

Tertiary Mollusca from Motutara, West Coast, Auckland.

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The material described in this paper is from sparsely fossiliferous tuffs which occur underlying pillow-lavas in the coastal cliffs at Motutara,* between Muriwai and Te Henga, West Coast, Auckland.

The following extract from a paper‡ by Professor J. A. Bartrum describes the manner of occurrence of these fossils:—

“A little south of the beginning of the beach, the sea-cliffs exhibit remarkable columnar structures in andesitic lavas of mid-Tertiary age, which occur sporadically in a large mass of andesitic material which builds the coastal range of hills between Muriwai and the entrance of Manukau Harbour, 16 miles south. At Muriwai itself this andesitic mass consists largely of fine-textured ejecta, including important sheets of lava in some places they include marine fossils in tuffaceous debris between the pillows, whilst they rest on tuffs with similar fossils. The seas into which they were poured, however, were very shallow, for large-scale examples of contemporaneous erosion in the subjacent tuffs are common.”

The fauna is a meagre one, only 30 species being listed, and of this number five are too imperfect for specific determination. Further, the matrix is so hard that weathering is slow and on this account there is little hope of much further material becoming available in the near future, particularly as it has taken over ten years of systematic hunting, representing some hundreds of visits to make the small collection here described.

Many of the species are represented by single specimens, the following being the only ones that occur at all commonly: *Thyasira bartrumi* n.sp., *Bathytoma mitchelsoni* n.sp., *Vaginella* cf. *torpedo* Marshall and *Lornia marzwicki* n.sp.

*Motutara is the name used for the coastal district between Muriwai Beach and Te Henga or Bethel's Beach.

‡Pillow lavas and columnar fan-structures at Muriwai, Auckland, New Zealand. Journ. of Geol. (U.S.A.) Vol. 38, no. 5, pp. 447-455, 1930.

With such a small and peculiarly assorted fauna and an unusual lithological facies, correlation is difficult, but what little evidence there is points fairly definitely to the Awamoan (Lower Miocene). Unfortunately only two species in the Motutara list occur at the type locality for the Awamoan, but three others (*Euspinacassis multinodosa* Powell, 1928, *Parvamussium zitteli* (Hutton, 1873) and *Hipponix centrifugalis* (Marwick, 1931) were recorded from the Tutamoe Series (= Awamoan Stage) of Gisborne District by Marwick (1931, N.Z. Geol. Surv. Pal. Bul. No. 13, pp. 8, 19 and 22). Another, *Astele boileaui* Marwick 1931 (l.c. p. 87) was described from the Ormond Series (=Taranakian Upper Miocene) (l.c. p. 8) and several others such as *Lornia marwicki* n.sp. and *Risellopsis prisca* n.sp., although related to species from stages lower than the Awamoan, are not specifically identical and could be very well the Awamoan evolutionary development from the earlier species.

Although these Motutara tuffs are here referred to the Awamoan, the writer still considers the basal Waitemata beds (Waiheke Island, Kawau Island and Cape Rodney) to be older, equalling the Hutchinsonian. Exact correlation is impossible, however, as molluscan fossils scarcely occur at the typical Hutchinsonian locality. Nevertheless the assemblage of species in the Waitemata beds seems definitely to be older than that of the Motutara tuffs.

The material was collected from the following five localities:

- A. Sea cliffs about $\frac{1}{2}$ mile south from Muriwai Beach, in large fallen blocks of tuff, from beneath a band of conglomerate 10 to 15 feet in thickness. A.1 is the conglomerate.
- B. Sea cliffs about $\frac{3}{4}$ mile south from Muriwai Beach, from tuffs forming tidal platform and cliff, underlying pillow-lava at the entrance to a large cave, which has a boulder beach north of it and a small sandy beach to the south.
- C. About $1\frac{1}{4}$ miles south from Muriwai Beach, from tuffs forming tidal platform and cliff, situated between two small sandy beaches, each with a waterfall.
- D. Cliffs of tuffs about $1\frac{1}{2}$ miles south from Muriwai Beach, just beyond second waterfall and before reaching gap which prevents further progress south at tide level.
- E. Cliffs at beach level between last locality and Te Henga (access from nearer Te Henga), opposite a detached mass about 30 feet in height, which is separated from the shore except at low spring tides.

List of Species.

(Letters A—E indicate localities listed above.)

PHYLUM MOLLUSCA.

CLASS PELECYPODA.

	Localities
<i>Nuculana (Saccella) motutaraensis</i> Powell n. sp.	(A)
<i>Glycymeris (Grandaxinea) monsadusta</i> Marwick 1932	(A.1)
<i>Parvamussium zitteli</i> (Hutton 1873)	(A)
<i>Myrtea maoria</i> Powell n. sp.	(C)
<i>Myrtea (Lucinoma) taylori</i> Powell n. sp.	(A & B)
<i>Pteromyrtea motutaraensis</i> Powell n. sp.	(A)
<i>Lima cf. colorata</i> (Hutton 1873) (juvenile)	(A.1)
<i>Ostrea (Crenostrea) wuellerstorfi</i> Zittel 1864	(A.1)
<i>Chama</i> sp. (indeterminable)	(A.1)
<i>Thyasira (Prothyasira) motutaraensis</i> Powell n. sp.	(C)
<i>Thyasira (Prothyasira) bartrumi</i> Powell n. sp.	(C)
<i>Ascitellina protensa</i> Powell n. sp.	(A & B)
<i>Nemocardium cf. patulum</i> (Hutton 1873)	(C)

CLASS GASTEROPODA.

<i>Astele boileaui</i> Marwick 1931	(C)
<i>Calliotropis motutaraensis</i> Powell n. sp.	(A)
<i>Risellopsis prisca</i> Powell n. sp.	(A)
<i>Hipponix centrifugalis</i> Marwick 1931	(A)
<i>Polinices motutaraensis</i> Powell n. sp.	(A)
<i>Uberella marwicki</i> Powell n. sp.	(A)
* <i>Euspinacassis multinodosa</i> Powell 1928	(C)
* <i>Euspinacassis torcuma</i> (Powell 1928)	(C)
<i>Falsiculus gemmatus</i> Powell n. sp.	(C)
<i>Marshallena carinaria</i> Powell n. sp.	(C)
<i>Bathytoma mitchelsoni</i> Powell n. sp.	(C)
<i>Gemula</i> sp. possibly <i>orba</i> Marwick 1931 (material fragmentary)	(C)
<i>Comitas fusiformis</i> (Hutton 1873)	(C)
" <i>Turris</i> " <i>finlayi</i> Powell n. sp.	(C)
<i>Conus</i> sp. (indeterminable)	(A.1)
<i>Cylichnania bartrumi</i> Marwick 1931	(A)
<i>Ringicula marwicki</i> Powell n. sp.	(E)
<i>Vaginella cf. torpedo</i> Marshall 1918	(D & E)
<i>Lornia marwicki</i> Powell n. sp.	(B)

CLASS SCAPHOPODA.

<i>Dentalium</i> n. sp.	(A)
<i>Cadulus</i> n. sp.	(C)

Of the 34 species listed all are now extinct.

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*Trans. N.Z. Inst., Vol. 59, pp. 634 and 636.

NUCULANIDAE.

Genus NUCULANA Link 1807.

Subgenus SACCELLA Woodring 1925.

Type (original designation) : LEDA COMMUTATA Philippi.

Nuculana (Saccella) motutaraensis n. sp. Pl. 76, fig. 1.

Shell of moderate size, elongate-oval, narrowed posteriorly to a blunt upturned rostrum, beaks prominent, broadly rounded, situated a little in front of the middle. Anterior end broadly and regularly rounded. Posterior end concave along the dorsal margin, and gently upcurved basally to a blunt rounded rostrum which is tilted upwards slightly at the tip. Posterior area broad, concave, bounded by a slight ridge which bifurcates; the stronger arm running from the beak to the upper extremity of the rostrum and the weaker to a slight angulation between the lower extremity of the rostrum and the basal margin. Sculpture of strong, regular, well-spaced, concentric ridges, five per millimetre. The concentric ridges become obsolete over the posterior area proper, the lower ridge of the rostrum being crossed by the normal sculpture.

Height, 6 mm.; length, 9.5 mm.; thickness (one valve), 2 mm. (holotype).

Locality: Motutara (A).

Holotype in writer's collection, Auckland Museum.

In the somewhat upcurved beak, this species resembles Marwick's *N. (Saccella) waikohuensis* (1931, N.Z. Geol. Surv. Pal. Bull. No. 13, p. 50) but otherwise it has the proportions of the *bellula* series, yet is distinctive in outline and sculpture from those so far described.

CODAKIIDAE.

Genus MYRTEA Turton 1822.

Type (by monotypy) : VENUS SPINIFERA Montagu.

Myrtea maoria n. sp. Pl. 76, fig. 2.

Shell fairly large, oval, almost equilateral, moderately inflated. Beaks low, rather small. Lunule and escutcheon long, narrow, slightly depressed and bordered by a thin ridge which is rendered somewhat serrate by the surmounting and termination of the concentric sculpture. The concentric sculpture is in the form of prominent widely spaced slightly lamellose, rounded upcurved ridges, about four in five millimetres over the lower half of the shell. The interstices are smooth except for occasional faint concentric growth lines, and radial sculpture is entirely absent. Anterior and posterior dorsal areas depressed, causing the traversing concentric ridges to cant a little and to appear slightly flatter and broader as they approach the dorsal edge.

Length (estimated) 23 mm.; height, 20 mm.; thickness (one valve), 4 mm. (holotype).

Locality: Motutara (C).

Holotype in writer's collection, Auckland Museum.

The simple, spaced, lamellate concentric ridges without radial sculpture and moderately large shell are features more in accord with the European *Myrtea* than with the Australasian *Notomyrtea* series which have radial as well as concentric sculpture.

Subgenus LUCINOMA Dall 1901.

Type (original designation): LUCINA FILOSA Stimpson.

Myrtea (Lucinoma) taylori n. sp. Pl. 76, fig. 3.

Shell of moderate size, suborbicular, sculptured with regularly disposed fine, sharp, concentric riblets, the interspaces each having four or five considerably finer and somewhat irregular concentric growth lines. The concentric riblets are a little less than one millimetre apart over the lower part of the shell. There is no radial sculpture, and the typical lucinoid anterior and posterior radial sulci are only just visible, mainly owing to a very slight reduction in strength of the concentric sculpture above the posterior sulcus in particular. There is a moderate-sized lanceolate pseudo-lunule, situated immediately in front of the beaks and a longer lanceolate ligamental groove posterior to the beaks. Interior of shell not accessible in any of the specimens.

Height, 30 mm.; width, 32.5 mm.; thickness (both valves), 15 mm. (holotype).

Locality: Motutara (A and B).

Holotype in writer's collection, Auckland Museum.

This species has a very striking resemblance to the North European *M. (Lucinoma) borealis* (Linn.). The European species, however, has the concentric riblets slightly more numerous and closely spaced, and the anterior and posterior radial sulci almost completely obsolete, otherwise the two are remarkably similar.

Genus PTEROMYRTEA Finlay 1926.

Type (original designation): CYCLINA DISPAR Hutton.

Pteromyrtea motutaraensis n. sp. Pl. 76, fig. 4.

Shell of moderate size, ovate, longer than high, somewhat inflated, rather thin. Beaks central. Lunule narrowly lanceolate. Anterior wing long and clearly marked off by a groove. Sculpture consisting of extremely fine regular concentric threads, about five per millimetre. Valve margins smooth. Hinge typical, as shown by a paratype.

Height, 17 mm.; length, 21 mm. (holotype).

Locality: Motutara (A).

Holotype in writer's collection, Auckland Museum.

This species is much more oval in outline than any of the described species.

THYASIRIDAE.

Genus *THYASIRA* Lamarck 1818.

Subgenus *PROTHYASIRA* Iredale 1930.

Type (original designation): *P. PERONIANA* Iredale.

***Thyasira (Prothyasira) motutaraensis* n. sp.** Pl. 76, fig. 7.

Shell small, triangulate, higher than wide, equivalve, moderately inflated and almost equilateral. Beaks about central, small, directed forwards and incurved at tips. Anterior end sharply descending, slightly concave, with a moderately long shallowly excavated lunule which is margined by a furrow running from near the beaks to the margin. On the posterior end there are two strong, slightly divergent furrows which are close to the posterior dorsal margin and extend from near the beaks to the margin. The ridges associated with these furrows are angular on their upper edges. Basal margin convex. Surface smooth except for microscopic concentric growth lines.

Height, 7.4 mm.; width, 6.5 mm.; thickness (two valves), 4.75 mm. (holotype).

Locality: Motutara (C).

Holotype in writer's collection, Auckland Museum.

This species is related to the Miocene (Taranakian) *Thyasira planata* Marwick (1926, Trans. N.Z. Inst. Vol. 56, p. 331), but it differs in being higher than wide, more acutely angular above, almost equilateral, and in having an additional radial furrow which borders the lunule.

***Thyasira (Prothyasira) bartrumi* n. sp.** Pl. 76, figs. 5 and 6.

Shell of moderate size, thin, very oblique and inequilateral, equivalve and inflated. Beaks at about anterior seventh, small, directed forwards and incurved at tips. Anterior end short, with a large, deeply excavated lunule which extends from just below the beaks to the angle with the ventral margin. The greatly produced posterior end has two deep arcuate furrows bordering the dorsal slope, and a very broad but only slightly raised medial fold which runs from the beaks to behind the anterior fourth on the ventral margin. Surface smooth except for regular microscopic concentric lines of growth. Interior not accessible in any of the specimens.

Height, 15 mm.; width, 15 mm.; thickness (two valves), 10.75 mm. (holotype).

Locality: Motutara (C).

Holotype in writer's collection, Auckland Museum.

This species also shows relationship with the Taranakian *planata*, but it differs from that species and also from the above described *motutaraensis* in having a more deeply excavated lunule, not bordered by a furrow, and a very oblique outline.

GARIIDAE.

Genus ASCITELLINA Marwick 1928.

Type (original designation): *A. DONACIFORMIS* Marwick.

Ascitellina protensa n. sp. Pl. 76, fig. 8.

Shell small, thin, compressed, elongate-oval, rounded at both ends. Beaks a little in front of the anterior third, very little raised and directed forwards. Posterior end more narrowly rounded than anterior. Sculpture consisting of fine, somewhat irregular, concentric growth lines.

Length, 11.25 mm.; height, 6 mm.; thickness (one valve), 1.75 mm. (holotype).

Locality: Motutara (A and B).

Holotype in writer's collection, Auckland Museum.

The hinge is represented only by one fragment of the central portion of that of the left valve. Although fragmentary, the hinge features that are showing are in accord with those of the Recent *Tellina urinatoria* Suter 1913, which has been referred to *Ascitellina* by Marwick (1931, N.Z. Geol. Surv. Pal. Bull. No. 13, p. 74). The new species appears to be much more closely allied to the Recent *urinatoria* than to the Chatham Island oligocene genotype. From the Recent species, *protensa* differs in its more elongate-oval outline, more narrowly contracted posterior end, and less regular sculpture.

CALLIOSTOMATIDAE.

Genus CALLIOTROPIS Seguenza 1903.

Type (original designation): *CALLIOSTOMA OTTOI* Phil.

Calliotropis motutaraensis n. sp. Pl. 77, figs. 12, 13 and 14.

Shell fairly large, thin, conical and widely umbilicate. Whorls $8\frac{1}{2}$, including a minute globular smooth protoconch of $1\frac{1}{2}$ whorls. First post-nuclear whorl of closely-spaced crisp axials. Subsequent whorls with two widely separated spiral rows of closely-spaced prominent spinose nodules. The distance between the spiral rows is slightly more than double the distance between either one of these spirals and the adjacent suture. There are

19 nodules in one spiral series on the last whorl, and 17 on the third post-nuclear. The body-whorl has a third spinose spiral proceeding from the suture, and four more on the base, the last of which borders a wide and deep funnel-shaped umbilicus, the maximum width of which is about one-third that of the base. The basal spirals have finer and much more numerous nodules. The surface of the upper whorls is smooth, but on the body-whorl there are close but somewhat irregular retractive axial growth lines, those on the base being somewhat stronger and more regular. Aperture rhomboidal. Peristome thin, discontinuous. Inner lip as a thin callosity over the parietal wall. Upper part of columella slightly reflected over the umbilical cavity.

Height, 17 mm.; diameter, 18 mm. (holotype).

Locality: Motutara (A).

Holotype in writer's collection, Auckland Museum.

Recent species of this genus are invariably from deep water, but the rest of the Motutara fauna and the lithological facies point definitely to shallow-water deposition. Either *Calliotropis* has not always been restricted to deep water or else the present species is incorrectly ascribed to that genus. The latter possibility does not seem likely, for the Motutara fossil has all the necessary characteristics of the genus.

LITTORINIDAE.

Genus *Risellopsis* Kesteven 1902.

Type: *Fossarina varia* Hutton.

***Risellopsis prisca* n. sp.** Pl. 78, figs. 20, 21 and 22.

Shell small, solid, depressed trochiform, perforate, spirally striated and prominently keeled. Whorls $4\frac{1}{2}$, including a typical almost flat protoconch of $2\frac{1}{2}$ smooth whorls. Spire-whorls with two strong cords, which later, with the addition of another strong cord from beneath the lower suture, develop into the three strong peripheral keels so characteristic of the Recent genotype. In addition, the surface, both above and below, is sculptured with fine spiral threads; about five above and three below the upper keel of the first post-nuclear whorl, and increasing to about double this number at the termination of the last whorl. On the base there is a strong spiral ridge almost the strength of one of the keels. This is situated midway across the base and defines the termination of the spiral cord sculpture from above from a smooth deeply excavated umbilical depression which terminates in a small perforation, overhung by the reflexed inner-lip callus. Medially the inner lip has a callus projection which overhangs the umbilical depression. Spire low, about half the height of aperture.

Height, 3.3 mm.; diameter, 5.5 mm. (holotype).

Locality: Motutara (A).

Holotype in writer's collection, Auckland Museum.

The above species differs from the Recent *varia* in having the tricarinate keels more strongly and evenly developed, a differently sculptured base with a more concave umbilical depression, and a strong callus projection on the outer reflexed edge of the inner-lip. A congeneric Tertiary species is Marshall's *Submargarita ? tricineta* (Trans. N.Z. Inst. Vol. 51, p. 227) from Hampden, Eocene (Tahuian).

NATICIDAE.

Genus *UBERELLA* Finlay 1928.

Type (original designation): *NATICA VITREA* Hutton.

***Uberella marwicki* n. sp.** Pl. 78, fig. 19.

Shell small, solid, globular, smooth. Spire depressed, about one-fourth the height of the aperture. Whorls four, including a typical paucispiral protoconch of one whorl. Suture abutting and somewhat impressed; axial growth lines fairly prominent for a short distance below the suture. Umbilicus small, not deep. Parietal callus narrow, widest above, with a small semi-circular gap in it at the umbilicus, and very much thickened on the lower section of the columella and around the basal part of the aperture.

Height, 6.5 mm.; diameter, 6.5 mm. (holotype).

Locality: Motutara (A).

Holotype in writer's collection, Auckland Museum.

Dr. J. Marwick, who kindly examined this species, groups it with *pseudovitrea* (Finlay 1924) and *maesta* (Marwick 1924). From these species the Motutara shells differ in having the lower portion of the columella and the basal section of the lip extremely massive. The semi-circular gap in the callus above the small shallow umbilicus is another distinguishing feature.

Genus *POLINICES* Montfort 1810.

Type (original designation): *POLINICES ALBUS* Mont.

(= *NATICA MAMMILLARIS* Lamk.)

***Polinices motutaraensis* n. sp.** Pl. 78, figs. 17 and 18.

Shell small, solid, oval, smooth except for numerous axial growth lines. Whorls $4\frac{3}{4}$, including a protoconch not clearly marked off, but with a tiny nucleus, and probably about $2\frac{1}{2}$ whorls. Spire blunt, broadly rounded, about one-fifth the height of aperture (suture to basal lip). Suture tangential. Parietal callus peculiar, fairly heavy, widest below as it is coalescent with the funicle, completely filling the umbilicus. The medial part of the callus is surmounted by a prominent tubercle, and the outer edge is bounded by a shallow groove. Basal lip much thickened, especially at the point of contact with the umbilical callus.

Height, 8.9 mm.; diameter, 7.5 mm. (holotype).

Locality: Motutara (A).

Holotype in writer's collection, Auckland Museum.

Dr. Marwick kindly examined this species also, and considers it to be nearest to his *senisculus* from Wangaloa. Neither species is a typical *Polinices* and a new group name will be published by him later. The prominent tubercle on the parietal callus and the complete filling of the umbilicus serve to distinguish this species from all others so far described.

FASCIOLARIIDAE.

Genus *FALSICOLUS* Finlay 1930.

Type (original designation): *FUSINUS KAIPARAENSIS* Suter.

Falsicolus gemmatus n. sp. Pl. 77, figs. 10 and 11.

Shell of moderate size, fusiform, massive. Spire elevated, conic, a little more than half the height of the aperture plus canal. Whorls about seven, apex small, unfortunately obscured by matrix in only complete specimen. Outline of whorls convex, almost flat on spire, but with a very broad but extremely shallow subsutural depression. Canal rather short; pillar massive, straight, with a heavy oblique ridge at the base of the aperture. Outer lip not thickened. Sculpture of numerous rounded spiral cords and microscopic interstitial spiral threads, crossed by thin axials which render the cords slightly gemmate at the points of intersection. There are five spiral cords on the penultimate and about twenty-two on the body-whorl and canal-neck. The axials number nineteen on the penultimate, but on the body-whorl they become subobsolete and irregular, the gemmules being far more numerous and closely spaced. The axial sculpture does not extend over the spirals of the canal neck. Between each of the spiral cords on the spire whorls there are about six microscopic spiral threads, but these become obsolete below the periphery on the body-whorl. Aperture ovate, rather small.

Height, 42 mm.; diameter, 17 mm. (holotype).

Locality: Motutara (C).

Holotype in writer's collection, Auckland Museum.

This species is well characterised by its gently rounded whorls and delicate gemmate sculpture. It seems nearest allied to such species as *coerulescens* Finlay 1930 and *waiauensis* Finlay 1930.

TURRIDAE.

Genus *MARSHALLENA* Finlay 1926.

Type (original designation): *BELOPHOS INCERTUS* Marshall.

Marshallena carinaria n. sp. Pl. 78, figs. 26 and 27.

Shell small, broadly fusiform, sculptured with numerous rounded spiral cords having linear interspaces and prominent closely spaced oblique axial folds. Whorls angled at periphery, which is situated at the lower third on the first post-nuclear

whorl, but rises to very little below the middle on the penultimate. There are eight whorls, including a typical tiny smooth protoconch of $2\frac{1}{2}$ whorls. The spiral cords number eight on the second post-nuclear whorl and eleven on the penultimate, those above the periphery (five) being finer and less distinct, and there are about forty on the body-whorl, base and canal neck. The axial folds number 17, both on the penultimate and on the body-whorl. Spire turriculate, about equal to height of aperture plus canal. Aperture ovate, canal bent to the left, rather short, damaged. Suture impressed, bordered below by a rounded spiral fold that is crenulated slightly by the axial folds, which are strongly developed only from the periphery to the lower suture.

Height, 12 mm.; diameter, 6.75 mm. (holotype).

Locality: Motutara (C).

Holotype in writer's collection, Auckland Museum.

This species appears to be closely allied to Allan's *spiralis* (Verconella) (Trans. N.Z. Inst. vol. 56, p. 340, 1926) which differs from the Motutara species in having more bulging and not so sharply angular whorls.

Genus BATHYTOMA Harris and Burrows 1891.

Type: PLEUROTOMA CATAPHRACTA Brocchi.

Bathytoma mitchelsoni n. sp. Pl. 77, figs. 15 and 16.

Shell of moderate size, fusiform, solid, spire a little less than height of aperture plus canal. Whorls keeled very low, almost at lower suture. There are ten whorls, including a small smooth conical protoconch of $2\frac{3}{4}$ whorls. Spire whorls with a flat sub-sutural band bearing two spiral threads, which are broken up into a close series of rounded gemmules. Below this is a strongly concave shoulder extending to the keel, which is almost at the lower suture, being separated from it only by a deep groove. The keel also is made up of two spiral gemmate threads, which are so close together that the upper and lower opposed gemmules appear to merge as larger oval nodules in a single peripheral series. There are thirty-four of these nodules on the keel of the last whorl. On the concave shoulder, between the upper sutural band and the lower keel there are from four to seven fine spiral threads which are rendered gemmulate by close radial growth lines. On the base from below the keel there are twelve rather strong spiral cords, and in each interspace a weak spiral thread, the whole rendered gemmulate by the radial growth lines. Aperture narrow, produced below into a short, straight and wide canal. Outer lip with a deep, rather narrow sinus at the keel. Inner lip and columella smooth and polished, slightly excavated over parietal wall.

Height, 28 mm.; diameter, 13.5 mm. (holotype).

Locality: Motutara (C).

Holotype presented to Auckland Museum.

This species differs from *haasti* (Hutton 1877) in having the keel much lower, almost on to the lower suture, and also in the finer and more numerous gemmules:

The species is named after the late Hon. Sir Edwin Mitchelson, K.C.M.G., M.L.C., upon whose property most of the material was collected.

Genus *TURRIS* Bolten 1798.

Type (subsequent designation, Dall 1909), *MUREX BABYLONUS*

Gmelin (error for *BABYLONIUS*) = *MUREX BABYLONIUS* Linn.

“*Turris*” *finlayi* n. sp. Pl. 78, figs. 28 and 29.

Shell small, bicarinate, fusiform, slender. Spire tall, higher than aperture plus canal. Whorls 7, including a blunt round-topped cylindrical-sided, smooth protoconch of two whorls, finishing with a few closely spaced thin axials. Spire whorls sculptured with two moderately strong widely spaced keels, which are produced into rounded nodules at the points of intersection with the rather distant protractively oblique axial folds. The distance between the keels is greater than that between either keel and its adjacent suture, and the lower carina is always nearer to the lower suture than is the upper carina to the upper suture. The axial folds number about ten per whorl. Body-whorl with a weak spiral thread between the two keels and ten spiral threads on the base and neck, those on the neck being more closely spaced. Aperture imbedded in matrix, but the growth lines clearly indicate the sinus to be rather deep, V-shaped, and situated on the upper carina.

Height, 8.5 mm.; diameter, 3.1 mm. (holotype).

Locality: Motutara (C).

Holotype presented to Auckland Museum.

This species really belong to a new group, but is placed in *Turris* provisionally at the suggestion of Dr. H. J. Finlay, who is preparing a monograph of the family.

The position of the sinus on the peripheral keels recalls *Polystira* (Woodring 1928. Mioc. Moll. Bowden, Jamaica. Carnegie Inst. Washington Pub. No. 385, p. 145) and *Gemmula* Weinkauff 1876 as well as *Turris*. Both *Gemmula* and *Turris* have a polygyrate protoconch, but *Polystira* has a paucispiral blunt protoconch similar to that of the Motutara shell. However, the American genus *Polystira* cannot be used for the Motutara species, for apart from the similarity in nuclear characters and peripheral position of the sinus the small New Zealand shell does not compare well in all other respects with the large, massive, distinctively sculptured West Indian genotype.

RINGICULIDAE.

Genus RINGICULA Deshayes 1838.

Type (subsequent designation, Gray, 1847): AURICULA RINGENS Lamarek.

Ringicula marwicki n. sp. Pl. 78, fig. 25.

Shell small, ovate, solid. Body-whorl inflated. Spire narrowly conical, about two-thirds height of aperture. Whorls $4\frac{1}{2}$, including a small, smooth, dome-shaped protoconch of about $1\frac{1}{2}$ whorls, the tip flattened and slightly tilted. Suture impressed and bordered below by a fairly strong groove. Spire whorls smooth, body-whorl sculptured with about 16 incised lines, five of them being between the sutures. Outer lip broken away below, but, by the remaining upper portion, it is shown to be strongly variced. Parietal wall with a strong fold and two more, equally strong, on the columella.

Height, 3 mm.; diameter, 2 mm. (holotype).

Locality: Motutara (E).

Holotype in writer's collection, Auckland Museum.

This species is nearest allied to Marwick's *R. torquata* (1926, Trans. N.Z. Inst. Vol. 56, p. 326) from Papapatiki stream, North Taranaki (Taranakian). It differs from the Motutara species in its larger size, more broadly conic spire, weaker subsutural border and in the spiral lines being restricted to the lower half of the body-whorl.

SPIRATELLIDAE.

Genus LORNIA Marwick 1926*

Type (original designation): LORNIA LIMATA Marwick.

Lornia marwicki n. sp. Pl. 78, figs. 23 and 24.

Shell small, sinistral, discoidal, globular, spire sunken into a rather deep cavity of less than one-third the width of the base in diameter. Umbilicus large, very deep, width equal to that of the spire-cavity. Surface smooth. Aperture lunate, rather small. Whorls few, only the body-whorl showing, the whorls of the sunken spire in all specimens being obscured by matrix.

Height, 2.5 mm.; diameter, 3.9 mm.

Locality: Motutara (B).

Holotype presented to Auckland Museum.

This species differs from the Waiarekan genotype in being much more globular, and in having the spire deeply sunken.

*Finlay 1926, Trans. N.Z. Inst., Vol. 57, p. 336, has referred this genus tentatively to the *Pteropoda*, comparing it with *Spiratella*.

DENTALIIDAE.

Genus DENTALIUM Linn.

Type (subsequent designation, Gray 1847): DENTALIUM

ELEPHANTINUM Linn.

Dentalium n. sp.*Locality:* Motutara (A).

I hesitate to describe this species, as no complete examples were collected, and the described New Zealand species are at present ill-defined.

Although only fragmentary sections of the Motutara species were collected, these exhibit perfect sculptural detail and suggest a new species allied to *mantelli* Zittel (1865, Voy. "Novara," Pal., p. 45, pl. 13, f. 7). From that species the Motutara shell differs in having more numerous radial primary ribs and less obvious alternation between primary and secondary ribs. The main feature is the persistence of the annular threads, which are closely spaced and crenulate the ribs throughout. At 2 mm. diameter there are 22 primary ribs, and at 6 mm., with the addition of interstitial ribs, a total of about 50 subequal ribs is reached. The interspaces are about twice the width of the radials above and equal to them or less below.

Genus CADULUS Philippi.

Type (monotypy): DENTALIUM OVULUM Philippi.

Cadulus sp.*Locality:* Motutara (C).

One complete but decorticated specimen resembles Marwick's *Cadulus (Gadilopsis) prosperus* (1931, N.Z. Geol. Surv. Pal. Bul. No. 13, p. 159). It is too imperfect to describe, apart from giving the dimensions, which are:—

Length, 16 mm.; diameter—posterior, 0.6 mm.; maximum, 2.2 mm.; anterior, 1.8 mm.

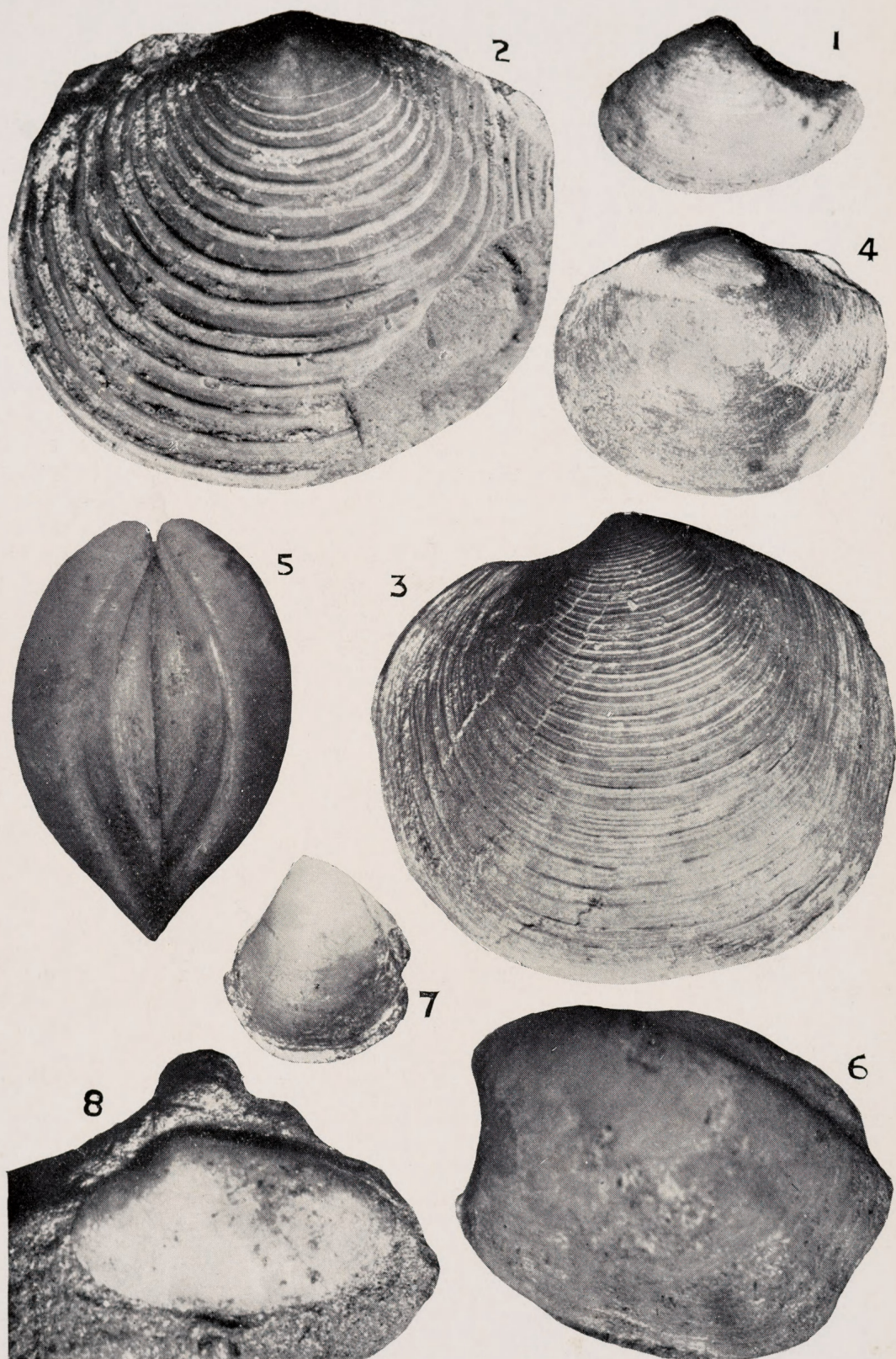


Fig. 1. *Nuculana (Saccella) motutaraensis* Powell n. sp. (Holotype).
 Fig. 2. *Myrtea maoria* Powell n. sp. (Holotype).
 Fig. 3. *Myrtea (Lucinoma) taylori* Powell n. sp. (Holotype).
 Fig. 4. *Pteromyrtea motutaraensis* Powell n. sp. (Holotype).
 Figs. 5 and 6. *Thyasira (Prothyasira) bartrumi* Powell n. sp. (Holotype).
 Fig. 7. *Thyasira (Prothyasira) motutaraensis* Powell n. sp. (Holotype).
 Fig. 8. *Ascitellina protensa* Powell n. sp. (Holotype).

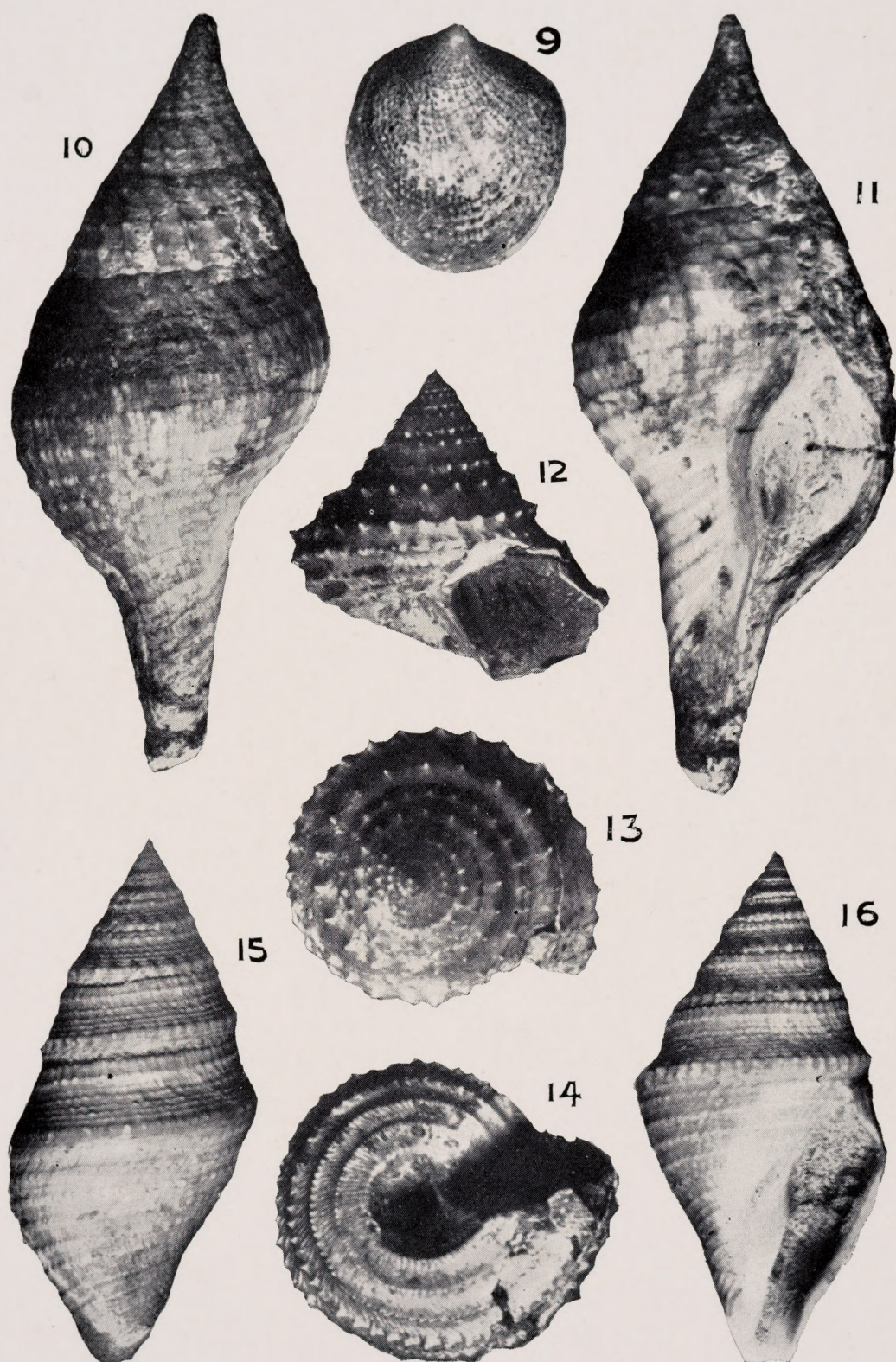
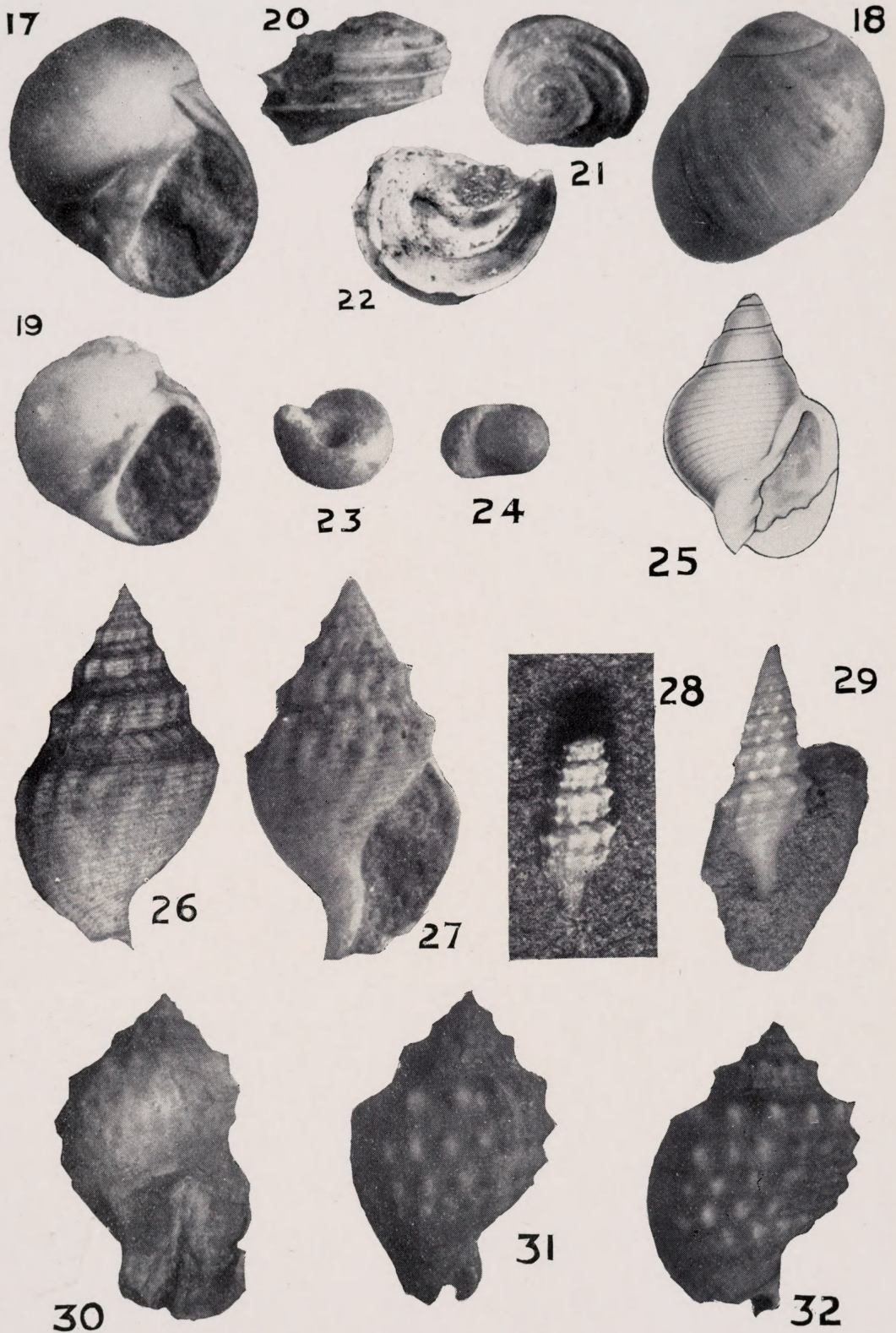


Fig. 9. *Hipponix centrifugalis* Marwick 1931. Motutara (A).
 Figs. 10 and 11. *Falsicolus gemmatus* Powell n. sp. (Holotype).
 Figs. 12, 13 and 14. *Calliotropis motutaraensis* Powell n. sp. (Holotype).
 Figs. 15 and 16. *Bathytoma mitchelsoni* Powell n. sp. (Holotype, 16).



Figs. 17 and 18. *Polinices motutaraensis* Powell n. sp. (Holotype).
 Fig. 19. *Uberella marwicki* Powell n. sp. (Holotype).
 Figs. 20, 21 and 22. *Risellopsis prisca* Powell n. sp. (Holotype 20 and 21).
 Figs. 23 and 24. *Lornia marwicki* Powell n. sp. (Holotype).
 Fig. 25. *Ringicula marwicki* Powell n. sp. (Holotype).
 Figs. 26 and 27. *Marshallena carinaria* Powell n. sp. (Holotype).
 Figs. 28 and 29. "*Turris*" *finlayi* Powell n. sp. (Holotype 29).
 Fig. 30. *Euspinacassis multinodosa* Powell 1928 (Holotype).
 Fig. 31. *Euspinacassis multinodosa* Powell 1928 (Paratype).
 Fig. 32. *Euspinacassis toreuma* (Powell 1928) (Holotype).



Powell, A. W. B. 1935. "Tertiary Mollusca from Motutara, West Coast, Auckland." *Records of the Auckland Institute and Museum* 1, 327–340.

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