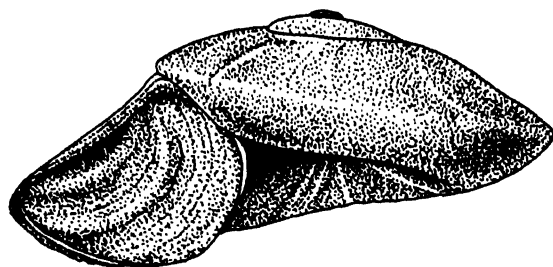


A. A. Schileyko

TREATISE ON RECENT TERRESTRIAL  
PULMONATE MOLLUSCS

Part 7

Endodontidae,  
Thyrophorellidae,  
Charopidae



Ruthenica, Supplement 2  
Moscow ♦ June, 2001

The author dedicates this volume to the memory  
of his good friend and talented malacologist  
Walter Bernard Miller (1918-2000)

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## **Suborder LIMACOIDEI** **Férussac, 1801**

Férussac, 1801 (cf. Golikov & Starobogatov, 1989: 69).

Shell mostly flat to globular, rarely pupilloid, primarily without long columellar lamella running from embryonic whorls down to aperture. Superficial teeth on all walls of aperture may be present.

Foot holopodous or aulacopodous, rarely with caudal horn and/or caudal foss.

Excretory apparatus of sigmurethral type: kidney (rather) short, sometimes bilobed, primary ureter completed, secondary ureter open or completed to various extent.

Jaw polyplacognathous, oxygnathous or ribbed.

Prostate long, compact, generally consists of rather small acini. Distal part of female division of genitalia often with accessory organs (sarcobelum, stylophores). Penis frequently also with accessory organs (flagellum, caecum, calc sac), but never with pupilloid appendix.

Mostly oviparous.

Herbivorous, detritivorous or facultative carnivores.

## **Infraorder ENDODONTOINEI** **Schileyko, 1979**

Schileyko, 1979: 57 (as Endodontinia).

Shell mostly dextral, small to medium-sized, primarily depressed. Embryonic whorls smooth, either radially wrinkled, or with spiral sculpture. Postembryonic whorls mostly with conspicuous "charopid" sculpture consisting of principal radial ribs and minor riblets in interstices; spiral striae in intervals also may be present. Sometimes sculpture more or less reduced. Aperture toothless to heavily toothed. Umbilicus mostly wide, although in many cases narrowed to (rarely) closed.

Penis with or without epiphallus; rarely with a caecum. Distal part of female division lacks accessory organs. Spermathecal stalk without diverticle.

## **PUNCTOIDEA Morse, 1864**

Morse, 1864: 27 (pro subfam.).

Characters of infraorder.

DISTRIBUTION. Circumglobally.

REMARK. As Stanic (1990: 227) properly states, "Knowledge of Australian [and not only Australian — A. Sch.] Charopidae is still at a rudimentary level and reflected by the mosaic nature of morphological trends " These words can be applied to all Punctoidea. Because of this mosaics and numerous cases of rich local endemism the consequence of genera given below often does not reflect their historical relations.

## **ENDODONTIDAE Pilsbry, 1895**

Pilsbry, 1895 (1893-1895): xxi. Solem, 1976: 121

Shell small to rather large, never reduced. Surface initially with radial sculpture on both embryonic and postembryonic whorls; sculpture often reduced or lost in larger mollusks. Microsculpture of radial riblets and primitively of microspirial cordlets that are lower than microradials; most sculpture features composed of non-periostracal elements. Aperture initially with complex armature on all walls, posterior elevated portions of lamellae and plicae expanded and capped with microdenticulations that point outward. Armature more or less reduced to absence in many taxa. Umbilicus generally broad, and sometimes used as an egg deposition site. In many taxa umbilical cavity secondarily narrowed to form a nearly enclosed brood chamber.

Eyes well developed.

Pedal and suprapedal grooves unite above tail, without forming a caudal horn or enlarged mucus foss.

Jaw of separated plates (polyplacognathous), that sometimes partially or completely fused (pseudodontognathous).

Kidney initially triangular, sometimes with a weak (rarely long) rectal lobe, primary ureter well developed and slightly reflexed at posterior end; secondary ureter mostly open.

Hermaphroditic gland with multiple palmately clavate clumps. Hermaphroditic duct mostly not convoluted. Talon with elongately oval apex on a variably lengthened shaft. Prostate and uterus completely separated. Vas deferens usually opens through a simple pore subapically on penis, sometimes with altered opening into epi-

*Beilania* Preston, 1913  
Fig. 1155

Preston, 1913a: 433 (*Ptychodon* subg.).

TYPE SPECIES — *Beilania inopina* Preston, 1913; OD.

Shell nearly flat, thin, of about 4 convex whorls; last whorl straight or a little descending in front, evenly rounded at periphery. Color uniformly corneous or brown. Embryonic sculpture of spiral, sometimes punctate lirae. Postapical whorls with fine, regular, radial ribs; minor riblets in intervals crossed by finer spiral striae. Aperture rounded, only slightly oblique, with simple or somewhat expanded margins; parietal wall with 1 or 2 longitudinal lamellae; basal and palatal margins with a few variously developed tuberculiform teeth or toothless. Umbilicus broadly open. Height 0.75-1.00, diam. 1.6-2.0 mm (1.00 × 1.96 mm).

DISTRIBUTION. Philippines, Indonesia with Moluccas (Beilan-Beilan Islet at Obi Island), Aru Island, New Guinea, ?Bismarck Archipelago. 4-6 spp.

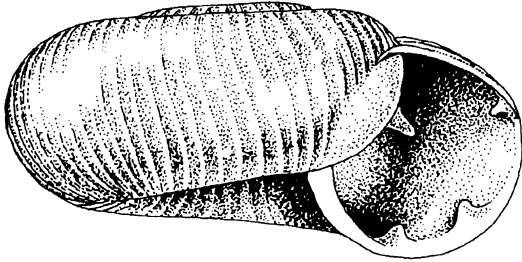


Fig. 1155. ! *Beilania philippinensis* (Semper, 1874).  
Luzon Island, Philippines. Phil. No. 96441

*Minidonta* Solem, 1976  
Fig. 1156

Solem, 1976: 126.

TYPE SPECIES — *Minidonta hendersoni* Solem, 1976; OD.

Shell more or less depressed dome-shaped, thin, of 4.75 to nearly 6 moderately to strongly convex whorls. Color light-corneous or brown. Embryonic whorls with radial riblets. Postapical sculpture of prominent, rarely fine and crowded, radial ribs. Aperture semilunate, vertical; parietal lamellae 2-4, rarely with accessory traces; columellar lamella moderately developed to absent; palatal plicae simple blades, 2-5, usually 4 in number, in many species with accessory traces. All barriers reduced in size in several species. Umbilicus internally constricted or U-shaped, with last whorl decoiling rapidly (except for two species). Height 0.83-2.04, diam. 1.59-3.41 mm (1.10 × 1.62 mm).

Talon long, slender, with small head. Prostate of large acini opening into narrow tube appressed to wall of uterus, only a single row of acini present. Vas deferens very long, passing down to penioviducal angle, then reflexed up side of penis to insert sub-

phallus. Penis initially with 2 longitudinal pilasters, sometimes variously modified. Verge absent. Penial retractor originating from common columellar trunk or diaphragm, inserting variously on penis apex or side. Free oviduct, a simple tube that may or may not unite with spermathecal stalk before atrium. Spermathecal shaft inserts onto free oviduct, atrium or base of penis; reservoir lying above pallial cavity apex, rarely on spermooviduct.

DISTRIBUTION. Pacific Islands, New Guinea, Indonesia, Japan, Philippines, Hindustan, S and E Africa, Madagascar, Island of St. Helena, S America.

ENDODONTINAE Pilsbry, 1895

Shell often with apertural barriers.

Spermatophore (when present) found in epiphallus.

DISTRIBUTION. Pacific Islands, New Guinea, Indonesia, Philippines, S and E Africa.



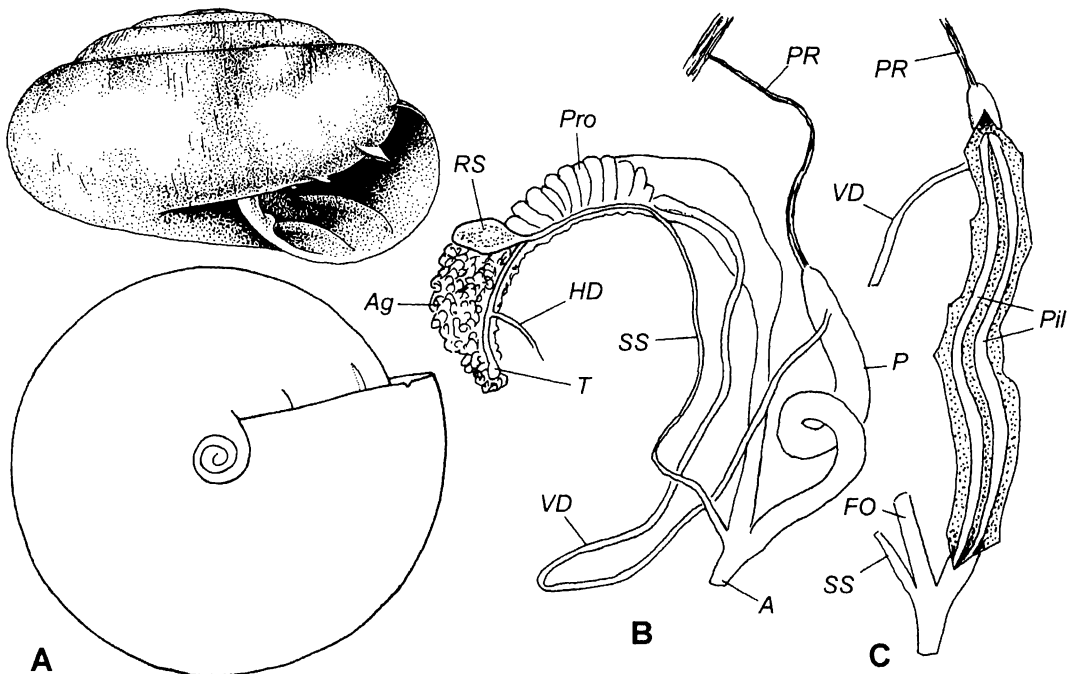


Fig. 1156. ! *Minidonta rotellina* (Pease, 1870).

A — shell: "Cook's Ids." Phil. No. 187036. B, C — *Minidonta hendersoni* Solem, 1976.  
B — reproductive tract. C — interior of penis. After Solem, 1976.

apically on penis summit. Penis elongated, slender, internally with 2 simple pilasters; vas deferens entering just below apical connection of pilasters in "V" formed by their junction. Penial retractor originating from diaphragm, attaching to penis apically. Free oviduct long, tapering gradually from uterus. Vagina absent, spermathecal stalk slender, inserts on female side opposite to base of penis. Atrium rather long.

DISTRIBUTION. Samoa, Marshall, Gambier, Henderson, Austral (Tubuai), Cook, Society Islands. 15 spp.

### *Mautodontha* Solem, 1976

Solem, 1976: 151

TYPE SPECIES — *Helix daedalea* Gould, 1846; OD.

Shell flat to markedly elevated, of 4-8 tightly coiled whorls. Body whorl rounded to laterally compressed or markedly angu-

lated at periphery. Major postapical sculpture varying from extremely fine and crowded to greatly reduced, normally with 80-154 ribs on body whorl. Aperture narrow; parietal lamellae basically 4 in number, frequently 1 or more absent or splitted into traces, many species with only 1 or 2 parietal lamellae. Columellar lamella weak or absent. Palatal wall normally bears 4 or 5 plicae, with or without one to several accessory traces; sometimes palatal plicae absent or reduced to 2 or 3. Umbilicus broadly to narrowly open, rarely constricted or closed.

Penial retractor merges with penis apex lacking fleshy extension. In other aspects reproductive tract similar to that of *Australodonta* (see p. 890.).

DISTRIBUTION. Society, Tuamotu, Austral, Cook Islands.

### *Mautodontha* (*Mautodontha* s. str.)

Fig. 1157

Shell depressed to flat. Body whorl at

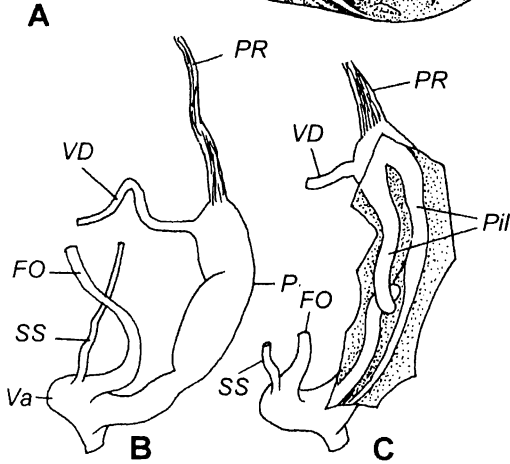
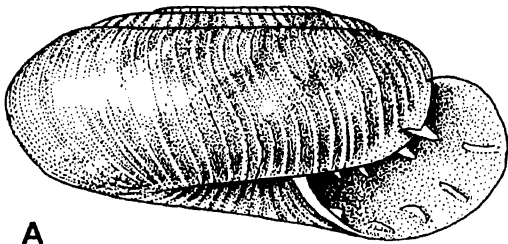


Fig. 1157 A — *Mautodontha (Mautodontha) daedalea* (Gould, 1846).

Shell: Aurora [= Makatea] Island (Society Islands). Phil. No. 1947 B, C — ! *Mautodontha (Mautodontha) zimmermani* Solem, 1976. B — distal part of reproductive tract. C — interior of penis. After Solem, 1976.

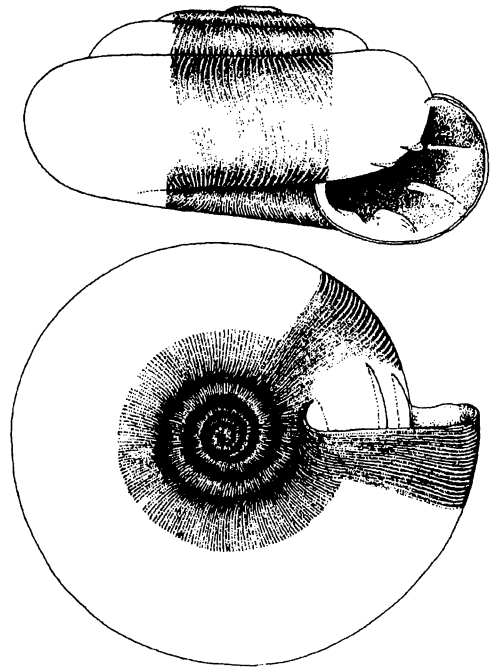


Fig. 1158. *Mautodontha (Garrettoconcha) parvidens* (Pease, 1861). After Solem, 1976.

least weakly angulated at periphery. Elements of aperture armature prominent, large, rarely with accessory traces, greatly reduced in only one case. Umbilicus broad. Height 0.89-2.47, diam. 2.6-5.0 mm (2.22 × 3.82).

Vas deferens enters penis subapically. Penis elongated, internally with V-shaped pilaster; pore of vas deferens situated just below apical junction of arms of "V" Penial retractor attached to penis terminally. Free oviduct long. Vagina extremely short. Spermathecal shaft slender throughout.

DISTRIBUTION. Society, Tuamotu, Austral (Tubuai), Cook Islands. 6 spp.

*Mautodontha (Garrettoconcha)*  
Solem, 1976

Fig. 1158

Solem, 1976: 162.

TYPE SPECIES — *Helix parvidens* Pease, 1861; OD.

Shell more or less elevated, of 4.5-6 convex whorls; body whorl laterally compressed or evenly rounded at periphery (weakly angulated in one species), usually descending abruptly in front. Apertural armature reduced in size, one or more parietal lamellae and palatal plicae absent or splitted into fine accessory traces. Umbilicus narrower than in *Mautodontha* s. str. Height 1.25-2.60, diam. 2.65-4.90 mm.

DISTRIBUTION. Society and Cook Islands. 11 spp.

*Anceyodonta* Solem, 1976

Fig. 1159

Solem, 1976: 178.

TYPE SPECIES — *Anceyodonta difficilis* Solem, 1976; OD.

Shell flat to subglobose, of 4.25-7.5 quite convex whorls. Body whorl rounded

at periphery. Several species have a sub-sutural and/or suprapерipheral sulcus. Color corneous, with darker flammulations. Embryonic sculpture of variously developed radial riblets. Ribs on postapical whorls usually quite widely spaced. Aperture armature complex: parietal lamellae usually 4 in number, extending for at least 1/4 whorl; V-shaped upper palatal plica lies opposite to upper parietal lamella; many species have columellar barrier slanting downward or displaced onto basal margin; there are normally 4 or more palatal traces. Aperture rather wide or secondarily narrowed. Umbilicus narrow to broad. Height 1.16-3.45, diam. 1.69-4.93 mm (2.50 × 3.12 mm).

DISTRIBUTION. Tuamotu Archipelago (Gambier Islands). 12 spp.

### *Cookeconcha* Solem, 1976

Fig. 1160

Solem, 1976: 207

TYPE SPECIES — *Helix hystrix* L. Pfeiffer, 1846; OD.

Shell more or less depressed to flat, thin, dull, of 3.5-5.75 convex whorls. Last whorl straight, mostly evenly rounded at periphery, rarely laterally compressed; sometimes compressed above and below periphery; a weak suprapерipheral sulcus or extensive sulci rarely may be present. Embryonic sculpture of fine radial riblets in species with prominent palatal plicae (except one species), absent on 1st half to whole apical whorl in species with reduced or no palatal plicae. Postnuclear whorls with narrow to wide, generally prominent, protractive radial ribs, reduced in one species. Sometimes long periostracal hairs present. Microsculpture typical, rarely with secondary spiral threads. Aperture generally rounded, a little oblique. Parietal wall with 2 lamellae, varying from quite large with upper bifid to having lower lost with upper a thread-like ridge; columellar lamella may be present. Palatal plicae 4 or 5 in smaller mollusks, reduced in size and variable in number in larger; sometimes absent. Umbilicus (very) broad. Height 0.97-3.60, diam. 1.71-6.91 mm (3.60 × 6.62 mm).

Jaw of numerous, partly to almost completely fused, narrow plates.

Hermaphroditic duct straight or convoluted. Talon with globular apex and short,

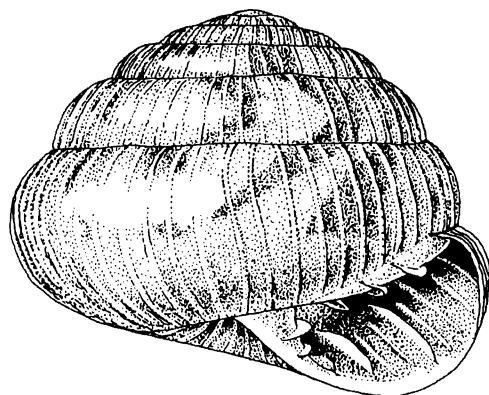


Fig. 1159. *Anceyodonta sexlamellata* (L. Pfeiffer, 1845).

Gambier Is. Phil. No. 1919.

thick shaft. Vas deferens entering penis subterminally through a simple pore between arms of U-shaped pilaster. Penis of varying length, without apical extension; internally either with narrow, elongated pilasters (as in *Endodonta* or *Nesophila*), or shortened and enlarged (as in *Australdonta*). Penial retractor arising from diaphragm, attaching to apex of penis. Free oviduct long. Vagina very short. Spermathecal stalk slender, reservoir small.

DISTRIBUTION. Marshall and Hawaiian Islands. 16 spp.

### *Kleokyphus* Solem, 1976

Fig. 1161

Solem, 1976: 224.

TYPE SPECIES — *Kleokyphus callinus* Solem, 1976; OD.

Shell nearly subglobose, relatively solid,

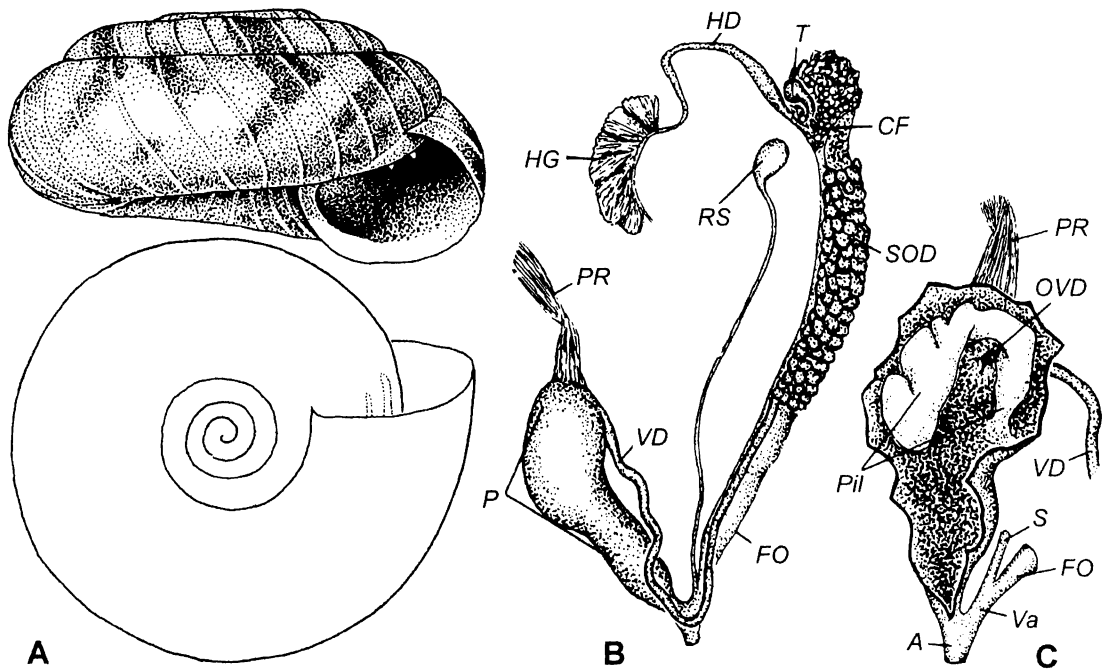


Fig. 1160. *Cookeconcha hystrix* (L. Pfeiffer, 1846).

A — shell: Mt. Konahuanui, Oahu, Hawaiian Islands. Phil. No. 95253. B, C — ! *Cookeconcha hystricellus* (L. Pfeiffer, 1859). B — reproductive tract. C — interior of penis. After Solem, 1976.

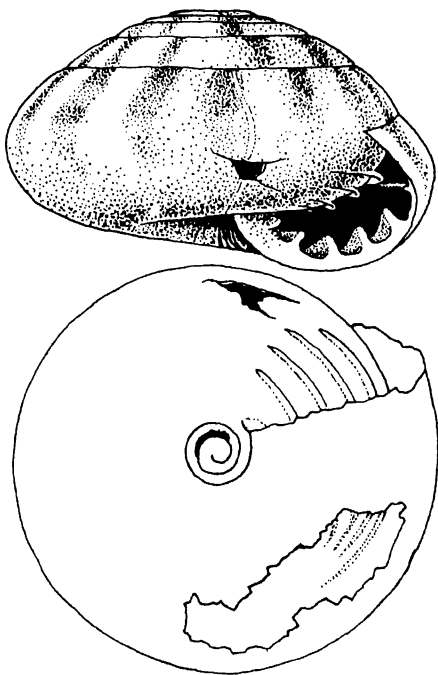


Fig. 1161. *Kleokyphus callinus* Solem, 1976. Makatea Island [Tuamotu Archipelago]. Paratype. Paris.

of 7.25-8 flat to convex whorls. Body whorl straight, obtusely angulated to laterally compressed. Spire dome-shaped. Color light-corneous with darker flammulations. Embryonic sculpture of radial riblets. Post-nuclear whorls with rather prominent to greatly reduced radial ribs above periphery. Aperture rather narrow, a little oblique, with 3-4 large parietal, 0-1 columellar lamellae and 4-5 large palatal plicae. Umbilicus relatively narrow but perspective, U-shaped. Height 2.17-4.51, diam. 4.28-6.60 mm (2.17 × 4.32 mm).

DISTRIBUTION. Tuamotu Islands (Makatea Island). 2 spp.

*Opanara* Solem, 1976

Fig. 1162

Solem, 1976: 227

TYPE SPECIES — *Opanara areaensis areaensis* Solem, 1976; OD.

Shell flat or depressed to very strongly

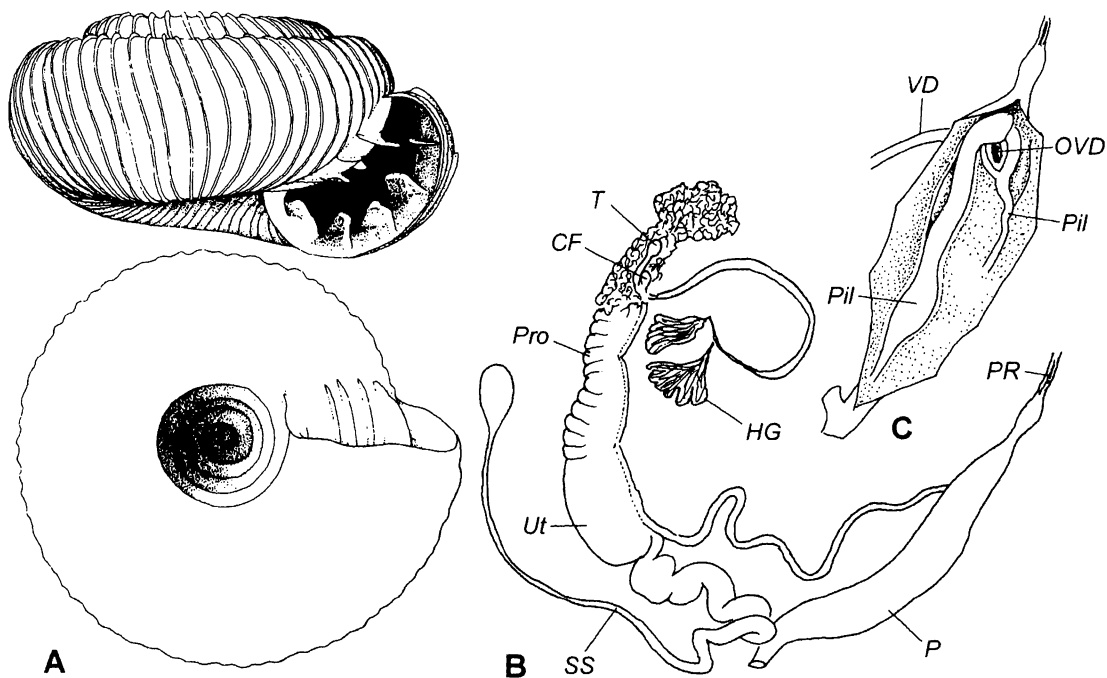


Fig. 1162. *Opanara areaensis areaensis* Solem, 1976.

A — shell. B — reproductive tract. C — interior of penis. After Solem, 1976.

elevated, of 4.5-6.25 convex whorls. Body whorl laterally compressed, evenly rounded, or compressed above and below a rounded periphery. A supraperipheral sulcus present in one species. Sculpture typical. Aperture narrowly to broadly semilunate, slightly oblique. Parietal lamellae normally 3, sometimes 2 or 4, or altered to low threads with accessory traces. Columellar lamella developed to various degree, sometimes displaced onto basal margin by lateral compression; or deflected onto basal margin, or reduced to many thread-like traces. Palatal plicae normally 4 (in one species 5), or broken into many fine threads; accessory traces present in two species. Umbilicus generally U-shaped, rarely extremely wide or almost closed, sometimes with angled or margined border. Height 1.16-2.01, diam. 2.63-4.84 mm.

Jaw of weak overlapping plates, broadly to narrowly rectangular.

Hermaphroditic gland and duct typical. Talon rather short, with rapidly tapering shaft. Vas deferens entering penis quite near apex, just below junction of internal

pilasters. Penial pilasters much higher than wide at base, usually simple and equal; rarely complexly folded or separated. Penial retractor arising from diaphragm (from common columellar trunk in a single species) and attaching to fleshy extension of penis apex (two species have no extension). Free oviduct long, more or less convoluted. Spermathecal shaft slightly expanded basally, enters free oviduct just at peni-oviducal angle, so vagina practically absent.

DISTRIBUTION. Austral Islands (Rapa). 12 spp. & subspp.

### *Rhysoconcha* Solem, 1976

Fig. 1163

Solem, 1976: 255.

TYPE SPECIES — *Rhysoconcha variumbilicata* Solem, 1976; OD.

Shell more or less depressed, of 4.25-5.5 tightly coiled, quite convex whorls. Body whorl with evenly rounded or slightly compressed periphery. Color light-corneous, with whitish spots (on last whorl below su-

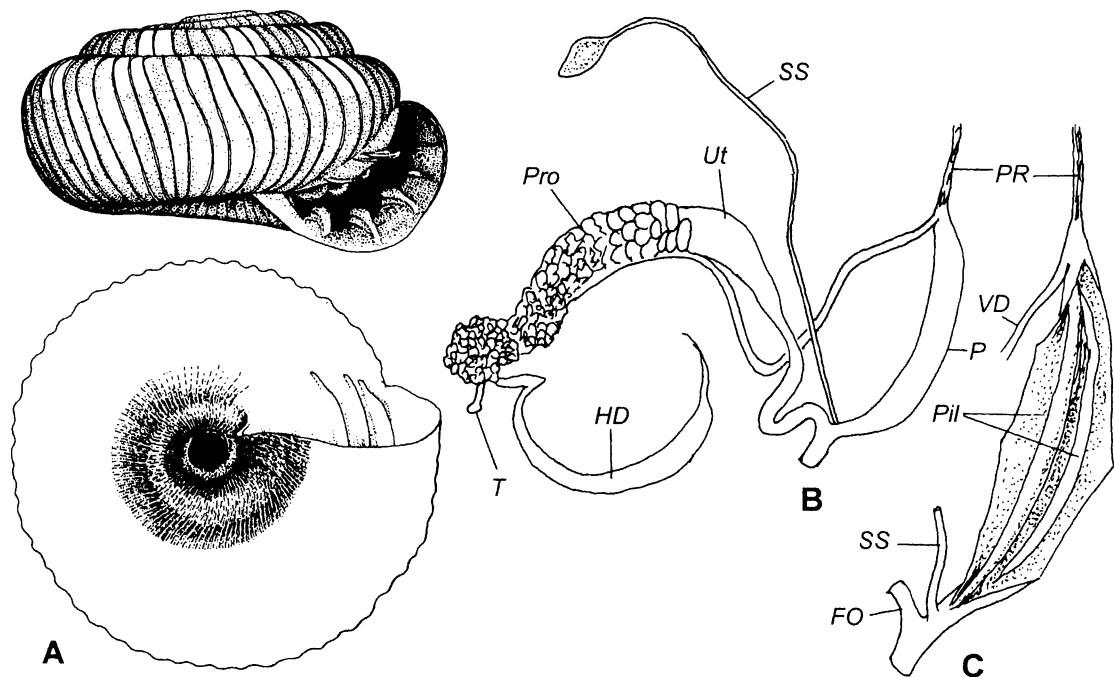


Fig. 1163. *Rhysoconcha variumbilicata* Solem, 1976.

A — shell. B — reproductive tract. C — interior of penis. After Solem, 1976.

ture). Embryonic sculpture typical, but very fine. Radial ribs on postapical whorls quite narrow, moderately to very crowded. Aperture moderately narrow, only slightly oblique. Parietal wall with 3-4 lamellae, one or two of them recessed. Columellar plate deeply recessed or nearly reaching margin. Palatal plicae normally 5, rarely 6. Umbilicus wide or secondarily constricted. Height 0.82-1.38, diam. 1.74-2.67 mm.

Hermaphroditic gland of proportionately large acini; hermaphroditic duct with wide collecting tubule and rather long anterior duct. Talon exposed, small, with globular head. Vas deferens entering apical section of penis laterally. Latter with no fleshy extension, internally with 2 rather closely set pilasters that are slightly higher than wide and unite apically above pore of vas deferens. Penial retractor originating from diaphragm and inserting on top of penis. Free oviduct long, slender; vagina absent because very thin, cylindrical spermathecal stalk inserted on atrium or even on distalmost part of penis. Reservoir of spermatheca attending albumen gland.

DISTRIBUTION. Austral Islands (Rapa). 2 spp.

### *Ruatara* Solem, 1976

Fig. 1164

Solem, 1976: 265.

TYPE SPECIES — *Ruatara oparica normalis* Solem, 1976; OD.

Shell slightly depressed, of 4.5-6.25 rather tightly coiled, convex whorls. Body whorl straight, rounded or obtusely angulated at periphery. Apical and postapical microsculpture typical; major radial ribs normally spaced or rather crowded. Aperture lunate, subvertical, somewhat narrowed by strongly developed armature. Parietal lamellae usually 2 or 3, rarely more, prominent. Columellar lamella prominent and deeply recessed; in one species twisted onto basal margin; or slanting partway across columellar margin. Palatal plicae 0-5, usually 3 or 4, rarely reduced to absent. Umbilicus

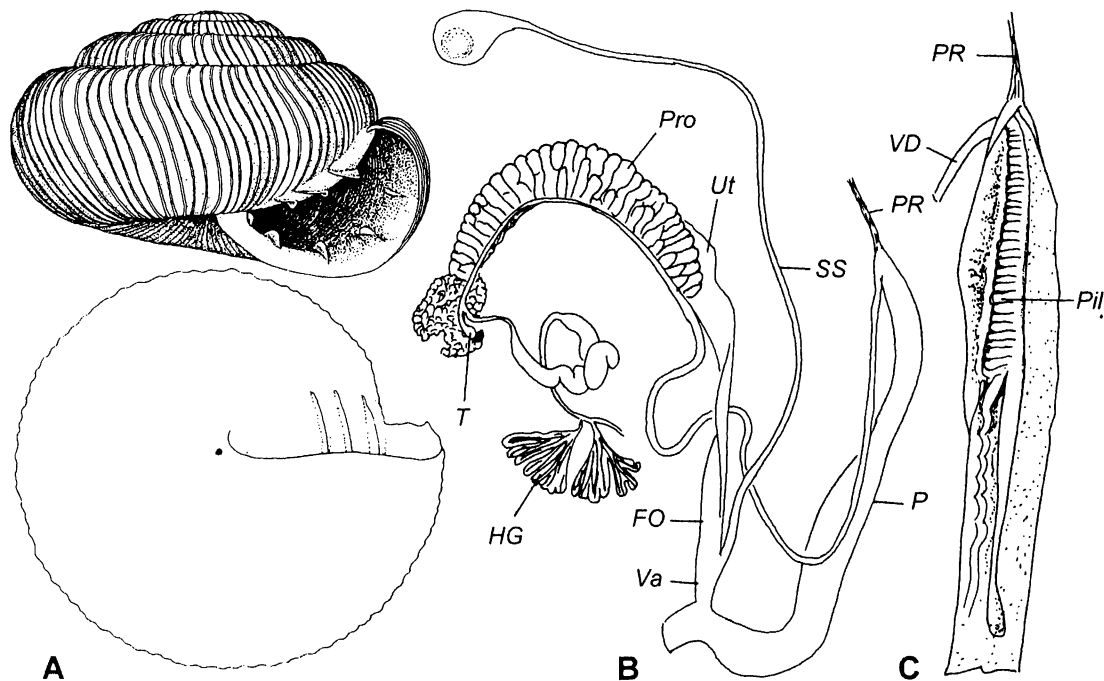


Fig. 1164. *Ruatara oparica normalis* Solem, 1976.

A — shell. B — reproductive tract. C — interior of penis. After Solem, 1976.

dot-like to closed. Height 1.48-2.86, diam. 2.70-4.87 mm.

Hermaphroditic duct highly convoluted. Vas deferens entering penis subapically. Penis long, without fleshy extension, internally with a very large and transversely rugose pilaster. Spermathecal shaft and free oviduct uniting well above atrium, producing a clearly marked but short vagina. Reservoir of spermatheca attending albumen gland.

DISTRIBUTION. Austral Islands (Rapa). 2 spp. one of them composed of 3 subsp.

### *Orangia* Solem, 1976

Fig. 1165

Solem, 1976: 276.

TYPE SPECIES — *Orangia cookei cookei* Solem, 1976; OD.

Shell slightly depressed, of 5-6.5 convex, shouldered whorls. Body whorl straight, with evenly rounded, distinctly angulated, or protruded periphery. Spire moderately elevated. Embryonic sculpture typical, with

or without secondary spiral cording; normal spiral microsculpture greatly reduced. Major ribs on postnuclear whorls widely spaced to very crowded. Aperture rather narrow, almost vertical. Parietal plates 2, upper lamellate for entire length, lower with thread-like anterior portion terminating opposite or before anterior end of upper. Columellar lamella reaching edge of aperture to deeply recessed. Palatal plicae 4, rarely 5, variable in height. Umbilicus dot-like or usually closed. Height 1.59-2.58, diam. 3.74-4.4.67 mm.

Rectal branch of kidney much reduced. Secondary ureter incomplete.

Talon consists of very long shaft and small globular head. Vas deferens enters penis markedly subapically through a small, simple pore. Penis with a fleshy extension of its apex merging with penial retractor. Internally penis with 2 axial pilasters that become high, thin lamellar ridges apically. Penial retractor arising from diaphragm. Spermathecal shaft long, slender, entering female duct quite next to atrium thus vagina as such practically absent.

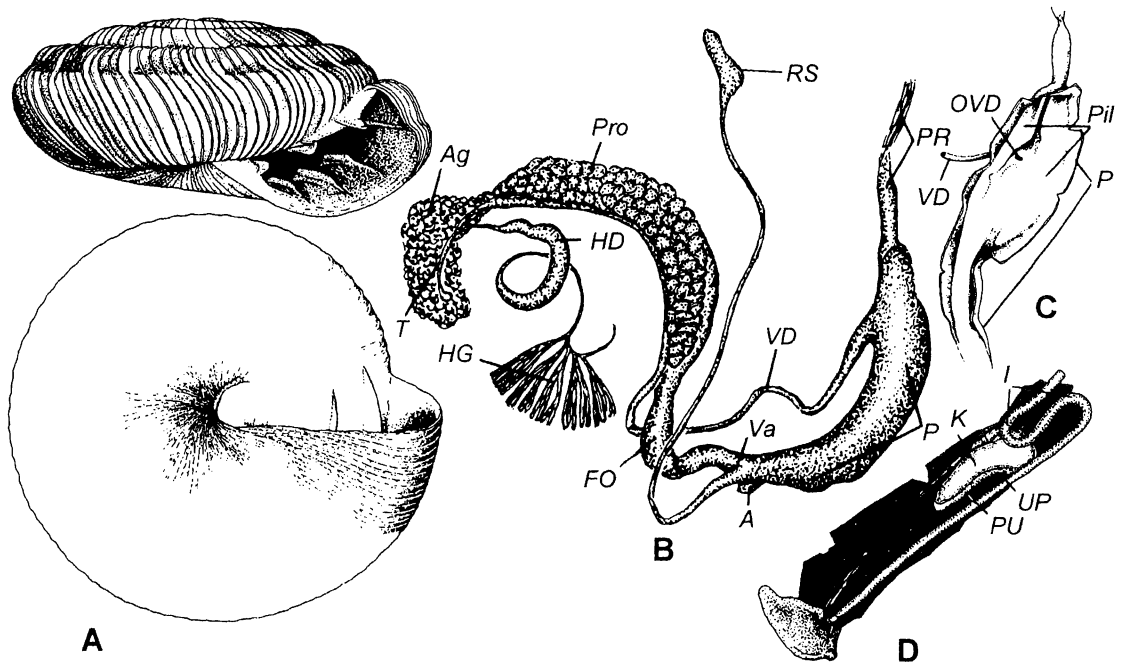


Fig. 1165. *Orangia cookei cookei* Solem, 1976.

A — shell. B — reproductive tract. C — interior of penis. D — roof of lung cavity. After Solem, 1976. I — intestine. UP — ureteric pore.

DISTRIBUTION. Austral Islands (Rapa). 3 spp. one of them represented by 3 subsp.

### *Australdonta* Solem, 1976

Fig. 1166

Solem, 1976: 289

TYPE SPECIES — *Australdonta raivavaeana* Solem, 1976; OD.

Shell nearly flat to moderately depressed, of 4.5-6.5 moderately to strongly convex whorls. Last whorl straight, with periphery usually sharply angled or keeled, rarely rounded. Supraperipheral sulcus mostly present; sometimes there is a subperipheral sulcus as well. Embryonic sculpture typical; postnuclear whorls with major radial ribs that moderately to widely spaced (crowded in a single species), and spiral incised lines in interstices. Aperture generally lunate, slightly oblique. Parietal lamellae generally 3 or 4, extending posteriorly for 3/16 to more than 1/4 whorl, rarely reduced to 2, many thread-like traces or a single faint

trace. Columellar lamella generally absent or (rarely) very weak. Palatal folds 3-5, relatively long, rarely lacking. Umbilicus widely to moderately open. Height 1.06-2.67, diam. 2.55-5.13 mm (2.08 × 3.94 mm).

Jaw of elongated plates.

Talon as in *Orangia*. Vas deferens enters penis laterally through a pore situated between two broadly rounded and expanded pilasters that are complexly expanded and splitted. Apical portion of penis protruded into fleshy extension. Penial retractor arising from common columellar trunk and inserting on apical extension of penis. Structure of spermatheca as in *Orangia*.

DISTRIBUTION. Austral Islands (Rurutu, Rimatara, Tubuai, Raivavae). 12 spp. & subsp.

### *Taipidon* Solem, 1976

Fig. 1167

Solem, 1976: 314.

TYPE SPECIES — *Pithys analogica* Pease, 1870; OD.



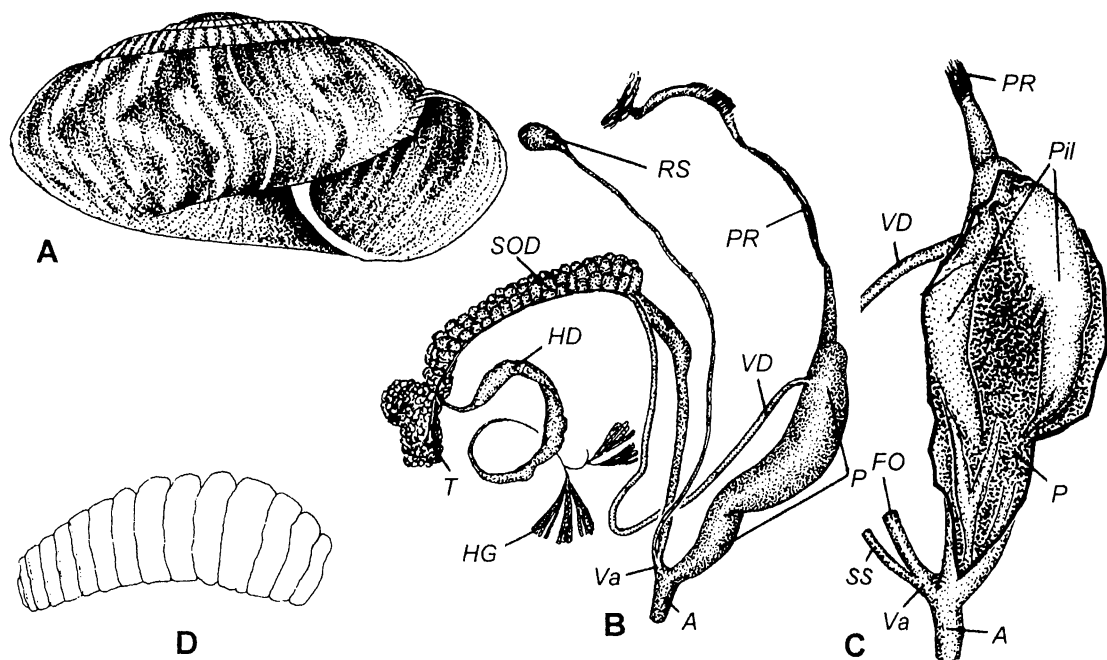


Fig. 1166. ! *Australdonta radiella* (L. Pfeiffer, 1846).

A — shell: Opara [= Rapa] Island [error; actually Tubuai Island: Solem, 1976: 306]. Phil. No. 47794. B, C, D — *Australdonta raivavaeana* Solem, 1976. B — reproductive tract. C — interior of penis. D — jaw. After Solem, 1976.

Shell nearly flat to subglobose, of 5-7.5 convex whorls. Body whorl evenly rounded or laterally compressed (in one species with compression above and below periphery). Color corneous, with variously developed, irregular darker zigzagged flammulations. Embryonic sculpture of radial riblets. On postapical whorls major radial ribbing crowded or (rarely) widely spaced; secondary spiral cording absent to strongly developed. Aperture lunate to ovate, only slightly oblique. Parietal lamellae mostly 2, sometimes 3 or 4; generally without accessory traces. Columellar lamella absent, reduced or splitted into many traces. Palatal plicae highly variable in length, form and position; accessory traces present in a single species, all palatal folds splitted and reduced in length in other species. Umbilicus moderately open, generally V-shaped and relatively wide or U-shaped and somewhat narrower, except modified to form a brood pouch in one case. Height 1.42-3.48, diam. 2.65-5.56 mm.

Jaw of separate, rectangular plates or more elongated plates with partial fusion.

Rectal arm of kidney much shorter than

pericardial one. Secondary ureter incomplete along most of its length.

Talon with rather short stalk and ovate head. Vas deferens entering penis laterally below fleshy extension. Internally penis with a submedian pustulose glandular zone and 2 pilasters of varying size and relative prominence, in some species splitted into elongated beads. Penial retractor originates from diaphragm or columellar trunk and inserts on a fleshy extension of penis. Free oviduct enormously long, narrow. Vagina absent. Spermathecal stalk enters atrium between free oviduct and penis; reservoir attending albumen gland.

DISTRIBUTION. Marquesas Islands (Hatu-tu, Nukuhiva, Eiao, Dominique, Hivaoa, Uapou). 10 spp., one of them of two subspp.

*Planudonta* Solem, 1976

Fig. 1168

Solem, 1976: 335.

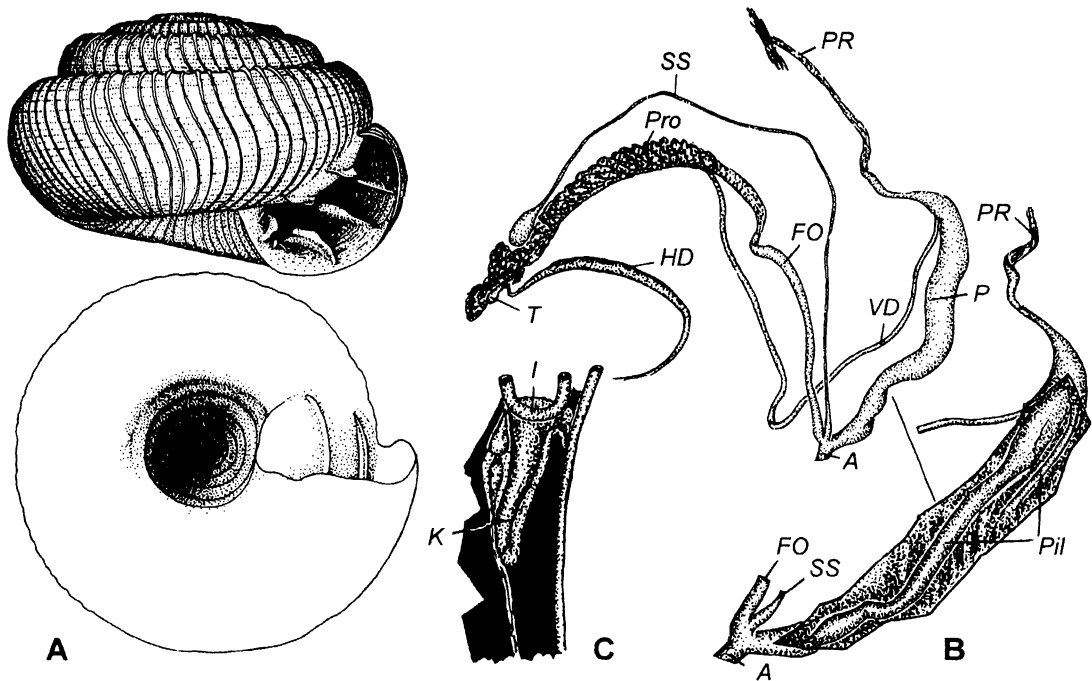


Fig. 1167 A — *Taipidon analogica* (Pease, 1870). Shell.  
 B, C — ! *Taipidon semimarsupialis* Solem, 1976. B — reproductive tract and interior of penis. C — roof of lung cavity. After Solem, 1976. I — intestine.

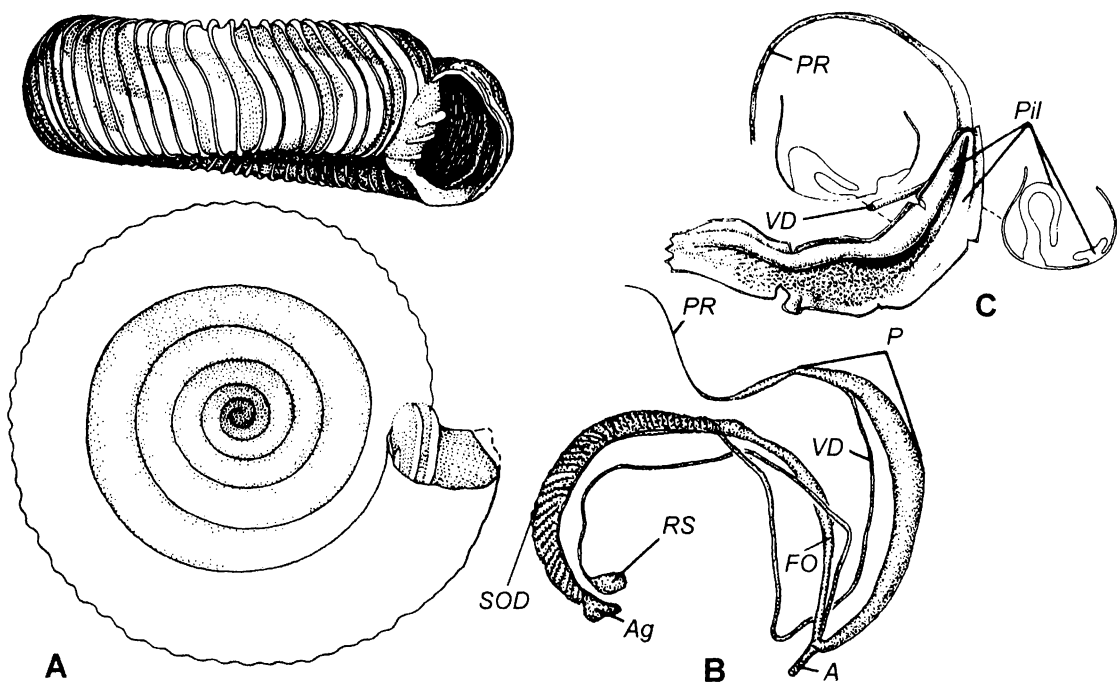


Fig. 1168. *Planudonta concava* Solem, 1976.  
 A — shell. B — reproductive tract. C — interior of penis. After Solem, 1976.

TYPE SPECIES — *Planudonta concava* Solem, 1976; OD.

Shell flat, of 5.5-6.5 convex whorls, with spire more or less deeply sunken below level of penultimate whorl. Body whorl straight, broadly rounded at periphery. Color corneous with brown irregular flammulations. Apical and microradial sculpture generally typical. Postembryonic sculpture of high, not crowded, slightly to strongly sinuated ribs. Aperture semilunate, a little oblique. Parietal lamellae 2, short to very long, without or with a few to many accessory traces. Columellar margin smooth, or with 2 small lamellae, or with numerous traces. Palatal armament absent, or composed of 3 plicae, or of many traces. Umbilicus very broad, V-shaped to cup-shaped. Height 1.58-2.10, diam. 3.75-5.79 mm.

Jaw with or without partial fusion of central plates.

Vas deferens entering penis markedly below apex through a simple pore located between pilasters. Penis internally with 2 pilasters, variously modified, and a pustulose zone in central region. Penial retractor originating from columellar muscle, attaching directly to fleshy extension of penis summit. Free oviduct very long. Vagina practically absent. Spermathecal shaft long, cylindrical, entering atrium between free oviduct and penis. Reservoir reaching albumen gland.

DISTRIBUTION. Marquesas Islands (Nukuhiva and Hivaoa). 3 spp. one of them consists of 2 subsp.

*Rikitea* Solem et Cooke, 1976

Fig. 1169

Solem & Cooke in Solem, 1976: 342.

TYPE SPECIES — *Rikitea insolens* Cooke et Solem, 1976; OD.

Shell nearly flat, with scarcely elevated spire; whorl count and embryonic sculpture unknown. Body whorl strongly rounded above and evenly rounded at periphery. Postnuclear sculpture of widely spaced, prominent radial ribs; microsculpture probably absent. Aperture subcircular, slightly oblique, armed with a single, very high, medially placed subhorizontal lamella. Umbilicus very broad. Height of specimen with

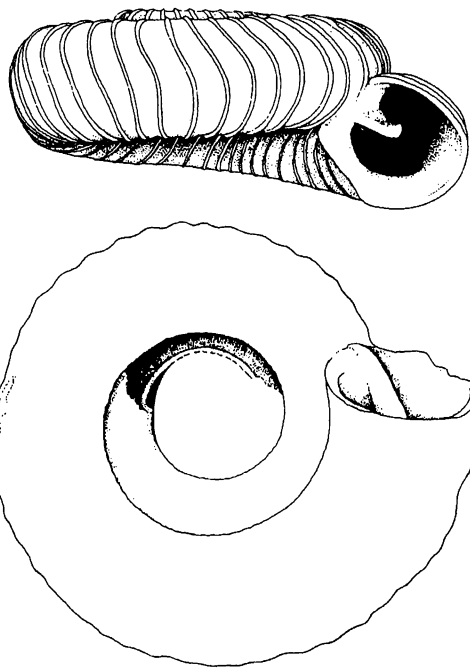


Fig. 1169. *Rikitea insolens* Cooke et Solem, 1976. Holotype. After Solem, 1976.

apex and most of spire missing 1.22, diam. 2.90 mm. Only holotype is known.

DISTRIBUTION. Gambier Islands (Mangareva). 1 sp.

*Nesodiscus* Thiele, 1931

Fig. 1170

Thiele, 1931 571 Solem, 1976: 345.

TYPE SPECIES — *Helix fabrefactus* Pease, 1864; monotypy.

Shell flat to elevated-conic, rather thin, of 4.75-8.5 flat whorls. Body whorl with angulated to strongly keeled periphery, rarely rounded. Major embryonic sculpture of large, broadly rounded radial ribs; apical microsculpture typical. Postapical whorls with very fine, crowded ribs in most species, larger ribs present in a single species, restricted to upper spire in another; in two cases whole sculpture greatly reduced. Aperture broadly semilunate, ovate, subquadrangular, or nearly circular, moderately ob-

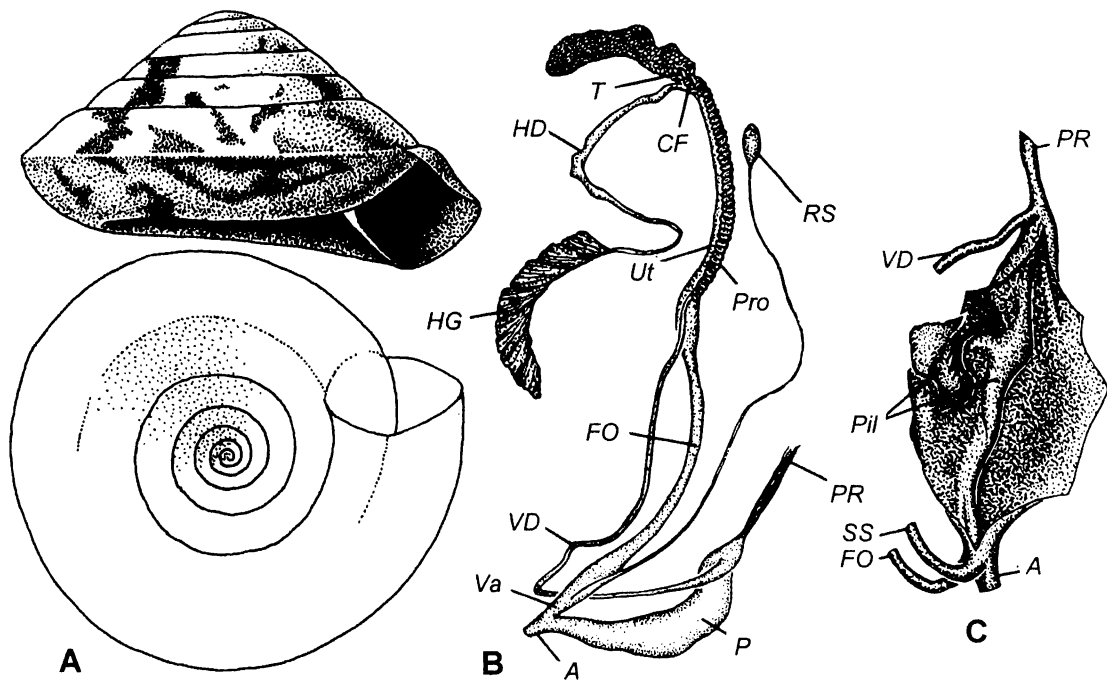


Fig. 1170. A — *Nesodiscus fabrefactus* (Pease, 1864). Shell: Raiatea Island, Society Islands. Moscow No. Lc-25313. B, C — ! *Nesodiscus fictus* (Pease, 1864). B — reproductive tract. C — interior of penis. After Solem, 1976.

lique. Parietal lamella mostly one, low, extending posteriorly beyond line of vision; rarely absent or there is the second deeply recessed parietal lamella. Columellar margin toothless. Palatal plicae very deeply recessed, variable in number: normally 4, sometimes 0 to 4. Umbilicus very broad, cup-shaped or (rarely) U-shaped. Height 1.62-4.64, diam. 4.01-8.50 mm (3.60 × 6.82 mm).

Ovotestis of many elongated acini. Hermaphroditic duct not convoluted. Talon minute, exposed. Vas deferens entering penis laterally between fused pilasters. Penis short, expanded supramedi ally or slender, depending on degree of pilaster expansion and folding, internally with 2 equal pilasters united above at penis apex. Penial retractor originating partly from diaphragm, partly from common columellar trunk, inserting directly on penis apex. Free oviduct long. Spermathecal shaft entering next to atrium, thus vagina very short.

DISTRIBUTION. Society Islands (Borabora, Huahine, Tahiti, Raiatea, Tahaa). 9 spp. & forms.

### *Nesophila* Pilsbry, 1893 Fig. 1171

Pilsbry, 1893 (1893-1895): 27 (*Endodonta* sect.). Solem, 1976: 365.

TYPE SPECIES — *Helix tiara* Mighels, 1845; OD.

Shell depressedly dome-shaped or conic, thin, of 4.5-5.5 or a little more moderately convex whorls. Body whorl rounded to obtusely angulated at periphery, usually compressed laterally above and below. Color brown with reddish radial streaks. Embryonic whorls nearly smooth to weakly radially ribbed. Later whorls with variously developed, smoothed radial ribs. Aperture broadly semilunate, markedly oblique; parietal wall with many weak, thread-like lamellar traces that extend deeply within last whorl. Columellar and palatal margins simple. Umbilicus wide, with distinctly angulated margin. Height 3.5-7.1, diam. 4.2-13.0 mm (7.1 × 12.9 mm).

Jaw of completely fused plates centrally, traces of sutures visible at outer edge.

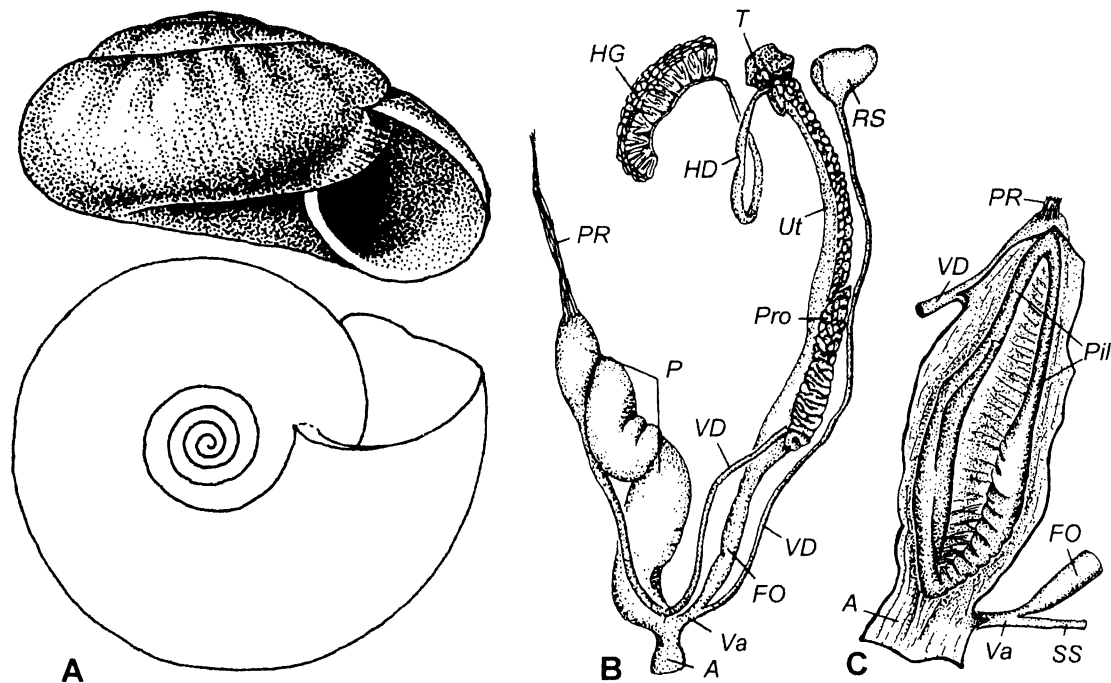


Fig. 1171 *Nesophila tiara* (Mighels, 1845).

A — shell: Hawaii. StB No. 09661 B — reproductive tract. C — interior of penis. After Solem, 1976.

Talon short, with globular head and short shaft. Vas deferens entering penis well below apex. Penis long, nearly uniform in width, internally with 2 large pilasters connected above and below, forming an elongately oval, "donut"-shaped stimulatory pad. Penial retractor arising partially from diaphragm, partially from apex of common columellar trunk, and inserting on penis apically. Free oviduct long. Vagina not differentiated. Spermathecal stalk thin, cylindrical; reservoir large, attending albumen gland.

DISTRIBUTION. Hawaiian Islands. 3 or 4 spp.

### *Kondoconcha* Solem, 1976

Fig. 1172

Solem, 1976: 368.

TYPE SPECIES — *Kondoconcha othnius* Solem, 1976; OD.

Shell generally dome-shaped, of 6-6.75 flattened, shouldered whorls. Body whorl with rounded peripheral angle, with a weak suprapерipheral sulcus, weakly to strongly

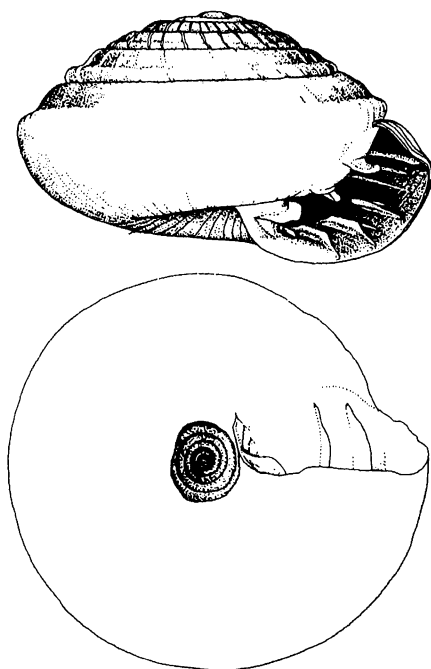


Fig. 1172. *Kondoconcha othnius* Solem, 1976. After Solem, 1976.

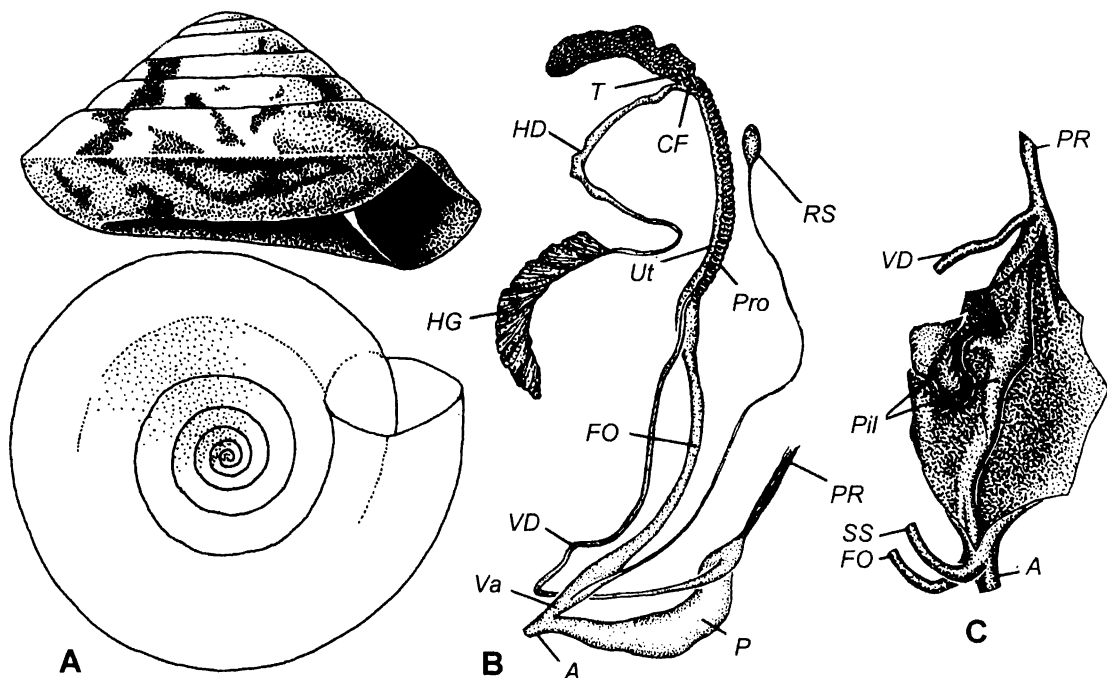


Fig. 1170. A — *Nesodiscus fabrefactus* (Pease, 1864). Shell: Raiatea Island, Society Islands. Moscow No. Lc-25313. B, C — ! *Nesodiscus fictus* (Pease, 1864). B — reproductive tract. C — interior of penis. After Solem, 1976.

lique. Parietal lamella mostly one, low, extending posteriorly beyond line of vision; rarely absent or there is the second deeply recessed parietal lamella. Columellar margin toothless. Palatal plicae very deeply recessed, variable in number: normally 4, sometimes 0 to 4. Umbilicus very broad, cup-shaped or (rarely) U-shaped. Height 1.62-4.64, diam. 4.01-8.50 mm (3.60 × 6.82 mm).

Ovotestis of many elongated acini. Hermaphroditic duct not convoluted. Talon minute, exposed. Vas deferens entering penis laterally between fused pilasters. Penis short, expanded supramedi ally or slender, depending on degree of pilaster expansion and folding, internally with 2 equal pilasters united above at penis apex. Penial retractor originating partly from diaphragm, partly from common columellar trunk, inserting directly on penis apex. Free oviduct long. Spermathecal shaft entering next to atrium, thus vagina very short.

DISTRIBUTION. Society Islands (Borabora, Huahine, Tahiti, Raiatea, Tahaa). 9 spp. & forms.

### *Nesophila* Pilsbry, 1893 Fig. 1171

Pilsbry, 1893 (1893-1895): 27 (*Endodonta* sect.). Solem, 1976: 365.

TYPE SPECIES — *Helix tiara* Mighels, 1845; OD.

Shell depressedly dome-shaped or conic, thin, of 4.5-5.5 or a little more moderately convex whorls. Body whorl rounded to obtusely angulated at periphery, usually compressed laterally above and below. Color brown with reddish radial streaks. Embryonic whorls nearly smooth to weakly radially ribbed. Later whorls with variously developed, smoothed radial ribs. Aperture broadly semilunate, markedly oblique; parietal wall with many weak, thread-like lamellar traces that extend deeply within last whorl. Columellar and palatal margins simple. Umbilicus wide, with distinctly angulated margin. Height 3.5-7.1, diam. 4.2-13.0 mm (7.1 × 12.9 mm).

Jaw of completely fused plates centrally, traces of sutures visible at outer edge.

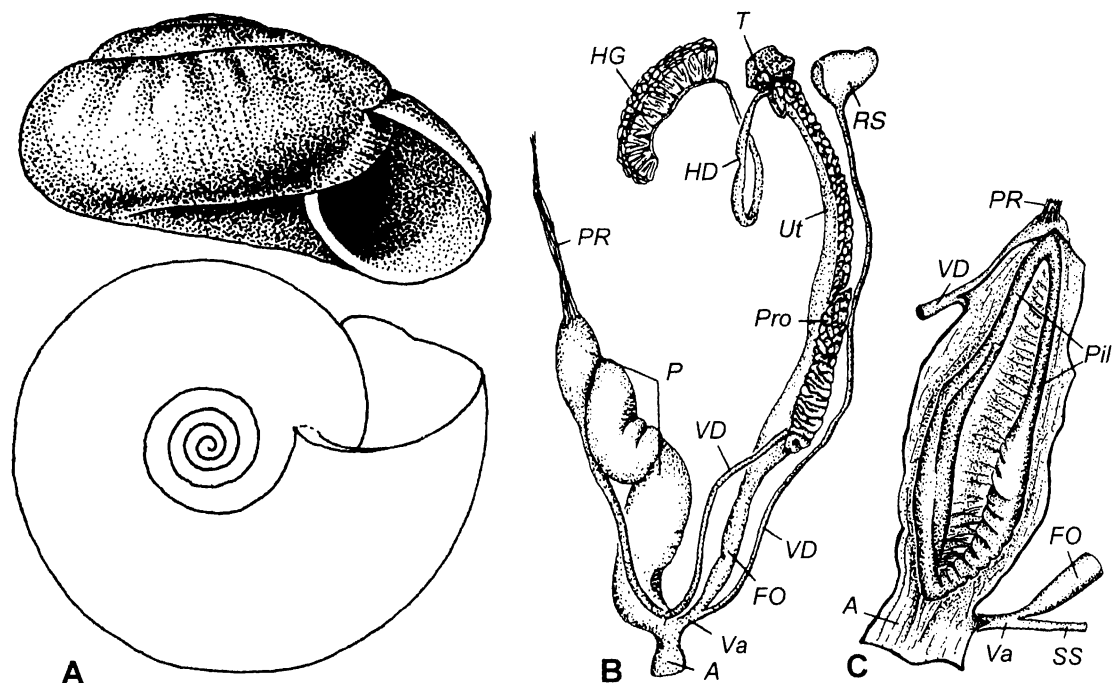


Fig. 1171. *Nesophila tiara* (Mighels, 1845).

A — shell: Hawaii. StB No. 09661 B — reproductive tract. C — interior of penis. After Solem, 1976.

Talon short, with globular head and short shaft. Vas deferens entering penis well below apex. Penis long, nearly uniform in width, internally with 2 large pilasters connected above and below, forming an elongately oval, "donut"-shaped stimulatory pad. Penial retractor arising partially from diaphragm, partially from apex of common columellar trunk, and inserting on penis apically. Free oviduct long. Vagina not differentiated. Spermathecal stalk thin, cylindrical; reservoir large, attending albumen gland.

DISTRIBUTION. Hawaiian Islands. 3 or 4 spp.

### *Kondoconcha* Solem, 1976

Fig. 1172

Solem, 1976: 368.

TYPE SPECIES — *Kondoconcha othnius* Solem, 1976; OD.

Shell generally dome-shaped, of 6-6.75 flattened, shouldered whorls. Body whorl with rounded peripheral angle, with a weak suprapерipheral sulcus, weakly to strongly

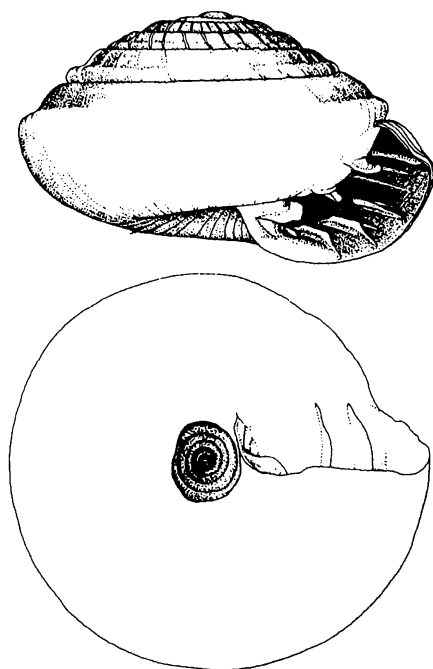


Fig. 1172. *Kondoconcha othnius* Solem, 1976. After Solem, 1976.

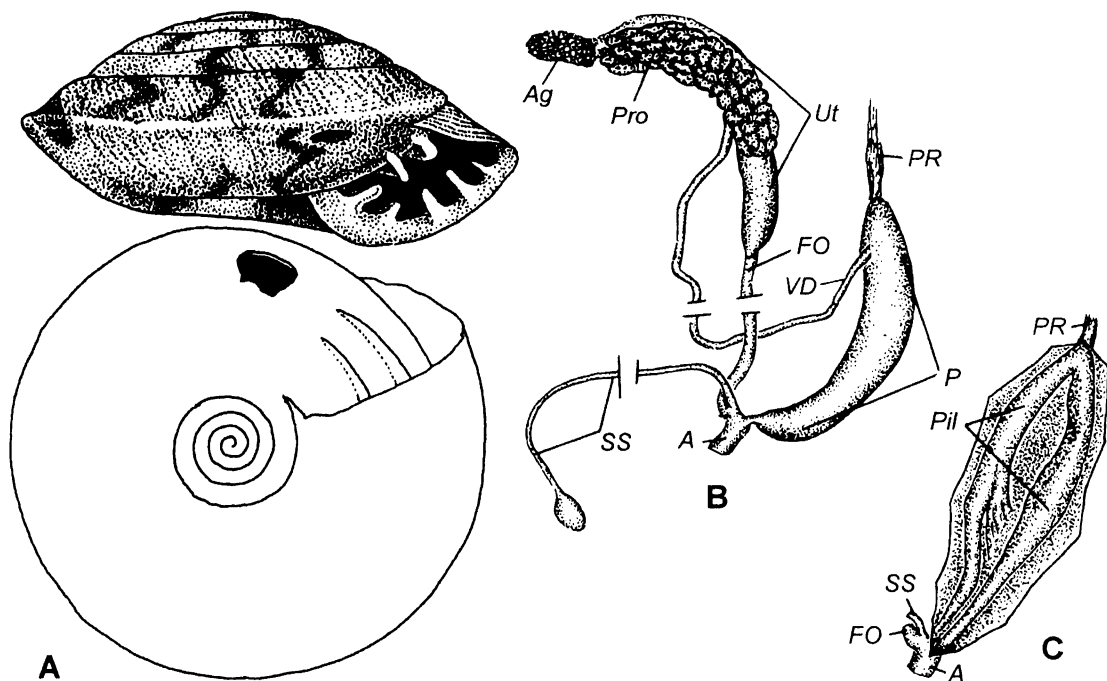


Fig. 1173. *Endodonta lamellosa* (Férussac, 1824).  
 A — shell: Oahu. Chicago No. 154481. B — reproductive tract. C — interior of penis.  
 After Solem, 1976.

deflected below periphery. Postembryonic sculpture of broad, prominent, low, protractive radial ribs that become greatly reduced in prominence on lower spire and absent from last whorl. Basal surface smooth, shining. Microsculpture of exceedingly fine, crowded radial riblets crossed by even finer and more crowded spiral striae. Aperture ovate, flattened laterally above protruded periphery, somewhat oblique. Parietal wall with 2 lamellae, each with at least 1 accessory ridge on each side, plus several short accessory traces. Columellar lamella large, subhorizontal, with a lower accessory trace. Palatal side with 5 thin plicae, with many accessory traces. Umbilicus rather narrow but perspective. Diam. 3.81-4.24 mm (holotype: height 2.54, diam. 4.21 mm).

DISTRIBUTION. Rapa Island (Austral Islands). 1 sp.

*Endodonta* Albers, 1850

Fig. 1173

Albers, 1850: 89 (*Helix* subg.). Solem, 1976: 371.

TYPE SPECIES — *Helix lamellosa* Férussac, 1824; SD Martens in Albers, 1860.

Shell lens-shaped, not shining, of 4.75-7 flattened whorls. Spire weakly to moderately elevated. Body whorl flattened above and below a thread-like keel or angled periphery. Embryonic sculpture typical (of radial riblets), sometimes secondarily reduced. Postapical whorls rarely with wide, prominent radial ribs, reduced on body whorl or lower spire, or (most frequently) surface practically smooth. Aperture rather narrow, somewhat oblique; parietal lamellae 2, relatively long, generally weakly to strongly bifid above, rarely simple. Columellar lamella rather large, reaching edge or midway across callus, lying subhorizontally or slightly slanting downwards. Palatal plicae 4 or 5, bifid only in a single species, usually with 1-2 accessory traces (may be absent). Umbilicus wide, U-shaped; in one case modified into brood pouch. Height 1.46-4.61, diam. 2.73-10.10 mm (2.38 × 6.00 mm).

Jaw of partially fused, very narrow lamellar plates which are too indistinct for accurate counting.



Kidney with short rectal arm.

Hermaphroditic duct uncoiled. Talon with small, globular apex and tapered shaft. Prostate of rather large acini. Vas deferens entering penis subterminally. Penis of variable length, internally with 2 axial pilasters of varying size that combine or fade out near atrium. Penial retractor originating from columellar muscle and inserting onto penis apex. Uterus bipartite. Spermathecal stalk slender, entering very long free oviduct at or just above rather elongated atrium.

DISTRIBUTION. Hawaiian Islands (Oahu, Kauai, Maui, Molokai, Lanai). 10 spp.

*Pseudolibera* Solem, 1976

Fig. 1174

Solem, 1976: 383.

TYPE SPECIES — *Pseudolibera lillianae* Solem, 1976; OD.

Shell lens-shaped, of about 5.5 normally coiled whorls; spire moderately and almost evenly elevated, dome-shaped. Body whorl straight, periphery with rather sharp uneven keel. Embryonic sculpture of rather narrow radial ribs, interspersed with finer riblets. Postnuclear sculpture of rounded, somewhat protractively sinuated radial ribs on upper surface; on base radial sculpture missing but there are strong, well spaced spiral cords. Aperture rather narrow, somewhat oblique, armed only with a single, medially placed, high, blade-like parietal lamella, extending for more than 0.5 whorl posteriorly, apparently with gradual anterior descent. Umbilicus modified by inward growth of the last 1.5 whorls to form a brood chamber. Height 3.13, diam. 6.42 mm (holotype).

DISTRIBUTION. Tuamotu Islands (Makatea Island). 1 sp.

*Libera* Garrett, 1881

Fig. 1175

Garrett, 1881 33.

— *Garrettia* Cossmann, 1900: 43 (nom. praeocc., non Paetel, 1873; nom. nov. pro *Libera* Garrett, 1881).

— *Garrettina* Thiele, 1931 572 (nom. nov. pro *Libera* Garrett, 1900, and *Garrettia* Cossmann, 1900).

Solem, 1976: 385.

TYPE SPECIES — *Pityx cavernula* Garrett, 1872 (= *Helix subcavernula* Tryon, 1887); SD Pilsbry, 1894 (1893-1895).

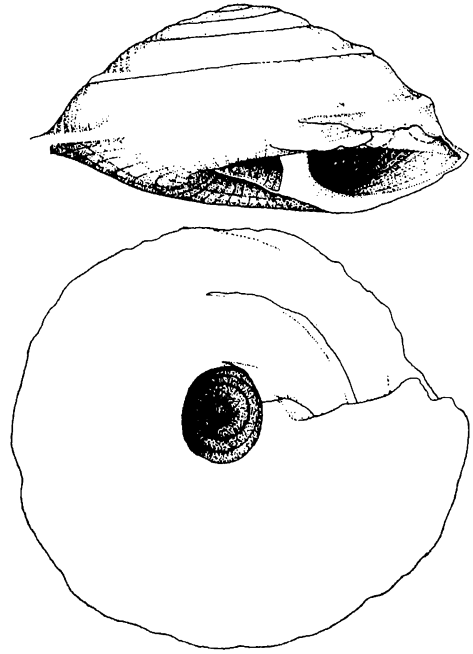


Fig. 1174. *Pseudolibera lillianae* Solem, 1976. After Solem, 1976.

Shell dome-shaped to subglobose, of 5.5-9 (mostly 6.5-8) flattened to convex whorls. Body whorl usually with weak to strong keel, rarely angulated or rounded. Supraperipheral and subperipheral sulci prominence correlated to degree of peripheral protrusion. Embryonic sculpture of fine, crowded radial riblets. Rest whorls with normal, very widely spaced, reduced, coarsened or lacking major radial ribs; secondary spiral cording present in species with normal (except a single species) or widely spaced major radial ribbing, absent in those with coarsened sculpture. Aperture ovately angulated, weakly oblique; parietal lamellae normally 2, rarely 1, extending posteriorly to line of vision or beyond, sometimes shorter; equal or (more often) with lower reduced, either having a thread-like anterior extension or deeply recessed. Columellar lamella present or absent; when present, usually deeply recessed. Palatal plicae 1-4, normally 3. Umbilicus secondarily narrowed to form a brood chamber by gradual inward growth in last 2 whorls. Height 2.22-6.18, diam. 3.66-9.28 mm (4.22 × 6.82 mm).

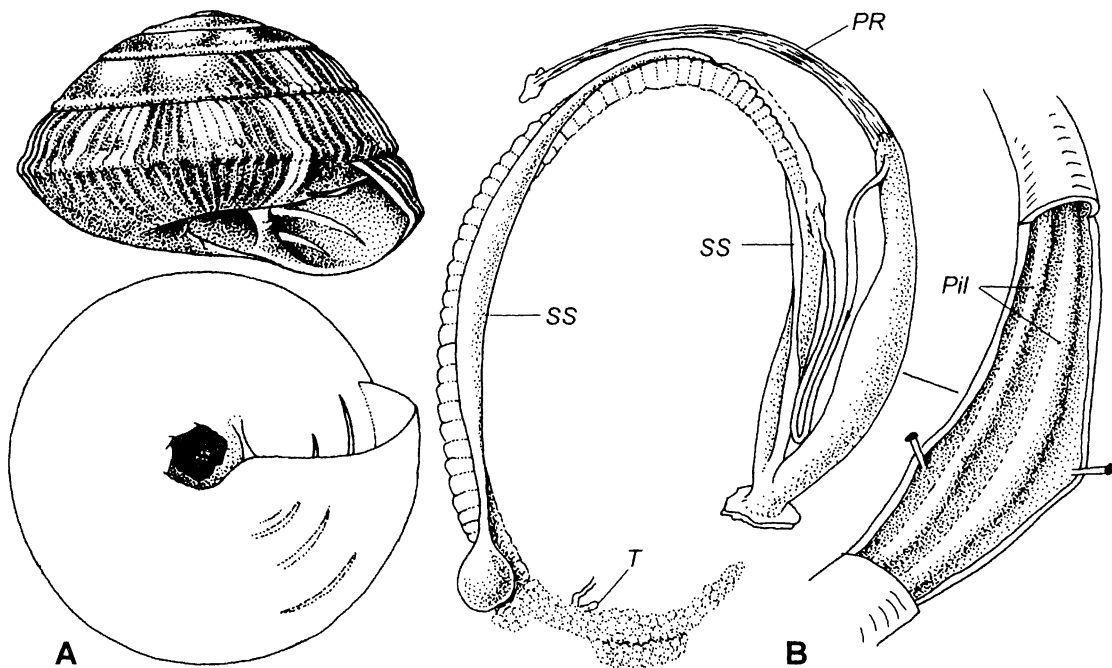


Fig. 1175. A — *Libera subcavernula* (Tryon, 1887). Shell: Cook Islands. Chicago No. 91884. B — ! *Libera fratercula rarotongensis* Solem, 1976. Reproductive tract and interior of penis. Avarua, inland from beach, Rarotonga, Cook Islands, December 7, 1965. Paratype. Chicago No. 152744.

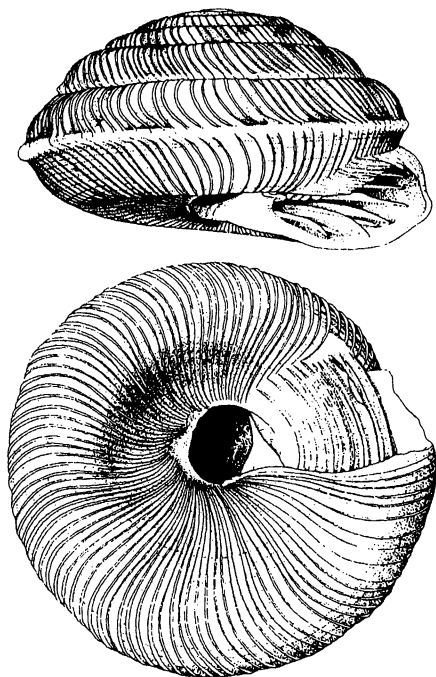


Fig. 1176. *Gambiodonta pilsbryi pilsbryi* Solem, 1976. After Solem, 1976.

Talon small. Vas deferens cylindrical or slightly expanded in distal section, entering penis slightly to moderately below penial apex through a simple pore. Penis variable in length, internally with 2 moderately to greatly elevated pilasters of varying prominence and folding. Penial retractor arising from diaphragm very close to common columellar trunk, inserting to penis terminally. Free oviduct long. Spermathecal duct entering atrium directly, between free oviduct and penis.

DISTRIBUTION. Society (Tahiti, Moorea) and Cook Islands (Mangaia, Rarotonga). About 20 spp. & subspp.

*Gambiodonta* Solem, 1976  
Fig. 1176

Solem, 1976: 431

TYPE SPECIES — *Gambiodonta pilsbryi pilsbryi* Solem, 1976; OD.

Shell subglobose to more or less depressed, of 5-8 convex, a little shouldered whorls. Spire dome-shaped in outline. Last whorl

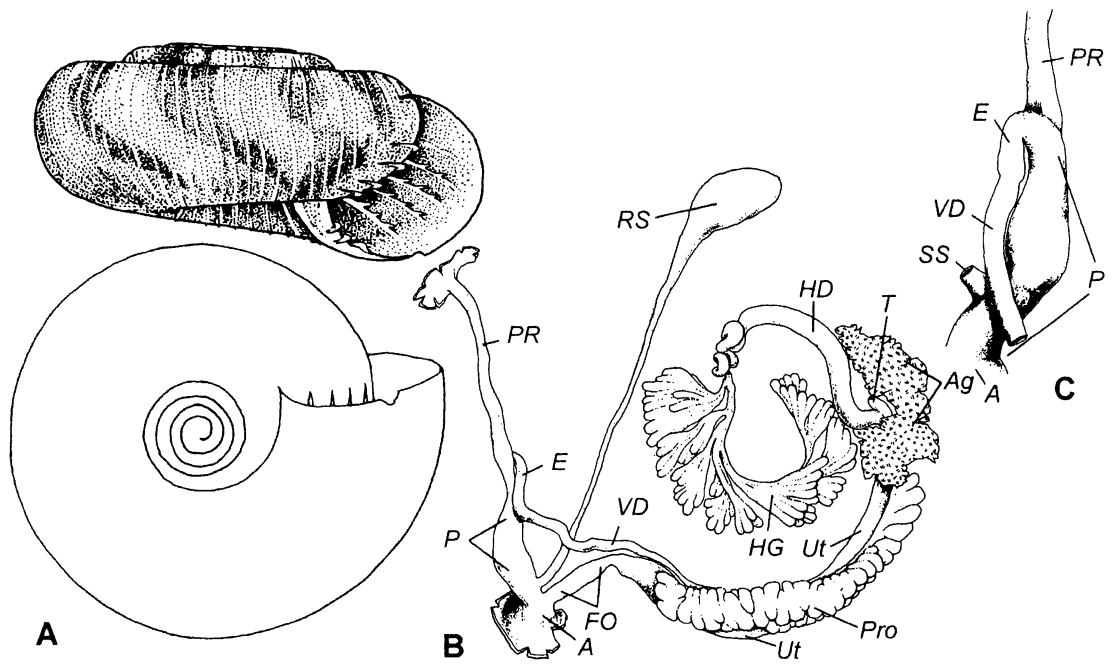


Fig. 1177 A — *Thaumatonodon multilamellata* (Garrett, 1872). Shell. Rarotonga [Cook Islands]. Paris. B, C — ! *Thaumatonodon hystricelloides* (Mousson, 1865). B — reproductive tract. C — penis from other side. After Solem, 1976.

scarcely angled to strongly keeled at periphery. Embryonic whorls with very broad, rounded ribs and finer riblets in interstices. Adult sculpture of narrow to broadly rounded, strongly protractive radial ribs that denticulate peripheral keel; ribs may be reduced or absent on basal surface. Strong spiral cording usually present. Aperture narrow, slightly oblique; parietal wall with 2-5 (usually 4-5) lamellae, extending for more than 1/4 whorl, and usually 5-8 accessory traces. Columellar lamella 1, usually with a single accessory trace. Palatal plicae 4, lower almost reduced to accessory traces, with 3-12 accessory traces. Umbilicus modified by inward growth of last whorl to form a brood chamber. Height 2.50-8.70, diam. 3.91-13.40 mm.

DISTRIBUTION. Gambier Islands (Mangareva and nearby islets). 6 spp.; one of them of 2 subsp.

*Thaumatonodon* Pilsbry, 1893  
Fig. 1177

Pilsbry, 1893 (1893-1895): 26. Solem, 1976: 444.

TYPE SPECIES — *Pityis multilamellata* Garrett, 1872; OD.

Shell flattened to nearly subglobose, of 4.75-6 moderately to strongly convex whorls. Body whorl usually rounded or laterally compressed; in a single species with 2 keels. Apical and microsculpture typical; rarely secondary spiral cording developed. Postembryonic sculpture of narrow to very wide radial ribs, with a tendency toward great reduction of ribbing on last whorl or over entire spire. Aperture widely lunate, subvertical; parietal plates 3-4, with straight or twisted, small to large serrated beads above, or crystalline barbs. Several accessory traces usually present. Columellar lamellae 1 or 2, parallel or slanting downwards from plane of coiling. Palatal plicae 3-6, normally 4, sometimes accessory traces present. Umbilicus rather wide to rather narrow. Height 0.96-2.85, diam. 1.99-4.14 mm (2.19 × 3.38 mm).

Rectal arm of kidney well developed.

Hermaphroditic duct usually convoluted for 0.25-0.5 of length. Talon a short, untapered to tapered nub on carrefour. Vas

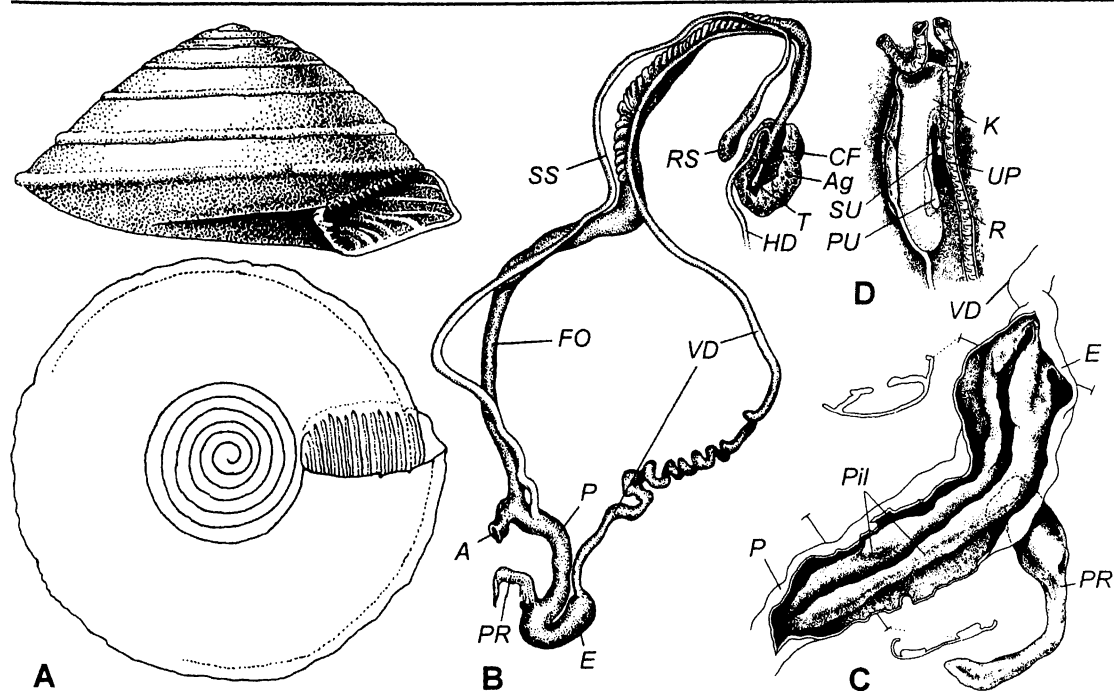


Fig. 1178. *Priceconcha tuvuthaensis* Solem, 1973.  
 A — shell: W coast Tuvutha, NE Lau Group, Fiji; heavy limestone forest. Holotype. Chicago No. 168131. B — reproductive tract. C — interior of penis. D — roof of lung cavity. After Solem, 1973. R — rectum. UP — ureteric pore.

deferens entering epiphallus through a valve. Epiphallus about 0.25-0.5 length of penis, internally with two pilasters that continue into penis, variously splitting. Penial retractor arising from diaphragm and inserting onto penis/epiphallus junction. Free oviduct comparatively short. Vagina absent. Spermathecal shaft cylindrical, enters basal section of penis. Reservoir voluminous, attending albumen gland.

**DISTRIBUTION.** Cook (Rarotonga), Ellice (Nukufetau), Samoa (Upolu), Tonga (Eua, Vavau), Fiji Islands (Wangava Island; Lau Archipelago: Mango and Thithia Islands); Juan Fernandez Island. About 10 spp.

*Priceconcha* Solem, 1973

Fig. 1178

Solem, 1973: 20. Solem, 1976: 465.

**TYPE SPECIES** — *Priceconcha tuvuthaensis* Solem 1973; OD.

Shell trochoid, conic, thin, translucent, of 7-7.5 flattened whorls. Body whorl

straight, with strong, thread-like keel. Color light-corneous. Embryonic and early post-nuclear whorls practically smooth; only on last two whorls there are remnants of microreticulation between somewhat stronger radial wrinkles. Aperture rather narrow, subrectangular, strongly flattened laterally below periphery, markedly oblique. Parietal lamellae 5, with 10-11 accessory traces, extending for more than 1 whorl posteriorly. Columellar lamellae 2, with 2 accessory traces. Palatal plicae 5, with 4-5 accessory traces. All major elements of armature beaded above. Umbilicus wide, perspective, with margins sharply rounded. Height 2.14 (holotype), diam. 4.05-4.54 mm (2.14 × 4.05 mm).

Rectal arm of kidney reduced in prominence. Secondary ureter completed only at upper portion.

Hermaphroditic duct not convoluted, entering laterally near base of very elongated carrefour. Talon rather long, tapering. Vas deferens very long, with highly convoluted mid portion, entering epiphallus through a simple valve. Epiphallus quite

thick, internally with a pair of high, lamellar, rather complex pilasters that continue through penis to atrium, but decrease rapidly in height. Penial retractor arising on diaphragm, inserting on penis/epiphallus junction. Free oviduct very long. Spermathecal shaft very long, slender, cylindrical, entering basal section of penis; reservoir poorly defined, very slender, elongated.

DISTRIBUTION. Fiji (Lau Archipelago: Tuvutha Island). 1 sp.

### *Zyzyxdonta* Solem, 1976

Fig. 1179

Solem, 1976: 466.

TYPE SPECIES — *Zyzyxdonta alata* Solem, 1976; OD.

Shell lens-shaped, thin, of 4.5-5 rather loosely coiled whorls; last whorl straight. Body whorl strongly keeled at periphery, with distinct subperipheral sulcus. Apex flat. Embryonic whorls finely radially ribbed. Postapical whorls with widely spaced radial ribs that protruded on shell periphery into hollow, wing-like structures at keel; between major ribs there are fine radial riblets. Aperture suquadangular, somewhat oblique. Parietal lamellae 3; columellar lamella 1, slanting downwards; palatal plicae 3. Parietal and palatal elements long, with beaded edges. Umbilicus wide, perspective. Height 1.65 (holotype), diam. 3.62-4.34 mm.

DISTRIBUTION. Fiji Islands (Lau Archipelago, Yangasa cluster, Navutu-i-Loma). 1 sp.

### *Aaadonta* Solem, 1976

Fig. 1180

Solem, 1976: 467

TYPE SPECIES — *Endodonta constricta* Semper, 1874; OD.

Shell thickened lens-shaped to nearly globose, of 4.5-6.5 tightly coiled, convex whorls. Spire usually markedly elevated (flat in a single species). Body whorl with protruded keel (in one species absent). Major elements of radial sculpture absent both on embryonic and later whorls. Nuclear whorls with about 20 fine, squiggly spiral cords, secondary radial irregularities near end of embryonic growth. Postembryonic sculpture of fine radial riblets with variously

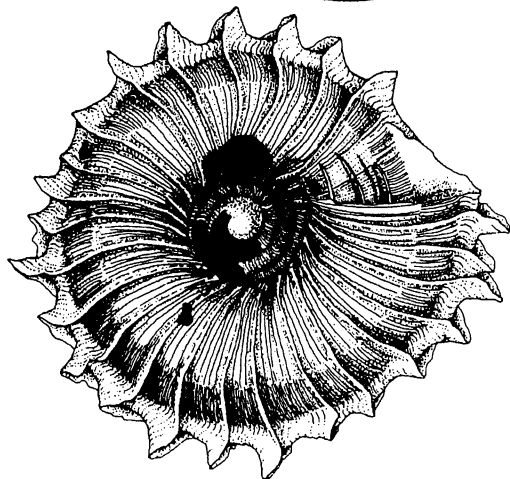
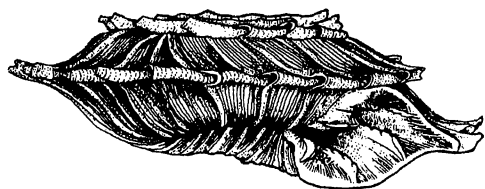


Fig. 1179 *Zyzyxdonta alata* Solem, 1976.  
After Solem, 1976.

prominent lateral beads arranged in spiral series that represent continuations of apical spirals and appear as secondary spiral cords. Aperture of irregular form because of peripheral protrusion, moderately oblique. Parietal lamellae 3 or (rarely) 2, beaded above, sometimes with a single accessory trace. Columellar lamella usually 1, rarely 2 or none, lying parallel to plane of coiling or slightly declined. Palatal plicae 3-5, with strongly beaded edges; accessory traces sometimes present. Umbilicus usually very narrow to closed (in two species secondarily widened). Height 1.59-3.31, diam. 2.68-5.60 mm.

Kidney with very short rectal arm. Secondary ureter incomplete.

Hermaphroditic duct convoluted for 1/3 of length, entering basal portion of talon. Latter elongated with slightly to moderately bulbous apex and tapered shaft. Vas deferens entering epiphallus through a papillate valve. Internally epiphallus with 2 pilasters that variously expanded, split or fade out in penis. Penial retractor originating from diaphragm, inserting on penis/epiphallus junction. Free oviduct long. Atrium very long.

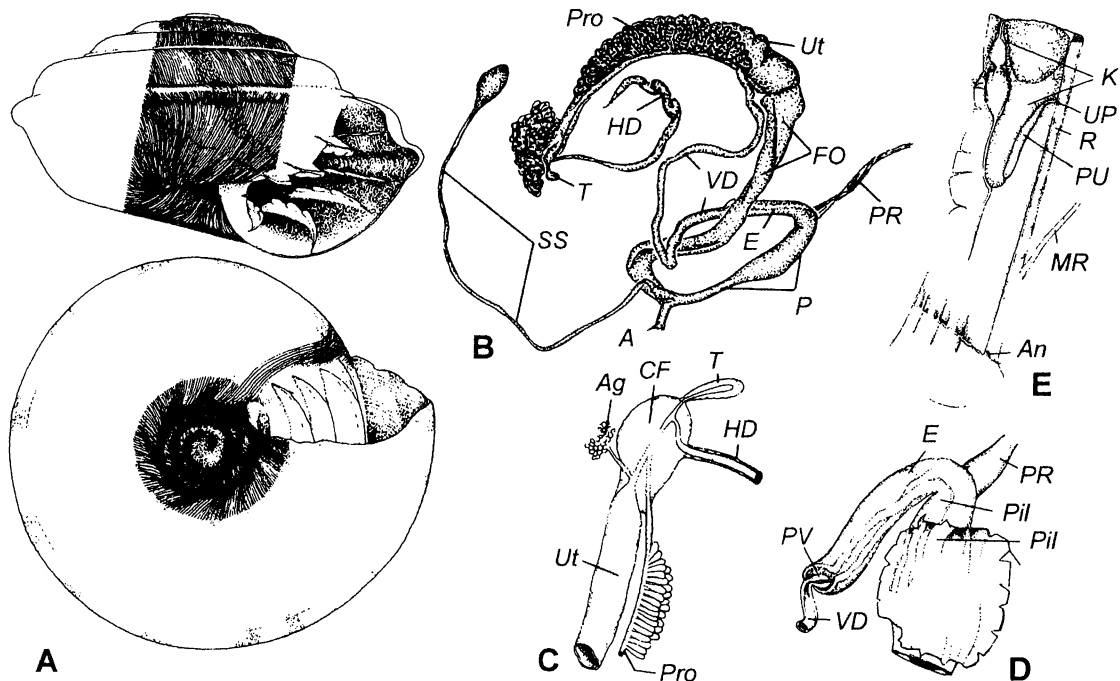


Fig. 1180. *Aaadonta constricta constricta* (Semper, 1874).

A — shell. B — reproductive tract. C — talon-carrefour complex. D — interior of penis. E — roof of lung cavity. After Solem, 1976. An — anus. MR — mantle retractor. PV — papillate valve. UP — ureter pore.

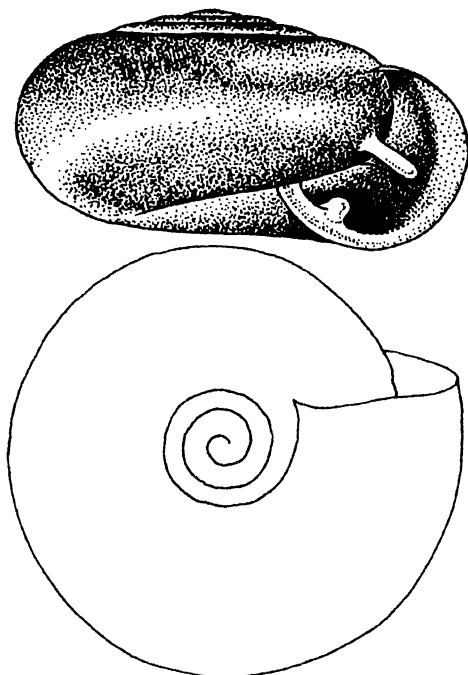


Fig. 1181 *Afrodonta bilamellaris* Melvill et Ponsonby, 1908.  
Ntimbankulu, Mid-Illovo, S Africa. ? Syn-  
type. Phil. No. 47298.

Spermathecal stalk shifted to basal portion of penis.

DISTRIBUTION. Palau Islands (Angaur, Peleliu, Koror, Ngemelis and Babelthaupt Islands). 9 spp., subsp. & forms.

*Afrodonta* Melvill et Ponsonby, 1908  
Fig. 1181

Melvill & Ponsonby, 1908: 133. Solem, 1970a: 348.

TYPE SPECIES — *Afrodonta bilamellaris* Melvill et Ponsonby, 1908; SD Burnup, 1912.

Shell depressed, thin, silky glossy, of 4-5 moderately convex whorls. Last whorl generally laterally compressed and strongly rounded above. Apex slightly to moderately swollen. Color uniformly light-corneous to brown. Embryonic whorls with or without radial wrinkles; subsequent whorls with very fine radial ribs, often not significantly larger than microradial riblets. Aperture rounded, rather narrow, with various tuber-

cles, calluses, and lamellae; presence of 1 or 2 entering parietal lamellae is characteristic. Umbilicus profound, narrowly to broadly open. Height 0.60-1.00, diam. 1.20-1.97 mm (0.78 × 1.60 mm).

Jaw of narrow plates set side by side.

DISTRIBUTION. Republic of South Africa; Mozambique (1 sp.), Kenya (1 sp.). 14 spp. & sub spp.

REMARK. B. Rensch (1932: 122) described a monotypical genus *Anaglyphula* from Flores Island (Indonesia), with the new species *cancellata*, and included it in the family Valloniidae. Later Zilch (1959: 216) transferred this genus to Endodontidae (Endodontinae). However, a peculiar sculpture in combination with shape, solid walls and thickened peristome of the shell made me doubt that this genus belongs to Pulmonata. Recently Maassen (2000: 139) described a new species of *Anaglyphula* from Sumatra (*A. minutissima*) and referred the genus to the family Assimineidae. I think that Maassen's decision is correct, and exclude *Anaglyphula* from consideration in this book.

## TRACHYCYSTINAE Schileyko, 1986

Schileyko, 1986: 195.

Shell lacking apertural barriers.  
Spermatophores found in penis.

DISTRIBUTION. S, SE and W Africa, Madagascar, Mascarene Islands, St. Helena Island, S. America.

REMARK. Nearly all African taxa described below are usually placed in *Trachycystis* as subgenera. Since they differ from each other mostly by essential characters and because I have dissected only two species, at present I prefer to recognize them as genera.

### *Trachycystis* Pilsbry, 1893

Fig. 1182

Pilsbry, 1893 (1892-1893): 136 (*Phasis* subg.; nom. nov. pro *Pella* Martens in Albers, 1860).

— *Pella* Martens in Albers, 1860: 84 [nom. praeocc., non Stephens, 1832 (Coleoptera); *Helix* subg.; t.-sp. *Helix bisculpta* Benson, 1851; OD].

TYPE SPECIES — *Helix bisculpta* Benson, 1851; OD.

Shell subglobose to depressed, thin, sometimes shining and transparent, of 4-5 rather to moderately convex, often slightly shouldered whorls. Color brown to yellowish-corneous. Embryonic whorls with distinct spiral cordlets, sometimes minutely pitted. Postnuclear sculpture of thin, regular ribs and distant spiral striae crossing ribs. Aperture rounded to subcircular, with simple margins. Umbilicus narrow or absent. Height 3.8-9.2, diam. 5.3-14.0 mm (4.6 × 6.4 mm).

Foot long, narrow, with a prominent serrated keel running along top of posterior end. Caudal foss wanting.

Jaw vertically folded.

Right ommatophoran retractor passes through peni-oviducal angle.

Talon hidden. Spermoviduct unusually short. Vas deferens enters epiphallus terminally. Epiphallus consisting of proximal enlarged (subglobular) and short, narrow distal portions. Proximal portion internally with numerous, very high axial folds and central pilaster of complex shape on cross section; in narrow distal portion only central pilaster remains. Penis internally with 2 longitudinal pilasters (major and minor) and glandular pad on which a spermatophore situated. When spermatophore filled with sperm mass, its head (apex) entire; if spermatophore empty, its head ruptured, destructed. Insertion of penial retractor extending from upper end of penis for a short distance down one side. Free oviduct of moderate length, slender. Vagina very short. Spermathecal stalk not enlarged basally, (rather) long.

DISTRIBUTION. S Africa (SW Cape Province). 7 spp.

REMARK. Actually what I designate here as "spermatophore" is not homologous to spermatophores of many other Stylomatophora since it is formed in penis (not in flagellum or epiphallus) and not transferred to a partner during copulation. I am planning to discuss this problem in the final part of this book.

### *Reticulapex* Emberton et Pearce, 2000

Fig. 1183

Emberton & Pearce, 2000: 250.

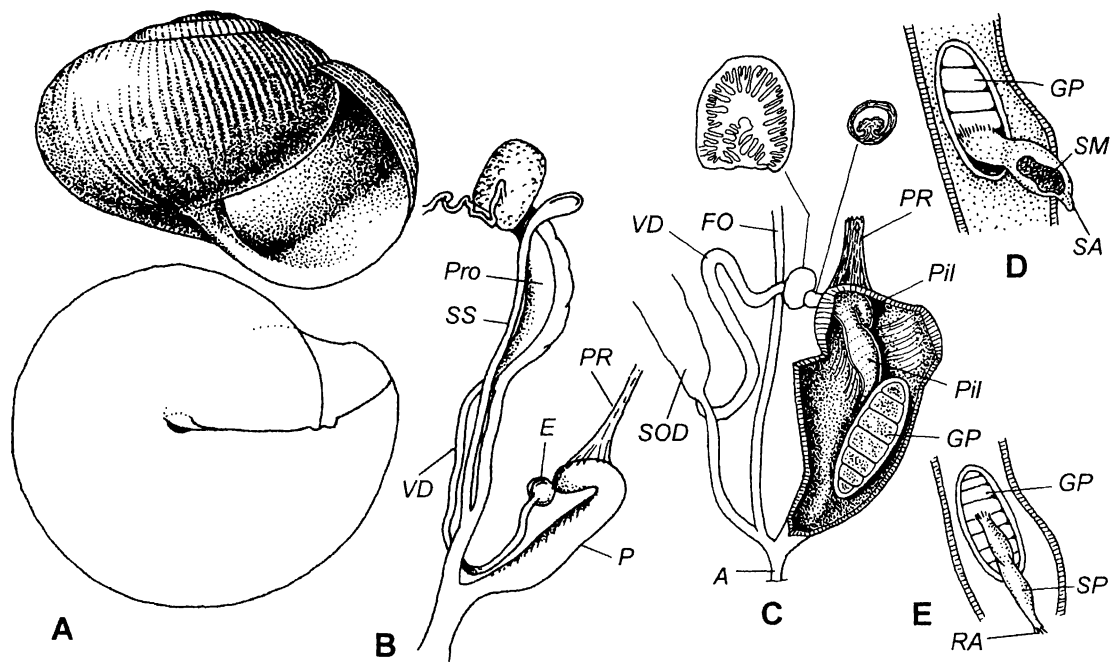


Fig. 1182. A, B — *Trachycystis bisculpta* (Benson, 1851).

A — shell: "Simons T.C. of G[ood] Hope" Phil. No. 1082. B — reproductive tract. After Watson, 1934. C, D, E — ! *Trachycystis leucocarina* Sirgel, 1980. C — interior of penis and cross sections through enlarged proximal and narrow distal sections of epiphallus. D — penial pad with spermatophore containing sperm mass. E — penial pad with spermatophore not containing sperm mass. After Sirgel, 1980. GP — glandular pad in penis. RA — ruptured apex of spermatophore. SA — apex of spermatophore. SM — sperm mass.

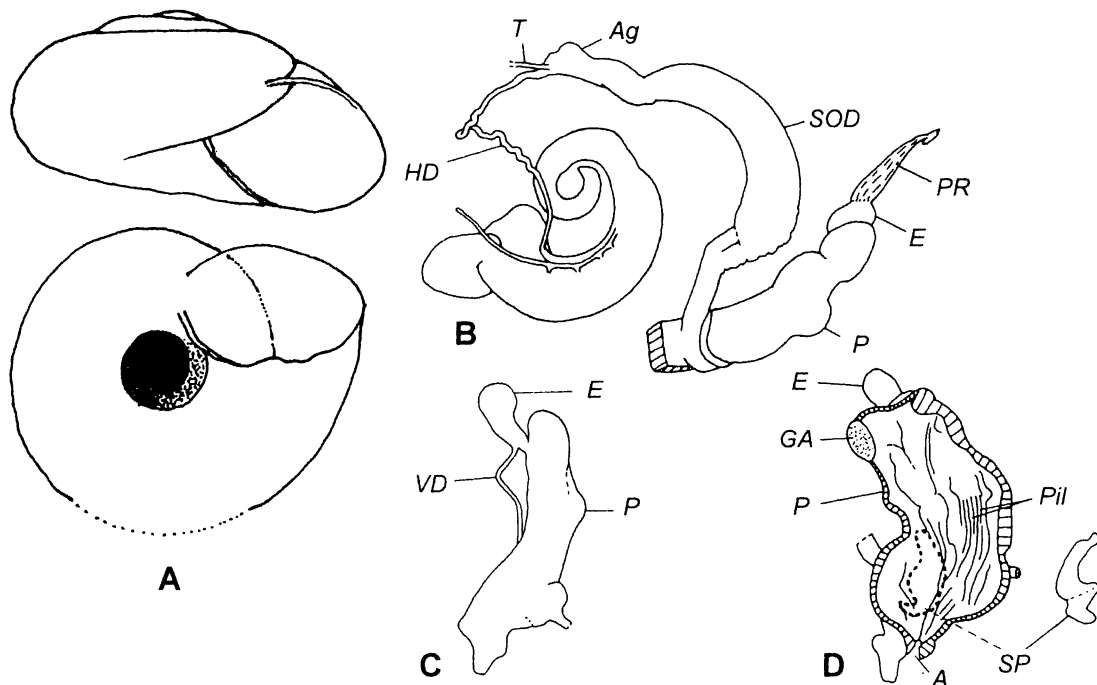


Fig. 1183. *Reticulapex villosus* Emberton et Pierce, 2000.

A — shell. B — reproductive tract. C — penis from other side. D — interior of penis and extracted spermatophore. After Emberton & Pierce, 2000. GA — glandular area.



TYPE SPECIES — *Reticulapex villosus* Emberton et Pierce, 2000; OD.

Shell flattened to subglobose, thin, of 3.5-5.5 convex whorls. Last whorl straight, rounded to slightly angular at periphery. Color yellow-brown to brown-red, sometimes with whitish flammulations or blotches. Embryonic sculpture obliquely cross-hatched. Postapical whorls with not strong radial ribs; rib periostracum without ornamentation or locally extended into hairs. Spiral sculpture absent or restricted to a few grooves below periphery of body whorl. Aperture ovate to subcircular, slightly to moderately oblique, with simple, nonreflexed margins. Height 2.2-10.2, diam. 3.3-18.1 mm.

Ovotestis of few clumps of acini. Hermaphroditic duct only slightly coiled. Talon extremely long, slender, generally free of albumen gland. Vas deferens slender throughout, enters epiphallus basally, near penis/epiphallus junction. Epiphallus, a bulbous sac arising subterminally from apical bulb of penis; epiphallar bulb lying alongside, and tightly adherent to, apical penial swelling. Penis thick, slightly bulbous apically, its inner surface consisting of various combinations of smooth (rarely pustulose), soft bulges, flaps, pilasters, and ridges. Spermatophore less than 3 times as long as wide, tapered, spirally coiled slightly; attaches to basal part of penis. Penial retractor attached to epiphallar bulb subapically. Free oviduct rather long. Vagina very short. Spermathecal stalk slender along its entire length.

DISTRIBUTION. Madagascar. 16 spp.

REMARK. Emberton and Pearce (2000) attributed this genus to Charopidae, together with *Trachycystis* s. lat. Until a thorough revision of Endodontidae and Charopidae I prefer to place both taxa in Endodontidae, because their anatomical characters (in particular, the number of ovotestis clumps), as far as they are known, correspond better to the diagnosis of Endodontidae given above.

*Lyrocystis* H. Watson, 1934  
Fig. 1184

Watson H. 1934: 170 (*Trachycystis* subg.).

TYPE SPECIES — *Helix cosmia* L. Pfeiffer, 1852; OD.

Shell depressed (sub)globose to depres-

sed-conic, thin, fragile, of about 5 flattened whorls. Last whorl angulated at periphery. Color (light) corneous. Embryonic whorls with crowded, pitted spiral striae crossed by very fine radial wrinklets on 1st whorl. Later whorls with oblique, variously developed riblets and (often) delicate spiral striae. Aperture lunate, moderately oblique. Umbilicus narrow. Height 2.6-6.8, diam. 4.6-10.1 mm (5.4 × 9.7 mm).

Posterior end of cephalopodium rounded above, not keeled.

Right ommatophoran retractor passes through peni-oviducal angle.

Hermaphroditic duct uncoiled. Talon not visible. Vas deferens thickened at proximal portion, then narrowed and entering epiphallus terminally. Penis bulky, with a caecum to which penial retractor attached. Free oviduct and vagina subequal in length, moderately long. Base of spermathecal stalk slightly enlarged; reservoir reaching albumen gland.

DISTRIBUTION. S Africa (Cape Province). 4 spp.

*Liparocystis* H. Watson, 1934  
Fig. 1185

Watson H. 1934: 182 (*Trachycystis* subg.).

TYPE SPECIES — *Zingis delicata* Melvill et Ponsonby, 1895; OD.

Shell depressed-globose, thin, glossy, translucent, of 5 nearly flat whorls. Color reddish-brown. Embryonic whorls (2) practically smooth, except for weak microscopic radial wrinklets, which gradually become stronger and crossed on later whorls by crowded spiral striae. Aperture lunate, slightly oblique, columellar margin oblique, concave, thickened but not reflexed. Umbilicus closed. Height 9.7-11.5, diam. 16-17 mm (11.2 × 17.0 mm).

Posterior end of cephalopodium laterally compressed but not keeled.

Right ommatophoran retractor passes through peni-oviducal angle.

Jaw thin, with weak vertical folds.

Vas deferens evenly cylindrical throughout. Epiphallus moderately long, entering penis laterally at some distance from its upper end. Beyond entrance of epiphallus penis continued in form of a very short caecum, directed laterally, with short, stout

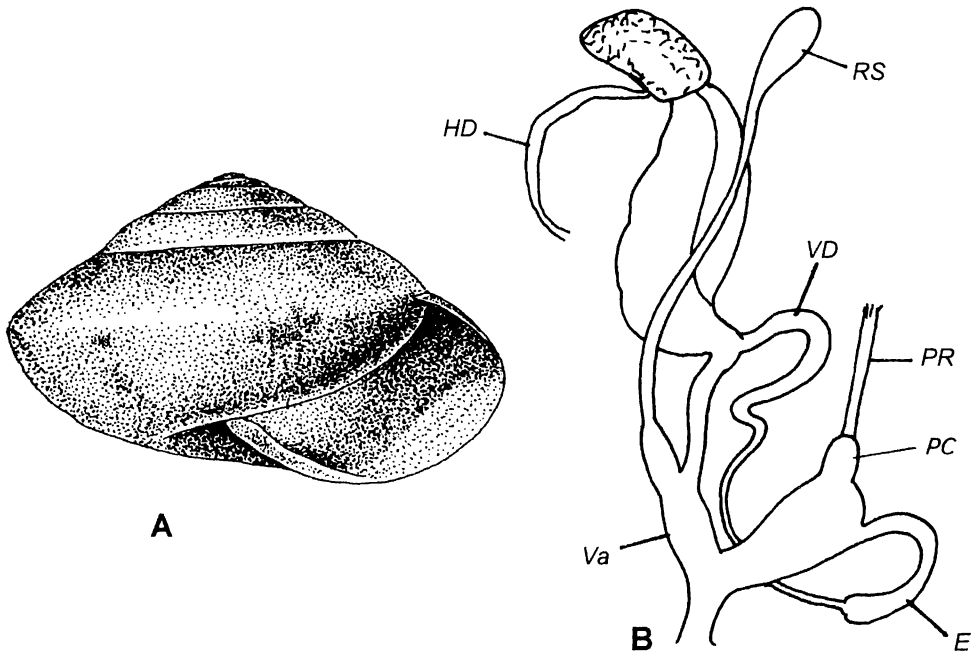


Fig. 1184. *Lyrocystis cosmia* (L. Pfeiffer, 1852).  
 A — shell: Tharfield, S Africa. Senck. No. 158304. B — reproductive tract. After Watson, 1934.

penial retractor attached to its side. Vagina broad posteriorly, contrasting strongly with very narrow, sinuous free oviduct. Spermathecal stalk enlarged basally.

DISTRIBUTION. S Africa (Cape Province, Knysna District). 1 sp.

***Chalcocystis* H. Watson, 1934**  
 Fig. 1186

Watson H. 1934: 169 (*Trachycystis* subg.).

TYPE SPECIES — *Helix aenea* Krauss, 1848; OD.

Shell inflated, depressed-subglobose, thin, of 4-5 moderately convex whorls. Last whorl evenly rounded at periphery. Color corneous to whitish. Embryonic whorls pitted, sometimes with traces of rather coarse spiral striae. Later whorls with thin, rather closely set major radial ribs and minor riblets in intervals; dense, fine spiral striation also present. Aperture ample, moderately oblique, with simple margins. Umbili-

cus very narrow. Height 5.0-8.5 diam. 7-12 mm (8.3 × 11.0 mm).

Hind end of foot either with a rather prominent serrated keel or keel relatively low and inconspicuous. Caudal foss absent.

Jaw narrow, with very weak, scarcely visible, vertical ribs.

Right ommatophoran retractor passes through peni-oviducal angle.

Vas deferens thin, entering elongated-clavate epiphallus apically. Epiphallus internally with 1 axial pilaster; inserting on middle of penis through a wide pore surrounded by circular thickening. Inner surface of distal part of penis with 1 strong longitudinal pilaster bearing numerous transverse grooves; upward this pilaster branched intensively, branches run to lumen of penial caecum. Penial retractor attached to caecum apically. Free oviduct slender, rather long, somewhat enlarged in distal part. Vagina short, greatly swollen. Spermathecal stalk long, strongly expanded basally; reservoir small, globose.

DISTRIBUTION. S Africa (Cape Province, Natal, Zululand to Delagoa Bay). 3 spp.

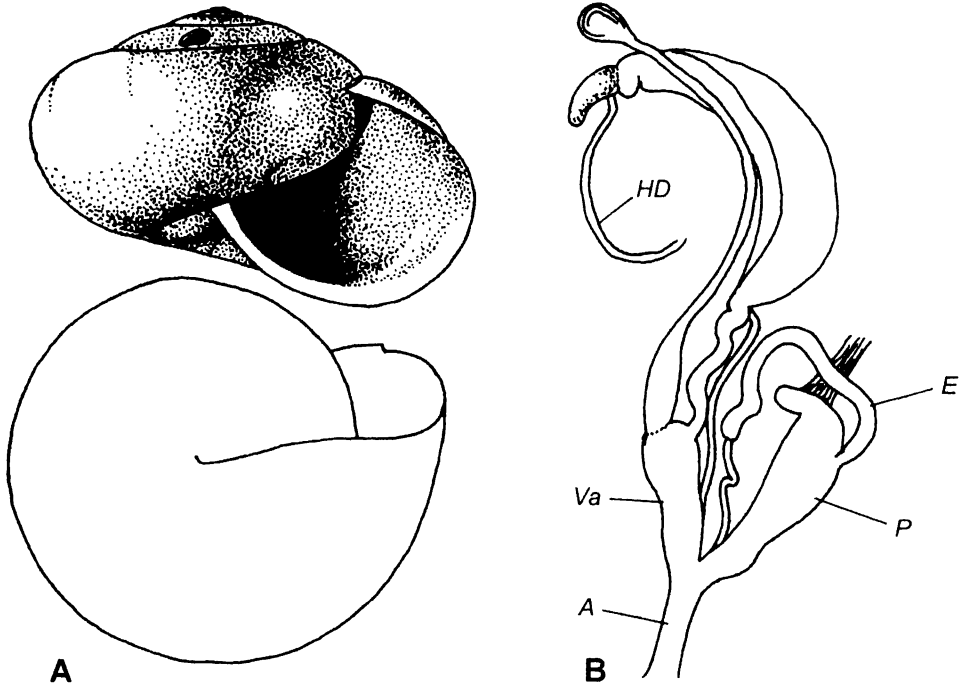


Fig. 1185. *Liparocystis delicata* (Melvill et Ponsonby, 1895).  
 A — shell: Deepwalls, Knysna, Cape Prov., S Africa. Leiden. B — reproductive tract. After H. Watson, 1934.

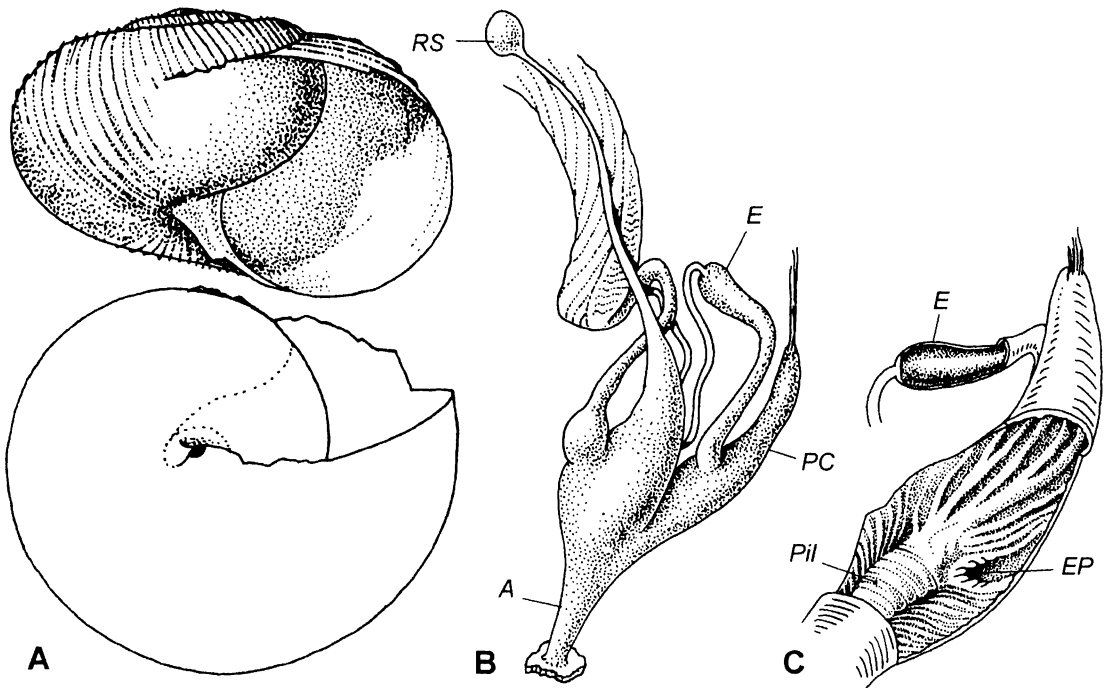


Fig. 1186. *Chalcocystis aenea* (Krauss, 1848).  
 Dune forest, E shore of Lake Sibayi, Zululand, April 13, 1966. A — shell. B — reproductive tract. C — interior of penis. Leiden.

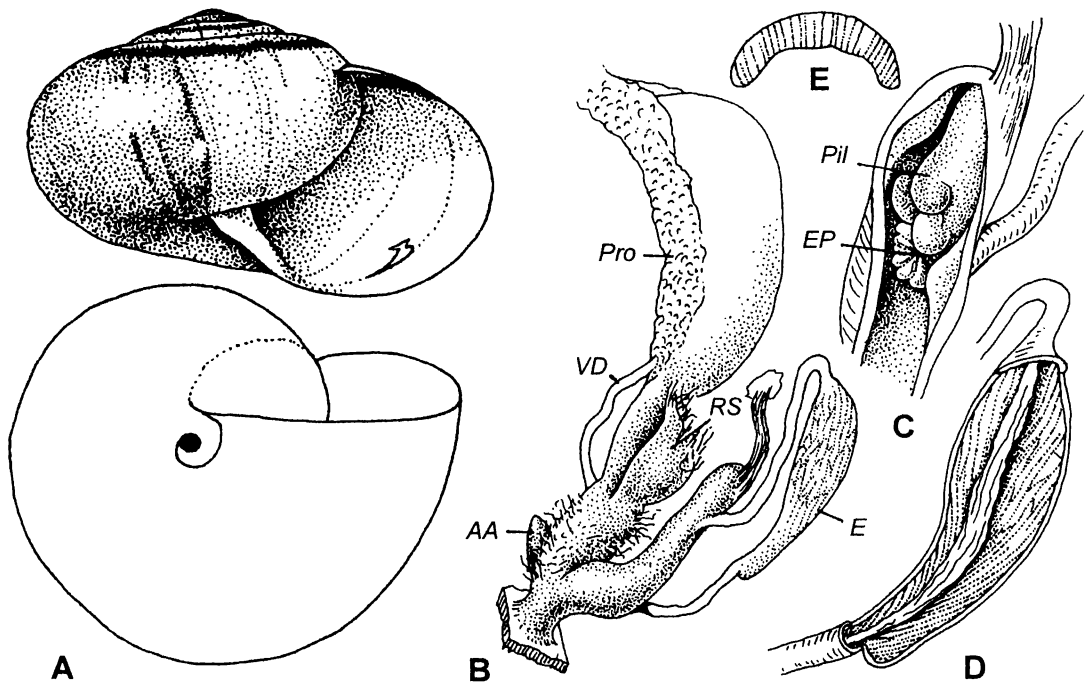


Fig. 1187 *Phortion menkeana* (L. Pfeiffer, 1842). Nuweberg Forest Station near Grabouw, Cape Province, S Africa. A — shell. B — reproductive tract. C — interior of proximal part of penis and caecum. D — interior of proximal swollen section of epiphallus. E — jaw. Leiden.

*Phortion* Preston, 1910  
Fig. 1187

Preston, 1910: 531 (nom. nov. pro *Phasis* Albers, 1850).

— *Phasis* Albers, 1850: 92 (nom. praeocc., non Hübner, 1818; *Helix* subg.; t.-sp. *Helix menkeana* L. Pfeiffer, 1842; monotypy).

Watson H. 1934: 180.

TYPE SPECIES — *Helix menkeana* L. Pfeiffer, 1842; OD.

Shell depressed-globose, thin, dull or silky glossy, somewhat translucent, of 4-5 moderately convex whorls. Last whorl evenly rounded at periphery. Color white or buff, uniform or with 1-6 dark, narrow bands. Embryonic whorls not mamillate, gradually developing low radial ribs and microscopic spiral striae. Postnuclear sculpture of radial striae and ribs of varying strength and coarse spiral lines. Aperture large, rounded, subvertical, with sharp, simple margins; columellar margin dilated. Um-

bilicus narrowly open. Height 8.5-15.0, diam. 12.0-23.5 mm (12.8 × 22.7 mm).

Posterior end of cephalopodium usually somewhat angular above, without sharp keel.

Right ommatophoran retractor passes through peni-oviducal angle.

Jaw narrow, with narrow vertical smoothed ribs.

Vas deferens enters epiphallus eccentrically. Proximal part of epiphallus greatly expanded, internally with 1 longitudinal pilaster and numerous small folds directed at sharp angle to pilaster; distal part of epiphallus as wide as vas deferens, entering penis laterally at some distance from its summit. Internally upper penial caecum with a fleshy stimulatory pilaster of complex shape; below pilaster there is an epiphallic pore, from which several short plicae radiating. Free oviduct and vagina short, expanded, of about equal length. Lower section of vagina with a short, conic atrial appendix. Spermathecal stalk extraordinary

short, so reservoir nearly sedentary, with apical ligament.

DISTRIBUTION. S Africa (southwestern part of Cape Province from Kapstadt to Knysna District). 7 spp.

*Prositala* Germain, 1915

Fig. 1188

Germain, 1915: 288 (*Sitala* subg.).

TYPE SPECIES — *Sitala* (*Prositala*) *fernandopoensis* Germain, 1915; OD.

Shell high, turbinate, with nearly conic, elevated spire, comparatively solid, of about 6 moderately convex whorls. Last whorl evenly rounded. Color pale-greenish. Embryonic whorls smooth. Later whorls with reticulate sculpture because of crossing of fine radial and spiral striae. Aperture widely lunate, vertical; columellar and adjoining part of basal margin reflexed. Umbilicus narrowly open, cylindrical. Height 3.0-3.5, diam. 3.8-4.5 mm (4.8 × 3.9 mm).

DISTRIBUTION. Tropical Africa (Sierra Leone, Ivory Coast, Cameroon, Uganda, Kenya), Fernando Poó Island. 2 spp.

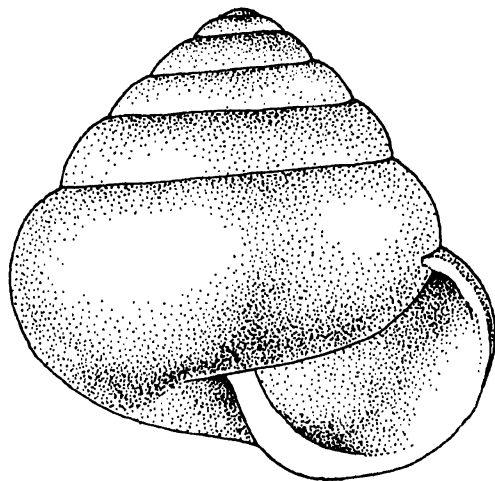


Fig. 1188. *Prositala fernandopoensis* (Germain, 1915).

Bahia de S. Carlos, Fernando Poó Island. Syntype. Paris.

*Psichion* Gude, 1911

Fig. 1189

Gude, 1911 272.

— *Massaihelix* Germain, 1913: 352 (*Halolimnohelix* subg.; t.-sp. *Helix butumbiana* Martens, 1895; OD).

— *Nassaihelix* Fischer-Piette, 1947: 91 (nom. err. pro *Massaihelix* Germain, 1913).

Watson H. 1934: 172.

TYPE SPECIES — *Helix miliaris* Morelet, 1884; OD.

Shell turbinate or subglobose, thin, fragile, glossy, of 4-5.5 rather convex whorls. Last whorl rounded at periphery. Color generally corneous, sometimes with a tendency toward being faint lilac or pinkish-grey. Embryonic whorls minutely pitted or with scarcely visible spiral striae. Postapical sculpture of dense, regular, silky radial striation and very fine spiral striae which seem to be periostacal. Aperture ovate-semilunate, subvertical, with simple margins. Umbilicus narrow, often semicovered. Height 0.4-5.5, diam. 1.2-8.5 mm (3.5 × 4.8 mm).

Posterior end of foot rounded above, not keeled.

Right ommatophoran retractor passes through peni-oviducal angle.

Vas deferens evenly cylindrical, enters epiphallus apically. Epiphallus moderately long, entering side of broadly fusiform penis at some distance from its upper end, to which penial retractor attached. Spermathecal stalk considerably enlarged basally, reservoir attending albumen gland.

DISTRIBUTION. S and SE Africa (Cape Province, Natal, Transvaal, Zimbabwe), Comoro Islands. About 25 spp.

*Chilocystis* H. Watson, 1934

Fig. 1190

Watson H., 1934: 174 (*Trachycystis* subg.).

TYPE SPECIES — *Helix* (*Pella*) *lygaea* Melvill et Ponsonby, 1892; OD.

Shell lenticular to depressed-turbinate, thin to moderately solid, of 5-6 rather con-

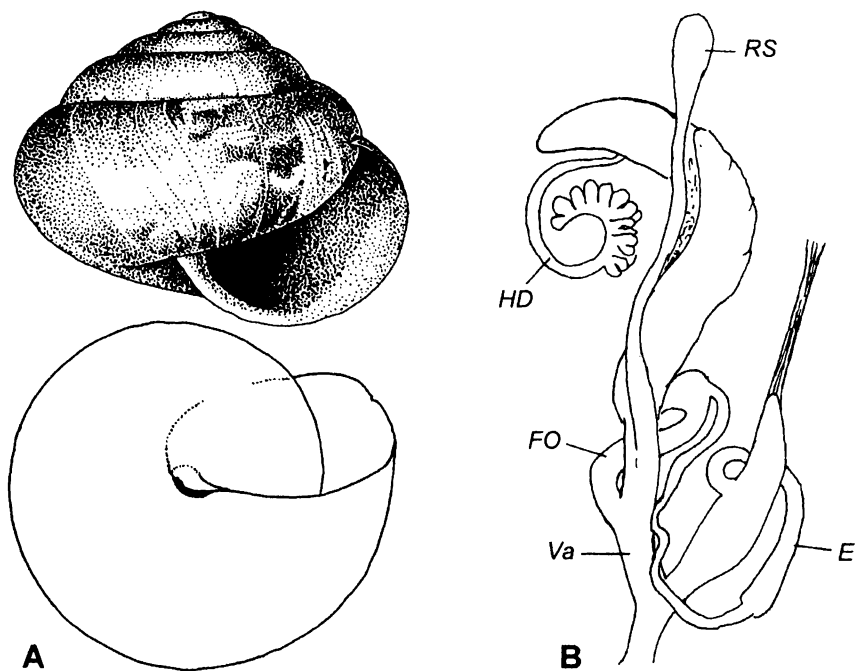


Fig. 1189. A — *Psichion miliaris* (Morelet, 1884). Shell: Mayotte Island, Comoro Islands. Vienna. B — ! *Psichion ectima* (Melvill et Ponsonby, 1899). Reproductive tract. After H. Watson, 1934.

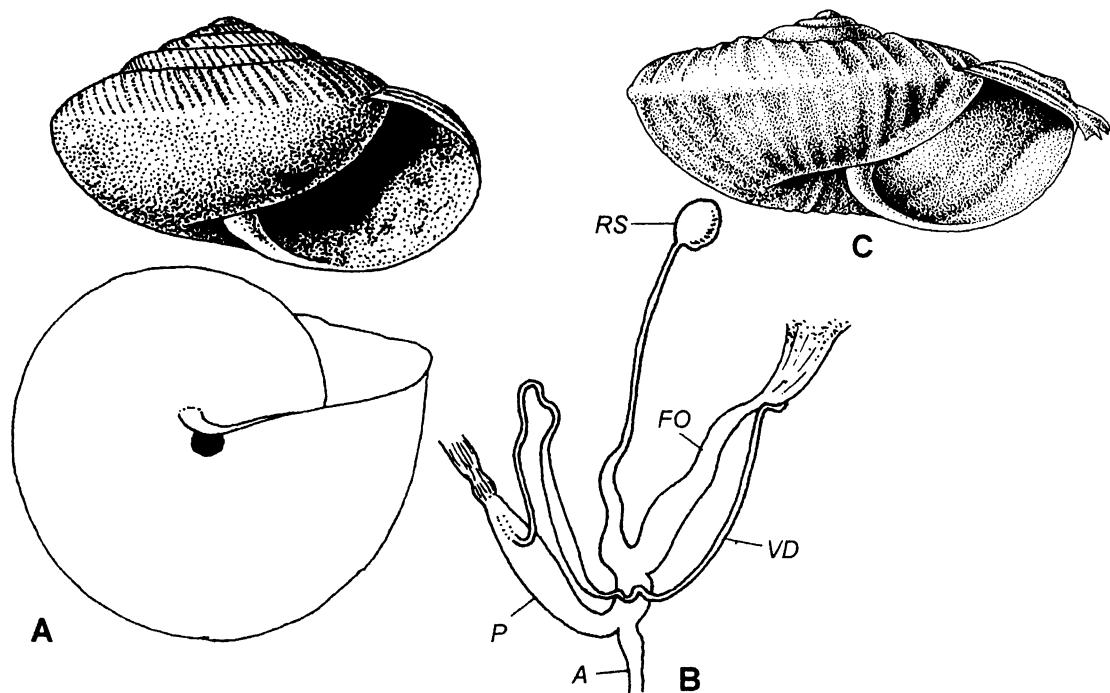


Fig. 1190. A, B — *Chilocystis lygaea* (Melvill et Ponsonby, 1892). A — shell: Natal [S Africa]. "Type" London No. 1905.1.26.11. B — reproductive tract. After Moss & Webb, 1899. C — ! *Chilocystis scolopendra* (Melvill et Ponsonby, 1903). Shell: Port Shepstone, S Africa. Vienna.

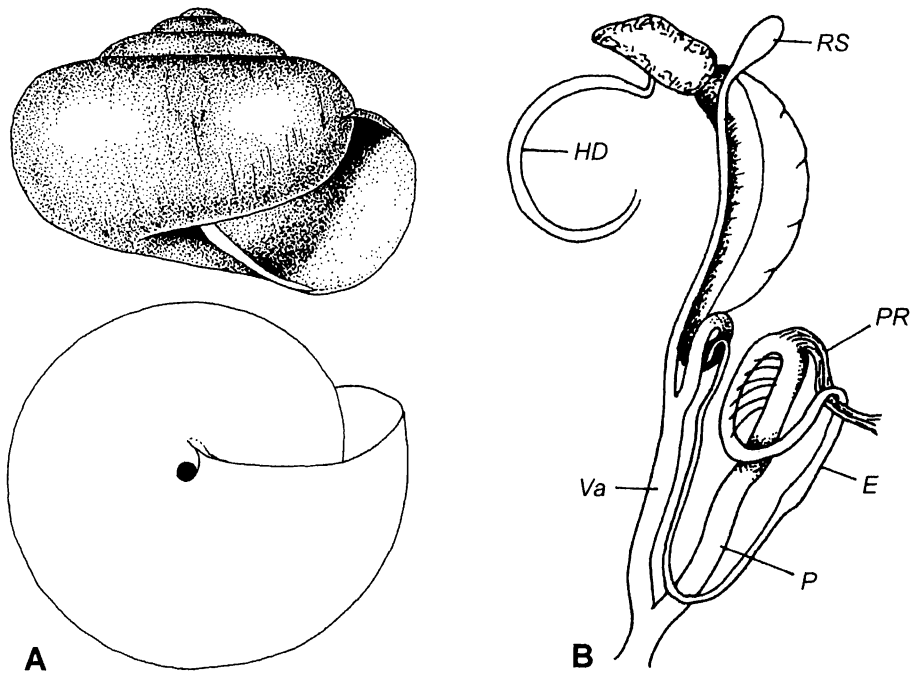


Fig. 1191. *Phaulocystis aulacophora* (Ancey, 1890).

A — shell: Port Elisabeth, S Africa. Senck. No. 158305. B — reproductive tract. After H. Watson, 1934.

vex whorls. Last whorl with rounded angle or keel at periphery. Color light-yellowish or pale corneous. Embryonic whorls nearly smooth (sometimes vaguely pitted). Post-apical sculpture of distinct ribs or fine, rather regular rib-striation above; elements of spiral striation may be present on base. Aperture widely lunate, slightly oblique, with simple margins; columellar margin oblique, dilated. Height 3-8, diam. 6-15 mm (*lygaea*: 6.6 × 10.9 mm; *scolopendra*: 6.3 × 12.8 mm).

Posterior end of cephalopodium rounded above, not keeled; fringe partly crossed at posterior end by a median groove, which passes back from angle formed by junction of two peripodial grooves and constitutes a somewhat vestigial caudal pore.

Right ommatophoran retractor passes through peni-oviducal angle.

Vas deferens forms light swelling near its middle, enters penis subapically. Epiphallus very long, entering side of penis at or a little above middle of its length. Penis swollen in middle, but tapering posteriorly to a blunt point to which penial retractor attached. Free oviduct much longer than vagina.

Atrium rather long, narrow. Spermathecal stalk enlarged toward base.

DISTRIBUTION. S Africa (Cape Province, Natal, Transvaal, Zululand). About 20 spp.

### *Phaulocystis* H. Watson, 1934

Fig. 1191

Watson H., 1934: 171 (*Trachycystis* subg.).

TYPE SPECIES — *Helix aulacophora* Ancey, 1890; OD.

Shell depressed-turbinata to almost flat, thin, of 3.75-5 moderately to very convex whorls. Last whorl evenly rounded at periphery. Color generally (pale) corneous-brown. Embryonic whorls minutely pitted. Postnuclear sculpture of radial lirae and variously developed ribs (sometimes very weak) crossed by fine spiral striae. Aperture widely lunate, only slightly oblique. Columellar margin inclined. Umbilicus very narrow. Height 0.8-5.4, diam. 1.5-7.4 mm (3.3 × 4.3 mm).

Posterior end of cephalopodium rounded above, not keeled.

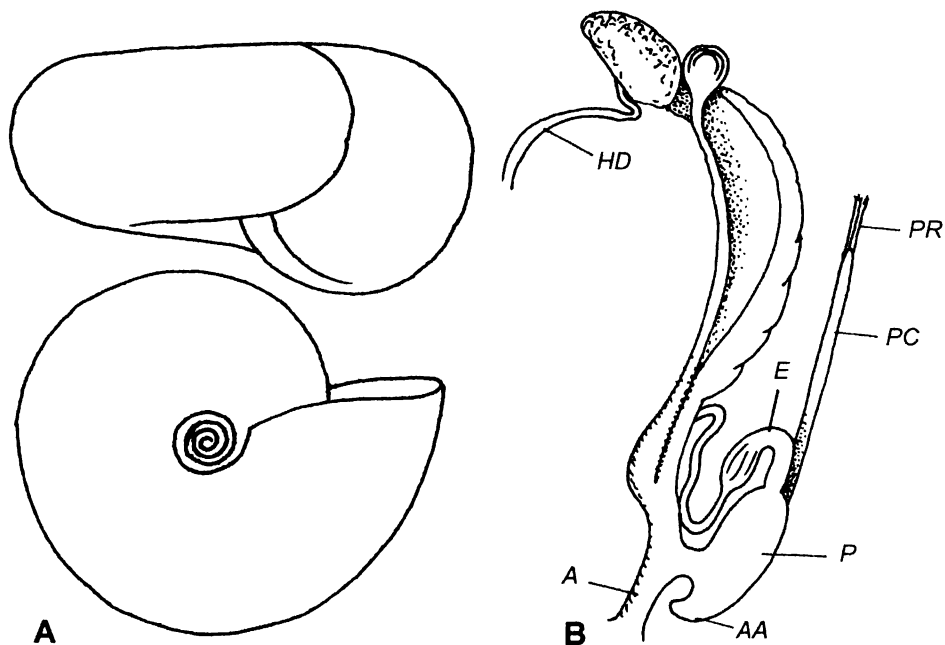


Fig. 1192. *Cyclocystis charybdis* (Benson, 1856).

A — shell. After Zilch, 1959. B — reproductive tract. After H. Watson, 1934.

Right ommatophoran retractor passes through peni-oviducal angle.

Vas deferens evenly cylindrical, enters epiphallus apically. Epiphallus narrow, long or of medium length, entering penis terminally. Penis long, subcylindrical, lacking caecum. Penial retractor attaching to penis at entrance of epiphallus. Free oviduct rather long, sometimes slightly convoluted. Vagina longer than in any other African endodontids. Spermathecal stalk slightly or not enlarged basally.

DISTRIBUTION. S and SE Africa (Cape Province, Great Namaqualand, Zimbabwe, Mozambique). About 35 spp., subspp. & forms.

### *Cyclocystis* H. Watson, 1934

Fig. 1192

Watson H., 1934: 167 (*Trachycystis* subg.).

TYPE SPECIES — *Helix charybdis* Benson, 1856; OD.

Shell discoid to depressed-orbicular,

thin, translucent, of 4.5-5.5 convex whorls. Color reddish- or yellowish-corneous. Embryonic whorls nearly smooth or with numerous fine spiral striae, crossed by well marked radial riblets, except on 1st half whorl. Subsequent whorls delicately radially ribbed. Aperture rounded lunate, with acute margins. Umbilicus moderately narrow but perspective. Height 2.7-5.0, diam. 5.3-8.8 mm.

Foot rounded above, without a keel. Caudal foss wanting.

Right ommatophoran retractor free from peni-oviducal angle.

Vas deferens rather short, entering epiphallus terminally. Epiphallus short, entering upper end of broad lower part of penis, which produced into a pocket or short appendix next to atrium (which is probably a homology of atrial appendix shifted to basal part of penis). Posterior to entrance of epiphallus penis continued in form of a long, narrow caecum, to extremity of which penial retractor attached. Free oviduct rather short, a little longer than



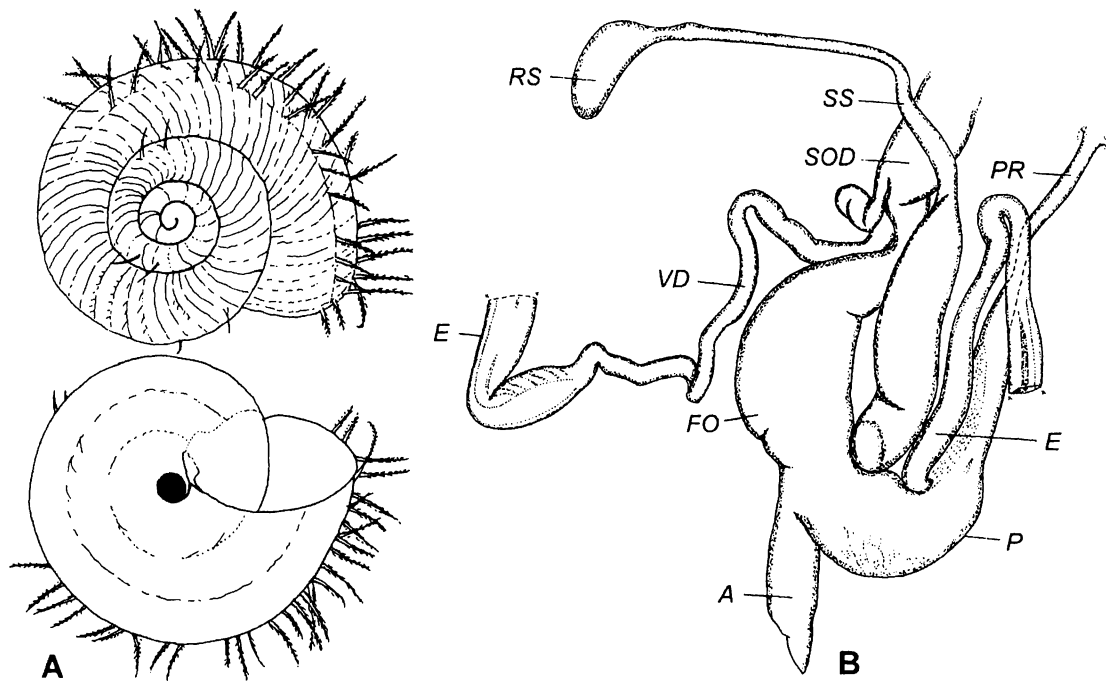


Fig. 1193. *Dendrotrichia sylvicola* van Bruggen & Verdcourt, 1965.  
A — shell. B — reproductive tract. After van Bruggen & Verdcourt, 1965.

vagina. Spermathecal shaft somewhat enlarged basally.

DISTRIBUTION. S Africa (Cape Province). 2 spp.

### *Dendrotrichia*

van Bruggen et Verdcourt, 1965

Fig. 1193

Van Bruggen & Verdcourt, 1965: 219 (*Trachycystis* subg.).

TYPE SPECIES — *Trachycystis (Dendrotrichia) sylvicola* van Bruggen et Verdcourt, 1965; OD.

Shell depressed-subconic, thin, dull, somewhat translucent, of 4-4.5 nearly flat, bluntly shouldered whorls. Color corneous. Embryonic whorls smooth. Later whorls with sharp, curved, oblique riblets; each riblet bears a long, stiff, ramose bristle. Bristles arranged in spiral rows. Interstices with microscopic radial striae, cut by close, strong, regular spiral lines. Aperture widely lunate, oblique, with hardly expanded mar-

gins. Umbilicus narrow. Height 3.1-3.5, diam. 5.0-6.6 mm.

Hind end of cephalopodium rounded above, fringe somewhat swollen at extremity, lacking mucus pore.

Jaw thin, with vertical folds.

Vas deferens passes gradually to epiphallus. Epiphallus long, entering penis near its middle, swollen at opposite side; swelling contains a series of folds. Penis stout basally, narrowed to upper blind end (caecum) to which penial retractor attached. Free oviduct greatly swollen. Vagina practically absent. Spermathecal stalk greatly enlarged basally; reservoir ovate.

DISTRIBUTION. Zimbabwe, Mozambique. 1 sp.

### *Xerocystis* H. Watson, 1934

Fig. 1194

Watson H., 1934: 178 (*Trachycystis* subg.).

TYPE SPECIES — *Helix capensis* L. Pfeiffer, 1841; OD.

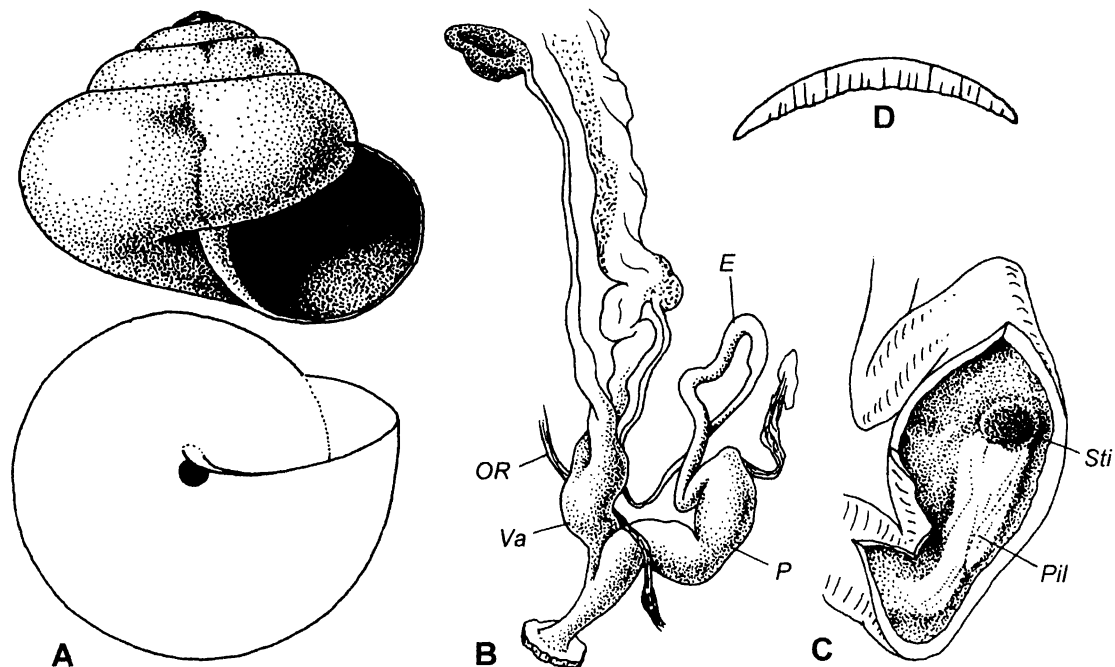


Fig. 1194. *Xerocystis capensis* (L. Pfeiffer, 1841).  
 A — shell: South Meitland River, Cape Prov., S Africa. Moscow No. Lc-25309 (Leiden).  
 B, C, D — Port Nolloth, Cape Prov., S Africa, July 26, 1988. B — reproductive tract.  
 C — interior of penis. D — jaw. Leiden.

Shell generally turbinoid, comparatively solid, of 4.5-6 nearly flat to rather convex whorls. Last whorl rounded or bluntly angulated at periphery. Color whitish, usually with brown bands or spots; apex dark-brown or black. Embryonic whorls smooth. Later whorls with a weak sculpture of radial wrinklets. Aperture subcircular, with simple margins; columellar margin dilated. Umbilicus narrow. Height 4.0-8.2, diam. 5.5-11.1 mm (5.1 × 6.3 mm).

Posterior end of cephalopodium rounded above.

Right ommatophoran retractor passes through peni-oviducal angle.

Jaw thin, narrow, with vertical folds.

Vas deferens evenly slender. Epiphallus moderately long, subcylindrical, passes gradually into penis at sharp angle through a simple pore. Penis swollen, internally with 1 fleshy, irregularly axially folded longitudinal pilaster which ends by a rounded, dark-colored, tuberculiform stimulator. Penial retractor attached to penis/epiphallus junction. Free oviduct comparatively long, vagina markedly shorter. Spermathecal shaft more or less enlarged basally; res-

ervoir ovate, (nearly) attending albumen gland.

DISTRIBUTION. S Africa (maritime area of Cape Province from mouth of Orange River to East London). 5 spp. & forms.

*Propilula* Germain, 1918  
 Fig. 1195

Germain, 1918: 519.

TYPE SPECIES — *Helix cyclaria* Morelet, 1875; monotypy.

Shell much flattened, thin, fragile, translucent, of about 5 rather convex whorls. Last whorl inflated, rounded at periphery. Color white, apex sometimes pinkish. Embryonic whorls nearly smooth to very delicately radially wrinkled. Postapical sculpture of fine, thread-like, widely spaced, regular radial riblets. Aperture ample, rounded, columellar and basal margins shortly reflexed. Umbilicus closed. Height 11-13, diam. 19-23 mm (12.8 × 22.8 mm).

DISTRIBUTION. Mauritius Island. 1 sp. (subfossil).

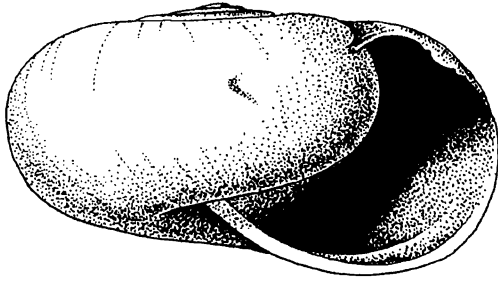


Fig. 1195. *Propilula cyclaria* (Morelet, 1875). Mauritius. Paris.

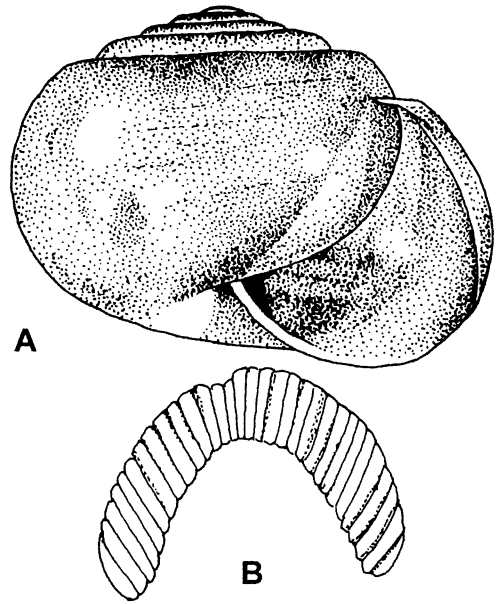


Fig. 1196. A — *Pilula praetumida* (Morelet, 1860). Shell: "Island of Bourbon" [Réunion]. Phil. No. 5570. B — *Pilula praetumida* var. *mahesiana* (Martens, 1898). Jaw. After Wiegmann in Martens & Wiegmann, 1898.

*Pilula* E. Martens, 1898  
Fig. 1196

Martens E. in Martens & Wiegmann, 1898: 16 (*Helix* subg.).

TYPE SPECIES — *Helix praetumida* Morelet, 1860; monotypy.

Shell depressed, subglobose, rather thin, shining, of 4.5-6 convex, distinctly shouldered whorls. Last whorl inflated, widely rounded. Color corneous or brown. Embryonic whorls smooth. Postnuclear sculpture of variously developed spiral cords or striae; radial sculpture very weak. Aperture broadly semilunate, almost vertical, with simple margins; columellar margin oblique. Umbilicus moderately wide to dot-like. Height 3.9-6.5, diam. 5-9 mm (6.4 × 8.2 mm).

Jaw of many compressed vertical plates separated by narrow grooves.

DISTRIBUTION. Réunion Island, Madagascar. 4 spp.

*Helenodiscus* Solem, 1977  
Fig. 1197

Solem, 1977: 523.

TYPE SPECIES — *Patula vernoni* E. Smith, 1892; OD.

Shell lenticular to depressed-discoidal, flattened above, of 6-7 flattened whorls. Last whorl hardly descending in front, rounded or carinated at periphery. Color white with rufous radial rays. Embryonic whorls smoothish. Postembryonic sculpture of radial ribs reduced in prominence. Aperture subrhomboidal, slightly oblique. Parietal wall with 1 or 2 thread-like, fine ridges; columellar and palatal margins without armature. Umbilicus very narrow to almost closed. Height 4, diam. 11.4-12.0 mm.

DISTRIBUTION. Island of Saint Helena. 2 spp. (subfossil).

*Pseudohelienoconcha* Germain, 1932  
Fig. 1198

Germain, 1932: 6 (*Helienoconcha* subg.).

TYPE SPECIES — *Helix spurca* Sowerby, 1844; SD Zilch, 1959.

Shell depressedly turbinata, thin, some-

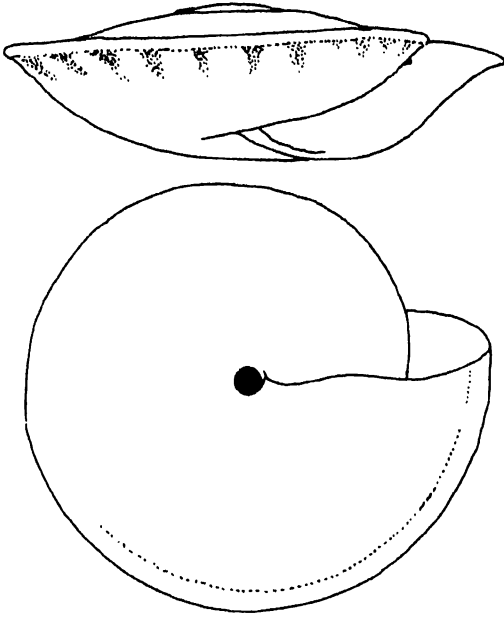


Fig. 1197 *Helenodiscus vernoni* (E. Smith, 1892).  
After Pilsbry, 1893 (1892-1893).

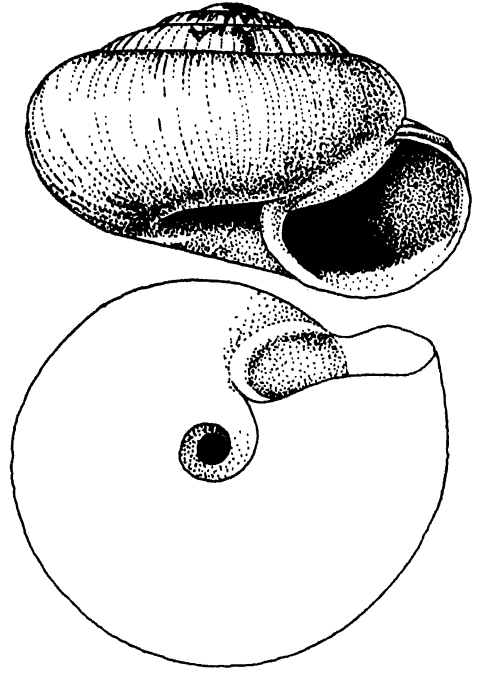


Fig. 1198. *Pseudohelienoconcha spurca* Sowerby, 1844.  
St. Helena. Phil. No. 69771

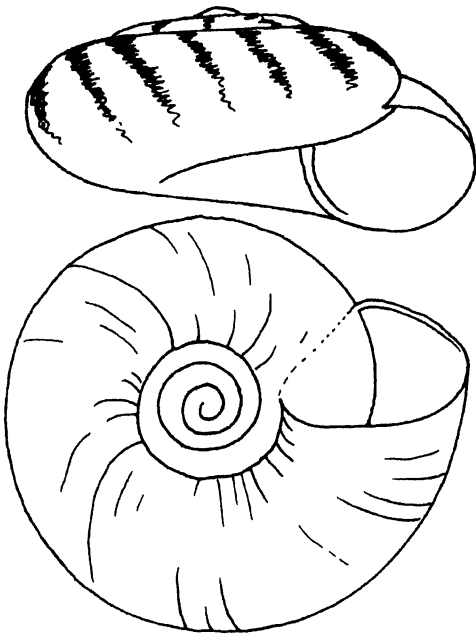


Fig. 1199. *Austrodiscus twomeyi* (Parodiz, 1954).  
After Parodiz, 1954.

what glossy, of 3.5-5.5 moderately convex whorls. Color corneous. Embryonic whorls smooth. Postembryonic whorls with thin radial ribs and a few finer riblets in interstices. Aperture widely semilunate, toothless, only slightly oblique, with simple margins. Parietal callus variously developed. Columellar margin a little concave, shortly reflexed. Umbilicus generally narrow, deep. Height 2.4-3.2, diam. 3.5-5.0 mm (2.9 × 4.6 mm).

DISTRIBUTION. Island of Saint Helena. 4 spp. (extinct).

*Austrodiscus* Parodiz, 1957  
Fig. 1199

Parodiz, 1957: 131 (nom. nov. pro *Araucania* Parodiz, 1954).

— *Araucania* Parodiz, 1954: 17 [nom. praeocc., non Pate, 1946 (Hymenoptera, Sapygidae); t.-sp. *Araucania twomeyi* Parodiz, 1954; OD].

TYPE SPECIES — *Araucania twomeyi* Parodiz, 1954; OD.

Shell depressed, rather thin, of 5.5

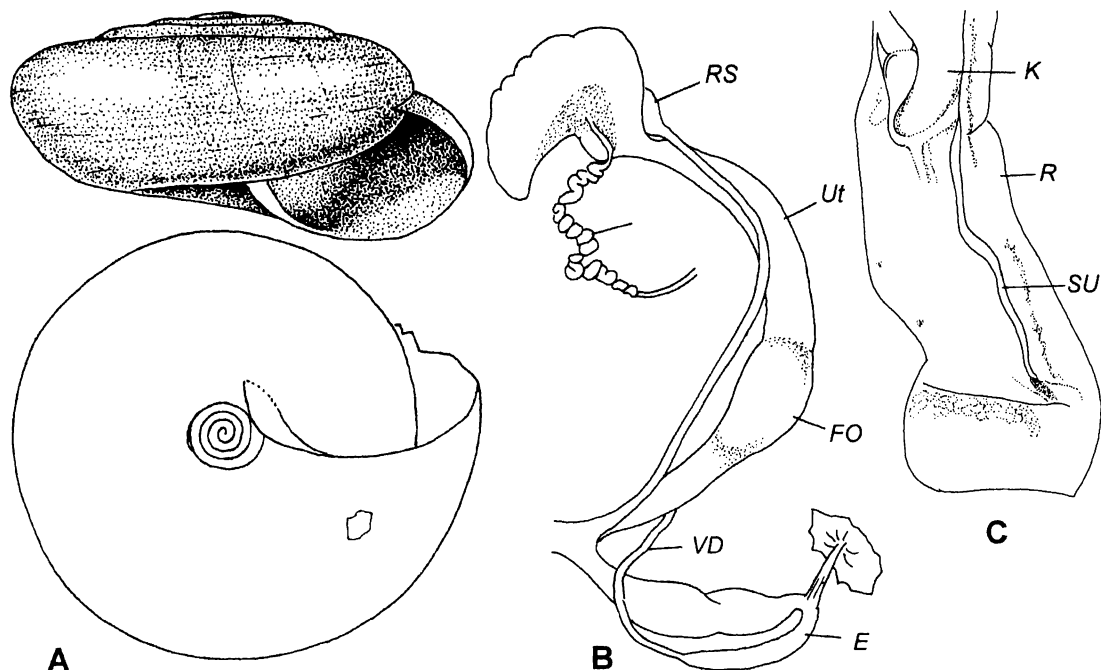


Fig. 1200. A — *Zylchogyra costellata* (Orbigny, 1835).

Shell: Coquimbo, Chile. Basel No. 7358-a. B, C — ! *Zylchogyra leptotera* (Mabille et Rochebrune, 1882). B — reproductive tract. C — roof of lung cavity. After Hylton Scott, 1970. R — rectum.

rather convex whorls. Last whorl straight, rounded at periphery. Coloration of corneous background and obliquely-radial chestnut flammulations. Embryonic whorls with microscopical spiral and radial lines. Post-apical sculpture of fine, irregular, uneven radial wrinklets and delicate, crowded spiral striae. Aperture subcircular, moderately oblique. Umbilicus wide, shallow, perspective. Height 5.8, diam. 14.2 mm (holotype of *A. twomeyi*).

DISTRIBUTION. S Chile. 1 or 2 spp.

### *Zilchogyra* Weyrauch, 1965

Fig. 1200

Weyrauch, 1965: 122.

TYPE SPECIES — *Helix costellata* Orbigny, 1835; OD.

Shell flattened to depressed-conic, thin, translucent, shining, of 4-5 strongly convex whorls. Last whorl straight, rounded at periphery. Color whitish. Embryonic whorls mostly nearly smooth, sometimes with very fine radial and spiral striae. Postapical sculpture of radial riblets; interstices

smooth or with very delicate radial threadlets; microscopic spiral striae may be present. Aperture generally widely semilunate, slightly oblique. Umbilicus moderately wide, perspective. Height 1.2-2.7, diam. 2.5-6.0 mm (2.6 × 5.8 mm).

Kidney triangular, lacking rectal arm. Secondary ureter complete.

Hermaphroditic duct convoluted. Talon not visible. Vas deferens entering short epiphallus apically. Flagellum absent. Penis consisting of 2 chambers separated by circular narrowing. Penial retractor arising on diaphragm, attaching to penis/epiphallus junction. Free oviduct rather long. Vagina practically absent. Spermathecal shaft cylindrical, only slightly expanded basally. Reservoir attending lower section of albumen gland.

DISTRIBUTION. S America. 12-14 spp.

### *Stephadiscus* Hylton Scott, 1981

Fig. 1201

Hylton Scott, 1981: 125.

TYPE SPECIES — *Helix lyrata* Gould, 1846; OD.

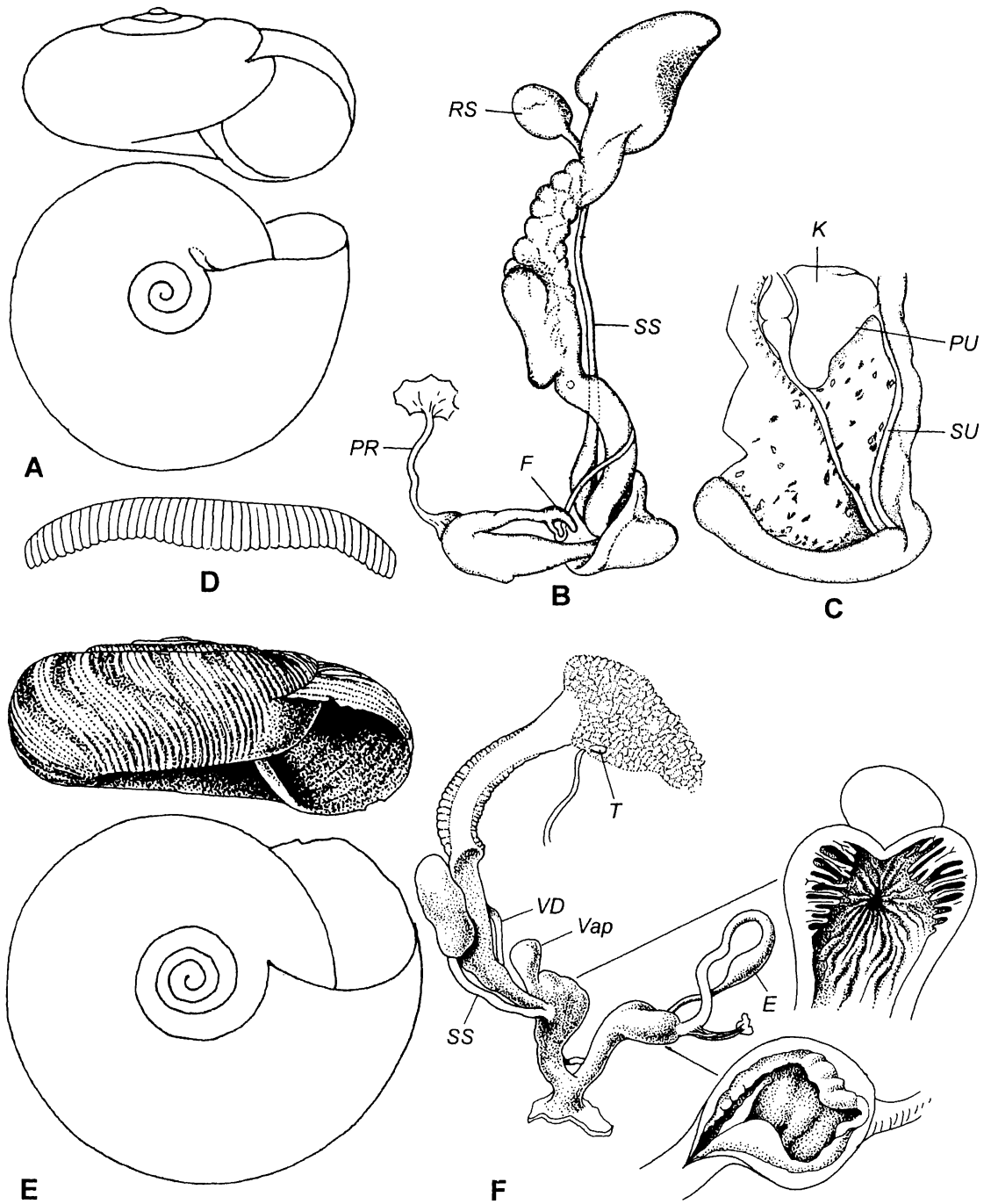


Fig. 1201. A, B, C, D — *Stephadiscus lyratus* (Gould, 1846).

A — shell. B — reproductive tract. C — roof of lung cavity. D — jaw. After Hylton Scott, 1970.

E, F — ! "*Stephadiscus*" *binneyanus* (L. Pfeiffer, 1847). Aysen, Rio Cisnes, Chile, February, 1961. E — shell. F — reproductive tract, interior of penis and vagina. Chicago No. 135428.

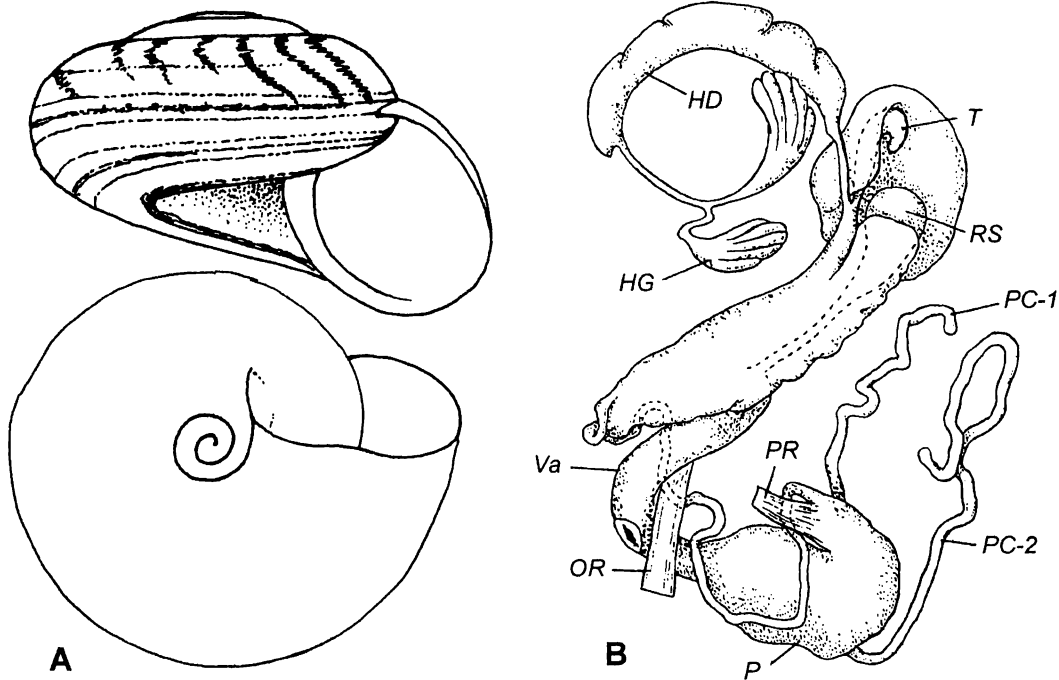


Fig. 1202. ! *Stephanoda quadrata* (Deshayes, 1851).  
A — shell. B — reproductive tract. After Odhner, 1922.

Shell flattened, discoidal, thin, glossy, translucent, of 3-4 convex whorls. Last whorl straight or scarcely descending in front, evenly rounded at periphery. Color corneous or yellowish, monochromatic or with darker flammulations. Embryonic whorls with radial riblets. Later whorls with crowded major ribs, fine minor riblets and fine spiral striae in interstices. Aperture subcircular, subvertical to well oblique, with simple margins. Umbilicus broad, perspective. Height 2.2-6.2, diam. 4.8-19.0 mm (6.1 × 18.6 mm).

Jaw of numerous vertical plates.

Kidney triangular, lacking rectal arm. Secondary ureter complete.

*Stephadiscus lyratus* (Gould, 1846). Vas deferens entering epiphallus laterally. There is a short, tapering flagellum. Epiphallus short. Penis bulky, somewhat clavate. Penial retractor attached to penis/epiphallus junction. Free oviduct long, vagina very short, without swelling, but uterus forms a peculiar sac in distal part. Spermathecal stalk long, somewhat expanded basally.

"*Stephadiscus*" *binneyanus* (L. Pfeiffer, 1847). Ovotestis of several rounded clumps

of many elongated acini. Hermaphroditic duct not convoluted. Talon very short, exposed. Vas deferens free, cylindrical, entering epiphallus apically. Flagellum missing. Epiphallus swollen in proximal part, empties in penis through a simple pore. Penis rather short, internally with 2 strong pilasters. Penial retractor attached to epiphallus at its junction with penis. Free oviduct rather long, vagina markedly shorter. Upper part of vagina greatly swollen, internally with high circular plicae; on this swelling an apical bulb situated. These portions connected by very narrow canal from which strong folds radiating. Spermathecal stalk of various length, entering vaginal swelling side by side with free oviduct.

DISTRIBUTION. Southern part of S America. 12 spp.

See Remark to *Stephanoda*.

*Stephanoda* Martens, 1860

Fig. 1202

Martens in Albers, 1860: 88 (*Helix* subg.).

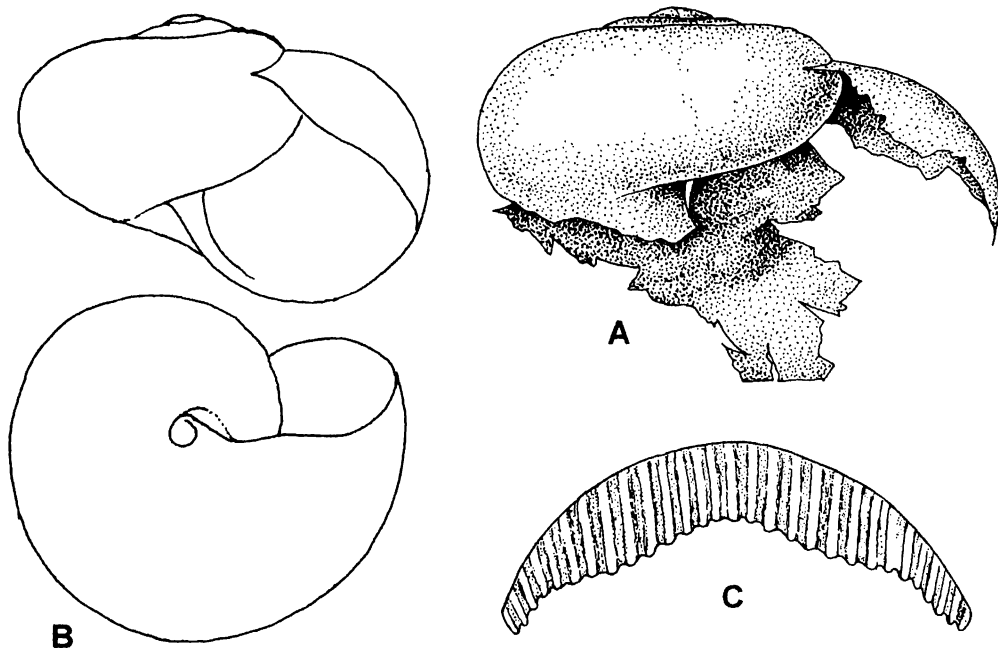


Fig. 1203. *Payenia saxatilis* (Gould, 1846). ]-  
 A, B — shells. A — Orange Harbor, Tierra del Fuego, Argentina. Syntype. Cambridge No. 098972. B — After Hylton Scott, 1970. C — jaw. After Hylton Scott, 1970.

TYPE SPECIES — *Helix dissimilis* Orbigny, 1837; OD.

Shell flattened to almost flat, thin, translucent, of 5-7 convex whorls. Last whorl (flatly) rounded at periphery. Color dull-yellow, with brown-reddish sinuous rays. Embryonic sculpture of fine spiral cords and coarser radial riblets. Postapical whorls have similar sculpture. Aperture ovate, moderately oblique, with simple, fragile margins. Umbilicus widely open. Height 1.5-7.5, diam. 2.5-15.0 mm.

Posterior end of cephalopodium with a mucus pore.

Ovotestis of 2 clumps of long acini, 5-6 in each clump. Hermaphroditic duct not convoluted, at first slender, then strongly expanded, near albumen gland narrowed again. Talon well developed, exposed, curved. Prostate poorly defined. Vas deferens passes beneath ommatophoran retractor; then, after some coils, enters apex of greatly swollen penis. Penial retractor attached at base of vas deferens. Epiphallus absent. Penis with a long, vermiform caecum entering at some distance from base of penial retractor; another caecum of simi-

lar shape attached far more distally, at about half of penis length. Uterus produced upward and downward. Free oviduct extremely short. Vagina rather long. Spermathecal stalk cylindrical, ovate reservoir lies on lower part of albumen gland.

DISTRIBUTION. SW part of S America. 13 spp.

REMARK. Evidently, the structure of reproductive tracts of two illustrated here species of *Stephadiscus* and one species of *Stephanoda* is different enough to place them in at least three separate, not closely related genera. Moreover, the anatomy of *Stephanoda testalba* Hylton Scott, 1970: 285, fig. IV [which has been placed by Fonseca & Thomé (1993a) in the subgenus *Stephadiscus*] also differs from all three mentioned species. However, the taxonomic complex *Stephanoda-Stephadiscus* includes 25 species (Fonseca & Thomé, 1993a) and only a few of them have been investigated anatomically. I have personally managed to dissect only a single species of this complex. Therefore a thorough taxonomical revision of this complex is needed.



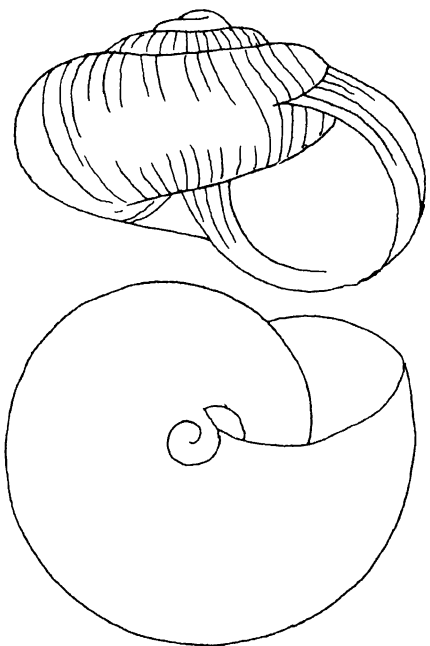


Fig. 1204. *Glabrogyra kuscheli* (Hylton Scott, 1957).  
After Hylton Scott, 1957

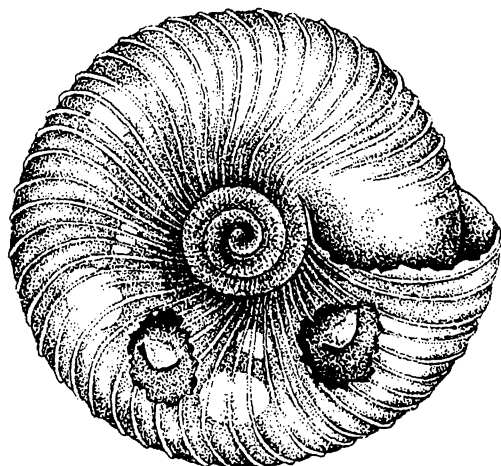


Fig. 1205. *Lilloiconcha tucumana* (Hylton Scott, 1963).  
Umbilical view of immature shell. After Weyrauch, 1965.

### *Payenia*

Rochebrunne et Mabile, 1889

Fig. 1203

Rochebrunne & Mabile, 1889: 18.

TYPE SPECIES — *Helix saxatilis* Gould, 1846; monotypy.

Shell inflated, depressed, very thin, fragile, silky glossy, of 3-3.5 rather convex whorls. Color yellowish-corneous. Embryonic whorls microscopically granulated, post-apical sculpture of vague, very delicate, crowded radial striae. Aperture ovate, large, markedly oblique, with simple margins. Umbilicus narrowly open. Height 3-4, diam. 5.5-7.0 mm (estimated: 3.0 × 5.5 mm).

Jaw with distinct vertical plaits.

DISTRIBUTION. South of S America. 2-3 spp.

*Glabrogyra* Fonseca et Thomé, 1993

Fig. 1204

Fonseca & Thomé, 1993b: 102 (*Trochogyra* subg.).

TYPE SPECIES — *Radiodiscus kuscheli* Hylton Scott, 1957; OD.

Shell flattened-turbinoid, dull, thin, fragile, of 4 rather convex whorls. Last whorl straight, rounded at periphery. Color corneous. Embryonic whorls spirally striated. Subsequent whorls with irregular radial wrinkles. Aperture rounded, with simple margins; columellar margin distinctly expanded. Umbilicus rather narrow, perspective. Height 1.9-2.1, diam. 2.9-3.2 mm.

DISTRIBUTION. Chile. 2 spp.

*Lilloiconcha* Weyrauch, 1965

Fig. 1205

Weyrauch, 1965: 127

TYPE SPECIES — *Austrodiscus superbus tucumanus* Hylton Scott, 1963; OD.

Shell subglobose, thin, of 5.5-6 strongly convex whorls. Last whorl rounded at periphery. Color corneous. Embryonic whorls smooth. Postapical sculpture of radial riblets and very fine threadlets in interstices. Aperture rounded, slightly oblique; in adult

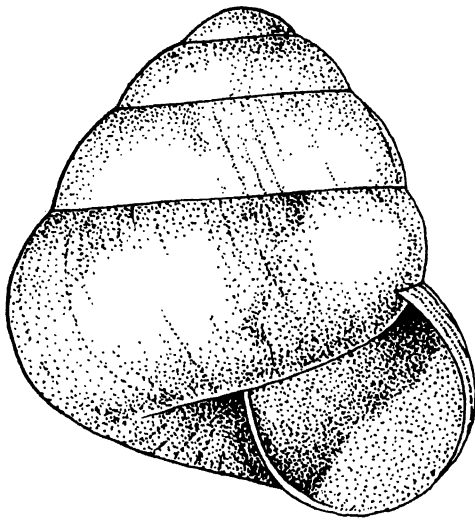


Fig. 1206. *Trochogyra* ex gr. *superba* (Thiele, 1927). Villarrica, Paraguay. Vienna. (Old shell with obsolete sculpture).

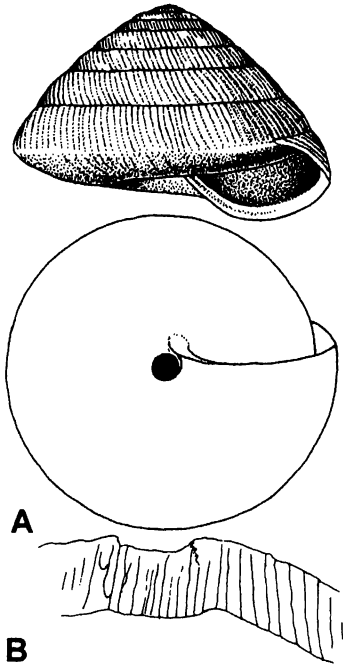


Fig. 1207 A — *Thy-sanota guerini* (L. Pfeiffer, 1842). Shell: Nilgiri, E India. Moscow No. Lc-25310 (Bern No. 1704.234). B — ! *Thy-sanota crinigera* (Benson, 1850). Fragment of jaw. After Godwin-Austen, 1907

shells aperture toothless but in young shells (of 2.5-5.5 whorls) few sets of small, tooth-like tubercles situated on palatal and basal walls. Umbilicus in immature shells rather wide, perspective, in adult shells narrowed, nearly cylindrical. Height 2.4-3.4, diam. 3.0-3.4 mm.

DISTRIBUTION. S America (N Argentina, ? S Bolivia, ? S Brazil). 1 sp.

*Trochogyra* Weyrauch, 1965  
Fig. 1206

Weyrauch, 1965: 126 (*Zilchogyra* subg.).

TYPE SPECIES — *Endodonta superba* Thiele, 1927; OD.

Shell subglobose with elevated spire, very thin, glossy, of 4-6 rather convex whorls. Last whorl straight, rounded at periphery. Color (light) corneous, monocromatic or with darker radial streaks. Embryonic whorls smooth. Postnuclear whorls with variously developed major radial ribs, finer riblets in interstices and microscopic spiral striae. Aperture subcircular. Umbilicus subcylindrical, narrow but perspective. Height 2.5-14.0, diam. 2.5-15.0 mm (2.8 × 2.6 mm).

DISTRIBUTION. Brazil, Paraguay. 5 spp.

THYSANOTINAE  
Godwin-Austen, 1907

Godwin-Austen, 1907: 188.

Shell without barriers in aperture.

Spermatophore, if present, found in epiphallus.

DISTRIBUTION. Hindustan Peninsula, Burma, Ceylon, Taiwan, Japan, Andaman Islands, Sunda Islands, New Guinea.

*Thy-sanota* E. Martens, 1860  
Fig. 1207

Martens in Albers, 1860: 63 (*Nanina* subg.).

TYPE SPECIES — *Helix guerini* L. Pfeiffer, 1842; OD.

Shell turbinoid, conic, comparatively solid, dull, of 6-8 moderately convex whorls. Last whorl bluntly angulated at periphery. Color grey-corneous or light-brown. Embryonic whorl almost smooth to

microscopically malleated, often with traces of spiral cording. Postembryonic whorls coarsely radially wrinkled. Aperture rather narrow, generally semilunate, scarcely oblique. Umbilicus deep, subcylindrical, narrowly open. Height 5-13, diam. 8.0-18.2 mm (12.8 × 17.8 mm).

Jaw of many fused plates.

DISTRIBUTION. S India, Ceylon. 5-6 spp.

***Glyptaulax* Gude, 1914**

Fig. 1208

Gude, 1914: 14.

TYPE SPECIES — *Helix artificiosa* Benson, 1856; OD.

Shell subdiscoidal, solid, opaque, dull, of about 6 very convex whorls. Last whorl straight, rounded at periphery. Color grey. Embryonic whorls smooth; coarse, rounded spiral cords on later whorls more or less distinctly broken by radial grooves into series of elongated tubercles. Aperture semilunate, only slightly oblique, margins thin, slightly sinuous in profile. Umbilicus narrowly open, profound. Height 6.2-6.5, diam. 13-14 mm (6.4 × 13.2 mm).

DISTRIBUTION. Burma. 1 sp.

***Ruthvenia* Gude, 1911**

Fig. 1209

Gude, 1911 271 (nom. nov. pro *Sykesia* Gude, 1897).

— *Austenia* Gude, 1897: 300 (nom. praeocc., non Nevill, 1878; t.-sp. *Helix clathratula* L. Pfeiffer, 1850; OD).

— *Sykesia* Gude, 1897: 332 [nom. praeocc., non Pomel, 1883 (Echinodermata); nom. nov. pro *Austenia* Gude, 1897; t.-sp. *Helix clathratula* L. Pfeiffer, 1850; OD].

TYPE SPECIES — *Helix clathratula* L. Pfeiffer, 1850; OD.

Shell more or less flattened, somewhat translucent, of 5-6 rather convex whorls. Last whorl with 1 peripheral (sometimes provided with hairs) and 0-3 supraperipheral rounded keels. Color uniformly light-corneous. Embryonic whorls finely radially striated. Subsequent whorls with 2-3 strong spiral cords and periostracal radial

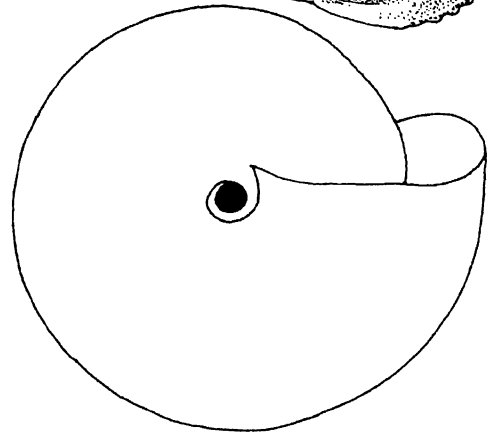
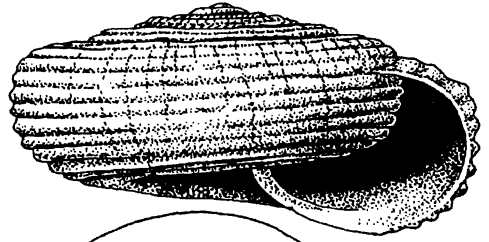


Fig. 1208. *Glyptaulax artificiosa* (Benson, 1856). Tenasserim, Burma. Syntype. Vienna.

riblets on upper surface; riblets locally form short, fine hairs. On basal surface spiral sculpture absent, radial sculpture becomes weaker. Aperture narrow, angulate, only slightly oblique; deeply inside last whorl 1 transverse parietal and several small palatal folds usually present. Umbilicus very broad, shallow. Height 2.5-4.0, diam. 4.0-7.5 mm (3.0 × 5.6 mm).

Jaw entire, with a few very broad vertical folds.

Ovotestis of several (5-7) clumps of elongated, clavate acini. Hermaphroditic duct not convoluted. In distal part of uterus I found 1 well developed embryo. Vas deferens thin, tightly bound to penis, entering penis subterminally through a simple pore. Penis internally with delicate, irregular, longitudinal folds. Free oviduct long, more or less convoluted. Vagina extremely short. Atrium rather thin and long. Basal half of spermathecal stalk expanded, reservoir bean-shaped, a little not attending albumen gland.

DISTRIBUTION. S India, Ceylon. 5 or 6 spp.

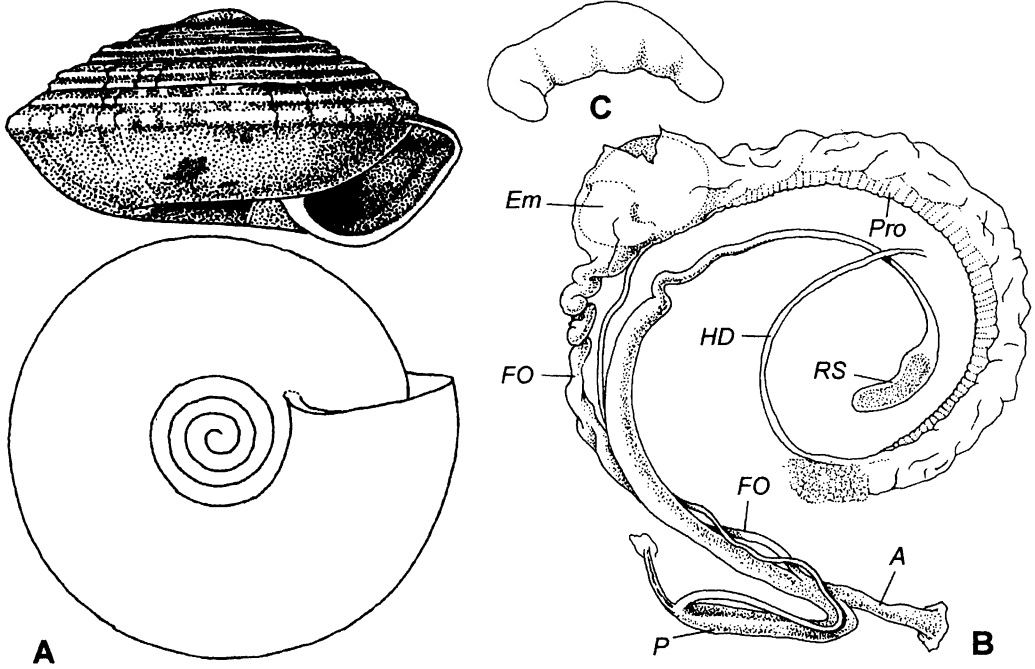


Fig. 1209. *Ruthvenia clathratula* (L. Pfeiffer, 1850).  
 A — shell: Kandookere, Ceylon. Phil. No. 1348. B — reproductive tract. C — jaw. Ceylon.  
 Moscow No. Lc-25319 (Vienna No. 41.563).

***Philalanka* Godwin-Austen, 1898**  
 Fig. 1210

Godwin-Austen, 1898: 11 (*Endodonta* subg.).  
 — ? *Actinaria* L. Pfeiffer, 1855: 128 (part; *Helix*  
 subg.; t.-sp. not designated).

TYPE SPECIES — *Helix secessa* Godwin-  
 Austen, 1898; SD Godwin-Austen, 1907

Shell pyramidal to trochiform, thin,  
 fragile, more or less translucent, of 4-8  
 nearly flat to strongly convex whorls. Last  
 whorl straight, sharply angled. Color yel-  
 lowish, (pale) corneous or ochraceous. Em-  
 bryonic whorls smooth. Later whorls with  
 exceptionally fine spiral striation and 2-5  
 distinct spiral cords that situate above pe-  
 ripheral angle; on base striae absent. Aper-  
 ture semilunate to ovate, (sub)vertical, with  
 simple margins. Umbilicus dot-like. Height  
 1-6, diam. 1.4-7.0 mm (4.6 × 4.7 mm).

Cephalopodium without caudal pore.

Jaw of numerous squarish plates.

Vas deferens long, slender, passing gradu-  
 ally into also long epiphallus. Penis bulky,  
 internally with globular verge. Penial  
 retractor attached to distal part of epiphal-

lus. Free oviduct shorter than vagina. Sper-  
 mathecal stalk subcylindrical, reservoir vo-  
 luminous.

DISTRIBUTION. Hindustan Peninsula,  
 Ceylon, Andaman Islands, Sunda Islands,  
 New Guinea. At least 30 spp.

***Hirasea* Pilsbry, 1902**  
 Fig. 1211

Pilsbry, 1902a: 118.

TYPE SPECIES — *Hirasea sinuosa* Pilsbry,  
 1902; OD.

Shell flattened, discoidal or biconvex,  
 (rather) thin, glossy, of 4-6 rather convex  
 whorls. Last whorl straight, rounded or  
 with variously developed (but never  
 strong) angle above mid-line. Color uni-  
 formly pale-corneous. Embryonic whorls al-  
 most smooth, subsequent whorls finely rib-  
 striated. Aperture narrow, crescentic, verti-  
 cal, with heavy lip within. Umbilicus dot-  
 like. Height 1.5-2.5, diam. 4-6 mm (2.1 ×  
 4.3 mm).

DISTRIBUTION. Japan. 12 spp. & subspp.

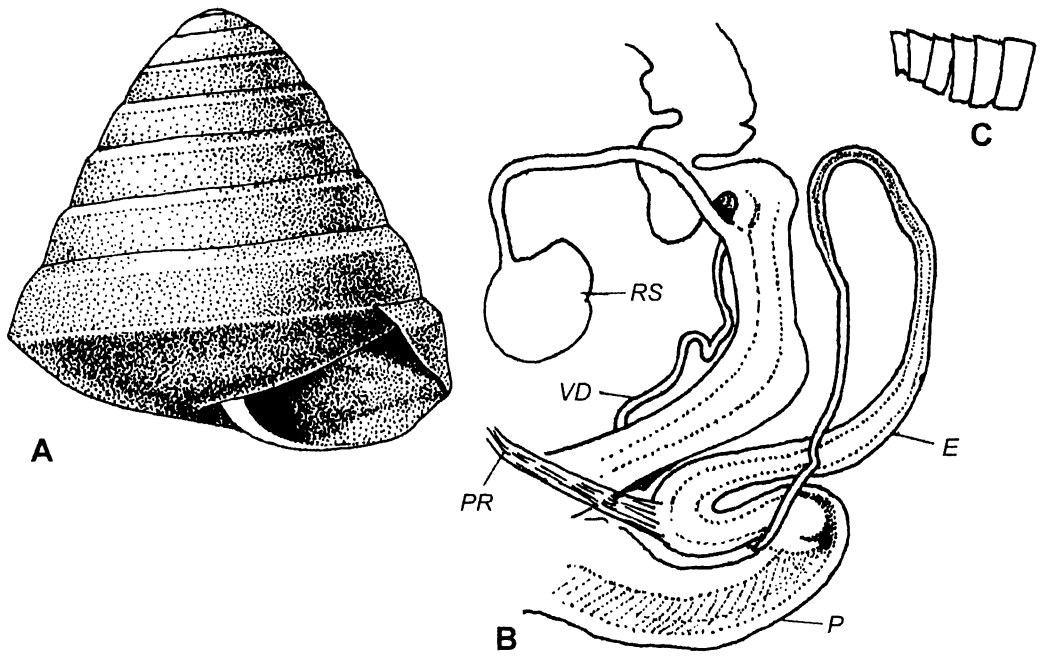


Fig. 1210. *Philalanka secessa* Godwin-Austen, 1898.

A — shell: Watawala, Ceylon. Phil. 79683. B — reproductive tract. C — fragment of jaw. After Godwin-Austen, 1898.

*Hirasiella* Pilsbry, 1902

Fig. 1212

Pilsbry, 1902b: 142.

TYPE SPECIES — *Hirasiella clara* Pilsbry, 1902; OD.

Shell ovate-conic, with convex sides, thin, glossy, translucent, of 6-7 flattened whorls. Color light-yellow. Regular sculpture absent. Aperture shortly lunate, a little oblique, with thin, slightly reflexed margins; peristome somewhat thickened within. Umbilicus tiny. Height 3-4, diam. 3.0-3.2 mm (3.2 × 3.2 mm).

DISTRIBUTION. Japan. 1 sp.

*Tadaia* Minato et Okubo, 1992

Fig. 1213

Minato & Okubo, 1992: 155.

TYPE SPECIES — *Tadaia nivalis* Minato et Okubo, 1992; OD.

Shell dome-shaped, thin, silky glossy, transparent, of 7.5 rather convex, somewhat shouldered whorls. Last whorl rounded at

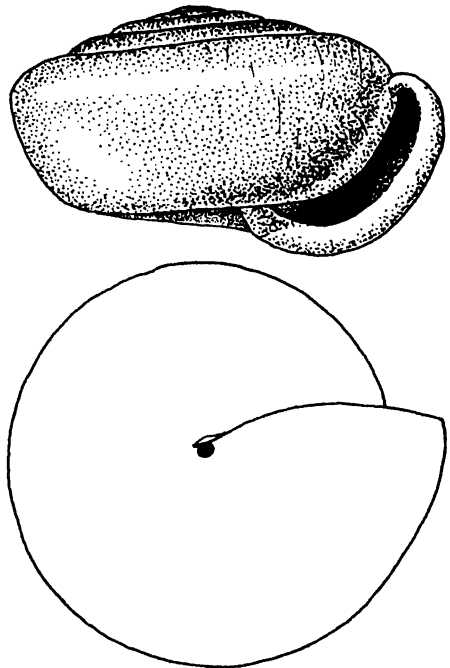


Fig. 1211 *Hirasea sinuosa* Pilsbry, 1902.

Hahajima, Ogasawara, Japan. Holotype. Phil. No. 82603a.

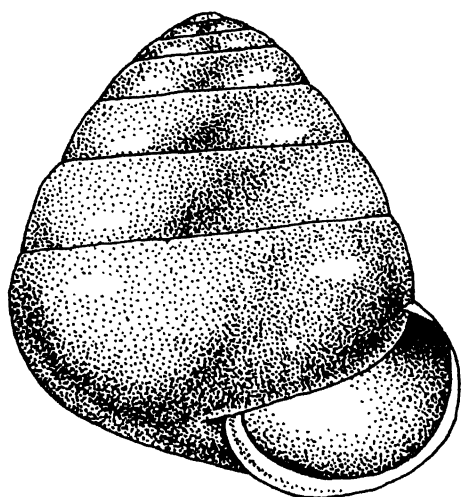


Fig. 1212. *Hirasiella clara* Pilsbry, 1902.  
Chichijima, Ogasawara, Japan. Leiden.

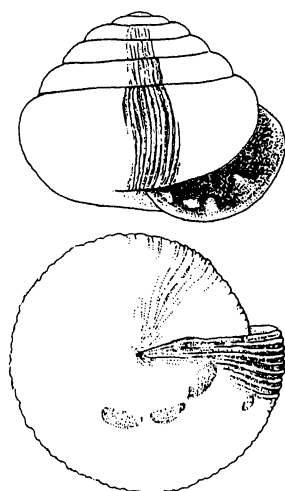


Fig. 1213. *Tadaia nivalis* Minato et Okubo,  
1992.  
After Minato & Okubo, 1992.

periphery. Color snow-white. Embryonic whorls (1.5) smooth, following whorls finely radially ribbed. Aperture narrow, semilunate, slightly oblique, with simple, sharp margins. Basal wall with 2 rows of discontinuous, nodose teeth which are visible through shell wall. Umbilicus dot-like or nearly closed. Height 1.7-2.0, diam. 2.3-2.5 mm.

DISTRIBUTION. Taiwan. 1 sp.

? *Fametesta* Pilsbry, 1902  
Fig. 1214

Pilsbry, 1902c: 30 (*Hirasea* subg.).

TYPE SPECIES — *Hirasea mirabilis* Pilsbry, 1902; OD.

Shell lens-shaped, thin, fragile, translucent, of 4.75-6 sharply keeled whorls. Color (light) corneous. Embryonic whorls almost smooth. Postembryonic sculpture of rather coarse (under lens), more or less regular radial wrinkles; on body whorl locally one can see vestigial traces of charopid sculpture: major ribs with minor riblets in intervals. Aperture narrow, sharply angled, well oblique. Umbilicus dot-like. Height 1.5-3.0, diam. 7-9 mm (1.5 × 7.1 mm).

Vas deferens slender, enters penis terminally. Penis large, with a long vermiform caecum which enters penis at upper margin of penis sheath. Internally caecum bears a longitudinal fold which continues into penis and turns upward — to pore of vas deferens. There is a peculiar penis sheath coating middle third of penis and attaching to upper portion of vagina. Penial retractor attached to vas deferens/penis junction. Free oviduct and vagina long, former longer than latter. Spermatheca clavate, without clear division into stalk and reservoir, shorter than free oviduct.

DISTRIBUTION. Japan. 2 spp., one of them with 2 subsp.

REMARK. The peculiar structure of penis sheath and presence of penial caecum, along with unusual for endodontoids shell makes me to suggest that *Fametesta* deserves the separation to the subfamily of its own. However, I refrain from doing this until the anatomy of other Japanese taxa is known. On the other hand, *Fametesta* may belong to Helicarionidae characterized by the presence of penial caecum; the final decision of this problem depends on the structure of jaw and sole.

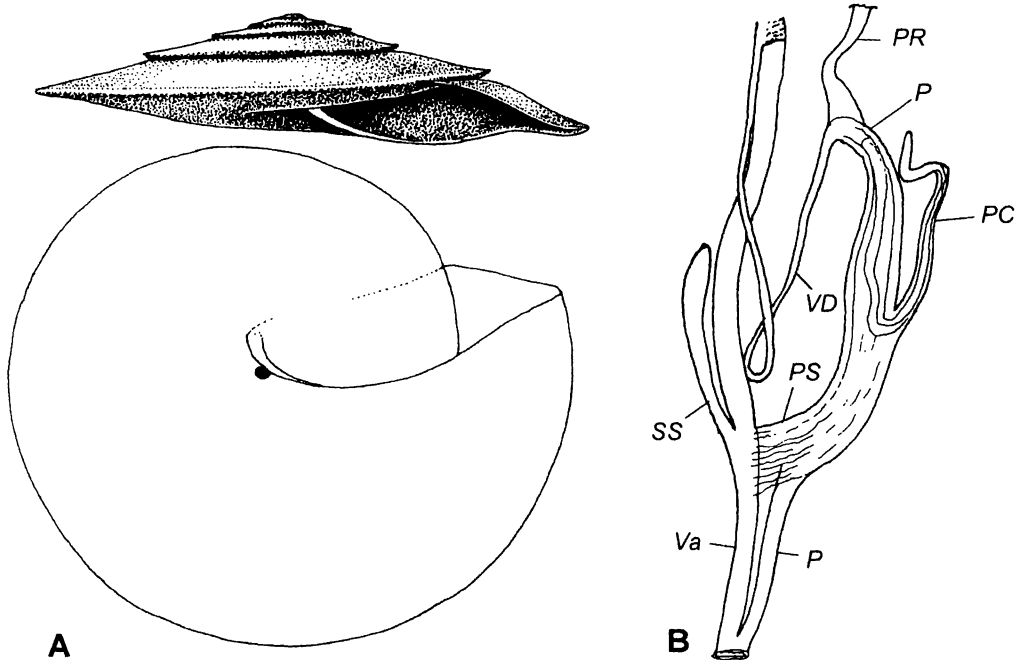


Fig. 1214. *Fametesta mirabilis* (Pilsbry, 1902).  
A — shell: Japan. Paris. B — reproductive tract. After Azuma, 1995.

## THYROPHORELLIDAE Girard, 1895

Girard, 1895: 31.

Shell sinistral, with rather sharp peripheral angle. Aperture with a peculiar calcareous "operculum" which is an extension of upper portion of peristome and connected with it by flexible periostracal membrane.

Eyes well developed.

Jaw thin, with several weak, small plates.

Reproductive tract lacking appendages.

DISTRIBUTION. São Thomé Island (Gulf of Guinea).

### *Thyrophorella* Greeff, 1882

Fig. 1215

Greeff, 1882: 517

TYPE SPECIES — *Thyrophorella thomensis* Greeff, 1882; monotypy.

Shell sinistral, very low conic above, bulging below; thin, translucent, of about 3 nearly flat, slightly shouldered whorls. Last whorl sharply angulated. Color pale-

yellowish to corneous. Embryonic whorls with weak, strongly smoothed radial wrinklets. Postnuclear sculpture of fine, irregular, curved radial striae. Aperture semi-circular, almost vertical, with simple, sharp margins; palatal margin above peripheral angle flat. Umbilicus rather wide, perspective. Height up to 4, diam. up to 9 mm (4.0 × 9.0 mm).

Penis long, with terminal retractor. Vagina swollen. Spermathecal stalk very short. Atrium narrow.

DISTRIBUTION. São Thomé Island. 1 sp.

## CHAROPIDAE Hutton, 1884

Hutton, 1884: 188. Solem, 1983: 59.

Shell small to medium-sized, rarely reduced. Sculpture of embryonic whorls diverse, postapical whorls primitively with major radial ribs and a microsculpture of radial riblets and secondary spiral elements; most sculpture features composed of periostracal elements only. In many taxa sculpture secondarily reduced to lost. Ap-

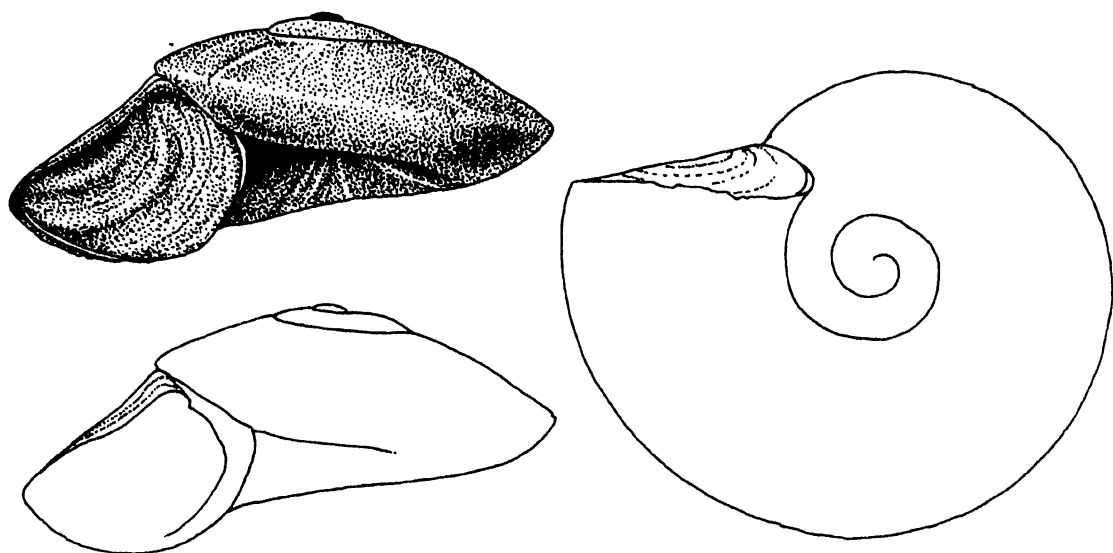


Fig. 1215. *Thyrophorella thomensis* Greef, 1882.  
São Thomé Island, Gulf of Guinea. Leiden.

erture armature mostly absent, however in several lineages it independently arises. Umbilicus widely open to closed.

Eyes well developed.

Pedal and suprapedal grooves unite above tail, in some taxa forming a caudal horn or mucus foss.

Jaw of separated, squarish plates in smaller mollusks, becoming partly to completely fused in larger animals.

Kidney usually distinctly bilobed, relative size of pericardial and rectal arms quite variable among species; secondary ureter open to complete.

Hermaphroditic gland typically of 1 or 2 clumps of long acini, but in larger mollusks number of clumps may be higher. Hermaphroditic duct not convolute. Talon a finger-like projection or swollen head on a short shaft. Prostate and uterus fused with partial common lumen. Vas deferens normally entering a clearly differentiated epiphallus, often through a complex valvular pore. Penis usually stout, at least in upper section, not usually long and slender, lower part often a thin tube. Interior of penis frequently with a well-developed ver-

ge, circular ridges, pilasters, and stimulators. Penial retractor arising from diaphragm, usually very short, inserting in simple to complex fashion on penis or epiphallus. Interior of lower female tract simple to with very large longitudinal simple to corrugated pilasters, openings to free oviduct and/or spermathecal stalk varying from simple pores to complex valves. Base of spermathecal stalk (and upper part of vagina) normally swollen; reservoir mostly attending albumen gland.

DISTRIBUTION. Australia, Tasmania, New Zealand, Oceania, Subantarctic Islands (Kerguelen, Possession, Heard, Marion, Amsterdam), Juan Fernandez, southern S America, Andes, Central America, western N America.

#### ROTADISCINAE Baker, 1927

Baker H. 1927: 228 (in Endodontidae).

Shell small to minute, more or less depressed, with tightly coiled whorls. Sculpture of embryonic whorls of short spirally



arranged segments, visible as spiral cords. Rest surface covered with thin regular riblets. Aperture toothless or with barriers.

Jaw of separate plates.

Kidney weakly to evenly bent; rectal arm much longer than pericardial. Secondary ureter mostly completed.

Hermaphroditic gland of 1-3 clumps of short acini. Talon short to long not with globular head. Vas deferens evenly slender, entering epiphallus apically. Epiphallus short, usually below penial retractor insertion, opening into penis through a short conic verge or simple pore. Penis not long, internally with stimulatory pilasters of various shape. Base of spermathecal stalk not or only slightly swollen.

DISTRIBUTION. North, Central, and South America; Papua New Guinea; St. Helena Island; W Australia; New Zealand; Lau Archipelago and Viti Levu Islands (Fiji).

### *Microcharopa* Solem, 1983

Fig. 1216

Solem, 1983: 70.

TYPE SPECIES — *Microcharopa mimula* Solem, 1983; OD.

Shell nearly flat, thin, of less than 3.5 tightly coiled, almost evenly rounded, slightly compressed laterally above periphery and on basal margin whorls. Embryonic sculpture of short, twisted, open-ended ridges arranged in 16-20 spiral rows on top of weakly and broadly undulating radially ridged surface. Postembryonic whorls with narrow, very crowded, protractively sinuated radial ribs, very fine riblets in interstices, finer spiral striae, and some weak secondary spiral cords. Aperture rounded, nearly vertical, without armature or heavy callus. Umbilicus widely open, cup-shaped, its margins weakly shouldered. Diam. 0.95-1.13 mm; holotype: height 0.48, diam. 1.02 mm.

DISTRIBUTION. Lau Archipelago and Viti Levu Islands (Fiji). 1 sp.

### *Rotacharopa* Stanistic, 1990

Fig. 1217

Stanistic, 1990: 210.

TYPE SPECIES — *Rotacharopa annabelli* Stanistic, 1990; OD.

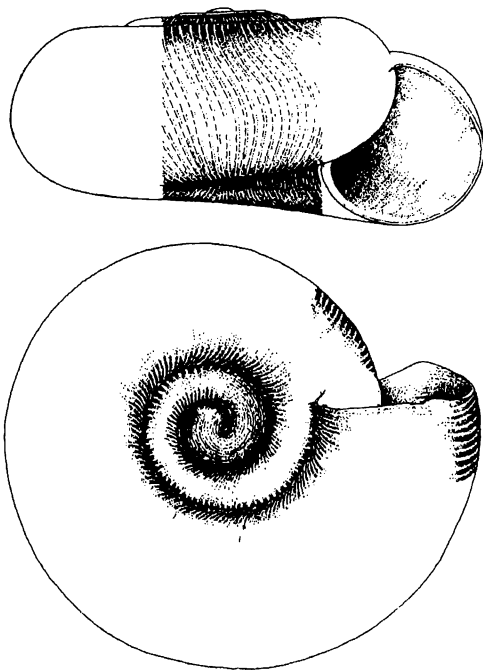


Fig. 1216. *Microcharopa mimula* Solem, 1983. After Solem, 1983.

Shell depressed dome-shaped, fragile, spire blunt, weakly to moderately elevated. Whorls nearly 5 to more than 6, very tightly coiled, weakly convex, shouldered above and rounded below laterally compressed periphery. Embryonic sculpture of short, slightly twisted segments, arranged into spiral rows, and weakly curved, low radial ridges. Postapical whorls with very crowded to moderately spaced protractively sinuated major radial ribs, very fine radial striation in interstices and low, broad spiral cords which are raised at their intersection with minor riblets to form elongated beads. Aperture simple, roundly lunate. Umbilicus very narrow to completely closed by reflection of columellar margin. Height 1.13-1.50, diam. 1.77-2.46 mm.

Kidney bent, pericardial arm well developed, vaguely triangular, elongated; rectal branch reduced. Secondary ureter completed.

Hermaphroditic gland of 2 drop-shaped clusters. Vas deferens entering epiphallus apically. Epiphallus short, internally with transverse thickenings, entering penis

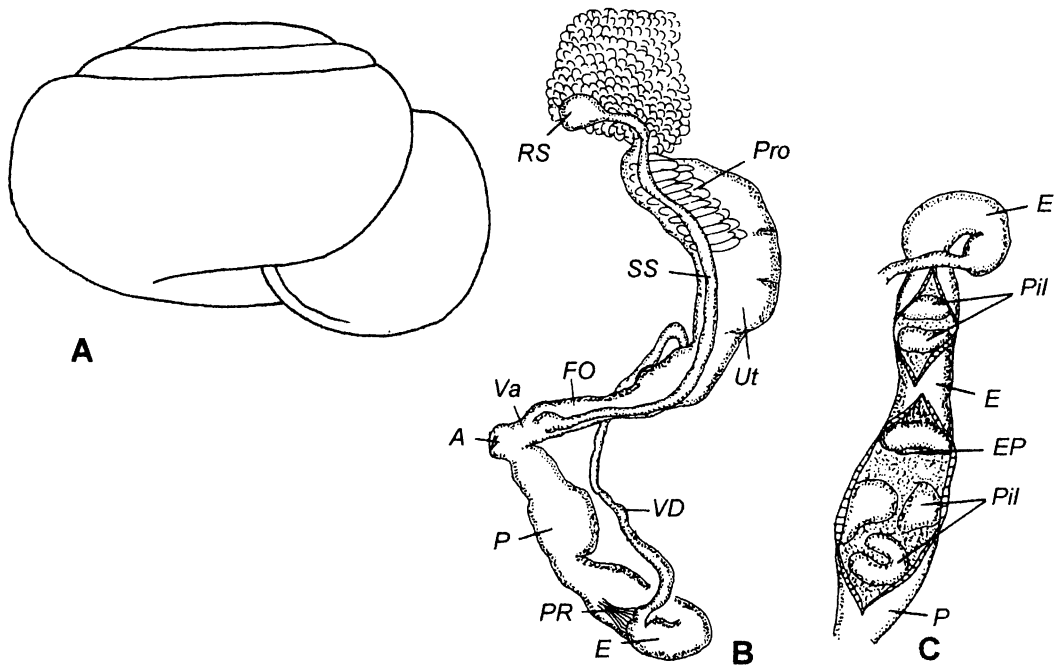


Fig. 1217 *Rotacharopa annabelli* Stanisic, 1990.  
 A — shell. B — reproductive tract. C — interior of penis. After Stanisic, 1990.

through a pore surrounded by a large fleshy pilaster. Penis large, barrel-shaped, with or without a verge, normally with longitudinal pilasters which may be modified. Penis with short to extremely long preputial tubular extension. Penial retractor attached to vas deferens/epiphallus junction. Free oviduct rather long. Vagina long or (rarely) short, internally with axial folds. Spermathecal stalk long, more or less cylindrical; reservoir attends albumen gland.

DISTRIBUTION. E Australia (South to mid-east Queensland). 3 spp.

### *Rotadiscus* Pilsbry, 1926

Fig. 1218

Pilsbry, 1926: 132.

— *Unilamellatus* Weyrauch, 1965: 134 (*Ptychodon* subg.; t.-sp. *Ptychodon unilamellatus* Weyrauch, 1965; OD: Climo, 1989: 617).

TYPE SPECIES — *Helix hermanni* L. Pfeiffer, 1866; OD.

Shell depressed, discoidal, thin, of 4-5 narrow, closely coiled whorls. Last whorl straight, evenly rounded at periphery. Spi-

re weakly sunken or weakly raised. Color light-corneous, uniform or with darker flammulations. Embryonic whorls (1.5) almost smooth to very densely microscopically pitted, postnuclear whorls radially costulate; in intervals between main ribs there are a few finer riblets. Aperture semilunate, toothless or with 1-2 parietal and 1 columellar lamellae. Umbilicus narrowly to broadly open. Height 1.0-1.3, diam. 1.5-3.2 mm. (1.1 × 2.0 mm).

Jaw of about 13 slightly overlapping plates with thickened edges.

Ovotestis of 1 clump of a few ovate acini. Hermaphroditic duct not convoluted. Talon exposed, rod-like, recurved. Vas deferens enters epiphallus subapically. Epiphallus short; entering penis through a short, slender verge. Penial retractor attached to vas deferens/epiphallus junction. Free oviduct short, vagina about twice longer. Spermathecal stalk a little expanded basally; reservoir small, lies on basal part of albumen gland.

DISTRIBUTION. Mexico, NE Venezuela, Peru, W Argentina, S Brazil; New Zealand. More than 10 spp. & subspp.

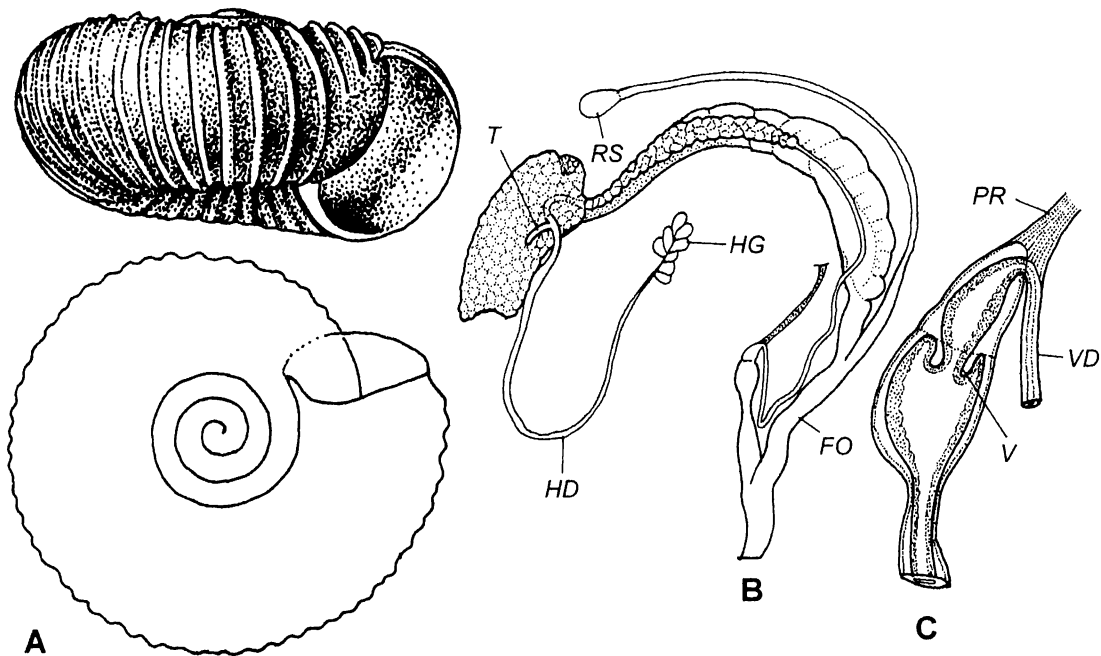


Fig. 1218. *Rotadiscus hermanni* (L. Pfeiffer, 1866).  
 A — shell: El Desierto to La Venta, Mexico. Phil. No. 256496. B — reproductive tract.  
 C — interior of penis. After Baker, 1927

***Radiodiscus*** Pilsbry et Ferriss, 1906  
 Fig. 1219

Pilsbry & Ferriss, 1906: 154.

TYPE SPECIES — *Radiodiscus millicostatus* Pilsbry et Ferriss, 1906; OD.

Shell much depressed to discoidal, thin, of about 4 convex, slightly shouldered whorls. Color generally corneous. Embryonic whorls (1.5) minutely engraved spirally. Surface of postnuclear whorls densely radially costulate; in intervals there are very fine spiral striae, especially on basal surface. Aperture lunate, as high as wide, only slightly oblique. Umbilicus broad, cup-like. Height 1.0-1.1, diam. 2.0-2.1 mm (1.06 × 2.02 mm).

Ovotestis of 2 clumps of finger-like acini. Talon exposed, small. Spermoviduct relatively short and broad, sacculate. Prostate rather long, of large rounded acini. Vas deferens short, transverse, not caught into penioviducal angle. Epiphallus fusiform with knob at apex, greatest width below middle; penial verge low, rounded. Penis relatively large, carrot-shaped, its walls very thickened toward apex. Both penis and

epiphallus coated by a thin sheath. Penial retractor short, arising from diaphragm, inserting laterally near apex of sheath. Free oviduct stout, rather long. Vagina missing. Atrium with small appendix. Spermathecal stalk long, slender, swollen basally; reservoir long, lanceolate.

DISTRIBUTION. N America (Oregon, Idaho, Arizona); Mexico, Central America; S America from Colombia to Tierra del Fuego. About 25 spp.

***Radioconus*** Baker, 1927  
 Fig. 1220

Baker H., 1927: 233 (*Radiodiscus* subg.).

TYPE SPECIES — *Helix bactriola* Guppy, 1868; OD.

Shell conic, trochiform, thin, of about 5 rather convex whorls. Color corneous. Embryonic whorls smooth. Postnuclear sculpture of regular radial ribs. Aperture rounded, slightly oblique, with simple margins. Umbilicus wide, perspective. Height 1.8-3.0, diam. 2-5 mm (2.2 × 3.6 mm).

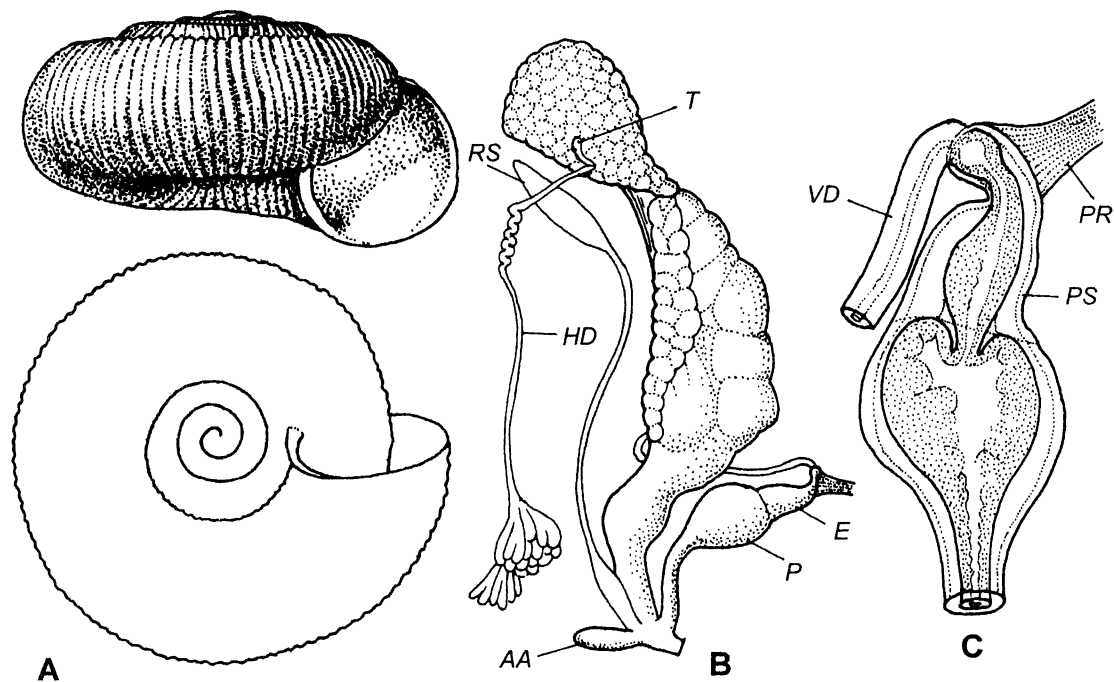


Fig. 1219. A — *Radiodiscus millecostatus millecostatus* Pilsbry et Ferriss, 1906. Shell: San Francisco Mts., Coconino Co., Arizona. Phil. No. 324171. B, C — *Radiodiscus millecostatus costaricanus* Pilsbry, 1926. B — reproductive tract. C — interior of penis. After Baker, 1927

Kidney comma-like, with short rectal arm. Secondary ureter incompletely.

Ovotestis of 2-3 clusters of rather short acini. Hermaphroditic duct convoluted in middle part. Talon hidden, consists of short shaft and subglobular head. Spermooviduct long. Vas deferens as that of *Radiodiscus*. Epiphallus comparatively very long, entering penis through a simple pore. Penis minute, lacking verge. Penial retractor attached to epiphallus near entrance of vas deferens. Free oviduct not long, vagina absent. Atrium with a tapering appendix. Spermathecal stalk very long, with swollen base; another enlargement may be present on middle part of stalk. Reservoir minute.

DISTRIBUTION. S America. At least 11 spp.

### *Radiodomus* H. Baker, 1930

Fig. 1221

Baker H., 1930: 124 (*Radiodiscus* subg.).

TYPE SPECIES — *Radiodiscus* (*Radiodomus*) *abietum* Baker, 1930; OD.

Shell subdiscoidal, thin, but with heavy, almost opaque periostracum. Whorls up to 5.75, gradually increasing, rounded, markedly shouldered; last whorl scarcely descending in front. Sculpture of embryonic whorls (2-2.5) of closely spaced spiral cordlets; rest surface finely costulate, with close spiral striation in interspaces. Aperture crescentic, slightly oblique. Umbilicus moderately broad. Height up to 3.8, diam. up to 7.3 mm (3.8 × 7.3 mm).

Jaw of separate plates.

Kidney curved. Secondary ureter completed at upper part, its lower portion in form of open groove.

Ovotestis of a few, large, long-clavate acini; hermaphroditic duct very long, may be swollen and convoluted near its distal end. Talon clavate, with a slender apical extension. Prostate long. Vas deferens caught into penioviducal angle by right ommatophoran retractor. Epiphallus small, with narrow lumen; walls thickened asymmetrically and marked by radiating, glandular columns. Penis rather long, fusiform, internally axially plicate, supplied with 2

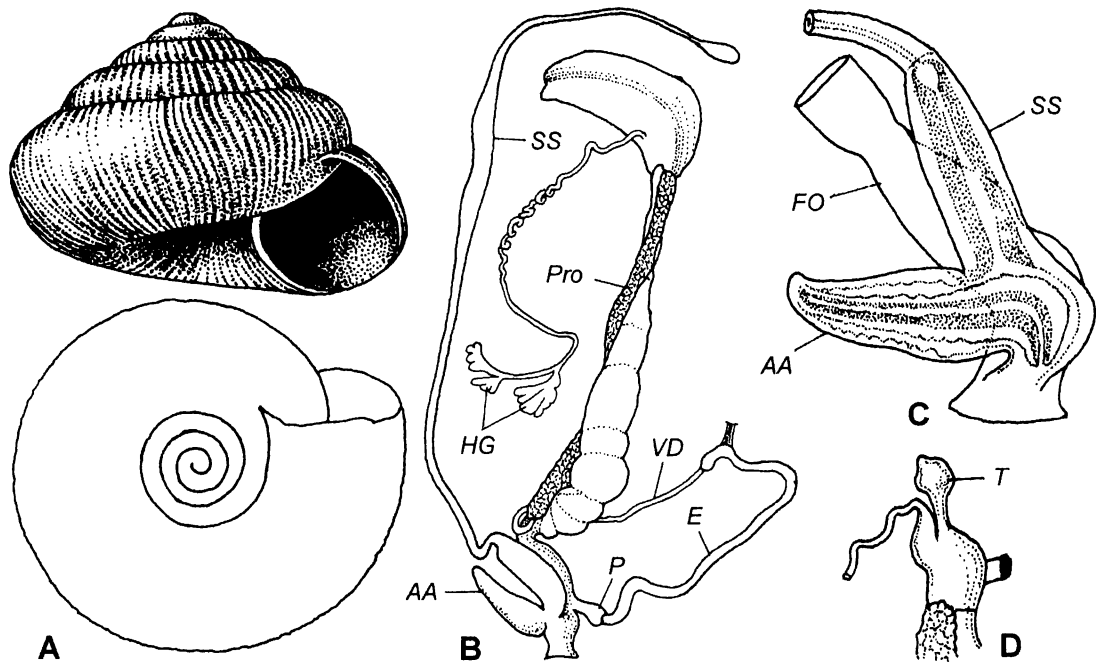


Fig. 1220. *Radioconus bactriolus* (Guppy, 1868).  
 A — shell: Cariaquita, Venezuela. Phil. No. 105203. B — reproductive tract. C — interior of distal part of female division. D — talon-carrefour complex. After Baker, 1927

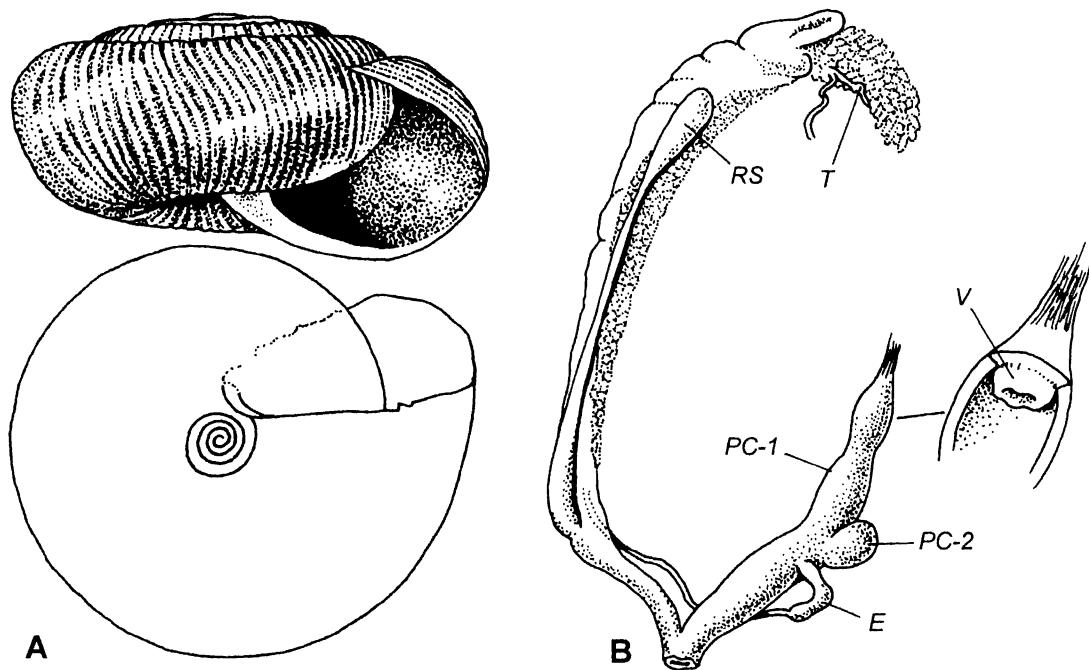


Fig. 1221. *Radiodomus abietum* (Baker, 1930).  
 A — shell: valley of Pine Creek, above Weston, Umatilla Co., Oregon. Phil. No. 165427  
 B — reproductive tract and interior of penis. Goosecreek, Idaho, September 13, 1929. Phil. No. A 1950-E.

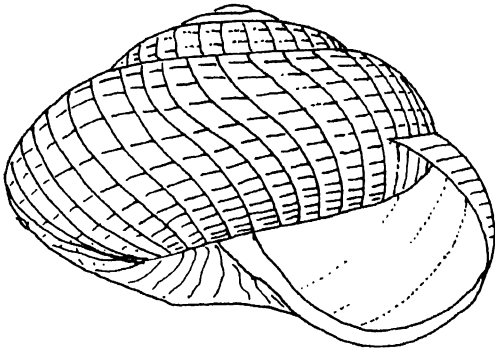


Fig. 1222. *Missioclivus textus* (Hedley, 1891).  
After Pilsbry, 1893 (1892-1893).

caeca. Larger caecum (PC-1) an ellipsoid continuation of penis proper, with thick, glandular walls; smaller caecum (PC-2) ovoid, with muscular walls, which develop 2 internal pilasters, opening into penial apex on side opposite to epiphallic pore. Latter protrudes through very short verge into upper part of penis. Penial retractor originated from diaphragm, heavy, short, attached to apex of larger caecum. Free oviduct very short. Vagina rather long. Spermathecal stalk of moderate length; reservoir clavate, not attending albumen gland.

DISTRIBUTION. N America (Oregon, Idaho). 2 spp.

### *Missioclivus* Iredale, 1941

Fig. 1222

Iredale, 1941b: 65.

TYPE SPECIES — *Charopa texta* Hedley, 1891; OD.

Shell turbanate, thin, glistening, of 4.5 moderately convex whorls. Last whorl evenly rounded at periphery. Color reddish-corneous. Embryonic whorls finely radially wrinkled. Later whorls with rather coarse

sculpture of strong, sinuate radial major ribs; interstices with filiform minor riblets crossed by minute spiral cordlets. Aperture roundly lunate, oblique, with straight, sharp margins; columellar margin reflexed. Umbilicus narrow. Height 4, diam. 6 mm.

DISTRIBUTION. Papua New Guinea. 1 sp.

REMARK. Solem (1958: 22) thinks that this genus may belong to "Vertiginide nahe *Pyramidula*" I disagree because the sculpture of *Missioclivus textus* is quite charopid and its size is too large for pyramidulid snails.

### *Damonita* Climo, 1981

Fig. 1223

Climo, 1981: 12.

TYPE SPECIES — *Damonita geminoropiformis* Climo, 1981; OD.

Shell flat, with sunken apex, thin, of 4.5-5 tightly coiled, convex whorls. Last whorl large owing to its great overlap of early whorls, evenly rounded at periphery. Embryonic whorls strongly radially ribbed. Postnuclear sculpture of fine, close radial riblets, reflexed toward suture because of a well developed apertural sinus; interstices reticulated by fine lirae and minor riblets, beading at intersections. Aperture narrowly lunate, vertical, with simple margins. Umbilicus rather narrow. Diam. 2.8 mm.

DISTRIBUTION. New Zealand. 1 sp. (subfossil).

### *Alsolemia* Climo, 1981

Fig. 1224

Climo, 1981: 13 (nom. nov. pro *Solemia* Climo, 1978).

— *Solemia* Climo, 1978: 179 [nom. praeocc., non Loomis, 1964 (Diplopoda); t.-sp. *Endodonta* (*Thaumatodon*) *monoplax* Suter, 1913; OD].

Climo, 1989: 629.

TYPE SPECIES — *Endodonta* (*Thaumatodon*) *monoplax* Suter, 1913; OD.

Shell much flattened to depressed, with weakly to moderately raised spire, of 5.5-6.5 convex whorls. Color uniformly light-golden when fresh. Embryonic whorls microscopically unevenly malleated or vaguely microgranulated. Rest whorls regularly radially ribbed; spiral elements present in intervals between major ribs. Aper-

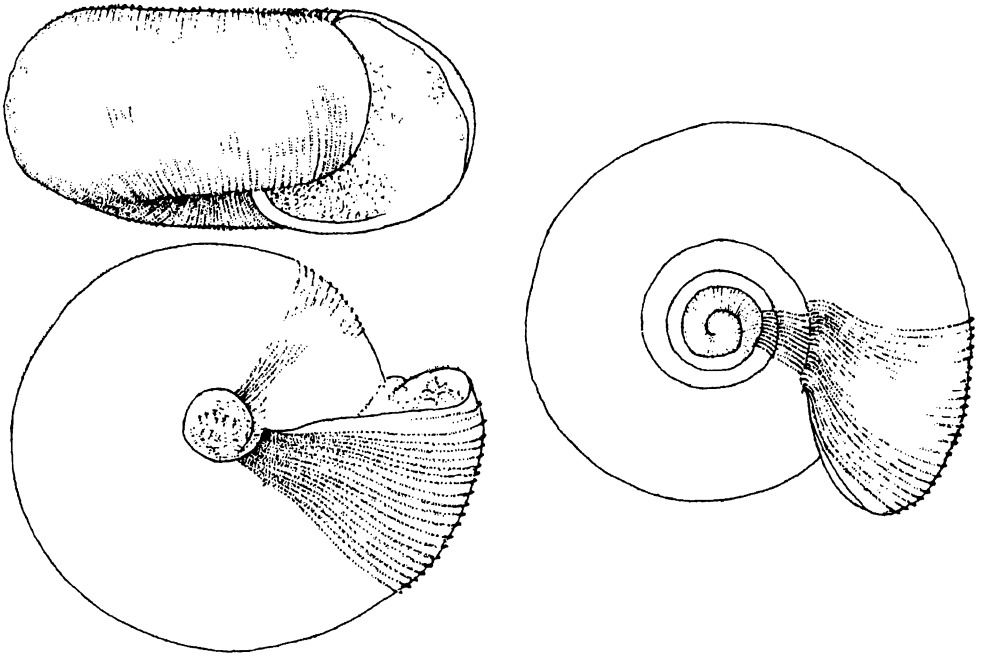


Fig. 1223. *Damonita geminoropiformis* Climo, 1981.  
After Climo, 1981.

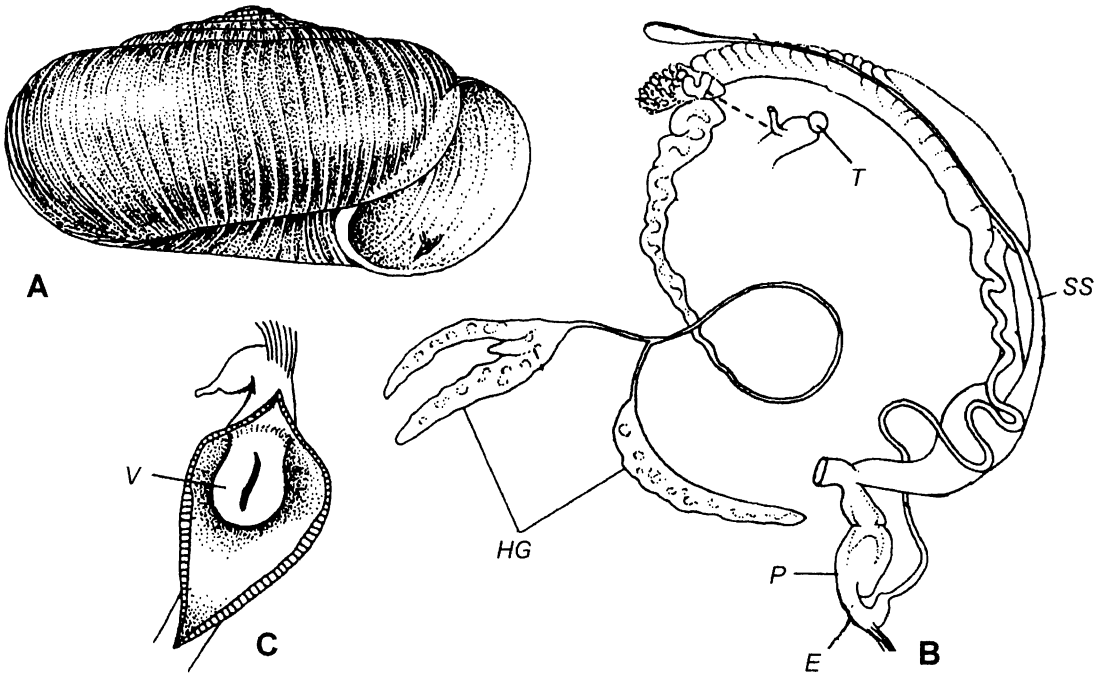


Fig. 1224. *Asolemia monoplex* (Suter, 1913).  
A — shell: Otago's Retreat, Preservation Inlet, Otago Fiords, South Island, New Zealand.  
Phil. No. 232224. B — reproductive tract. C — interior of penis. After Climo, 1989.

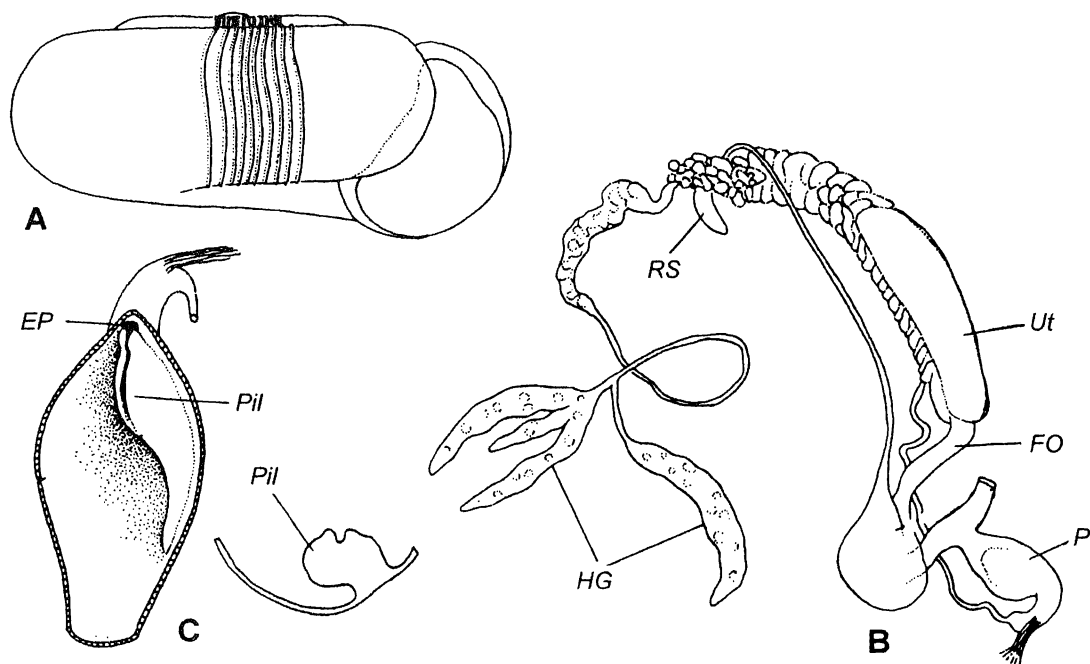


Fig. 1225. *Loisthodon benhami* (Suter, 1909).  
A — shell. B — reproductive tract. C — interior of penis. After Climo, 1989.

ture rather narrow, semilunate. Parietal wall with a long, thin, thread-like, deeply located lamella not visible through aperture. Umbilicus rather narrow to wide. Height 1.1-1.8, diam. 1.8-3.5 mm (1.20 × 2.36 mm).

Ovotestis of 2 clumps of long acini, each clump of 1-3 acini. Hermaphroditic duct convoluted in distal section. Talon of short, stout shaft and minute, globular head. Vas deferens long, slender, entering very short epiphallus apically. Penis rather small, bulky, internally with ovate verge having slit-like lateral opening. Penial retractor attached to middle section of epiphallus. Free oviduct of moderate length, vagina considerably swollen at base of spermathecal stalk. Latter somewhat expanded basally; reservoir small, reaching albumen gland.

DISTRIBUTION. New Zealand. 2 spp.

*Loisthodon* Climo, 1989  
Fig. 1225

Climo, 1989: 630.

TYPE SPECIES — *Endodonta (Charopa) benhami* Suter, 1909; OD.

Shell almost flat, thin, with a little elevated spire, of about 5 convex whorls. Color uniformly light-brown, sometimes with darker radial streaks on upper side. Embryonic whorls vaguely microgranulated. Post-apical sculpture of fine, closely spaced radial riblets and delicate spiral striae in intervals between ribs. Aperture widely semilunate, toothless, subvertical. Umbilicus wide, perspective. Height 1.4, diam. 2.6 mm.

Hermaphroditic gland of 2 clumps of finger-like acini: one clump of 1 acinus, the other of 3 acini. Hermaphroditic duct convoluted. Vas deferens slender, entering short epiphallus apically. Penis ovate, expanded, internally containing a large globular pilaster with groove along its ridge; this groove communicating directly with epiphallic pore. Penial retractor attached to middle section of epiphallus. Free oviduct rather long. Vagina greatly swollen at base of spermathecal stalk. Reservoir attending albumen gland.

DISTRIBUTION. New Zealand (Auckland Island). 1 sp.



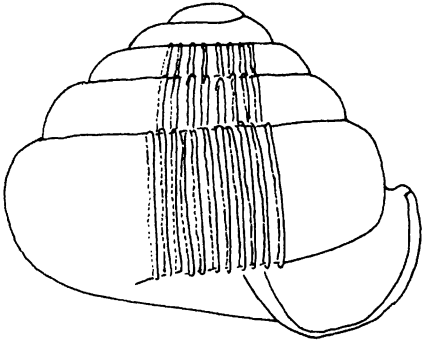


Fig. 1226. *Zelandicus elevatus* (Climo, 1978).  
After Climo, 1978.

***Zelandicus* Climo, 1989**

Fig. 1226

Climo, 1989: 633.

TYPE SPECIES — *Ptychodon (Solemia) elevata* Climo, 1978; OD.

Shell conic, with tall spire, thin, of 4.75-5.75 quite convex whorls. Last whorls straight, evenly rounded at periphery. Color uniformly greyish-white. Embryonic whorls (1.75-2) superficially smooth, microscopically unevenly malleated and with traces of radial wrinkles. Postnuclear sculpture of delicate radial ribs. Aperture lunate, vertical, toothless, with simple margins. Umbilicus relatively wide, well-like. Height 1.35-1.60, diam. 1.80-2.46 mm.

DISTRIBUTION. New Zealand. 2 spp.

***Mitodon* Climo, 1989**

Fig. 1227

Climo, 1989: 625.

TYPE SPECIES — *Helix wairarapa* Suter, 1890; OD.

Shell flat or with weakly raised spire, thin, of 5-5.5 rather convex whorls. Last whorl straight, evenly rounded at periphery. Suture not channelled. Color light-brown with darker radial streaks on upper surface. Embryonic whorls nearly smooth. Postembryonic sculpture of almost straight, delicate radial riblets. Aperture lunate, vertical. Parietal wall with groups of short, sometimes fused lamellae on its adcolumnellar side. Columellar margin with 1 lamella. On palatal wall 1 suprapalatal plicae always present; rest of palatal folds either an undivided rounded ridge extending from columella to long suprapalatal plica, or divided into usually 6 short plica in intermediate position. Umbilicus broad. Height 0.7-0.8, diam. 1.4-1.9 mm.

Talon exposed, with short, stout shaft and minute globular head. Prostate of large acini. Vas deferens entering slender, long epiphallus apically. Penis short, internally with few longitudinal folds and a minute verge. Penial retractor attached to penis/epiphallus junction. Free oviduct subequal to vagina in length. Spermathecal stalk slightly expanded at base; reservoir attending albumen gland.

DISTRIBUTION. New Zealand. 2 spp.

***Ptychodon* Ancey, 1888**

Fig. 1228

Ancey, 1888: 372.

— *Strobila* Hutton, 1883: 135 (nom. praeocc., non Morse, 1864; t.-sp. *Strobila leiodus* Hutton, 1883; monotypy).

— *Huttonella* Suter, 1890: 224 (nom. praeocc. non L. Pfeiffer, 1855; t.-sp. *Helix leiodus* Hutton, 1883; OD).

— *Maoriana* Suter, 1891b: 96 (nom. nov. pro *Huttonella* Suter, 1890).

Climo, 1978: 178.

TYPE SPECIES — *Strobila leiodus* Hutton, 1883; OD.

Shell depressed, inflated, thin, translucent, of 5-6.5 quite convex, sometimes a little shouldered whorls. Last whorl not descending, evenly rounded at periphery. Suture channelled. Color corneous with wide reddish streaks or uniformly light golden-brown. Embryonic whorls superficially smooth (sometimes with traces of spiral lirae). Postapical whorls with normal charopid sculpture; spiral elements weak or

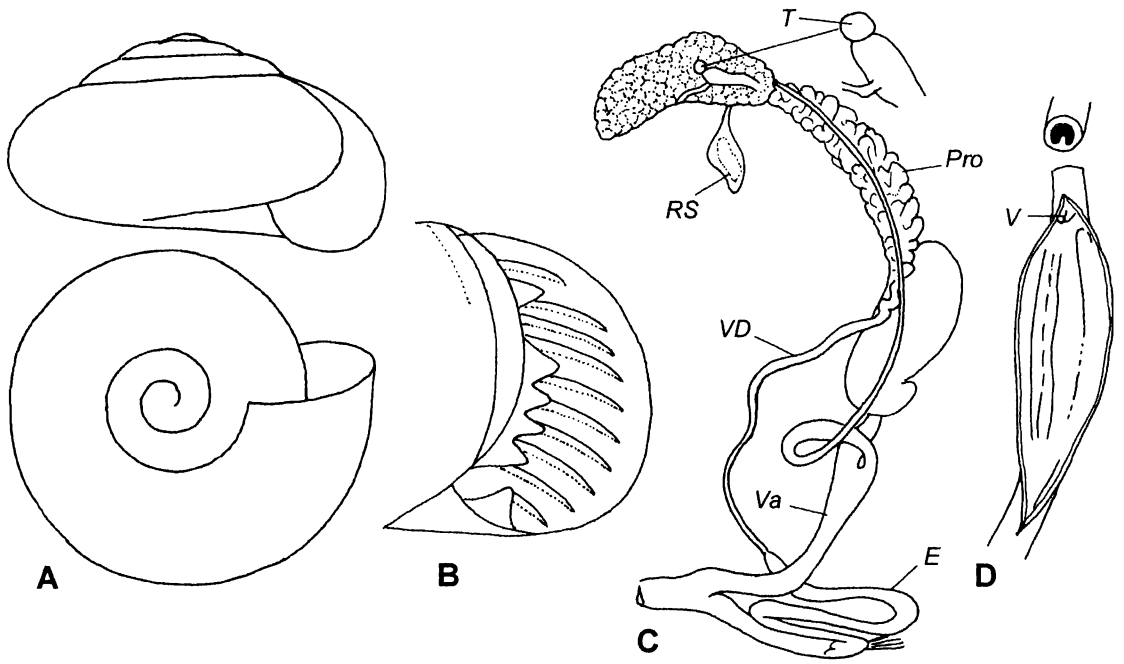


Fig. 1227 *Mitodon wairarapa* (Suter, 1890).

A — contours of shell. B — aperture enlarged. After Pilsbry, 1893 (1892-1893). C — reproductive tract. D — interior of penis. After Climo, 1989.

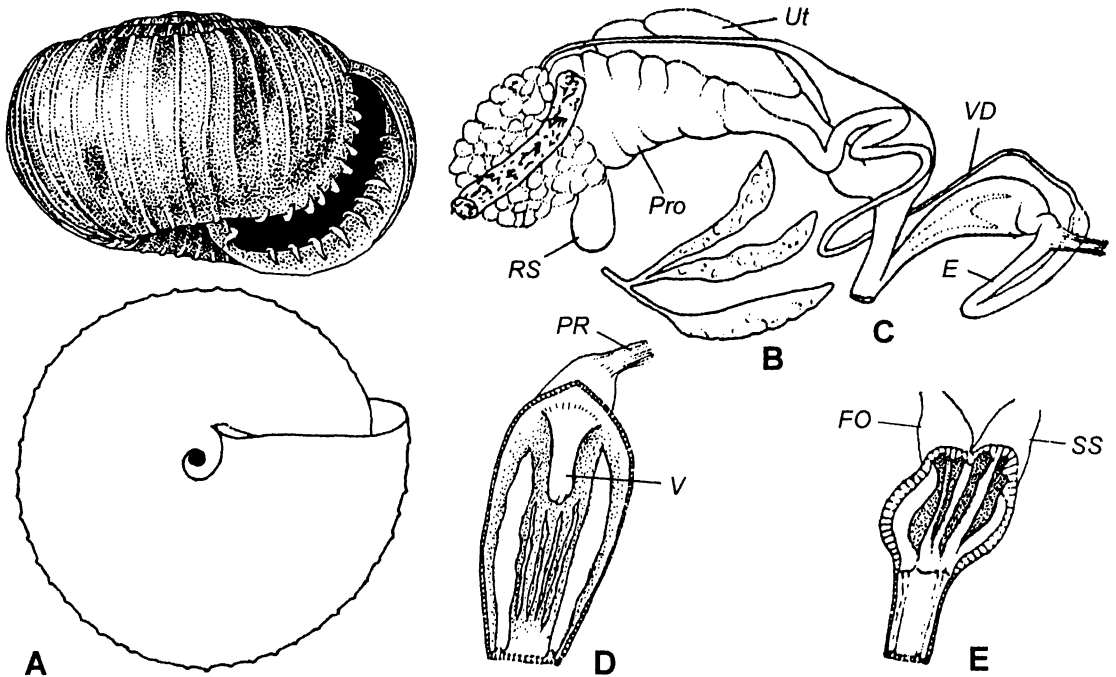


Fig. 1228. *Ptychodon leiodus* (Hutton, 1883).

A — shell: Greymouth, New Zealand. Zürich No. 503369. B — hermaphroditic gland. C — reproductive tract. D — interior of penis. E — interior of vagina. After Climo, 1989.

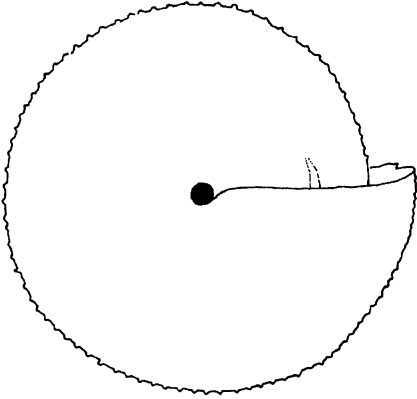
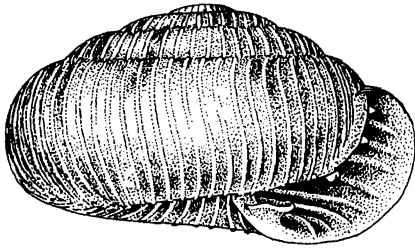


Fig. 1229. ! *Huonodon pseudoleiodus* (Suter, 1890).  
Kaimai Range, Waikato, North Island, New Zealand. Moscow No. Lc-25312 (gift of K. Schniebs).

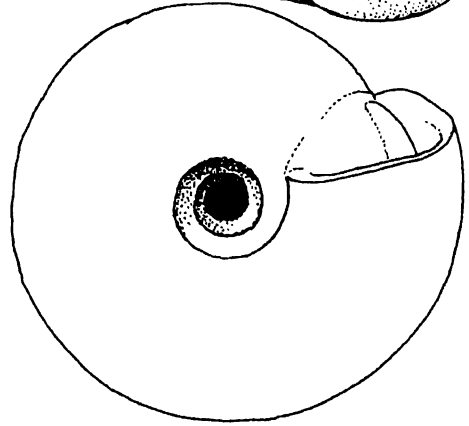
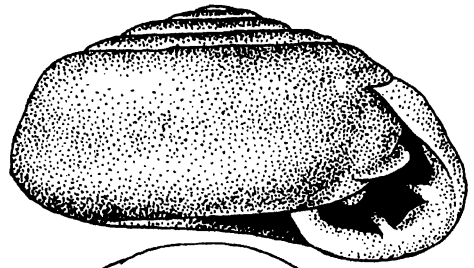


Fig. 1230. *Ridleya quinquelirata* (E. Smith, 1890).  
Fernando Noronha Island. Phil. No. 100536.

absent. Aperture narrow, semilunate, nearly vertical. Parietal wall with 0-9 short, non-bifid lamellae. Columellar margin simple or with 1 rather small lamella. Palatal wall with a lip far back in aperture bearing 0-8 lamellar plicae. Umbilicus moderately wide to narrow. Height 0.7-1.6, diam. 1.4-3.2 mm (1.5 × 2.1 mm).

Hermaphroditic gland of 1 cluster of a few finger-like acini. Vas deferens markedly expanded proximally, entering long epiphallus terminally. Penis rather short, internally with well developed verge, 2 main axial pilasters and a few minor folds between them. Penial retractor attached to distal part of epiphallus. Free oviduct nearly equal to vagina in length. Vagina internally with a longitudinal pilaster that forked proximally: one arm runs into free oviduct, the other — into shaft of spermatheca. Spermathecal stalk greatly enlarged basally. Reservoir reaching albumen gland.

DISTRIBUTION. New Zealand. 4 spp.

### *Huonodon* Iredale, 1945 Fig. 1229

Iredale, 1945: 56.

— *Mylesia* Climo, 1978: 185 (t.-sp. *Helix hectori* Suter, 1890; OD).

TYPE SPECIES — *Ptychodon pseutes* Iredale, 1913 (= *Helix hectori* Suter, 1890; Climo, 1978); OD.

Shell depressed dome-shaped, thin, of 5-5.5 convex whorls. Last whorl straight, evenly rounded at periphery. Coloration consists of light corneous background and darker radial flames or zigzags. Embryonic whorls strongly radially ribbed. Postapical sculpture of radial costae. Aperture semilunate, vertical. Parietal wall with bifid entering lamella that usually has microscopically serrated edges and 1-4 simple accessory lamellae. Columellar margin with 1-2 subhorizontal lamellae. Palatal wall with up to 10 plicae; 3-4 lowest usually the largest. Umbilicus open, moderately wide to

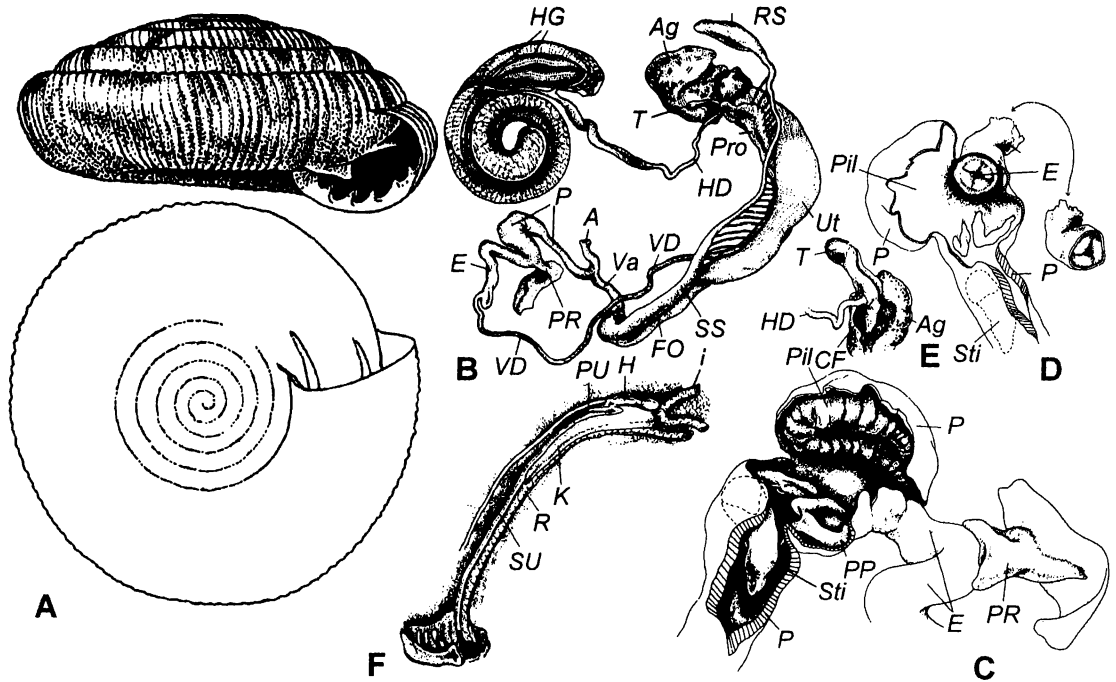


Fig. 1231. A — *Helenoconcha polyodon* (Sowerby, 1844).

Shell: St. Helena. Phil. No. 69980. B, C, D, E, F — ! *Helenoconcha relictta* Solem, 1977  
 B — reproductive tract. C — interior of penis. D — detail of epiphallic pore. E — talon  
 and carrefour region. F — roof of lung cavity. After Solem, 1977 H — heart. I — intestine.  
 R — rectum.

narrow. Height 1.0-1.5, diam. 1.9-2.5 mm  
 (1.4 × 2.5 mm).

DISTRIBUTION. New Zealand, Kerma-  
 dec Islands. About 10 spp. & subsp.

### *Ridleya* Ancey, 1901

Fig. 1230

Ancey, 1901: 17

TYPE SPECIES — *Helix* (*Ophiogyra* ?) *quinqueliratus* E. Smith, 1890; OD.

Shell depressed, rather solid, of about 6 rather convex whorls. Last whorl distinctly compressed laterally. Color brown or corneous. Embryonic whorls smooth. Later whorls weakly radially striated. Aperture narrowly lunate, slightly oblique, with more or less thickened margins. Parietal wall with 2 entering lamellae, upper longer than lower. Palatal side with 2 long plicae. Umbilicus moderately wide, deep, perspective. Height 3.0-3.5, diam. 5.5-6.3 mm (3.2 × 5.5 mm).

DISTRIBUTION. Fernando Noronha Is-  
 land (Brazil). 1 sp. (subfossil).

### *Helenoconcha* Pilsbry, 1892

Fig. 1231

Pilsbry, 1892 (1892-1893): 91 [*Patula* (*Endo-  
 donta*) sect.].

TYPE SPECIES — *Helix polyodon* Sowerby, 1844; SD Pilsbry, 1894 (1893-1895).

Shell depressed dome-shaped, thin, of 5-9 tightly coiled, rounded whorls. Color corneous with darker spots or flames. Apical sculpture of spiral cords, rest surface with spaced, more or less sharp radial ribs; microsculpture represented by fine radial riblets and finer spiral threadlets. Aperture lunate to ovate, with 6 to more than 13 medium to large teeth. Parietal lamellae typically 2, Y-shaped, extending posteriorly for 3/16 to 1/4 whorl; between them a weaker accessory plate may be present; another one sometimes lies nearer to columellar

margin. Columellar lamella 1, knob-like, or absent. Baso-palatal margin bears several (up to 7) lamellate plicae. Umbilicus open, varies in width. Height 1.4-2.3, diam. 2.8-5.0 mm (2.1 × 4.5 mm).

Kidney curved, rectal arm much longer than pericardial. Secondary ureter complete.

Ovotestis of 2 clumps of several long, usually unbranched acini. Hermaphroditic duct uncoiled, entering carrefour at base of moderately long, bifurcate talon. Vas deferens slender, entering upper part of epiphallus laterally. Epiphallus internally with large longitudinal pilasters, opening into penis through a cross-like pore. Penis club-shaped above, lower half a slender tube. Upper enlarged portion of penis internally with a very large and puckered U-spaped pilaster extending from epiphallic pore on outer of penis curve; opposite to base of "U" 2 much lower, very irregularly curved pilasters situated; below this area lies a conic, twisted stimulator. Penial retractor short, arising from diaphragm, attached onto penis/epiphallus junction. Free oviduct and vagina rather long, subequal in length. Lower third of spermathecal stalk somewhat expanded; reservoir attending albumen gland.

DISTRIBUTION. St. Helena Island. 6 spp.

## CHAROPINAE Hutton, 1884

— Dipnelicidae Iredale, 1937b: 22.

— Hedleyoconchidae Iredale, 1942: 34.

— Pseudocharopidae Iredale, 1944: 312.

Shell small to rather large. Embryonic sculpture either of spiral cords or radial ribs; sometimes secondarily absent. Post-apical whorls primarily with normal charopid sculpture, which frequently secondarily reduced. Apertural armature developed in several lineages.

Jaw of separate plates in smaller snails, fused partly to completely in larger.

Kidney bilobed, pericardial and rectal arms mostly subequal in length. Secondary ureter completed to open.

Hermaphroditic gland of 2-3 clumps of elongated acini. Talon mostly short with globular head, or hidden. Vas deferens evenly slender or somewhat expanded

proximally. Epiphallus variously developed, sometimes missing. Penis with or without verge, mostly with complex stimulatory pilasters. Base of spermathecal stalk often more or less swollen.

DISTRIBUTION. Philippines, Indonesia, New Guinea, Micronesia, Melanesia, Polynesia, Australia, Tasmania, New Zealand, Subantarctic Islands, Juan Fernandez Island, ? Madeira.

## *Pilsbrycharopa* Solem, 1958

Fig. 1232

Solem, 1958: 24.

— ? *Corinomala* Iredale, 1939: 43 [*Luinodiscus* subg.; t.-sp. *Endodonta* (*Charopa*) *tumida* Odhner, 1917; OD].

Solem, 1970b: 240.

TYPE SPECIES — *Pilsbrycharopa papuana* Solem, 1958 (= *Charopa nigrofusca* E. Smith, 1896); OD.

Shell almost flat to rather strongly elevated, thin, of 3.75-4.5 rather convex, loosely to tightly coiled whorls. Color uniformly reddish-brown. Embryonic sculpture of delicate spiral striae and fine radial riblets with varying dominance. Postnuclear whorls with regular, dense, major radial ribs and filiform riblets crossed by fine spiral striae in interstices; sometimes this sculpture more or less reduced. Aperture ovate, well oblique, with simple margins; upper part of palatal margin often somewhat depressed as in many Rhytididae. Umbilicus wide to closed. Height 2.0-3.1, diam. 3.9-7.4 mm (2.8 × 6.0 mm).

Jaw of separated plates.

Kidney typical for subfamily. Secondary ureter completed.

Prostate of numerous slender acini opening into groove on inner surface of upper part of uterus. Vas deferens very large and glandular at first, narrowing before peni-oviducal angle, reflexing up to enter swollen head of epiphallus. Upper end of epiphallus narrowing after a small caecum, followed by a slender tube with longitudinal pilasters leading to penis. Penis elongately ovate, thick-walled, tapering from swollen head down to atrium, internally with short axial pilasters clustering around epiphallic pore, main portion with modified stimulatory pad and accessory pilas-

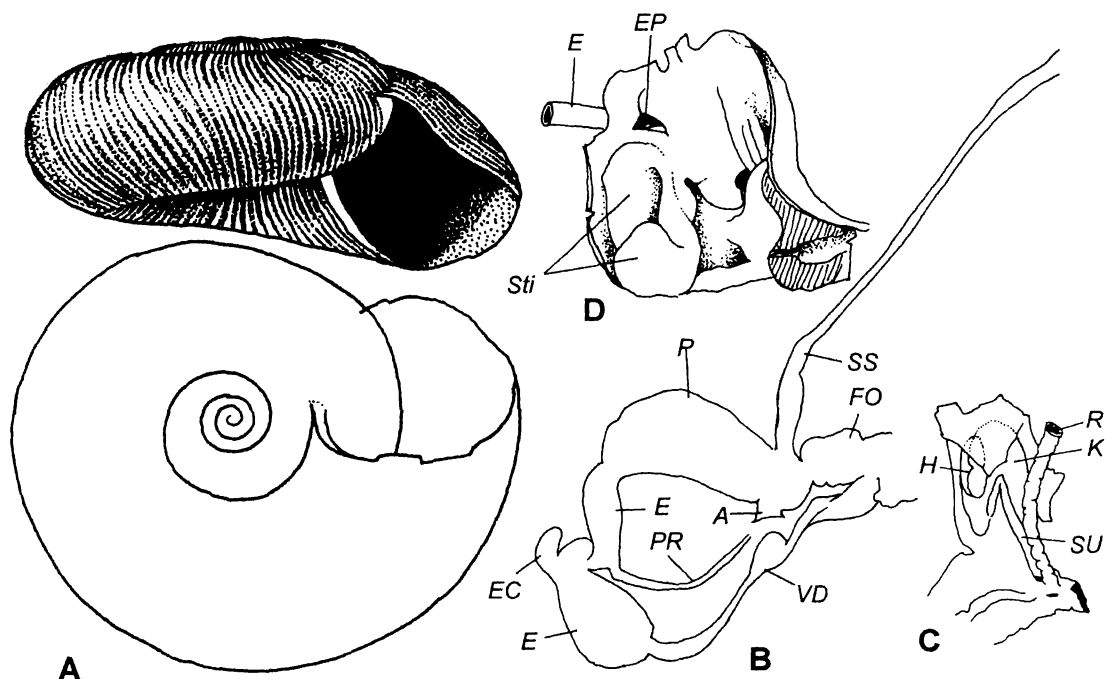


Fig. 1232. A — *Pilsbrycharopa nigrofusca* (E. Smith, 1896). Shell: Constantinshafen, New Guinea. (Paratype of *papuana* Solem, 1958). Chicago No. 63527 B, C, D — ! *Pilsbrycharopa gressitti* Solem, 1958. B — distal part of reproductive tract. C — roof of lung cavity. D — interior of penis. After Solem, 1970b. H — heart. R — rectum.

ters. Penial retractor rather long, arising on diaphragm, inserting on coiled shaft of epiphallus below caecum. Free oviduct short. Vagina missing. Spermathecal stalk long, somewhat expanded basally, entering atrium between penis and free oviduct; ovoid reservoir lying just above spermooviduct.

DISTRIBUTION. From Kalimantan (Borneo) to New Britain, Bismarck Archipelago, New Guinea, N Australia. 10 spp.

REMARK. Initially Solem (1958) introduced the name *Pilsbrycharopa* with 3 species. In 1970(b) the same author revised this genus and included 9 species in it but did not mention the species *tumida* Odhner, 1917, which is the type species of *Corinomala*. Later Solem (1984b: 166) recognized *Corinomala* Iredale, 1939 as a synonym of *Pilsbrycharopa* because the former "is considered to be a nomen nudum" Actually *Corinomala* is not a nomen nudum because it has been accompanied by a description and indication of type species. Thus, formally Iredale's name *Corinomala* has priority over the name *Pilsbrycharopa*.

However, I tentatively remain the Solem's name because I have not seen *Endodonta tumida* Odhner and do not know if it belongs to the same genus as *Charopa nigrofusca* E. Smith.

### *Paryphantopsis* Thiele, 1928 Fig. 1233

Thiele, 1928: 125 (*Flammulina* subg.).

— *Illonesta* Iredale, 1941b: 92 (t.-sp. *Paryphanta louisadarum* Moellendorff, 1899; OD). Solem, 1959a: 156.

— *Gallodema* Iredale, 1941b: 92 (t.-sp. *Rhytida globosa* Hedley, 1890; OD).

Solem, 1970b: 254.

TYPE SPECIES — *Flammulina* (*Paryphantopsis*) *lamelligera* Thiele, 1928; OD.

Shell subglobose, somewhat vitrinoid, very thin, fragile, of about 3 moderately convex whorls. Last whorl rounded or keeled at periphery. Color generally brownish-ol-

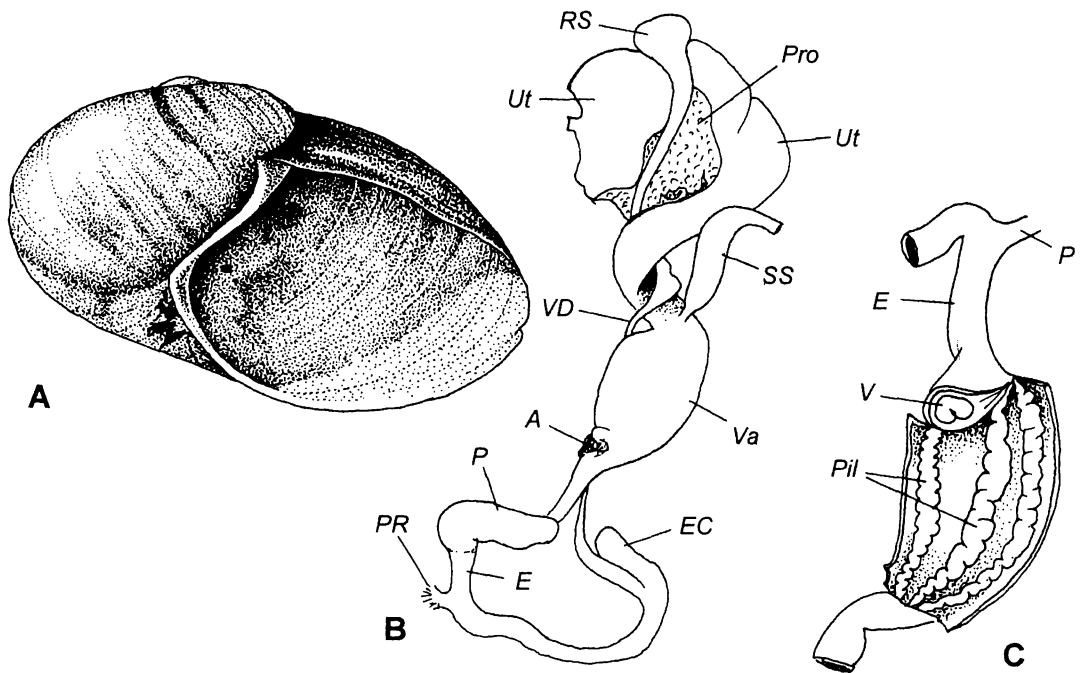


Fig. 1233. A — *Paryphantopsis lamelliger* (Thiele, 1928). Shell: Rossel Island [Louisiades]. Phil. No. 109257 B, C, — ! *Paryphantopsis dauloensis* Solem, 1970. B — reproductive tract. C — interior of penis. After Solem, 1970b.

ive with diffuse blackish streaks. Embryonic sculpture varies from a lattice of coequal radial and spiral riblets to distinctly pitted, pits form honey-comb pattern. On later whorls pits lie looser and arranged in spiral series; radial wrinkles rather coarse but smoothed, sometimes with periostracal fringes; on basal surface pits, when present, become scattered. Aperture large, rounded, rather oblique, with simple, fragile margins. Umbilicus minutely open laterally or absent. Height 2.7-10.0, diam. 3.6-17.0 mm (7.2 × 10.0 mm).

Jaw of narrow plates fused centrally and tightly joined out to margins.

Kidney typical. Secondary ureter complete.

Prostate and uterus as in *Pilsbrycharopa*. Vas deferens enlarged at first, becoming very slender, entering epiphallus at head after being coiled around penis at muscle sheath. Epiphallus with swollen head, rather long lateral caecum and long, coiled tube leading to penis head. Penis club-shaped, gradually tapering, basal third with a

muscular sheath; internally with short verge having axial groove; sheath of verge attached to one wall of penis, other walls with corrugated longitudinal pilasters tapering to atrium. Penial retractor very short, arising on diaphragm, inserting on epiphallus near entrance to penis. Free oviduct short. Vagina greatly swollen, with very thick glandular walls. Spermathecal stalk with muscular basal portion, narrowing at very base. Reservoir club-shaped, lying slightly above spermoviduct.

DISTRIBUTION. New Guinea, Louisiades. 10 spp.

### *Papulaoma* Iredale, 1941

Fig. 1234

Iredale, 1941b: 64.

TYPE SPECIES — *Flammulina abdita* Hedley, 1897; OD.

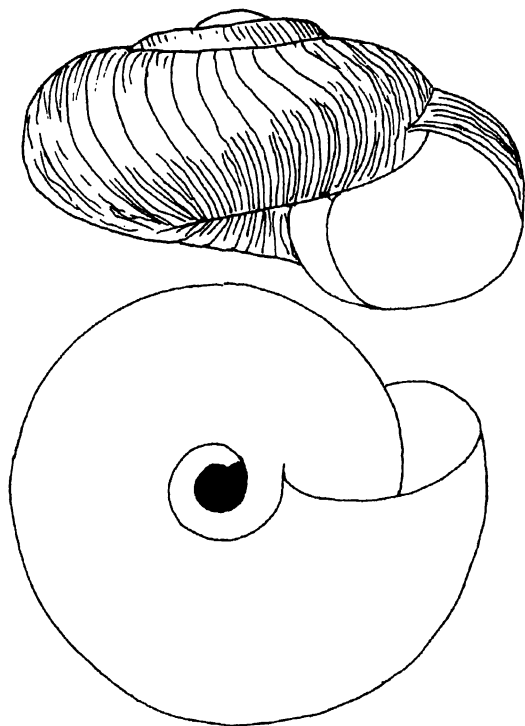


Fig. 1234. *Papulaoma abdita* (Hedley, 1897).  
After Hedley, 1897

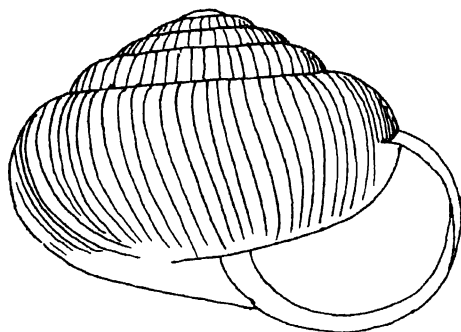


Fig. 1235. *Teracharopa goudi* Maassen, 2000.  
After Maassen, 2000.

Shell depressed, with somewhat elevated spire, thin, translucent, of 3.5 moderately convex whorls. Last whorl slightly descending in front, rounded at periphery. Color raw umber, paler on earlier whorls, purplish on apex. Embryonic whorls spirally lirate. Postapical whorls with periostracal, lamellar radial ribs. Aperture ovate-lunate, slightly oblique, toothless, with simple margins. Umbilicus moderately wide, perspective. Height 0.8, diam. 1.5 mm.

DISTRIBUTION. Papua New Guinea. 1 sp.

***Teracharopa* Maassen, 2000**  
Fig. 1235

Maassen, 2000: 142.

TYPE SPECIES — *Teracharopa goudi* Maassen, 2000; OD.

Shell low-conic, thin, transparent, shining, of 4-5 rather convex, slightly shouldered whorls. Last whorl evenly rounded at periphery. Color white. Postnuclear sculpture of sharp, wavy radial riblets and

distinct, delicate spiral lines in intervals. Aperture rather narrow, crescentic, with a little thickened margins; columellar margin reflexed. Umbilicus very narrow or closed. Height 2.7-3.1, diam. 3.7-4.1 mm.

DISTRIBUTION. Sumatra, ?Kalimantan (Borneo). 2 or 3 spp.

***Setomedeia* Iredale, 1941**  
Fig. 1236

Iredale, 1941a: 267

— *Setomedia* Kershaw, 1956: 7 (nom. err. pro *Setomedeia*).

B. Smith, 1992: 204.

TYPE SPECIES — *Suteria seticostata* Hedley, 1924; OD.

Shell more or less depressed to nearly flat, very thin, fragile, of 3.5-nearly 6 normally to loosely coiled whorls. Spire slightly to strongly elevated. Whorls shouldered above and rounded below a slightly compressed periphery, or rounded above



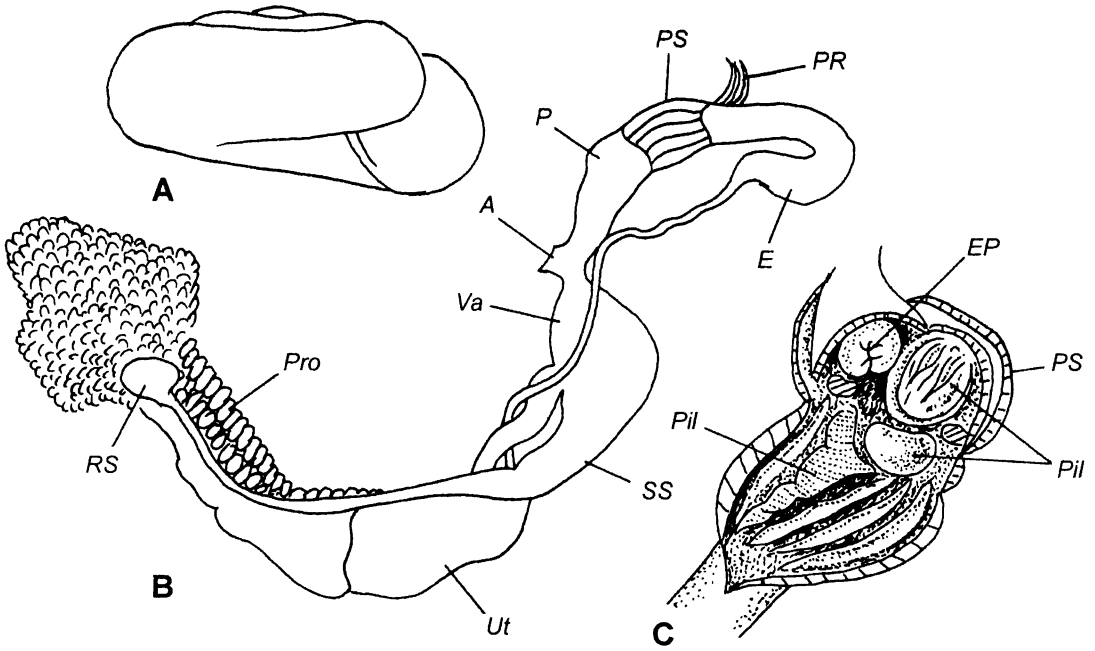


Fig. 1236. *Setomedea seticostata* (Hedley, 1924).

A — shell. B — reproductive tract. C — interior of penis. After Stanisic, 1990.

and flattened at basal surface. Color yellow-corneous to brownish-yellow with reddish-brown flammulations and suffusions. Apical sculpture of numerous slightly to strongly squiggly spiral cords with a few vague radial undulations. Postnuclear sculpture of broad spiral furrows (except for one species) and numerous, moderately spaced, complex radial ribs formed by enlargement of 2-3 riblets. Major ribs have periostracal blades scalloped (caused by spiral undulations in shell surface) or normal, with or without regularly spaced slender setae along their length. Microsculpture of fine, crowded radial riblets, 7-15 between major ribs, and numerous, dense spiral cords on radial ribs. Aperture simple, roundly lunate, columellar margin slightly expanded. Parietal callus developed. Umbilicus wide to narrow. Height 1.36-3.37, diam. 2.56-5.71 mm.

Kidney broadly triangular to elongated, curved. Initial part of primary ureter somewhat coiled about lower end of kidney. Secondary ureter incomplete, ureteric pore

situated just below bend separating primary and secondary ureters.

Hermaphroditic gland of 2 clusters of palmately clavate clumps of acini. Epiphallus muscularised, of various length, sometimes modified and partially incorporated into penial summit. Epiphallus enters apical bulb of penis terminally or nearly so through a simple pore. Tubular distal portion of penis sometimes separated from proximal bulbous portion by a sphincter, internally with fleshy, longitudinal pilasters or low pustular thickenings. Proximal portion internally with pilasters, tubercular stimulator or with incorporated epiphallus. Vagina (very) short. Spermathecal stalk basally swollen, reservoir attends albumen gland.

DISTRIBUTION. Australia (New South Wales, Queensland). 5 spp.

? *Paratrochus* Pilsbry, 1893  
Fig. 1237

Pilsbry, 1893 (1892-1893): 295 (*Endodonta* sect.).

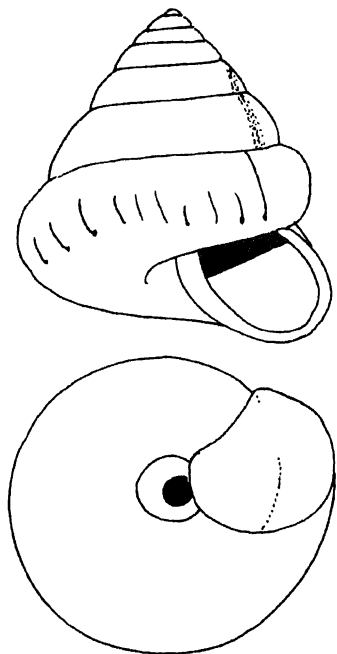


Fig. 1237 *Paratrochus dalbertisi* (Brazier, 1876).  
After Pilsbry, 1895 (1893-1895).

TYPE SPECIES — *Helix (Ochthevilla) d'albertisi* Brazier, 1876; monotypy.

Shell pyramidally conic, thin, hyaline, with acute apex, of 8.5 slightly convex whorls; last whorl with a small crenulated peripheral keel. Suture channeled, crenulated. Color reddish-brown, apex white. Embryonic and early postembryonic whorls closely, obliquely, rugosely striated; later whorls spirally granulated. Aperture nearly circular, oblique; peristome thin, margins continuous; columellar margin slightly reflexed over umbilicus. Parietal wall with callus. Umbilicus narrow, cylindrical. Height 8, diam. 7.5 mm.

DISTRIBUTION. Yule Island, New Guinea. 1 sp.

REMARK. Solem (1964b) suggested that *Paratrochus dalbertisi* may prove to be related to *Foxidonta* (Trochomorphidae).

### *Hedleyoconcha* Pilsbry, 1893

Fig. 1238

Pilsbry, 1893 (1893-1895): 18. Stanistic, 1990: 42.

TYPE SPECIES — *Helix delta* L. Pfeiffer, 1857; OD.

Shell relatively large, trochoid, thin, of 5-7 weakly convex whorls. Last whorl scarcely descending. Whorls slightly flattened above and rounded below strongly angulate to carinate periphery. Color straw to creamy with darker, diffuse radial streaks. Surface of embryonic whorls pitted, rest whorls covered with low, protractively sinuated, radial ribs and low rounded spiral cords forming a reticulate pattern. Aperture ovately lunate to rounded, markedly oblique, with thin margins. Columellar margin expanded and slightly reflexed over narrow umbilicus. Height 4.62-7.00, diam. 5.38-10.08 mm (6.93 × 8.63 mm).

Caudal horn present.

Kidney elongated, vaguely triangular with a reduced rectal branch. Secondary ureter incomplete.

Hermaphroditic gland of several clumps, consisting of palmately clavate acini. Talon elongated-rounded. Vas deferens evenly thin. Epiphallus rather large, muscular, entering penis through a very short, fleshy, sphincter-like verge opposite to a grooved muscular thickening. Inner surface of penis with longitudinal, slender, corrugated pilasters. Penial retractor inserted at penis/epiphallus junction. Free oviduct and vagina rather long to medium length. Spermathecal stalk basally swollen, reservoir attends albumen gland.

DISTRIBUTION. E Australia (Queensland, New South Wales), Lord Howe Island. 3-4 spp.

### *Ngairea* Stanistic, 1990

Fig. 1239

Stanistic, 1990: 14.

TYPE SPECIES — *Oreokera dorrigoensis* Iredale, 1941; OD.

Shell depressed, somewhat lenticular, thin, of 4-6 normally to tightly coiled whorls; whorls weakly angulate to carinate, sometimes rounded. Spire moderately to strongly elevated, last whorl descending slightly. Color uniformly yellow-corneous or with red flammulations. Apex nearly flat, sculptured with curved radial ribs, reduced or modified, with or without spiral elements in form of cords or incised grooves. Postembryonic sculpture of crowded, protractively sinuated radial ribs

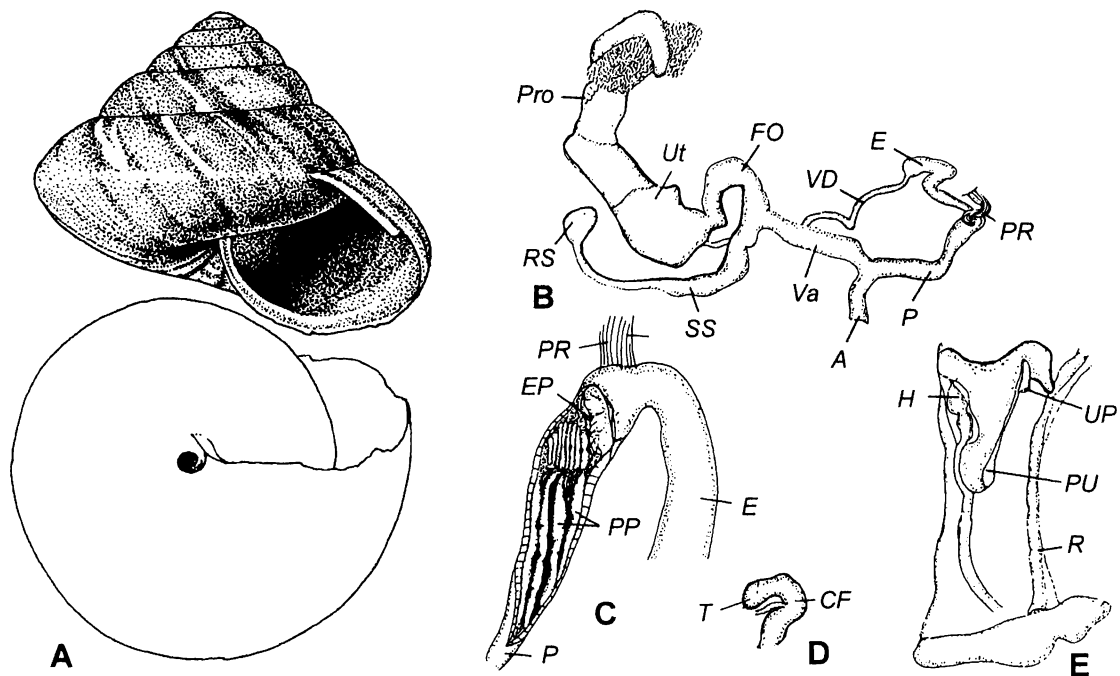


Fig. 1238. *Hedleyoconcha delta* (L. Pfeiffer, 1857).

A — shell: Queensland. Senck. No. 158314a. B — reproductive tract. C — interior of penis. D — talon-carrefour complex. E — roof of lung cavity. After Stanisc, 1990. H — heart. R — rectum. UP — ureteric pore.

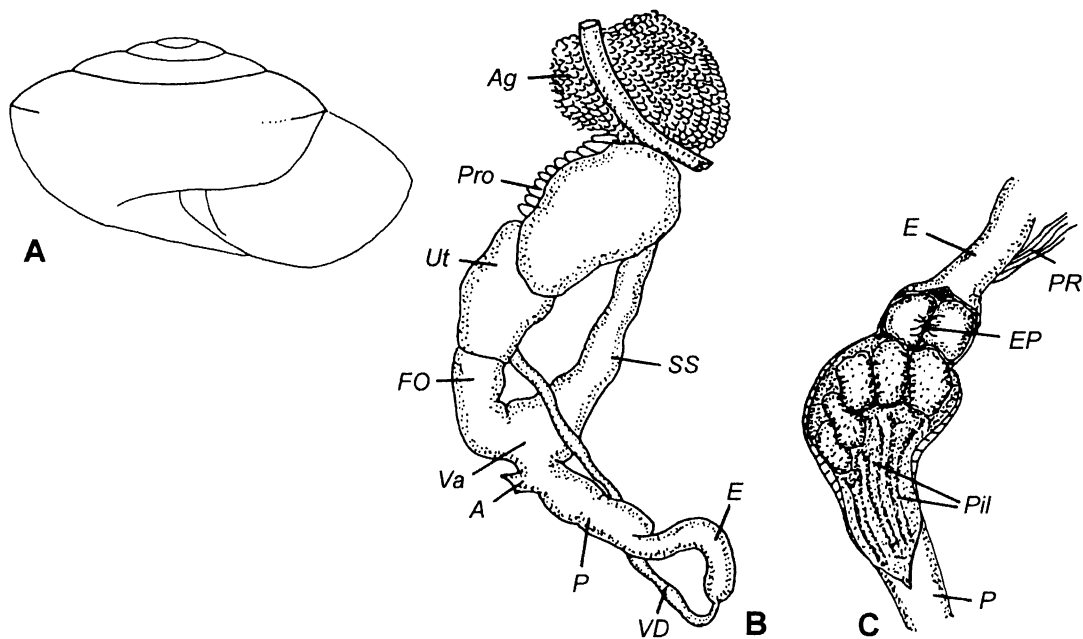


Fig. 1239. *Ngairia dorrigoensis* (Iredale, 1941).

A — shell. B — reproductive tract. C — interior of penis. After Stanisc, 1990.

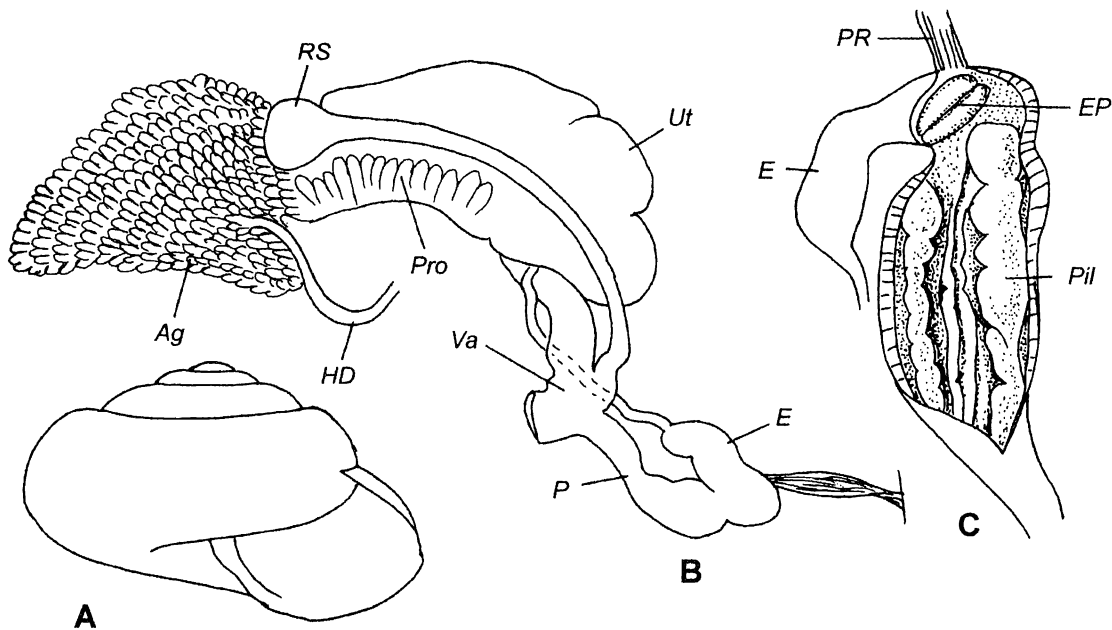


Fig. 1240. *Lenwebbia protoscrobiculata* Stanisc, 1990.  
 A — shell. B — reproductive tract. C — interior of penis. After Stanisc, 1990.

which may be reduced; between each pair of these ribs there is spiral sculpture of cords or incised lines. On basal surface sculpture weaker. Aperture toothless, roundly lunate to subquadrate, with simple or somewhat thickened margins. Columellar margin subvertical, reflexed. Umbilicus relatively wide to closed. Height 2.86-5.35, diam. 5.46-7.40 mm.

Caudal horn sometimes present.

Kidney broadly to narrowly triangular, rectal branch vestigial or absent. Secondary ureter incomplete, ureteric pore situated below bend separating arms of ureter.

Hermaphroditic gland of 2-3 clusters of palmately clavate acini. Epiphallus muscled, of various length, entering penis apically or nearly so. Epiphallic pore occupies central position on (very) short pad-shaped verge. Summit of penis swollen, internally separated from a tubular distal part by an annular collar (sphincter). This tubular part internally with axial, broad, corrugated or slender, fleshy pilasters. Penial retractor attached to epiphallus, penis/epiphallus junction or upper part of penis. Va-

gina (very) short. Spermathecal stalk usually expanded, swollen basally; reservoir reaching albumen gland.

DISTRIBUTION. E Australia (SE Queensland, New South Wales). 5 spp.

*Lenwebbia* Stanisc, 1990  
 Fig. 1240

Stanisc, 1990: 52.

TYPE SPECIES — *Lenwebbia protoscrobiculata* Stanisc, 1990; OD.

Shell depressed, with moderately elevated spire, of about 4 rounded whorls. Last whorl more or less regularly rounded at periphery. Color yellow-brown, spire may be darker. Embryonic sculpture of numerous dimples and vague radial riblets. Rest whorls with spiral grooves, broad radial undulations and very fine thread-like radial ribs. Basal surface with incised spiral lines and weak radial wrinkles. Aperture roundly lunate, toothless, with thin margins, columellar margin dilated, slightly

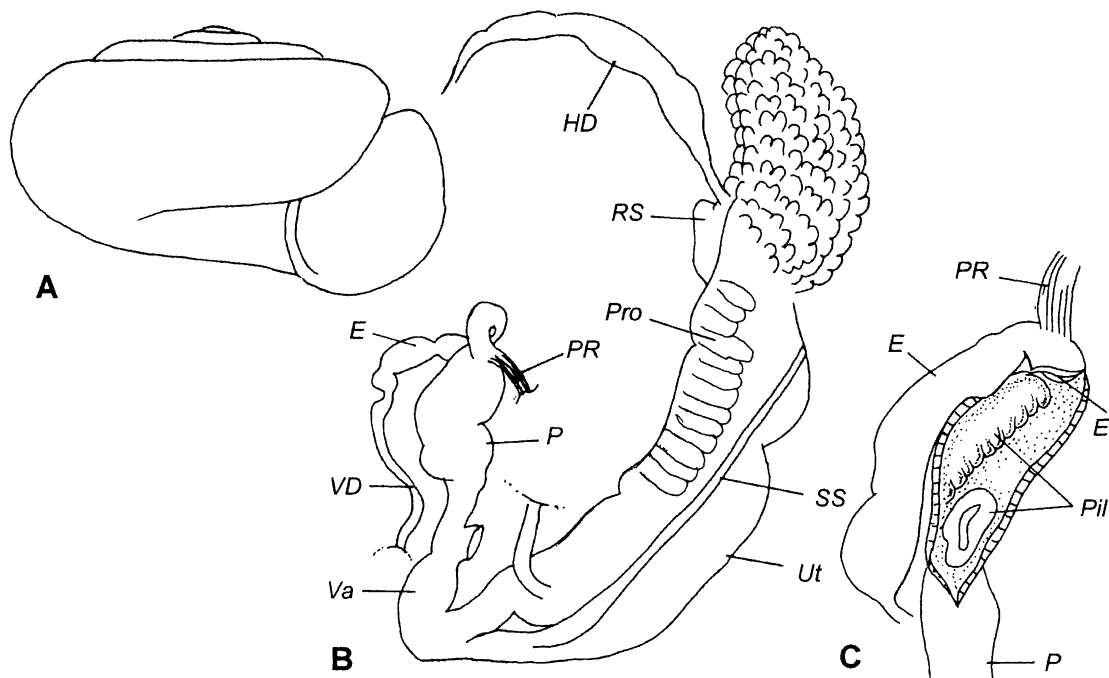


Fig. 1241. *Egilomen cochlidium* (Cox, 1868).

A — shell. B — reproductive tract. C — interior of penis. After Stanistic, 1990.

thickened. Umbilicus narrow. Height 2.56-3.15, diam. 3.96-4.69 mm.

Caudal horn and foss absent.

Kidney triangular, its rectal arm reduced. Secondary ureter incomplete.

Hermaphroditic gland composed of few clusters of palmately clavate acini. Vas deferens rather short, evenly cylindrical. Epiphallus short, muscled, entering penis apically through a simple pore, surrounded by fleshy ridges. Penis elongated, internally with a few large longitudinal pilasters. Free oviduct longer than vagina. Spermathecal stalk cylindrical, basally scarcely enlarged; reservoir attends albumen gland.

DISTRIBUTION. E Australia (SE Queensland). 2 spp.

*Egilomen* Iredale, 1937

Fig. 1241

Iredale, 1937a: 328. Stanistic, 1990: 193.

TYPE SPECIES — *Helix cochlidium* Cox, 1868; OD.

Shell thin, somewhat depressed to nearly globose, of 4.25-5 (or a little more) whorls, that shouldered above and rounded below a weakly flattened periphery. Color white to light straw-yellow; shell often covered with dirt particles. Embryonic sculpture of broad, bold, widely spaced, slightly curved radial ribs, and weak spiral cords. Rest whorls with broad, bold, moderately to widely spaced, weakly protractively sinuated to vertical ribs. Microsculpture of low, rounded, dense spiral cords crossed by fine, thread-like radial riblets. Aperture generally ovate, with thickened lip, rarely there is a distinct basal knob, retracted at suture to form a sinulus. Umbilicus wide to closed. Height 1.11-2.04, diam. 1.62-3.07 mm.

Kidney strongly bent, secondary ureter complete.

Talon with very short stalk, subcircular. Vas deferens rather short, entering epiphallus terminally. Epiphallus well developed, slender, entering penis through a simple

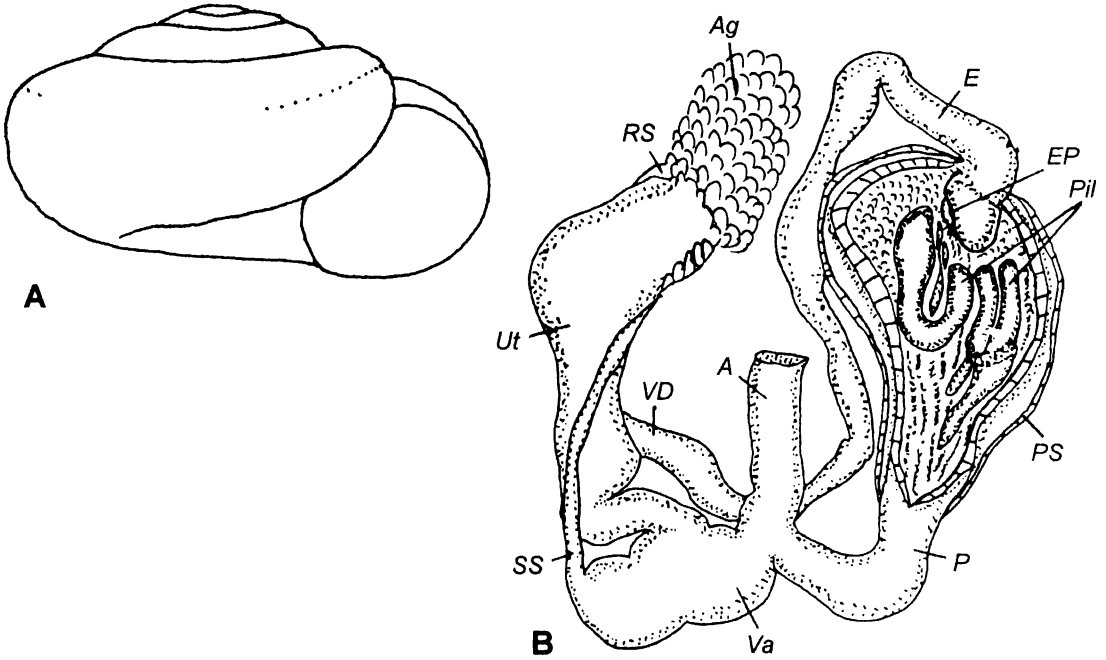


Fig. 1242. *Coenocharopa sordida* Staniscic, 1990.  
 A — shell. B — reproductive tract (penis dissected). After Staniscic, 1990.

pore. Penis subcylindrical, internally with a large longitudinal and an accessory circular pad-shaped pilasters. Penial retractor attached to penis/epiphallus junction. Free oviduct and vagina relatively long, subequal in length. Base of spermathecal stalk somewhat enlarged, reservoir reaching albumen gland.

DISTRIBUTION. E Australia (Queensland, New South Wales). 4 spp.

*Coenocharopa* Staniscic, 1990  
 Fig. 1242

Staniscic, 1990: 169.

TYPE SPECIES — *Coenocharopa sordidus* Staniscic, 1990; OD.

Shell more or less depressed, thin, spire slightly to conspicuously elevated. Whorls 4-4.5, strongly to weakly shouldered, occasionally with suprapерipheral sulcus. Last whorl descending. Color yellow-corneous or burnished yellow-beige; dirt particles often adhering to shell surface. Sculpture of

embryonic whorls of weak to prominent, curved radial ribs which may be (moderately) crowded, more so at embryonic-post-embryonic junction, or regularly, widely spaced. Ribs with prominent periostracal blades. There is a secondary apical sculpture of crowded, squiggly spiral cords which are not continuous on radial riblets. Postembryonic sculpture of widely spaced to crowded, weak radial ribs with prominent periostracal blades sometimes modified into wing-like processes, rarely lacking. Microsculpture of thread-like radial riblets which may have strongly developed periostracal blades and low, broad to high, narrow spiral cords. Aperture roundly to ovately lunate, with simple, converging margins. Parietal callus strongly developed. Umbilicus moderately wide to narrow. Height 1.07-2.64, diam. 1.91-4.43 mm.

Vas deferens slender to expanded. Epiphallus sometimes partially bound to penis sheath, entering penis apically through 2 fleshy thickenings. Penis (very) large, surrounded by a sheath, internally with several longitudinal pilasters which

modified in some species. Penial retractor inserted on or very near to boundary between epiphallus and penis. Free oviduct moderately long, vagina much shorter. Atrium long. Base of spermathecal stalk greatly swollen, reservoir reaching albumen gland.

DISTRIBUTION. E Australia. 6 spp.

### *Mussonula* Iredale, 1937

Fig. 1243

Iredale, 1937c: 13. B. Smith, 1992: 194.

TYPE SPECIES — *Mussonula verax* Iredale, 1937; OD.

Shell trochoid, of about 4 weakly convex whorls. Last whorl angulated at periphery, slightly descending in front. Whorls rounded above and below periphery. Color yellow-corneous to brown; surface usually with adhering soil particles. Apex prominent, with numerous bold to fine spiral cords and very weak radial wrinkles which become more prominent toward end of embryonic shell. Postnuclear sculpture of numerous, high, protractively sinuated radial riblets with periostracal blades. Sometimes there is trace of weak incised spiral lines, but minor radial riblets absent. Aperture subquadrate, with thin margins, columellar margin slightly reflexed toward rather narrow umbilicus. Height 3.32-4.45, diam. 4.81-5.63 mm.

Rectal branch of kidney reduced. Secondary ureter incomplete.

DISTRIBUTION. E Australia (northern part of New South Wales, SE Queensland). 2 spp.

### *Discocharopa* Iredale, 1913

Fig. 1244

Iredale, 1913: 279 (*Charopa* subg.). Stanisic, 1990: 143.

TYPE SPECIES — *Charopa* (*Discocharopa*) *exquisita* Iredale, 1913 (= *Patula aperta* Möllendorff, 1888); OD.

Shell depressed to almost discoidal, of slightly more than 3.5 normally coiled, moderately convex whorls. Last whorl somewhat flattened laterally above and below rounded periphery. Spire usually slightly to moderately elevated. Color white with a

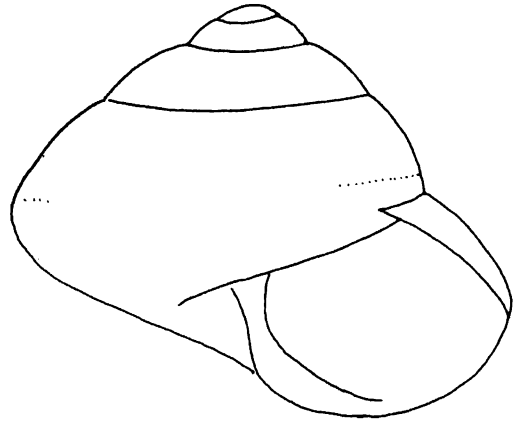


Fig. 1243. *Mussonula verax* Iredale, 1937  
After Stanisic, 1990.

yellow tinge. Embryonic sculpture of major radial ribs more crowded near end of apex, with periostracal, relatively regular folds providing microspiral elements. Postnuclear whorls with narrow, sharply defined, crowded, strongly protractively sinuated radial ribs. Microsculpture of very fine radial riblets with serrated edges; no trace of spiral sculpture. Aperture with or without a small to very large and deeply recessed, medial parietal lamella. Umbilicus very wide. Height 0.4-0.5, diam. 1.18-1.84 mm (0.46 × 1.20 mm).

Kidney sharply curved, pericardial branch markedly longer than rectal. Secondary ureter complete.

Hermaphroditic gland bilobed. Talon slender. Penis slender, with subapical entrance of vas deferens; no externally recognizable epiphallus. Penis internally with at least 2 axial pilasters. Penial retractor inserted apically. Free oviduct very short. Vagina rather long, slender. Atrium long. Spermathecal shaft closely bound to prostate, not enlarged basally.

DISTRIBUTION. Philippines, Java, Aus-

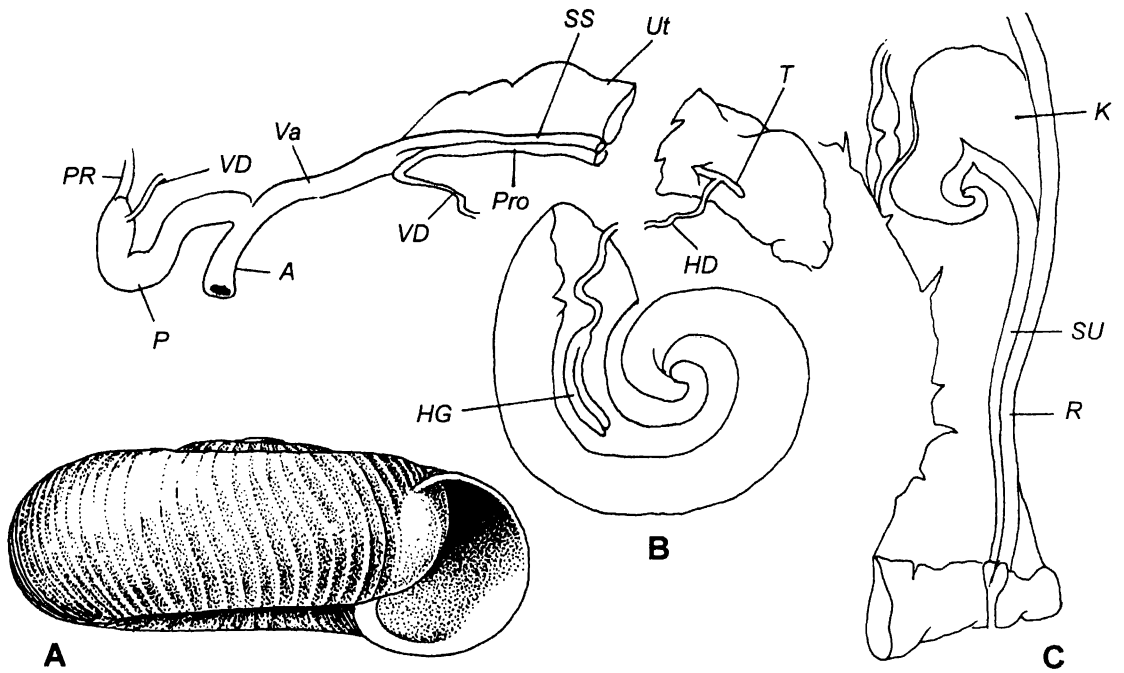


Fig. 1244. *Discocharopa aperta* (Möllendorff, 1888).  
 A — shell: Sarakata River valley, Espiritu Santo, New Hebrides. Phil. No. 200659. B — fragments of reproductive tract. C — roof of lung cavity. After Solem, 1983. R — rectum.

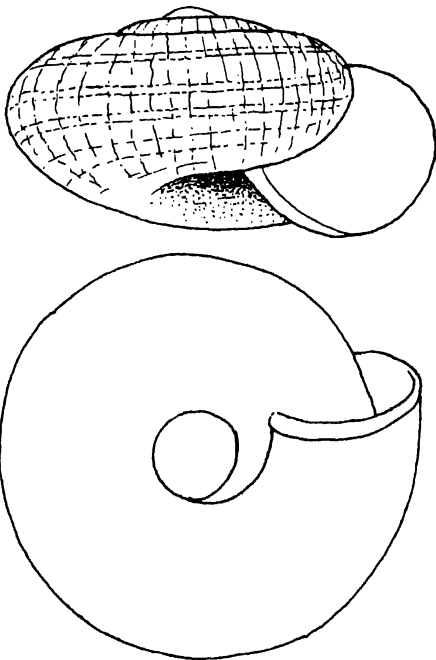


Fig. 1245. *Parvicharopa persculpta* (E. Smith, 1894).  
 After E. Smith, 1894.

tralia, Tasmania, New Hebrides, Kermadec and Society Islands; ? Madeira (Gittenberger & Ripken, 1983). 6-8 spp.

*Parvicharopa* Solem, 1958  
 Fig. 1245

Solem, 1958: 20.

TYPE SPECIES — *Patula persculpta* E. Smith, 1894; OD.

Shell depressed, thin, of 3-3.5 slightly convex whorls. Last whorl scarcely angulated (nearly rounded). Base of shell somewhat convex. Color whitish. Embryonic whorls with reticulate sculpture. Postapical sculpture of major ribs and distinct spiral striae; microradial sculpture in interstices absent. Aperture rounded, toothless, with reflexed columellar margin. Umbilicus moderately wide. Height 0.6-0.8, diam. 1.0-1.5 mm.

DISTRIBUTION. Central Indonesia, Moluccas. 2 spp.



*Reticharopa* Solem, 1959

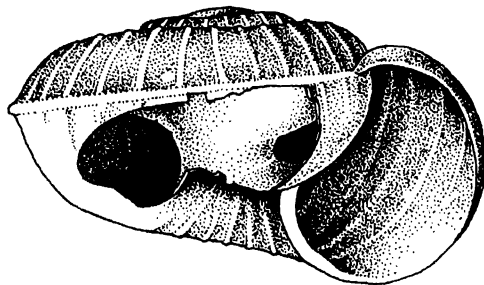
Fig. 1246

Solem, 1959b: 85.

TYPE SPECIES — *Reticharopa latecosta* Solem, 1959; OD.

Shell flat to depressedly turbinoid, rather thin, of 3-4.5 convex whorls. Color corneous, ribs lighter. Embryonic whorls with reticulate sculpture. Postapical whorls with distinct major radial ribs and fine reticulate sculpture in interstices; spiral cordlets distinct, well spaced. Aperture generally rounded, ample, subvertical, with simple margins. Umbilicus moderately wide, deep. Height 1.1-1.8, diam. 2.0-3.1 mm (1.02 × 1.72 mm).

DISTRIBUTION. New Hebrides. 5-6 spp.



*Cralopa* Iredale, 1941

Fig. 1247

Iredale, 1941a: 267 Stanisc, 1990: 147

TYPE SPECIES — *Helix stroudensis* Cox, 1864; OD.

Shell somewhat depressed, thin, of 3.75-4.5 tightly to loosely coiled whorls. Last whorl round to weakly shouldered above periphery and rounded below. Spire slightly elevated. Color brown. Embryonic sculpture of prominent to bold, weakly curved radial ribs and low, delicate spiral cords. Postapical whorls with few to many, widely spaced to crowded, bold, strongly protractively sinuated, major radial ribs and combination of fine radial riblets and dense, narrow spiral cords in interstices; spiral cords continuous on major ribs. Aperture roundly lunate, with sinuous margins, strongly retracted at upper part to form a sinus; columellar margin reflexed over closed or narrowly open umbilicus. Height 0.90-3.36, diam. 1.66-6.64 mm.

Kidney weakly curved, pericardial arm longer than rectal. Secondary ureter complete.

Hermaphroditic gland bilobed, each lobe consists of a few elongated acini. Vas deferens fat, its diameter nearly equal to that of weakly differentiated epiphallus. Latter enters penis terminally through a pore surrounded by circular pilaster. Penis very large, nearly cylindrical, internally with 2 large, spongy longitudinal pilasters.

Fig. 1246. *Reticharopa latecosta* Solem, 1959. Sarakata River Valley, Espiritu Santo, New Hebrides. Paratype. Cambridge No. 186829.

Penial retractor attached to upper portion of penis or to epiphallus closely to penis. Free oviduct rather long, vagina shorter. Spermathecal shaft long to moderate, cylindrical or somewhat enlarged at its base.

DISTRIBUTION. E Australia. 4 spp.

*Elsothera* Iredale, 1933

Fig. 1248

Iredale, 1933: 53. Stanisc, 1990: 160.

TYPE SPECIES — *Helix sericatula* L. Pfeiffer, 1850; OD.

Shell depressed to flat, thin, of 4-5 whorls shouldered above and rounded below weakly compressed periphery. Last whorl inflated, sometimes with a light suprapерipheral sulcus. Color light- to dark-brown with darker radial streaks. Apical sculpture of dense, slightly curved, high radial ribs and finer, more crowded, low spiral cords which continue onto radial ribs. Postembryonic sculpture of numerous, very crowded, high, protractively sinuated radial

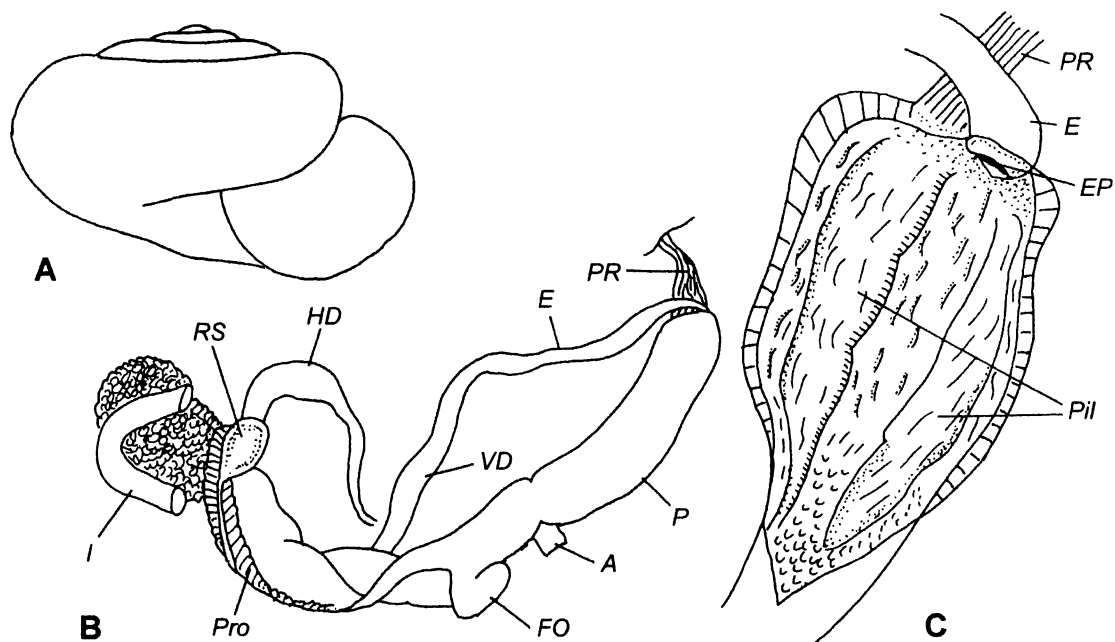


Fig. 1247 *Cralopa stroudensis* (Cox, 1864).

A — shell. B — reproductive tract. C — interior of penis. After Stanisci, 1990. I — intestine.

ribs; between these ribs there are fine, high radial riblets and equally high, more widely spaced spiral cords. Aperture more or less circular, with thin, non-reflexed margins except for columellar margin, reflexed over closed to barely open umbilicus. Height 2.17-3.36, diam. 3.96-6.64 mm.

Rectal arm of kidney reduced, secondary ureter complete.

Vas deferens enters epiphallus apically. Epiphallus long, muscularized, sometimes partially covered with thin sheath, entering penis through a simple pore surrounded by a collar. Penis moderately short, tubular, with apical bulb that contains numerous short, transverse or longitudinal folds and with a spongy or fleshy sphincter constricting entrance to tubular penis chamber. Latter internally with short, longitudinal thickenings and pustulations, or only pustulations. Free oviduct not long. Vagina short, or long with an apical caecum. Spermathecal stalk subcylindrical or tapering toward reservoir, adjoining albumen gland.

DISTRIBUTION. E Australia (Queens-

land, New South Wales, Victoria), N Tasmania. 7-8 spp.

### *Cavellia* Iredale, 1915

Fig. 1249

Iredale, 1915: 481. Dell, 1952b: 91.

TYPE SPECIES — *Helix biconcava* L. Pfeiffer, 1853; OD.

Shell flat, with sunken apex, fragile, silky glossy, of 5-6 convex whorls. Last whorl widely rounded at periphery. Color ivory, with yellowish-reddish patches. First 0.5 whorls smooth, rest whorls with quite regular radial ribs and very fine radial striae in interstices. Aperture widely semi-lunate, only slightly oblique, with sharp, simple margins; angular area of palatal margin curved backward. Umbilicus broad, shallow. Height 0.7-2.1, diam. 1.5-5.5 mm (2.0 × 5.2 mm).

DISTRIBUTION. New Zealand. Probably 1 sp.

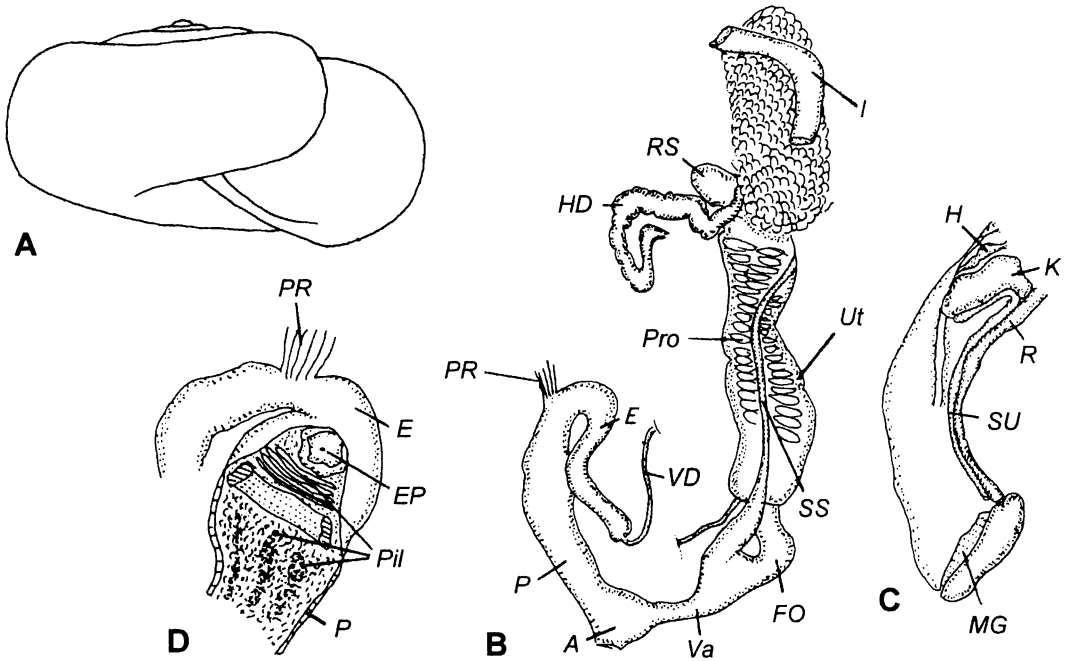


Fig. 1248. *Elsothera sericatulula* (L. Pfeiffer, 1850).  
 A — shell. B — reproductive tract. C — roof of lung cavity. D — interior of penis. After Stanisic, 1990. *H* — heart. *I* — intestine. *MG* — mantle gland. *R* — rectum.

***Rhophodon* Hedley, 1924**

Fig. 1250

Hedley, 1924: 219.

— *Egilodonta* Iredale, 1937a: 328 (t.-sp. *Charopa bairnsdalensis* Gabriel, 1930; OD).

Stanisic, 1990: 114. B. Smith, 1992: 202.

TYPE SPECIES — *Rhophodon peregrinus* Hedley, 1924; OD.

Shell flat or nearly so, fragile, of 4.25-5.5 (very) tightly coiled whorls. Periphery of body whorl broadly rounded, shouldered above and flattened below. Spire slightly sunken to very slightly elevated. Sculpture of embryonic whorls of numerous moderately to crowded, weakly curved radial ribs and very weak thread-like spiral cords and threads. Postapical sculpture of few, widely spaced to many, crowded, thin, protractively sinuated to straight radial ribs. Between these major ribs there are dense radial riblets and widely spaced to crowded, low rounded spiral cords raised at their intersection with radial riblets to form elon-

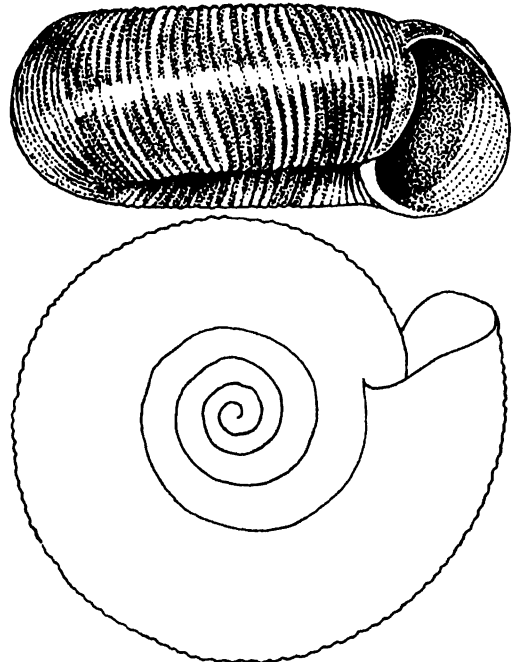


Fig. 1249. *Cavellia biconcava* (L. Pfeiffer, 1853).  
 "40-mile Buch, New Zealand" Phil. No. 47731.

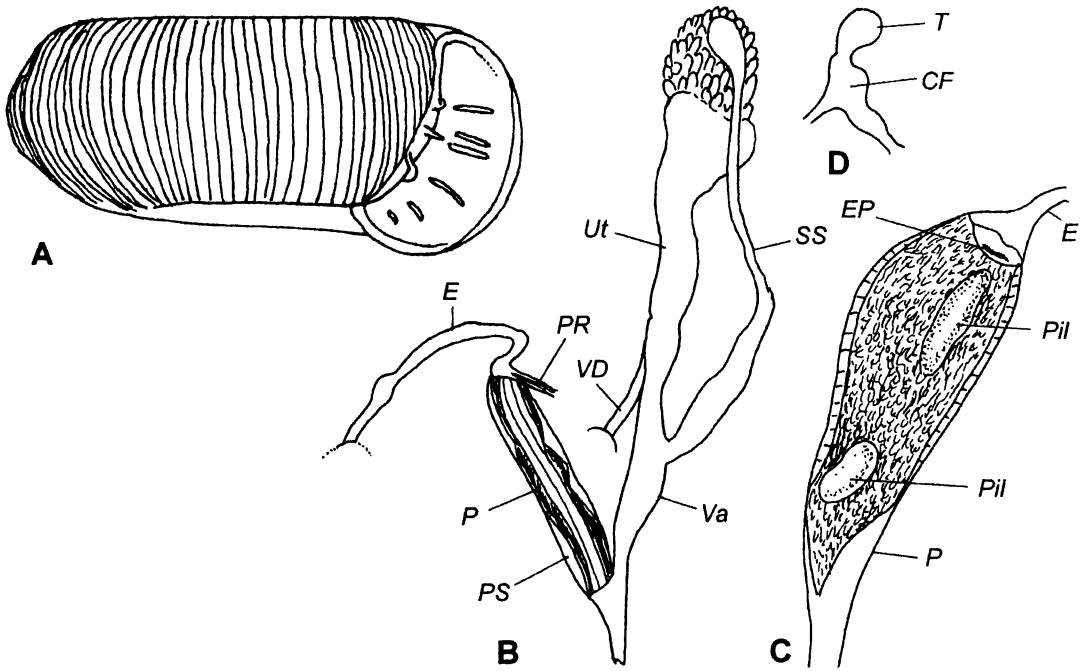


Fig. 1250. *Rhopodon peregrinus* Hedley, 1924.

A — shell. After Hedley, 1924. B — reproductive tract. C — interior of penis. D — talon-carrefour complex. After Stanistic, 1990.

gated beads. Aperture ovately lunate, with few to many plates and folds. Parietal wall bears 1-4 crescentic lamellae, with or without additional thread-like traces. Columellar lamella sometimes present. Palatal side with 3-6 crescentic folds, with or without a superior trace. Height 0.6-1.2, diam. 1.29-2.98 mm.

Kidney nearly straight, secondary ureter complete.

Hermaphroditic gland composed of 2 small clusters of finger-like acini. Talon with very short stalk and globular head. Epiphallus enters penis apically or subapically through 2 fleshy lips surrounded by a muscular collar. Penis with or without a sheath, its upper end more or less swollen, internally with longitudinal pilasters. Inner surface of lower portion of penis with small, fleshy, axial and basal, circular, stimulatory pilasters. Penial retractor inserts on penis/epiphallus junction. Vagina and free oviduct long. Base of spermathecal stalk moderately expanded, reservoir lies on albumen gland.

DISTRIBUTION. E Australia (Queensland to Victoria). 8 spp.

### *Letomola* Iredale, 1941

Fig. 1251

Iredale, 1941a: 267

— *Letomala* Kershaw, 1956: 9 (nom. err. pro *Letomola*).

Stanistic, 1990: 109.

TYPE SPECIES — *Rhopodon contortus* Hedley, 1924; OD.

Shell flat, fragile, of 3.5-4 whorls rounded below periphery and with a broad spiral sulcus above periphery; basal side flattened. Color chestnut, irregularly streaked with raw sienna. Sculpture of embryonic whorls of irregular malleations and ridgelets. Postapical sculpture of weak radial wrinkles and vague spiral cords. Aperture ovately lunate, moderately oblique, with a weak parietal lamella and short, low basal fold; both lie deeply. Umbilicus very

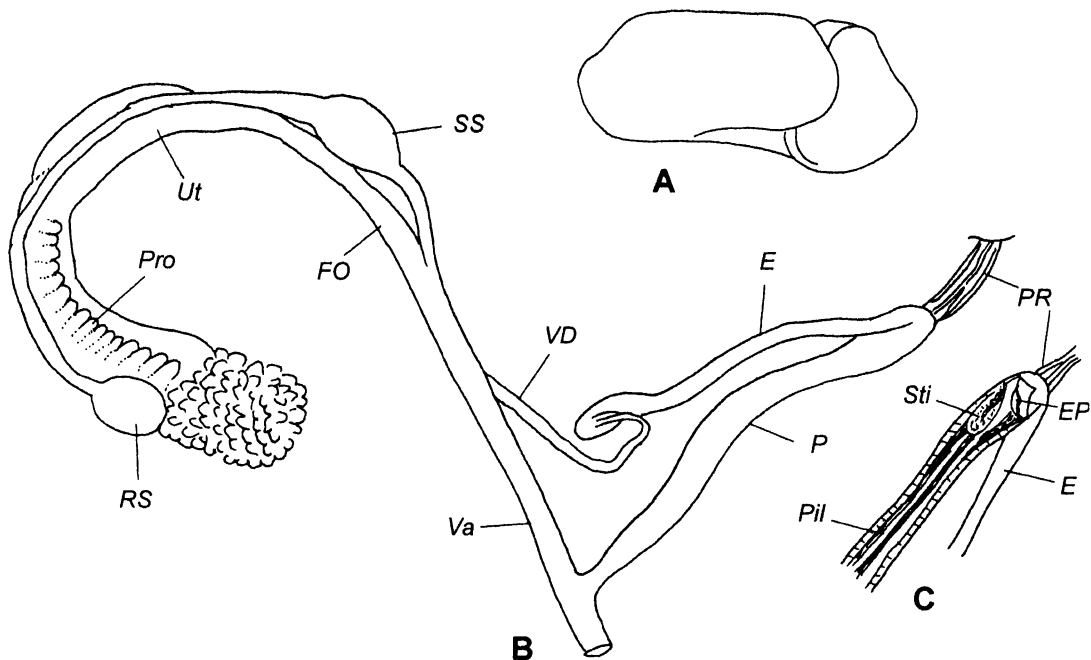


Fig. 1251. *Letomola contorta* (Hedley, 1924).

A — shell. B — reproductive tract. C — interior of penis. After Stanisc, 1990.

wide, cup-shaped. Height 0.80-1.03, diam. 1.81-2.24 mm.

Kidney bent, its arms subequal in length. Secondary ureter complete.

Hermaphrodite gland a single, bilobed cluster of acini. Proximal part of vas deferens a little thickened. Epiphallus long, slender, entering penis apically through a pore surrounded by small fleshy lips. Penis slender, long, its proximal chamber internally with a short subapical stimulator, rest surface bears longitudinal pilasters. Penial retractor inserted at junction of penis and epiphallus. Free oviduct and vagina very long. Basal section of spermathecal stalk swollen at some distance from its entrance to female side, reservoir attending lower edge of albumen gland.

DISTRIBUTION. New South Wales, Australia. 1 sp. As Stanisc (1990: 109) has stated, Smith & Kershaw (1979) included in this genus the Tasmanian species *Helix barrenensis* Petterd, 1879 without giving reasons; so he excluded this species from the genus.

*Nautiliropa* Stanisc, 1990

Fig. 1252

Stanisc, 1990: 101.

TYPE SPECIES — *Helix omicron* L. Pfeiffer, 1851; OD.

Shell flat, fragile, of about 4-4.5 tightly coiled whorls, rounded below and shouldered above rounded periphery. Spire strongly depressed, apex sunken. Color pale-corneous to light-brown, often with reddish radial flammulations arranged in a zigzag pattern. Embryonic whorls with low radial ribs and very delicate spiral cordlets, modified to produce a pattern of regularly arranged pits. Postapical sculpture of numerous, protractively sinuated radial ribs enforced by periostracal extensions. In interstices there are dense, fine spiral and radial striae. Aperture ovately lunate, subvertical, toothless; upper part of palatal margin protruded. Umbilicus moderately wide. Height 2.35-3.11, diam. 4.20-5.97 mm (2.40 × 5.23 mm).

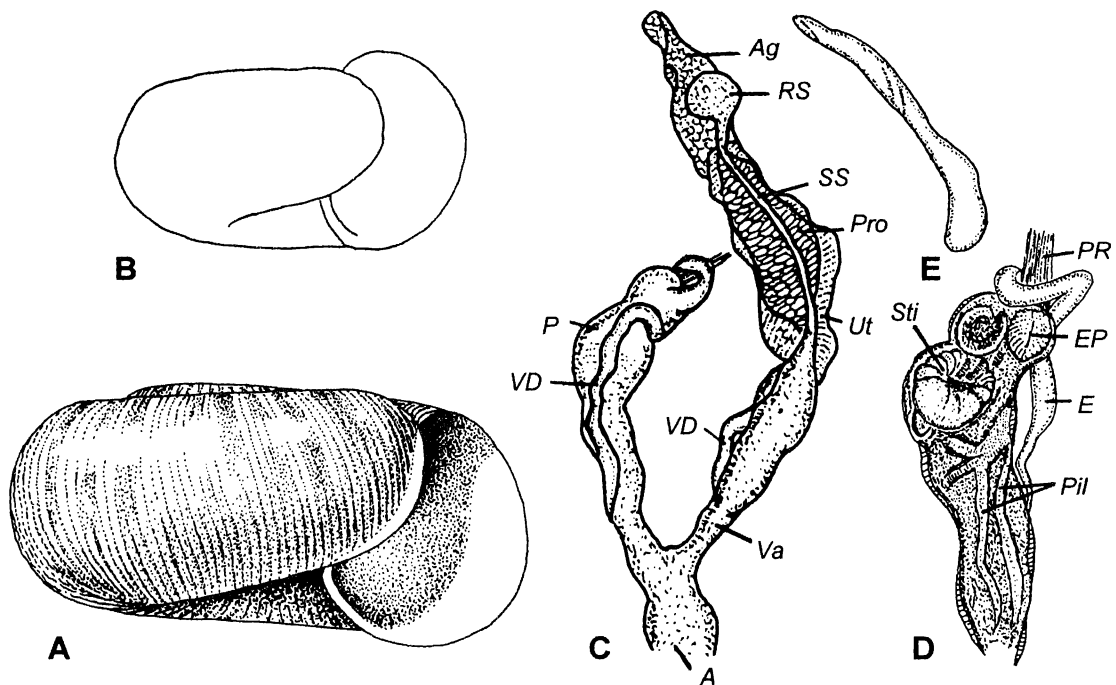


Fig. 1252. *Nautiliropa omicron* (L. Pfeiffer, 1851).  
 A — shell: Australia. Phil. No. 47749. B — shell. C — reproductive tract. D — interior of penis. E — spermatophore. After Staniscic, 1990.

Kidney with long pericardial and vestigial rectal arms. Secondary ureter complete.

Epiphallus not bound to penis, entering penis apically through a short fleshy verge. Penis pear-shaped with muscular collar and complex pilaster pattern; apical part containing horseshoe-shaped pilaster, subcircular stimulatory pad and longitudinal, anastomosing spongy thickenings. Free oviduct and vagina rather short. Atrium somewhat expanded. Spermathecal shaft swollen basally; reservoir adjoins to albumen gland. Spermatophore simple, clavate.

DISTRIBUTION. Australia (Queensland, New South Wales). 1 sp.

***Biomphalopa* Staniscic, 1990**  
 Fig. 1253

Staniscic, 1990: 94.

TYPE SPECIES — *Endodontia recava* Hedley, 1912; OD.

Shell flat, early whorls deeply sunken.

Whorls 4-5.5, tightly coiled, strongly shouldered above and rounded below laterally compressed periphery. Color creamy-white with darker radial suffusions. Apical sculpture of regularly arranged pits and vague radial wrinkles. Postembryonic whorls with high, bold, crowded, protractively sinuated radial major ribs; between each pair of ribs there are fine radial riblets and equally fine spiral cords, continuous on surface of major ribs. Aperture ovately lunate, slightly oblique, toothless. Umbilicus wide, cup-shaped. Height 1.58-2.68, diam. 2.64-4.69 mm.

Kidney bent, its pericardial arm long and slender, rectal arm reduced. Secondary ureter complete.

Epiphallus shorter than penis, muscular, entering penis subapically through a pore surrounded by fleshy circular thickening. Penis without sheath, either tubular with a large central longitudinal pilaster and a group of smaller apical longitudinal pilasters, or with a swollen apical section containing a large corrugated pilaster. Vagina

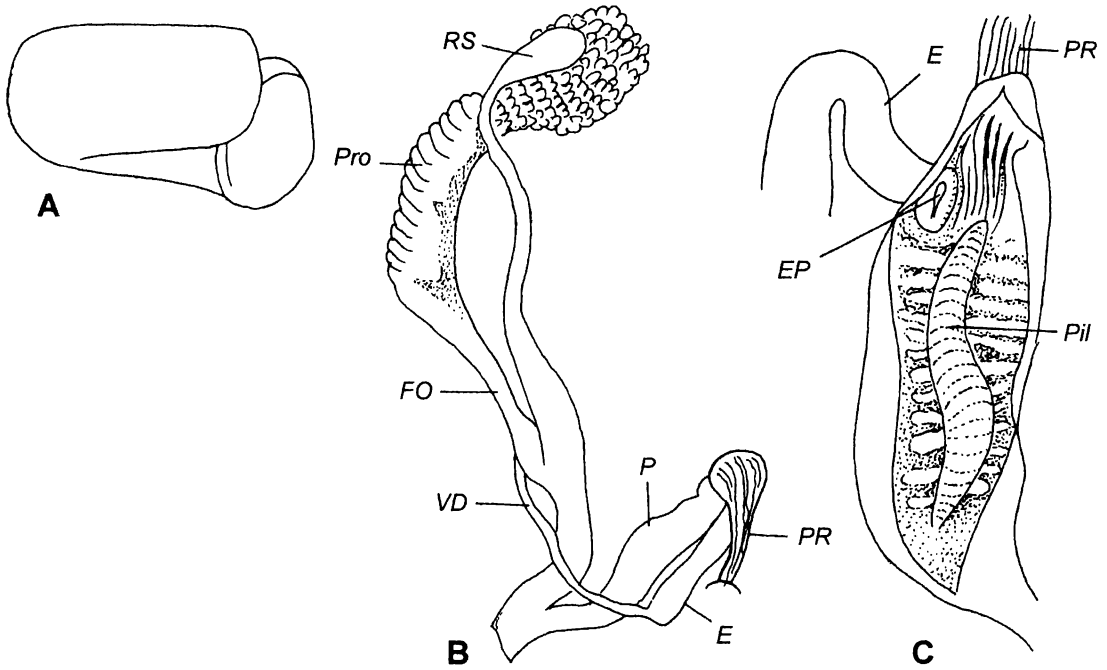


Fig. 1253. *Biomphalopa recava* (Hedley, 1912).

A — shell. B — reproductive tract. C — interior of penis. After Stanisić, 1990.

and free oviduct long. Spermathecal stalk swollen basally, reservoir adjoins to albumen gland.

DISTRIBUTION. NE Australia. 2 spp.

### *Gyrocochlea* Hedley, 1924

Fig. 1254

Hedley, 1924: 215. Stanisić, 1990: 77

TYPE SPECIES — *Helix vinitincta* Cox, 1868; OD.

Shell flat, inflated, thin, with concave spire. Whorls 4-4.75, tightly to moderately tightly coiled. Last whorl rounded below and strongly to weakly shouldered above weakly rounded to flattened periphery. Apical sculpture of fine dense spiral cords and numerous similarly spaced, weakly curved radial ribs forming fine beads at their intersections, or more widely spaced spiral cords and weakly curved, radial ribs which partially fused and worn, giving apex a pitted appearance. Rest surface with

crowded, moderately to widely spaced, prominent, weakly protractively sinuated radial ribs. Microsculpture of numerous radial riblets and more crowded microscopic spiral threads overriding major radial ribs. Aperture simple, ovately lunate, subvertical. Umbilicus wide. Height 2.5-4.8, diam. 5.0-8.7 mm (4.7 × 8.7 mm).

Kidney with elongated pericardial and reduced rectal arms. Secondary ureter complete.

Epiphallus long, coiled. Penis long, tubular, internally with large longitudinal pilasters and with, or without, smaller crowded pilasters near and above penis sheath. Epiphallus entering penis subapically through small conic verge or simple pore. Terminal portion of epiphallus connected to penis sheath by fine connective strands. Vagina long, free oviduct shorter. Basal part of spermathecal stalk somewhat expanded, reservoir lies on upper section of spermoviduct or on lower part of albumen gland.

DISTRIBUTION. E Australia (Queensland, New South Wales). 4 spp.

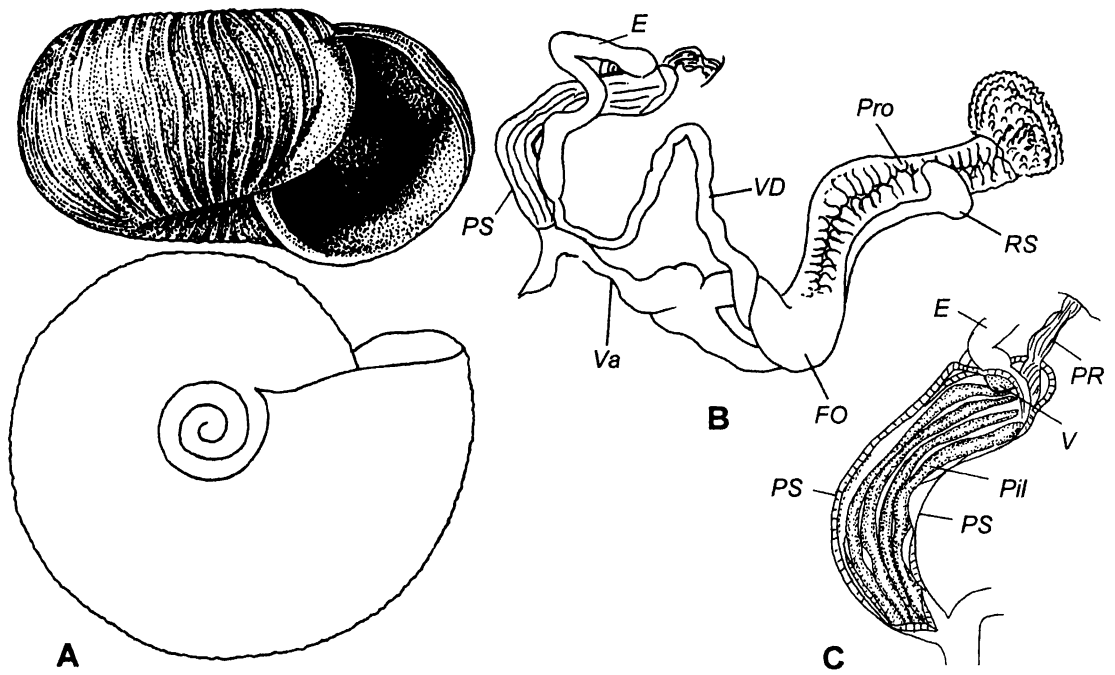


Fig. 1254. *Gyrocochlea vinitincta* (Cox, 1868).  
 A — shell: New South Wales: Richmond River. Syntype. Senck. No. 158293a. B — reproductive tract. C — interior of penis. After Stanistic, 1990.

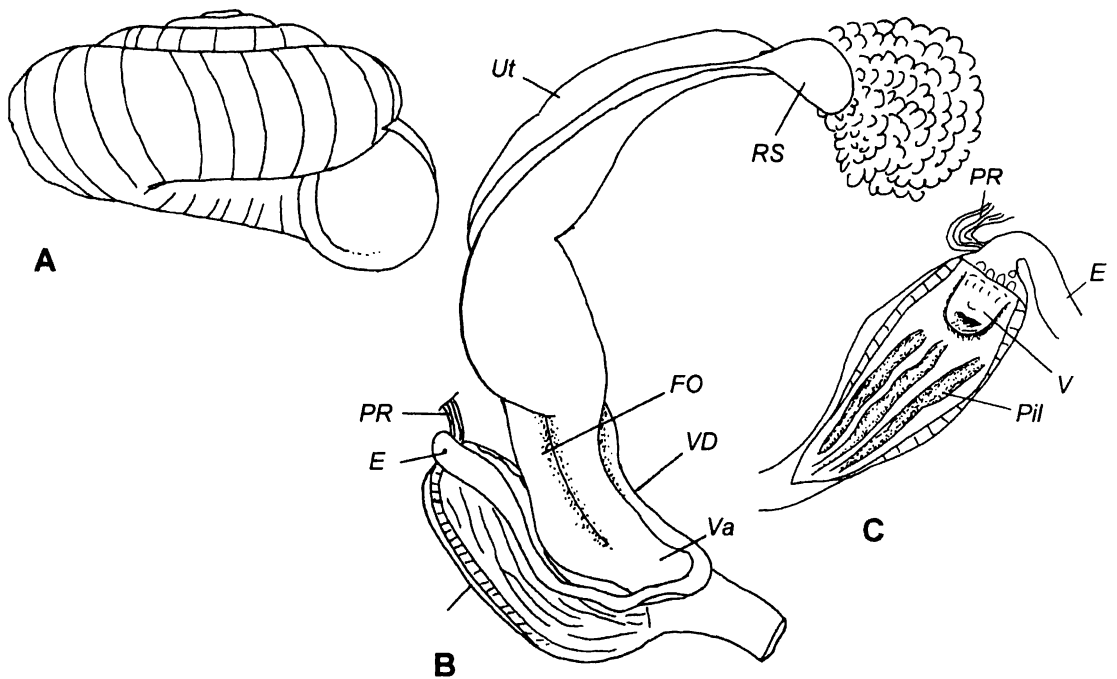


Fig. 1255. *Omphaloropa varicosa* Stanistic, 1990.  
 A — shell. B — reproductive tract. C — interior of penis. After Stanistic, 1990.



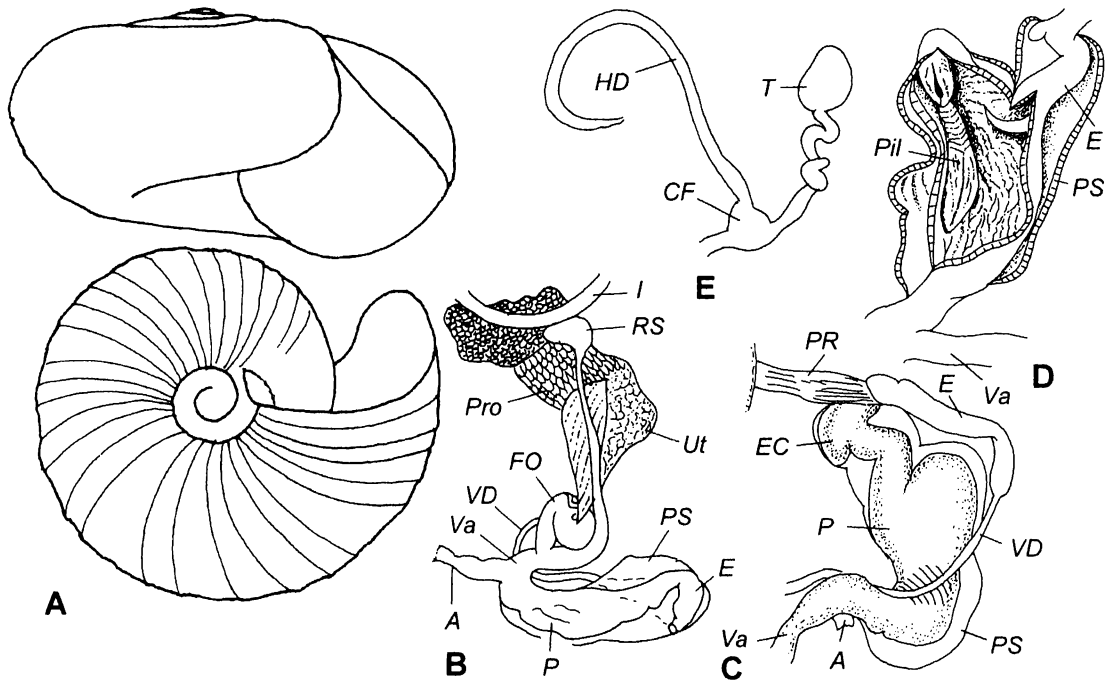


Fig. 1256. *Danielleilona marycolliverae* Stanisic, 1993.  
 A — shell. B — reproductive tract. C — penial complex enlarged. D — interior of penis.  
 E — talon-carrefour complex. After Stanisic, 1993. I — intestine.

***Omphaloropa* Stanisic, 1990**  
 Fig. 1255

Stanisic, 1990: 198.

TYPE SPECIES — *Omphaloropa varicosa* Stanisic, 1990; OD.

Shell depressed, of about 3.75-4.75 moderately convex whorls. Last whorl rounded at periphery. Color brown with alternating lighter and darker radial streaks. Apical sculpture of low spiral cords. Postembryonic sculpture of very widely spaced, prominent, protractively sinuated radial ribs and microsculpture of low radial riblets and spiral threads which have raised knobs at their intersection. Aperture simple, roundly lunate, somewhat oblique, with simple margins; columellar margin slightly dilated. Umbilicus wide, cup-shaped. Height 1.03-1.42, diam. 2.03-2.34 mm.

Epiphallus poorly differentiated from vas deferens, entering penis apically through a well developed verge. Penis with sheath and internal longitudinal pilasters. Free oviduct and vagina relatively short, subequal in length. Basal portion of sper-

mathecal stalk somewhat swollen, reservoir attending albumen gland.

DISTRIBUTION. SE Queensland, Australia. 1 sp.

***Danielleilona* Stanisic, 1993**  
 Fig. 1256

Stanisic, 1993: 11

TYPE SPECIES — *Danielleilona marycolliverae* Stanisic, 1993; OD.

Shell nearly flat, thin, of 4.25-5 moderately convex whorls. Apex and spire flat to very slightly elevated. Color yellowish-light-brown with irregular reddish-brown flammulations or suffusions. Embryonic whorls with low, rounded spiral cords. Postembryonic sculpture of prominent, very strongly protractively sinuated, moderately crowded to widely spaced, broad radial major ribs; interstices filled with fine, crowded minor riblets and spiral striae. Aperture roundly lunate, a little oblique, with simple margins; angular area of palatal margin forms a prominent sinus. Umbilicus

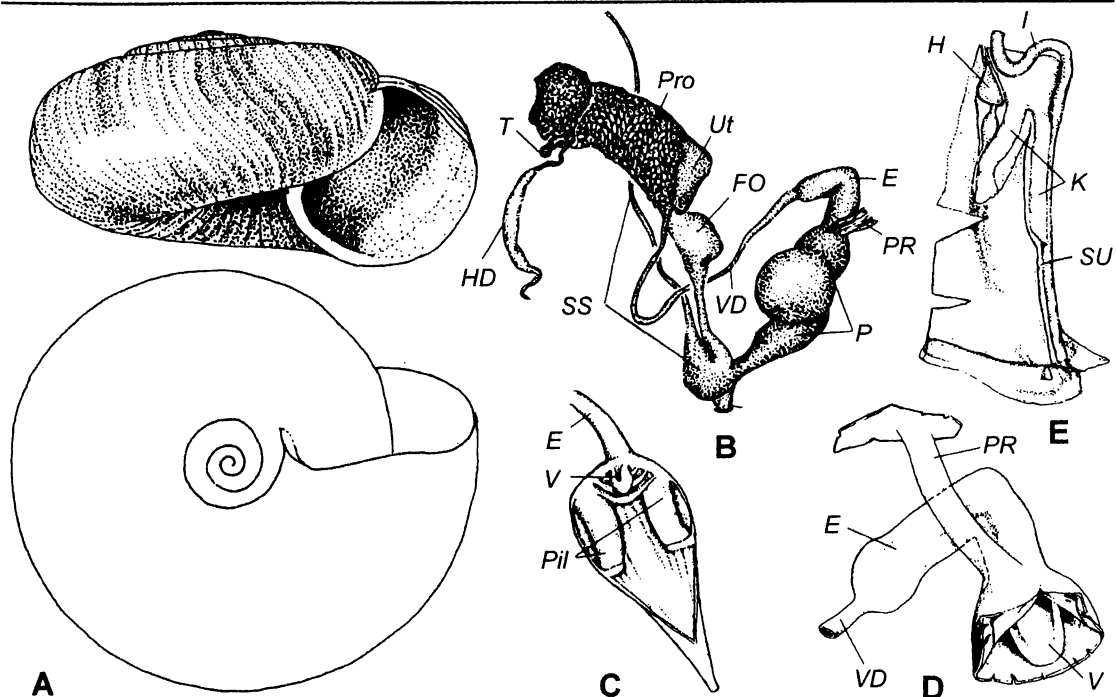


Fig. 1257 A, C, D, E — *Sinployea peasei* Solem, 1983. A — shell: Rarotonga [Cook Islands]. Phil. 47711. C, D — interior of penis. E — roof of lung cavity. After Solem, 1983. B — ! *Sinployea neglecta* Solem, 1983. Reproductive tract. After Solem, 1983. H — heart. I — intestine.

deep, narrow U- to V-shaped. Height 3.78-3.83, diam. 5.71-7.23 mm.

Kidney bilobed; pericardial arm large, rectal arm vestigial. Secondary ureter complete.

Hermaphroditic gland of 2 clumps of finger-like lobes. Talon with long, coiled shaft and globular head. Vas deferens thin, entering epiphallus apically. Epiphallus partially enveloped in penis sheath, with a short caecum, enters penis through a simple pore. Penis long, with a lateral out-pocket or a long muscular caecum; internally with axial pilasters. Penial retractor attached to epiphallus at junction with penis sheath. Free oviduct long, vagina markedly shorter. Spermathecal stalk somewhat enlarged basally, reservoir reaching albumen gland.

DISTRIBUTION. Australia (NE Queensland). 2 spp.

*Sinployea* Solem, 1983  
Fig. 1257

Solem, 1983: 81

TYPE SPECIES — *Sinployea peasei* Solem, 1983; OD.

Shell generally depressed, thin, of 3.5-6.5 convex whorls. Last whorl descending moderately to drastically. Spire rarely flat, more often slightly depressed or barely protruding, normally moderately protruded, sometimes elevated for more than 1/4 body whorl width. Last whorl rounded at periphery. Color light-corneous or reddish-brown with darker flammulations. Embryonic sculpture usually of 10-12 prominent to fine spiral cords, rarely averaging less than 9 or more than 13, sometimes greatly reduced in prominence. Postapical whorls with extremely fine and crowded to broader and quite widely spaced, usually protractively sinuated radial ribs, rarely lost on lower spire and body whorl, sometimes becoming too fine and crowded or irregular to count. Microsculpture of fine radial and finer spiral riblets, secondary spiral cording may present. Aperture circular to compressedly ovate, somewhat oblique, unarmed. Umbilicus widely open, rarely barely perforate or closed. Height 1.00-2.55 diam. 2.08-4.92 mm (2.11 × 3.02 mm).

Arms of kidney subequal in length. Secondary ureter complete.

Talon exposed, with short, stout shaft and globular head. Epiphallus developed. Penis internally with verge, muscular collar (sphincter) just below verge tip, and large stimulatory pad near middle portion. Penial retractor attached to boundary between penis and epiphallus. Free oviduct long, sometimes with local thickenings; vagina absent. Base of spermathecal stalk greatly swollen, reservoir adjoins to albumen gland.

DISTRIBUTION. Marianas, Micronesia, Melanesia, Kiribati, Vanuatu Islands and Polynesia to Society Islands; 1 sp. in Australia (Queensland). More than 50 spp.

*Luinodiscus* Iredale, 1937

Fig. 1258

Iredale, 1937a: 331 B. Smith, 1992: 193.

TYPE SPECIES — *Helix cupreus* Cox, 1868; OD.

Shell much flattened, thin, silky glossy, of 4-5 convex whorls. Last whorl rounded at periphery. Color (light) corneous. Embryonic whorls with distinct spiral cords. Later whorls with typical charopid sculpture; major ribs well spaced, minor riblets numerous; fine spiral striation also present. Aperture rounded, slightly oblique, with simple margins. Umbilicus wide, rather deep. Height 2-3, diam. 4.0-4.5 mm (2.50 × 4.25 mm).

DISTRIBUTION. SW Australia. 4 spp.

*Oreokera* Stanisic, 1987

Fig. 1259

Stanisic, 1987: 2.

Iredale, 1933: 54 (nom. nud.); 1941a: 265 (nom. nud.).

TYPE SPECIES — *Flammulina cumulus* Odhner, 1917; OD.

Shell turbinate, thin, of 4.75-5.25 flattened whorls. Last whorl straight, acutely rounded to keeled at periphery. Color yellow-corneous to brown with darker flammulations above and below. Embryonic whorls with prominent spiral cords, with a secondary sculpture of vague radial rugosi-

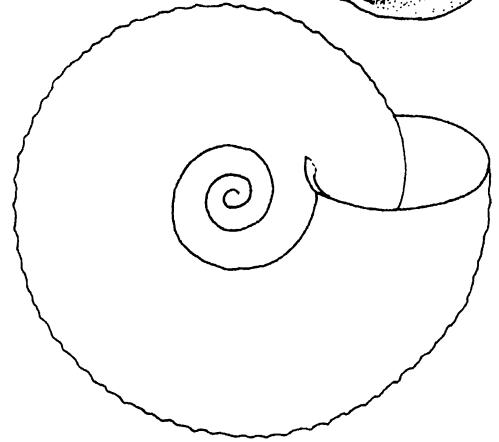
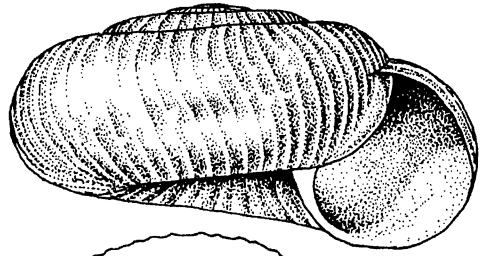


Fig. 1258. ! *Luinodiscus cygneus* (Benson, 1853). Swan River, Western Australia. Syntype. Cambridge No. 161979.

ties on last portion. Postnuclear sculpture of regularly spaced, very prominent radial ribs with well developed periostracal blades; microsculpture of prominent radial riblets crossed by finer spiral cordlets. Sculpture not reduced below periphery, continuous on base. Aperture ovate, a little oblique, with simple margins. Umbilicus minutely open, dot-like. Height 3.57-5.19, diam. 5.62-7.15 mm.

Kidney with much shortened rectal and prominent pericardial lobes. Secondary ureter incomplete for most of its length.

Hermaphroditic gland of 2 clusters of acini. Hermaphroditic duct convoluted. Talon exposed, globular. Vas deferens, a simple tube. Epiphallus well developed, with a long flagellum; epiphallus enters penis through a pore which may be surrounded by short radiating folds, or through a verge. Penis moderately to strongly swollen, with a short, rounded caecum; internally with corrugated longitudinal and sinuous pilasters. Penial retractor short, inserting on epiphallic flagellum. Free oviduct short, almost as long as va-

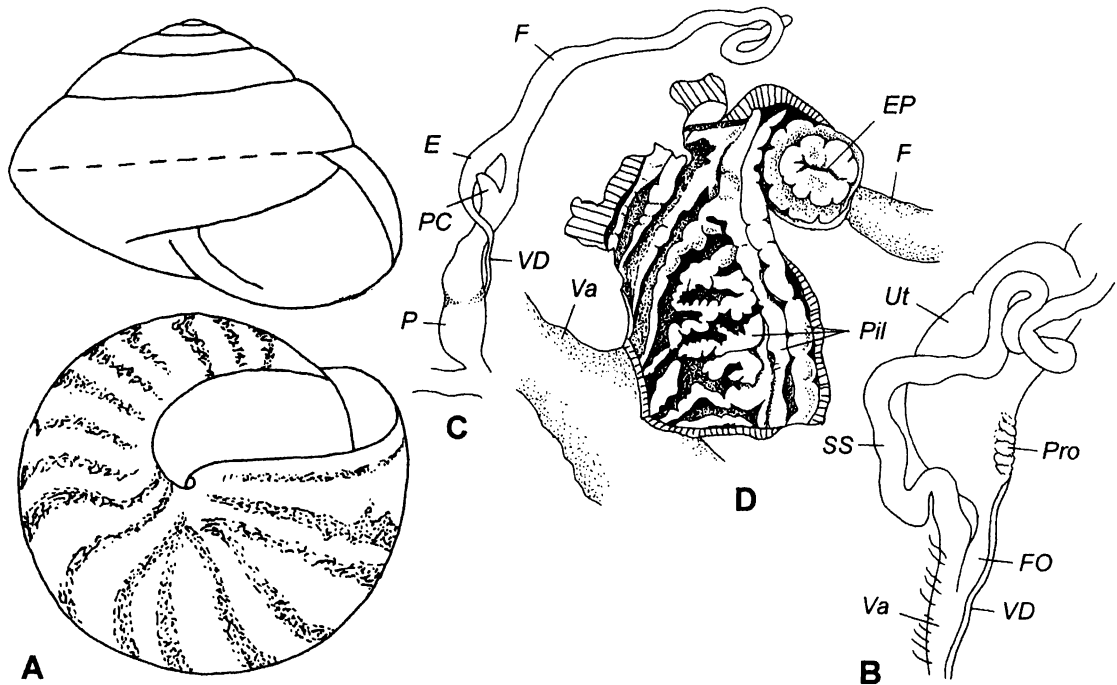


Fig. 1259. *Oreokera cumulus* (Odhner, 1917).

A — shell. B — lower part of female section. C — lower part of male section. D — interior of penis. After Stanisic, 1987

gina. Spermathecal stalk long, subcylindrical; reservoir attending albumen gland.

DISTRIBUTION. E Australia (Queensland). 2 spp.

***Epinicium* Iredale, 1939**

Fig. 1260

Iredale, 1939: 43. B. Smith, 1992: 189.

TYPE SPECIES — *Epinicium restifer* Iredale, 1939; OD.

Shell depressed, thin, of about 5 convex, slightly shouldered whorls. Spire a little elevated. Last whorl scarcely descending in front, rounded at periphery. Color deep brown. Embryonic whorls finely radially striated. Later whorls with distant major ribs, interstices closely radially striated. Aperture semicircular, oblique, with simple margins; columellar margin straight, well reflexed. Umbilicus wide, with steep sides. Height 2.5, diam. 3-5 mm.

DISTRIBUTION. SW Australia. 1 sp.

***Dipnelix* Iredale, 1937**

Fig. 1261

Iredale, 1937b: 23. B. Smith, 1992: 185.

TYPE SPECIES — *Dipnelix pertriosa* Iredale, 1937; OD.

Shell depressed, thin, with a little elevated spire, of 4 rather convex whorls. Last whorl rounded at periphery, slightly descending. Color pale brown with faint flammules of red brown which generally disappear on last whorl. Embryonic whorls 2, first smooth, 2nd whorl with very fine radial wrinklets, which succeeded by spiral lines, forming, along with radial elements, a fine subnodulose sculpture. On penultimate whorl about 10 lines can be counted and fine nodules appear as lozenges: on last whorl spiral lines regularly become obsolete so that reticulation very faint near aperture. On basal surface spiral lines fairly regular, and radial wrinkles obsolete while both become indistinct near aperture. Aperture rounded, toothless, a little broader than high, slightly oblique. Columellar

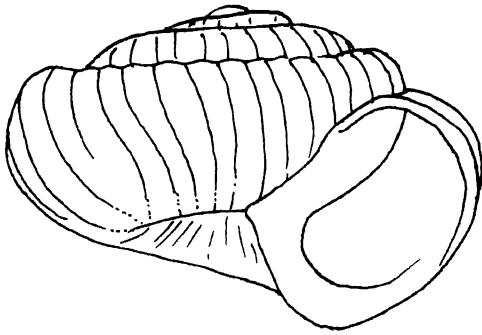


Fig. 1260. *Epinicum restifer* Iredale, 1939.  
After Iredale, 1939.

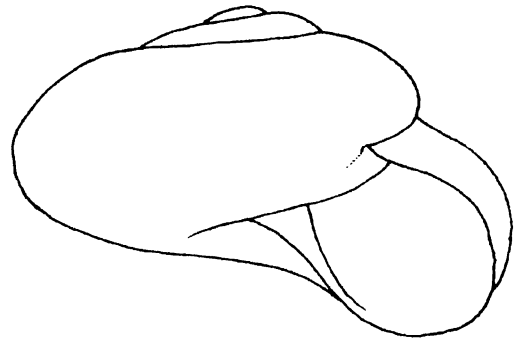


Fig. 1261 *Dipnelix pertricensa* Iredale, 1937  
After Iredale, 1937b.

margin slanting, a little reflexed. Palatal margin rather flattened above. Umbilicus wide, about 1/3 diameter of shell. Height 7, diam. 10 mm.

DISTRIBUTION. S and W Australia (Hummock and Pearson Islands of Investigator Group, Great Australian Bight and nearby islands). 2 spp.

***Annoselix* Iredale, 1939**  
Fig. 1262

Iredale, 1939: 39. B. Smith, 1992: 181.

TYPE SPECIES — *Annoselix dolosa* Iredale, 1939; OD.

Shell broadly conic, with convex base, of 5-5.5 moderately convex to flattened whorls. Last whorl keeled peripherally. Color brown, base paler brown, sometimes flamed with reddish-brown. Embryonic whorls obscurely radially striated. Later whorls with same striae, without major elements; there is also a delicate spiral striation, producing a very fine semi-cancellate

appearance. On base spiral sculpture generally predominates. Aperture squarish, somewhat oblique; columellar margin sometimes expanded, with a small thickening. Umbilicus very narrow. Height 5, diam. 7.5 mm.

DISTRIBUTION. W Australia. 1 sp.

***Pillomena* Iredale, 1937**  
Fig. 1263

Iredale, 1937b: 25. Iredale, 1933: 54 (nom. nud.). B. Smith, 1992: 199.

TYPE SPECIES — *Flammulina meraca* Cox et Hedley, 1912; OD.

Shell inflated, much depressed to flat, thin, translucent, of 3-5 moderately convex whorls. Last whorl rounded at periphery. Color white. Embryonic whorls spirally striated or (rarely) granulated. Postnuclear whorls with sharp, fine, close-set radial ribs. Aperture rounded, subvertical, with simple margins. Umbilicus moderately wide to narrow. Height 1.2-2.8, diam. 2-5 mm.

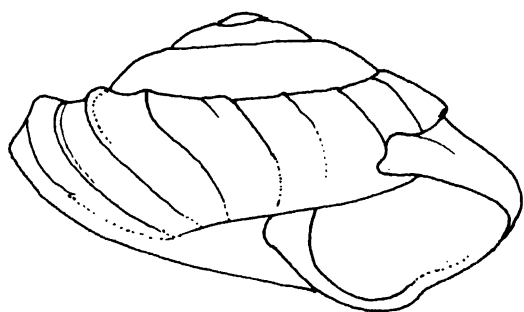


Fig. 1262. *Annoselix dolosa* Iredale, 1939.  
After Iredale, 1939.

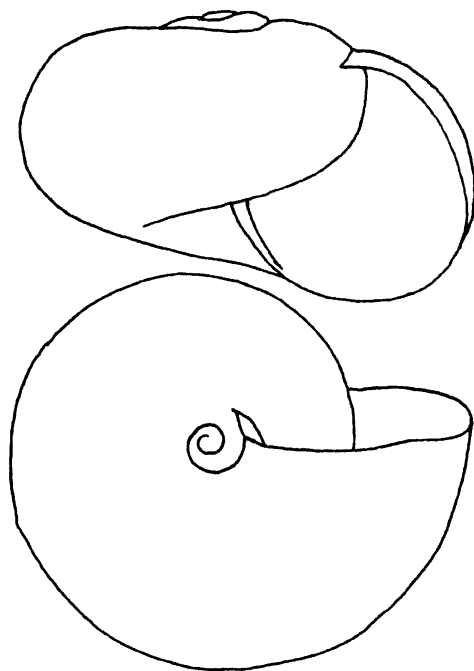


Fig. 1263. *Pillomena meraca* (Cox et Hedley, 1912).  
After Smith & Kershaw, 1979.

DISTRIBUTION. SE Australia (New South Wales, Victoria). 5 spp.

***Roblinella* Iredale, 1937**  
Fig. 1264

Iredale, 1937a: 332. B. Smith, 1992: 203.

TYPE SPECIES — *Helix roblini* Petterd, 1879; OD.

Shell strongly flattened to flat, thin, of 4-5 moderately convex whorls. Last whorl evenly rounded at periphery. Spire flattened to slightly convex. Color white to pale-corneous. Embryonic whorls finely, distinctly spirally grooved. Postnuclear sculpture of close-set to rather well-spaced major radial ribs and minor riblets in intervals. Aperture ovate-lunate or rounded, only slightly oblique, with simple margins. Umbilicus moderately broad, shallow. Height 0.8-3.3, diam. 2-7 mm (3.0 × 5.3 mm).

DISTRIBUTION. E Australia (Queensland, South Australia), Tasmania. 7 spp.

***Allocharopa* Iredale, 1937**  
Fig. 1265

Iredale, 1937a: 326. B. Smith, 1992: 181.

TYPE SPECIES — *Helix brazieri* Cox, 1868; OD.

Shell flattened, thin, of 4-5 rather convex whorls. Last whorl evenly rounded at periphery. Color pale-brownish or ash-grey, with radial flammulations. Both embryonic and postembryonic whorls with fine, regular radial striation and microscopic spiral striae in interstices. Aperture broadly lunate, slightly oblique, with simple margins. Umbilicus wide, quite perspective. Height 1.0-2.6, diam. 2-5 mm.

DISTRIBUTION. E Australia, Tasmania. 7 spp.

***Pernagera* Iredale, 1939**  
Fig. 1266

Iredale, 1939: 40. B. Smith, 1992: 197

TYPE SPECIES — *Helix albanensis* Cox, 1868; OD.

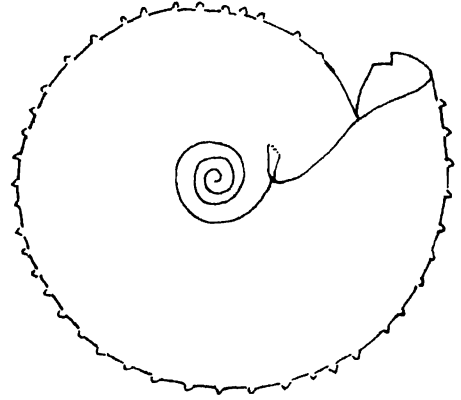
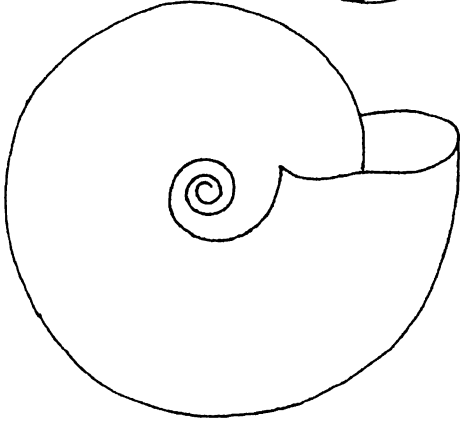
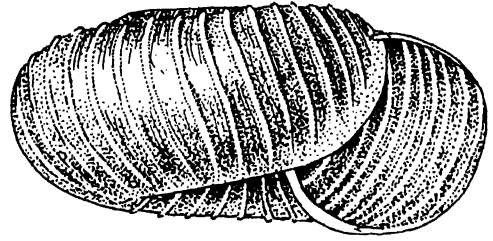
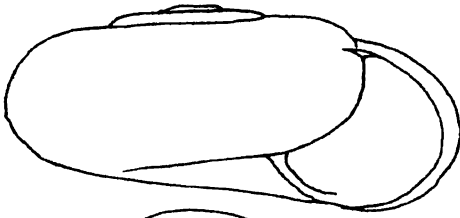


Fig. 1264. A — *Roblinella roblini* (Petterd, 1879).  
After Smith & Kershaw, 1979. B — ! *Roblinella mathinnae* (Petterd, 1879). Fish Basin,  
Launceston, Tasmania. Phil. No. 47750.

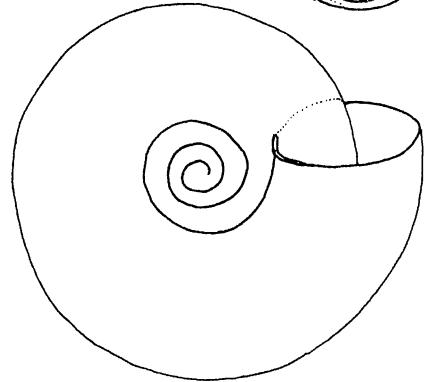
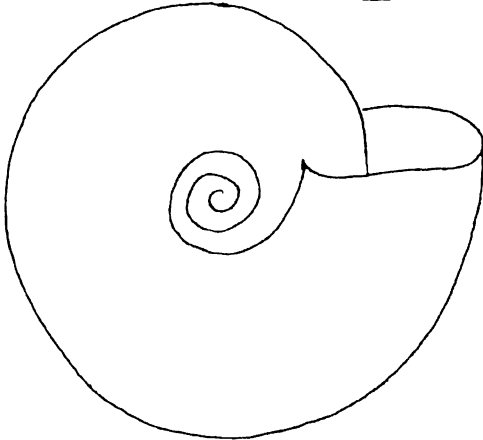
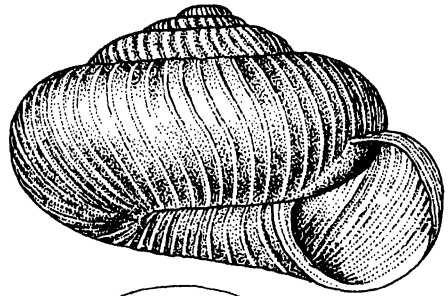
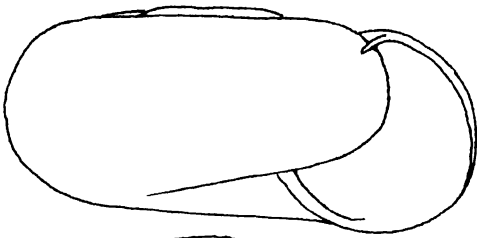


Fig. 1265. *Allocharopa brazieri* (Cox, 1868).  
After Cox, 1868.

Fig. 1266. *Pernagera albanensis* (Cox, 1868).  
Tasmania. Vienna No. 49616 (2).

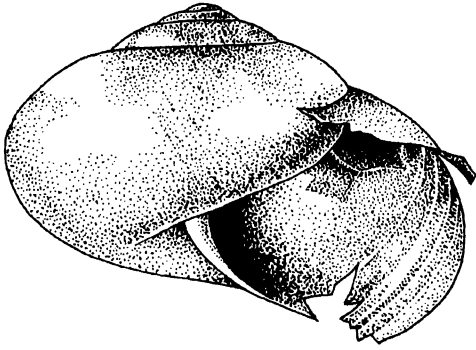


Fig. 1267 *Mulathena fordei* (Brazier, 1871).  
Tasmania. Vienna.

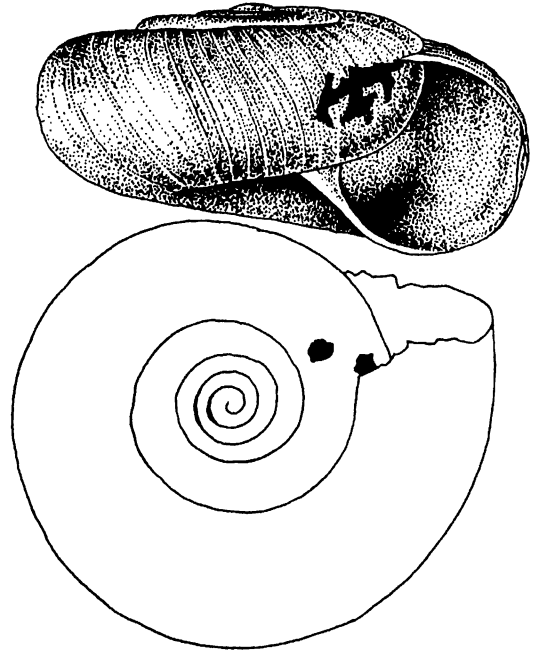


Fig. 1268. *Thryasona diemenensis* (Cox, 1868).  
Tasmania. Moscow No. Lc-25311 (Vienna).

Shell depressed conic, thin, fragile, somewhat translucent, of 4-5 quite convex whorls. Last whorl with evenly rounded periphery. Coloration consists of corneous background and variously developed reddish flammulations. Embryonic whorls smooth or vaguely microgranulated. Postapical sculpture of regular, sinuated major ribs and several minor, extremely fine riblets in interstices; spiral striae, if present, extraordinary fine. Aperture sub-circular, a little oblique, with simple margins; columellar margin dilated. Umbilicus moderately wide. Height 1.2-4.0, diam. 2-7 mm (3.5 × 4.7 mm).

DISTRIBUTION. Australia, Tasmania. 7 spp.

*Mulathena* Smith et Kershaw, 1985  
Fig. 1267

Smith & Kershaw, 1985: 2. Iredale, 1933: 53 (nom. nud.). B. Smith, 1992: 193.

TYPE SPECIES — *Helix (Hemiplecta) fordei* Brazier, 1871; OD.

Shell turbate to conoid, very thin, fragile, translucent, of 4.5-5 rather convex whorls. Last whorl sometimes with extremely weak peripheral angle. Color yellowish to brown. Embryonic whorls nearly smooth to finely radially ribbed. Later whorls with charopid sculpture, but major elements usually more or less reduced. Aperture large, ovate, subvertical, with simple margins. Umbilicus narrow. Height 5.0-5.6, diam. 7.0-8.5 mm (5.4 × 8.2 mm).

DISTRIBUTION. W and S Tasmania and S Australia (south central Victoria). Probably 1 variable sp.

*Thryasona* Smith et Kershaw, 1985  
Fig. 1268

Smith & Kershaw, 1985: 5. Iredale, 1933: 54 (nom. nud.). B. Smith, 1992: 206.

TYPE SPECIES — *Helix diemenensis* Cox, 1868; OD.

Shell (strongly) depressed, thin, fragile, of 4-5 moderately convex whorls. Last whorl scarcely compressed at periphery.



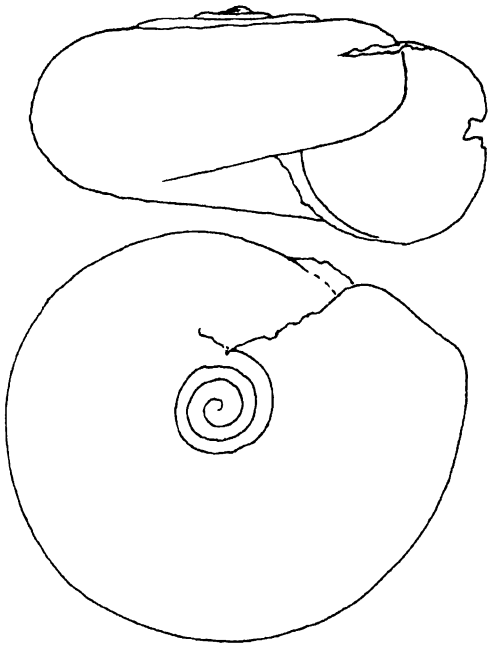


Fig. 1269. *Dupucharopa millestriata* (E. Smith, 1874).  
After Solem, 1984.

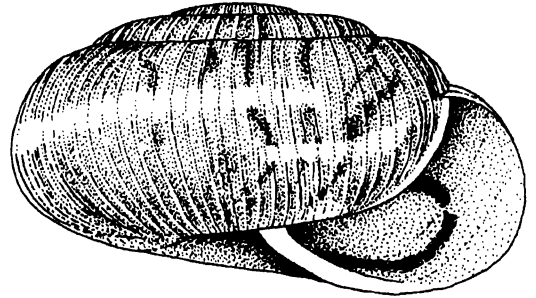


Fig. 1270. *Oreomava otwayensis* (Petterd, 1879).  
Fern Tree Gully, Victoria, Australia. Phil.  
No. 153727

Color corneous or ochraceous-buff, occasionally with pale-reddish or brown radial streaks. Embryonic whorls smooth or with very fine radial wrinklets; rest surface silky radially striated, with or without widely spaced major riblets; besides, there are exceptionally fine spiral striae visible predominantly on body whorl. Aperture ovate-lunate to rounded, slightly oblique, with sharp margins. Umbilicus broad, encircled by a weak angle. Height 3.0-3.5, diam. 6-8 mm (3.3 × 7.2 mm).

DISTRIBUTION. S Australia (Victoria), Tasmania. 2 spp.

*Dupucharopa* Iredale, 1937  
Fig. 1269

Iredale, 1937a: 332. B. Smith, 1992: 187

TYPE SPECIES — *Helix millestriata* E. Smith, 1874; OD.

Shell much depressed, thin, spire slightly elevated, of about 6.75 rather convex whorls. Last whorl descending gradually before aperture, strongly rounded

above, somewhat flattened laterally above and below periphery. Color corneous. Embryonic sculpture of rather widely spaced radial ribs, at least partly with calcareous sections, crossed by very fine, crowded spiral cords that become higher on top of radial ribs, giving a beaded effect. Postnuclear whorls with broadly rounded, low, rather widely spaced radial ribs; microsculpture of fine spiral cords continued from apex, plus extremely narrow, fine radial riblets. A beaded effect occurs when radial and spiral microelements of sculpture intersect. Umbilicus rather narrow, semicovered. Height 3.5-3.6, diam. 6.7-6.8 mm.

DISTRIBUTION. NW Australia. 1 sp.

*Oreomava* Kershaw, 1956  
Fig. 1270

Kershaw, 1956: 140. Iredale, 1933: 54 (nom. nud.). B. Smith, 1992: 197

TYPE SPECIES — *Helix otwayensis* Petterd, 1879; OD.

Shell depressed dome-shaped, thin,

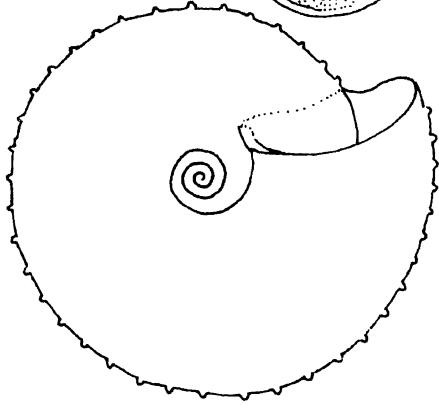
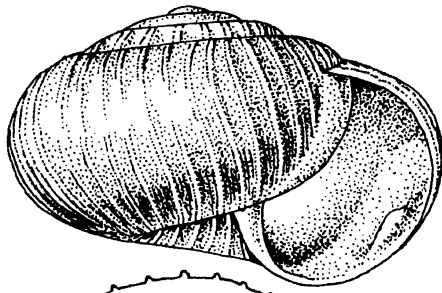


Fig. 1271 *Dentherona dispar* (Brazier, 1871).  
Tasmania. Geneva.

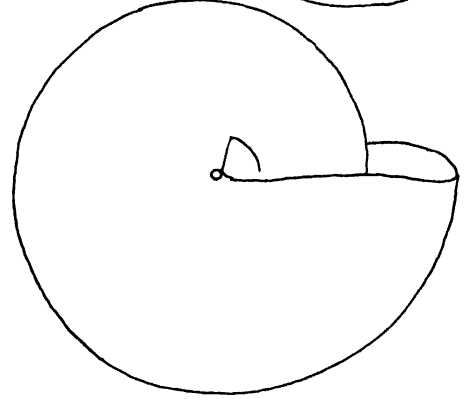
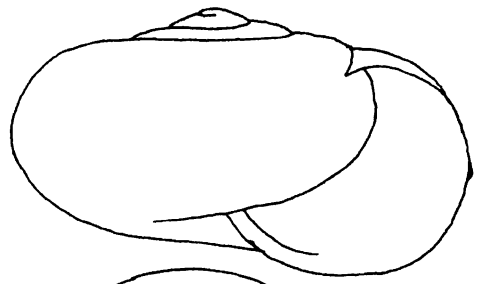


Fig. 1272. *Bischoffena bischoffensis* (Petterd, 1879).  
After Smith & Kershaw, 1979.

silky glossy, of 4-6 convex whorls. Last whorl straight, widely rounded at periphery. Color (light) corneous, with darker rays and spots. Embryonic sculpture of distinct spiral cordlets. Postapical whorls with regular major ribs and a few (1-3) minor riblets crossed by dense spiral striae in interstices. Aperture widely semilunate, vertical, with simple margins; columellar and adjacent part of basal margin somewhat thickened. Umbilicus tiny or closed. Height 1.40-1.75, diam. 2.0-3.3 mm (1.72 × 3.24 mm).

DISTRIBUTION. E Australia (Victoria), NW Tasmania. 3 spp.

### *Dentherona* Iredale, 1933

Fig. 1271

Iredale, 1933: 53.

— *Kannaropa* Iredale, 1937a: 328 (t.-sp. *Helix subrugosa* Legrand, 1871; OD).

Kershaw, 1956: 8. B. Smith, 1992: 184.

TYPE SPECIES — *Helix* (? *Charopa*) *dispar* Brazier, 1871; OD.

Shell somewhat depressed or low conic, thin, subtransparent, of 4-6 rather convex whorls. Last whorl widely, evenly rounded at periphery. Color reddish-yellow to white. Embryonic whorls smooth, postnuclear whorls with high, regular, rather widely spaced radial ribs and filiform riblets in interstices. Aperture widely semilunate, subvertical. On baso-palatal wall usually there is a (rather) strong, wide callouse fold; rarely fold missing. Umbilicus moderately wide, subvertical. Height 1.1-1.8, diam. 2-4 mm (1.2 × 2.0 mm).

DISTRIBUTION. E Australia, Tasmania. 6 spp.

### *Bischoffena* Iredale, 1937

Fig. 1272

Iredale, 1937a: 332. B. Smith, 1992: 182.

TYPE SPECIES — *Helix bischoffensis* Petterd, 1879; OD.

Shell flattened to depressed, thin, of 4-6

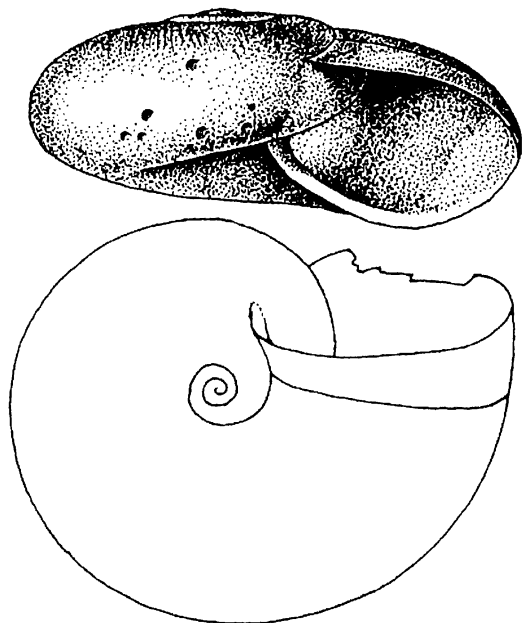


Fig. 1273. *Stenacapha hamiltoni* (Cox, 1868).  
Mt. Wellington, Tasmania. Vienna No. Ob-  
11993.

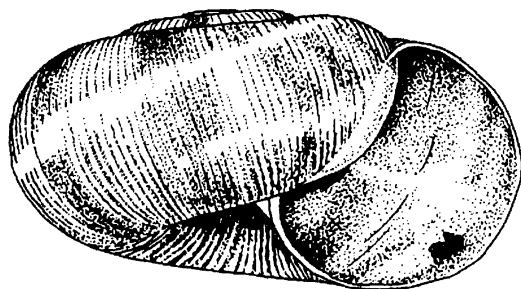


Fig. 1274. *Planilaoma luckmanni* (Brazier, 1877).  
Tasmania. Phil. No. 65057

moderately convex whorls. Last whorl inflated, rounded at periphery. Color brown. Embryonic whorls finely spirally striated. Later whorls almost reticulate: fine radial wrinkles crossed by microscopic spiral striae. Aperture widely lunate, subvertical, with simple margins. Palatal wall with 2 internal plicae. Umbilicus closed or nearly so. Diam. 2-3 mm.

DISTRIBUTION. NW Tasmania. 1 sp.

***Stenacapha* Smith et Kershaw, 1985**  
Fig. 1273

Smith & Kershaw, 1985: 4. Iredale, 1933: 53  
(nom. nud.). B. Smith, 1992: 205.

TYPE SPECIES — *Helix hamiltoni* Cox,  
1868; OD.

Shell flattened, thin, of 4-6 slightly convex, rapidly increasing whorls. Last whorl rounded, expanded. Color yellowish to blackish. Embryonic whorls smooth, shining. Postnuclear sculpture of fine, regular rib-striation of rhytidid type. Aperture large, ovate, quite oblique, with simple

margins. Umbilicus moderately wide, perspective. Height 6-8, diam. 14-18 mm (7.0 × 17.3 mm).

DISTRIBUTION. Tasmania. 1 variable sp.

***Planilaoma* Iredale, 1937**  
Fig. 1274

Iredale, 1937a: 316. B. Smith, 1992: 200.

TYPE SPECIES — *Helix luckmannii* Brazier,  
1877; OD.

Shell almost flat, very thin, silky glossy, of 4-5 convex whorls. Last whorl much inflated, evenly rounded at periphery. Color pattern of alternating, diffuse grayish and fulvous rays or streaks. Embryonic sculpture of distant spiral cordlets. Postapical whorls with delicate major ribs, very fine minor riblets and spiral striae in interstices. Aperture widely lunate, only slightly oblique, with simple margins. Umbilicus not wide, subcylindrical. Height 1.2-1.4, diam. 2.2-3.0 mm (1.28 × 2.20 mm).

DISTRIBUTION. Tasmania. 1 sp.

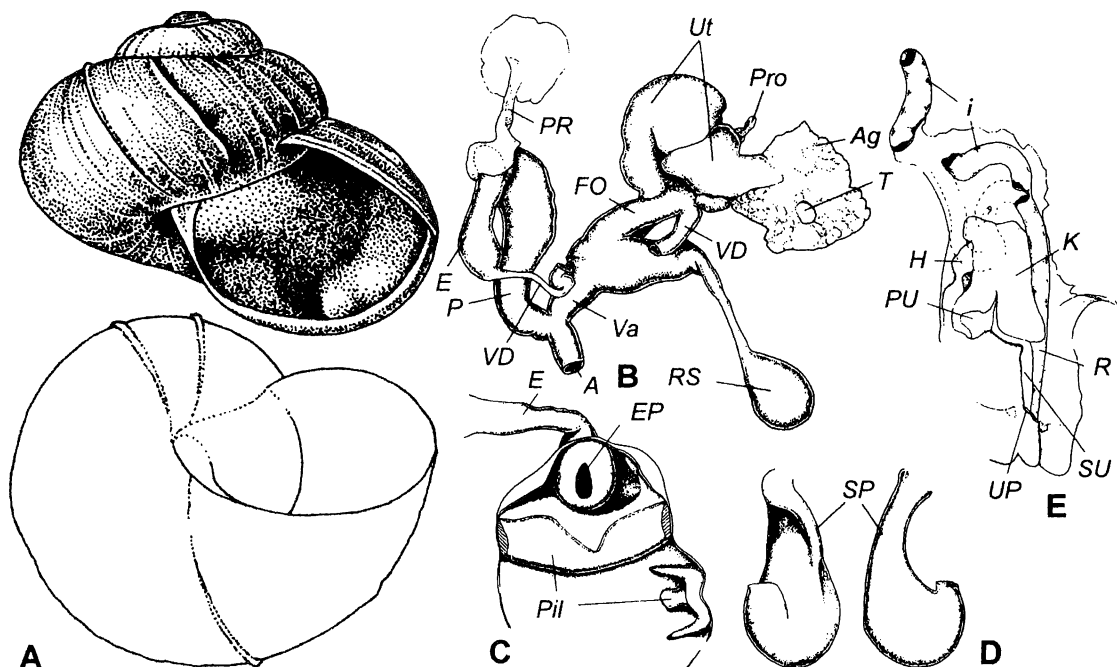


Fig. 1275. *Ba humbugi* Solem, 1983.

A — shell: Sanganakoreva area back of Tubarua saw mill, 5 mi inland from Ngaloa, Nuku Dist., Viti Levu Island, Fiji. Paratype. Chicago No. 153605. B — reproductive tract. C — interior of penis. D — spermatophore. E — roof of lung cavity. After Solem, 1983. H — heart. I — intestine. R — rectum. UP — ureteric pore.

### *Ba* Solem, 1983

Fig. 1275

Solem, 1983: 172.

TYPE SPECIES — *Ba humbugi* Solem, 1983; OD.

Shell trochoid, thin, of about 3-3.5 quite convex whorls. Body whorl rounded, descending rapidly. Color light reddish-yellow with dark-brown, almost black, periostracal extensions. Embryonic sculpture of about 12 very prominent spiral cords. Postnuclear sculpture of fine, irregular, radial wrinkles and widely spaced major ribs having thin periostracal blades. Microsculpture locally visible as consisting of fine radial riblets, finer and more crowded spiral striation. Aperture ovate, toothless, with thin margins; columellar margin reflexed over closed to barely open umbilicus. Height 1.84-2.50, diam. 2.30-3.32 mm (2.05 × 2.94 mm).

Kidney curved, squarish with tightly compacted ureter arms. Secondary ureter complete.

Hermaphroditic gland consists of 1

cluster of acini, its duct short, uncoiled. Talon buried in albumen gland, with short neck and globular head. Spermooviduct folded, compacted. Upper portion of vas deferens fat, then the duct narrows and enters epiphallus terminally. Epiphallus well developed. Penis massive, internally with large verge and circular muscle band (sphincter), pocket stimulator greatly reduced in size. Penial retractor attached to epiphallus/penis junction, its insertion unusually complicated. Free oviduct and vagina not long, nearly equal in length. Spermathecal stalk swollen basally, voluminous reservoir attends albumen gland. Spermatophore curved, of irregular shape.

DISTRIBUTION. Fiji: Viti Levu Island. 1 sp.

### *Mystivagor* Iredale, 1944

Fig. 1276

Iredale, 1944: 317 B. Smith, 1992: 194.

TYPE SPECIES — *Simpulopsis* (?) *mastersi* Brazier, 1872; OD.

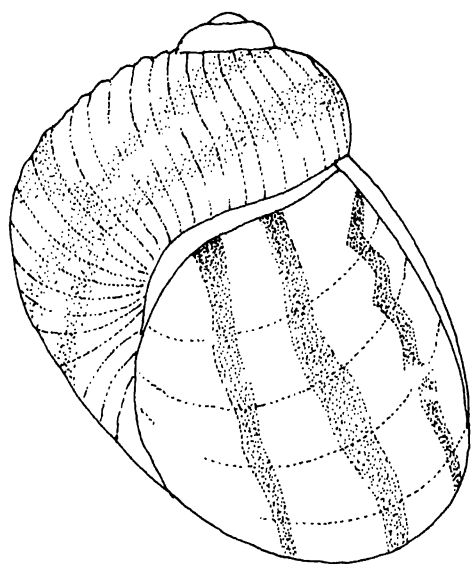


Fig. 1276. *Mystivagor mastersi* (Brazier, 1872).  
After Pilsbry, 1893 (1892-1893).

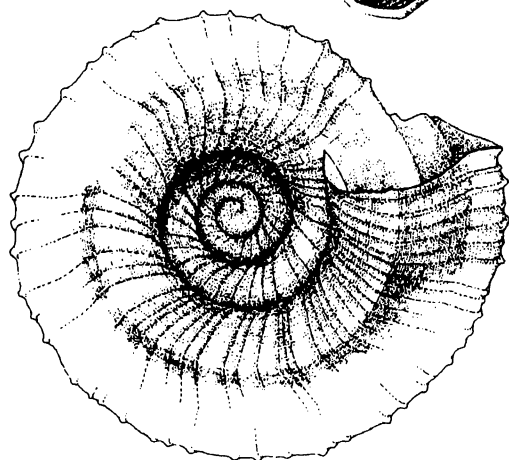
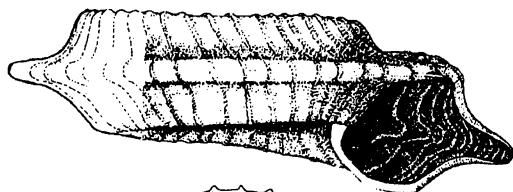


Fig. 1277 *Maafu thaumasius* Solem, 1983.  
After Solem, 1983.

Shell somewhat succinoid, fragile, of 3-3.5 moderately convex whorls. Last whorl very large, inflated. Color dull-yellowish, closely flamed with narrow, reddish or reddish-brown zigzag flames. Embryonic whorl finely radially striated, next whorls distantly radially ribbed. Aperture large, ovate, much higher than broad, with simple, straight margins; columellar margin reflexed, parietal callus well developed, glaze. Umbilicus closed. Height 3.25, diam. 2.25 lines, i.e. approximately  $6.9 \times 4.8$  mm.

DISTRIBUTION. Lord Howe Island. 1 sp.

*Maafu* Solem, 1983  
Fig. 1277

Solem, 1983: 174.

TYPE SPECIES — *Maafu thaumasius* Solem, 1983; OD.

Shell flat, about lens-shaped, of 4-4.5 normally coiled whorls. Spire sunken below level of postnuclear subsutural keel. Periphery strongly protruded into a thread-like

keel with prominent supra- and sub-peripheral sulci. Embryonic sculpture of distinct spiral cords. Rest surface with prominent, widely spaced radial ribs that are enlarged on crossing keel; regular microsculpture reduced, spiral cording narrow, rather prominent, quite crowded. Aperture simple, with thin margins. Umbilicus broadly open, cup-shaped. Height 1.12-1.51, diam. 3.19-3.98 mm.

DISTRIBUTION. Fiji: Lau Group, Nayau. 1 sp.

*Lauopa* Solem, 1983  
Fig. 1278

Solem, 1983 177

TYPE SPECIES — *Lauopa mbalavuana* Solem, 1983 OD.

Shell nearly flat, of about 4.75 shouldered, normally coiled whorls. Last whorl descending rapidly, flattened laterally above and slightly compressed laterally below rounded periphery. Spire flat or

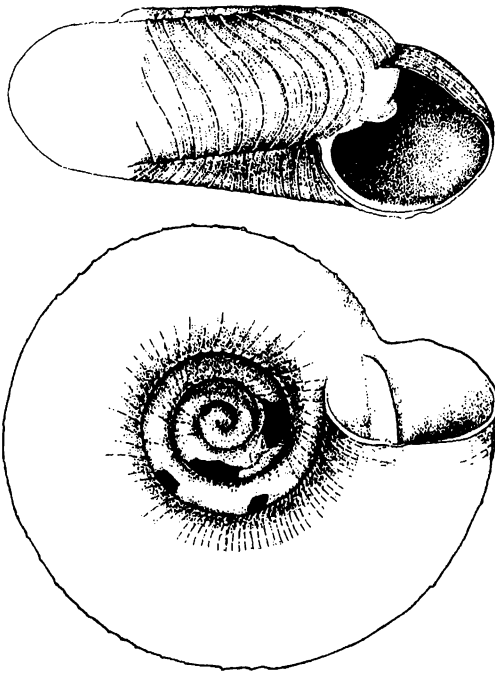


Fig. 1278. *Lauopa mbalavuana* Solem, 1983.  
After Solem, 1983.

slightly elevated. Embryonic sculpture of about 22 very prominent spiral cords. Post-nuclear whorls covered with high, strongly protractively sinuated radial ribs. Between each pair of ribs there are fine radial riblets and finer spiral cords; no secondary cording. Aperture circular, flattened laterally above periphery, somewhat oblique. Parietal wall bears a high, ridge-like short lamella. Margins of aperture simple, thin. Umbilicus widely open, cup-shaped. Height 2.81-3.66, diam. 6.67-8.37 mm.

DISTRIBUTION. Fiji: Lau Group, Vanua Mbalavu. 1 sp.

***Tuimalila* Solem, 1983**  
Fig. 1279

Solem, 1983: 178.

TYPE SPECIES — *Tuimalila pilsbryi* Solem, 1983; OD.

Shell depressed, thin, of 3.75 to nearly 4.5 normally to loosely coiled whorls. Body whorl more or less evenly rounded. Color light yellow-white with numerous sinuated irregular reddish-brown flammulations, or

yellowish brown with very irregular radial reddish maculations. Embryonic sculpture of fine, crowded spiral cords, sometimes there is a secondary intrusion of radial swellings that appear as primary radial ribs at optical examination. Postapical sculpture of large, prominent, major radial ribs and very fine radial riblets, crossed by finer and more crowded spiral threadlets. Aperture simple, relatively large, ovate to sub-circular, toothless, somewhat oblique. Umbilicus comparatively narrow. Height 2.88-4.18, diam. 4.97-6.99 mm.

Kidney curved, its arms approximately equal in length. Secondary ureter complete.

Ovotestis, a single clump of palmately clavate acini. Hermaphroditic duct narrowing abruptly near albumen gland. Talon globular, without distinct shaft. Vas deferens fat, with rather thick, glandular walls, becoming very slender upward and entering epiphallus subapically. Epiphallus inserting into penis to one side of penial retractor, internally with Y-shaped valve and plug apically, lower portion with axial pilasters running into epiphallic pore. Penis swollen medially, internally with typical pocket stimulator producing medial bulge, apically with verge and circular muscular band on wall below it. Penial retractor very short, arising on diaphragm, inserting onto upper part of penis. Free oviduct greatly expanded, rather long. Vagina very short. Spermathecal stalk basally enlarged; ovate reservoir lying next to albumen gland.

DISTRIBUTION. Tonga: Eua and Vavau Islands. 2 spp.

***Lagivala* Solem, 1983**  
Fig. 1280

Solem, 1983: 183.

TYPE SPECIES — *Lagivala vivus* Solem, 1983; OD.

Shell much depressed to flat, of about 4.5-5 whorls. Periphery, as a rule, strongly compressed laterally, umbilical margin evenly rounded to strongly shouldered. Color uniformly brown. Embryonic sculpture of 10-14 fine spiral cords. Postapical whorls with prominent to very fine radial ribs, microsculpture of very fine radial riblets, no spiral cording. Aperture subcircular to semi-lunate, nearly vertical, with thin margins,

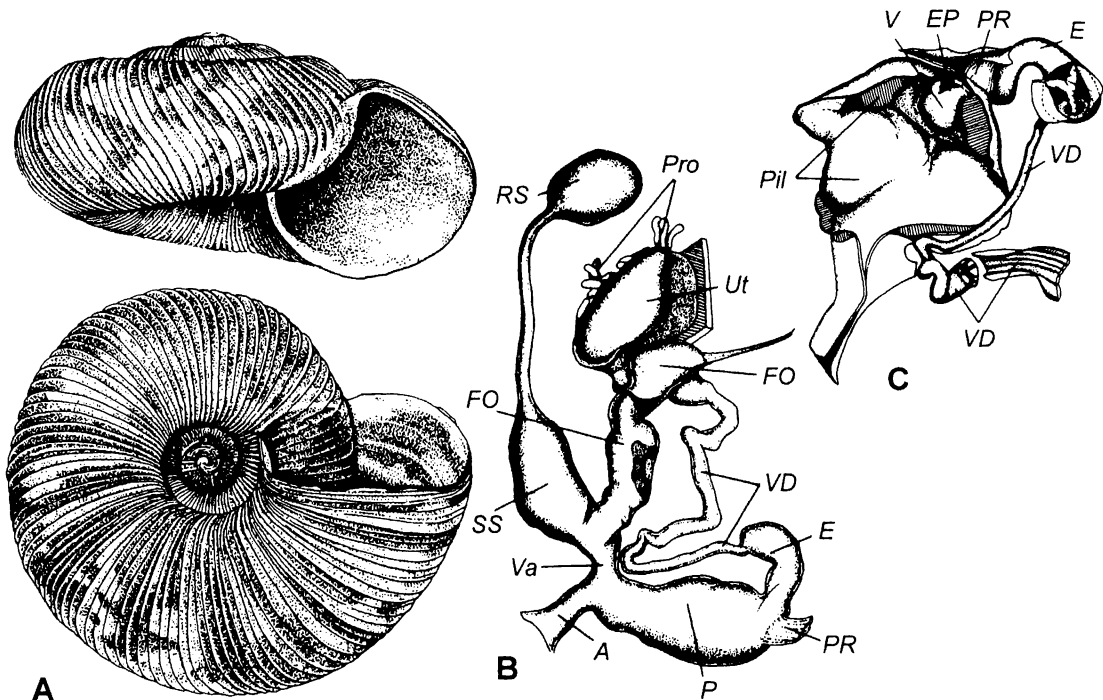


Fig. 1279 *Tuimalila pilsbryi* Solem, 1983.  
A — shell. B — reproductive tract. C — interior of penis. After Solem, 1983.

sometimes with a lip lying at some distance from apertural edges. There are 2 or 3 (rarely 1) large parietal lamellae, extending posteriorly from 3/16 of a whorl to line of vision; where 2 parietal plates only, apparently a 3rd sometimes displaced onto columellar margin by partial detachment of parietal wall. Baso-palatal wall with 3-6 short, very deeply recessed, crescents or elongated lamellar blades situated opposite to posterior margin of parietal lamellae; one species with only a long single tooth lying partly on columellar and partly on basal margin. Umbilicus very wide, cup-shaped (narrow in a single species). Height 0.63-1.02, diam. 1.40-2.07 mm.

DISTRIBUTION. E Indonesia and West Irian; New Britain, Bismarck Archipelago; Viti Levu, Fiji; Funafuti, Ellice Islands. 6 spp.

*Vatusila* Solem, 1983  
Fig. 1281

Solem, 1983: 191

TYPE SPECIES — *Vatusila tongensis* Solem, 1983; OD.

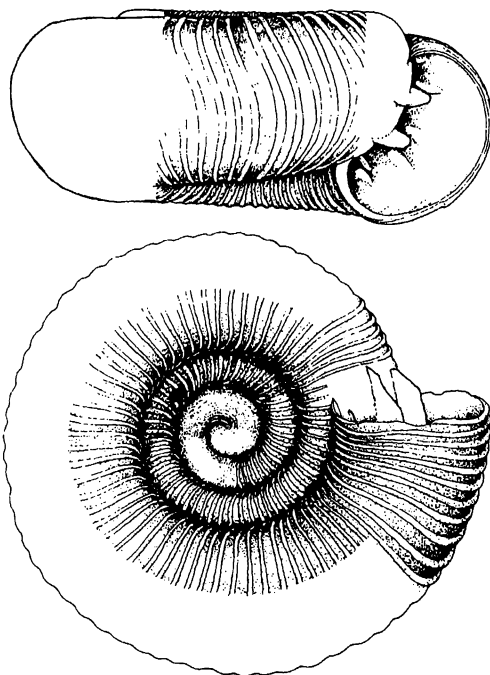


Fig. 1280. *Lagivala vivus* Solem, 1983.  
After Solem, 1983.

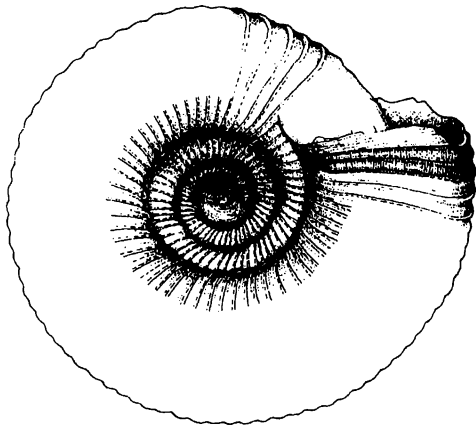
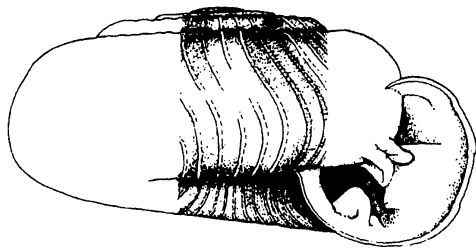


Fig. 1281. *Vatusila tongensis* Solem, 1983.  
After Solem, 1983.

lar fleshy pilasters forming a bilobed verge and superior epiphallic pore; biscuit-like stimulator very large, with narrow central crack. Penial retractor attaching to penis/epiphallus junction.

DISTRIBUTION. Fiji, Tonga, Marshall and Ellice Islands. 6 spp.

### *Graeffedon* Solem, 1983

Fig. 1282

Solem, 1983: 200.

TYPE SPECIES — *Endodonta graeffei* Mousson, 1869; OD.

Shell depressed to nearly flat, of 4-5.25 normally coiled whorls. Last whorl with rounded periphery, slightly flattened laterally above periphery. Color yellow-white with zigzagged flammulations. Apical sculpture of 11-13 narrow, prominent spiral cords. Surface of postembryonic whorls with medium to very prominent, protractively sinuated radial ribs, fine radial and finer microspiral elements, but no spiral cording. Aperture rounded to semilunate; parietal wall bears 2 lamellae, extending posteriorly for about 1/8 whorl, upper with rather sharp anterior descent, lower with more gradual anterior descent. Columellar margin with or without a low thread-like ridge parallel to plane of coiling, recessed or reaching apertural margin. Palatal folds 4-7, short, high, almost reaching apertural edge, sometimes with weak accessory traces. Umbilicus broad. Height 1.61-3.26, diam. 3.32-5.92 mm (2.80 × 5.02 mm).

Kidney bent, rectal arm much larger and longer than pericardial. Secondary ureter complete.

Hermaphroditic gland a single clump of large, long, palmately clavate acini. Hermaphroditic duct not convoluted, abruptly narrowed before reflexing to enter base of globular talon. Vas deferens tapering and muscular after passing through muscle threads, entering epiphallus apically. Epiphallus curved, twisted, with simple entrance of vas deferens, followed by 2 high pilasters. Penis with apical muscle ring and 3 large axial pilasters, 1 probably acting as a stimulator. Penial retractor arises from diaphragm and inserts terminally onto upper part of penis. Free oviduct and vagina moderately long. Basal half of spermathe-

Shell more or less depressed, of 3.5-5 normally to rather tightly coiled whorls, slightly to strongly flattened laterally above periphery. Periphery rounded. Color flammulations, when present, not zigzagged, following radial sculpture elements. Embryonic sculpture of 8-12 fine but prominent spiral cords. Postapical whorls with crowded to widely spaced radial ribs, strong secondary spiral cording in all but one species weakened and absent in one more species. Aperture rounded to semilunate, subvertical. Parietal wall with 2 lamellae, one bifurcated lamella, or greatly reduced single lamella. Columellar margin with or without low lamella. Parietal plicae 0-3, broadly expanded down to a low, broad remnant of callus. Umbilicus moderately to rather wide, quite perspective. Height 0.86-1.72, diam. 1.58-2.75 mm.

Anatomy mostly unknown; in only dissected species (*V. tongensis* Solem, 1983) vas deferens enters epiphallus terminally through a somewhat thickened bulb. Epiphallus enters penis laterally. Upper portion of penis enlarged, contains semicircu-



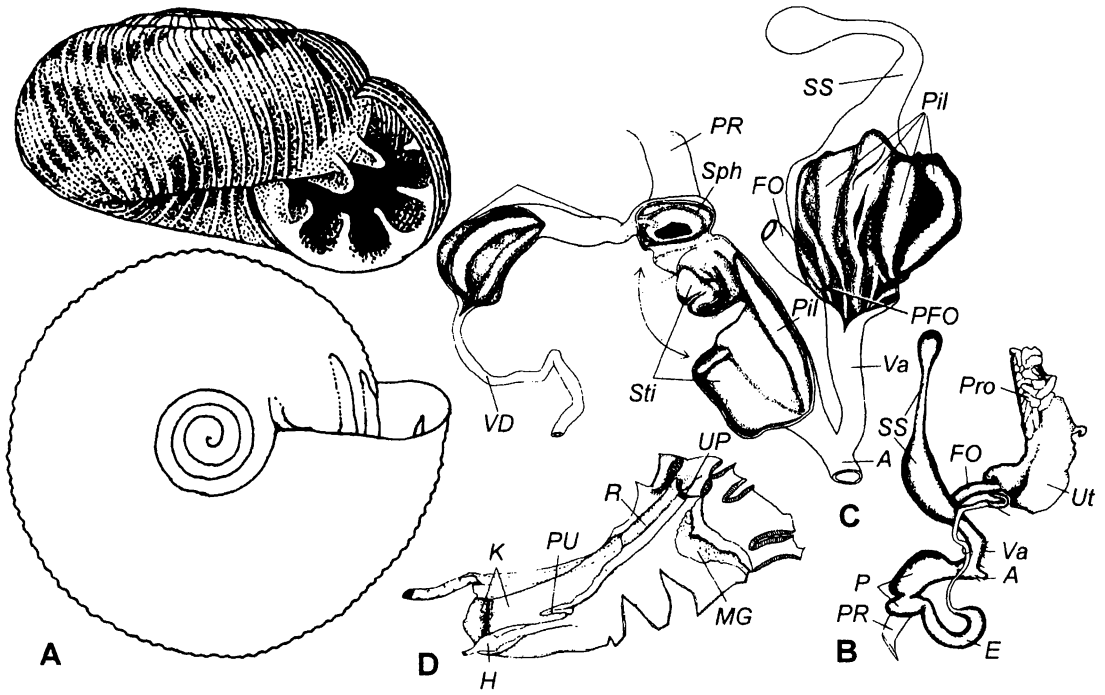


Fig. 1282. *Graeffodon graeffei* (Mousson, 1869).

A — shell: Upolu, Samoa. Paratype. Chicago No. 147544. B — reproductive tract. C — interior of distal genitalia. D — roof of lung cavity. After Solem, 1983. H — heart. MG — mantle gland. PFO — pore of free oviduct. R — rectum. UP — ureteric pore.

cal shaft swollen, internally with several strong pilasters.

DISTRIBUTION. Samoa (Upolu, Savai'i) and Tonga (Tongatapu). 3 spp.

### *Hirtudiscus* Hylton Scott, 1973

Fig. 1283

Hylton Scott, 1973: 128.

TYPE SPECIES — *Hirtudiscus hirtus* Hylton Scott, 1973; OD.

Shell flat, planorboid, thin, of about 4 convex whorls. Last whorl rounded at periphery. Color chestnut. Embryonic whorl smooth. Later whorls covered with periostracum furnished with numerous short hairs and spiral striae. Aperture subcircular, vertical, toothless, with simple margins. Peristome insertions widely separated. Umbilicus very wide, shallow. Height 1.6, diam. 4.0 mm (holotype).

DISTRIBUTION. Falkland Islands. 1 sp.

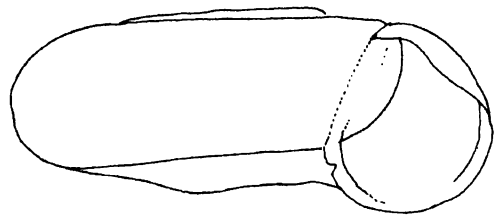


Fig. 1283. *Hirtudiscus hirtus* Hylton Scott, 1973. After Hylton Scott, 1973.

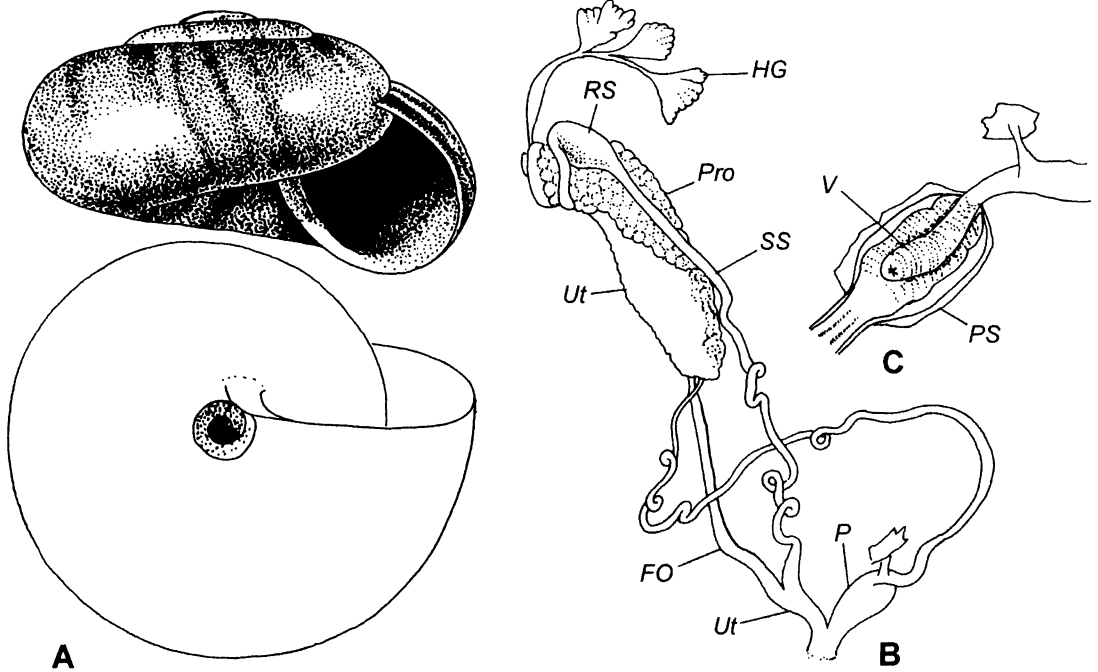


Fig. 1284. *Notodiscus hookeri* (Reeve, 1854). A — shell: Port Coubreux, Kerguelen Island. Paris. B — reproductive tract. C — interior of penis. After Solem, 1968.

*Notodiscus* Thiele, 1931  
Fig. 1284

Thiele, 1931: 575. Solem, 1968: 252.

TYPE SPECIES — *Helix hookeri* Reeve, 1854; OD.

Shell depressed, thin, fragile, shining, of about 4 convex whorls. Last whorl evenly rounded at periphery. Color greenish-yellow with alternating vague lighter and darker radial streaks. Embryonic sculpture of vestigial spiral grooves. Postnuclear whorls with heavy, macroscopically smooth periostracum; at strong magnification surface occasionally smooth and shining, most frequently with faint traces of microreticulation. Aperture rounded, moderately oblique, with thin margins. Umbilicus comparatively narrow, deep. Height 3.0-4.2, diam. 6.0-7.7 mm (3.2 × 6.0 mm).

Tail of cephalopodium without mid-dorsal groove. No caudal foss or horn. Both pedal and suprapedal grooves unite above tail.

Jaw very delicate, composed of narrow, overlapping plates, about 15-17 per half

jaw; central portion fused, with only weak traces of sutures left.

Kidney sigmoid, massive, occupies 2/3 length of lung cavity. Secondary ureter complete.

Hermaphroditic gland of numerous clumped, palmately clavate acini. Hermaphroditic duct narrowing abruptly just before reaching base of albumen gland. Talon short, globose. Prostate short, of large acini fastened to wall of uterus. Vas deferens very long, strongly convoluted, slender, free, expanding in width shortly above insertion of penial retractor. Penis very short, bulbous, internally with a long cylindrical verge with blunt tip, terminal pore and circularly wrinkled sides. Part of penis below vergic chamber with weak axial folds extending into atrium. Penial retractor arising on diaphragm, inserting distinctly above head of penis. Free oviduct long, slender, weakly convoluted. Vagina short, slightly thicker than oviduct. Spermathecal stalk slender, highly convoluted, scarcely thickened at base; reservoir with a finger-like apical process reflexed along albumen gland surface.

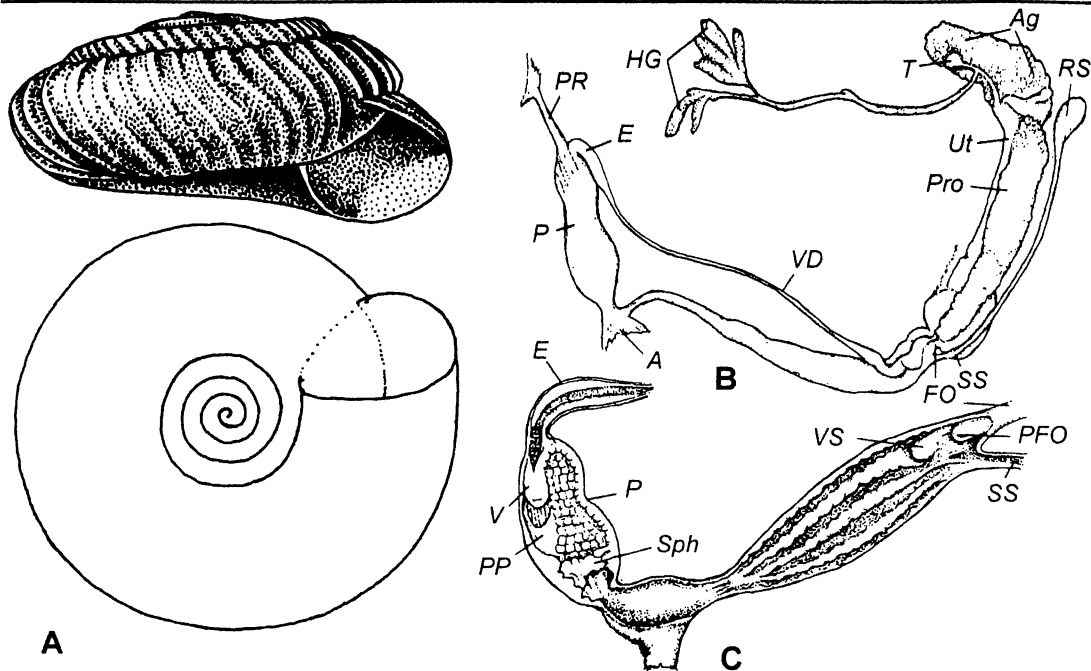


Fig. 1285. *Charopa coma* (Gray, 1843).

A — shell: Canterbury, New Zealand. Moscow No. Lc-25303 (SPb). B — reproductive tract. C — interior of penis. After Solem, 1983. PFO — pore of free oviduct. PP — penial pocket. VS — vaginal stimulator.

**DISTRIBUTION.** Subantarctic islands (Kerguelen, Possession, Marion, Amsterdam, Heard). 1 sp. with a few subsp.

*Charopa* Martens in Albers, 1860  
Fig. 1285

Martens in Albers, 1860: 87 (*Helix* subg.).

— *Simplicaria* Suter, 1891a: 90 (nom. nud.).

— *Pseudogestula* Dell, 1954: 144 [pro subg.; t.-sp. *Endodonta* (*Charopa*) *transenna* Suter, 1904; OD].

Climo, 1970: 287 Powell, 1979: 303.

**TYPE SPECIES** — *Helix coma* Gray, 1843; OD.

Shell depressed to subdiscoidal, thin, with slightly to moderately elevated spire, of 3.5-6 rather convex whorls. Last whorl flattened laterally above and below rounded periphery. Color white to corneous with darker zigzags or brown with white flashes on upper surface and periphery. Embryonic sculpture of major radial ribs more crowded near end of apex, and with

periostracal, relatively regular wrinkles providing a microspiral element. Postapical whorls with narrow, sharply defined, crowded, strongly protractively sinuated radial ribs. Besides, there is a microsculpture of very fine radial riblets with serrated edges; spiral elements totally absent. Aperture with or without a small to very large and deeply recessed, medial parietal lamella. Height 0.6-3.5, diam. 1.5-7.0 mm (3.4 × 6.5 mm).

Jaw oxyghathous (!), with a narrow vertical lamella in middle [at least, in *Charopa cryptobidens* (Suter, 1891)].

Kidney curved, pericardial branch longer than rectal. Secondary ureter complete.

Ovotestis of 2 clusters of elongated acini. Hermaphroditic duct not convoluted. Talon clavate, with globular head. Vas deferens enters very short epiphallus (sub)apically. Epiphallus internally with 2 axial folds, opens into penis through a pore on tip of short verge. Penis not long, slightly compressed in middle, its inner surface covered with tubercles or circular ridges; verge directed to a small pocket. In

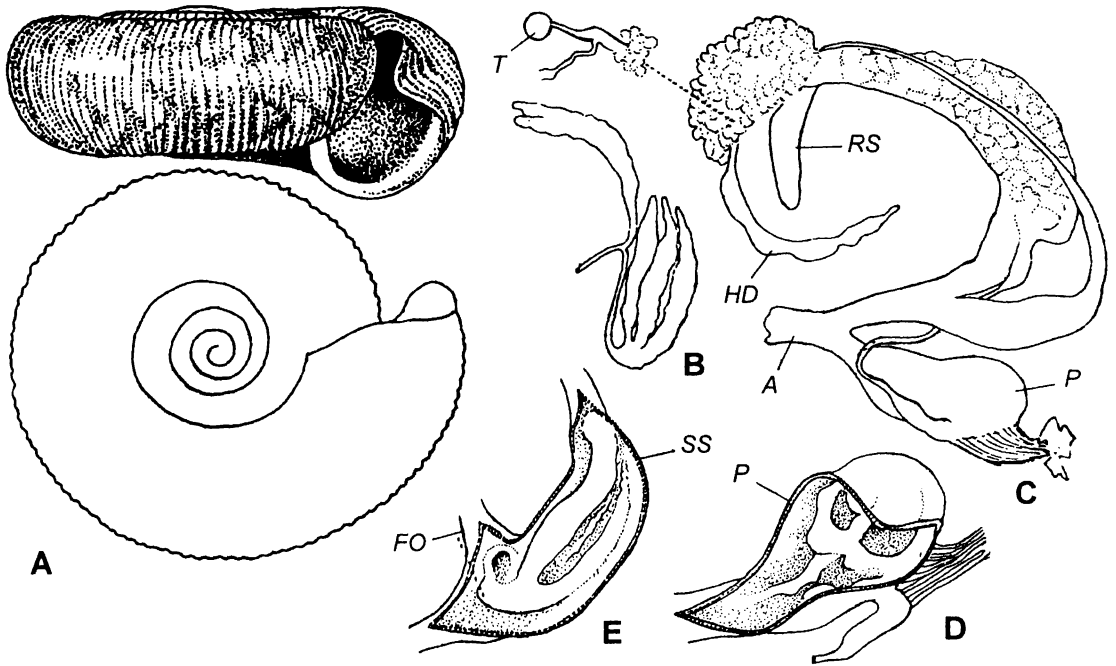


Fig. 1286. *Fectola infecta* (Reeve, 1852).

A — shell: Forty Miles Bush, North Island, New Zealand. Senck. No. 158289. B — hermaphroditic gland. C — reproductive tract. D — interior of penis. E — interior of base of spermathecal stalk. After Climo, 1989.

distal part of penis there is a sphincter. Free oviduct exceptionally short, vagina, on the contrary, unusually long, internally with axial corrugated folds and a small stimulator. Spermathecal stalk cylindrical, slender; reservoir attending lower margin of albumen gland.

DISTRIBUTION. New Zealand, Juan Fernandez Island. 10 spp.

### *Fectola* Iredale, 1915

Fig. 1286

Iredale, 1915: 481. Climo, 1989: 589.

TYPE SPECIES — *Helix infecta* Reeve, 1852; OD.

Shell flat to depressed-turbinate, (rather) thin, mostly silky glossy, of 5-6 rather convex whorls. Last whorl rounded at periphery. Coloration consists of pale-corneous background and reddish or dark-corneous zigzag streaks. Embryonic whorls spirally lirated. Postnuclear whorls with (rather) heavy, sinuous major ribs (often blade-like on periphery but becoming weak on base),

minor riblets in interstices and hardly visible (especially on base) spiral striae. Aperture lunate or of irregular shape because of deep depression of upper palatal side, oblique, with simple or somewhat thickened margins. Parietal lamellae 0-2, columellar lamellae absent, basal plica 0-1, palatal plicae 0-3. Umbilicus wide. Height 0.7-3.0, diam. 1.6-6.0 mm (1.8 × 4.0 mm).

Ovotestis composed of 2 clumps, each with 1-6 long acini. Hermaphroditic duct stout, not convoluted. Talon consists of thin, rather short stalk and globular head. Vas deferens somewhat enlarged in proximal part, entering short but well defined epiphallus. Penis greatly swollen, internally with a large epiphallic pore surrounded by strong pilasters; sometimes there is a short verge. Penial retractor attached by 2 arms to penis and epiphallus. Free oviduct and vagina rather short, subequal in length. Spermathecal base enlarged, internally with 2 axial pilasters; reservoir lies on albumen gland.

DISTRIBUTION. New Zealand. About 10 spp.

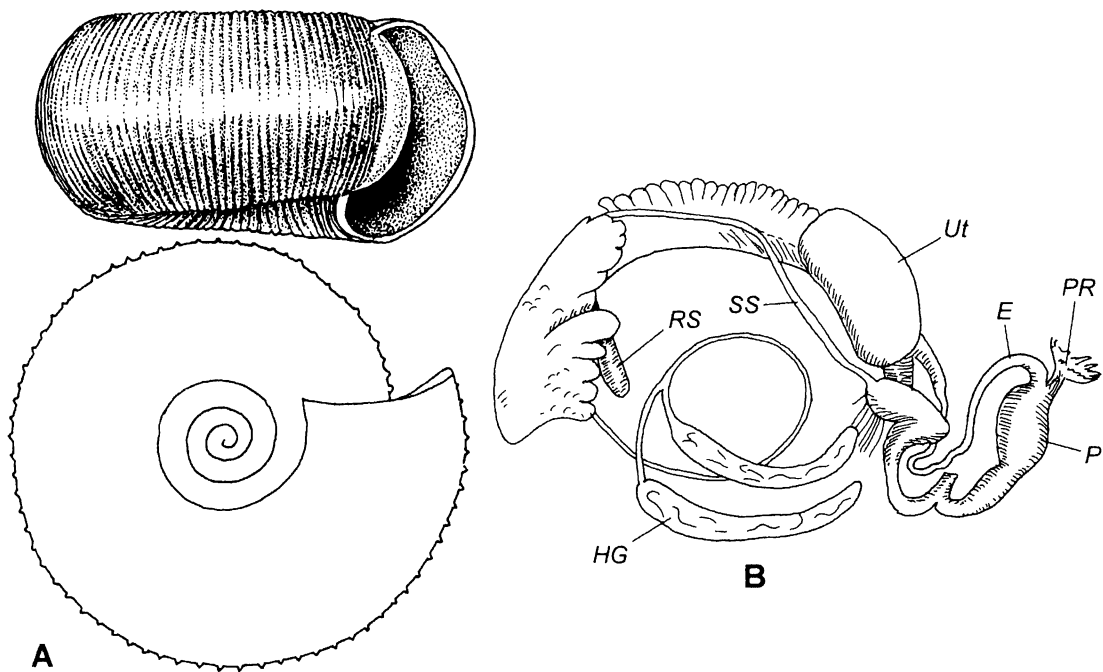


Fig. 1287 A — ! *Geminoropa microrhina* (Suter, 1909). Shell: Motu River, Bay of Plenty, New Zealand. Phil. No. 147510. B — ! *Geminoropa subantialba* (Suter, 1890). Reproductive tract. After Climo, 1970.

***Geminoropa* Kershaw, 1955**  
Fig. 1287

Kershaw, 1955: 29.

Iredale, 1933: 53 (nom. nud.)

— *Cavellioropa* Dell, 1952: 93 (*Geminoropa* subg.; t.-sp. *Diplomphalus subantialba* Suter, 1890; OD).

Climo, 1970: 321 B. Smith, 1992: 189.

TYPE SPECIES — *Helix antialba* Petterd, 1879; OD.

Shell flat, thin, with more or less sunken apex, silky glossy, of about 5 whorls. Color pale-yellowish to light-corneous. Embryonic whorls granulate, later whorls with sharp, lamellar radial ribs and finer minor riblets in interstices. Aperture semilunate, vertical, a little nautiloid, i.e. angular area of palatal margin curved backward. Umbilicus very wide. Height 0.9-2.0, diam. 1.7-5.5 mm (0.98 × 1.76 mm).

Ovotestis of 2 banana-like acini. Hermaphroditic duct straight, not convoluted. Talon hidden or exposed, with globular head. Vas deferens gradually passes into (rather) short epiphallus terminally. Penis

(irregularly) ovate to clavate. Penial retractor attached to penis/epiphallus junction. Free oviduct shorter or longer than vagina. Atrium rather long. Base of spermathecal stalk greatly swollen; reservoir small, elongated, attending albumen gland.

DISTRIBUTION. SE Australia, Tasmania, New Zealand. 3-4 spp.

***Subfectola* Powell, 1939**  
Fig. 1288

Powell, 1939: 238 (*Fectola* subg.).

TYPE SPECIES — *Helix caputspinulae* Reeve, 1852; OD.

Shell discoidal, thin, glossy, translucent, of 3.5-4 rather convex whorls. Last whorl rounded at periphery. Color uniformly white. Embryonic whorls with distant radial riblets. Sculpture of postnuclear whorls of dense, fine radial ribs; interstices minutely reticulated. Aperture rather large, ovate, subvertical, not retracted to a sinus at suture. Umbilicus wide. Height 0.7-1.3, diam. 1.65-2.80 mm (0.92 × 1.83 mm).

Talon small, exposed. Vas deferens

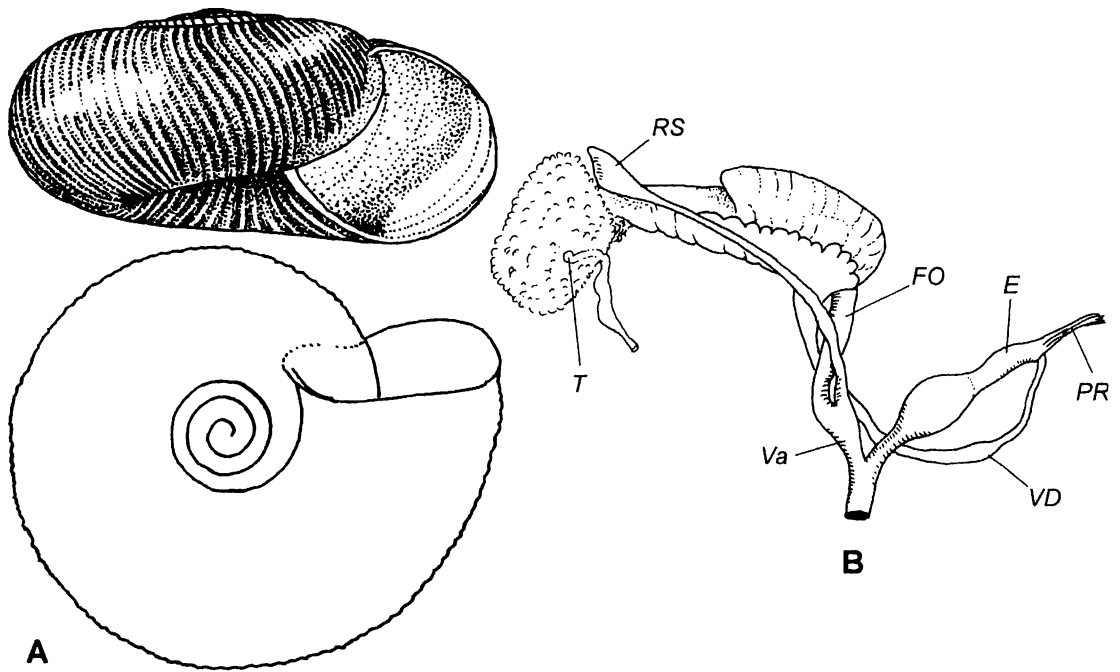


Fig. 1288. *Subfectola caputspinulae* (Reeve, 1852).

A — shell: Mt. Huarua, N Auckland, New Zealand. Phil. No. 227972. B — ! *Subfectola rakiura* (Powell, 1939). Reproductive tract. After Climo, 1970.

somewhat enlarged in middle part. Epiphallus short. Penis ovate. Penial retractor attached to epiphallus terminally. Free oviduct slightly longer than vagina. Spermathecal stalk a little expanded in lower half; reservoir attending albumen gland.

DISTRIBUTION. New Zealand, Stewart Island. 2 spp.

### *Paracharopa* Climo, 1983

Fig. 1289

Climo, 1983: 152.

TYPE SPECIES — *Endodonta* (*Charopa*) *chrysaugaia* Webster, 1904; OD.

Shell (sub)discoidal, thin, silky glossy, of 4-4.5 rapidly increasing, convex whorls. Color golden-brown when shell fresh. Embryonic whorls smooth. Sculpture of later whorls of very fine, crowded radial riblets; interstices with a few minor radial riblets and fine spiral lirae. Aperture roundly lunate, scarcely oblique. Columellar margin short, arcuate. Palatal wall sometimes with a variously developed, radially positioned callus. Umbilicus comparatively narrow to

rather wide, perspective. Height 0.9-1.0, diam. 2.00-2.63 mm (0.96 × 2.08 mm).

Pericardial and rectal lobes of kidney subequal in length. Secondary ureter complete along most of its length.

Ovotestis in 2 clumps, each composed of 2-3 acini. Vas deferens enters rather long epiphallus. Penis clavate, internally with a tubular, well developed verge and 2 strong, rounded pads of tissue (pilasters) high in lumen forming bulky clubbed upper half of the organ to which epiphallus attached. Penial retractor attached near a "U-bend" about half-way along epiphallus or near tip of a more gently curved organ (*fuscosa*). Free oviduct short. Vagina very long. Spermathecal stalk only slightly expanded at base. Reservoir attending albumen gland.

DISTRIBUTION. New Zealand. 6 spp.

### *Chaureopa* Climo, 1985

Fig. 1290

Climo, 1985: 284.

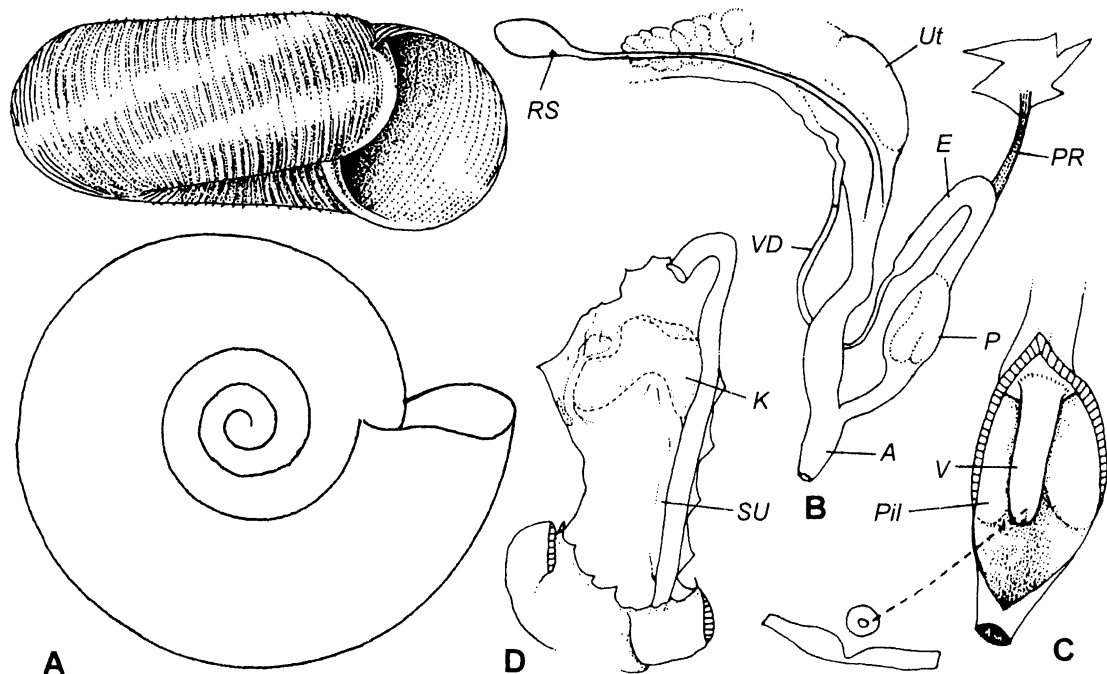


Fig. 1289. A — *Paracharopa chrysaugia* (Webster, 1904). Shell: Church River, near Kaitaia, Northland, New Zealand. Delaware Mus. of Natural Hist., Wilmington, No. 148502. B, C, D — ! *Paracharopa fuscata* (Suter, 1894). B — reproductive tract. C — interior of penis. D — roof of lung cavity. After Climo, 1983.

TYPE SPECIES — *Chaureopa depressa* Climo, 1985; OD.

Shell flattened to flat, thin, silky glossy, of 4.5-5 convex whorls. Last whorl rounded or scarcely compressed above periphery. Color pale-yellow to light-corneous. Embryonic whorls smooth, polished, shining. Postnuclear sculpture of major ribs and minor filiform riblets in interstices; spiral striae mostly absent. Aperture broadly semilunate, only slightly oblique, with simple margins. Umbilicus wide. Height 1.8-2.3, diam. 3.4-4.7 mm (2.04 × 3.88 mm).

Ovotestis of 2 clumps; terminal clump composed of 5 main acini, subterminal of 4. Hermaphroditic duct convoluted within transparent sheath. Talon comparatively large, globular. Vas deferens somewhat expanded proximally, then narrowed and enters slender epiphallus apically. Internally epiphallus with 2 axial pilasters. Penis evenly tubular, internally with 2 pilasters. Larger pilaster running downward from epiphallus; its lower edge free-hanging. Second, more weakly defined, narrower pilaster extending from epiphallus entrance to well-developed sphincter. Penial retractor

attached to upper third of penis. Free oviduct short, vagina a little longer. Spermathecal stalk slightly expanded basally.

DISTRIBUTION. New Zealand (North Island). 6 spp.

### *Mocella* Iredale, 1915 Fig. 1291

Iredale, 1915: 481 Powell, 1979: 310.

TYPE SPECIES — *Helix corniculum* Reeve, 1852 (non Reeve, 1851; = *Helix eta* L. Pfeiffer, 1853); OD.

Shell subdiscoidal, thin, fragile, silky glossy, of 4-5 quite convex whorls. Last whorl rounded. Color white to corneous. Embryonic whorls spirally lirate and radially ribbed. Postnuclear sculpture of close-set, almost straight, regular radial riblets and fine interstitial radial threads, reticulated by microscopic spiral striae. Aperture broadly semilunate, subvertical, with simple margins. Umbilicus wide, shallow. Height 1.0-1.5, diam. 2-4 mm (1.1 × 2.3 mm).

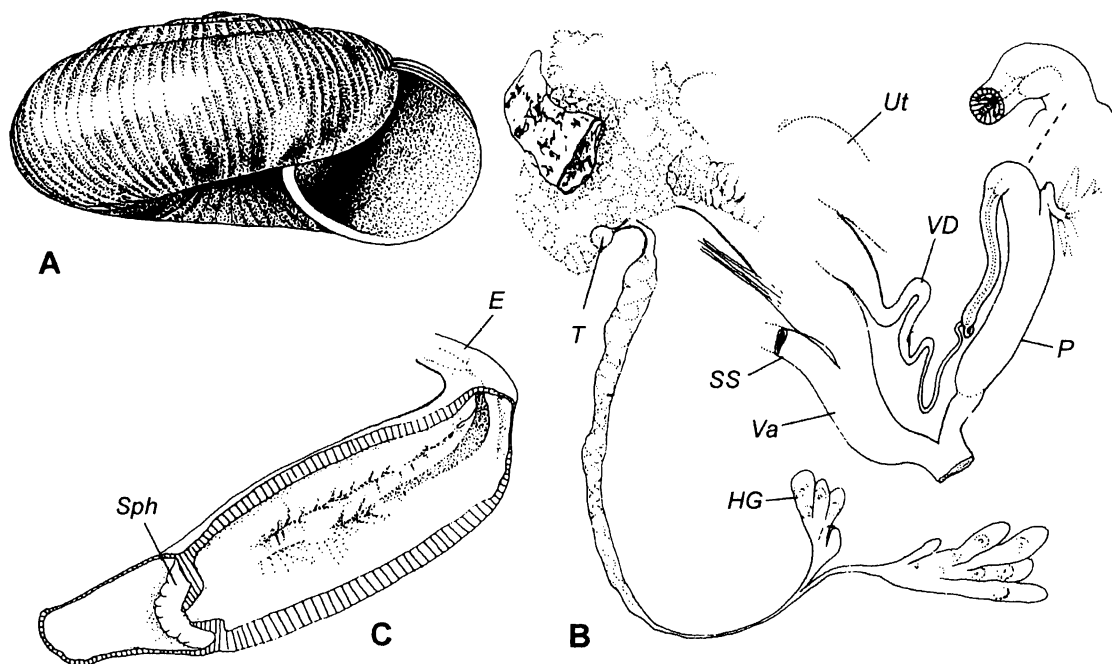


Fig. 1290. A — ! *Chaureopa titirangiensis* (Suter, 1896). Shell: Waiuku, North Island, New Zealand. Phil. No. 250818 (paratype of *Endodonta ochra* Webster, 1904). B, C — *Chaureopa depressa* Climo, 1985. B — reproductive tract. C — interior of penis. After Climo, 1985.

Hermaphroditic gland of 2 alveolar acini. Hermaphroditic duct slightly swollen in distal half, not convoluted. Vas deferens enters epiphallus excentrically. Epiphallus opens into penis through a pore that situated on tip of minute verge. Penis with apical bulb, internally with a couple of variously developed stimulatory pads and poorly defined, rounded axial folds. Free oviduct short; vagina rather long, greatly swollen. Atrium long. Base of spermathecal stalk expanded, small reservoir reaching base of albumen gland.

DISTRIBUTION. New Zealand. 5 spp.

### *Egestula* Iredale, 1915 Fig. 1292

Iredale, 1915: 481 Powell, 1979: 309.

TYPE SPECIES — *Helix egesta* Gray, 1850; OD.

Shell depressed to flat, of 4.5-5.5 convex whorls. Last whorl rounded. Color dark-brown, corneous with darker blocks of chestnut-brown on upper surface, or red-

dish-brown with white radiating flashes above. Embryonic whorls smooth or weakly spirally striated. Postnuclear sculpture of major radial ribs or deciduous lamellar blades; interstices with variously developed minor riblets crossed by spiral striae. Aperture almost circular, moderately oblique, with simple margins; columellar margin reflexed. Umbilicus wide, shallow. Height 1.4-2.0, diam. 3-5 mm (1.5 × 3.7 mm).

Hermaphroditic gland of 2 clusters of elongated acini, 5 acini in each cluster. Hermaphroditic duct not convoluted. Proximal part of vas deferens thickened; vas deferens enters short epiphallus terminally. Penis clavate. Penial retractor arising on diaphragm, inserting on upper part of penis at entrance of epiphallus. Free oviduct markedly shorter than vagina. Spermathecal shaft cylindrical, with slightly swollen base; reservoir attends lower part of albumen gland.

DISTRIBUTION. Australia, New Zealand. 6 spp.

REMARK. Climo (1989: 616) admits that "It is highly probable that the New Zealand genus *Egestula* is a helicodiscid



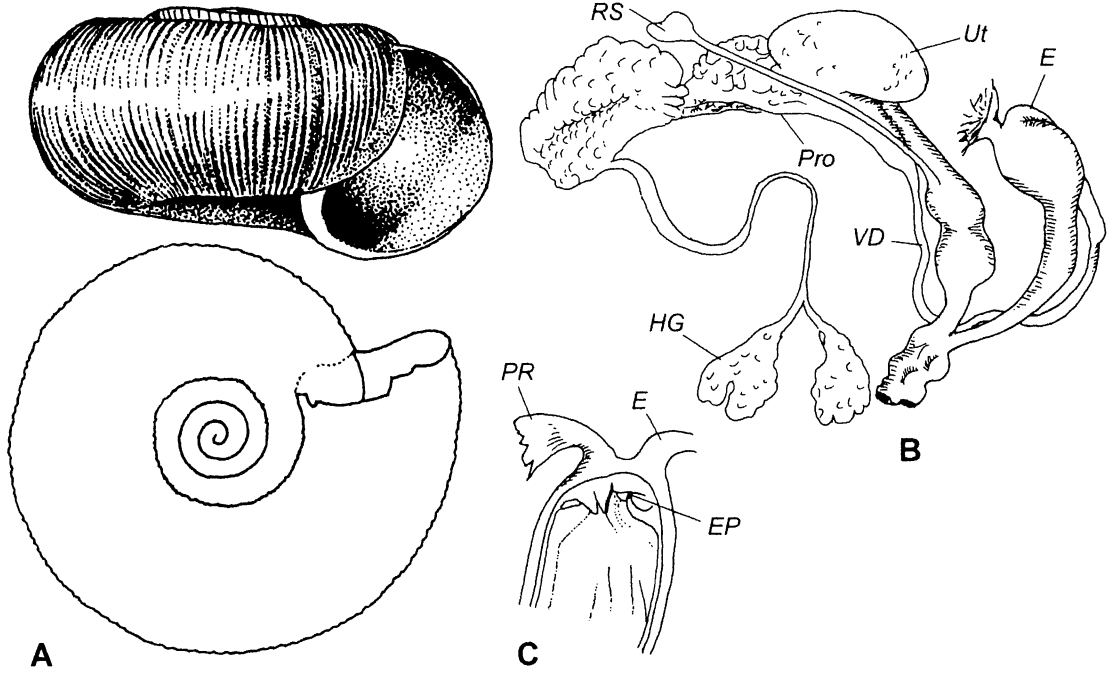


Fig. 1291 *Mocella eta* (L. Pfeiffer, 1853).

A — shell: Waitomo, North Island, New Zealand. Phil. No. 324551 B — reproductive tract. C — interior of penis. After Climo, 1970.

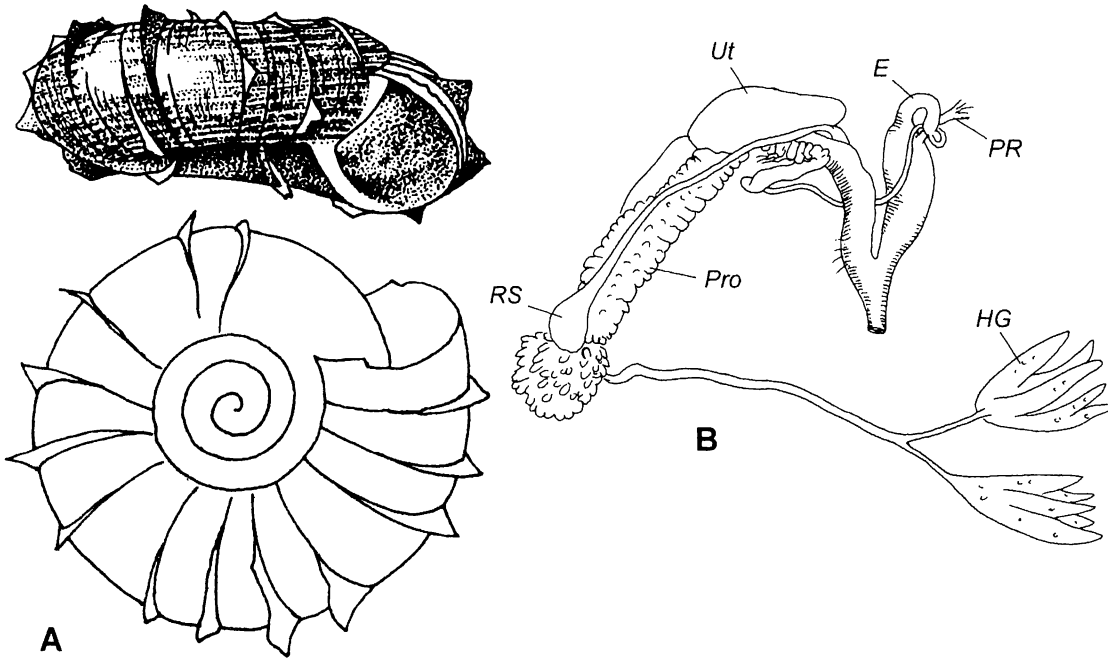


Fig. 1292. *Egestula egesta* (Gray, 1850).

A — shell: Waikere Range, Auckland, New Zealand. Phil. No. 227965. B — reproductive tract. After Climo, 1970.

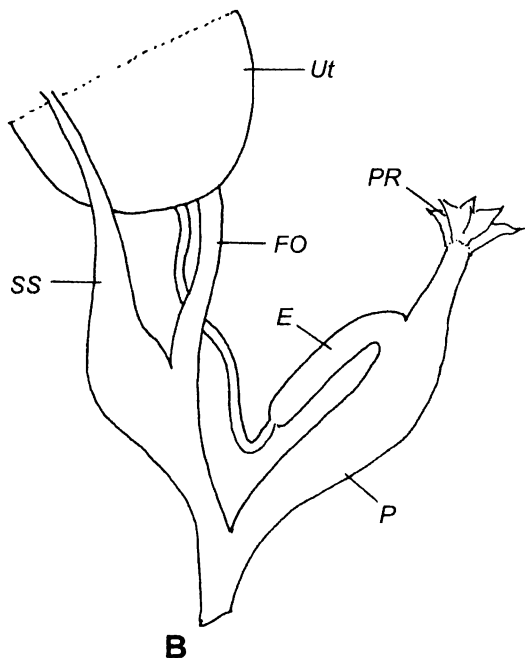
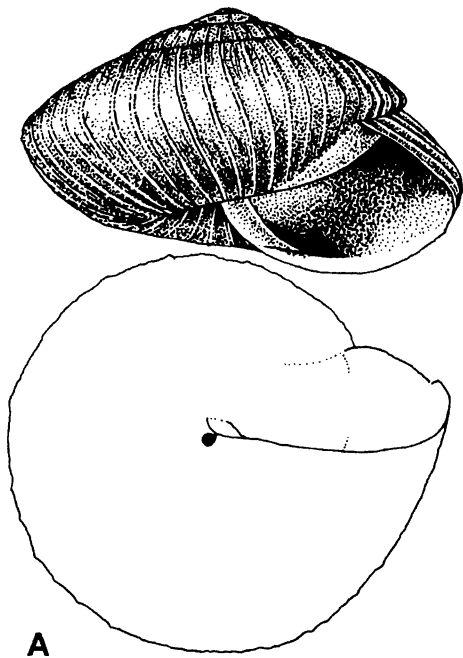


Fig. 1293. *Therasiella celinde* (Gray, 1850).  
 A — shell: Wainuku, North Island, New Zealand. Paris. B — reproductive tract. After Climo, 1973.

snail... I do not think so because shell coloration of *Egestula* is typically charopid and ovotestis consists of 2 clusters of acini as differing from 1 in *Helicodiscidae*.

arising from diaphragm, attaching to penis/epiphallus junction. Free oviduct and vagina subequal in length. Base of spermathecal stalk markedly swollen.

DISTRIBUTION. New Zealand. 6 spp.

*Therasiella* Powell, 1948  
 Fig. 1293

Powell, 1948: 276.

TYPE SPECIES — *Nanina* (?) *celinde* Gray, 1850; OD.

Shell depressed-conic, thin, fragile, translucent, of about 5 moderately convex whorls. Last whorl bluntly angulated at periphery. Color uniformly grey or corneous. Embryonic sculpture of spiral striae. Later whorls with low, periostracal, lamellar major riblets, fine minor riblets and delicate spiral striae in interstices. Aperture ovate-angulated, well oblique. Umbilicus dot-like or closed. Height 1.5-3.0, diam. 3-5 mm (2.3 × 3.7 mm).

Vas deferens not long, entering rather short epiphallus apically. Penis of moderate length, subfusiform. Penial retractor

*Suteria* Pilsbry, 1892  
 Fig. 1294

Pilsbry, 1892: 56 (nom. nov. pro *Patulopsis* Suter, 1892).

— *Patulopsis* Suter, 1892: 270 [nom. praeocc. non Strebel, 1879; t.-sp. *Helix ida* (sic!) Gray, 1850; OD].

TYPE SPECIES — *Helix ide* Gray, 1850; OD.

Shell discoidal, thin, dull, of about 4 convex whorls. Last whorl straight, evenly rounded at periphery. Color yellowish-corneous, with dark-brown radial streaks. Embryonic sculpture of weak radial striae. Postnuclear whorls with distant, well spaced, lamellar radial ribs, furnished with rather long setae, and quite distinct spiral striae. Aperture broadly lunate, markedly

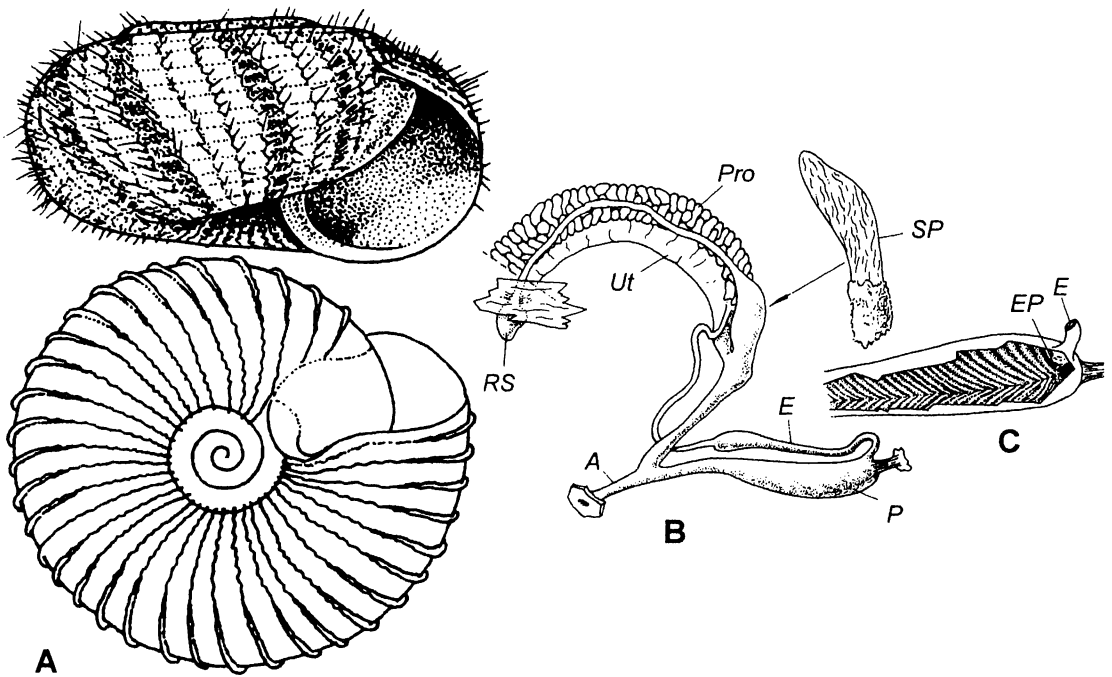


Fig. 1294. *Suteria ide* (Gray, 1850). Morrison's Farm, Fernflats Rd. Marton, North Island, New Zealand, February 8, 1973.  
 A — shell. B — reproductive tract and spermatophore. C — interior of penis. Moscow No. Lc-25305 (SPb) (shell); SPb (alcohol material).

oblique, with thin margins; columellar margin more or less reflexed, basal margin somewhat protruded. Umbilicus moderately wide, perspective. Height 3.0-4.5, diam. 6-9 mm ( $3.6 \times 6.3$  mm).

Prostate of large, well defined acini. Vas deferens entering epiphallus apically. Epiphallus slender, elongated, clavate. Penis comparatively large, internally with crowded, obliquely-transverse folds, an axial groove and minute, a little lateral verge having apical epiphallic pore. Penial retractor attached to penis at entrance of epiphallus. Free oviduct short. Vagina long, slender. Base of spermathecal stalk greatly swollen; within it I found a spermatophore in form of leathery body with folded surface. Reservoir of spermatheca attends lower margin of albumen gland and fastened to wall of lung cavity at pericardium.

DISTRIBUTION. New Zealand. 2 spp.

### *Aeschrodomus* Pilsbry, 1892

Fig. 1295

Pilsbry, 1892: 55 (nom. nov. pro *Thera* Hutton, 1884).

— *Thera* Hutton, 1884: 193 [*Patula* sect.; nom. praeocc., non Stephens, 1831 (Lepidoptera); t.-sp. *Helix stipulata* Reeve, 1852; designated here].

TYPE SPECIES — *Helix alpha* L. Pfeiffer, 1853 (= *Helix stipulata* Reeve, 1852); OD.

Shell elevated dome-shaped, thin, fragile, of 6-7 flattened to nearly flat whorls. Last whorl angulated. Color yellowish-brown or brown, obscurely variegated with yellowish-white streaks, or buff with irregular rectangular blotches of reddish-brown. Embryonic whorls with distinct spiral threads. Later whorls silky, densely radially striated, with thin periostracal riblets having lash-like processes. Umbilicus deep, not very wide, subcylindrical. Height 2.0-4.5, diam. 2.6-4.5 mm ( $3.3 \times 4.3$  mm).

Rectal lobe of kidney much longer than pericardial. Secondary ureter complete.

Ovotestis of 2 clumps, one with 2, the other with 3 banana-like acini, some acini bifurcated at tips. Hermaphroditic duct not convoluted. Talon with very short stalk and globular head. Proximal end of vas deferens markedly expanded. Vas deferens coiled around penial retractor, enters short

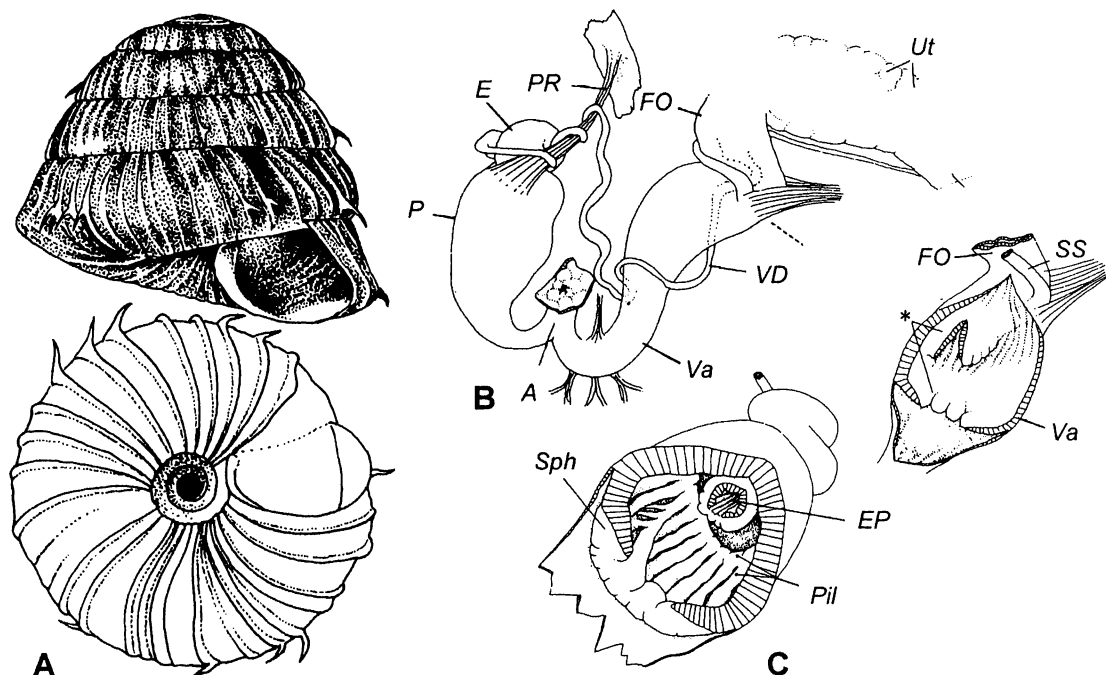


Fig. 1295. *Aeschrodromus stipulatus* (Reeve, 1852).  
 A — shell: New Zealand. Phil. No. 63800. B — reproductive tract and interior of vagina.  
 C — interior of penis. After Climo, 1970. *Asterisk* — sphincter-like valve in vagina.

epiphallus terminally. Epiphallus opens into penis on tip of well-developed verge. Penis greatly swollen, ovate, its proximal chamber internally with distinct circular folds, separated from distal chamber by a sphincter; inner surface of distal chamber smooth. Penial retractor attached to penis/epiphallus junction. Free oviduct short. Vagina long, internally with a complex sphincter-like valve. Basal portion of spermathecal stalk expanded, reservoir lies on lower half of albumen gland.

DISTRIBUTION. New Zealand. 2-3 spp.

### *Pulchridomus* Climo, 1980

Fig. 1296

Climo, 1980: 295.

TYPE SPECIES — *Helix barbatula* Reeve, 1852; OD.

Shell dome-shaped, thin, of 8-8.25 flattened whorls. Last whorl angulated. Color light corneous-brown, with weakly flexuous radial streaks of chocolate-brown. Embryonic whorls glossy, with very weak radial

folds and unevenly distributed weak malleations. Later whorls with radial ribs surmounted by periostracal blades, that drawn out into curved spines. Aperture semilunate, slightly oblique, with simple margins. Umbilicus narrow, cylindrical. Height 5, diam. 3.6 mm.

Kidney lobes approximately equal in length. Secondary ureter complete.

Ovotestis of 2 clumps. Talon with short stalk and circular head. Vas deferens a little expanded in proximal section, enters small epiphallus terminally. Penis considerably swollen, its lumen divided into 2 chambers by a sphincter. Proximal chamber internally with well developed verge and several circular, corrugated plicae interrupted on one side by axial groove. Each plica consists of close-set tubercles. Distal chamber with weak, sinuous axial folds. Penial retractor attached to penis at entrance of epiphallus. Free oviduct very short. Vagina long, internally with branched longitudinal folds and a large valve at entrance of spermatheca consisting of 2 pilasters of complex shape. Sper-

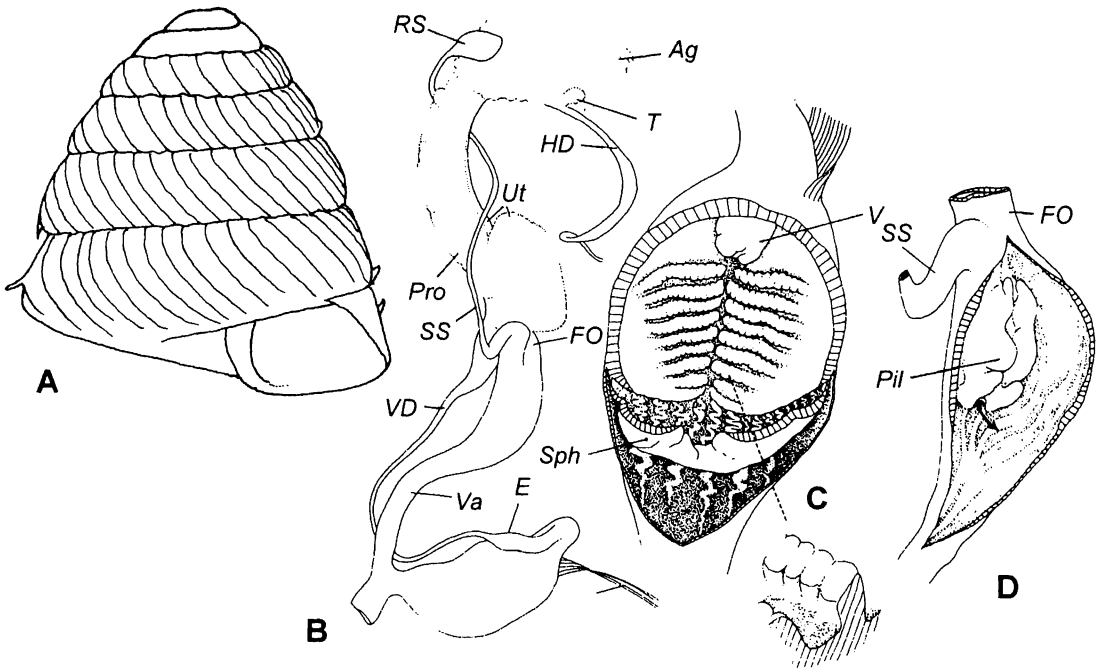


Fig. 1296. *Pulchridomus barbatula* (Reeve, 1852).  
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. After Climo, 1980.

mathecal shaft a little thickened basally, reservoir attends albumen gland.

DISTRIBUTION. New Zealand. 1 sp.

***Phenacharopa* Pilsbry, 1893**  
 Fig. 1297

Pilsbry, 1893 (1893-1895): 29 (*Endodonta* subg.).

— *Tesseraria* O. Boettger, 1880: 69 [nom. praeocc. non Haeckel, 1880 (Coelenterata); *Pupa*, sect. *Columella*, "Gruppe": t.-sp. *Pupa novoseelandica* L. Pfeiffer, 1853; monotypy].

Powell, 1979: 311.

TYPE SPECIES — *Pupa novoseelandica* L. Pfeiffer, 1853; OD.

Shell *Columella*-like, cylindrical, thin, of 7-8 moderately convex whorls. Color reddish-brown, with more or less regular yellowish-white markings. Embryonic whorls spirally striated. Later whorls with numerous fine, flexuous radial riblets. Aperture rounded or ovate, toothless, nearly vertical, with sharp, simple margins. Umbilicus narrowly open. Height 4.5-5.0, diam. 2 mm (4.8 × 2.0 mm).

Ovotestis of 2 clusters of elongated acini. Hermaphroditic duct not convoluted. Talon not visible. Vas deferens free, entering short epiphallus apically. Epiphallus internally with a few longitudinal folds. Penis bulky, irregularly ovate, with a short, blind caecum; internally smooth, with or without a small verge; in distal part there is a series of 1-4 thin, high, circular folds. Penial retractor arising on diaphragm, attaching to penis/epiphallus junction. Free oviduct short, vagina a little longer, expanded. Spermathecal stalk supplied with its own retractor; reservoir voluminous, attending lower part of albumen gland.

DISTRIBUTION. New Zealand. 1 sp.

***Gerontia* Hutton, 1883**  
 Fig. 1298

Hutton, 1883: 135. Powell, 1979: 312.

TYPE SPECIES — *Gerontia pantherina* Hutton, 1883; monotypy.

Shell depressed, thin, of 5-6 not very convex whorls. Color greenish-olive. Em-

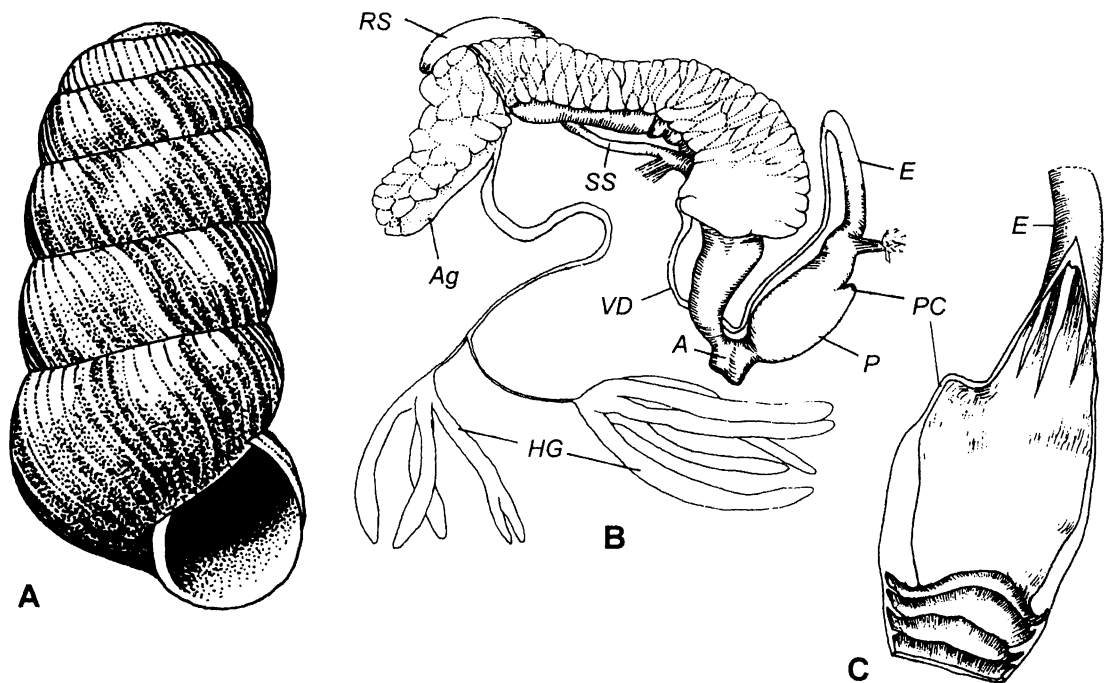


Fig. 1297 *Phenacharopa novoseelandica* (L. Pfeiffer, 1853).  
 A — shell: Happy Valley, South Island, New Zealand. SPb. B — reproductive tract. C — interior of penis. After Climo, 1970.

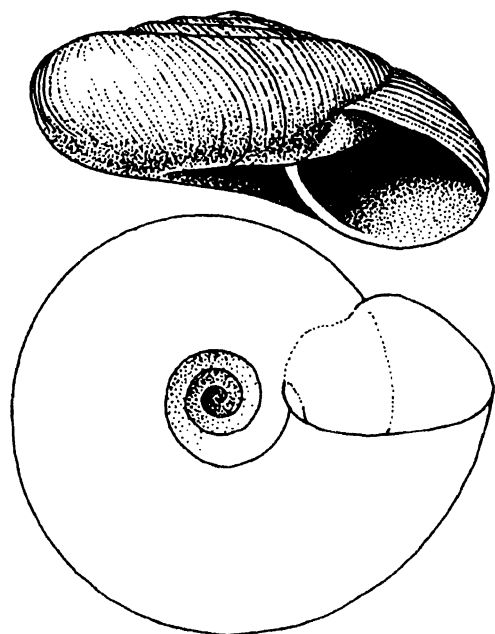


Fig. 1298. *Gerontia pantherina* Hutton, 1883.  
 Keefton, New Zealand. SPb.

bryonic sculpture finely spirally striated. Postnuclear whorls with rather close, irregular, oblique radial striae, which are membranous on upper surface; interstices smooth. Aperture rounded, well oblique, slightly flattened below; margins thin, their insertions somewhat converging. Umbilicus rather wide, perspective. Height 4.0-5.3, diam. 8.0-10.5 mm (4.8 × 9.5 mm).

Tail of cephalopodium with caudal pore but without horn.

Jaw finely vertically striated.

DISTRIBUTION. New Zealand. 1 sp.

### *Frustropa* Iredale, 1945

Iredale, 1945: 58. B. Smith, 1992: 189.

TYPE SPECIES — *Frustropa alea* Iredale, 1945; OD.

Shell depressedly turbinata, thin, with slightly elevated, convex spire, of 4.5 convex whorls; last whorl rounded at periphery, descending in front. Color pale creamy. Embryonic whorls (1.5) large,

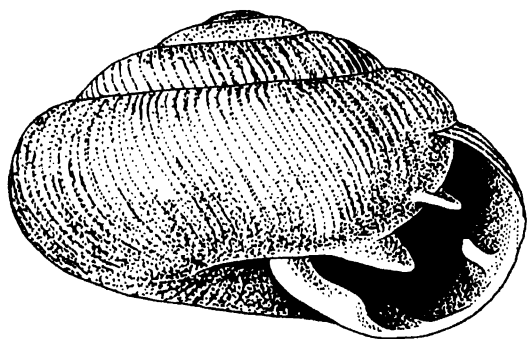


Fig. 1299 *Norfolcioconcha norfolkensis* (Hedley, 1899).  
Norfolk Island. London No. 1995071

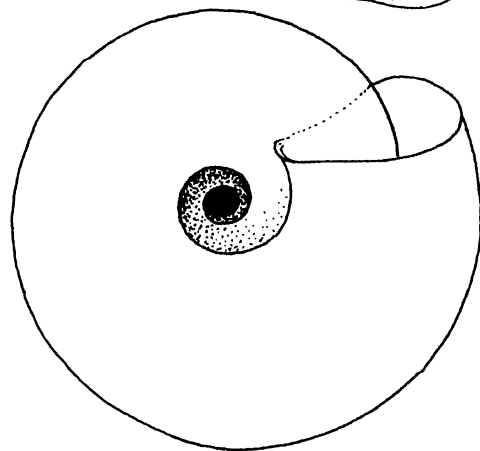
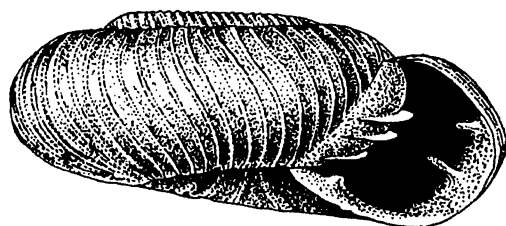


Fig. 1300. *Kermodon royanus* (Iredale, 1913).  
Sunday Island, Kermadec Islands. Syntype.  
Vienna No. 48155.

smooth. Later whorls with fine, curved, crowded, lamellate ribs; intervals smooth. Aperture reversed, ear-shaped, without teeth, with simple margins. Umbilicus narrow, deep. Height 1.25, diam. 2 mm.

DISTRIBUTION. Norfolk Island. 1 sp.

*Norfolcioconcha* Preston, 1913

Fig. 1299

Preston, 1913b: 535. B. Smith, 1992: 196.

TYPE SPECIES — *Endodonta norfolkensis* Hedley, 1899; OD.

Shell depressedly dome-shaped, rather thin, subhyaline, of about 5 moderately convex whorls. Last whorl rounded at periphery. Color light-corneous. Embryonic whorls smooth. Postapical sculpture of major ribs, few finer riblets and distinct wavy spiral striae in interstices. Aperture semilunate, subvertical, with thin margins. Parietal wall with 2 thin, high, subhorizontal lamellae. Columellar margin somewhat thickened, abruptly truncated. Basal plica

smoothed, palatal plica short, strong, lamellar. Umbilicus moderately wide, deep. Height 0.4-0.6, diam. 1.0-1.4 mm (0.5 × 1.3 mm).

DISTRIBUTION. Norfolk Island. 3 spp.

*Kermodon* Iredale, 1945

Fig. 1300

Iredale, 1945: 56.

TYPE SPECIES — *Ptychodon royanus* Iredale, 1913; OD.

Shell flat, thin, of 4.5-5 convex whorls. Last whorl rounded. Color corneous. Embryonic whorls finely radially striated. Later whorls with distinct major ribs and several minor riblets in intervals. Aperture ovate, subvertical, with simple margins. Parietal wall with 2-3 low, entering lamellae. Columellar margin with 1-2 variously developed tubercles. Basal tooth 1 or missing, palatal plicae 2. Umbilicus rather wide, funnel-like. Height 1.3-1.5, diam. 3.5-3.8 mm (1.5 × 3.7 mm).

DISTRIBUTION. Kermadec Islands. 1 sp.

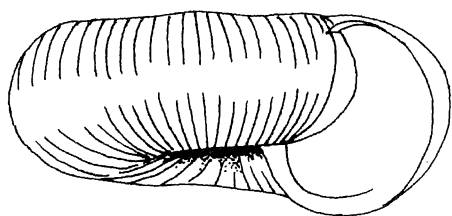


Fig. 1301 *Gyropena verans* Iredale, 1944.  
After Iredale, 1944.

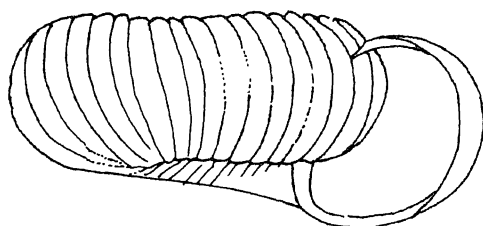


Fig. 1302. ! *Goweroconcha wenda* Iredale, 1944.  
After Iredale, 1944.

***Gyropena* Iredale, 1944**  
Fig. 1301

Iredale, 1944: 321. B. Smith, 1992: 191

TYPE SPECIES — *Gyropena verans* Iredale, 1944; OD.

Shell discoidal, flat, with sunken spire, thin, silky glossy, of about 4 convex whorls. Last whorl evenly rounded. Color pale fawn with brown patches which increase to fuse together completely. Embryonic whorls large, spirally striated. Postapical sculpture of fine, close-set radial riblets. Aperture subcircular, with thin margins. Umbilicus wide, perspective. Height 1.25, diam. 3 mm.

DISTRIBUTION. Lord Howe Island. 1 sp.

***Goweroconcha* Iredale, 1944**  
Fig. 1302

Iredale, 1944: 318. B. Smith, 1992: 190.

TYPE SPECIES — *Goweroconcha wilsoni* Iredale, 1944; OD.

Shell discoidal, spire a little sunken, thin, of about 4 whorls. Color bright fawn with wavy, oblique, red flame markings or dull, pale-buff with madder-brown markings. Embryonic whorls radially striated. Later whorls with major radial ribs and very fine minor radial riblets (striae) in interstices. Aperture subcircular, with simple margins. Umbilicus wide. Height 2.0-3.5, diam. 4.50-8.75 mm.

DISTRIBUTION. Lord Howe Island. 3 spp.

***Pulcharopa* Iredale, 1944**  
Fig. 1303

Iredale, 1944: 320. B. Smith, 1992: 202.

TYPE SPECIES — *Pulcharopa plesa* Iredale, 1944; OD.

Shell depressed, with almost flat spire, thin, of about 5 convex whorls. Last whorl rounded at periphery. Coloration dull fawn flamed with dull red. Embryonic whorls microscopically radially striated. Later whorls with distant ribs and delicate radial



striae in intervals. Aperture subcircular, with thin margins; columellar margin straight, vertical. Umbilicus deep, funnel-like, perspective. Height up to 2.25, diam. up to 3.5 mm.

DISTRIBUTION. Lord Howe Island. 1 sp.

### *Pseudocharopa* Peile, 1929

Fig. 1304

Peile, 1929: 267

— *Howeinsulea* Peile, 1929: 267, footnote (as syn. of *Pseudocharopa*; t.-sp. *Patula ledgbirdi* Hedley, 1891; OD).

— *Deceptrena* Iredale, 1944: 314 (pro subg.; t.-sp. *Pseudocharopa editior* Iredale, 1944; OD).

— *Ballena* Iredale, 1944: 314 (pro subg.; t.-sp. *Pseudocharopa imperator* Iredale, 1944; OD).

— *Lidgbirdia* Iredale, 1944: 315 (t.-sp. *Pseudocharopa exquisita* Peile, 1929; OD).

B. Smith, 1992: 200.

TYPE SPECIES — *Patula ledgbirdi* Hedley, 1891; OD.

Shell low-turbinata, thin, slightly translucent, of 3-3.5 convex whorls. Color uniformly brown to pale-corneous. Embryonic whorls smooth to vaguely granulated. Post-nuclear whorls with distinct radial ribs and microscopical spiral striae in interstices. Aperture rather large, widely ovate, well oblique, with simple margins; columellar margin a little concave, shortly reflexed. Umbilicus comparatively narrow, deep. Height 4-9, diam. 6-16 mm (4.4 × 6.7 mm).

Kidney bilobed, its pericardial and rectal arms subequal in length. Secondary ureter complete.

Hermaphroditic duct nearly straight. Talon exposed, with very short shaft and globular head. Spermoviduct shortened, prostate small. Vas deferens caught into penioviducal angle, entering epiphallus apically. Epiphallus very short, stout, internally with a large axial pilaster. Interior of penis with high, smooth pilasters in lower part; rugose, irregular, transversal and axial low pilasters in upper part. Penial retractor arising from diaphragm, attaching to penis/epiphallus junction. Free oviduct not long, vagina very short. Spermathecal stalk markedly expanded at base, reservoir lying on basal margin of albumen gland.

DISTRIBUTION. Lord Howe Island. 6 spp.

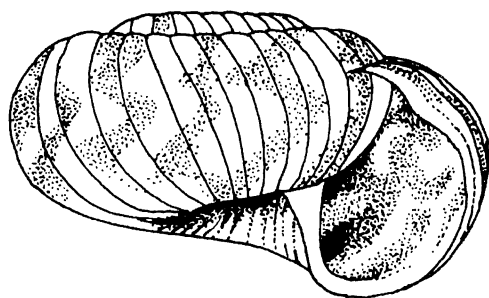


Fig. 1303. *Pulcharopa plesa* Iredale, 1944. After Iredale, 1944.

### *Charopella* Iredale, 1944

Fig. 1305

Iredale, 1944: 320. B. Smith, 1992: 182.

TYPE SPECIES — *Charopella zela* Iredale, 1944; OD.

Shell depressedly turbinata, thin, with a little elevated spire, of 5 convex whorls; last whorl roundly angled or bluntly keeled at periphery. Color pale flawn, with golden-brown or red flammulations. Embryonic whorls (1.5) smooth. Postapical sculpture of radial ribs with minor riblets in interstices, crossed sometimes by spiral striae. Aperture subcircular, with simple margins; columellar margin vertical. Umbilicus wide. Height 1.0-1.5, diam. 2.5-3.0 mm.

DISTRIBUTION. Lord Howe Island. 2 spp.

### *Charopinesta* Iredale, 1944

Fig. 1306

Iredale, 1944: 321 B. Smith, 1992: 182.

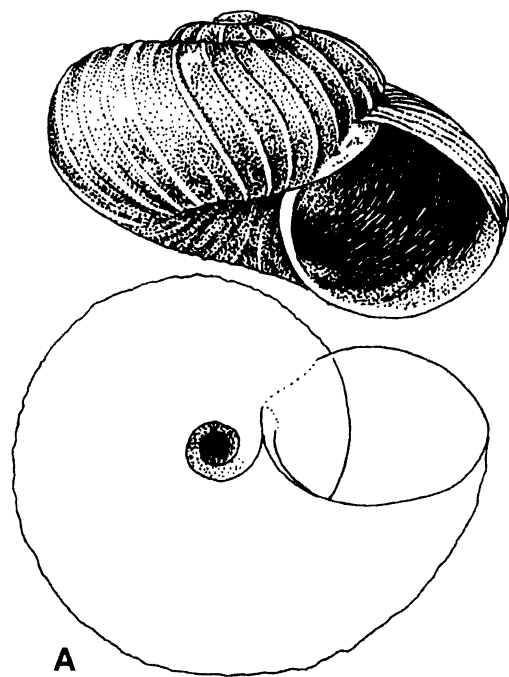


Fig. 1304. *Pseudocharopa ledgirdi* (Hedley, 1891).

A — shell: Lord Howe Island. Syntype. Senck. No. 158315. B — reproductive tract. C — interior of penis. After Solem, 1983.

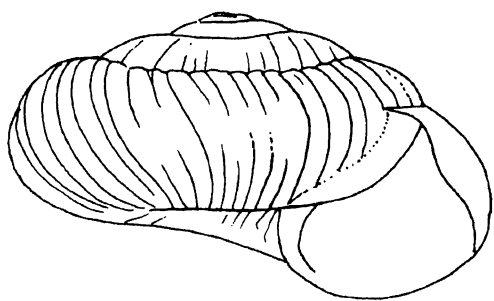


Fig. 1305. *Charopella zela* Iredale, 1944.  
After Iredale, 1944.

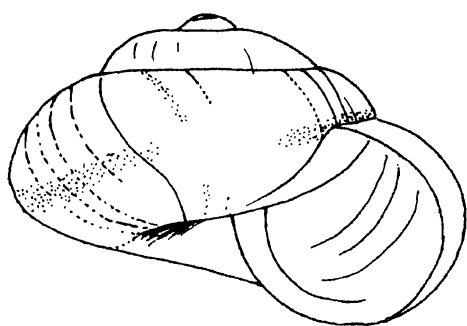


Fig. 1306. *Charopinesta sema* Iredale, 1944.  
After Iredale, 1944.

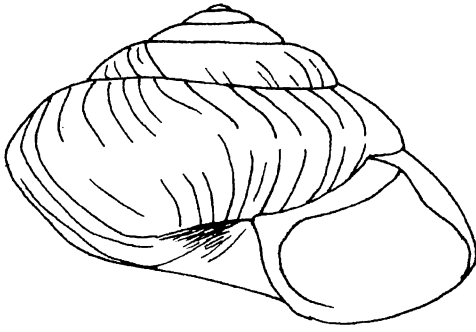


Fig. 1307 *Pernastela charon* Iredale, 1944.  
After Iredale, 1944.

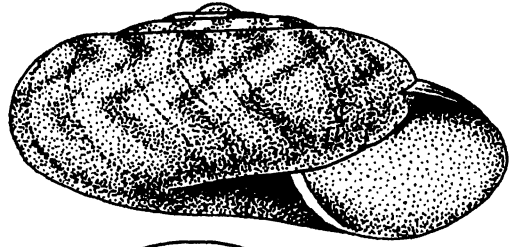
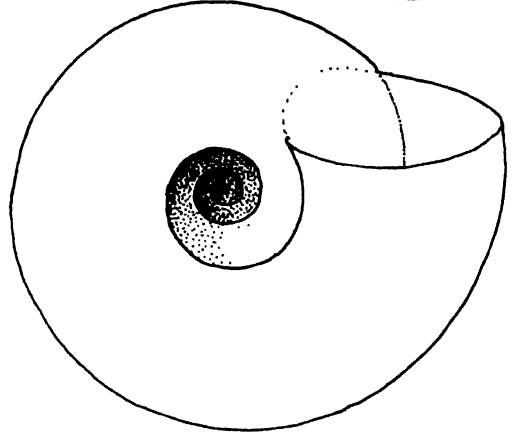


Fig. 1308. *Rhytidopsis chelonites* (Crosse, 1868).  
New Caledonia. SPb.



TYPE SPECIES — *Charpinesta sema* Iredale, 1944; OD.

Shell depressedly turbinoid, thin, of 4-4.5 convex whorls. Last whorl rounded. Color uniformly pale yellowish or red-brown. Embryonic whorls smooth to delicately radially striated. Postnuclear sculpture of very fine radial striation; on basal surface weak spiral striae may be observed. Aperture subcircular, with simple margins. Umbilicus open, deep, about 1/4 of shell diameter. Height 1, diam. 1.5-2.5 mm.

DISTRIBUTION. Lord Howe Island. 3 spp.

***Pernastela* Iredale, 1944**

Fig. 1307

Iredale, 1944: 322. B. Smith, 1992: 199.

TYPE SPECIES — *Pernastela charon* Iredale, 1944; OD.

Shell depressedly turbinate, thin, of about 5 convex, somewhat shouldered whorls. Last whorl roundly angulated at periphery. Color pale fawn with darker markings or uniformly brown. Embryonic

whorls spirally striated. Later whorls with more or less distant ribs and radial threadlets in intervals. Aperture sublunar or roundly quadrangular. Umbilicus not very wide, about 1/5-1/4 of shell diameter. Height 1-2, diam. 1.5-3.5 mm.

DISTRIBUTION. Lord Howe Island. 3 spp.

***Rhytidopsis* Ancey, 1882**

Fig. 1308

Ancey, 1882: 86.

TYPE SPECIES — *Helix chelonites* Crosse, 1868; monotypy.

Shell flattened, rather thin, somewhat translucent, of 5-6 moderately convex whorls. Last whorl rounded at periphery. Color yellowish or whitish, with reddish zigzags or spots. Embryonic whorls almost smooth. Later whorls nearly smooth to finely radially ribbed. Aperture generally ovate, only slightly oblique, with simple margins. Umbilicus narrow to moderately wide. Height 2.2-3.7, diam. 4.5-7.5 mm (3.5 × 6.8 mm).

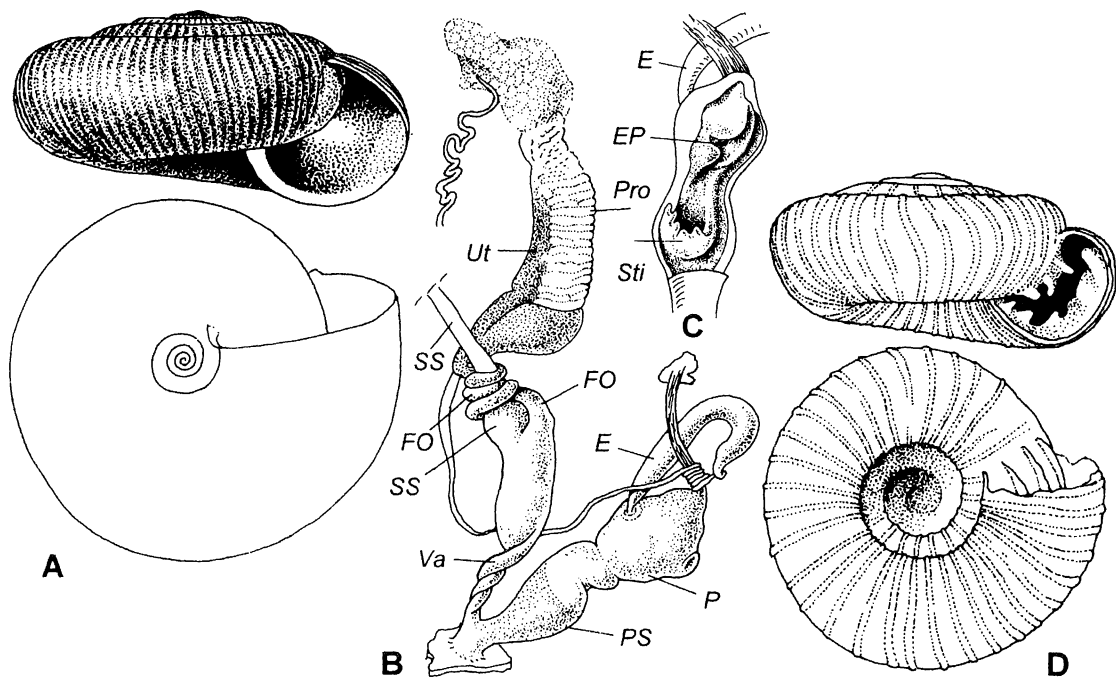


Fig. 1309 A, B, C — *Andrefrancia rhizophorarum* (Gassies, 1865).  
 A — shell: New Caledonia. Paris. B, C — Haute Rivière Bleue, New Caledonia, November 11, 1984. B — reproductive tract. C — interior of penis. Paris. D — ! *Andrefrancia cockerelli* Solem, 1960. After Solem, 1960.

Tail of cephalopodium with so-called pseudo-operculum, formed from a dorsal epidermal thickening and occludes aperture when snail body withdrawn.

DISTRIBUTION. New Caledonia. 5 spp.

*Andrefrancia* Solem, 1960

Fig. 1309

Solem, 1960: 2.

TYPE SPECIES — *Helix rhizophorarum* Gassies, 1865; OD.

Shell much depressed, rather thin, of 4-6.5 tightly to loosely coiled, rather convex whorls. Last whorl rounded at periphery. Color uniformly corneous to dark-brown. Embryonic whorls usually with delicate spiral threads; postapical sculpture of relatively prominent radial ribs (sometimes more or less reduced). Microsculpture of radial riblets crossed by fine spiral incised lines between major ribs. Aperture slightly oblique, somewhat ovate, heavily toothed to toothless. Umbilicus narrowly to

broadly open. Height 1-3, diam. 1.6-8.5 mm (2.4 × 5.2 mm).

Hermaphroditic duct convoluted. Talon not visible. Prostate of many white, tightly packed acini. Proximal part of vas deferens slightly expanded, distal part coiled around base of penial retractor, entering fusiform epiphallus apically. Penis consists of 2 chambers: swollen proximal and elongated distal whose basal portion coated by thin, smooth, darkened sheath. Epiphallic pore located in proximal part of penis and surrounded by lamellar lobes from which 2 thin folds run downward; distally these folds fused together to form a sort of velum-like stimulator. Free oviduct forms a few whorls around base of spermathecal stalk. Vagina swollen in proximal part, its distal part narrowed and twisted.

DISTRIBUTION. New Caledonia. About 6 spp.

*Platyrhytida* Pilsbry, 1895

Fig. 1310

Pilsbry, 1895 (1893-1895): 342.

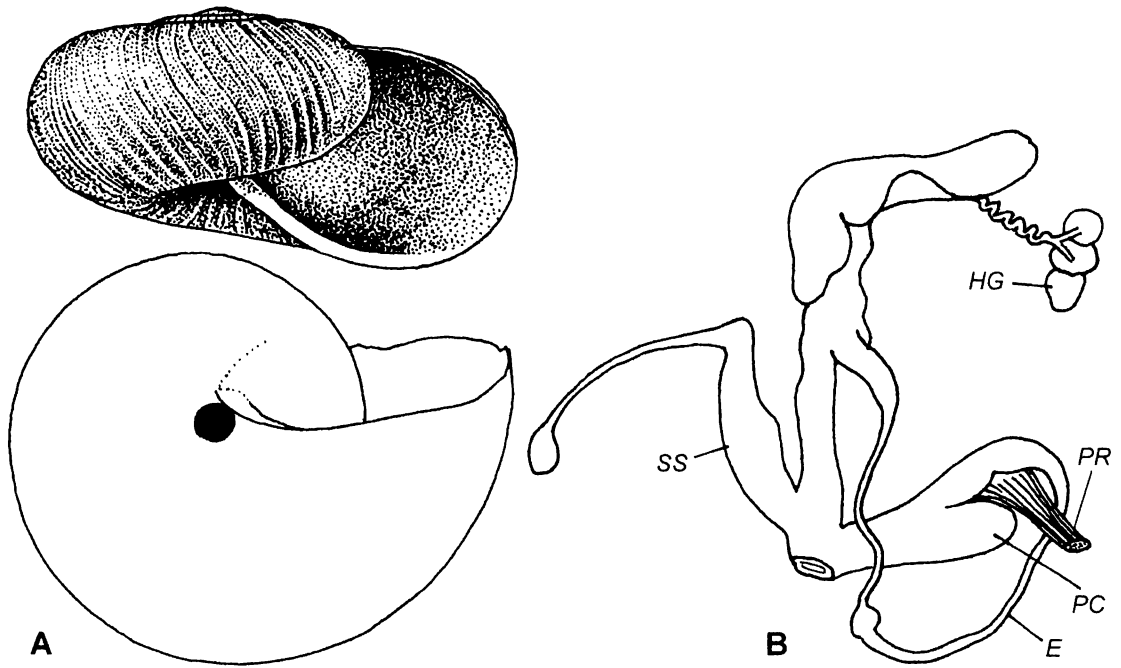


Fig. 1310. *Platyrrhytida saisseti* (Souverbie, 1860).

A — shell: New Caledonia. Paris. B — reproductive tract. After Starmühlner, 1970.

— *Platystoma* Ancey, 1882: 86 (nom. praecoc., non Hörnes, 1855; t.-sp. not designated).

— *Saissetia* Ancey, 1888: 368 [nom. praecoc., non Déplanches, 1865 (Insecta, Coccidae); t.-sp. *Helix saisseti* Souverbie, 1860; tautonymy].

TYPE SPECIES — *Helix saisseti* Souverbie, 1860; OD.

Shell nearly flat, moderately thin, slightly translucent, of about 4 whorls. Last whorl rounded at periphery. Coloration of yellowish-corneous background and variously developed reddish zigzag flammulations. Embryonic whorls glabrous. Postnuclear sculpture of thin, regular radial ribs. Aperture large, ovate, slightly oblique, with simple, sharp margins. Umbilicus cylindrical, narrowly open. Height 2.4-9.0, diam. 5-17 mm (8.8 × 16.0 mm).

Ovotestis of a few rounded clumps of acini. Hermaphroditic duct strongly convoluted. Vas deferens markedly expanded at prostate, enters epiphallus apically. Proximal end of long epiphallus somewhat bulbous, distal end expanded. Penis short,

with a large subterminal caecum. Penial retractor attached to distal expansion of epiphallus by wide fan. Free oviduct long, vagina nearly absent. Lower part of spermathecal stalk strongly enlarged; reservoir small.

DISTRIBUTION. New Caledonia. 5 spp.

### *Micromphalia* Ancey, 1882

Fig. 1311

Ancey, 1882: 86.

TYPE SPECIES — *Helix abax* Marie, 1870; SD Thiele, 1931

Shell depressed dome-shaped, rather thin, glossy, of about 5 convex whorls. Last whorl inflated, widely and evenly rounded at periphery. Coloration consists of creamy or light-corneous background and variously developed pattern: below suture there is light band with white and chestnut rounded spots; below many darker spots of irregular shape scattered; apex dark brown. First 0.5 whorl smooth; rest surface

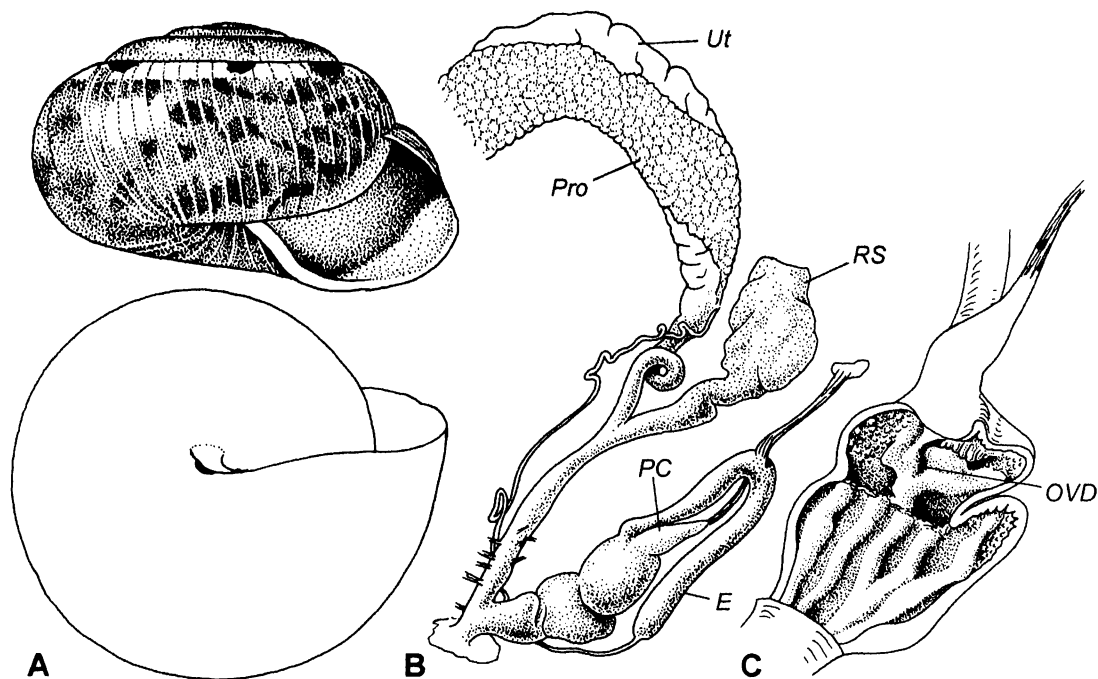


Fig. 1311. *Micromphalia abax* (Marie, 1870).

A — shell: "Nouvelle-Caledonie, Baie du Sud" Lectotype. Paris. B, C — "Nouvelle Caledonie, Montagne des Sources, 23.XI.1988" B — reproductive tract. C — interior of penis. Paris.

with distinct major radial ribs and 4-5 thinner, crowded minor riblets in interstices. Aperture irregularly ovate, with simple margins. A triangular basal tooth situated deep inside aperture. Umbilicus minute, semicovered. Height 3.5-8.5, diam. 6-14 mm ( $8.2 \times 13.5$  mm).

Tail of cephalopodium unusually long. Sole in preserved specimens folded longitudinally, with a deep median groove.

Vas deferens slender, more or less convoluted, free, enters long, cylindrical epiphallus apically. Penis consists of 3 chambers and furnished with apical conic caecum. Epiphallus entering penis at base of caecum through a simple pore located on fleshy pad of irregular shape. Upper chamber of penis internally, besides mentioned pad, with small numerous papillae, separated from middle chamber by a sphincter. Middle chamber with few large axial folds which continue into basal chamber. Penial retractor attached to middle section of epiphallus; additional arm attached to tip of penial caecum. Free oviduct and vagina

rather long, of about equal length. Spermathecal stalk short, not expanded basally; reservoir capacious, thin-walled, lying on basal part of spermoviduct.

DISTRIBUTION. New Caledonia. 3 spp.

### *Monomphalus* Ancey, 1882

Fig. 1312

Ancey, 1882: 86.

TYPE SPECIES — *Helix rossiterianus* Crose, 1871; SD Pilsbry, 1893 (1893-1895).

Shell flat, inflated, thin, of 4.5-5 convex whorls. Last whorl somewhat compressed at periphery. Apex slightly sunken. Coloration consists of corneous to reddish background and light, rounded spots. Embryonic whorls with very fine spiral striae. Postnuclear sculpture of low periostracal radial riblets. Aperture widely semilunate, vertical, with thin, simple margins. Basal margin somewhat protruded forward. Umbilicus minutely open or semicovered.

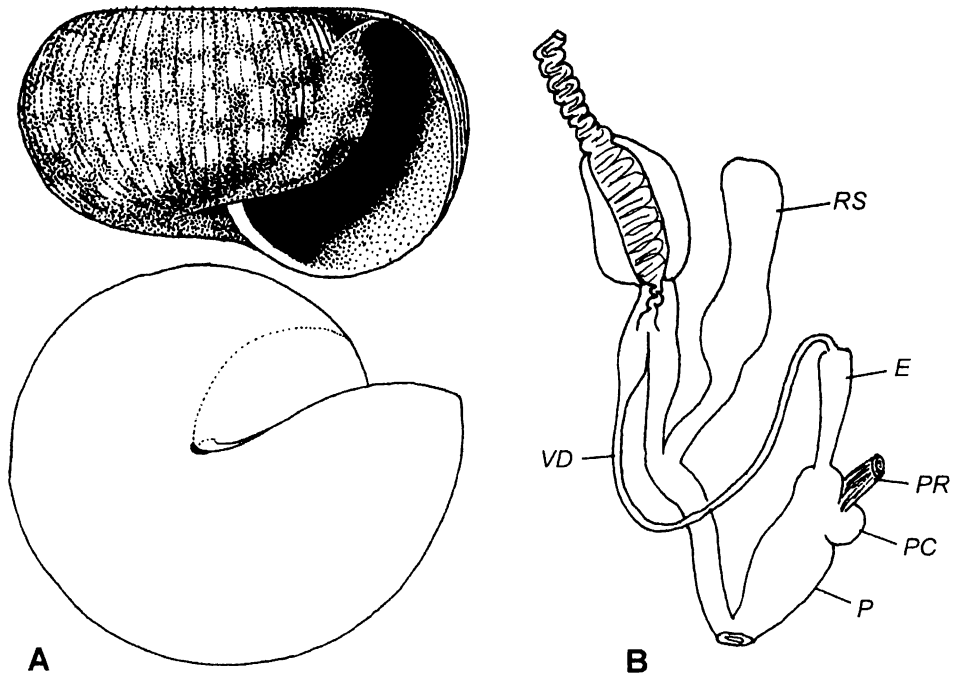


Fig. 1312. A — *Monomphalus rossiterianus* (Crosse, 1871). Shell: New Caledonia. SPb. [as *M. heckelianus* (Crosse, 1872)]. B — ! *Monomphalus havayi* (Crosse et Marie, 1868). Reproductive tract. After Starmühlner, 1970.

Height 2.4-5.0, diam. 5-11 mm (3.1 × 6.4 mm).

Vas deferens somewhat swollen at prostate, then narrowing, entering rather short epiphallus apically. Penis bulky, with globular caecum on proximal part. Penial retractor attached to penis just above caecum. Free oviduct subequal to vagina in length. Spermathecal stalk short, reservoir elongated.

DISTRIBUTION. New Caledonia. 3-4 spp.

*Plesiopsis* Ancey, 1888  
Fig. 1313

Ancey, 1888: 372 (*Micromphalia* subg.).

TYPE SPECIES — *Helix lombardoi* Montrouzier, 1860; OD.

Shell subglobose, rather solid, of about 6 rather convex, slightly shouldered whorls. Last whorl much inflated, widely rounded at periphery. Coloration consists of brown or reddish background and variously devel-

oped, scattered light spots. Embryonic sculpture of vague microgranulation. Post-nuclear whorls with low, membranaceous, periostracal riblets and very fine striae in interstices. Aperture comparatively narrow, lunate, vertical. Columellar margin oblique, somewhat reflexed. Umbilicus dot-like. Height 7.0-7.5, diam. 9-10 mm (7.0 × 9.6 mm).

Hermaphroditic duct strongly convoluted. Talon not visible. Vas deferens enormously long, convoluted, looped, entering epiphallus at short distance from apex. Epiphallus not long, with a short, conic caecum, separated from penis by a shallow narrowing. Penis internally with numerous, thin, obliquely-axial folds and comparatively large, corrugated verge with apical pore. Penial retractor attached to caecum apically. Free oviduct very short, vagina about 3 times longer. Spermathecal shaft not thickened basally, extraordinary long, convoluted and looped (correspondingly to length and shape of vas deferens); reservoir elongated.

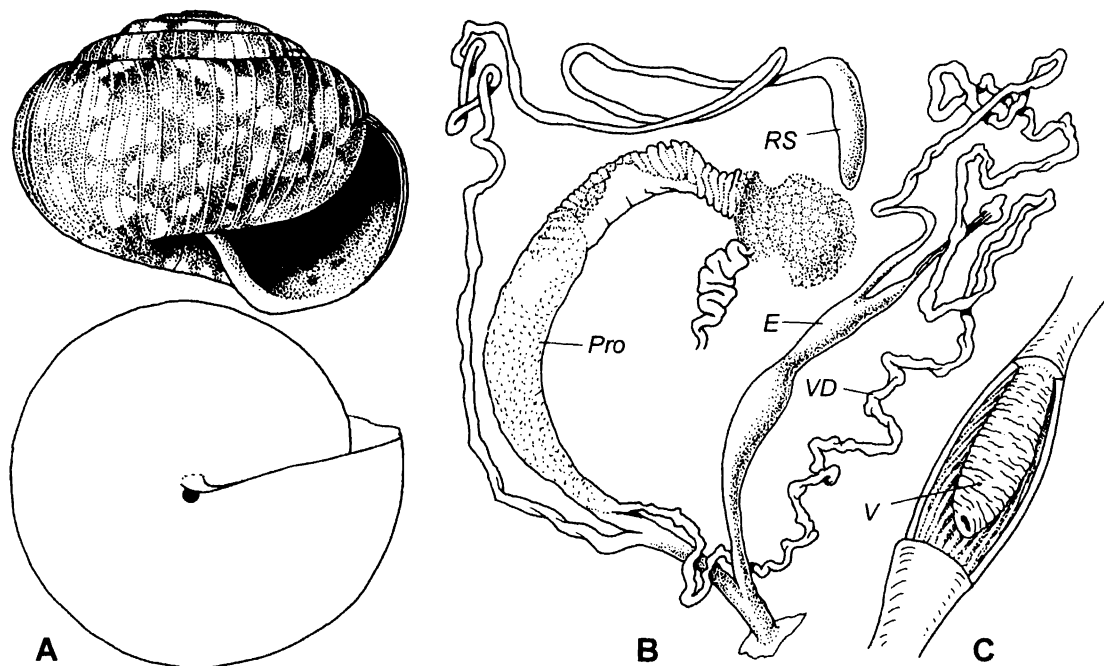


Fig. 1313. *Plesiopsis lombardoi* (Montrouzier, 1860).  
 A — shell: "Mont Panié, Nouvelle-Caledonie" Paris. B, C — "Tchingou, Nouvelle-Caledonie, 14 VII 1979" B — reproductive tract. C — interior of penis. Paris.

DISTRIBUTION. New Caledonia. 1 sp.

*Pararhytida* Ancey, 1882  
 Fig. 1314

Ancey, 1882: 85. Mordan & Tillier, 1986: 214.

TYPE SPECIES — *Helix dictyodes* L. Pfeiffer, 1847; SD Pilsbry, 1894 (1893-1895).

Shell lenticular, with depressed conic spire, comparatively solid, translucent, slightly glossy, of 5.5-7 nearly flat whorls. Last whorl angulated at periphery. Coloration consists of yellow or light-corneous background and brown or reddish pattern of spots, rays and zigzags. Embryonic sculpture of smoothed radial wrinkles. Postapical whorls with very fine, dense radial striation. Aperture irregularly ovate, somewhat oblique, with simple margins; columellar margin short, straight, nearly vertical. Palatal margin sometimes with a thin lip. Umbilicus narrowly open, deep.

Height 10-24, diam. 15-37 mm (17.6 × 26.8 mm).

Cephalopodium with pseudo-operculum, as in *Rhytidopsis*.

Jaw thin, arcuate, smooth.

Kidney bent, pericardial and rectal arms generally subequal in length. Secondary ureter complete.

Vas deferens thin, free, convoluted, passing into extremely long, also convoluted epiphallus. Distal part of vas deferens and proximal part of epiphallus incorporated in muscular sheath. Epiphallus opens to clavate penis through a pore surrounded by corrugated folds. Internally penis with a few strong pilasters having numerous transverse grooves. A small, subglobular penial caecum situated near entrance of epiphallus. Penial retractor attached between base of epiphallus and caecum. Free oviduct unusually long, strongly convoluted. Vagina comparatively short. Spermatheca thin-walled, voluminous, without distinct subdivision into stalk and reservoir.



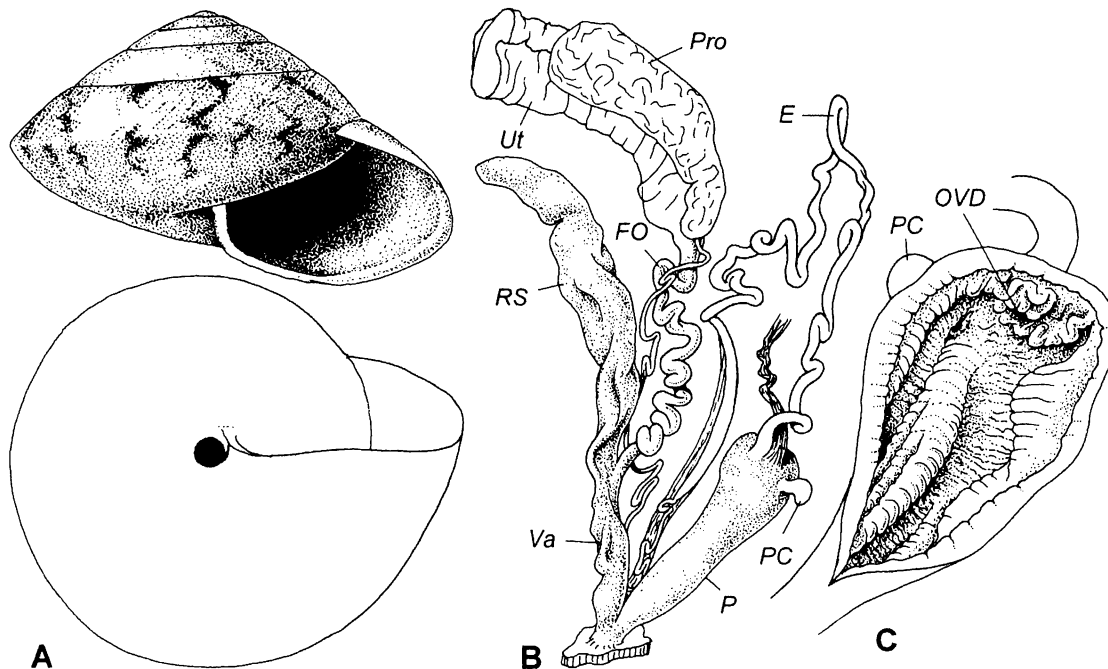


Fig. 1314. *Pararhytida dictyodes* (L. Pfeiffer, 1847).

Ca. 5 miles inland from Koumac, on main highway to E coast, NW New Caledonia, October 31, 1967 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-25316 (Chicago No. 159259).

Spermatophore elongated-fusiform, with a very long tail and longitudinal serrated ridge.

DISTRIBUTION. New Caledonia. 6 spp.

### *Acanthoptyx* Ancey, 1888

Fig. 1315

Ancey, 1888: 370.

TYPE SPECIES — *Helix acanthinula* Crosse, 1868; OD.

Shell depressed, thin, dull, slightly translucent, of 3-4 shouldered, rapidly increasing whorls. Last whorl with 3 rounded, smoothed angles: at periphery, above and below periphery. Color dark brown. Embryonic whorls with distinct spiral threads. On postnuclear whorls spiral sculpture becomes weaker; there are also dense radial riblets, some of them membranaceous. Aperture ample, moderately oblique, columellar and basal margins reflexed. Umbilicus profound, not very wide. Height 1.5-1.8, diam. 3.0-4.5 mm (1.7 × 3.7 mm).

DISTRIBUTION. New Caledonia. 1 sp.

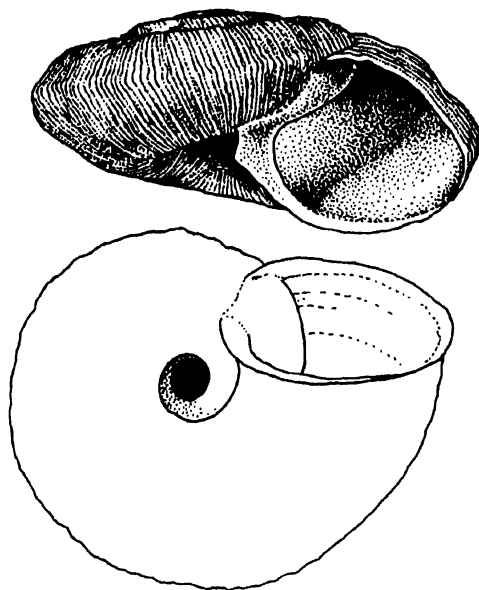


Fig. 1315. *Acanthoptyx acanthinula* (Crosse, 1868).

New Caledonia. Phil. No. 4738.

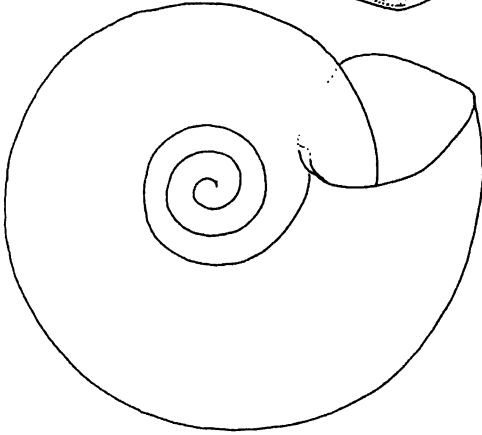
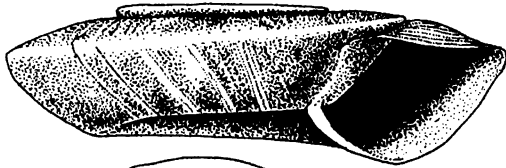


Fig. 1316. *Tropidotropis trichocoma* (Crosse, 1868).  
New Caledonia. Lectotype. Paris.

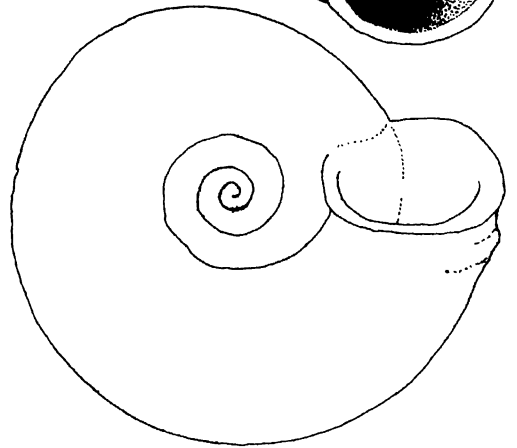
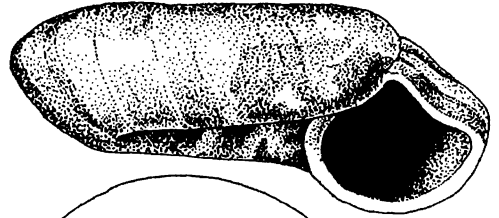


Fig. 1317 *Cryptocharopa exagitans* (Cox, 1870).  
Norfolk Island. Cardiff (as *atlantoididea*  
Preston, 1913).

***Tropidotropis* Ancey, 1888**  
Fig. 1316

Ancey, 1888: 370.

TYPE SPECIES — *Helix trichocoma* Crosse, 1868; OD.

Shell flat, lens-shaped, thin, of about 4 sharply angled, shouldered whorls. Color corneous, often with whitish, irregular, diffuse spots. Embryonic whorls vaguely radially wrinkled. Later whorls with coarse, crowded radial wrinkles of different height. Aperture angled, well oblique, with simple margins. Umbilicus very broad, shallow. Height 2.2-2.6, diam. 7.0-7.5 mm (2.5 × 7.5 mm).

DISTRIBUTION. New Caledonia. 1 sp.

***Cryptocharopa* Preston, 1913**  
Fig. 1317

Preston, 1913b: 534.

— ? *Penescosta* Iredale, 1944: 320 (t.-sp. *Charopa mathewsi* Preston, 1913; OD).

B. Smith, 1992: 184.

TYPE SPECIES — *Cryptocharopa atlantoididea* Preston, 1913 (= *Helix exagitans* Cox, 1870); OD.

Shell flat, thin, of about 5 convex whorls. Last whorl slightly but markedly descending in front, with obtuse angle above mid-line. Shell sometimes encrusted with agglutinated mass of earth and vegetable matter, which broadens out at periphery into a serrated fringe. Color corneous, uniform or with irregular lighter spots. Embryonic whorls smooth. Upper surface of postapical whorls with clear spiral striation and light, widely spaced, smoothed radial riblets; under peripheral angle this sculpture absent or very weak. Aperture shortly, irregularly ovate, oblique, with sharp, somewhat reflexed margins. Upper part of palatal wall slightly concave. Umbilicus broad, shallow. Height 0.5-1.8, diam. 1.5-4.2 mm (1.8 × 4.1 mm).

DISTRIBUTION. Norfolk Island. 6 spp.

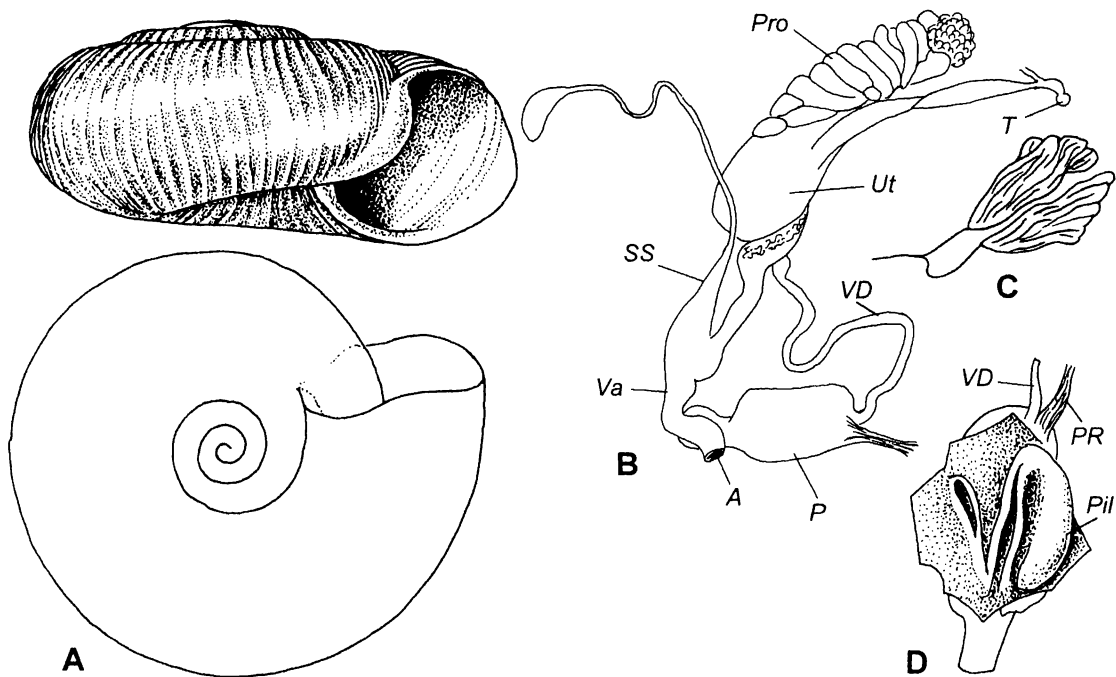


Fig. 1318. *Trukcharopa trukana* Solem, 1983.  
 A — shell: Ta Island, Carolines. Phil. No. 192000. B — reproductive tract. C — hermaphroditic gland. D — interior of penis. After Solem, 1983.

**TRUKCHAROPINAE Solem, 1983**

Solem, 1983: 70, 205.

Shell small to medium-sized. Embryonic sculpture of spiral cords. Postapical sculpture strong to secondarily reduced. Aperture with or without armature.

Jaw of separate plates.

Kidney as in Charopiniae.

Hermaphroditic gland of 2 clumps of elongated, partly fused acini. Talon with very short stalk and small globular head. Vas deferens passing through penial retractor before entering penis through either a verge or pore. Epiphallus absent. Interior of penis with stimulatory pilasters of varied form. Base of spermathecal stalk greatly swollen, thick-walled.

DISTRIBUTION. Micronesia (Palau and Caroline Islands).

*Trukcharopa* Solem, 1983

Fig. 1318

Solem, 1983: 207

TYPE SPECIES — *Trukcharopa trukana* Solem, 1983; OD.

Shell of medium size, nearly flat, of 4-4.5 normally coiled whorls. Whorls only slightly compressed above and below rounded periphery. Color reddish-brown. Embryonic whorls with about 10 prominent spiral cords. Postnuclear sculpture of narrow, crowded, protractively sinuated radial ribs. Microsculpture of fine radial riblets, finer spiral, and prominent secondary spiral cords. Aperture subovate, simple, somewhat oblique, compressed laterally above periphery and on basal margin. Umbilicus widely open. Height 0.99-1.42, diam. 2.50-3.08 mm (1.40 × 2.51 mm).

Kidney bent, its rectal arm longer than pericardial. Secondary ureter complete.

Hermaphroditic gland composed of 2 clumps of palmately clavate acini; hermaphroditic duct partly convoluted, tapering downward. Talon with globular head. Vas deferens slender, entering penis terminally or nearly so through a simple pore. Penis voluminous, its upper portion greatly ex-

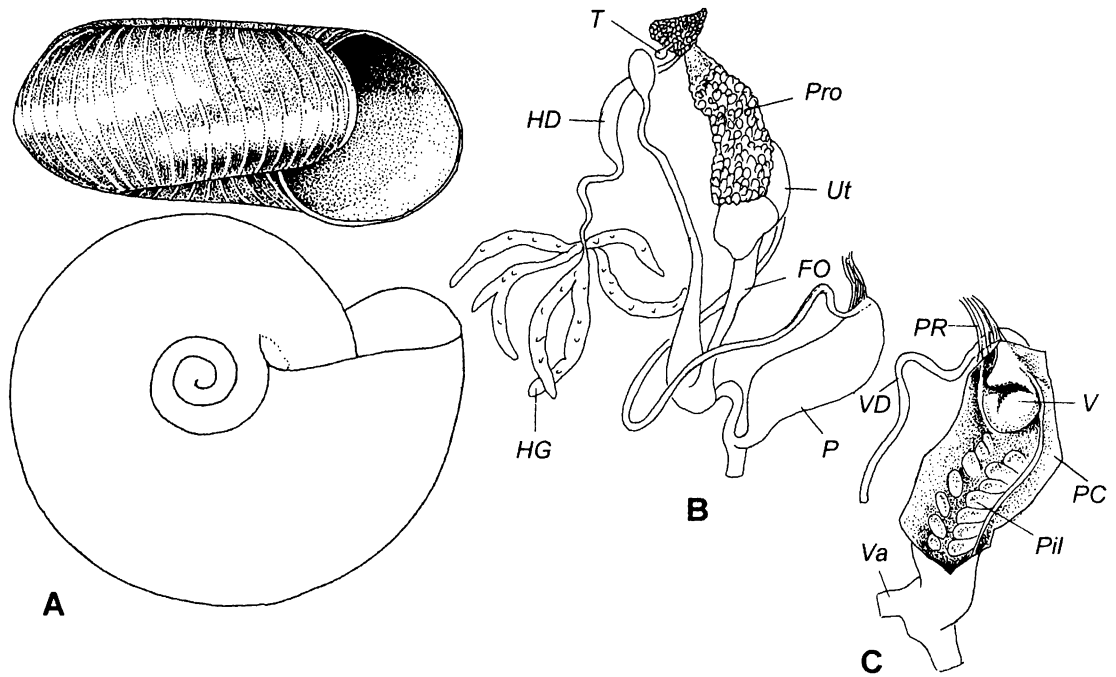


Fig. 1319. *Kubaryiellus kubaryi* (Moellendorff, 1900).  
 A — shell: Ponape, Caroline Islands. Phil. No. 170797 (as *Russatus nigrescens*). B — reproductive tract. C — interior of penis. After Solem, 1983.

panded, internally with a huge medial stimulatory pilaster; lower tubular portion with weak, papillose, glandular walls. Free oviduct rather long, vagina markedly shorter. Basal part of spermathecal stalk greatly expanded.

DISTRIBUTION. Caroline Islands (Truk Island and nearby islets). 1 sp.

*Kubaryiellus* Solem, 1983  
 Fig. 1319

Solem, 1983: 210.

TYPE SPECIES — *Charopa kubaryi* Moellendorff, 1900; OD.

Shell flat, of 4-4.5 rather loosely coiled whorls, that flattened above and below rounded periphery. Spire slightly sunken below body whorl. Color light reddish or yellow-brown above, apex yellow-corneous, and a narrow yellowish-white spiral band situated 1/3 of way between suture and periphery. Apical sculpture of 6-9 very prominent spiral cords. Rest surface with narrow,

prominent, protractively sinuated radial ribs; microsculpture of prominent radial riblets, finer spiral lines, and spiral cords. Aperture ovate, simple, slightly oblique, moderately flattened above periphery, its upper palatal margin protruded. Umbilicus moderately open. Height 1.58-2.24, diam. 3.36-4.60 mm (2.22 x 3.96 mm).

Kidney curved, its rectal arm about twice of length of pericardial. Secondary ureter complete.

Ovotestis with 1 clump of very long acini, hermaphroditic duct tightly convoluted. Talon globular. Slender, cylindrical vas deferens passes through penial retractor before entering laterally upper part of penis. There is a thin sheath coating penis entirely. Penis long, voluminous, tapering, containing a trilobed verge followed by 2 long stimulatory pilasters on a papillose glandular wall. Free oviduct long, vagina shorter. Spermathecal shaft long, slender, enlarged basally.

DISTRIBUTION. Caroline Islands (Ponape Island). 1 sp.

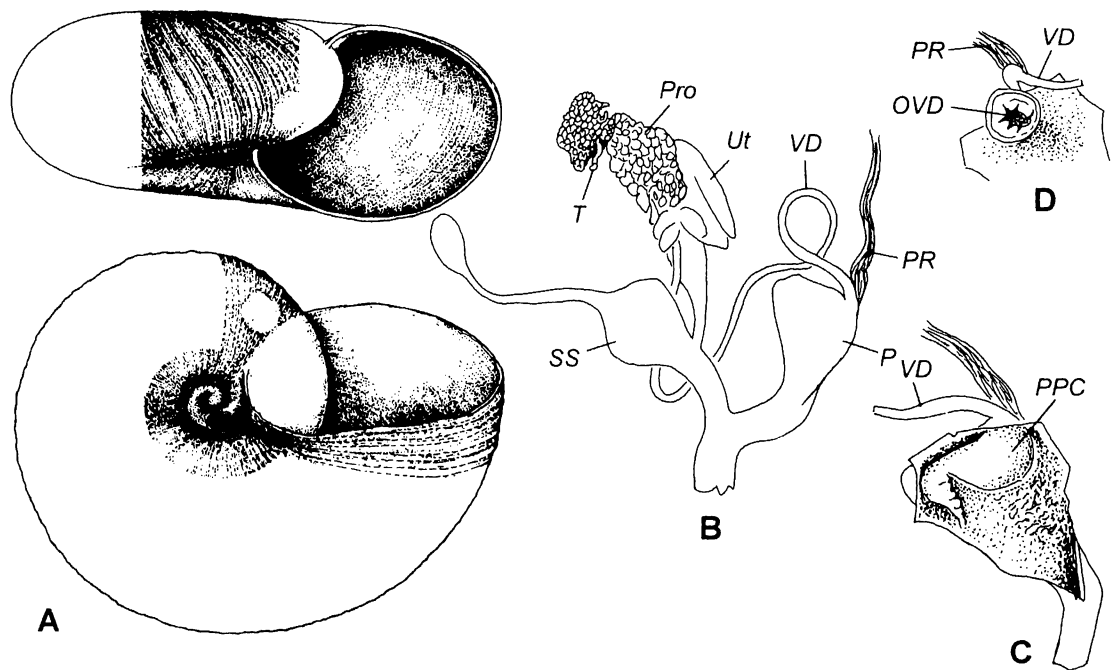


Fig. 1320. *Russatus nigrescens* (Moellendorff, 1900).  
 A — shell. B — reproductive tract. C, D — interior of penis. After Solem, 1983. PPC — penial pocket caecum.

***Russatus* Solem, 1983**  
 Fig. 1320

Solem, 1983: 214.

TYPE SPECIES — *Flammulina (Calymna) nigrescens* Moellendorff, 1900; OD.

Shell flat, of less than 3.5 very loosely coiled, compressed above periphery whorls. Spire flat or slightly depressed. Embryonic whorls with microscopic traces of fine spiral cording visible at high magnification. Postnuclear sculpture of irregular, very crowded, fine radial riblets with high periostracal blades. Occasional microreticulation visible at 96x magnification. Aperture elongately ovate, oblique, flattened above periphery and on basal margin. Apertural armature absent. Umbilicus narrow. Height 1.92-2.68, diam. 3.90-5.56 mm.

Kidney almost square, very thick in middle, rectal and pericardial arms equal in length. Secondary ureter complete.

Vas deferens cylindrical, slender, enters upper part of penis laterally through a simple pore. Expanded upper end of penis tri-

angular, internally with a blind caecum lying at apex from opening of vas deferens to outer edge of expanded penis head, lower parts with circularly elongated glandular papillae on wall. Vagina relatively long, much thicker than free oviduct. Spermathecal shaft globularly expanded basally.

DISTRIBUTION. Caroline Islands (Ponape Island). 1 sp.

***Roimontis* Solem, 1983**  
 Fig. 1321

Solem, 1983: 217

TYPE SPECIES — *Roimontis tolotomensis* Solem, 1983; OD.

Shell flat, puck-shaped, of 4 strongly overlapping whorls. Body whorl very strongly flattened above periphery, with compressed lower palatal and basal margin. Spire deeply sunken beneath level of body whorl, last third of latter with looser coiling. Apical sculpture of 6-7 very prominent

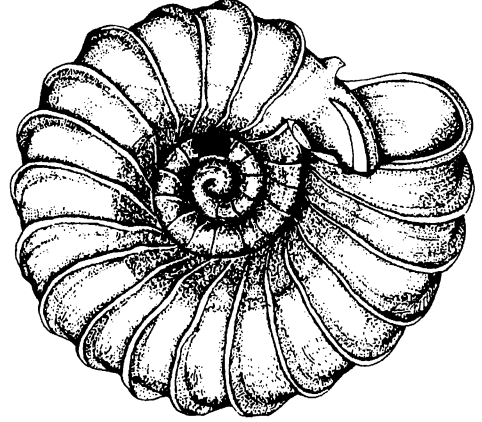
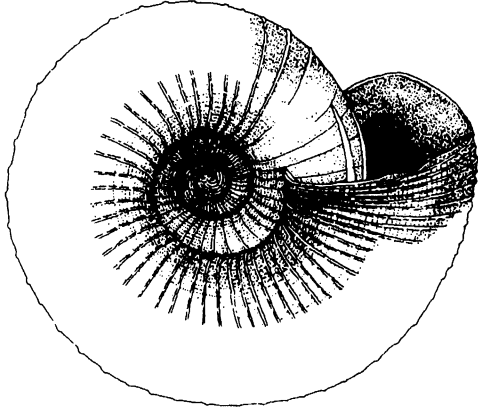
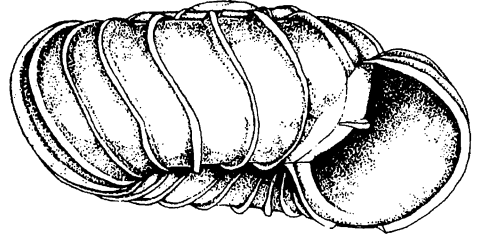
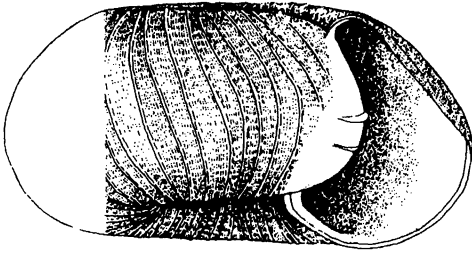


Fig. 1321. *Roimontis tolotomensis* Solem, 1983.  
After Solem, 1983.

Fig. 1322. *Palikirus cosmetus* Solem, 1983.  
After Solem, 1983.

spiral cords. Postembryonic whorls with narrow, protractively sinuated, widely spaced radial ribs. Microsculpture of fine radial riblets, finer spiral threadlets, and prominent spiral grooves. Aperture widely semi-lunate, somewhat oblique, with 2 thread-like parietal lamellae, extending about 3/16 of a whorl. Umbilicus shallow, moderately wide. Height 1.38, diam. 2.63-2.91 mm (holotype).

DISTRIBUTION. Caroline Islands (Ponape Island). 1 sp.

### *Palikirus* Solem, 1983

Fig. 1322

Solem, 1983: 219.

TYPE SPECIES — *Palikirus cosmetus* Solem, 1983; OD.

Shell depressed, of about 3.5-4 rather tightly coiled, more or less rounded whorls. Spire barely to slightly elevated. Color uniformly very light reddish yellow brown. Embryonic sculpture of very fine, widely

spaced spiral cords. Postapical whorls with very large, prominent, protractively sinuated radial ribs, usually quite widely spaced. Interspaces between ribs with fine radial riblets, finer spiral threads, and relatively prominent spiral cords. Aperture broadly ovate, oblique; parietal wall with or without medial, low, blade-like lamella; no columellar or palatal teeth. Umbilicus widely open. Height 0.99-1.27, diam. 2.17-2.50 mm.

Kidney curved, rectal arm much longer than pericardial, secondary ureter complete.

Hermaphroditic duct not convoluted. Vas deferens, passing through penial retractor, enters penis through a simple pore. Penis with an expanded head, internally with weak longitudinal pilasters to level of external constriction that marks presence of a globose, muscular-walled stimulatory pad, puckered near point of attachment to wall. Lower portion of penis shorter, with minutely papillose glandular walls. Penial retractor long, arising from diaphragm, attached to head of penis after enfolding of vas deferens. Free oviduct relatively long,

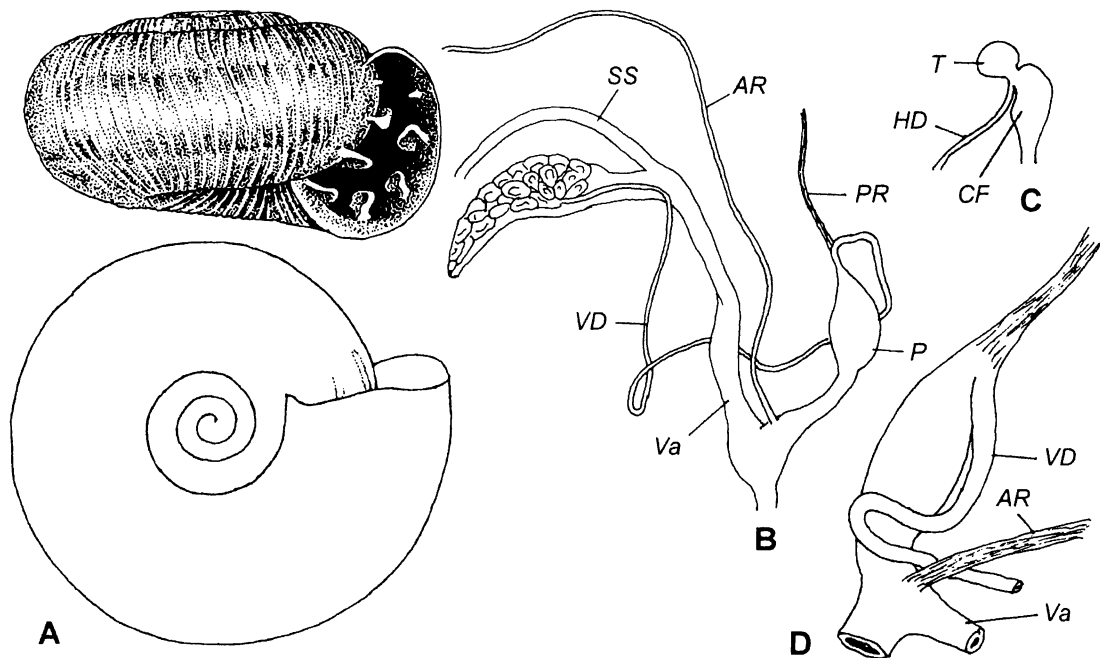


Fig. 1323. *Jokajdon callizona* (Moellendorff, 1900).

A — shell: Ponape Island [Carolines]. Syntype. Moscow No. Lc-25302 (Vienna No. 40244).  
 B — reproductive tract. C — talon-carrefour region. D — detail of vas deferens/penis junction.  
 After Solem, 1983.

vagina short. Spermathecal stalk slender, greatly expanded near origin of vas deferens to union with free oviduct; reservoir elongately ovate, lying next to albumen gland.

DISTRIBUTION. Caroline Islands (Ponape Island). 2 spp.

### *Jokajdon* Solem, 1983

Fig. 1323

Solem, 1983: 222.

TYPE SPECIES — *Endodonta* (*Thaumadonta*) *callizona* Moellendorff, 1900; OD.

Shell nearly flat to slightly dome-shaped, rather thin, of 4-4.5 shouldered whorls. Periphery rounded, with light to very strong lateral flattening. Color dark-brown to chestnut, uniform or with broad darker peripheral band. Embryonic sculpture of variable number of fine spiral cords. Rest surface covered with prominent, narrow, slightly protractively sinuated radial ribs, usually crowded, sometimes widely spaced or greatly reduced. Microsculpture

of fine radial riblets, finer spiral cordlets, and prominent secondary spiral threads. Aperture ovate or semilunate, vertical, with complex armature. Parietal lamellae 2-3, with or without accessory blade on 1st, variable in length. Columellar plate subhorizontal, lamellar or in form of weak knob. Baso-palatal armature consists of 3 well developed major plicae and 1-6 accessory lamellate teeth. Umbilicus moderately to widely open. Height 0.79-1.65, diam. 1.79-2.73 mm (1.28 × 2.13 mm).

Kidney narrow, strongly bent, its pericardial arm much reduced. Secondary ureter complete.

Ovotestis of a single clump of a few acini, hermaphroditic duct not convoluted. Talon globular, with unusually short shaft. Vas deferens slender, cylindrical, entering penis almost terminally. Penis variable in length, subfusiform, internally with weak longitudinal pilasters to middle and medial stimulatory pad just below middle. Penial retractor arising from diaphragm, inserted to penis apically just above vas deferens entrance. A separate muscle strand (atrial

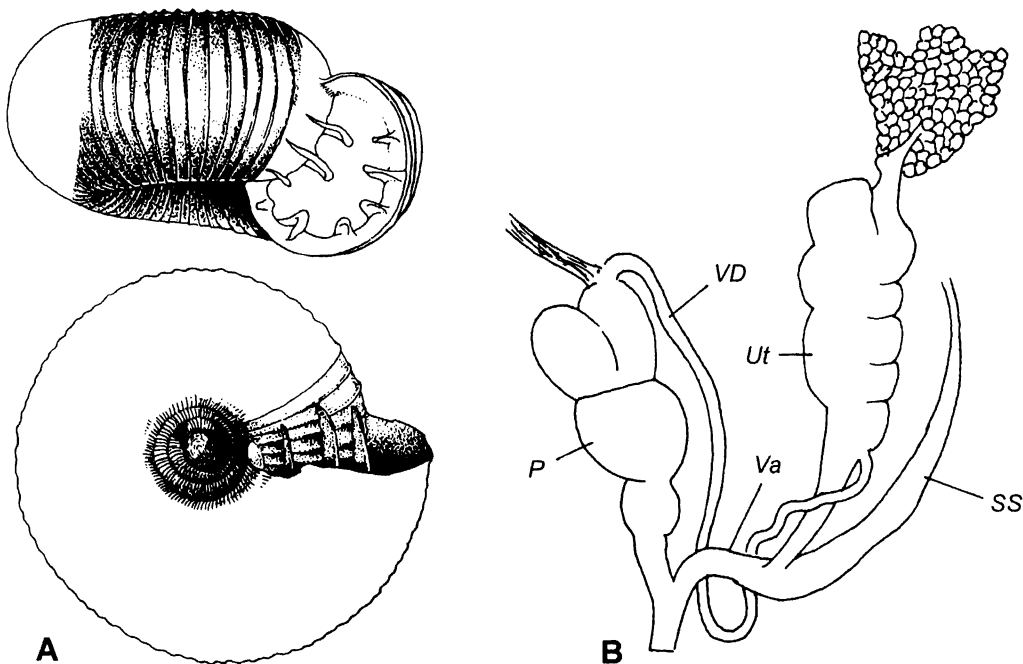


Fig. 1324. *Palline notera notera* Solem, 1983.  
A — shell. B — reproductive tract. After Solem, 1983.

retractor) from columellar muscle inserts directly onto atrium between penis and vagina. Free oviduct short. Vagina very long. Spermathecal stalk slender, not expanded basally.

DISTRIBUTION. Caroline Islands (Ponape Island). 2 spp.

***Palline* Solem, 1983**  
Fig. 1324

Solem, 1983: 228.

TYPE SPECIES — *Palline notera notera* Solem, 1983; OD.

Shell flat to depressedly dome-shaped, of 4-4.25 normally coiled whorls. Last whorl strongly rounded above and compressed laterally to strongly flattened laterally above rounded periphery. Color light yellow-corneous or light reddish-yellow, monochromatic or with vague reddish flammulations. Embryonic sculpture of a variable number of prominent spiral cords. Postapical whorls with narrow, moderately

spaced to crowded, almost vertical radial ribs. Microsculpture of extremely fine radial riblets and spiral threadlets with prominent, rather widely spaced spiral cording. Aperture more or less ovate, almost vertical. Parietal wall with 3-1 short, high lamellae. Columellar margin with or without a low thread-like ridge. Baso-palatal plicae mostly 4-6, rarely reduced to 2, or absent at all. Umbilicus rather wide. Height 0.97-1.55, diam. 1.89-2.50 mm.

Kidney somewhat widened, sharply bent, pericardial arm much reduced. Secondary ureter complete.

Ovotestis of 2 clumps of acini. Vas deferens enters upper part of penis through a tubular verge. Penis coated by a thin sheath, its upper portion bulging with external constrictions indicating 3 internal zones: a lateral or upper zone containing verge; upper part to side of verge or shifted downward, with 2 circular glandular pilasters; lower zone with thick circular or horseshoe-shaped pilaster tapering into narrowed shaft leading to atrium. Free oviduct moderately long, vagina a little shorter.



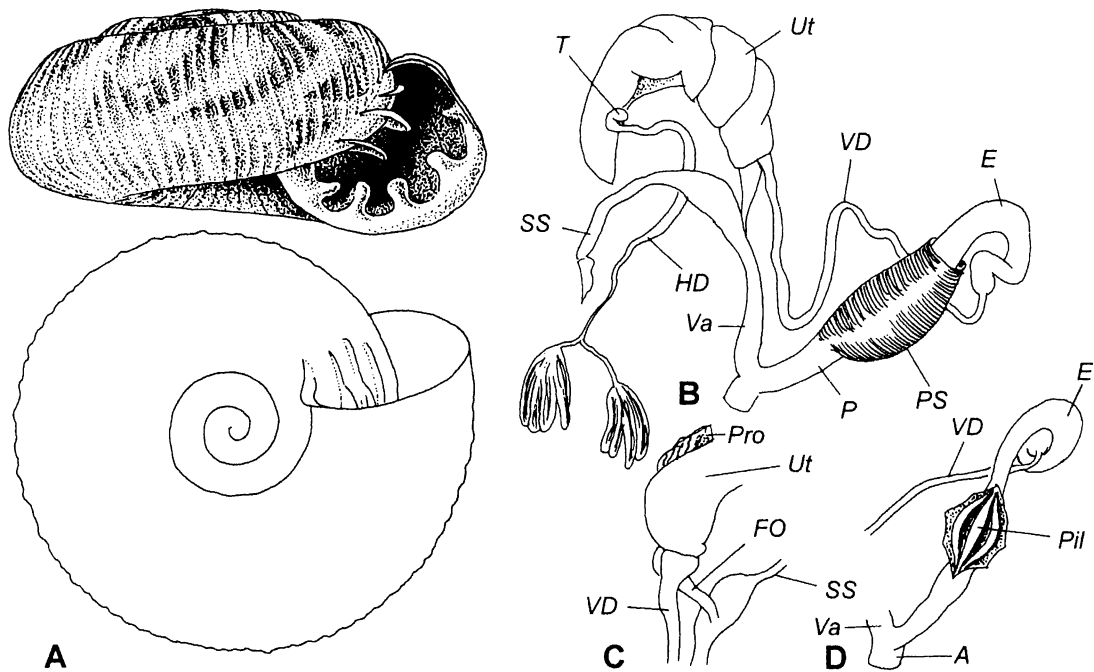


Fig. 1325. A — ! *Semperdon heptptychius* (Quadras et Moellendorff, 1894). Shell: Agana, Guam, Mariana Islands. Phil. No. 96447 B, C, D — *Semperdon xyleborus* Solem, 1983. B — reproductive tract. C — detail of vas deferens and free oviduct origin. D — interior of penis. After Solem, 1983.

Spermathecal stalk slender or somewhat expanded basally

DISTRIBUTION. Palau Islands (Peleliu, Koror and satellite islets, Babelthuap); Caroline Islands (Ponape); West Irian (Biak). 5 spp. & subsp.

### SEMPERDONINAE Solem, 1983

Solem, 1983: 70, 235.

Shell medium sized to large. Embryonic whorls with spiral cords. Postapical sculpture of radial ribs or greatly reduced. Aperture with or without armature.

Kidney bent, secondary ureter complete.

Hermaphroditic gland of 1 clump of long acini. Talon with short stalk and comparatively large globular head. Vas deferens more or less markedly expanded in proximal part. Epiphallus, a coiled double tube, outer wall thin, inner a thick glandular tube rolled inward in one side, opening

into penis through a simple pore. Penis with a heavy muscle sheath of circular fibers that extends upward around lower portion of epiphallus, with inner tube containing fine apical pilasters that usually coalesce into 3 glandular pilasters lower down. Base of spermathecal stalk swollen, with thin walls.

DISTRIBUTION. Palau and Mariana Islands.

### *Semperdon* Solem, 1983

Fig. 1325

Solem, 1983: 236.

TYPE SPECIES — *Semperdon xyleborus* Solem, 1983; OD.

Shell flattened to depressedly dome-shaped, rather thin, of 4-5 convex, normally to tightly coiled whorls. Last whorl strongly rounded above, compressed laterally. Embryonic sculpture of about 10-13 spiral cords. Postapical whorls with very widely spaced and few to rather numerous

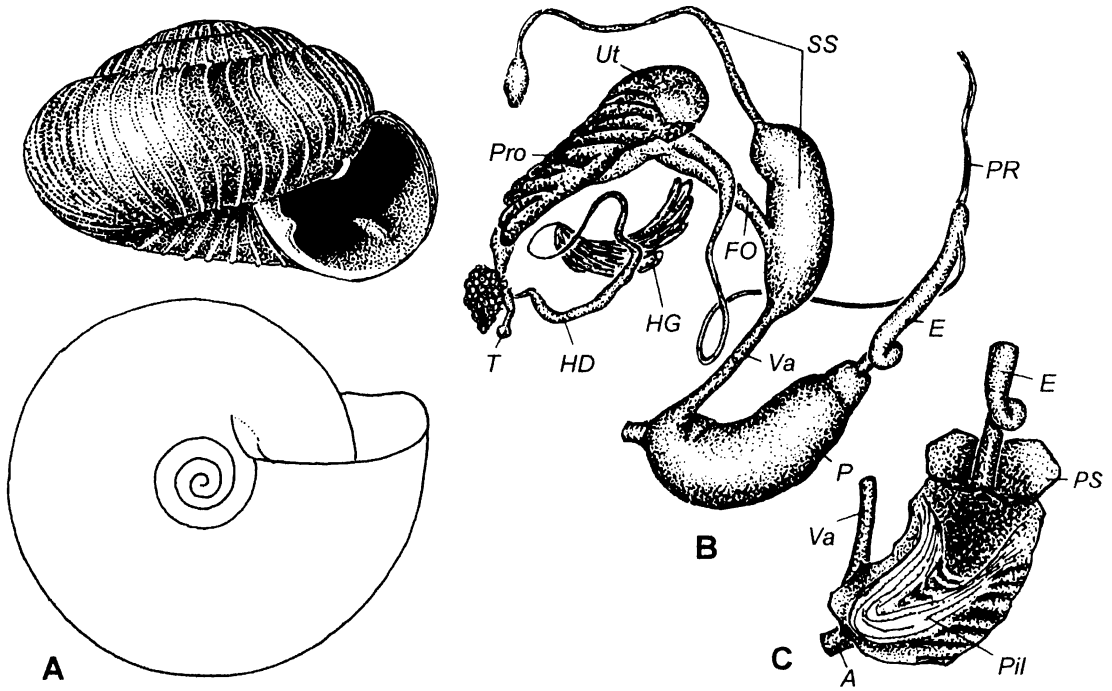


Fig. 1326. *Ladronellum mariannarum* (Quadras et Moellendorff, 1894).  
 A — shell: Mt. Lambau, Guam Island [Mariana Islands]. Vienna No. 40246. B — reproductive tract. C — interior of penis. After Solem, 1983.

and crowded vertically to protractively sinuated radial ribs. Microsculpture of numerous fine radial and finer spiral riblets, secondary spiral cording mostly absent. Aperture ovate, a little oblique. Parietal lamellae 2-4, generally large and prominent (in one species reduced), with or without accessory traces. Columellar plates 0-2. Baso-palatal folds usually 4-8 (rarely 1-0), high, situated near lip edge. Umbilicus wide. Height 1.26-3.59, diam. 2.47-5.17 mm (2.12 × 4.03 mm).

Hermaphroditic gland of 1-2 clumps of acini. Spermoviduct rather short. Prostate of few very large acini. Vas deferens wide at first, thin-walled to penioviducal angle, becoming very slender and with opaque muscular walls during ascent along penis before entering upper portion of epiphallus alongside penial retractor insertion. Epiphallus long, thick, coiled, entering penis by a simple pore. Penial sheath extending upward to form a collar around base of epiphallus and extending downward to end or near to end of expanded upper part of

penis; lower part relatively slender. Penis internally with numerous very high, narrow pilasters radiating from epiphallic pore to coalesce medially in expanded section to 3 generally long, slender glandular pilasters (short and wide in one species). Free oviduct short. Vagina long, tapering. Basal portion of spermathecal shaft expanded.

DISTRIBUTION. Palau Islands (Angaur, Koror, Auluptagel, Peleliu, Ngemelis); Mariana Islands (Rota, Guam). 5 spp.

*Ladronellum* Solem, 1983  
 Fig. 1326

Solem, 1983: 255.

TYPE SPECIES — *Endodonta mariannarum* Quadras et Moellendorff, 1894; OD.

Shell depressed-conic, with somewhat elevated spire, of 4-5 rather tightly coiled whorls. Body whorl strongly rounded above, with evenly rounded periphery. Color purplish reddish brown or chestnut. Spiral

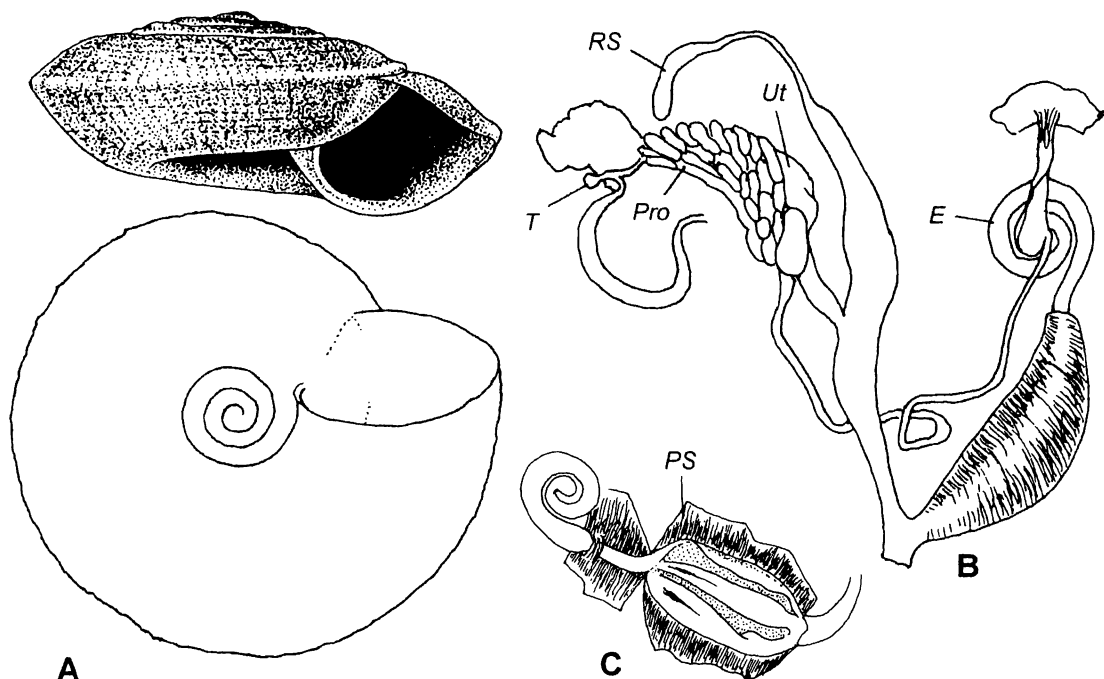


Fig. 1327 *Himeronconcha fusca* (Quadras et Moellendorff, 1894).

A — shell: Guam Island. Paralectotype. Vienna No. 8436. B — reproductive tract (hermaphroditic gland omitted). C — interior of penis. After Solem, 1983.

cords on embryonic whorls distinct, fine, widely spaced. Postnuclear sculpture of high, prominent, protractively sinuated, widely spaced radial ribs and almost equally developed radial and spiral riblets in interstices. Aperture subcircular, slightly oblique. Parietal wall with single, recessed, small lamella. Columellar margin with broadly rounded, low-crescentic to crescentic, short lamella. Palatal plica very weak, V-shaped to low-lamellar or crescentic. Both columellar and palatal teeth may be absent. Umbilicus moderately wide. Height 1.80-2.95, diam. 3.05-4.30 mm (1.82 × 3.10 mm).

Rectal kidney arm longer than narrowed pericardial.

Talon with moderately long stalk and globular head. Spermooviduct rather short. Vas deferens enters laterally below base of penial retractor on upper portion of epiphallus. Penis sheath forms an epiphallic collar; penis internally with many narrow pilasters radiating from epiphallic pore, they merge to form a single huge inflatable pilaster occupying lower 2/3 of penis. Free

oviduct moderately long. Vagina with very long and slender lower portion. Spermathecal duct slender, its basal section greatly swollen.

DISTRIBUTION. Mariana Islands (Guam). 1 sp.

*Himeronconcha* Solem, 1983  
Fig. 1327

Solem, 1983: 259.

TYPE SPECIES — *Patula fusca* Quadras et Moellendorff, 1894; OD.

Shell much depressed to flat, thin, fragile, of 4.25-4.5 normally coiled whorls, rarely of 3.5 loosely coiled whorls. Periphery of body whorl rounded to angulated and protruded. Color corneous. Spiral cords on embryonic whorls few, prominent, widely spaced, rarely reduced. Postapical sculpture of low, irregular, protractively sinuated radial ribs. Microsculpture of very fine reticulation visible between very prominent

THERASIINAE  
Schileyko, subfam. nov.

Type genus — *Therasia* Hutton, 1883.

Shell medium-sized to rather large. Embryonic whorls smooth or spirally striated. Rest whorls radially ribbed or lacking strong sculpture. Aperture without barriers.

Jaw of thin, narrow to subquadrate, fused or overlapping plates.

Hermaphroditic gland generally of 2 clumps of acini. Vas deferens evenly narrow along its length or somewhat expanded in middle third, entering epiphallus laterally. Epiphallus, a terminal process that bent back upon penis and adherent to it; epiphallus and penis completely coated by a thin common sheath. Epiphallic pore simple or surrounded by short radiating folds. Penis internally with numerous rounded papillae. Verges absent. Base of spermathecal stalk greatly swollen, with thick, muscular walls.

DISTRIBUTION. New Zealand.

REMARK. The main diagnostic character of Therasiinae is the structure and position of epiphallus: no other subfamily has epiphallus bent back upon penis and surrounded, together with penis, by a sheath.

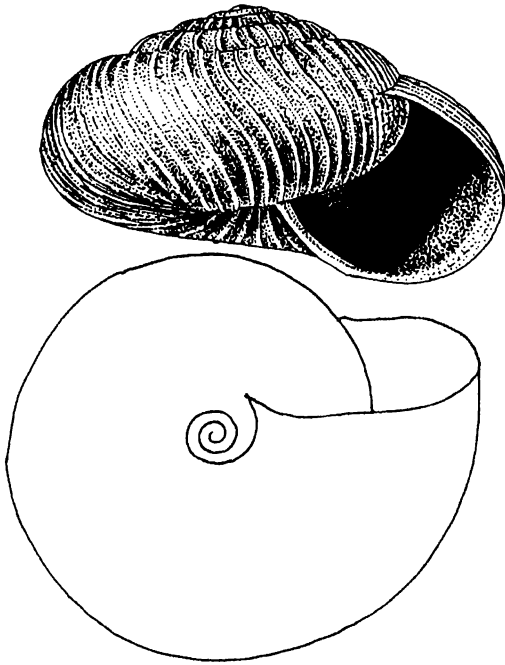


Fig. 1328. *Phacussa helmsi* (Hutton, 1883).  
Greymouth, South Island, New Zealand.  
Senck. No. 158320.

secondary spiral cords, rarely reduced. Aperture subcircular, ovate or angulated, markedly oblique, without armature. Umbilicus rather wide. Height 2.55-3.33, diam. 5.75-6.67 mm (2.60 × 5.82 mm).

Arms of kidney equal or pericardial arm slightly shorter, pericardial branch usually much narrower. Secondary ureter complete.

Talon with moderately long stalk and globular head. Vas deferens thin-walled and tapering to peni-oviducal angle, then very slender and muscular, entering slightly below head on side of epiphallus. Basal part of epiphallus surrounded by collar from penial sheath, opening into penis through a simple pore. Penis tapering to bulging, internally with apical portion smooth or with many longitudinal weak pilasters that fuse into 3 large pilasters at a short to longer distance from apex. Relative size and proportions of spermathecal expansion and vaginal tract variable.

DISTRIBUTION. Mariana Islands (Guam).  
4 spp.

*Phacussa* Hutton, 1883  
Fig. 1328

Hutton, 1883: 138. Powell, 1979: 315.

— *Phelussa* Iredale, 1915: 479 [unnecessary nom. nov. pro *Phacussa* Hutton, 1883, not praeocc. by *Phacusa* Walker, 1854; t.-sp. *Helix hypopolia* L. Pfeiffer, 1853; OD].

TYPE SPECIES — *Zonites* (?) *helmsi* Hutton, 1883; SD Pilsbry, 1893 (1893-1895).

Shell depressed-conic, thin, somewhat translucent, of 5-6 convex whorls. Last whorl evenly rounded at periphery. Color corneous or brown. Embryonic whorls smooth, later whorls with regular radial major ribs and few minor riblets in interstices. Spiral sculpture absent. Aperture ovate, well oblique, with simple margins. Umbilicus rather narrow to moderately wide. Height 2.5-7.0, diam. 5-12 mm (6.0 × 9.5 mm).

DISTRIBUTION. New Zealand. 6-8 spp.

*Thermia* Hutton, 1904

Fig. 1329

Hutton, 1904: 461 (nom. nov. pro *Pyrrha* Hutton, 1884).

— *Pyrrha* Hutton, 1884: 200 [nom. praeocc., non Cabanis, 1849 (Aves); t.-sp. *Pfeifferia* (?) *cressida* Hutton, 1883; SD Pilsbry, 1892].

Powell, 1979: 316.

TYPE SPECIES — *Pfeifferia* (?) *cressida* Hutton, 1883; SD Pilsbry, 1894 (1893-1895).

Shell subglobose, thin, translucent, of 4-5 moderately convex whorls. Last whorl straight, inflated, widely rounded at periphery. Color olivaceous or greenish-corneous, sometimes with weak, diffuse darker streaks. Embryonic sculpture of dense spiral striation. Later whorls with weak, irregular radial growth lines. Aperture ample, rounded, slightly oblique, with simple margins. Umbilicus narrowly open or closed. Height 5.5-10.0, diam. 9.0-13.5 mm (9.8 × 13.3 mm).

DISTRIBUTION. New Zealand. 2 spp.

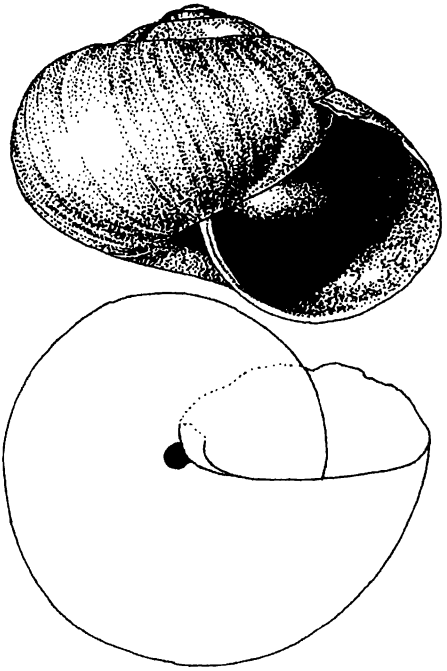


Fig. 1329. *Thermia cressida* (Hutton, 1883). Preservation Inlet, New Zealand. London No. 1905.5.22.23-24.

*Serpho* Hutton, 1904

Fig. 1330

Hutton, 1904: 461 (nom. nov. pro *Carthaea* Hutton, 1884).

— *Carthaea* Hutton, 1884: 189 [nom. praeocc. non Walker, 1858 (Lepidoptera); for "*C. kiwi* (sic!) Gray (1843)" and "*H. irradiata*, Gould (1846)"].

Powell, 1979: 323.

TYPE SPECIES — *Nanina* (?) *kivi* Gray, 1843; monotypy

Shell subglobose or turbanate, thin, translucent, of about 5 moderately convex whorls. Last whorl rounded or with weak, blunt peripheral angle. Color white, either radially streaked in purplish-brown, or with a broad, reddish-brown peripheral band, sometimes with addition of odd radial streaks of the same color. Embryonic whorls weakly radially wrinkled. Postnuclear sculpture of variously developed sharp, crowded radial wrinkles (sometimes almost smooth). Aperture ovate, quite oblique, with thin margins; columellar margin reflexed. Umbilicus dot-like or closed. Height 6.0-9.5, diam. 7.5-10.0 mm (7.0 × 8.6 mm).

Jaw of many rectangular, overlapping plates, each higher than broad.

Vas deferens free, convoluted in proximal section, entering poorly defined epiphallus subapically through a simple pore. Penis consists of narrowed basal and bulky proximal parts, latter internally with numerous papillae except for uppermost section; in lower portion of swollen part there is a conic stimulator which is an invagination of penis wall. Penis surrounded by a thin sheath. Penial retractor attached to penis terminally. Free oviduct and vagina rather long, of about equal length. Basal half of spermathecal stalk greatly swollen.

DISTRIBUTION. New Zealand. 2 spp.

*Therasia* Hutton, 1883

Fig. 1331

Hutton, 1883: 477 Powell, 1979: 316.

TYPE SPECIES — *Therasia thaisa* Hutton, 1883; SD Pilsbry, 1894 (1893-1895).

Shell depressed, usually thin, translu-

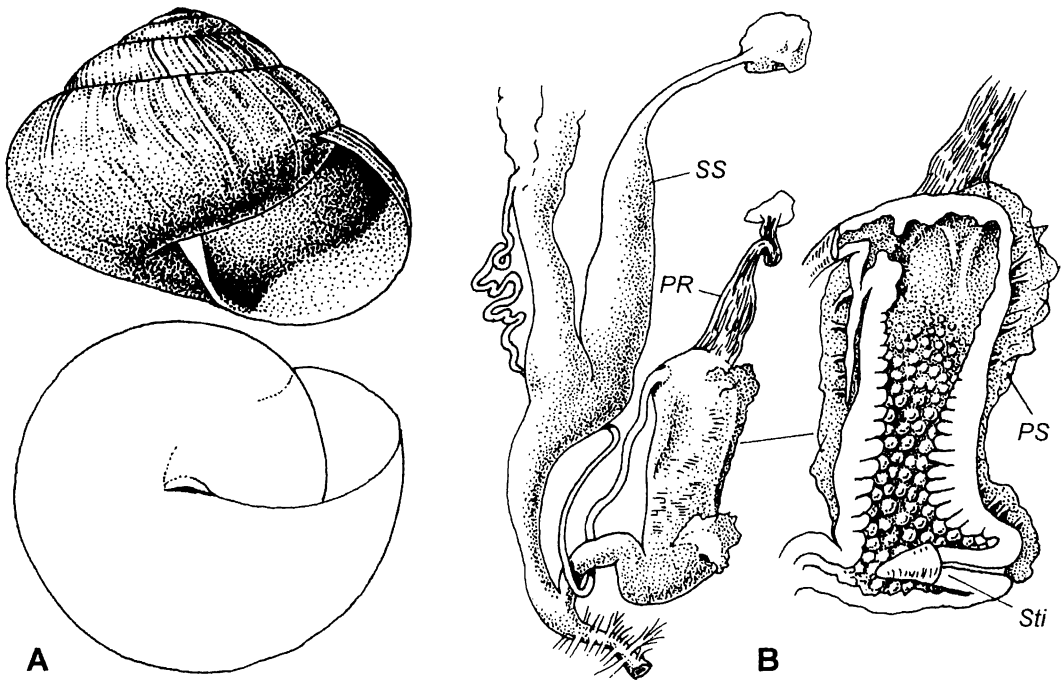


Fig. 1330. *Serpfo kivi* (Gray, 1843).

Lake Kotoehu Reserve, New Zealand, May 24, 1987 A — shell. B — reproductive tract and interior of penis. London.

cent, with a low conoidal spire, of about 5 rather convex whorls. Last whorl rounded or (sub)angulated at periphery. Color yellowish or corneous, with reddish zigzag flammulations. Embryonic sculpture of fine but distinct spiral threadlets. Post-nuclear whorls with delicate radial wrinkles and often with a dense, fine spiral striation. Aperture widely semilunate, a little to moderately oblique. Umbilicus narrowly open or merely a perforation. Height 3.75-8.00, diam. 8.25-12.50 mm (6.5 × 9.7 mm).

Jaw with rounded, vertical, smoothed ribs.

Prostate of many elongated acini. Vas deferens long, forming a fusiform enlargement in its middle, entering epiphallus laterally through a simple pore. Epiphallus tightly adherent to penis laterally and coated, along with penis, by a sheath: distal half of sheath muscular, proximal half thin, transparent. Epiphallus internally with an axial pilaster and transverse grooves. Inner surface of penis with longitudinal pilaster branched distally; rest sur-

face covered with many rounded tubercles. Penial retractor attached to penis/epiphallus junction. Uterus with a compact, ovate additional gland located in lower part of organ. Free oviduct short, swollen in distal end. Vagina slender, markedly longer than free oviduct. Distal half of spermathecal stalk greatly swollen; reservoir bean-shaped, not reaching albumen gland.

DISTRIBUTION. New Zealand. 5 spp.

### *Thalassohelix* Pilsbry, 1892

Fig. 1332

Pilsbry, 1892: 56 (*Gerontia* subg.). Powell, 1979: 317

TYPE SPECIES — *Helix zelandiae* Gray, 1843; OD.

Shell depressed or with a low conoidal spire, thin, translucent, of 3.5-4.5 moderately convex whorls. Last whorl straight, weakly to sharply carinated. Color yellowish-brown, sometimes with pale-brow-

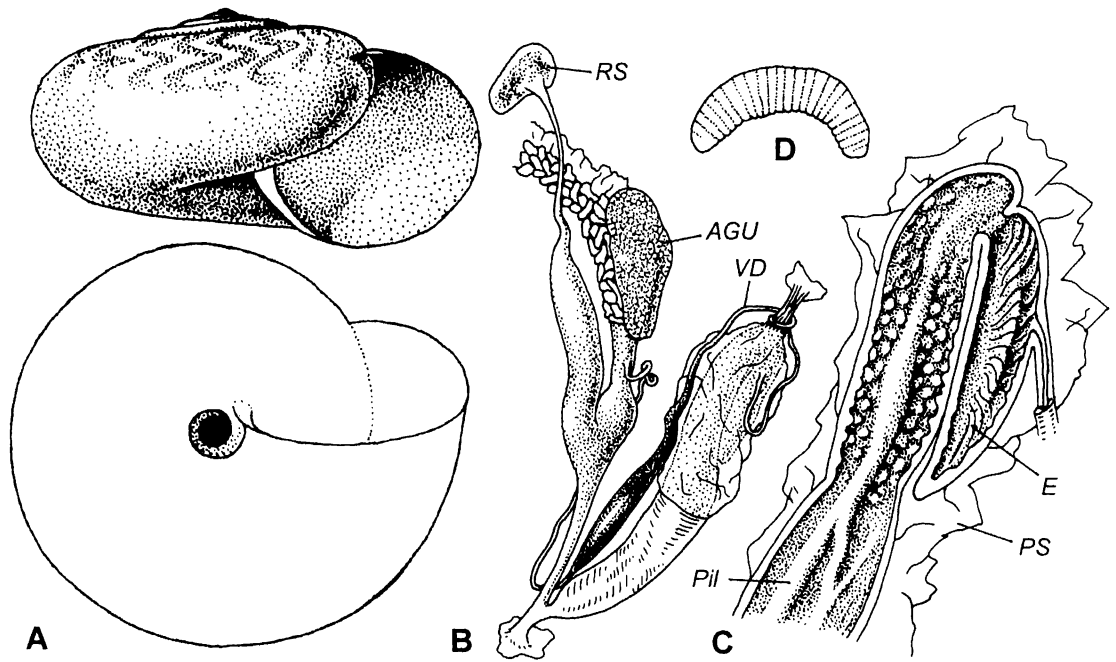


Fig. 1331 *Therasia thaisa* Hutton, 1883.  
 Cave Creek, Canterbury, New Zealand, September 27, 1967 A — shell. B — reproductive tract. C — interior of penis. D — jaw. SPb. AGU — additional gland of uterus.

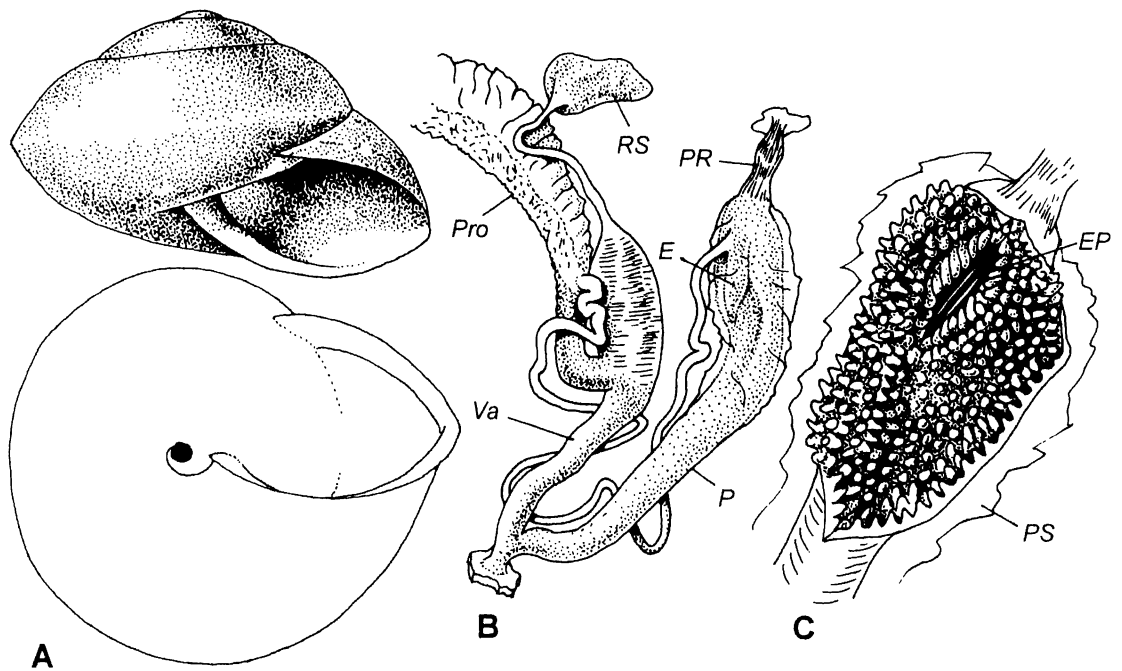


Fig. 1332. *Thalassohelix zelandiae* (Gray, 1843).  
 Waitakeri Range, North Island, New Zealand. A — shell. B — reproductive tract. C — interior of penis. SPb.

nish radial streaks and spots. Embryonic whorls minutely spirally striated. Postnuclear sculpture of delicate, irregular radial lines or distant riblets and (exceedingly) fine, dense spiral striae. Aperture rather large, angled, ovate, well oblique. Umbilicus very narrow. Height 2.5-5.5, diam. 6-12 mm (4.7 × 9.8 mm).

Vas deferens long, convoluted, entering epiphallus laterally through slit-like pore. Pore surrounded by a slightly elongated tubercles radiating from it. Inner surface of penis covered by numerous conic papillae. Penis and epiphallus entirely coated by thin, transparent sheath. Penial retractor attached to penis apically. Free oviduct and vagina moderately long, of about equal length. Spermathecal stalk not very long, its base highly muscular, enormously swollen; reservoir of irregular shape.

DISTRIBUTION. New Zealand. 7 spp.

## PHENACOHELICINAE Suter, 1892

Suter, 1892: 270 (pro fam.).

Shell small to medium-sized. Embryonic sculpture smooth or with microscopical spiral striae. Postapical sculpture (rather) strong. Aperture toothless.

Jaw of separate plates.

Kidney bent, pericardial arm much longer than rectal. Secondary ureter complete.

Hermaphroditic gland of 2 clumps of elongated acini. Talon hidden or its globular head visible on surface of albumen gland. Vas deferens cylindrical, not passing through penial retractor before entering penis. Epiphallus short or absent. Interior of penis with longitudinal pilasters, sphincter and small verge. Basal part of spermathecal stalk or free oviduct at its entrance markedly swollen.

DISTRIBUTION. New Zealand and Subantarctic Islands.

### *Phenacohelix* Suter, 1892

Fig. 1333

Suter, 1892: 270 (*Flammulina* subg.).

— *Neophenacohelix* Cumber, 1961: 164, 169 (pro subg.; t.-sp. *Phenacohelix giveni* Cumber, 1961; OD).

Powell, 1979: 322.

TYPE SPECIES — *Helix pilula* Reeve, 1852; SD Pilsbry, 1892.

Shell globose to depressed, thin, fragile, of 4-5 moderately convex whorls. Color yellowish-corneous, either uniform or with rufous or reddish-brown spots, streaks and zigzags, usually with a tendency toward tessellation on basal surface. Embryonic whorls smooth or with microscopical spiral striae. Subsequent whorls finely radially ribbed. Aperture widely semilunate, only slightly oblique, with thin margins; columellar and basal margins shortly reflexed. Umbilicus narrowly open. Height 3-5, diam. 3-8 mm (3.1 × 5.3 mm).

Cephalopodium with caudal foss overhanging over caudal horn.

Jaw with numerous flat plates.

Ovotestis of 2 clumps of acini. Hermaphroditic duct not convoluted, swollen in middle. Talon globular. Spermooviduct short. Prostate of large, elongated follicles. Vas deferens cylindrical, entering epiphallus apically. Epiphallus short, enters penis through a short verge with apical pore. Penis by about 3 times longer than epiphallus, swollen above; this expanded part contains verge and circular thickening; below thickening there are short, corrugated axial folds. Lower cylindrical part of penis internally with a few thin folds. Free oviduct short, vagina swollen, not long. Spermathecal stalk subcylindrical, reservoir attending albumen gland.

DISTRIBUTION. New Zealand and Subantarctic islands. 7 spp.

### *Allodiscus* Pilsbry, 1892

Pilsbry, 1892: 56; 1892 (1892-1893): 14 (*Geron-tia* subg.).

— *Psyra* Hutton, 1884: 201 [nom. praeocc., non Walker, 1860 nec Stal, 1876; t.-sp. *Helix dimorpha* L. Pfeiffer, 1853; SD Pilsbry, 1892 (1892-1893)].

— *Allodisens* Gabriel, 1929: 132 (nom. err. pro *Allodiscus* Pilsbry, 1892).

TYPE SPECIES — *Helix dimorpha* L. Pfeiffer, 1853; OD.

Shell depressed-globose, thin, of 4.5-5 rather convex whorls. Last whorl inflated, with widely rounded periphery. Coloration



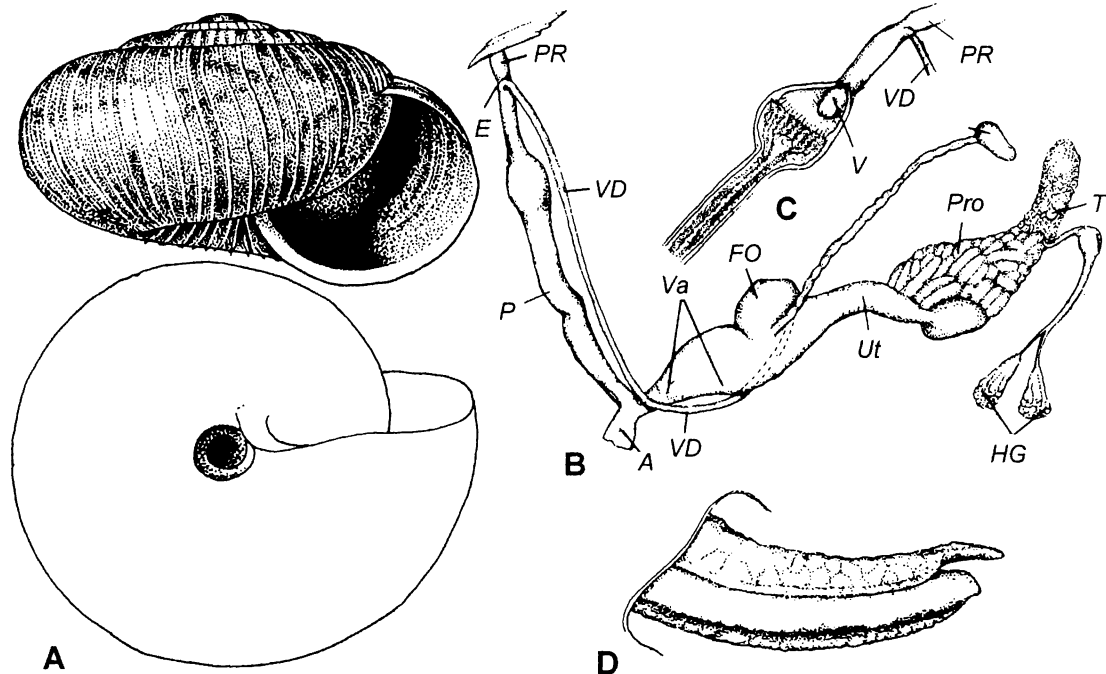


Fig. 1333. A — ! *Phenacohelix ponsonbyi* (Suter, 1892). Shell: Whangarei, New Zealand. Paris. B, C — *Phenacohelix pilula* (Reeve, 1852). B — reproductive tract. C — interior of penis. D — posterior end of cephalopodium. After Solem, 1983.

consists of corneous or yellowish background and variously developed radial blocks of brown near suture, sometimes transformed into coarse tessellations on periphery and base. Embryonic whorls smooth, or with spiral striae, fine radial riblets or both. Later whorls with fine, delicate radial ribs, with or without hair-like processes. Aperture lunate, oblique. Umbilicus narrowly open or completely closed.

DISTRIBUTION. New Zealand.

### *Allodiscus* (*Allodiscus* s. str.)

Fig. 1334

Embryonic whorls with spiral striae, fine radial riblets, or both. Radial riblets on postnuclear whorls without hair-like processes. Height 1.0-5.5, diam. 1.5-8.0 mm (5.4 × 8.0 mm).

DISTRIBUTION. New Zealand. 22-24 spp.

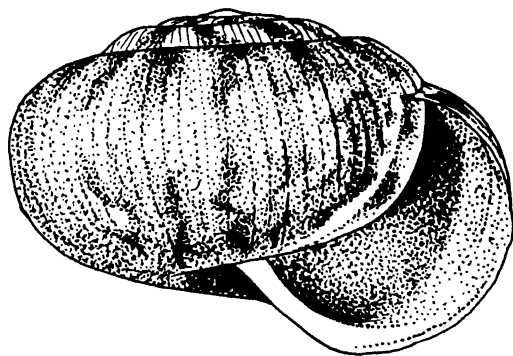


Fig. 1334. *Allodiscus* (*Allodiscus*) *dimorphus* (L. Pfeiffer, 1853). Whangaroa, New Zealand. Paris.

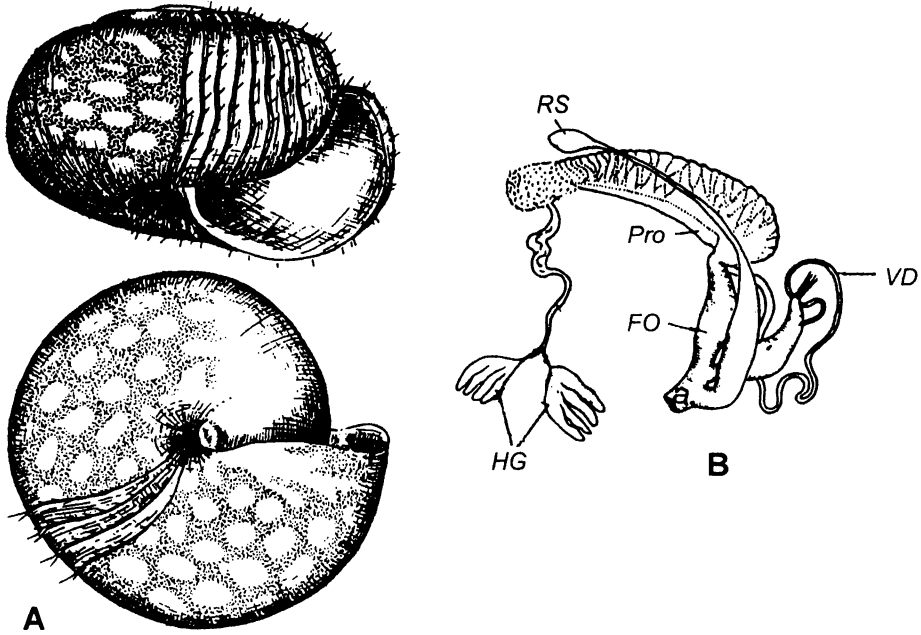


Fig. 1335. *Allodiscus (Hirsutodiscus) rakiura* (Climo, 1971).  
A — shell. B — reproductive tract. After Climo, 1971b.

*Allodiscus (Hirsutodiscus)*  
Climo, 1971)  
Fig. 1335

Climo, 1971b: 98.

TYPE SPECIES — *Allodiscus (Hirsutodiscus) rakiura* Climo, 1971; OD.

Embryonic whorls smooth, glossy. Radial riblets on postnuclear whorls with hair-like processes. Height (estimated) about 2, diam. 3.0 mm.

Hermaphroditic gland of 2 clusters, each composed of 4 elongated acini. Hermaphroditic duct slightly convoluted, swollen at centre. Vas deferens thin, entering penis at short distance from its apex. Penis not long, subcylindrical. Penial retractor attached to blind end of penis apically. Free oviduct rather long, fusiform. Vagina absent: spermathecal stalk and free oviduct arising from atrium; penis arising slightly posterior to stalk of spermatheca which is greatly expanded; reservoir attends albumen gland.

DISTRIBUTION. New Zealand (Stewart Island). 1 sp.

*Pseudallodiscus* Climo, 1971  
Fig. 1336

Climo, 1971b: 99.

TYPE SPECIES — *Pseudallodiscus ponderi* Climo, 1971; OD.

Shell much flattened, thin, fragile, of 4-4.5 convex whorls. Last whorl rounded at periphery. Color corneous or corneous-grey, with crowded brown tessellation on upper and basal surfaces, or zigzag flammulations. Embryonic whorls finely radially ribbed. Postnuclear sculpture of numerous, flexuous radial major riblets; interstices reticulated by fine minor riblets and spiral striae. Aperture broadly lunate, only slightly oblique. Columellar margin nearly straight, reflexed a little over moderately wide to narrow umbilicus. Diam. 2.7-3.5 mm.

Hermaphroditic gland composed of 2 groups of elongated acini. Hermaphroditic duct not convoluted, markedly swollen. Talon hidden, short, with globular head. Vas deferens long, convoluted, entering penis apically. Epiphallus missing. Penis

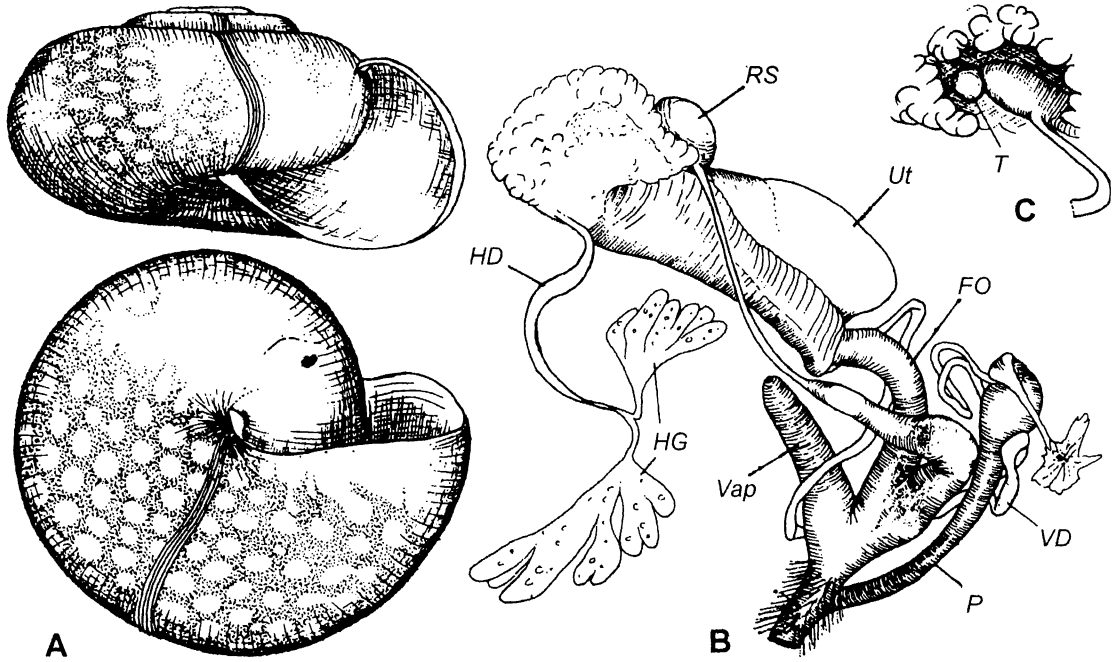


Fig. 1336. *Pseudallodiscus ponderi* Climo, 1971  
 A — shell. B — reproductive tract. C — talon-carrefour complex. After Climo, 1971b.

elongated, clavate. Penial retractor attached to penis apically. Free oviduct long. Vagina rather short, with a large tapering appendix. Atrium and base of vagina with numerous projecting muscle fibers. Base of spermathecal shaft greatly thickened; reservoir reaching lower part of albumen gland.

DISTRIBUTION. New Zealand. 3 spp.

### FLAMMULININAE Crosse, 1895

Crosse, 1895: 210.

— Amphidoxinae Thiele, 1931: 575.

Shell medium-sized, flattened, somewhat reduced, with rapidly increasing whorls. Embryonic whorls with radial riblets or nearly smooth. Postnuclear sculpture mostly of thin, regular, low, periostacal major ribs and delicate minor rib-striation in interstices; spiral striation also may be present. Aperture lacking barriers.

Jaw of many delicate vertical plates that are weakly striated or microscopically papillate and not strongly overlap.

Kidney short, bilobed, pericardial arm larger than rectal. Pericardial arm sometimes twisted in front of heart, extending on both sides of primary ureter. Secondary ureter completed to open.

Hermaphroditic gland of 2 clumps, each of several to many (rather) long acini. Talon moderately long with globular head. Vas deferens evenly slender or with expanded proximal end. Epiphallus very short or missing, entering penis through a simple pore or verge. Penis swollen (at least proximally), internally with a complex system of fleshy pilasters. Base of spermathecal stalk variously swollen.

DISTRIBUTION. Australia, New Zealand, S America (Chile), Juan Fernandez Island.

### *Amphidoxa* Albers, 1850

Fig. 1337

Albers, 1850: 110 (*Helix* subg.).

TYPE SPECIES — *Helix marmorella* L. Pfeiffer, 1845; SD Pilsbry, 1893 (1893-1895).

Shell more or less depressed, thin, frag-

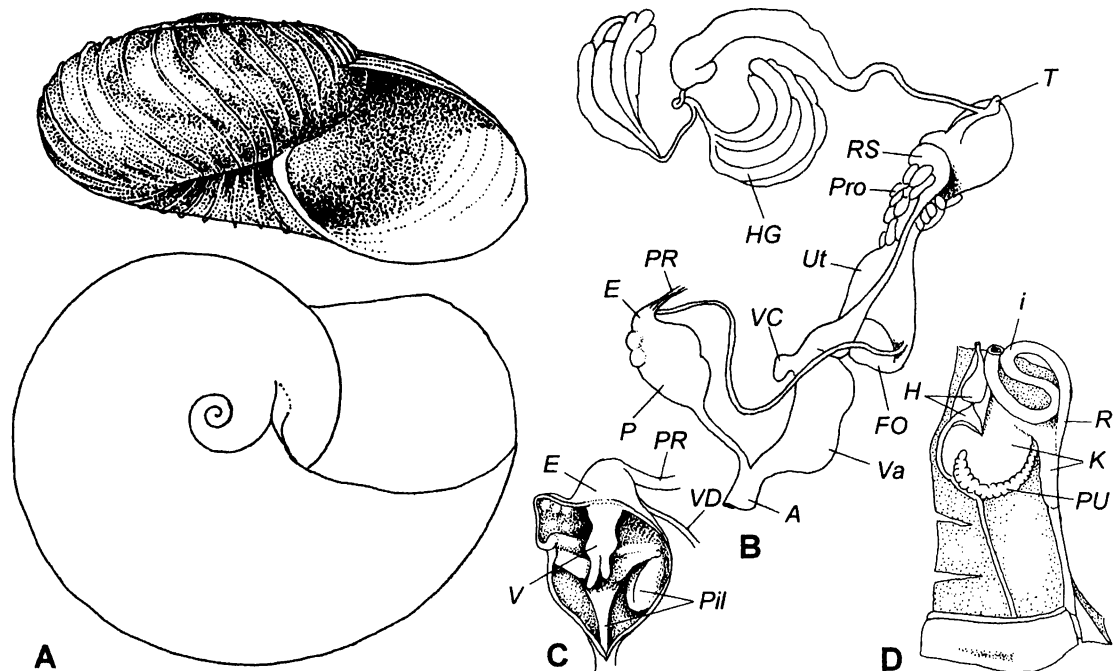


Fig. 1337 *Amphidoxa marmorella* (L. Pfeiffer, 1845).

A — shell: Centinela Ridge, Juan Fernandez Island. Phil. No. 130443. B — reproductive tract. C — interior of penis. D — roof of lung cavity. After Solem, 1983. H — heart. I — intestine. R — rectum. VC — vaginal caecum.

ile, silky glossy, of slightly more than 3 flattened, rapidly enlarging whorls. Last whorl narrowly rounded at periphery. Coloration consists of light-corneous or yellowish-white background and brown-redish flammulations. Embryonic sculpture of widely spaced major periostracal lamellar riblets over microreticulated lattice visible only at great magnification. Rest surface with thin, regular, low, periostracal major ribs and delicate minor rib-striation in interstices. Aperture large, roundly lunate or subcircular, well oblique, with simple, sharp margins. Umbilicus moderately broad. Height 1.4-3.0, diam. 3-7 mm (1.48 × 3.06 mm).

Jaw of many delicate vertical plates that are weakly striated and not strongly overlap.

Kidney bilobed, pericardial arm larger than rectal. Pericardial arm twisted in front of heart extending on both sides of primary ureter. Secondary ureter incomplete.

Ovotestis of 2 clumps of long, tightly packed, finger-like acini; some bifurcated.

Hermaphroditic duct thick, nodular, becoming slender near albumen gland. Talon long with slender, slightly tapering head and broader base. Spermooviduct short. Prostate of large acini, opening into a closed duct partly enfolded by uterus. Vas deferens very slender, inserting laterally on epiphallus. Epiphallus very short, entering penis through a well developed, bifurcated apically verge, internally with pilasters surrounding epiphallic pore and leading into verge. Penis strongly swollen above, tapering to a slender distal end, internally with a large circular muscular collar separated into 2 parts: a broad, thin pilaster and apparently doughnut-shaped pilaster. Penial retractor arising on diaphragm, inserting on upper end of epiphallus. Free oviduct short. Vagina strongly swollen, with a small, globular caecum in upper portion opening between two major pilasters that continue to spermatheca. Spermathecal stalk slightly expanded basally; reservoir lies in angle between upper end of prostate and albumen gland base.

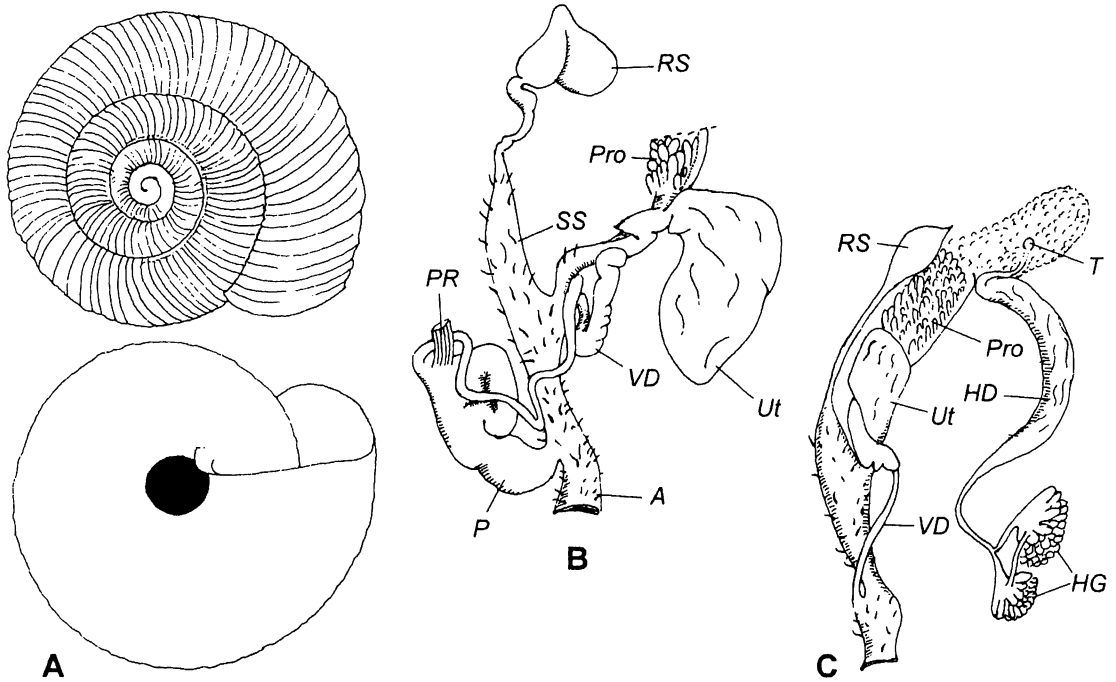


Fig. 1338. *Protoflammulina johnsi* Climo, 1971  
 A — shell. B — reproductive tract of euphallic specimen. C — same of aphyallic specimen.  
 After Climo, 1971b.

DISTRIBUTION. Juan Fernandez Island, Chile (Valdivia, Chiloe). 3 spp.

***Protoflammulina* Climo, 1971**  
 Fig. 1338

Climo, 1971b: 95. Powell, 1979: 314.

TYPE SPECIES — *Protoflammulina johnsi* Climo, 1971; OD.

Shell subdiscoidal, thin, glossy, of 5.5 rather convex whorls. Last whorl evenly rounded at periphery. Apex flat or weakly convex. Color light-brown, flammulated by broad reddish-brown zigzag markings, equally strong on upper and basal surfaces. Embryonic whorls strongly radially costate. Postnuclear sculpture of strong major radial ribs and 6-10 minor riblets in interstices; whole surface crossed by paired, deep spiral striae. Aperture large, subrhomboidal, moderately oblique. Parietal wall with a finely granular white callus through which brown zigzags clearly visible. Co-

lumellar margin short, oblique. Umbilicus moderately wide. Diam. 8-10 mm.

Jaw arcuate, composed of 45-50 thin, fused, microscopically papillate plates.

Reproductive tract dimorphic. Some specimens have a large penis with apical retractor, vas deferens also apically inserted, while others have no penis, vas deferens entering directly into atrium. Rest of reproductive tract in both types is the same. Hermaphroditic gland of 2 clusters of tightly compacted acini. Hermaphroditic duct not convoluted, greatly swollen. Talon exposed, with minute globular head. Prostate of numerous finger-like acini. Penis, when present, stout, with strongly expanded proximal section of complex shape. Uterus sac-like. Free oviduct much shorter than vagina. Base of spermathecal stalk thickened, reservoir large, heart-shaped. Thickened part of spermathecal stalk, free oviduct, vagina, and atrium covered by dense mat of muscle fibers.

DISTRIBUTION. New Zealand (Snares Islands). 1 sp.

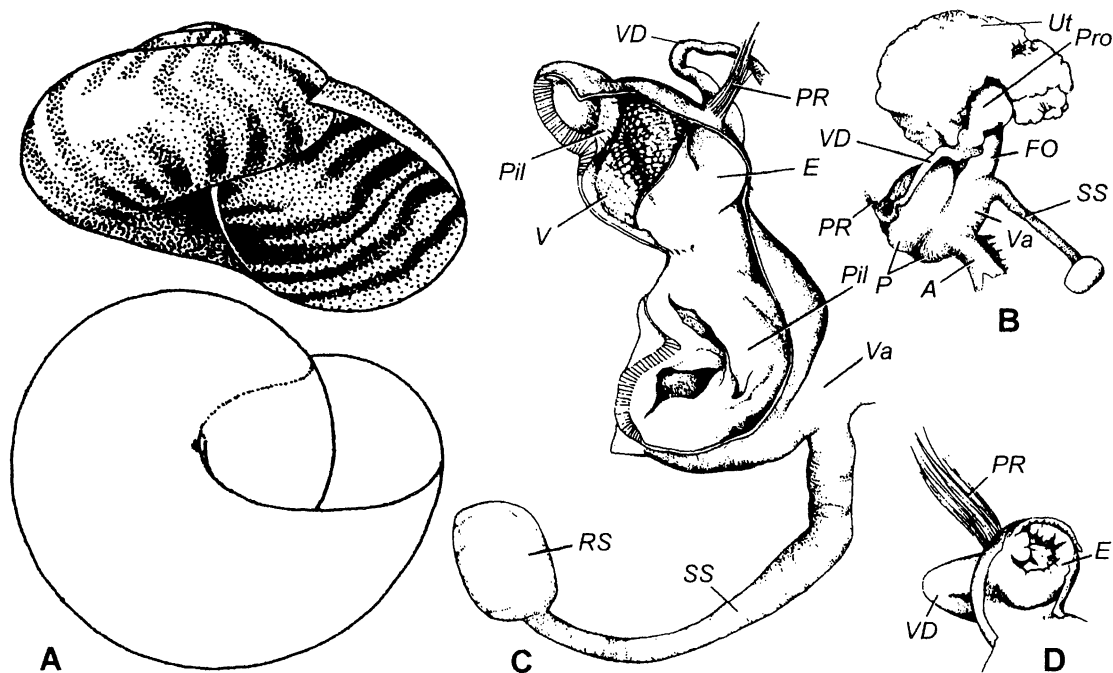


Fig. 1339. *Flammulina zebra* (Le Guillon, 1842).

A — shell: Canterbury, New Zealand. Moscow No. Lc-25300 (SPb). B — reproductive tract. C — interior of penis. D — detail of vas deferens/epiphallus junction. After Solem, 1983.

***Flammulina* E. Martens, 1873**

Fig. 1339

Martens E., 1873: 12. Powell, 1979: 313.

TYPE SPECIES — *Vitrina zebra* Le Guillon, 1842; SD Pilsbry, 1894 (1893-1895).

Shell somewhat vitrinoid, subglobose to depressed, thin, fragile, glossy, of about 3.5 rather convex whorls. Last whorl rounded, inflated. Color pale-corneous or yellowish-brown, often with flame-like reddish-brown radial streaks. Embryonic whorls with smoothed radial wrinkles. Postnuclear whorls smooth or finely radially ribbed. Aperture ample, ovate, quite oblique. Umbilicus very narrow or closed. Height 1.5-5.5, diam. 3.5-8.5 mm (4.0 × 6.3 mm).

Pedal and suprapedal grooves united above tail; no caudal horn; mid-dorsal groove may be present.

Kidney short, wide, bilobed. Secondary ureter complete.

Ovotestis of 2 large clumps of palmately

clavate acini. Hermaphroditic duct narrow, variously kinked and coiled, extending to side of prostate, reflexed upward and straightened to angled union with carrefour. Talon very short, with globular head, buried in albumen gland. Prostate of comparatively few acini along sides of uterus. Vas deferens thicker for first 1/3 of length, then narrowed and entering apex of epiphallus next to point where penial retractor inserts, tightly bound to penis. Epiphallus compacted into upper penial chamber, with complex valvular entrance of vas deferens. Penis almost circular, apex with compacted epiphallus opening through a corrugated verge; lower portion with a complex set of pilasters, highly modified from standard charopid pattern. Penial retractor very short, arising on diaphragm. Free oviduct short, twisted. Vagina and lower part of penis fused into a common chamber. Spermathecal stalk somewhat expanded basally, reservoir attending albumen gland.

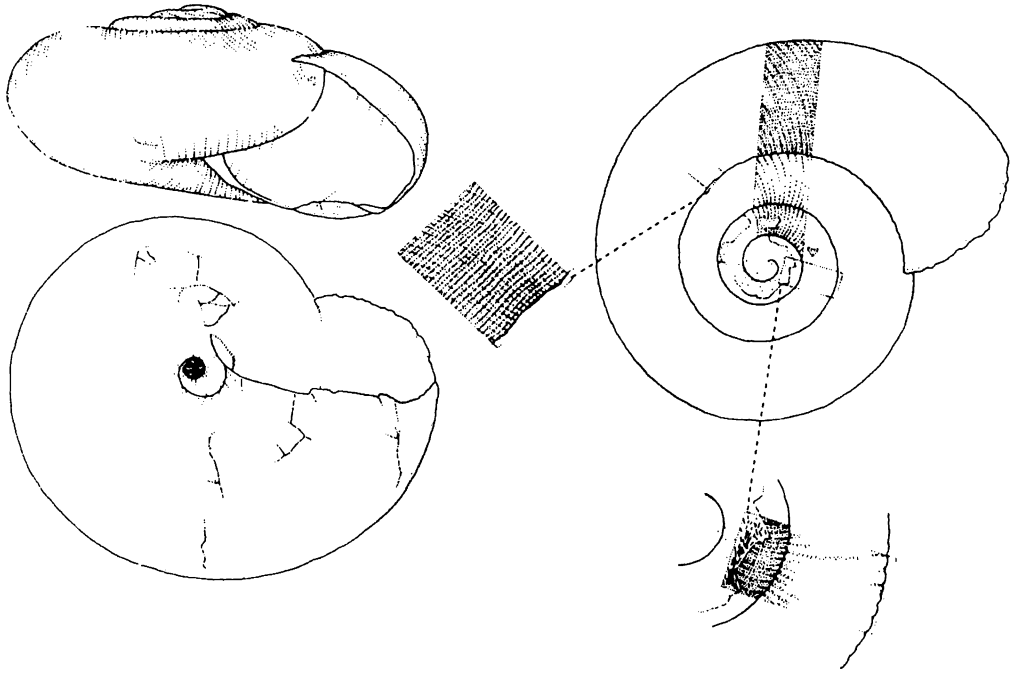


Fig. 1340. *Montaropa macsweeneyi* Climo, 1984.  
After Climo, 1984.

DISTRIBUTION. New Zealand, Chile.  
About 15 spp.

*Montaropa* Climo, 1984  
Fig. 1340

Climo, 1984: 208.

TYPE SPECIES — *Montaropa macsweeneyi*  
Climo, 1984; OD.

Shell much flattened, thin, fragile, of 4-4.25 rather convex, loosely coiled, rapidly increasing whorls. Last whorl narrowly rounded at periphery. Color of periostracum glistening greenish-gold; non-calcified purely periostracal growing edge of aperture light green. Embryonic whorls with weak intersecting sculpture of delicate radial riblets and spiral lirae. Postapical whorls with very fine reticulate sculpture of crossing coarser radial riblets and microscopical spiral lines. Aperture ovate, moderately oblique. Umbilicus narrowly open. Height 4.1, diam. 8.1 mm.

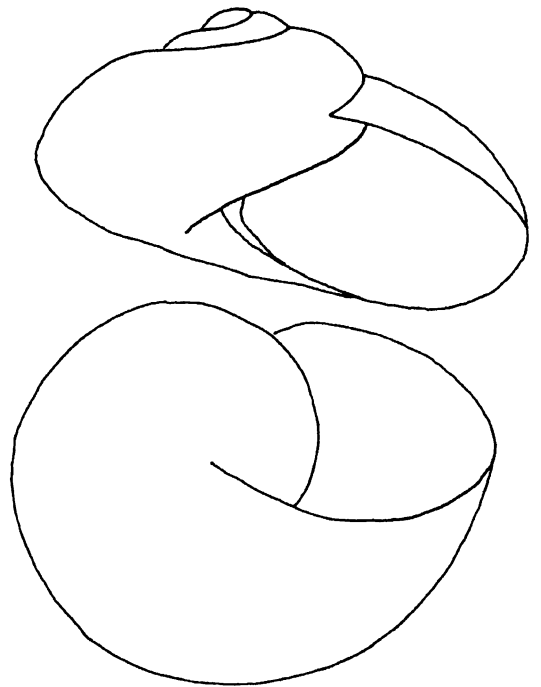


Fig. 1341 *Flammulops excelsior* (Hedley, 1896).

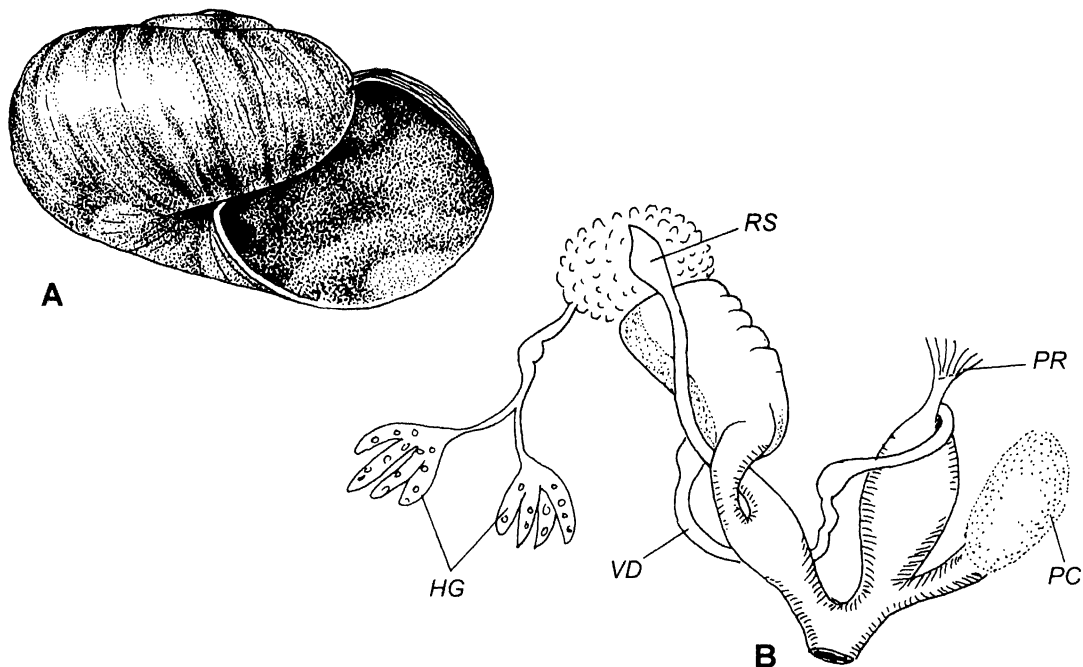


Fig. 1342. *Flammocharopa costulata* (Hutton, 1883).  
 A — shell: Waitakere Range, Auckland, New Zealand. Delaware Mus. of Natural Hist. Wilmington, No. 148458. B — reproductive tract. After Climo, 1970.

DISTRIBUTION. New Zealand (South Island). 1 sp.

*Flammulops* Iredale, 1937  
 Fig. 1341

Iredale, 1937a: 319 B. Smith, 1992: 189.

TYPE SPECIES — *Flammulina excelsior* Hedley, 1896; OD.

Shell somewhat vitrinoid, very thin, of 3 convex whorls. Last whorl inflated, sub-angulated at periphery. Spire elevated. Coloration of pale-corneous background and brown flames. Embryonic sculpture (0.5 whorl) of faint spiral striae. Postapical whorls with very fine, close-set radial riblets and delicate spiral striation in interstices. Aperture ample, ovate-lunate, oblique, with thin margins; columellar margin reflexed. Umbilicus closed. Height 5.0-5.5, diam. 8-10 mm.

DISTRIBUTION. Australia (Great Divide of eastern Victoria and southern New South Wales). 1 sp.

**FLAMMOCONCHINAE**  
 Schileyko, subfam. nov.

Type genus — *Flammoconcha* Dell, 1952.

Shell medium-sized, markedly reduced, with rapidly increasing whorls, sometimes covered by mantle. Embryonic sculpture of spiral threadlets. Postapical whorls with major ribs, minor riblets in interstices and crowded, regular spiral cordlets. Aperture ample, toothless.

Jaw of separate plates.

Hermaphroditic gland of 2 clumps of many elongated acini. Talon hidden. Vas deferens somewhat swollen proximally. Epiphallus clavate, rather long. Penis with a large club-like appendage at lower section. Base of spermathecal stalk slightly swollen.

DISTRIBUTION. New Zealand.

REMARK. Two New Zealand genera (*Flammocharopa* and *Flammoconcha*) differ from any other charopid genera by the presence of conspicuous (glandular?) penial appendage.



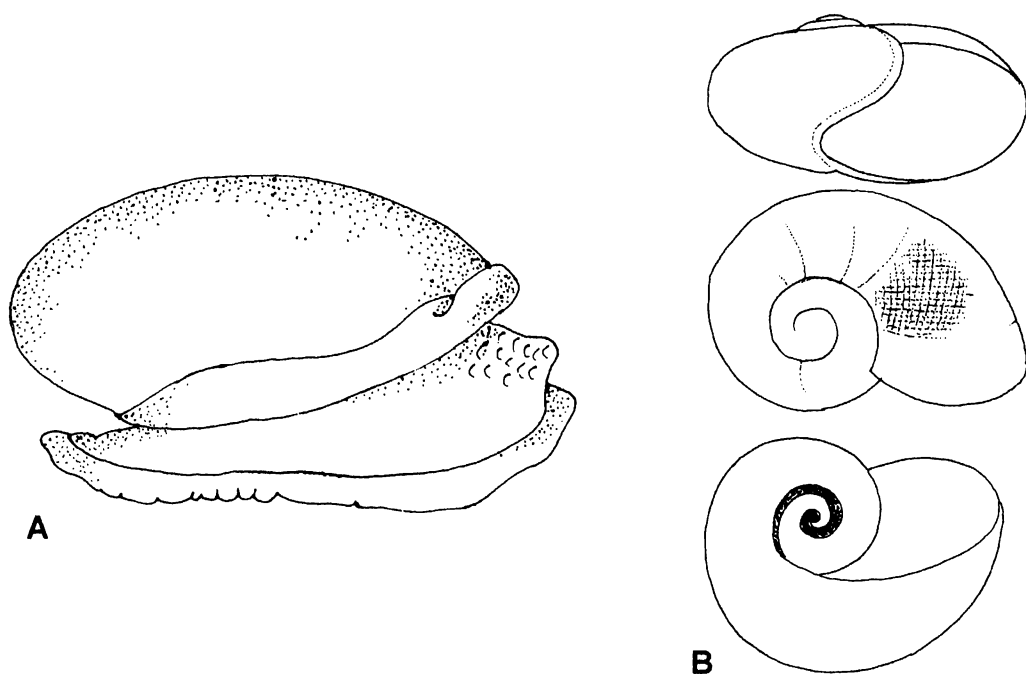


Fig. 1343. A — *Flammoconcha cumberi* (Powell, 1941). External view of contracted animal. B — ! *Flammoconcha stewartensis* (Dell, 1952). Shell. After Dell, 1952a.

***Flammocharopa* Climo, 1970**  
Fig. 1342

Climo, 1970: 334.

— *Calymna* Hutton, 1884: 199 (nom. praeocc. non Hübner, 1816; *Amphidoxa* subg.; t-sp. *Amphidoxa costulata* Hutton, 1882; SD Pilsbry, 1892).

Powell, 1979: 308.

TYPE SPECIES — *Amphidoxa costulata* Hutton, 1882; OD.

Shell nearly flat, thin, silky glossy, of 3-3.5 convex whorls. Last whorl straight, widely rounded, inflated. Color corneous with irregular reddish or brownish radial rays. Embryonic sculpture of spiral cordlets. Postapical whorls with major ribs, minor riblets in interstices and close-set, regular spiral threadlets. Aperture ample, generally ovate, a little oblique, with simple margins. Umbilicus cylindrical, narrowly open. Height 1.8-2.0, diam. 2.8-3.8 mm (1.80 × 2.88 mm).

Hermaphroditic gland of 2 clusters of elongated acini, each cluster composed of

3-4 finger-like acini. Hermaphroditic duct more or less swollen in middle part, not convoluted. Talon not visible. Spermooviduct unusually short. Vas deferens expanded in proximal part, entering slender, clavate epiphallus. Penis rather short, thickened, with a large club-like (glandular?) appendage on its lower section. Free oviduct approximately equal to vagina in length. Basal part of spermathecal stalk more or less expanded, reservoir reaching albumen gland.

DISTRIBUTION. New Zealand. 2 spp.

***Flammoconcha* Dell, 1952**  
Fig. 1343

Dell, 1952a: 65. Powell, 1979: 324.

TYPE SPECIES — *Helicarion (Peloparion) cumberi* Powell, 1941; OD.

Shell reduced (cephalopodium can not be withdrawn in shell), auriform, very thin, of 2-3 flattened whorls. Base of shell half or more cut away. Color pale-yellow.

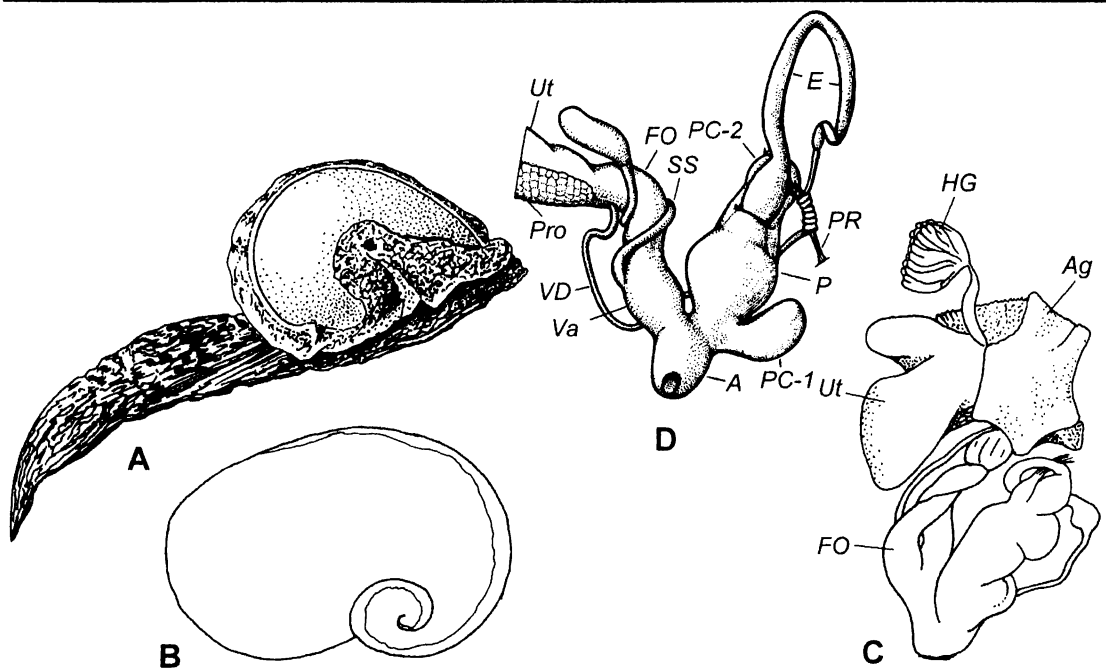


Fig. 1344. *Otoconcha dimidiata* (L. Pfeiffer, 1853).

A — external view of preserved specimen: Centennial Arive, 3 mi N Titirangi, Waitakere Range, Auckland, New Zealand. Phil. No. 234096. B — shell. C — reproductive tract. After Climo, 1971a. D — distal portion of reproductive tract. After Baker, 1938.

Sculpture of strong, crisp, arcuate radial grooves sometimes crossed by fine spiral lines. Height 1.25-3.70, diam. 1.95-4.10 mm.

Penis with club-like appendage on its outer side.

DISTRIBUTION. New Zealand (South and Stewart Islands). 2 spp.

## OTOCONCHINAE Cockerell, 1893

Cockerell, 1893: 188, 205.

Semislugs; visceral hump strongly shifted toward animal head, resulting in very long tail of cephalopodium. Shell reduced, ear-shaped, very thin, of 1.5-2 whorls. Basal part of shell missing. Aperture without barriers.

Jaw with several flattened ribs in central third and traces of irregular ribs laterally.

Kidney large, rounded triangular. Secondary ureter complete.

Hermaphroditic gland of 1 or 2 hemi-

spherical clumps of numerous clavate acini. Spermoviduct short. Talon clavate, fairly long. Vas deferens enters epiphallus apically. Epiphallus long, well developed. Penis swollen, thick-walled, furnished with 1 or 2 caeca, internally with a large verge. Spermathecal stalk subcylindrical, not enlarged basally.

DISTRIBUTION. New Zealand.

## *Otoconcha* Hutton, 1884

Fig. 1344

Hutton, 1884: 188. Baker, 1938: 89. Climo, 1971a: 44.

TYPE SPECIES — *Vitrina dimidiata* L. Pfeiffer, 1853; OD.

Vas deferens coiled around penial retractor. Penis with 2 caeca. Proximal (upper) caecum (PC-2) with comparatively thin walls, located above entrance of epiphallus. Distal (lower) caecum (PC-1) contains a big papilla (stimulator). Diam. of shell up to 5 mm; length of animal about 25 mm.

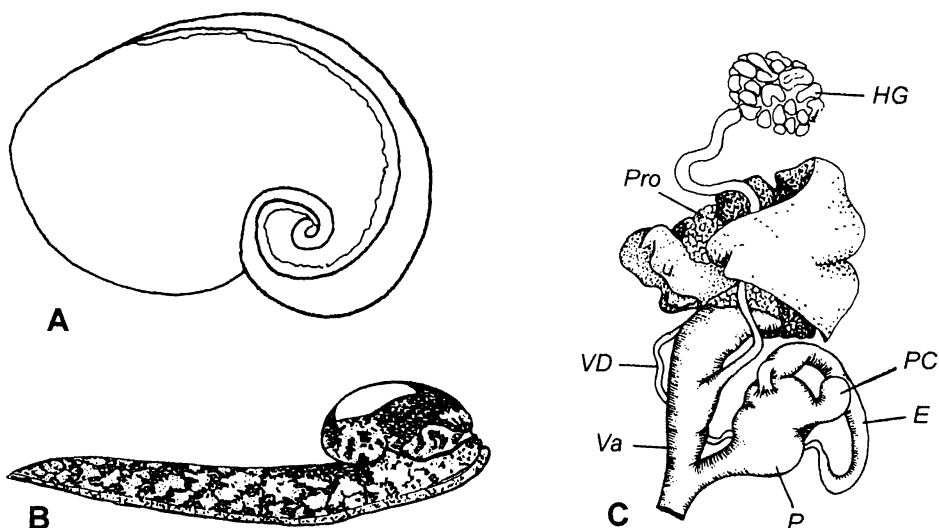


Fig. 1345. *Maoriconcha oconnori* (Powell, 1941).

A — shell. B — external view of animal. C — reproductive tract. After Climo, 1971a.

DISTRIBUTION. New Zealand. 1 sp.

*Maoriconcha* Dell, 1952  
Fig. 1345

Dell, 1952a: 62. Climo, 1971a: 45.

TYPE SPECIES — *Helicarion oconnori* Powell, 1941; OD.

Vas deferens not coiled around penial retractor. Penis with 1 (upper) caecum. Diam. of shell 4.3-9.2, length 17.3-32.0 mm.

DISTRIBUTION. New Zealand. 3 spp.

RANFURLYINAE

*Schileyko, subfam. nov.*

Type genus — *Ranfurlya* Suter, 1903.

Slugs. Shell nearly internal, partially exposed, membranaceous, transparent, somewhat folded in preserved animals, of about

1 auriform whorl. Color of shell yellowish-corneous. Sculpture of faint, distant growth lines. Visceral hump subcentral in position on cephalopodium. Color of body almost black.

Jaw very thin, with weak vertical wrinkles.

Ovotestis of a single clump of many acini. Hermaphroditic duct nearly straight. Talon not visible. Vas deferens in proximal part enlarged, gradually narrowed toward atrium, enters epiphallus apically. Epiphallus externally not demarcated from penis, pierced by vas deferens which lies in lumen of epiphallus freely and opens on tip of verge; thus walls of verge separate epiphallus from penis. Inner surface of penis with weak, irregular, somewhat branched folds. Penis surrounded by a thin sheath. Penial retractor attached to epiphallus subapically. Free oviduct long, stout, with dense, highly muscular walls. Vagina extremely short (nearly absent). Basal part of spermathecal stalk fusiformly swollen.

DISTRIBUTION. New Zealand.

REMARK. Initially Suter (1903) attributed the genus *Ranfurlya* to *Phenacohelici-*

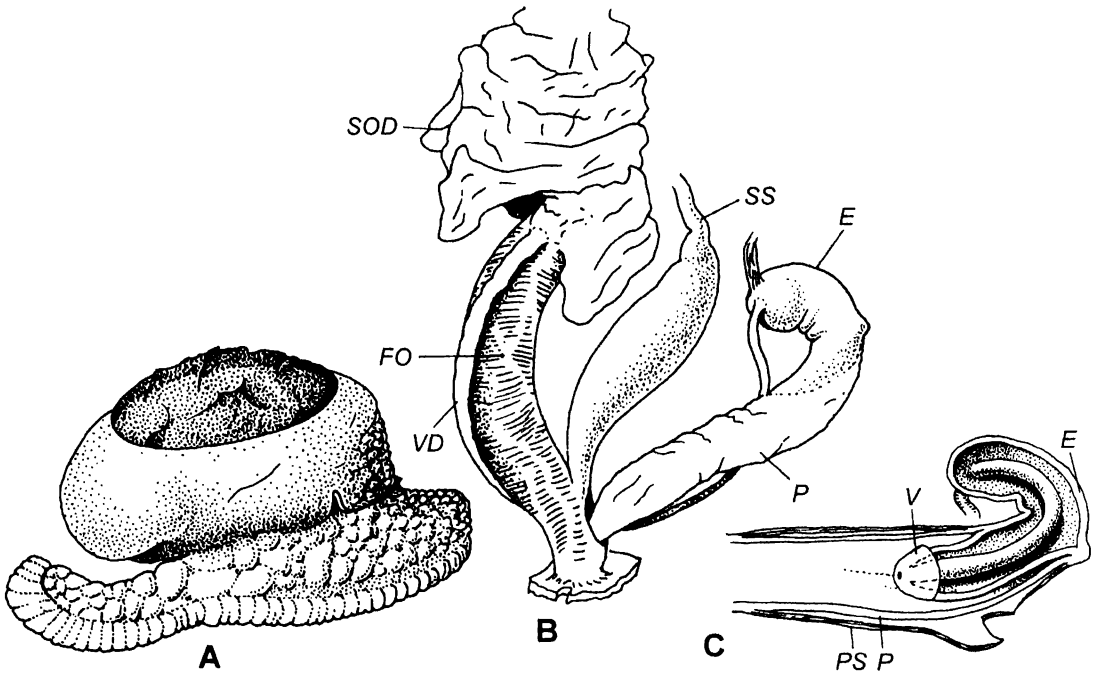


Fig. 1346. *Ranfurlya constanceae* Suter, 1903. Auckland Island, New Zealand.  
 A — external view of contracted animal. B — reproductive tract. C — interior of penis.  
 Spb.

dae. Zilch (1959) assigned it to Amphidoxinae (Endodontidae) placing it among New Caledonian taxa, between *Monomphalus* and *Pararhytida*. As it follows from the data presented, *Ranfurlya* has nothing in common with these taxa neither externally nor anatomically or geographically. Later Climo (1969) considered it as a member of Flammulininae (Endodontidae); Powell (1979) placed this genus among New Zealand "Endodontidae" next to *Flammoconcha*. However, anatomical characters, especially the structure of epiphallus and penis, show that *Ranfurlya* occupies a quite isolated position. Moreover, I am not sure that its placement in Charopidae is correct though

at the moment I do not see a real alternative.

*Ranfurlya* Suter, 1903  
 Fig. 1346

Suter, 1903: 62. Powell, 1979: 324. Climo, 1969: 148.

TYPE SPECIES — *Ranfurlya constanceae* Suter, 1903; monotypy.

Characters of subfamily. Diam. major of shell up to 3 mm; length of preserved animal up to 6 mm.

DISTRIBUTION. New Zealand (Auckland Island). 1 sp.

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**Part 1 April 1998: 1-127, figs. 1-140**

Achatinellidae, Amastridae, Orculidae, Strobilopsidae, Spelaeodiscidae, Valloniidae, Cochlicopidae, Pupillidae, Chondrinidae, Pyramidulidae

**Part 2, November 1998: 129-261 figs. 141-316.**

Gastrocoptidae, Hypselostomatidae, Vertiginidae, Truncatellinidae, Addition To Vertiginoidea, Pachnodidae, Enidae, Sagdidae

**Part 3, April 1999: 263-436, figs. 317-566.**

Partulidae, Aillyidae, Bulimulidae, Orthalicidae, Megaspiridae, Urocoptidae

**Part 4, December 1999; 437-564, figs. 567-732.**

Draparnaudiidae, Caryodidae, Macrocyclidae, Acavidae, Clavatoridae, Dorcasiidae, Sculptariidae, Plectopyloidea, Corillidae, Plectopylidae, Megalobulimidae, Strophocheilidae, Cerionidae, Achatinidae, Subulinidae, Glessulidae, Micractaeonidae, Ferrussaciidae

**Part 5, May 2000: 565-729, figs. 733-949.**

Clausiliidae

**Part 6, December 2000: 731-880, figs. 950-1154.**

Rhytididae, Chlamydephoridae, Systrophiidae, Haplotrematidae, Streptaxidae, Spiraxidae, Oleacinoidae, Testacellidae

**Part 7, June 2001: 881-1034, figs. 1155-1346.**

Endodontidae, Thyrophorellidae, Charopidae