookesi* n. subsp. Pl. 35, fig. 7.**

A geographic subspecies with a distinctive colour pattern, distributed from Whangaroa to Parengarenga Harbour. Suter (1913, Man. N.Z. Moll., p. 290) gives the range of *virgata* as Bay of Islands to East Cape, and the type locality is Bay of Islands.

Typical *virgata* has weak spiral lirae marked out as thin dark brown continuous lines, three on the spire-whorls and 6-7, rarely 8, on the body-whorl and base. In addition there is a weaker under pattern of flexuous axial flammules. Interspaces of both spirals and axials approximately equal, which results in a reticulated effect. The new subspecies has a dense pattern of flexuous, narrow, dark-brown axial lines on an olive-grey ground. The pattern has frequent meanders and interrupted lines, caused by damage to the outer lip during growth. This pattern is descriptive of well preserved examples. When erosion takes place, close spiral dark lines appear from underneath the surface pattern, but both are never visible on an uneroded surface. Worn shells exhibit approximately eight dark brown spirals on the spire-whorls and sixteen on the body-whorl and base, twice the number shown in the typical species. Columella and outer lip bright orange as in the typical species.

At Te Hapua, Parengarenga, a stunted form of *virgata brookesi* occurs. It has a tendency to develop stronger and more persistent axial costae, some extending on to the body-whorl, but this is probably only an ecological form.

Height, 32.5 mm.; diameter, 17.00 mm. (holotype).

Localities: Whangaroa Harbour (W. H. Webster Coll., Auckland Museum); Whatuwhiwhi, Rangiawhia Peninsula, Mangonui County (D. Forsyth) (type locality); Aurere, Doubtless Bay (A. E. Brookes); Te Hapua, Parengarenga Harbour (A.W.B.P.).

Holotype: Auckland Museum.

In the Auckland Museum collection typical *virgata* is represented from the following localities: Bay of Islands; Whangarei Harbour; Port Fitzroy, Great Barrier Island; Little Barrier Island; Alderman Islands; Big Mercury Island; Narrow Neck and Takapuna, Auckland; and Mount Maunganui, Bay of Plenty.

I am indebted to Mr. A. E. Brookes for first bringing this subspecies to my notice, to Mr. D. Forsyth for the Whatuwhiwhi material, and to Mr. V. W. Lindauer for a long series of topotypes of *virgata*.

Family NASSARIIDAE

When Finlay (1926) provided the new name *aoteanus* for "*Arcularia coronata* var." (Smith, 1915) from 11-20 fathoms near North Cape, New Zealand, he also remarked that "Powell and La Roche have collected one or two specimens and these prove to be of the '*glans*' type, not like *spiratus* but close to *particeps* Hedley."

One of the specimens, formerly in Mr. La Roche's collection, is definitely a *particeps*, but the other is a typical *spiratus*. No further New Zealand examples of *particeps* are known to me, but I have additional Northland records of *spiratus*; listed below.

Dredging operations on the continental shelf, Northland, have produced several *aoteanus* but no *spiratus*, which seems to occur only in shallow water. The specimen Suter listed from 38 fathoms near Cuvier Island as "*Nassa suturalis dunkeri* n. n." (1908, Trans. N.Z. Inst., 40, p. 350) was thus almost certain to have been an *aoteanus*. However, his subsequent description and figure (1913, Man. N.Z. Moll., p. 398 and 1915, Atlas, Pl. 45, f. 17) is of *particeps*, probably an Australian example, and not the Cuvier Island shell. As pointed out by Finlay (l.c.) the name *dunkeri* must be dropped, since it is merely a new name for *Nassa intermedia* Dunker, 1866, non Forbes, 1844.

Nassarius particeps (Hedley).

1915—*Arcularia particeps* Hedley, Proc. Linn. Soc. N.S.W. 39 (4), p. 738.

1926—*Nassarius* cf. *particeps*: Finlay, Trans. N.Z. Inst. 57, p. 419.

Localities: Cavalli Islands, Northland (W. La Roche ca. 1924), one example, Powell coll., Auckland). The type locality is Port Jackson, New South Wales.

The species is characterised by three narrow brown spiral lines on the spire-whorls and five or six on the body-whorl, in addition to a maculated pattern.

Nassarius spiratus (A. Adams).

1852—*Nassa spirata* A. Adams, Proc. Zool. Soc. London for 1851, p. 106.

Localities: Tom Bowling Bay, Whangaroa, Matauri Bay and Cavalli Islands, Northland; Kaitoke, Great Barrier Island (Powell coll., Auckland). The type is from Swan River, Western Australia.

The species occurs commonly in New South Wales, Norfolk Island and at Sunday Island, Kermadec Group. It has a maculated pattern but lacks the spiral lines of the *glans-particeps* group.

Nassarius aoteanus Finlay.

1915—*Arcularia coronata* var., Smith, Brit. Antarctic "Terra Nova" Exped. 1910, Moll. p. 85, Pl. 1, f. 28.

1926—*Nassarius aoteanus* Finlay, Trans. N.Z. Inst. 57, p. 419.

Localities: Near North Cape, New Zealand, 11-20 fathoms (type); half-way between Outer Chicken Island and Mokohinau Islands, 62 fathoms; off Cuvier Island ca. 40 fathoms; Tryphena and Kaitoke, Great Barrier Island, from crayfish pots (Powell coll., Auckland).

The species has a channelled suture, coronated by short stout axials, and is coloured uniformly pale yellowish-brown.

Family MITRIDAE

Austromitra planatella Finlay, 1930.

The holotype from off Cuvier Island in 38 fathoms is an immature shell measuring 10.8 mm. x 4.5 mm. Two adult specimens in my collection measure 13.6 mm. x 5.8 mm. and 13 mm. x 5.5 mm. respectively. The first is dull white and is from 30 fathoms off Mayor Island, Bay of Plenty, the second is light pinkish-brown and was found at Whangaroa. A feature of the species is the pinched or narrowly arched character of the axials.

Austromitra brunneacincta n. sp. Pl. 36, fig. 4.

Shell of moderate size for the genus, rather broadly fusiform, spire about equal to height of aperture plus canal, strongly axially costate, crossed by numerous clearly incised spiral lines. Colour buff, with a pattern of narrow light reddish-brown spiral bands, two on the spire whorls and five on the body-whorl. The first is subsutural and the fifth covers the fasciole. Four of the bands show strongly within the aperture. Whorls 6, including a smooth globular protoconch of $1\frac{1}{2}$ whorls. Axials moderately strong, rounded, regular, vertical, continuous from suture to suture and rapidly becoming obsolete on the base, 16 on the penultimate. The whole surface crossed by distinctly incised spiral lines, about 14 on the spire whorls and about 55 on the body-whorl, including the fasciole. Columellar plaits four, oblique, uppermost strong.

Height, 10.6 mm.; diameter, 4.9 mm.

Locality: Mayor Island, $\frac{1}{2}$ mile off west side, from stomach of a tarakihi, *Dactylopagrus macropterus* (Forster), taken in 18 fathoms (Mr. Gordon Williams, 12/12/1947).

Holotype: Presented to the Auckland Museum by Mr. Gordon Williams.

The species is nearest to *planatella* but in that species the shell is larger, the axials are pinched or narrowly arched, the spiral sculpture is much weaker and there is no colour pattern.

Austromitra zafra n. sp. Pl. 36, fig. 3.

Shell small, narrowly fusiform, uniformly dark reddish-brown, sculptured with numerous rather weak narrowly rounded axials crossed by closely spaced spiral cords with linear interspaces. Whorls 5, including a smooth pupoid protoconch of $1\frac{1}{2}$ whorls. Axials slender, vertical, about 25 on the penultimate. Spiral cords evenly developed over all post-nuclear whorls, including the fasciole, 16 on penultimate. Columellar plaits four, oblique, uppermost strongest.

Height, 5.25 mm.; diameter, 2.25 mm.

Locality: Mayor Island, 1 mile off south-west end, from stomach of a tarakihi, taken in 50 fathoms (Mr. Gordon Williams, 20/2/1949).

Holotype: Presented to the Auckland Museum by Mr. Gordon Williams.

The style of sculpture is reminiscent of that of the Pyrenid genus *Zafra*.

Microvoluta obconica n. sp. Pl. 36, fig. 2.

Shell small ovate-biconic, solid, sculptured with low distant axial folds, about ten per whorl and faint incised spiral lines. Whorls $4\frac{1}{2}$, including a smooth dome-shaped protoconch of $1\frac{1}{2}$ whorls. Spire less than height of aperture. Spire whorls with a subsutural fold and furrow and two median spiral incised lines. Body-whorl with an additional spiral line proceeding from the suture and four more on the upper part of the base. A rather closely spaced group of four rounded spiral cords on the neck separate the body-whorl from the smooth fasciole. Columellar plaits four, upper three strong, lower one weak and very oblique.

Colour buff, with three broad white spiral zones on the body-whorl, each with a colour pattern of yellowish-brown arcuate to chevron-shaped narrow axial lines.

Height, 5 mm.; diameter, 2.75 mm. (holotype).

Locality: Off Spirits Bay, Northland, 30 fathoms (type); Discovery II St. 933, off Three Kings Islands, 260 metres.

The species is more ovate and inflated and has much weaker axial sculpture than either *biconica* Murdoch and Suter, 1906, or *cuvierensis* Finlay, 1930.

Holotype presented to the Auckland Museum by the writer.

Family MARGINELLIDAE

Very few of the large number of species ascribed to this family are known anatomically. This fact, coupled with an almost general lack of sculptural features in the shell, has induced either a conventional lumping of species in the type genus or their assignment to a few genera or subgenera, often quite inappropriately.

Habe, 1951, in "Illustrated Catalogue of Japanese Shells" (No. 16, pp. 101-107), proposed three new generic names for Japanese groups and these seem to be represented in Australian and New Zealand waters. They are *Volvarinella* Habe, 1951, type. *V. makiyamai* Habe, *Kogomea* Habe, 1951, type. *Marginella novemprovincialis* (Yokoyama) and *Microvulina* Habe, 1951, type. *M. nipponica* Habe. Habe also used *Volvarina* generically. However, since most of the species are based solely on shell characters it would seem safer for the present to assign subgeneric rather than generic status to the groups.

The acceptance of Habe's new names would involve the following changes in the New Zealand Recent faunal list:

Subgenus *Volvarinella* for *amoena* Suter, 1908; *aoteana* Powell, 1932; *cairoa* Brookes, 1924; *fusula* Murdoch and Suter, 1906; *hebesceus* Murdoch and Suter, 1906; *lurida* Suter, 1908; *stewartiana* Suter, 1908; *subfusula* Powell, 1932 and possibly *subamoena* Powell, 1937. Subgenus *Microvulina* for *angasi* Crosse, 1870. Subgenus *Kogomea* for *Gibberula ficula* (Murdoch and Suter, 1906).

Family CANCELLARIIDAE

***Zeadmete barkeri* n. sp. Pl. 36, fig. 1.**

Shell nearer to the Castlecliffian (Upper Pliocene) *pliocenica* Finlay, 1930, than to *trailli* Hutton, 1873. It resembles *pliocenica* in being shouldered, in having the spiral cords of the spire-whorls stronger and more openly spaced and the pillar plaits much weaker and more oblique than in *trailli*. It differs from *pliocenica* in having only sub-obsolete axials, which render the upper spiral cords of the spire whorls weakly crenulate but not gemmate, in the narrower and less distinct shoulder and in the more broadly ovate outline to the whole shell.

In *trailli* the shell is more obese than either *pliocenica* or *barkeri*, not shouldered, the spiral cords are closer, linear spaced, the aperture wider and relatively shorter and the pillar plaits very strong.

Shell small, ovate, dull white, sculptured with revolving series of flat-topped cords, four primary ones on spire whorls increasing to six on the penultimate, three more on the upper part of the base followed by about eleven linear-spaced, rounded cords, on the lower half of the base. Spire about equal to height of aperture.

Height, 8.8 mm; diameter, 4.75 mm. (holotype).

Locality: Off Mayor Island, 35 fathoms.

Holotype: Presented to the Auckland Museum by Mr. G. W. Barker.

Family DIAPHANIDAE

Austrodiaphana maunganuica n. sp. Pl. 36, fig. 7.

Shell small, thin, squat, ovate-cylindrical with flat spire and sharply carinated shoulder having a weak concavity immediately below it. Whorls $3\frac{1}{2}$, the small, smooth, globular protoconch scarcely visible above the level of the shoulder. Aperture narrow above and expanded below. Columella thin, separated from body-whorl by a long, deep, crescentic umbilicus. Sculptured with about 18 subobsolete spiral lirae and more distinct but irregular axial growth lines. Colour pale yellowish-brown with two narrow colourless spiral zones, one immediately below the shoulder and the other about the middle of the body-whorl. The columella and umbilicus are colourless also. One specimen has the addition of a darker-brown line margining the lower side of each clear zone.

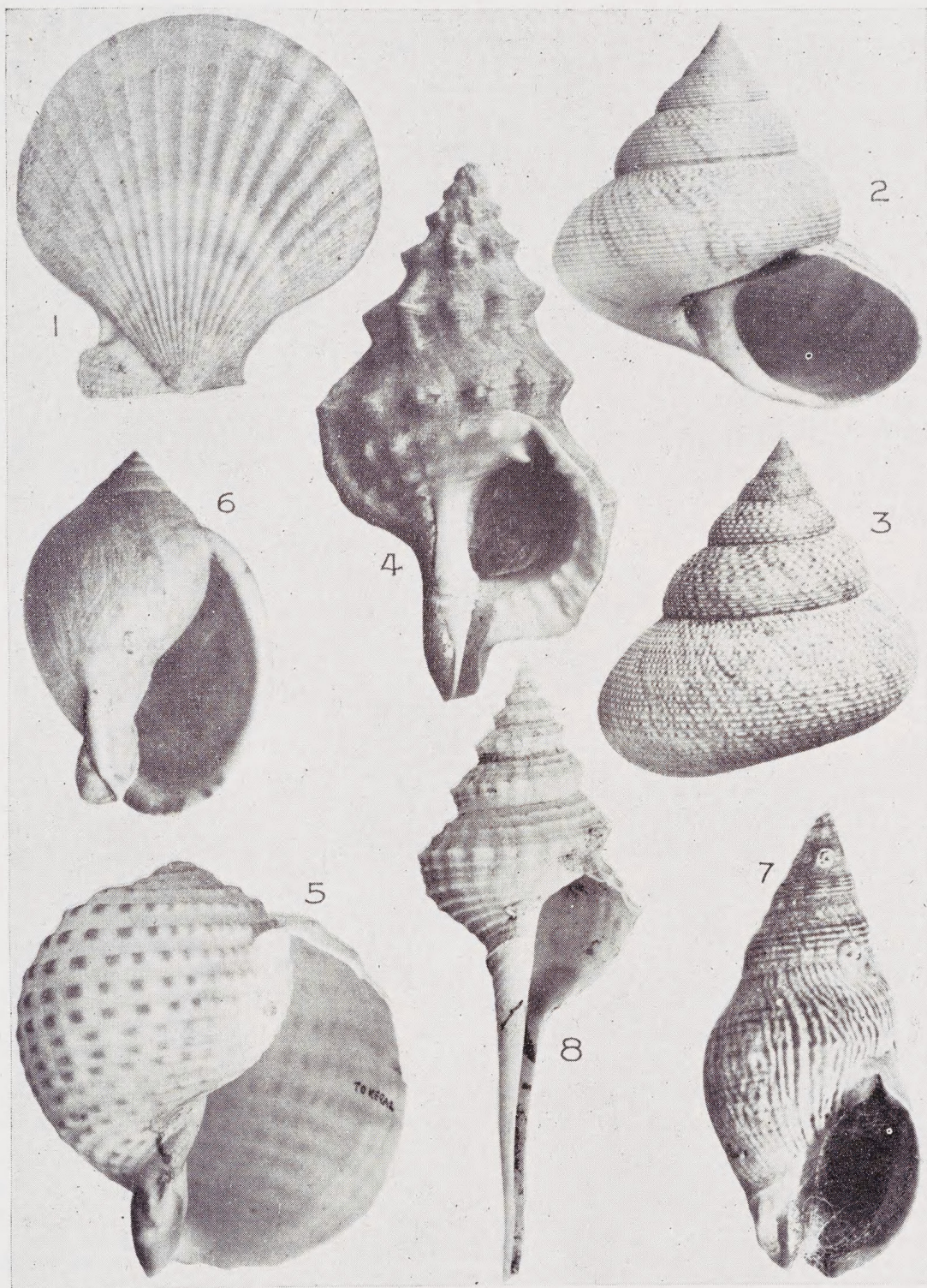
Height, 2.1 mm.; diameter, 1.45 mm.

Locality: $2\frac{1}{2}$ miles north of Mount Maunganui, Bay of Plenty, from stomach of a tarakihi, *Dactylopagrus macropterus* (Forster), taken in 18 fathoms (Mr. Gordon Williams, April, 1948) (type); off Hen and Chickens Islands, 25 fathoms (Finlay coll., Auckland Museum).

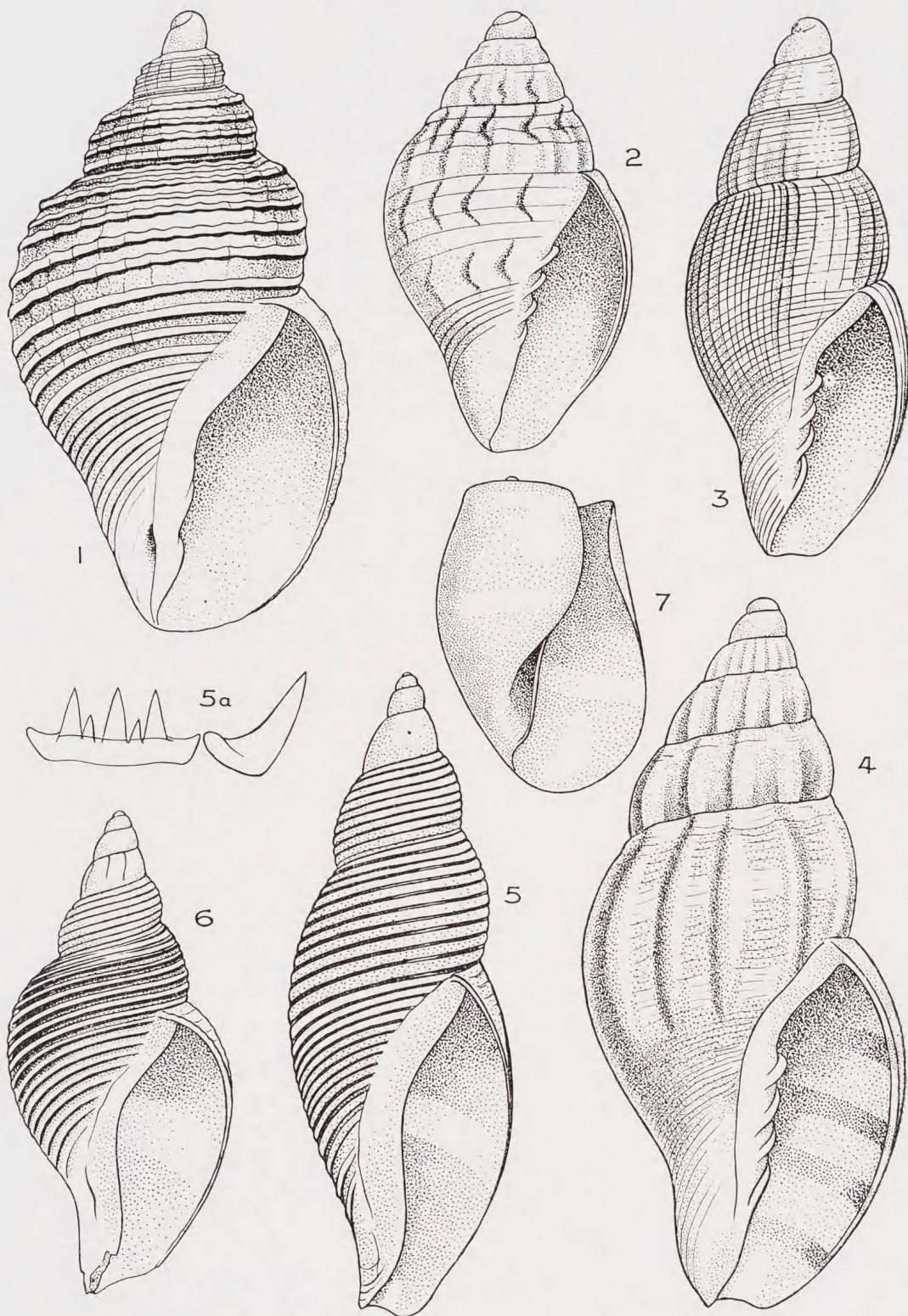
Holotype: Presented to the Auckland Museum by Mr. Gordon Williams.

The species is smaller and narrower than *colei* Fleming, 1948, from Fiordland, the only other New Zealand member of the genus so far described. A conspicuous difference is in the form of the umbilicus, which is short in *colei* but long in *maunganuica*. Also there is a weak shoulder constriction in *maunganuica*, but it is not nearly so pronounced as in the Australian genotype *brazieri* Angas.

The small paratype of *colei* is about the size of *maunganuica* but the differentiating characteristics are still apparent.



- Fig. 1. *Chlamys* (*Mimachlamys*) *taiaroa* n. sp. Holotype 43 x 42 mm.
 Figs. 2 and 3. *Venustas punctulata multigemmata* n. subsp. Holotype (Fig. 2), 54 x 50 mm.
 Fig. 4. *Mayena australasia vossi* n. subsp. Holotype, 81.5 x 83 mm.
 Fig. 5. *Tonna dolium* Linnaeus, 83 x 73 mm.
 Fig. 6. *Xenophalium* (*Xenogalca*) *matai* n. sp. Holotype, 45.5 x 31 mm.
 Fig. 7. *Cominella virgata brookesi* n. sp. Holotype, 32.5 x 17 mm.
 Fig. 8. *Colusca mariae* n. sp. Holotype, 81 x 21.5 mm.



- Fig. 1. *Zeadmete barkeri* n. sp. Holotype, 8.8 x 4.75 mm.
 Fig. 2. *Microvoluta obconica* n. sp. Holotype, 5 x 2.75 mm.
 Fig. 3. *Austromitra zafra* n. sp. Holotype, 5.25 x 2.25 mm.
 Fig. 4. *Austromitra brunneacincta* n. sp. Holotype, 10.6 x 4.9 mm.
 Fig. 5. *Uttleya williamsi* n. sp. Holotype, 10.75 x 3.7 mm.
 Fig. 5a. *Uttleya williamsi* n. sp. radula.
 Fig. 6. *Uttleya marwicki* n. sp. (Holotype) 8.1 x 3.6 mm.
 Fig. 7. *Austrodiaphana maunganuica* n. sp. Holotype, 2.1 x 1.45 mm.



Powell, A. W. B. 1952. "New Zealand Molluscan Systematics, with Descriptions of New Species, Part 1." *Records of the Auckland Institute and Museum* 4, 169–185.

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