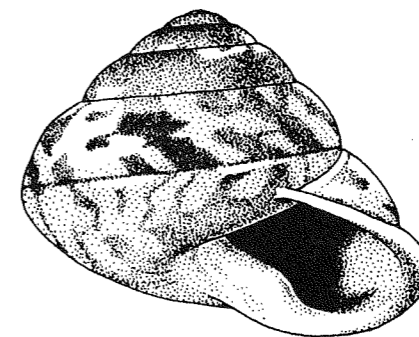


A. A. Schileyko

TREATISE ON RECENT TERRESTRIAL
PULMONATE MOLLUSCS

Part 11

Trigonochlamydidae, Papillodermidae,
Vitrinidae, Limacidae, Bielziidae,
Agriolimacidae, Boettgerillidae, Camaenidae



Ruthenica, Supplement 2
Moscow ♦ November, 2003

CONTENTS

TRIGONOCHLAMYDOIDEA Hesse, 1882	1467
TRIGONOCHLAMYDIDAE Hesse, 1882	1467
TRIGONOCHLAMYDINAE Hesse, 1982	1467
SELENOCHLAMYDINAE Likharev et Wiktor, 1980	1473
PAPILLODERMIDAE Wiktor, Martin et Castillejo, 1990	1474
VITRINOIDEA Fitzinger, 1833	1475
VITRINIDAE Fitzinger, 1833	1476
PLUTONIAINAE Cockerell, 1893	1476
SEMILIMACINAE Schileyko, 1986	1482
Oligolimacini Schileyko, trib. nov.	1483
Semilimacini Schileyko, 1986	1484
VITRININAE Fitzinger, 1833	1487
LIMACOIDEA Rafinesque, 1815	1489
LIMACIDAE Rafinesque, 1815	1489
LIMACINAE Rafinesque, 1815	1489
EUMILACINAE Likharev et Wiktor, 1980	1499
BIELZIIDAE Likharev et Wiktor, 1980	1500
AGRIOLIMACIDAE J. Wagner, 1935	1502
BOETTGERILLIDAE Van Goethem, 1972	1508
CAMAENOIDEA Pilsbry, 1893	1510
CAMAENIDAE Pilsbry, 1893	1510
CAMAENINAE Pilsbry, 1893	1510
XANTHOMELONTINAE Iredale, 1938	1574
PAPUININAE Iredale, 1938	1599
CRISTOVALINAE Schileyko, subfam. nov.	1620
References	1622



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TRIGONOCHLAMYDOIDEA
 Hesse, 1882

Hesse, 1882: 32.

Slugs; shell rudimentary. Mantle very small (there are a few exceptions), situated on middle of back.

Sole tripartite (Trigonochlamydidae) or undivided (Papillodermidae). Caudal foss or caudal horn absent.

Head wart absent.

Jaw oxygnathous, rudimentary or missing.

Flagellum absent. Epiphallus present or missing. Penis simple or with peculiar "spermatophores"; no penial gland. Penial caecum absent. Penis sheath surrounds basal part of penis. Sarcobelum absent. Vagina simple. Perivaginal gland absent. Atrial appendix absent. True spermatophores missing.

Carnivorous animals.

DISTRIBUTION. Caucasus with adjacent regions of Turkey and Iran; N Spain.

TRIGONOCHLAMYDIDAE
 Hesse, 1882

Hesse, 1882: 32 (subf. Trigonochlamydina).

— Parmacellillinae Hesse, 1926b: 54.

Likharev & Wiktor, 1980: 306.

Schileyko & Kijashko, 1999: 43.

Shell flat, with very thin spatula that usually consists of separate carbonate granules lying on delicate periostracum; rudimentary coiling of nucleus retained only in 1 genus (*Parmacellilla*). Body surface without rows of conic papillae. Mantle large to very small, middle in position or more or less shifted to posterior end. Sole tripartite.

Jaw rudimentary or missing.

Alimentary tract of carnivorous type, i.e. having enormously long throat, specific radula and short gut.

Genital atrium narrow and long, connected to body wall by muscular bundles. Penis internally with a few pilasters; one of them larger than other, often with median furrow and bears 1-4 penial ampullae ("spermatophores"); during mating penial ampullae empty into spermatheca of a partner without detaching from penis; verge absent.

Penis sheath surrounds base of penis.

DISTRIBUTION. Forest and alpine zones of Caucasus, of Pont Mts. (Turkey) and of Elburs Mts. (N Iran).

REMARK. One of conspicuous characters of Trigonochlamydidae is the presence of the so-called "spermatophores" within penis. Actually they are not genuine spermatophores since they do not transferred from one partner to the other during copulation. That is why I introduce a neutral term "penial ampullae" for them; in the illustrations the abbreviation "SP" is retained.

TRIGONOCHLAMYDINAE
 Hesse, 1882

Mantle lies near middle of body, 4-5 times shorter than body (exceptions: in genera *Troglolestes* and *Boreolestes* mantle covers nearly entire back).

Right ocular retractor passes through peni-oviducal angle.

Throat occupies about 1/4 of body cavity.

Detorsion of mantle complex less than 90°. Heart ventricle lies behind of auricle. Circumoesophageal nervous ring surrounds crop. Vas deferens enters penis apically or nearly so.

DISTRIBUTION. As in family.

Parmacellilla Simroth, 1910
 Fig. 1896

Simroth, 1910b: 536. Likharev & Wiktor, 1980: 319.

TYPE SPECIES — *Parmacellilla filipowitschi* Simroth, 1910; monotypy.

Shell nucleus planorboid, very thin, fragile, of 1 whorl. Color yellowish, with thin, easily detached periostracum. Periostracum with conspicuous sculpture of accurate spiral rows of minute pits. Aperture subcircular, slightly oblique. Umbilicus absent. Height 0.8, diam. 1.9 mm. Spatula flat and small.

Body spindle-shaped when contracted, with very narrow sole. Mantle small, posterior in position, with narrow cephalic shield. Horseshoe-like groove weakly expressed. Back occupied by a strong keel; at junction between keel and mantle edge there is slit, through which nucleus of shell is seen. Upper side including mantle covered with large, flat, polygonal wrinkles giving squamulous appearance; each wrinkle bears minute tubercles. Body length of holotype 16.5 mm.

Cylindrical throat occupies about 1/3 of

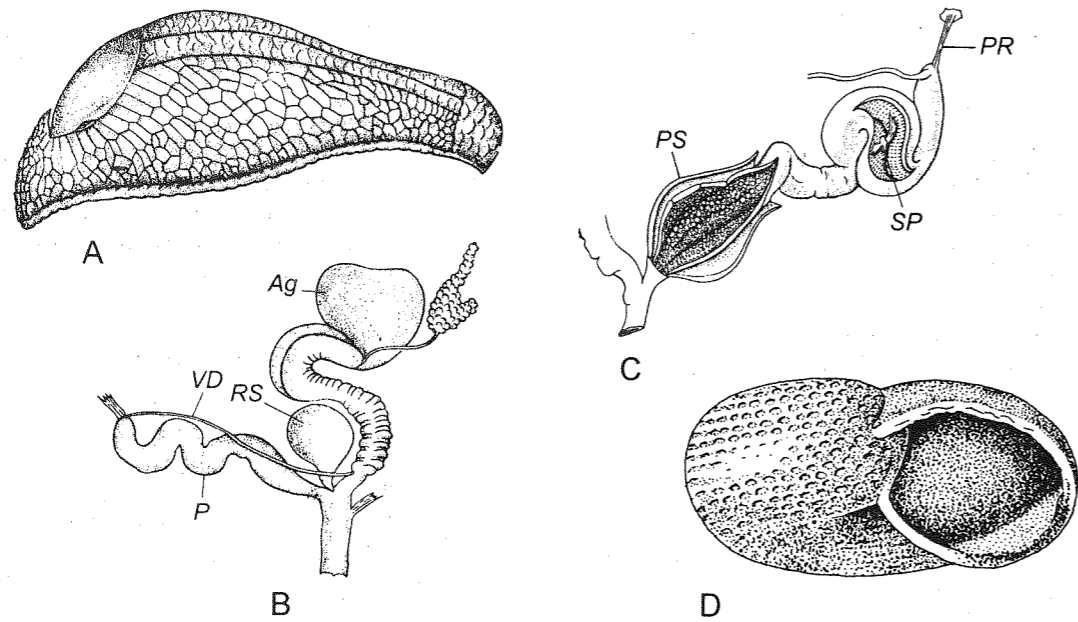


Fig. 1896. *Parmacellilla filipowitschi* Simroth, 1910. A — external view. B — reproductive tract. After Simroth, 1910b. C — interior of penis. After Likharev & Wiktor, 1980. D — shell: "Rechtes Ufer des Babul, Meschhedischer, Mazenderan, N Persien". Basel No. 3960a.

visceral sac. 2 regular rows of protractors attached to throat. Jaw comparatively large. Mantle complex shifted backwards. Venation of lung well developed but limited by roof of lung cavity. Retractors of lower tentacles not fused with rest and attached posteriorly to body wall; besides, each of them sends an additional branch to throat.

Vas deferens enters long, cylindrical penis apically. Epiphallus absent. Internally penis with tubercular longitudinal pilasters and a small pad to which penial ampulla(e) ["spermatophore(s)"] attached. Distal part of penis coated by a sheath which attached only by its lower edge. Penial retractor arises from upper wall of body at anterior edge of mantle and attached next to base of vas deferens. Free oviduct short. Vagina as such absent. Atrium long. Spermathecal stalk very short, reservoir large, globular.

DISTRIBUTION. N Iran (northern foothills of Elburz Mts.). 1 sp.

Trigonoclamys O. Boettger, 1881
Fig. 1897

Boettger O., 1881: 173.

— *Pseudomilax* O. Boettger, 1881: 173 (non O. Boettger, 1884).

— *Phrixolestes* Simroth, 1891b: 57 (t.-sp. *Phrixolestes adsharicus* Simroth, 1891; OD).

Likharev & Wiktor, 1980: 309.

TYPE SPECIES — *Trigonoclamys imitatrix* O. Boettger, 1881; monotypy.

During locomotion body nearly cylindrical, slender, pointed backwards, with distinct keel. Mantle rounded-triangular, with clear horseshoe-like groove, lying somewhat behind middle of back. Skin relief composed of grooves running radially from mantle. Body length up to 38 mm when contracted.

Shell with sharp protruded nucleus and flat spatula. Large barrel-shaped throat has 6-8 pairs of retentors; protractors absent. Jaw very delicate, transparent, rudimentary.

Kidney S-shaped, embracing heart from right side. Lung venation clearly visible not only on roof of mantle cavity but also on diaphragm. Both throat retractors together with retractors of lower tentacles united into a common columellar muscle attached behind mantle complex. Ommatophoran retractors not included in common columellar system and each of them attached to corresponding wall of body.

Epiphallus short. Penis large, cylindrical, internally with 1 or 2 longitudinal pilasters;

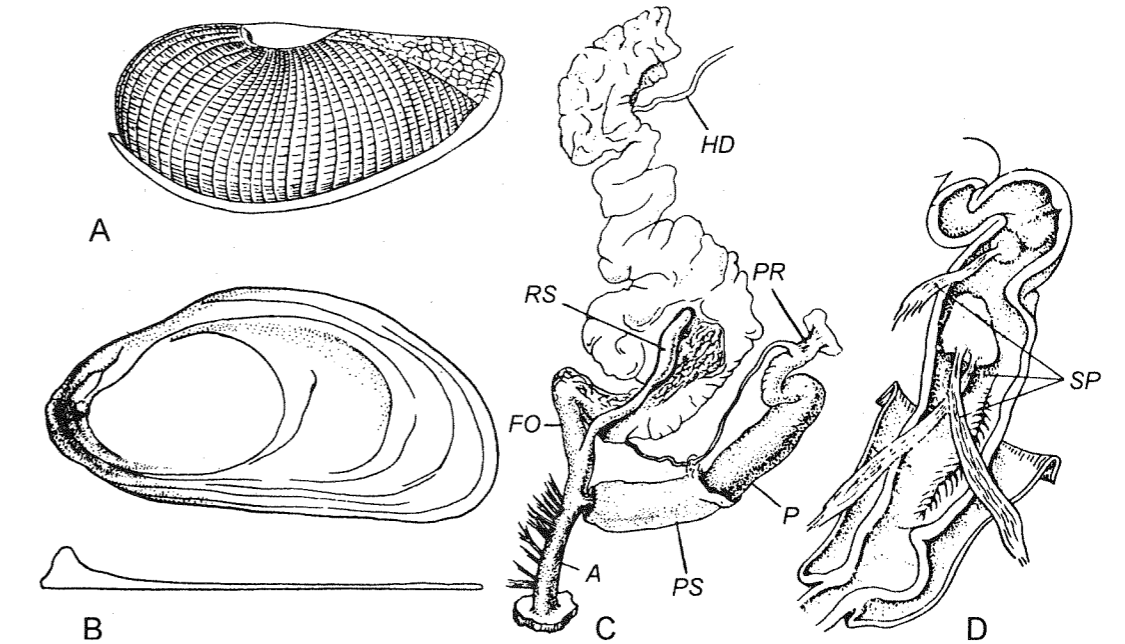


Fig. 1897. *Trigonoclamys imitatrix* O. Boettger, 1881. A — external view of animal. B — shell in two positions. C — reproductive tract. D — interior of penis. After Likharev & Wiktor, 1980.

near epiphallus there is a few large "pads" to which penial ampullae attached. Latter have appearance of light-brown pivots. Simultaneously there may be up to 4 penial ampullae. Penial retractor arises from diaphragm or neck wall. Distal portion of penis embraced by sheath attached at lower end. Penial retractor attached to vas deferens/epiphallus junction. Free oviduct moderately long. Vagina markedly shorter. Spermathecal stalk not long, spear-shaped reservoir lying on lower half of spermooviduct.

DISTRIBUTION. Caucasus and adjacent territories of Turkey. 1 sp.

Hyrcaolestes Simroth, 1901
Fig. 1898

Simroth, 1901a: 212, 226.

— *Pseudomilax* O. Boettger, 1881: 173 (part.).

— *Chrysalidomilax* Simroth, 1901a: 212, 226 (t.-sp. *Chrysalidomilax sphingiformis* Simroth, 1901; monotypy).

Likharev & Wiktor, 1980: 313.

TYPE SPECIES — *Parmacella velitaris* Martens, 1880; SD Lindholm, 1925.

Shell very thin, with distinct, nipple-like nucleus. Spatula more or less desintegrated

into calcareous granules lying on semitransparent periostracum.

Body during locomotion cylindrical, narrow, rounded anteriorly, pointed posteriorly. Mantle elongate-ovate, its length about 1/4 of body length; cephalic shield moderately wide. Keel occupies all back although well expressed at posterior end only. Surface covered with large polygonal flattened wrinkles. Body length up to 27 mm when contracted. Mantle complex similar to that of *Trigonoclamys*, but venation restricted by roof of lung.

Jaw extremely delicate. Throat barrel-shaped, without retentors and with numerous protractors. Columellar retractors of throat attached to its anterior end.

Vas deferens enters short epiphallus apically or nearly so. Penis very long, cylindrical, more or less twisted, internally with pad to which 1-2 long penial ampullae attached. Inner surface of lower portion of penis covered with numerous indistinct tubercles. Penis sheath attached at both ends. Free oviduct short. Vagina a little longer. Spermatheca almost sessile.

DISTRIBUTION. Caucasus and northern slopes of Elburz Mts. (N Iran). 1 sp.

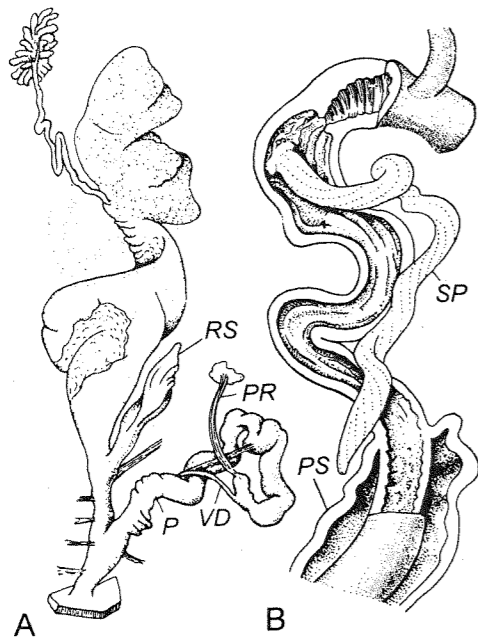


Fig. 1898. *Hyrcanolestes velitaris* Martens, 1880. A — reproductive tract. B — interior of penis. After Likharev & Wiktor, 1980.

Drilolestes Lindholm, 1925
Fig. 1899

- Lindholm, 1925: 168 (nom. nov. pro *Pseudomilax* Boettger, 1883, non Boettger, 1881).
— *Pseudomilax* O. Boettger, 1883: 147 (t.-sp. *Pseudomilax retowskii* O. Boettger, 1883; monotypy).
— *Pseudolimax* Simroth, 1892: 52 (non O. Boettger, 1881).
— *Chlamydolimax* Wenz, 1947: 36 (nom. nov. pro *Pseudomilax* Boettger, 1883).
Likharev & Wiktor, 1980: 324.

TYPE SPECIES — *Pseudomilax retowskii* O. Boettger, 1883; OD.

Body narrowly cylindrical when crawling. Mantle situated somewhat behind middle of back. Back with a strong keel. Skin relief composed of network of large polygonal wrinkles; sides with series of distinct vertical furrows. Mantle with comparatively broad cephalic shield; base of shield lies at level of anterior part of horseshoe-like groove. Shell and mantle complex similar to that of *Hyrcanolestes*. Throat occupies about 1/3 of body length. Protractors of each side of throat attached along one line.

Principal retractors attached to posterior end of throat. Jaw probably absent.

Vas deferens enters penis apically. Penis rather long, internally with series of oblique pilasters and pads that may bear penial ampullae. Penis sheath free at upper edge. Free oviduct comparatively long. Vagina somewhat shorter. Spermathecal stalk slender, moderately long; reservoir lies on lower half of spermoviduct. Atrium rather long, connected with body wall by several muscle bundles.

DISTRIBUTION. Caucasus. 1 sp.

Lesticulus Schileyko, 1988
Fig. 1900

Schileyko, 1988b: 1733.

TYPE SPECIES — *Lesticulus nocturnus* Schileyko, 1988; OD.

Small slugs with more or less spindle-shaped white body and narrow sole. Keel distinct, corrugated. Skin relief composed predominantly of vertical furrows; at tail section there are vague polygonal wrinkles. Mantle lies on middle of back. Horseshoe-like groove absent. Cephalic shield equal to about 1/3 of mantle length. Free mantle edge clearly expressed on right side; at left side mantle fused with surface of cephalopodium so tightly that it is hard to see boundary of mantle. Pneumostome shifted posteriorly. Eyes practically absent. Body length of holotype 10 mm. Shell with rounded protruded nucleus, shifted a little to the right, with thick spatula. Lower surface of spatula flat, tubercular. Under nucleus there is a deep, narrow slit.

Lung venation hardly visible. Long axis of heart disposed at nearly right angle to body axis. Auricle lies a little ahead of ventricle. Vas deferens short, enters penis apically. Penis rather long, slender, its posterior end slightly enlarged. Terminal enlargement internally with a characteristic relief consisting of clear, short, transversal wrinkles arranged into longitudinal rows. Distal part of penis narrowed, lined with a few branched folds. Semitransparent penis sheath surrounds distal portion of penis; upper edge of sheath free. Penial retractor arises from anterior part of diaphragm, attached to penis terminally. Free oviduct unusually long. Vagina very short. Spermathecal stalk not long. Reservoir subglobular,

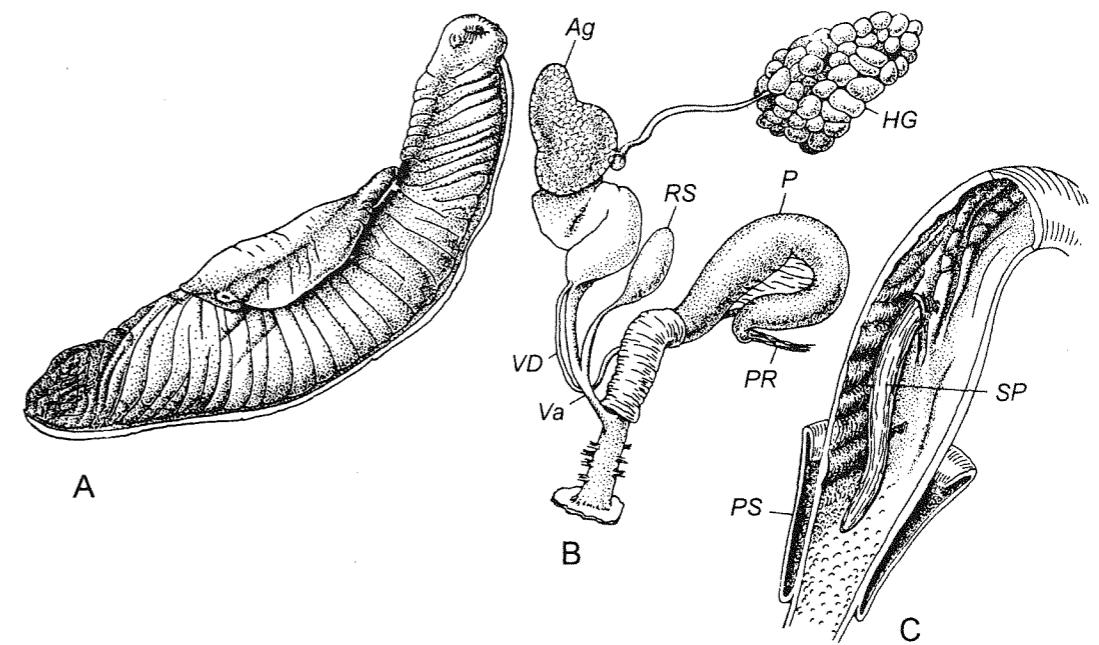


Fig. 1899. *Drilolestes retowskii* (O. Boettger, 1883). A — external view. B — reproductive tract. C — interior of penis. After Likharev & Wiktor, 1980.

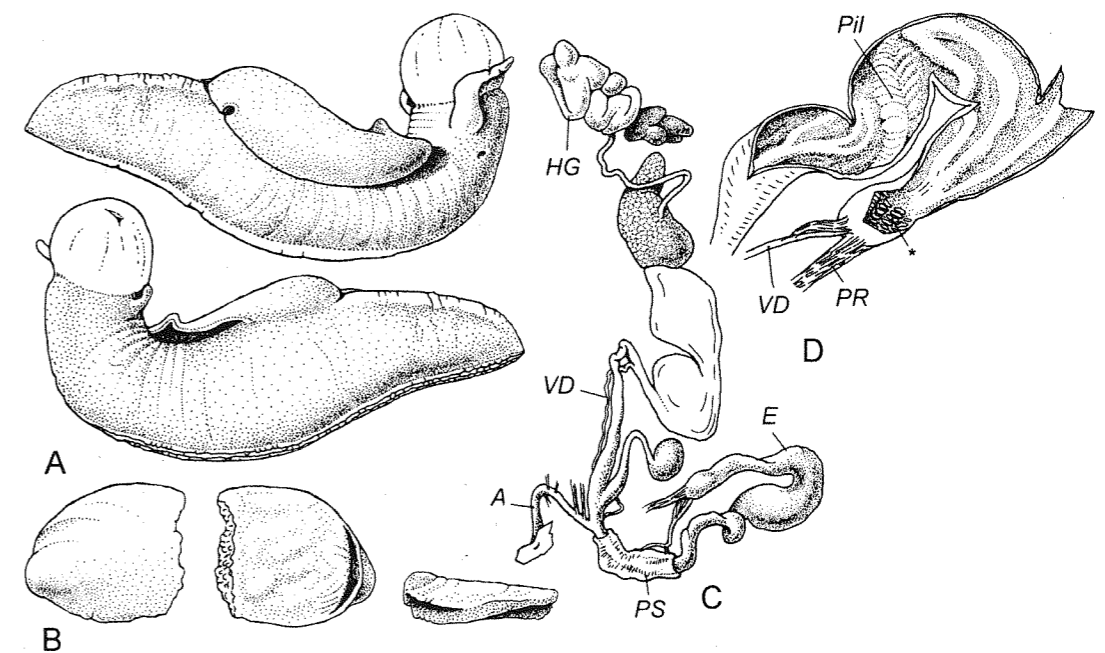


Fig. 1900. *Lesticulus nocturnus* Schileyko, 1988. Cave Ophicho near Cumistavi village (Tzhaltubo district, Georgia), January, 1987. Holotype. A — external view of animal in two positions. B — shell. C — reproductive tract. D — interior of penis. Moscow No. Lc-22803. Asterisk — relief within terminal enlargement of penis.

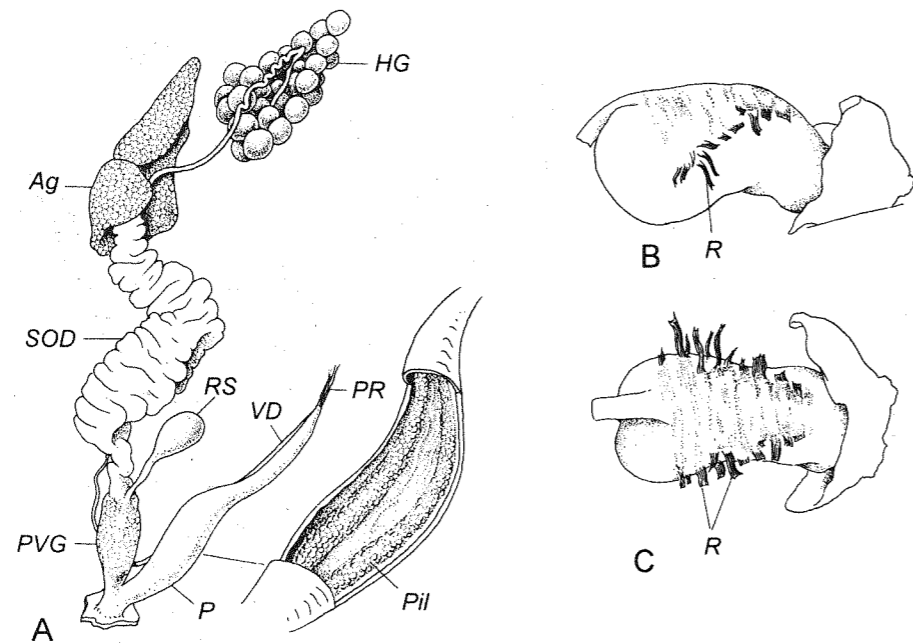


Fig. 1901. *Boreolestes likharevi* Schileyko et Kijashko, 1999. West-facing slope of Oshten Mount, Oshten-Fisht Mountains, NW Caucasus, June 24, 1997. Holotype. A — reproductive tract and interior of penis. B, C — throat in two positions. SPb.

attending lower part of spermooviduct. Atrium very long, slender, connected to body wall by thin muscle bundles.

DISTRIBUTION. W Caucasus, Cave Ophicho near Cumistavi village (Tzhaltubo district, Georgia). 1 sp.

Boreolestes Schileyko et Kijashko, 1999
Fig. 1901

Schileyko & Kijashko, 1999: 39.

TYPE SPECIES — *Boreolestes likharevi* Schileyko et Kijashko, 1999; OD.

Preserved animals elongated-ovate, rounded at both ends. Mantle very large, covering entire back of slug. Mantle surface covered with small papillae. Pneumostome situated not far from posterior end of mantle. Cephalic shield occupying somewhat less than 1/3 of mantle length. Upper surface of mantle strongly pigmented, leaden-colored; indistinct blotches with whitish dots in center seen at magnification. Horseshoe-like groove on mantle normally developed or presented by only its right branch. Orifice of genital atrium situated slightly behind right tentacle base.

Shell composed of thickened nucleus and very delicate, fragile spatula. Lung cavity very small. Venation scarcely visible.

Eyes normally developed.

Throat length about 1/4 of body length. Numerous retentors attached to throat obliquely-laterally, along one irregular line. Radula of normal "carnivorous" type but teeth relatively small. Jaw rudimentary, transparent, exceptionally thin.

Reproductive tract without accessory organs except for perivaginal gland. Hermaphroditic gland consisting of 1 clump of spherical acini. Talon hidden. Penis fusiform, internally with 2 broad longitudinal pilasters covered with numerous minute papillae; glandular pads or penial ampullae in penis not found. Penis sheath absent. Penial retractor attached to penis apically. Free oviduct rather short, about same length as vagina. Perivaginal gland well developed, surrounding vagina and base of spermatheca. Spermathecal stalk short, slender, reservoir ovate, adhering to lower portion of spermooviduct. Atrium short.

DISTRIBUTION. NW Caucasus (Oshten-Fisht Mts.). 2 spp.

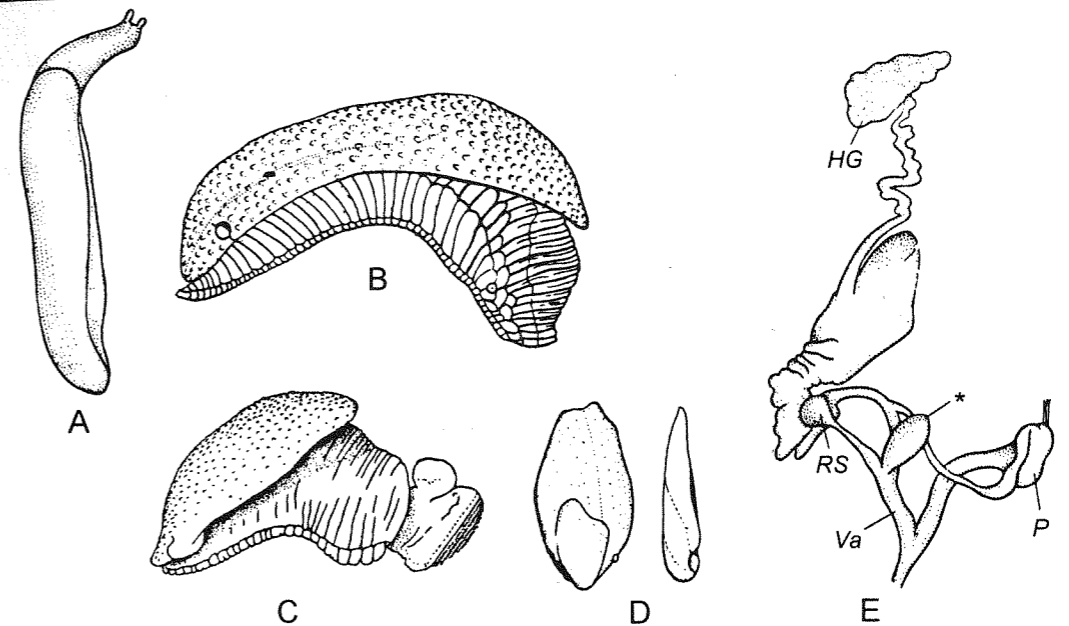


Fig. 1902. *Troglolestes sokolovi* Ljovushkin et Matiokin, 1965. A — crawling animal. B — contracted animal. C — contracted animal with everted throat. D — shell in two positions. E — reproductive tract. A, B, D, E — after Ljovushkin & Matekin, 1965. C — after Likharev & Wiktor, 1980. Asterisk — accessory organ on spermathecal stalk.

Troglolestes Ljovushkin et Matiokin, 1965
Fig. 1902

Ljovushkin & Matiokin, 1965: 36.

TYPE SPECIES — *Troglolestes sokolovi* Ljovushkin et Matiokin, 1965; monotypy.

Body snow-white, clavate-cylindrical when crawling. Mantle covers nearly entire upper side of body leaving only head, part of neck and posterior end of tail open. Pneumostome lies at hind end of mantle. Cephalic shield large, occupies anterior 1/4 of mantle. Upper surface of mantle covered with numerous tubercles. Horseshoe-like groove weakly developed. Eyes rudimentary. Body length of crawling slug up to 32 mm.

Shell similar to that of *Trigono-chlamys*.

Throat occupies about 1/3 of body length. Two regular rows of protractors connect throat with lateral and upper walls of neck. Jaw seemingly absent.

Lung cavity minute. Venation not visible. Heart disposed to left and ahead of kidney. Heart axis inclined to right, auricle in front of ventricle.

General trunk of columellar muscle sub-

divided into 3 principal branches: tentacular, throat, and 1 between them; latter forked at distal end. Vas deferens rather short, entering weakly defined epiphallus apically. Penis clavate. Free oviduct and vagina moderately long, subequal in length. Spermathecal stalk rather short, with a muscularized accessory organ containing papilla. Reservoir subglobular, bound to lower portion of spermooviduct. Atrium rather long.

DISTRIBUTION. W Caucasus (Voron-zovskaya Cave near Sochi). 1 sp.

SELENOCHLAMYDINAE
Likharev et Wiktor, 1980

Likharev & Wiktor, 1980: 327.

Mantle at posterior end of body, its length 15 times less than total length.

Right ocular retractor free from penioviducal angle.

Throat occupies nearly all body cavity.

As a result of detorsion of mantle complex by 180°, heart ventricle lies in front of

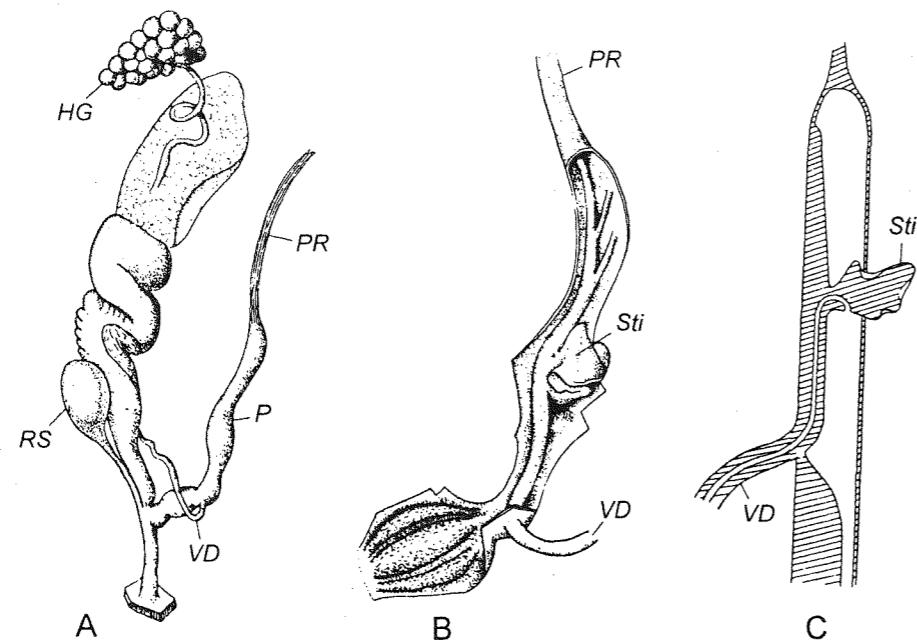


Fig. 1903. *Selenochlamys pallida* O. Boettger, 1883.
A — Voyenno-Sukhumskaya road [Georgia], July 7, 1974. A — reproductive tract. B — interior of penis. C — diagrammatic longitudinal section of penis. After Likharev & Wiktor, 1980.

auricle. Circumoesophageal nervous ring surrounds anterior section of throat.
Vas deferens enters penis laterally.
DISTRIBUTION. W Caucasus and adjacent territories of Turkey.

Selenochlamys O. Boettger, 1883
Fig. 1903

Boettger O., 1883: 141.

TYPE SPECIES — *Selenochlamys pallida* O. Boettger, 1883; monotypy.

Body fusiform-cylindrical, very light in color, with unusually narrow sole. Mantle minute, strongly shifted backward, without a horseshoe-like groove, or it is very weak. Keel very short but strong. Body length up to 22 mm when contracted.

Shell tiny, fragile, rounded.

Strong protractors branched off from posterior half of throat.

Network of blood vessels in lung cavity not discovered.

Columellar system of retractors disintegrated into independent retractors of tentacles and throat. Penial retractor arises from upper wall of body in front of mantle complex.

Vas deferens entering penis at considerable distance from its blind end. Internally distal portion of penis with 3 longitudinal folds covered with minute tubercles; proximal portion (blind end) contains 1 strong pilaster branched backwards. On this pilaster a large tongue-like stimulatory process (a sort of verge) situated; duct of vas deferens pierces base of process and opens to penis lumen. Penial ampullae seemingly absent. Free oviduct moderately long. Vagina absent. Spermathecal stalk not long, reservoir not attending midway of spermoviduct. Atrium rather long.

DISTRIBUTION. As in subfamily. 1 sp.

PAPILLODERMIDAE
Wiktor, Martin et Castillejo, 1990

Wiktor et al., 1990: 1.

Shell flattened but coiled, with bottom part preserved. Body fusiform, covered with regular rows of conic papillae. Mantle very small, slightly shifted to anterior end, in shape of a narrow ring in whose opening a fragment of last shell whorl visible.

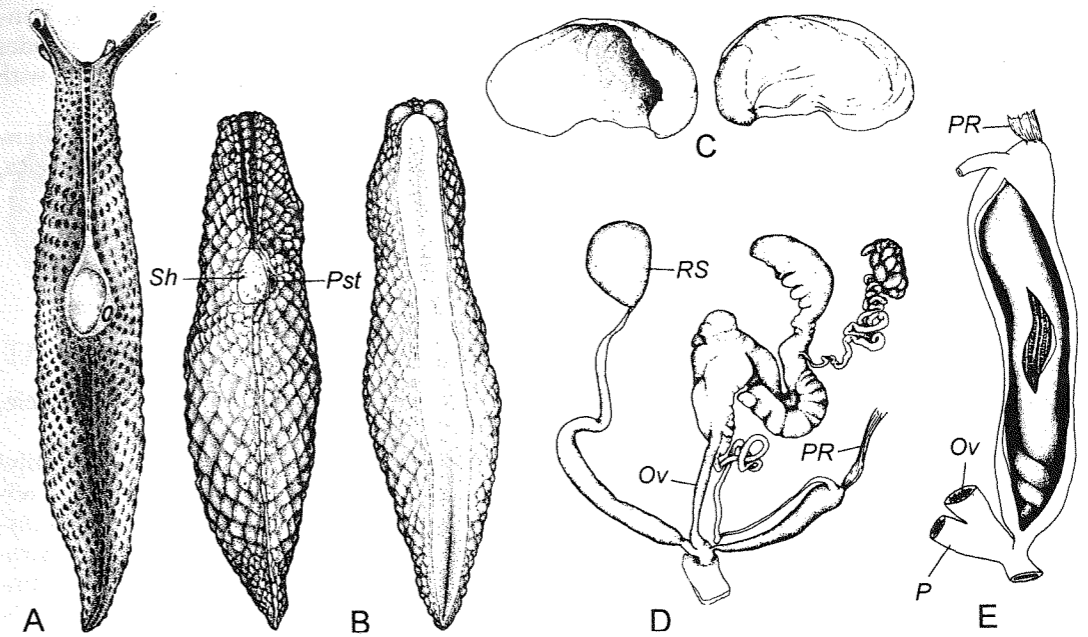


Fig. 1904. *Papilloderma altonagai* Wiktor, Martin et Castillejo, 1990.
A — crawling slug. B — two views of preserved specimen. C — shell. D — reproductive tract. E — interior of penis. After Wiktor et al., 1990.

Sole undivided.
Jaw absent.
Alimentary tract forms 1 big and 1 rudimentary loops.
Genital atrium short. Penis internally with a large verge; penial ampullae absent. Penis sheath missing.
DISTRIBUTION. N Spain.

Papilloderma Wiktor, Martin et
Castillejo, 1990
Fig. 1904

Wiktor et al., 1990: 3.

TYPE SPECIES — *Papilloderma altonagai* Wiktor, Martin et Castillejo, 1990; OD.

Body length of preserved specimens up to 27 mm.

Right ommatophoran retractor passes through peni-oviducal angle. Talon not located. Vas deferens very long, convoluted, entering penis subapically. Penis clavate, internally with a large, twisted verge filling almost whole lumen of penis. Free oviduct quite long. Vagina absent. Spermathecal stalk thickened in lower section, very long,

approximately equal to length of spermoviduct. DISTRIBUTION. N Spain. 1 sp.

VITRINOIDEA Fitzinger, 1833

Fitzinger, 1833: 91.

Shell thin, trochoid (vitrinoid), auriform to plate-like. Mantle in slug-like taxa large. Sole tripartite. Caudal foss or caudal horn absent.

Head wart absent.
Jaw oxygnathous.

Flagellum or epiphallus missing. Penis short, with variously developed gland in its walls. Penial caecum absent; rarely a small process on penis may be present. Penis sheath present. Sarcobelum vaginal or absent; when present, with or without thorn. Vagina simple or with internal papilla. Perivaginal gland present. Atrium lacks appendix. Spermatophores missing.

Omnivorous or carnivorous.
DISTRIBUTION. Holarctic; Arabian Peninsula, highland regions of Central and N Africa, islands of E Atlantic (Azores, Canaries, Madeira, Cabo Verde).

VITRINIDAE Fitzinger, 1833

Fitzinger, 1833: 91 (as Vitrinoidea).

Snails, semislugs or regular slugs. In accordance with degree of shell reduction visceral hump variously shifted backward. Skin of cephalopodium thin.

Shell low-conic to ear-shaped or plate-like, very thin, of 1.5-3.5 whorls, smooth or finely radially wrinkled. Embryonic whorls smooth, with radial wrinkles or microscopic dots, usually gathered into spiral rows. Aperture ample; when shell reduced, basal margin of aperture turns to membranous fringe (i.e. in this part only periostracum remains), which may be resorbed. Length of crawling animal up to 50 mm.

Pharynx moderately developed, paired pharyngeal retractors branched off ommatophoran retractors.

Albumen gland comparatively small, of irregular shape. Penis with a gland located in its thickened walls, and with well developed longitudinal pilaster(s). Vas deferens pierces penial gland. Female part of genitalia with appendages: these represented by either vaginal gland or sarcobelum, including 1 or 2 papillae; sometimes appendages absent. Spermatheca variously developed, rarely (*Trochovitrina*) absent.

DISTRIBUTION. As in superfamily.

PLUTONIAINAE Cockerell, 1893

Cockerell, 1893: 186 [as Plutoniinae; nom. praecoc., non Bollman, 1893 (Chilopoda)].

— Vitriplutoniinae Collinge in Cockerell, 1893: 204 ("*Plutonia*. It appears that this name has ... been used for a genus of trilobites"; footnote: "If any change is necessary, the generic name had better be altered, seeing that it is preoccupied. I would therefore suggest that the subfamily ... read — Vitriplutoniinae Cllge = Plutoniinae Ckll. *Vitriplutonia* Cllge = *Plutonia* Stab.").

— Phenacohelicinae Schileyko, 1986c: 125 (as Phenacolimacidas, err. typogr.)

Backhuys, 1975: 146.

Shelley & Backeljau, 1995: 150 (proposed spelling Plutoniinae). Wiktor & Backeljau, 1995: 69 (pro fam.).

Shell turbinate (vitrinoid) or ear-shaped (semislugs or slugs); in latter case basal margin may bear a thin periostracal fringe. Last whorl rounded or angulated at periphery.

Penis sheath absent. Vagina long, consisting of 2 sections; upper section includes well developed gland, usually furnished with a papilla. Sarcobelum missing.

DISTRIBUTION. Palearctic, Arabian Peninsula, NE Africa (Ethiopia), Madeira, Azores and Canary Islands.

Arabivitrina Thiele, 1931
Fig. 1905

Thiele, 1931: 600 [*Vitrina* (*Insulivitrina*); sect.].

TYPE SPECIES — *Vitrina arabica* Thiele, 1910; monotypy.

Shell comparatively (for the family) solid, of 3-3.75 whorls. Color generally yellowish. Embryonic whorls more or less distinctly spirally dotted, next 1-1.5 whorls radially wrinkled, on subsequent whorls wrinkles become weaker and less regular. Columellar margin of aperture somewhat callously thickened. Height up to 14.5, diam. up to 18.0 mm (Paris: 13.3 × 14.8 mm; illustrated syntype: 11.2 × 16.9 mm).

Vas deferens entering penis laterally. Penis large, sac-like, internally with a large, corrugated axial pilaster. Penial retractor attached subapically. Free oviduct moderately long. Vagina long, stout, surrounded by well developed gland, internally with a short papilla. Atrium rather long. Spermathecal shaft moderately long.

DISTRIBUTION. SW Arabian Peninsula, NE Africa (Ethiopia). About 12 spp.

REMARK. The shell inspected by me in Paris differs markedly from the shell of syntype illustrated by Neubert (1998b) by the height/diam. ratio (comp. fig. 1905 A & B). At the same time Neubert (op. cit.: 387) indicates that "The specimens from Yemen (pass over Sumara mountains) have a strongly elevated spire. The shells are more conical than the syntypes...".

Insulivitrina Hesse, 1923
Fig. 1906

Hesse, 1923: 131.

— *Insulina* Forcart, 1946: 37 (nom. err. pro *Insulivitrina* Hesse, 1923).

Schileyko, 1986: 126.

TYPE SPECIES — *Helicolimax lamarckii* Féruccac, 1821; SD Hesse, 1924.

Shell low conic to slightly ear-shaped, of about 3 whorls. Last whorl rounded at

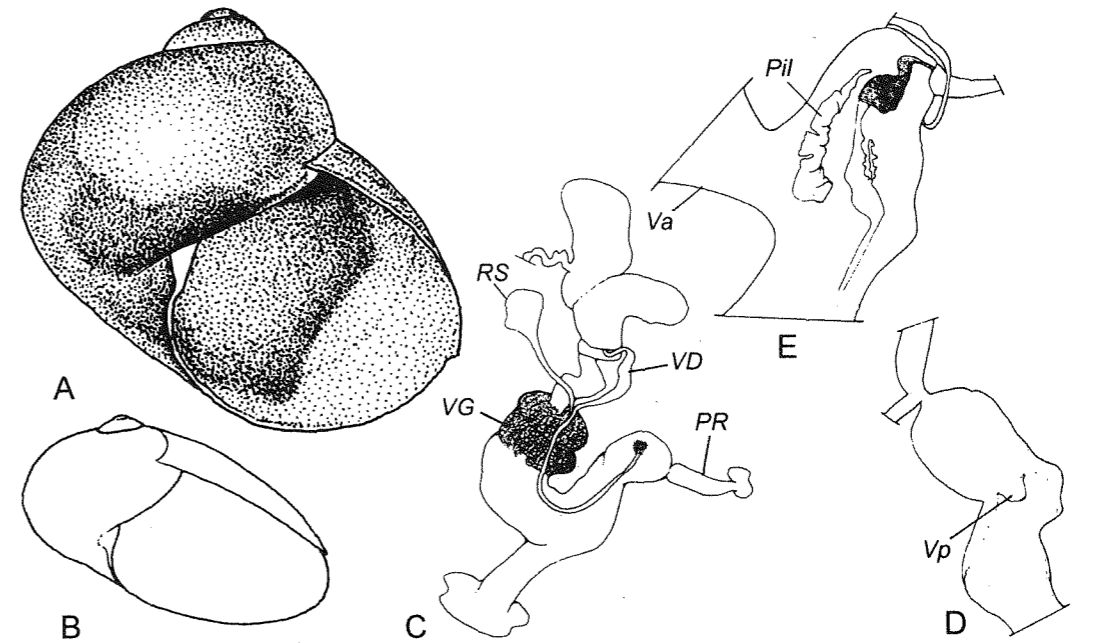


Fig. 1905. *Arabivitrina arabica* (Thiele, 1910). A, B — shells: A — "Yemen: entre Dhamar et Yarim". Paris. B — syntype. C — reproductive tract. D — interior of vagina. E — interior of penis. After Neubert, 1998b. VG — vaginal gland.

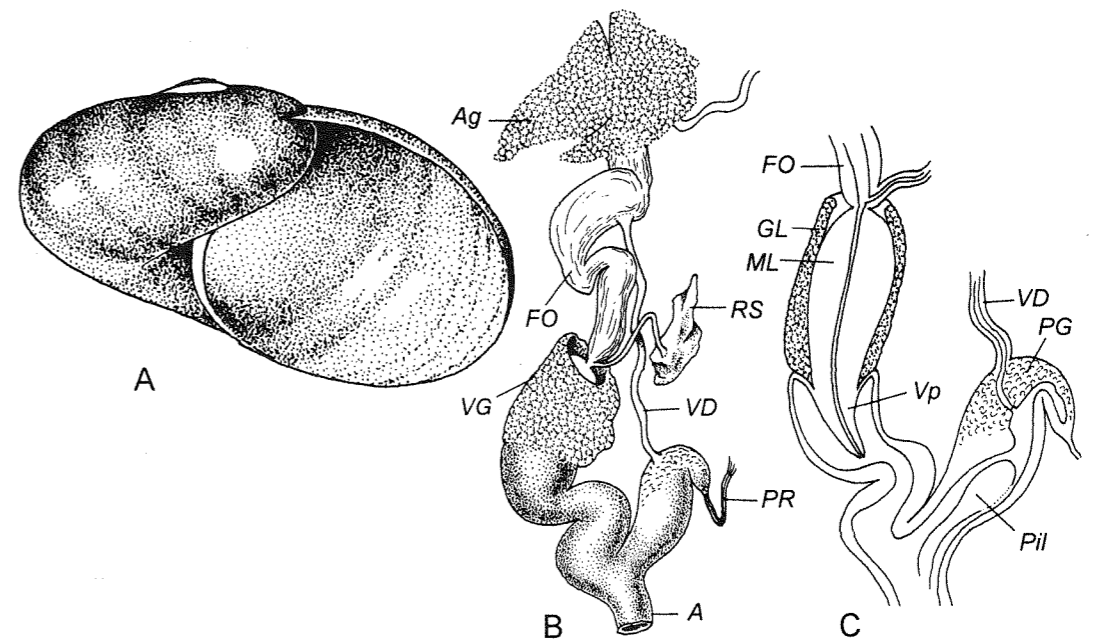


Fig. 1906. *Insulivitrina lamarcki* (Féruccac, 1821). A — shell: Madeira. Syntype. Phil. No. 97226. B — reproductive tract. C — longitudinal section of distal part of genitalia (semidiagrammatic). After Schileyko, 1986c. VG — vaginal gland

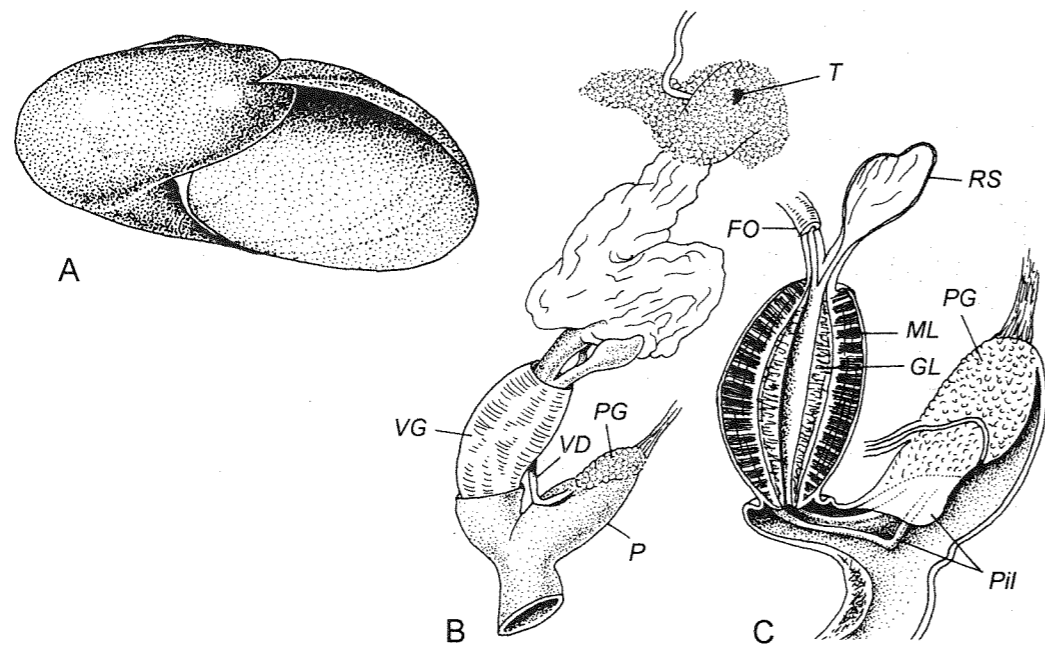


Fig. 1907. A — *Phenacolimax major* (Féussac, 1807). Shell: "Le Midi de la France". Syntype. Paris. B, C — ! *Phenacolimax annularis* (Studer, 1820). Sapitskaya Budka Hill near Vladikavkaz, N Caucasus, November 8, 1952. B — reproductive tract. C — interior of distal parts of genitalia. SPb. VG — vaginal gland.

periphery. Color yellowish to greenish or pale-corneous. Both embryonic and later whorls lacking regular sculpture. Aperture ample, periostracal fringe of its basal margin weakly developed or absent. Height 5-11, diam. 8-15 mm (7.4 × 11.3 mm).

Vas deferens rather short, entering penial gland. Penis short, club-shaped, without external appendices, its upper end sometimes narrowed. Internally penis with a bulky pilaster. Free oviduct (moderately) long. Vagina also long, containing well developed and highly muscled papilla with very narrow duct. Externally papilla covered by a layer of glandular tissue. Spermathecal shaft slender, rather long; reservoir not attending albumen gland.

DISTRIBUTION. Canary Islands, Madeira, Azores. About 15 sp.

Phenacolimax Stabile, 1859
Fig. 1907

Stabile, 1859: 422.

— *Gallandia* Bourguignat, 1880a: 4 (t.-sp. *Vitrina conoidea* sensu Bourguignat non Martens, 1874 = *Gallandia olympica* Hausdorf, 1995; OD).

— *Vitrina* Hesse, 1923: 82, 96 (non Draparnaud,

1801; t.-sp. *Helico-limax major* Féussac, 1807; OD). Schileyko, 1986: 128.

TYPE SPECIES — *Helico-limax major* Féussac, 1807; SD Fischer in Paulucci, 1878.

Shell low-conic, of 3-3.5 whorls. Last whorl rounded. Color yellowish or slightly greenish. Embryonic whorls pitted with tiny, round depressions which more or less arranged in spiral rows. Postapical whorls in places may retain same sculpture. Aperture large, its basal margin without periostracal fringe. Height 2-5.5, diam. 4-10 mm (3.5 × 7.4 mm).

Talon pigmented with black. Vas deferens comparatively short, enters middle part of penis and piercing penial gland. Penis short, conic or sac-like, without appendices; internally with 1 or 2 pilasters. Free oviduct short. Vagina large, internally with thick-walled papilla which has comparatively broad lumen. Peripheral layer of papilla generally consists of radial muscle bundles, inner layer — of glandular tissue. Spermathecal duct very short.

DISTRIBUTION. Mountain regions of Palearctic: Pyrenees, Alps, Apennines, Car-

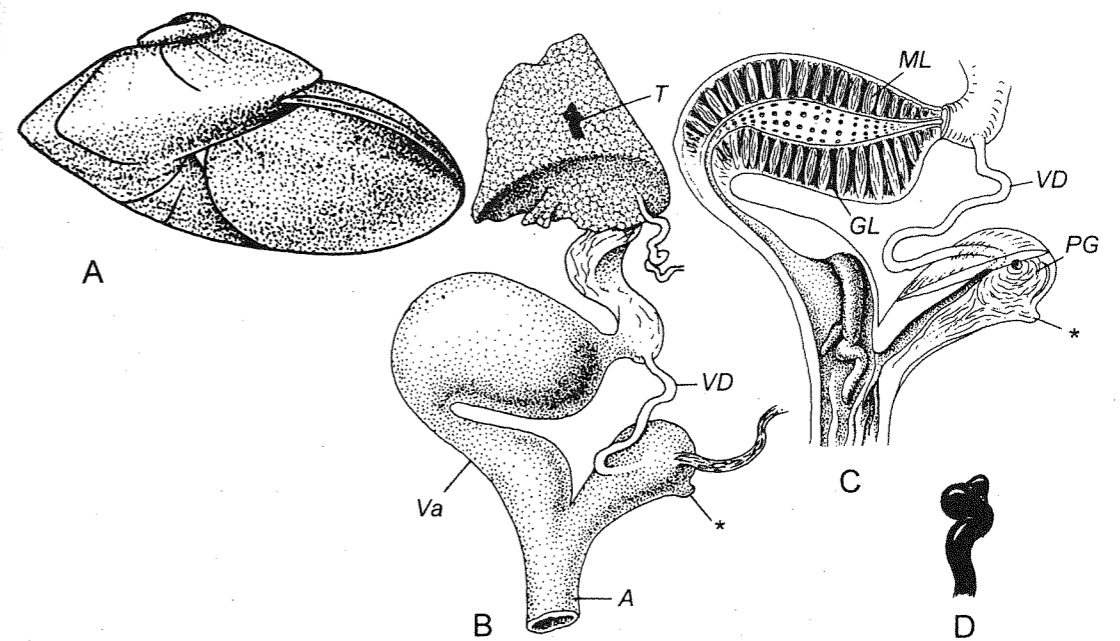


Fig. 1908. *Trochovitрина lederi* (O. Boettger, 1878). Kurumba village, Talysh Mts., SE Azerbaijan, March 24, 1965. A — shell. B — reproductive tract. C — interior of distal part of genitalia. D — talon enlarged. Moscow No. Lc-19985.

pathians, west of Asia Minor, Crimea, Caucasus, Central Asia. 6-10 spp.

REMARK. Hausdorf (1995: 70-71) believes that *Phenacolimax* and *Gallandia* are different genera and writes: "Because no characters could be found until now which characterize *Gallandia*..., the name *Gallandia* will be used here preliminary only for the eastern species originally included in this genus by Bourguignat (1880)". Since Hausdorf has not presented the diagnoses of both taxa, there is no reason to separate them at the moment.

Trochovitрина O. Boettger, 1880
Fig. 1908

Boettger O., 1880: 379.

TYPE SPECIES — *Lampadia lederi* O. Boettger, 1878; monotypy.

Shell depressed-conic, very fragile, translucent, of 2.5-3 flattened whorls. Last whorl distinctly angulated at periphery. Color corneous or greenish. Embryonic whorls with fine radial striae. Later whorls delicately but distinctly radially striated.

Aperture ovate, well oblique, without periostracal fringe. Height up to 4.0, diam. up to 5.8 mm (3.9 × 5.5 mm).

Talon rather long, twisted, strongly pigmented. Vas deferens short, entering middle part of penis. Penis shortly club-shaped, its thickened upper end bears a small tubercle. Internally penis without regular relief. Distal part of female section (free oviduct + vagina) long, its upper portion much enlarged, very thick-walled; walls contain numerous muscular bundles and glands which open by distinct pores into lumen of vagina. Spermatheca absent.

DISTRIBUTION. SE Caucasus (Suram Range, Lenkoran lowland) and Elburz Mts. including Talysh Mts. 1 sp. with 2 subspp.

REMARK. Hausdorf (1995: 72) places *Trochovitрина* to the synonymy of *Gallandia* Bourguignat, 1880. At the same time he writes: "If one wants to express the divergence between *G. lederi* and the other *Gallandia* species nomenclatorically by separating *Trochovitрина* ... as a genus (or subgenus), *Gallandia* (s. str.) would either become paraphyletic or another (sub-)genus ...". To my mind, this is a good example of cladistic mode of thinking.

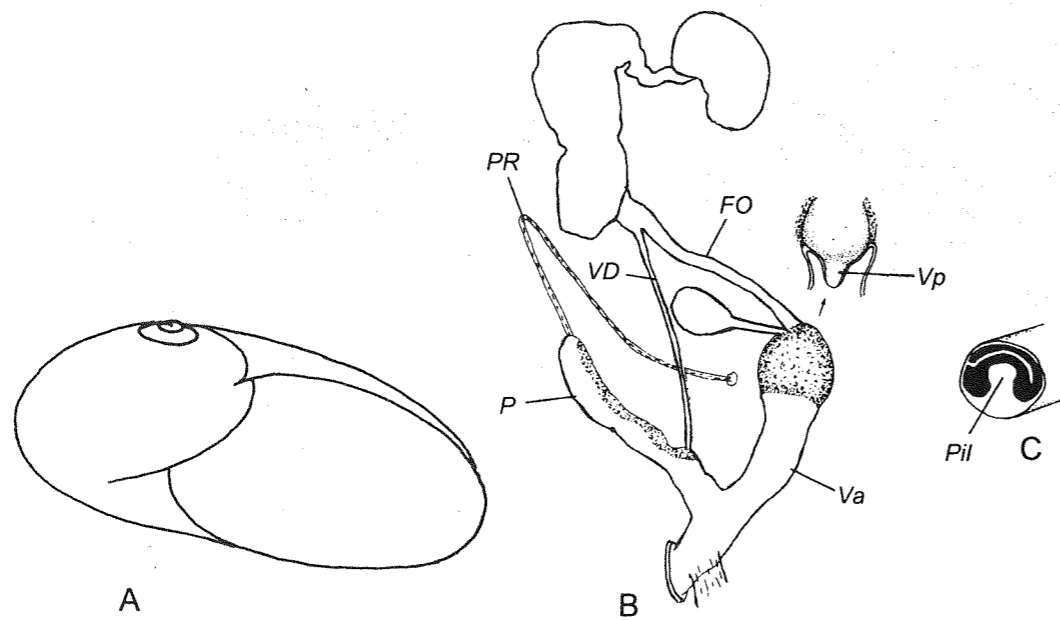


Fig. 1909. *Plutonia (Canarivitrina) taburientensis* Groh et Valido. A — shell. B — reproductive tract and interior of vagina. C — interior of penis. After Alonso et al., 2000.

***Plutonia* Stabile, 1864**

Stabile, 1864: 120, 121.

— *Vitriplutonia* Collinge in Cockerell, 1893: 204 [nom. nov. pro *Plutonia* Stabile, 1864 (see synonymy under family name)].

Wiktor & Bäckeljaug, 1995: 69.

TYPE SPECIES — *Viquesnelia atlantica* Morelet, 1860; monotypy.

Shell vitrinoid to *Testacella*-like, hidden completely under mantle lobes.

Vas deferens rather short.

DISTRIBUTION. Azores and Canary Islands.

Plutonia (Canarivitrina)

Valido et Alonso, 2000)

Fig. 1909

Valido & Alonso in Alonso et al., 2000: 56.

TYPE SPECIES — *Plutonia (Canarivitrina) taburientensis* Groh et Valido, 2000; OD.

Shell vitrinoid.

Vas deferens entering lower section of penis through a globular to cylindrical verge. Penis divided into 2 portions. Proximal portion long, slender, internally with 2 axial structures: long, solid pilaster ("torus") and opposite, thin velum. Distal portion short, slightly widened, internally without special relief. Verge and torus

coated by penial gland. Penial retractor attached to penis apically.

DISTRIBUTION. Canary Islands. 5 spp.

Plutonia (Plutonia s. str.)

Fig. 1910

Slugs with internal shell.

Vas deferens moderately long, entering penis apically through a very short, sphincter-like verge having slit-like pore. Penis short, with very narrow lumen and large penial gland; internally without regular relief. Free oviduct short. Vagina long, with a large papilla. Vaginal gland not found. Spermathecal stalk comparatively long, reservoir lying on lower part of spermooviduct. DISTRIBUTION. Azores. 1 sp.

***Guerrina* Odhner, 1954**

Fig. 1911

Odhner, 1954: 60 (*Vitrina* sect.). Valido et al., 1993: 117.

TYPE SPECIES — *Helix cuticula* Shuttleworth, 1852; OD.

Shell trochoid, extremely thin, whorls count up to 3. Body whorl angulated at periphery. Color corneous or olivaceous.

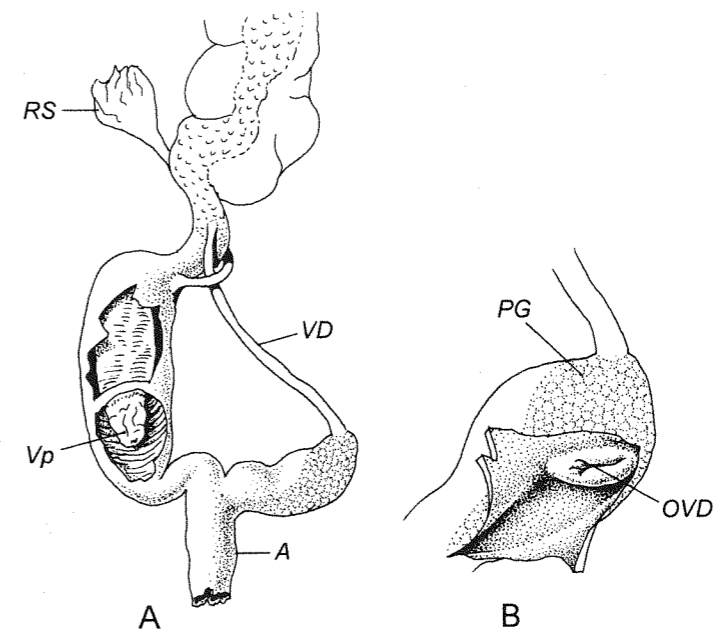


Fig. 1910. *Plutonia (Plutonia) atlantica* (Morelet, 1860). "Ponta Delgado, Azoren". Vienna No. 22875. A — reproductive tract, vagina dissected. B — interior of penis.

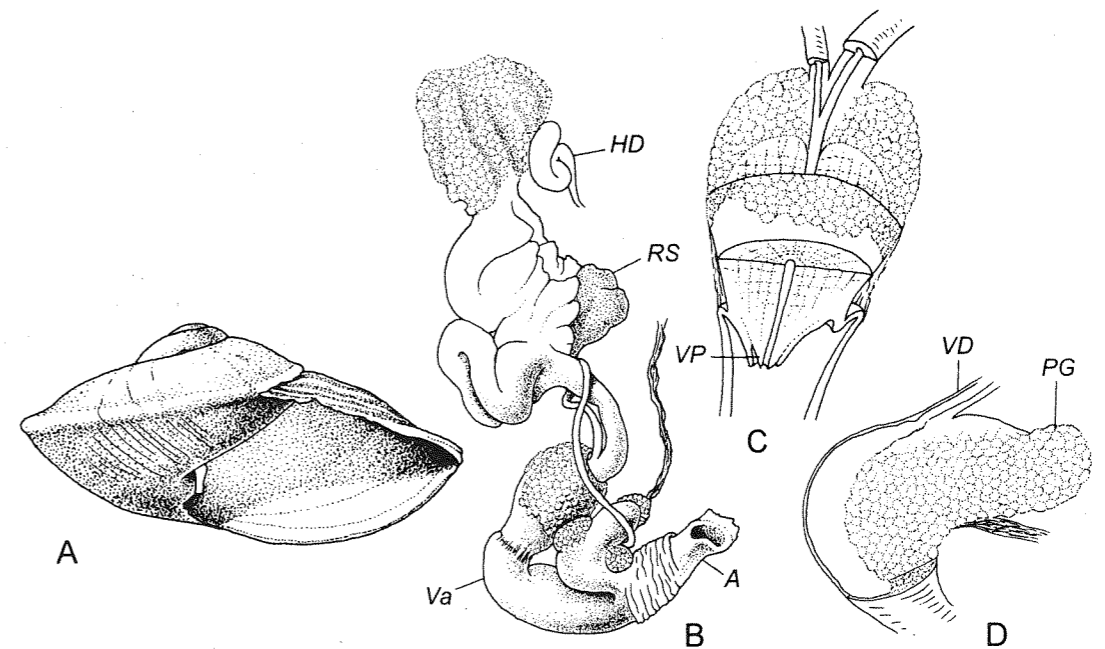


Fig. 1911. *Guerrina cuticula* (Shuttleworth, 1852). A — shell: Palma, Canary Islands. Paris. B, C, D — Canary Islands, Tenerife, Aguamansa (4 km SSE of La Orotava), March 13, 1947. B — reproductive tract. C — interior of vagina. D — interior of penis. Leiden.

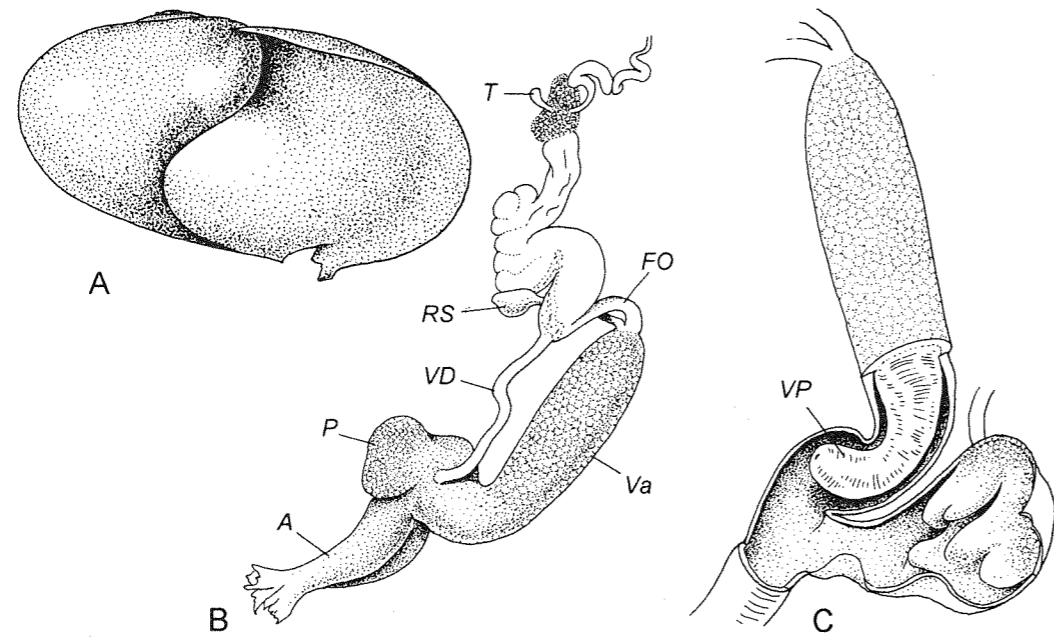


Fig. 1912. *Madeirovitrina nitida* (Gould, 1848).
At Ribeira do Inferno, Madeira, September 18, 1991. A — shell. B — reproductive tract.
C — interior of vagina and penis. Moscow No. Lc-25607 (shell), Lc-25627 (soft parts)
(Cardiff No. 2.1991.092).

Embryonic whorl densely dotted. Postapical whorls coarsely radially striated. Aperture angulated, well oblique, its margin without periostracal fringe. Height up to 4, diam. up to 7 mm (2.3 × 4.5 mm).

Talon not located. Vas deferens moderately long, entering penis laterally through a simple pore. Penis short, with narrow lumen, lunate in cross-section; about 3/4 of its circumference surrounded by penial gland. Internally penis without regular relief. Penial retractor attached to penial gland. Free oviduct rather long. Vagina long, its proximal section swollen, covered with outer glandular layer and contains a short papilla; inner layer of papillar section of vagina strongly muscular and pierced by very narrow ducts of glandular layer. Spermathecal stalk moderately long, reservoir embedded to middle part of spermooviduct.

DISTRIBUTION. Canary Islands. 2 spp.

Madeirovitrina

Groh et Hemmen, 1986

Fig. 1912

Groh & Hemmen, 1986: 186 (*Phenacolimax* subg.).

TYPE SPECIES — *Vitrina nitida* Gould, 1848; OD.

Shell somewhat membranous, of about 3 whorls, covered with mantle lobes. Color yellowish to greenish. Height 3.5-8.7, diam. 8.2-15.5 mm (6.0 × 10.9 mm).

Talon exposed, comparatively large, clavate. Vas deferens rather short, entering basal or middle part of penis through a slit-like pore. Penis short, of irregular shape, with thick glandular walls. Penial retractor apical or subapical. Free oviduct short. Vagina long, stout, with well developed papilla; vaginal gland with external glandular layer. Atrium enormously long.

DISTRIBUTION. Madeira and nearby islets. 15 spp.

SEMILIMACINAE Schileyko, 1986

Schileyko, 1986: 131.

Snails or semislugs. Shell ear-shaped, basal margin of aperture with periostracal fringe (exception: genus *Oligolimax* with

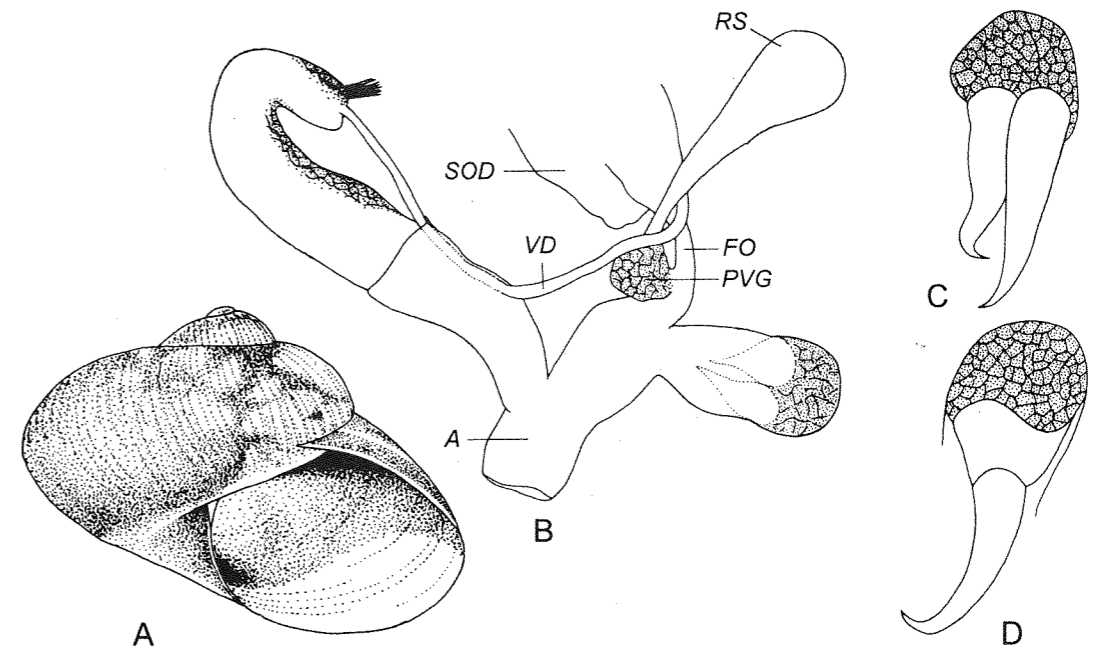


Fig. 1913. A — *Oligolimax bonellii bonellii* (Targione Tozzetti, 1873).
Shell: No data. "Type" of *Vitrina paulucciae* Fischer, 1878. Paris. B, C, D — ! *Oligolimax bonellii reiteri* (O. Boettger, 1880). B — reproductive tract. C, D — "brachia copulatoria", enlarged. After Grossu, 1979.

normal vitrinoid shell having rounded periphery and lacking periostracal fringe).

Penis sheath present. Vagina short, not subdivided into portions, without vaginal gland or papilla; at most a very short papilla may be present which is a modified sphincter lacking glandular elements. Sarcobelum initially present (missing in *Eucoebresia*), includes a fleshy papilla or 1 or 2 thorn-like processes.

DISTRIBUTION. Mountain systems of Central and W Europe.

Oligolimax Fischer, 1878

Type genus — *Oligolimax* Fischer, 1878.

Shell normal vitrinoid, aperture lacking periostracal fringe. Sarcobelum contains 1 or 2 thorn-like processes.

DISTRIBUTION. S Europe.

Oligolimax Fischer, 1878

Fig. 1913

Fischer in Paulucci, 1878: 23.

— *Semilimacella* Soós, 1917: 94 [*Vitrina* subg.; t.-sp. *Vitrina velebitica* Soós, 1917 (= *V. bonellii reiteri* O. Boettger, 1880); monotypy].

— *Targionia* Hesse, 1923: 114 (nom. praeocc., non Signoret, 1870; *Vitrinopugio* subg.; t.-sp. *Vitrina bonellii* Targione Tozzetti, 1873, OD).

— *Tozzettia* Hesse, 1924: 226 (nom. nov. pro *Targionia* Hesse, 1923).

— *Balcanovitrina* Osanova et Pintér, 1968: 244 (t.-sp. *Balcanovitrina dojtshini* Osanova et Pintér, 1968; OD).

TYPE SPECIES — *Vitrina paulucciae* Fischer in Paulucci, 1878 (= *Vitrina bonellii* Targione Tozzetti, 1873); OD.

Shell vitrinoid, of 3-3.5 convex whorls. Last whorl with rounded periphery. Color yellow or slightly greenish. Embryonic whorls with fine radial wrinkles. Postapical sculpture of coarse radial wrinkles or even delicate ribs. Aperture comparatively small, quite oblique, its margins without periostracal fringe. Height up to 3, diam. up to 5 mm (2.1 × 3.9 mm).

Vas deferens comparatively long, entering penis apically. Penis long, with penial gland. Penis sheath surrounds basal part of penis. Penial retractor attached to penis at

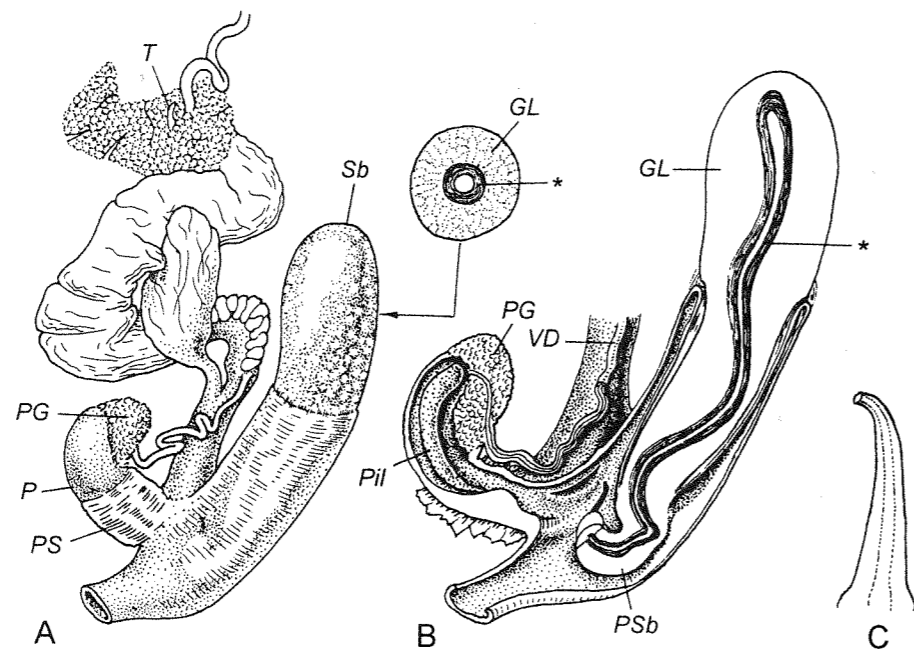


Fig. 1914. *Semilimax (Semilimax) semilimax* (Férussac, 1802). Apshinetz River valley, W Ukraine, September 1, 1982. A — reproductive tract and cross-section through sarcobelum. B — interior of penis and sarcobelum. C — thorn of sarcobelum. SPb. Asterisk — inner conchyolinous lining of papilla of sarcobelum.

base of vas deferens entrance. Free oviduct short. Vagina stout, with conspicuous, much modified sarcobelum, containing 1 or 2 thorn-like processes (brachia copulatoria) having inner ducts. Spermatheca clavate, with rather short stalk; base of stalk coated by a compact perivaginal gland.

DISTRIBUTION. S Europe. Probably 1 sp. with a few subsp.

Semilimacini Schileyko, 1986

Semislugs. Shell auriform, basal margin of aperture with periostracal fringe. Sarcobelum contains 1 fleshy papilla. DISTRIBUTION. As in subfamily.

Semilimax Agassiz, 1845

Agassiz, 1846: 81.

— ? *Chlamydea* Westerlund, 1886: 19 (*Vitrina* subg.; t.-sp. *Vitrina bicolor* Westerlund, 1881; monotypy).

— *Vitrinopugio* Ihering, 1892: 401 (t.-sp. *Vitrina elongata* Draparnaud, 1805; SD Hesse, 1923).

TYPE SPECIES — *Helix semilimax* Férussac, 1802; monotypy and tautonymy.

Shell ear-shaped, basal margin of aperture with periostracal fringe. Penis sheath surrounds basal half of penis. Walls of papilla of sarcobelum glandular, duct of papilla with conchyolinous lining. Sheath of sarcobelum attached to lower portion of papilla, thus most part of papilla is out of sheath. Vaginal papilla absent. Spermathecal duct short.

DISTRIBUTION. As in subfamily.

Semilimax (Semilimax s. str.)

Fig. 1914

Basal wall of shell not resorbed. Diam. up to 5 mm (4.8 mm).

Papilla of sarcobelum topped with a short hollow conchyolinous thorn. Vas deferens not connected with penis sheath. Penial retractor absent.

DISTRIBUTION. As in subfamily. 1 sp.

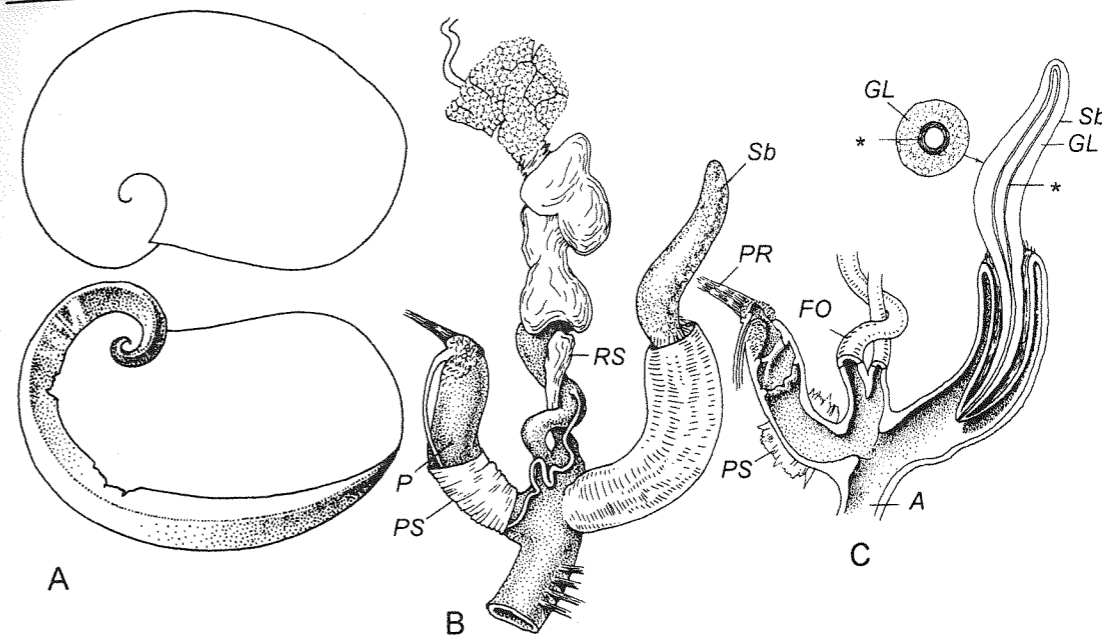


Fig. 1915. *Semilimax (Hessemilimax) kotulai* (Westerlund, 1883). A — shell: Kvasy village, Rakhov district, E Carpathians. Moscow No. Lc-19971. B, C — Carpathian National Reserve, Ukraine, August 16, 1982. B — reproductive tract. C — interior of distal part of genitalia and cross-section through sarcobelum. SPb. Asterisk — inner conchyolinous lining of papilla of sarcobelum.

Semilimax (Hessemilimax)

Schileyko, 1986)

Fig. 1915

Schileyko, 1986: 133.

TYPE SPECIES — *Vitrina kotulai* Westerlund, 1883; OD.

Basal wall of shell resorbed. Diam. up to 6 mm (5.5 mm).

Papilla of sarcobelum without a thorn. Part of vas deferens connected with penis by a penis sheath. Penial retractor present.

DISTRIBUTION. Alpine and subalpine zones of mountain systems of Europe from Grayan Alps and Vaux Canton (Switzerland) to Dolomite Alps, Sudetes, Tatra and Carpathians. Probably 1 sp.

Vitrinobrachium Künkel, 1929

Fig. 1916

Künkel, 1929: 624. Schileyko, 1986: 135.

TYPE SPECIES — *Helicolimax breve* Férussac, 1821; monotypy.

Shell ear-shaped, its basal margin with periostracal fringe. Diam. up to 5.5 mm (5.2 mm).

Vas deferens comparatively long, passing under penis sheath. Penis bulky, internally with fold-like pilaster which covers pore of vas deferens. Glandular elements of sarcobelum gathered in its apical portion, duct of papilla without conchyolinous lining. Papilla of sarcobelum with a pair of longitudinal plicae, situated entirely within its sheath; on inner surface of sheath there are sharp annular folds. Free oviduct rather short. Vagina absent as short spermathecal duct entering atrium.

DISTRIBUTION. S Alps and mountains of S and central Germany. 2 spp.

? *Eucobresia* Baker, 1929

Fig. 1917

Baker, 1929: 139 (nom. nov. pro *Semilimax* Hesse, 1923).

— *Semilimax* Hesse, 1923: 86 (nom. praeocc., non Agassiz, 1845; t.-sp. *Vitrina diaphana* Draparnaud, 1805; SD Baker, 1929).

TYPE SPECIES — *Vitrina diaphana* Draparnaud, 1805; OD.

Shell ear-shaped, basal margin of aper-

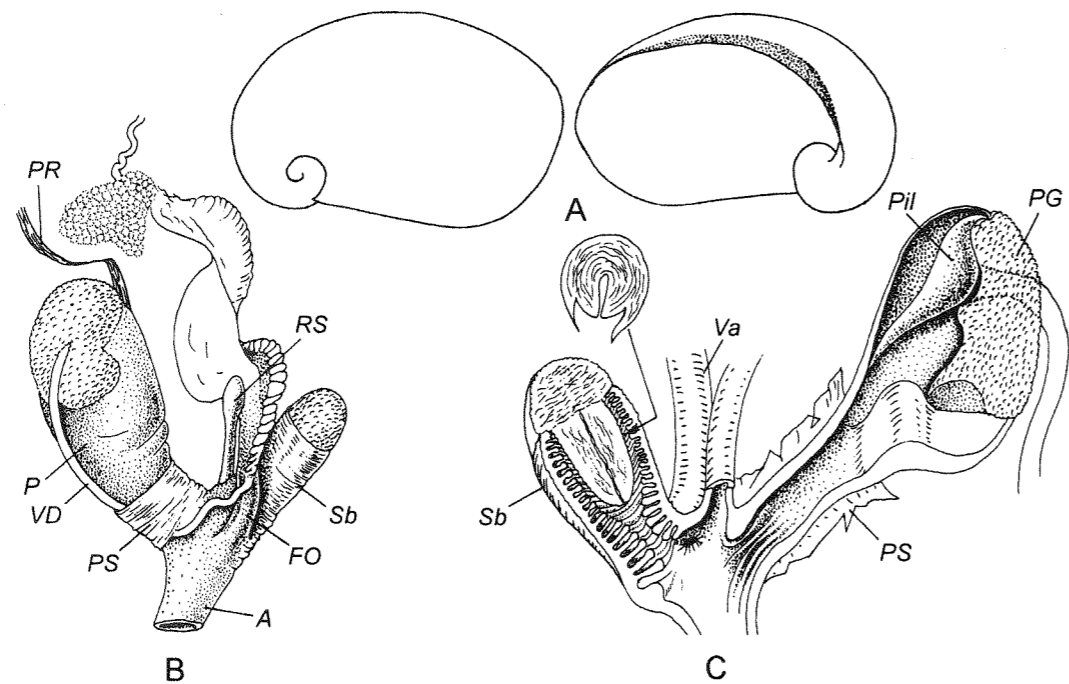


Fig. 1916. *Vitrinobrachium breve* (Férussac, 1821).
A — shell: Brianza, Italy. SPb. B, C — Heidelberg, Germany. B — reproductive tract.
C — interior of distal part of genitalia and cross-section through papilla of sarcobelum.
Moscow No. Lc-16396.

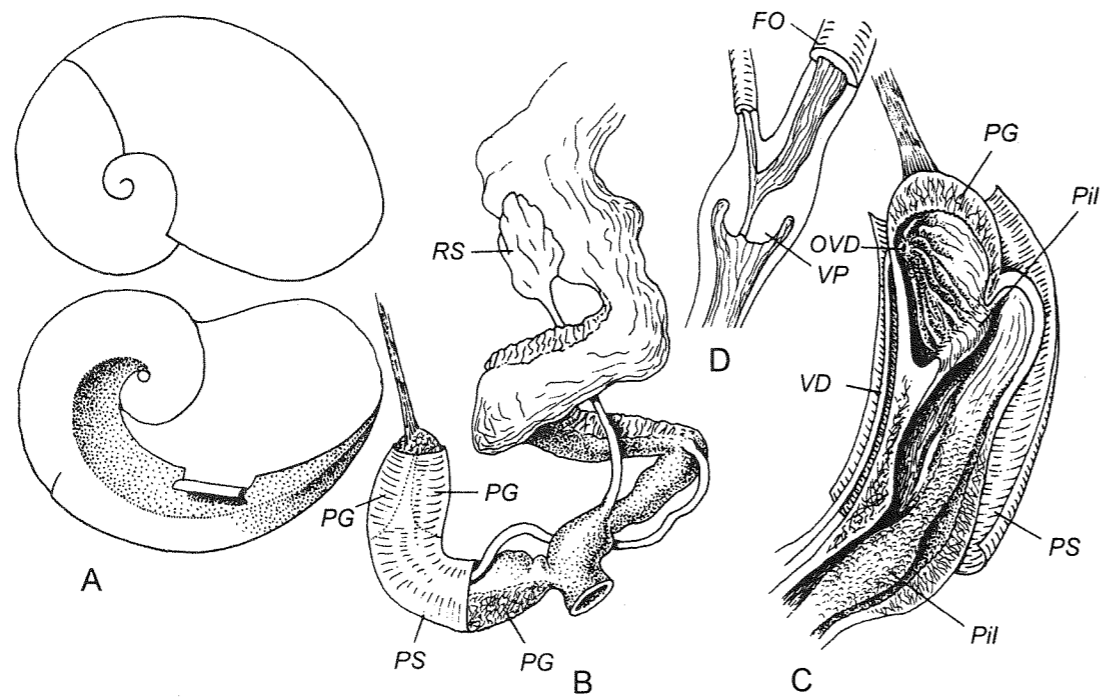


Fig. 1917. *Eucobresia diaphana* (Draparnaud, 1805).
Snezhnik Klotzki Mt., Lower Silesia, Poland, September 4, 1957. A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina, semidiagrammatic. SPb.

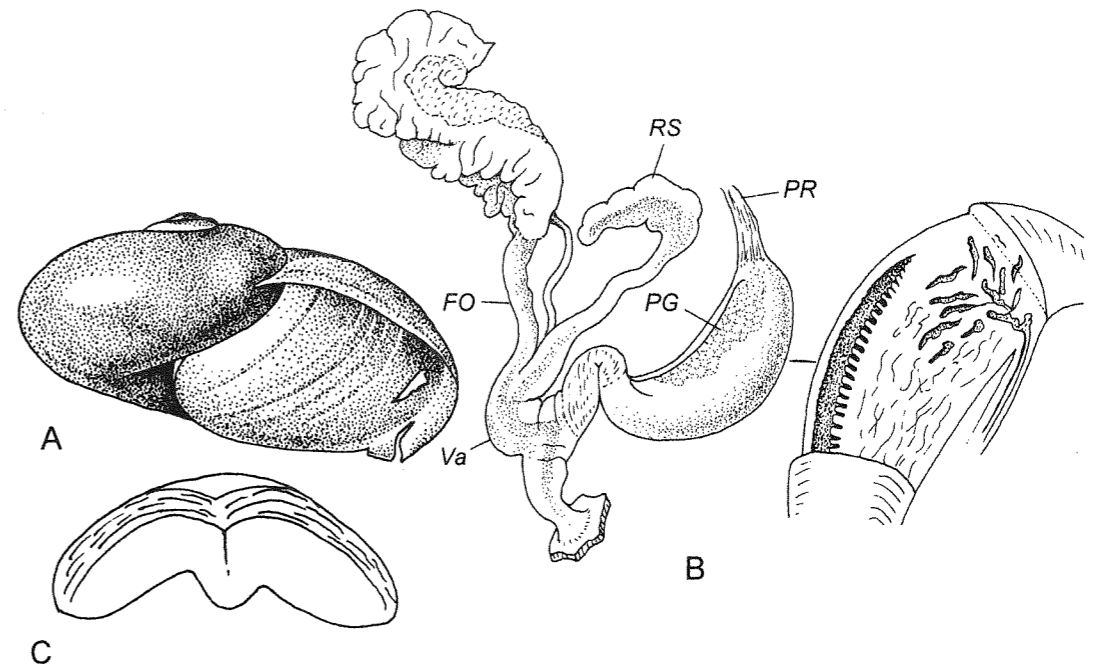


Fig. 1918. *Calidivitrina oleosa* (Martens, 1895).
A — shell: Mt. Ruwenzori, 3500 m above sea level [Kenya]. Phil. No. 117931. B — reproductive tract and interior of penis. Mission l'Omo, 1932-1933, Cherangani near Kitale [Kenya], August 10, 1933. Paris. C — jaw. After Pilsbry, 1919.

ture with periostracal fringe. Diam. up to 6.5 mm (6.2 mm).

Vas deferens rather long, passing under penis sheath and entering penis through a simple pore. Penis large, of 2 chambers separated by transverse pilaster. Upper chamber axially plicate, lower chamber contains a large longitudinal pilaster having tubercular surface. Sarcobelum wanting. Free oviduct rather long, vagina shorter, containing very short papilla, which is a modified sphincter. Spermathecal duct comparatively long, slender; reservoir attending midway of sarcobelum.

DISTRIBUTION. Central Europe (Alps, Sudetes, Tatry, Carpathians). 3 spp.

REMARK. Taxonomic position of *Eucobresia* is arbitrary. On one hand, this genus is similar to *Semilimax*, but without sarcobelum. On other hand, in *Eucobresia diaphana* there is a small vaginal papilla which is characteristic for Plutoniinae.

VITRININAE Fitzinger, 1833

Shell turbinate (vitrinoid), normally de-

veloped, with rounded periphery, basal margin of aperture without periostracal fringe.

Penis sheath present. Vagina very short (practically absent), lower part of female section without special structures. Sarcobelum missing.

DISTRIBUTION. Holarctic, alpine regions of E Africa.

Calidivitrina Pilsbry, 1919 Fig. 1918

Pilsbry, 1919: 281 (*Vitrina* subg.).

— *Calidivitrina* Connolly, 1930: 39 (nom. err. pro *Calidivitrina* Pilsbry, 1919).

TYPE SPECIES — *Vitrina oleosa* Martens, 1895; OD.

Shell typical vitrinoid, of 3.5-4 whorls. Last whorl rounded. Color dark-yellow. Embryonic whorls smooth (without dots). Postapical whorls lacking regular sculpture. Height up to 5, diam. up to 13 mm (4.0 × 9.2 mm).

Shell lobes of mantle very small or missing.

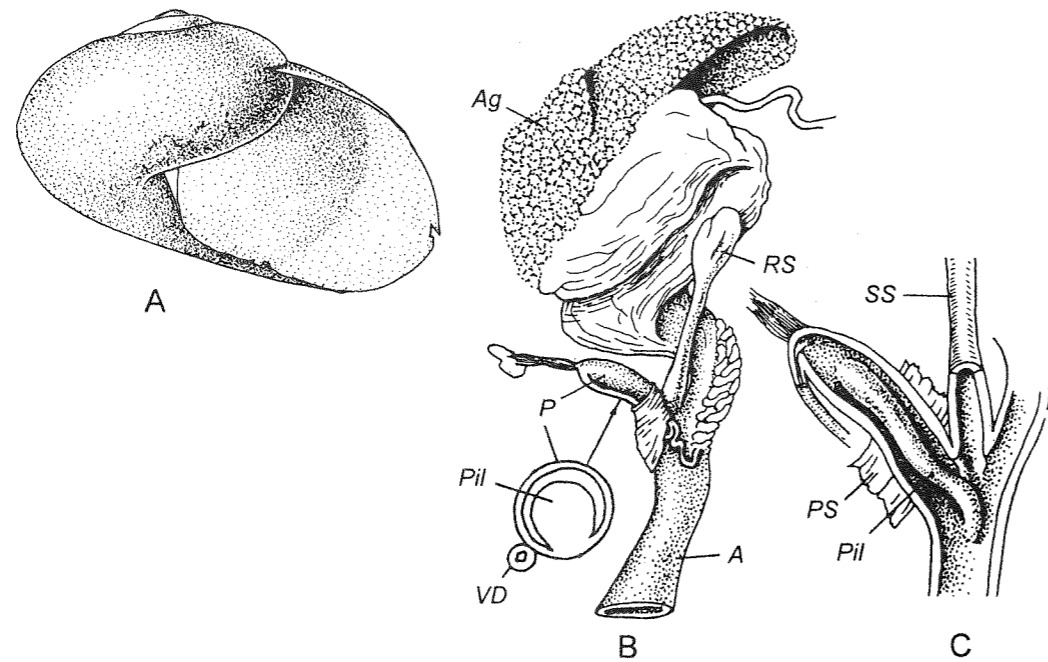


Fig. 1919. *Vitrina pellucida* (Müller, 1774).
A — shell: Left bank of Oka River at Beliye Kolodesi [Central Russia]. Moscow No. Lc-25609. B, C — Near mouth of Bolshaya Rechka River, Bargusinsky natural reserve, Baikal Lake, September 11, 1966. B — reproductive tract and cross-section through penis and vas deferens. C — interior of penis. After Schileyko, 1986.

Vas deferens rather long, adhering to penis and entering laterally through a simple pore. Penis quite long, with narrow lumen, with muscular walls in basal part; penial gland incorporated in penial wall. Penis sheath surrounds whole penis and fused apically with penial retractor. Free oviduct long. Vagina rather short. Atrium comparatively long. Spermathecal stalk moderately long, reservoir adhering to middle part of spermoviduct.

DISTRIBUTION. Alpine regions of E Africa. 9-10 spp.

Vitrina Draparnaud, 1801
Fig. 1919

Draparnaud, 1801 (July): 33.

— *Helico-limax* Féussac, 1801 (November): 390 (t.-sp. *Helix pellucida* Müller, 1774; monotypy).

— *Vitrinus* Montfort, 1810: 238 (nom. err. pro *Vitrina* Draparnaud, 1801).

— *Cobresia* Hübner, 1810: 4 (t.-sp. *Cobresia limacoides* Hübner, 1810; monotypy).

— *Hyalina* Studer, 1820: 86 (non Schumacher, 1817; *Glischrus* subg.; t.-sp. *Helix pellucida* Müller, 1774; SD Forcart, 1957b).

— *Pagana* Gistel, 1848: xi, 168 [t.-sp. "*P. pellucida* (Draparnaud, 1801)"; monotypy].

— *Phenacolimax* Hesse, 1923: 82 (non Stabile, 1859; t.-sp. *Helix pellucida* Müller, 1774; OD).

TYPE SPECIES — *Helix pellucida* Müller, 1774; monotypy.

Shell of 3-4 whorls. Last whorl with widely rounded periphery. Color grey, yellowish or greenish. Height up to 6, diam. up to 10 mm (3.6 × 6.0 mm).

Shell lobe of mantle reaches embryonic whorls.

Vas deferens short, passing under penis sheath and entering penis subapically. Penis small, internally with a large longitudinal pilaster. Penis sheath embraces lower portion of penis and not connected with penial retractor. Free oviduct and vagina practically absent. Atrium long, stout. Spermathecal stalk moderately short, reservoir nor reaching midway of spermoviduct.

DISTRIBUTION. Holarctic. About 10 spp., subsp. and forms.

LIMACOIDEA Rafinesque, 1815

Rafinesque, 1815: 141 (as "Limaxia").

Slugs; shell internal, plate-like. Mantle (rather) small (exception: *Megalopelte* with large mantle), anterior in position.

Sole tripartite. Caudal foss present or absent, caudal horn present or absent.

Head wart absent.

Jaw oxygnathous.

Flagellum present or absent. Epiphallus missing. Penis simple or with calcareous stimulator (some Agriolimacidae). Penial gland present or absent; in former case in form of thin-walled, alveolar tubule(s). Penial caecum present or absent. Penis sheath present or absent. Sarcobelum not present. Vagina simple or (rarely) with internal papilla. Perivaginal gland absent. Atrial appendix absent. Spermatophores missing.

Herbivorous or omnivorous animals.

DISTRIBUTION. Europe, Mediterranean regions of N Africa, Caucasus, Anterior and Central Asia.

LIMACIDAE Rafinesque, 1815

Slugs of various size, body elongate-cylindrical, fusiform when contracted. Keel variable in length. Mantle ovate, disposed at anterior part of body, its length generally about 1/3 of body length. Cephalic shield rather large. Pneumostome in majority of genera lies postmedially or nearly so (in Eumilacinae — antemedially). Transversal grooves on sole straight. Wrinkles on back and sides elongated, rather high.

Shell plate-like, with slightly elevated (sub)medial nucleus.

Lung venation situated mainly before kidney, but often extended along its right side. Kidney mostly bean-shaped or semi-lunate; lobus absent.

Gut of three-looped type (two-looped in *Eumilax*).

Right ocular retractor mostly passes through peni-oviducal angle.

Vas deferens more or less evenly slender. Penis well developed, usually without stimulator or verge, but in some taxa with flagellum. Distal part of oviduct sometimes with sphincter.

DISTRIBUTION. Europe, Mediterranean regions of N Africa, Caucasus, Anterior and Central Asia.

LIMACINAE Rafinesque, 1815

Pneumostome lies postmedially or nearly so.

Gut three-looped. Penis cylindrical or sac-like, in some species with a flagellum or a penial gland.

Hermaphroditic gland situated in posterior part of body behind albumen gland.

Distribution as in family.

Gigantomilax O. Boettger, 1883

Boettger O., 1883: 143 (*Amalia* subg.). Likharev & Wiktor, 1980: 221.

TYPE SPECIES — *Amalia* (*Gigantomilax*) *lederi* O. Boettger, 1883; monotypy.

Animals with keel of various height and length. Mantle occupies about 1/3 of body length. Pneumostome situated postmedially or medially and surrounded by a weak bolster. Body length up to 56 mm when contracted (in one species up to 100 mm).

Blind process of gut absent. 1st loop of gut nearly straight, 2nd much twisted, 3rd straight and shorter than others. Both liver lobes of about equal length and not reach posterior border of visceral sac. Heart axis inclined at 45°. Aorta long. Kidney situated at center of mantle complex. Penial retractor arises on diaphragm in front of heart.

Hermaphroditic gland situated behind gut and forms apex of visceral sac. Vas deferens very short, running directly to penis and not forming a penial loop. Penis sac-like or shortly cylindrical; internally with a sphincter situated next to atrium, and large stimulator. Free oviduct not long. Vagina absent. Spermathecal duct short, reservoir capacious.

DISTRIBUTION. Caucasus and adjacent territories of Turkey and Iran.

Gigantomilax (*Gigantomilax* s. str.)
Fig. 1920

Animals very large, with long, high wrinkles running somewhat parallel to keel. Keel thick, formed by 3 rows of wrinkles, occupies entire length of back. Posterior edge of mantle rounded. Pneumostome lies slightly postmedially. Sole very broad, with a thick margin, to which peripedal groove shifted. In crawling slugs body length up to 150 mm, in contracted — up to 100 mm.

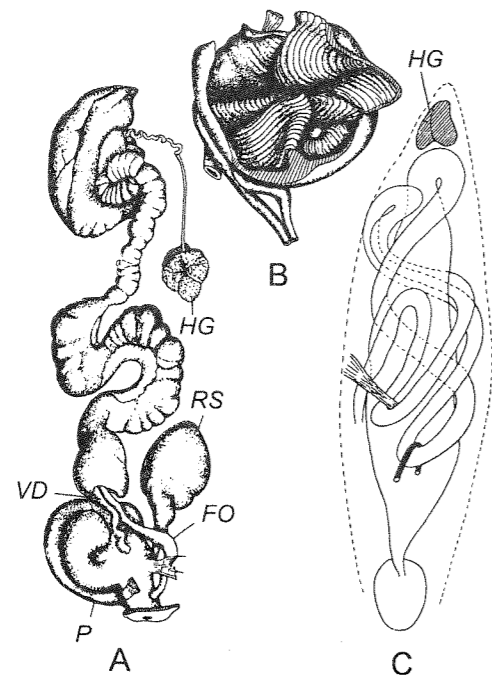


Fig. 1920. *Gigantomilax (Gigantomilax) lederi* (O. Boettger, 1883). A — reproductive tract. B — interior of penis. C — alimentary tract. After Likharev & Wiktor, 1980.

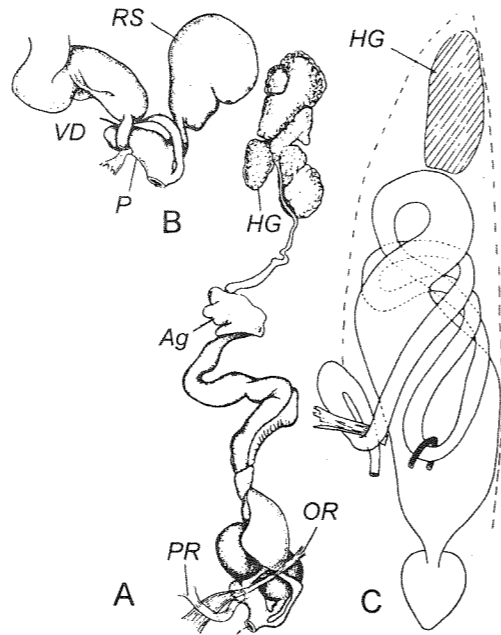


Fig. 1921. *Gigantomilax (Vitrinoides) armeniacus* (Simroth, 1886). A — reproductive tract. B — distal part of reproductive tract from opposite side. C — alimentary tract. After Likharev & Wiktor, 1980.

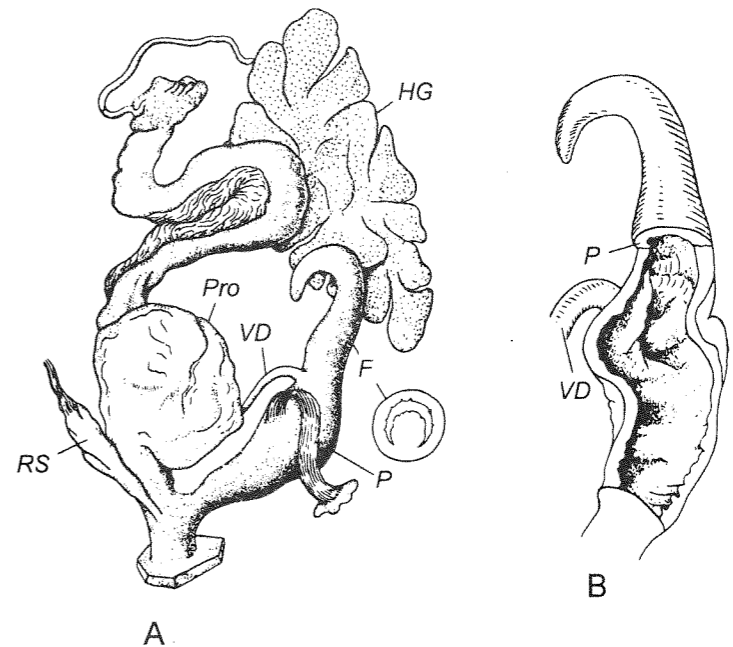


Fig. 1922. *Gigantomilax (Monochroma) brunneus* (Simroth, 1901). Zangezurski Range, Armenia, July 9, 1974. A — reproductive tract. B — interior of penis. SPb.

Right ocular retractor passes through peni-oviducal angle.

Penis sac-like, nearly globular, without appendages. Besides penial retractor, there are 2 retentors. Internally penis with a large triangular fold (probably a stimulator).

DISTRIBUTION. W Caucasus and NW Turkey (vilajet Choroh). 1 sp.

Gigantomilax (Vitrinoides)
Simroth, 1891)
Fig. 1921

Simroth, 1891a: 301.

TYPE SPECIES — *Limax armeniacus* Simroth, 1886; monotypy.

Animals of medium size. Keel narrow, formed by a single wrinkle and occupies generally no more than 2/3 of back length. Flat, rather short wrinkles running in fan-like manner from mantle edge. Mantle posteriorly with a more or less distinct angle. Pneumostome lies postmedially or nearly medially. Sole narrower than in *Gigantomilax* s. str.; peripodal groove lies above sole

edge. Body length when contracted up to 66 mm.

Right ocular retractor passing through peni-oviducal angle (in one subspecies retractor free from peni-oviducal angle).

Penis very short, sac-like, often with a small blind process; internally it has a sphincter, but without triangular fold. Besides penial retractor, there is a retentor.

DISTRIBUTION. Caucasus and adjacent territories of Turkey and Iran. 4 spp. & subspp.

Gigantomilax (Monochroma)
Simroth, 1896)
Fig. 1922

Simroth, 1896a: 366 (pro gen.).

— *Pseudarion* Germain, 1912: 31 (t.-sp. *Pseudarion morgani* Germain, 1912; monotypy).

TYPE SPECIES — *Monochroma brunneum* Simroth, 1901; monotypy.

Slugs of medium size. Wrinkles flat, on back arranged nearly parallel to keel which is formed by a single wrinkle. Mantle with a distinct angle at its posterior margin.

Pneumostome lies postmedially. Sole as in *Vitrinoides*. Body length when contracted up to 50 mm.

Right ocular retractor free from peni-oviducal angle.

Flagellum well developed, tapering. Penis cylindrical or sac-like, internally with sphincter and longitudinal pilasters.

DISTRIBUTION. SE Caucasus and NW Iran. 2 spp.

Svanetia Hesse, 1926
Fig. 1923

Hesse, 1926: 15.

— ? *Metalimacoides* Simroth, 1912a: 128 [*Metalimacoides* subg.; t.-sp. *Metalimacoides mlokosieviczi* Simroth, 1912; monotypy].

— *Caucasolimax* Likharev et Wiktor, 1980: 240 (t.-sp. *Limax caucasicus* Simroth, 1898; OD).

TYPE SPECIES — *Limax svaneticus* Simroth, 1912 (= *Limax caucasicus* Simroth, 1898); OD.

Rather small slugs, with a distinct keel which occupies no less than 3/4 of back length. Mantle relatively large, its length a

little shorter than 1/2 of body length. Pneumostome lies postmedially. Body length when contracted up to 35 mm.

Gut not twisted; 2nd and 3rd loops of approximately equal length, shifted backwards. Both lobes of hepatopancreas not attending apex of visceral sac which occupied by hermaphroditic gland.

Right ocular retractor passes through peni-oviducal angle.

Vas deferens unusually short and stout. Penis short, subdivided into a few portions, internally with a large verge. Free oviduct short. Spermatheca thick-walled, highly muscularized, subcylindrical, without subdivision into stalk and reservoir.

DISTRIBUTION. Central part of Greater Caucasus. 1 sp. with several forms.

Caspilimax Hesse, 1926
Fig. 1924

Hesse, 1926: 5, 14.

TYPE SPECIES — *Limax keyserlingi* Martens, 1880; OD.

Large slugs with a short, blunt keel.

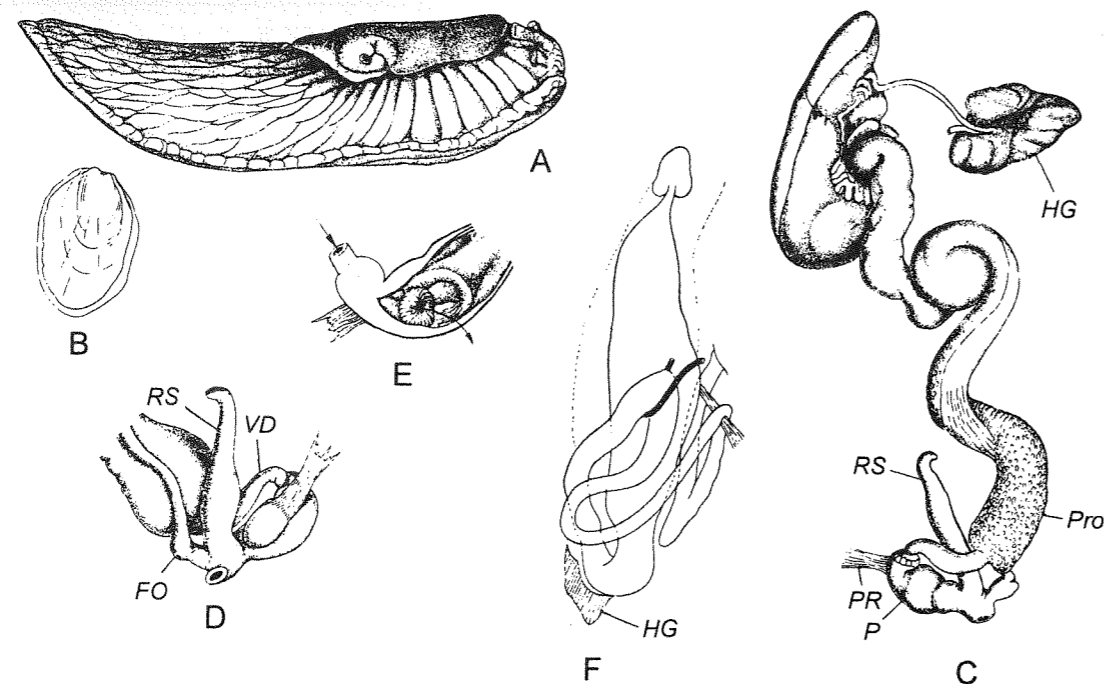


Fig. 1923. *Svanetia caucasica* (Simroth, 1898).
A — external view. B — shell. C — reproductive tract. D — distal part of genitalia from other side. E — interior of penis. F — alimentary tract. After Likharev & Wiktor, 1980.

Mantle occupies less than 1/3 of body length, with a distinct angle at posterior margin. Cephalic shield large. Pneumostome lies slightly postmedially. Body length when contracted up to 80 mm.

Gut not twisted, lacking blind process of gut. 2nd and 3rd loops of about equal length. Left lobe of hepatopancreas forms apex of visceral sac.

Heart axis inclined at 45°. Aorta long, posterior portion of lung venation well visible. Penial retractor arises from diaphragm in front of heart.

Right ocular retractor passes through peni-oviducal angle.

Hermaphroditic gland capacious, of many large, elongated acini. Talon not located. Vas deferens very short, stout, enters sac-like or subglobular penis through a simple pore. Internally penis with tubercular stimulator and 1 or 2 strong fold-like axial pilasters filling most of penis lumen; besides, several smaller folds may be present. Penis sheath thin, fibrous, surrounds basal 2/3 of penis. Penial retractor inserting on basal section of penis. Free oviduct short, internally with short, irregular, smoothed folds. Vagina absent. Spermathecal stalk

short; reservoir rather small, adjoining very distal section of spermoviduct.

DISTRIBUTION. SE Caucasus and adjacent territories of Iran (mountain system Elburs along with Talysh). 1 sp. with a few color forms.

Turcomilax Simroth, 1901

Simroth, 1901: 176 (*Gigantomilax* subg.).

TYPE SPECIES — *Gigantomilax* (*Turcomilax*) *nanus* Simroth, 1901; monotypy.

Slugs of medium size, body spindle-shaped, slender. Keel blunt, occupying no more than hind 1/3 of back. Mantle ovate, often with smoothed angle behind; cephalic shield occupies about 1/2 of its length. Pneumostome lies postmedially. Body length when contracted up to 55 mm.

Gut of 3 loops, not twisted; 1st loop extending backwards farther than rest loops. Majority of species have a blind process of gut. Right lobe of hepatopancreas lies posteriorly and forms an apex of visceral sac.

Heart lies in left quarter of mantle complex at its margin. Heart axis inclined to the right at about 45° to longitudinal axis of

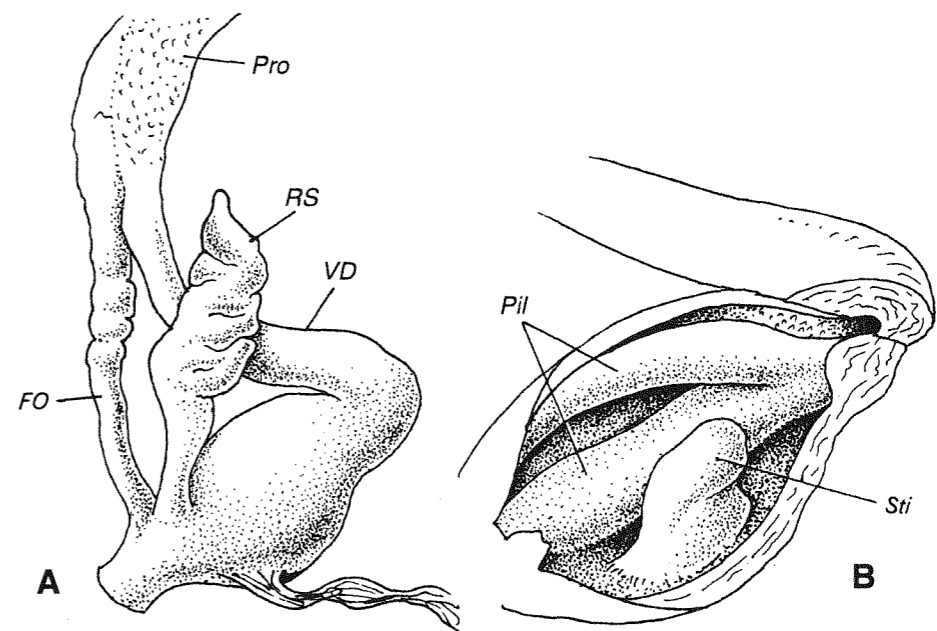


Fig. 1924. *Caspilimax keyserlingi* (Martens, 1880).
Environs of Shusha, Nakhichevan, July 31, 1964. A — reproductive tract. B — interior of penis. Moscow No. Lc-5107.

body. Aorta long. Penial retractor arises from left margin of diaphragm. Right ommatophoran retractor takes various position.

Hermaphroditic gland lies between crop and 2nd loop of gut. Prostate long, its distal end detached from female part. Vas deferens longer than in *Gigantomilax* but shorter than in *Limax*, entering penis subapically. Penial retractor attached to penis in front of vas deferens. Penis of various shape but longer than in *Gigantomilax*; internally with several longitudinal pilasters.

DISTRIBUTION. Central Asia, Himalaya.

Turcomilax (*Kasperia*) Godwin-Austen, 1914)

Fig. 1925

Godwin-Austen, 1914: 312 (*Limax* subg.).

— *Taulimax* Likharev et Wiktor, 1980: 254 [t.-sp. *Limax turkestanus* Simroth, 1898; OD).

Wiktor, 2001b: 38.

TYPE SPECIES — *Limax* (*Kasperia*) *mayae*

Godwin-Austen, 1914 (= *Limax turkestanus* Simroth, 1898); monotypy.

Right ocular retractor passes through peni-oviducal angle.

3rd loop of gut lacking blind process.

Flagellum absent. Penis internally with 2 roughly circular, corrugated pilasters. Spermatheca enters distal portion of penis.

DISTRIBUTION. Mountain systems of Central Asia, Himalaya. 2-3 spp.

Turcomilax (*Michaelsia*) Likharev et Wiktor, 1980)

Fig. 1926

Likharev & Wiktor, 1980: 252.

TYPE SPECIES — *Limax* (*Lehmannia*) *natalianus* Michaelis, 1892; OD.

Right ommatophoran retractor passes through peni-oviducal angle.

3rd loop of gut with a blind process.

Penis with a short flagellum, which sometimes invaginated inside penis lumen; in this case on place of flagellum a pit is visible. Spermatheca enters base of penis.

DISTRIBUTION. Tien-Shan, Dzungar and Tarbagatai Ranges. 1 sp.

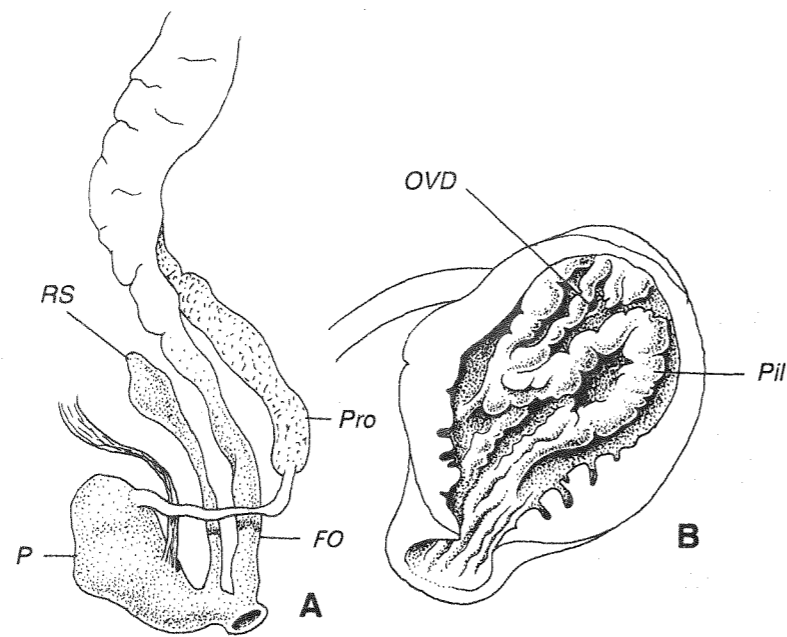


Fig. 1925. *Turcomilax (Kasperia) turkestanus* (Simroth, 1898).
Chon-Kizil-Su River valley, Terskei Ala-Too Range, July 25, 1965. A — reproductive tract.
B — interior of penis. Moscow No. Lc-24076.

Turcomilax (Turcomilax) s. str.
Fig. 1927

Right ommatophoran retractor free from peni-oviducal angle.

3rd loop of gut with a blind process.

Penis without flagellum. Spermatheca enters atrium.

DISTRIBUTION. W Tien-Shan. 2 spp.

Malacolimax Malm, 1868
Fig. 1928

Malm, 1868: 66.

— *Microheynemannia* Simroth, 1891a: 302 [*Limax (Heynemannia)*, sect. A; t.-sp. *Limax tenellus* Müller, 1774; designated here].

TYPE SPECIES — *Limax tenellus* Müller, 1774; monotypy.

Rather small slugs with very short and vague keel. Skin very thin, translucent. Pneumostome lies distinctly postmedially. Body length up to 35 mm when contracted.

Right ocular retractor passes through peni-oviducal angle.

Gut not twisted; 2nd loop shorter than

3rd, both bends of which lie nearly parallel to each other. Left lobe of liver forms apex of visceral sac.

Heart axis inclined at 45°. Aorta long. Penial retractor arises from diaphragm in front of heart.

Hermaphroditic gland situated behind or above 2nd loop of gut. Talon hidden. Vas deferens short; gradually expanding, enters apically or nearly so sac-like or shortly cylindrical penis through a simple pore. Internally penis with a large fleshy pilaster of very complex shape filling nearly entire lumen of penis; pilaster bears a rounded stimulator. Penis sheath very thin, fibrous. Penial retractor inserted on distalmost section of vas deferens. Free oviduct moderately long. Spermathecal stalk short, attached to distal portion of penis; reservoir attending basal part of spermoviduct.

DISTRIBUTION. Europe, Canary Islands (Tenerife Island). 2 spp. As Likharev & Wiktor (1980) state, several species from Algeria, Tunisia and Palestine have been described and assigned to this genus without studying of their anatomy (Bourguignat,

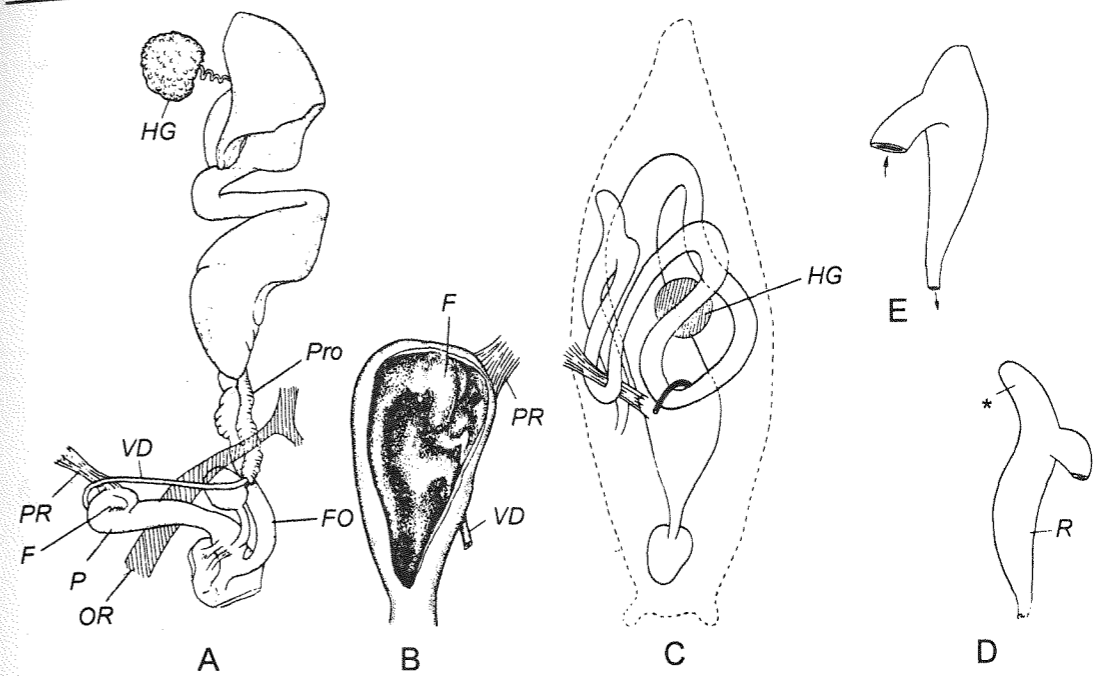


Fig. 1926. *Turcomilax (Michaelisia) natalianus* (Michaelis, 1892).
A — reproductive tract. B — interior of penis with invaginated flagellum. C — alimentary tract. D, E — blind process of gut of 2 specimens. After Likharev & Wiktor, 1980.
Asterisk — blind process of gut.

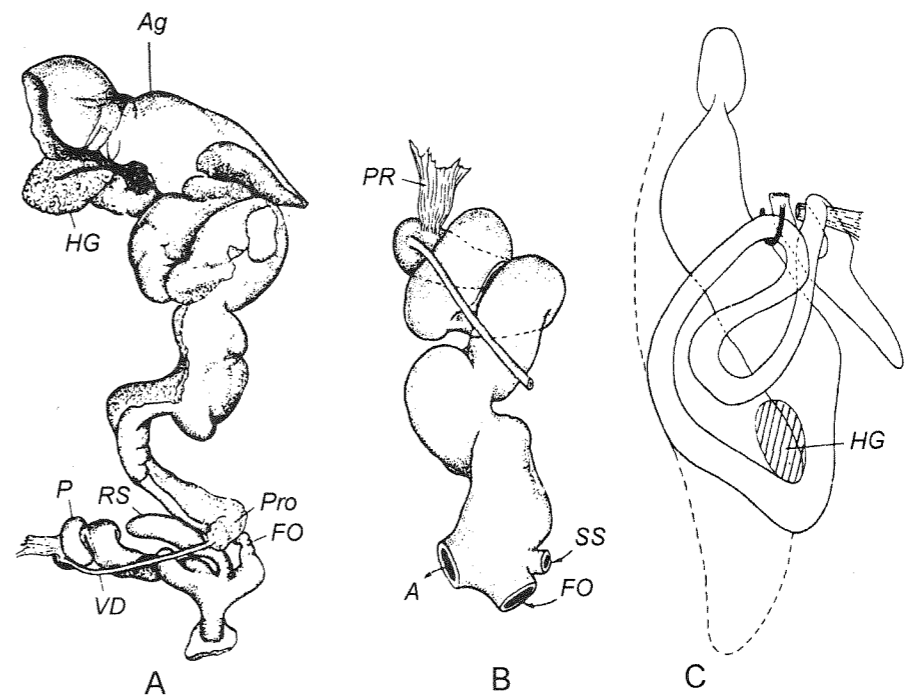


Fig. 1927. *Turcomilax (Turcomilax) nanus* (Simroth, 1901).
A — reproductive tract. B — penis enlarged. C — alimentary tract. After Likharev & Wiktor, 1980.

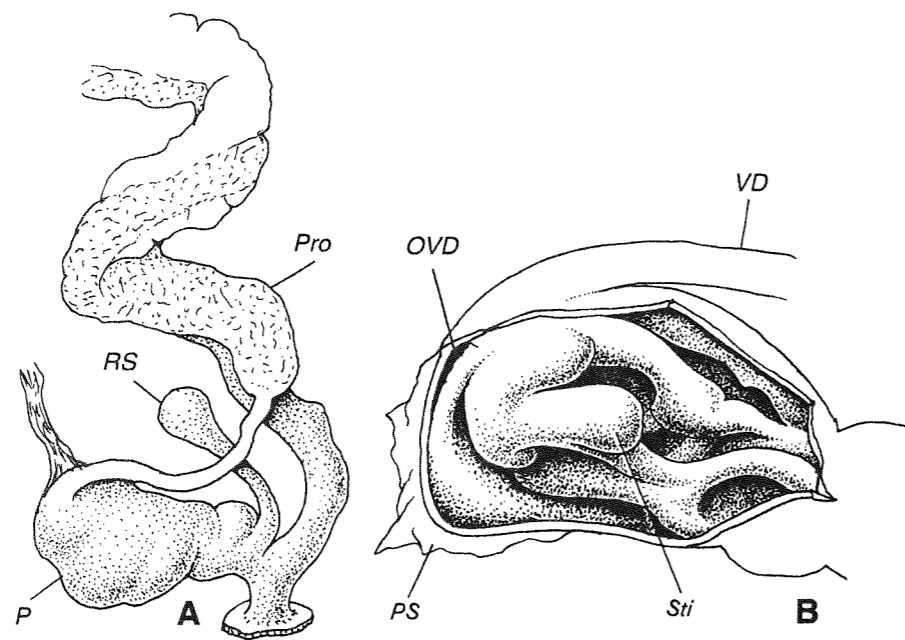


Fig. 1928. *Malacolimax tenellus* (Müller, 1774). Alexinsky district, Kaluzhskaya Oblast' [Central Russia]. A — reproductive tract. B — interior of penis. Moscow No. L-26136.

1861; Germain, 1907; Pollonera, 1909). These data should be verified.

Lehmannia Heynemann, 1862
Fig. 1929

Heynemann, 1862: 211.

— *Simrothia* Clessin, 1884: 62 [part.; *Limax* sect.; for *Limax variegatus* Draparnaud, 1801 (= *Limax flavus* Linnaeus, 1758) and *Limax arborum* Bouchard-Chantreaux, 1838 (= *Limax marginatus* Müller, 1774)].

— *Ambigolimax* Pollonera, 1887: 2 (*Agriolimax* "gruppo"; t.-sp. *Limax valentianus* Féussac, 1823; monotypy).

— *Melitolimax* Pollonera, 1891: 1, 2 (*Malacolimax* subg.; t.-sp. *Limax melitensis* Lessona et Pollonera, 1882; OD).

TYPE SPECIES — *Limax marginatus* Müller, 1774; monotypy.

Slugs of medium size with slender body pointed behind. Skin very soft and slippery. Keel of various length, slightly convex. Pneumostome lies postmedially. Body length up to 40 mm when contracted.

Gut not twisted. 2nd loop considerably shorter than 1st, 3rd shorter than 2nd.

There is a long blind process. Left lobe of liver forms apex of visceral sac.

Heart axis inclined at nearly 90°. Aorta long. Penial retractor arises from diaphragm to the left of kidney.

Right ocular retractor passes through peni-oviducal angle.

Hermaphroditic gland situated behind 2nd gut loop or within 1st. Distal portion of prostate slightly detached from spermooviduct. Vas deferens short, stout, enters penis subapically, generally next to penial retractor. There is a slender flagellum (absent in 2 species). Penis in most cases rather small, clavate or conic, rarely comparatively long and cylindrical. Internally penis with a large longitudinal pilaster. Penial retractor attached to penis below vas deferens entrance. Spermatheca short, entering basal portion of penis.

DISTRIBUTION. Europe. 7-8 spp.

? *Mesolimax* Pollonera, 1888
Fig. 1930

Pollonera, 1888: 8. Likharev & Wiktor, 1980: 204.

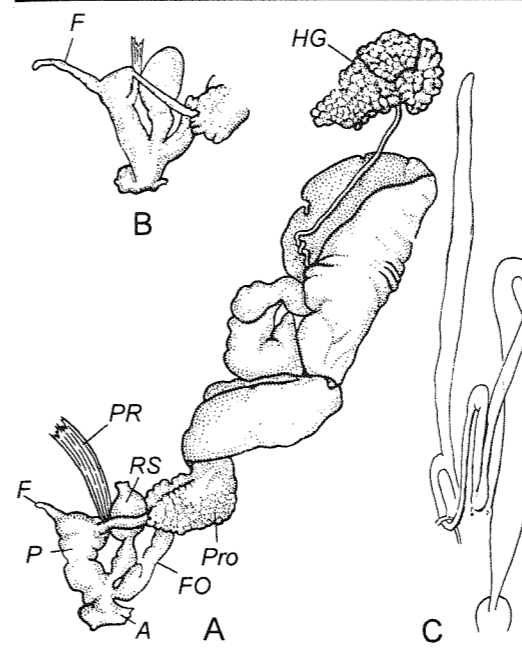


Fig. 1929. *Lehmannia marginata* (Müller, 1774). A — reproductive tract. B — distal part of genitalia of other specimen. C — alimentary tract. After Likharev & Wiktor, 1980.

TYPE SPECIES — *Mesolimax brauni* Pollonera, 1888; monotypy.

Shell symmetrical, nucleus lies nearly on middle of its hind margin. Animals of medium size, body narrow, with a short, weak keel at posterior end. Skin thick, with distinct relief. Pneumostome situated more or less postmedially. Each of side fields of sole, besides common numerous transverse grooves, has 2 additional longitudinal furrows. Central field, as in *Deroceras*, covered with transverse grooves which V-shapedly curved to posterior end. Body length up to 60 mm.

Posterior end of columellar muscle forked, rectum passes between arms of muscle.

Right ocular retractor passes through peni-oviducal angle.

Vas deferens passing under penis sheath. Penis very long, cylindrical, somewhat convoluted. Penis sheath surrounds basal part of penis. Penial retractor attached to penis subapically. Free oviduct moderately long, thin. Vagina rather short. Spermathecal shaft very short, reservoir not attending lower end of spermooviduct.

DISTRIBUTION. Asia Minor and Rhodos Island; ? Caucasus. 2 spp.

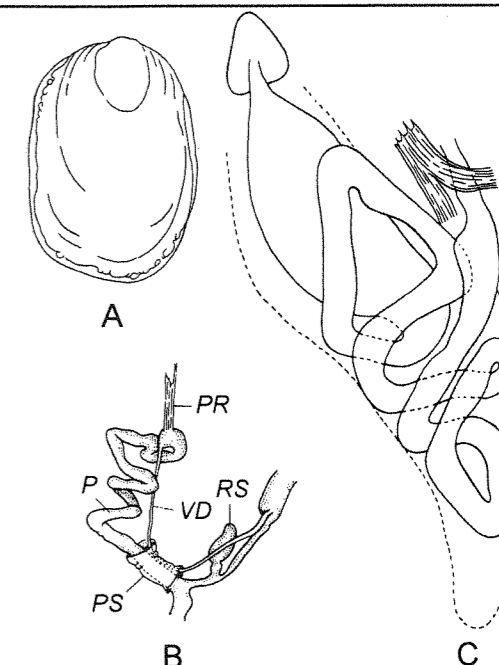


Fig. 1930. *Mesolimax brauni* (Pollonera, 1888). A — shell. B — reproductive tract. C — digestive tract. After Likharev & Wiktor, 1980.

REMARK. Taxonomic position of *Mesolimax* is unclear. As Likharev & Wiktor (1980: 204) state, in the species of the genus *Mesolimax* "external appearance and reproductive tract as in *Limax*, the sole and shell as in *Milax*, the radula and gut as in *Agriolimax*".

Limax Linnaeus, 1758

Linnaeus, 1758: 652.

— *Limacella* Brard, 1815: 107 (as "*Limacelle*"; t.-sp. not designated, the first species *Limacella parma* Brard, 1815).

— *Eulimax* Moquin-Tandon, 1855: 18, 22 (part.; t.-sp. not designated).

— *Heynemannia* Malm, 1868: 54 (t.-sp. *Limax maximus* Linnaeus, 1758; SD Wiktor, 1989).

— ? *Prolimax* Simroth, 1906: 23 (t.-sp. *Limax cecconii* Simroth, 1906; monotypy).

TYPE SPECIES — *Limax maximus* Linnaeus, 1758; SD Féussac, 1819.

Large slugs generally with a distinct keel of various length but never stretching along entire back. Mantle occupies 1/4-1/3 of body length.

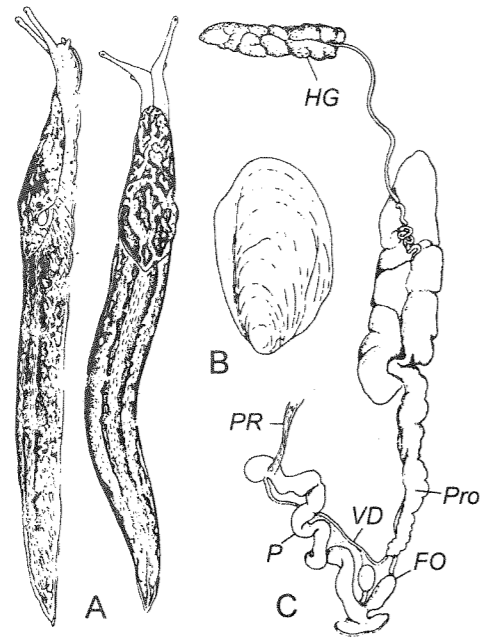


Fig. 1931. *Limax (Limax) maximus* (Linnaeus, 1758).
A — external view. B — shell. C — reproductive tract. After Wiktor, 1973.

Pneumostome lies well postmedially. Body length up to 150 mm when contracted.

Gut not twisted, in subgenus *Limacus* with a long blind process. 5th and 6th bends parallel to each other. Left liver lobe forms apex of visceral sac.

Heart axis inclined at 45°. Aorta short. Posterior division of lung venation well expressed. Penial retractor arises from diaphragm at posterior edge of kidney or outside pallial complex.

Hermaphroditic gland situated behind 2nd gut loop. Distal portion of prostate somewhat detached from uterus and connected with it by a thin membrane. Long vas deferens enters penis apically or subapically and connected with it by thin membrane. Penis very long, sometimes longer than body of animal. Internally penis with several longitudinal pilasters, one especially strong and forked at posterior end. Spermathecal stalk short, reservoir almost reaching lower end of spermoviduct. Short spermatheca enters basal portion of penis, atrium or vagina.

DISTRIBUTION. Europe.

Limax (Limax s. str.)

Fig. 1931

- *Gestroa* Pini, 1876: 83 (*Limax* subsect.; t.-sp. *Limax cinereoniger* Wolf, 1803; OD).
- *Chromolimax* Pini, 1876: 87 (*Limax* sect.; t.-sp. *Limax dacampoi* Menegazzi, 1854; OD).
- *Opiliolimax* Pini, 1876: 92 (*Limax* sect.; t.-sp. *Limax punctulatus* Sordelli, 1870; monotypy).
- *Stabilea* Pini, 1876: 97 (*Limax* sect.; t.-sp. *Limax psarus* Bourguignat, 1861; monotypy).
- *Macroheynemannia* Simroth, 1891: 303 (part.).

Keel occupies 1/3-1/2 of back length. Upper side of body either uniformly black or with pattern of dark bands or rows of spots on light background; mantle with spots.

3rd loop of gut usually equal to 2nd or longer; blind process absent.

Vas deferens rather short, entering penis subapically. Penis subcylindrical, convoluted, no less than a half of body length, often much longer.

Penial retractor attached at vas deferens entrance. Spermoviduct long. Free oviduct rather long, more or less swollen in distal portion.

DISTRIBUTION. Europe. About 15 spp. and numerous color forms.

Limax (Limacus) Lehmann, 1864

Fig. 1932

Lehmann, 1864: 145 (pro gen.).

- *Plepticolimax* Malm, 1868: 62 [*Eulimax* subg.; t.-sp. *Limax breckworthianus* Lehmann, 1864; monotypy].
- *Simrothia* Clessin, 1884: 62 [part.; *Limax* sect.; for *Limax variegatus* Draparnaud, 1801 (= *Limax flavus* Linnaeus, 1758) and *Limax arborum* Bouchard-Chantereaux, 1838 (= *Limax marginatus* Müller, 1774)].

TYPE SPECIES — *Limacus Breckworthianus* Lehmann, 1864 (= *Limax flavus* Linnaeus, 1758, var.); monotypy.

Keel short, vague. Color pattern of numerous small dark spots not arranged in longitudinal rows or series of larger spots.

3rd loop of gut very short (much shorter than 2nd), with a long blind process.

Penis shorter than a half of body. Spermoviduct very short, because not far from albumen gland this duct divided into prostate

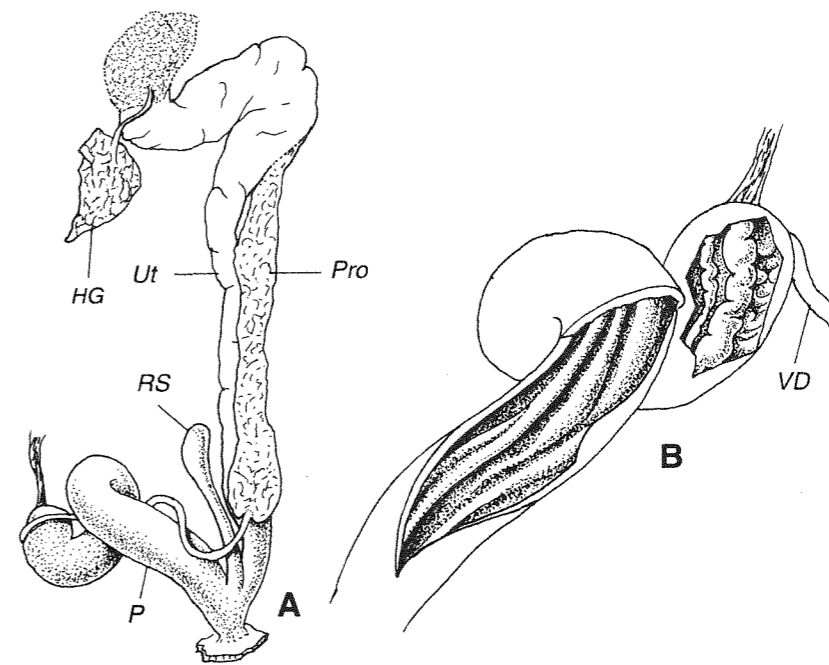


Fig. 1932. *Limax (Limacus) flavus* (Linnaeus, 1758).
Environs of Khasaviurt, Daghestan, August 1966 (not fully mature specimen). A — reproductive tract. B — interior of penis. Moscow No. Lc-5122.

and uterus; both ducts, tightly adjoining to each other, stretch down nearly to atrium.

DISTRIBUTION. Mediterranean countries of Europe and Asia Anterior; introduced in many points of world. 2 spp. with numerous color variations.

EUMILACINAE Likharev et Wiktor, 1980

Likharev & Wiktor, 1980: 290.

Pneumostome lies antemedially.

Gut two- or three-looped. In latter case 3rd loop very short and supplied with rather long blind outpocket. Rectum penetrates diaphragm nearer to pneumostome than in other Limacidae.

Hermaphroditic gland completely hidden among liver lobes and shifted forward.

DISTRIBUTION. Caucasus and Black Sea slopes of Pont Mts. in Asia Minor.

Eumilax O. Boettger, 1881

Fig. 1933

Boettger O., 1881: 178 (*Amalia* sect.).

- *Paralimax* O. Boettger, 1883: 144 (*Limax* sect.; t.-sp. *Limax intermittens* O. Boettger, 1883; monotypy).

TYPE SPECIES — *Limax (Milax) Brandti* Martens, 1880; monotypy.

Slugs of medium size to large with long distinct keel extended along entire back. Mantle occupies somewhat more than 1/2 of body length. Upper side of animal covered with minute tubercles. Nearly each of rows of wrinkles forked backwards. Body length up to 150 mm when contracted. Heart axis inclined to the right at 45° or more. Aorta of medium length, usually forked above kidney. Kidney semilunar, lies across body axis and surrounds heart along its sides. Penial retractor arises from diaphragm next to posterior edge of kidney.

Gut of 2 loops; no blind process.

Right ocular retractor passes through peni-oviducal angle.

Talon small, clavate, more or less buried. Spermoviduct very long, sinuous. Vas deferens short, narrow. Flagellum stout, ovate, internally with 2 pilasters more or less distinctly fused in lower part of flagellum. Penis very short, with a very long, curved caecum which everts during copulation. Inter-

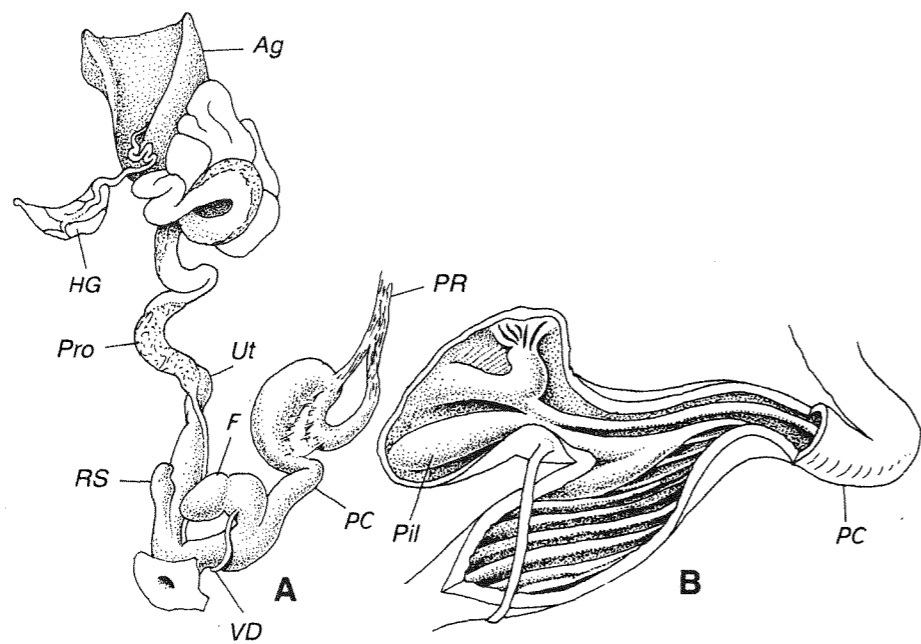


Fig. 1933. *Eumilax brandti* (Martens, 1880).
Nal'chick, N Caucasus, July 4, 1984. A — reproductive tract. B — interior of penis.
Moscow No. Lc-21204.

nally penis contains a number of obliquely-longitudinal folds. Penial retractor attached to penial caecum by 2 arms or base of retractor fan-like. Free oviduct rather long. Vagina extremely short. Spermathecal shaft very short, reservoir subglobular, not attending lower end of spermoviduct.

DISTRIBUTION. Greater Caucasus, W Transcaucasia and Black Sea coast of Asia Minor. 2 spp. with many color forms.

Metalimax Simroth, 1896

Fig. 1934

Simroth, 1896: 366. Likharev & Wiktor, 1980: 300.

TYPE SPECIES — *Metalimax elegans* Simroth, 1896; monotypy.

Slugs of medium size, with slender body and narrow sole. Keel developed to various degree. Mantle comparatively large (about 1/3 of body length), posteriorly with a sharp angle, with wide cephalic shield. Pneumostome lies well antemedially. Body length up to 40 mm when contracted. Heart axis inclined at 45° to right. Aorta very long. Kidney as in *Eumilax*.

Gut three-looped; 3rd loop very short, with rather long blind process.

Vas deferens enters penis (sub)apically. Penis long, nearly cylindrical, internally with longitudinal pilasters, without additional organs. Spermoviduct very long, subdivided into band-like prostate and uterus near atrium. Spermatheca almost sessile.

DISTRIBUTION. Western part of Greater Caucasus. 2 spp.

BIELZIIDAE Likharev et Wiktor, 1980

Likharev & Wiktor, 1980: 287. Zhiltzov & Schileyko, 2002: 73.

Rather large slugs with elongate-cylindrical body. Keel occupies 1/2-2/3 of back. Mantle and cephalic shield as in Limacidae. Pneumostome lies postmedially. Transversal grooves on sole straight. Wrinkles on back and sides elongated, rather high.

Shell plate-like, nucleus shifted to left side.

Lung venation well visible. Kidney of peculiar shape because of a pair of processes

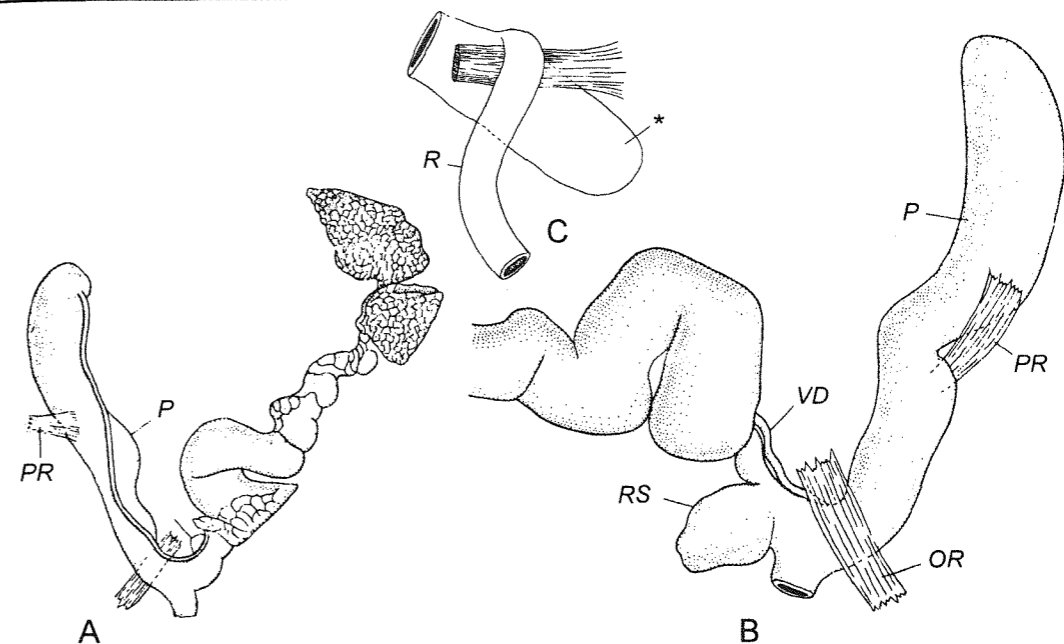


Fig. 1934. *Metalimax elegans* Simroth, 1896.
A — reproductive tract. B — distal part of reproductive tract from other side. C — blind process of gut. After Likharev & Wiktor, 1980. R — rectum. Asterisk — blind process.

on its right side. Ureter enters an elongated bladder; lobus absent.

Gut of three-looped type.

Right ocular retractor passes through peni-oviducal angle.

Vas deferens practically absent: a short, stout duct branched off from prostate; actually this duct is a penis. Internally penis with axial folds; verge absent. Penial retractor missing. Free oviduct of 2 parts: narrower proximal and stouter distal; in boundary between these parts there is a small but quite distinct papilla probably functioning as a peculiar ovipositor. Atrium supplied with large, thick-walled appendix having its own retractor attached laterally.

DISTRIBUTION. Carpathians and Sudetes.

Bielzia Clessin, 1887

Fig. 1935

Clessin, 1887 (1887-1890): 47 ("Sectio *Limacia*").

— *Frauenfeldia* Hazay, 1884: 330 (nom. praeocc., non Egger, 1865; nom. nud.).

— *Frauenfeldiana* Hazay, 1884: 330 (nom. err. pro *Frauenfeldia*).

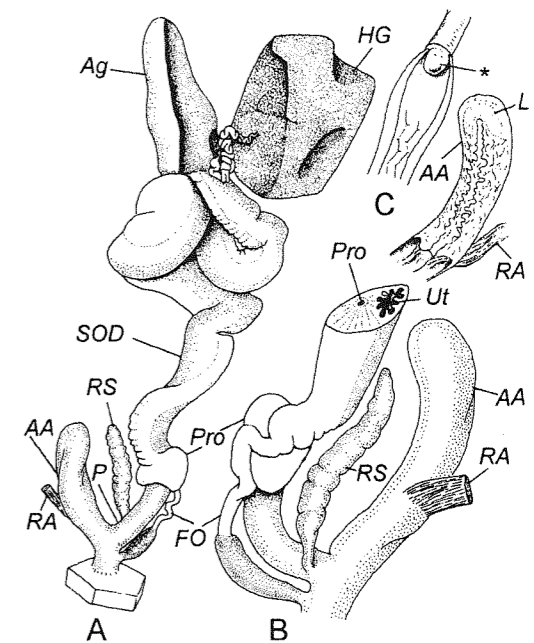


Fig. 1935. *Bielzia coeruleans* (Bielz, 1851).
Nevitzki Zamok, Uzhgorod district, E Carpathians, June 2000. A — reproductive tract. B — distal part of genitalia of the same specimen from opposite side and longitudinal section of atrial appendix. C — interior of free oviduct. After Zhiltzov & Schileyko, 2002. L — lacuna in upper part of atrial appendix. Asterisk — papilla in free oviduct.

— *Limacopsis* Simroth, 1888: 67 (t.-sp. *Limax coeruleans* Bielz, 1851; Likharev & Wiktor, 1980: 287).

Likharev & Wiktor, 1980: 287. Zhiltzov & Shileyko, 2002: 73.

TYPE SPECIES — *Limax coeruleans* Bielz, 1851; monotypy.

Most remarkable external character is coloration: blue, green, violet or creamy with brightly glimmering ridges of wrinkles.

Ovotestis compact, voluminous. Hermaphroditic duct strongly convoluted.

Talon not located. Spermatheca short, sleeve-like, without clear division into shaft and reservoir. Atrial appendix internally with complex relief of numerous folds and tubercles; wall of its upper part contains lacuna.

DISTRIBUTION. Carpathians and Sudetes. 1 sp.

REMARK. It is believed that the genus *Bielzia*, besides *B. coeruleans*, comprises more 3 species. One of them lives in Crete, two — in Bosnia and Montenegro. However anatomy of these 3 species is insufficiently or not studied, therefore for the moment I retain only *B. coeruleans* in this genus.

AGRIOLIMACIDAE J. Wagner, 1935

Wagner J., 1935: 174.

— Deroceratinae Magne, 1952: 30.

— Derocerasinae Hudec, 1972: 84.

Likharev & Wiktor, 1980: 123.

Animals small or medium sized. Mantle occupies anterior part of body (exception: in *Megalopelte* it covers nearly all upper surface of animal). Pneumostome situated postmedially or nearly medially. Part of mantle around pneumostome elevated and thickened a little to form a slight swelling. Peripheral parts of sole covered irregularly with transverse grooves, which, passing on central part, curved in form of "V" towards posterior end of body. Genital orifice situated behind right lower tentacle.

Shell with excentric nucleus, only in *Mesolimax* it lies nearly on longitudinal axis of shell.

Digestive tract of two-looped type, usually nearly not twisted; gut situated behind comparative short crop. Large right lobe of

hepatopancreas forms posterior of visceral hump; smaller lobe lies anteriorly. Heart situated in left anterior quarter of mantle complex; its axis inclined at 45° to right, i.e. to longitudinal axis of body. Aorta long or of medium length. Venation of lung situated in front of kidney and sometimes as well along its right side. Kidney bean-shaped or semilunate, its longer axis situated across longitudinal axis of body. Large tongue-like lobus runs off from kidney, penetrates under ureter and posterior gut. Ureter arises from posterior edge of kidney; anteriorly ureter passes to a voluminous bladder, which connected with kidney wall by a special band. Columellar muscle attached behind mantle complex.

Penial retractor arises from diaphragm in front of kidney and heart. Epiphallus absent. Genital atrium small. Distal female ducts lack accessory organs.

DISTRIBUTION. Palearctic; highest diversity in Mediterranean and Black Sea countries.

Deroceras Rafinesque, 1820

Rafinesque, 1820: 10 (*Limax* subg.).

— *Eulimax* Moquin-Tandon, 1855: 18, 22 (part.).

— *Malino* J. Gray, 1855: 178 (t.-sp. *Limax lombricoides* Morelet, 1845; monotypy).

— *Hydrolimax* Malm, 1868: 79 (part.; nom. praeocc., non Haldemann, 1842).

— *Arctolimax* Westerlund, 1894: 163 (*Agriolimax* subg.; t.-sp. *Agriolimax hyperboreus* Westerlund, 1876; monotypy).

— *Agriolimax* Hesse, 1926: 21 (non Mörch, 1865). TYPE SPECIES — *Limax gracilis* Rafinesque, 1820 (= *Limax laevis* Müller, 1774); monotypy.

Slugs small or medium-sized, with rather slim body having spindle-shaped appearance at contraction; maximal width in mantle region. Keel as a light angulosity of posterior end of body, visible at contraction of animal. Mantle usually occupies about 1/3 of body length or a little more. Between mantle slit and middle line of back there are 12-14, rarely 10-16 rows of wrinkles. Pneumostome lies postmedially. Body length up to 60, usually up to 45 mm.

Coloration uniform or with dark pattern of small spots. These spots sometimes integrated into net-like pattern, but they never form regular bands.

Rectum with or without a blind gut. Right ocular retractor free from penioviducal angle.

Hermaphroditic gland triangular or elongate tongue-like, with a short, gradually enlarged duct. Vas deferens enters penis posteriorly. Epiphallus absent. Penis comparatively short, sac-like or elongate, sometimes complex in external appearance. In anterior part of penis there is a stimulator, in posterior part — series of pilasters. Inner surface of penis finely and regularly crenulated. Upper end of penis has accessory organs. Generally there is a thin-walled penial gland(s); besides, elongated process(es) of posterior portion of penis may be present. Penial retractor attached to penis by 1-3 branches. Free oviduct usually short, tubular. Spermathecal stalk short, narrow, entering base of penis.

DISTRIBUTION. Most part of N Hemisphere.

Deroceras (Nipponolimax) monticola Yamaguchi et Habe, 1955)

Fig. 1936

Yamaguchi & Habe, 1955: 235, 238 (pro gen.).

TYPE SPECIES — *Nipponolimax monticola* Yamaguchi et Habe, 1955; OD.

Back of animal without keel. Mantle anterior in position. Neck rather long. Length of preserved animal 23 mm.

Vas deferens comparatively long, entering middle point of top of penis.

Penis large, subcylindrical. Penial glands 4-5 in number. Penial retractor attached to penis terminally. Free oviduct long, rather narrow. Spermathecal stalk rather long, stout; reservoir small, subglobular.

DISTRIBUTION. Japan. 1 sp.

Deroceras (Plathystimulus) Wiktor, 1973)

Fig. 1937

Wiktor, 1973: 130. Likharev & Wiktor, 1980: 153.

TYPE SPECIES — *Agriolimax subagrestis* Simroth, 1892; OD.

Mantle occupies no more than 1/3 of body length; its posterior edge during locomotion not shifted to posterior half of body. Cephalic shield occupies less than 1/2 of mantle length, at contraction it tightly contacts neck. Skin comparatively thick, not

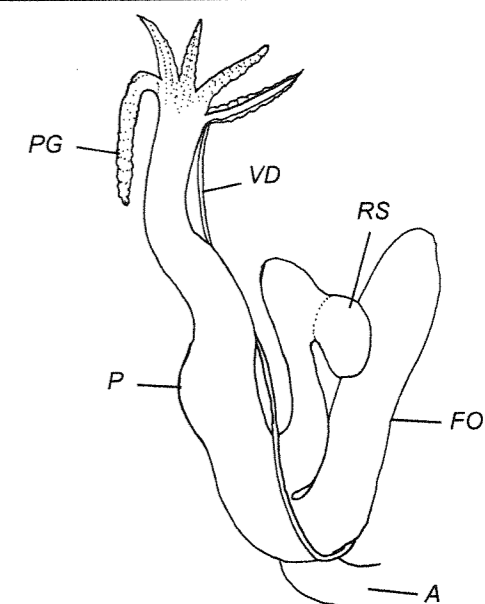


Fig. 1936. *Deroceras (Nipponolimax) monticola* (Yamaguchi et Habe, 1955).
Reproductive tract. After Azuma, 1982.

translucent, with rather distinct relief. Blind gut, a small pocket, whose length not exceeds width.

Penis, besides well developed penial gland, has side swellings and sometimes a typical appendix. Internally penis with a large, flattened stimulator which reminds a fan or a spade and lacks a calcareous plate.

DISTRIBUTION. Southern regions of Central and W Europe, Crimea, Caucasus. 5-6 spp.

Deroceras (Deroceras s. str.)

Fig. 1938

Mantle relatively large, its posterior edge during locomotion shifted a little to posterior half of body. Cephalic shield as in *Plathystimulus*.

Skin thin, translucent, with vague relief. Blind gut absent or has an appearance of a small pocket, with length no more than width.

Posterior end of penis with 1 or 2 blind processes; in some species there is also a penial gland. Stimulator conic or globular, with a blunt or pointed apex, without calcareous plate.

DISTRIBUTION. Most part of N Hemisphere. At least 20 spp.

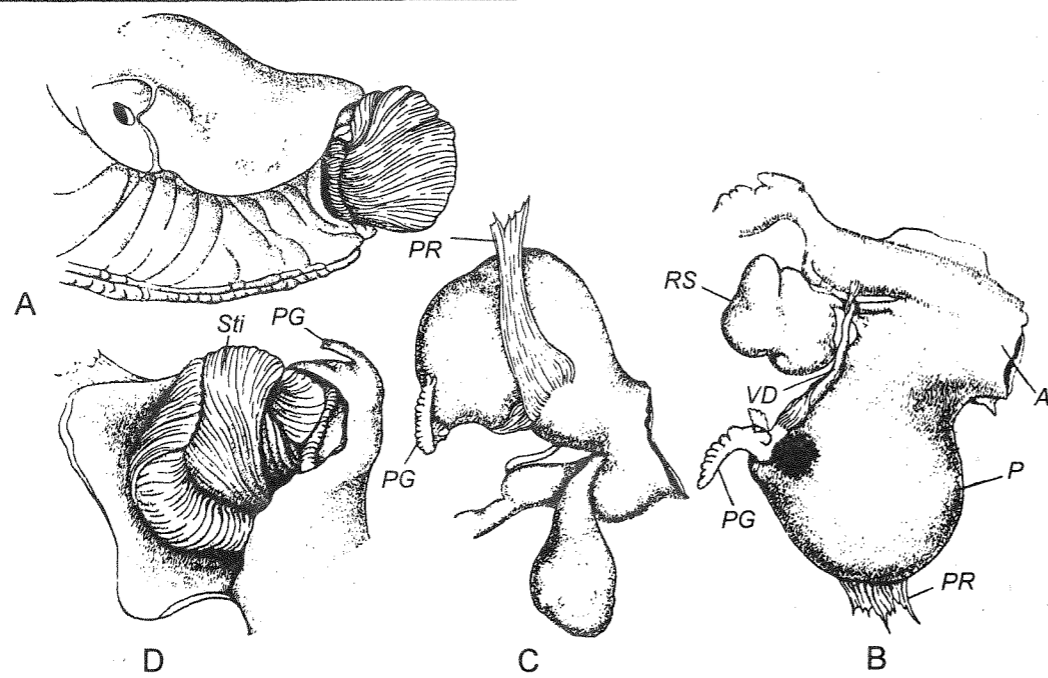


Fig. 1937. *Deroceras (Plathystimulus) subagreste* (Simroth, 1892).
A — anterior end of slug with everted stimulator. B — distal section of reproductive tract.
C — the same from other side. D — interior of penis. After Likharev & Wiktor, 1980.

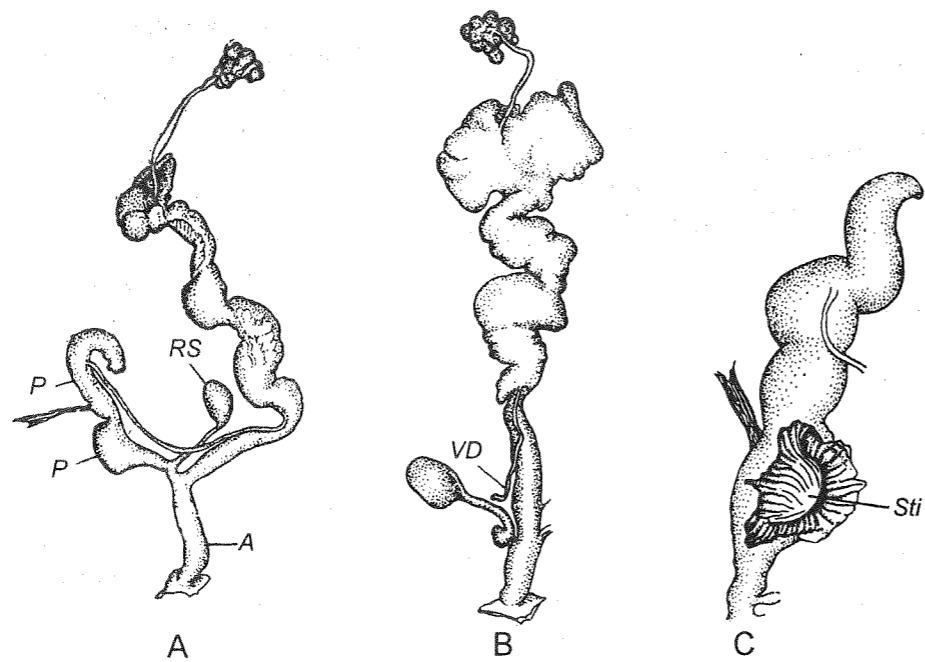


Fig. 1938. *Deroceras (Deroceras) laeve* (Müller, 1774).
A — reproductive tract of euphallic specimen. B — reproductive tract of aphallic specimen.
C — interior of penis. After Likharev & Wiktor, 1980.

Deroceras (Agriolimax) Mörch, 1865
Fig. 1939

Mörch, 1865: 378.
— *Chorolimax* Westerlund, 1894: 163 (t.-sp. *Limax agrestis* Linnaeus, 1758; monotypy).
Likharev & Wiktor, 1980: 142.

TYPE SPECIES — *Limax agrestis* Linnaeus, 1758; SD Malm, 1868.

Slugs externally like *Plathystimulus*.
Blind gut well developed, its length exceeds width by 2 times or more.

Penis of various shape, but always comparatively short, sac-like, clavate or ovate. Penial gland represented by 1 or few processes equipped with side branches or swellings. No appendix. Stimulator conic, with pointed apex, without calcareous plate.

DISTRIBUTION. Nearly entire Palearctic. At least 10 spp. with numerous color forms.

Deroceras (Liolytopelte) Simroth, 1901
Fig. 1940

Simroth, 1901: 174. Likharev & Wiktor, 1980: 169.

TYPE SPECIES — *Lytopelte caucasica* Simroth, 1901; SD Hesse, 1926b.

Mantle relatively large, its posterior edge during locomotion shifted a little to posterior half of body. Cephalic shield occupies a half of mantle, at contraction it somewhat elevated above neck. Skin very thin, translucent, nearly smooth.

Blind gut absent or there is slight expansion of rectum.

Penis of various shape, but always short, without typical penial gland. On upper end of penis there are swellings and appendages, sometimes rather long. Internally penis with longitudinal pilasters and stimulator; in adults on surface of stimulator there is a calcareous plate with concentric growth lines.

DISTRIBUTION. E and S Carpathians, Balkan Ridge, Crimea, Caucasus. 4-6 spp.

Furcopenis Castillejo et Wiktor, 1983
Fig. 1941

Castillejo & Wiktor, 1983: 1.

TYPE SPECIES — *Furcopenis darioi* Castillejo et Wiktor, 1983; OD.

Differs from *Deroceras* in structure of male section of reproductive tract. Penis

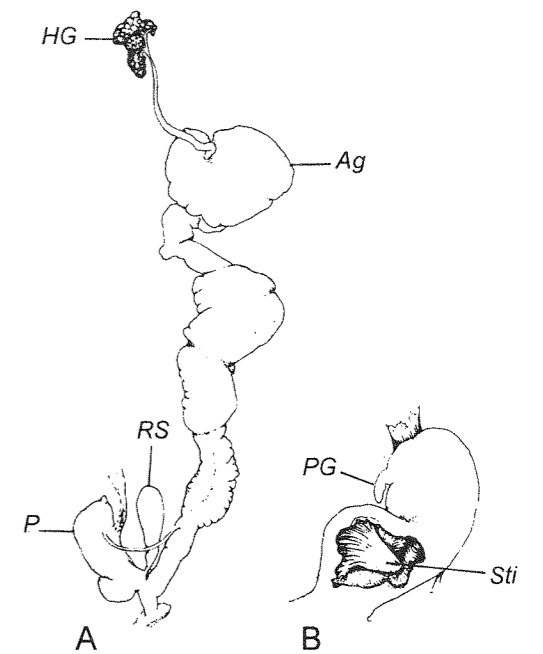


Fig. 1939. *Deroceras (Agriolimax) agreste* (Linnaeus, 1758).
A — reproductive tract. B — interior of penis. After Likharev & Wiktor, 1980.

cylindrical, with penial gland similar to that of many *Deroceras* species. No stimulator within penis. Distal part of penis with 1 or 2 accessory organs which are almost equal in size to penis; these organs have at apical ends their own glands matted in a ball. Penial retractor attached to penis apically. Branched strands of retractor attached to membrane enveloping glands of apical accessory organs.

Intestinal caecum absent.
DISTRIBUTION. Spain (Galicia). 2 spp.

Lytopelte O. Boettger, 1886
Fig. 1942

Boettger O., 1886: 241 (*Amalia* subg.).
— *Platytoxon* Simroth, 1886: 311 (*Agriolimax* subg.; t.-sp. *Amalia maculata* Koch et Heynemann, 1874; monotypy).
— *Tropidolytopelte* Simroth, 1901: 174 (t.-sp. *Amalia maculata* Koch et Heynemann, 1874; monotypy). Likharev & Wiktor, 1980: 195.

TYPE SPECIES — *Amalia (Lytopelte) longicollis* O. Boettger, 1886 (= *Amalia maculata* Koch et Heynemann, 1874); monotypy.

Rather small slugs with slender body. In

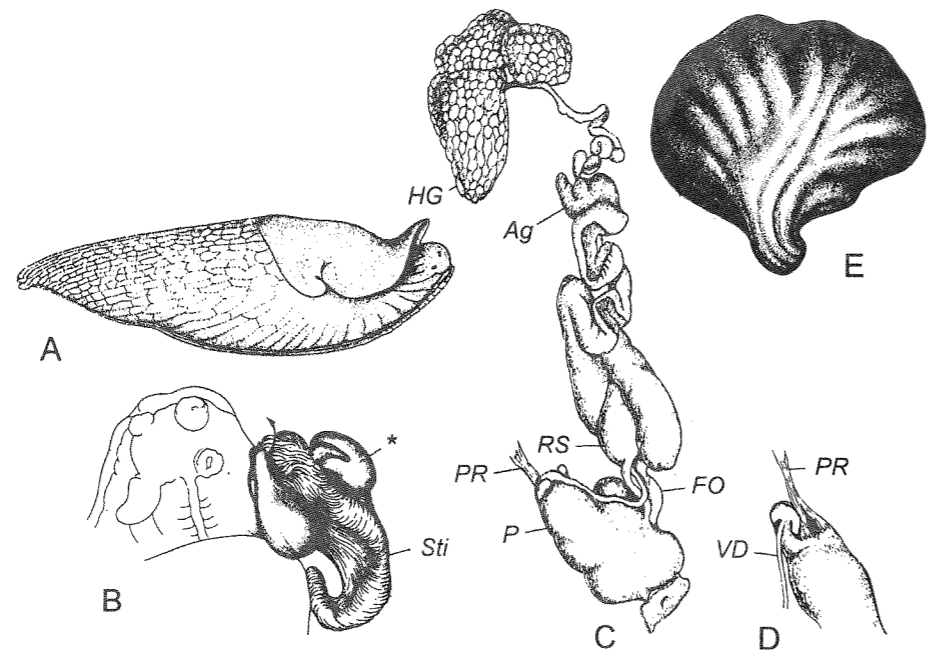


Fig. 1940. *Deroceras (Liolytopelte) caucasicum* (Simroth, 1901).
A — external view of animal. B — anterior end of slug with everted penis. C — reproductive tract. D — penis from other side. E — calcareous plate of stimulator. Asterisk — calcareous plate of stimulator.

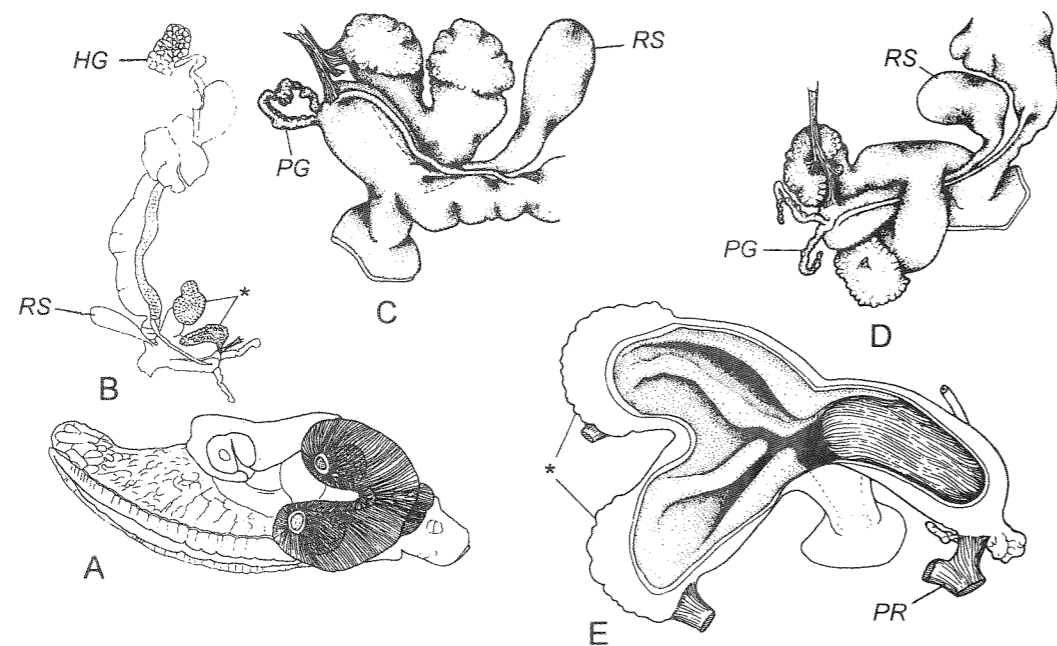


Fig. 1941. *Furcopenis darioi* Castillejo et Wiktor, 1983.
A — external view of animal with everted penis. B — reproductive tract. C, D — distal part of reproductive tract from two sides. E — interior of penis. After Castillejo & Wiktor, 1983. Asterisk — accessory organs.

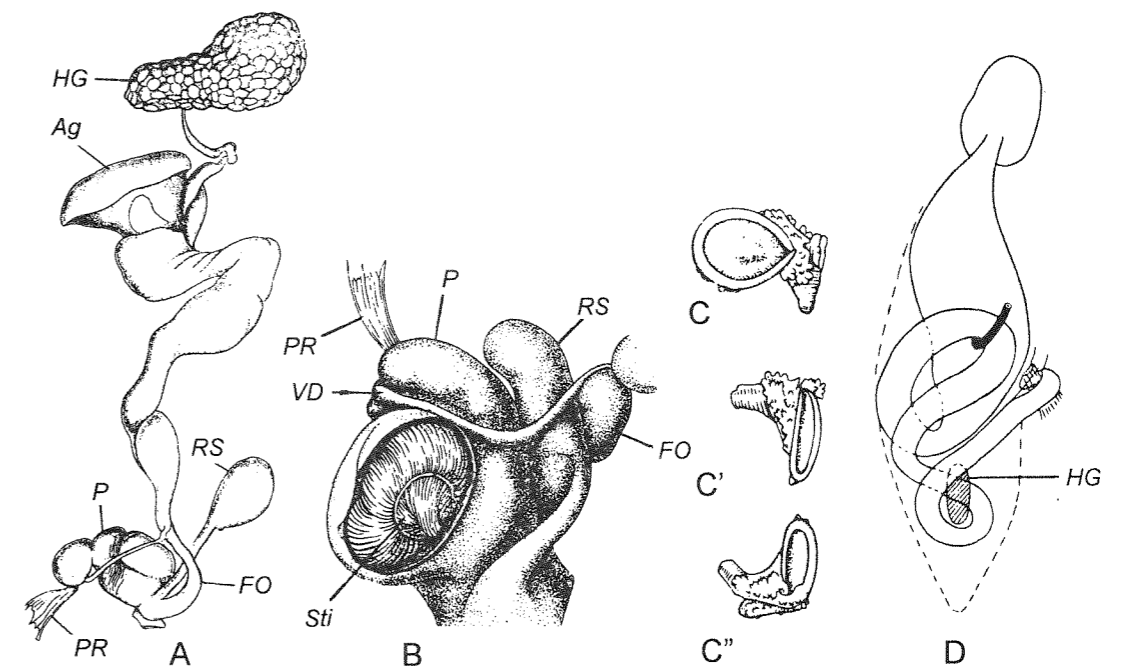


Fig. 1942. *Lytopelte maculata* (Koch et Heynemann, 1874).
A — reproductive tract. B — interior of penis. C, C', C'' — calcareous body in penis in 3 positions. D — alimentary tract. After Likharev & Wiktor, 1980

alive animals keel blunt and occupies posterior half of back. Length of mantle usually a half of total length. Between mantle slit and middle line of back there are 11-13 rows of wrinkles. Pneumostome strongly shifted post-medially. Color pattern consists of small irregular spots; a light band bordered with dark lies along middle of back and forms few local widenings. Body length up to 35 mm.

Blind gut absent.

Right ocular retractor free from peni-oviducal angle.

Penis sac-like, without accessory organs; subdivided into anterior and posterior parts by a shallow groove. Internally penis with a stimulator having calcareous body.

DISTRIBUTION. Caucasus, N Iran, Central Asia, Afghanistan. Probably 1 sp.

***Krynickyllus* Kaleniczenko, 1851.**

Kaleniczenko, 1851: 220. Likharev & Wiktor, 1980: 190.

TYPE SPECIES — *Krynickyllus melanocephalus* Kaleniczenko, 1851; SD Pilsbry, 1922.

Slugs of medium size, with slender body. Mantle lies in anterior part of body and occupies about 1/3 of body length. Cephalic

shield large (about 1/2 of mantle length). On surface of mantle there is a crescent furrow. Body length up to 40 mm.

Blind gut absent or represented by a small pocket.

Penis cylindrical or clavate, not subdivided into anterior and posterior halves, without external appendages or stimulator.

DISTRIBUTION. Crimea, Caucasus, Black Sea coasts of Asia Minor and of Balkan Peninsula.

Krynickyllus (Krynickyllus s. str.)

Fig. 1943

Inner surface of penis bears folds or pilasters, without crenulation. Calcareous stimulator absent.

DISTRIBUTION. Crimea, Caucasus, Black Sea coasts of Asia Minor and of Balkan Peninsula. 2 spp.

Krynickyllus (Toxolimax) Simroth, 1899

Fig. 1944

Simroth, 1899: 37 (*Mesolimax* subg.). Wiktor, 1994: 30.

TYPE SPECIES — *Mesolimax (Toxolimax) hoplites* Simroth, 1899; monotypy.

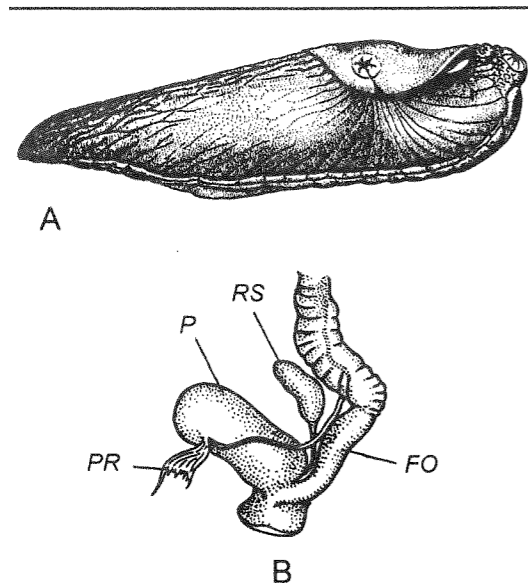


Fig. 1943. *Krynickillus (Krynickillus) melanocephalus* Kaleniczenko, 1851.
A — external view of animal. B — reproductive tract. After Likharev & Wiktor, 1980.

Pneumostome lies postmedially, above it there is a short, vague longitudinal furrow. Body length (of contracted animal) up to 22 mm. Shell with excentric nucleus separated from spatula by a septum visible from below.

Gut of two-looped type.

Right ocular retractor passes through peni-oviducal angle.

Penis clavate, with short conic process, within which there is a calcareous stimulator.

DISTRIBUTION. NW Asia Minor (Bursa, Bolu). 1 sp.

Megalopelte Lindholm, 1914

Fig. 1945

Lindholm, 1914: 167. Likharev & Wiktor, 1980: 200.

TYPE SPECIES — *Megalopelte simrothi* Lindholm, 1914; monotypy.

Small animals with very large mantle that covers nearly entire body. Mantle attached to body only by its central part. Cephalic shield very wide, about 1/2 of mantle length. Pneumostome and mantle slit situated nearly medially. Body length of extended animals up to 25 mm.

Talon hidden. Vas deferens moderately long, entering penis subapically through a simple pore. Penis large, subcylindrical, composed of enlarged distal and narrowed proximal sections. Internally penis with a strong longitudinal pilaster; distal portion of pilaster high, crest-like; proximal portion forming curvature inside upper blind end of penis, with numerous transversal crenulated grooves. Penial retractor attached to penis apically at entrance of vas deferens. Spermathecal stalk rather long, slender, enters basal part of penis; reservoir reaching mid-way of spermoviduct.

DISTRIBUTION. Western parts of Asia Minor and of Caucasus. 1 sp.

BOETTGERILLIDAE
Van Goethem, 1972

Van Goethem, 1972: 14.

Animals thin, slender, vermiform, with very narrow tripartite sole; body subcircular in cross section. Keel well developed and extends over entire back. Mantle occupies about 1/3 of body length, its hind edge does not attend middle of body. Cephalic shield somewhat shorter than a half of mantle. Pneumostome lies postmedially. 2 shallow furrows run from upper edge of pneumostome ahead and backwards, they together look like a contour of flying bird. Genital orifice lies immediately behind right lower tentacle.

Shell relatively very small, round-rectangular, lies under hind end of mantle. Nucleus disposed on longitudinal axis of shell before its posterior margin and is highest point of shell.

Gut of two-looped type. Left lobe of liver forms apex of visceral sac.

Heart lies in left anterior quarter of mantle complex. Aorta very short. Venation of lung poorly developed. Kidney somewhat rectangular, without a lobus, its anterior end elongated and curved.

Columellar muscle attached behind mantle complex, penial retractor arises from diaphragm between kidney and ureter. Right ocular retractor passes through peni-oviducal angle.

Middle portion of vas deferens much enlarged and turned to thick-walled and highly muscularized fusiform body ("corpus fusiformis"); posterior portion of vas defer-

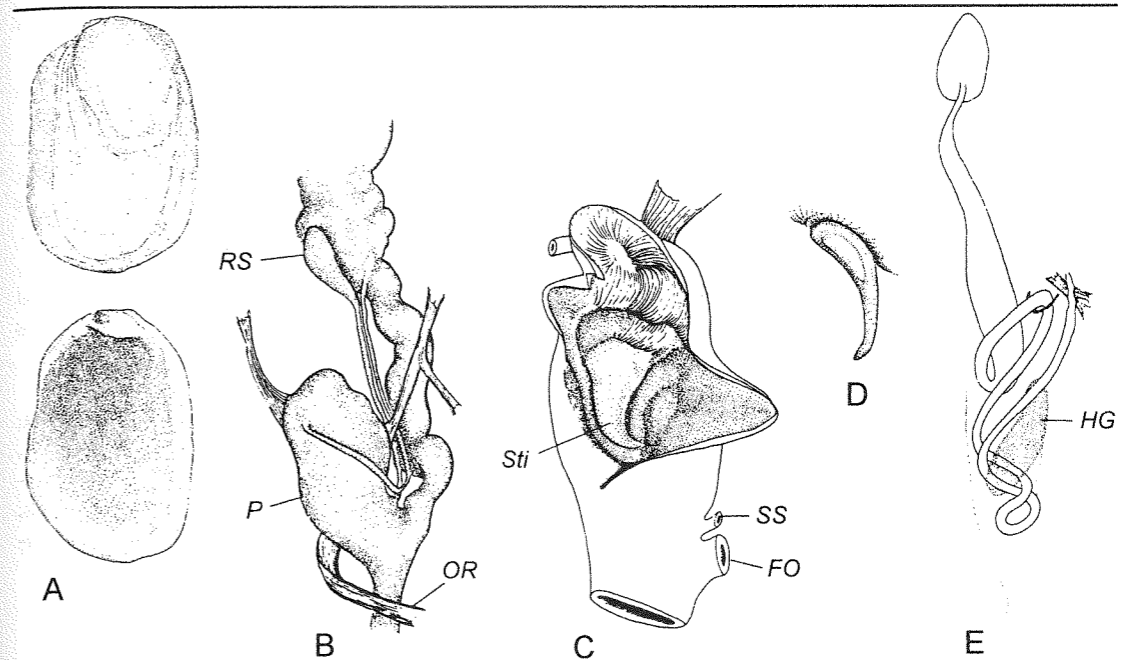


Fig. 1944. *Krynickillus (Toxolimax) hoplites* (Simroth, 1899).
A — shell. B — reproductive tract. C — interior of penis. D — calcareous plate inside penis. E — alimentary tract and position of hermaphroditic gland. After Wiktor, 1994.

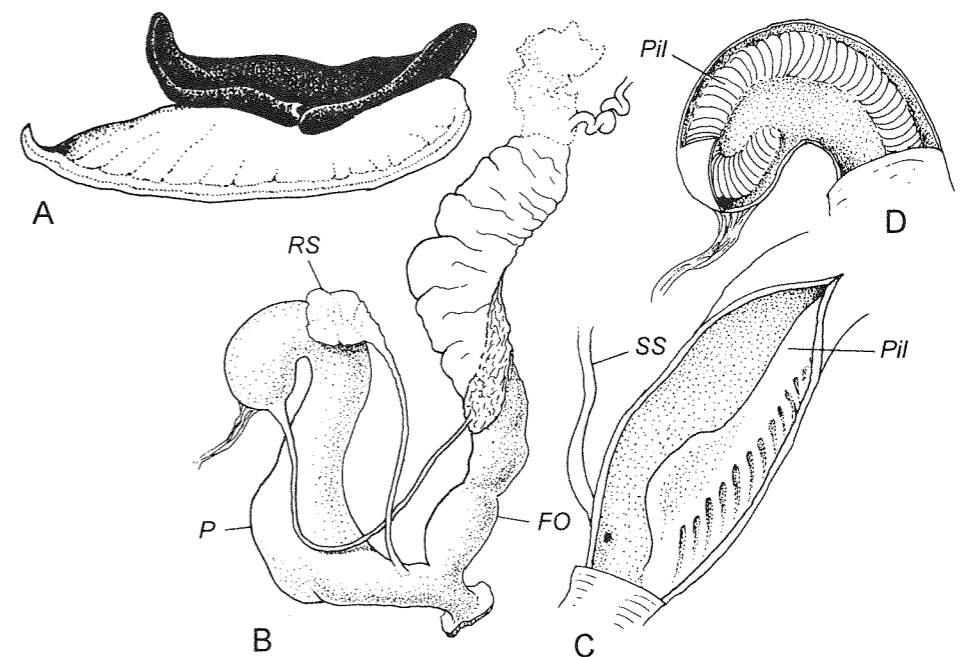


Fig. 1945. *Megalopelte simrothi* Lindholm, 1914.
Batumi Botanical Garden, October 13, 1978. A — external view. B — reproductive tract. C — interior of distal part of penis. D — interior of proximal part of penis. Moscow No. Lc-21833.

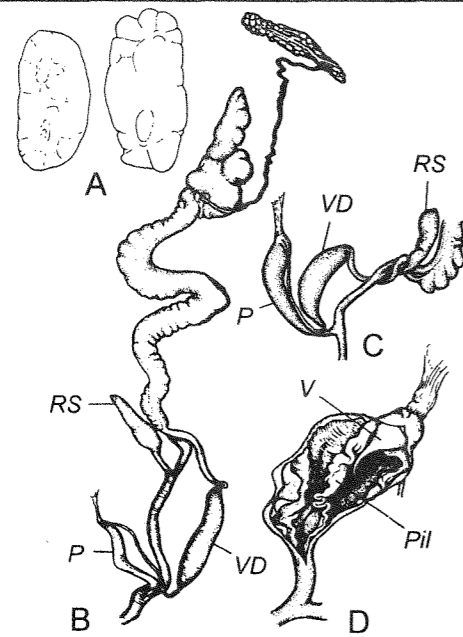


Fig. 1946. *Boettgerilla pallens* Simroth, 1912. A — shell. B — reproductive tract. C — distal part of reproductive tract of other specimen. D — interior of penis. After Wiktor, 1973.

ens, also muscularized, narrower and cylindrical; anterior one is the narrowest and thin-walled. Penis nearly cylindrical, internally with a verge and strong longitudinal pilasters. Spermatheca enters vagina far from tubular atrium.

DISTRIBUTION. Europe, W Caucasus, Central Asia (Ghissar Ridge).

Boettgerilla Simroth, 1910
Fig. 1946

Simroth, 1910b: 530.

TYPE SPECIES — *Boettgerilla compressa* Simroth, 1910; monotypy.

Characters and distribution as in family. 2 spp.

CAMAENOIDEA Pilsbry, 1893

Pilsbry, 1893 (1893-1895): XXXII (Helicidae subf.).

Shell highly variable in size, shape, and color, but never auriform or plate-like.

Sole undivided. Caudal foss or caudal horn absent.

Head wart may be present.

Jaw odontognathous.

Flagellum often present. Epiphallus only rarely absent, usually well developed, sometimes with a short caecum. Penial glands absent. Penis sheath mostly present, sometimes reduced or missing. Vagina simple, without internal papilla. Perivaginal gland or atrial appendix absent. Spermatophores sometimes present.

Herbivorous.

DISTRIBUTION. Hindustan Peninsula, Ceylon, SE Asia, China, Taiwan, Japan, Philippines, Indonesia, New Guinea, Australia, Melanesia (Moluccas, Solomons, Louisiades, Bismarck and Admiralty Archipelagos).

CAMAENIDAE Pilsbry, 1893

Characters and distribution as in superfamily.

CAMAENINAE Pilsbry, 1893

— Amphidrominae Kobelt, 1902: 1033.

— Hadridae Iredale, 1937b: 19.

— Chloritidae Iredale, 1938: 93.

— Rhagadidae Iredale, 1939: 57.

— Planispiridae Iredale, 1941: 89.

Solem, 1992: 6.

Shell generally helicoid, highly variable in size, shape, and color. Body whorl varying from rounded to sharply angulated or keeled. Embryonic sculpture, if present, normally of fine pustulations. Postapical whorls mostly with variously developed radial sculpture; ribbing or other heavy surface sculpture comparatively rare; sometimes there are periostracal setae, usually with minute to prominent calcareous base. Aperture varying from not at all to very sharply deflected over last part of body whorl; margins normally rather broadly expanded in wet or monsoon forest taxa, tending to become little-expanded in semi-arid area taxa.

Head of animal sometimes with an ever-sible head wart located between and slightly

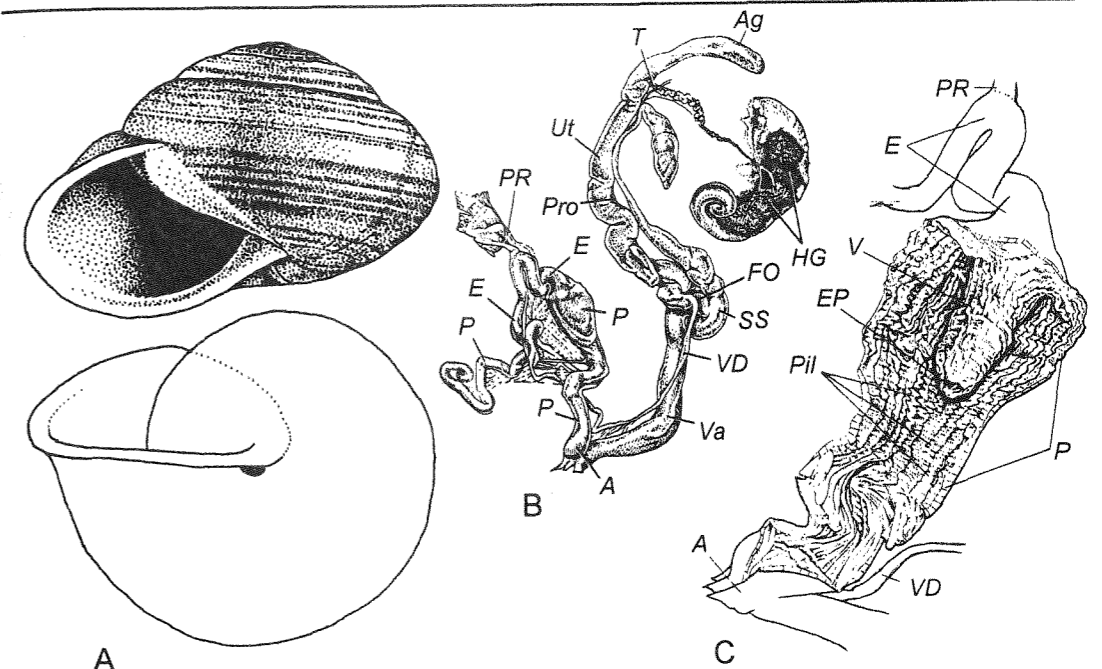


Fig. 1947. *Camaena cicatricosa* (Müller, 1774). A — shell: S China. Leiden. B — reproductive tract. C — interior of penis. After Solem, 1992.

behind ommatophores; wart frequently reduced to absent when taxa are sympatric.

Vas deferens not pierces penis sheath, enters epiphallus through specialized pilaster. Flagellum present to absent. Epiphallus may be very long and coiled, rarely with a caecum. Penis mostly rather short, internally with simple longitudinal pilasters or complex rugose sculpture, occasionally with secondary stimulatory organs; verge highly variable, sometimes absent. True penis sheath sometimes present but many taxa lack true penis sheath, with strands of a protosheath holding long, folded penis-epiphallus complex into a somewhat compact mass. Penial retractor inserting, unless secondarily altered, on epiphallus about 1/3 to 1/2 distance from penis apex to vas deferens entrance; rarely onto head of penis. Free oviduct usually short. Vagina often very long. Spermathecal stalk expanded basally; mostly long, secondarily may be shortened; reservoir originally reaching base of albumen gland.

Spermatophore, when present, elongated, without or with a conchyolinous covering and permanent shape.

DISTRIBUTION. Hindustan Peninsula, Ceylon, Andaman and Nicobar Islands, SE

Asia, China, Taiwan, Japan, Philippines, Indonesia, New Guinea, Australia, Melanesia (Moluccas, Solomons, Louisiades, Bismarck and Admiralty Archipelagos).

Camaena Albers, 1850
Fig. 1947

Albers, 1850: 85 (*Helix* subg.).

— *Camena* Martens in Albers, 1860: 165 (nom. err. pro *Camaena* Albers, 1850).

— *Eucochlias* Theobald in Nevill, 1878: 81 (t.-sp. *Helix ochthoplax* Benson, 1860; OD).

TYPE SPECIES — *Helix cicatricosa* Müller, 1774; SD Martens in Albers, 1860.

Shell dextral or sinistral, moderately solid, of 5-5.5 slightly convex whorls. Last whorl rounded, (nearly) straight. Color mostly grey or corneous, sometimes with slightly greenish tint, with many brown or blackish bands. Embryonic whorls smooth. Postnuclear whorls with variously developed malleate sculpture and elements of spiral striation. Aperture ovate, moderately oblique, with reflexed margins. Umbilicus moderately narrow, more or less covered.

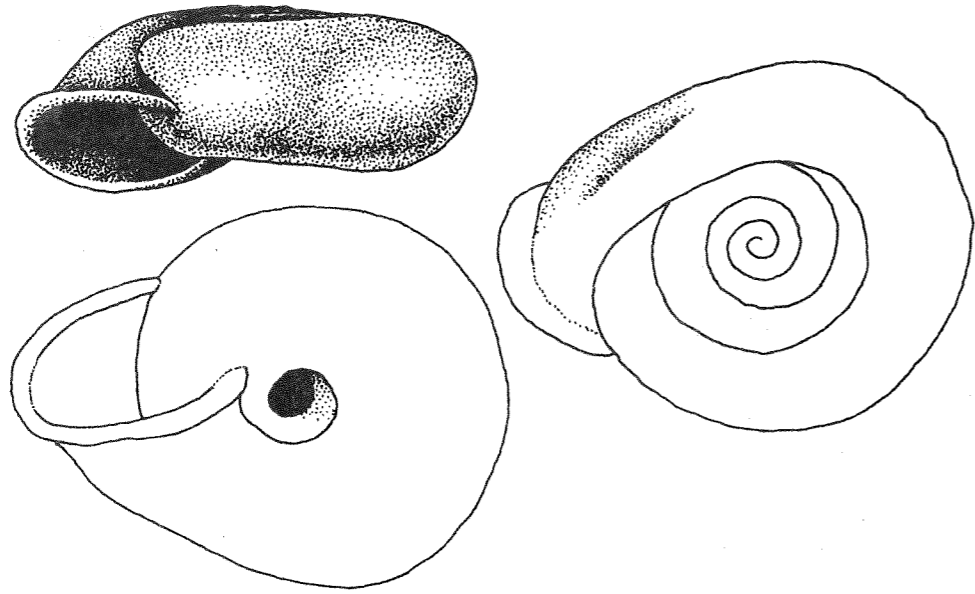


Fig. 1948. *Stegodera angusticollis* (Martens, 1875).
Hupé, China. Leiden.

Height 18-55, diam. 30-75 mm (35.3 × 44.0 mm).

Talon small, exposed. Vas deferens long, slender. Flagellum very long, vermiform. Epiphallus entering penis through a well developed, wrinkled verge. Internally penis with axial corrugated pilasters. Penis sheath absent but there is a thin, membranous "protosheath" connecting loops of flagellum, epiphallus and penis. Penial retractor attached to epiphallus. Free oviduct short. Vagina long, stout. Spermathecal stalk long, swollen basally; reservoir attending albumen gland.

DISTRIBUTION. SE Asia, S China. About 15 spp. with many forms.

Stegodera Martens, 1876
Fig. 1948

Martens in L. Pfeiffer, 1876: 150.

— *Steganodera* Kobelt, 1879: 236 (nom. err. pro *Stegodera* Martens, 1876).

TYPE SPECIES — *Helix angusticollis* Martens, 1875; monotypy.

Shell sinistral, flat, moderately to quite solid, of 4.5-5 quite convex whorls. Last whorl rounded at periphery, well descend-

ing in front, irregularly coiled in distal half; there is a longitudinal depression (sulcus) on upper palatal side behind aperture. Color corneous to chestnut. Embryonic whorls smooth. Early postnuclear whorls with irregular radial wrinkles, 2 last covered with distinct shagreen sculpture; fresh shells with hairy periostracum. Aperture ovate, very oblique, with reflexed, more or less thickened margins. Umbilicus funnel-like, excentric, moderately narrow. Height 12.5, diam. 28-30 mm (12.5 × 29.5 mm).

DISTRIBUTION. Central China (Kiangsi). 1 sp.

Traumatophora Ancey, 1887
Fig. 1949

Ancey, 1887: 54.

TYPE SPECIES — *Helix triscalpta* Martens, 1875; OD.

Shell much depressed, rather solid, of about 5 moderately convex whorls. Last whorl rounded, strongly but gradually descending in front. Color corneous. Embryonic whorls smooth. Postapical sculpture of radial striation. Aperture widely ovate, well oblique, with 3 baso-palatal lamellar teeth;

the shortest uppermost tooth (as seen in frontal view) may be covered up by upper margin of aperture. Outer surface of body whorl with longitudinal depressions corresponding to teeth. Aperture margins reflexed, somewhat thickened. Umbilicus moderately broad, perspective. Height 14-18, diam. 25-38 mm (15.5 × 30.5 mm).

DISTRIBUTION. S China. 1 sp.

Trichelix Ancey, 1887
Fig. 1950

Ancey, 1887: 64.

— *Trihelix* Pilsbry, 1890 (1890-1891): 6 (nom. err. pro *Trichelix* Ancey, 1887).

Minato, 1971: 35.

TYPE SPECIES — *Helix horrida* L. Pfeiffer, 1862; monotypy.

Shell flat, rather thin, with somewhat sunken apex, of 4-5 rather convex whorls. Last whorl strongly descending in front. Color yellowish-corneous to brown. Embryonic whorls with delicate granulation, later whorls with similar sculpture; on body whorl granules widely scattered. Aperture rounded, strongly oblique, with well reflexed margins; peristome insertions approached and connected by well developed callus. Umbilicus moderately broad, perspective. Height 6.4-10.5, diam. 13-30 mm (9.0 × 19.0 mm).

Jaw odontognathous, with flat ribs.

Vas deferens entering epiphallus apically or at short distance from tip, leaving short, conic epiphallus. Epiphallus short to long. Penis fusiform to swollen, internally with bilobed verge and distinct relief of axial rows of tubercles. Penial retractor attached to lower portion of epiphallus or to vas deferens/epiphallus junction. Free oviduct extremely short, vagina long to very long, swollen, with transversal grooves in upper portion. Spermathecal stalk moderately long to rather short.

DISTRIBUTION. SE Asia, China, Taiwan, S Japan (Ryukyu Islands). 4-6 spp.

REMARK. Judging by data of Minato (1971), this genus anatomically is not uniform. So, "*Moellendorffia* (*Trichelix*) *tokunoensis* Pilsbry & Hirase, 1905" differs from two other species from Amami Islands by absence of flagellum and extremely short epiphallus, and, perhaps, deserves the separation into independent subgenus. How-

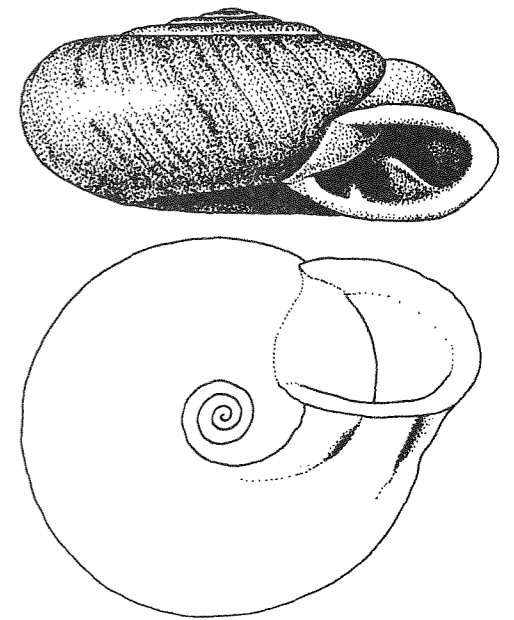


Fig. 1949. *Traumatophora triscalpta* (Martens, 1875).
Fukien Prov., China. Phil. No. 112913.

ever, as anatomy of type species of the genus is unknown, I refrain from definite decision.

Moellendorffia Pilsbry, 1905
Fig. 1951

Pilsbry, 1905: 65 (*Moellendorffia* subg.).

TYPE SPECIES — *Helix* (*Moellendorffia*) *erdmanni* Schmaeker et Boettger, 1894; monotypy.

Shell (nearly) flat, moderately solid, dull, of about 5 moderately convex whorls. Last whorl with angle above mid-line, strongly descending in front. Color corneous. Embryonic sculpture of distinct elongated chequerwise granules. Subsequent whorls with similar sculpture. Aperture rounded, subhorizontal, peristome insertions approached; margins well reflexed. There are baso-columellar and basal tuberculiform teeth, to which depressions on outer surface correspond. Umbilicus moderately broad, shallow, quite perspective. Height 7.5-8.0, diam. 17-20 mm (7.5 × 20.0 mm).

DISTRIBUTION. China. 1 sp.

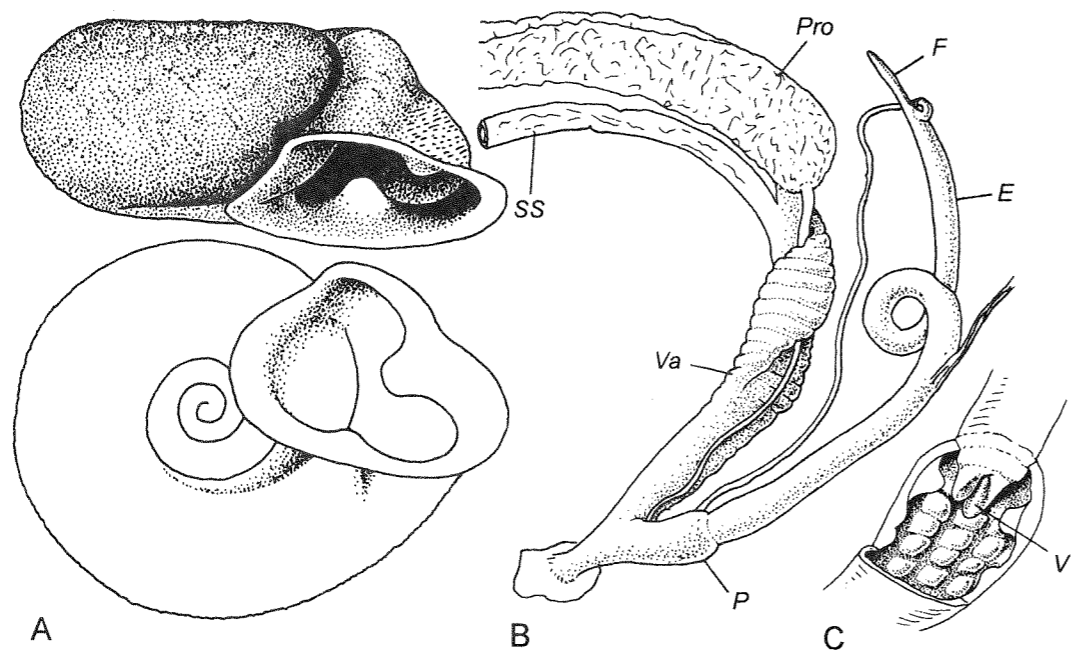


Fig. 1950. A — *Trichelix horrida* (L. Pfeiffer, 1862). Shell: Laos Mts., Cambodia. Phil. No. 32659. B, C — ! *Trichelix eucharistis* (Pilsbry, 1901). Osumi Province, Kyushu Island, March 1908. B — reproductive tract. C — interior of penis. Phil. No. A-9505-G.

Moellendorffia Ancey, 1887
Fig. 1952

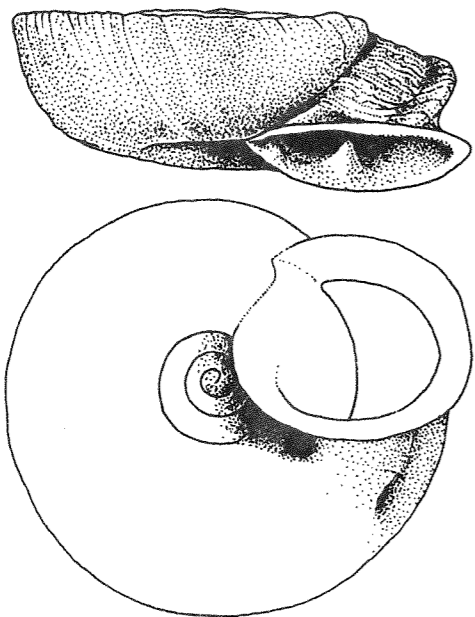


Fig. 1951. *Moellendorffiella erdmanni* (Schmacker et Boettger, 1894). Changyang, China. Phil. No. 66213.

Ancey, 1887: 64.

— *Proctostoma* Mabille, 1887: 102 (t-sp. *Helix loxotatum* Mabille, 1887; OD).

TYPE SPECIES — *Helix trisinuata* Martens, 1867; OD.

Shell depressed, rather thin, of about 5 moderately convex whorls. Last whorl rounded to angulated, strongly descending in front. Color light-corneous to dark-brown. Embryonic whorls with distinct chequerwise granulation. On subsequent whorls granules become coarse and scattered. Aperture detached, entire, roughly triangular, strongly oblique, with reflexed margins. There are 4-5 teeth: variously developed, rounded parietal; small, sometimes splitted basal; 2-3 lamellar palatal. Umbilicus open, comparatively narrow. Height 9-13, diam. 15-25 mm (11.5 × 19.5 mm).

Vas deferens long, thin, enters epiphallus laterally leaving a short, conic flagellum. Epiphallus very long, slender. Penis small, internally with bilobed verge and several axial pilasters. Penial retractor inserting on about middle of epiphallus. Free oviduct

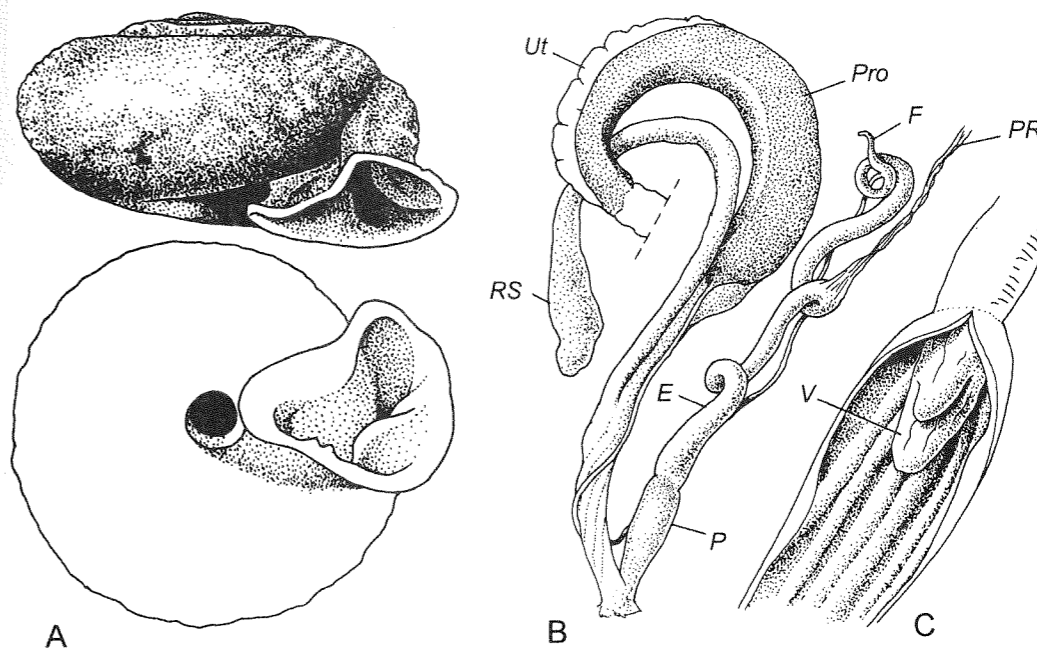


Fig. 1952. *Moellendorffia trisinuata* (Martens, 1867). A — shell: "Micrabaai, China". Leiden. B, C — Osumi Province, Kyushu Island, March 1908. B — reproductive tract. C — interior of penis. Phil. No. A-9505-G.

and vagina rather long, subequal in length; vagina internally with spiral folds. Spermathecal shaft long, cylindrical; clavate reservoir attending albumen gland.

DISTRIBUTION. SE Asia, Japan, China. 3-4 spp.

Neocepolis Pilsbry, 1891
Fig. 1953

Pilsbry, 1891 (1890-1891): 234 [*Helix (Obba)*; sect.].

TYPE SPECIES — *Helix merarcha* Mabille, 1888; OD.

Shell globose-conic, rather solid, of 6-7 slightly convex whorls. Last whorl more or less evenly rounded, strongly and abruptly descending in front. Color light- to dark-corneous, with darker, irregular, radial streaks. Embryonic whorls smooth. Later whorls finely radially ribbed, in places with elements of malleation. Behind aperture there is a short spiral depression that corresponds to smoothed crest inside aperture. Aperture subcircular, very oblique, with widely reflexed margins and internal fold within; baso-columellar margin usually with thickening. Umbilicus narrow, semi-

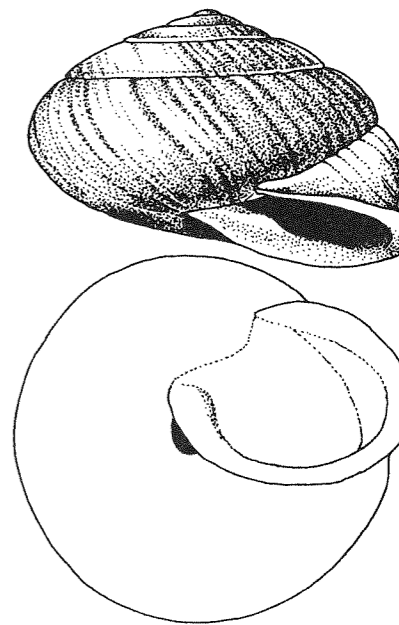


Fig. 1953. *Neocepolis merarcha* (Mabille, 1888). Lang-Son, N Vietnam. Leiden ["co-type" of *Neocepolis cherrieri* (Bavay, 1908)].

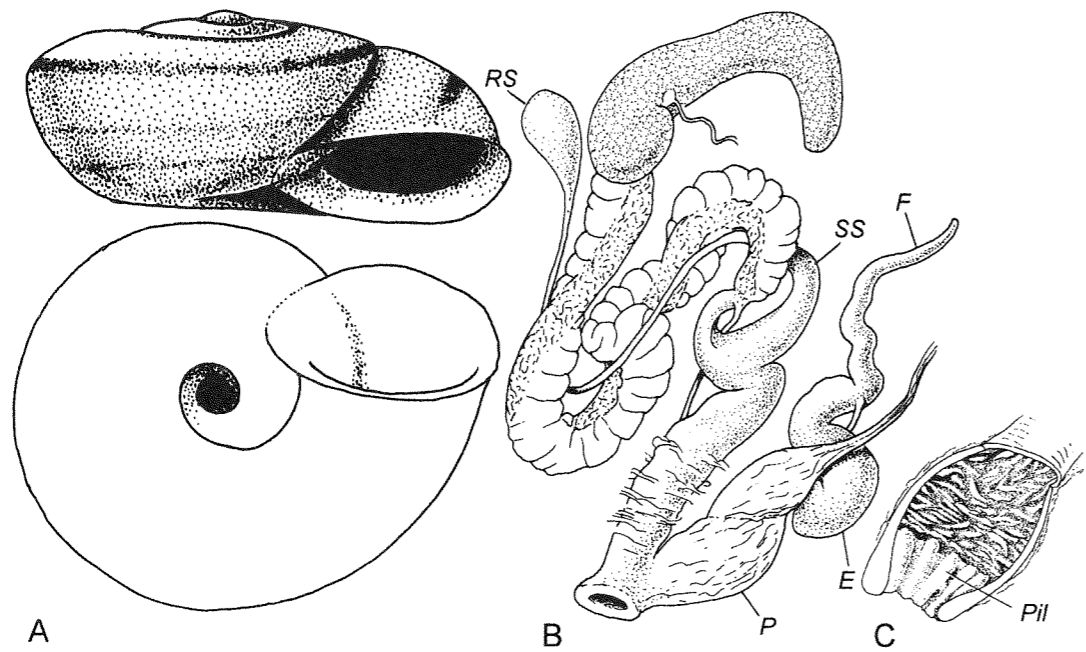


Fig. 1954. A — *Trachia asperella* (L. Pfeiffer, 1846). Ceylon. Leiden.
B, C — ! *Trachia vittata* (Müller, 1774). Islet near Tuticorin, S India, October 3-7, 2000. B — reproductive tract. C — interior of penis. Moscow No. Lc-25623.

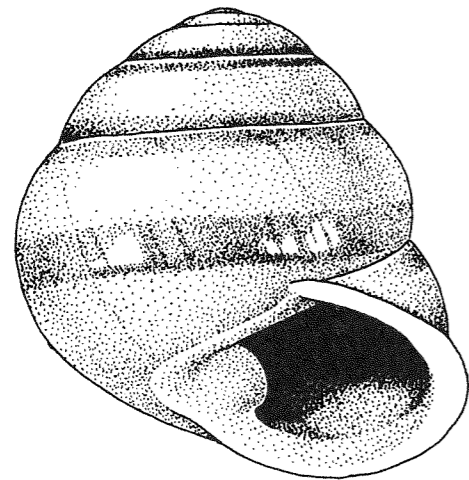


Fig. 1955. *Oreobba codonodes* (L. Pfeiffer, 1846).
Nicobar Islands. Phil. No. 63597.

covered. Height 16-34, diam. 24-40 mm (17.8 × 25.5 mm).

DISTRIBUTION. SE Asia with Andaman Islands, Philippines. 2-3 spp. with many forms.

Trachia Martens, 1860
Fig. 1954

Martens in Albers, 1860: 126 (*Helix* subg.).

— *Eurystoma* Albers, 1850: 126 [nom. praeocc., non Rafinesque, 1818; *Helix* subg.; t.-sp. *Helix vittata* Müller, 1774; SD Pilsbry, 1894 (1893-1895)].

— *Philidora* Morgan, 1885: 384 (for *Philidora wrayi* Morgan, 1885 and *Ph. hardouini* Morgan, 1885).

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

Shell depressedly conic to nearly flat, rather thin, of 4-5 slightly convex whorls. Last whorl deeply and abruptly descending in front, with periphery evenly rounded or slightly angulated. Color whitish or yellowish, monochromatic or with few dark, narrow bands. Embryonic whorls smooth. Postapical sculpture of delicate radial wrinkles, weak spiral striae and very fine granu-

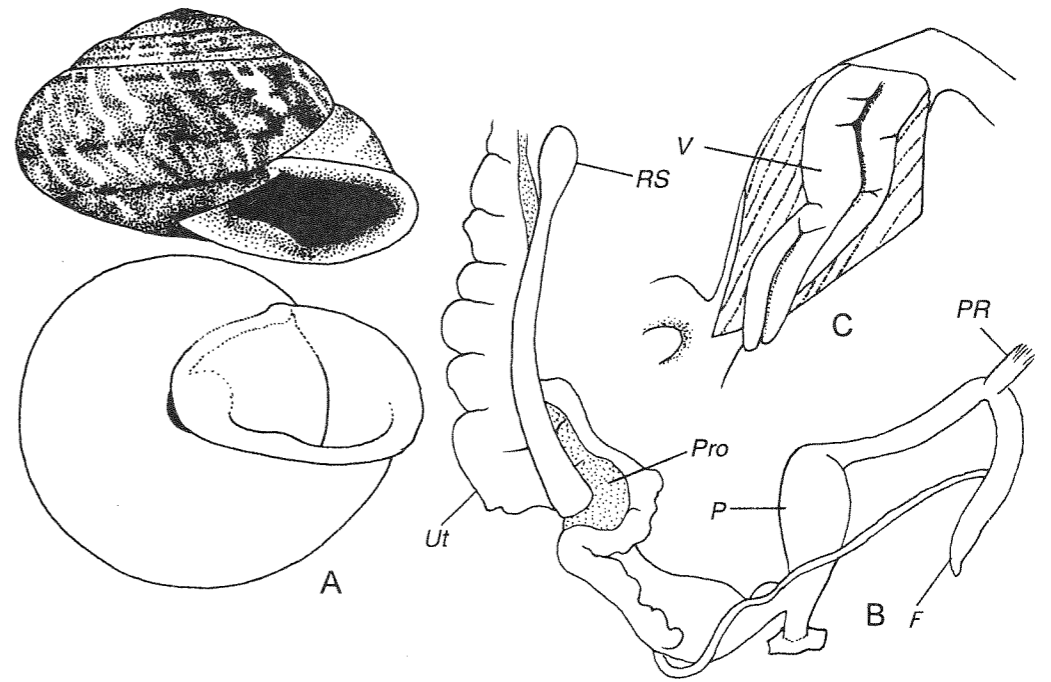


Fig. 1956. *Camaenella platyodon* (L. Pfeiffer, 1846).
A — shell: Hainan. Leiden. B — reproductive tract. C — interior of penis. After Pilsbry, 1893-1895.

lation; periostracum sometimes with short, thin hairs. Aperture quite oblique to subhorizontal, margin insertions more or less approached; margins shortly to widely reflexed. Umbilicus moderately broad. Height 3.4-15.0, diam. 7-28 mm (6.2 × 13.0 mm).

Vas deferens long, narrow, entering epiphallus laterally. Flagellum rather long, tapering. Epiphallus not long, stout. Penis somewhat swollen, internally with relief of short, chaotically scattered elongated plicae or axial pilasters broken into tubercles; in distal part with rounded, longitudinal plicae. Base of penial retractor incorporated into very thin, fibrous penis sheath. Free oviduct very short. Vagina (rather) long, stout. Spermathecal stalk long, somewhat swollen basally; reservoir reaching albumen gland.

DISTRIBUTION. Hindustan Peninsula, Ceylon, SE Asia, Mergui Archipelago, Andaman Islands, Sumatra. 18 spp. and several forms.

Oreobba Pilsbry, 1894
Fig. 1955

Pilsbry, 1894 (1893-1895): 109 (*Obba* subg.?).

— *Janira* Albers, 1850: 124 [nom. praeocc., non

Leach, 1813 (Crustacea); *Helix* subg.; t.-sp. *Helix codonodes* L. Pfeiffer, 1846; monotypy].

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

Shell globose-conoidal, moderately solid, glossy, of about 5 slightly convex whorls. Last whorl somewhat deflected, evenly rounded at periphery. Spire dome-shaped. Color whitish, with or without brown peripheral and diffuse subsutural bands. Embryonic whorls smooth. Subsequent whorls distinctly spirally striated; radial sculpture very weak. Aperture quite oblique, truncate-rounded; margins well reflexed, at columella expanded partly over narrow umbilicus, and armed with a callous tooth on inner edge. Height 18-28, diam. 17-30 mm (18.0 × 17.0 mm).

DISTRIBUTION. Nicobar Islands. 2 spp.

Camaenella Pilsbry, 1893
Fig. 1956

Pilsbry, 1893: 398 (*Camaena* subg.).

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

Shell somewhat depressed, subglobose,

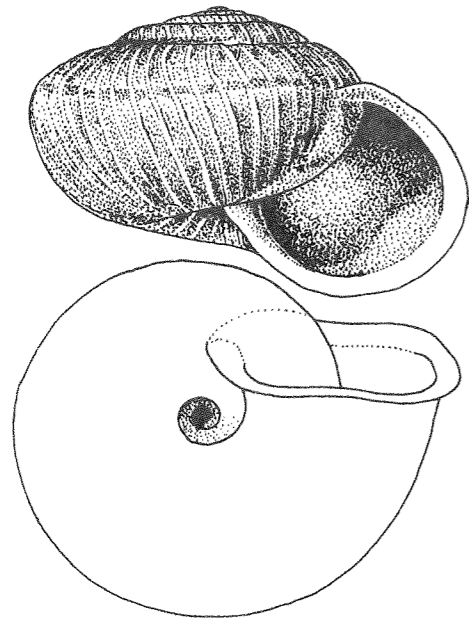


Fig. 1957. *Burmochloritis kengtungensis* Godwin-Austen, 1920.
Hills N of Kengtung, State Shan [Myanmar]. Syntype. London No. 1995078.

quite solid, of about 5.5 rather convex whorls. Last whorl rounded, abruptly deflected. Color yellowish or whitish, with brown bands and maculated with brown. Embryonic whorls smooth. Subsequent whorls with weak radial wrinkles and minute granulation. Aperture oblique, parietal callus well developed; margins enlarged, more or less reflexed, basal margin expanded, with an obtuse tooth. Umbilicus closed or nearly so. Height 14-18, diam. 22-30 mm (16.0 × 25.0 mm).

Vas deferens comparatively short, entering epiphallus laterally. Flagellum moderately long. Epiphallus curved, not long. Penis stout, internally with a very large verge and axial folds. Penial retractor attached to curvature of epiphallus. Spermathecal stalk very long.

DISTRIBUTION. Hainan Island. 1 sp.

Burmochloritis Godwin-Austen, 1920
Fig. 1957

Godwin-Austen, 1920: 9.

TYPE SPECIES — *Burmochloritis kengtungensis* Godwin-Austen, 1920; OD.

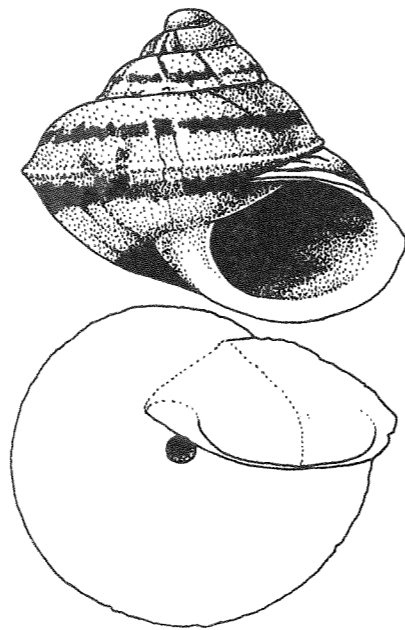


Fig. 1958. *Ganesella capitium* (Benson, 1848).
"Siam" [Thailand]. Leiden.

Shell somewhat depressed, thin, translucent, of 5-6 moderately convex whorls. Last whorl straight, rounded at periphery. Color yellowish, with corneous or reddish supraperipheral band. Embryonic whorls vaguely pitted (almost smooth). Later whorls rather regularly radially wrinkled. Aperture subcircular, only slightly oblique; margins thin, reflexed throughout. Umbilicus rather narrowly open, a little funnel-shaped. Height 16.0-20.6, diam. 24.0-32.2 mm (20.6 × 32.2 mm).

DISTRIBUTION. Myanmar (Shan State). 3 spp.

Ganesella Blanford, 1863
Fig. 1958

Blanford, 1863: 86 (*Helix* subg.).

— *Trochomoroides* Nevill, 1878: 80 (*Helix* subg.; t-sp. *Helix acris* Benson, 1859; OD).

TYPE SPECIES — *Helix capitium* Benson, 1848; monotypy.

Shell more or less trochiform, moderately thin to solid, of 4.5-6 rather convex whorls. Last whorl angulated or carinated, a little descending in front. Color light,

monochromatic or with a few dark bands. Embryonic whorls smooth. Postapical whorls with irregular radial ridgelets and spiral lines (smooth below peripheral angle or keel). Aperture widely ovate, moderately oblique, with variously reflexed margins. Umbilicus narrowly open, rarely closed. Height 4.5-25.0, diam. 5.5-27.0 mm (11.5 × 12.8 mm).

DISTRIBUTION. Hindustan Peninsula, SE Asia, Japan, Taiwan, Indonesia, Philippines. At least 50 spp.

REMARK. The volume and distribution of the genus *Ganesella* are problematic. Currently under the name *Ganesella* many species come which have nothing common with the type species of the genus (at least, conchologically). Many species, in particular, in Japan, actually do not belong to this genus. Thus, final decision on taxonomic position should be postponed until anatomy of type species is known.

Globotrochus Haas, 1935
Fig. 1959

Haas, 1935: 47.

TYPE SPECIES — *Helix onestera* Mabille, 1887; monotypy.

Shell trochoid, very thin, translucent, of 5-6 slightly convex, somewhat shouldered whorls. Last whorl straight, with cord-like peripheral keel. Color uniformly grey or corneous. Embryonic whorls smooth. Post-nuclear sculpture of fine accidental radial ridgelets and spiral lines, especially on body whorl; crossing of radial and spiral elements gives an effect of delicate granulation. Aperture ovate, bluntly angulated, with thin, slightly reflexed margins. Umbilicus closed. Height 16-17, diam. 21-22 mm (16.5 × 21.5 mm).

DISTRIBUTION. N Vietnam. 1 sp.

Giardia Ancy, 1907
Fig. 1960

Ancy, 1907: 195.

— *Girardius* Richardson, 1983: 94 (nom. err. pro *Giardia* Ancy, 1907).

TYPE SPECIES — *Buliminus siamensis* Redfield, 1853; SD Zilch, 1960.

Shell sinistral, elongated-ovate, shining, of 7-9 slightly convex whorls. Last whorl rounded, not deflected. Color (pale) corne-

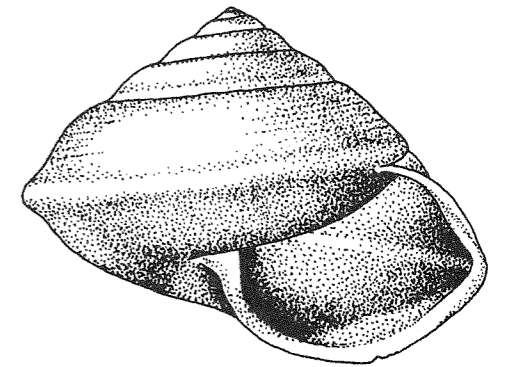


Fig. 1959. *Globotrochus onestera* (Mabille, 1887).

"Haiphong, Tonkin". Chicago No. 104281.

ous. Embryonic whorls smooth. Postapical sculpture very weak, of delicate radial wrinklelets. Aperture irregularly ovate, slightly oblique, with shortly reflexed, thin margins; columellar margin straight, well expanded. Umbilicus narrowly open. Height 13-23, diam. 6-7 mm (14.0 × 6.8 mm).

Talon small. Vas deferens long, thin, entering epiphallus laterally. Flagellum moderately long, tapering. There is no distinct external boundary between epiphallus and penis. Penis internally with a few axial pilasters consisting of triangular leaflets; verge absent. Penial retractor attached to middle part of epiphallus. Free oviduct short. Vagina long, stout. Spermathecal stalk long, thin; reservoir spear-shaped, attending albumen gland.

DISTRIBUTION. Thailand, Vietnam. 2-3 spp.

Beddomea Nevill, 1878
Fig. 1961

Nevill, 1878: 127 (*Amphidromus* subg.).

— *Phengus* Jousseaume, 1894: 295 (non Albers, 1850; t-sp. *Bulimus ceylanicus* L. Pfeiffer, 1846; designated here).

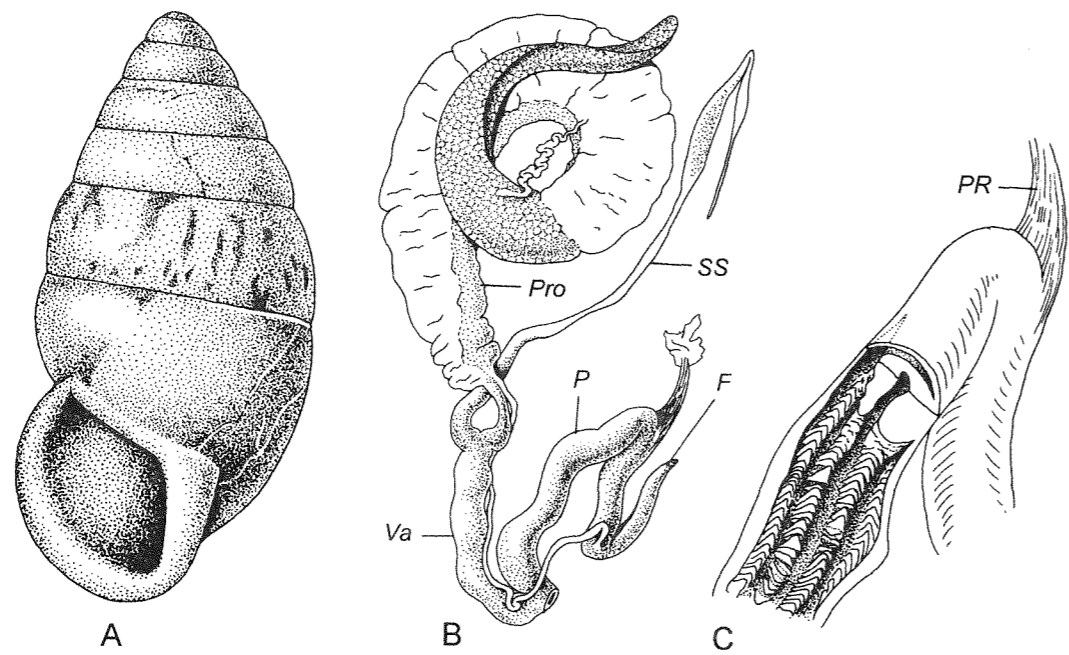


Fig. 1960. *Gardia siamensis* (Redfield, 1853). Tho Chu Island, Vietnam, June 30 — July 4, 1989. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-25595 (shell), 25626 (soft parts).

Type species — *Bulimus ceylanicus* L. Pfeiffer, 1846; OD.

Shell mostly dextral, conic, rather thin, of 5.5-6 slightly convex whorls. Last whorl straight, rounded. Color white, uniform or with brown bands or diffuse streaks. Embryonic whorls smooth. Later whorls without regular sculpture. Aperture ovate, oblique, with more or less reflexed margins. Umbilicus narrow. Height 23-35, diam. 13-21 mm (29.0 × 18.0 mm).

Vas deferens long, thin. Flagellum very long, vermiform. Epiphallus rather short. Penis clavate, elongated, internally with thin axial plicae and long, folded verge; surface of verge with 2 deep longitudinal furrows. Epiphallus connected with upper part of penis by thin fibers. Penial retractor attached to distal part of epiphallus. Free oviduct rather short, vagina somewhat longer. Spermathecal stalk long, enlarged basally.

DISTRIBUTION. S India, Ceylon. 7-8 spp. with several forms.

Obba Beck, 1837
Fig. 1962

Beck, 1837: 30 (*Helix* subg.).

— *Pusiodon* Swainson, 1840: 330 (for *Helix zonaria*

Chemnitz, 1786 and *Helix auriculata* Swainson, 1820).

— *Obbina* Semper, 1873: 120 (t.-sp. *Helix planulata* Lamarck, 1822; OD).

— *Gallina* Hartmann, 1843: 197 (t.-sp. *Helix rota* Sowerby, 1841; monotypy).

— *Philina* Albers, 1850: 119 (part.; *Helix planulata* Lamarck, 1822; designated here).

TYPE SPECIES — *Helix planulata* Lamarck, 1822; SD J. Gray, 1847.

Shell depressed to nearly flat, more or less lens-shaped, solid, of about 5 weakly convex whorls. Last whorl narrowly rounded to angled or keeled, abruptly deflected behind aperture. Coloration consists of white or creamy background, chestnut marble pattern and 1-2 dark bands above and below periphery. Embryonic whorls smooth. Subsequent whorls with weak, irregular, radial wrinkles; spiral incised lines irregular, vague; besides, there are elements of malleation and very fine granulation, predominantly on body whorl. Aperture subcircular, very oblique (nearly horizontal), entire, with reflexed, thickened margins; basal margin often with a tuberculi-form tooth. Umbilicus moderately narrow,

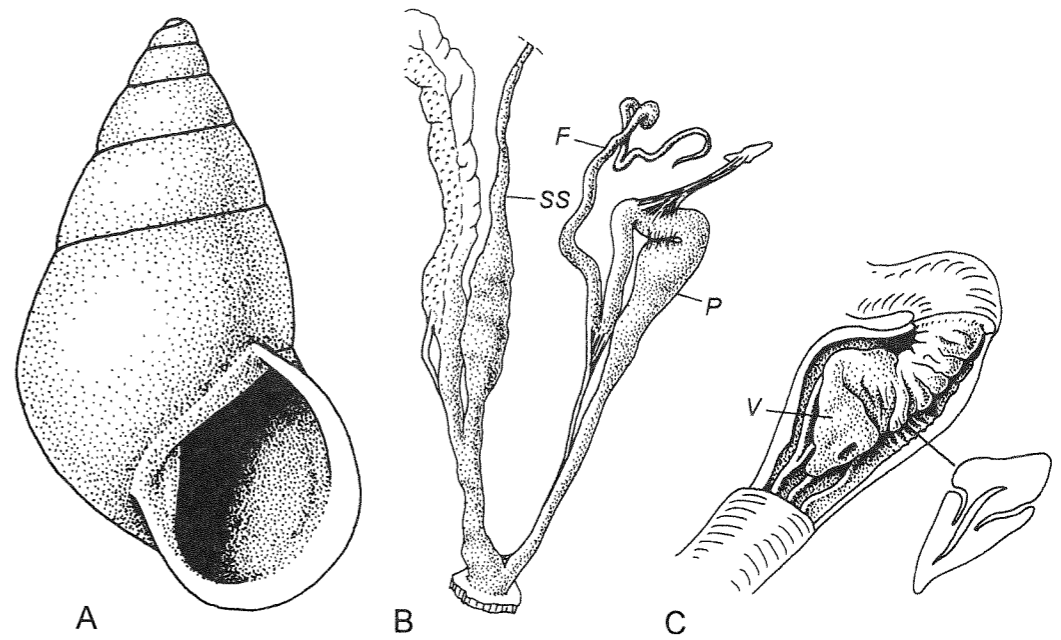


Fig. 1961. A — *Beddomea ceylanica* (L. Pfeiffer, 1846). Shell: Ceylon. Vienna No. 41.433. B, C — ! *Beddomea intermedia* (L. Pfeiffer, 1854). Ceylon. B — reproductive tract. C — interior of penis and cross-section through verge. Paris.

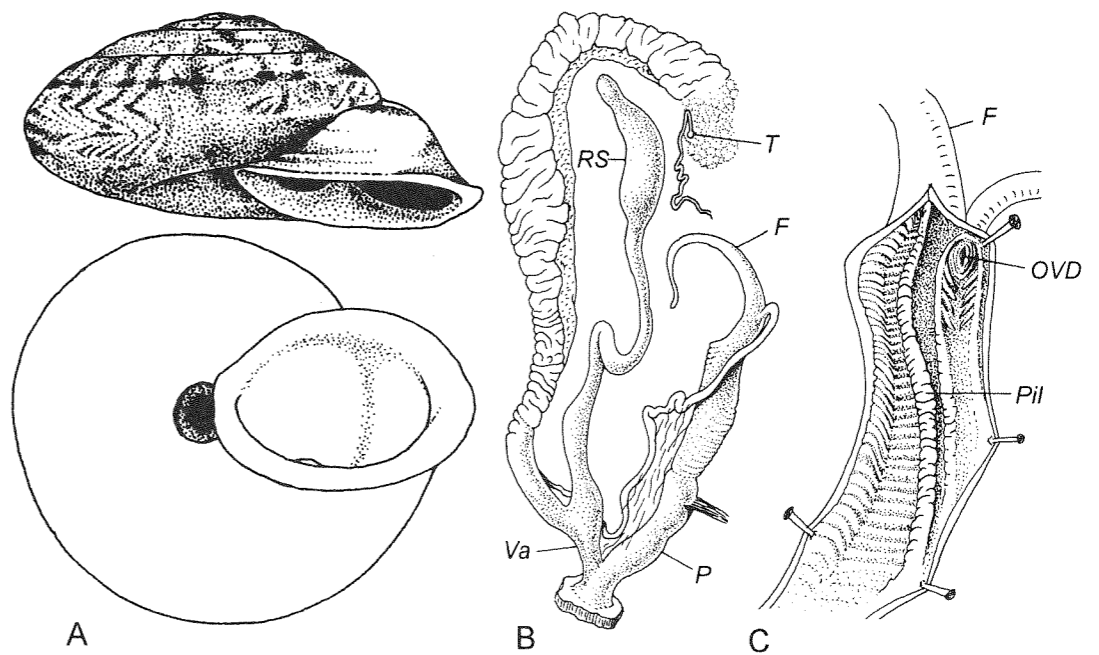


Fig. 1962. A — *Obba planulata* (Lamarck, 1822). Shell: Philippines. Moscow No. Lc-15569. B, C — ! *Obba listeri* (J. Gray, 1828). Mont Halcon, Mindoro Oriental [Philippines], December 1980. B — reproductive tract. C — interior of penis. Paris.

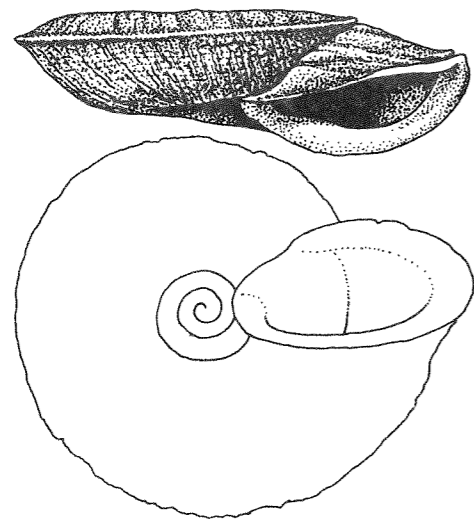


Fig. 1963. *Obbiberus bulacanensis* (Hidalgo, 1888).
Luzon. Phil. No. 81279.

partly covered. Height 9-20, diam. 17-43 mm (13.4 × 28.1 mm).

Talon exposed, small, clavate. Vas deferens rather long, entering epiphallus through a slit-like pore located on tip of a short nipple. Flagellum moderately long, tapering. Penis and epiphallus internally with a few corrugated axial pilasters; U-shaped pilaster embracing opening of vas deferens. Penial retractor attached to upper part of penis. Free oviduct somewhat longer than short vagina. Spermathecal stalk long, elongated reservoir reaching albumen gland.

DISTRIBUTION. Philippines, northern Sulawesi, Halmahera and Ceram Islands. About 30 spp. with numerous forms.

Obbiberus Haas, 1935
Fig. 1963

Haas, 1935: 45 (*Obba* subg.).

TYPE SPECIES — *Helix bulacanensis* Hidalgo, 1888; OD.

Shell flat, somewhat fragile, slightly translucent, of 4-4.5 flattened whorls. Last whorl strongly descending in front, with very sharp, cord-like keel at periphery. Color pale fulvous; 2 darker bands — above

and below keel — may be present. Embryonic whorls smooth. Postapical sculpture consists of combination of dense, radial, irregular wrinkles, wavy spiral engraved lines and elements of malleation. Aperture broadly ovate, subhorizontal, nearly entire, with reflexed, expanded margins, basal margin regularly arcuate. Umbilicus wide, perspective. Height 10, diam. 32-34 mm (10.0 × 33.9 mm).

DISTRIBUTION. Philippines (Luzon). 1 sp.

Planispira Beck, 1837
Fig. 1964

Beck, 1837: 29 (*Helix* subg.).

TYPE SPECIES — *Helix zonaria* Linnaeus, 1758; SD Martens in Albers, 1860.

Shell flat, moderately thin, slightly translucent, of about 5 weakly convex whorls. Last whorl evenly rounded, abruptly deflected toward aperture. Color grayish-yellow, monochromatic or with 1-3 dark bands. Embryonic whorls with exceptionally fine, silky spiral striation; same sculpture retained locally on postapical whorls; besides, there are irregular, fine, radial wrinkles. Aperture broadly ovate or nearly circular, very oblique to almost horizontal; margins reflexed, thickened basally. Umbilicus comparatively narrow but quite perspective. Height 6-13, diam. 14-32 mm (12.0 × 28.1 mm).

Vas deferens long, thin, entering epiphallus through a simple pore. Flagellum short, conic. Epiphallus somewhat enlarged, subcylindrical, internally with a pair of triangular in cross-section pilasters. Penis rather small, clavate, internally with a fleshy verge and 1-2 thick, transversal folds; verge forked on tip and with transversal grooves. Penial retractor inserting on lower half of epiphallus. Free oviduct and vagina not long, subequal in length. Spermathecal stalk very long, more or less convoluted.

DISTRIBUTION. New Guinea, Moluccas. At least 30 spp.

Pseudobba Moellendorff, 1891
Fig. 1965

Moellendorff, 1891: 202 (*Camaena* sect.).

TYPE SPECIES — *Helix mamilla* Féussac, 1821; OD.

Shell globose, solid, dull, of 5.5-6 mo-

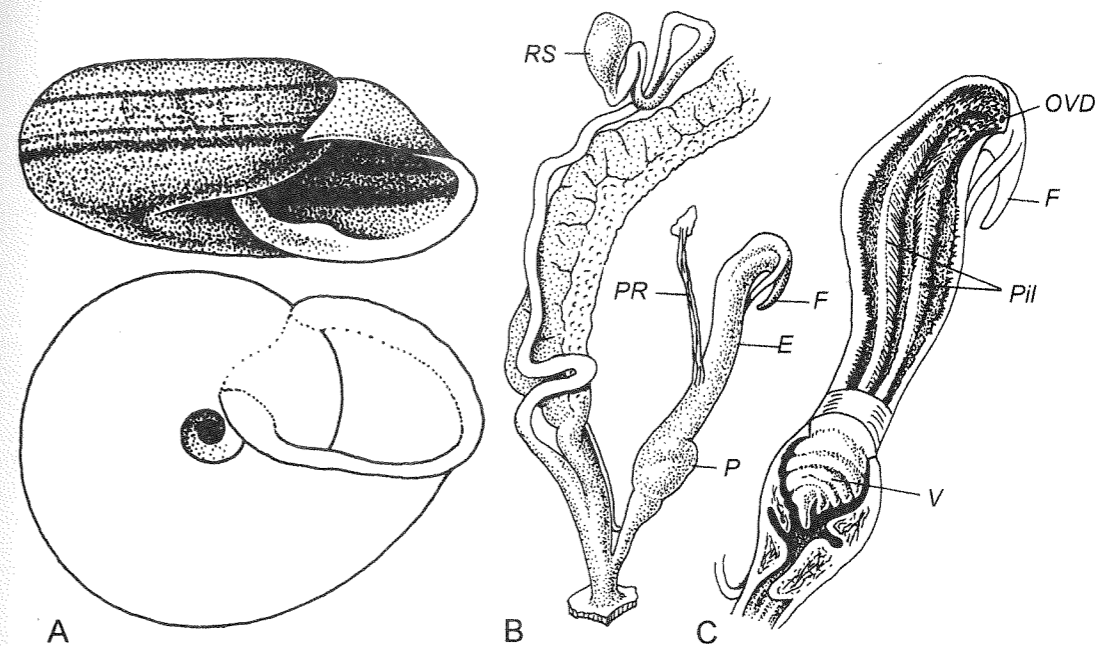


Fig. 1964. *Planispira zonaria* (Linnaeus, 1758). "Ambon, Ind. Archipel". A — shell. B — reproductive tract. C — interior of epiphallus and penis. Leiden.

derately to slightly convex whorls. Last whorl widely rounded, well descending in front. Color yellowish-corneous, marbled with brown and often with more or less diffuse, variously developed darker bands: above, on, and below periphery. Embryonic whorls smooth. Postapical sculpture of coarse malleation. Aperture widely ovate or subquadrangular, with more or less thickened, sharply reflexed margins; peristome insertions approached and connected by shining callus; columellar margin sometimes with light thickening. Umbilicus moderately narrow, partly covered. Height 25-50, diam. 30-65 mm (35.3 × 40.1 mm).

DISTRIBUTION. Indonesia (N Sulawesi and Sangihe Island). 4-5 spp.

Gemitelx Iredale, 1941
Fig. 1966

Iredale, 1941: 87.

TYPE SPECIES — *Helix (Chloritis) perambigua* Smith, 1895; OD.

Shell depressed-globose, rather thin, of 4.5 slightly convex whorls. Last whorl rounded, a little descending in front. Color uniformly chestnut. Embryonic whorls with

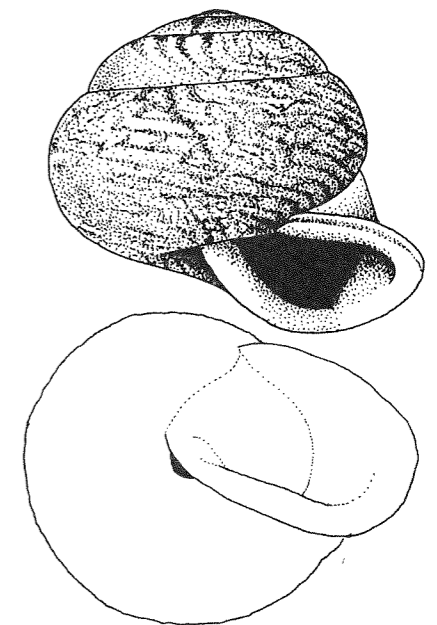


Fig. 1965. *Pseudobba mamilla* (Féussac, 1821). Sulawesi. Chicago No. 40920.

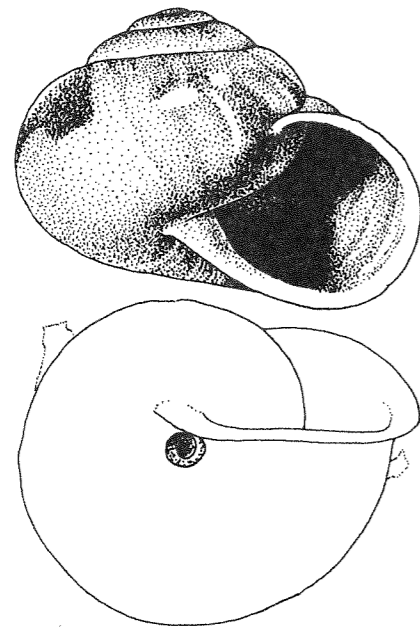


Fig. 1966. *Gemitelix perambigua* (E. Smith, 1895).
Finisterre Mts., Papua New Guinea. Cardiff.

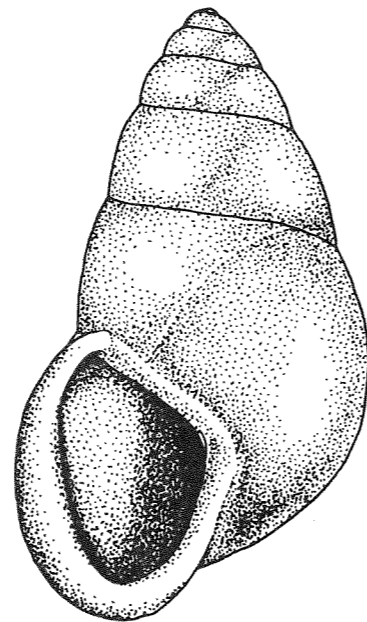


Fig. 1967. *Pseudopartula galericula* (Mousson, 1849).
Java. Leiden.

smoothed granulation. Postnuclear surface very finely radially striate (almost smooth). Aperture subcircular, only slightly oblique, with shortly reflexed margins; columellar margin dilated. Umbilicus narrowly open. Height 19-20, diam. 25-27 mm (19.8 × 26.3 mm).

DISTRIBUTION. Northern Papua New Guinea. Probably 1 sp.

Pseudopartula L. Pfeiffer, 1856
Fig. 1967

Pfeiffer L., 1856: 162 (as *Pseudopartula* err. typ., corr. Index, p. VII).

TYPE SPECIES — *Bulimus galericulum* Mousson, 1849; monotypy.

Shell sinistral, bulimoid, thin, shining, of 5.5-6 slightly convex whorls. Last whorl straight, evenly rounded or with peripheral cord. Color white or yellowish. Embryonic whorls smooth. Later whorls with weak, irregular radial wrinklets and also weak spiral lines. Aperture ovate, very oblique, palatal margin concave; margins somewhat thickened, broadly reflexed. Umbilicus very narrow or closed. Height 17-37, diam. 9-18 mm (21.8 × 11.5 mm).

DISTRIBUTION. Indonesia. 2-3 spp.

Parachloritis Ehrmann, 1912
Fig. 1968

Ehrmann, 1912: 45, 53.

TYPE SPECIES — *Eulota (Plecteulota) telitecta* Moellendorff, 1892; OD.

Shell depressed, comparatively solid, glossy, of 4-4.5 moderately convex, a little shouldered whorls. Last whorl with blunt peripheral keel, well descending in front. Color (pale) yellow. Embryonic whorls microscopically radially wrinkled. Postembryonic whorls with very fine granulation. Aperture ovate, well oblique, with thin, widely reflexed, expanded margins. Umbilicus narrow, usually partly covered. Height 8-11, diam. 15-19 mm (9.8 × 16.8 mm).

DISTRIBUTION. Indonesia (Timor and Tanimbar Islands). 2 spp.

Trachychloritis Haas, 1934
Fig. 1969

Haas, 1934: 203 (*Chloritis* subg.).

TYPE SPECIES — *Chloritis (Trachychloritis) verrucosa* Haas, 1934; monotypy.

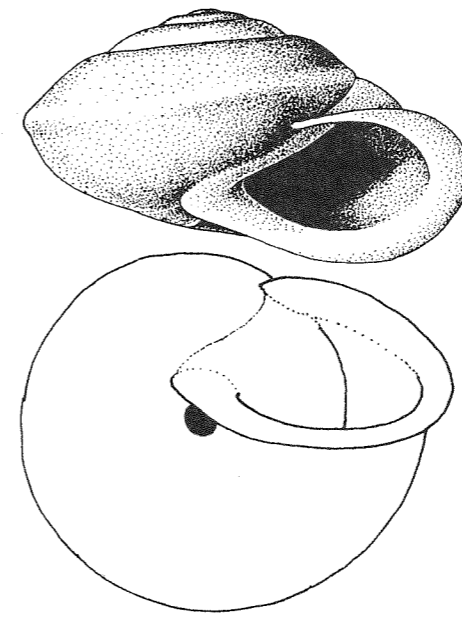


Fig. 1968. *Parachloritis telitectus* (Moellendorff, 1892).
"Tenimber Island". Lectotype. Senck. No. 9143.

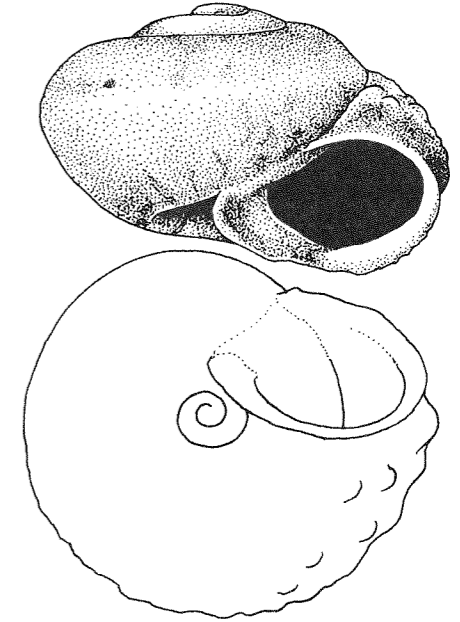


Fig. 1969. *Trachychloritis verrucosa* (Haas, 1934).
"Sjerah Isl., Tenimber". Holotype. Senck. No. 8677.

Shell depressed-globose, rather thin but firm, of about 3.5 rather convex whorls. Last whorl with very weak, rounded peripheral angle, descending in front, with circular groove behind aperture. Color corneous. Embryonic whorls clearly granulated. Postapical sculpture of dense, irregular, radial wrinkles, in places with elongate granules; last whorl in last quarter coarsely verrucose. Aperture broadly ovate, moderately to well oblique, with slightly thickened, reflexed margins. Umbilicus moderately narrow, perspective, encircled by a ridge; slopes of umbilicus finely granulated. Height 8.2, diam. 12.2 mm (8.2 × 12.2 mm).

DISTRIBUTION. Indonesia (Timor and Tenimbar Islands). 1 sp.

Ptychochloritis Moellendorff, 1902
Fig. 1970

Moellendorff, 1902: 199 (*Chloritis* subg.).

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

Shell flat, usually with somewhat sunken apex, of 5 rather convex whorls. Last whorl rounded at periphery, gently deflected.

Color yellowish-corneous. Embryonic whorls smooth. Postapical whorls with fine radial striation. Aperture narrowly semilunate, slightly oblique, with reflexed margins. Peristome insertions connected by a strong, elevated, ridge-like parietal callus giving an impression of entire aperture. Umbilicus narrow, semicovered. Height 8-19, diam. 16-38 mm (18.5 × 36.0 mm).

DISTRIBUTION. Indonesia [Xulla (= Kepulauan Sulu) and Buru Islands]. 5-6 spp.

Discoconcha I. Rensch, 1937
Fig. 1971

Rensch I., 1937: 542.

— *Opterigone* Iredale, 1941: 89 (t.-sp. *Helix majiuscula* L. Pfeiffer, 1856; OD).

TYPE SPECIES — *Helix majiuscula* L. Pfeiffer, 1856; monotypy.

Shell discoid, flat or nearly so, rather solid, of about 5 moderately convex whorls. Last whorl rounded or scarcely angled, well descending in front. Color dull-yellow to ochraceous, with darker radial spots and streaks. Embryonic whorls smooth. Postapical sculpture of irregular, not strong, radial wrinkles; body whorl with elements of

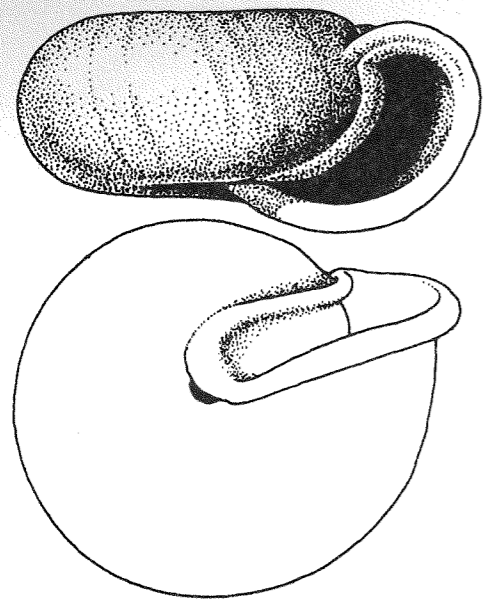


Fig. 1970. *Ptycochloritis gruneri* (L. Pfeiffer, 1846). Xulla Island [Indonesia]. Chicago No. 41267.

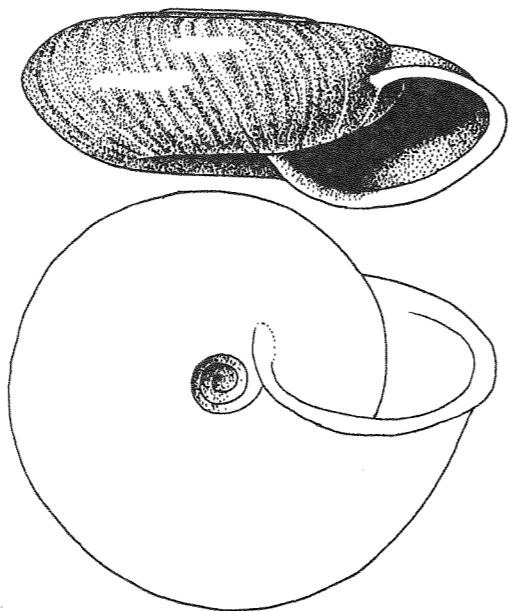


Fig. 1971. *Discoconcha majuscula* (L. Pfeiffer, 1856). "Australia". Cardiff.

malleation. Aperture irregularly semilunate, quite oblique, with reflexed, somewhat expanded margins. Umbilicus moderately wide, perspective. Height 17-27, diam. 40-58 mm (18.0 × 45.8 mm).

Vas deferens moderately long. Flagellum or epiphallus wanting. Penis enormously long. Spermathecal stalk long. Lower part of spermoviduct with a short, thick-walled, curved appendix.

DISTRIBUTION. New Guinea, Bismarck Islands, Admiralty Islands, ? N Australia. 1 sp. with 3 subspp.

Disteustoma Iredale, 1941
Fig. 1972

Iredale, 1941: 85.

TYPE SPECIES — *Helix dinodeomorpha* Tapparone-Canefri, 1883; OD.

Shell subglobose to depressed, moderately solid, dull, of 4-5 convex whorls. Last whorl widely rounded, gradually descending in front; on upper surface there is a blunt angle. Color uniformly corneous. Apical whorls practically smooth. Later whorls delicately granulate, often with scattered hairs. Aperture ovate, moderately to slightly

oblique, with thin, reflexed margins. Umbilicus rather narrow, profound. Height 17-19, diam. 27-30 mm (18.2 × 28.4 mm).

Vas deferens long, entering epiphallus subapically. Epiphallus consists of 2 sections: short, swollen proximal section and long, slender, expanded in its middle part distal section. Penis rather long, narrow. Penial retractor attached to upper part of penis. Free oviduct short; vagina markedly longer. Spermathecal stalk rather long, somewhat expanded basally; reservoir subglobular, not attending albumen gland.

DISTRIBUTION. Papua New Guinea. 8 spp.

Chloritis Beck, 1837
Fig. 1973

Beck, 1837: 24 (*Helix* subg.). Solem, 1979: 126.

TYPE SPECIES — *Helix unguina* Linnaeus, 1758; SD Martens in Albers, 1860.

Shell flat, with sunken apex, moderately thin, of 5-6 convex whorls. Last whorl evenly rounded at periphery, strongly descending in front. Color yellow, brownish or pinkish. Embryonic whorls smooth. Postapical surface only slightly sculptured with fine radial striation. Aperture roundly ovate, moderately oblique, margins somewhat

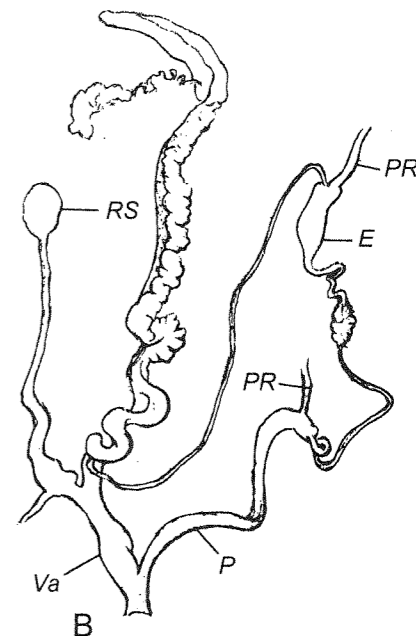
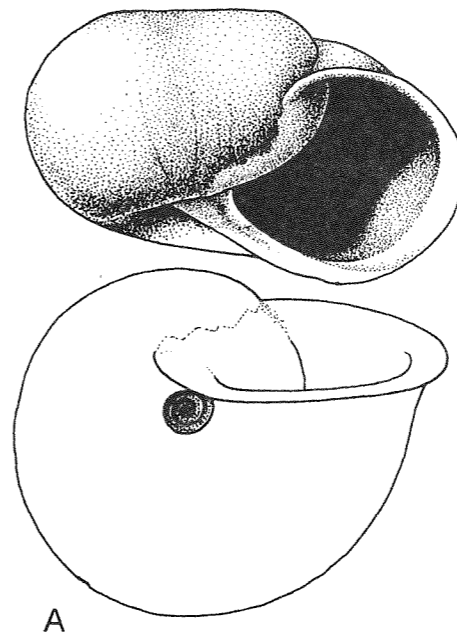


Fig. 1972. *Disteustoma dinodeomorpha* (Tapparone-Canefri, 1883). New Ireland, Papua-New Guinea. Cardiff.

expanded and reflexed. Umbilicus moderately narrow, open, cylindrical. Height 9-30, diam. 13-48 mm (14.0 × 25.0 mm).

DISTRIBUTION. Sulawesi, Ceram, New Guinea, Moluccas, New Ireland, Solomons, Louisiades. At least 12 spp.

Verdichloritis Clench, 1957
Fig. 1974

Clench, 1957: 1 (*Eustomopsis* subg.).

TYPE SPECIES — *Eustomopsis (Verdichloritis) polingi* Clench, 1957; OD.

Shell flat, thin, fragile, with sunken apex, of 3.5 very convex whorls. Last whorl evenly rounded at periphery. Color of embryonic whorls corneous, rest whorls bright bluish-green. Embryonic whorls vaguely microgranulated (practically smooth). Subsequent whorls with indistinct radial ridgelets and short hairs of golden color arranged radially and slightly diagonally; when hairs fall off, on their places clear scars remain. On slopes of umbilicus these scars very dense. Aperture subcircular, slightly oblique, with thin, narrowly reflexed margins. Behind aperture there is narrow, deep groove running parallel to peristome. Um-

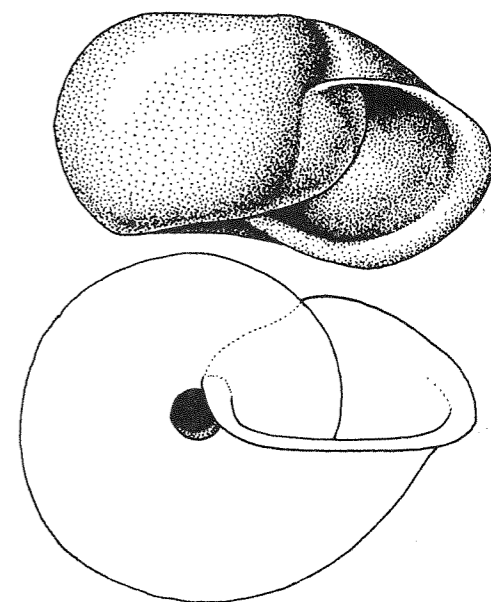


Fig. 1973. *Chloritis unguina* (Linnaeus, 1758). Ceram Isl. [Indonesia]. Leiden.

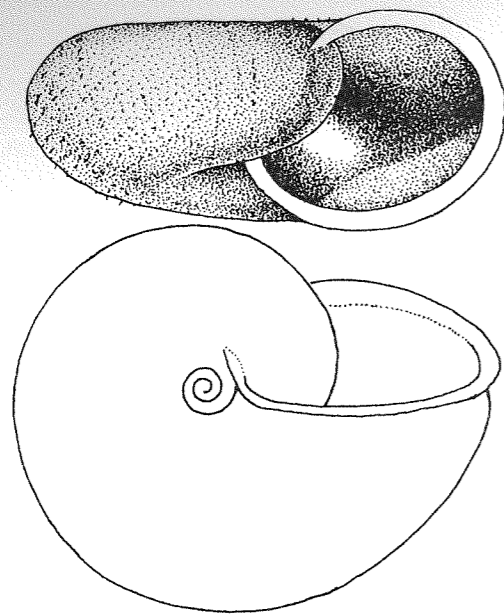


Fig. 1974. *Verdichloritis polingi* (Clench, 1957).
New Guinea. Holotype. Cambridge No.
212319.

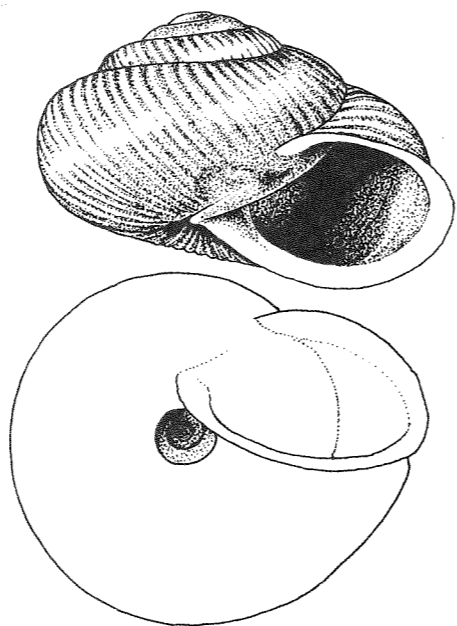


Fig. 1975. *Dorcasidea sublicifera* (E. Smith,
1895).
Papua New Guinea. Cardiff.

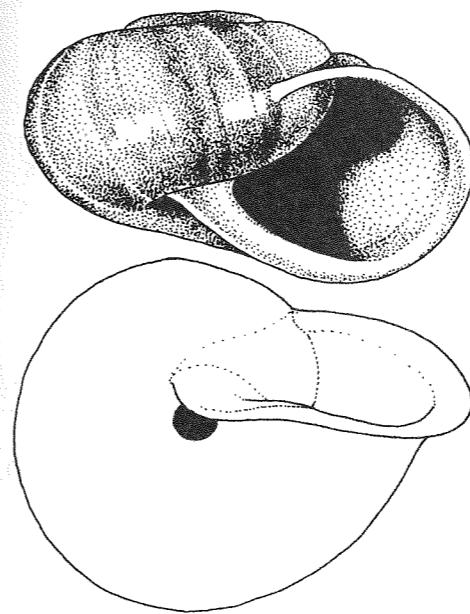


Fig. 1976. *Sulcobasis sulcosa* (L. Pfeiffer, 1854).
Aru Island. Phil. No. 45578.

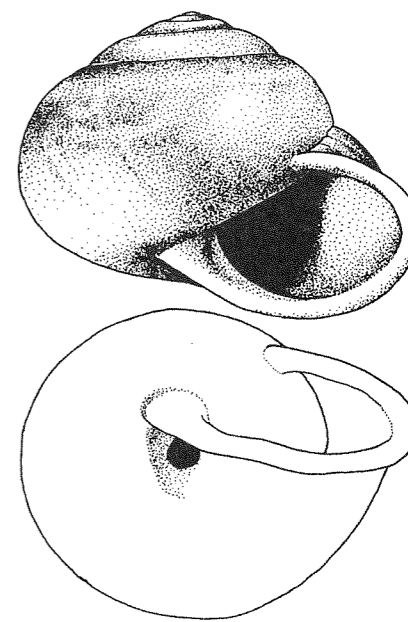


Fig. 1977. *Kendallena broadbenti* (Brazier, 1877).
"British New Guinea, St. Joseph River"
[Papua New Guinea]. Geneva.

bilicus open, rather narrow but quite perspective. Height 7.4, diam. 15.3 mm.

DISTRIBUTION. W New Guinea (Irian Jaya). 1 sp.

Dorcasidea Iredale, 1941
Fig. 1975

Iredale, 1941: 88.

TYPE SPECIES — *Helix (Dorcasia) sublicifera* E. Smith, 1895; OD.

Shell depressed-conic, spire a little elevated, rather thin, translucent, of 5 convex whorls. Last whorl evenly rounded, gradually descending in front. Color light-yellow. Embryonic whorls microscopically pitted. Postnuclear whorls with moderately coarse radial wrinkles. Aperture ovate, quite oblique. Umbilicus narrow, surrounded by a smoothed, weak ridge. Height 11-12, diam. 16-18 mm (11.0 × 16.7 mm).

DISTRIBUTION. Papua New Guinea. 1 sp.

Sulcobasis Tapparone-Canefri, 1883
Fig. 1976

Tapparone-Canefri, 1883: 161 (*Helix* sect.).

— ? *Aleatelix* Iredale, 1941: 86 (t.-sp. *Helix striophora* E. Smith, 1895; OD).

— ? *Goldielix* Iredale, 1941: 87 (t.-sp. *Helix rehsei* Martens, 1883; OD).

— ? *Timasenus* Iredale, 1941: 89 (t.-sp. *Helix penthilus* Iredale, 1941; OD).

TYPE SPECIES — *Helix sulcosa* L. Pfeiffer, 1854; SD Pilsbry, 1894 (1893-1895).

Shell depressed-subglobular, moderately thin, of about 5 rather convex whorls. Last whorl rounded to slightly angulated, a little ascending in front. Color corneous to greenish, usually with light radial streaks. Embryonic whorls smooth. Subsequent whorls with weak radial striation. Aperture broadly ovate to subcircular, moderately oblique, with not thickened, reflexed margins. Umbilicus rather narrow, a little covered, scarcely perspective. Height 7-45, diam. 10.5-65.0 mm (30.0 × 48.2 mm).

DISTRIBUTION. New Guinea, Aru Island, New Ireland, Solomon Islands. At least 20 spp.

Kendallena Iredale, 1941
Fig. 1977

Iredale, 1941: 73.

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

Shell depressed-conic to trochoid, solid, of 5-5.5 moderately convex whorls. Last whorl rounded, gradually descending toward aperture. Color brownish-yellow, often with reddish zones under suture, at periphery and around umbilicus; peristome ivory. Embryonic whorls smooth, glossy. Postnuclear surface without special sculpture except for much smoothed radial striae and ridgelets. Aperture ovate, moderately oblique, with thickened, reflexed margins; columellar margin slightly covers umbilicus. Umbilicus profound, open, subcylindrical, surrounded by a sort of crest. Height 31-50, diam. 41-48 mm (32.5 × 41.2 mm).

DISTRIBUTION. Papua New Guinea. 2 spp.

Tradeustoma Iredale, 1941
Fig. 1978

Iredale, 1941: 86.

TYPE SPECIES — *Helix (Chloritis) subcorpulentus* E. Smith, 1889; OD.

Shell depressed-globose, moderately solid, slightly translucent, somewhat glossy, of 4.5 convex whorls. Last whorl inflated, rounded, gradually descending toward ap-

erture. Color yellowish to corneous. Embryonic whorls microscopically pustulate. Later whorls without regular sculpture except for minute, scattered hair scars. Aperture subcircular, moderately oblique, with thin, well reflexed margins; columellar margin dilated. Umbilicus rather narrow, subcylindrical. Height 24-26, diam. 36-38 mm (25.2 × 37.7 mm).

DISTRIBUTION. Papua New Guinea. 1 sp.

Cristigibba Tapparone-Canefri, 1883
Fig. 1979

Tapparone-Canefri, 1883: 161 (*Helix* "sezione").

— *Australgibba* Iredale, 1933: 55 (*Cristigibba* subg.; t.-sp. *Helix wesselensis* Cox, 1868; OD).

TYPE SPECIES — *Helix tortilabia* Lesson, 1830; OD.

Shell much depressed to flat, rather thin, glossy, of 4-5 convex whorls. Last whorl rounded or vaguely angulated, strongly descending in front. Color white or yellow, monochromatic or with dark supra-peripheral and subsutural bands. Embryonic whorls microgranulated. Later whorls with fine radial striation; spiral sculpture absent.

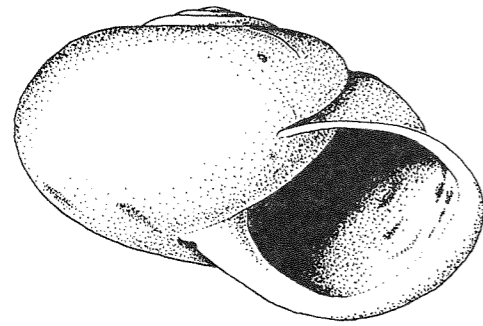


Fig. 1978. *Tradeustoma subcorpulenta* (E. Smith, 1889).
Rossel Island, Papua New Guinea. Delaware Museum of Natural History, Wilmington, No. 150382.

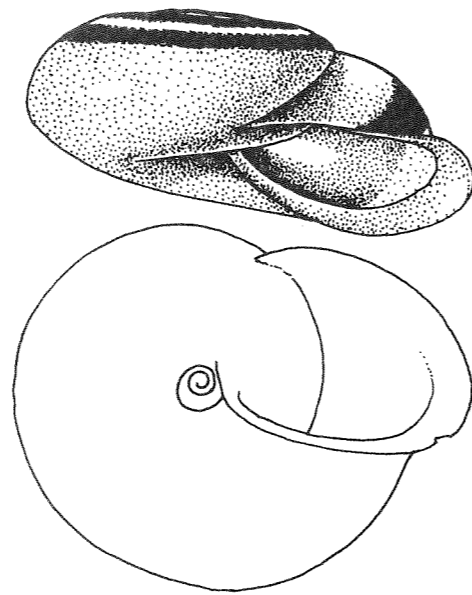


Fig. 1979. ! *Cristigibba corniculum* (Hombron et Jacquinot, 1851).
Kapau [River], [Papua] New Guinea. Leiden.

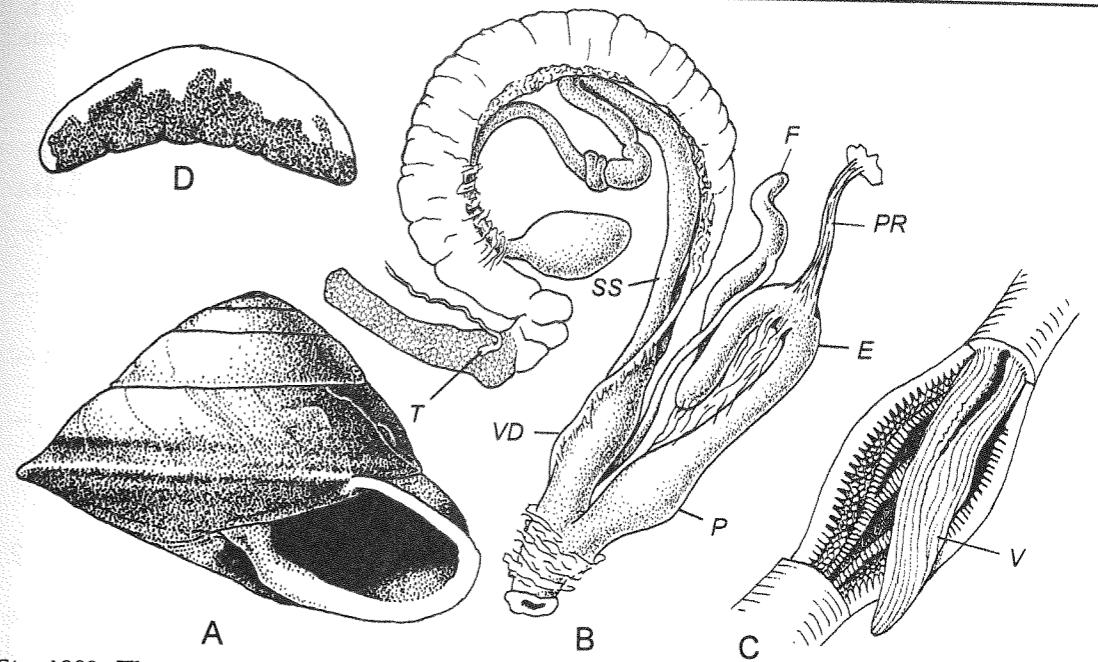


Fig. 1980. *Thersites richmondiana* (Reeve, 1852).
A — shell: Richmond River, Port Denison, Queensland. Vienna. B, C, D — Rain forest, Nagarigoon, Lamington National Park, SE Queensland, Australia. April, 1976. B — reproductive tract. C — interior of penis. D — jaw. Phil. No. A 7285.

Aperture subcircular, very oblique, with thin, broadly reflexed margins. Umbilicus rather narrow but quite perspective. Height 7.0-14.5, diam. 15-28 mm (10.0 × 20.5 mm).

DISTRIBUTION. Sumatra, Kalimantan, Batjan, Ceram, New Guinea, N Australia (Northern Territory). About 15 spp.

Thersites L. Pfeiffer, 1855
Fig. 1980

Pfeiffer L., 1855: 141 (*Helix* subg.).

— *Annakelea* Iredale, 1933: 43 (t.-sp. *Helix richmondiana* Reeve, 1852; OD).

Bishop, 1978: 9. B. Smith, 1992: 161.

TYPE SPECIES — *Helix richmondiana* Reeve, 1852; SD Martens in Albers, 1860.

Shell trochiform or turbinate, quite solid to moderately thin, of 5-5.5 nearly flat whorls. Last whorl with sharp peripheral angle, more or less descending in front. Color fulvous-chestnut to dark-brown, uniform or with dark band just above peripheral angle and dark circumumbilical zone; subsutural band also may be present. Embryonic whorls smooth or delicately radially wrin-

kled. Later whorls finely, irregularly, radially striate and with very conspicuous sculpture in form of network of short, oblique, smoothed wrinklelets; on basal surface this sculpture expressed better. Aperture angulate-ovate, very oblique, with thickened, reflexed margins. Umbilicus closed or slit-like. Height 36-40, diam. 28-54 mm (36.8 × 53.5 mm).

Frontal wart, a simple foss.

Jaw without visible ribs, with a few incisions on cutting edge; in dissected specimen covered with blackish crust.

Talon small, drop-like, exposed. Vas deferens rather long, tightly bound to free oviduct and vagina, entering epiphallus at very sharp angle. Epiphallus rather long. Penis fusiform, internally tubercular, with branched axial pilasters bearing numerous transversal grooves; verge long, conic, axially plicate, with a superficial groove; internally with blind central canal. Free oviduct and vagina subequal in length. Spermathecal stalk very long, somewhat convoluted; ovate reservoir attending albumen gland.

DISTRIBUTION. E Australia (Queensland, New South Wales). 3 spp.

Mecyntera Iredale, 1941
Fig. 1981

Iredale, 1941: 73.

TYPE SPECIES — *Thersites septentrionalis* Hedley, 1897; OD.

Shell globose-conic, rather solid, of 5 slightly convex whorls. Last whorl evenly rounded at periphery, slightly but distinctly deflected. Coloration consists of dark-yellow background and 4-5 dark bands; aperture margins black or dark-brown. Embryonic whorls smooth. Postapical whorls with fine radial ridgelets. Aperture broadly ovate, oblique, with somewhat thickened, well reflexed margins; columellar margin subvertical, strongly dilated; palatal margin slightly arched forward. Umbilicus narrow, partly covered. Height 53-56, diam. 42-45 mm (54.0 × 43.0 mm).

DISTRIBUTION. NE coast of Papua New Guinea. 1 sp.

Amphidromus Albers, 1850
Fig. 1982

Albers, 1850: 138 (*Bulimus* subg.).

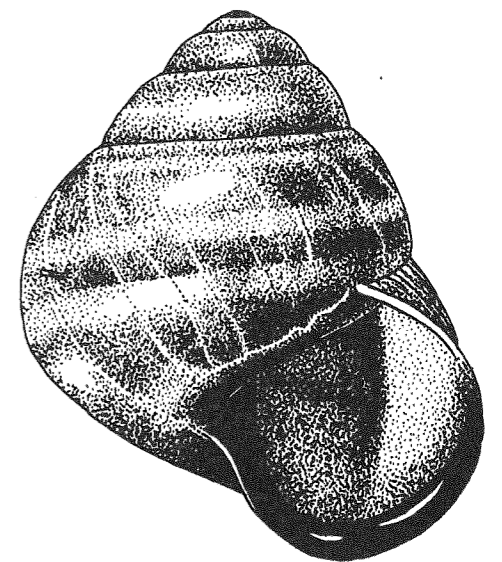


Fig. 1981. *Mecyntera septentrionalis* (Hedley, 1897).
Callingwood Bay, Papua New Guinea. Cardiff.

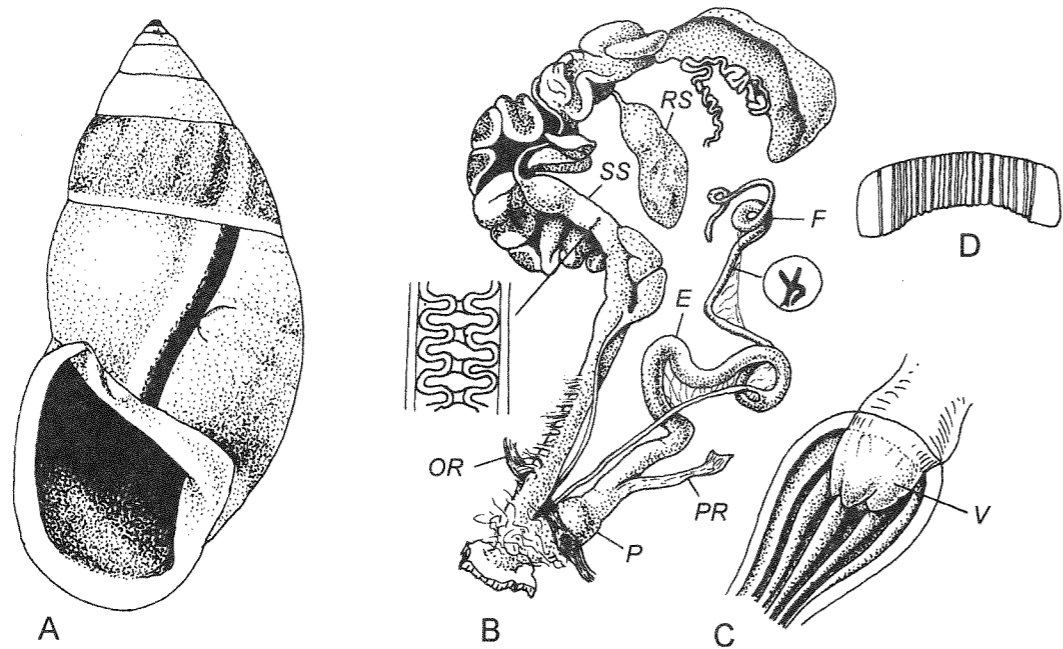


Fig. 1982. *Amphidromus perversus* (Linnaeus, 1758).
Baikan Islet near Kondao Island, S Vietnam, January 15, 1987. A — shell. B — reproductive tract and longitudinal section of basal swelling of spermathecal stalk (semidiagrammatic). C — interior of penis. D — jaw. Moscow No. Lc-16391.

— *Goniodromus* Bülow, 1905: 83 (*Amphidromus* subg.; t.-sp. *Amphidromus bülowi* Fruhstorfer, 1905; monotypy).

Laidlaw & Solem, 1961: 517.

TYPE SPECIES — *Helix perversus* Linnaeus, 1758; SD Martens in Albers, 1860.

Shell dextral or sinistral, elongate-conic, moderately thin to quite solid, glossy, of 5-8 slightly convex whorls. Last whorl straight or a little descending, evenly rounded. Color pattern monochromate to variegated but always with varix-like, dark streaks. Embryonic whorls almost smooth or microscopically radially striated. Postapical surface with very fine, irregular radial wrinkles and more or less distinct spiral striae. Aperture sublunate to auriform, oblique, with reflexed, expanded, often thickened margins and well developed parietal callus. Umbilicus narrowly open to closed. Height 32-78, diam. 18-38 mm (56.0 × 31.2 mm).

Jaw thin, weak, with low, flat ribs.

Talon buried. Vas deferens long, thin, entering epiphallus laterally. Flagellum long, slender, vermiform, internally with 3 wide and 1 thin, high axial folds. Epiphallus long, a little convoluted. Penis small, inter-

nally with distinct longitudinal pilasters and short subglobular verge. Penial retractor attached near penis/epiphallus junction. Free oviduct extremely short. Vagina very long. Spermathecal stalk greatly swollen basally; this swelling internally with sharp, rounded transversal folds. Upper part of stalk thin, long; reservoir capacious, reaching albumen gland.

DISTRIBUTION. Philippines, SE Asia, Indonesia. About 50 spp. & subspp. with many forms.

Syndromus Pilsbry, 1900
Fig. 1983

Pilsbry, 1900: 184.

TYPE SPECIES — *Helix contraria* Müller, 1774; SD Zilch, 1960.

Shell differs from *Amphidromus* by absence of parietal callus (or callus thin, semi-transparent), absence of varix-like streaks and much thinner shell wall. Height 22-55, diam. 10-28 mm (36.0 × 17.8 mm).

DISTRIBUTION. SE Asia, Indonesia. About 35 spp. & subspp.

REMARK. Perhaps, *Syndromus* is a mere subgenus of *Amphidromus*. I decided to give

it generic rank because differences between these taxa appear to be quite constant.

Sphaerospira Mörch, 1867
Fig. 1984

Mörch, 1867: 256.

— *Bentosites* Iredale, 1933: 44 (pro subg.; t.-sp. *Helix macleayi* Cox, 1865; OD).

— *Varohadra* Iredale, 1933: 45 (t.-sp. *Helix oconnellensis* Cox, 1871; OD).

— *Figuladra* Iredale, 1933: 45 (*Varohadra* subg.; t.-sp. *Helix curtisiana* L. Pfeiffer, 1863; OD).

— *Temporena* Iredale, 1933: 46 (*Gnarosophia* subg.; t.-sp. *Helix whartoni* Cox, 1871; OD). Smith, 1992: 153.

TYPE SPECIES — *Helix fraseri* Gray, 1834; SD Pilsbry, 1891 (1890-1891).

Shell globose, moderately to quite solid, shining, of about 6 slightly convex whorls. Last whorl widely rounded, markedly deflected. Spire dome-shaped. Color whitish to brownish, with chestnut bands of various width. Embryonic whorls smooth; rest whorls weakly sculptured with irregular radial striae. Aperture ample, rounded, well oblique, margins variously reflexed and expanded. Umbilicus narrowly open or cov-

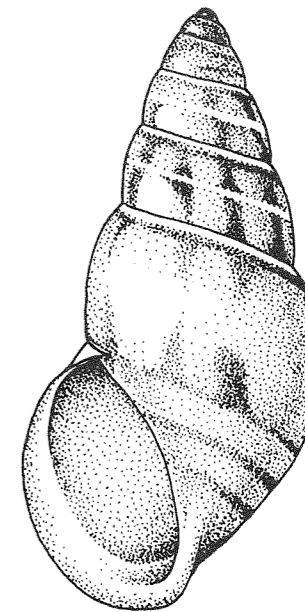


Fig. 1983. *Syndromus contrarius* (Müller, 1774).
Tjamplong, Timor Id. Phil. No. 167825.

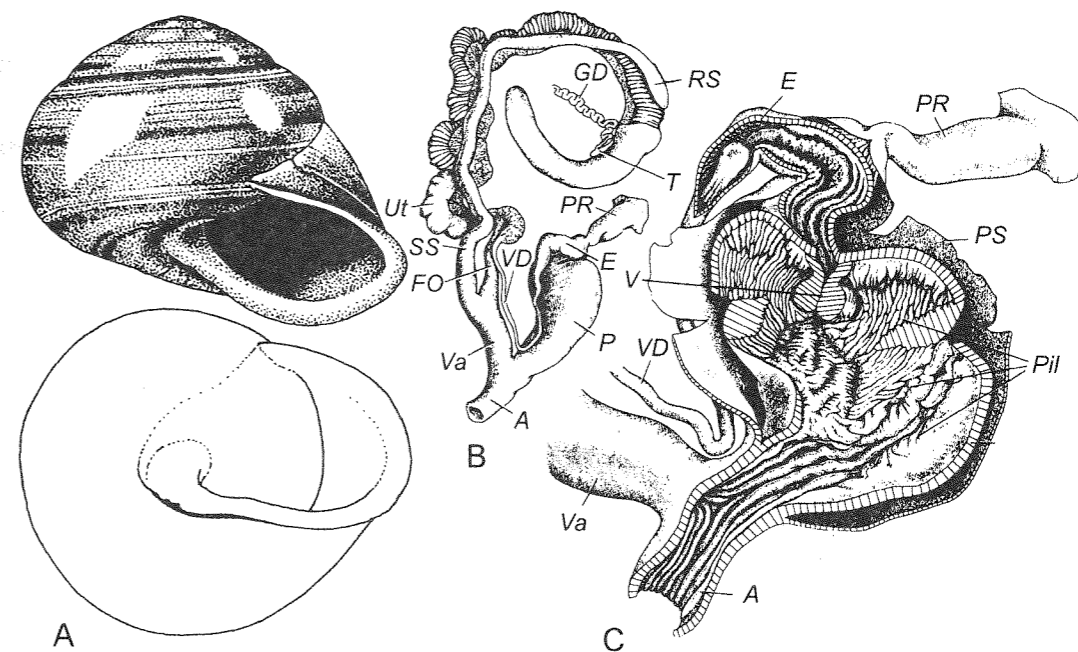


Fig. 1984. *Sphaerospira fraseri* (Gray, 1834).
A — shell: Queensland. SPb. B — reproductive tract. C — interior of epiphallus and penis. After Solem, 1992.

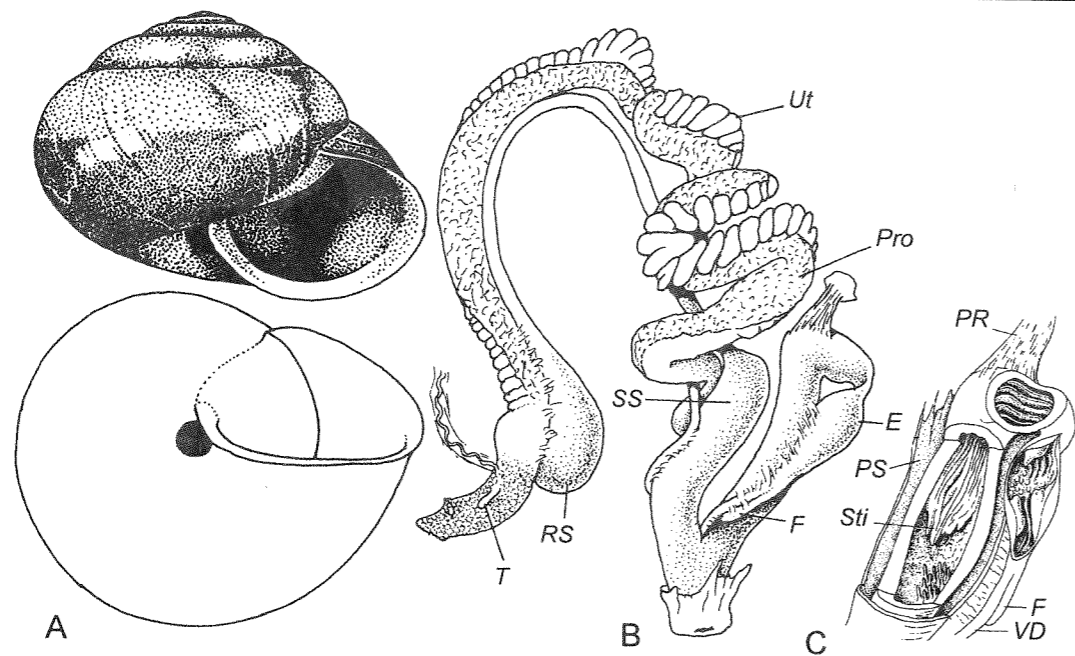


Fig. 1985. ! *Hadra semicastanea* (L. Pfeiffer, 1849).
A — shell: Bett Island, Torres Strait. Leiden. B, C — Lizard Island, Northern Queensland, Australia. B — reproductive tract. C — interior of epiphallus and penis. Phil. No. A-8316.

ered with reflection of columellar margin. Height 16-38, diam. 25-50 mm (36.2 × 43.1 mm).

Talon, a slightly expanded curvature of hermaphroditic duct. Vas deferens comparatively short, entering rather short epiphallus without sharp boundary. Internally epiphallus with 2-3 longitudinal pilasters. Penis bulky, sac-like, internally with a small, subglobular papilla and complex relief of system of short plicae and (in distal portion) axial pilasters. Penis sheath surrounds penis and distal part of epiphallus. Penial retractor attached to basal part of epiphallus. Free oviduct and vagina moderately long; subequal in length. Spermathecal shaft long, rather stout, reservoir almost reaching albumen gland.

DISTRIBUTION. New Guinea, NE Australia (Queensland). 20-22 spp.

Hadra Martens, 1860
Fig. 1985

Martens in Albers, 1860: 165 (*Helix* subg.).

— *Gnarosophia* Iredale, 1933: 46 (t.-sp. *Helix bellendenkerensis* Brazier, 1875; OD).

— *Micardista* Iredale, 1933: 47 [t.-sp. *Helix (Camaena) barneyi* Cox, 1873; OD].

Smith B., 1992: 128.

TYPE SPECIES — *Helix bipartita* Féussac, 1822; OD.

Shell semiglobose, rather solid, somewhat glossy, of 5-5.5 slightly convex whorls; body whorl straight or only slightly descending in front. Spire dome-shaped or conoid. Color of upper spire whitish or yellowish, uniform, or body whorl below periphery dark (chestnut or brown). Embryonic whorls smooth, later often with fine spiral striae and vague granulation. Aperture rounded, oblique, margins expanded. Umbilicus narrow. Height 9-48, diam. 14-60 mm (24.2 × 33.8 mm).

Talon exposed, small, finger-shaped. Vas deferens rather short, tightly bound to vagina and penis. Flagellum rudimentary, bound to vas deferens. Epiphallus fusiform, internally with a fleshy valve, small tubercles and short plicae. Penis moderately long, internally with stimulator of irregular shape and small papillae in distal portion. Penis sheath surrounds penis and distal part of epiphallus. Penial retractor attached to proximal part of penis. Free oviduct short,

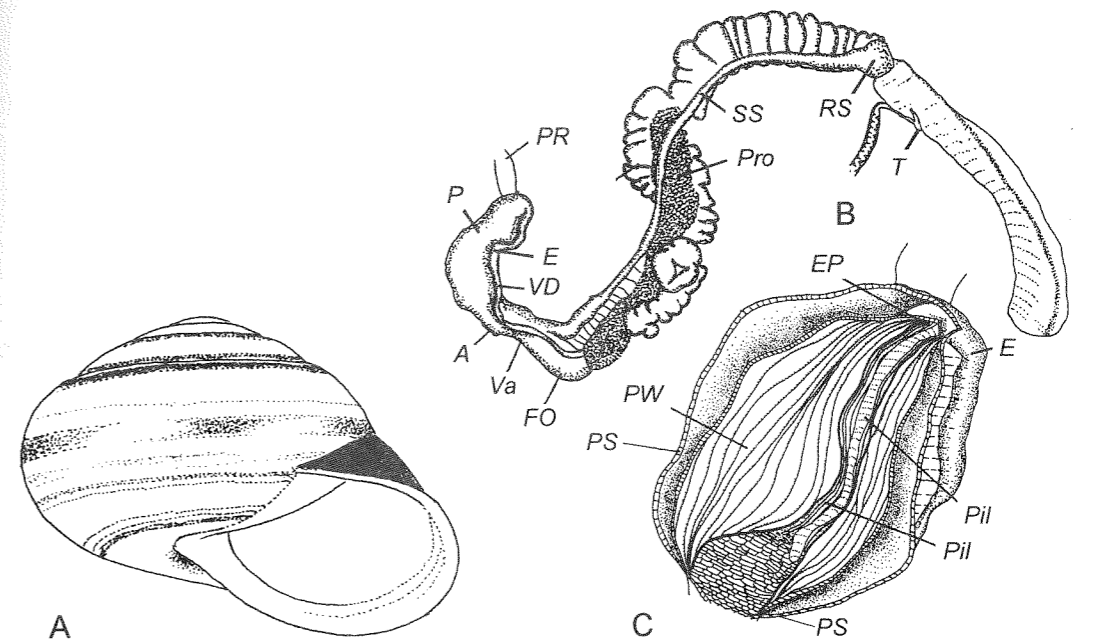


Fig. 1986. *Monteithosites heliostracum* Stanistic, 1996.
A — shell. B — reproductive tract. C — interior of penis. After Stanistic, 1996b. PW — wall of penis.

slender. Spermathecal stalk long, swollen basally; capacious reservoir reaching albumen gland.

DISTRIBUTION. New Guinea, Australia (Queensland, some islands in Torres Strait, Western Australia). 8 spp.

REMARK. Solem (1979, figs 34, 35) did not indicate the presence of flagellum or stimulator in the penis for type species.

Monteithosites Stanistic, 1996
Fig. 1986

Stanistic, 1996b: 356.

TYPE SPECIES — *Monteithosites heliostracum* Stanistic, 1996; OD.

Shell depressed-subglobular, moderately thin, shining, of 5.75-6 a little convex whorls. Last whorl evenly rounded, descending rapidly in front. Color yellow-corneous with reddish-brown bands; subsutural and peripheral bands sometimes split into a series of narrower bands; basally a series of narrow bands sometimes coalesced into a single broader band; several narrow intermediate bands may also be present; umbilical chink and peristome dark brown, parietal callus dark chocolate-brown. Embryonic sculpture of crowded,

slightly curved, weak radial ridges. Postapical whorls with very fine, close-set, radial thread-like periostracal wrinkles and conspicuous, more widely spaced, spiral, coarse, periostracal cords. Aperture lunately ovate, with strongly reflexed margins. Umbilicus barely open. Height 20.5-25.6, diam. 29.2-33.9 mm.

Ovotestis of several clumps of finger-like lobes of acini. Talon short, finger-like. Flagellum absent. Vas deferens thin, barely differentiated from short epiphallus. Epiphallus composed of short, thick descending arm and narrow, weakly expanded ascending arm, internally with a large axial pilaster; entering penis apically through a simple pore. Penis stout, short, with extremely thick wall; penial lumen reduced to a very narrow tube. Internally penis with a conspicuous, central longitudinal pilaster and several narrower pilasters; distal penial chamber lined with short, rectangular pustules; verge absent. Penis sheath thick. Free oviduct short. Vagina also short, internally with numerous longitudinal thickenings. Spermathecal stalk long, reservoir lying at base of albumen gland.

DISTRIBUTION. Australia (NE Queensland). 1 sp.

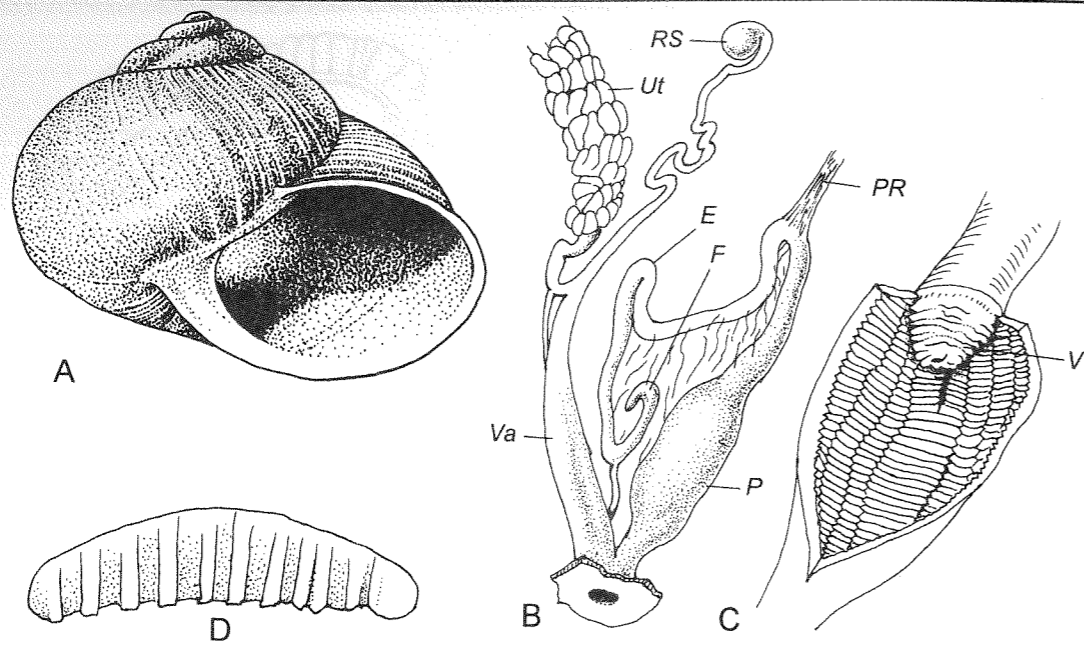


Fig. 1987. *Chloritisanax banneri* (L. Pfeiffer, 1863).
A — shell: Cape York Peninsula, Australia. Cardiff. B, C, D — Gordon Creek, Iron Range, Queensland, Australia, July 1976. B — reproductive tract. C — interior of penis. D — jaw. Phil. No. A-7270.

Chloritisanax Iredale, 1933.
Fig. 1987

Iredale, 1933: 49. B. Smith, 1992: 120.

TYPE SPECIES — *Helix banneri* L. Pfeiffer, 1863; OD.

Shell turbanate, rather solid but translucent, of 3.75-4 convex whorls. Last whorl rounded, gradually descending in front. Color yellowish-olivaceous, with scarcely visible lighter band near suture. Embryonic whorls practically smooth. Later whorls with fine, rather regular, radial ridgelets and widely spaced, indistinct spiral grooves. Aperture broadly ovate, oblique, with shortly reflexed margins; columellar margin widely dilated. Umbilicus narrow, covered with reflection of columellar margin. Height 28-30, diam. 34-36 mm (29.4 × 35.2 mm).

Head wart not visible.

Jaw with flat ribs.

Vas deferens rather short. Flagellum not long. Epiphallus long, subcylindrical. Penis roughly fusiform, internally with a rather small, folded verge. Inner surface of penis with axial pilasters consisting of rows of prismatic folds. Penis sheath absent. Penial retractor attached

to distal half of epiphallus. Free oviduct very short. Vagina quite long, somewhat expanded. Spermathecal stalk long, more or less convoluted; reservoir small, globular, almost attending albumen gland.

DISTRIBUTION. E Australia (Queensland). 1 sp.

Badistes Gould, 1862
Fig. 1988

Gould, 1862: 243.

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

Shell depressed-conic, moderately thin, of 5-6 moderately convex whorls. Last whorl rounded or with very weak peripheral angle, well descending in front. Color chestnut to greenish. Embryonic whorls smooth in very beginning, then finely radially wrinkled. Postapical sculpture of coarse radial wrinkles and microscopic granulation. Aperture broadly ovate, well oblique, with shortly reflexed margins; columellar margin dilated. Umbilicus narrow to nearly closed. Height 4.5-26.0, diam. 10-35 mm (25.1 × 34.2 mm).

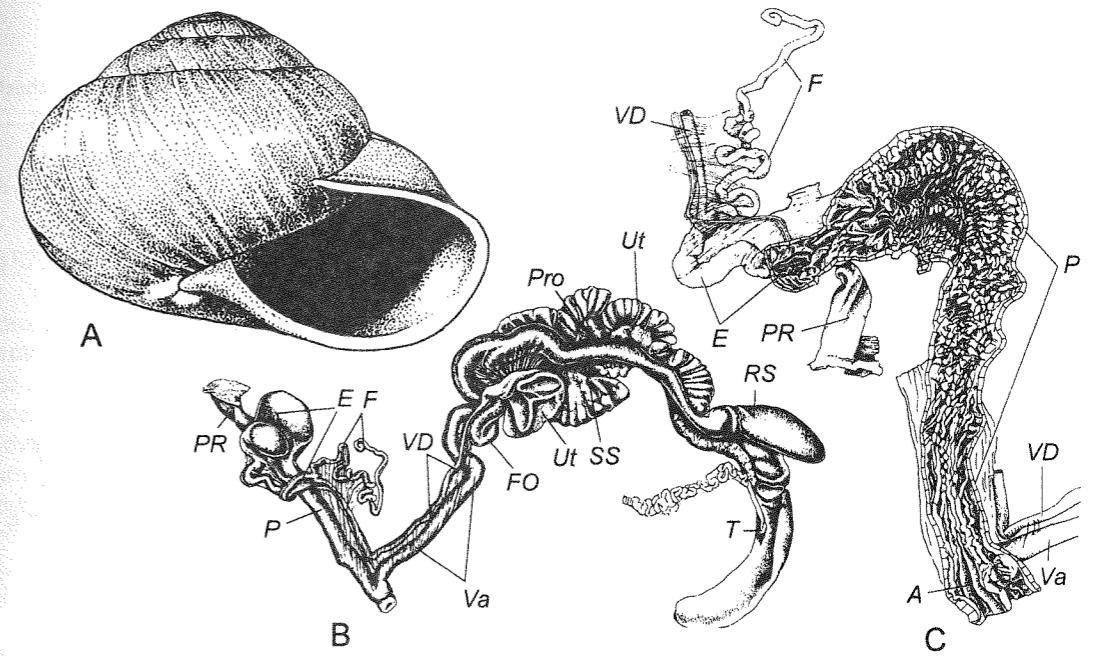


Fig. 1988. *Badistes gulosum* (Gould, 1846).
A — shell: Manning River, New South Wales. Cardiff. B — reproductive tract. C — interior of penis. After Solem, 1992.

Talon small, exposed. Vas deferens long, entering epiphallus at base of long, vermiform flagellum. Epiphallus rather short, swollen in places, entering penis through a simple pore. Penis subcylindrical, internally with numerous, chaotically scattered tubercles, fleshy scales and folds; verge absent. Thin protosheath surrounds all sections of distal genitalia. Penial retractor inserting on upper part of penis. Free oviduct and vagina quite long. Spermathecal stalk rather stout, reservoir attending lower part of albumen gland.

DISTRIBUTION. Central, S and W Australia. About 10 spp.

Gloreugenia Iredale, 1933
Fig. 1989

Iredale, 1933: 50. B. Smith, 1992: 127.

TYPE SPECIES — *Helix coxeni* Cox, 1871; OD.

Shell depressed-turbanate, rather thin, of about 5 slightly convex whorls. Last whorl rounded, gradually descending toward aperture. Color yellow to pale corneous. Embryonic sculpture of dense granulation.

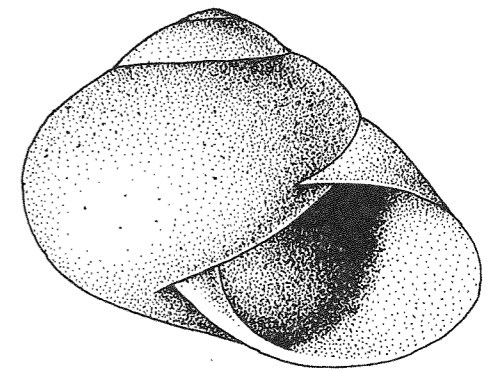


Fig. 1989. *Gloreugenia coxeni* (Cox, 1871).
Whitsunday Id., Queensland. Cardiff.

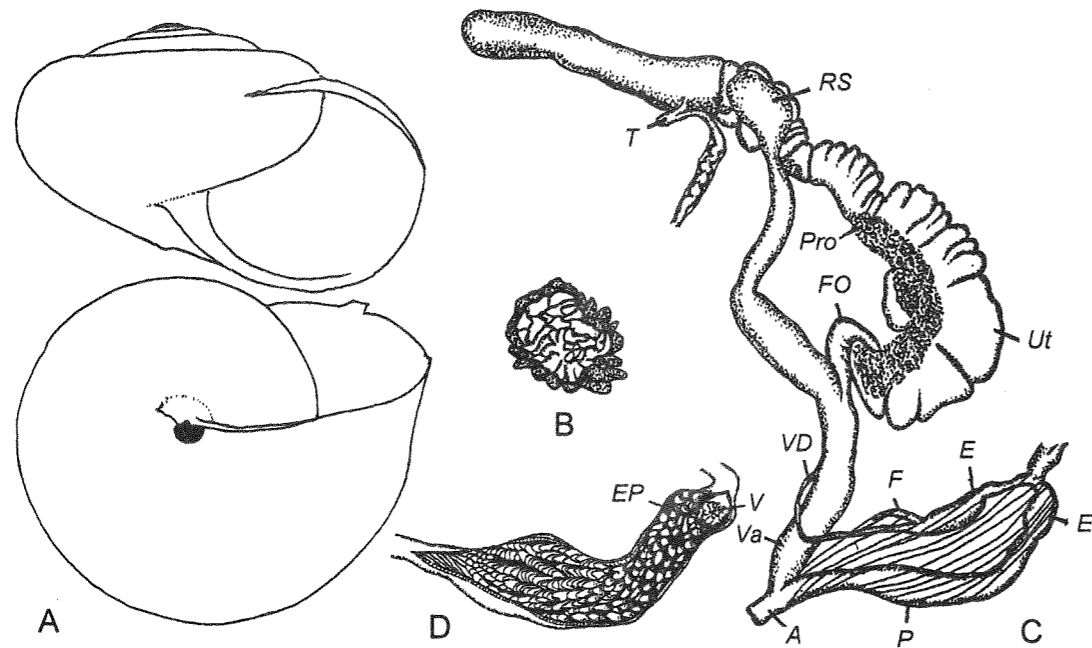


Fig. 1990. *Adclarkia dawsonensis* Stanistic, 1996.
A — shell. B — head wart. C — reproductive tract. D — interior of penis. After Stanistic, 1996a.

Postapical whorls with regular, short, stiff hairs; each hair sits on a small scale or pustule. Aperture large, broadly ovate, oblique, with thin margins; columellar margin reflexed, dilated. Umbilicus narrow, almost covered. Height 15-20, diam. 20-25 mm (18.4 × 22.5 mm).

DISTRIBUTION. E Australia (Queensland). 5 spp.

Adclarkia Stanistic, 1996
Fig. 1990

Stanistic, 1996a: 348.

TYPE SPECIES — *Adclarkia dawsonensis* Stanistic, 1996; OD.

Shell depressed-globose, comparatively thin, of about 5.5 slightly convex whorls. Last whorl rounded, slightly descending in front. Color light-brown to greenish-yellow corneous, occasionally with a narrow, red subsutural band and a small, red circumumbilical patch; aperture margins white. Embryonic whorls with radial, moderately spaced, subcircular pustules. Later whorls with densely scattered, elongate pustules and weak radial ridges; in unworn shells a

small periostracal scale sits atop each pustule. Microsculpture of fine, crowded, periostracal ridgelets. Aperture subcircular, moderately oblique, with weakly reflexed margins; columellar margin dilated. Umbilicus narrow, partly covered. Height 14.58-16.62, diam. 21.68-25.74 mm.

Head wart present.
Talon short, finger-like, embedded in albumen gland. Flagellum short, finger-like. Epiphallus becoming enlarged about half-way along its length, internally with longitudinal thickenings. Penis elongated, internally with axial rows of elongate pustules which become crowded in distal half of penis before giving rise to fleshy longitudinal pilasters in lower quarter; there is a wrinkled, tubular verge with apical opening. Penis sheath absent, but there is protosheath enveloping penis, epiphallus and flagellum. Penial retractor inserted on epiphallus at point where it reflexed. Free oviduct rather short, vagina somewhat longer, internally axially plicated. Spermathecal stalk swollen basally; reservoir appressed to base of albumen gland.

DISTRIBUTION. SE Queensland (Dawson Valley). 1 sp.

Spurlingia Iredale,
Fig. 1991

Iredale, 1933: 47.

— *Zigelix* Iredale, 1937b: 23 (t.-sp. *Helix forsteriana* Reeve, 1852; OD).

B. Smith, 1992: 160.

TYPE SPECIES — *Helix nicomede* Brazier, 1878 (= *Helix dunkiensis* Forbes, 1851); OD.

Shell depressed-subglobose, rather thin, more or less translucent, of about 6 moderately convex whorls. Last whorl rounded to slightly angulated at periphery, well descending in front. Color yellow to yellowish-grey. Embryonic whorls almost smooth. Later whorls finely granulated. Aperture broadly ovate, quite oblique, with scarcely thickened, shortly reflexed margins. Umbilicus not wide, cylindrical. Height 16-21, diam. 12-30 mm (20.0 × 29.1 mm).

DISTRIBUTION. E Australia (Queensland). 5 spp.

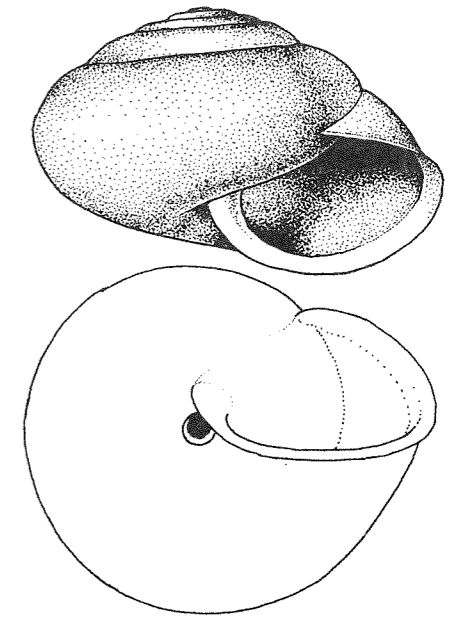


Fig. 1991. *Spurlingia dunkiensis* (Forbes, 1851).
Dunk Island, N Queensland. Basel No. 8879-a.

Austrochloritis Pilsbry, 1891
Fig. 1992

Pilsbry, 1891 (1890-1891): 262 [*Helix* (*Chloritis*), sect. *Chloritis*; subsect.].

— *Chloritobadistes* Iredale, 1933: 49 (nom. nud.; t.-sp. *Helix victoriae* Cox, 1868; OD).

— *Nannochloritis* Iredale, 1938: 94 (nom. nud.).

— *Patrubella* Iredale, 1938: 95 [pro subg.; t.-sp. *Helix* (*Planispira*) *buxtoni* Brazier, 1880; OD].
Solem, 1979: 120. B. Smith, 1992: 116.

TYPE SPECIES — *Helix porteri* Cox, 1866; OD.

Shell somewhat depressed to subglobose, moderately solid, of 4-5 slightly to moderately convex whorls. Body whorl at most slightly descending in front, rounded to weakly angulated at periphery. Color whitish to yellowish-brown. Embryonic sculpture of small pustules. Postnuclear whorls with crowded, short setae arranged in regular rows and with secondary sculpture of irregularly wavy microridgelets. Aperture ovate, moderately oblique, margins thin, slightly expanded after sharp reflexion. Umbilicus narrowly open to nearly closed. Height 6.5-12.0, diam. 11.0-17.5 mm (10.0 × 17.5 mm).

Hermaphroditic duct entering head of a small talon. Vas deferens inserting on epiphallus laterally or apically. Flagellum very short or absent. Epiphallus cylindrical,

rather long. No penis sheath. Penis clavate, internally with a verge that may have a conic tip although open laterally, apically, or have 1 lobe fastened to penis wall and the other lobe free. Inner surface of penis with irregular longitudinal pilasters and variously developed pustulations. Penial retractor inserting about midway on epiphallus. Free oviduct moderately short. Vagina long. Spermathecal shaft relatively short and nearly straight to very long, strongly sinuated and twisted. Reservoir variable in shape.

DISTRIBUTION. Australia (Queensland, islands in Torres Strait, New South Wales, Victoria, King Island); possibly New Guinea. 16-18 spp.

Mussonena Iredale, 1938
Fig. 1993

Iredale, 1938: 95. B. Smith, 1992: 136.

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

Shell depressed, moderately thin, slightly glossy, of 4.5 rather convex whorls. Last whorl straight, rounded peripherally. Color corneous. Embryonic whorls with minute

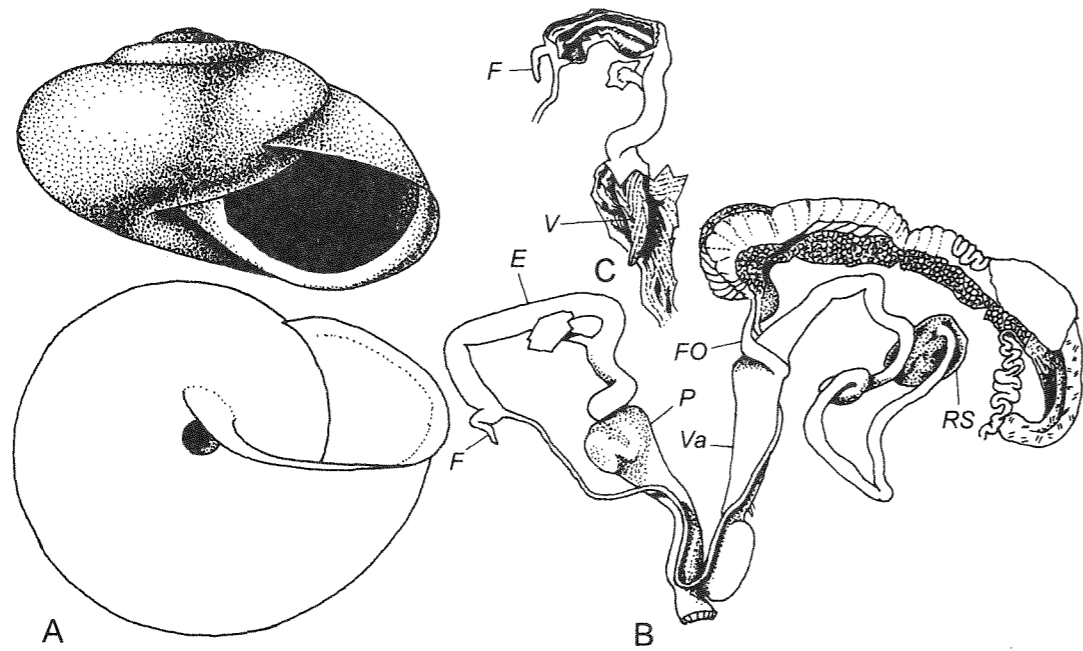


Fig. 1992. *Austrochloritis porteri* (Cox, 1866).
A — shell: New South Wales, Australia. Leiden. B — reproductive tract. C — interior of epiphallus and penis. After Solem, 1979.

pustulae. Postnuclear whorls with rather coarse but small radial wrinklets and numerous dots (hair scars). Aperture broadly ovate or subcircular, with simple margins; columellar margin well reflexed, evenly convex. Parietal callus weak. Umbilicus rather narrow, round, deep. Height 5-6, diam. 9-11 mm (5.8 × 10.0 mm).

DISTRIBUTION. E Australia (Queensland). 2 spp.

Tolgachloritis Iredale, 1933
Fig. 1994

Iredale, 1933: 50. B. Smith, 1992: 162.

TYPE SPECIES — *Chloritis jacksoni* Hedley, 1912; OD.

Shell depressed-turbinate, very thin, of 4 convex whorls. Last whorl rounded, straight. Color uniformly burnt amber. Embryonic whorls (1.5) coarsely granulated. Subsequent whorls with numerous small, rather regular riblets, which continue with a backward sweep from suture to umbilicus; upon these and their interstices there are minute, scattered hairs, easily denuded, and so visible only on fresh specimens. Aperture

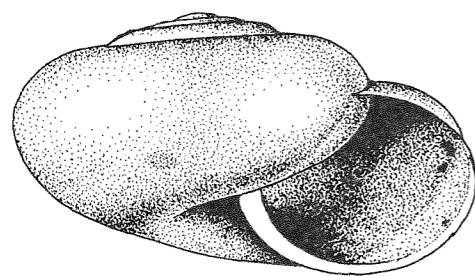


Fig. 1993. *Mussonena spinei* (Cox, 1868).
No data. Phil. No. 62706.

broadly ovate, with thin, simple, scarcely reflexed margins; columellar margin dilated. Umbilicus narrow. Height 8, diam. 13.5 mm.

DISTRIBUTION. E Australia (Queensland). 1 sp.

Melostrachia Solem, 1979
Fig. 1995

Solem, 1979: 92. Iredale, 1938: 111 (nom. nud.).
B. Smith, 1992: 133.

TYPE SPECIES — *Torresitrachia glomerans* Iredale, 1938; OD.

Shell subglobose, moderately solid, of 4.5-5.5 only slightly convex whorls. Body whorl evenly rounded at periphery, not deflected in front. Color uniformly light yellow-brown. Embryonic whorls with irregular radial ridgelets, mostly short and wavy or angled, on following whorls changed into rounded radial ribs. Fresh immature shells with very fine, prominent spiral threads between radial ribs in area of new growth. Aperture broadly ovate, moderately oblique, with thin, rather narrow, sharply reflexed margins. Umbilicus narrowly open, inter-

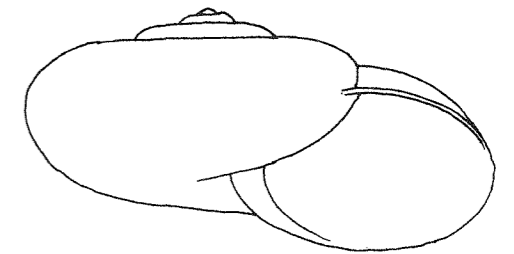


Fig. 1994. *Tolgachloritis jacksoni* (Hedley, 1912).

After Hedley, 1912.

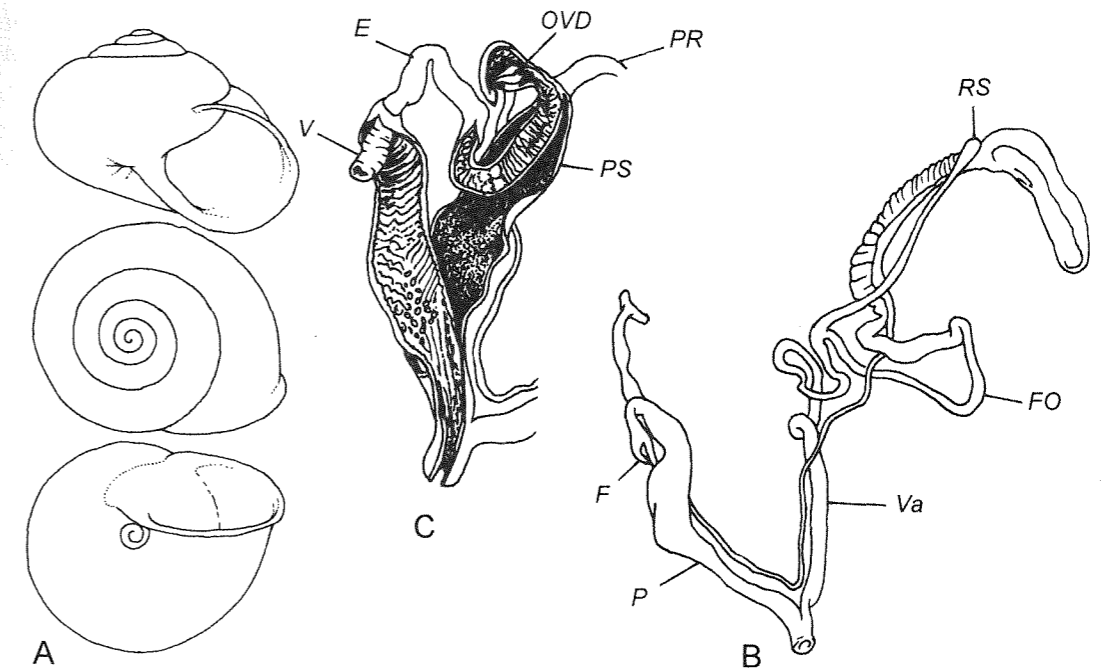


Fig. 1995. *Melostrachia glomerans* (Iredale, 1938).
A — shell. B — reproductive tract. C — interior of epiphallus and penis. After Solem, 1979.

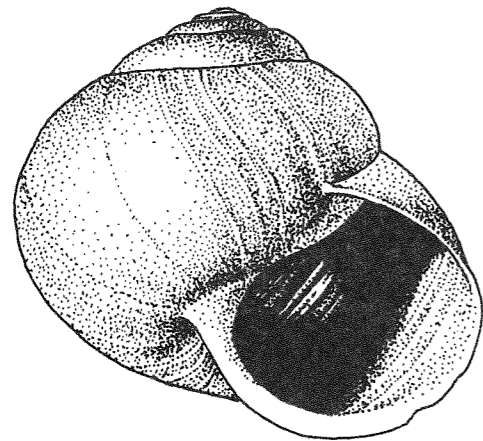


Fig. 1996. *Calvigenia blackmani* (Cox, 1868). Queensland, Australia. Cardiff.

nally with widely scattered pustules. Height 10.9-21.2, diam. 14.7-26.5 mm.

Hermaphroditic duct apparently entering head of talon. Vas deferens entering epiphallus through a pore with high raised pilasters. Flagellum short, internally with longitudinal pilasters. Epiphallus and penis folded within a long penis sheath that starts distinctly above atrium. Internally epiphallus and penis with narrow to wide circular ridges, that break up into pustules lower in penis; in basal portion the sculpture changes to simple longitudinal folds. Verge tubular, with wide orifice. Free oviduct very long, multicoiled. Vagina extremely long. Atrium short. Spermathecal shaft long, slender; reservoir small, reaching basal edge of albumen gland.

DISTRIBUTION. E Australia (Queensland). 2 spp.

Calvigenia Iredale, 1938
Fig. 1996

Iredale, 1938: 98. B. Smith, 1992: 120.

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

Shell globular, rather thin, somewhat glossy, of about 5 moderately convex

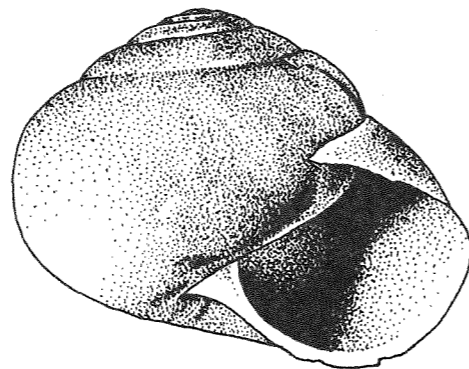


Fig. 1997. *Pallidelix greenhilli* (Cox, 1866). Upper Dawson River, Queensland. Syntype. Cardiff.

whorls. Last whorl inflated, widely rounded, rather strongly deflected. Color olivaceous. Embryonic whorls finely radially costulate. Later whorls with similar but less regular sculpture. Aperture ample, subcircular, with thin margins; palatal margin scarcely reflexed, basal and columellar expanded. Umbilicus narrow. Height 15-18, diam. 15-18 mm (17.0 × 17.0 mm).

DISTRIBUTION. E Australia (Queensland). 1 sp.

Pallidelix Iredale, 1933
Fig. 1997

Iredale, 1933: 47. B. Smith, 1992: 140.

TYPE SPECIES — *Helix greenhilli* Cox, 1866; OD.

Shell globosely-turbinata, rather thin, of 5.25-6 moderately convex whorls. Last whorl rounded, scarcely descending in front. Color olivaceous. Embryonic whorls with fine, slightly irregular, elongate granulation. Postapical whorls with fine radial riblets, zigzagging at irregular intervals and giving an anastomosing effect; basal surface glossy, without microsculpture. Aperture rounded, oblique, with simple margins; ba-

sal margin reflexed, columellar dilated. Umbilicus narrow, nearly covered. Height 22-23, diam. 27-30 mm (22.4 × 27.8 mm).

DISTRIBUTION. E Australia (Queensland). 1 sp.

Neveritis Iredale, 1938
Fig. 1998

Iredale, 1938: 96. B. Smith, 1992: 136.

TYPE SPECIES — *Chloritis poorei* Gude, 1907; OD.

Shell globosely-turbinata, thin, translucent, of 4-5 rather convex whorls. Last whorl (nearly) straight, rounded. Color (light) yellow. Both embryonic and later whorls with fine, distinct granulation. Aperture rounded, slightly oblique, with thin, simple margins; columellar margin expanded. Umbilicus very narrow. Height 7-9, diam. 10-13 mm (8.0 × 11.3 mm).

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

Trachiopsis Pilsbry, 1893
Fig. 1999

Pilsbry, 1893 (1892-1893): 284 (*Planispira* sect.). Solem, 1979: 113.

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

Shell flattened, moderately thin, with dome-shaped outline of spire, of 4-5 slightly convex whorls. Body whorl sharply descending in front, rounded to distinctly angulated at periphery. Color yellow-brown, often with pale reddish peripheral band. Apical whorls with pustules to irregular radial corrugations. Rest surface with very low, irregularly spaced, radial, blade-like ridges; area behind aperture having oval pustules. Microsculpture of irregular, nearly spiral ridgelets present on at least part of spire. Aperture ovate, oblique, with broadly expanded thin margins, without a basal node. Umbilicus more or less narrow, with dense pustules within. Height 3.0-4.5, diam. 5.8-9.0 mm (4.5 × 9.0 mm).

Hermaphroditic duct entering talon laterally. Vas deferens passing into epiphallus by a simple pore between 2 large pilasters. Flagellum (epiphallic caecum, after Solem, 1979) very short to long and finger-like, internally with longitudinal pilasters. Epiphallus very long. Penis long, irregularly cylindrical, contains an U-shaped, large

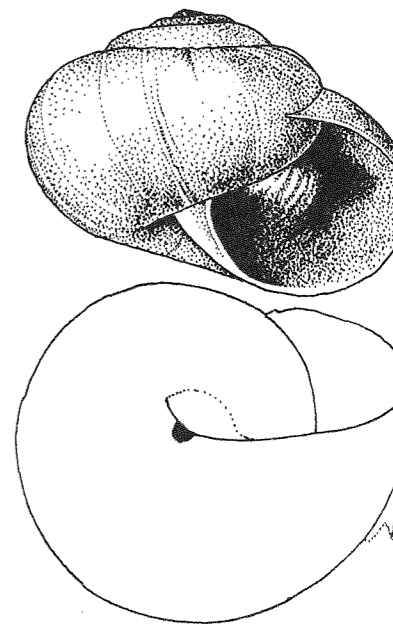


Fig. 1998. *Neveritis poorei* (Gude, 1907). Cardwell, Queensland, Australia. Cardiff.

verge that is not closed completely; inner surface of penis with longitudinal pilasters. Penis sheath thin. Penial retractor attached to epiphallus. Free oviduct and vagina long. Spermathecal shaft long, moderately slender, sometimes basally enlarged; reservoir touching base of albumen gland.

DISTRIBUTION. Australia (Queensland and islands in Torres Strait). 3 spp.

Obsteugenia Iredale, 1933
Fig. 2000

Iredale, 1933: 50.

— *Obstengenia* B. Smith, 1992: 139 (nom. err. pro *Obsteugenia* Iredale, 1933).

TYPE SPECIES — *Chloritis inflecta* Hedley, 1912; OD.

Shell depressed-turbinata, with inflated base, rather solid, of 4.5 slightly convex whorls. Last whorl rounded, abruptly, considerably descending. Color cinnamon on spire, darkening to chestnut on last whorl; peristome buff. Behind peristome, last whorl suddenly, tightly contracted; contraction, open above, narrowing as it descends till, on base, it ends in a groove running beneath peristome into axis. Embryonic

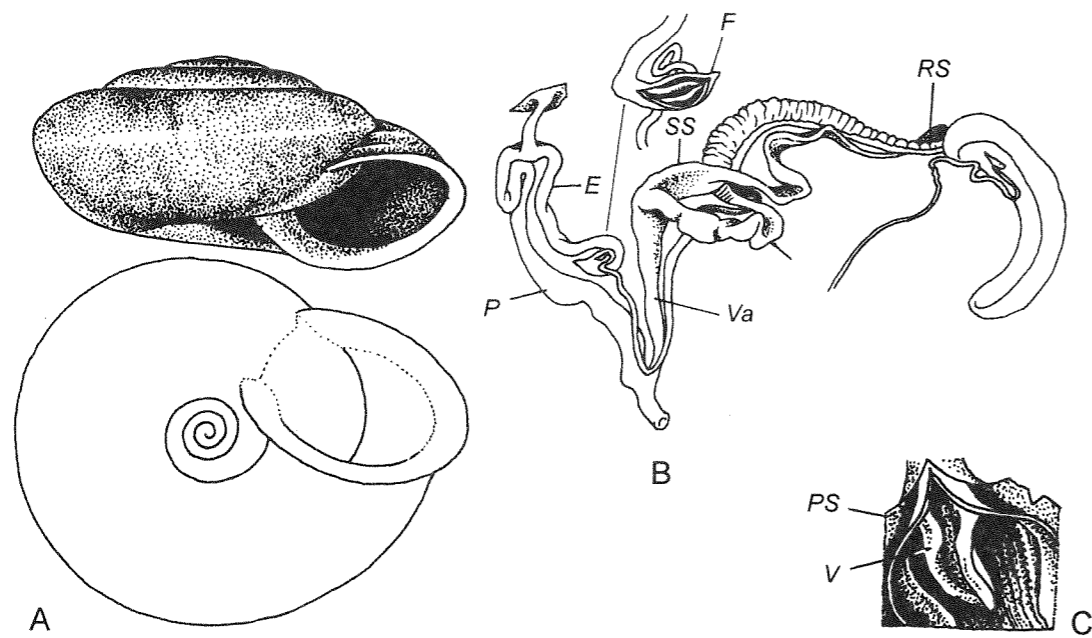


Fig. 1999. A — *Trachiopsis tuckeri* (L. Pfeiffer, 1846). Shell: Port Curtis [Australia]. Phil. No. 4376. B, C — ! *Trachiopsis strangulata* (Hombron et Jacquinot, 1841). B — reproductive tract and interior of flagellum. C — interior of penis. After Solem, 1979.

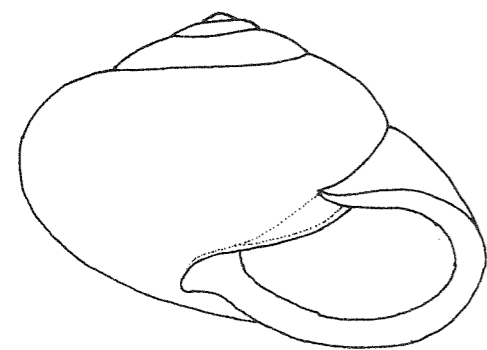


Fig. 2000. *Obsteugenia inflecta* (Hedley, 1912). After Hedley, 1912.

whorls (1.5) finely, densely grained. Later whorls with microscopical radial ridgelets; overall shell covered with small, short, scattered bristles set in radial and oblique lines; among them surface minutely shagreened. Aperture ovate-lunate, very oblique, with thickened, broadly reflexed margins. Umbilicus closed. Height 10, diam. 15 mm.

DISTRIBUTION. E Australia (Queensland). 1 sp.

Torresitrachia Iredale, 1939

Fig. 2001

Iredale, 1939: 48; 1933: 55 (nom. nud.).

— *Magitrachia* Iredale, 1941: 91 [t.-sp. *Planispira* (*Trachiopsis*) *blackiana* Preston, 1905; OD]. Solem, 1979: 45. B. Smith, 1992: 162.

TYPE SPECIES — *Helix endeavourensis* Brazier, 1872 (= *Helix torresiana* Hombron et Jacquinot, 1841); OD.

Shell more or less depressed, moderately solid, of 4.5-6 rather convex whorls. Spire evenly rounded. Body whorl not or slightly descending in front (rarely sharply descending), rounded at periphery. Color yellow-brown, often with a greenish cast. Embry-

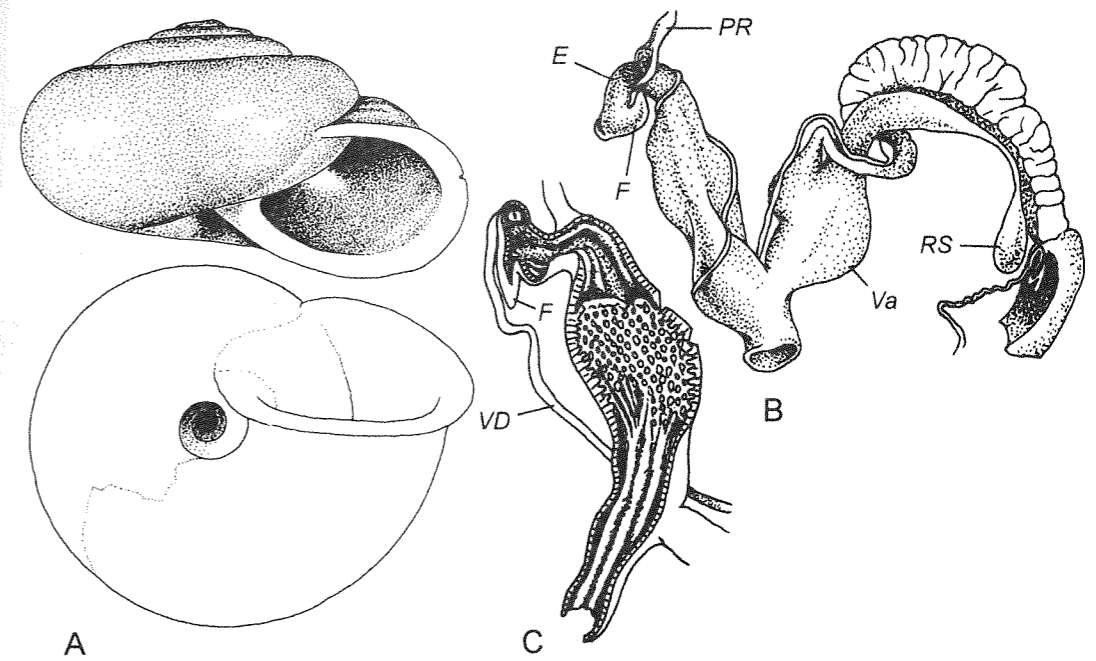


Fig. 2001. *Torresitrachia torresiana* (Hombron et Jacquinot, 1841). A — shell: "Australie". Geneva [as *T. endeavourensis* (Brazier, 1872)]. B — reproductive tract. C — interior of penis. After Solem, 1979.

onic sculpture ranging from essentially absent through scattered fine pustules to densely pustulose or ridged. Postnuclear sculpture usually of strong to reduced radial ribs, which may stop abruptly at periphery, continue with reduced prominence to umbilicus, or continue unchanged in prominence to umbilicus; microsculpture of radial angled, or spiral ridgelets, that continue onto rib tops where ribs reduced in prominence, absent from rib tops where ribs high and sharply defined. Aperture ovate, rather oblique, margins moderately to very strongly expanded, sharply reflexed. No basal node. Umbilicus moderately open to nearly closed. Height 6.6-15.5, diam. 11.4-24.6 mm.

Hermaphroditic duct enters talon laterally. Vas deferens entering epiphallus via complex pilaster. Flagellum variable in size and shape. Interior of epiphallus with structures ranging from longitudinal ridges to a complex pilaster. Demarcation between penis and epiphallus by a sphincter to only a change in pilasters. Upper portion of penis walls with dense, high pustules that may have chitinized pointed tips, which sometimes arranged in rows or quite crowded;

lower portion of penis with longitudinal pilasters. Verge wanting. Penis sheath absent. Penial retractor inserting on mid-portion of epiphallus. Free oviduct usually short. Vagina more or less expanded, short or (rarely) greatly elongated. Spermathecal shaft slender, generally swollen basally; expanded reservoir mostly lying next to base of albumen gland.

DISTRIBUTION. New Guinea, Australia (Queensland, Northern Territory, Western Australia). 12 spp.

Jacksonena Iredale, 1937

Fig. 2002

Iredale, 1937b: 22. B. Smith, 1992: 131.

TYPE SPECIES — *Planispira rudis* Hedley, 1912; OD.

Shell lenticular, moderately solid, of 4.5-5.5 much flattened whorls. Last whorl carinated peripherally, abruptly but not strongly deflected. Base ventricose. Color brownish-corneous, russet or tawny olive; aperture inside white to purple. Embryonic whorls roughly granulated, granules arranged in spiral direction. Postapical whorls with coarse

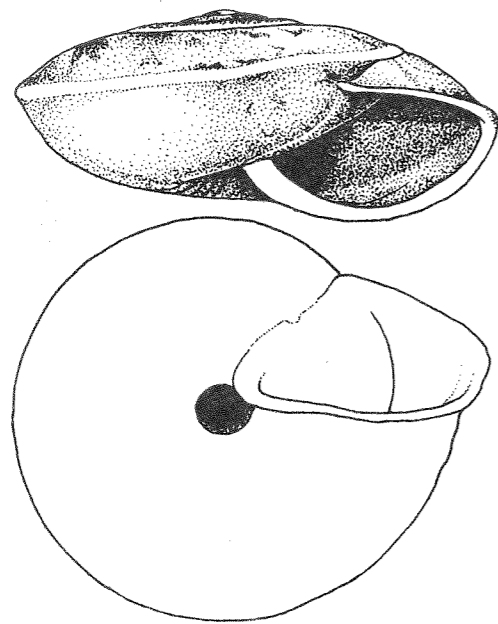


Fig. 2002. *Jacksonena rudis* (Hedley, 1912). Tinaroo, N Queensland [old shell]. Basel No. 8885-a.

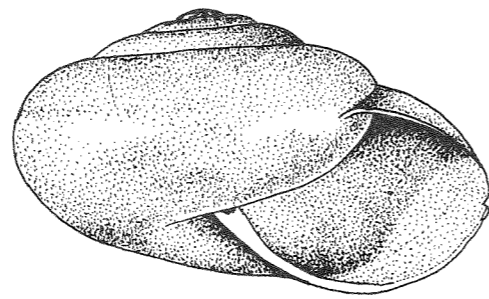


Fig. 2003. *Ramogenia challengeri* (Gude, 1906). Mt. Cooroora near Pomona, S Queensland, Australia. Delaware Museum of Natural History, Wilmington, No. 74559.

vermiculate rugae and finely shagreened. Aperture trapezoidal, well oblique, with shortly reflexed, a little thickened margins. Umbilicus not wide, cylindrical. Height 9-14, diam. 23-32 mm (13.0 × 30.5 mm).

DISTRIBUTION. E Australia (Queensland). 2 spp.

Ramogenia Iredale, 1938
Fig. 2003

Iredale, 1938: 97. B. Smith, 1992: 144.

TYPE SPECIES — *Chloritis obnubila* Gude, 1907 (= *Chloritis challengeri* Gude, 1906); OD.

Shell depressed-conic, thin, a little shining, of 4.5-5 moderately convex whorls. Last whorl rounded, slightly descending in front. Color corneous or ochraceous. Embryonic sculpture of rather coarse, dense pustules. Postapical whorls finely shagreened, with accidental, smoothed radial ridgelets. Aperture ovate, well oblique, with thin, scarcely reflexed margins; columellar margin moderately expanded. Umbilicus not wide, deep, cylindrical. Height 8-11, diam. 13-17 mm (10.0 × 15.7 mm).

DISTRIBUTION. E Australia (Queensland). 3 spp.

Trozena Iredale, 1938
Fig. 2004

Iredale, 1938: 111. Solem, 1979: 116. B. Smith, 1992: 165.

TYPE SPECIES — *Trozena morata* Iredale, 1938; OD.

Shell nearly lens-shaped, relatively solid, of 4.75-5.25 flattened whorls. Last whorl distinctly angulated at periphery, slightly descending in front. Color uniformly dark yellow-brown. Embryonic whorls with densely spaced pustules. Postapical whorls with short, radially oriented, scattered blade-like ridges; microsculpture of radial ridgelets, replaced by dense pustules in umbilicus. Aperture subcircular, well oblique, nearly adnate. Aperture margins broadly expanded, with a weak to moderately developed basal node. Umbilicus rather broad, perspective. Height 5.1-5.9, diam. 10.2-12.3 mm.

Hermaphroditic duct entering head of talon. Vas deferens entering very long epiphallus apically through a simple pore.

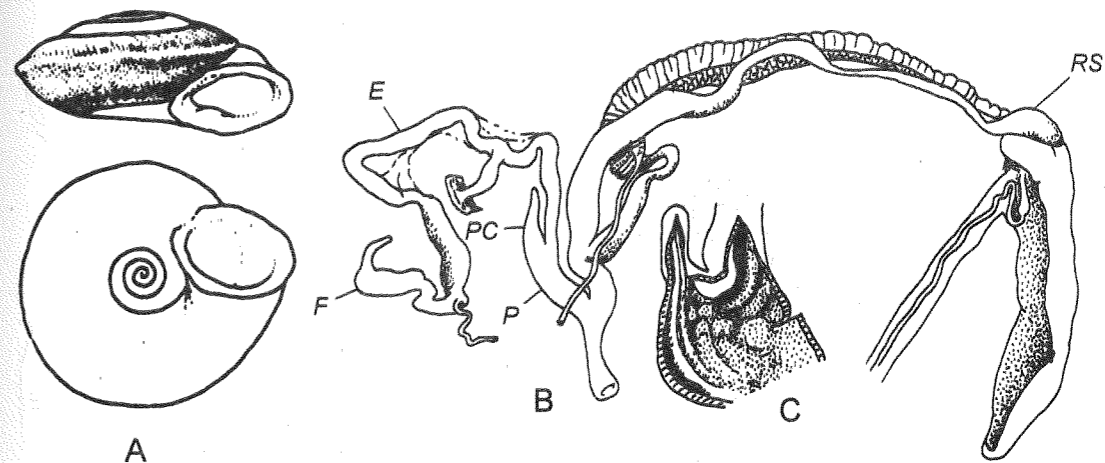


Fig. 2004. *Trozena morata* Iredale, 1938. A — shell. B — reproductive tract. C — interior of penis. After Solem, 1979.

Flagellum long, narrowing apically, internally with longitudinal pilasters. No distinct demarcation between epiphallus and penis. Penis short, with a small caecum and weak internal pilasters; verge missing. Penis sheath absent. Penial retractor attaching to lower third of epiphallus. Free oviduct rather long, vagina noticeably shorter. Spermathecal duct long, gradually expanding toward base; reservoir lies on lower portion of albumen gland.

DISTRIBUTION. E Australia (Queensland). 1 sp.

Plectorhagada Iredale, 1933
Fig. 2005

Iredale, 1933: 52 (*Rhagada* subg.).

— *Idamera* Iredale, 1939: 71 [*Plectorhagada* subg.; t.-sp. *Plectorhagada (Idamera) rovina* Iredale, 1939; OD].

B. Smith, 1992: 141. Solem, 1997: 1575.

TYPE SPECIES — *Helix plectilis* Benson, 1853; OD.

Shell depressed to nearly globose, moderately solid, not glossy, of 3.75-6 convex whorls.

Last whorl evenly rounded to (in 1 species) angulated, gradually descending in front. Color light-corneous to nearly white, sometimes with a weak darker supraparipheral band and white zone just below it. Embryonic sculpture of smoothed, uneven radial wrinkles and very weak micropustules. Postnuclear whorls with very rugose, oblique wrinkles and elongate tubercles; over this sculpture there are numerous pustules. Aperture circular or nearly so, oblique; margins somewhat reflexed, columellar margin well expanded. Parietal callus varying from thin to thick and elevated. Umbilicus closed or a narrow lateral crack in more globose species; narrowly open in 2 species; widely open in 1 species. Height 10-14, diam. 12-21 mm (12.9 × 16.7 mm).

Jaw with a few broad but very low ribs on central portion, greatly reduced to absent on sides.

Hermaphroditic duct entering small talon laterally. Vas deferens very slender, entering slightly expanded head of epiphallus. Flagellum absent or a small knob. Epiphallus short, enters penis through a simple pore. Penis globular to somewhat elongated, internally with a large and sim-

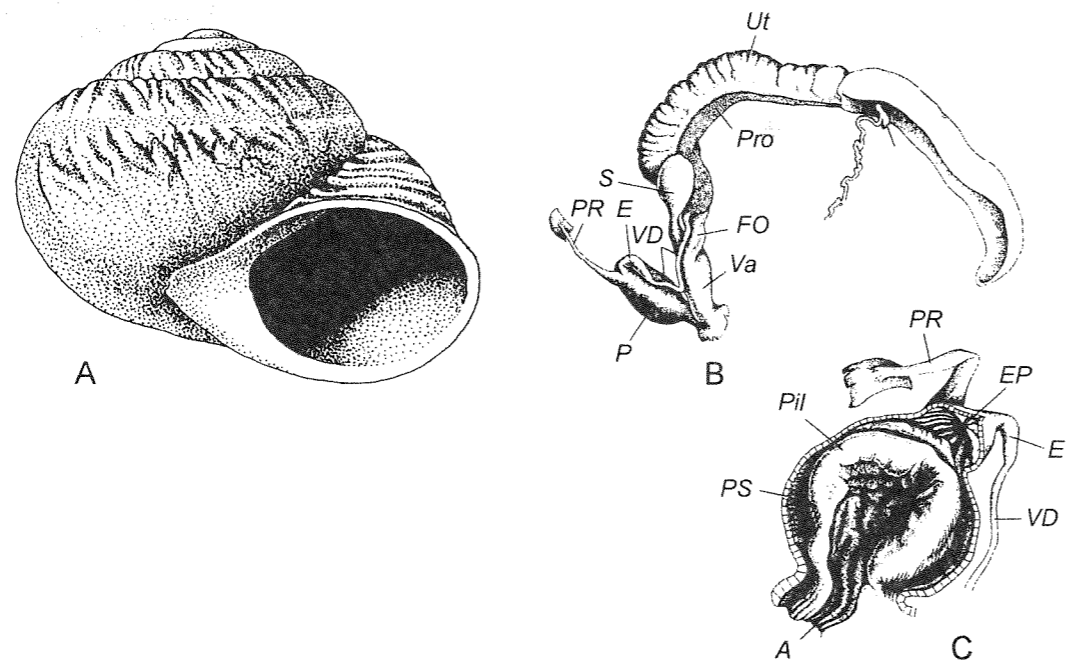


Fig. 2005. *Plectorhagada plectilis* (Benson, 1853).
A — shell: NW Overlander, W Australia. Moscow No. Lc-25579. B — reproductive tract.
C — interior of penis. After Solem, 1997.

ple, highly modified or greatly reduced U-shaped pilaster. Penis sheath seemingly missing. Penial retractor inserts in an arc at point where epiphallus enters penis. Free oviduct rather short. Vagina short to very short. Short spermathecal shaft and free oviduct twisted around each other; reservoir reaching just above base of spermoviduct.

DISTRIBUTION. W Australia (mainly Shark Bay area). 5 spp.

Cupedora Iredale, 1933

Fig. 2006

Iredale, 1933: 48.

— *Meracomelon* Iredale, 1933: 52 (nom. nud.; t.-sp. *Helix rufofasciata* Brazier, 1875; OD).

— *Exilibadistes* Iredale, 1933: 52 (nom. nud.; *Meridolum* subg.; t.-sp. *Helix bednalli* Brazier, 1872; OD).

— *Findomelon* Iredale, 1937a: 32 (*Meracomelon* subg.; t.-sp. *Helix luteofusca* Cox, 1868).

B. Smith, 1992: 123. Solem, 1992: 23.

TYPE SPECIES — *Helix lincolniensis* L. Pfeiffer, 1864; OD.

Shell depressedly turbanate, moderately solid, somewhat translucent, of 3.75-6

weakly convex whorls. Last whorl more or less deflected, usually evenly rounded at periphery, rarely angulated or keeled. Basic color light yellow-brown, often with red to burgundy bands, zones, or patches in most species. Embryonic whorls smooth to pustulose. Postnuclear sculpture of 4 elements: micropustulations, radial microridgelets, larger and sometimes connected pustules, and radial irregular wrinkles. Aperture moderately oblique, ample, broad, margins slightly to strongly expanded. Parietal callus thin, but always present. Umbilicus usually narrowly open, sometimes closed or nearly so. Height 7.6-27.7, diam. 11-36 mm (9.4 × 15.2 mm).

Vas deferens enters epiphallus lateral to termination of flagellum and through a pilaster. Flagellum short to long. A protosheath of fibrous tissue connects to or surrounds penis complex, also connective tissue binds ascending arm of vas deferens, flagellum, and pre-penial retractor portion of epiphallus to protosheath. Length of penis and epiphallus variable. Penis contains a short, wrinkled verge having a lateral epiphallic pore; inner surface of penis chamber pustulose around verge, lower sections

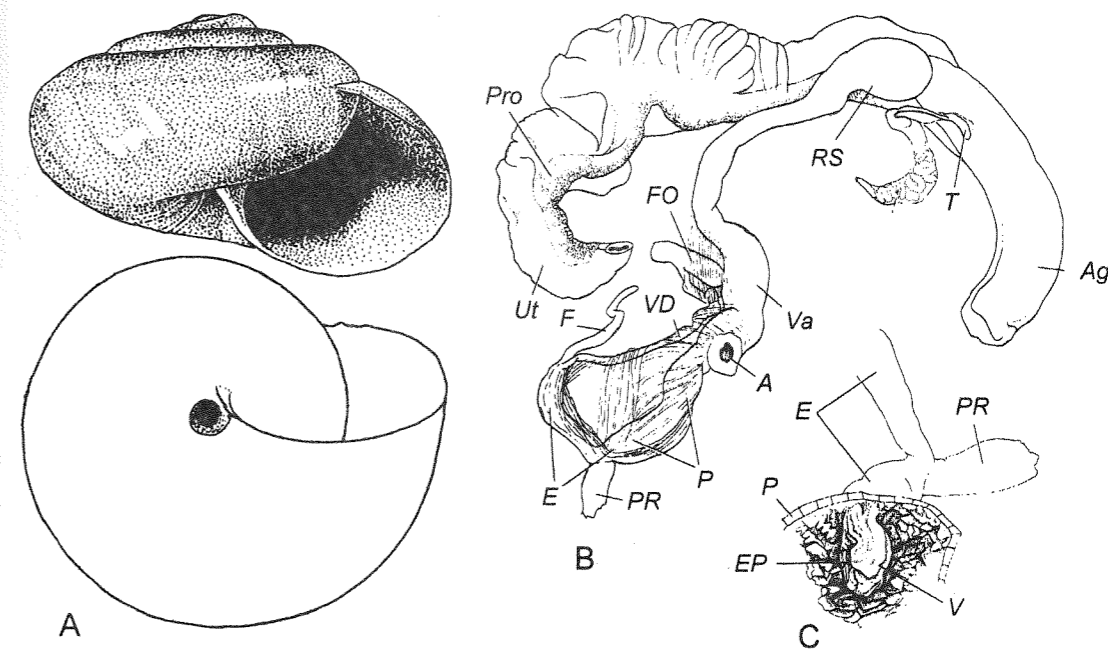


Fig. 2006. A — *Cupedora lincolniensis* (L. Pfeiffer, 1864).
A — shell: Port Lincoln, S Australia. Vienna. B, C — ! *Cupedora bednalli* (Brazier, 1872).
B — reproductive tract. C — interior of penis. After Solem, 1992.

with longitudinal ridges. Penial retractor inserts onto epiphallus at point where protosheath begins. Free oviduct short, entering vagina-spermathecal angle at right or nearly right angle. Basal part of vagina usually with a few stimulatory ridges. Spermatheca bound to spermoviduct by connective tissue; lower part of shaft expanded, walls thick, internally with longitudinal ridges; reservoir reaching base of albumen gland.

DISTRIBUTION. S Australia (Flinders Ranges to the tip of the Eyre Peninsula and some islets off the eastern side of the peninsula). 16 spp.

Cooperconcha Solem, 1992

Fig. 2007

Solem, 1992: 139.

TYPE SPECIES — *Cooperconcha bunyeroana* Solem, 1992; OD.

Shell flat to moderately elevated, rather thin, of 4.5-5.5 convex whorls. Last whorl straight, rounded to weakly angulated at periphery. Color uniformly yellow-brown. Embryonic whorls with crowded pustules. Early postapical sculpture of pustules or raised

periostacal extensions, becoming larger and more complex microsculpture on later whorls. Aperture ovate to subcircular, moderately oblique, margins thin, not expanded or reflexed, slightly thickened internally only in gerontic specimens. Parietal wall with at most a thin callus. Umbilicus narrowly to moderately open, perspective. Height 4.3-12.1, diam. 10.9-19.4 mm.

Head wart eversible, opening between and at posterior margin of ommatophores.

Jaw with ribs reduced on sides, inter-rib spaces wide.

Vas deferens enters epiphallus through a pore lateral to flagellum base. Flagellum and epiphallus variable in length. Penis short to long, sculpture of inner walls variable; verge shortly cylindrical, broadly triangular or conic; its surface wrinkled, opening more or less shifted laterally. Protosheath of fibers (in 1 species), with a thin, but fully developed sheath, extending from atrium to insertion of penial retractor. Free oviduct and vagina of moderate length. Spermathecal shaft somewhat swollen at base, reservoir reaching base of albumen gland.

DISTRIBUTION. South Australia. 4 spp. & subspp.

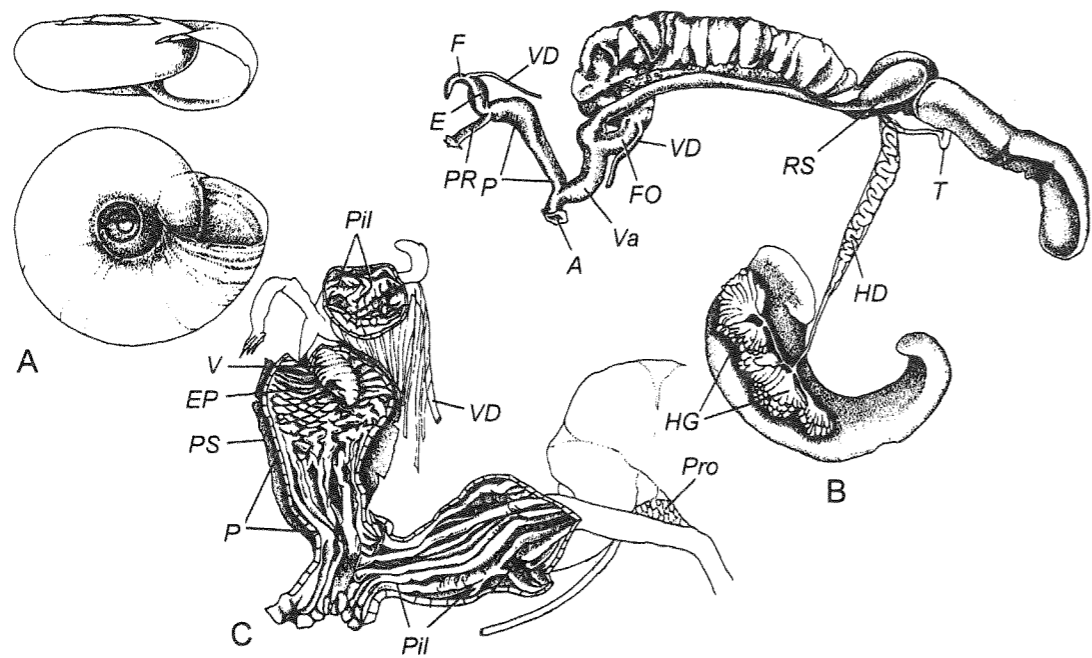


Fig. 2007. *Cooperconcha bunyerooana* Solem, 1992.
A — shell. B — reproductive tract. C — interior of flagellum, penis and vagina. After Solem, 1992.

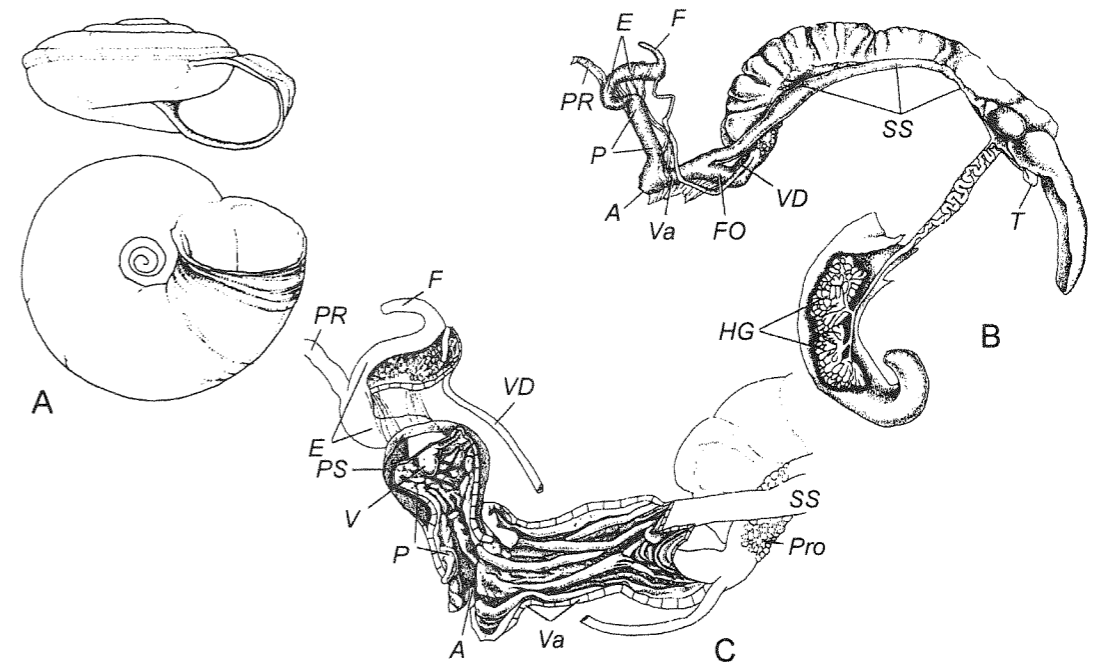


Fig. 2009. *Pseudocupedora trezonana* Solem, 1992.
A — shell. B — reproductive tract. C — interior of flagellum, penis and vagina. After Solem, 1992.

Discomelon Iredale, 1938
Fig. 2008

Iredale, 1938: 89. B. Smith, 1992: 125.

TYPE SPECIES — *Discomelon intricatum* Iredale, 1938; OD.

Shell much depressed, moderately thin, glossy, a little translucent, of about 5 convex whorls. Last whorl rounded, slightly descending toward aperture. Color yellowish with scarcely visible reddish supraperipheral band. Embryonic whorls with fine, smoothed pustules. Later whorls without regular sculpture. Aperture broadly ovate, moderately oblique, with a little thickened, shortly reflexed margins. Umbilicus sub-cylindrical, rather narrow. Height 8.5-9.5, diam. 15-18 mm (9.0 × 17.0 mm).

DISTRIBUTION. E Australia (New South Wales). 1 sp.

Pseudocupedora Solem, 1992
Fig. 2009

Solem, 1992: 154.

TYPE SPECIES — *Pseudocupedora trezonana* Solem, 1992; OD.

Shell depressed, moderately thin, of 4.5

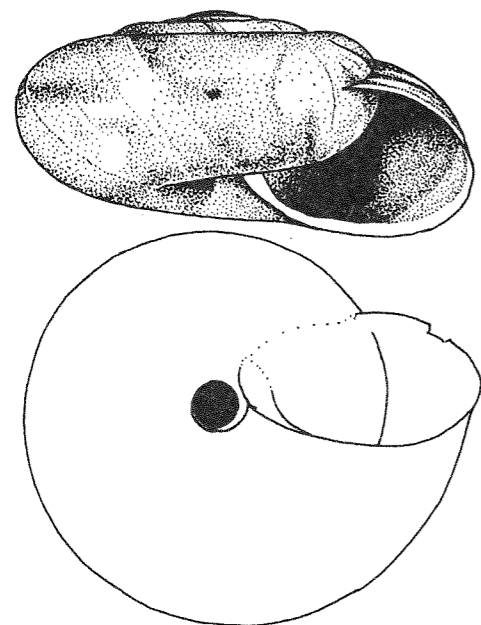


Fig. 2008. *Discomelon intricatum* Iredale, 1938. Collarenebri, New South Wales. Basel No. 8884-a.

to nearly 5 rather convex, somewhat shouldered whorls. Last whorl not descending, with protruded thread-like keel. Spire dome-shaped, evenly elevated. Color light yellow-corneous above, lighter on base, no trace of bands or suffusions. Embryonic whorls with crowded pustules. Early postapical whorls with small periostracal extensions that have anteriorly V-shaped arms, becoming elongated or fused into radial ridges on body whorl. Aperture ovate, moderately oblique, margins not expanded or reflexed but columellar margin which a little dilated. Umbilicus wide, very slightly narrowed by columellar margin reflection. Height 5.60-6.95, diam. 13.2-15.9 mm.

Head wart situated between and at rear margin of ommatophores.

Vas deferens entering epiphallus lateral to long flagellum. Epiphallus short and thick. Penis short, upper pustulose area narrow, verge small, wrinkled, with side orifice; lower portion of penis and vagina with simple pilasters. Penis sheath thin, extending from atrium to insertion of penial retractor. Free oviduct and vagina short, of about equal length. Spermathecal shaft more or less cylindrical, reservoir attends base of albumen gland.

DISTRIBUTION. South Australia (Flinders Ranges, Trezona Range). 1 sp.

Glyptorhagada Pilsbry, 1890
Fig. 2010

Pilsbry, 1890 (1890-1891): 191 (*Rhagada* sect.). — *Halmatorhagada* Iredale, 1933: 51 (*Glyptorhagada* subg.; t.-sp. *Helix bordaensis* Angas, 1880; OD).

B. Smith, 1992: 128. Solem, 1992: 102.

TYPE SPECIES — *Helix (Rhagada) silveri* Angas, 1868; OD.

Shell nearly flat to subglobose, rather solid, of 4-5.5 convex whorls. Body whorl rounded to strongly angulated or even keeled, markedly deflected. Color mostly light yellow-corneous or darker with 3 bands. Embryonic whorls smooth. Postapical sculpture mostly of micro-pustulations (secondarily reduced in 1 species), and periostracal ridgelets. Major sculpture highly variable; elements of spiral striation mostly present. Aperture large, rounded, oblique, with variably expanded margins. Umbilicus rather narrow to nearly closed. Height 5.7-22.8, diam. 15.9-31.6 mm (16.2 × 23.5 mm).

Head wart pit opening between, and

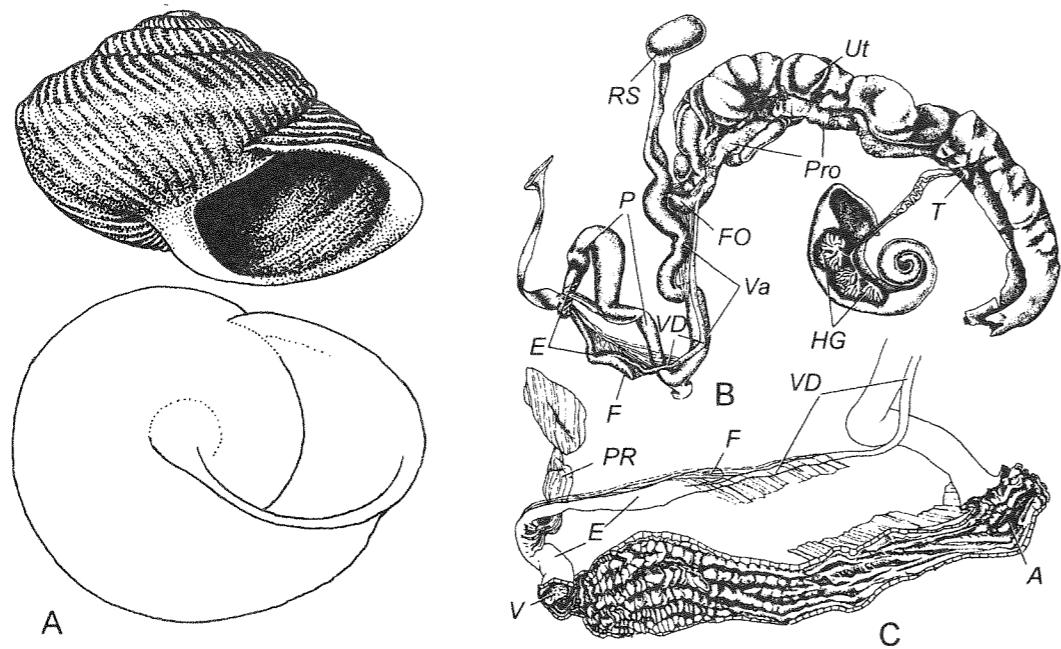


Fig. 2010. *Glyptorhagada silveri* (Angas, 1868).
A — shell: E slope Pepuarta Hill, 13.6 road km SSE of Manna Hill, S Australia, Chicago No. 205656. B — reproductive tract. C — interior of penis. After Solem, 1992.

slightly behind, posterior margin of ommatophores.

Vas deferens entering epiphallus at base of short and rather thick flagellum (sometimes flagellum more or less thin and elongated). Internally epiphallus with complex structure of small folds; epiphallus enters penis through a wrinkled verge having pore in lateral position. Penis chamber with pustulose zone in upper section, lower part with longitudinal folds. A protosheath of fibers surrounds penis complex. Penial retractor inserts on epiphallus about two-thirds of way from apex of latter. Free oviduct short, entering vaginal-spermathecal channel at right angle. Vagina mostly short, internally with stimulatory ridges. Lower part of spermathecal shaft expanded, may contain stimulatory ridges, bound to spermooviduct by connective tissue. Reservoir attends base of albumen gland.

DISTRIBUTION. South Australia. 10 spp. & subspp.

Aslintesta Solem, 1992
Fig. 2011

Solem, 1992: 157.

TYPE SPECIES — *Aslintesta camelus* Solem, 1992; OD.

Shell flat to very slightly elevated, moderately solid, of 3.5-4.5 whorls. Last whorl sharply deflected behind aperture, weakly angulated at periphery. Color light yellow-brown, base lighter; no trace of bands. Embryonic sculpture of crowded pustules. Early postnuclear whorls with small periostacal projections with anteriorly sloping arms, changing on body whorl to enlarged projections that sometimes join to form simple longitudinal ridges. Aperture well oblique, subcircular, with expanded and reflexed margins; peristome insertions closely approached. Parietal callus heavy. Umbilicus wide, very slightly narrowed by columellar margin expansion. Height 3.44-5.00, diam. 10.1-14.2 mm.

Head wart located between and slightly behind rear margins of ommatophores.

Vas deferens entering epiphallus through a simple pore on short pilaster. Flagellum short, tapering. Epiphallus long, internally with complex sculpture. Penis of irregular shape, internally with numerous folds and pilasters; verge absent. Penis/epiphallus junction internally with weak folds and

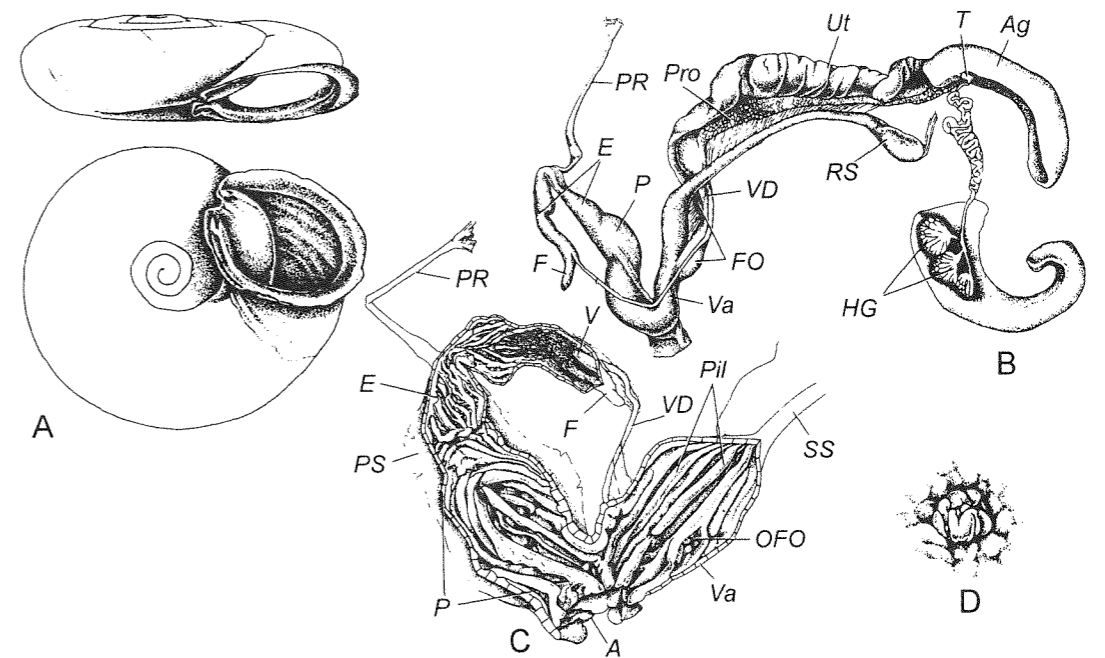


Fig. 2011. *Aslintesta camelus* Solem, 1992.
A — shell. B — reproductive tract. C — interior of epiphallus, penis and vagina. D — partly everted head wart. After Solem, 1992. OFO — opening of free oviduct.

changes in pilasters; upper portion of penis without pustules. Penis sheath very thin, extending from atrium to insertion of penial retractor. Free oviduct longer than very short vagina. Spermathecal shaft basally swollen; reservoir reaching base of albumen gland.

DISTRIBUTION. South Australia (Flinders Ranges and neighboring territories). 1 sp.

Ventopelita Iredale, 1943
Fig. 2012

Iredale, 1933: 55 (nom. nud.); 1943: 62. B. Smith, 1992: 167.

TYPE SPECIES — *Helix leucocheilus* Cox, 1868 (= *Helix mariae* Cox, 1864); OD.

Shell depressedly orbicular, thin to moderately solid, translucent, of 4-5 slightly convex whorls. Last whorl with peripheral angle or cord-like keel, slightly descending in front. Color dirty-yellow or olivaceous, usually with brown bands under suture, above peripheral angle or keel and around umbilicus; peristome white. Both embryonic and later whorls with fine granulation. Aperture ovate, quite oblique; peristome a little re-

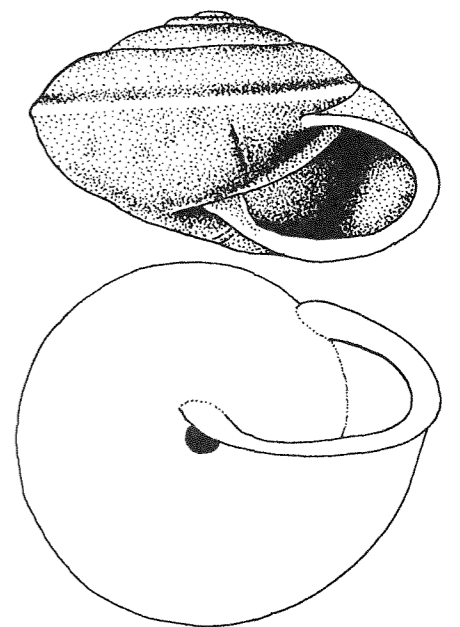


Fig. 2012. *Ventopelita mariae* (Cox, 1848).
Ballina, New South Wales, Australia. Cardiff.

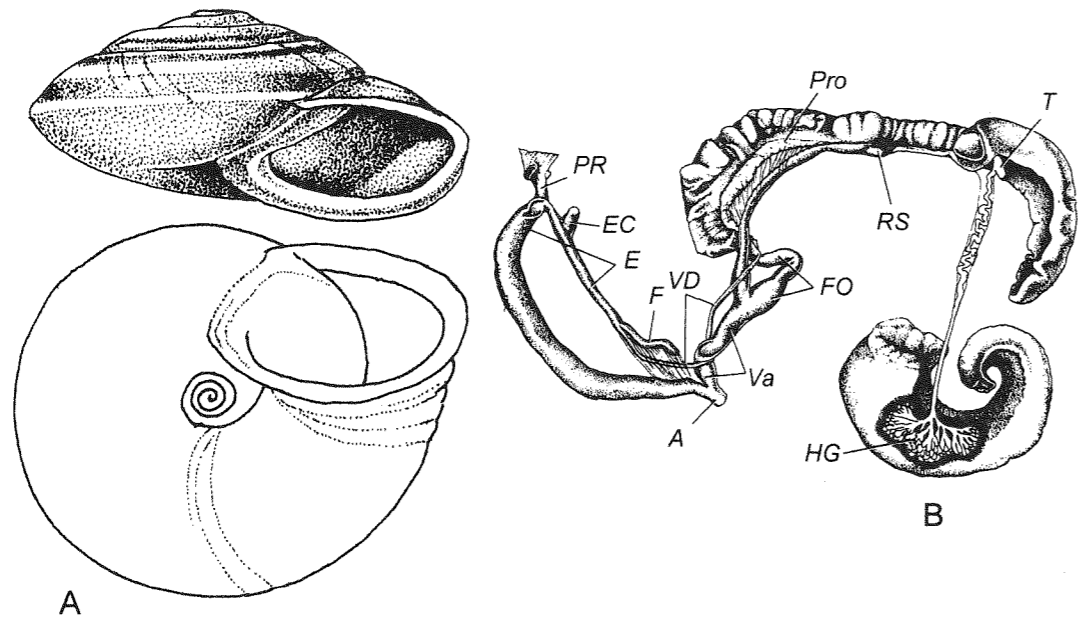


Fig. 2013. *Contramelon howardi* (Angas, 1869).
A — shell: Chambers Gorge, N Flinders [S Australia]. Chicago No. 205711. B — reproductive tract. After Solem, 1992.

flexed, strongly thickened. Umbilicus rather narrow, more or less covered. Height 7-13, diam. 14-18 mm (10.1 × 16.3 mm).
DISTRIBUTION. E Australia (Queensland, New South Wales). 3 spp.

***Contramelon* Iredale, 1937**
Fig. 2013

Iredale, 1937a: 34 (*Meracomelon* subg.).
B. Smith, 1992: 120. Solem, 1992: 134.

TYPE SPECIES — *Helix* (? *Plectotropis*) *howardi* Angas, 1869; OD.

Shell lens-shaped, rather solid, of 4-5 flattened whorls. Last whorl angulated, slightly to moderately descending. Color light yellow-corneous with faded reddish subsutural and supraperipheral bands, plus a red color patch confined to umbilicus. Apex usually worn smooth. Postembryonic whorls with inconspicuous radial wrinkles; microsculpture of fine, anastomosing ridges, no pustules. Aperture subcircular, quite oblique; palatal and basal margins sharply reflexed and expanded. Parietal callus well developed. Umbilicus narrowly to moder-

ately open. Height 7.6-12.1, diam. 17.25-24.80 mm (10.1 × 20.1 mm).

Head wart pore located between and slightly behind ommatophores.

Hermaphroditic duct enters small, exposed talon laterally. Vas deferens joining epiphallus apically. Flagellum and epiphallus long. Accessory epiphallic caecum located just above attachment of penial retractor. Interior of epiphallus with fine, irregular pilasters above insertion of penial retractor, 2 large pilasters below. Penis moderately thick-walled, no sculpture in area around verge, moderately strong pilasters below verge tip, becoming diffuse in lower part of penial chamber; verge long, slender, smooth, its tip pointed, with almost terminal pore. Penis sheath thin, extends from penial retractor to atrium. A fibrous membrane connects vas deferens and upper epiphallus to penis sheath. Free oviduct long, swollen basally, kinked. Vagina short. Upper part of vagina and lower part of free oviduct with thick, glandular walls. Spermathecal shaft short, bound to spermoviduct by connective tissue; reservoir poorly defined, reaching only 3/4 way up spermoviduct.

DISTRIBUTION. South Australia (Flinders Ranges). 1 sp.

***Galadistes* Iredale, 1938**
Fig. 2014

Iredale, 1938: 85. B. Smith, 1992: 126.

TYPE SPECIES — *Helix* (*Galaxias*) *liverpoolensis* Brazier, 1872; OD.

Shell depressed-turbinate, thin, very translucent, silky glossy, of 4-5 moderately to slightly convex whorls. Last whorl evenly rounded, markedly but not abruptly descending in front. Color greyish-yellow to light corneous. Embryonic whorls more or less distinctly granulated. Later whorls densely pustulose above and almost smooth on base. Aperture broadly ovate, well oblique, with thin, simple, not reflexed margins. Umbilicus narrow, subcylindrical, partly covered. Height 9-14, diam. 12-18 mm (12.9 × 16.8 mm).

DISTRIBUTION. E Australia (Queensland, New South Wales). 7 spp.

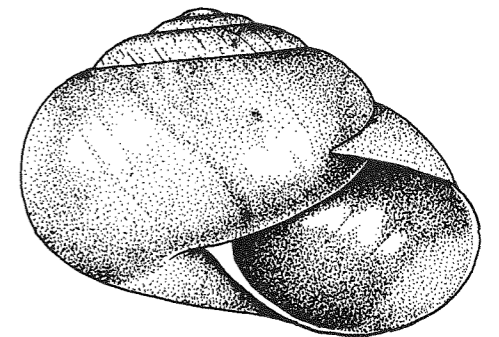


Fig. 2014. *Galadistes liverpoolensis* (Brazier, 1872).
New South Wales. Phil. No. 81401.

oviduct and vagina rather short. Spermathecal shaft long, reservoir reaching basal section of albumen gland.

DISTRIBUTION. Australia (Western Australia, Baudin and Cassini Islands in Admiralty Gulf). 3 spp.

***Meridolum* Iredale, 1942**
Fig. 2016

Iredale, 1942: 39. 1933: 47 (nom. nud.). B. Smith, 1992: 133.

TYPE SPECIES — *Helix jervisensis* Quoy et Gaimard, 1832; OD.

Shell subglobose, rather thin, dull above and glossy below, of 5-6 moderately to slightly convex whorls. Last whorl broadly rounded, a little descending in front. Color corneous or yellow to buff; umbilicus sometimes encircled by chestnut zone; peristome white. Embryonic whorls coarsely, chaotically pitted. Subsequent whorls distinctly granulated above; base almost glabrous. Aperture widely ovate to subcircular, moderately oblique, with thin, (shortly) reflexed margins. Umbilicus narrow to nearly closed. Height 20-27, diam. 24-35 mm (24.8 × 30.1 mm).

***Damochlora* Iredale, 1938**
Fig. 2015

Iredale, 1938: 97.

— ? *Offachloritis* Iredale, 1933: 50 (t.-sp. *Helix dryanderensis* Cox, 1872; OD).

— *Perochlora* Iredale, 1939: 46 [nom. nud.; t.-sp. *Damochlora rectilabrum* (E. Smith, 1894); OD]. Solem, 1979: 101.

TYPE SPECIES — *Helix* (*Chloritis*) *millepunctata* E. Smith, 1894; OD.

Shell much depressed, moderately solid, of 4-5.25 rather convex whorls. Body whorl straight, rounded at periphery. Color uniformly light-brown. Embryonic whorls with crowded, prominent pustules. Postapical sculpture of short blade-like to conic ridges oriented radially; besides, there is a secondary sculpture of extremely fine and short irregular wavy ridges, both replaced in umbilicus by short, crowded setae. Aperture broadly ovate, moderately oblique, with slightly reflexed, a little thickened margins. Umbilicus moderately narrow. Height 4.7-9.0, diam. 9.6-15.9 mm.

Hermaphroditic duct attaching to head of talon. Vas deferens comparatively short, entering epiphallus through a pair of low pilasters. Epiphallus with both a long, slender flagellum and a stout caecum, latter ornamented internally with pustules. Penis rather long, twisted, internally with a verge and radial pustulations. Penis sheath long. Penial retractor inserting near top of epiphallus. Both free

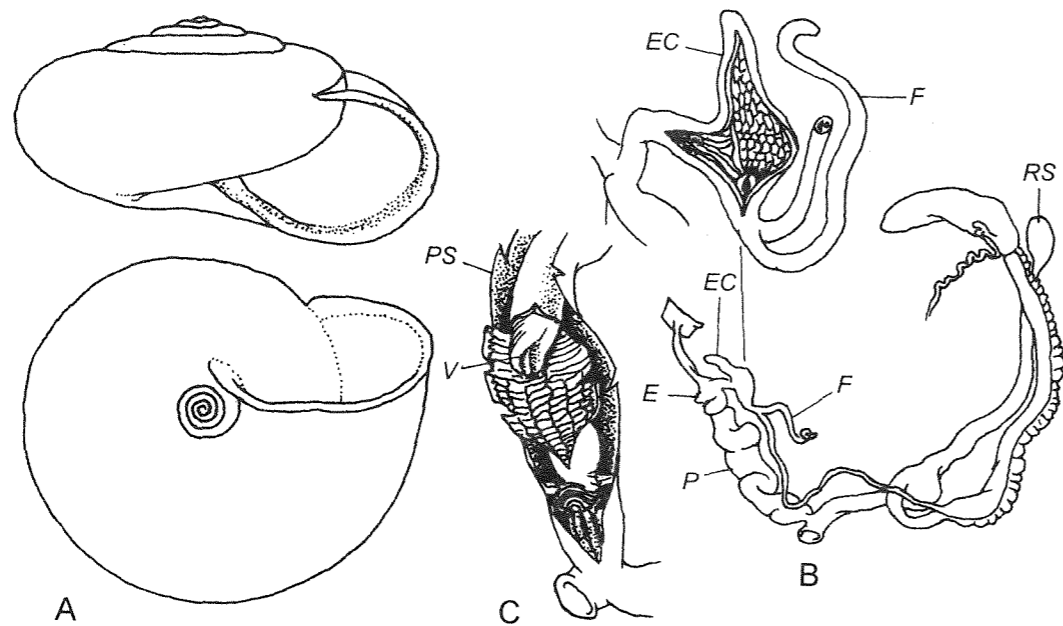


Fig. 2015. A — *Damochlora millepunctata* (E. Smith, 1894). Shell. B, C — *Damochlora rectilabrum* (E. Smith, 1894). B — reproductive tract and interior of epiphallic caecum. C — interior of penis. After Solem, 1979.

DISTRIBUTION. E Australia (Queensland, New South Wales). 12 spp.

Vidumelon Iredale, 1933
Fig. 2017

Iredale, 1933: 51. Solem, 1993: 1439.

TYPE SPECIES — *Hadra wattii* Tate, 1894; OD.

Shell depressed, rather solid, slightly translucent, glossy, of 6-7.25 rather convex, very tightly coiled whorls. Body whorl at most obtusely angulated above middle line, gradually descending in front. Spire dome-shaped, only slightly elevated. Color dark brownish-yellow, lighter on base. Embryonic sculpture reduced, with low scattered pustules on lower portion. Rest surface above periphery of body whorl with very dense periostracal setae, each with a long basal support, plus low and irregular periostracal wrinkles in between. Sculpture greatly reduced below periphery, absent from base. Aperture well oblique, with sharply reflexed, slightly expanded margins; peristome thickened internally. Umbilicus open, very narrow. Height 4.8-6.6, diam. 10.2-12.2 mm (5.5 × 10.2 mm).

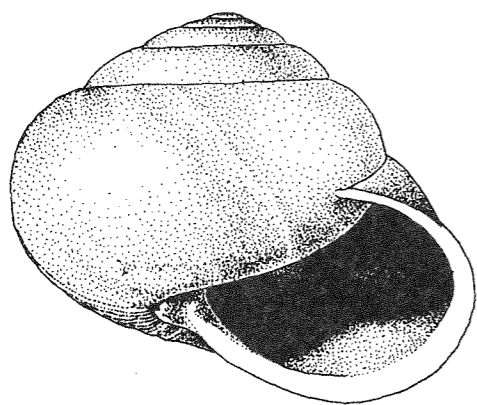


Fig. 2016. *Meridolum jervisensis* (Quoy et Gaimard, 1832).
Clarence River, N. S. Wales. Vienna.

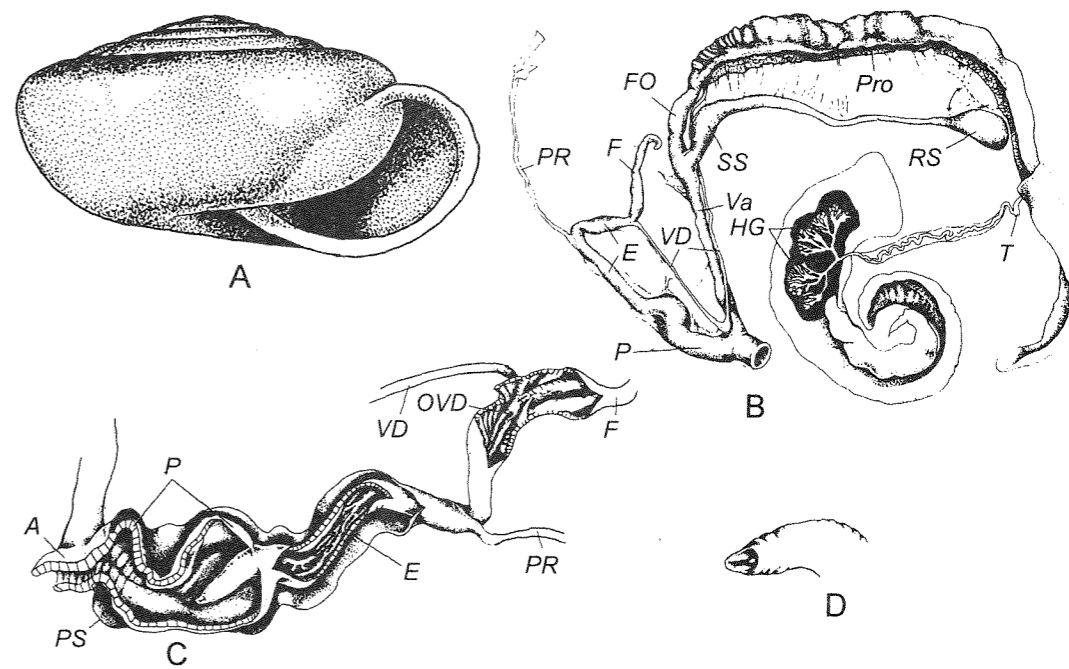


Fig. 2017. *Vidumelon wattii* (Tate, 1894).
A — shell: Maude River, Hart Range, central Australia. Phil. No. 72488. B — reproductive tract. C — interior of epiphallus and penis. D — verge. After Solem, 1993.

Head of animal with very small patch of specialized pustules between and just behind ommatophores.

Talon, a simple curvature of hermaphroditic duct. Vas deferens partly bound to other parts of genitalia with fibers, entering junction of flagellum and epiphallus through a low pilaster. Flagellum long, tapering apically. Epiphallus with complex internal relief. Penis long, thick-walled, internally with low, smooth pilasters and tubular verge which has nearly terminal opening. Penis sheath thin, surrounds penis and basal part of epiphallus. Penial retractor inserts on epiphallus at point where penis sheath begins. Atrium very short. Free oviduct short, not folded. Vagina long, slender. Spermathecal duct rather long, expanded basally; reservoir not reaches base of albumen gland.

DISTRIBUTION. Australia (Northern Territory; Hart Ranges). 1 sp.

Semotrachia Iredale, 1933
Fig. 2018

Iredale, 1933: 51.

— *Catellotrachia* Iredale, 1933: 52 (*Semotrachia* subg.; t.-sp. *Hadra winneckeana* Tate, 1894; OD).

— *Spernachloritis* Iredale, 1933: 52 (*Semotrachia* subg.; t.-sp. *Hadra setigera* Tate, 1894; OD).
B. Smith, 1992: 148. Solem, 1993: 1271.

TYPE SPECIES — *Thersites basedowi* Hedley, 1905; OD.

Shell nearly flat to depressed, generally solid, of 3.25-5.75 convex whorls. Last whorl rounded, shouldered or angulated; abruptly descending in front except in species with very angulated periphery, or reduced in size. Color yellow-brown. Embryonic sculpture of scattered to dense diagonal wrinkles or round to elongated pustules. Rest surface with small to very large pustules and/or ridgelets, plus scattered to very closely spaced periostracal setae that surmount the pustules; there are also reduced to very prominent microridging, that lacks any calcareous base, present between setae. Aperture almost circular, well oblique; margins sharply reflexed, slightly to moderately expanded. Parietal callus variously developed; sometimes aperture almost adnate. Rarely there is a trace of a basal lip knob. Umbilicus moderately to very widely open. Height 3.3-8.1, diam. 4.9-18.8 mm.

Hermaphroditic gland multi-clumped,

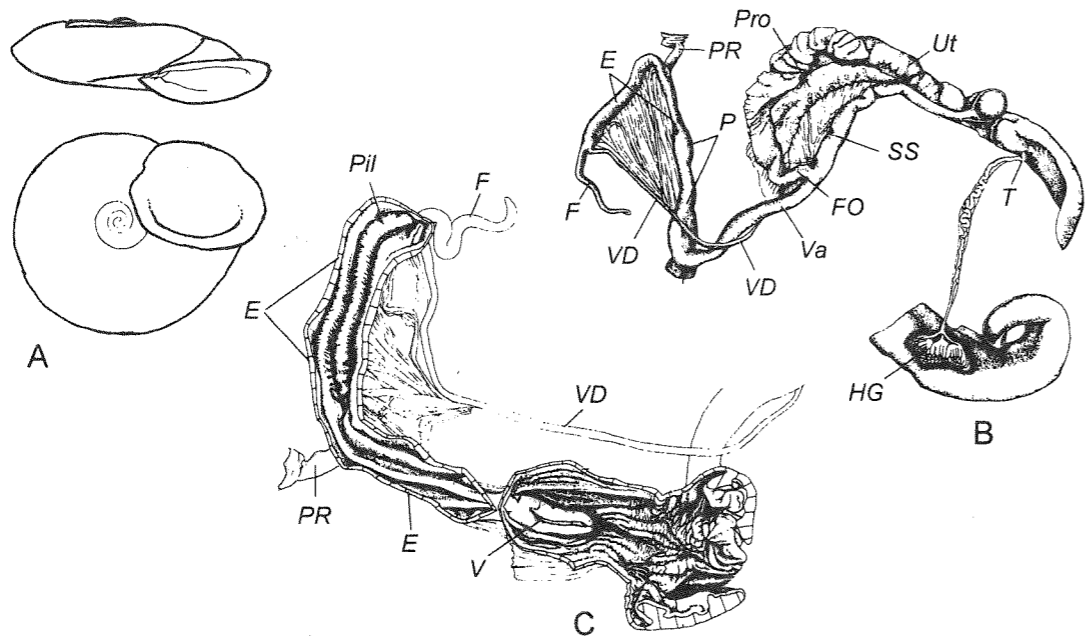


Fig. 2018. *Semotrachia basedowi* (Hedley, 1905).
A — shell. B — reproductive tract. C — interior of epiphallus and penis. After Solem, 1993.

hermaphroditic duct tightly coiled. Talon small, a simple curvature of hermaphroditic duct. Vas deferens enters epiphallus through a low ridge or pilaster. Flagellum usually small, sometimes greatly enlarged, or rarely absent. Epiphallus usually longer than penis, variable in length. Penis short to long, internally of various structure: with simple longitudinal ridges, with fine pustules, with corrugate ridges, or with rugose surface. Verge from very long and cylindrical with groove extending to lip to wider than long; its surface smooth, rugose, or corrugated; sometimes verge sheet-like. In 2 species an accessory foliated pilaster developed. Penis sheath absent. Penial retractor inserting on epiphallus, usually about 1/3 of way from verge base to entrance of vas deferens, sometimes near verge base. Free oviduct normally very short, occasionally longer. Vagina variable in length, internally with simple longitudinal pilasters. Spermathecal stalk more or less expanded in lower half; reservoir of spermatheca reaching base of albumen gland.

DISTRIBUTION. Australia (Northern Territory, Central and S Australia). 25 spp.

Dirutrachia Iredale, 1937
Fig. 2019

Iredale, 1937a: 36 (*Semotrachia* subg.). Solem, 1993: 1420.

TYPE SPECIES — *Hadra sublevata* Tate, 1894; OD.

Shell much depressed, rather solid, dull, of 4-5.5 convex whorls. Last whorl slightly to sharply angulated, descending abruptly just behind aperture. Color yellow-brown, lighter on base, without bands. Embryonic sculpture of more or less dense pustules that become elongated on lower portion. Rest surface with minute periostracal setal projections and an overlay of widely scattered calcareous pustules; or with large, more crowded calcareous pustules. Aperture moderately to strongly ovate, margins sharply reflexed, narrowly to moderately expanded, thickened internally, with a prominent lip knob that is low and elongated or higher and triangular. Parietal callus moderate to thick, sometimes raised. Umbilicus open, narrow. Height 5.7-9.2, diam. 13.0-19.3 mm (7.2 × 14.4 mm).

Head of animal with very small patch of specialized pustules between and just behind ommatophores.

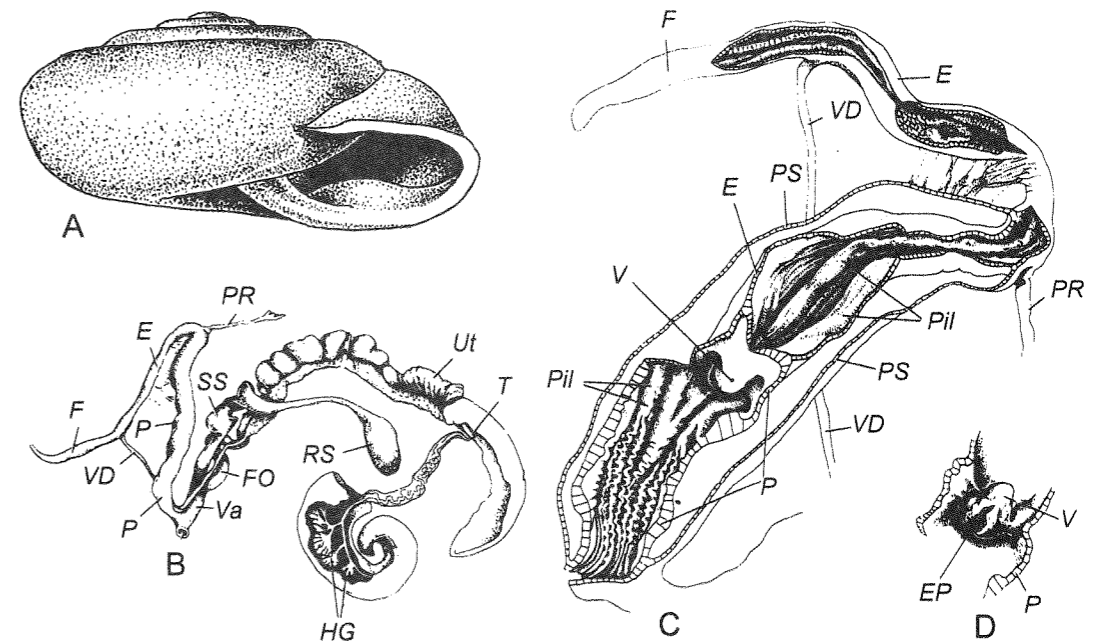


Fig. 2019. *Dirutrachia sublevata* (Tate, 1894).
A — shell: Hart Ranges, N[orthern] T[erritory]. Paratype. Chicago No. 171525. B — reproductive tract. C — interior of flagellum, epiphallus and penis. D — verge. After Solem, 1993.

Talon minute, exposed. Vas deferens slender, lightly bound by fibers to rest of terminal genitalia, entering either directly epiphallus or junction of epiphallus and flagellum. Flagellum bluntly tipped. Epiphallus long, with varied internal surface sculpture, joined by flagellum prior to insertion of penial retractor, entering penis through a verge. Penis chamber with thicker walls, longitudinally corrugated to simple ridges; verge either very short and tubercular, or small and tapering, with a lateral groove. Penis sheath well developed, starting at point of penial retractor insertion, continuing to atrium, or reduced to fibers. Atrium very short. Free oviduct long, U-folded or kinked. Vagina very short to long. Spermathecal stalk expanded basally, reservoir reaches base of albumen gland.

DISTRIBUTION. Australia (Northern Territory). 3 spp.

Arnemelassa Iredale, 1938
Fig. 2020

Iredale, 1933: 55 (nom. nud.); 1938: 110.

TYPE SPECIES — *Helix creedi* Cox, 1868; OD.
Shell depressed-globose, of 5.5 convex

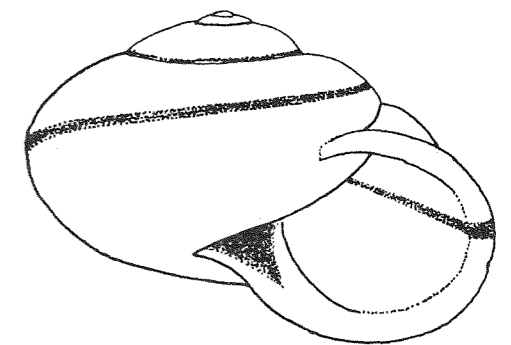


Fig. 2020. *Arnemelassa creedi* (Cox, 1868).
After Cox, 1868.

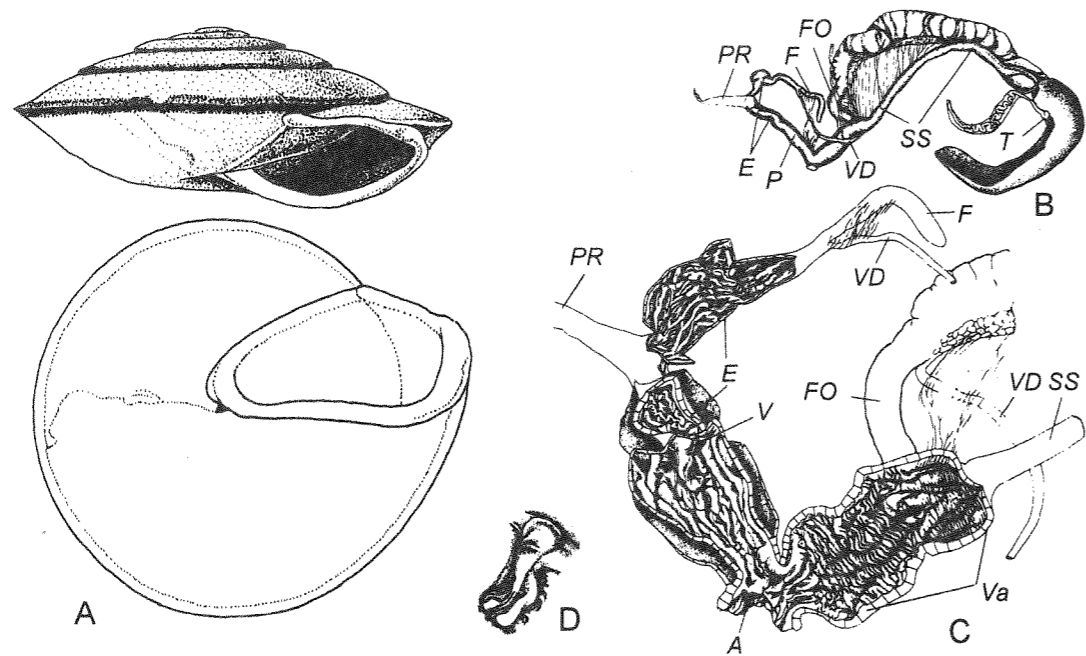


Fig. 201. *Divellomelon hillieri* (E. Smith, 1910).
A — shell: Neighbourhood of Herrmannsburg, N[orthern] T[erritory]. Holotype. London No. 1909.10.23.1. B — reproductive tract. C — interior of epiphallus, penis and vagina. D — verge. After Solem, 1993.

whorls. Last whorl inflated, rounded, descending. Color dull-fawn, darker toward apex, with 2 brown bands, one forming a fine dark margin to suture, the other above periphery. Postembryonic sculpture of fine radial striae. Aperture rounded, oblique, with a little thickened, broadly reflexed margins. Peristome insertions approached, joined by a thin, shining callus; columellar margin dilated. Umbilicus narrowly open, slightly covered. Height 17-18, diam. 26-27 mm ("0.70 × 1.05 inches").

DISTRIBUTION. Australia (Northern Territory). 1 sp.

Divellomelon Iredale, 1933
Fig. 201

Iredale, 1933: 51. Solem, 1993: 1445.

TYPE SPECIES — *Thersites (Glyptorhagada) hillieri* E. Smith, 1910; OD.

Shell lens-shaped, equally convex above and below, moderately solid, of about 5.5-6.3 fairly narrow whorls. Body whorl not descending in front, acutely angulated, with thread-like keel at periphery. Color light yellow-brown, base much lighter; with red nar-

row peripheral and subsutural bands. Apical whorls worn in known material (Solem, 1993), rest surface with low, irregular radial ridgelets; microsculpture absent. Aperture narrowly ovate, moderately oblique, margins narrowly expanded, rolled, thickened internally. Parietal callus variously developed. Umbilicus closed to minute. Height 7.0-8.1, diam. 16.3-18.6 mm (7.5 × 17.8 mm).

Head of animal with small patch of specialized pustules between and just behind ommatophores.

Talon very small. Vas deferens slender, entering epiphallus laterally. Flagellum finger-like. Epiphallus, penis chamber walls, and vagina internally with complex foliated and folded sculpture. Penis short with short verge bearing a lateral groove. Penial retractor inserting onto epiphallus at point where thin penis sheath begins. Atrium very short. Free oviduct moderately short, folded. Vagina short, relatively thick. Spermathecal stalk a little swollen basally; reservoir reaching base of albumen gland.

DISTRIBUTION. Australia (Northern Territory; Palm Valley, Krichauff Ranges). 1 sp.

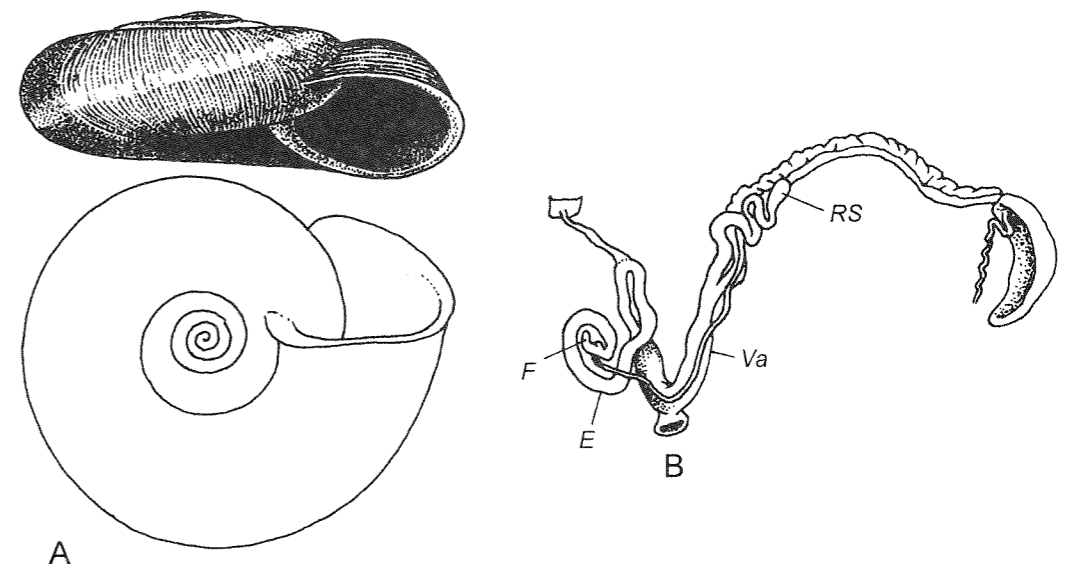


Fig. 202. *Retroterra costa* Solem, 1985.
A — shell: E of Mt. Brookes, tributary of Roe R., SE of Prince Frederick Harbour, NW Kimberley. Moscow No. Lc-25606 (Chicago No. 220648). B — reproductive tract. After Solem, 1985.

Retroterra Solem, 1985
Fig. 202

Solem, 1985: 787. B. Smith, 1992: 145.

TYPE SPECIES — *Retroterra costa* Solem, 1985; OD.

Shell nearly flat to depressed, moderately solid, of 4 to nearly 6 weakly convex whorls. Body whorl rounded at periphery, moderately or not descending in front. Color dark yellow-brown, sometimes with reddish suffusions, base may be lighter. Embryonic sculpture probably of weak elongated pustules (surface usually eroded). Rest whorls with fine to very prominent radial ribs which sometimes anastomose; ribbing on basal surface sometimes reduced. Aperture more or less ovate, well oblique, with moderately to barely expanded margins; one species has significant basal node. Umbilicus moderately to broadly open. Height 3.8-13.4, diam. 9.2-24.6 mm (6.3 × 17.7 mm).

Vas deferens simple, entering epiphallus at base of short flagellum. Interior of epiphallus with simple to corrugated longitudinal pilasters. Length of epiphallic portion above insertion of penial retractor vari-

able. Junction of penis and epiphallus marked by a stimulatory papilla, spatulate or almost tubular verge. Inner surface of penis either smooth or with axial pilasters. Penis sheath absent. Penial retractor inserts onto epiphallus. Free oviduct short. Vagina medium to long. Spermathecal shaft unusually long and either sinuated or complexly kinked, bound tightly to lower part of spermoviduct.

DISTRIBUTION. Western Australia (Prince Regent, Roe, and Hunter River drainages in the Prince Regent River Reserve area). 3 spp.

Setobaudinia Iredale, 1933
Fig. 203

Iredale, 1933: 55. Solem, 1985: 711. B. Smith, 1992: 149.

TYPE SPECIES — *Helix (Gonostoma) collingii* E. Smith, 1893; OD.

Shell more or less depressed, relatively solid, of 3.5-4.75 moderately convex whorls. Spire slightly to moderately elevated, often rounded. Body whorl not to strongly or sharply descending in front; periphery

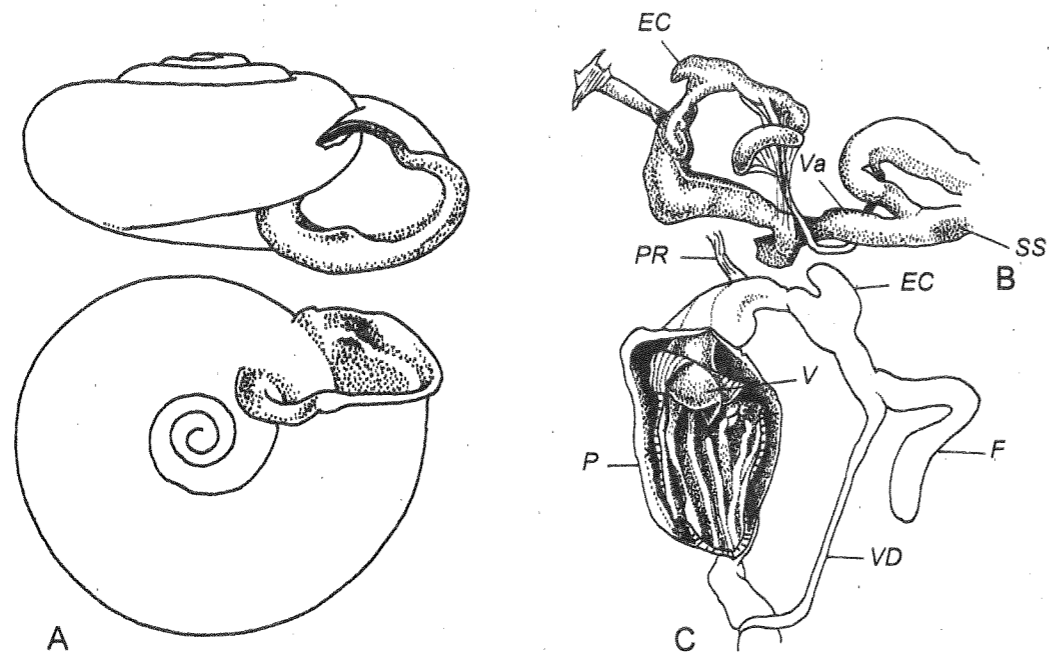


Fig. 2023. A — *Setobaudinia collingii* (E. Smith, 1893). Shell. B, C — ! *Setobaudinia pagoana* Solem, 1985. B — distal portion of reproductive tract. C — interior of penis. After Solem, 1985.

evenly rounded to slightly angulated. Color rich brownish-corneous, peristome white. Embryonic sculpture of ovoid to elongated triangular tubercles arranged in vertical and diagonal rows, tubercles largest in mid-section, becoming reduced and irregular near end of apex. Postapical whorls with weak, irregular radial wrinkles and with a complex and varied microsculpture of periostracal setal rows and microscopic surface ridging. Mentioned setae short and densely distributed, to long and widely spaced, generally reduced in size and with different form near suture. Tip of setae bluntly rounded to sharply pointed. Base of setae mostly simple, sometimes with base slightly broadened, lateral buttresses well developed, to almost triangular in appearance. Microsculpture ranging from separated protrusions to anastomosing ridges. On base all sculpture elements more or less reduced. Aperture generally ovate, oblique; palatal and basal margins, with a single exception, with nodules. Umbilicus widely open. Height 2.7-5.75, diam. 5.2-9.8 mm.

Hermaphroditic duct entering short talon laterally. Vas deferens and ascending portion of epiphallus bound to penis by con-

nective tissue fibers. Epiphallus normally with both flagellum and a caecum, former absent in one species. Penis elongated, internally with variable sculpture and apical structures ranging from almost tubular verge to simple apical pilasters. Penis sheath long. Penial retractor attaching to epiphallus where it reflexes anteriorly and expands before entering verge. Free oviduct generally much shorter than vagina. Spermathecal duct long, expanded reservoir (almost) reaching base of albumen gland.

DISTRIBUTION. Australia (Northern Territory, Western Australia). 8 spp.

Baudinella Thiele, 1931
Fig. 2024

Thiele, 1931: 685.

— *Gonobaudinia* Iredale, 1933: 55 [t.-sp. *Helix* (*Gonostoma*) *baudinensis* E. Smith, 1893; OD]. Solem, 1985: 775. B. Smith, 1992: 119.

TYPE SPECIES — *Helix* (*Gonostoma*) *baudinensis* E. Smith, 1893; OD.

Shell depressed, comparatively thin, of 3.5-4.5 mm. Spire more or less elevated, not rounded above. Body whorl evenly rounded

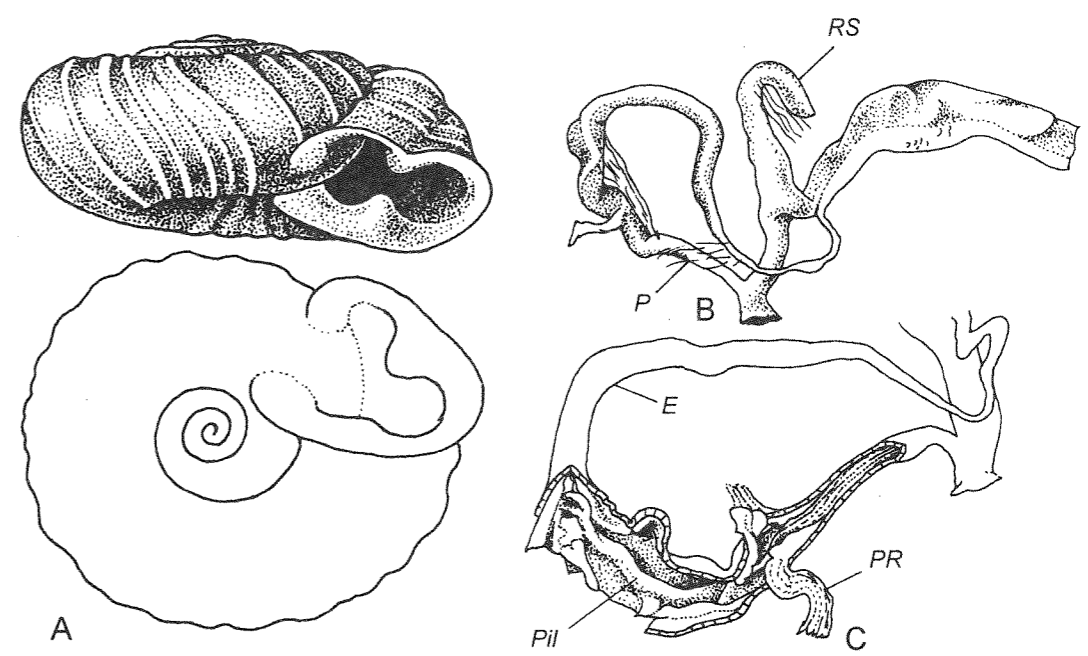


Fig. 2024. *Baudinella baudinensis* (E. Smith, 1893). A — shell: E side Montagne Sound, NW Kimberley, W Australia. Chicago No. 220295. B — reproductive tract. C — interior of penis. After Solem, 1985.

at periphery, slightly to moderately descending in front. Color uniformly yellow-brown, peristome white. Embryonic sculpture of prominent, irregularly spaced tubercles. Postapical whorls with closely to moderately spaced radial ribs; microsculpture of tiny projections or anastomosing ridgelets and widely spaced, short, pointed periostracal setae; bases of setae only slightly widened. Aperture ovate-triangular, oblique, with strongly expanded margins; basal and palatal edges curving into parietal wall. Basal node very prominent, composed primarily of internal additions. Palatal node thickened internally, but initial prominence resulting from crease in edge. Umbilicus moderately to widely open. Height 2.5-5.3; diam. 5.2-8.7 mm (3.1 × 6.5 mm).

Vas deferens short, enters very long epiphallus with longitudinal pilasters. No flagellum or epiphallic caecum. Demarcation between epiphallus and penis not clearly defined. Penis internally with 1 or 2 types of pilasters; verge absent. Penis sheath lacking. Penial retractor attaching to epiphallus which then reflexes anteriorly. Free oviduct short. Vagina variable in

length. Spermathecal shaft expanded, hooked or tightly coiled; reservoir as such not defined.

DISTRIBUTION. W Australia (Prince Regent River Reserve and Baudin Island, Admiralty Gulf). 2 spp.

Parglogenia Iredale, 1938
Fig. 2025

Iredale, 1938: 99. Solem, 1979: 128. B. Smith, 1992: 140.

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

Shell nearly globose, moderately solid, of 5-5.5 weakly convex whorls. Spire high dome-shaped. Body whorl only slightly descending in front, rounded at periphery. Color uniformly very light yellow-brown. Embryonic whorls with anastomosing riblets initially, becoming pustulose after 1st half whorl. Surface of rest whorls bears minute, rather widely spaced setae and extremely fine ridgelets with weak radial riblets. Aperture ample, subcircular, moderately oblique, with thin, strongly reflexed margins. No basal node. Umbilicus very nar-

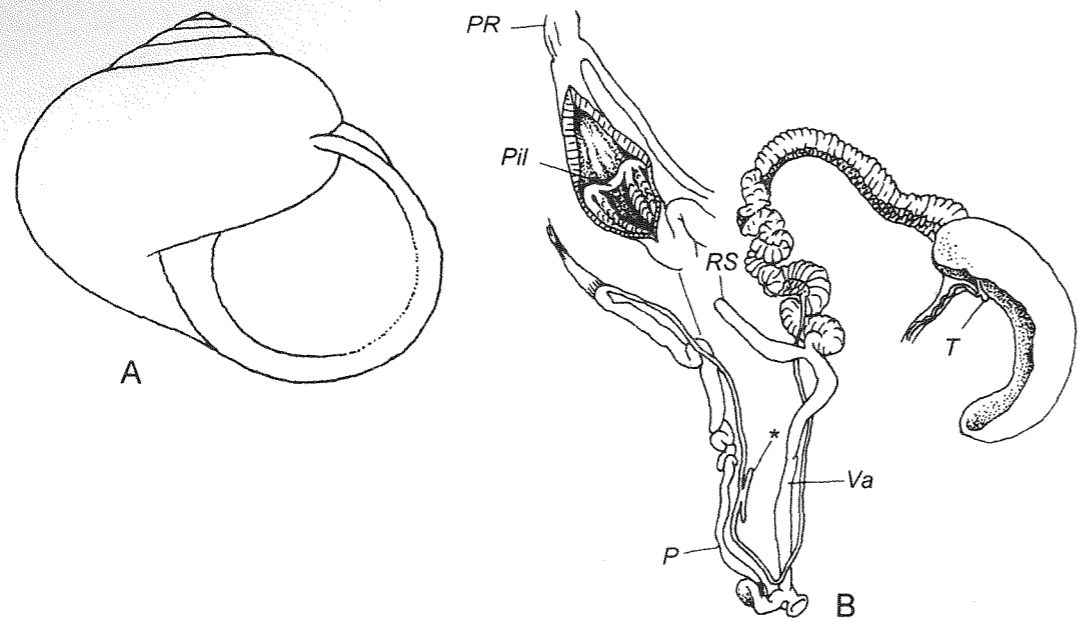


Fig. 2025. *Parglogenia pelodes* (L. Pfeiffer, 1846).
A — shell. After Reeve, 1852 (1851-1854). B — reproductive tract and interior of proximal portion of penis. After Solem, 1979. Asterisk — bifurcated caecum.

row, partly covered, internally with crowded pustules. Height 15.8-21.6, diam. 20.6-26.8 mm.

Hermaphroditic duct inserting laterally on minute talon. Vas deferens very long, with a very peculiar bifurcated caecum on ascending portion, entering epiphallus at point of insertion of penial retractor without differentiation. Epiphallic caecum or penis sheath absent. A narrow, raised semicircular ridge separates epiphallus from long, twisted penis, whose inner surface ornamented with longitudinal corrugated pilasters running down to nearly atrium; verge missing. Free oviduct of moderate length, with glandular, convoluted walls. Vagina very long. Spermatheca short, without visible subdivision unto shaft and reservoir.

DISTRIBUTION. Australia (Northern Territory). 2 spp.

Caperantrum Solem, 1997
Fig. 2026

Solem, 1997: 1657.

TYPE SPECIES — *Caperantrum polygyrum* Solem, 1997; OD.

Shell globose-conic, of 5.5-7 very tightly coiled, moderately convex whorls. Last whorl evenly rounded, sharply but gradually deflected. Color yellow-brown, with fine, reddish peripheral and subsutural bands; peristome often with reddish-purple or pink tinge. Embryonic whorls with fine, wavy radial ridgelets. Upper spire with very fine radial ridgelets, lower spire with radial growth lines and incised spiral lines. Aperture rounded, very oblique, with thick parietal callus; basal and palatal margins strongly expanded, edge rolled; basal margin with a long, elevated knob; columellar margin wider. Umbilicus closed, usually with extended heavy callus. Diam. 19.60-29.75 mm; holotype: height 15.6, diam. 23.2 mm.

Jaw with high, narrow ribs that continue nearly to lateral margins.

Talon small, exposed. Albumen gland huge. Vas deferens very slender, entering expanded epiphallus at a slight angle. Flagellum small. Epiphallus about 1/3 length of penis, entering penis apically through a simple pilasters. Epiphallus and vas deferens bound to penis by a sheet of connective tissue but penis sheath absent. Penis thick-walled; internally upper penis chamber with

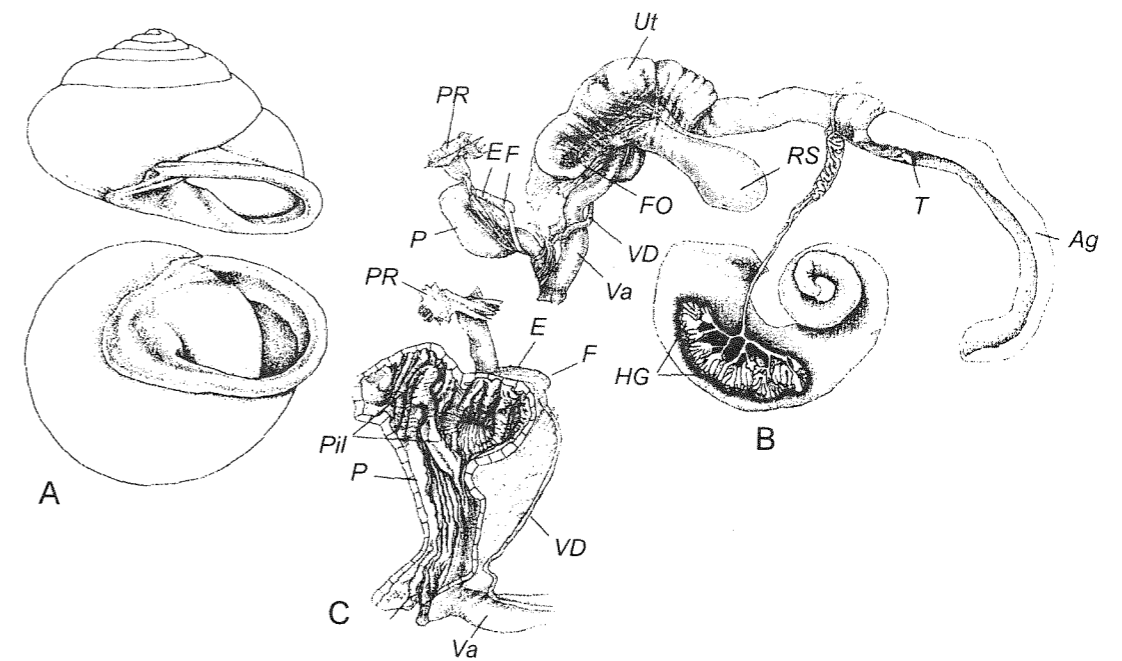


Fig. 2026. *Caperantrum polygyrum* Solem, 1997.
A — shell. B — reproductive tract. C — interior of penis. After Solem, 1997.

short section of spiral pilasters, middle part with longitudinal corrugated ridges, basal section with simple pilasters. Penial retractor inserts in an arc on penis/epiphallus junction. Free oviduct short, reflexed apically. Vagina rather long, slender, without internal corrugated pilasters. Spermathecal shaft short; expanded reservoir tightly bound to base of spermooviduct.

DISTRIBUTION. Western Australia (Cape Range peninsula). 1 sp.

Kendrickia Solem, 1985
Fig. 2027

Solem, 1985: 804.

TYPE SPECIES — *Kendrickia ignivenatus* Solem, 1985; OD.

Shell flattened, moderately solid, of 4-5 rather convex whorls. Body whorl moderately to abruptly descending in front, rounded at periphery. Color variable, apex and spire normally translucent yellow-brown, on last whorl a reddish spiral, slightly supraperipheral band often present, bordered above and below by white zones. Below periphery white zones variable in

presence and numbers, base lighter. Embryonic whorls smooth. Postnuclear sculpture of rather prominent radial ribs; some of them continuous from suture into umbilicus, some extend for only part of a whorl, rarely anastomosing. Aperture ovate, moderately oblique, with strongly expanded after sharp reflexion margins, normally with a prominent basal node; columellar margin projecting over umbilicus to variable extent. Parietal callus well developed. Umbilicus widely open. Height 3.6-6.4, diam. 9.0-12.4 mm (5.5 × 11.1 mm).

Jaw with prominent ribs.

Hermaphroditic duct reflexing to enter head of talon. Vas deferens slender over entire length, normally wrapped around epiphallus, entering at junction of flagellum and epiphallus through a simple pore situated between pilasters. Flagellum long, with coiled tip, diameter at base equal to that of epiphallus. Epiphallus thick-walled, extending to point of penial retractor insertion, where a large vergic pilaster marks transition to penis. Entire tract from vas deferens entrance to penis base thick-walled, with low, vague ridges. Penis not long, internally without special sculpture, with large, fleshy,

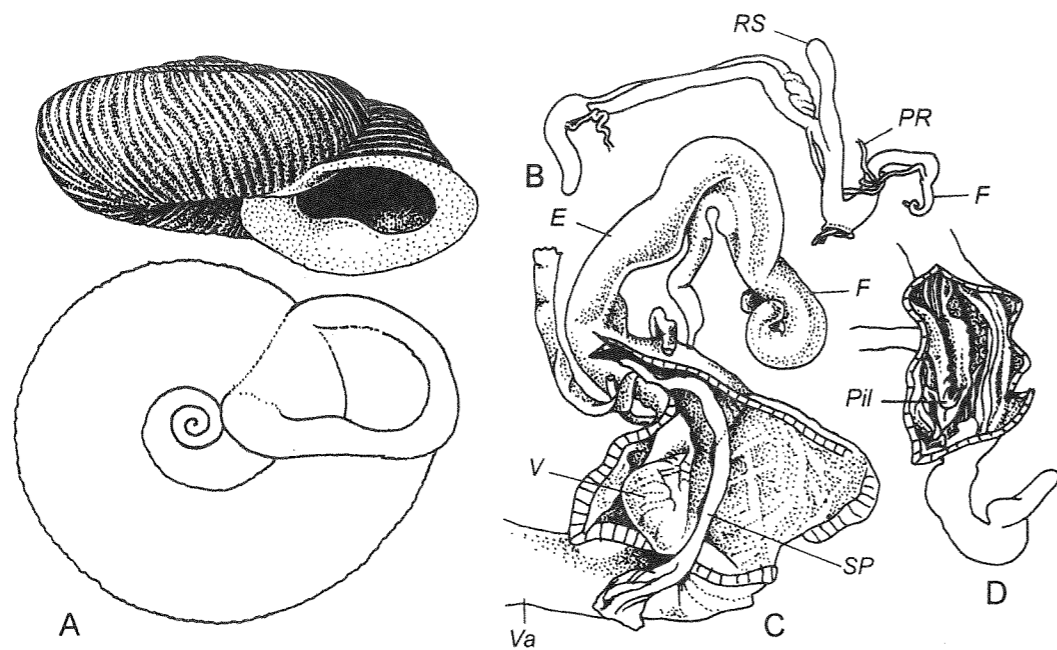


Fig. 2027. *Kendrickia ignivenatus* Solem, 1985.
A — shell: Cliffs at NW end Napier Range, W Australia. Moscow No. Lc-26605 (Chicago).
B — reproductive tract. C — interior of penis. D — interior of epiphallus. After Solem, 1985.

cone-shaped verge that has a deep lateral groove extending nearly to tip. Illustrated specimen with a spermatophore *in situ*. Penis sheath absent. Penial retractor inserting directly onto penis/epiphallus junction. Free oviduct short, merging at 45° angle with spermathecal shaft to form rather long and thick vagina. Reservoir of spermatheca moderately expanded, reaching point about 1/3 of way from base of spermoviduct to base of albumen gland, lightly bound to spermoviduct by fibers.

DISTRIBUTION. Western Australia (Napier Range). 1 sp.

Rhagada Martens in Albers, 1860
Fig. 2028

Martens in Albers, 1860: 108 (*Helix* subg.).

— *Bellrhagada* Iredale, 1938: 114 (t.-sp. *Rhagada plicata* Preston, 1914; OD).

— *Tumegada* Iredale, 1939: 62 (t.-sp. *Helix convicta* Cox, 1870; OD).

— *Bellorhagada* B. Smith, 1992: 145 (nom. err. pro *Bellrhagada* Iredale, 1938).

Solem, 1985: 875. B. Smith, 1992: 145.

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

Shell globose to flat, rather solid, of 4-6.75 slightly to moderately convex whorls. Last whorl evenly rounded in most species, sometimes weakly or obtusely angulated; in 1 species with a protruded keel; descending slightly to rather strongly. Color basically white, with 2 red or brown bands, supraperipheral and subsutural, that may be joined by narrower accessory bands of red to orange; occasionally these secondary bands may be widened; a few taxa have a reddish suffusion on apex that may extend to cover entire spire; peristome white. Embryonic sculpture absent or very weak. Postapical whorls with either radial ridgelets or prominent ribs that may continue onto base; microsculpture of short to medium length, irregular periostracal ridgelets that overlie vague calcareous undulations. Aperture ovate to subcircular, well oblique; degree of peristome reflection and expansion highly variable among species; weak knob on basal margin occasionally present. Umbilicus closed to open, often with a greatly expanded columellar callus. Height 7-15, diam. 9.00-25.65 mm (9.0 × 12.5 mm).

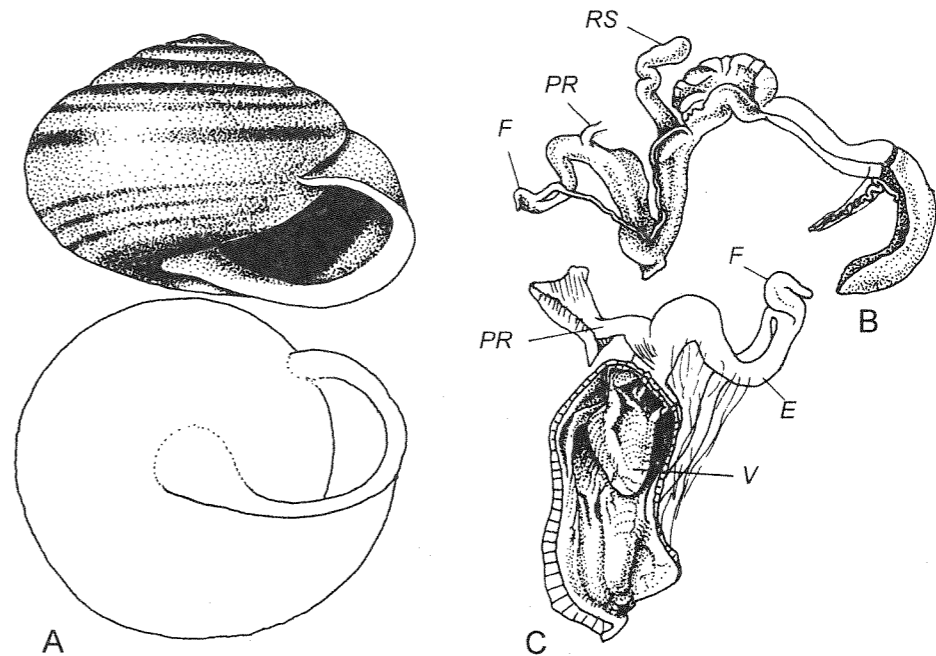


Fig. 2028. A — *Rhagada reinga* (L. Pfeiffer, 1846).
Shell: Roebuck Bay, Caravan Park, Broome, W Australia. Chicago No. 199361. B, C — !
Rhagada sutra Iredale, 1939. B — reproductive tract. C — interior of penis. After Solem, 1985.

Head wart permanently exposed (absent in juveniles), pustulose, small to large.

Jaw ribbing variable.

Flagellum highly variable in length. Epiphallus long, more or less coiled. Penis short to long, internally with fleshy verge and variously developed longitudinal pilasters. Penis sheath absent, but often a sheet of fibers connects epiphallus and penis. Penial retractor inserts on epiphallus a short to moderate distance beyond penis apex. Free oviduct normally short, often curved. Vagina short to medium in length. Spermathecal stalk short to long, simple to tightly kinked in different species.

DISTRIBUTION. Western Australia. 15 spp.

Falspleuroxia Solem, 1997.
Fig. 2029

Solem, 1997: 1561.

TYPE SPECIES — *Falspleuroxia overlanderensis* Solem, 1997; OD.

Shell depressed-turbinate, rather thin, of 4-4.75 convex whorls. Last whorl rounded, regularly and slightly descending. Color very

light yellow-brown above, mostly with narrow red, slightly supraperipheral band; base lighter; peristome white. Embryonic whorls smooth initially, with irregular radial ridgelets on later portion. Postnuclear whorls with low, rounded, nearly regularly spaced radial riblets that fade out below periphery; microsculpture of low, slightly elongated pustules topped with low periostracal setae having wide lateral buttresses. Aperture rounded, well oblique, with thin, reflexed margins. Umbilicus variable in width, usually narrow, partly closed. Height 8.3-14.0, diam. 14.1-21.2 mm (12.5 × 16.7 mm).

Talon minute, exposed. Albumen gland enormously large. Vas deferens moderately long, sinuous. Flagellum, a small nub. Epiphallus free of penis wall, partially encircling penial retractor before entering penis through a verge. Penis short, subglobular, internally with a lateral stimulatory pilaster and a small pilaster on upper chamber wall; lower part of penis surface smooth except for circular ridge-like pilaster. Penis sheath missing. Free oviduct rather long, vagina very short. Free oviduct and spermathecal shaft twisted around each other. Reservoir

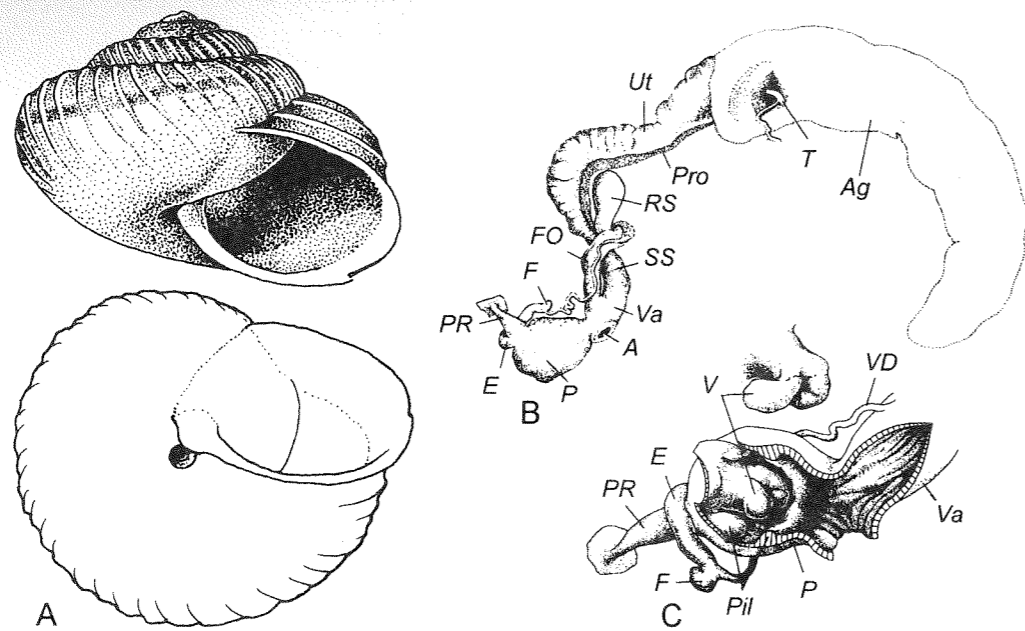


Fig. 2029. *Falspleuroxia overlanderensis* Solem, 1997.
A — shell: Australia, WA, 5 km SSE Overlander Roadhouse, on coastal Highway I. Moscow No. Lc-25580. B — reproductive tract. C — interior of penis and everted verge. After Solem, 1997.

of spermatheca situated just above base of spermooviduct.

DISTRIBUTION. W Australia. 2 spp.

Strepsitaurus Solem, 1997
Fig. 2030

Solem, 1997: 1611.

TYPE SPECIES — *Pleuroxia ruga* Cotton, 1953; OD.

Shell flattened to rather high turbanate, comparatively solid, dull, of 3.5-5.5 moderately convex whorls. Body whorl rounded to obtusely angulated, descending moderately to sharply behind aperture. Color white on rib tops, reddish-brown in areas between ribs; peristome white or with a slight brownish tone. Embryonic sculpture of dense, often elongated micropustules, usually arranged in radial rows, sometimes coalescing and forming wavy radial ridges of varied length. Postapical whorls with crenulated radial ridges, following growth lines or strongly oblique, prominence variable from reduced to very large, plus large micropustules and probably setae. Aperture generally subcircular, strongly oblique. Pa-

rietal callus with a very thick callus or a free edge; palatal and basal margins reflexed and moderately to broadly expanded; columellar margin wider, covering part to all of narrow umbilicus. Height 4-8, diam. 7.90-18.65 (7.4 × 13.1 mm).

Jaw variable, from having high ribs in central area (though greatly reduced on both margins) to lacking any trace of ribs.

Talon small, exposed. Albumen gland of normal size. Vas deferens rather short, directly entering enlarged head of epiphallus. Flagellum wanting. Epiphallus very thin-walled, internally with axial pilasters. Penis short, thick-walled, internally with a massive pilaster occupying upper 2/3 of chamber; pilaster with central groove and cross corrugations; lower portion of penis with simple axial pilaster. Penis sheath missing. Penial retractor inserting in an arc on middle of epiphallus. Free oviduct very short. Vagina short to medium in length, thicker than free oviduct. Spermatheca with short to very short shaft, expanded reservoir situated at base of spermooviduct, extending a little way upward.

DISTRIBUTION. W Australia (Cape Range Peninsula). 5 spp.

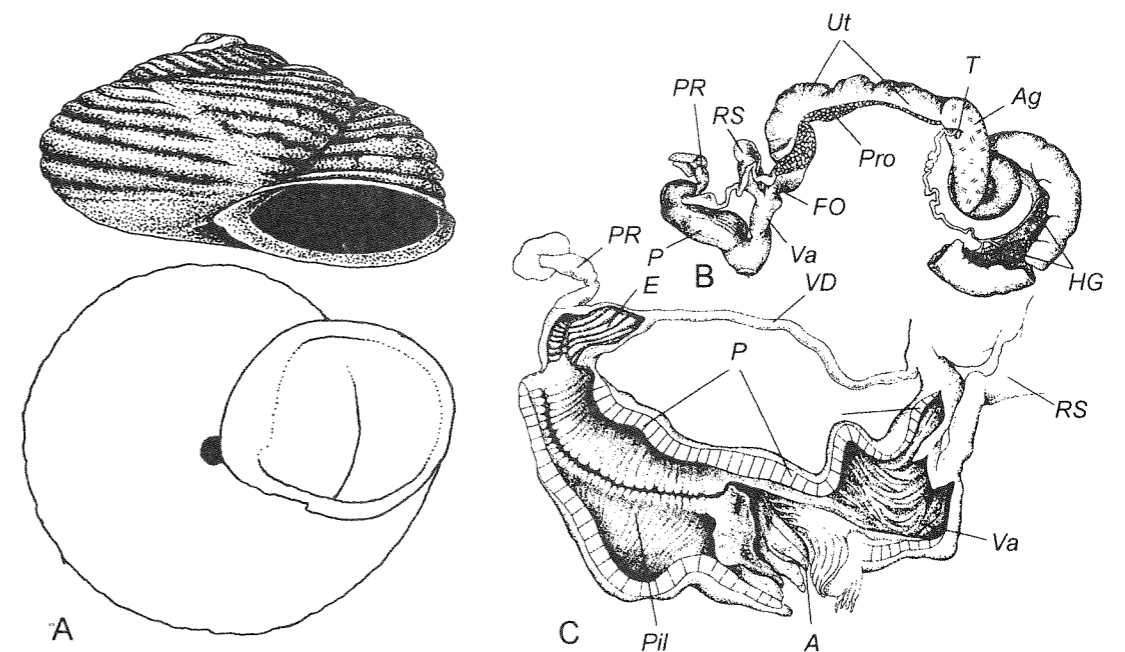


Fig. 2030. *Strepsitaurus rugus* (Cotton, 1953).
A — shell: W Australia, Cape Range, at the end of Charles Knife road, North West Cape. Moscow No. Lc-25584. B — reproductive tract. C — interior of penis and vagina. After Solem, 1997.

? *Craterodiscus* McMichael, 1959
Fig. 2031

McMichael, 1959: 31. Solem, 1973: 378.

TYPE SPECIES — *Craterodiscus pricei* McMichael, 1959; OD.

Shell subdiscoidal, thin, somewhat glossy, of about 6-6.5 rather convex whorls. Body whorl with blunt angle above mid-line, not deflected. Color light-corneous. Embryonic whorls smooth. Later whorls with weak radial wrinkles and very fine spiral striae; on base spiral sculpture weaker. Aperture small, lunate, with simple margins; columellar margin shortly reflexed. Umbilicus very broad, shallow, perspective. Height 2.0-2.2, diam. 4.9-5.2 mm (2.1 × 5.0 mm).

Hermaphroditic duct very long, not convoluted. No differentiation of a talon or distinct carrefour structure. Prostate and vagina appressed together along pallial passage but not connected. Flagellum or epiphallus missing. Vas deferens bound to penis, entering near penis apex through a simple pore that lies in middle of axial pilaster. Penis short, on its lower third interior a second,

higher, drop-shaped pilaster originates and continues down to base of atrium. Penis sheath absent. Penial retractor inserting on penis apically. Free oviduct and uterus not externally differentiated. Vagina very short. Spermathecal duct long, slender; reservoir slightly elongately expanded, lying next to albumen gland.

DISTRIBUTION. E Australia (Queensland). 1 sp.

REMARK. Taxonomic position of *Craterodiscus* in Camaenidae is arbitrary mainly because of separation of male and female gonoducts (unique character among Camaenidae) and very simple organization of penial complex. Perhaps, the genus deserves a separation as an independent (sub)family.

Eustomopsis Gude, 1906
Fig. 2032

Gude, 1906: 112 (*Chloritis* sect.).

— *Erigone* Albers, 1850: 92 [nom. praeocc., non Savigny, 1826 (*Arachnida*); *Helix* subg.; t.-sp. *Helix discordialis* Férussac, 1839; monotypy].

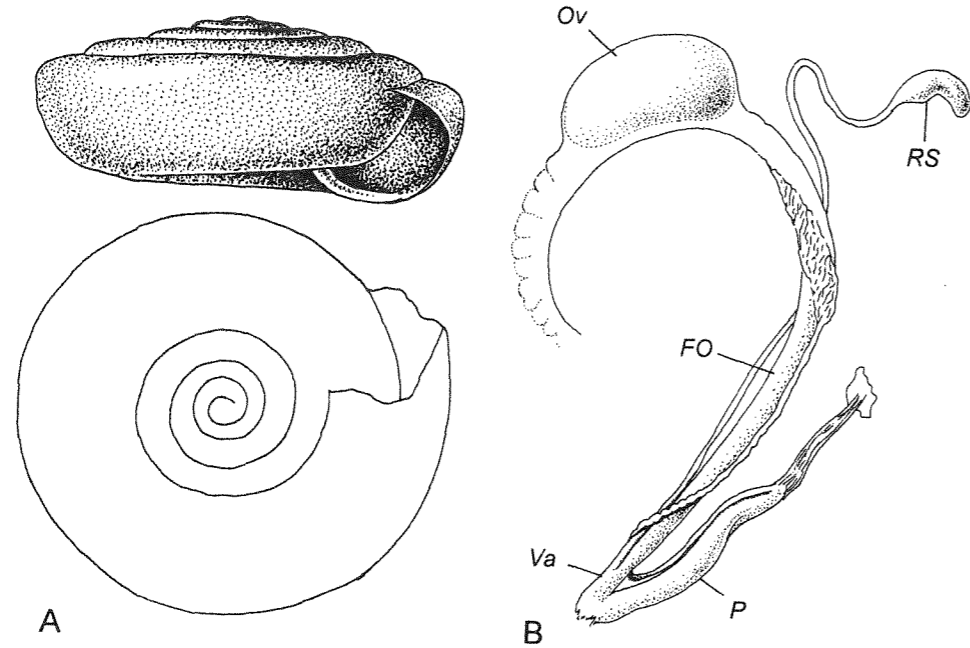


Fig. 2031. *Craterodiscus pricei* McMichael, 1959.
Hypipamee Crater, Atherton Tableland, Queensland, Australia, August 1964. A — shell. B — reproductive tract. Chicago No. 135141.

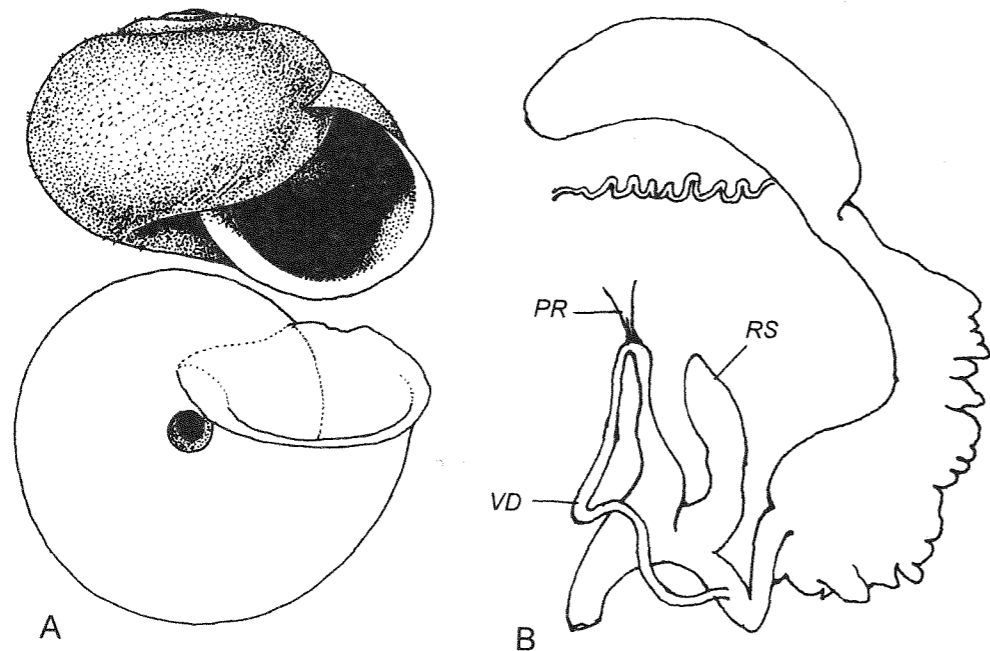


Fig. 2032. *Eustomopsis eustoma* (L. Pfeiffer, 1856).
A — shell: Suu, Malaita, Solomon Islands. Chicago No. 77526. B — reproductive tract. After Clapp, 1923.

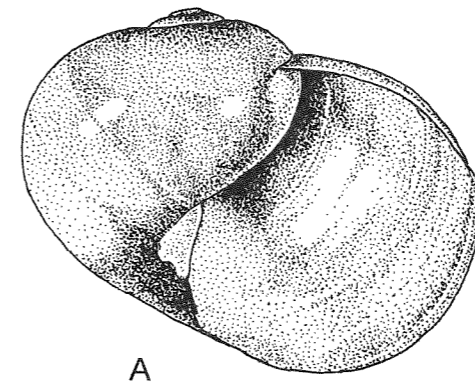


Fig. 2033. *Cryptaegis pilsbryi* Clapp, 1923.
A — shell: Wainoni Bay, San Christoval Id., Solomon Islands. Holotype. Cambridge No. 36841b. B — reproductive tract. After Clapp, 1923.

— *Helerigone* Strand, 1910: 34 (nom. nov. pro *Erigone* Albers, 1850).

***Cryptaegis* Clapp, 1923**
Fig. 2033

Clapp, 1923: 403.

TYPE SPECIES — *Helix eustoma* L. Pfeiffer, 1856; OD.

Shell subglobular, thin, fragile, of 4.5-5.5 moderately convex whorls. Last whorl inflated, rounded, scarcely descending or practically straight. Color corneous. Sculpture of embryonic and later whorls of distinct granulation, including slopes of umbilicus; each granule bears very short, rigid hair. Aperture subcircular, moderately oblique, with thin, reflexed margins. Umbilicus rather narrow. Height 10-24, diam. 12-32 mm (15.0 × 20.0 mm).

Vas deferens rather short, entering penis almost terminally. Flagellum missing. Epiphallus very short. Penis also short. Free oviduct not long, vagina absent as spermatheca sits on atrium between free oviduct and base of penis. Spermatheca without distinct differentiation into shaft and reservoir, reaching middle part of spermoviduct.

DISTRIBUTION. Vietnam, New Guinea, Louisiades, New Ireland, Solomons. About 20 spp.

TYPE SPECIES — *Cryptaegis pilsbryi* Clapp, 1923; OD.

Shell somewhat vitrinoid, thin, semi-transparent, shining, of 3 slightly convex whorls. Body whorl much inflated, widely rounded, straight. Color light-yellow with indistinct olive-ochraceous streaks. Embryonic whorls smooth. Subsequent whorl with smoothed irregular radial wrinkles and weak traces of short spiral striae expressed mainly near aperture. Aperture subcircular, moderately oblique, with simple, fragile margins. Umbilicus absent. Height 22-23, diam. 24-26 mm (22.5 × 24.6 mm). Mantle entirely covers the shell.

Kidney more than twice as long as pericardium, secondary ureter open.

Vas deferens rather short. Flagellum strong, stout, blunt, entering very short, thick-walled epiphallus laterally. Penis swollen, its inner surface coarsely papillose; upper part of penis containing a large, blunt verge completely filling its cavity. Penial re-

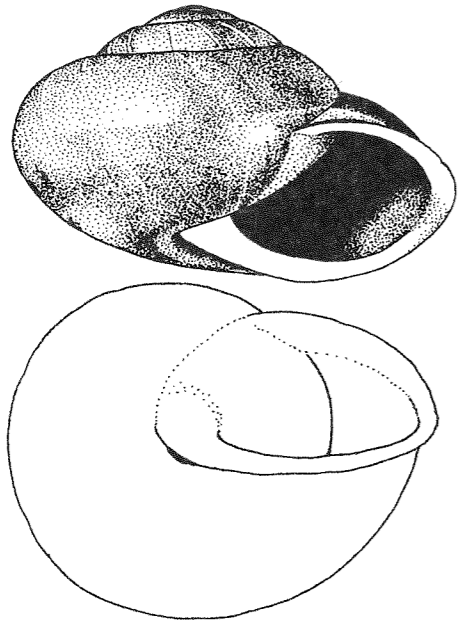


Fig. 2034. *Quirosena bougainvillei* (L. Pfeiffer, 1860).
Bougainville Island. Vienna No. B 3343.

tractor inserted on epiphallus. Free oviduct and vagina short. Spermathecal shaft long, stout, securely embedded in spermoviduct. "In one specimen examined the lower half of the spermatheca-duct was greatly swollen and contained one free gelatinous body, which from its position and appearance is probably a spermatophore ... it has two rows of tubercles on its inner face, recalling when magnified the arm of an octopod." (Clapp, 1923: 406). Atrium very short.

DISTRIBUTION. San Christoval Island (Solomon Islands). 1 sp.

Quirosena Iredale, 1941
Fig. 2034

Iredale, 1941: 89.

TYPE SPECIES — *Helix bougainvillei* L. Pfeiffer, 1860; OD.

Shell depressed-subglobose, heavy and solid, of 4.5-5 moderately convex whorls. Last whorl scarcely angulated, moderately descending in front. Color chestnut, aperture margins white. Embryonic whorls smooth. Later whorls finely radially striated.

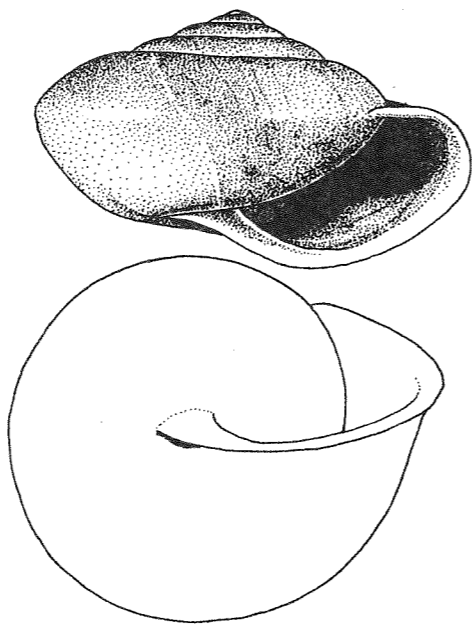


Fig. 2035. *Sheba hombroni* (L. Pfeiffer, 1856).
Solomon Ids. Vienna No. E 5397.

Aperture ovate, moderately oblique, with thickened, somewhat reflexed margins. Umbilicus (nearly) covered. Height 37-41, diam. 58-63 mm (40.3 × 61.7 mm).

DISTRIBUTION. Papua New Guinea (Bougainville Island). 1 sp.

Sheba Iredale, 1941
Fig. 2035

Iredale, 1941: 89.

TYPE SPECIES — *Helix hombroni* L. Pfeiffer, 1856; OD.

Shell depressed-conic, relatively thin, somewhat translucent, of 5-5.5 rather convex whorls. Last whorl straight, with rounded peripheral angle. Color (pale) corneous, peristome white. Embryonic whorls smooth. Postapical whorls finely radially striated and with numerous, deciduous setae. Aperture narrow, roundly angulated, well oblique, with thin, reflexed margins. Umbilicus, a lateral crack. Height 19-22, diam. 32-36 mm (20.5 × 34.4 mm).

DISTRIBUTION. Solomon Islands. 1-2 spp.

Albersia H. Adams, 1865
Fig. 2036

Adams H. in Wallace, 1865: 410.

TYPE SPECIES — *Helix granulata* Quoy et Gaimard, 1826; OD.

Shell subglobose, moderately thin, dull, of 5-6 moderately to slightly convex whorls. Body whorl evenly rounded, a little deflected. Color pale-corneous to brown, monochromatic or with a dark supra-peripheral band. Embryonic whorls almost smooth. Postnuclear whorls granulated or hairy. Aperture widely ovate to subcircular, slightly to moderately oblique, with well reflexed, more or less thickened margins; columellar margin rather steeply ascending, often curved to form a small knob. Umbilicus closed or slit-like. Height 13-36, diam. 20-50 mm (35.2 × 49.0 mm).

Jaw with several strong ribs in central area; sides smooth.

DISTRIBUTION. New Guinea, Moluccas. About 10 spp. with many forms.

Rhytidoconcha I. Rensch, 1933
Fig. 2037

Rensch I., 1933: 313 (*Papuina* subg.). Clench & Turner, 1964: 62.

TYPE SPECIES — *Papuina inquirenda* I. Rensch, 1929; OD.

Shell subglobose conic, moderately solid but somewhat translucent, of 3-3.5 rather convex whorls. Last whorl rounded, gradually deflected. Periostracum deciduous, whitish, light-grey or yellowish, monochromatic or with minute dark, hydrophanous spots and markings that scattered or arranged in radial rows. Embryonic whorls (1.25) with very fine, crowded, spiral threads. Subsequent whorls with similar sculpture; body whorl decorated with numerous, irregular, incised lines mainly in spiral arrangement. Aperture subcircular, quite oblique, with a slight restriction or depressed area just behind peristome; margins widely reflexed; columellar margin short, expanded, flattened, rounded toward base. Height 10-16, diam. 12.5-16.5 mm (10.2 × 13.0 mm).

Jaw with numerous, thin ribs extended to sides.

Vas deferens enters penis apically. Flagellum or epiphallus absent. Penis long, more or less cylindrical, internally with somewhat spirally directed folds and minute

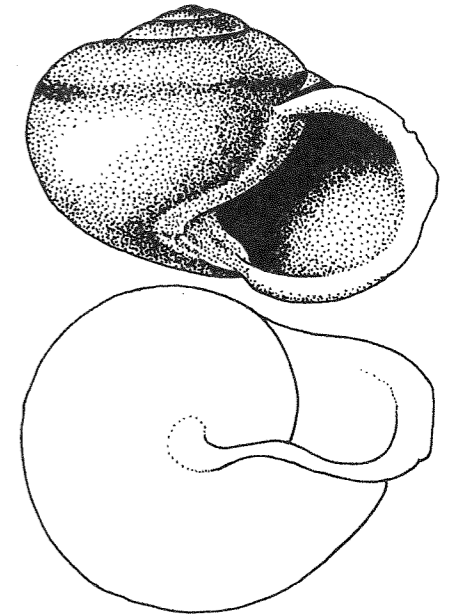


Fig. 2036. *Albersia granulata* (Quoy et Gaimard, 1826).
No data. Leiden.

verge. Penis sheath missing. Penial retractor inserted to distal part of vas deferens. Free oviduct a little longer than vagina. Spermathecal shaft short, reservoir voluminous, large, reaching middle portion of spermoviduct.

DISTRIBUTION. Papua New Guinea and nearby islands. 2 spp.

Vulnus Sykes, 1904
Fig. 2038

Sykes, 1904: 88 (*Planispira* sect.).

TYPE SPECIES — *Helix endoptycha* Martens, 1864; OD.

Shell depressed dome-shaped, rather thin, of about 5 slightly convex whorls. Last whorl rounded, moderately and gradually descending in front. Color corneous or brown. Embryonic whorls smooth. Later whorls with smoothed radial wrinkles (looks almost glabrous). Aperture ovate, well oblique, with thin margins; columellar and basal margins reflexed, with callus-like thickening; a small palatal fold usually present; on base, behind aperture there is an

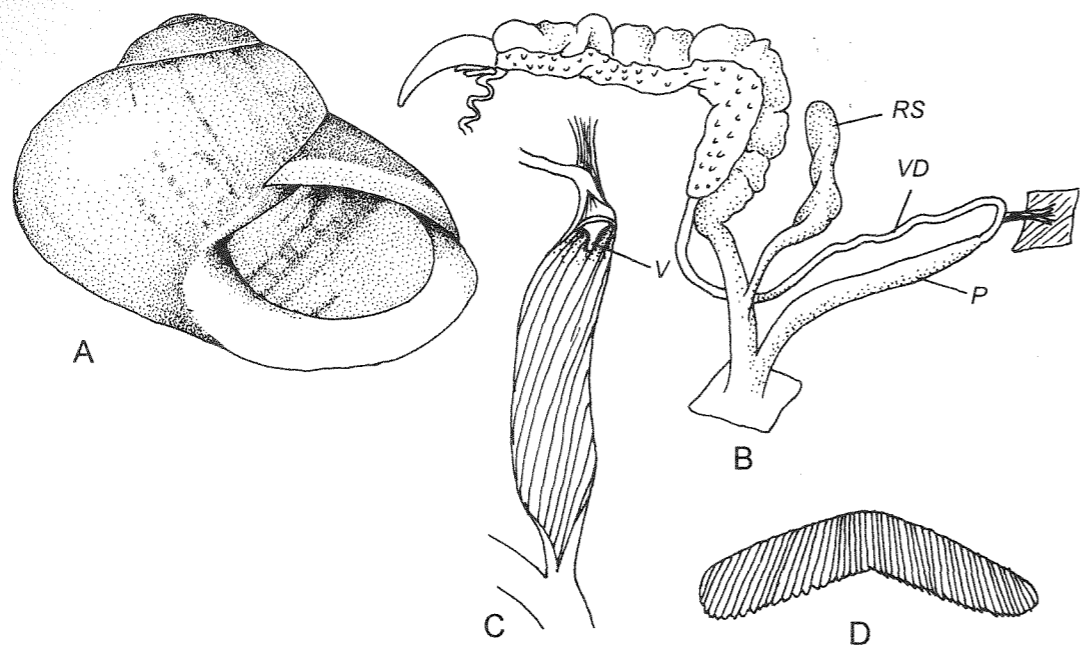


Fig. 2037. A — *Rhytidoconcha inquirenda* (I. Rensch, 1929). Shell: St. Matthias, Squally Isl., Admiralty Ids. Holotype. Berlin No. 76734. B, C, D — *Rhytidoconcha confirmata* (I. Rensch, 1929). B — reproductive tract. C — interior of penis. D — jaw. After Clench & Turner, 1964.

elongated depression corresponding to basal thickening. Umbilicus funnel-like, rather narrow. Height 8-9, diam. 15-16 mm (8.0 × 15.5 mm).

DISTRIBUTION. Moluccas. 2-3 spp.

XANTHOMELONTINAE Iredale, 1938

Iredale, 1938: 100 (pro fam.).

— Sinumeloninae Solem, 1992: 161.

Shell tending towards globose shape with inflated body whorl, secondarily may become nearly flat and weakly umbilicated. Body whorl rarely angulated, not to strongly deflected. Color generally greenish-yellow, with or without reddish spire suffusions or spiral red bands. Radial ridging common, development of distinct radial ribs less common. Microsculpture of fine pustulations usually present at least on spire, often reduced to absent on lower spire and body whorl; periostracal setae may be present.

Head of animal with or without eversible wart.

Vas deferens (rarely epiphallus) pierces

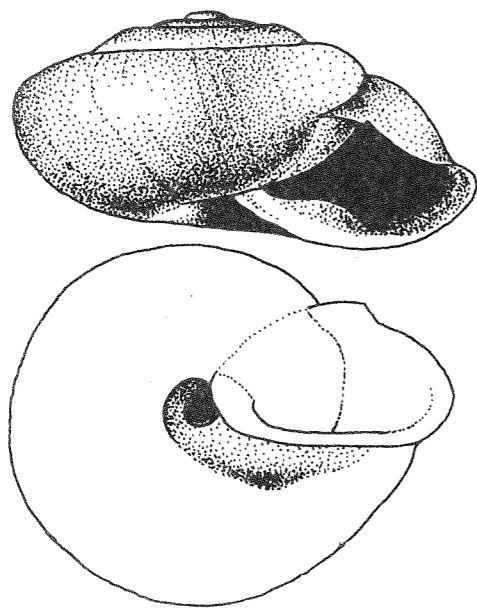


Fig. 2038. *Vulnus endoptycha* (Martens, 1864). "Balyan" [Moluccas]. Leiden.

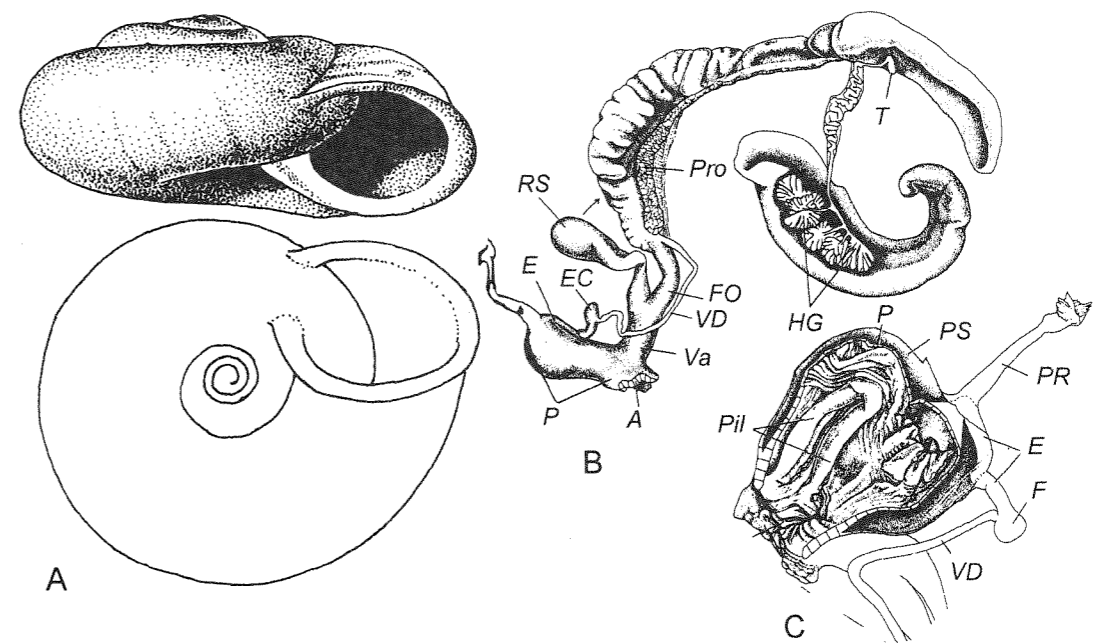


Fig. 2039. *Lacustrelax eyrei* (Adams et Angas, 1876). A — shell: South Central Australia. Cardiff. B — reproductive tract. C — interior of penis. After Solem, 1992.

penis sheath before entering epiphallus or penis. Flagellum present or absent. Epiphallus mostly long, wholly or partially coiled (often together with penis) within penis sheath; free portion of epiphallus bound to side of penis sheath. Penis globular to elongated, usually thick-walled, internally without verge, sometimes with a low ridge around epiphallic pore; with a main pilaster, simple, elaborated or U-shaped, normally with accessory ridges that may be broken up into pustules. True penis sheath always well developed. Penial retractor inserting onto epiphallus either as it reflects to enter penis sheath or inside sheath. Spermathecal shaft short, may be twisted around free oviduct, reservoir bound to base of prostate.

Sperm transferred in a loose oval mass, no hardened spermatophore formed.

DISTRIBUTION. Australia.

Lacustrelax Iredale, 1937

Fig. 2039

Iredale, 1937a: 39 (*Semotrachia* subg.). Solem, 1992: 182.

TYPE SPECIES — *Helix eyrei* Adams et Angas, 1876; OD.

Shell somewhat elevated to almost flat, rather solid, of 3.5-5 or a little more whorls. Last whorl generally rounded, sometimes weakly angulated, at most only slightly descending in front. Color variable: uniformly yellowish to very light reddish, or reddish suffusion above periphery, or subsutural and suprapерipheral red spiral bands; aperture margin pink or light-red. Embryonic whorls with distinct micropustulations; postapical sculpture also of dense microscopic pustules surmounted by short periostracal setae, sometimes joined by a few minor radial ridges. Aperture roundly ovate, quite oblique, columellar margin more or less expanded and sometimes partly rolled over umbilicus; basal and palatal margins weakly to moderately expanded. Umbilicus rather broad, open. Height 4.6-14.6, diam. 12.2-20.5 mm (7.2 × 16.2 mm).

Talon small, exposed, drop-like. Flagellum small, knob-like. Epiphallus short. Penis bulky, internally with prominent sculpture: large U-shaped main pilaster present, arms of "U" either wide apart, with several longitudinal pilasters between them, or arms approached; a zone of corrugated folds surrounds epiphallic pore. Penis sheath

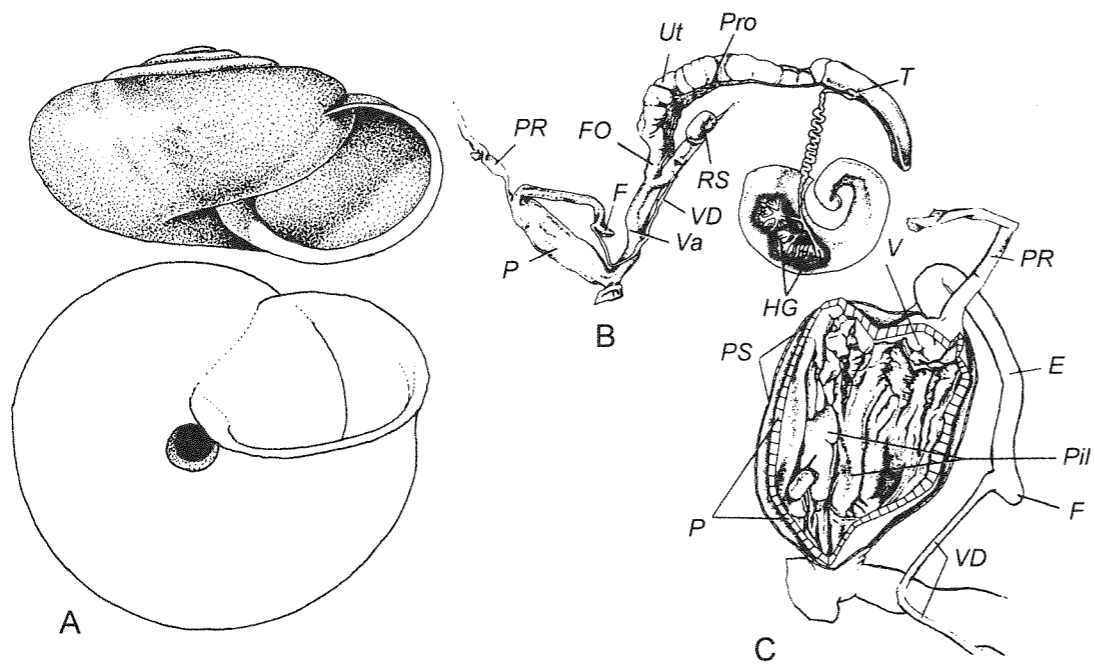


Fig. 2040. *Montanomelon reynoldsi* Solem, 1993.
A — shell: White Hill, Yanningidjara Hills, 20 km W of Stuart Hwy, central Australia. Moscow No. Lc-25581. B — reproductive tract. C — interior of penis. After Solem, 1993.

thin, surrounds penis and basal section of epiphallus. Penial retractor inserts just as epiphallus reflects to enter penis sheath. Free oviduct enlarged, moderately long. Vagina of various length. Spermathecal stalk short, reservoir bound to lower portion of spermooviduct, sometimes curved across free oviduct, never twisted around it.

DISTRIBUTION. South Australia (Flinders Ranges). 3 spp.

Montanomelon Solem, 1993
Fig. 2040

Solem, 1993: 1258.

TYPE SPECIES — *Montanomelon reynoldsi* Solem, 1993; OD.

Shell depressed, moderately thin, of 3.5-5 rather convex whorls. Body whorl evenly rounded at periphery, descending slightly to moderately in front. Color brownish, base somewhat lighter. Embryonic sculpture of ovate pustules, variable in spacing. Postnuclear whorls with dense, prominent to low and scattered plus variably prominent irregular radial ridgelets. Aperture ovate, rather oblique, palatal and basal margins sharply re-

flexed, moderately expanded, usually thickened internally; columellar margin slightly wider and covering portion of umbilicus. Parietal callus variously developed. Umbilicus (widely) open. Height 2.7-8.7, diam. 7.0-12.8 mm (5.2 × 10.4 mm).

Talon minute, exposed. Flagellum very short. Epiphallus medium to short, entering penis sheath apically, partially encircling penial retractor before entering apex of penis. Penis subcylindrical, internally with fragmented longitudinal pilasters and a low foliated pilaster around epiphallic pore. Penis sheath very thin. Free oviduct short. Vagina medium to long. Spermathecal shaft short, lying alongside free oviduct and base of spermooviduct; reservoir nearly attending mid-point of spermooviduct.

DISTRIBUTION. South Australia (Reynolds and Mann Ranges). 2 spp.

Micromelon Solem, 1992
Fig. 2041

Solem, 1992: 162.

TYPE SPECIES — *Micromelon nepouieana* Solem, 1992; OD.

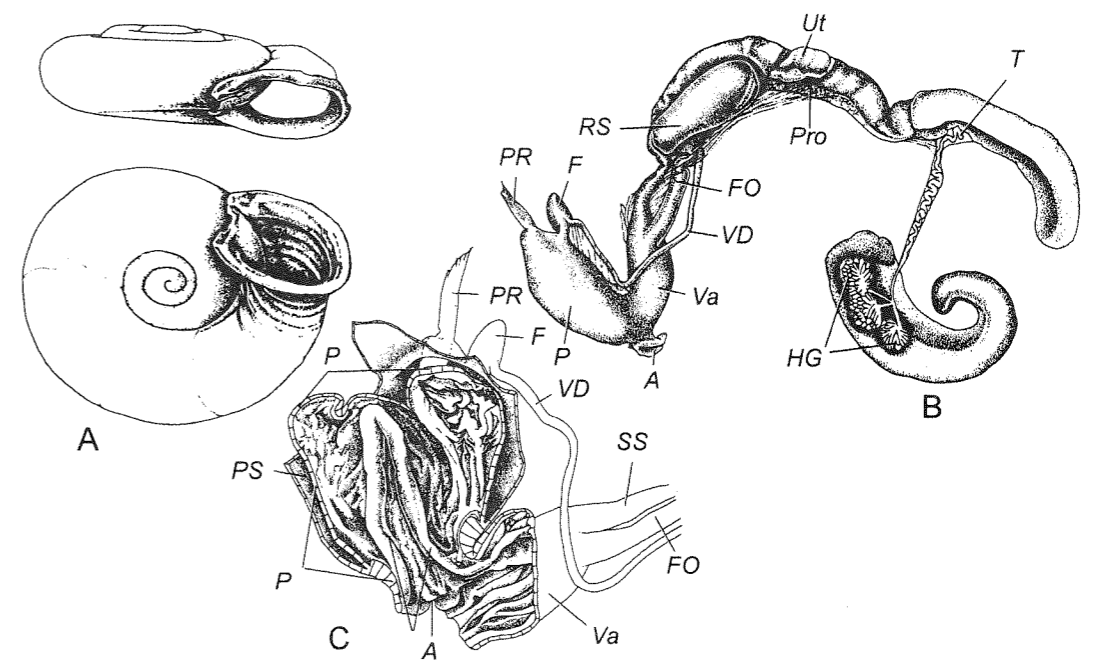


Fig. 2041. *Micromelon nepouieana* Solem, 1992.
A — shell. B — reproductive tract. C — interior of penis and vagina. After Solem, 1992.

Shell flat or slightly elevated, moderately solid, of 3.5-4 or a little more whorls. Last whorl rounded, sharply deflected. Color dark yellow-brown. Embryonic sculpture of widely spaced pustules. Later whorls with rather widely spaced setae arising from a V-shaped base, with fine anastomosing ridges in between. Aperture ovate, very oblique; parietal wall varying from a simple and thin callus, to raised parietal edge, sometimes with free parietal lip edge; columellar margin slightly narrowing umbilicus; palatal margin narrowly expanded and thickened. Umbilicus wide, shallow. Height 3.15-5.65, diam. 9.65-13.50 mm.

Talon small, exposed. Vas deferens moderately long. Flagellum short, prominent. Epiphallus very short. Penis swollen, internally with simple U-shaped pilaster whose arms close together, no accessory ridges, some corrugated folds encircle epiphallic pore. Penis sheath surrounds penis and base of epiphallus; lower wall of sheath relatively thick. Free oviduct rather long. Vagina long, thick, with prominent internal pilasters. Spermathecal shaft rather short, not twisted around free oviduct; reservoir elongated, loosely attached to basal portion of spermooviduct.

DISTRIBUTION. South Australia (Flinders Ranges). 1 sp.

Granulomelon Iredale, 1933
Fig. 2042

Iredale, 1933: 51. B. Smith, 1992:128. Solem, 1993: 1040.

TYPE SPECIES — *Hadra grandituberculata* Tate, 1894; OD.

Shell flattened to turbinate, more or less solid, of nearly 4 to 4.5 convex whorls. Body whorl rounded in high spired species, angulated in single flattened spired species, usually descending at least moderately just behind aperture. Spire either nearly flat or strongly and evenly elevated. Color light greenish-yellow, with subsutural and (supra)peripheral red bands; latter may be reduced. Embryonic sculpture of dense micropustulations that continue onto spire and body whorl, becoming larger and ovate or triangular and pointed. Postapical whorls with sculpture of high, anastomosing radial ribs; low ridgelets or minor ribs; or without any radial elements. Aperture ovate to sub-circular, usually adnate, moderately oblique;

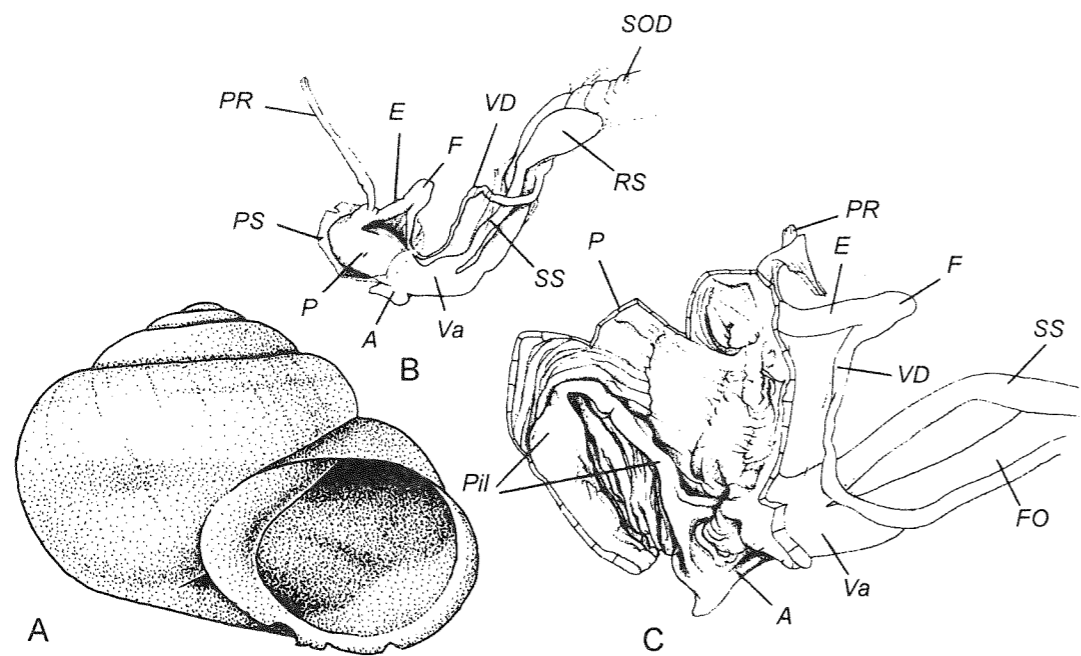


Fig. 2042. *Granulomelon grandituberculatum* (Tate, 1894).
A — shell: Maude River, Hart Range, Central Australia. Phil. No. 72466. B — reproductive tract. C — interior of penis and atrium. After Solem, 1993.

margins quite reflexed. Umbilicus narrowly open, slightly covered by expansion of columellar margin. Height 6-13, diam. 8-17 mm (13.0 × 16.4 mm).

Flagellum short, more or less rounded at tip. Epiphallus rather short and narrow. Penis varies from short and globular to elongated; internally with U-pilaster reduced in prominence, accessory ridge area expanded; there is a small area of corrugated folds around epiphallic pore. Penis sheath reduced to a thin membrane. Free oviduct sometimes very long. Vagina of various length. Spermathecal stalk very slender, not wrapped around free oviduct; reservoir situated just above base of spermoviduct to reaching middle of it.

DISTRIBUTION. Central part of Australia (Red Centre). 4 spp.

Minimelon Solem, 1993
Fig. 2043

Solem, 1993: 1217.

TYPE SPECIES — *Minimelon colmani* Solem, 1993; OD.

Shell depressedly subglobose, moder-

ately solid, of 3.75-4.75 convex whorls. Outline of spire rounded. Last whorl rounded at periphery, descending slightly to moderately in front. Color greenish-yellow, often with bright reddish suffusion that extends only to periphery; peristome white. Embryonic sculpture of dense pustules, rest surface with more widely spaced pustules, weak and irregular radial wrinkles, and fine periostracal ridgelets. Aperture ovate, oblique, with moderate parietal callus. Palatal and basal margins thickened internally, at most very slightly expanded; columellar margin narrow, partly reflexed over umbilicus. Umbilicus varying from nearly closed to narrowly open. Height 5.8-9.9, diam. 9.0-13.7 mm.

Talon and vas deferens typical. Flagellum proportionately large. Epiphallus short, entering thin penis sheath subapically, partly encircling penial retractor. Penis of medium length, swollen medially, internally with U-shaped main pilaster having a massive cross arm. Epiphallic pore surrounded by a corrugated pilaster. Accessory longitudinal pilasters situated on chamber wall. Free oviduct enlarged. Vagina short, together with lower portion of spermoviduct

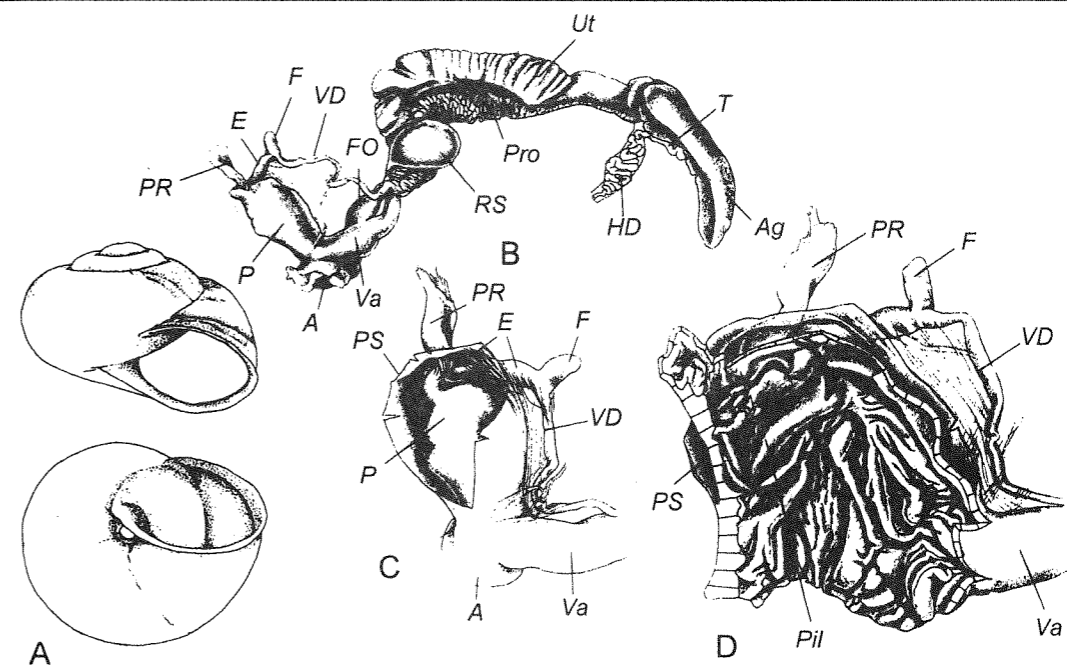


Fig. 2043. *Minimelon colmani* Solem, 1993.
A — shell. B — reproductive tract. C — penis, penis sheath open. D — interior of penis. After Solem, 1993.

partly wrapped around spermathecal shaft; expanded reservoir way up spermoviduct.

DISTRIBUTION. Central Australia. 1 or 2 spp.

Basedowena Iredale, 1937
Fig. 2044

Iredale, 1937a: 51.

— *Baccalena* Iredale, 1937a: 50 (*Pleuroxia* subg., t.-sp. *Hadra squamulosa* Tate, 1894; OD).

— *Fatulabia* Iredale, 1937a: 51 [*Pleuroxia* subg., t.-sp. *Helix (Hadra) elderi* Bednall, 1892; OD].

— *Baccalena* Richardson, 1985: 55 (nom. err. pro *Baccalena* Iredale, 1937).

B. Smith, 1992: 118. Solem, 1993: 1158.

TYPE SPECIES — *Basedowena cottoni* Iredale, 1937; OD.

Shell more or less globose, rather solid, of 4-5.5 moderately convex whorls. Last whorl rounded at periphery, descending moderately to sharply just behind aperture. Color various shades of brownish-yellow, with a lighter zone around umbilicus; rarely (in 1 species) there are 2 narrow red bands. Embryonic sculpture of dense pustules, often becoming elongated, rarely reduced.

Postapical whorls usually with dense pustules, varying from simple to curved, rarely greatly reduced on lower whorls. Supplementary radial ridgelets present in many species, never reaching prominence of ribs. Aperture ovate to subcircular, ample, moderately oblique, with very narrow to well expanded margins. Parietal callus variously developed. Umbilicus narrowly open to closed. Height 8.2-26.6, diam. 12.6-26.8 mm (16.0 × 18.5 mm).

Flagellum small to relatively large, receiving rather short vas deferens laterally. Epiphallus short to medium, entering penis sheath and partly encircling penial retractor before entering penis. Penis globose to elongated, internally with variously modified, U-shaped principal pilaster, and foliated pilaster that surrounds epiphallic pore; rarely accessory ridges developed on inner surface of penis. Penis sheath very thin. Penial retractor of various length, inserting onto penis apex. Free oviduct usually partly wound around shaft of spermatheca, degree of coiling variable. Vagina short to long, usually expanded basally, internally with fine to very large longitudinal pilasters. Spermathecal duct variable in diameter and length;

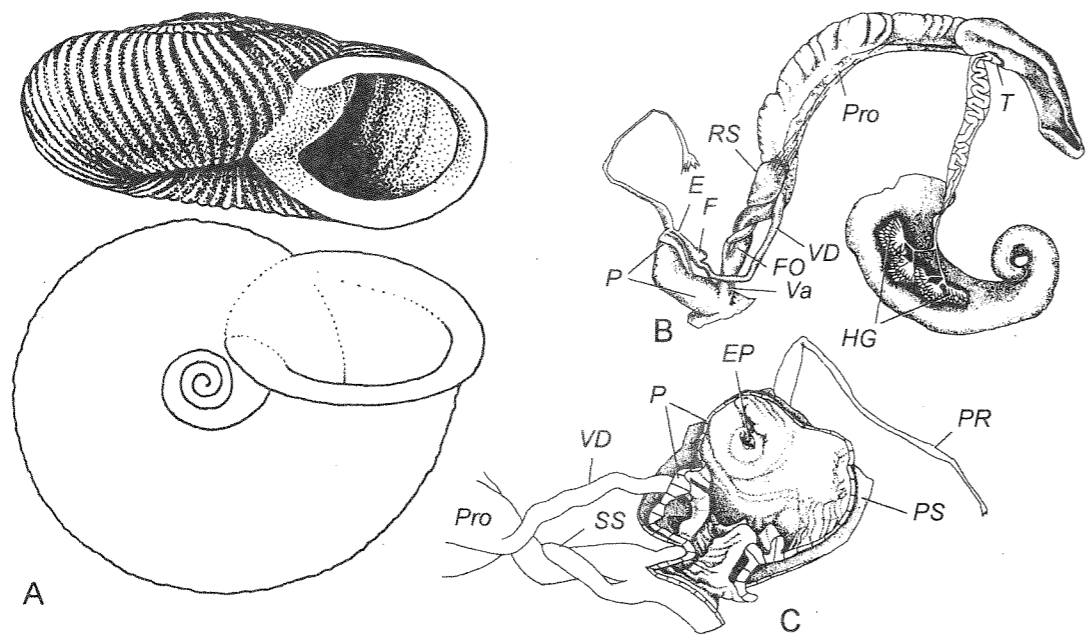


Fig. 2046. *Pleuroxia cyrtopleura* (L. Pfeiffer, 1862).
A — shell: Australia. Phil. No. 97657. B — reproductive tract. C — interior of penis. After Solem, 1992.

prominence of internal pilasters variable. Reservoir of spermatheca lying against lower portion of spermoviduct, exact position variable.

DISTRIBUTION. Australia (Northern Territory, New South Wales, South Australia). 14 spp.

Eximiorhagada Iredale, 1933
Fig. 2047

Iredale, 1933: 51 (*Xanthomelon* subg.). B. Smith, 1992: 126. Solem, 1993: 1255.

TYPE SPECIES — *Xanthomelon asperrimum* Hedley, 1905; OD.

Shell obesely lens-shaped, rather solid, of about 4 flattened whorls; spire slightly to moderately elevated. Body whorl with a strong, sharp keel, descending abruptly just behind aperture. Embryonic sculpture of dense micropustules. Postapical whorls with large pustules that usually elongated to ovate, and a microsculpture of radial ridgelets. Aperture rounded, angulated, well oblique, with thin, somewhat expanded margins; upper portion of columellar margin more broadly expanded over umbilicus. Parietal callus thin, almost covers pustules on

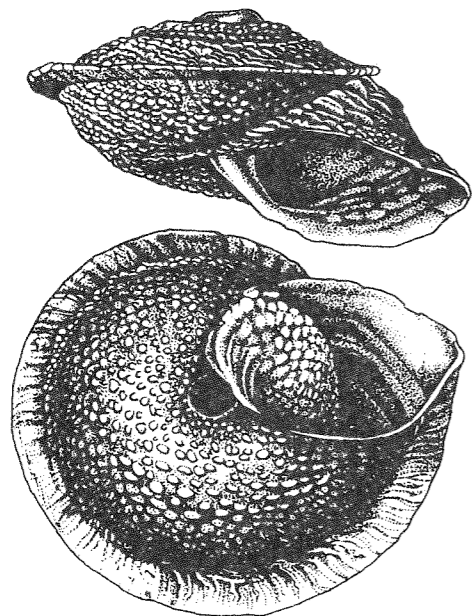


Fig. 2047. *Eximiorhagada asperrima* (Hedley, 1905).
After Solem, 1993.

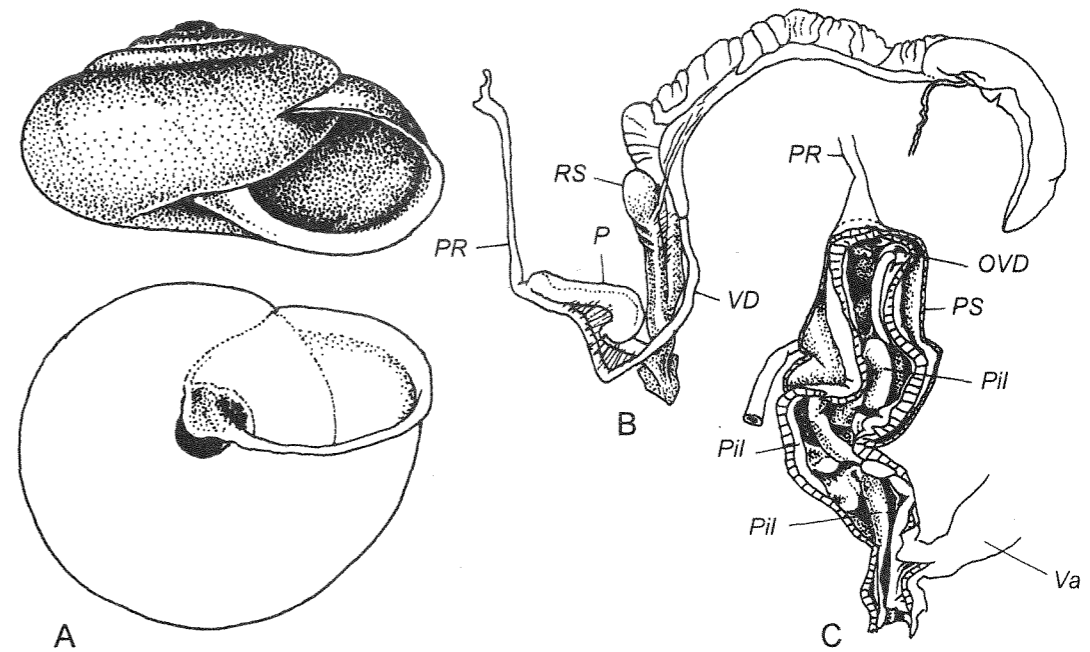


Fig. 2048. *Mesodontrachia fitzroyana* Solem, 1985.
A — shell: 24.4 km of Timber Creek Police Station, N Territory. Paratype. Moscow No. Lc-25569 (Chicago). B — reproductive tract. C — interior of penis. After Solem, 1985.

penultimate whorl. Umbilicus narrowly open. Height of lectotype 10, diam. 19.6 mm (diam. ranging 15.4-19.6 mm).

DISTRIBUTION. South Australia. 1 sp.

Mesodontrachia Solem, 1985
Fig. 2048

Solem, 1985: 863. B. Smith, 1992: 135.

TYPE SPECIES — *Mesodontrachia fitzroyana* Solem, 1985; OD.

Shell more or less depressed, moderately solid, of 4.5-6.5 rather convex whorls. Body whorl barely or not descending in front, with rounded or weakly angulated periphery. Color light yellow-corneous, often with darker spire suffusions, base lighter. Embryonic whorls with prominent, elongated pustules or practically smooth. Postapical whorls with dense pustules and short microridges on early spire, changing to pustules on lower whorls, continuing on basal surface, or reduced to minute pustules on lower spire and last whorl above periphery. Aperture broadly ovate, moderately oblique, with slightly to moderately expanded margins. Parietal callus thin. Umbilicus nar-

rowly to very narrowly open, partly covered by reflection of columellar margin. Height 10.3-14.3, diam. 17.3-23.1 mm (12.2 × 19.8 mm).

Vas deferens loosely bound to outside of penis sheath by long fibers, entering sheath subapically and opening to penis chamber through a simple pore. Epiphallus or caecum missing. Penis thick-walled, internally with wide longitudinal ridges; verge absent. Penis sheath very thin, extending from near atrium or part way up penis to point part way up penial retractor. Penial retractor extending well into sheath to insert directly onto upper end of penis. Free oviduct and vagina of medium length. Spermathecal shaft short to very short, reservoir bound to basal section of spermoviduct by thin fibers.

DISTRIBUTION. Australia (Western Australia, Northern Territory). 3 spp.

Xanthomelon Martens in Albers, 1860
Fig. 2049

Martens in Albers, 1860: 174 (*Cochlostyla* subg.).

— *Globorhagada* Iredale, 1933: 52 [t.-sp. *Helix*

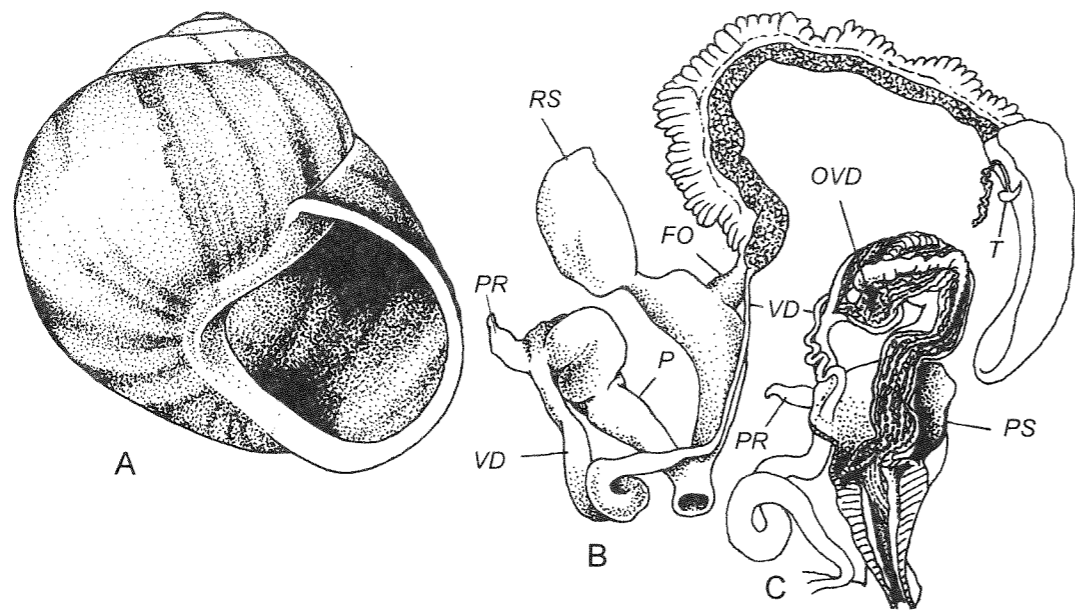


Fig. 2049. A — ! *Xanthomelon pachystyla* (L. Pfeiffer, 1845). Shell: Norval Park via Bundaberg, Queensland, Australia. Moscow No. Lc-25592. B, C — *Xanthomelon durvillii* (Hombron et Jacquinot, 1841). B — reproductive tract. C — interior of penis. After Solem, 1979.

(*Hadra*) *prudhoensis* E. Smith, 1894; OD]. Solem, 1979: 9. B. Smith, 1992: 172.

TYPE SPECIES — *Helix pomum* L. Pfeiffer, 1842 (= *Helix durvillii* Hombron et Jacquinot, 1841); OD.

Shell generally globose, moderately solid, of 4.25-5.5 comparatively convex whorls. Body whorl broadly and evenly rounded at periphery, descending abruptly in front. Color basically green with varying degree of yellow suffusion, sometimes with moderate to heavy suffusion of red. Surface of embryonic whorls usually eroded or faintly pustulose. Postapical sculpture from minute pustules on slightly elevated retractile radial ribs that cover spire but fade out on lower whorls, to oblique radial anastomosing rugosities, to an essentially smooth surface. Aperture ample, subcircular, oblique, margins moderately to strongly expanded and flared, partly reflexing over columellar region. Umbilicus moderately to narrowly open or closed. Height 17.4-38.8, diam. 17.7-45.1 mm (33.1 × 30.6 mm).

Talon small, drop-like, with lateral entrance of hermaphroditic duct.

Vas deferens rather short, entering long

epiphallus apically without distinct demarcation. Penis slightly to strongly coiled within a sheath, internally variously sculptured with ridges or a large pilaster; verge absent. Penial retractor inserting onto a section of vas deferens at upper margin of penis sheath. Free oviduct short. Vagina, along with base of short spermathecal shaft enlarged, longer than free oviduct. Reservoir of spermatheca not attending mid-point of spermoviduct.

DISTRIBUTION. Australia (Queensland, Western Australia, Northern Territory). 8 spp.

Amplirhagada Iredale, 1933

Fig. 2050

Iredale, 1933: 52.

— *Thetagada* Iredale, 1939: 25 (nom. nud.; t.-sp. *Rhagada astuta* Iredale, 1939; OD).

— *Tenuigada* Iredale, 1939: 25 (t.-sp. *Tenuigada percita* Iredale, 1939; OD).

Solem, 1981a: 148. B. Smith, 1992: 111.

TYPE SPECIES — *Helix (Hadra) sykesi* E. Smith, 1894; OD.

Shell depressed to dome-shaped, moderately to quite solid, more or less shining, of

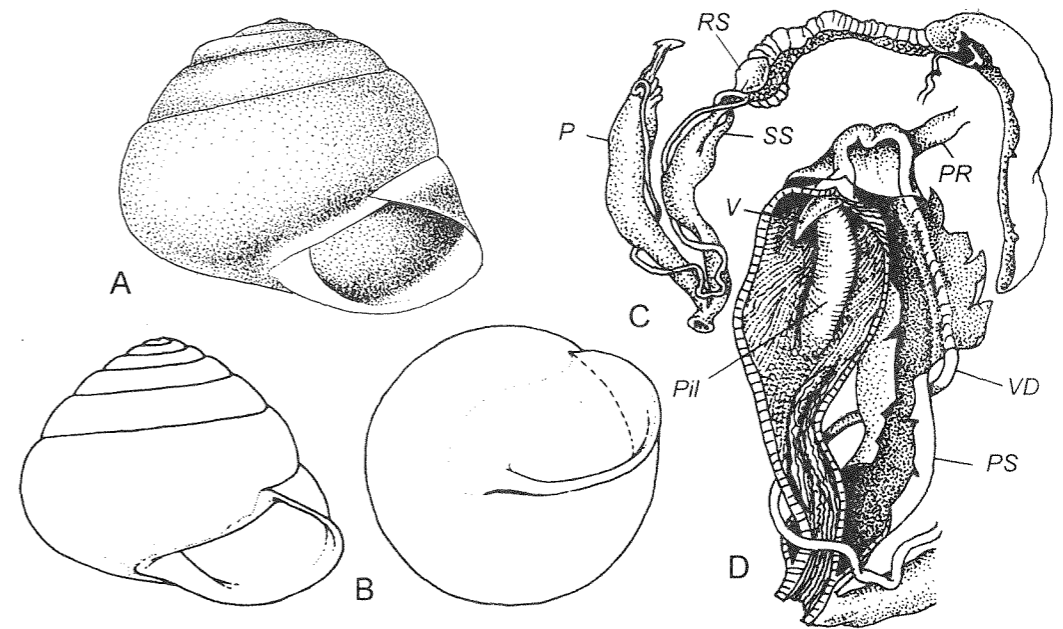


Fig. 2050. A — ! *Amplirhagada napierana* Solem, 1981. Shell: W Australia, 12 km NW of Barker Gorge, Napier Ranges, SW Kimberley. Moscow No. Lc-25568. B — *Amplirhagada sykesi* (E. Smith, 1894). Shell. C, D — ! *Amplirhagada mitchelliana* Solem, 1981. C — reproductive tract. D — interior of penis. After Solem, 1981a.

5.5-6.5 moderately convex whorls. Body whorl evenly rounded to occasionally angulated or carinated, sharply or not descending in front. Color white to corneous, often with reddish markings; typically with both subsutural and supraperipheral darker spiral band, a small to extensive columellar color patch in species with closed umbilicus. Embryonic sculpture of radially elongated fine to very coarse pustulations, sometimes coalesced into weak radial ribs. Rest surface above periphery ranging from very weak radial wrinkles to sharply defined or grossly broadened ribs; basal surface with incised spiral lines. Aperture more or less ovate, oblique; margins moderately reflexed and expanded; basal margin smooth or with a tuberculate protrusion. Parietal callus thin. Umbilicus narrowly open to completely closed by reflexed columellar margin. Height 7.3-18.5, diam. 11.5-25.6 mm (16.5 × 15.6 mm).

Vas deferens enters penis sheath from halfway up to near apex, usually folded in S-loop to tightly coiled below insertion of vas deferens (except immediately after mating and for the next few days). Flagellum absent. Vas deferens entering penis through

short to very long tubular to conic verge with terminal and usually simple opening (in 2 species tip of verge modified). Thin penis sheath extending from slightly above atrium to insertion of penial retractor onto vas deferens. Inner surface of penis with basal ridges of variable length, pustules on upper wall (1 species lacks pustules), principal pilaster (sometimes greatly reduced) surmounted by narrow to wide corrugations whose anterior edges lined with a few to many sharp points. Length of free oviduct and vagina variable among species. Spermathecal shaft normally with expanded base; reservoir lies just above vas deferens/free oviduct origin. Interior of spermatheca base and vagina normally with narrow corrugated pilasters and ridged, highly expandable pad surrounding opening of free oviduct.

DISTRIBUTION. Australia (Northern Territory; Western Australia; Corneille Island, Admiralty Gulf). About 30 spp. & subspp.

Tatemelon Solem, 1993

Fig. 2051

Solem, 1993: 1226.

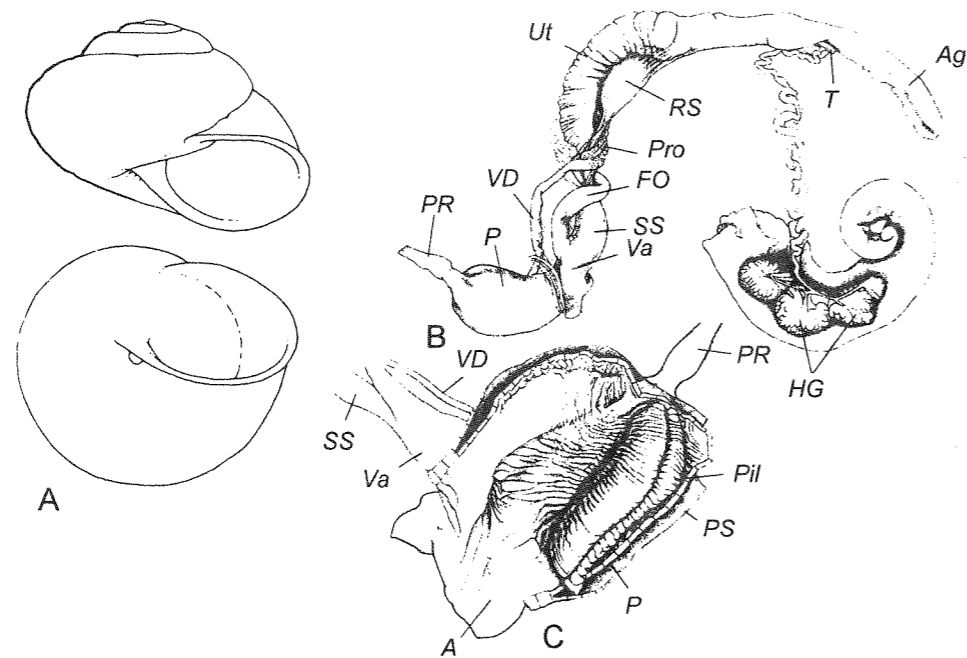


Fig. 2051. *Tatemelon musga* (Iredale, 1937).
A — shell. B — reproductive tract. C — interior of penis. After Solem, 1993.

TYPE SPECIES — *Pleuroxia musga* Iredale, 1937; OD.

Shell depressedly subglobose, solid, of 3.75-5 moderately convex whorls. Spire dome-shaped or slightly conic. Last whorl evenly rounded at periphery, descending moderately to very sharply over last part of whorl. Color brown, often lighter on base. Embryonic sculpture of dense pustules, often worn off. Later whorls densely pustulose, without radial ribbing, or with prominent, crowded radial ridges that maybe greatly reduced. Aperture ovate, well oblique; palatal and basal margins narrow, moderately to well expanded; columellar margin variably expanded. Parietal callus sometimes present. Umbilicus open to almost closed. Height 10.6-15.7, diam. 15.9-23.7 mm.

Vas deferens enters normal flagellum part-way up penis (at least in 2 species). Epiphallus then enters very thin-walled penis sheath (sub)apically, and at least partly encircles penial retractor before entering head of penis or epiphallus; sometimes vas deferens enters very thick penis sheath just above peni-oviducal angle, lies free in sheath cavity to near mid-point where it either joins remnant of

flagellum or increases in diameter to form epiphallus, which then coils apically and enters penis apex next to insertion of penial retractor after partly encircling it. Epiphallus thus shortened (in 1 species) or long. Penis short, globose, of medium length and enlarged diameter, or very long and slender. Epiphallic pore apical, surrounded by enlarged wall pustules or series of very low, indistinct folds. Main pilaster U-shaped with 1 arm reduced, a simple long ridge with specialized head, or a grossly enlarged ridge occupying most of chamber with narrow, cross corrugations and median groove extending partway down pilaster, or with larger cross corrugations and median groove extending for entire length of main pilaster. Inner surface of penis with some accessory ridges basally and prominent pustules above, many simple ridges, or almost no accessory sculpture present. Vagina short to long, swollen or slender, internally with longitudinal pilasters. Vagina short. Spermathecal duct of various length, sometimes swollen basally; reservoir expanded, bound to lower part of spermoviduct.

DISTRIBUTION. Central Australia. 4 spp.

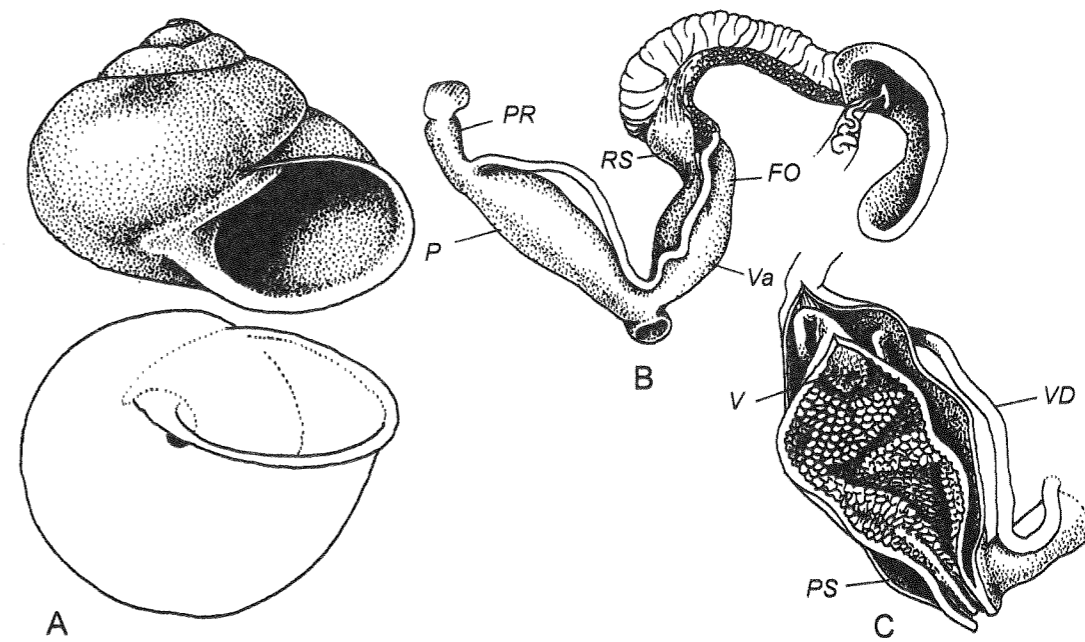


Fig. 2052. *Kimborhaga micromphala* (Gude, 1907).
A — shell: SE side Windjana Gorge, Napier Range, W Australia. Moscow No. Lc-25590 (Chicago No. 199182). B — reproductive tract. C — interior of penis. After Solem, 1985.

Kimborhaga Iredale, 1939
Fig. 2052

Iredale, 1939: 47. Iredale, 1933: 50 (nom. nud.).
Solem, 1985: 818. B. Smith, 1992: 131.

TYPE SPECIES — *Chloritis micromphala* Gude, 1907; OD.

Shell (sub)globose, rather solid, of 4-5.25 moderately convex whorls. Spire strongly elevated, not rounded above. Body whorl rounded at periphery, descending moderately in front. Color light yellow-corneous, sometimes with reddish-purple suffusion. Embryonic whorls worn smooth. Postnuclear whorls mostly with prominent, quite narrow radial ribs, that may continue onto base or basal surface nearly smooth; sometimes there are fine spiral incised lines. Aperture broadly ovate to subcircular, oblique; margins moderately expanded, only slightly thickened. Parietal callus thin to moderately developed. Umbilicus variable, either narrowly open or a lateral crack to closed. Height 9.5-21.2, diam. 15.3-24.0 mm (20.5 × 24.0 mm).

Vas deferens very slender for entire length, coiled or kinked near peni-oviducal

angle, entering penis sheath near apex of penis, although sometimes bound to outer wall of penis sheath for a considerable distance. Inside penis sheath, vas deferens long (except in a single species), coiled apically to insertion of penial retractor, then reflexing anteriorly and coiled until expansion just before entering penis. Vas deferens opening into penis through a verge or major pilaster, whose surface bears enlarged pustules. Penis sheath thin to thick, extending from just above atrium to slightly above insertion of penial retractor. Penis proper varying from short to much longer than sheath. Inner surface of penis with very small to very large pustules of various orientation. Lower part of penis chamber with simple longitudinal pilasters.

DISTRIBUTION. Western Australia. 6 spp.

Turgenitubulus Solem, 1981
Fig. 2053

Solem, 1981b: 358. B. Smith, 1992: 165.

TYPE SPECIES — *Turgenitubulus christenseni* Solem, 1981; OD.

Shell generally depressed-conic, moder-

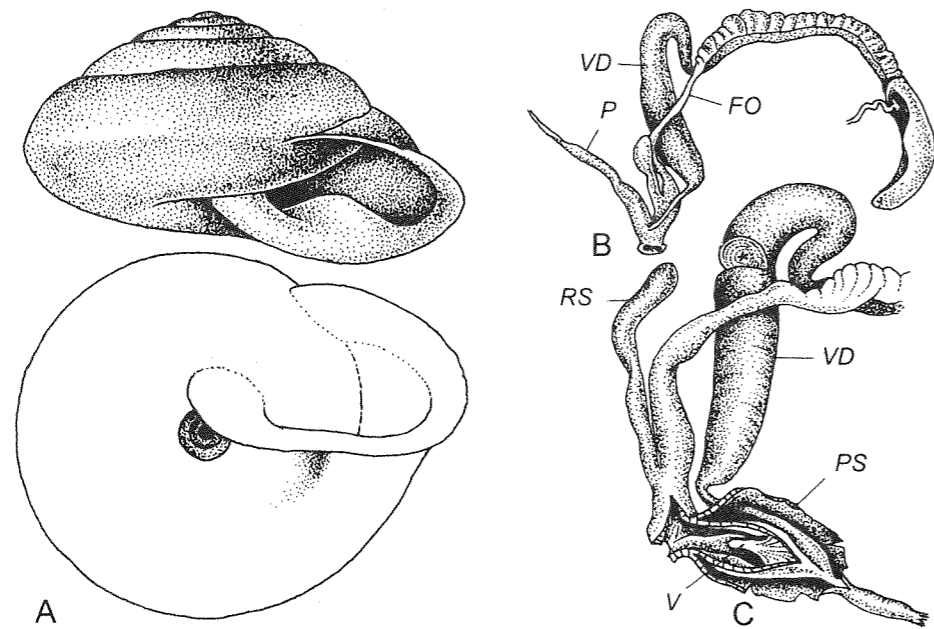


Fig. 2053. *Turgenitubulus christensenii* Solem, 1981.

A — shell: E slope Ningbing Range, N of Kununurra, W Australia. Paratype. Moscow No. Lc-24788 (Chicago No. 205045). B — reproductive tract. C — distal section of genitalia and interior of penis (vas deferens partly cut transversely). After Solem, 1981b.

ately thin, of 4.5-6 slightly to moderately convex whorls. Body whorl only slightly descending in front, usually obtusely angulated at periphery, with a very weak to strong depression on base behind aperture. Color light yellow-corneous above periphery; basal surface, aperture edges, and basal ridge white. Embryonic sculpture of radially elongated pustulations, becoming irregular to anastomosing riblets on later portions. Rest surface with weak to very strong radial ribs; base, with a single exception, smooth. Aperture oblique, ovate, with reflexed and expanded margins; basal margin with generally low and broad ridge, sometimes conic, marked on outside by a very deep indentation and fairly long depression. Umbilicus narrowly open, partly covered by reflection of columellar margin. Height 6.4-11.5, diam. 12.9-18.4 mm (9.4 × 16.0 mm).

Vas deferens enormously swollen and lengthened immediately after origin, curved upward along spermatheca, then reflexing downward; narrowing to normal diameter just above, at, or slightly below spermatheca/free oviduct junction. Swollen portion with heavily muscular walls and narrow

central canal. Vas deferens entering penis sheath just above base, ascending to apex of penis sheath, reflexing anteriorly through apical plug of penis after receiving insertion of penial retractor. Penis sheath normally equal to penis length. Penis normally with apical plug, length and shape varying among species (in 1 species absent). Internally penis with longitudinal pilasters, generally 1-3 enlarged as stimulators; verge generally tubular, usually conic to finger-shaped with terminal pore. Free oviduct long, slender. Vagina usually short (in 1 species long), moderately to strongly swollen. Spermathecal duct short, slender; reservoir lies well below origin of free oviduct, attached by connective tissue to base of free oviduct.

DISTRIBUTION. Western Australia. 8 spp.

Prototrachia Solem, 1984

Fig. 2054

Solem, 1984: 681. B. Smith, 1992: 144.

TYPE SPECIES — *Prototrachia sedula* Solem, 1984; OD.

Shell depressed, moderately solid, of 5-

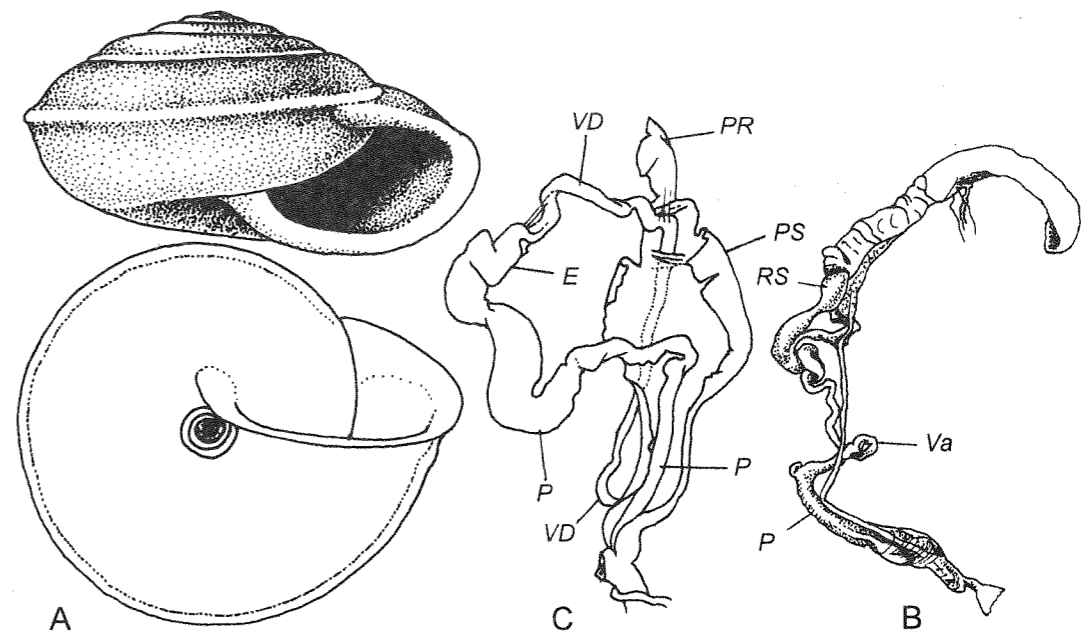


Fig. 2054. *Prototrachia sedula* Solem, 1984.

A — shell: N side of Victoria Hwy., N[orthern]. T[erritory]. Australia. Chicago, No. 205157. B — reproductive tract. C — penis, penis sheath dissected. After Solem, 1984.

5.75 flattened whorls. Spire moderately, evenly elevated. Body whorl at most descending slightly in front; periphery with thread-like keel. Color very light yellow-corneous, base almost white. Apical sculpture initially of fine radial riblets to which, on last portion, added periostracal projections that on rest surface become crescent-shaped ridgelets oriented spirally individually, but radially in rows, reduced on base. Aperture broadly ovate, oblique, with strongly expanded, reflexed margins. Parietal callus weak. Umbilicus narrowly open, partly covered. Height 7.2-10.5, diam. 13.6-17.3 mm (10.0 × 18.0 mm).

Hermaphroditic duct attaching laterally to talon. Vas deferens entering very thin penis sheath subapically, reflexing almost immediately and continuing downward to enter epiphallus. Latter short, with thick walls, internally with vague longitudinal pilasters, no external indication of change to penis; internally transition marked by sharp alteration in wall sculpture. Penis coiled within sheath, basal 2/3 very slender, with simple longitudinal pilasters, upper third much thicker, with complex, foliated pilasters that have hardened upper edges. Free oviduct rather short, slender,

entering laterally expanded chamber at base of spermatheca and head of vagina. Spermathecal shaft very short, reservoir attached to base of spermatheca by thin connective tissue fibers.

DISTRIBUTION. Australia (Northern Territory). 1 sp.

Carinotrachia Solem, 1985

Fig. 2055

Solem, 1985: 857. B. Smith, 1992: 120. TYPE SPECIES — *Carinotrachia carsoniana* Solem, 1985; OD.

Shell somewhat trochoid, moderately thin, slightly translucent, of 4.75-5.25 convex, shouldered whorls. Body whorl noticeably descending in front, with a cord-like keel, ribs denticulate keel edge. Color light yellow-corneous. Nuclear whorls with reduced sculpture of pustules. Rest surface sculptured with irregular radial ribs, with extremely fine microsculpture of anastomosing periostracal folds. Aperture rounded, well oblique, with weakly expanded, slightly thickened, somewhat approached margins; no nodes. Parietal callus well developed. Umbilicus narrowly open, partly covered by reflection of columellar

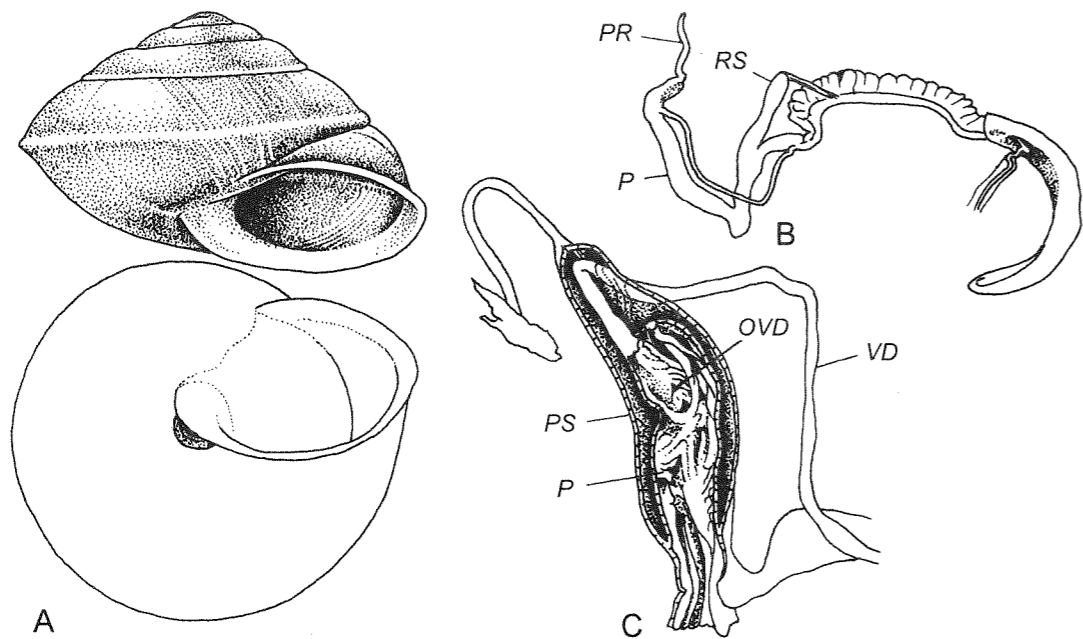


Fig. 2055. *Carinotrachia carsoniana* Solem, 1985.
A — shell: 4.8 km WNW of Putairta Hill, ca 15 air km S of Kalumburu, N Kimberley, W Australia. Chicago No. 220022. B — reproductive tract. C — interior of penis. After Solem, 1985.

margin. Height 9.1-11.8, diam. 11.9-18.6 mm (11.2 × 17.1 mm).

Vas deferens entering thin penis sheath subapically, reflexing as weakly differentiated epiphallus after insertion of penial retractor. Flagellum missing. Penis cylindrical, thin-walled, receiving opening from epiphallus through a simple pore with a complex valve-pilasters. Free oviduct not long, sinuated. Vagina short. Shaft of spermatheca short, expanded; weakly defined reservoir bound to base of spermooviduct by fibers.

DISTRIBUTION. Western Australia (Kimberley). 1 sp.

Westraltrachia Iredale, 1933

Fig. 2056

Iredale, 1933: 55.

— *Parrhagada* Iredale, 1938: 114 [t.-sp. *Thersites* (*Rhagada*) *woodwardi* Fulton, 1902; OD].

— *Zygotrachia* Iredale, 1939: 50 (*Westraltrachia* subg.; t.-sp. *Westraltrachia alterna* Iredale, 1939; OD).

B. Smith, 1992: 167. Solem, 1984a: 431.

TYPE SPECIES — *Trachia froggatti* Ancey, 1898; OD.

Shell flattened to turbanate, moderately thin, of 4-6 more or less convex whorls. Body whorl slightly to a little descending in front; periphery generally rounded, sometimes obtusely angulated, subcarinated, or rarely with a protruding keel. Color varies from chalk-white to light-brown and irregularly variegated, sometimes with peripheral lighter band. Embryonic whorls smooth. Postapical whorls usually with irregular radial wrinkles, never with strong and regular ribs; microsculpture variable, from weak incised spiral lines to periostracal folds, rarely weak pustulations. Aperture ovate, oblique, margins expanded in various degree; development of a basal nodular ridge occasional in some species, normal in 1 species. Umbilicus rarely open, usually a simple lateral crack. Height 5.0-18.3, diam. 10.3-24.5 mm (7.8 × 15.0 mm).

Hermaphroditic duct enters talon laterally. Vas deferens, a thin tube throughout its length, entering wall of penis sheath at a position most easily defined in relation to penis or base of epiphallus: rarely above base, often opposite to base, sometimes moderately below base, often well below epiphallus base. At summit of penis sheath,

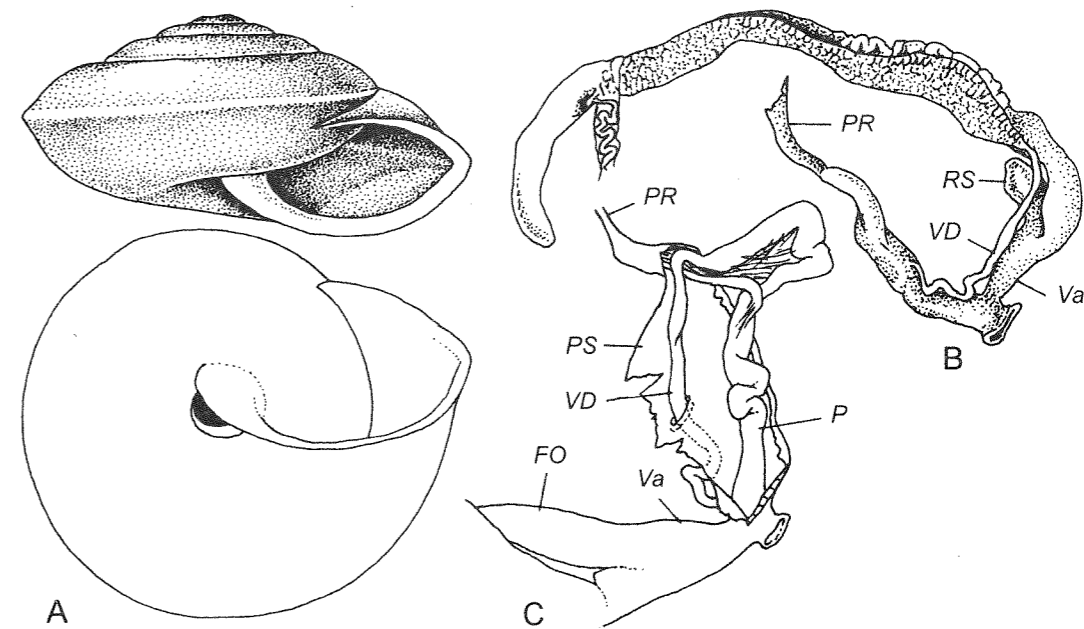


Fig. 2056. *Westraltrachia froggatti* (Ancey, 1898).
A — shell: SW corner Winjana Gorge, Napier Range, W Australia. Moscow No. Lc-25591 (Chicago No. 199430). B — reproductive tract. C — penis, penis sheath dissected. After Solem, 1984.

vas deferens reflexes and enters epiphallus without special structural change. Epiphallus variable in length and diameter, always with its major portion extended laterally in U-shaped projected tube that varies in length from typically long, to rarely shortened, internally with very narrow, low pilasters. Penis proper very slender, of highly variable length, sometimes coiled within sheath because of length, but may be much shorter than epiphallus. Interior of upper penis with variable sculpture, ranging from complex and large ridges to remnants of these, or simple pilasters. Lower portion of penis chamber with simple pilasters that continue into atrium and also vagina. Penial retractor attaching to vas deferens/epiphallus junction after entering penis sheath. A special penis muscle extends downward to attach at penis/epiphallus junction, sometimes continuing for significant distance anteriorly, more frequently only anchoring apex of penis. Lateral strands bind main portion of epiphallus into U-shaped lateral projection. Vagina slender, of various length. Spermatheca very short, sac-like, without expanded reservoir, connected to base of spermooviduct by thin strands.

DISTRIBUTION. Western Australia (Kimberley). 21 spp. & subsp.

Ordtrachia Solem, 1984

Fig. 2057

Solem, 1984: 647. B. Smith, 1992: 139.

TYPE SPECIES — *Ordtrachia septentrionalis* Solem, 1984; OD.

Shell more or less flattened, moderately thin, of 4-5.75 moderately convex whorls. Spire moderately, evenly elevated. Last whorl descending slightly just behind aperture; periphery weakly to strongly keeled. Color in 1 species uniformly light yellow-brown, in remaining species a weakly variegated pattern of brownish and yellow flammulations; basal surface in any case lighter to white. Embryonic sculpture usually of fine radial riblets or ridgelets. Postapical surface at first glance nearly smooth (in 1 species with radial ribs), but with microsculpture of low, blunt pustules, V-shaped periostracal ridges (which sometimes reduced), or a dense coat of pointed periostracal projections. Aperture moderately oblique, with strongly expanded, reflexed margins; outer edge rolled. Parietal callus thin. Umbilicus widely open to almost closed. Height 3.6-10.1, diam. 7.3-22.2 mm (7.5 × 13.0 mm).

Hermaphroditic duct attaching subter-

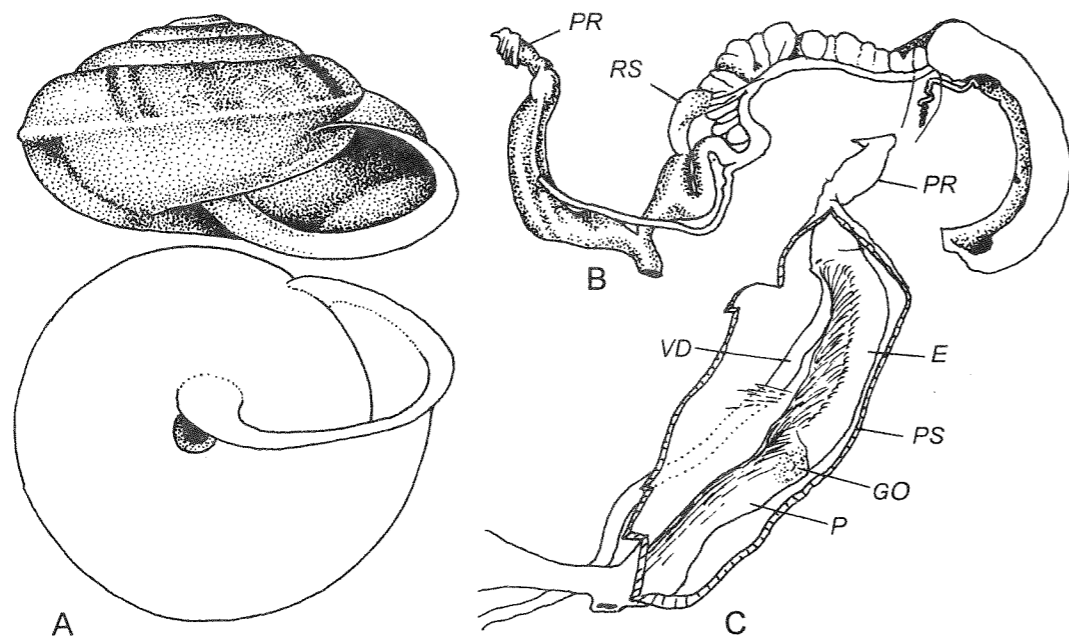


Fig. 2057. *Ordtrachia septentrionalis* Solem, 1984.
A — shell: Rosewood Station, Duncan Hwy, N.T., Australia. Moscow No. Lc-25587 (Chicago No. 211694). B — reproductive tract. C — penis, penis sheath dissected. After Solem, 1984a. GO — glandular outpocket.

minally or laterally to talon. Vas deferens enters penis sheath at or slightly above head of penis, continuing to apex where it reflexes and becomes epiphallus. Penial retractor attaching to head of epiphallus, continuing as grossly expanded penis muscle-glandular zone on side opposite to vas deferens down to penis apex. Epiphallic region thus consists of large muscle-gland outer portion and very narrow tube. Base of epiphallus and upper portion of penis with lateral, thin-walled, glandular outpocket. Penis thick-walled, internally with weak, simple longitudinal pilasters. Free oviduct of various length, more or less sinuated. Vagina very short to moderately long. Spermathecal shaft very short to long.

DISTRIBUTION. Western Australia (Kimberley). 5 spp.

Ningbingia Solem, 1981
Fig. 2058

Solem, 1981b: 326.

TYPE SPECIES — *Ningbingia bulla* Solem, 1981; OD.

Shell more or less depressed, relatively thin, somewhat shining, of 4.75 to nearly 7

moderately convex whorls. Last whorl only slightly descending in front, with rounded to angulated periphery, with or without peripheral sulcus behind aperture that may extend up to 1/2 whorl apically. Color basically light yellow-corneous, base lighter (white). Embryonic whorls with radially elongated pustules initially, tending to become irregular to anastomosing radial riblets on later portions. Postnuclear sculpture at most of irregular radial wrinkles (practically smooth). Basal surface smooth or with faint radial wrinkles. Aperture broadly ovate, well oblique; parietal callus weakly developed. Basal margin smooth or (in 1 species) with high, deeply recessed ridge. Margins moderately to strongly flared and expanded on palatal wall, basally reflexed to cover partly narrow to moderately open umbilicus. Height 9.2-16.6, diam. 14.1-21.5 mm (10.1 × 18.8 mm).

Vas deferens slender for its entire length, passing through sheath at or above midpoint, reflexing down from insertion of penial retractor either as a thin tube or through a small to large apical plug (sometimes absent) in penis. Flagellum and epiphallus absent. Penis sheath thin to moderately thick-walled, ex-

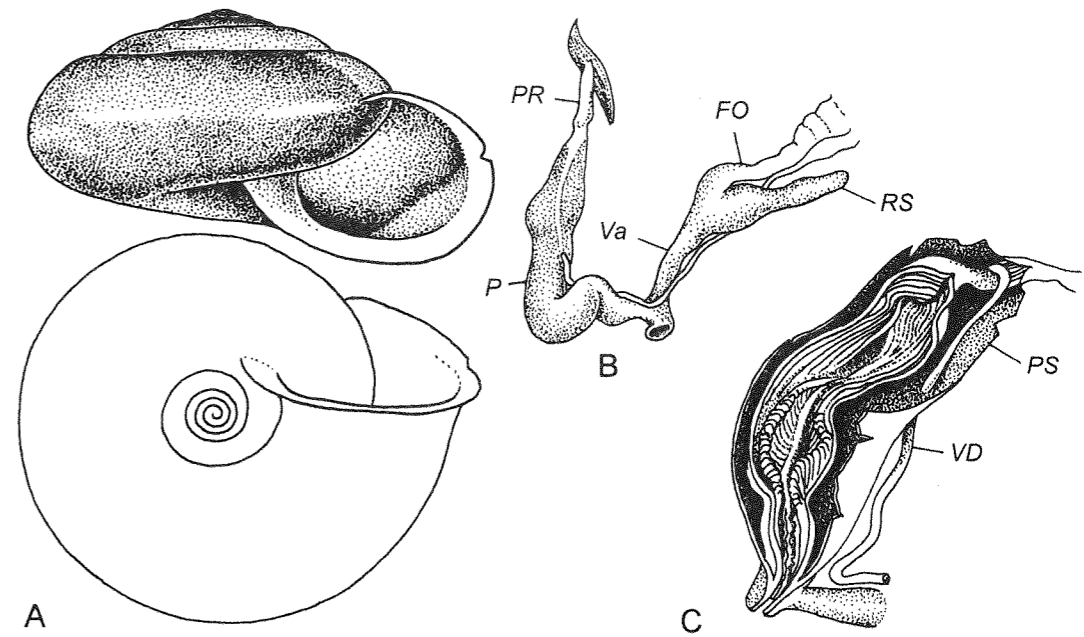


Fig. 2058. *Ningbingia bulla* Solem, 1981.
A — shell: N end of Ningbing Range, N of Kununurra, W Australia. Paratype. Moscow No. Lc-24768 (Chicago No. 199022). B — reproductive tract. C — interior of penis. After Solem, 1981b.

tending up to insertion of penial retractor onto vas deferens. Penis ranging from essentially equal in length to sheath to more than twice of sheath length; no verge but sometimes with a thick apical plug through which vas deferens passes. Internally upper portion of penis chamber with few to many simple longitudinal pilasters, corrugated longitudinal pilasters, or narrow circular ridges; always there are 2 very high pilasters extending from plug to atrium, that have a portion of their length with corrugated upper edges. Corrugated section very short to very long. Penial retractor attached apically. Free oviduct and vagina not long, subequal in length. Spermathecal shaft very short, reservoir normally bound to spermo-viduct just above base of spermo-viduct.

DISTRIBUTION. Western Australia (Ningbing Ranges). 7 spp. & subspp.

Exiligada Iredale, 1939
Fig. 2059

Iredale, 1939: 68. B. Smith, 1992: 126.

TYPE SPECIES — *Exiligada negriensis* Iredale, 1939; OD.

Shell depressed to subglobose, moderately solid, of 4.5-5.75 slightly convex whorls. Spire moderately to strongly elevated, more or less dome-shaped. Body whorl descending gradually in front over last eighth whorl; periphery evenly rounded, no sulci present. Color light yellow-corneous, normally with 2 reddish-yellow bands: one peripheral, the other below it; sometimes bands broken up into many narrow bands that also present on basal surface or into many short dashes, but often banding reduced or absent. Embryonic sculpture of fine radial riblets. Postapical whorls smooth or with weak, irregular wrinkles; on lower spire and body whorl there are very fine micropustulations. Aperture ovate to subcircular, oblique, with reflexed, moderately expanded margins. Parietal callus weakly developed. Umbilicus narrowly open to lateral slit. Height 9.9-17.3, diam. 16.1-24.5 mm.

Hermaphroditic duct entering talon laterally. Vas deferens entering penis sheath shortly above base, continuing to sheath apex where it reflexed into epiphallus. Lower third of penis sheath wall somewhat thickened. Epiphallus shorter than penis, ending in a short loop bound by penis mus-

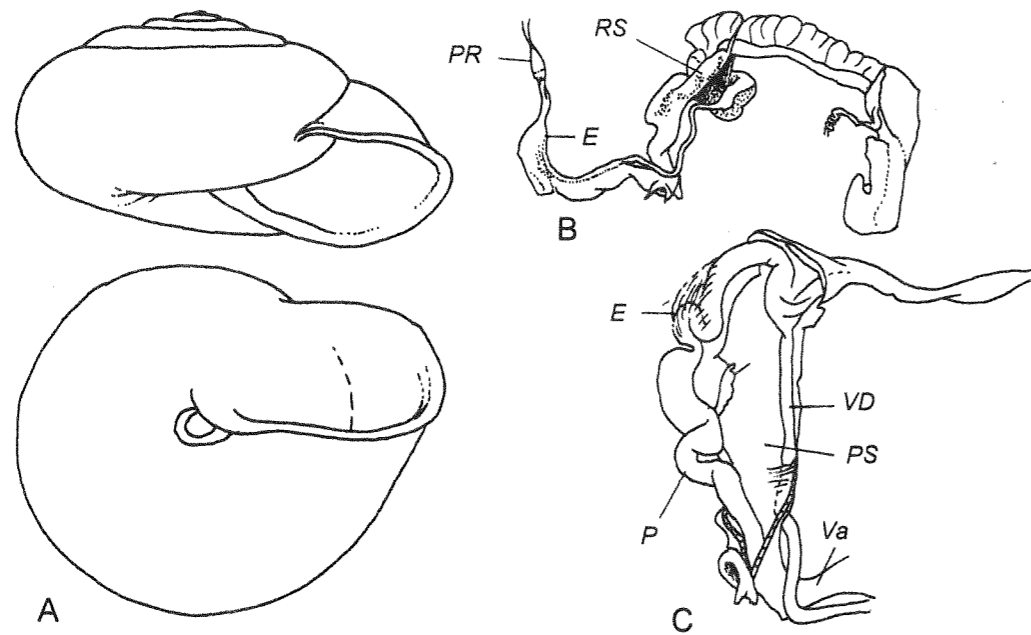


Fig. 2059. *Exiligada negriensis* Iredale, 1939.
A — shell. B — reproductive tract. C — penis, penis sheath dissected. After Solem, 1984.

cle. Penis thick-walled, coiled within sheath, internally with a large apical pilasters, basally with simple longitudinal pilasters. Penial retractor inserting on vas deferens/epiphallus junction, with fibers continuing along epiphallus to head of penis. Free oviduct moderately long, U-shaped. Vagina short. Shaft of spermatheca very short, thus elongated reservoir nearly sedentary.

DISTRIBUTION. Western Australia (Kimberley). 2 spp.

Prymnobriareus Solem, 1981
Fig. 2060

Solem, 1981b: 417. B. Smith, 1992: 144.

TYPE SPECIES — *Prymnobriareus nimerlinus* Solem, 1981; OD.

Shell depressed, moderately thin, of 4.5-5.5 somewhat convex whorls. Body whorl straight, with rounded periphery. Color brownish-yellow-corneous above, nearly white at base. Embryonic sculpture of distinct, regular pitting. Postapical whorls with irregular pustules that sometimes anastomose, when slightly worn giving impression of pitting; sculpture continuing

across shell base into umbilicus. Aperture ovate, moderately oblique, with narrow, sharply reflexed margins. Parietal callus very thin. Umbilicus moderately narrow, only slightly covered. Height 8.6-11.1, diam. 15.8-18.5 mm (8.6 × 17.3 mm).

Vas deferens normal, entering very thin penis sheath about midpoint, reflexing from insertion of penial retractor, opening through simple opening flanked by single, long penial stimulator. Penis slightly longer than sheath, apically with longitudinal pilasters; lower 2/3 with 3 high stimulatory pilasters, whose upper edges have hardened ridgelets. Free oviduct short. Vagina very long, swollen apically. Base of very short spermathecal shaft much enlarged, voluminous reservoir lies on lower portion of spermooviduct.

DISTRIBUTION. Western Australia (Nimberline area). 1 sp.

Cristilabrum Solem, 1981
Fig. 2061

Solem, 1981b: 382. B. Smith, 1992: 121.
TYPE SPECIES — *Cristilabrum primum* Solem, 1981; OD.

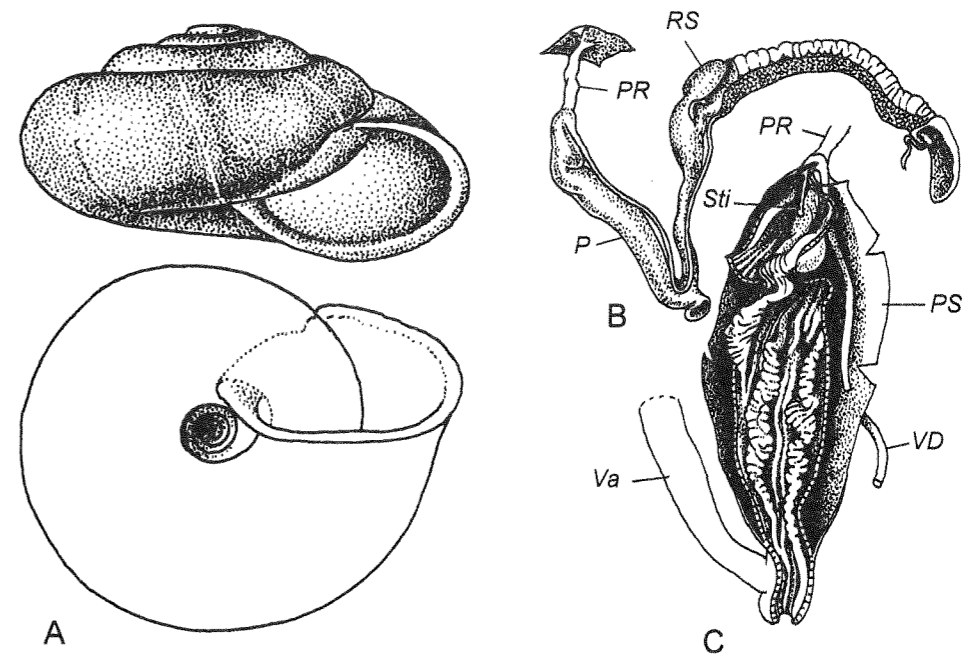


Fig. 2060. *Prymnobriareus nimerlinus* Solem, 1981.
S — shell: S of Wyndham, E bank Salmon River, W.A., Australia. Moscow No. Lc-25589 (Chicago No. 211746). B — reproductive tract. C — interior of penis. After Solem, 1981b.

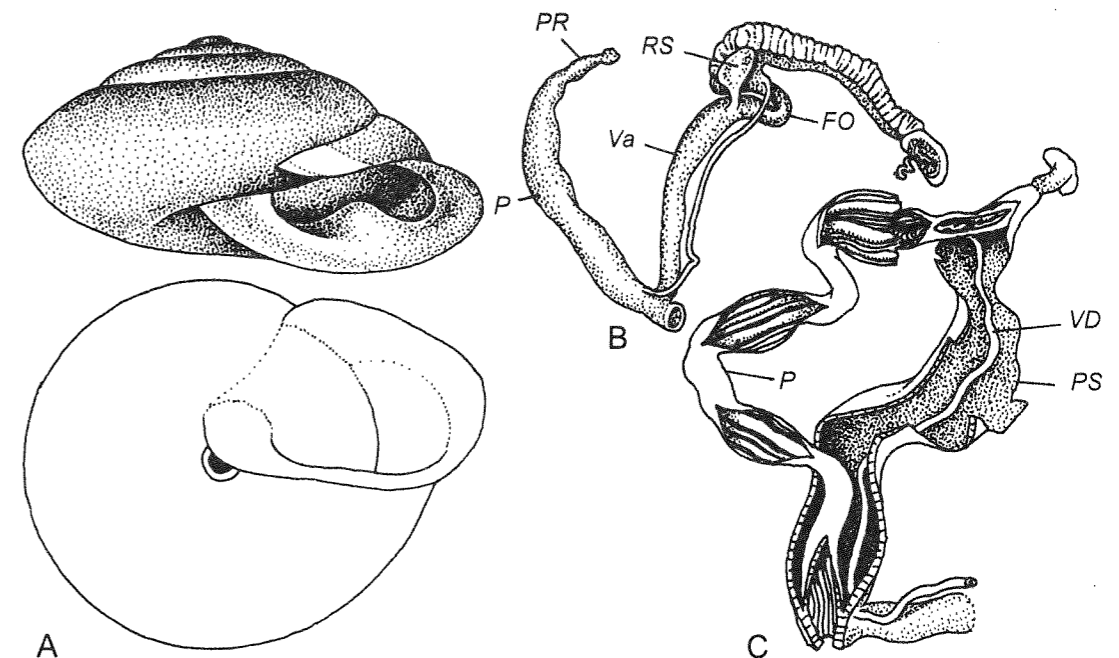


Fig. 2061. *Cristilabrum primum* Solem, 1981.
A — shell: S Ningbing Ranges, N of Kununurra, W Australia. Paratype. Moscow No. Lc-25564 (Chicago No. 211821). B — reproductive tract. C — interior of penis. After Solem, 1981b.

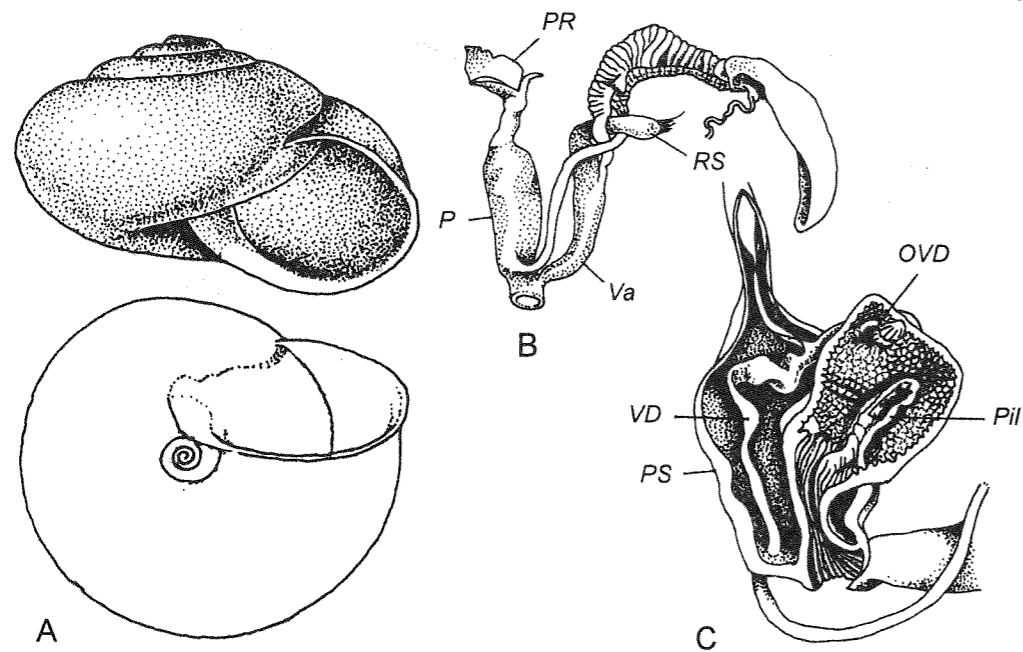


Fig. 2062. *Quistrachia monogramma* (Ancey, 1898). A — shell: N side fringes Napier Range, W Australia. Moscow Lc-25586 (Chicago No. 199256). B — reproductive tract. C — interior of penis. After Solem, 1985.

Shell depressed to dome-shaped, rather solid, of 5-6.5 moderately convex whorls. Spire strongly and evenly elevated, in 1 species slightly elevated or rounded above. Body whorl slightly or not descending in front (except 1 species), with normally obtusely to strongly angulated periphery; peripheral sulcus prominent in some species, absent in most. Embryonic sculpture of radially elongated pustules, becoming partly coalescent into radial riblets by end of apex. Postembryonic sculpture varying from vague radial wrinkles to very prominent ribs, which mostly absent from base. Aperture ovate, oblique, with narrowly to very broadly (most species) expanded and sharply reflexed. Basal margin with variously developed ridge. Umbilicus narrowly open, slightly to moderately narrowed by reflection of columellar margin. Height 7.6-13.4, diam. 14.1-23.2 mm (8.8 × 16.3 mm).

Vas deferens normal in diameter, entering penis sheath at base (at midway in 1 species), reflexing down from insertion of penial retractor through short apical plug to open into penis chamber. Pair of tiny to prominent penial stimulators

flanking pore of vas deferens. Penis equal in length, slightly longer to more than twice length of sheath, whose walls vary in thickness from uniform to extremely thick on lower portion. Internally penis with variable sized plug and 2 small to large stimulators; verge absent. Free oviduct short to long, usually kinked. Vagina moderately to very long, slender. Spermathecal shaft short; reservoir of variable shape, normally appressed to base of spermo-viduct.

DISTRIBUTION. Western Australia. 12 spp.

Quistrachia Iredale, 1939
Fig. 2062

Iredale, 1939: 51. Solem, 1985: 846. B. Smith, 1992: 144.

TYPE SPECIES — *Trachia monogramma* Ancey, 1898; OD.

Shell generally depressed-subglobose, rather thin, of 4 to nearly 5 slightly convex whorls. Spire dome-shaped. Body whorl evenly rounded at periphery, descending very slightly in front. Color light yellow-cor- neous, a faint to prominent reddish or red-

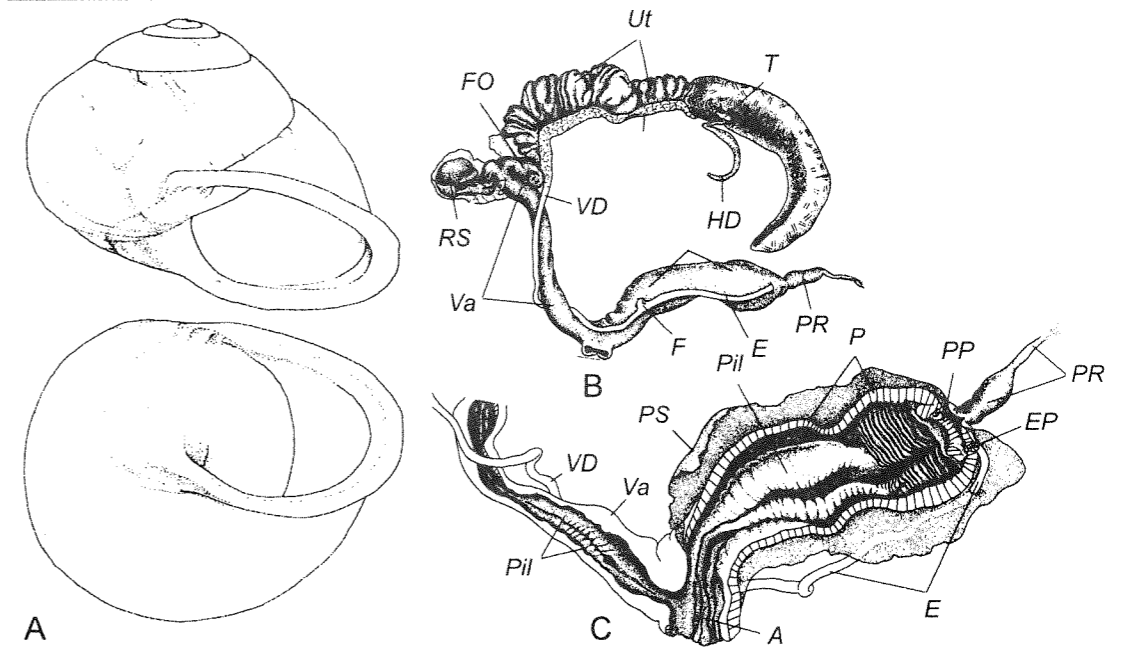


Fig. 2063. *Promonturconchum superbum* Solem, 1997. A — shell. B — reproductive tract. C — interior of penis, atrium and vagina. After Solem, 1997.

dish-brown peripheral or slightly su- praperipheral band. Apical sculpture of vague remnants of pustules. Postem- bryonic whorls with radial irregular wrinkles. Aperture broadly ovate, moderately oblique; margins moderately expanded and slightly thickened, columellar margin reflexed. Umbilicus open, moderately nar- row. Height 7.7-12.8, diam. 14.1-20.7 mm (10.0 × 17.2 mm).

Vas deferens entering thick penis sheath just above atrium, ascending free of wall to insertion of penial retractor, then reflexing to simple pore, or sometimes through a circle of raised pustules. Penis rather short, thick-walled, upper portion internally with fine pustules, lower portion with simple axial pilasters. Principal pilasters with smooth upper edges and a central groove, merging into longitudinal pilaster zone basally. Free oviduct rather short. Vagina long. Atrium very short. Spermathecal shaft short, en- larged; reservoir bound to base of sper- moviduct by thin fibers.

DISTRIBUTION. Western Australia. 3 de- scribed spp.; Solem (1985) indicates that there are several more undescribed species.

Promonturconchum Solem, 1997
Fig. 2063

Solem, 1997: 1647.

TYPE SPECIES — *Promonturconchum super- bum* Solem, 1997; OD.

Shell globose-conic, rather solid, of about 4.5-5.25 flattened, very loosely coiled whorls. Spire strongly, evenly elevated, not rounded above. Last whorl strongly inflated, evenly rounded, descending sharply behind aperture. Color light yellow-corneous, fresh specimens with broad, faint mid-palatal red band; peristome white. Embryonic whorls with weak radial ridges and some pustules. Later whorls with weak growth lines and microsculpture of incised spiral lines. Aper- ture rounded, well oblique, with palatal and basal margins broadly expanded, rolled; co- lumellar margin wider. Umbilicus either closed, and covered with heavy callus or a narrow crack visible along columellar edge. Diam. 24.5-32.3 mm.

Jaw with a few high, usually wide ribs, not reduced on margins.

Albumen gland enlarged. Vas deferens very slender, enters directly into unex-

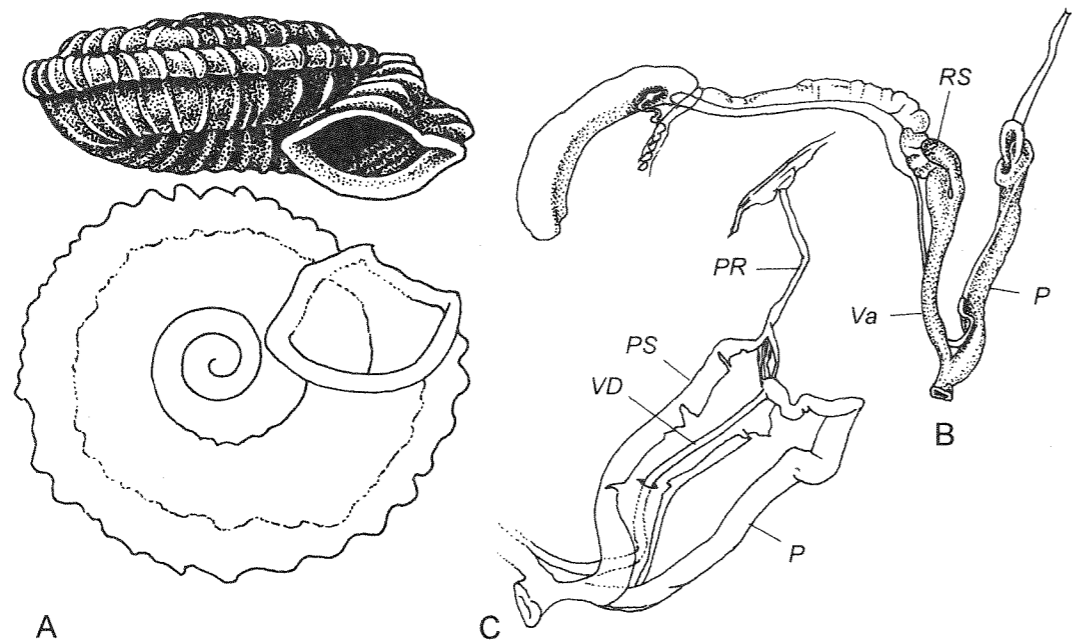


Fig. 2064. *Mouldingia occidentalis* Solem, 1984.
A — shell: S side Napier Range, E of Derby, W Australia. Paratype. Moscow No. Lc-24789 (Chicago No. 205316). B — reproductive tract. C — penis, sheath dissected. After Solem, 1984.

panded epiphallus about 1/4 to 1/3 way up penis; junction marked by lateral, nodular flagellum. Epiphallus enters sheath subapically, reflexes to enter apex of penis through small, complex pilasters. Penis cylindrical, long, thick-walled, internally with spiral pilasters apically, 3 elongated corrugated pilasters in middle 2/3; basal portion with axial pilasters. Penis sheath very thin. Penial retractor inserts in an arc on penis/epiphallus junction. Free oviduct short, reflexed apically. Vagina long, slender, internally with longitudinal pilasters, partly corrugated into stimulatory edges. Spermatheca with short stalk; reservoir expanded, tightly bound to base of spermoviduct.

DISTRIBUTION. Western Australia (Cape Range). 1 sp.

Mouldingia Solem, 1984
Fig. 2064

Solem, 1984a: 635. B. Smith, 1992: 136.

TYPE SPECIES — *Mouldingia occidentalis* Solem, 1984; OD.

Shell nearly flat, rather thin, of 3.5-4.5

somewhat convex whorls. Body whorl strongly deflecting in front, descent accelerated just behind aperture; periphery moderately to strongly keeled. Color uniformly light yellow-brown. Embryonic whorls with quite prominent pustules and with a secondary sculpture of vague radial ridgelets on last portion. Post-nuclear sculpture of very large, high, irregularly spaced, protractive radial ribs; over these there are dense, prominent periostracal extensions of various shape. Aperture ovate, well oblique, with rather strongly expanded and reflexed margins. Parietal callus developed to various degree. Umbilicus broadly open. Height 2.9-5.7, diam. 8.0-11.8 mm (4.0 × 10.0 mm).

Hermaphroditic duct enters talon subapically. Vas deferens thin, reflexing at peni-oviducal angle, entering penis sheath from 1/3 to more than halfway up sheath. Epiphallus elongated, complexly folded within penis sheath, gradually increasing in diameter to junction with penis, internally with simple longitudinal pilasters. Penis/epiphallus junction marked by a lateral protrusion in coiled tube, internally with muscular walls, whose inner surface covered with a few apical narrow and zigzagged pi-

lasters, lower portion with simple axial pilasters. Penial retractor entering penis sheath terminally and attaching to reflexed vas deferens/epiphallus junction. Free oviduct rather long, not sinuated. Vagina very long, slender, without unusual internal structures. Spermathecal duct very short, reservoir attached by connective tissue strands to spermoviduct.

DISTRIBUTION. W Australia (Kimberley). 2 spp.

PAPUININAE Iredale, 1938

Iredale, 1938: 91 (pro fam.).

— ? Calyciidae Iredale, 1941: 71.

Shell generally trochoid to depressed, rather thin to solid, of 4.5-6 whorls. Last whorl often more or less keeled. Color frequently bright, sometimes with pattern of bands or radial streaks. Embryonic whorls smooth or with fine spiral threads; postapical sculpture usually weak. Aperture very oblique, frequently with conspicuous beak or notch on palatal margin. Umbilicus very narrow or completely covered by reflection of columellar margin.

Vas deferens not pierces penis sheath. Flagellum short to absent. Epiphallus ranging from moderately long to missing, never globular. Penis never long, internally with verge that often somewhat twisted, externally grooved but with internal canal. Penis sheath at most confined to distal part of epiphallus and head of penis; mostly absent. Penial retractor inserts on epiphallus, rarely on head of penis. Free oviduct never long. Vagina (rather) long. Spermathecal stalk very short to long; in latter case swollen basally; correspondingly reservoir attending base of spermoviduct to albumen gland.

DISTRIBUTION. New Guinea, Australia (northern Queensland) and Melanesia (Moluccas, Solomons, Louisiades, Bismarck and Admiralty Archipelagos).

Rhynchotrochus Moellendorff, 1895
Fig. 2065

Moellendorff, 1895: 237.

— *Henga* Iredale, 1941: 81 (t.-sp. *Geotrochus trobriandensis* Hedley, 1891; OD).

— *Violenga* Iredale, 1941: 81 [t.-sp. *Helix* (*Papuina*) *rollsiana* Smith, 1887; OD].
— *Kathadena* Iredale, 1941: 82 [t.-sp. *Helix* (*Geotrochus*) *gurgustii* Cox, 1879; OD].
Clench & Turner, 1966: 60.

TYPE SPECIES — *Helix tayloriana* Adams et Reeve, 1850, OD.

Shell trochiform to obesely lentiform, solid, glossy, of 4-6 flat to somewhat convex whorls. Last whorl well descending in front, with angled to keeled periphery. Color pattern usually consists of light (white, yellowish or greyish-violet) background and few dark spiral bands or radial streaks; sometimes surface mottled or uniformly light. Embryonic whorls smooth. Postapical sculpture weak, usually with obliquely-radial wrinklets and wavy spiral incised lines. Aperture moderately to very oblique (nearly horizontal), with papuinoid beak or rostrum. Umbilicus very narrow to closed. Height 9-32, diam. 15-40 mm (16.5 × 26.1 mm).

Jaw with variously developed ribs on central area.

Talon small, rod-like, with lateral entrance of hermaphroditic duct.

Vas deferens enters epiphallus at base of flagellum. Flagellum very short to short. Epiphallus moderately long, internally with several high, thin longitudinal folds. Penis somewhat expanded, more or less distinctly demarcated from epiphallus, contains an extremely contractile, large, grooved verge; inner surface of penis nearly smooth to longitudinally folded. Penial retractor attached to distal half of epiphallus. Free oviduct (rather) short. Vagina slender, moderately long. Spermathecal shaft medium in length to rather long, swollen basally; reservoir globular, reaching about 1/2 to 2/3 of distance to albumen gland.

DISTRIBUTION. New Guinea, NE Australia. About 20 spp. & subspp.

Meliobba Iredale, 1940
Fig. 2066

Iredale, 1940: 240.

— *Negotobba* Iredale, 1941: 83 [t.-sp. *Helix* (*Obba*) *goldiei* Brazier, 1884; OD].

Clench & Turner, 1962: 21.

TYPE SPECIES — *Meliobba shafferyi* Iredale, 1940; monotypy.

Shell depressed-globose to lens-shaped, (moderately) solid, a little translucent, of

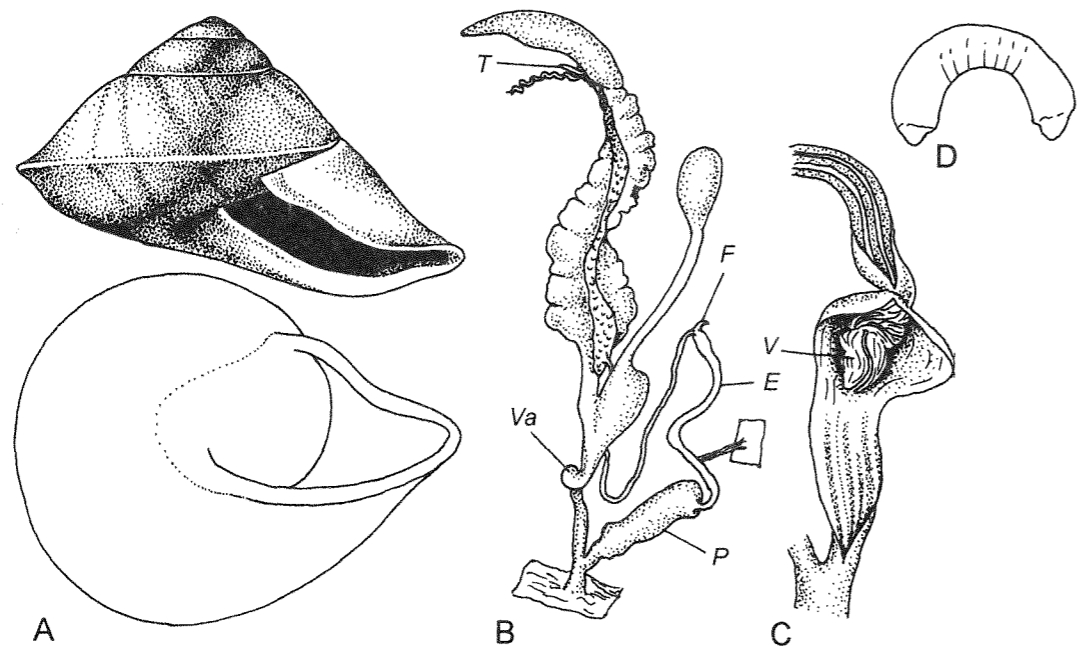


Fig. 2065. A, B, C, D — *Rhynchotrochus (Rhynchotrochus) taylorianus* (Adams et Reeve, 1850). A — shell: Astrolabe Bay, Leiden. B — reproductive tract. C — interior of penis. D — jaw. After Clench & Turner, 1966. E, F, G — *Rhynchotrochus (Rhynchotrochus) macgillivrayi* (Forbes, 1851). Kuranda near Cairns, Australia. E — reproductive tract and cross-section through epiphallus. F — interior of penis. G — longitudinal section through basal part of spermathecal stalk. SPb.

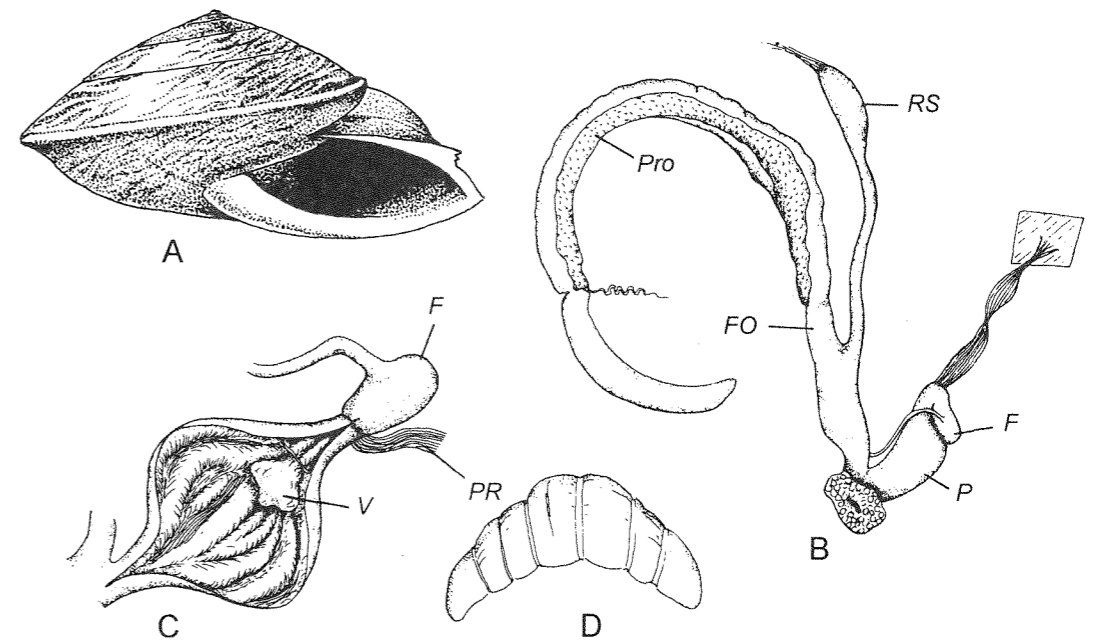
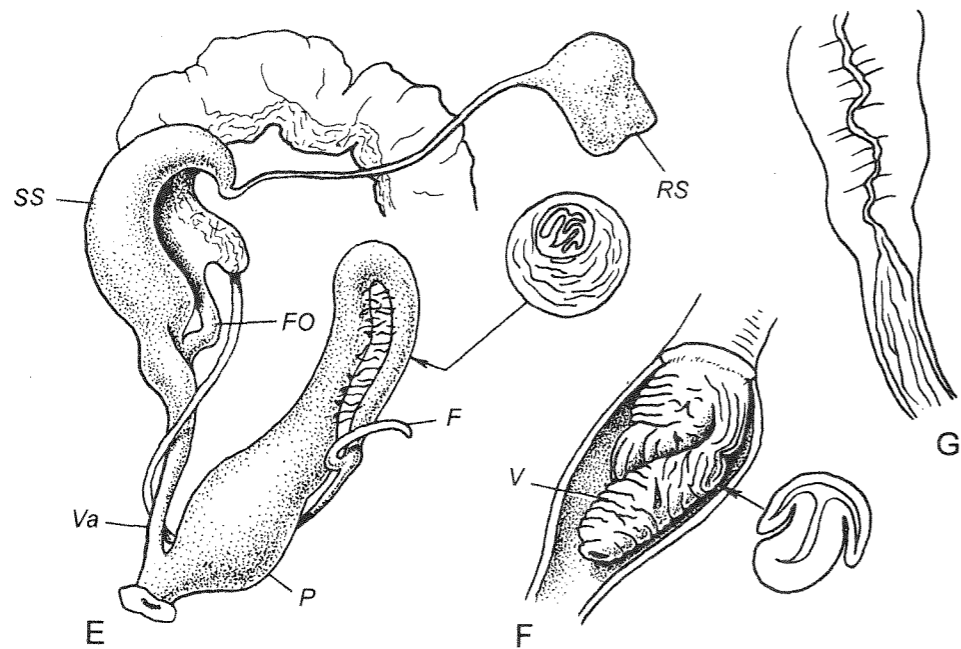


Fig. 2066. A — *Meliobba shafferyi* Iredale, 1940. Shell: Mt. Alexander, Mossman, Queensland, Australia. Cambridge No. 235650. B, C — *Meliobba helenae* Clench et Turner, 1962. B — reproductive tract. C — interior of penis. After Clench & Turner, 1962.



Papuanella Clench et Turner, 1959
Fig. 2067

Clench & Turner, 1959: 5.

TYPE SPECIES — *Geotrochus ogeramuensis* Kobelt, 1914; OD.

Shell trochoid, moderately solid, of 4.5-5 somewhat convex whorls. Last whorl faintly angled or keeled at periphery, slightly to strongly descending in front. Ground color yellowish to olive or reddish-brown, apex dark; sometimes marbled or with 1-5 dark bands; interior of aperture dark. Embryonic whorls smooth. Later whorls with fine diagonal incised lines. Aperture ovate to sub-circular, very oblique, with thickened but not reflexed margins, without papuinoid notch or beak. Umbilicus closed. Height 17.0-24.5, diam. 20.2-25.5 mm (18.1 × 22.4 mm).

Jaw with smooth central area and 3 wide, flat ribs on each margin.

Vas deferens rather short, slender, entering epiphallus laterally. Flagellum short, rounded. Epiphallus also short, recurved. Penis swollen, with moderately thick walls. Penial retractor attaches to epiphallus at re-

4-5 nearly flat to moderately convex whorls. Last whorl strongly and abruptly descending in front, with sharp peripheral angle or keel. Apex conic, pointed. Color greyish, usually marbled with purple to reddish brown; peripheral keel white. Embryonic sculpture of very small radial ridges. Postembryonic whorls with variously developed, irregular radial wrinkles. Aperture rounded, oblique, with reflexed and somewhat thickened margins, without beak or notch. Umbilicus very narrow or closed. Height 14.0-27.5, diam. 32.5-48.5 mm (25.6 × 47.2 mm).

Jaw with a few very broad, flat ribs.

Vas deferens entering short epiphallus laterally. Flagellum short, ovoid, with rounded tip. Epiphallus very short. Penis internally with strong, rounded longitudinal pilasters and a short but well developed, subglobular verge. Penial retractor inserted onto epiphallus. Free oviduct and vagina rather short, of approximately equal length. Spermatheca short, not longer than a half of spermoviduct; reservoir globular to elongate.

DISTRIBUTION. New Guinea and N Australia (N Queensland). 6 spp.

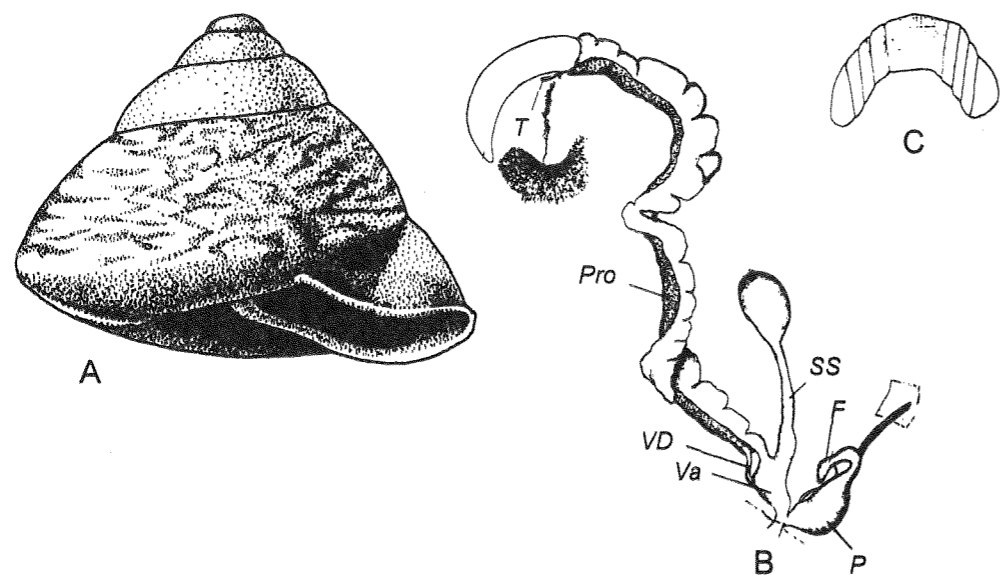


Fig. 2067. A — ! *Papuanella finisterrensis* (Kobelt, 1914). Finisterre Mts., New Guinea. Cardiff. B, C — *Papuanella ogeramuensis* (Kobelt, 1914). B — reproductive tract. C — jaw. After Clench & Turner, 1959.

curved area. Free oviduct and vagina short. Spermathecal shaft rather short, somewhat swollen at base; reservoir subglobular, spermatheca as a whole shorter than a half of spermooviduct.

DISTRIBUTION. Papua New Guinea (Finisterre Mts.). 2 spp.

Wahgia Clench et Turner, 1959
Fig. 2068

Clench & Turner, 1959: 4.

TYPE SPECIES — *Wahgia juliae* Clench et Turner, 1959; OD.

Shell depressed-trochoid, solid, of 4.5 flattened whorls. Last whorl abruptly descending in front, sharply angled at periphery. Color of apical whorls violet-chestnut, ground color of later whorls olive-brown, increasing in intensity toward aperture; sometimes black diffused into olive near aperture; just above peripheral angle narrow black band may be present; angle itself whitish; peristome dark-brown or black. Embryonic whorls smooth. Postapical whorls delicately radially wrinkled, with hair scars, basal surface with elements of spiral striation. Aperture very oblique, with

beak and well defined notch, basal margin shortly reflexed. Umbilicus closed. Height 18.0-21.5, diam. 27.5-34.5 mm (21.5 × 33.5 mm).

Talon minute, rod-like, with basal entrance of hermaphroditic duct. Vas deferens entering epiphallus at some distance below apex, leaving small, rounded flagellum. Epiphallus short. Penis short, with swollen upper portion. Penial retractor attached to penis at base of epiphallus. Free oviduct and vagina stout, former somewhat shorter than latter. Spermathecal shaft very short, reservoir globular.

DISTRIBUTION. Papua New Guinea. 1 sp.

Papuina Martens, 1860
Fig. 2069

Martens in Albers, 1860: 166 (*Helix* subg.).

— *Eugenia* Albers, 1860: 167 (nom. nud.).

— *Insularia* Tapparone-Canefri, 1883: 115, 138 [t.-sp. *Helix lituus* Lesson, 1831; SD Pilsbry, 1894 (1893-1895)].

— *Molmerope* Iredale, 1941: 84 (t.-sp. *Helix pileus* Müller, 1774; OD).

— *Carmerope* Iredale, 1941: 84 (t.-sp. *Helix pileolus* Férussac, 1821; OD).

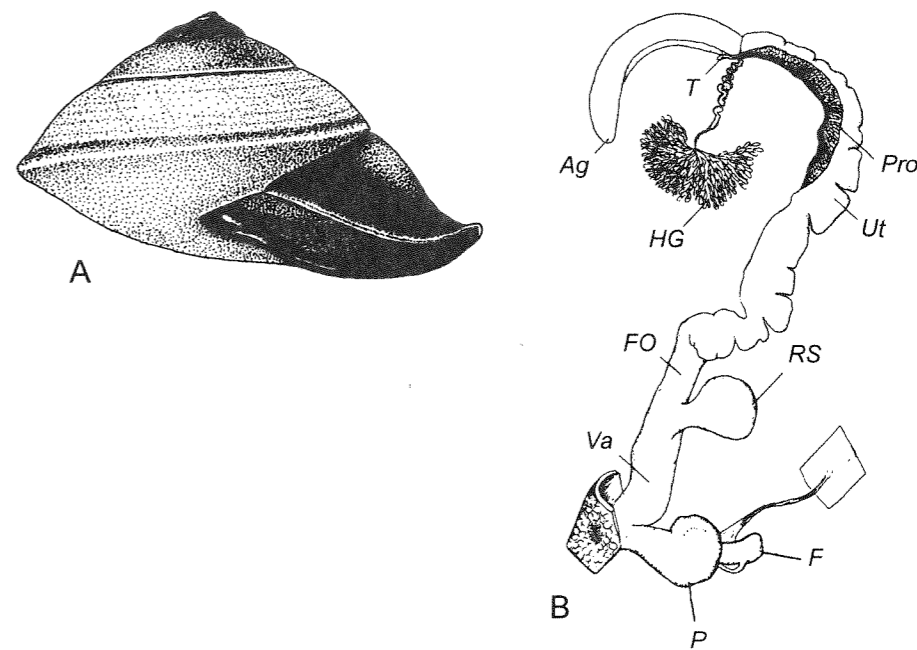


Fig. 2068. *Wahgia juliae* Clench et Turner, 1959. A — shell: 12 mi. NE of Mt. Hagen, Sapik-Wahgi Divide, New Guinea. Paratype. Cambridge No. 191399. B — reproductive tract. After Clench & Turner, 1959.

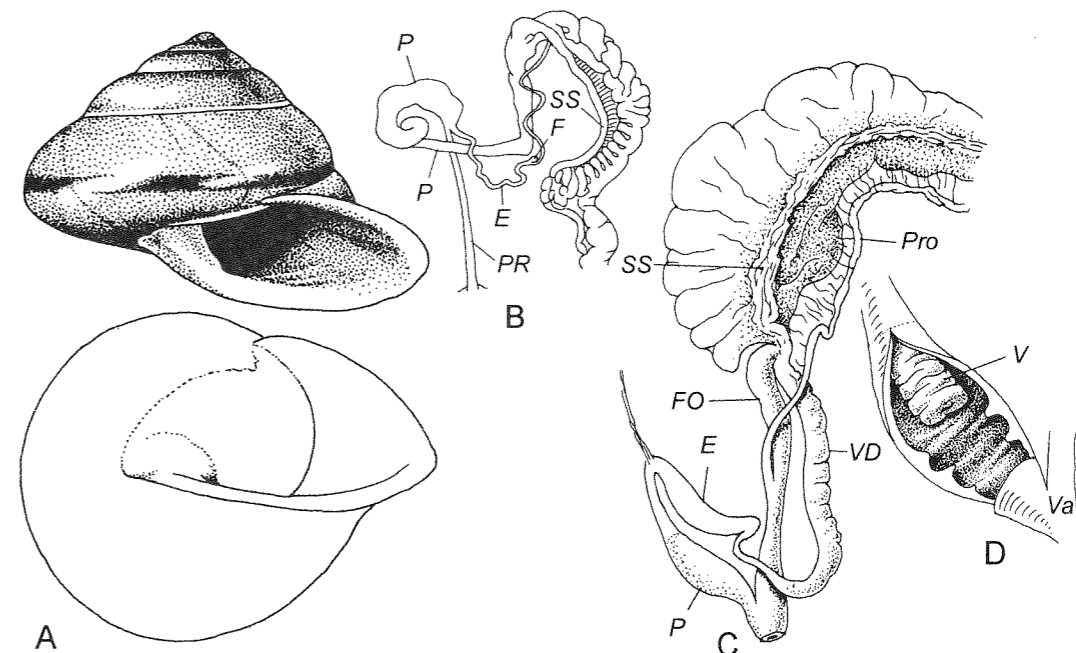


Fig. 2069. A, B — *Papuina lituus* (Lesson, 1831). A — shell: New Guinea. Leiden. B — reproductive tract. After Robson, 1914. C, D — ! *Papuina phaeostoma medinensis* I. Rensch, 1934. Lossu village, 80 mi. SE of Kavieng, New Ireland, Bismarck Archipelago, September 1970. C — reproductive tract. D — interior of penis. Moscow No. Lc-25624.

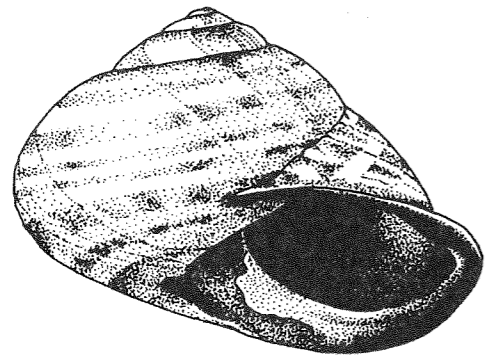


Fig. 2070. *Letitia (Saccoletitia) zeno* (Brazier, 1876).
"Papua". Chicago No. 190915.

— *Zetemina* Iredale, 1941: 84 [t.-sp. *Helix (Geotrochus) hedleyi* E. Smith, 1892; OD].

— *Zetermina* Richardson, 1985: 345 (nom. err. pro *Zetemina* Iredale, 1941).

TYPE SPECIES — *Helix lituus* Lesson, 1831; OD.

Shell conic, obesely lenticular or trochiform, rather thin to solid, of 5-6 moderately convex to flattened whorls. Last whorl slightly descending in front, angulated to bluntly keeled peripherally. Apex mostly dark, subsequent whorls uniformly dark creamy to pinkish, banded or variegated. Embryonic whorls smooth. Postapical whorls without regular radial sculpture, but with variously developed spiral striation. Aperture generally ovate, with more or less expressed papuoid notch; margins reflexed, sometimes thickened; columellar margin smooth or with a tubercular nodule. Umbilicus absent or present, but covered for more than a half. Height 9-26, diam. 12-40 mm (25.5 × 37.0 mm).

Vas deferens (rather) long, slender or widened in proximal portion, entering epiphallus apically. Flagellum absent or minute, drop-like. Epiphallus (moderately)

long, thickened or slender. Penis cylindrical to spindle-shaped, internally with smoothed transversal folds and folded verge. Penial retractor attached to penis/epiphallus junction. Free oviduct of various length. Vagina rather long. Spermathecal stalk long, slender; reservoir, as a rule, attending albumen gland.

DISTRIBUTION. New Guinea, Louisiade, Bismarck Archipelago, Admiralty, Solomons, New Hebrides, Moluccas. At least 150 spp., subspp. & forms.

Letitia Iredale, 1941

Iredale, 1941: 78. Clench & Turner, 1968: 32.

TYPE SPECIES — *Helix brumeriensis* Forbes, 1852; OD.

Shell subglobose to trochoid, solid, dull, of 4-4.5 flattened to slightly convex whorls. Last whorl more or less rounded, angled or keeled, well descending in front. Color varies from uniformly chalky-white to banded; in any case aperture margins including parietal wall usually purplish to reddish brown; rarely white. Embryonic whorls glabrous. Rest whorls with very delicate radial and spiral striation. Aperture moderately to strongly oblique, with more or less thickened margins; columellar margin expanded. Umbilicus closed.

DISTRIBUTION. New Guinea.

Letitia (Saccoletitia) Iredale, 1941 Fig. 2070

Iredale, 1941: 79.

— *Caroletitia* Iredale, 1941: 80 (*Helix diomedes* Brazier, 1877; OD).

Clench & Turner, 1968: 43.

TYPE SPECIES — *Helix (Geotrochus) zeno* Brazier, 1876; OD.

Shell subglobose to lens-shaped, moderately solid, of 4.5 slightly convex whorls. Last rounded or keeled. Color chalky white, violetish-corneous or dull greyish, uniform or with several (up to 7) brownish-purple bands; aperture margins dark. Postembryonic sculpture of distinct, wavy spiral grooves. Aperture moderately oblique to subhorizontal, with reflexed, thickened margins. Height 24-33, diam. 29-43 mm (26.2 × 35.0 mm).

DISTRIBUTION. Papua New Guinea. 4-5 spp.

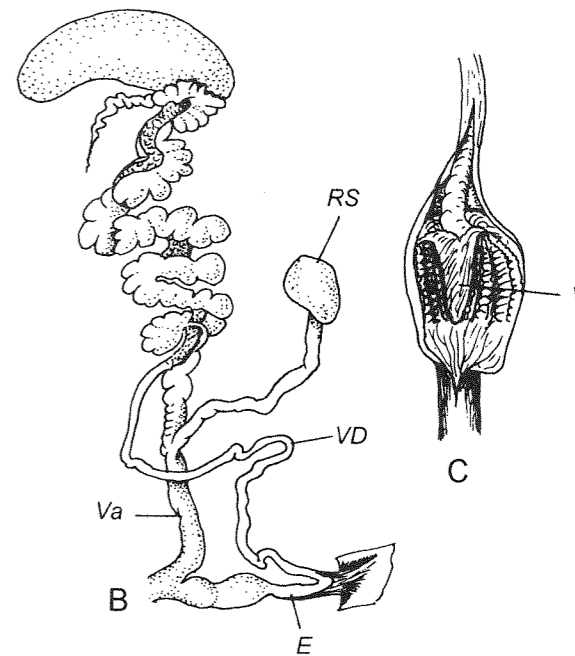
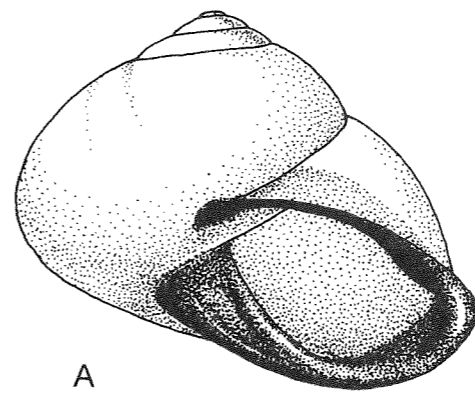


Fig. 2071. *Letitia (Letitia) brumeriensis* (Forbes, 1852).
A — shell: New Guinea. Chicago No. 303. B — reproductive tract. C — interior of penis.
After Clench & Turner, 1968.

Letitia (Letitia) s.str.) Fig. 2071

— *Zenolina* Iredale, 1941: 82 [t.-sp. *Helix (Geotrochus) chapmani* Cox, 1879; OD].

Shell subglobose to high-conic, solid, of 4.5-6 slightly convex whorls. Color white, sometimes faintly mottled; aperture margins brown or purplish-black, rarely reddish-orange. Postembryonic sculpture of fine, irregular, beaded spiral striae or irregular microscopic, anastomosing wrinkles which arranged obliquely. Height 18-38, diam. 24.5-37.5 mm (26.2 × 37.0 mm).

Vas deferens long, slender, entering epiphallus terminally. Flagellum missing. Epiphallus very short. Penis rather small, internally with conic, folded verge and corrugated axial pilasters. Penis sheath reduced, confined to basal part of epiphallus and head of penis. Free oviduct rather short, vagina somewhat longer. Spermathecal stalk slender; ovoid reservoir nearly reaching albumen gland.

DISTRIBUTION. New Guinea. 4 spp. & subspp.

Megalacron I. Rensch, 1934 Fig. 2072

Rensch I., 1934: 487.

— *Pileolus* Lesson, 1830: 313 [nom. praeocc., non Sowerby, 1823; *Helix* subg.; t.-sp. *Helix (Pileolus) tuffetii* Lesson, 1830; SD Clench & Turner, 1964].

— ? *Lullicola* Iredale, 1941: 82 (t.-sp. *Helix boyerii* Fischer et Bernardi, 1857; OD).

— *Pinnadena* Iredale, 1941: 84 [t.-sp. *Helix lambei* L. Pfeiffer, 1856 (as *lombei*); OD].

— *Emiralena* Iredale, 1941: 84 (t.-sp. *Helix moseleyi* E. Smith, 1884; OD).

— *Lisprelia* Iredale, 1941: 85 (t.-sp. *Helix novaehaemorrhensis* Cox, 1870; OD).

TYPE SPECIES — *Helix novaehaemorrhensis* Cox, 1870; OD.

Shell subglobose-conic to lenticular, moderately thin to quite solid, of 3.5-5 whorls. Last whorl abruptly deflected, rounded to sharply keeled. Color pattern of spiral bands and zigzag markings of brownish to blackish brown; rarely uniformly yellow. Embryonic whorls smooth. Subsequent whorls with irregular, interlacing, incised lines; above periphery lines ar-

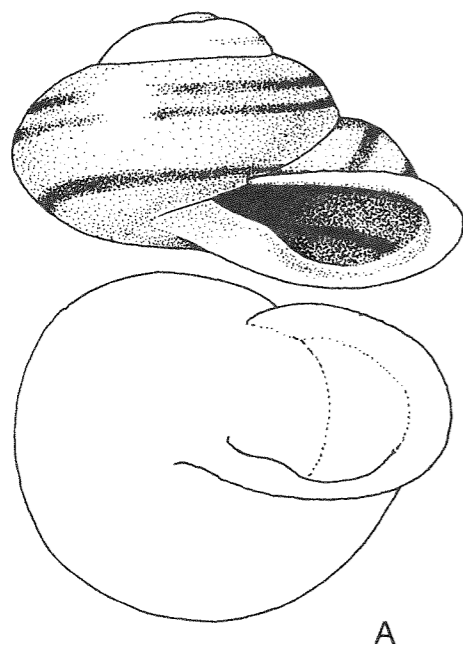


Fig. 2072. A — *Megalacron novaegeorgiensis* (Cox, 1870). Shell: Nauna Island, Admiralty Islands. Chicago No. 77438. B, C, D — ! *Megalacron lufensis* (Thiele, 1928). Hermit Atoll, Papua New Guinea, November 19, 1978. B — shell. C — reproductive tract. D — interior of penis. Moscow No. Lc-20468 (shell), Lc-25630 (soft parts).

ranged in diagonal pattern, while below periphery they arranged spirally; in 1 species surface nearly smooth. Aperture moderately to strongly oblique; papuroid notch absent or only faintly indicated. Umbilicus closed. Height 14.5-23.0, diam. 20.0-29.5 mm (*novaegeorgiensis*: 15.0 × 23.1 mm; *lufensis*: 11.7 × 18.3 mm).

Vas deferens enlarged, sometimes very stout, enters penis terminally. Epiphallus seemingly absent. Penis with or without a verge; in the former case verge short. Inner surface of penial chamber covered with a number of longitudinal folds; sometimes these folds sinuated at upper portion, or broken into series of tubercles. Penial retractor attached to vas deferens/penis junction. Free oviduct and vagina of about equal length. Spermathecal stalk mostly swollen at middle portion, rarely cylindrical. Reservoir globular, usually not reaching albumen gland.

DISTRIBUTION. Bismarck and Solomon Islands. About 30 spp. & subsp.

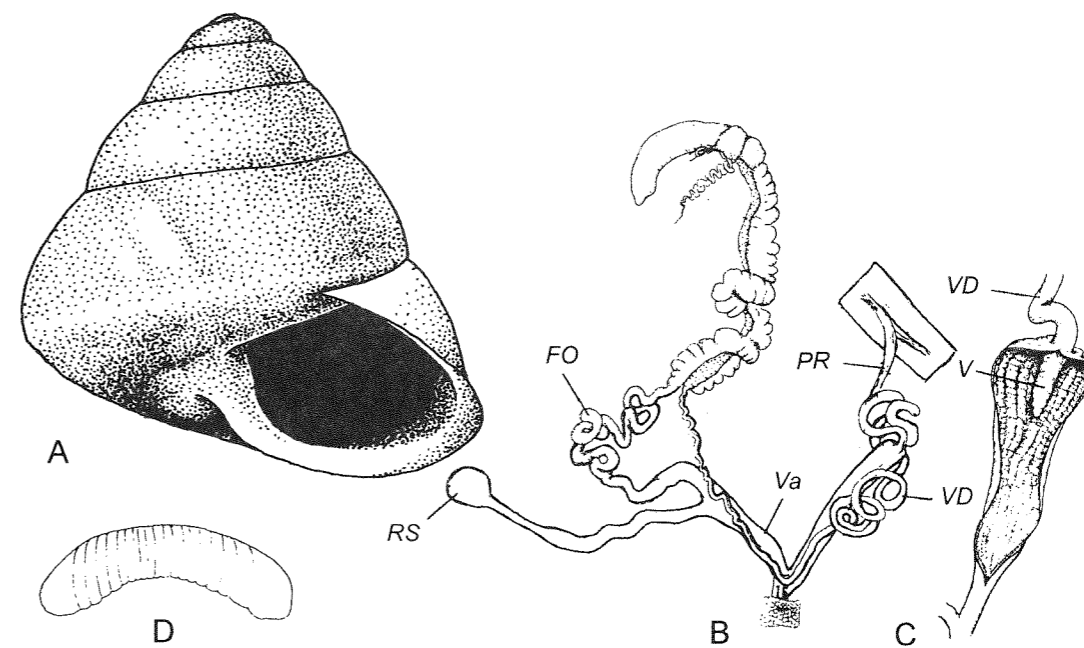


Fig. 2073. *Glomerata migratoria* (L. Pfeiffer, 1855). A — shell: Guadalcanal, Solomon Islands. Chicago No. 21436. B — reproductive tract. C — interior of penis. D — jaw. After Turner & Clench, 1972.

Glomerata I. Rensch, 1934
Fig. 2073

Rensch I., 1934: 486. Turner & Clench, 1972: 222 (syn. of *Megalacron*).

TYPE SPECIES — *Helix migratoria* L. Pfeiffer, 1855; monotypy.

Shell high-trochoid, solid, of about 5 slightly convex whorls. Last whorl with rounded peripheral angle, scarcely deflected. Color corneous or ivory, sometimes with brown narrow band on base and light subsutural band. Embryonic whorls smooth, shining. Postapical sculpture of weak spiral lines and also weak radial wrinklets. Aperture irregularly ovate, without papuroid beak, well oblique, with thin to somewhat thickened, reflexed margins. Umbilicus narrow, more or less covered. Height 16-22, diam. 17.5-19.0 mm (18.2 × 17.5 mm).

Jaw with many flat ribs that absent on very margins.

Vas deferens very long, convoluted, entering head of penis through conic verge. Flagellum or epiphallus missing. Penis clavate, internally with corrugated longitudinal pilasters. Penis sheath absent. Penial retractor in-

serts on basal part of vas deferens. Free oviduct extraordinary long, convoluted and twisted. Vagina rather short. Spermathecal stalk moderately long, slightly thickened in lower 2/3; reservoir subglobular.

DISTRIBUTION. Solomon Islands. 1 sp.

Posorites Iredale, 1933
Fig. 2074

Iredale, 1933: 42. B. Smith, 1992: 143.

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

Shell globosely conic or trochoid, thin to rather solid, glossy, of 5-6 nearly flat to slightly convex whorls. Last whorl a little descending in front, rounded or with obsolete angle. Spire conic. Coloration consists of whitish background and several brown or reddish bands; apex usually dark. Embryonic whorls smooth. Later whorls with fine radial striation and sometimes with weak spiral striae. Aperture diagonal, lunately ovate, with thin, slightly reflexed margins; columellar widely dilated. Umbilicus closed. Height 14-15, diam. 16-18 mm (14.7 × 16.6 mm).

DISTRIBUTION. E Australia (Queensland, New South Wales). 3 spp.

Papuolus Schileyko, gen. nov.
Fig. 2075

ETYMOLOGY. The name is a combination of words "Papua" and "Coliolus". Gender: Masculine.

TYPE SPECIES — "*Coliolus*" *canefrianus* E. Smith, 1895.

Shell depressed pagodiform, moderately thin, somewhat translucent, dull (shining on base), of 7-8 flattened whorls. Last whorl strongly, abruptly descending in front. Color light-brown. Embryonic whorls smooth. Postapical whorls with alternating stronger (major) and weaker radial riblets; stronger bear in their lower part (just above suture) membranous periostracal leaflets similar to oak leaves; leaflets continue on major riblets where they become triangular. Same triangular processes, but somewhat smaller, present on shell periphery; on base sculpture weaker, smoothed. Aperture kidney-like, entire, strongly oblique, with shortly reflexed, a little thickened margins. Upper part of palatal margin protruded ahead and downward. Umbilicus rather nar-

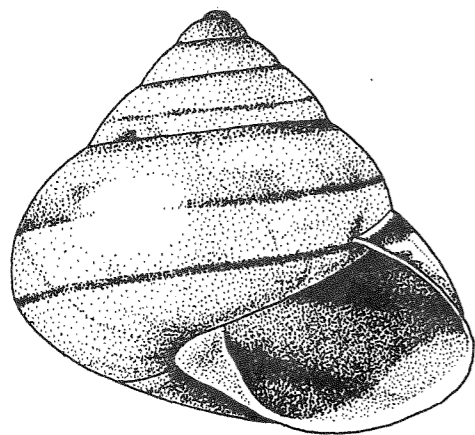


Fig. 2074. *Posorites fucata* (L. Pfeiffer, 1853). "Wide Bay, Diemensland". Zurich No. 510467.

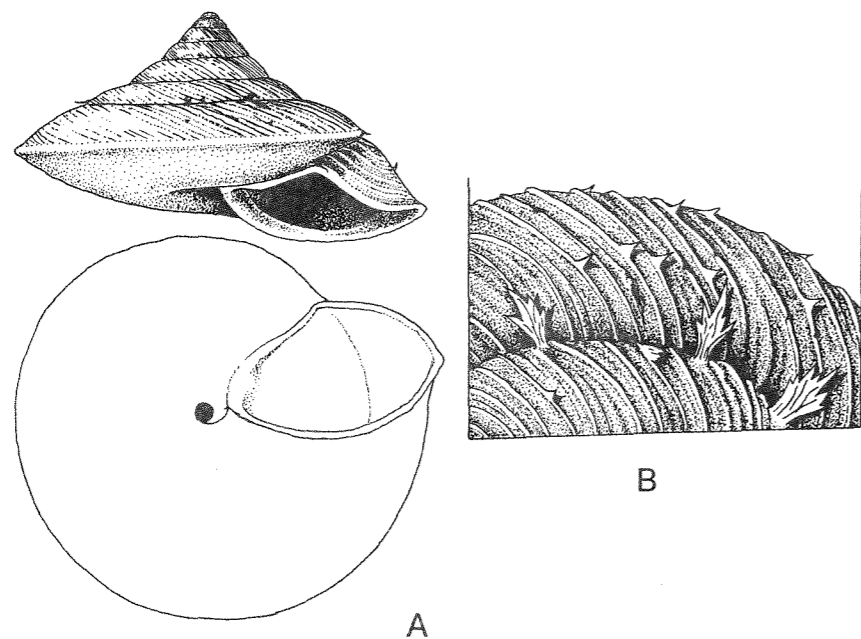


Fig. 2075. *Papuolus canefrianus* (E. Smith, 1895). "Dutch New Guinea" [Irian Jaya]. A — shell. B — fragment of two last whorls to show periostracal leaflets. Cambridge No. 191378.

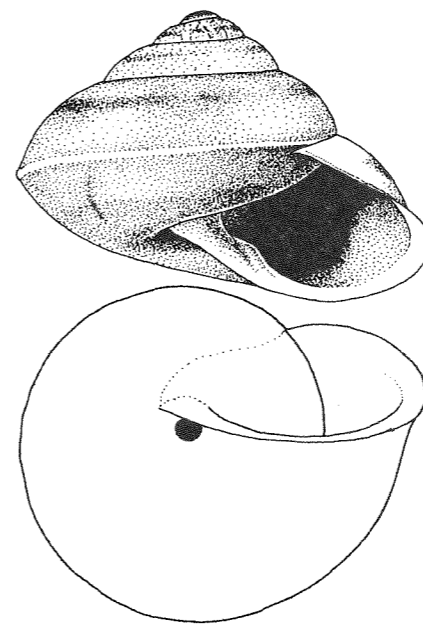


Fig. 2076. *Smeatonia eddystonensis* (Reeve, 1854). Solomon Islands. Vienna No. E 60476.

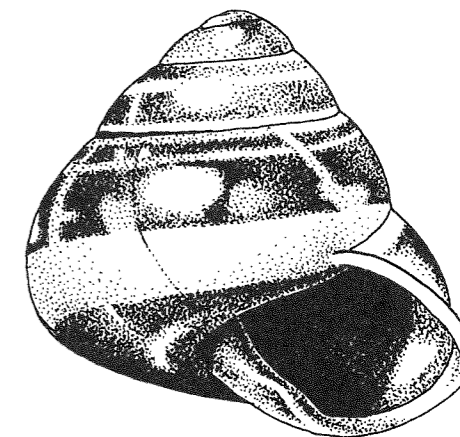


Fig. 2077. ! *Solmopina ambrosia* (Angas, 1868). "Solomon Ids." Chicago No. 301.

row but open and perspective. Height 9-10, diam. 17-18 mm (9.6 × 17.2 mm).

DISTRIBUTION. W New Guinea (Irian Jaya). 1 sp.

REMARK. This genus is probably related to *Coliolus* Tapparone-Canefri, 1887 and shares with *Coliolus* the concave outlines of spire and free aperture. Differs from it mainly by much more depressed shape, by smooth embryonic whorls lacking spiral sculpture, and by the presence of periostracal leaf-like processes.

Smeatonia Iredale, 1941
Fig. 2076

Iredale, 1941: 84.

TYPE SPECIES — *Helix eddystonensis* Reeve, 1854; OD.

Shell (depressedly) trochoid, moderately solid but slightly translucent, of 4.5-5 somewhat convex whorls. Last whorl nearly straight, with angle or cord-like peripheral keel. Color variable, usually bright, often with 2 or more variously developed dark bands above and below periphery. Embryonic whorls microscopically granulose. Sub-

sequent whorls with fine forward-descending wrinkles and coarse obliquely-spiral striation; on base this striation becomes spiral. Aperture ovate, moderately oblique, usually angled, margins expanded, basal margin reflexed. Columellar margin often with callous fold or obtuse tubercle. Umbilicus narrow, semicovered. Height 12-17, diam. 20-23 mm (15.2 × 20.8 mm).

DISTRIBUTION. Solomon Islands. About 10 spp. & forms.

Solmopina Iredale, 1941
Fig. 2077

Iredale, 1941: 84.

TYPE SPECIES — *Helix boivini* Petit, 1841; OD.

Shell broadly conic, thin to moderately solid, shining, of 4-5 slightly convex whorls. Last whorl rounded, slightly and gradually descending. Coloration consists of light background and several variously developed dark-grey to chestnut or reddish bands. Embryonic and subsequent whorls lack regular sculpture. Aperture broadly ovate to rounded-quadrangular, with more or less re-

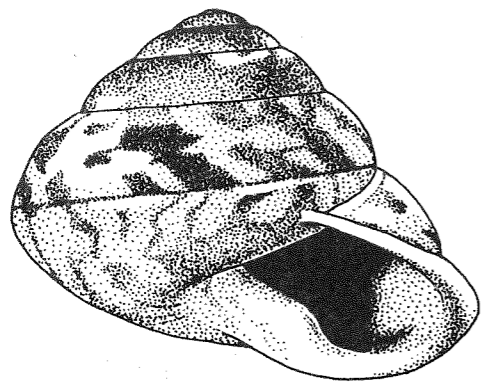


Fig. 2078. *Forcartia buehleri* (Rensch, 1933).
Lorengau, Manus Island, Admiralty Islands.
Phil. No. 391864.

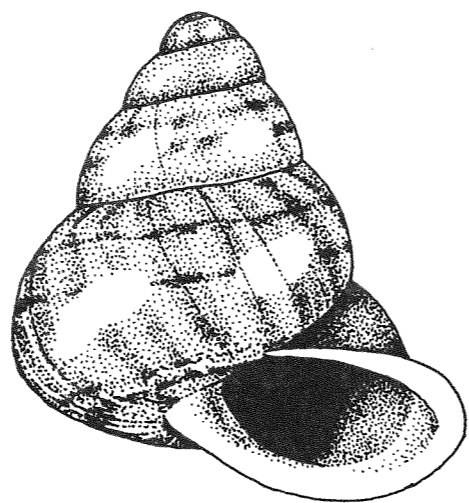


Fig. 2079. ! *Canefriula lacteolata japonensis*
(Bentham-Jutting, 1965).
New Guinea. Leiden.

flexed margins; columellar margin usually expanded, with local thickening. Umbilicus closed. Height 16-24, diam. 16-24 mm (20.0 × 20.0 mm).

DISTRIBUTION. Solomon Islands. About 15 spp.

Forcartia Clench et Turner, 1962
Fig. 2078

Clench & Turner, 1962: 19.

TYPE SPECIES — *Papuina buehleri* Rensch, 1933; OD.

Shell conic-subglobose, rather solid, shining, of 4-5 moderately convex whorls. Last whorl evenly rounded at periphery, markedly but not abruptly deflected. Color creamy or yellow, with flush of pink at umbilical area or light yellowish-brown with narrow peripheral band of dark mahogany-brown; besides, sometimes surface flecked with zigzag markings. Embryonic whorls smooth. Subsequent whorls with exceedingly fine radial wrinkles and very delicate spiral lines. Aperture ovate, well oblique, with reflexed, slightly thickened margins. Columellar margin widened, sometimes with small, smoothed, tooth-like process.

Umbilicus closed. Height 20-32, diam. 28.5-35.0 mm (32.0 × 35.0 mm).

DISTRIBUTION. Admiralty (Manus Island) and Bismarck (New Britain Island) Archipelagoes. 2 spp.

Canefriula Iredale, 1941
Fig. 2079

Iredale, 1941: 74.

— *Paulodorra* Iredale, 1941: 74 (*Canefriula* subg.; t.-sp. *Helix taumantias* Tapparone-Canefri, 1883; OD).

— *Medistoma* Iredale, 1941: 74 [*Canefriula* subg.; t.-sp. *Helix (Geotrochus) sicula* Brazier, 1876; OD].

— *Mediostoma* Richardson, 1985: 324 (nom. err. pro *Medistoma*).

TYPE SPECIES — *Helix tomasinelliana* Tapparone-Canefri, 1883; OD.

Shell depressedly globose to high-conic, solid, shining, of 4.5-6 moderately convex whorls. Last whorl evenly rounded, gradually descending. Coloration consists of whitish to ochraceous background and pattern of 2-6 variously developed, rather narrow darker bands and paler, more or less diffuse, radial streaks. Embryonic whorls smooth.

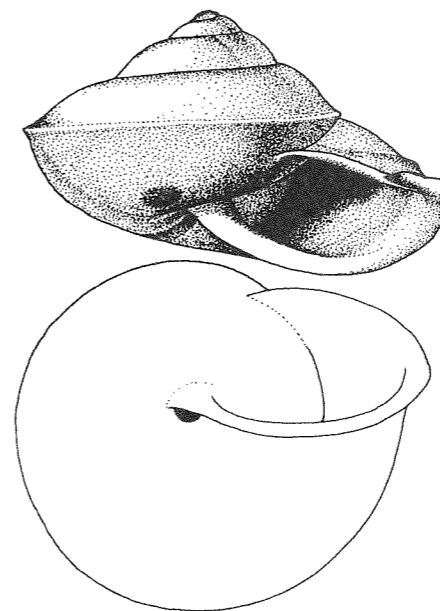


Fig. 2080. *Cymotropis antrorsus* (L. Pfeiffer, 1855).
Admiralty Islands. Lectotype. London No. 1995077.

Postapical sculpture of radial wrinkles, sometimes strongly pronounced. Aperture ovate, broader than high, with widely reflexed margins; columellar margin expanded, conceals very narrow umbilicus. Height 25-32, diam. 30-44 mm (30.0 × 35.2 mm).

DISTRIBUTION. Papua New Guinea. About 30 spp. & forms.

Cymotropis Martens, 1860
Fig. 2080

Martens in Albers, 1860: 169 (*Helix* subg.).

TYPE SPECIES — *Helix vitrea* Martens, 1860 (non Férussac, 1821; = *Helix antrorsa* L. Pfeiffer, 1855); monotypy.

Shell depressedly conic, rather solid but somewhat translucent, of 4.5-5.5 slightly to moderately convex whorls. Body whorl with sharp peripheral keel or angle, abruptly descending in front. Spire conic. Color white to pale corneous. Embryonic whorls smooth. 1st postnuclear whorl with well spaced spiral lines; later whorls with oblique, slightly wavy wrinkles running from suture to peripheral keel; around umbilicus wavy wrinkles become spiral. Aper-

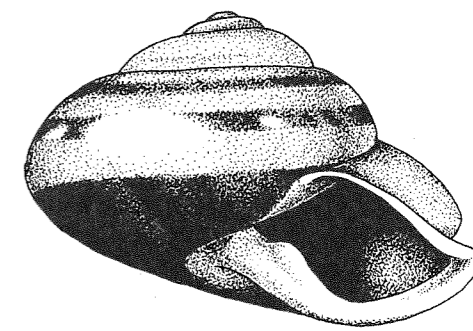


Fig. 2081. *Municeps redempta* (Cox, 1873).
"Solomon Is.". Phil. No. 45604.

ture ovate, broader than high, quite oblique, with not thickened, reflexed and expanded margins. Umbilicus narrow, partly covered. Height 8-16, diam. 12-25 mm (14.2 × 22.5 mm).

DISTRIBUTION. Admiralty and Solomon Islands. At least 10 spp.

Municeps Iredale, 1941
Fig. 2081

Iredale, 1941: 85.

TYPE SPECIES — *Helix redempta* Cox, 1873; OD.

Shell depressed-turbinate, solid, shining, of 4.5-5 slightly to rather convex whorls. Last whorl keeled or angulated, shortly descending in front. Spire bluntly conic. Ground color white, variously decorated with scattered dark-chestnut spots, or with 2 or more regular broad bands; apex and aperture margins mostly pink. Embryonic whorls smooth. Subsequent whorls obliquely finely striated; last 2 whorls often with elements of malleate sculpture. Aperture irregularly ovate to quadrilateral, beaked at palatal side; margins narrowly reflexed; columellar margin broadly dilated,

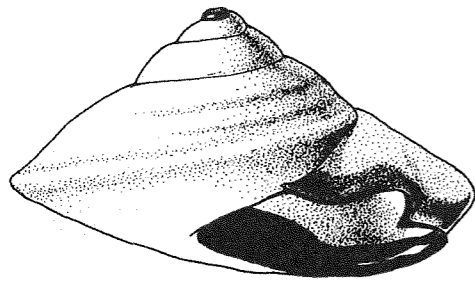


Fig. 2082. *Pompalabia naso* (Martens, 1883).
New Guinea. Cardiff.

often with smoothed crest. Umbilicus closed. Height 14-22, diam. 18-30 mm (19.6 × 28.7 mm).

DISTRIBUTION. Solomon Islands. About 10 spp.

Pompalabia Iredale, 1941
Fig. 2082

Iredale, 1941: 80 (pro gen.). Clench & Turner, 1966: 81.

TYPE SPECIES — *Helix naso* Martens, 1883; OD.

Shell turritate, quite solid, of about 5 flattened whorls. Last whorl abruptly and strongly descending, with sharp angle or keel at periphery. Outline of spire straight or concave. Color variable, banded, mottled or uniform; aperture margins brownish-black. Embryonic whorls smooth. Postapical sculpture of fine, wavy, incised radial lines and/or with fine spiral striation. Aperture of irregular shape, subhorizontal, with widely reflexed margins; papuoid notch well developed. Parietal callus mostly thick. Umbilicus closed. Height 17.0-21.5, diam. 22.5-35.0 mm (21.2 × 33.7 mm).

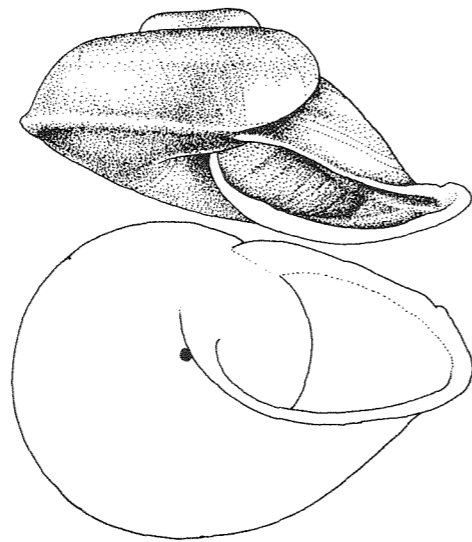


Fig. 2083. *Pseudopapuina scheepmakeri* (L. Pfeiffer, 1851).
Batyian Island, Moluccas. Paris.

DISTRIBUTION. Papua New Guinea. 3-4 spp.

Pseudopapuina Haas, 1934
Fig. 2083

Haas, 1934: 202 (*Planispira* subg.).

— *Phrenogibba* Iredale, 1941: 91 (t.-sp. *Helix scheepmakeri* L. Pfeiffer, 1851; OD).

TYPE SPECIES — *Planispira* (*Pseudopapuina*) *peculiaris* Haas, 1934 (= *Helix scheepmakeri* L. Pfeiffer, 1851); OD.

Shell trochoid, thin, translucent, of about 4 flattened to convex whorls. Last whorl with a sharp peripheral keel, scarcely descending in front. Color pinkish-white, monochromatic or with 1-3 variously developed brown bands. Embryonic whorls smooth. Later whorls with obsolete radial wrinklets and engraved spiral lines. Aperture pointed-ovate, very oblique, peristome insertions somewhat approached; margins reflexed. Umbilicus very narrow. Height 12-15, diam. 23-27 mm (12.2 × 23.3 mm).

DISTRIBUTION. Moluccas, western Sulawesi. 5-7 spp.

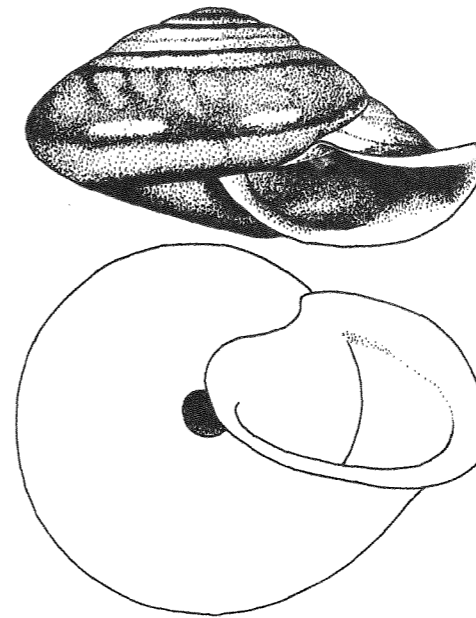


Fig. 2084. *Minacispira loxotropis* (L. Pfeiffer, 1850).
"Indonesien, Molukken, Halmahera". Zurich No. 510225.

Minacispira Iredale, 1941
Fig. 2084

Iredale, 1941: 91.

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

Shell more or less depressed, turritoid, moderately solid, shining, a little translucent. Last whorl well descending, roundly angulated at periphery. Basic coloration: apical part grayish, on 2 last whorls there is a white subsutural band, then a reddish band comes, rest surface reddish-brown; base with 1 white and 1 reddish-brown bands; umbilicus encircled by a white zone. Embryonic whorls smooth. Postapical whorl with very delicate, irregular, radial wrinkles and microscopic, vague granulation. Aperture rounded, very oblique (subhorizontal), with thin, reflexed, expanded margins. Parietal callus thin but well developed. Umbilicus moderately narrow, partly covered. Height 11-14, diam. 19-26 mm (12.8 × 24.4 mm).

DISTRIBUTION. Indonesia (Halmahera Island). 2-3 spp.

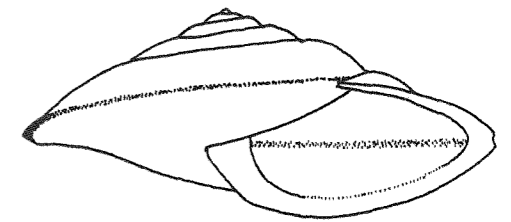


Fig. 2085. *Claudettea bevani* (Hedley, 1892).
After Hedley, 1892b.

Claudettea Iredale, 1941
Fig. 2085

Iredale, 1941: 76.

— ? *Claudena* Iredale, 1941: 76 (*Claudettea* subg.; t.-sp. *Geotrochus elisus* Hedley, 1891; OD).

TYPE SPECIES — *Helix bevani* Hedley, 1892; OD.

Shell lens-shaped, moderately thin, of about 5 rather convex whorls. Last whorl straight, with a sharp peripheral keel. Spire short, conic. Color pale brown, aperture margins dull red. Postembryonic whorls finely radially striated. Aperture broadly ovate, somewhat oblique, with thin, reflexed margins. Umbilicus narrowly open. Height 10-18, diam. 29-45 mm.

DISTRIBUTION. Papua New Guinea. 2-3 spp.

? *Necvidena* Iredale, 1941
Fig. 2086

Iredale, 1941: 72 (in Geotrochidae).

TYPE SPECIES — *Necvidena froggatti* Iredale, 1941; OD.

Shell depressedly conic, thin, translu-

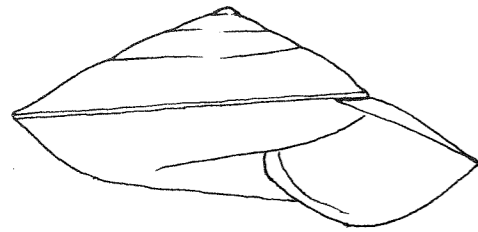


Fig. 2086. *Necvidena froggatti* Iredale, 1941.
After Iredale, 1941.

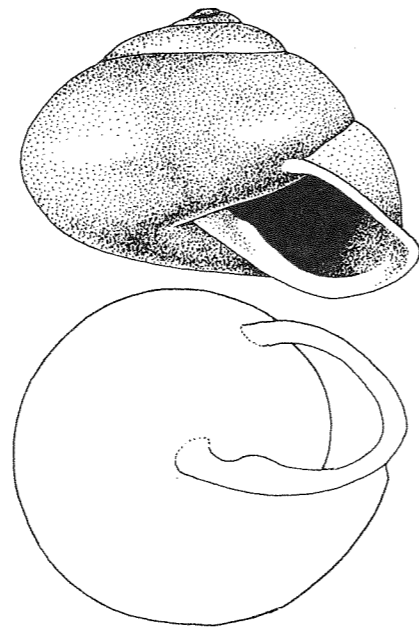


Fig. 2087. *Solmotella fringilla* (L. Pfeiffer, 1855).
Solomon Islands. Vienna.

cent, of about 5 a little convex whorls. Last whorl straight, with sharp peripheral keel. Base rounded. Postapical sculpture of very fine radial ridgelets and fine spiral striae. Aperture subquadrangular, with thin, straight margins; columellar margin thin, vertical. Umbilicus narrow, deep. Height 7, diam. 13 mm.

DISTRIBUTION. Papua New Guinea. 1 spp.

REMARK. Taxonomic position of *Necvidena* unclear. Perhaps, it is a member of Ariophantidae s. lat.

Solmotella Iredale, 1941
Fig. 2087

Iredale, 1941: 85.

— *Merope* Albers in Martens, 1860: 158 [nom. praeocc., non Newman, 1838; *Helix* subg.; t.-sp. *Helix fringilla* L. Pfeiffer, 1855; SD Pilsbry, 1894 (1893-1895)].

TYPE SPECIES — *Helix fringilla* L. Pfeiffer, 1855; OD.

Shell depressed-globose, (moderately) solid, glossy, of 4-4.5 slightly convex whorls. Last whorl subangulated at periphery, abruptly deflected in front, strongly con-

stricted behind aperture. Spire dome-shaped or convexly low-conic; apex obtuse. Color olive-yellow to pinkish, either uniform or having brown spiral bands; sometimes with brown circumumbilical zone; aperture margins white or bright pink. Embryonic whorls glabrous. Postnuclear whorls almost smooth, shining, lightly radially striatulate. Aperture roundly-subquadrangular, oblique, margins thickened, narrowly reflexed. Columellar margin straight, sloping, with more or less distinct fold-like callus or blunt tooth on its inner margin, near its insertion. Umbilicus closed. Height 15-18, diam. 21-24 mm (15.3 × 21.3 mm).

DISTRIBUTION. Solomon and Admiralty Islands; ? Hawaii (Hawaii Island) — see Pilsbry, 1891: 75 (the letter of Barnacle to E. Smith). Probably 2 spp.

Solmopesta Iredale, 1941
Fig. 2088

Iredale, 1941: 84.

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

Shell high-conic, turbinate, moderately

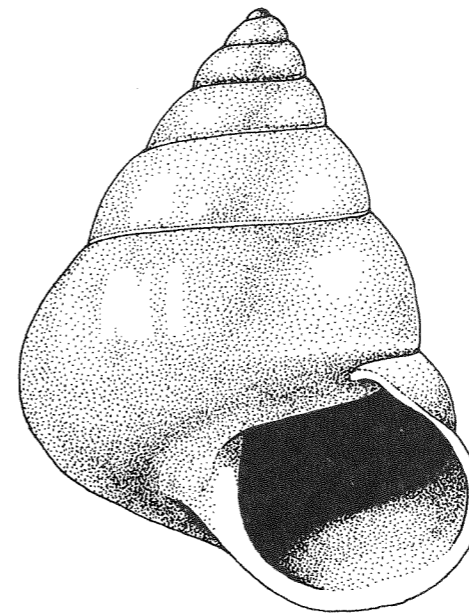


Fig. 2088. *Solmopesta meta* (L. Pfeiffer, 1857).
Bougainville, Solomon Ids. Vienna No. E 60481.

solid, somewhat translucent, of about 6 rather convex whorls. Last whorl rounded, scarcely deflected. Color ochraceous or pinkish-corneous, sometimes with light subsutural band. Embryonic whorls smooth, later nearly so; on last whorl in places there are extremely thin spiral striae. Aperture irregularly rounded, very oblique, with thin, reflexed margins. Umbilicus nearly completely closed. Height 25-28, diam. 18-21 mm (26.8 × 19.5 mm).

DISTRIBUTION. Solomon Islands. About 10 spp.

Solmogada Iredale, 1941
Fig. 2089

Iredale, 1941: 84.

Type-species — *Helix flexilabris* L. Pfeiffer, 1856; OD.

Shell high-conic, rather thin but firm, somewhat translucent, shining, of 5.5-6 rather convex whorls. Last whorl rounded, well deflected. Color white or yellow, with supra- and subperipheral chestnut bands. Embryonic whorls smooth. Later whorls with exceptionally fine reticulate sculpture arising because of crossing of obliquely-ra-

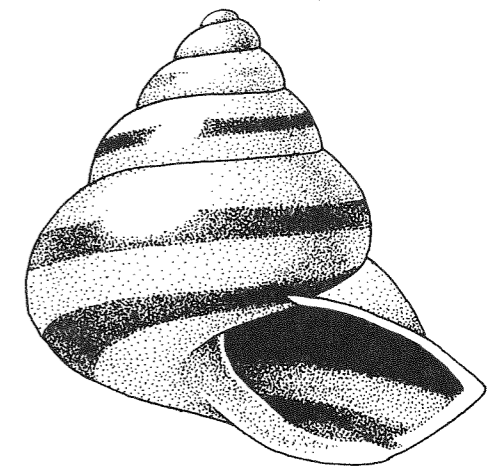


Fig. 2089. *Solmogada flexilabris* (L. Pfeiffer, 1856).
New Ireland, Papua New Guinea. Moscow No. Lc-25601 (Cardiff).

dial ridgelets running from right to left and from left to right. Aperture ovate, a little rostrate, very oblique, with thin, broadly reflexed margins. Umbilicus closed. Height 22-26, diam. 22-29 mm (24.1 × 24.5 mm).

DISTRIBUTION. Papua New Guinea. 6-8 spp.

Noctepuna Iredale, 1933
Fig. 2090

Iredale, 1933: 41. B. Smith, 1992: 138.

Type-species — *Helix poiretiana* Reeve, 1852; OD.

Shell high-conic, moderately thin, of 7 flatly convex whorls. Last whorl obtusely angled at periphery, scarcely deflected. Color whitish, faintly tinged with light-brown, with interrupted, brown peripheral band. Aperture rather small, squarish, with simple, a little thickened within margins; columellar margin broadly reflexed, dilated. Peristome insertions rather approached. Umbilicus very narrow. Height 23-30, diam. 18-27 mm.

DISTRIBUTION. NE Australia (N Queensland). 5 spp. & subspp.

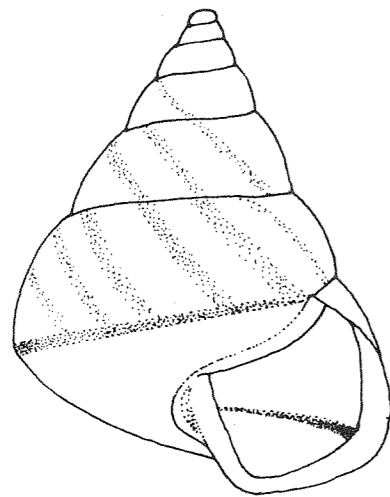


Fig. 2090. *Noctepuna poiretiana* (Reeve, 1852).
After Reeve, 1852 (1851-1854).

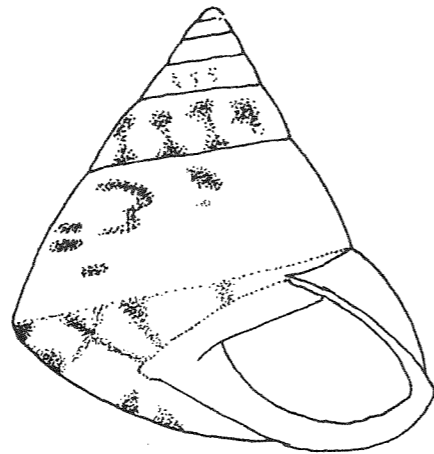


Fig. 2091. *Papuexul bidwilli* (Reeve, 1853).
After Reeve, 1853 (1851-1854).

Papuexul Iredale, 1933
Fig. 2091

Iredale, 1933: 41 (*Rhynchotrochus* subg.). B.
Smith, 1992: 140.

TYPE SPECIES — *Helix bidwilli* Reeve,
1853; OD.

Shell pyramidally conic, solid, of 6 much
flattened whorls. Last whorl sharply angled,
almost straight. Color white, spotted with
light burnt-brown, darker-spotted at base;
peristome and interior of aperture very dark
black-brown. Regular sculpture absent. Ap-
erture ovate, very oblique, with thin, shortly
reflexed margins. Parietal callus thick, la-
mellar. Umbilicus closed. Height 20, diam.
18 mm.

DISTRIBUTION. E Australia (Queens-
land). 1 sp.

Tepomusa Iredale, 1941
Fig. 2092

Iredale, 1941: 82.

— *Solmodora* Iredale, 1941: 84 (t.-sp. *Helix mendoza*
Brazier, 1872; OD).

— *Tepomesa* Richardson, 1985: 345, 473 (nom.
err. pro *Tepomusa* Iredale, 1941).

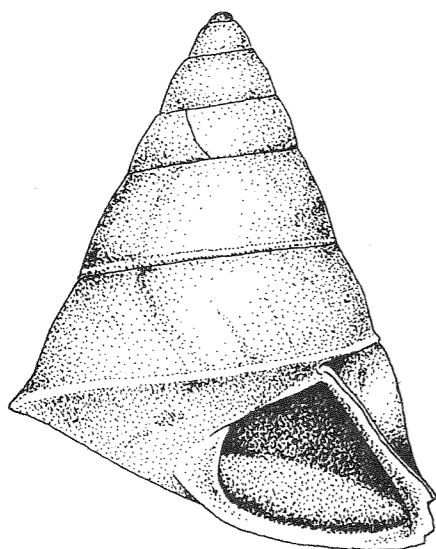


Fig. 2092. ! *Tepomusa mendoza* (Brazier, 1872).
Choiseul Island, Wurulata River, Solomon
Islands. Museum of Comparative Zoology,
Cambridge, Massachusetts No.
181226.

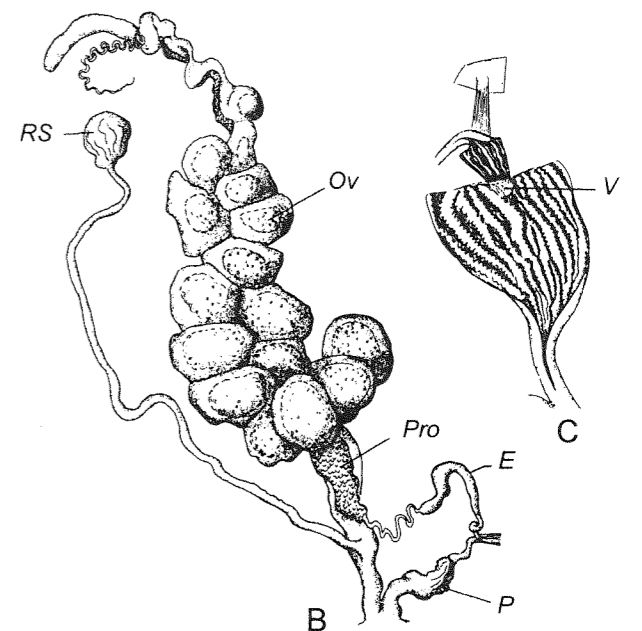
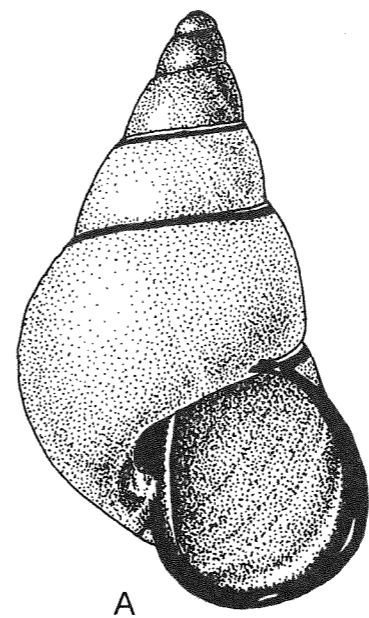


Fig. 2093. *Papustyla hindei* (Cox, 1888).

A — shell: Morobe, New Guinea. Phil. No. 391908. B — reproductive tract. C — interior
of penis. After Clench & Turner, 1962.

TYPE SPECIES — *Helix canovarii* Tap-
parone-Canefri, 1883; OD.

Shell high-conic, elevated-trochiform,
moderately thin, of 6-7 slightly convex
whorls; base a little convex. Last whorl
rather acutely carinated below its middle.
Color pale-corneous, darker toward apex.
Apical whorls smooth, polished. Later
whorls very closely and minutely radially
striated; basal surface with very delicate ra-
dial striation. Aperture ovate-subrhomboid-
al, oblique; margins a little thickened, re-
flexed. Basal margin nearly straight, palatal
subangular in middle; columellar margin di-
lated, almost closing umbilicus. Height 20-
25, diam. 18-20 mm (24.1 × 19.4 mm).

DISTRIBUTION. Papua New Guinea,
Solomon Islands. 3-4 spp.

Papustyla Pilsbry, 1893
Fig. 2093

Pilsbry, 1893 (1892-1893): 243.

— ? *Hombrocula* Iredale, 1941: 84 [t.-sp. *Helix*
(*Geotrochus*) *horderi* Sowerby, 1889; OD].
Clench & Turner, 1962: 7.

TYPE SPECIES — *Cochlostyla hindei* Cox,
1888; SD I. Rensch, 1934.

Shell high-conic, attenuate, rather thin,
glossy, of 6-7 flattened to somewhat convex
whorls. Last whorls rounded or more or less
angled below middle line. Color generally
uniformly white, brown or emerald-green
with or without darker band; aperture mar-
gins white, brown or yellow. Embryonic
whorls smooth. Later whorls weakly sculp-
tured with radial wrinkles and, in places,
with fine, spiral, engraved lines. Aperture
slightly to well oblique, margins thin, usu-
ally broadly reflexed; columellar margin
sometimes with tooth-like thickening. Um-
bilicus narrow or closed. Height 30.0-48.0,
diam. 22.0-35.5 mm (32.1 × 20.1 mm).

Vas deferens slender, entering epiphallus
terminally. Epiphallus very short to long.
Penis rather small, internally with a fleshy
verge of various length and longitudinal,
corrugated pilasters. Penial retractor at-
tached to epiphallus at insertion of vas de-
ferens. Free oviduct and vagina short. Sper-
mathecal shaft long, evenly slender or swol-
len at base; reservoir reaching basal edge of
albumen gland or somewhat shorter.

DISTRIBUTION. Papua New Guinea, Ad-
miralty Archipelago (Manus Island), Bis-
marcks (New Britain Island) and Solomons

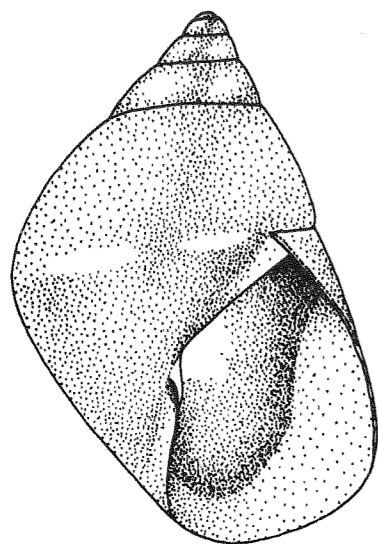


Fig. 2094. *Calycia crystallina* (Reeve, 1842).
Waigeo Island [Irian Jaya]. Leiden.

(Bougainville and Choiseul Islands). 9-10
spp. & subsp.

? *Calycia* H. Adams, 1865
Fig. 2094

Adams H. in Wallace, 1865: 412.

TYPE SPECIES — *Bulimus crystallinus*
Reeve, 1842; OD.

Shell bulimoid, thin, fragile, translucent,
of 5-5.5 much flattened whorls. Last whorl
inflated, straight, with rounded peripheral
angle. Color uniformly white to yellowish.
Embryonic whorls practically smooth.
Postapical sculpture of spiral lines, that
more distinct on basal part. Aperture irregularly
trapezoid-ovate, moderately oblique,
with thin, straight margins. Umbilicus (al-
most) closed. Height 40-50, diam. 28-33
mm (48.0 × 31.2 mm).

DISTRIBUTION. New Guinea and nearby
islands. 3 spp.

REMARK. Taxonomic position of this very
peculiar genus is arbitrary. Iredale (1941) as-
signed this genus to the family Calyciidae Ire-
dale, 1941; perhaps, he was right, however
final decision must be postponed until anat-
omy of type species is studied properly.

? *Coliolus* Tapparone-Canefri, 1887
Fig. 2095

Tapparone-Canefri, 1887: 131.

TYPE SPECIES — *Coliolus arfakiensis* Tap-
parone-Canefri, 1887; monotypy.

Shell high-pagodiform to turbinate,
moderately thin, of 7-10 flattened whorls.
Last whorl angulated, slightly descending in
front. Color light-corneous to brown. Em-
bryonic whorls with spiral striation which
sometimes may be extremely fine. Sculpture
of subsequent whorls of rather sharp, irregu-
lar, radial wrinkles; on peripheral keel and
just above suture short periostracal pro-
cesses may be present; besides, very oblique
wrinklets sometimes present above suture.
Aperture well oblique, rhomboid to subcir-
cular, with somewhat thickened margins.
Umbilicus narrowly open, cylindrical.
Height 9.0-11.5, diam. 6.5-8.7 mm (*arfakiensis*:
9.6 × 17.2 mm; *weiskei*: 9.2 × 6.8).

DISTRIBUTION. New Guinea. 4-5 spp.

REMARK. Taxonomical position and vol-
ume of this genus is unclear. Zilch (1960)
places it in Camaenidae as a subgenus of
Ganesella; however spiral striation of embry-
onic whorls is more characteristic for some
endodontoid or ariophantoid groups.

Crystallopsis Ancey, 1887
Fig. 2096

Ancey, 1887: 23.

TYPE SPECIES — *Helix hunteri* Cox, 1872;
SD Pilsbry, 1895 (1893-1895).

Shell subglobose, rather thin, translu-
cent, of 3.5-4.5 moderately convex whorls.
Last whorl inflated, (nearly) straight, with
cord-like keel at periphery. Color uniformly
white, yellowish or pinkish. Embryonic
whorls smooth. Later whorls with very
weak, irregular radial ridgelets and variously
developed spiral grooves. Aperture ample,
broadly ovate, well oblique, with thin mar-
gins; columellar margin strongly, widely re-
flexed and expanded. Umbilicus round, very
narrow, semicovered or closed. Height 14-
36, diam. 20-42 mm (19.8 × 24.8 mm).

Jaw nearly smooth to finely ribbed.

Vas deferens moderately long, slender,
entering short epiphallus laterally. Flagel-
lum rather short, tapering. Penis more or
less fusiform. Penial retractor inserts on ba-
sal part of epiphallus. Free oviduct rather
short, vagina markedly longer. Spermathe-

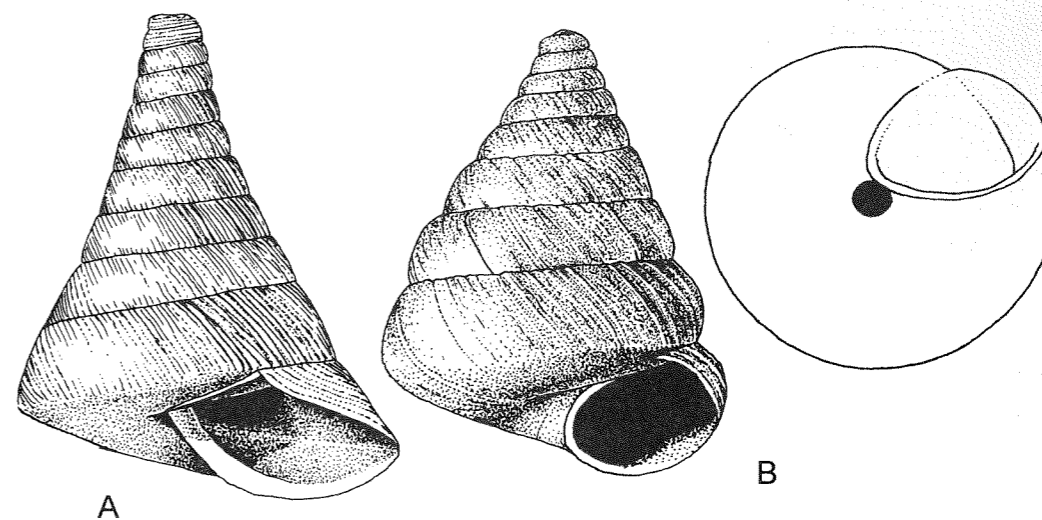


Fig. 2095. A — *Coliolus arfakiensis* Tapparone-Canefri, 1887.
Hatam, Arfak Mt., New Guinea. Holotype. Museo Civico di Storia Naturale, Genova.
B — ! "*Coliolus*" *weiskei* (Fulton, 1902). "Kamp Welsh Fl., Brit. New Guinea". Vienna
No. 45135.

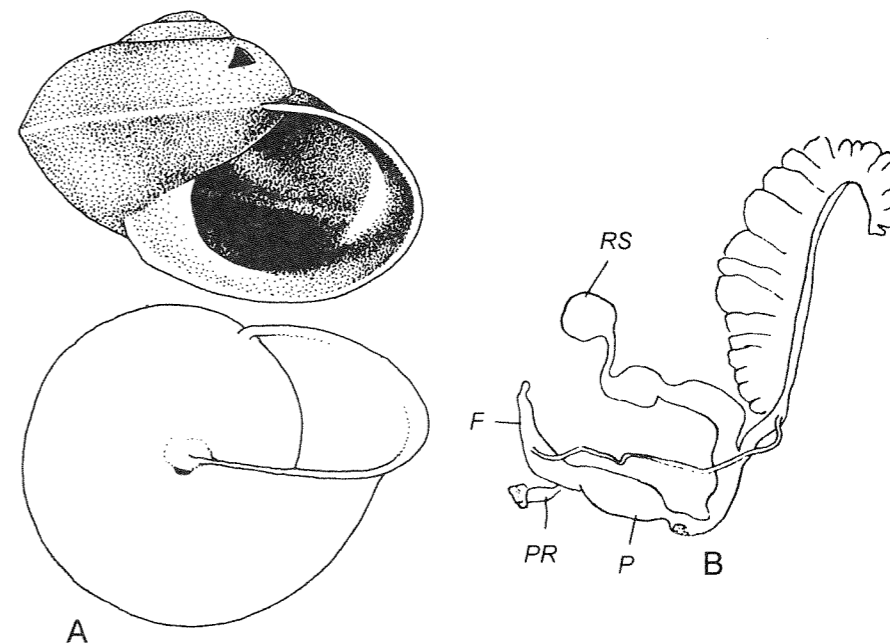


Fig. 2096. A — *Crystallopsis hunteri* (Cox, 1872).
Shell: "Solomon Ids.". Phil. No. 31585. B — ! *Crystallopsis fulakorensis* Clapp, 1923.
Reproductive tract. After Clapp, 1923.

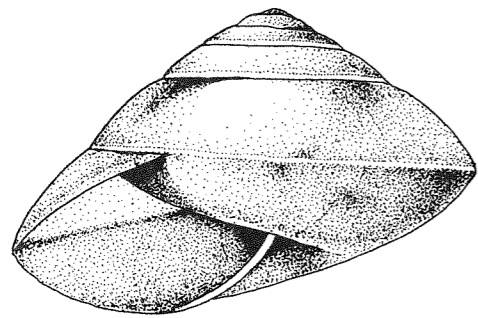


Fig. 2097. *Ariophantopsis pseudamphidromus* B. Rensch, 1930. "Batoe Doelang, Sumbawa, 800-1200 m". "Type". Berlin No. 75158.

cal stalk somewhat swollen basally; globular reservoir not reaching albumen gland.
DISTRIBUTION. Solomons to Moluccas. About 25 spp.

Ariophantopsis B. Rensch, 1930
Fig. 2097

Rensch B., 1930: 181.

TYPE SPECIES — *Ariophantopsis pseudamphidromus* B. Rensch, 1930; OD.

Shell sinistral, depressed-conic, thin, glossy, somewhat translucent, of about 5 much flattened whorls. Last whorl straight, with distinct peripheral angle. Color yellow or whitish, sometimes with narrow, reddish-brown band that occupies about 0.5 last whorl and seen through aperture. Embryonic whorls vaguely, microscopically malleated (looking smooth). Postapical whorls very finely granulated, especially on base, and with smoothed, very weak, irregular radial ridgelets. Aperture ovate-angulate, well oblique, with simple, sharp, straight margins. Umbilicus tiny or closed. Height 9.7, diam. 15.3 mm.

DISTRIBUTION. Indonesia (W Sumbawa Island). 1 or 2 spp.

CRISTOVALINAE
Schileyko, subfam. nov.

Type genus — *Cristovala* Clench, 1958.

Shell obesely lentiform, very thin, much translucent, shining, of a few whorls. Last whorl not deflected, with peripheral angle. Color white, with uneven, fulvous, radial streaks and diaphanous zones; peristome brown to blackish. Embryonic whorls with weak spiral striae. On later whorls spiral grooves quite distinct plus there are fine, irregular radial ridgelets. Aperture angulate, with flattened upper palatal margin; below angle margins shortly reflexed. Umbilicus closed.

Vas deferens not pierces penis sheath, long, entering epiphallus subapically. Flagellum absent. Epiphallus globular, thick-walled, with central pore, connected with penis by very thin, semitransparent membrane. Penis rather short, internally with few axial pilasters; verge missing. Penis sheath absent. Penial retractor inserts on epiphallus apically. Free oviduct short. Vagina rather long. Spermathecal stalk long, slender; reservoir reaching base of albumen gland.

DISTRIBUTION. Solomon Islands.

REMARK. The most peculiar, diagnostic character of Cristovalinae is the unique structure of epiphallus which represents a globular, thick-walled organ connected with penis by a very thin, semitransparent membrane.

Cristovala Clench, 1958
Fig. 2098

Clench, 1958: 188 (*Crystalloopsis* subg.).

TYPE SPECIES — *Helix tricolor* L. Pfeiffer, 1849; OD.

Shell composed by 3.5-4 flattened whorls. Other characters as in subfamily. Height 14.5-21.0, diam. 22-32 mm (15.0 × 23.5 mm).

Talon buried. Central pore of epiphallus situated on tip of a small, nipple-like tubercle surrounded by a shallow circular groove from which several shallow furrow radiate.

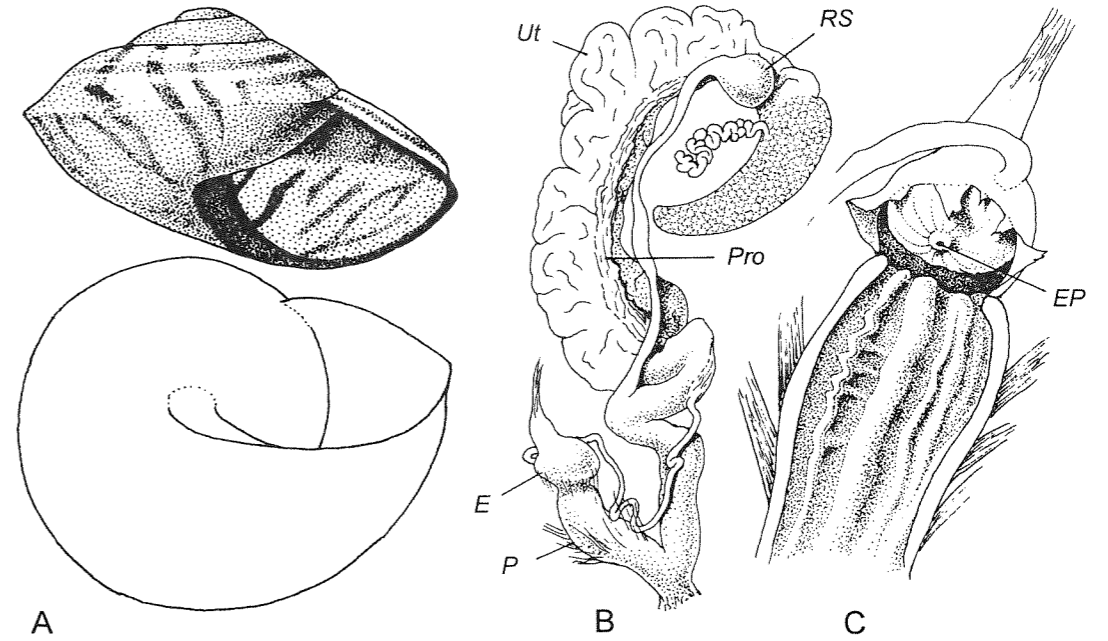


Fig. 2098. *Cristovala tricolor* (L. Pfeiffer, 1849). Bio Island, Solomons, December 22, 1976. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-16393 (shell), Lc-23996 (soft parts).

Penis supplied with many external thin muscle bundles. Other characters as in family.

DISTRIBUTION. Solomon Islands. 2-3 spp.

References

- Agassiz L., 1846. *Nomenclatoris Zoologici, Index Universalis, continens nomina systematica classium, ordinum, familiarum et generum animalium omnium, tam viventium quam fossilium*. Soloduri. 393 pp.
- Albers J.C., 1850. *Die Heliceen, nach natürlicher Verwandtschaft systematisch geordnet*. Berlin. 262 S.
- Albers J.C., 1860. *Die Heliceen nach natürlicher Verwandtschaft systematisch geordnet. Zweite Ausgabe, nach dem hinterlassenen Manuskript besorgt von Eduard von Martens*. Leipzig. 359 S.
- Alonso R., Valido M.J., Groh K., Ibáñez M., 2000. *Plutonia* (*Canarivitrina*), new subgenus, from the Canary Islands, and the phylogenetic relationships of the subfamily Plutoniinae (Gastropoda: Limacoidea: Vitrinidae). *Malacologia*, vol. 42 (1-2): 39-62.
- Ancey C.F., 1887. Description of new genera or subgenera of Helicidae. *Conch. Exch.*, vol. 1: 53-54, 64, 75-76; vol. 2: 22-23, 38-39.
- Ancey C.F., 1907. Observations sur les mollusques gastéropodes sénestres de l'époque actuelle. *Bull. Sci. France et Belgique*, vol. 40: 187-205.
- Angas G.F., 1864. On the land-shells of South Australia. *Proc. Zool. Soc. London*, 1863: 519-523.
- Azuma M., 1982. *Colored illustrations of the land snails of Japan*. Osaka. 333 pp. (in Japan).
- Backhuys W., 1975. *Land and fresh-water Molluscs of the Azores*. Amsterdam. 350 pp.
- Baker H.B., 1929. Nomenclature in the genus *Vitrina*. *Nautilus*, vol. 42, no. 4: 137-139.

- Beck H., 1837. *Index molluscorum praesentis aevi musei principis augustissimi Christiani Frederici*. Hafniae: 1-100.
- Bishop M.J., 1978. A revision of the genus *Thersites* Pfeiffer (Pulmonata: Camaenidae). *J. Malac. Soc. Aust.*, Bd. 4 (1-2): 9-21.
- Blanford W.T., 1863. On Indian species of land-shells belonging to the genera *Helix*, Linn., and *Nanina*, Gray. *Ann. Mag. Nat. Hist.*, ser. 3, no. 11: 80-86.
- Boettger O., 1880. Diagnoses molluscorum novorum ab ill. Hans Leder in regione caspia Talysch dicta lectorum. *Jahrb. dtsh. malak. Ges.*, Bd. 7: 379-383.
- Boettger O., 1881. Sechstes Verzeichniss transcaucasischer, armenischer und nordpersischen Mollusken. *Jahrb. dtsh. malak. Ges.*, Bd. 8: 167-261.
- Boettger O., 1883. Siebentes Verzeichniss von Mollusken der Kaukasusländer. *Jahrb. dtsh. malak. Ges.*, Bd. 10: 135-198.
- Boettger O., 1886. Abbildungen und Beschreibungen von Binnenmollusken aus dem Talysch-Gebiet im Südwesten des Caspisees (XI). *Jahrb. dtsh. malak. Ges.*, Bd. 13: 241-258.
- Bourguignat J.-R., 1861. Des limaces algériennes. *Rev. Mag. Zool.*, ser. 2, vol. 13, No. 7: 299-306.
- Bourguignat J.-R., 1880. *Description du nouveau genre Gallandia*. Saint-Germain. 8 pp.
- Brard C.P., 1815. *Histoire des coquilles terrestres et fluviatiles qui vivent aux environs de Paris*. Paris et Geneve, p. 1-23, 1-239, 1-17.
- Bülow C., 1905. Einige Seltenheiten meiner Sammlung. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 37: 78-83.
- Castillejo J., Wiktor A., 1983. *Furcopenis* gen. n. with its two new species and a new *Deroceras* species from Spain. *Malak. Abhandl. Staatl. Mus. Tierk. Dresden*, Bd. 9, no. 1: 1-16.
- Clapp W.F., 1923. Some mollusca from the Solomon Islands. *Bull. Mus. Comp. Zool. Harvard*, vol. 65, no. 11: 351-418.
- Clench W.J., 1957. Two new land and freshwater mollusks from New Guinea. *Breviora, Mus. Comp. Zool.*, no. 76: 1-4.
- Clench W.J., 1958. The land and freshwater mollusca of Rennell Island, Solomon Islands. *The Natural History of Rennell Island British Solomon Islands*, vol. 2: 155-202.
- Clench W.J., Turner R.D., 1959. Two new genera of land molluscs (Papuinae) from the Central Highlands of New Guinea. *J. Malac. Soc. Australia*, no. 3: 4-9.
- Clench W.J., Turner R.D., 1962. Monographs of the genera *Papustyla*, *Forcartia* and *Meliobba* (Papuinae: Camaenidae). *J. Malac. Soc. Australia*, no. 6: 3-33.
- Clench W.J., Turner R.D., 1964. Monographs of the genera *Megalacron* and *Rhytidoconcha* (Papuinae: Camaenidae). *J. Malac. Soc. Australia*, no. 8: 36-71.
- Clench W.J., Turner R.D., 1966. Monograph of the genus *Rhynchotrochus* (Papuinae: Camaenidae). *J. Malac. Soc. Australia*, no. 9: 59-95.
- Clench W.J., Turner R.D., 1968. Monograph of the genus *Letitia* (Papuinae: Camaenidae). *Malac. Soc. Australia*, no. 11: 32-49.
- Clessin S., 1884. *Deutsche Excursions-Mollusken-Fauna* 2. Aufl. Nürnberg. S. 1-480.
- Clessin S., 1887-1890. *Die Molluskenfauna Oesterreich-Ungarns und der Schweiz*. Nürnberg. 860 S.
- Cockerell T.D.A., 1893. A check-list of the slugs. *The Conchologist*, vol. 2, no. 8: 185-228.
- Connolly M., 1930. Descriptions of new molluscs from Central Africa, with notes on other species. *Proc. Malac. Soc. London*, vol. 19, no. 1: 37-48.
- Cotton B.C., Godfrey F.K., 1932. South Australian shells. (Including descriptions of new genera and species). Part V. *South Austral. Nat.*, vol. 13: 127-176.
- Cox J.C., 1868. *A monograph of Australian land shells*. Sydney. 111 pp.
- Draparnaud J.-P.-R., 1801. *Tableau des mollusques terrestres et fluviatiles de la France*. Paris. 116 pp.
- Ehrmann P., 1912. Die Landmolluskenfauna der Tenimber-Inseln. *SB. naturf. Ges. Leipzig*, Bd. 38 (1911): 32-71.
- Férussac J.B.L. d'Audebard de, 1801. Essai d'une methode conchyliologique appliquee aux mollusques, fluviatiles et terrestres d'après la consideration de l'animal et de son test. *Mem. Soc. med. Emul. Paris*, vol. 4: xvi+142 pp.
- Férussac J.B.L. d'Audebard de, 1819. *Histoire naturelle generale et particuliere des mollusques terrestres et fluviatiles* 2: IXVI + 1-96. Paris.
- Fitzinger L.I., 1833. Systematisches Verzeichniss der im Erzherzogthume Oesterreich vorkommenden Weichthiere, als Prodrum einer Fauna desselben. *Beitr. Landesg. Oesterr. Enns (Ver. vaterl. Gesch. Wien)*, Bd. 3: 88-122.
- Forcart L., 1946. Nachtrage zur Monographie der schweizerischen Vitrinidae (Moll., Pulm.). *Revue suisse Zool.*, vol. 53, no. 2: 33-38.
- Forcart L., 1957. *Ipsa Studeri* Conchylia. *Mitt. Naturforsch. Ges. Bern, N.F.*, 15: 157-210.
- Germain L., 1907. Liste des mollusques recueillis par M. H. Gadeau de Kerville, pendant son voyage en Khroumirie. *Bull. Mus. Hist. nat. Paris*, vol. 13, no. 2: 154-158.
- Germain L., 1912. Etudes sur la faune malacologique de l'Asie anterieure, Parmacellidae et Limacidae. I. *Bull. Deleg. en Perse*, no. 2: 1-45.
- Gistel J., 1848. *Naturgeschichte des Thierreichs für höhere Schulen bearbeitet*. Stuttgart. 216 S.
- Godwin-Austen H.H., 1914. *Land and freshwater mollusca of India, including South Arabia, Baluchistan, Afghanistan, Kashmir, Nepal, Burmah, Pegu, Tenasserim, Malay Peninsula, Ceylon, and other islands of the Indian Ocean*. London. vol.2 (XII): 311-442.
- Godwin-Austen H.H., 1920. Notes on the genus *Chloritis*, Beck, with the description of the animal of a new genus (*Burmochloritis*). *Rec. Ind. Mus.*, vol. 19, no. 1: 9-11.
- Gould A.A., 1862. *Otia Conchologica: descriptions of shells and mollusks, from 1839 to 1862*. Boston: Gould and Lincoln. 256 pp.
- Gray J.E., 1847. A list of the genera of recent mollusca, their synonyma and types. *Proc. Zool. Soc. London*, vol. 15: 129-219.
- Gray J.E., 1855. *Catalogue of pulmonate or air-breathing mollusca in the collections of the British Museum*. London. 192 pp.
- Groh K., Hemmen J., 1986. Zur Kenntnis der Vitriniden des Madeira-Archipels (Pulmonata: Vitrinidae). *Arch. Moll.*, Bd. 116 (4/6): 183-217.
- Grossu A.V., 1979. Revision der Vitriniden Rumäniens (Gastropoda, Stylommatophora). *Malak. Abhandl. Staatl. Mus. Tierk. Dresden*, Bd. 6, no. 9: 107-123.
- Gude G.K., 1906. Further remarks on the genus *Chloritis*, with descriptions of eleven new species. *Proc. Malac. Soc. London*, vol. 7: 105-118.
- Haas F., 1934. Einige neue Binnenschnecken aus Asien und Afrika. *Zool. Anz.*, Bd. 108 (7/8): 202-205.
- Haas F., 1935. Kleine Bemerkungen, IV. *Arch. Moll.*, Bd. 67 (1): 45-47.
- Hartmann J.D.W., 1843. *Erd- und Süßwasser-Gastropoden der Schweiz. Mit Zugabe einiger merkwürdigen exotischen Arten*. St. Gallen. 157-204.
- Hausdorf B., 1995. The Vitrinidae of Turkey, with remarks on the phylogeny of *Gallandia* (Gastropoda: Stylommatophora). *Zool. Anz.*, Bd. 234: 63-74.
- Hazay J., 1884. Az északi kárpátok és vidékének Molluska Faunája különös tekintettel a magas Tátra tenyészetére. *Math. termés. Közlem.*, vol. 19, no. 6: 315-381.
- Hedley C., 1892. The land molluscan fauna of British New Guinea. *Proc. Linn. Soc. N. S. Wales*, vol. 6: 67-116; 685-697.
- Hedley C., 1912. On some land shells collected in Queensland by Mr. Sidney W. Jackson. *Proc. Linn. Soc. N.S.W.*, vol. 37, pt. 2: 253-270.
- Hesse P., 1882. Miscellen. *Jahrb. dtsh. malak. Ges.*, Bd. 9: 29-37.
- Hesse P., 1923. Beiträge zur näheren Kenntnis der Familie Vitrinidae. *Arch. Moll.*, Bd. 55: 81-115, 129-145.
- Hesse P., 1924. Kritische Fragmente. XXVIII. Bemerkungen über die Familie Vitrinidae; XXIX. Änderungsbedürftige Nacktschnecken-Namen. *Arch. Moll.*, Bd. 56: 226-230.
- Hesse P., 1926. Die Nacktschnecken der palaearktischen Region. *Abh. Arch. Moll.*, Bd. 2 (1): 1-152.
- Heynemann F.D., 1862. Einige Mittheilungen über Schnecken zungen mit besonderer Beachtung der Gattung *Limax*. *Malak. Bl.*, Bd. 10: 200-216.
- Hübner J., 1810. *Monographie von Testaceen. Baiersche Landschnecken, Cobresien oder Cobresiae; genau nach der Natur bestimmt, angeordnet, eingetheilt, benannt, beschrieben und abgebildet*. Augsburg. 6 S.
- Hudec V., 1972. Poznámky k anatomii některých druhů plžů z Krymu. *Časopis Nár. muz., odd. přírod.*, vol. 141, no. 1-2: 73-91.
- Ihering H. von, 1892. Morphologie und Systematik des Genitalapparates von *Helix*. *Z. wiss. Zool.*, Bd. 54: 386-520.
- Iredale T., 1930. Notes on some desert snails. *Victorian Naturalist*, vol. 47, no. 7: 118-120.
- Iredale T., 1933. Systematic notes on Australian land shells. *Rec. Austral. Mus.*, vol. 19, no. 1: 37-59.
- Iredale T., 1937a. An annotated check list of the land shells of South and Central Australia. *South Austral. Naturalist*, vol. 18, no. 2: 6-56.
- Iredale T., 1937b. A basic list of the land mollusca of Australia. - Part II. *Australian Zoologist*, vol. 9, no. 1: 1-39.
- Iredale T., 1938. A basic list of the land mollusca of Australia - part III. *Australian Zoologist*, vol. 9, no. 2: 83-124.
- Iredale T., 1939. A review of the land mollusca of Western Australia. *J. Roy. Soc. Western Australia*, vol. 25, no. 1: 1-88.
- Iredale T., 1940. A New Guinea land shell in Queensland. *Australian Naturalist*, vol. 10, pt. 7: 239-240.
- Iredale T., 1941. A basic list of the land mollusca of Papua. *Australian Zoologist*, vol. 10, no. 1: 51-94.
- Iredale T., 1942. Guide to the land shells of New South Wales. Pt 4. *Australian Naturalist*, vol. 11: 33-40.
- Iredale T., 1943. Guide to the land shells of New South Wales. Pt 5. *Australian Naturalist*, vol. 11: 61-69.
- Jousseume F., 1894. Mollusques recueillis à Ceylan par M.E. Simon, et revision générale des espèces terrestres et fluvio-lacustres de cette île. *Mém. Soc. zool. France*, vol. 7: 264-330.
- Kaleniczenko J., 1851. Description d'un nouveau genre de Limaces de la Russie meridionale (*Krynickillus*). *Bull. Soc. Imp. Nat. Moscou*, vol. 24, pt. 1: 213-228.
- Kobelt W., 1879. *Illustriertes Conchylienbuch*. 2 Bände. Nürnberg. Lief. 6: 145-176; 7/8: 177-264.
- Kobelt W., 1902. Die Familie Buliminidae. In: *Martini & Chemnitz. Systematische Conchylien-Cabinet*, I. 13, 2: 837-1051.
- Künkel K., 1929. Experimentelle Studie über *Vitrina brevis* Férussac. *Zool. Jahrb. (Allg. Zool.)*, Bd. 46: 575-626.
- Laidlaw F.F., Solem A., 1961. The land snail genus *Amphidromus*. A synoptic catalogue. *Fieldiana: Zoology*, vol. 41, No. 4: 507-677.
- Lehmann R., 1864. Neue Nacktschnecke aus Australien. *Malak. Bl.*, Bd. 11: 145-149.
- Lesson R.P., 1830 (1831). Histoire naturelle des Zoophytes recueillies dans le voyage de la corvette La Coquille. *Voy. "Coquille", Zool.*, vol. 2 (1). 40 pp.
- Likharev I.M., Wiktor A., 1980. The fauna of slugs of the USSR and adjacent countries (Gastropoda Terrestria Nuda). *Fauna USSR*, vol. 3, pt. 5, N.S., no. 122. 437 pp. (in Russian).
- Lindholm W.A., 1914. Beschreibung einer neuen Nacktschnecken gattung aus dem Kaukasusgebiete. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 46: 167-168.
- Lindholm W.A., 1925. On a misapplied generic name for Caucasian slugs. *Proc. Malac. Soc. London*, vol. 16: 167-168.
- Linnaeus C., 1758. *Caroli Linnaei ... systema naturae per regne tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis...* Editio decima reformata. Impensis Direct. Laurentii Salvii, Holmiae, Tome I. Animalia. 823 p.
- Ljovushkin S.I., Matiokin P.V., 1965. *Troglolestes sokolovi* gen. n. sp. n. — the first troglobiont slug. *Bull. Moscow Soc. Investigators Nat., div. biol.*, vol. 70, no. 3: 35-46 (in Russian).

- Mabille J., 1887. Sur quelques mollusques du Tonkin. *Bull. Soc. Malac. France*, vol. 4: 73-164.
- Magne A., 1952. Les Deroceratinae de la faune girondine. *Procès verbaux Soc. sci. phys. natur. Bordeaux* (1946-48): 30-32.
- Malm A.W., 1868. Skandinaviska Land-Sniglar, Limacina, afbildade efter levande exemplar och beskrifna. *Göteborg vet. Samh. Handl.* (N.F.), Bd. 10: 26-93.
- McMichael D.F., 1959. A new genus and species of land snail from North Queensland. *J. Malac. Soc. Australia*, no. 3: 31-32.
- Minato H., 1971. Revision of the genus *Moellendorffia* from the Amami Islands. *Venus*, vol. 30, no. 1: 35-39.
- Moellendorff O.F. von, 1891. *Hadra* und *Camaena*. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 23: 195-202.
- Moellendorff O.F. von, 1895. On a collection of land-shells made by Mr. Kubary in German New Guinea. *Proc. Malac. Soc. London*, vol. 1: 234-240.
- Moellendorff O.F. von, 1902. Binnenmollusken aus Niederländisch-Indien. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 34: 185-207.
- Montfort P. Denys de, 1810. *Conchyliologie systematique et classification methodique de coquilles...* Paris. Vol. 2. 676 pp.
- Moquin-Tandon A., 1855. *Histoire naturelle des mollusques terrestres et fluviatiles de France*. Paris. Vol. 1: 646 pp.
- Mörch O.A.L., 1865. Quelques mots sur un arrangement des mollusques pulmones terrestres (Geophiles, Fér.) base sur le systeme naturel. *J. de Conch.*, vol. 13: 265-283, 376-396.
- Mörch O.A.L., 1867. Abrégé de l'histoire de la classification moderne des mollusques basée, principalement sur l'armature linguale. *J. de Conch.*, vol. 15: 232-258.
- Morgan J. de, 1885. Mollusques terrestres & fluviatiles du Royaume de Perak et des pays voisins (presqu'île Malaise). *Bull. Soc. zool. France*, vol. 10: 353-428.
- Neubert E., 1998. Annotated checklist of the terrestrial and freshwater molluscs of the Arabian Peninsula with descriptions of new species. *Fauna of Arabia*, vol. 17: 333-461.
- Nevill G., 1878. *Hand list of mollusca in the Indian Museum*, Calcutta. Part I. Gastropoda. XV + 338 pp.
- Odhner N.Hj., 1954. *Vitrina* (*Guerrina* n. sect.) *cuticula* (Shuttleworth) and its relations. *Proc. Malac. Soc. London*, vol. 31, pt. 2: 56-63.
- Osanova N., Pintér L., 1968. Über bulgarische Vitrinidae (Gastropoda, Euthyneura). *Malak. Abhandl. Staatl. Mus. Tierk. Dresden*, Bd. 2, no. 18: 243-247.
- Paulucci M., 1878. *Matériaux pour servir à l'étude de la fauna malacologique terrestre et fluviatile de l'Italie et des îles*. Paris. 54 pp.
- Pfeiffer L., 1855. Versuch einer Anordnung der Heliceen nach natürlichen Gruppen. *Malak. Bl.*, Bd. 2: 112-144.
- Pfeiffer L., 1856. Versuch einer Anordnung der Heliceen nach natürlichen Gruppen. *Malak. Bl.*, Bd. 2: 145-185.
- Pfeiffer L., 1876. Bemerkungen zum achten Bande meiner Monographia Heliceorum. *Malak. Bl.*, Bd. 23: 196-230.
- Pilsbry H.A., 1890-1891. *Manual of Conchology*, ser. 2, vol. 6. Helicidae: vol. IV. 324 pp.
- Pilsbry H.A., 1891. *Manual of Conchology*, ser. 2, vol. 7. Helicidae, vol. V. 225 pp.
- Pilsbry H.A., 1892-1893. *Manual of Conchology*, ser. 2, vol. 8. Helicidae, vol. VI. 314 pp.
- Pilsbry H.A., 1893. Preliminary outline of a new classification of the helices. *Proc. Acad. Nat. Sci. Philad.*, vol. 44 (1892): 387-404.
- Pilsbry H.A., 1893-1895. *Manual of Conchology*, ser. 2, vol. 9. (Helicidae, vol. 7). Guide to the study of Helices. 366+126 pp.
- Pilsbry H.A., 1894. Note on *Liparus. Nautilus*, vol. 8: 35-36.
- Pilsbry H.A., 1900. *Manual of Conchology*, ser. 2, vol. 13. Australasian Bulimulidae: *Bothriembryon, Placostylus*. Helicidae: *Amphidromus*. 253 pp.
- Pilsbry H.A., 1905. Notes on *Moellendorffia* and *Stegodera. Nautilus*, vol. 19, no. 6: 63-67.
- Pilsbry H.A., 1919. A review of the land mollusks of the Belgian Congo chiefly based on the collections of the American Museum Congo expedition, 1909-1915. *Bull. Amer. Mus. Nat. Hist.*, vol. 40, art. 1: 1-370.
- Pilsbry H.A., 1922. Observations upon the nomenclature of slugs. *Nautilus*, vol. 35, no. 3: 77-80.
- Pini N., 1876. Molluschi terrestri e d'acqua dolce viventi nel territorio d'Esino. *Bull. Soc. malac. Ital.*, vol. 2: 67-206.
- Pollonera C., 1887. Intorno ad alcuni Limacidi europei poco noti. *Boll. Mus. Zool. Anat. comp. Univ. Torino*, vol. 2, no. 21: 4 pp.
- Pollonera C., 1888. Appunti di Malacologia. I. De alcune Testacee raccolte presso Torino. II. De alcune Testacee spagnole. III. Un nuovo Limacide dell'Asia Minore. *Boll. Mus. Zool. Anat. comp. Univ. Torino*, vol. 3, no. 43: 10 pp.
- Pollonera C., 1891. Appunti di Malacologia. VII. Intorno ai Limacidi di Malta. *Boll. Mus. Zool. Anat. comp. Univ. Torino*, vol. 6, no. 99: 1-4.
- Pollonera C., 1909. Note malacologiche. Sulla Limacide della Siria e della Palestina. *Boll. Mus. Zool. Anat. comp. Univ. Torino*, vol. 24, no. 608: 1-8.
- Rafinesque-Schmaltz C.S., 1815. *Analyse de la nature, ou tableau de l'univers et des corps organisés*. Palermo.
- Rafinesque-Schmaltz C.S., 1820. *Annals of nature or annual synopsis of new genera and species of animals, plants, etc., discovered in North America by C.S. Rafinesque*. First Annual Number, Philadelphia, 1820.
- Reeve L., 1851-1854. *Conchologica Iconica*. Monograph of the genus *Helix*. London. CCX plates.
- Rensch B., 1930. Über einige aberrante Landschnecken und die Abgrenzung der Familien bei Pulmonaten. *Zool. Anz.*, Bd. 92: 181-187.
- Rensch I., 1933. Diagnosen neuer *Papuina*-Arten (Moll. Pulm.). *Zool. Anz.*, Bd. 102: 313-319.
- Rensch I., 1934. Systematische und tiergeographische Untersuchungen über die Landschneckenfauna des Bismarck-Archipels. I. *Arch. Naturg.*, NF, Bd. 3, Heft 3: 445-488.
- Rensch I., 1937. Systematische und tiergeographische Untersuchungen über die Landschneckenfauna des Bismarck-Archipels. II. *Arch. Naturg.*, NF, Bd. 6, Heft 4: 526-644.
- Richardson C.L., 1983. Bradybaenidae: catalog of species. *Tryonia*, no. 9: 1-253.
- Richardson C.L., 1985. Camaenidae: catalog of species. *Tryonia*, no. 12: 1-479.
- Robson G.C., 1914. Report on the mollusca collected by the British Ornithologist's Union Expedition and the Wollaston Expedition in Dutch New Guinea. *Trans. Zool. Soc. London*, vol. 20: 287-304.
- Schileyko A.A., 1986. The system and phylogeny of Vitrinidae (Gastropoda Pulmonata). *Proc. Zool. Inst. Acad. Sci. USSR*, vol. 146: 124-157. (in Russian).
- Schileyko A.A., 1988. Two new troglobiont species of the terrestrial Pulmonata from Georgia (Daudebaridiidae and Trigonochlamydidae). *Zool. J.*, vol. 67, no. 11: 1730-1735. (in Russian).
- Schileyko A.A., Kijashko P.V., 1999. *Boreolestes* gen. nov., a new genus of carnivorous slugs from Western Caucasus, and some considerations on the phylogeny of Trigonochlamydidae (Pulmonata). *Ruthenica*, vol. 9, No. 1: 39-46.
- Semper C., 1873. *Reisen im Archipel der Philippinen*. 2 Theil, Bd. 3. Landmollusken. 2: 81-128.
- Shelley R.M., Backeljau T., 1995. Plutoniinae Bollman, 1893 (Arthropoda, Chilopoda) and Plutoniinae Cockerell, 1893 (Mollusca, Gastropoda): proposed removal of homonymy. *Bull. Zool. Nom.*, Case 2946, vol. 52, no. 2: 150-152.
- Simroth H., 1886. Ueber bekannte und neue palaearktische Nacktschnecken. *Jahrb. dtsh. malak. Ges.*, Bd. 13: 311-342.
- Simroth H., 1888. Ueber die azorisch-portugiesische Nacktschneckenfauna und ihre Beziehungen (Vorläufige Mittheilung). *Zool. Anz.*, Bd. 11 (272): 66-70, 86-90.
- Simroth H., 1891a. Die Nacktschnecken der portugiesisch-azorischen Fauna in ihrem Verhältnis zu denen der paläarktischen Region überhaupt. *Nova Acta k. Leop.-Carol. dtsh. Akad. Naturf.*, Bd. 56, Heft 2: 203-424.
- Simroth H., 1891b. Ueber kaukasische Limaciden und Testacelliden. *Verhandl. dtsh. zool. Ges.*, Bd. 1: 51-58.
- Simroth H., 1892. Ueber einige Raublungenschnecken des Kaukasus. In: *Festschr. für Leuckart*. Leipzig: 48-58.
- Simroth H., 1896. Vorläufige Mittheilung eine Bearbeitung der russischen Nacktschneckenfauna betreffend. *Annu. Mus. Zool. Acad. Sci. St. Petersburg*, vol. 1: 355-368.
- Simroth H., 1899. Über einige kleinasiatische Nacktschnecken. *SB. naturf. Ges. Leipzig*, 1897/98: 35-38.
- Simroth H., 1901. *Die Nacktschnecken des Russischen Reiches*. St. Petersburg. XII+321 S.
- Simroth H., 1906. Ueber eine Reihe von Nacktschnecken, die Herr Dr. Cecconi auf Cypem und in Palaestina gesammelt hat. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 38: 17-24, 84-91.
- Simroth H., 1910. Kaukasische und asiatische Limaciden und Raublungenschnecken. *Annu. Mus. Zool. Acad. Sci. St. Petersburg*, vol. 15: 449-560.
- Simroth H., 1912a. Neue Beiträge zur Kenntnis der kaukasischen Nacktschnecken. *Mitt. kaukasischen Mus.*, Bd. 6, Lief. 1: 1-140.
- Simroth H., 1912b. Ueber die im Frühjahr 1897 von Herrn Kaznakov in den Gebirgen Buchara's erbeuteten Parmacellen. *Annu. Mus. Zool. Acad. Sci. St. Petersburg*, vol. 17: 41-52.
- Smith B.J., 1992. Non-Marine Mollusca. In: Houston, W. W. K. (ed.). *Zoological Catalogue of Australia*. Canberra: AGPS vol. 8. Canberra. XII 405 pp.
- Solem A., 1973. *Craterodiscus* McMichael, 1959, a camaenid land snail from Queensland. *J. Malac. Soc. Australia*, vol. 2, no. 4: 377-385.
- Solem A., 1979. Camaenid land snails from Western and Central Australia (Mollusca: Pulmonata: Camaenidae). I. Taxa with transaustralian distribution. *Rec. West. Austr. Mus.*, Suppl. no. 10: 5-142.
- Solem A., 1981a. Camaenid land snails from Western and Central Australia (Mollusca: Pulmonata: Camaenidae). II. Taxa from the Kimberley, *Amplirhagada* Iredale, 1933. *Rec. West. Austr. Mus.*, Suppl. no. 11: 147-320.
- Solem A., 1981b. Camaenid land snails from Western and Central Australia (Mollusca: Pulmonata: Camaenidae). III. Taxa from the Ningbing Ranges and nearby areas. *Rec. West. Austr. Mus.*, Suppl. no. 11: 321-425.
- Solem A., 1984. Camaenid land snails from Western and Central Australia (Mollusca: Pulmonata: Camaenidae). IV. Taxa from the Kimberley, *Westraltrachia* Iredale, 1933 and related genera. *Rec. West. Austr. Mus.*, Suppl. no. 17: 427-705.
- Solem A., 1985. Camaenid land snails from Western and Central Australia (Mollusca: Pulmonata: Camaenidae). V. Remaining Kimberley genera and Addenda to the Kimberley. *Rec. West. Austr. Mus.*, Suppl. no. 20: 707-981.
- Solem A., 1992. Camaenid land snails from Southern and Eastern South Australia, excluding Kangaroo Island. Part I. Systematics, distribution, and variation. *Rec. South Aust. Mus. Monogr. Ser.* 2: 1-338.
- Solem A., 1993. Camaenid land snails from Western and Central Australia (Mollusca: Pulmonata: Camaenidae). VI. Taxa from the Red Centre. *Rec. West. Austr. Mus.*, Suppl., no. 43: 983-1459.
- Solem A., 1997. Camaenid land snails from Western and Central Australia (Mollusca: Pulmonata: Camaenidae). VII. Taxa from Dampierland through Nullarbor. *Rec. West. Austr. Mus.*, Suppl., no. 50: 1461-1906.
- Soós L., 1917. Zur systematischen Anatomie der ungarischen Pulmonaten. *Ann. Mus. nation. Hungar.*, vol. 15: 1-165.
- Stabile J., 1859. Description de quelques coquilles nouvelles ou peu connues. *Rev. Mag. Zool.*, vol. 11 (2): 419-432.
- Stabile J., 1864. Mollusques terrestres vivants du Piémont. *Atti Soc. ital. Sci. nat. Milano*, vol. 7: 1-142.
- Stanisic J., 1996a. New land snails from boggomoss environments in the Dawson Valley, southeastern Queensland (Eupulmonata: Charopidae and Camaenidae). *Mem. Queensl. Mus.*, vol. 39 (2): 343-354.

- Stanisic J., 1996b. A new camaenid land snail from the wet tropics biogeographic region, northeastern Queensland (Eupulmonata: Camaenidae). *Mem. Queensl. Mus.*, vol. 39 (2): 355-363.
- Strand E., 1910. Die Gattungsnamen *Erigone*, *Ericia* und *Nordenskiöldia*. *Soc. entomol.*, vol. 25: 34.
- Studer S., 1820. Kurzes Verzeichnis der bis jetzt in unserem Vaterlande entdeckten Conchylien. *Naturw. Anz. schweiz. Ges. Naturw.*, Bd. 3, Heft 11: 83-90; Heft 12: 91-94.
- Swainson W., 1840. *A treatise on malacology; or the natural classification of shells and shell fish*. VIII+419 pp.
- Sykes E.R., 1904. On some non-marine shells from the Austro- and Indo-Malayan Regions. *J. of Malac.*, vol. 11: 87-92.
- Tapparone-Canefri C., 1883. Fauna malacologica della Nuova Guinea e delle isole adiacenti. Pt. I. Molluschi estramarini. *Ann. Mus. civ. stor. nat. Genova*, vol. 19: 1-313.
- Tapparone-Canefri C., 1887. Fauna malacologica della Nuova Guinea e delle isole adiacenti. Pt. I. Molluschi estramarini. + Suppl. I. *Ann. Mus. civ. stor. nat. Genova*, (2), vol. 4: 113-199.
- Thiele J., 1931. *Handbuch der systematischen Weichtierkunde*. Jena. Bd. I, Teil 2: 377-778.
- Turner R.D., Clench W.J., 1972. Land and freshwater snails of Savo Island, Solomons, with anatomical descriptions (Mollusca, Gastropoda). *Steenstrupia*, vol. 2: 207-232.
- Valido M., Groh K., Ibañez M., Alonso M.R., 1993. La familia Vitrinidae en Canarias. V. El género *Guerrina* (Gastropoda: Pulmonata). *Arch. Moll.*, Bd. 121 (1990) (1/6): 117-124.
- Van Goethem J.L., 1972. Contribution a l'étude de *Boetgerilla vermiformis* Wiktor, 1959 (Mollusca, Pulmonata). *Bull. Inst. r. Sci. nat. Belg.*, vol. 48, no. 14: 1-16.
- Wagner J., 1935. Die Nacktschnecken Ungarns, Croatiens und Dalmatiens. II. *Ann. Mus. Nat. Hung.*, Bd. 29: 169-212.
- Wallace A.R., 1865. List of the land shells collected by Mr. Wallace in the Malay Archipelago, with descriptions of the new species by Mr. Henry Adams. *Proc. Zool. Soc. London*, 1865: 405-416.
- Wenz W., 1947. Zur Taxonomie der Euthyneura. *Arch. Moll.*, Bd. 76: 36.
- Westerlund C.A., 1886. *Fauna der in der Paläarktischen Region (Europa, Kaukasien, Sibirien, Turan, Persien, Kurdistan, Armenien, Mesopotamien, Kleinasien, Syrien, Arabien, Egypten, Tripolis, Tunesien, Algerien und Marocco) lebenden Binnenconchylien*. I. Fam. Testacellidae, Glandinidae, Vitrinidae & Leucochroidae. Lund. 88+7 pp.
- Westerlund C.A., 1894. Specilegium Malacologicum. Neue Binnen-Conchylien aus der Paläarktischen Region, V. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 26: 163-177, 190-205.
- Wiktor A., 1973. Die Nacktschnecken Polens. In: *Monografie fauny Polski*. T. 1. 182 pp.
- Wiktor A., 1989. *Limacoidea et Zonitoidea nuda (Gastropoda: Stylommatophora)*. Państwowe wydawnictwo naukowe, Warszawa. 206 pp.
- Wiktor A., 1994. Contribution to the knowledge of the slugs of Turkey (Gastropoda terrestria nuda). *Arch. Moll.*, Bd. 123 (1/6): 1-47.
- Wiktor A., 2001. Taxonomic position of *Kasperia* Godwin-Austen, 1914 (Gastropoda: Pulmonata: Limacidae). *Folia Malacologica*, vol. 9, no. 1: 37-38.
- Wiktor A., Bäckeljau T., 1995. Redescription of the Azorean endemic slug *Plutonia atlantica* (Morelet, 1860) (Gastropoda terrestria nuda). *Bull. Inst. Roy. Sci. Natur. Belg. Biol.*, vol. 65: 69-82.
- Wiktor A., Martín R., Castillejo J., 1990. A new slug family Papillodermidae with description of a new genus and species from Spain (Gastropoda, Pulmonata terrestria nuda). *Malak. Abhandl. Staatl. Mus. Tierk. Dresden*, Bd. 15, no. 1: 1-18.
- Yamaguchi N., Habe T., 1955. Studies on the Japanese slugs (I). *Venus*, vol. 18, no. 4: 234-240.
- Zhiltsov S.S., Schileyko A.A., 2002. Morphology of reproductive system of *Bielzia coeruleans* (Gastropoda, Pulmonata) and phylogenetic relations of the genus *Bielzia*. *Ruthenica*, vol. 12, no. 1: 73-79. (in Russian).
- Zilch A., 1960. Gastropoda Teil 2. Euthyneura. *Handbuch der Paläozoologie*, Bd. 6. Lfg. 3: 401-600; Lfg. 4: 601-834 (1960).
- Part 1, April 1998: 1-127, figs. 1-146.
Achatinellidae, Amastridae, Orculidae, Strobilopsidae, Spixioidiscidae, Valloniidae, Cochlicopidae, Pupillidae, Chronionidae, Pyramidulidae.
- Part 2, November 1998: 129-261, figs. 141-316.
Gastrocoptidae, Hypsistommatidae, Vertiginidae, Murexellidae, Addition to Vertiginidae, Pachnodidae, Luridae, Sagdidae.
- Part 3, April 1999: 263-436, figs. 317-566.
Pantidae, Atilidae, Bulimulidae, Ormalicidae, Megastylidae, Urocypidae.
- Part 4, December 1999: 437-564, figs. 567-732.
Draparnaudiidae, Caryodidae, Macrovelidae, Acaudae, Clavariidae, Dorcasidae, Sculptariidae, Pleurotyloidea, Cornilidae, Plectrotyloidea, Megalobulimulidae, Streptochelidae, Cerionidae, Achatinidae, Subulinidae, Glossoidae, Microactariidae, Ferrissulidae.
- Part 5, May 2000: 565-729, figs. 733-949.
Clausiidae.
- Part 6, December 2000: 731-880, figs. 950-1154.
Rhyndidae, Chlamydephoridae, Systrophidae, Haplottrematidae, Streptaxidae, Spizellidae, Oleariidae, Testacellidae.
- Part 7, June 2001: 881-1034, figs. 1155-1346.
Eukodontidae, Throchophoridae, Charopidae.
- Part 8, January 2002: 1035-1166, figs. 1347-1524.
Pantidae, Helicodiscidae, Discidae, Cystopelidae, Eucornulidae, Trochomorphidae.
- Part 9, September 2002: 1167-1307, figs. 1525-1710.
Additions to Eucornulidae (Cathellidae), Addition to Trochomorphidae (Pachyphoridae), Gymnarionidae, Rhysotritidae, Anophantidae.
- Part 10, April 2003: 1309-1466, figs. 1711-1895.
Anophantidae, Ostreacanthidae, Ryssidae, Albinidae, Diastidae, Stenodermidae, Gaeolidontidae, Zonitidae, Dandebariidae, Parmacellidae.
- Part 11, November 2003: 1467-1626, figs. 1896-2098.
Trochomorphidae, Papillodermidae, Vitrinidae, Limacidae, Bielziidae, Apolloniidae, Boetgeriidae, Camaenidae.