

Additions to the Recent Molluscan Fauna of New Zealand.

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Plate 52.

SEVERAL new species discovered in seaweed-washings from Taieri Beach (a few miles south of the Taieri River), and in oyster-scrapings from the Bluff, and one or two larger species from other localities, are described in the following paper. Of especial interest are the records of *Cassidea stadialis* Hedley and *Charonia lampas* var. *euchia* Hedley: their size and appearance render them striking additions to the fauna of a land whose mollusca are in general not remarkable for their beauty. The writer would also like to make the following new records for the localities mentioned:—

(1.) Bluff (Oyster-scrapings).

Orbitestella hinemoa Mestayer. Recorded only from Snares Island (50 fathoms).

(2.) Taieri Beach.

Musculus barbatus (Reeve). In seaweed and sponges.

Rocheportia reniformis Sut. Recorded only from fairly deep water, but not uncommon on the littoral attached to the under-side of muddy rocks.

Callanaitis yatei (Gray).

Callochiton platessa Gould. Two specimens of this rare shell, on stones in a channel bare at extreme low tide.

Lorica haurakiensis Mestayer. One valve, on the beach.

Schismope brevis var. *laevigata* Iredale. Seaweed-washings.

Incisura lytteltonensis (Smith). Seaweed-washings; not uncommon.

Thoristella dunedinensis (Sut.).

Margarella decepta Iredale. Very plentiful under kelp-roots. This record extends the southern range of the species, but is it probably still common much farther south before its place is taken by *M. antipoda* H. & J.

Notosetia micans (Webster). Seaweed-washings.

Notosetia subflavescens Iredale. Seaweed-washings.

Subonoba foveauxiana (Suter). Seaweed-washings.

Skenella pfefferi Suter. Seaweed-washings; very common. This record extends the southern range of the species considerably.

Evalea impolita (Hutt.). In muddy crevices.

Præne reticulatum Hedley. Recorded in an earlier paper in this volume (p. 462) from a broken shell cast up on the rocks.

3. Dunedin Harbour.

Musculus barbatus (Reeve).

Rocheportia reniformis Sut. Littoral (*vide ante*).

Erycina parva (Desh.). With *Lasaea*, attached to the under-side of stones, but rare. Recorded only from fairly deep water.

Mactra ovata var. *rudis* Hutt.

Callochiton empleurus (Hutt.). One example, on the littoral. Previously known only by one or two specimens from Foveaux Strait; fairly deep water.

- Rhyssoplax canaliculata* (Q. & G.). One specimen, on the littoral, together with *R. aerea* (Reeve). Recorded only from deep water.
- Patelloida stella* (Lesson). One living specimen.
- Tugalia bascauda* Hedley. One living specimen.
- Elachorbis substatei* (Sut.). In 20 fathoms, outside Otago Heads.
- Astraea sulcata* subs. *davisii* Stowe. Two juveniles, crawling among seaweed on the shore.
- Lepsiella scobina* (Q. & G.). The var. *albomarginata* Desh. is very common in the South Island, and occurs also in the North, but the species itself is recorded only from the North. It is therefore interesting to note that typical specimens, and all grades between it and the subspecies, were found by Mr. R. S. Allan while collecting with the writer, but were apparently restricted to a small isolated patch of rocks about two miles from Port Chalmers. Here, however, the probable recurrence of conditions similar to those prevailing in the North Island has induced local reversion to the strongly sculptured form.
- Atrina zelandica* (Gray). The length recorded by Suter for this species is 226 mm.; a specimen from Otago Heads (20 fathoms) measured 280 mm.
- Calliostoma selectum* Chemnitz. Suter gives the range of this species as from Auckland to Cook Strait. Some half-dozen very large and fine examples were obtained in 20 fathoms off Otago Heads, the largest reaching 65 × 55 mm.
- Calliostoma tigris* Martyn. The same remarks apply to this species also, except that only two shells were obtained. Suter gives the dimensions as 58 × 59 mm., but the larger of the above two specimens measures 72 × 75 mm.
- Charonia lampas* var. *euchia* Hedley. Recorded elsewhere in this volume (p. 462) from a specimen obtained outside Otago Heads in 22 fathoms.
- Cassidea stadiakis* Hedley. This is dealt with later in the paper.

***Elachorbis diaphana* n. sp. (Fig. 1.)**

Shell minute, depressed-turbinata, finely spirally lirata, perforate. Test translucent, protoconch white, opaque. Whole surface covered with very fine and inconspicuous spirals; they are low and flattish with linear interstices and diminish a little as they near umbilicus. Spire about one-fifth height of aperture. Whorls $2\frac{1}{2}$, slightly convex, body-whorl faintly and bluntly subangled; protoconch of 1 smooth whorl. Suture distinct, situated in shallow furrow. Aperture subcircular, slightly angled above. Peristome not continuous, outer lip advancing past inner; its ends are, however, connected by thin parietal callus. Umbilicus narrow, deep, perspective, one-seventh to one-eighth of major diameter.

Diameter, 0.75 mm.; height, about 0.4 mm.

Type in author's collection. One specimen, probably not adult; in oyster-scrapings from Bluff.

In its regular fine spiral striation, absence of distinct infrasutural sulcus, and incomplete peristome, this species resembles an undescribed new Tertiary species from Waikaia, but is amply distinguished by its much smaller size, convex base, and narrower umbilicus.

***Zalipais parva* n. sp. (Fig. 2.)**

Shell very minute, discoidal, thin, smooth, perforate. Test subhyaline and, apart from growth-lines, quite smooth. Colour vitreous-white. Spire flat. Protoconch of 1 smooth rather bulbous whorl, relatively rather large,

but hardly elevated. Whorls $2\frac{3}{4}$; strongly convex, periphery and base rounded. Suture prominent, at the bottom of a rather deep furrow which causes whorls to appear bluntly angled on upper surface. Aperture as in *Z. lissa* (Sut.) but even less angled above, as in this species peristome

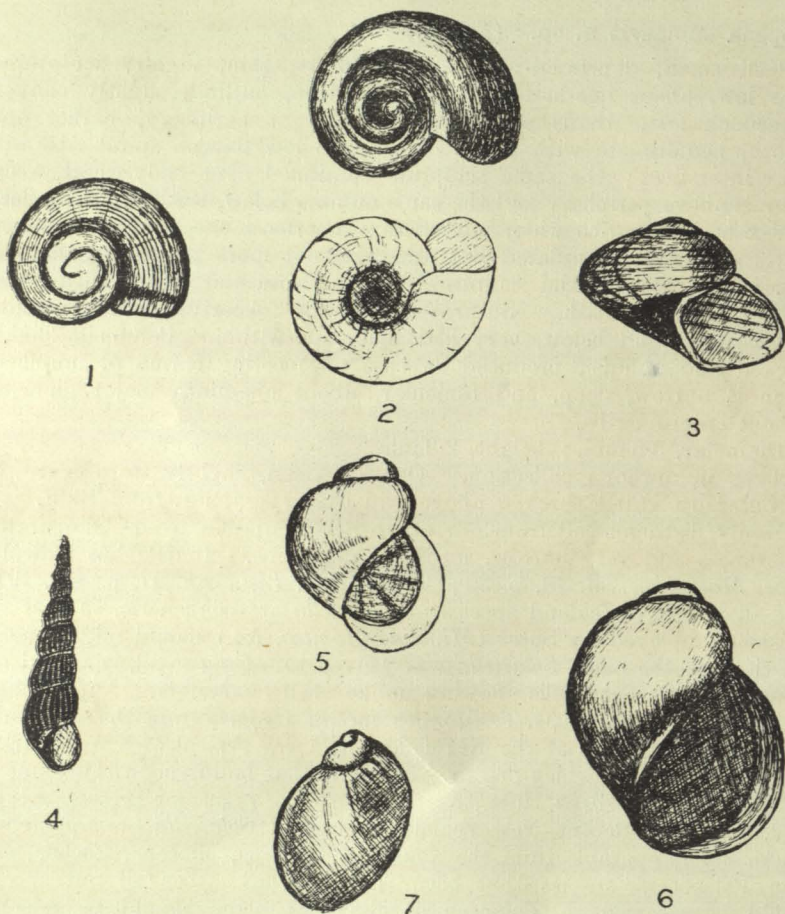


FIG. 1.—*Elachorbis diaphana* n. sp. : type. $\times 30$.
 FIG. 2.—*Zalipais parva* n. sp. : type. $\times 45$.
 FIG. 3.—*Talopena sublaevis* n. sp. : type. $\times 8$.
 FIG. 4.—*Turbonilla* (*Pyroglampros*) *blanda* n. sp. : type. $\times 10$.
 FIG. 5.—*Laevitorina micra* n. sp. : type. $\times 33$.
 FIG. 6.—*Laevitorina cystophora* n. sp. : type. $\times 34$.
 FIG. 7.—*Laevitorina cystophora* n. sp. : paratype. $\times 22$.

is continuous and sharp and outer lip is advancing, thus producing sutural notch. Columella arcuate, hardly thickened. Umbilicus wide, more than one-third major diameter.

Diameter, 0.6 mm. ; height, about 0.3 mm.

Type in author's collection. Two specimens ; from seaweed-washings, Taieri Beach, together with *Z. lissa* (Sut.), which, however, is very much more abundant.

The new species differs at sight from *Z. lissa* (Sut.) in its smaller size (*Z. lissa* (Sut.) of a little over 2 whorls is 0.9 mm. in diameter), deeply furrowed suture, absence of sculpture, and much wider umbilicus, which in *Z. lissa* (Sut.) is not more than one-fifth major diameter.

Talopena sublaevis n. sp. (Fig. 3.)

Shell small, depressed-turbinata, perforate, thin, slightly sculptured. Spire low, about one-half height of aperture, outlines slightly convex. Protoconch lost, whorls about 4, subangled at periphery, earlier ones smooth, penultimate with traces of about 6 low flattish spiral ribs with linear interstices; the same sculpture continued over body-whorl, about 7 spirals above periphery and the same number below, less distinct on flatly convex base and with wider interstices; innermost one margins umbilicus and is obsolete crenulated but otherwise not more prominent than the rest. No trace of axial sculpture. Colour rose and brown with lighter patches, base whitish. Suture impressed. Aperture subrhomboidal, angled above and below, very little nacreous within. Columella slightly reflexed and oblique, produced at base on meeting carina of umbilicus, which is narrow, deep, and funicular; about one-ninth major diameter, without entering ribs.

Diameter, 3.6 mm.; height, 2.3 mm.

Type in author's collection. One specimen, slightly worn and with the outer lip a little broken above; in oyster-scrappings from Bluff.

Easily distinguished from our other Recent species by its comparative smoothness and very narrow, unribbed umbilicus. Iredale has indicated (*Proc. Mal. Soc.*, vol. 13, p. 30; *Trans. N.Z. Inst.*, vol. 47, p. 439, 1915) that all the New Zealand species of *Solariella* are congeneric, so that the divisions employed by Suter (*Minolia*, *Monilea*, &c.) should not be used; but that, as the name *Solariella* was "given to a Crag fossil, it should not be used for Recent shells showing unlike shell characters." Accordingly he proposed *Talopena* (G.-T. *Monilea incerta* Iredale, from the Kermadec Islands), remarking that the Kermadec shell was typical of a well-marked austral group, from which one may conclude that he intended this name to be applied to *M. egena* Hutt., &c. This is too vague for present acceptance, since the Recent New Zealand species of *Solariella* are apparently generically inseparable from the abundant Pliocene, Miocene, Eocene, and even Palaeocene species that occur here. Thus either all our species should be referred to *Talopena* or else that name should be rejected altogether. It is a pity that Iredale did not explain more fully what he meant by "unlike shell characters," but as the similarity of our forms to *M. incerta* Iredale is certain, while their relation to the exotic species is somewhat doubtful, there is apparently no course open but the acceptance of *Talopena*.

Xymene robustus n. sp. (Plate 52, figs. 4a, 4b.)

Shell small, fusiform, very solid, whitish, with axial and spiral ribs. There are strong, broadly rounded, slightly lamellose axials, 14-15 on penultimate whorl, with variable but usually subequal or slightly wider interstices, but at some distance from aperture axials lose their regularity and develop into prominent varices with sharp edge anteriorly; they are about twice as far apart as axial ribs; on body-whorl there are 7 axials and then 4 varices; they continue over base. Axial sculpture overlaid with spiral

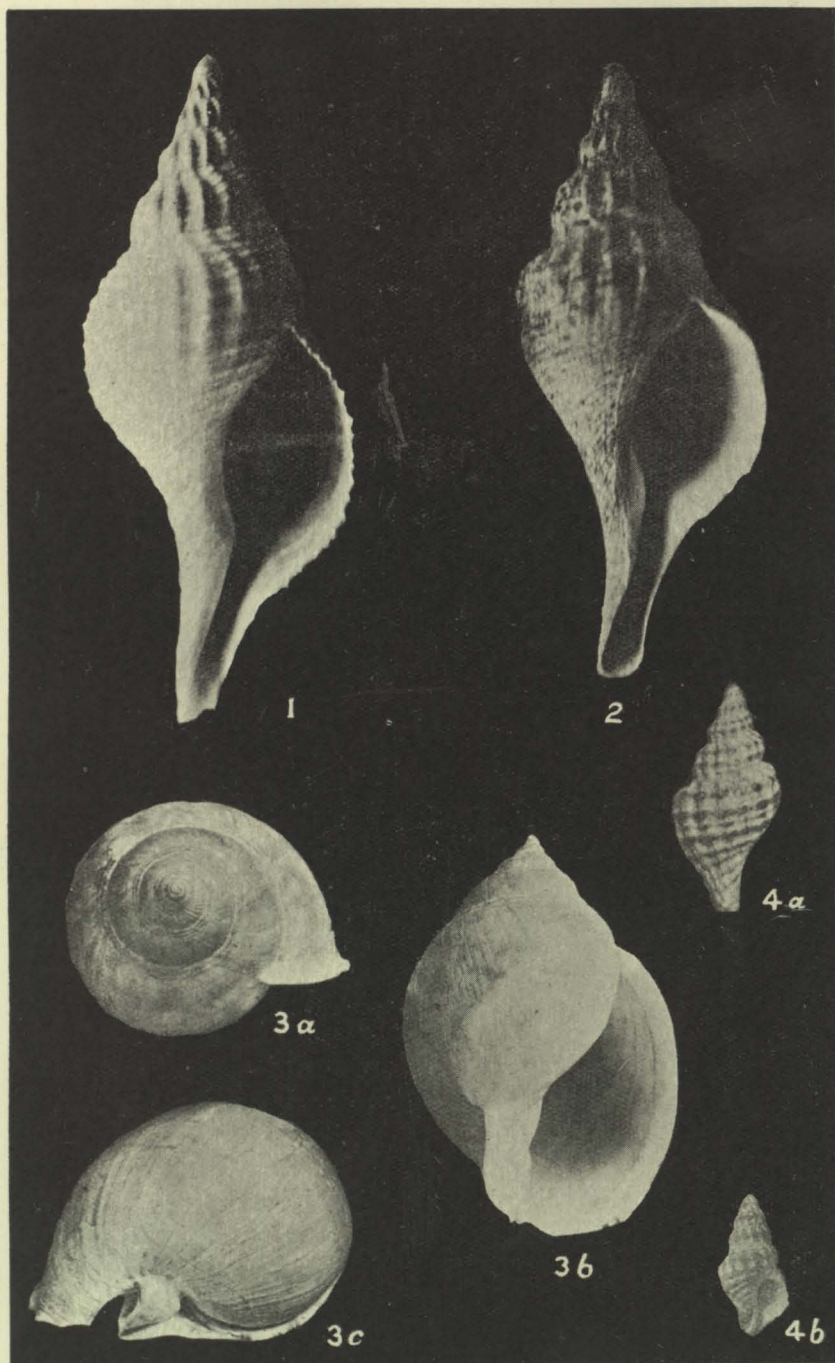


FIG. 1.—*Verconella marshalli* Murdoch. $\times 2$.
 FIG. 2.—*Verconella compta* n. sp. $\times 2$.
 FIGS. 3a, 3b, 3c.—*Cassidea stadialis* Hedley. $\times \frac{1}{2}$.
 FIGS. 4a, 4b.—*Xymene robustus* n. sp. (a) Holotype, $\times 2\frac{1}{2}$;
 (b) paratype, nat. size.



cords; the spire-whorls with 2 equally strong; close spiral cords on the lower half, these, with another that emerges from suture, form 3 strong peripheral cords on body-whorl; between the lower two there is nearly always an interstitial riblet; 5 strong, gradually diminishing cords below these on base-whorl, with an additional 4 on base of body-whorl, interstices about equal to ribs, except on base where they are wider, rendered lamellose by growth-lines; shoulder generally smooth, but may bear 2 or 3 weak riblets. Colour whitish, aperture glossy white inside. Spire elevated, turreted, usually higher than aperture with canal. Protoconch small, of 2 glossy convex whorls, the first volution considerably tilted; 5 whorls remain, first 2 or 3 whorls subangled just above suture where axials suddenly become a little thicker, then sloping in to suture below, later whorls subquadrate, with an almost level shoulder, base rapidly contracted above canal. Suture indistinct. Aperture vertical, ovate, rounded above, produced below into a moderately long very narrow canal, slightly recurved and bent to left. Outer lip with a sharp edge but very rapidly thickening inside till the aperture is considerably reduced in area; 5 thick denticles rather far inside aperture, the lower 2 sometimes most prominent. Inner lip smooth, sharply marked off from body-whorl by groove extending from insertion of outer lip to end of canal. Columella vertical; bent, and drawn out to a fine edge along canal. Fasciole moderately strong, separated from inner lip by distinct umbilical chink.

Height (type, broken), 12 mm.; diameter, 5.5 mm.; height of aperture, 7 mm.

Height (paratype, adult), 17 mm., diameter, 8 mm.; height of aperture, 8 mm.

Type in the author's collection, dredged in 3 fathoms, Dunedin Harbour. One slightly beach-worn specimen found by Mr. R. S. Allan at the Otago Heads is referable to this species, and is the paratype here figured. Also a few specimens dredged in 60 fathoms off Otago Heads.

Note on *Onithochiton subantarcticus* Suter.

Suter, in the *Manual*, refers to this form as a chocolate-coloured variety of *O. neglectus* (Rochebrune) (*O. undulatus* Q. & G.), and records it from Auckland and Campbell Islands, Cook Strait, and New Brighton. Iredale (*Trans. N.Z. Inst.*, vol. 47, p. 423, 1915) remarks that "Suter's record of his var. *subantarcticus* from Cook Strait and New Brighton does not refer to this species, which is confined to the subantarctic islands, but belongs to a species quite distinct, but as yet unnamed." During the early part of the year the writer gathered two specimens of an *Onithochiton* under kelp-roots at Taieri Beach; these were very like *O. neglectus* (Rochebrune) in shape and sculpture, but were uniformly chocolate in colour, with indications of white patches on the ridge. It seemed highly probable that these were Iredale's "unnamed species." To settle this point the shells were sent to Mr. W. R. B. Oliver, who kindly compared them with the type of *O. subantarcticus* Sut. (from the Auckland Islands, coll. Captain Bollons) in the Wanganui Museum, and wrote, "With regard to *O. subantarcticus*, Suter has only one specimen in his collection, and both Mr. Murdoch and myself agreed that it was like yours; I cannot see the difference between the New Zealand and southern shells. But Suter's specimen is small and in bad order, so it is difficult to come to a decision: Iredale has only made a bald statement, so that his account is unsatisfactory." Under these circumstances it does not seem to the writer wise to propose a specific name

for the Taieri Beach shells until they have been compared with better subantarctic specimens and their identity or difference placed beyond doubt. Till this has been done, or till Iredale gives more satisfactory reasons for his action, it seems better to include *O. subantarcticus* Sut. as a part of the Neozelanic main-islands fauna.

Turbonilla (*Pyrgolampros*) *blanda* n. sp. (Fig. 4.)

Shell small, subulate, very thin and fragile, subdiaphanous and subperforate. About 26 slender flexuous axial ribs on penultimate whorl, curved slightly outwards medially, vanishing towards aperture on base (though not suddenly truncated), interstices slightly wider. Ribs regularly convex and smooth, but interstices bear very fine and dense radial riblets, about 15 on penultimate whorl, with linear interstices so that the effect of fine beading between the axials is produced. Similar radial sculpture continued on an increasingly finer scale over the whole body-whorl and base; inside aperture riblets are distinctly visible through translucent test, simulating the characteristic appearance of a *Subonoba*. Colour pale horn. Spire acicular, much higher than aperture; protoconch heterostrophe. Whorls 9, regularly increasing, lowly convex with deeply-cut-in sutures, base flatly convex. Aperture subrectangular, angled above, rounded and slightly effuse below. Peristome discontinuous, thin and sharp. Columella slightly arcuate, glossy; inner lip slightly reflexed, leaving narrow umbilical perforation.

Height, 3 mm.; width, 0.7 mm.

Type in the author's collection.

Hab.—Taieri Beach, a few miles south of the Taieri River, in seaweed-washings—a single specimen.

Remarks.—The subgenus *Pyrgolampros* is new to our Recent fauna. The Miocene shell, *T. (Pyrgiscus) oamarutica* Suter, which is a much larger, more stoutly built shell, with very much coarser sculpture, should not be referred to this family at all, as stated elsewhere in this volume (p. 506). There are, however, several new Miocene species of *Pyrgiscus* and *Pyrgolampros* to be described, and some of these are fairly close allies of the present form.

Laevilitorina micra n. sp. (Fig. 5.)

Shell minute, turbinate, rimate, smooth, fragile. Fine curved growth-lines distinct, otherwise smooth. Colour light brown to pale horn. Epidermis shining. Spire conical, lower than aperture, outlines convex. Protoconch very minute, helicoid. Whorls about 3, strongly convex, the last large, base rounded. Suture subcanaliculate. Aperture almost oval, angled above. Peristome sharp, thin, continuous, part of it being the relatively thick parietal callus. Basal lip hardly reflected. Columella arcuate, brown. Umbilical chink distinct, widely funicular. Operculum as in *Melarhaphe*, nucleus near centre of inner margin.

Diameter, 0.7 mm.; height, 0.7 mm.

Type in the author's collection.

Hab.—Taieri Beach, in seaweed-washings—four specimens.

Remarks.—Somewhat allied to *L. antipodum* Filhol, but differing from that species in its lower spire, fewer whorls, and consequently much smaller shell, and more globose shape.

Laevilitorina cystophora n. sp. (Figs. 6, 7.)

Shell very small, subglobose, subperforate, smooth, thin and fragile. Sculpture of growth-lines only. Colour fuscous, horny near aperture, epidermis not shining; shell generally overlaid with rusty-brown granulose coating, obscuring upper whorls. Spire very short, obtuse, about one-third of aperture. Protoconch minute, flat, eroded. Whorls about 2, disproportionately increasing, convex, the last very large, base rounded. Suture viewed from above narrowly canaliculate, in other positions inconspicuous. Aperture pear-shaped, not quite symmetrical, fuscous. Peristome continuous, thin and sharp, parietal callus distinct. Columella arcuate, faintly twisted, hardly callous. Umbilicus often obsolete, at most only a narrow chink, no carina surrounding it. Operculum normal.

Diameter, 0.9 mm.; height, 1 mm.

Type in the author's collection.

Hab.—Taieri Beach, in seaweed-washings; very common on *Cystophora* to the exclusion of almost all other forms, rare elsewhere. A few specimens were also obtained in seaweed-washings from Breaker Bay, Wellington, so that the species, though hitherto unobserved, is widely distributed.

Remarks.—A close ally of *L. hamiltoni* E. A. Smith, from which it differs in the consistently much smaller size, more pear-shaped aperture, and absence of a basal keel round the chink-like umbilicus. From *L. micra* it differs in its larger size, more globose form, much shorter spire, flatter whorls, and absence of a distinct umbilicus.

Verconella compta n. sp. (Plate 52, fig. 2.)

Shell small, fusiform, elongate (especially anteriorly), with bluntly-shouldered whorls, axially and spirally sculptured. Axial ribs prominent on all whorls, beginning to fade out only at a short distance from aperture, 16–17 per whorl, very narrowly convex, interstices up to twice their width, they reach lower suture on spire-whorls, but not upper, disappearing half-way across shoulder, on body-whorl practically confined to periphery, base having only spiral sculpture. This consists on spire and body-whorls of low regular rounded ribs, subequal interstices with a single much finer but otherwise similar rib; the same sculpture continues over canal. Sculpture alters slightly on shoulder; between suture and first regular spiral are 2 similar but more distant spirals, and spaces between these bear about 3 fine riblets. Colour uniformly pale brown; aperture white and glossy; inner lip with red-brown tinge. Spire conical, a little over height of aperture plus canal, outlines straight. Protoconch small, of little over 2 whorls, volutions and nucleus distinct, slightly askew, horny-coloured and minutely granulate; axial acceleration is shown and axials develop in brephic stage before spirals. Whorls about $7\frac{1}{2}$, disproportionately increasing (body-whorl swollen), bluntly shouldered above middle, shoulder strongly sloping and very little concave, then dropping in from vertical to lower suture; base not much excavated, regularly rounded. Suture rather inconspicuous, due to whorl below being prominently flattened upwards to clasp whorl above. Aperture a little oblique, quadrately pyriform, angled and slightly channelled above, with very long canal below; this is flexed to left and slightly backwards, narrowed medially by encroachment of inner lip but opened out near its rounded base. Outer lip strongly swelled outwards, subquadrate, sharply edged and but faintly lirate within; it projects farthest near its base, and on shoulder is considerably cut in to form a wide sinus.

also faintly shown on earlier whorls by growth-lines. Columella considerably excavated and twisted below, leading to the apparent formation of a long narrow elevated plait bordering canal. Inner lip spread as a sharply marked thin glaze beyond pillar and upon parietal wall, narrowed to a point below. Operculum not seen.

Height, 38 mm.; width, 15 mm. Height of aperture with canal, 25 mm.; canal, about 12 mm.

Holotype (dredged by Mr. W. La Roche in 20 fathoms off Opotiki, Bay of Plenty) in the author's collection.

This shell has the dimensions of *V. caudata* Q. & G., but differs totally in the shape of its whorls and canal. From *V. mandarina* Duclos it differs in spiral sculpture and relatively much lower spire. Its nearest ally is *V. marshalli* Murdoch, described also in this volume (p. 159), from which it is separable by its sutural flattening, differently shaped whorls, different sinus, longer canal, and slightly different protoconch. A fossil specimen of this species, from Castlecliff, is figured for comparison with the new species (Plate 52, fig. 1).

Note on *Phalium labiatum* (Perry) and its subsp. *pyrum* (Lamk.).

On page 312 of Suter's *Manual of the New Zealand Mollusca* our two well-known Cassids are given the above names, but in the "Emendations" (p. 1084) a change from *P. labiatum* (Perry) to *P. achatinum* (Lamk.) is advocated on the ground that *labiatum* was preoccupied by Chemnitz. Since, however, Chemnitz did not adopt binomial nomenclature, his work cannot affect names that were validly proposed later, so that *P. labiatum* (Perry) should stand.

It seems best to the writer to give the "*pyrum*" form specific rank. This course is adopted by Hedley and May in Australia, and might with advantage be adopted in New Zealand. Hedley also prefers to use the name *Cassidea* generically. The shells differ considerably at sight, and, though they are obviously nearly related, the differences of form and occurrence seem to be of specific importance. Several of the characters of difference given by Suter are variable, but others are constant in all specimens seen by the author. The height of spire in typical forms is much less than in *C. labiata* (Perry) and its angle consequently greater, but this is variable and specimens with moderately high spires are sometimes seen. The shell attains a considerably larger size, is thinner, and always more inflated. Nodulous keels are generally a strong feature of the sculpture, and though these are occasionally absent the spire-whorls are nearly always keeled. The basal spiral grooves may be very distinct or subobsolete (though never totally absent), but the grooves between periphery and suture above are always very distinct. *C. labiata* (Perry) also has often spiral grooves on the base, but fewer in number and much less distinct; infrasutural grooves are absent. The place of denticles on the lower part of the inner lip is taken in *C. pyra* by shallow and indistinct crenulations, the ends of faint furrows following the spiral grooves of the exterior. One of the best and most constant distinguishing points is the character of the umbilicus, which in *C. labiata* (Perry) is narrow and partially closed up by the very small plate formed by the inner lip, while in *C. pyra* (Lamk.) it is wide open and the plate is very large and not encroaching. *C. pyra* (Lamk.) has a wider geographical range than *C. labiata* (Perry); also in New Zealand *C. labiata* (Perry) has not yet been found fossil, while a shell similar to *C. pyra* (Lamk.) is not uncommon in

Pliocene beds, and the still earlier *C. fibrata* (M. & M.) is much closer to *C. pyra* than to *C. labiata*. The separation of these two as species seems therefore justified.

Hedley (*Biol. Res. "Endeavour,"* vol. 2, pt. 2, p. 68) has described a species as *Cassidea stadialis*, commenting on its resemblance to *C. pyra* (Lamk.) and *C. turgida* (Reeve). The writer was lately fortunate in obtaining several fine specimens of Hedley's species from off Otago Heads, but, as in the case of *Charonia eucha* Hedley, in much shallower water than the Australian type. As Hedley's account is not easily available, and these Cassids are such variable and similar forms, a full description and figures of the New Zealand shells are here given:—

Cassidea stadialis Hedley. (Plate 52, figs. 3a, 3b, 3c.)

Shell large, inflated, thin, almost smooth. Whorls 8, always strongly and regularly convex, never angled; much inflated, especially near the base; keels obsolete (but traces are sometimes barely visible on parts of the body-whorl). Reticulation present on upper whorls, but nodules never developed. One or two wide shallow and distant grooves just below suture on the lower whorls, with additional fainter and linear grooves below these on upper whorls. Base quite destitute of grooves; the whole surface covered, as in *P. labiatum* (Perry) and *P. pyrsum* (Lamk.), with extremely fine and dense spirals. One of the specimens has a strong varix marking the position of a former outer lip, at about 240° from the mouth of the shell; this is abnormal for *Cassidea*. Colour very distinctive and striking. The whole shell is a uniform glossy fawn-amber tint, suffused with orange or pink. Bands of darker colour are practically absent, and when present number about four and are distinct only near the outer lip; spots are never present. The interior is of the same colour as the exterior with a few milky patches, very highly polished and in places opaline. Outer lip china-white inside, the edge sometimes with 4 dark patches marking the position of the bands. Height of spire variable, but generally well over one-third height of aperture. Protoconch small, obtuse, not sharply marked off. Aperture and columella normal. Outer lip thin, quite smooth, no trace of denticles or furrows on its lower part. Umbilicus, as in *C. pyra* (Lamk.), widely open, due to the extension of the inner lip as a thick twisted plate some distance beyond the columella.

Diameter, 60 mm., 54 mm., 61 mm., 60 mm.; height, 91 mm., 88 mm., 85 mm., 93 mm.; height of aperture, 64 mm., 63 mm., 65 mm., 68 mm.

Four specimens in the author's collection, one in the Otago Museum, trawled in about 20 fathoms between Otago Heads and Waikouaiti.

This large and beautiful shell is a noteworthy addition to our fauna. The five specimens were presented to the author by the fisherman who obtained them in the living state, and the following account was given of their capture: Several years ago, while the trawl-boats were at work, the nets were brought up laden with these shells, the sea-bottom being evidently thick with them. The men rightly deemed this strange, as they had never seen them before, and specimens were taken home as curios. Most of these have by this time probably been lost or dispersed, and the author was fortunate in securing the last remnant of the considerable number once possessed by the donor. The species was never found again, possibly because the remainder retreated to the deep water which, in Australia, seems to be the natural habitat of the species. The sudden swarm in

shallower water, with the subsequent disappearance, may be due to pursuit of food, or perchance a new danger that assailed them. Whatever the cause, the shell is probably very rare in New Zealand, though the writer has seen a specimen from the collection of Mr. A. W. B. Powell, of Auckland, dredged in 25-30 fathoms in the Bay of Plenty, where the shell may perhaps be less rare. The species is easily distinguished from *C. labiata* (Perry), which it resembles in smoothness, by its widely open umbilicus; much larger, more inflated, and thinner test; total absence of keels and nodules, and presence of deep infrasutural spiral grooves; and total absence of denticles on the outer lip. From *C. pyra* (Lamk.), to which it is more nearly allied, it differs in its rather greater size and thinner shell; its regularly convex whorls, without nodules, its simpler spiral sculpture and total absence of basal grooves and crenulations of the outer lip; the higher spire (ratio height of spire to height of aperture in the four shells measured is .31, .37, .39, .42, while the maximum ratio observed in *C. pyra* is under $\frac{1}{2}$); characteristic colour, and the disposition of the canal, which is not cut back nearly so far nor so much recurved, is wider, and has its termination squarish instead of rounded.

*The Family Liotiidae, Iredale, in the New Zealand Tertiary: Part 1,
the Genus Brookula.*

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Plate 53.

THE shell recorded by Suter as *Lissospira corulum* (Hutt.) is a rather common fossil in the Castlecliff beds, and was originally described by Hutton (1884) as a Pliocene fossil from that locality under the name of *Scalaria corulum* (Hutt.). Subsequently it was discovered to be a still-living form, and was placed, together with another Recent minute shell, in the genus *Lissospira* (Suter, 1913), after a temporary classification in *Cyclostrema* (Suter, 1910). Iredale (1915) rejected these genera as inapplicable to Neozelanic shells, and placed Hutton's species in his genus *Brookula*, with genotype *B. stibarochila* Iredale from the Kermedec Islands (Iredale, 1912). *B. corulum* (Hutt.) is, however, not a typical member of this genus: the elevated spire and somewhat smooth base are abnormal. Iredale (1915) has also proposed the genus *Liotella* to contain such forms as Suter's *Liotia polyplicura* Hedley, *L. rotula* Suter, and (?) *Cyclostremella neozelanica* Suter, and the exact difference between *Liotella* and *Brookula* is not very clear. The author at first hesitated to refer all the following species to *Brookula*, but after a discussion of the question with Mr. W. R. B. Oliver, of the Dominion Museum, that course was adopted, it being assumed that *Liotella* should be restricted to subdiscoidal forms.

Apart from *B. corulum* (Hutt.) no others of the genus have up till now been recorded from our Tertiary beds; six new species are here proposed. Specimens are often by no means uncommon in washings and sievings;