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Archibenthal Mollusca from Northern New Zealand

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Abstract

NEW species of marine mollusca and extensions of ranges of archibenthal mollusca are recorded from stations in northern New Zealand established by the New Zealand Marine Department Prawn Trawling Survey in 1962. New species of *Pholadomya*, *Aeneator* (*Ellicea*), *Columbarium*, *Pachymelon* (*Palomelon*), and *Waitara* are described, the species of *Pholadomya*, *Columbarium* and *Waitara* being the first Recent records of these genera from New Zealand waters. The probable wide distribution of the archibenthal mollusca is discussed.

INTRODUCTION

SINCE the writer (Dell, 1956b) gave an account of the archibenthal mollusca of New Zealand, additional material has come to hand. Some of this was recorded recently (Dell, 1962). During 1962 the New Zealand Marine Department carried out a number of cruises in the "Ikaterere" on the north-eastern coast of the North Island from the Bay of Plenty north. An Australian commercial prawn trawl was used with a mesh size 1 inch square. The otter boards were slotted and on occasions small nets were placed over the slots. The mollusca obtained were handed over to the writer by Dr R. B. Pike and since they add a number of interesting species to the New Zealand fauna and provide useful information on the latitudinal extent of the New Zealand archibenthal fauna the shelled molluscs from depths greater than 100 fathoms have been recorded here. The cephalopods obtained will be treated elsewhere.

Shelled mollusca were obtained from 17 stations which are detailed below:

- Haul 5—Between Aldermen Islands and Red Mercury, 340 fathoms, 26.8.1962.
- Haul 9—10 miles N.N.W. of Mayor Island, 200 fathoms, 28.9.1962.
- Haul 11—14 miles N. 20° E. of Motiti Island, 290 fathoms, 29.9.1962.
- Haul 12—15 miles N. 50° E. of Plate Island, 340–320 fathoms, 29.9.1962.
- Haul 14—8 miles E. of White Island, 344–300 fathoms, 30.9.1962.
- Haul 16—23 miles N.E. of Cuvier Island, 260–270 fathoms, 8.11.1962.
- Haul 20—30 miles N.N.E. of Arid Island, 200 fathoms, 9.11.1962.
- Haul 21—30 miles E.N.E. of Poor Knights Islands, 280 fathoms, 11.11.1962.
- Haul 22—28 miles E.N.E. of Poor Knights Islands, 305–340 fathoms, 11.11.1962.
- Haul 23—23 miles N.E. of Poor Knights Islands, 296–276 fathoms, 11.11.1962.
- Haul 25—33 miles E.N.E. of Poor Knights Islands, 265 fathoms, 13.11.1962.
- Haul 27—18 miles N. 30° E. of Poor Knights Islands, 256–267 fathoms, 20.11.1962.

- Haul 28—23 miles N. of Poor Knights, 312–320 fathoms, 20.11.1962.
 Haul 29—20 miles N. of Cape Brett, 400 fathoms, 22.11.1962.
 Haul 30—22 miles N. of Cape Brett, 400 fathoms, 22.11.1962.
 Haul 31—17 miles N.E. of Cavalli Islands, 260 fathoms, 22.11.1962.
 Haul 33—17 miles N.E. of Cavalli Islands, 260 fathoms, 23.11.1962.

SYSTEMATICS

GENUS PARVAMUSSIUM Sacco

1897. I Moll. Terz. Piemonte e Lig. pt 24, p. 48.

Type species (original designation) *Pecten duodecimlamellatus* Brown, Miocene, Italy.

Parvamussium maorum Dell

1956. *Parvamussium maorum* Dell, Dominion Mus. Bull. 18, p. 20, figs. 30, 31.

1962. *Parvamussium maorum* Dell, Rec. Dominion Mus. 4, p. 75.

The Marine Department investigation brought live specimens of the species to light in deep water in the Bay of Plenty. These well preserved specimens allow some amplification of the original diagnosis. The species can obviously grow to a much greater size (up to 22mm in length) than the original material indicated. The shell colour in life is a light orange over the thickened portion, fading towards the margins. Left valve in well preserved specimens sculptured with low, rounded radials (up to 31) crossed by microscopically fine close-set, raised concentrics. It is obvious that these thin outer margins are easily broken off in dead shells and are very easily damaged in living specimens. The thickened central area bearing the internal lamellae extends over about one-third of the disc in adult shells.

LOCALITY:

Haul 12—15 miles N. 50° E. of Plate Island, Bay of Plenty, 340-320 fathoms, 29.9.1962.

GENUS CORIAREUS Hedley

1907. Rec. Austr. Mus., 6, p. 301.

Type species (original designation) *Coriaraus vitreus* Hedley, Recent, New South Wales.

Coriaraus neozelanicus Dell

1956. *Coriaraus neozelanicus* Dell, Dominion Mus. Bull., 18, p. 30, figs. 42, 43, 47.

Specimens from two hauls were found attached to a new species of echinoid of the genus *Cyclaster*. The specimens have a heavy black coating over the valves as described by Hedley for the Australian type species of the genus and by the writer in the original description of the New Zealand species. The specimens obtained by the Chatham Island Expedition were sorted out from trawl debris, but the species is probably normally attached to echinoids. The present records extend the known range of this species considerably to the north.

LOCALITIES: Haul 5, between Aldermen and Red Mercury Islands, 340 fathoms, 26.9.1962, on *Cyclaster* n. sp. Haul 9, 10 miles N.N.W. of Mayor Island, 200 fathoms, 28.9.1962, on *Cyclaster* n. sp.

GENUS PHOLADOMYA Sowerby

1823. Gen. Recent. Fossil Shells, Pl. 19, fig. 1.

Type species (subsequent designation, Gray, 1847) *Pholadomya candida* Sowerby, Recent. West Indies.

Pholadomya maoria n. sp. Pl. 1, figs. 1, 2.

Shell very similar to *P. pacifica* Dall from the north-west Pacific and Japan, whitish, very thin, the beaks rather behind the anterior third. Inner layer pearly. Anterior margin evenly rounded, posterior end considerably more attenuate and with a considerable gape,

posterior extremity evenly rounded. Hinge line thin, details of chondrophore and nymph much as described and figured for *pacifica*. Right valve apparently rather overlapping the left along the postero-dorsal margin in life. The thin shell and highly polished interior obscures the details of muscle scars and sinus, but the details appear very similar to those developed in *pacifica*. Interior strongly grooved by the major radial folds. Exterior dull, sculptured with strong radial folds over the central part of the shell, radials becoming obsolete anteriorly and posteriorly. There are eight major radials with finer intermediate radials. Rest of shell sculptured with very fine hair-like radials. Radial sculpture crossed by irregular growth folds and microscopically fine growth lines. Whole surface finely granulose except around the beaks where fine surface sculpture has been eroded. Length, 28mm; height, 19mm; distance from beaks to anterior end, 17mm.

Holotype (M. 16253) and paratypes (M. 16257) in Dominion Museum.

LOCALITY:

Haul 5—Between Aldermen and Red Mercury Islands, 340 fathoms, 26.9.1962.

This new species adds a genus to the New Zealand Recent fauna, although several fossil species of *Pholadomya* have been described. It is very close to *P. pacifica* Dall in all respects but appears to differ in the rather more central position of the beaks, the persistence of obsolete radials anteriorly and posteriorly of the central highly sculptured area, and in the much finer concentric sculpture. When additional material of both *pacifica* and *maoria* is available, it may well be found that these apparent differences are not significant. Living species of *Pholadomya* are, however, rarely encountered and the two forms are so widely separated geographically that the apparent morphological differences may be given systematic recognition.

Genus CUSPIDARIA Nardo

1840. Rev. Zool. Soc. Cuv., 1840, p. 30.

Type species (monotypy) *Tellina cuspidata* Olivi, Recent, Mediterranean.

Cuspidaria fairchildi Suter

1908. *Cuspidaria fairchildi* Suter, Trans. N.Z. Inst., 40, p. 372, Pl. 29, fig. 19.

1913. *Cuspidaria fairchildi* Suter, Man. N.Z. Moll., p. 1036, Pl. 54, figs. 16, 16a.

1956. *Cuspidaria fairchildi*: Dell, Dominion Mus. Bull., 18, p. 38, fig. 51.

The writer (Dell, 1956, p. 39) commented that this species may be considered one of the characteristic species of the archibenthal fauna. Shells from deeper water grow to a larger size than specimens known from the shelf. Two specimens from deep water in the Bay of Plenty are relatively enormous, being 49mm and 39mm in length respectively.

LOCALITY:

Haul 5—Between Aldermen and Red Mercury Islands, 340 fathoms, 26.8.1962.

Genus EUCIROA Dall

1886. Bull. Mus. Comp. Zool., 12, p. 286.

Type species (original designation) *Verticordia elegantissima* Dall, Recent, West Indies.

Euciroa galatheae (Dell)

1956. *Questimya galatheae* Dell, Rec. Dominion Mus., 3, p. 33, figs. 43, 46.

1956. *Euciroa delectabile* Dell, Bull. Dominion Mus., 18, p. 42, figs. 58, 59.

1962. *Euciroa galatheae* Dell, Rec. Dominion Mus. 4, p. 70.

LOCALITIES

Haul 5—Between Aldermen Islands and Red Mercury, 340 fathoms, 26.9.1962.

Haul 12—15 miles N. 50° E. of Plate Island, 340–320 fathoms, 30.9.1962.

Haul 16—23 miles N.E. of Cuvier Island, 260–270 fathoms, 8.11.1962.

Haul 21—30 miles E.N.E. of Poor Knights Islands, 280 fathoms, 11.11.1962.

This genus appears to be a widely distributed and characteristic member of the archibenthal fauna. The New Zealand *galatheae* seems closest related to *E. eburnea* Wood-Mason and Alcock from the India Ocean. It differs in the much finer radial sculpture and the straighter dorsal margin.

Genus OTUKAIA Ikebe

1941. *Venus*, 11, p. 60.

Type species (original designation) *Calliostoma kiheiziebisu* Otuka, Recent, Japan.

Synonym: *Alertalex* Dell.

1956. *Dominion Mus. Bull.* 18, p. 46.

Type species (original designation) *Alertalex blacki* Dell, 1956, Recent, New Zealand.

Otuka's species *C. kiheiziebisu*, described from 600 metres off Kasimanada, Japan, proves to be very similar to the writer's *Alertalex blacki* described from the Chatham Rise and the two species are undoubtedly congeneric. Ikebe erected a new subgenus of *Calliostoma* for *kiheiziebisu*, and his name *Otukaia* is here used generically for the New Zealand species as well. Clench and Turner (1960, p. 78) have stated that they believe that the type species of *Alertalex* should be referred to *Calliostoma* (s. str.). The jaw in *blacki* is certainly of the same type as that shown for *zizyphinum* Linnaeus and the radula also appears to be similar, but the very different shell surface and the fact that the group appears to have a moderately long geological history in Japan, influences the writer in retaining the group at a generic level. Since the writer described *blacki*, he has had the opportunity of examining *coppingeri* Smith and can now note that the two species do not appear to be related closely.

Otukaia blacki Dell

1956. *Alertalex blacki* Dell, *Dominion Mus. Bull.*, 18, p. 46, figs. 61, 120, 260.

1962. *Alertalex blacki* Dell, *Rec. Dominion Mus.*, 4, p. 75.

Two specimens of this typical archibenthal species were obtained during Marine Department operations. The latitudinal range of this species on the east coast is now known to extend from approximately 35° S. to 45° S., in depths from 220 to 340 fathoms.

LOCALITIES:

Haul 12—15 miles N. 50° E. of Plate Island, Bay of Plenty, in 340–320 fathoms, 29.9.62.

Haul 31—17 miles N.E. of Cavalli Island, in 260 fathoms, 22.11.1962.

Genus CAPULUS Montfort

1810. *Conch. Syst.*, p. 55.

Type species (original designation) *Patella ungarica* Linnaeus, Recent, Europe.

Capulus calcareus Suter

1909. *Capulus calcareus* Suter, *Rec. Cant. Mus.*, 1, p. 122.

1913. *Capulus calcareus* Suter, *Manual N.Z. Moll.*, p. 280.

1956. *Capulus calcareus* Dell, *Dominion Mus. Bull.*, 18, p. 71.

This species has been recorded from the archibenthal in southern New Zealand. It is a common species on the shelf in the north and can now be recorded from as deep as 267 fathoms.

LOCALITIES:

Haul 5—Between Aldermen and Red Mercury Islands, 200 fathoms, 26.9.1962.

Haul 27—18 miles N. 30° E. of Poor Knights, 256–267 fathoms, 20.11.1962.

Haul 33—17 miles N.E. of Cavalli Islands, 260 fathoms, 22.11.1962.

Genus GLOBISINUM Marwick

1924. *Trans. N.Z. Inst.*, 55, p. 574.

Type species (original designation) *Sigaretus drewi* Murdoch, Pleistocene, and Recent, New Zealand.

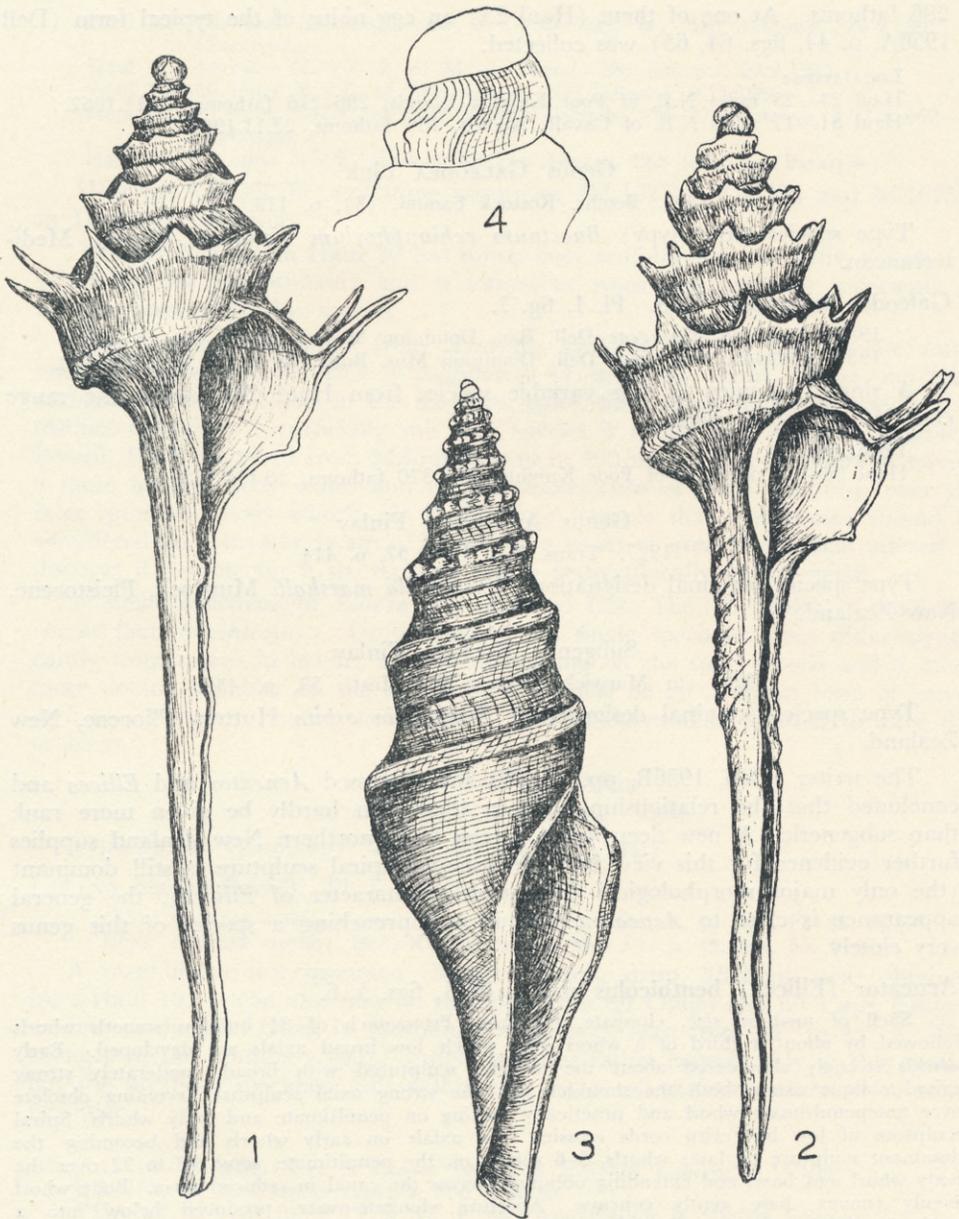


FIG. 1.—*Columbarium veridicum* n.sp., holotype, 69.3 x 24.2mm.

FIG. 2.—*Columbarium pagoda* (Lesson), Japan, 65.3 x 22.2mm.

FIG. 3.—*Waitara pikei* n.sp., holotype, 35.0 x 10.8mm.

F.g. 4.—*Waitara pikei* n.sp., details of protoconch.

Globisium drewi (Murdoch)

1899. *Sigaretus* (?) *drewi* Murdoch, Proc. Malac. Soc. London, 3, p. 215.

1956. *Globisium drewi*: Dell, Rec. Dominion Mus., 3, p. 43 (full synonymy).

The writer (Dell 1956B, p. 173) reported this species from deep water off the Chatham Islands. It has previously been known from many areas of the shelf. The Marine Department Survey collected it from two stations down to

296 fathoms. At one of them (Haul 23) an egg nidus of the typical form (Dell 1956A, p. 44, figs. 64, 65) was collected.

LOCALITIES:

Haul 23—23 miles N.E. of Poor Knights Islands, 296–276 fathoms, 11.11.1962.

Haul 31—17 miles N.E. of Cavalli Islands, 260 fathoms, 22.11.1962.

Genus GALEODEA Link

1807. Besch. Rostock Samml. (3), p. 113.

Type species (monotypy) *Buccinum echinophorium* Linnaeus, Recent, Mediterranean.

Galeodea trigancae Dell. Pl. 1, fig. 7.

1953. *Galeodea trigancae* Dell, Rec. Dominion Mus. 2, p. 51, figs. 1–4.

1956. *Galeodea trigancae* Dell, Dominion Mus. Bull. 18, p. 85, figs. 116–118.

A single specimen of this variable species from Haul 28 extends the range considerably to the north.

LOCALITY:

Haul 28—23 miles N. of Poor Knights, 312–320 fathoms, 20.11.1962.

Genus AENEATOR Finlay

1927. Trans. N.Z. Inst., 57, p. 414.

Type species (original designation) *Verconella marshalli* Murdoch, Pleistocene, New Zealand.

Subgenus ELLICEA Finlay

1928. (in Marwick) Trans. N.Z. Inst., 58, p. 432.

Type species (original designation) *Siphonalia orbita* Hutton, Pliocene, New Zealand.

The writer (Dell, 1956B, pp. 98, 99) has discussed *Aeneator* and *Ellicea* and concluded that the relationship between them can hardly be given more rank than subgeneric. A new deep water species from northern New Zealand supplies further evidence for this view because although spiral sculpture is still dominant (the only major morphological distinguishing character of *Ellicea*), the general appearance is close to *Aeneator*, and it is approaching a species of this genus very closely.

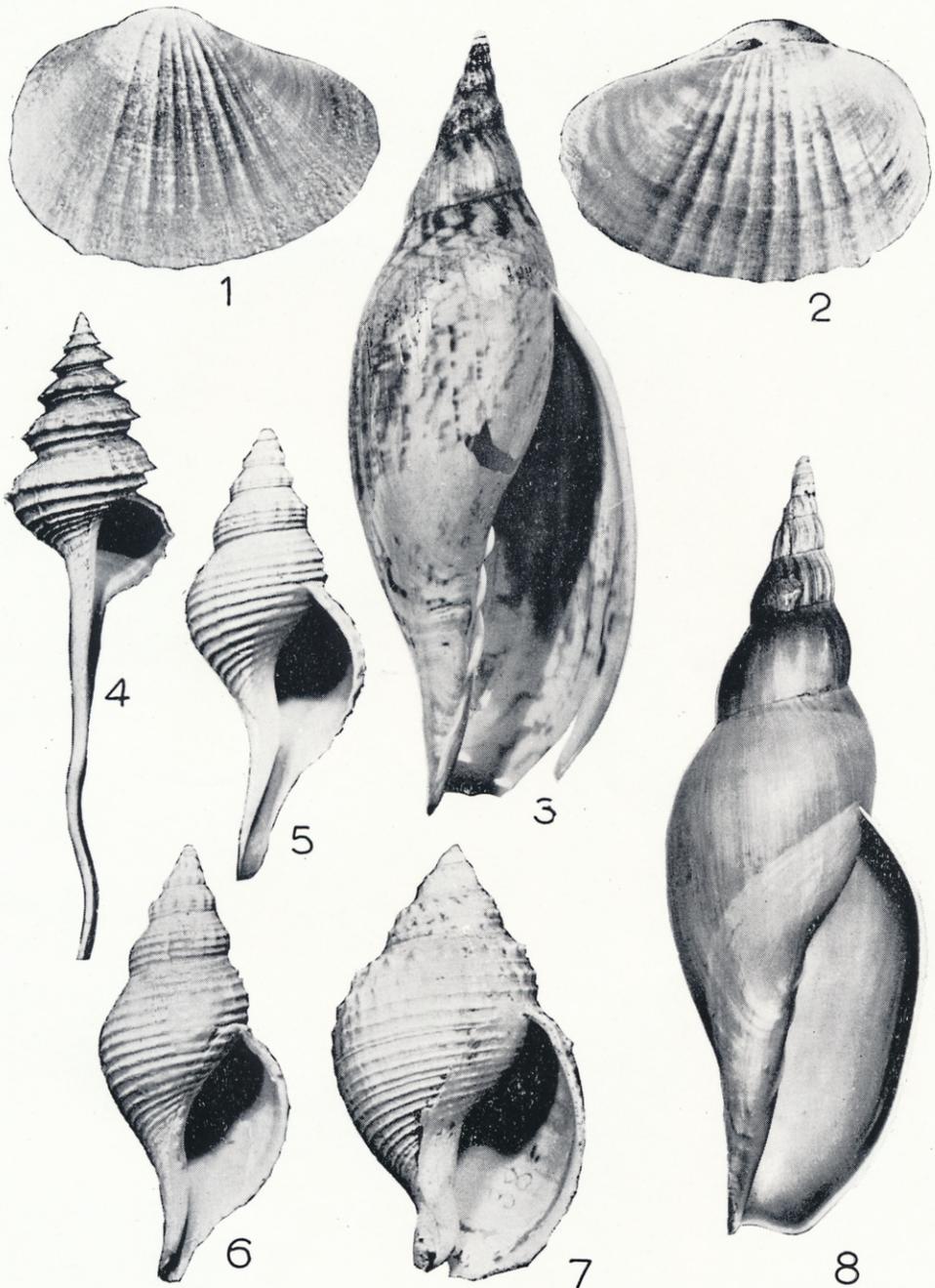
Aeneator (Ellicea) benthicolus n. sp. Pl. 1, figs. 5, 6.

Shell of medium size, elongate, fusiform. Protoconch of $2\frac{1}{4}$ bulbous smooth whorls followed by about a third of a whorl over which low broad axials are developed. Early whorls strongly shouldered about the middle, sculptured with broad, moderately strong raised oblique axials, both the shoulder and the strong axial sculpture becoming obsolete over antepenultimate whorl and practically lacking on penultimate and body whorls. Spiral sculpture of low but crisp cords crossing the axials on early whorls and becoming the dominant sculpture on later whorls, 5–6 spirals on the penultimate, some 18 to 22 over the body whorl and base, and extending obliquely across the canal in reduced form. Body whorl evenly convex, base gently concave. Aperture elongate-ovate, produced below into a moderate canal, twisted to the left. Inner lip spread as a thin glaze across the body whorl. Outer lip thin, with a wide, gentle, even sinus. Colour chalky white in dead shells, orange yellow shading to white in live specimens.

	Height mm	Diam. mm	Spirals on Penultimate
Haul 33 (Holotype)	52.3	23.7	6
Haul 25 (Paratype)	45.9	19.2	6
Haul 5 (Paratype)	35.2	15.3	5
Haul 20	44.0	18.1	10
Haul 23 (Paratype)	30.4	13.6	5

LOCALITIES:

Haul 33—17 miles N.E. of Cavalli Islands, 260 fathoms, 23.11.1962 (Holotype).



FIGS. 1, 2.—*Pholadomya maoria* n.sp., holotype, 28 x 19mm.
 FIG. 3.—*Pachymelon (Palomelon) fissurata* n.sp., holotype, 195 x 71mm.
 FIG. 4.—*Coluzea mariae* Powell, Haul 16, 105 x 28.7mm.
 FIG. 5.—*Aeneator (Ellicea) benthicolus* n.sp., paratype, 45.9 x 19.2mm.
 FIG. 6.—*Aeneator (Ellicea) benthicolus* n.sp., holotype, 52.3 x 23.7mm.
 FIG. 7.—*Galeodea trigancae* Dell, Haul 28, 48.8 x 28.2mm.
 FIG. 8.—*Pachymelon (Palomelon) benthicola* n.sp., holotype, 186 x 60.6mm.

Haul 5—Between Aldermen and Red Mercury Is., 340 fathoms, 26.9.1962 (Paratype).

Haul 11—14 miles N. 20° E. of Motiti Island, 290 fathoms, 29.9.1962.

Haul 20—30 miles N.N.E. of Arid Island, 200 fathoms, 9.11.1962.

Haul 23—23 miles E.N.E. of Poor Knights Islands, 296–276 fathoms, 11.11.1962 (Paratype).

Haul 25—33 miles E.N.E. of Poor Knights Islands, 265 fathoms (Paratype).

Holotype (M.16278) and three paratypes (M.16271, M.16258 and M.16254) in Dominion Museum.

The specimen from Haul 20 has much finer sculpture on the spire whorls (10 spirals on the penultimate) and is somewhat worn but probably represents an extreme variant of this species.

The new species differs from *Aeneator (Ellicea) recens* Dell in the much narrower spire and the lack of angulation of the body whorl. From the fossil *carinata* Powell it differs in the narrower spire, finer spiral sculpture and lack of distinct shoulder. Superficially this new species is rather like *Aeneator galathea* Powell, 1958, described from Milford Sound in 290 metres, but it differs in having a more inflated body whorl and in the obsolescence of axial sculpture over the later spire and body whorls. It is therefore possible that *benthicolus* should be considered an *Aeneator* (s.str.). It will be a point of great theoretical interest to discover if *benthicolus* n. sp. replaces *recens* geographically in the north.

A single specimen of *Ellicea* was obtained from Haul 5, which is more like *recens* than *benthicolus*. Unfortunately this single specimen does differ significantly from *recens* in having a lower angulation on the spire whorls and a much more sloping shoulder on the body whorl. It may be an aberrant form of *recens* or it may represent another new species. Further material is required to solve this problem.

Genus COLUZZEA Allan

1926. Trans. N.Z. Inst., 57, p. 304.

Type species (monotypy) *Fusus dentatus* (Hutton)

Coluzea mariae Powell. Pl. 1, fig. 4.

1952. *Coluzea mariae* Powell, Rec. Auck. Inst. Mus., 4, p. 180, Pl. 35, fig. 8.

1956. *Coluzea mariae*: Dell, Rec. Dominion Mus., 3, p. 49, figs. 55, 61.

A magnificent live specimen (length 105mm, diam. 28.7mm) was obtained from Haul 16. It can also now be recorded from off Otago and off Cape Palliser, so that on the East Coast its latitudinal range is at least from 36° to 45° S. The strength of the subsidiary spiral sculpture varies rather considerably in this species but the northern specimen falls within the degree of variation observed in other localities.

LOCALITIES:

Haul 16—23 miles N.E. of Cuvier Island in 260–270 fathoms, 8.11.1962.

B.S. 190, off East Otago coast in 300 fathoms.

VUZ. 54, 41° 39' 30" S., 175° 17' E. off Cape Palliser in 50–200 fathoms.

Genus COLUMBARIUM Martens

1881. Conch. Mittheil., 2 p. 105.

Type species (monotypy) *Pleurotoma (Columbarium) spinicinctum* Martens, 1881, Recent, Queensland.

Columbarium veridicum n. sp. Text-fig. 1.

Shell thin, fragile. Spire moderately elevated, scalar, canal very long. Spire ornamented with strong peripheral girdle somewhat below the middle on the spire whorls, the edges drawn out into strong, obliquely set, sharp pointed, flat based spines, mostly worn off on the early spire whorls. On the body whorl a second minor flange is developed about the level of the apertural suture. Other sculpture consists of growth lines which have the

appearance of low, flattened lamellae arched backwards on the sutural ramp, strongly forward between the peripheral flange and the second flange on the body whorl, practically straight on the base and then twisted strongly backwards to the base of the siphonal canal. Where these cross the second flange on the body whorl, this is rendered minutely nodulous. Growth lines strongly marked down the siphonal canal. Protoconch of moderate size, deviated paucispiral. Aperture drawn out into a long siphonal canal, which is somewhat irregularly sinuous. Aperture strongly angled by the two flanges. Outer lip thin, inner lip rather excavated. The shell is chalky white on the surface, with a faintly purple brown coloration on the inner surface. Length, 69.3mm; diam., 17.1mm (without spines); 24.2mm (including spines).

LOCALITY:

Haul 22—28 miles E.N.E. of Poor Knights Islands, 305–340 fathoms, 11.11.1962.

Holotype (M.16274) in Dominion Museum.

The new species appears to be most closely allied to *C. hedleyi* Iredale from New South Wales and to *C. pagoda* Lesson from Japan. From *C. hedleyi* it differs in the different setting of the spines (more upright in *veridicum*), in having more spines on the body whorl (11 as against 8 in *hedleyi*), in having one subsidiary spiral on the lower portion of the body whorl instead of two, and in lacking the rows of spirals on the canal.

From *C. pagoda* it differs in having the spines less upright, a considerably wider spire angle, and in lacking the spirals on the canal, and apparently in the poor development of the inner lip.

This is the first record of *Columbarium* from New Zealand, the species previously recorded under this generic name having been shown to be better placed in *Coluzea*.

Genus POIRIERIA Jousseaume

1879. Rev. Mag. Zool. (Ser. 3), 7, p. 325.

Poirieria kopua Dell

1956. *Poirieria kopua* Dell, Dom. Mus. Bull. 18, p. 114, figs. 161, 162, 165.

Three specimens from Hauls 11 and 12 agree with the type series of *kopua*, known previously from a single station on the Chatham rise in 290 fathoms.

LOCALITY:

Haul 11—14 miles N. 20° E. of Motiti Island, 290 fathoms, 29.9.1962.

Haul 12—15 miles N. 50° E. of Plate Island, 340–320 fathoms, 30.9.1962.

Genus ALCITHOE H. and A. Adams

1858. H. & A. Adams, Genera Rec. Mollusca, 1, p. 164.

Type species (subsequent designation, Cossmann, 1899) *Buccinum arabicum* Martyn, Recent, New Zealand.

Alcithoe larochei Marwick

1926. *Alcithoe larochei* Marwick, Trans. N.Z. Inst., 56, p. 294, Pl. 63, fig. 6.

Specimens of *Alcithoe* from 260 to 340 fathoms agree very well with *larochei* except that the shell is very much thinner. There does not seem to be any other character by which they may be distinguished from typical *larochei*.

LOCALITIES:

Haul 12—15 miles N. 50° E. of Plate Island, 340 to 320 fathoms, 29.9.1962.

Haul 14—8 miles E. of White Island, 344 to 300 fathoms, 30.9.1962 (young specimens).

Haul 25—33 miles E.N.E. of Poor Knights Islands, 265 fathoms, 13.11.1962 (damaged adult).

Haul 31—17 miles N.E. of Cavalli Islands, 260 fathoms, 22.11.1962 (young specimen).

Genus PACHYMELON Marwick

1926. Trans. N.Z. Inst., 56, p. 281.

Type species (original designation) *Waihaioia amoriaformis* Marwick, Miocene, New Zealand.

Subgenus PALOMELON Finlay

1926. Trans. N.Z. Inst., 57, p. 432.

Type species (original designation) *Cymbiola lutea* Watson, Recent, New Zealand.

Pachymelon (Palomelon) benthicola n. sp. Pl. 1, fig. 8.

Shell large, fusiform, height three times the diameter. Total height 1.7 times the height of the aperture. Protoconch abraded in both known examples but apparently caricelloid, of three whorls, the latter whorls at least sculptured with 3 to 4 low spirals, crossed by fine, widely spaced, raised axials. First three to four whorls of teleconch with broad, raised axial folds, some 14 on the antepenultimate, 15 on the preceding whorl, becoming obsolete across the penultimate whorl. Body whorl smooth, apart from growth lines and indistinct, irregular spirals. Body whorl tapering very gently at first and then more suddenly across the base. Canal almost straight, no sign of a fasciole. Aperture slightly expanded with a very shallow, broad notch below. Outer lip slightly thickened, columella bearing four moderately developed oblique plaits. Inner lip developed as a thin glaze extensively across the body whorl and canal. Colour of surface chalky white, aperture and internal surface bright orange brown, which colour shows through the chalky shell surface.

Height, 186mm; diameter, 60.6mm; height of aperture 80mm.

LOCALITIES:

Haul 14—8 miles E. of White Island, Bay of Plenty, 344 to 300 fathoms, 30.9.1962 (Holotype).

Haul 29—20 miles N. of Cape Brett, 400 fathoms, 22.11.1962 (young paratype).

Holotype (M.16276) and young paratype (M.16261) in Dominion Museum.

This new species seems closest to *Pachymelon (Palomelon) lutea* Watson, obtained by the "Challenger". It differs in being considerably more elongate, height three times the diameter as against 2.2 times the diameter in *lutea*. The spire angle is considerably less and the outer lip is by no means so expanded as in *lutea*. *Pachymelon (Palomelon) lutea* is still only represented in collections by the type although the "Galathea" obtained a specimen in deep water off the west coast of the South Island, a specimen which appears to have been lost.

Pachymelon (Palomelon) fissurata n sp. Pl. 1, fig. 3.

Shell large, very thin and fragile, fusiform, height 2.7 times the diameter. Total height 1.5 times the height of the aperture. Protoconch abraded but caricelloid, of $2\frac{3}{4}$ whorls, the last $1\frac{1}{2}$ at least sculptured with fine, widely spaced, raised spirals crossed by equally developed, widely spaced axials. Whorls 8, including the protoconch. First $1\frac{1}{2}$ whorls of teleconch with oblique, raised axial folds running from suture to suture, some 17 per whorl. Remainder of whorls smooth, apart from microscopic wavy spirals. Whorl outline gently and evenly concave. Aperture elongate, expanded, with a moderately deep, wide notch. Outer lip slightly thickened. Inner lip spread as a wide, thin glaze over the body whorl and pillar. Columella arcuate, twisted considerably to the left anteriorly, bearing four strong, very oblique plaits. Colour a basic light orange with dark reddish brown patterns imposed. Dark patterns arranged in irregular fashion with two broad bands of discontinuous longitudinal masses, one just below the suture and the other below the middle of the body whorl. These broad masses are joined longitudinally by irregularly arranged narrower zig-zag markings. Fasciole not differentiated from the base.

Height, 195mm; diam., 71mm.

LOCALITY:

Haul 11—14 miles N. 20° E. of Motiti Island, 290 fathoms, 29.9.1962.

Holotype (M.16277) a slightly damaged shell, in the Dominion Museum.

Pachymelon (P.) fissurata differs from previously known species of the genus in New Zealand by the fact that the axial sculpture very rapidly becomes obsolete, the thin fragile shell and the general proportions. As more deep water species of volutes are recorded from New Zealand the distinction between *Pachymelon (Palomelon)* and *Alcithoe* becomes more difficult to maintain. The only general distinguishing character that now remains to separate the two groups is the lack of a distinct fasciole in *Pachymelon (Palomelon)*. In some specimens of *Alcithoe larochei* Marwick the fasciole becomes almost as diffuse as it is in species attributed to *Pachymelon (Palomelon)*.

GENUS *IREDALINA* Finlay

1926. Proc. Malac. Soc., London, 17, p. 59.

Type species (original designation) *Iredalina mirabilis* Finlay, Recent, New Zealand.

Iredalina mirabilis Finlay

1926. *Iredalina mirabilis* Finlay, Proc. Malac. Soc., London, 17, p. 59.

1954. *Iredalina mirabilis* Powell, Rec. Auck. Inst. Mus., 4, p. 239.

1956. *Iredalina mirabilis* Dell, Dominion Mus. Bull., 18, p. 123.

Two closely allied species of *Iredalina* have been described from New Zealand, *I. mirabilis* Finlay and *I. aurantia* Powell, distinguished by the fact that *aurantia* is relatively shorter with a wider spire angle, with faint raised spirals across the canal and a higher aperture in relation to the total height. The writer (Dell, 1956B, p. 122) summarised the existing state of knowledge of these two species and showed that while the absence of spirals on the canal seemed a definite feature of *mirabilis*, very few live specimens of this form had been examined. The other distinguishing characters between the two species either showed some degree of overlap or their ranges in the material examined were contiguous. A single broken specimen from Haul 30 has a well-preserved surface, and although the spire angle is only 34° (towards the lower limit previously known for *mirabilis*, for which the range is 32–42°), there are very well developed spirals across the base of the canal. Thus the major features characteristic of *mirabilis* can no longer be held to be constant. The writer therefore concludes that only one species of *Iredalina* should be accepted.

This northern specimen extends the range of the species from approximately 35° S. to 45° S.

LOCALITY:

Haul 30—22 miles N. of Cape Brett, 400 fathoms, 22.11.1962.

GENUS *COMITAS* Finlay

1926. Trans. N.Z. Inst., 56, p. 251.

Type species (original designation) *Surcula oamarutica* Suter (= *Drillia fusiformis* Hutton), Tertiary, New Zealand.

Comitas onokeana vivens Dell

1956. *Comitas onokeana vivens* Dell, Dom. Mus. Bull. 18, p. 131, fig. 171.

1962. *Comitas onokeana vivens* Dell, Rec. Dominion Mus. 4, p. 76.

This is another archibenthal species that can now be recorded from approximately 35° to 46° S.

LOCALITY:

Haul 31—17 miles N.E. of Cavalli Islands, 260 fathoms, 22.11.1962.

GENUS *MICANTAPEX* Iredale

1936. Rec. Austr. Mus., 19, p. 319.

Type species (original designation) *Bathytoma agnata* Hedley and Petterd, Recent, 250 fathoms off Sydney, New South Wales.

Micantapex parengonius Dell

1956. *Micantapex parengonius* Dell, Dominion Mus. Bull., 18, p. 129, fig. 168.

1962. *Micantapex parengonius* Dell, Rec. Dominion Mus., 4, p. 76.

A single specimen from Haul 12 shows that this species ranges at least as far north as the Bay of Plenty.

LOCALITY:

Haul 12—15 miles N. 50° E. of Plate Island, Bay of Plenty, 320–340 fathoms, 29.9.1962.

Genus WAITARA Marwick

1931. N.Z. Geo. Surv. Pal. Bull., 13, p. 149.

Type species (original designation) *Turricula waitaraensis* Marwick, Miocene, New Zealand.

Waitara pikei n. sp. Text-figs. 3, 4.

Shell of moderate size, narrowly fusiform with a long straight anterior canal, not notched. Whorls $9\frac{1}{2}$ including protoconch. Protoconch paucispiral of $1\frac{1}{2}$ rather flattened globose whorls, sculptured with microscopically fine axials curving back to the suture to follow the same line as the series on the adult shell, the axials crossed by finer incised spirals, the sculpture only visible under $\times 25$ magnification. Whorls strongly angled, below the middle on the early whorls, about the middle on later, shoulder deeply concave. The first six whorls of the teleconch sculptured with raised axials which are fine across the shoulder following the line of the sinus, bending forward across the angulation where they become very strong, rendering the angulation strongly nodulous, and thence continuing obliquely across the lower portion of the whorls and diminishing in strength to disappear before the lower suture. On the antepenultimate these axials are becoming obsolete and across the penultimate and body whorls they have almost completely disappeared. Spiral sculpture well developed. Shoulder at first lacking spirals except for microscopically fine striations, but soon developing three to four weak spirals just below the suture. The peripheral angulation bears three to five strong close-spaced spirals with the lower part of the whorl bearing at first three and eventually ten evenly developed raised spirals. Body whorl with three weak spirals below the suture, three on the shoulder, 14 of varied strength across the angulation and some 58 across the rest of body whorl and base. Outer lip with a well developed sinus sweeping well back from the angulation and then in a wide, shallow even arc across the shoulder to the upper suture. Inner lip a thin glaze across the body whorl. Height, 35.0mm; diam., 10.8mm.

LOCALITIES:

Haul 27—18 miles N. 30° E. of Poor Knights Islands, 256–267 fathoms, 20.11.1962. (Holotype)

Haul 31—17 miles N.E. of Cavalli Islands, 260 fathoms, 22.11.1962. (Paratype)

Holotype (M.16273) and paratype (M.16252) in Dominion Museum.

Reference of this species to *Waitara* is made with some hesitation. Powell (1942, p. 167) has discussed *Waitara* in some detail and has included the genus together with *Thatcheria* in a new family, the Thatcheridae. The protoconch has been described and figured for *Waitara liratulula* Powell (Powell, 1942, Text-fig. B3) and the protoconch in *pikei* is of this type. The sinus is similar to that developed in *Waitara*. On the other hand *pikei* is much narrower than any of the previously described species of *Waitara* and the protoconch, apart from the very fine sculpture is very like that seen in *Comitas* and *Apiotoma* and the whole shell is rather similar to such Australian species of *Apiotoma* as *pritchardi* Powell and *bassi* (Pritchard). On the basis of the sculpturing on the protoconch it is here referred to *Waitara*.

The species is named for Dr R. B. Pike, whose enthusiastic collecting has brought the present novelties to light.

DISCUSSION

The gear used was such that the smaller species were not collected, but the larger, more spectacular members of the fauna are probably better represented. From the indications given, however, it would appear that many of the common typical members of the archibenthal molluscan fauna extend well to the north. The following species are now known from $35\text{--}37^{\circ}$ S. to 46° S. on the east coast of New Zealand. The depth ranges known in fathoms are given in parentheses:

Linucula recens Dell (155–330)

Austronucula galathea Dell (113–370)

Parvamussium maorum Dell (260–350)

- Euciroa galathea* (Dell) (260-400)
Otukaia blacki Dell (220-340)
Zeminolia meridiana Dell (120-400)
Coluzea mariae Powell (80-300)
Cymatona kampyla Watson (125-300)
Nassarius ephamillus Watson (220-1100)
Iredalina mirabilis Finlay (40-400)
Micantapex parengonius Dell (220-700)
Asperdaphne ula Watson (220-1100)
Comitas onokeana vivens Dell (220-430)
Retusa pachys Watson (155-700)
Dentalium (*Dentalium*) *tiwhana* Dell (113-330)

In addition *Coriaraus neozelanicus* Dell, *Galeodea triganceae* Dell and *Poirieria kopua* Dell are now known in deep water from the Chatham Rise at least to the Bay of Plenty. There is some evidence for believing that there is a distinct element in the more northerly areas from which the New Zealand archibenthal is known, but the evidence is perhaps not yet complete enough to postulate any firm theory upon the known distribution patterns. At the same time the fact that *Columbarium*, *Pholadomya*, *Waitara*, *Aeneator* (*Ellicea*) *benthicolus* and the two new species of *Pachymelon* (*Palomelon*) are not yet known from south of East Cape may later prove to have some significance. Extension of knowledge of the New Zealand archibenthal molluscan fauna to the north and to the south, some sampling of the abyssal fauna in our area and a considerable extension of knowledge of the archibenthal fauna of south-eastern Australian waters will all be required before relationships can be adequately assessed.

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