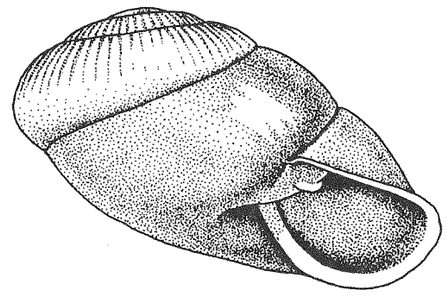
A. A. Schileyko

TREATISE ON RECENT TERRESTRIAL PULMONATE MOLLUSCS

Part 6

Rhytididae, Chlamydephoridae, Systrophiidae, Haplotrematidae, Streptaxidae, Spiraxidae, Oleacinidae, Testacellidae



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Suborder OLEACINOIDEI Schileyko, 1979

Schileyko, 1979: 56 (as Oleacinina).

— Rhytidoinei Schileyko & Starobogatov in Golikov & Starobogatov, 1988: 75.

— Testacelloinei Schileyko & Starobogatov in Golikov & Starobogatov, 1988: 75.

Shell slender and many-whorled to reduced, auriform; rarely totally absent. Columella simple, twisted or with entering lamella(e).

Jaw much reduced or (more often) missing.

Foot sole without longitudinal grooves. Caudal horn generally absent, rarely present. Caudal foss missing.

Kidney sigmurethral, primary ureter closed, secondary ureter open to completed.

Distal parts of female division without appendages. Male division simple to having flagellum and/or caecum. Spermathecal stalk lacking diverticle.

Oviparous or ovoviviparous.

Obligatory carnivorous.

DISTRIBUTION. Tropical and subtropical zones of both hemispheres.

RHYTIDOIDEA Pilsbry, 1893

Pilsbry, 1893 (1892-1893): 135 (pro fam.).

Shell generally depressedly helicoid to flat, of a few to many whorls; in one genus reduced. Sculpture various but never strong. Periostracum present or absent. Aperture without armature. Umbilicus rarely closed, more often wide, shallow.

Jaw vestigial or missing.

Reproductive tract usually without accessory organs; sometimes a flagellum present. Penis internally often with papillae, but without conchiolinous hooks. Spermatheca sometimes not present. Aphallia discovered in several cases.

DISTRIBUTION. Tropical and subtropical areas in both hemispheres.

RHYTIDIDAE Pilsbry, 1893

Pilsbry, 1893 (1892-1893) (February): 135.

— Paryphantinae Godwin-Austen, 1893 (December): 8.

— Occirheneidae Iredale, 1939: 73.

Solem, 1959: 147. Climo, 1977: 60.

Shell flat to low-conic, usually not solid, of a few convex whorls, last whorl rounded, angled or (rarely) keeled at periphery, often more or less descending in front; palatal margin usually with variously developed depression. In one genus (*Schizoglossa*) shell reduced, ear-shaped. Periostracum sometimes well developed, of brownish, greenish or nearly black color, sometimes with several spiral bands. Surface smooth to finely rib-striated; sometimes there is spiral striation. Aperture oblique, toothless, with simple margins. Umbilicus open (very rarely closed), narrow to very wide.

Foot of holopodous type.

Jaw absent.

Lateral teeth of radula unicuspid, aculeate.

Kidney short, triangular, primary ureter completed, secondary ureter completed or open.

Hermaphroditic gland of 2 to many acini. Albumen gland not differentiated. Genitalia usually without accessory organs; sometimes a flagellum present. Epiphallus sometimes present but more often absent. Penis internally often with papillae. Spermathecal shaft sometimes missing. Aphallia discovered in several cases.

DISTRIBUTION. Indonesia, Melanesia, Caroline Islands, Samoa, Tonga, Australia, Tasmania, New Zealand, SE Africa.

REMARK. Climo (1977) divided New Zealand Rhytididae into Rhytidinae and Paryphantinae. The main diagnostic character of Paryphantinae sensu Climo, as opposite to Rhytidinae, is a tendency to reduction of penis. However, in many other groups phenomenon of aphallia arises independently in a number of cases. So, at the current level of our knowledge about anatomy of Rhytididae as a whole, separations of subfamilies would be premature.

Austrorhytida B. Smith, 1987
Fig. 950

Smith B., 1987: 86.

TYPE SPECIES — *Helix capillacea* Férussac, 1832; OD.

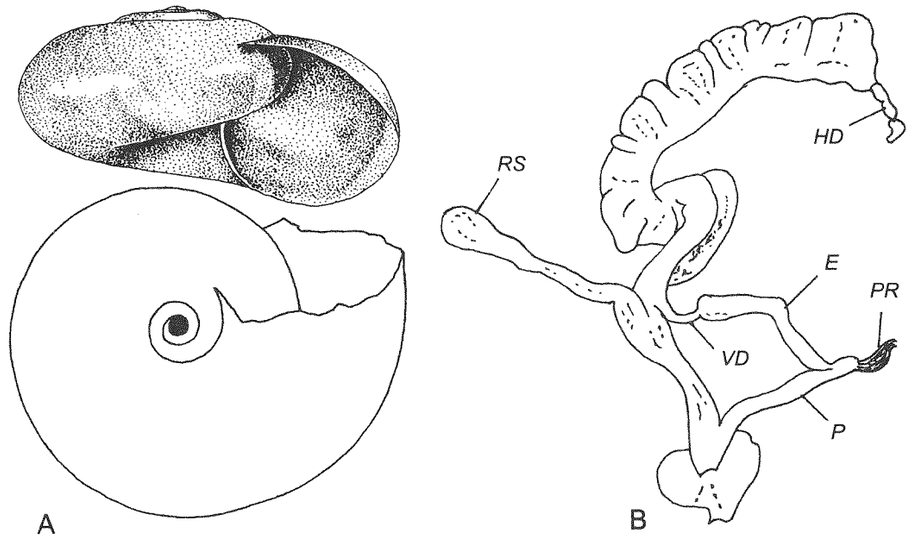


Fig. 950. ***Austrorhytida capillacea*** (Férussac, 1832).
A — shell: Australia. **Phil**. No. 5440. B — reproductive tract. After B. Smith, 1987.

Shell much flattened, thin, transparent, of about 4-5 moderately convex whorls. Color uniformly straw-yellow to dark-honey. Embryonic whorls smooth, glossy. Subsequent whorls above finely, accurately, radially rib-striated, basal surface nearly smooth. Aperture ovate, rather oblique, with thin, simple margins; columellar margin very slightly expanded. Umbilicus profound, moderately broad, perspective. Height 10-11, diam. 20-21 mm (10.1 × 20.8 mm).

Vas deferens exceptionally short, entering epiphallus apically. Epiphallus subequal in length to penis, boundary between them marked by abrupt bend to which penial retractor attached. Free oviduct very short, vagina considerably longer. Spermathecal stalk not long, reservoir weakly defined, not reaching albumen gland.

DISTRIBUTION. SE Australia. 1 sp.

Saladelos Iredale, 1933
Fig. 951

Iredale, 1933: 48.

— *Montidelos* Iredale, 1943: 68 (t.-sp. *Montidelos orcadis* Iredale, 1943; OD).

B. Smith, 1979: 426; 1992: 300.

TYPE SPECIES — *Helix splendidula* L. Pfeiffer, 1846 [non Gmelin, 1758; = *Saladelos commixta* Iredale, 1933, nom. nov. pro *Helix splendidula* L. Pfeiffer, 1846; = *Helix* (*Rhytida*) *hobsoni* Brazier, 1876]; OD.

Shell flattened, thin, translucent, of 4-4.5 whorls; last evenly rounded at periphery, scarcely descending in front. Spire flat to slightly elevated. Color yellow to honey, monochromate or with only occasional dark yellow to green fine radial rays. Postapical sculpture consists of very delicate radial striae with occasional traces of microscopical spiral incised lines; basal surface smooth and glossy except for irregular radial striae. Umbilicus wide, deep. Height 4.5-5.5, diam. 8-10 mm.

Vas deferens very short. Epiphallus enormously enlarged, spindle-shaped, entering penis at some distance from its summit. Inner surface of penis sparsely covered with small papillae. Verge missing. Penial retractor attached apically. Atrium rather long.

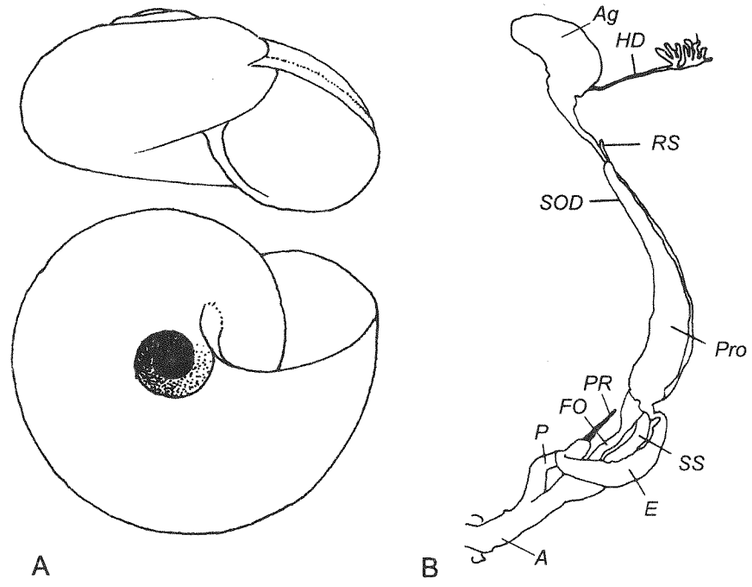


Fig. 951. ***Saladelos hobsoni*** (Brazier, 1876).
A — shell. B — reproductive tract. After B. Smith, 1979.

Free oviduct a little longer than vagina. Spermathecal shaft long, reservoir very small, nearly reaching lower edge of albumen gland.

DISTRIBUTION. Australia (Islands of Torres Strait, Queensland and northern New South Wales). 2 spp.

Echotrida Iredale, 1933
Fig. 952

Iredale, 1933: 48.

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

Shell nearly flat, thin, translucent to subtransparent, of about 4 whorls. Last whorl straight. Color yellowish-greenish. Embryonic whorls smooth, later with distinct, well spaced, shallow spiral grooves and irregular, smoothed to coarse radial wrinklets; on basal surface this sculpture becomes very weak. Aperture irregularly triangular to ovate, a little oblique, with simple margins and wide, shallow depression on palatal margin. Umbilicus funnel-like, somewhat excentric, of variable width. Height 0.33, diam. 0.40 inches (3.7×8.7 mm).

DISTRIBUTION. Australia. 1 sp.

Strangesta Iredale, 1933
Fig. 953

Iredale, 1933: 48.

— *Murphitella* Iredale, 1933: 49 (t.-sp. *Helix franklandiensis* Forbes, 1852; OD).

Smith B., 1979: 421; 1992: 301.

TYPE SPECIES — *Helix leichardti* Cox, 1864 (= *confusa* L. Pfeiffer, 1855); OD.

Shell subglobose to depressed, thin, fragile, often glossy, of 4-5 moderately convex whorls. Last whorl evenly rounded at periphery. Color pale-yellow to deep honey-brown, uniform or with darker radial streaks. Embryonic whorls nearly smooth, rest surface with fine, close, radial wrinkles or fine spiral incised lines above. Aperture large, lunate, with simple margins; palatal depression weak or absent. Umbilicus

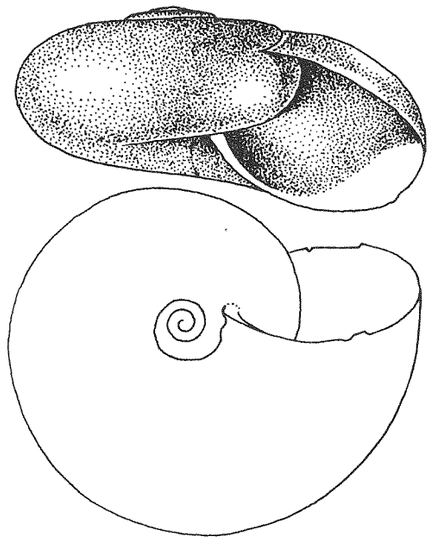


Fig. 952. ***Echotrida strangeoides*** (Cox, 1864). "Little Mt. Brisbane near Kilcoy, S Queensland". **Basel** No. 8543-a.

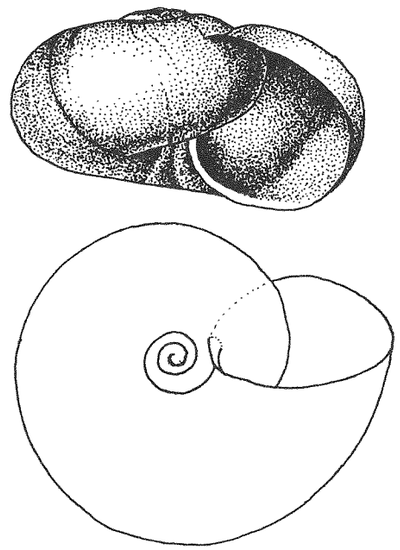


Fig. 953. ! ***Strangesta franklandiensis*** (Forbes, 1851). Frankland Island [N Queensland]. **London** No. 1859.3.11.4.

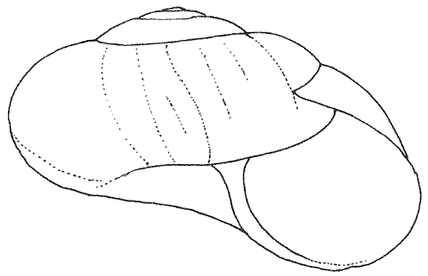


Fig. 954. ***Namoitena strangei*** (L. Pfeiffer, 1849).
After Cox, 1868.

widely open, deep. Height 5.7-8.4, diam. 14.0-25.5 mm (5.7×15.1 mm).

Internally penis uniformly covered with small papillae and contains a small verge.

DISTRIBUTION. Australia (S Australia and SW Victoria to Otway Ranges). 3 spp.

Namoitena Iredale, 1933
Fig. 954

Iredale, 1933: 49. Smith B., 1992: 302.

TYPE SPECIES — *Helix namoiensis* Cox, 1868 (= *Helix strangei* L. Pfeiffer, 1849); OD.

Shell (convexly) depressed, (rather) thin, shining, subtransparent, of 4-5 slightly convex whorls; last whorl not descending, rounded at periphery. Color yellowish, olive-brown, reddish, or chestnut-horny. Embryonic whorls smooth, later whorls with variously developed (frequently obsolete), very close radial striae above and nearly smooth at base. Upper surface of spire sometimes also with microscopical spiral striae. Aperture large, subcircular, (moderately) oblique, its insertions more or less approached; margins sharp, simple; columellar margin dilated. Umbilicus moderately narrow, profound. Height 1.0-6.3, diam. 2.5-17.5 mm.

DISTRIBUTION. E Australia. 4 spp.

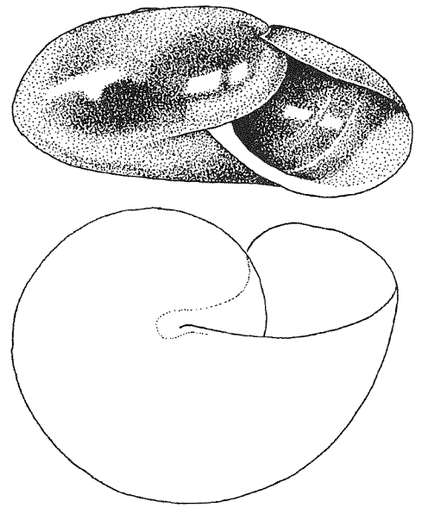


Fig. 955. ***Prolesophanta dyeri*** (Petterd, 1879). Fern Tree Gully, Victoria, Australia. **Phil**. No. 153725.

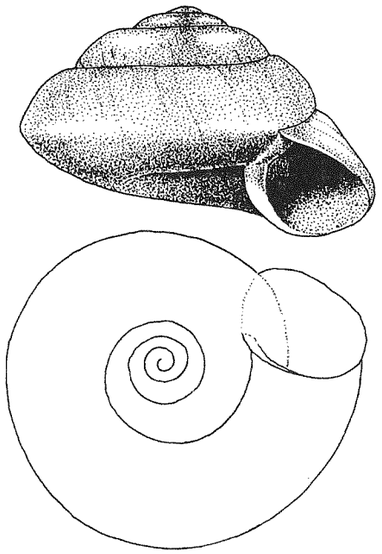


Fig. 956. ***Torresiropa spaldingi*** (Brazier, 1876). "Torres Straight". **Zürich** No. 500609.

Prolesophanta Iredale, 1933
Fig. 955

Iredale, 1933: 40.

— *Tasmadelos* Iredale, 1938: 118 (t.-sp. *Helix nelsonensis* Brazier, 1871; OD).

B. Smith, 1992: 300.

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

Shell somewhat vitrinoid, with large body whorl, thin, fragile, strongly shining, translucent to semitransparent, of 3-3.5 whorls; last evenly rounded, straight. Color pale corneous or shell nearly colorless, often with diffuse streaks of dark-red to chestnut-brown. Initial whorl nearly smooth, subsequent smooth or with very delicate radial grooves. Aperture large, well oblique, with thin, simple margins except columellar where a small tubercle may be present. No umbilicus, although umbilical depression distinct. Height 1.7-2.0, diam. 3-4 mm (1.8 × 3.2 mm).

DISTRIBUTION. SE Australia, N Tasmania. 2 spp.

Torresiropa Iredale, 1933
Fig. 956

Iredale, 1933: 54.

TYPE SPECIES — *Helix* (*Patula*) *spaldingi* Brazier, 1876; OD.

Shell (depressedly) turbinoid, comparatively solid, shining, of about 4.5 rather convex whorls. Last whorl angled at periphery. Color pale-yellow. Embryonic whorls smooth, later with irregularly spaced, rounded, radial riblets and exceptionally delicate spiral striae in interspaces; on base striae wider spaced. Aperture relatively small, subquadrangular, well oblique, with scarcely thickened margins, peristome insertions somewhat approached, upper part of palatal

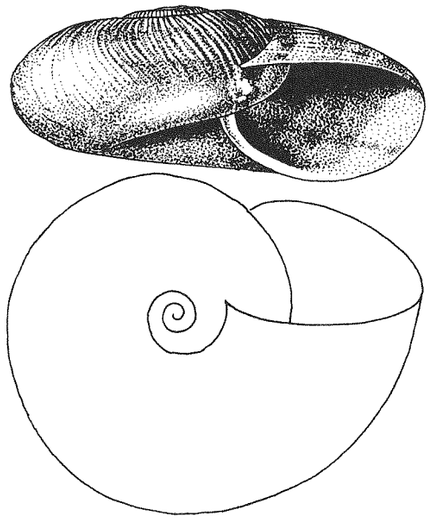


Fig. 957. ***Tasmaphena sinclairi*** (L. Pfeiffer, 1845).
Tasmania. **Vienna** No. 34007.

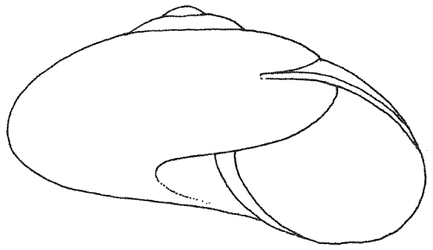


Fig. 958. ***Occirhenea georgiana*** (Quoy et Gaimard, 1832).
After Cox, 1868.

wall somewhat flattened. Umbilicus funnel-shaped, broad. Height 2.5-3.2, diam. 5-6 mm (3.0 × 5.2 mm).

DISTRIBUTION. Australia (N. Queensland). Probably 1 variable sp.

Tasmaphena Iredale, 1933
Fig. 957

Iredale, 1933: 48.

TYPE SPECIES — *Helix sinclairi* L. Pfeiffer, 1845; OD.

Shell depressed, thin, translucent, not shining, of 3.25-4 whorls; last whorl slightly and gradually descending in front, rounded or bluntly angulated at periphery. Periostracum thin, color dark- to light-yellow, with several (up to 7) dark-brown bands; widest running along periphery. Embryonic whorls nearly smooth (often with very delicate radial wrinklets), later with irregular, pronounced, coarse, radial riblets; spiral striation, if present, extremely delicate; on basal surface sculpture usually weaker or absent. Aperture strongly oblique, ovate, with sharp margins; upper portion of palatal margin more or less indented. Umbilicus funnel-like, broad to rather narrow. Height 2.5-8.5, diam. 6-17 mm (7.2 × 16.4 mm).

DISTRIBUTION. SE Australia, Tasmania. 4 spp.

Occirhenea Iredale, 1933
Fig. 958

Iredale, 1933: 48.

TYPE SPECIES — *Helix georgiana* Quoy et Gaimard, 1832; OD.

Shell subdiscoid to depressedly-conic, thin, brittle, translucent, of 4 slightly convex whorls. Last whorl inflated. Color yellow. Embryonic whorls smooth, later very finely and deeply striated above, basal surface smooth. Aperture subcircular, oblique, with simple margins. Umbilicus rather wide. Height 0.24, diam. 0.43 inches (about 6 ×11 mm).

DISTRIBUTION. W Australia. 1 sp.

Victaphanta Iredale, 1933
Fig. 959

Iredale, 1933: 40 (*Paryphanta* subg.) (line priority).

— *Melavitrina* Iredale, 1933: 40 (t.-sp. *Vitrina milligani* L. Pfeiffer, 1853; OD).

B. Smith, 1992: 304.

TYPE SPECIES — *Nanina atramentaria* Shuttleworth, 1853; OD.

Shell somewhat vitrinoid, (sub)globose, very thin, scarcely calcareous, dull above, shining and highly polished below, of 3.5-5 convex whorls. Color greenish-black to dark-brown, initial whorls lighter. Embryonic whorls smooth, subsequent with few, fine, spiral incised lines on upper surface, lower surface polished; sometimes there is fine radial striation on upper side. Aperture large, ovate-lunate, well oblique. Umbilicus narrow to nearly closed. Height 10-18, diam. 18-34 mm (18.0 x 29.8 mm).

DISTRIBUTION. SE Australia, Tasmania. 4 spp.

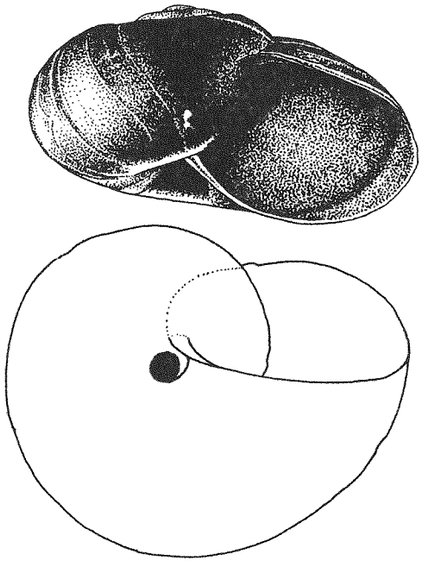


Fig. 959. ***Victaphanta atramentaria*** (Shuttleworth, 1853).
Australia. **Vienna**.

Delos Hutton, 1904
Fig. 960

Hutton, 1904: 461 (nom. nov. pro *Rhenea* Hutton, 1884).

— *Elaea* Hutton, 1884: 207 [nom. praeocc., non Ziegler, 1833 (Prosobranchia); t.-sp. *Zonites coresia* Gray, 1849; SD Suter, 1913].

— *Rhenea* Hutton, 1893: 631 (nom. praeocc., non Saalmüller, 1884 (Lepidoptera); nom. nov. pro *Elaea* Hutton, 1884).

— *Renea* Kobelt, 1910: 139 (nom. praeocc., non Nevill, 1880; nom. err. pro *Rhenea* Hutton, 1893).

TYPE SPECIES — *Zonites coresia* Gray, 1849; SD Suter, 1913.

Shell flattened, thin, translucent, shining, of 3-4 rather convex whorls. Color greenish or brownish, usually with brown sparse radial streaks. Embryonic whorls smooth, polished or microscopically spirally striated. Later whorls often lacking regular sculpture, only with weak wrinklets and, in places, separate spiral lines, especially on basal surface; rarely with fine radial rib-striation. Aperture obliquely ovate, moderately oblique, with simple, sharp margins. Umbilicus (rather) wide, perspective. Height 1.7-2.8, diam. 4-7 mm (2.6 ×5.6 mm).

Hermaphroditic gland of 2 banana-shaped lobes. Vas deferens entering penis subterminally to form a short flagellum. Penis long, cylindrical. Penial retractor attached apically. Free oviduct and vagina short, subequal in length. Spermatheca roughly as long as penis, fusiform, without distinct differentiation into stalk and reservoir, with apical muscular ligament.

DISTRIBUTION. New Hebrides region through Australia and Tasmania to North Island and off-shore islands of New Zealand. At least 10 spp.

Delouagapia Powell, 1952
Fig. 961

Powell, 1952: 167 (*Delos* subg.).

TYPE SPECIES — *Gerontia cordelia* Hutton, 1883; OD.

Shell depressed to almost flat, thin, glossy, of 4.5 whorls; last whorl rounded, scarcely descending. Color of well developed periostracum pale-corneous, marbled and streaked with reddish-brown. Sculpture of embryonic and later whorls of regular, more or less crowded, rather coarse radial wrinkles. Aperture comparatively small, rounded to subquadrangular, slightly oblique, with thin margins; columellar mar-

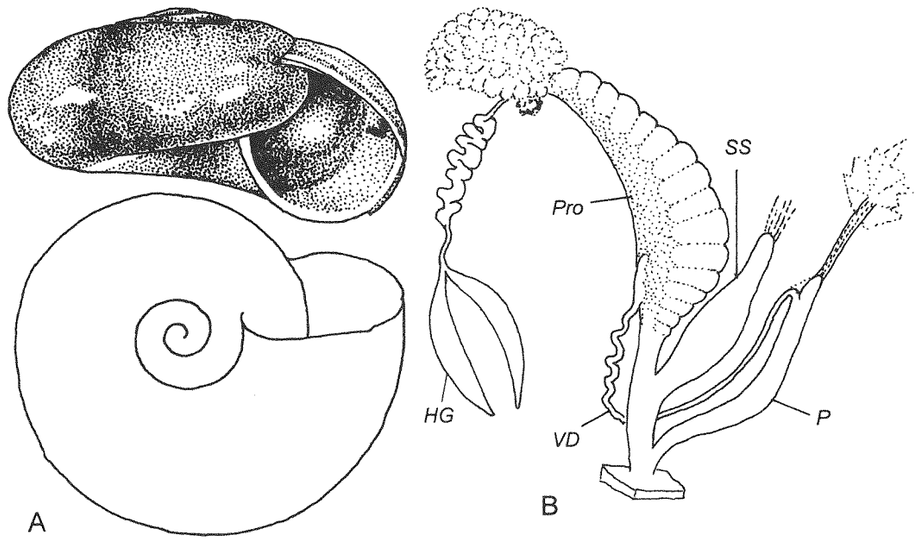


Fig. 960. A — ***Delos coresia*** (Gray, 1849). North Island, New Zealand. **Phil**. No. 63819.
B — ! ***Delos jeffreysiana*** (L. Pfeiffer, 1853). Reproductive tract. After Climo, 1973.

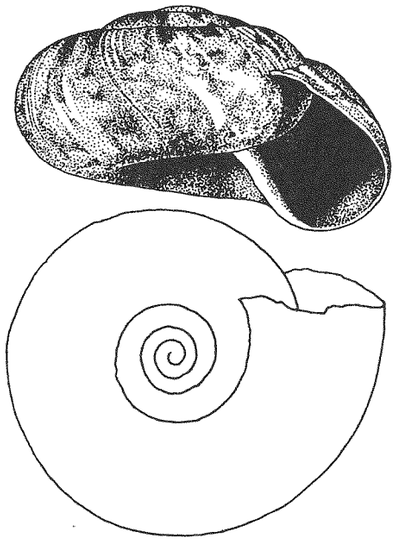


Fig. 961. ***Delouagapia cordelia*** (Hutton, 1883). Waipoua Forest, North Island, New Zealand. **Phil**. No. 324595.

gin dilated, rapidly ascending but not vertical. Umbilicus broad, quite perspective. Height 3.3-4.5, diam. 6.5-8 mm (3.4×6.5 mm).

Powell (1952) erected this taxon on the basis of radular characters: formula 12+0+12, while in two species of *Delos* it is 9+0+9.

DISTRIBUTION. New Zealand (North Island). Probably 1 variable sp.

Powelliphanta O'Connor, 1945
Fig. 962

O'Connor, 1945: 55 (*Paryphanta* subg.).

TYPE SPECIES — *Helix hochstetteri* L. Pfeiffer, 1862; OD.

Shell strongly depressed, rather solid, dull above, shining below, of about 5 whorls; last evenly rounded, markedly descending in front. Color of unusually thick periostracum olive-greenish, with several dark bands and dark zone around umbilicus; aperture internally black. Embryonic

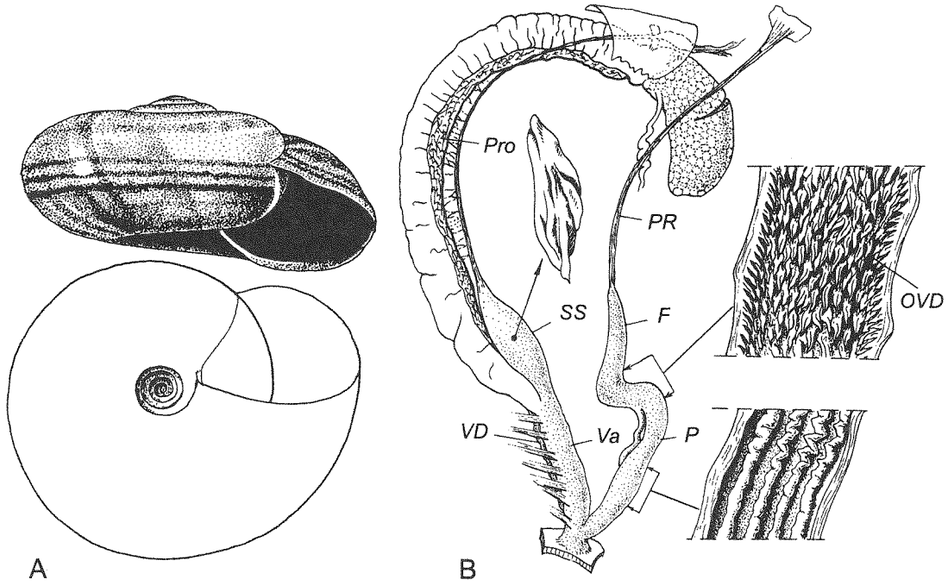


Fig. 962. ***Powelliphanta hochstetteri*** (L. Pfeiffer, 1862).
A — shell: Blumine Id., Queen Charlotte Sound, Marlborough, South Island, New Zealand. **Paris**. B — reproductive tract and interior of penis and epiphallus. Takaka Valley, New Zealand. **SPb**.

whorls with spiral striation, later whorls with fine irregular radial striation and spirally directed short wrinkles; locally there are elements of malleate sculpture. Basal surface smooth. Aperture ovate, well oblique, margins simple, thin or scarcely thickened; upper part of palatal margin flattened or slightly concave. Umbilicus moderately wide, perspective. Height 9-31, diam. 20-60 mm (28.0 × 56.4 mm).

Kidney trianglular. Secondary ureter completed. Vas deferens bound to side of vagina and penis by fibrous tissue, entering penis through a simple pore at considerable distance from apex; thus, a rather long flagellum arises. Penis long, rather thin, with central longitudinal pigmented strip corresponding to several pigmented strips within the organ. Inner surface of upper section of penis densely covered with numerous large, flat, leaf-shaped papillae having pointed tips. Lower and middle sections of penis with several axial folds. Penial retractor long, arising on diaphragm, attached apically to flagellum. Vagina with series of retentors connecting the organ with body wall. Spermatheca ovate, short, with very long apical ligament adhering to bottom of lung cavity; a dense package of spermatozoa has been found inside spermatheca (arrow on fig. 962, B).

DISTRIBUTION. New Zealand. 10 spp. with about 40 subspp. & forms (Meads et al., 1984).

Rhytida Martens in Albers, 1860
Fig. 963

Martens in Albers, 1860: 89 (*Helix* subg.).

— *Eurhytida* Moellendorff in Moellendorff & Kobelt, 1903 (1902-1905): 25 (*Rhytida* subg.; t.-sp. *Helix greenwoodi* Gray, 1849; OD).

TYPE SPECIES — *Helix greenwoodi* Gray, 1849; OD.

Shell depressedly conic, moderately solid, of 4-5 convex whorls; last whorl gradually descending in front. Color brownish to olivaceous, uniform or with indistinct radial streaks. Embryonic whorls usually delicately radially wrinkled, later whorls cove-

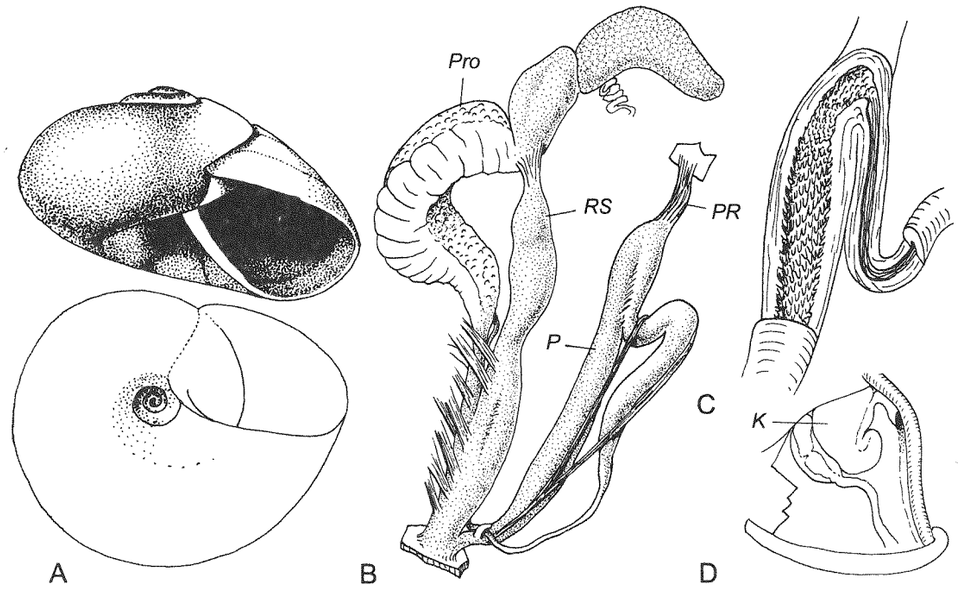


Fig. 963. ***Rhytida greenwoodi*** (Gray, 1849).
A — shell: New Zealand. **Paris**. B — reproductive tract. C — interior of penis. D — roof of lung. Auckland, New Zealand. **SPb**.

red with irregular radial wrinkles, often with spiral cords, fine granulation or with malleate-vermiculate sculpture. Aperture well oblique, with simple margins; upper portion of palatal margin distinctly flattened. Umbilicus moderately narrow, but quite perspective, surrounded by blunt angle on basal surface. Height 4-30, diam. 9.5-42.0 mm (12.3 ×20.8 mm).

Orifice of atrium located at midway between base of right ommarophore and mantle margin.

Kidney triangular, its lower end curved back upon itself. Secondary ureter completed only at upper portion. Vas deferens entering epiphallus apically. Epiphallus about as long as penis, adherent to it at upper section. Epiphallus enters penis through simple pore, internally with fine longitudinal folds. Inner surface of penis covered with numerous leaf-shaped, flattened papillae arranged in obliquely-circular series. Penial retractor short, strong, attached to epiphallus/penis junction. There is an additional muscular band connecting basal part of penis with epiphallus by 2 branches. Spermatheca stout, with a shallow narrowing between shaft and reservoir. Reservoir with a short apical ligament attached to upper section of spermoviduct. Numerous well-developed retentors connect vagina and base of spermathecal stalk with body wall.

DISTRIBUTION. New Zealand. 10 spp. & subspp.

Wainuia Powell, 1930
Fig. 964

Powell, 1930: 22, 51.

TYPE SPECIES — *Helix urnula* L. Pfeiffer, 1855; OD.

Shell subglobose, very thin, fragile, glossy, of about 3 convex whorls; last whorl obliquely flattened above, only little descending. Color uniformly greenish-brown. Embryonic whorls with obsolete to distinct radial riblets, subsequent whorls irregularly, obliquely sulcated and malleated. Aperture large, ovate, oblique, with simple, sharp, fragile margins. Umbilicus

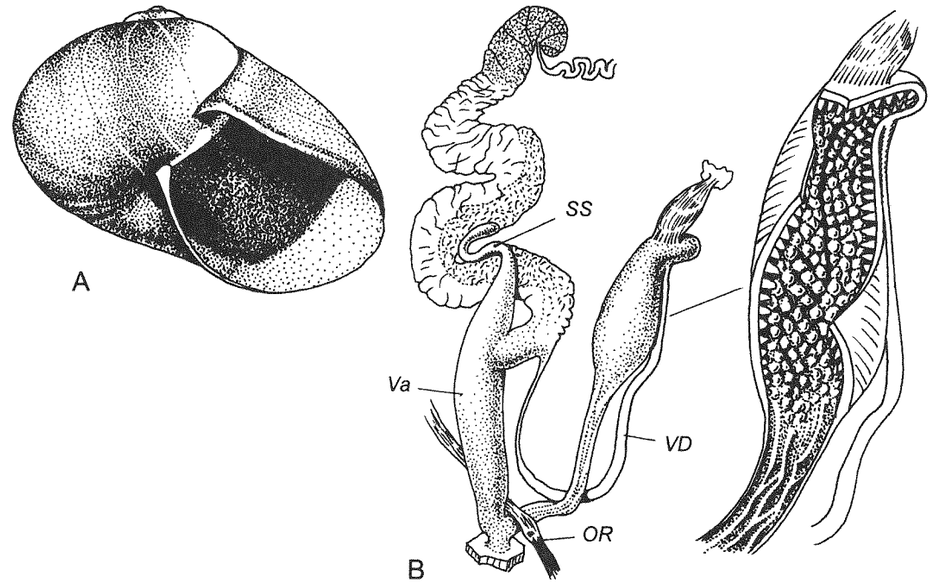


Fig. 964. ***Wainuia urnula*** (L. Pfeiffer, 1855).
A — shell: 1200 feet up Wainniomata near Wellington, January, 1924. **Chicago** No. 158833.
B — reproductive tract and interior of penis. Naenae, Hutt Valley, Wellington, February 24, 1966. **SPb**.

narrowly open. Height 9-28, diam. 16-34 mm (17.2 ×18.0 mm).

Talon not visible, embedded in albumen gland. Vas deferens thin at proximal portion, than it becomes wider and distally slightly narrowed again; entering well below summit of penis, thus a short rounded flagellum arises. Penis consists of two portions. Distal portion narrow, internally with fine anostomosing longitudinal folds, proximal portion expanded, its inner surface covered with large regular papillae arranged in oblique rows; opening of vas deferens situated in deep and narrow slit. Penial retractor attached opposite to base of vas deferens. Free oviduct very short, vagina much longer, stout, cylindrical. Spermatheca short, with greatly enlarged basally shaft and minute reservoir.

DISTRIBUTION. New Zealand. 5 spp. & subspp.

Paryphanta Albers, 1850
Fig. 965

Albers, 1850: 129 (*Helix* subg.).

TYPE SPECIES — *Helix bushyi* Gray, 1840; monotypy.

Shell depressed, thin, very shining, of 4.5 whorls; last whorl strongly, gradually descending in front. Color of thick periostracum greenish-black; periostracum so strong, that usually breaking shell when contracted in drying dead shells. Embryonic whorls smooth, surface of subsequent whorls more or less wavy because of presence of smoothed, rounded, wide spiral ridges. Aperture ovate, very oblique, with simple, somewhat inflected margins; upper part of palatal margin much flattened. Umbilicus rather narrow, deep, excentric. Height 22-31, diam. 53-70 mm (29.2 × 67.2 mm).

Vas deferens and penis vestigial, strongly reduced. Spermatheca missing.

DISTRIBUTION. New Zealand (North Island). 1 sp. with a few subspp.

Rhytidarex Powell, 1948
Fig. 966

Powell, 1948: 281 (*Rhytida* subg.).

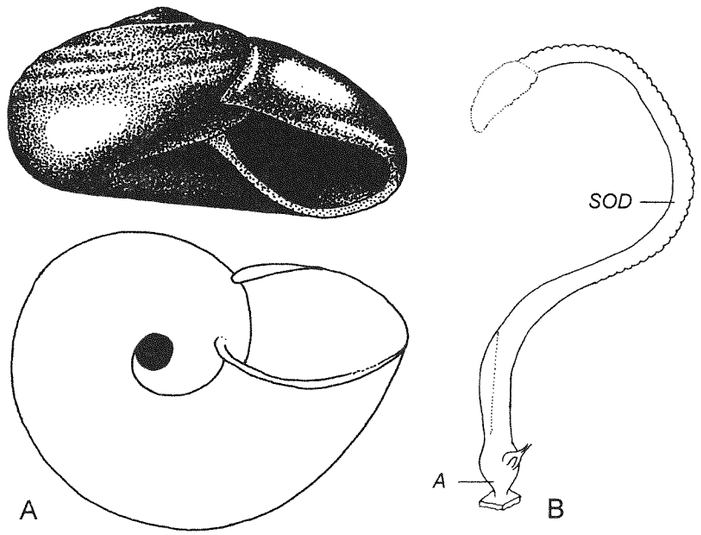


Fig. 965. ***Paryphanta bushyi*** (Gray, 1840).
A — shell: New Zealand. **Vienna** No. 16.698. B — reproductive tract. After Climo, 1977.

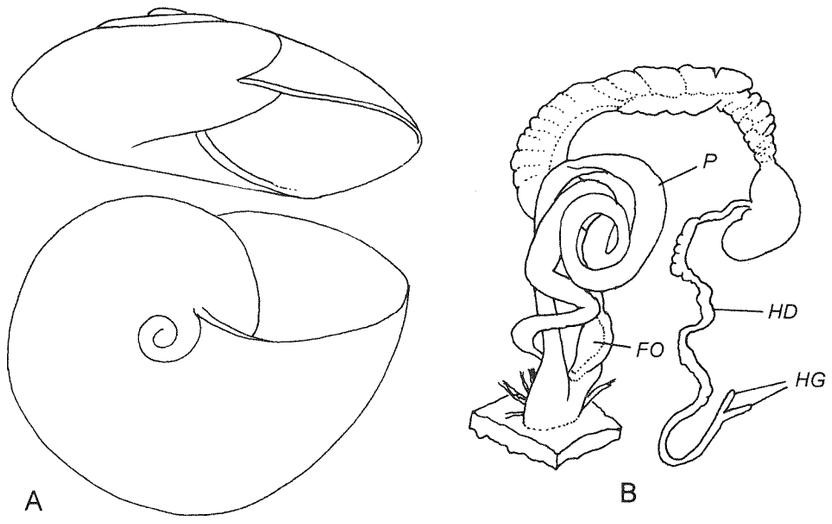


Fig. 966. ***Rhytidarex johnsoni*** (Powell, 1948).
A — shell. After Powell, 1948. B — reproductive tract. After Climo, 1977.

TYPE SPECIES — *Rhytida* (*Rhytidarex*) *johnsoni* Powell, 1948; OD.

Shell depressed, thin, of 3.5-4.5 rather convex whorls; last whorl (scarcely) angled at periphery, a little descending. Color of variously developed periostracum brownish or pale yellowish-olive. Embryonic sculpture of weak radial wrinkles; later whorls with fairly regular, closely spaced radial wrinkles, becoming irregularly anastomosing and malleate over body whorl or its distal half; this sculpture fine but distinct on upper surface, but obsolete on basal surface. Umbilicus moderately narrow, profound. Height 11.2-29.0, diam. 21.6-64.0 mm.

Hermaphroditic gland of 2 clusters of acini. Talon not visible (absent?). Vas deferens short, tightly bound to distal part of female section. Penis unusually long, coiled, intricately bound by muscle fibers. Penial retractor and spermatheca not found. There are several thin atrial retractors.

DISTRIBUTION. New Zealand (Three Kings Islands). 2 spp.

REMARK. Initially this taxon has been erected on the basis of radular characters (radular formula 33+1+33) whilst the number of lateral teeth in *Rhytida* is no more than 18 (18+1+18)) and by the reason of less distinct (than in *Rhytida*) embryonic sculpture. However, the main diagnostic character of the genus is the presence of unusually long, coiled penis lacking a retractor.

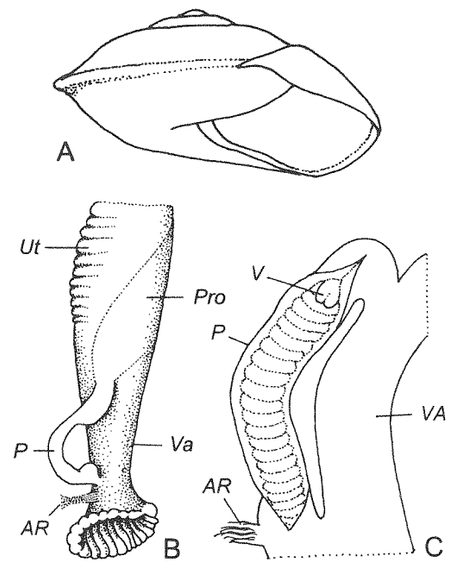


Fig. 967. ***Amborhytida dunniae*** (Gray, 1840).
A — shell. After Pilsbry, 1885. B — distal part of reproductive tract. After Climo, 1974. C — ! ***Amborhytida pycrofti*** (Powell, 1952). Interior of penis. After Climo, 1977.

Amborhytida Climo, 1974
Fig. 967

Climo, 1974: 181 (*Rhytida* subg.).

TYPE SPECIES — *Helix dunniae* Gray, 1840; OD.

Shell somewhat depressed, rather thin, of about 4 flattened whorls; last whorl slightly descending in front, with 1 or 2 distinct peripheral keels. Color olivaceous-brown or orange-brown; umbilical area in some species brown or chestnut. Embryonic whorls smooth, later with irregular or malleate, close-set radial striae and sometimes spiral cord-like striation. Aperture irregularly ovate, oblique, with simple margins, upper part of palatal margin flattened. Umbilicus rather narrow. Height 11-16, diam. 24.0-30.5 mm.

As Climo (1974b) stated, the penis is absent; however it is possible that it is reduced and does not differ externally from vas deferens. Internally penis with tiny bilobed verge, inner surface covered with circular folds. Weak atrial retractor may be present. Spermatheca missing.

DISTRIBUTION. New Zealand. 5 spp.

Schizoglossa Hedley, 1893
Fig. 968

Hedley, 1893: 391.

TYPE SPECIES — *Daudebardia novozeelandica* L. Pfeiffer, 1862; OD.

Shell reduced, ear-shaped, thin, glossy, opaque, of 2-2.5 whorls. Color brown to chestnut or greenish-yellow, upper spire often tinged with pink; aperture within slightly nacreous, gleaming white and purple; columella white. Embryonic whorls (1.5) smooth, last whorl coarsely, irregularly, radially wrinkled and faintly spirally grooved. Height up to 6, max. diam. up to

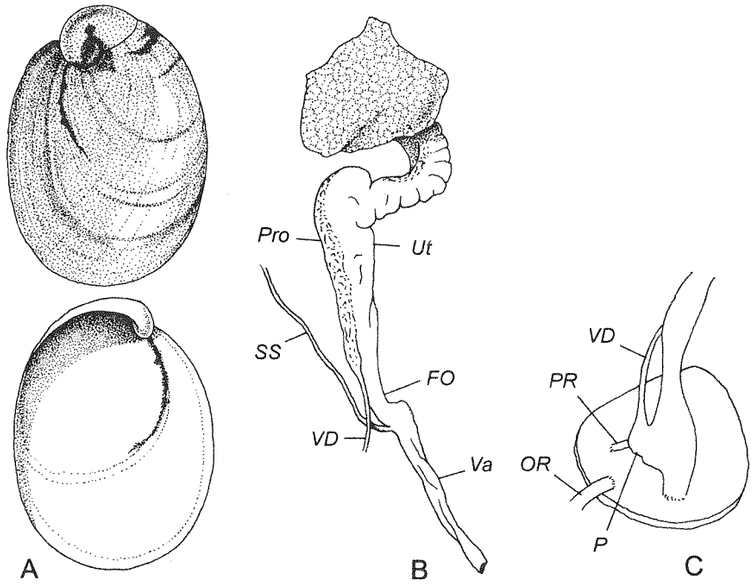


Fig. 968. ***Schizoglossa novozeelandica*** (L. Pfeiffer, 1862).
Rangitoto Pureora Forest Range, North Island, New Zealand, March 12, 1996. A — shell. B — reproductive tract. **Moscow** No. Lc-24939. C — distal portion of reproductive tract. After Hedley, 1892.

32, min. diam. up to 19 mm (2.0 ×12.2 × 8.6 mm).

Central teeth of radula missing.

Specimen I dissected was aphallic. Vas deferens ending blindly. Free oviduct somewhat shorter than vagina. Stalk of spermatheca very thin, reservoir not found. According to Hedley (1892, pl. X, fig. 9), vas deferens short, straight. Penis minute, rudimentary, appearing to be represented by a slight bulbous swelling. Penial retractor connects penis and nearest point of body wall. Spermatheca not found.

DISTRIBUTION. New Zealand (North Island). 5 spp. & subspp.

Natalina Pilsbry, 1893

Pilsbry, 1893 (1892-1893): 135.

— *Aerope* Martens in Albers, 1860: 83 [nom. praeocc., non Desmarest, 1823; *Helix* subg.; t.-sp. *Helix caffra* (sic!) Férussac, 1821; monotypy].

TYPE SPECIES — *Helix cafra* Férussac, 1821; OD.

Shell more or less flattened, with a rather large protoconch composed of about 2 whorls. Embryonic sculpture of curved radial riblets.

Lower left body lobe of mantle collar not very prominent, but extending far around mantle collar and more or less connected with upper left lobe.

Orifice of atrium located at short distance behind base of right ommatophore.

Kidney not reflexed at front end.

Spermoviduct convoluted. Epiphallus rather short. Penis much longer, cylindrical. Free oviduct short; vagina, on the contrary, long. Spermathecal stalk long, slender.

DISTRIBUTION. S Africa.

Natalina (*Natalina* s. str.)
Fig. 969

Shell subglobose, thin, more or less translucent, dull above, glossy below, of about 5 whorls; last whorl rounded, straight or a little descending in front. Color yellowish- or reddish-brown, with darker radial streaks at irregular intervals. Both embryonic and

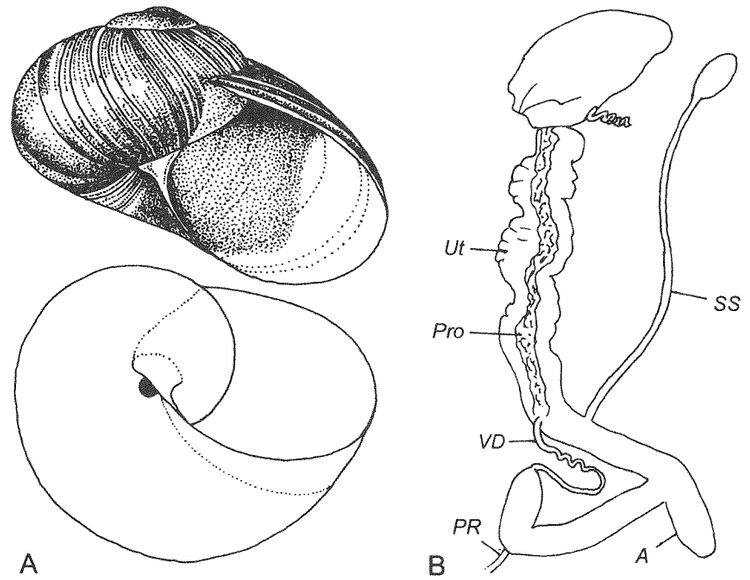


Fig. 969. ***Natalina*** (***Natalina***) ***cafra*** (Férussac, 1821).
A — shell: S Africa. **SPb**. B — reproductive tract. After Woodward, 1895.

postembryonic whorls with very close, sharp, regular riblets. Aperture ample, oblong-ovate, margins usually membranaceous owing to periostracum being continued a little beyond calcareous layer of shell. Columellar margin broadly triangularly reflexed, but scarcely overhanging rather narrow cylindrical umbilicus. Height 7-50, diam. 11.2-75.5 mm (49.5 × 75.2 mm).

Talon not visible. Vas deferens slightly coiled, entering epiphallus apically. Epiphallus passes to penis through a curvature; penial retractor attached on angle. Free oviduct short, vagina long. Reservoir of spermatheca attending albumen gland.

DISTRIBUTION. S Africa (Natal, Cape Province). 9 spp.

Natalina (*Afrorhytida* Moellendorff, 1905)
Fig. 970

Moellendorff in Moellendorff & Kobelt, 1905 (1902-1905): 25, 61 (*Rhytida* subg.).

TYPE SPECIES — *Helix knysnaensis* L. Pfeiffer, 1845; OD.

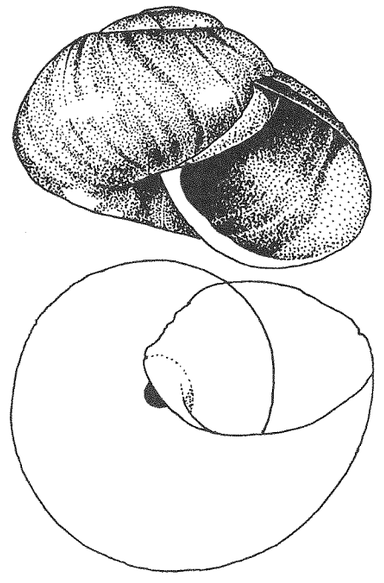


Fig. 970. ***Natalina*** (***Afrorhytida***) ***knysnaensis*** (L. Pfeiffer, 1845).
Port Elisabeth, S Africa. **Phil**. No. 60000.

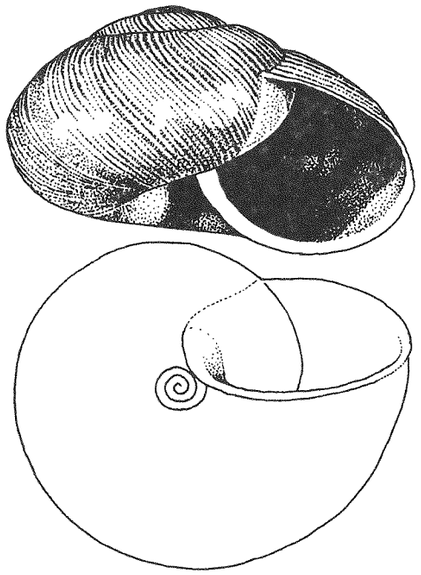


Fig. 971. ***Natalina*** (***Hyperrhytida***) ***trimeni*** (Melvill et Ponsonby, 1892).
Cradock, S Africa. **Phil**. No. 118158.

Shell semiglobose, thin, translucent, of 4-5 rather convex whorls; last whorl evenly rounded at periphery, straight or scarcely descending in front. Color greenish or olivaceous, often with irregular darker radial streaks. Radial sculpture on embryonic whorls variously developed, postnuclear whorls with very fine radial riblets and weak spiral striae. Aperture subcircular, with more or less thickened margins; columellar margin somewhat reflexed. Umbilicus narrow, cylindrical. Height 15-17, diam. 20-24 mm (15.2 ×21.1 mm).

Upper and lower left body lobes of mantle collar connected by a low ridge.

Talon not visible. Vas deferens entering very short epiphallus apically. Epiphallus joined to side of penis by connective-tissue bands. Penis rather long, cylindrical. Penial retractor attached to penis/epiphallus junction. Free oviduct comparatively long, somewhat swollen; vagina of about same length, cylindrical. Spermathecal duct long, evenly slender, reservoir club-shaped, reaching albumen gland.

DISTRIBUTION. S Africa. 5 spp.

Natalina (*Hyperrhytida* Watson, 1934)
Fig. 971

Watson, 1934: 156 (pro sect.).

TYPE SPECIES — *Helix* (*Aerope*) *trimeni* Melvill et Ponsonby, 1892; OD.

Shell semiglobose, thin, fragile, silky above, glossy beneath, of 4-5 moderately convex whorls; last whorl rounded, slightly deflected. Color greenish, pale-chestnut or corneous-yellow-brown. Embryonic whorls with faint, curved, radial striae, subsequent densely radially rib-striated, including last whorl. Aperture rounded, with simple margins; columellar reflexed and a little expanded. Upper portion of palatal margin only slightly flattened. Umbilicus moderately broad, perspective. Height 13.0-16.5, diam. 20-25 mm (13.0 ×21.0 mm).

DISTRIBUTION. S Africa. 2 spp.

Natalina (*Capitina* Watson, 1934)
Fig. 972

Watson, 1934: 153.

TYPE SPECIES — *Helix scharfiae* L. Pfeiffer, 1861; OD.

Shell much depressed, rather solid, dull and silky above, glossy beneath, more or less translucent, of 3.5-4.5 whorls. Last whorl evenly rounded at periphery, distinctly descending in front. Color corneous-olive-brown, with 1-3 narrow chestnut bands. Embryonic whorls with radial ribs which cut by 2 or 3 spiral grooves near periphery; later whorls bear coarse, irregular, oblique, radial wrinkles; on basal surface this sculpture much weaker. Aperture subovate, with somewhat thickened margins. Upper part of palatal margin only slightly flattened. Columellar and basal margins more or less reflexed. Umbilicus rather narrow, excentric. Height 15-18, diam. 23-31 mm (18.0 ×29.8 mm).

Upper and lower left body lobes of mantle collar completely united to form a single extensive lobe.

Reproductive tract of same structure as in *Afrorhytida* except that epiphallus much shorter; it joined to side of penis by connective-tissue bands.

DISTRIBUTION. S Africa (south of Cape Province). 1 sp.

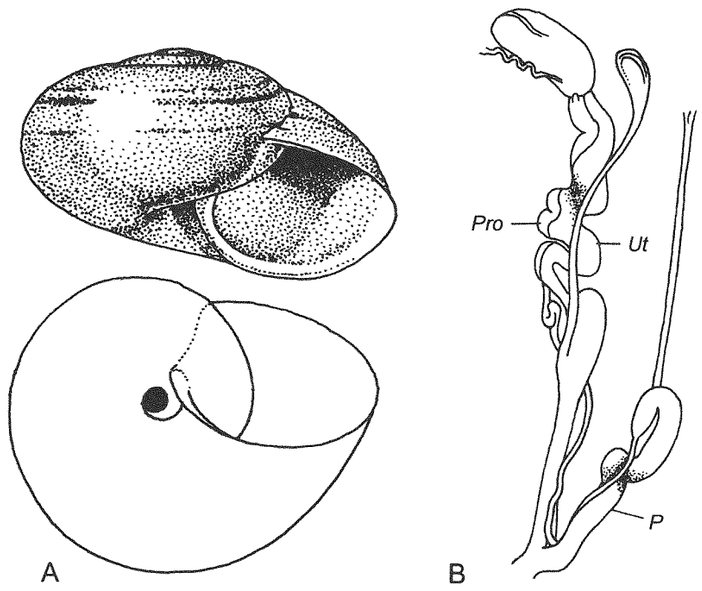


Fig. 972. ***Natalina*** (***Capitina***) ***scharfiae*** (L.Pfeiffer, 1861).
A — shell: Near Gans Bay, Cape Prov., S Africa. **Leiden**. B — reproductive tract. After Watson, 1934.

Nata Watson, 1934

Watson, 1934: 158.

TYPE SPECIES — *Natalina tarachodes* Connolly, 1912; OD.

Shell with small protoconch. Embryonic sculpture generally missing. Umbilicus narrow to broad.

Left body lobe of mantle collar quite separate, having relatively short attachments but rather prominent, with protecting outer angles.

Orifice of atrium shifted far backward and located below mantle collar.

Front end of kidney bent downwards and backwards, so that beginning of ureter overlaps anterior end of pericardium.

Spermoviduct not convoluted. Epiphallus, when present, comparatively small and much narrower than penis. Penis shorter and broader than in *Natalina*. Free oviduct rather long and narrow. Vagina very short. One species with atrial appendix. Spermathecal stalk expanded basally, shorter than in *Natalina*.

DISTRIBUTION. S Africa.

Nata (*Nata* s. str.)
Fig. 973

Shell depressedly globose, moderately thin, more or less translucent, shining, of 4-5 rather convex whorls; last whorl rounded, not or scarcely descending in front. Color corneous, yellowish or greenish. Embryonic whorls nearly smooth or smoothly malleate, subsequent whorls above with fine, crowded, fairly regular, curved radial wrinkles and trace of extremely dense, microscopic spiral striation, better visible on basal surface. Aperture oblong-ovate, with simple margins. Umbilicus broad, profound. Height 3.3-13.0, diam. 5-22 mm (*tarachodes*: 4.6 × 9.8 mm; *dumeticola*: 13.0 × 22.0 mm).

Kidney approximately triangular, its front end bluntly pointed.

Vas deferens passing beside free oviduct and vagina, then beside penis. Epiphallus

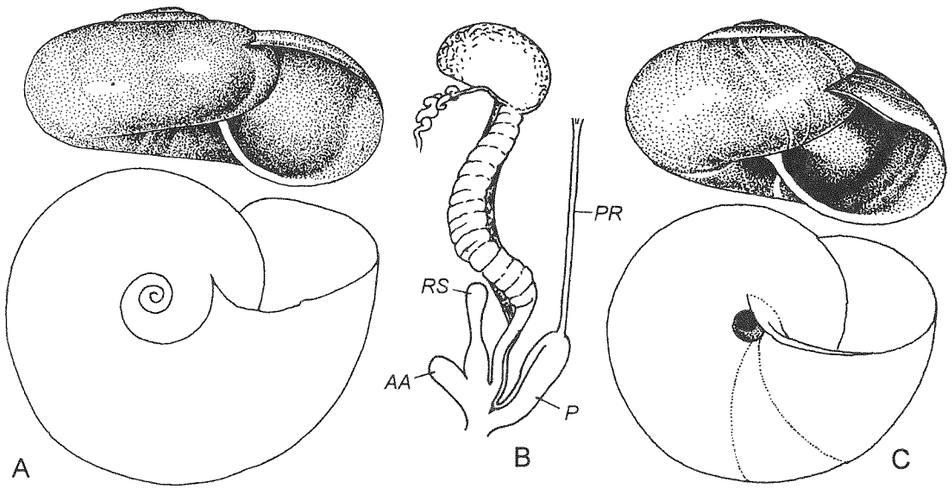


Fig. 973. A, B — ***Nata*** (***Nata***) ***tarachodes*** (Connolly, 1912).
A — shell: Signal Hill, Table Mountain, Cape Peninsula. **London** No. 1937.12.30.1352-3.
B — reproductive tract. After Watson, 1934.
C — ! ***Nata*** (***Nata***) ***dumeticola*** (Benson, 1851). Shell: Cape of Good Hope. **Phil**. No. 1085.

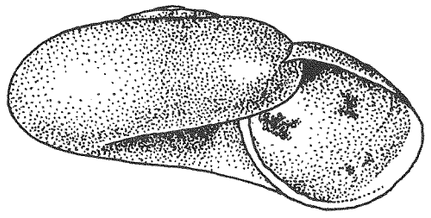


Fig. 974. ***Nata*** (***Natella***) ***viridescens*** (Melvill et Ponsonby, 1891).
Pretoria, S Africa. **Phil**. No. 67236.

short, entering penis laterally either at its upper end or further distalwards. In one species (*N. tarachodes* Connolly, 1912) there is a blunt atrial (? vaginal) appendix.

DISTRIBUTION. S Africa. At least 5 spp.

Nata (*Natella* Watson, 1934)
Fig. 974

Watson, 1934: 160 (pro sect.).

TYPE SPECIES — *Helix* (*Patula*) *viridescens* Melvill et Ponsonby, 1891; OD.

Shell flattened, thin, translucent, glossy, of 3-3.75 whorls; last whorl rounded at periphery, straight. Color corneous-golden-yellow. Embryonic whorls smooth, subsequent whorls with weak, irregular, slightly curved radial striae; spiral sculpture absent. Aperture elongated-ovate, oblique, with simple margins; upper portion of palatal margin somewhat indented. Umbilicus wide, open. Height 1.4-2.2, diam. 3-5 mm (1.4 × 3.7 mm).

Kidney approximately ovate, with broadly rounded front end.

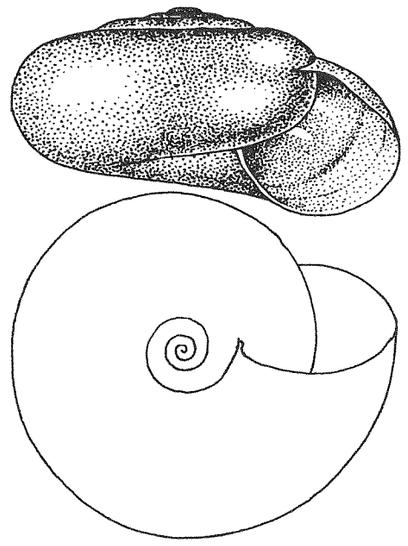


Fig. 975. ! ***Macrocycloides annatonensis*** (Reeve, 1854).
New Hebrides. **Chicago** No. 37019.

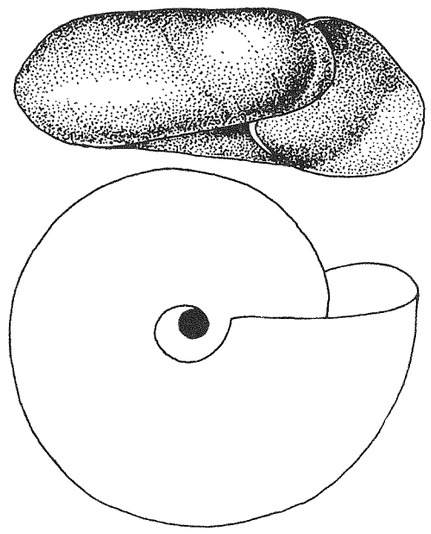


Fig. 976. ***Hebridelos rapidus*** (L. Pfeiffer, 1853).
New Hebrides. **Geneva**.

Vas deferens not enlarged to form an epiphallus, but passing directly to apex of short, broad penis.

DISTRIBUTION. S Africa (Transvaal, Natal). 1 sp.

Macrocycloides E. Martens, 1867
Fig. 975

Martens E., 1867: 259 (*Patula* "Gruppe").

TYPE SPECIES — *Helix arthurii* L. Pfeiffer, 1851; SD Kobelt, 1905 in Moellendorff & Kobelt, 1902-1905.

Shell *Oxychilus*-like, depressed, thin, transparent, of 4-5 rather convex whorls; last whorl almost straight, evenly rounded at periphery. Color brownish-yellow, yellowish or shell colorless. Embryonic whorls smooth, later whorls glabrous to finely radially striated. Aperture rounded, with thin, simple margins; columellar margin scarcely reflexed. Upper part of palatal margin somewhat flattened. Umbilicus open, moderately wide, quite perspective. Height 1-5, diam. 2.5-9.0 mm (4.6 × 9.0 mm).

DISTRIBUTION. Indonesia, New Guinea, ? New Caledonia, New Hebrides, Moluccas, Fiji, China. About 20 spp.

Hebridelos Solem, 1959
Fig. 976

Solem, 1959: 152 (*Delos* subg.).

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

Shell strongly depressed to flat, discoidal, thin, of 3.5-5 whorls; last whorl not or only slightly deflected, evenly rounded or angled at periphery. Color of thick periostracum dark- or light-greenish-corneous with red blotches or zigzag streaks. Embryonic whorls nearly smooth, subsequent with anostomosing spiral striae crossed by a few irregular radial wrinkles. Aperture ovate to compressedly lunate, with simple margins. Palatal margin concave. Umbilicus (widely) open, either shallow or deep. Height 2-4, diam. 5-12 mm (4.0×9.1 mm).

DISTRIBUTION. New Hebrides, Caroline Islands. 5 spp.

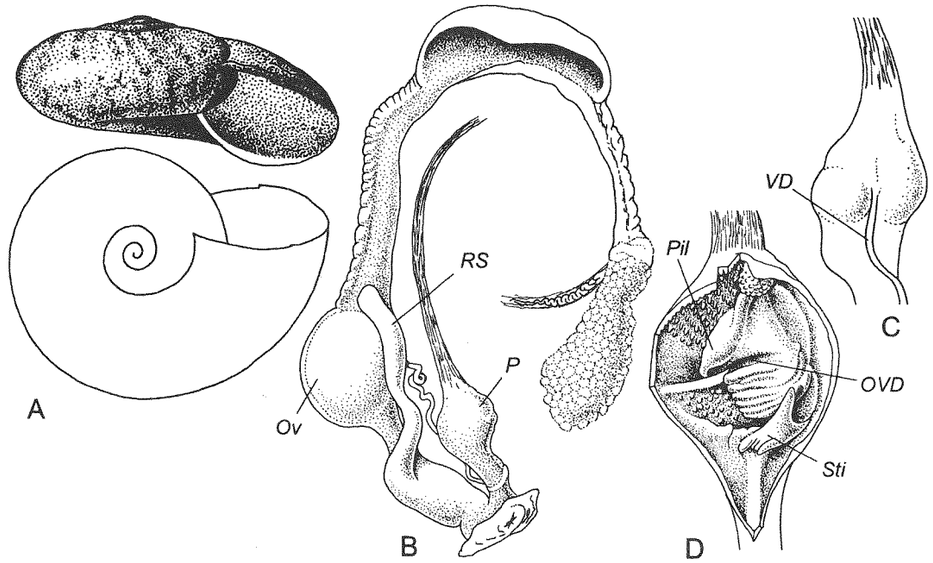


Fig. 977. ***Ouagapia raynali*** (Gassies, 1863).
A — shell: New Caledonia. **SPb**. B — reproductive tract. C — penis from other side. D — interior of penis. **New Caledonia, November 18, 1978. Paris**.

Ouagapia Crosse, 1894
Fig. 977

Crosse, 1894: 203.

— *Ouagabia* Zilch, 1983: 123 (nom. err. pro *Ouagapia* Crosse, 1894).

TYPE SPECIES — *Helix raynali* Gassies, 1863; monotypy.

Shell flattened, rather thin, dull to glossy, of about 4 slightly convex whorls; last whorl scarcely and gradually descending in front, evenly rounded. Apex broadly rounded. Color greenish-olive, with brown streaks and spots. Embryonic whorls smooth, subsequent with smoothish irregular radial wrinkles and very fine silky spiral striation. Aperture ovate, slightly oblique, margin insertions a little approached, margins thin, straight; palatal margin more or less flattened. Umbilicus wide, shallow, perspective. Height 2.0-15.5, diam. 5-33 mm (15.2 × 32.0 mm).

Talon not visible externally. Vas deferens tightly bound to penis, entering at some distance from upper end of penis. Penis sac-like, internally of complex structure. Lower cylindrical portion with a single, large longitudinal pilaster; this portion separated from upper swollen section by a distinct "threshold", on which a lamellar stimulator located; this stimulator has a complex shape and may serve as a sort of valve, capable to isolate penial sections from each other. Upper swollen portion has a very strong, fleshy pilaster bearing a deep semicircular furrow on its surface; on opposite side there is a distinct cross-lying ridge, exactly corresponding to furrow on pilaster; in combination these structures divide upper section into 2 chambers. Both chambers internally with conspicious pointed papillae. Pore of vas deferens situated in bottom of mentioned furrow and theoretically may be open only at complete eversion of penis or at considerable relaxation of penial walls. Penial retractor attaching to penis apically. In lower part of uterus (actually in free oviduct) I found one large egg having calcareous envelope. Free oviduct as long as vagina. Spermatheca short, without distinct separation into shaft and reservoir.

DISTRIBUTION. New Caledonia, New Hebrides, Fiji, Tonga, Ellice Island, Solomons. About 10 spp.

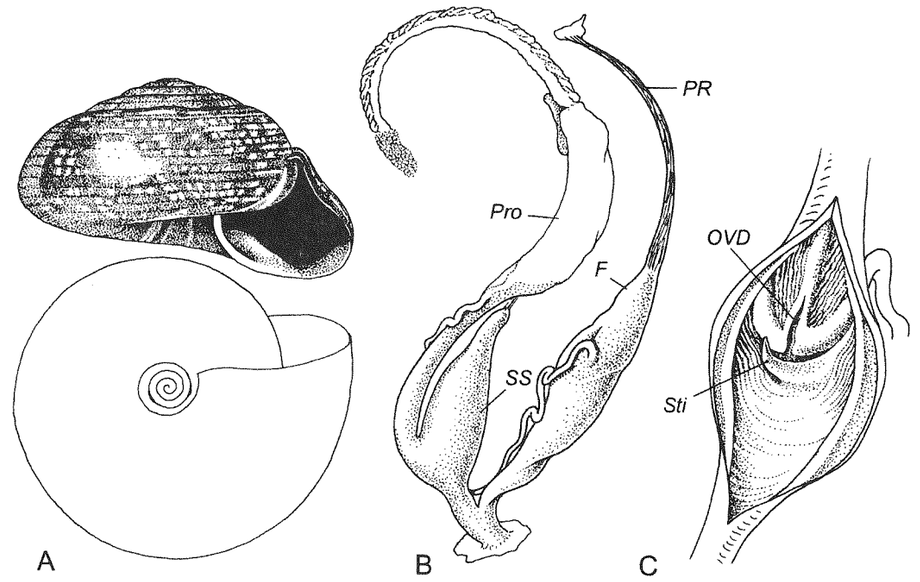


Fig. 978. ***Ptychorhytida beraudi*** (Gassies, 1858).
"Nouvelle Caledonie, Haute Rivière Blue", October 11, 1984. A — shell. B — reproductive tract. C — interior of penis. **Paris**.

Ptychorhytida Moellendorff, 1905
Fig. 978

Moellendorff in Moellendorff & Kobelt, 1905 (1902-1905): 25, 65 (*Rhytida* subg.).

TYPE SPECIES — *Helix beraudi* Gassies, 1858; OD.

Shell depressedly dome-shaped, somewhat solid, glossy, of 5.5-6.5 moderately convex, slightly shouldered whorls. Last whorl scarcely deflected. Color brown or brown-olive, with diffused radial darker streaks. Embryonic whorls vaguely malleated, rest whorls coarsely radially wrinkled and with widely spaced, quite distinct spiral grooves. Aperture roughly triangular, upper part of palatal wall concave, margins simple; columellar margin subvertical, shortly reflexed. Basal wall bears a large, deeply entering plica corresponding to a depression on basal surface of shell. Umbilicus moderately wide, profound, perspective. Height 2.5-17.5, diam. 5-30 mm (17.2 × 29.0 mm).

Talon externally not visible. Vas deferens not bound to penis, entering at some distance from base of penial retractor. Penis fusiform, its distal portion internally bears smoothed circular folds; proximal section contains a small conic stimulator and W-shaped pilaster; orifice of vas deferens situated between inner arms of "W". Penial retractor attached terminally. Free oviduct long, vagina short. Spermatheca short, conic, strongly enlarged basally, without distinct reservoir, with a weak apical ligament.

DISTRIBUTION. New Caledonia, Loyalty Islands. 5 spp.

Pseudomphalus Ancey, 1882
Fig. 979

Ancey, 1882: 86.

TYPE SPECIES — *Diplomphalus fabrei* Crosse, 1875; SD Zilch, 1960.

Shell flat, obese, with sunken summit, rather thin and fragile, of 4.5-6 convex whorls. Last whorl more or less evenly rounded at periphery. Color uniformly light-corneous. Embryonic whorls smooth, subsequent with delicate irregular radial wrinkles and extremely fine spiral striation. Aperture narrow, semilunar, with thin margins and well developed parietal callus. Um-

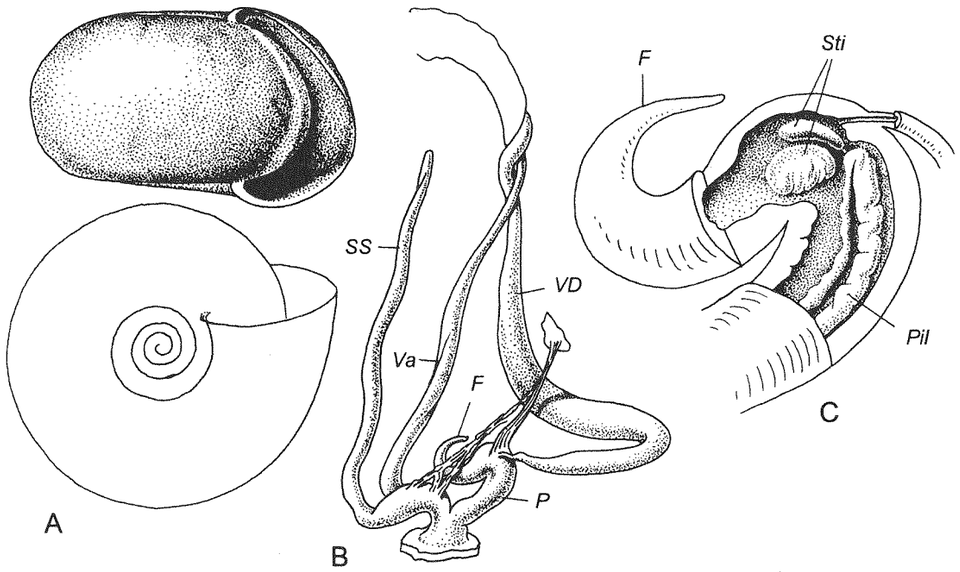


Fig. 979. ***Pseudomphalus fabrei*** (Crosse, 1875).
A — shell: New Caledonia. **Senck**. No. 158914. B — reproductive tract. C — interior of penis. "Nouvelle Caledonie, Sud du Grand Lac", October 26, 1984. **Paris**.

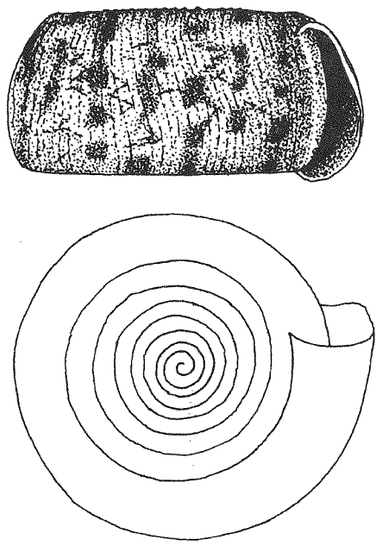


Fig. 980. ***Diplomphalus cabriti*** (Gassies, 1863).
New Caledonia. **Phil**. No. 62492.

bilicus open, rather broad. Height 7.0-8.5, diam. 12-15 mm (7.0×12.5 mm).

Vas deferens not sinuated or twisted, enormously swollen, narrowed at distal end, entering penis at base of penial retractor. Flagellum conic, thick-walled, relatively long. Penis short, internally with a single strong V-shaped pilaster; tip of "V" directed to pore of vas deferens. Pair of stimulatory pads situated opposite to mentioned pore. Penial retractor attaching to penis/flagellum junction; branch of retractor inserted by a few arms on vagina. Free oviduct very long, vagina short. Spermatheca sleeve-like, without subdivision into shaft and reservoir.

DISTRIBUTION. New Caledonia. 1 sp.

Diplomphalus Crosse et Fischer, 1873
Fig. 980

Crosse & Fischer, 1873: 20.

TYPE SPECIES — *Helix cabriti* Gassies, 1863; SD Ancey, 1882.

Shell flat, rather thin, scarcely shining, of

7-9.5 tightly coiled whorls; last whorl slightly and gradually descending in front, evenly rounded at periphery, somewhat angled above and below. Apex profoundly sunken. Color corneous, crossed by reddish-chestnut maculation. Embryonic whorls smooth, postnuclear with flexuous suboblique striae, which better expressed near suture; so, suture crenulate. Aperture narrowly lunate, margins simple. Umbilicus shallow, very broad, quite perspective. Height 2.0-8.5, diam. 5.5-15.0 mm (4.2 × 8.6 mm).

DISTRIBUTION. New Caledonia. 6 spp.

CHLAMYDEPHORIDAE Cockerell, 1935

Cockerell, 1935: 143.

— Aperidae Moellendorff, 1902 in Moellendorff and Kobelt, 1902-1905: 5 (based on junior synonym).

Forcart, 1967: 517. Herbert, 1997: 208.

Slugs; shell internal, small, flattish, brittle, lying deep within a pocket in skin behind and to the left of pneumostome which situated in mid-line of back near posterior end of animal. Mantle absent. Dorsal surface with distinct grooves radiating from pneumostome.

Foot of aulacopodous type.

Jaw absent.

Lateral teeth of radula unicuspid, aculeate.

Kidney very short, both ureters completed.

Hermaphroditic gland of several acini. Hermaphroditic duct not convoluted. Albumen gland not differentiated. Epiphallus not present but distal part of vas deferens sometimes forms an epiphallic enlargement. Penis with a rather long to short flagellum, internally with numerous papillae, without hooks. Spermathecal shaft short, more or less swollen, internally with high axial folds.

DISTRIBUTION. S Africa (Natal, Zululand, Cape Province, Transvaal, Zimbabwe).

Chlamydephorus Binney, 1879
Fig. 981

Binney, 1879: 331.

— *Apera* Heynemann, 1885: 20 [nom. nov. pro

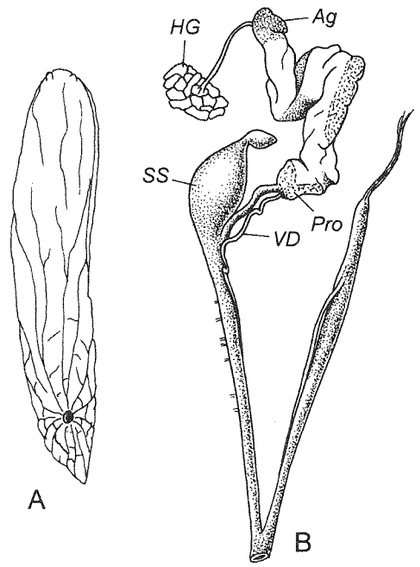


Fig. 981. ***Clamydephorus gibbonsi*** Binney, 1879.
"Cape Colony" [S Africa].
A — external view. B — reproductive tract.
London No. 1879.6.25.1.

Chlamydephorus Binney, 1879, non *Chlamyphorus* Harlan, 1830 (Mammalia); t.-sp. *Chlamydephorus gibbonsi* Binney, 1879; monotypy].

Forcart, 1967: 517 (as *Apera*).

TYPE SPECIES — *Chlamydephorus gibbonsi* Binney, 1879; monotypy.

Talon not visible. Vas deferens loosely bound to vagina and penis. Free oviduct shorter than vagina. Length of contracted animals up to 30 mm.

DISTRIBUTION. S Africa. 10-12 spp.

SYSTROPHIIDAE Thiele, 1926

Thiele, 1926: 143.

— Scolodontidae Baker, 1925a: 88.

Shell helicoid to discoid, (rather) thin, translucent to transparent, colorless or nearly so, weakly sculptured, generally of a few whorls. Aperture practically toothless, with simple or emarginate margins; palatal margin without depression. Umbilicus

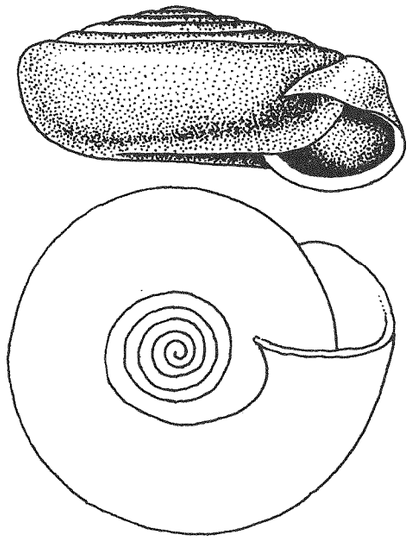


Fig. 982. ***Systrophia*** **(*Systrophia*)** ***systropha*** (Albers, 1854).
Colombia. **Chicago** No. 30514.

broadly open to very narrow, sometimes absent.

Foot aulacopodous.

Jaw, when present, simple, not chitinized.

Lateral teeth of radula unicuspid.

Hermaphroditic gland of a few to many acini. Albumen gland not differentiated. Epiphallus present. Penis sometimes with 1 or 2 caeca, internally with axial folds or tubercles, without hooks.

DISTRIBUTION. Central and S America.

Systrophiini Thiele, 1926

Tail of foot obliquely truncated, lacking caudal horn, suprapedal groove running parallel to tail truncation.

Central tooth of radula smaller than 1st lateral tooth which smaller than 2nd.

Length of kidney 2 times less than its width; kidney longer than a half of mantle cavity. Rectum touching proximal edge of kidney.

Ommatophoran retractor passes through peni-oviducal angle.

Prostate elongated, band-like. Penis sheath of mainly longitudinal fibers or sheath missing.

Ovoviviparous animals.

DISTRIBUTION. S America.

Systrophia L.Pfeiffer, 1855

Pfeiffer L., 1855: 136 (Helix sect.).

TYPE SPECIES — *Helix systropha* Albers, 1854; tautonymy.

Shell much flattened to flat, translucent, shining, of 8-12 moderately convex whorls. Embryonic whorls smooth, later whorls weakly sculptured. Umbilicus (very) broad, shallow.

Central tooth of radula very small, its length at least 4 times exceeds its width.

Penis sheath present.

DISTRIBUTION. N and NW regions of S America.

Systrophia **(*Systrophia*** s. str.)
Fig. 982

Shell much flattened to flat, moderately thin to rather solid, of 10-12 tightly coiled whorls; last whorl rounded at periphery, strongly descending in front. Color yellow or pale-brown or shell nearly colorless. Postembryonic whorls with weak irregular radial wrinklets and extremely fine crowded spiral striae. Aperture rounded, well oblique, with slightly thickened margins; upper part of palatal margin a little concave. Height 2.5-7.0 mm, diam. 6-20 mm (4.5 × 11.2 mm).

Lateral teeth number 25 in radula.

DISTRIBUTION. NW of S America. About 10 spp. & subspp.

Systrophia **(*Entodina*** Ancey, 1887)
Fig. 983

Ancey, 1887: 64.

TYPE SPECIES — *Helix reyrei* Sowerby, 1858; OD.

Shell strongly flattened, thin but rather firm, of about 8 whorls. Last whorl markedly deflected towards aperture. Color yellowish. Postembryonic whorls with delicate, silky radial striation. Aperture small, of irregular shape, oblique, with shortly reflexed, somewhat thickened margins and well developed parietal callus. Palatal margin with shallow depression and tubercle, basal margin often with light local thickening. Height 1-4, diam. 5-17 mm (3.6 × 16.6 mm).

Lateral teeth number in radula 15.

DISTRIBUTION. Ecuador. 2-3 spp.

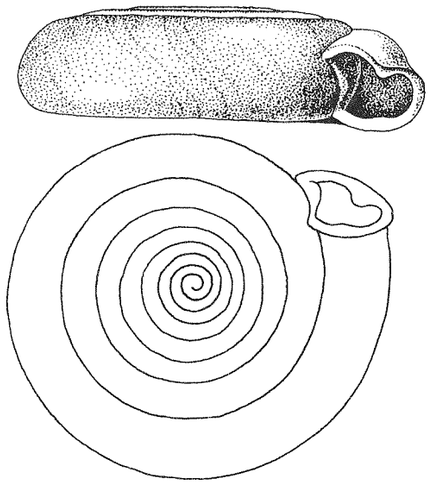


Fig. 983. ! ***Systrophia*** **(*Entodina*)** ***heligmoidea*** (Orbigny, 1835).
Ecuador: Guayaquil. **Senck**. No. 157965.

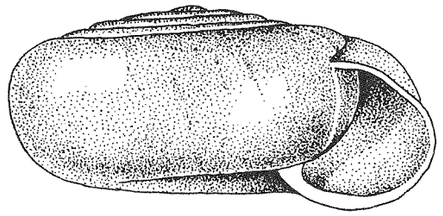


Fig. 984. ! ***Zilchistrophia obvoluta*** (Haas, 1949).
Contamana, Loreto, Peru. **Phil**. No. 212174.

Zilchistrophia Weyrauch, 1960
Fig. 984

Weyrauch, 1960: 26.

TYPE SPECIES — *Zilchistrophia tridentata* Weyrauch, 1960; OD.

Shell flattened, glossy, solid but more or less translucent, of 7.5-9 rather convex whorls. Last whorl markedly descending in front. Color light-yellow or pale-corneous. Embryonic whorls smooth, later whorls with fine irregular radial wrinkles. Aperture broadly semilunate, oblique, with shortly reflexed, slightly thickened margins. Deeply lying radial row of 2-3 palatal tooth-like plicae situated inside last whorl. Upper part of palatal margin more or less flattened. Umbilicus wide and deep. Height 3.2-3.8, diam. 8.0 mm (3.8 × 8.0 mm).

DISTRIBUTION. Peru. 3 spp.

Wayampia Tillier, 1980
Fig. 985

Tillier, 1980: 93, 95 (*Systrophia* subg.).

TYPE SPECIES — *Systrophia* (*Wayampia*) *lutea* Tillier, 1980; OD.

Shell strongly flattened, very thin, fragile, shining, semitransparent, of 4.5-5 moderately convex whorls. Color pale-yellow. Both embryonic and subsequent whorls lacking regular sculpture. Aperture widely semilunate, with sharp, simple margins; columellar margin a little dilated. Umbilicus moderately wide but quite perspective. Height 3-5, diam. 6-11 mm (3.4 × 6.1 mm).

Jaw arched, very thin, soft, not chitinized.

Lateral teeth number 25 in radula.

Gonad of several acini. Hermaphroditic

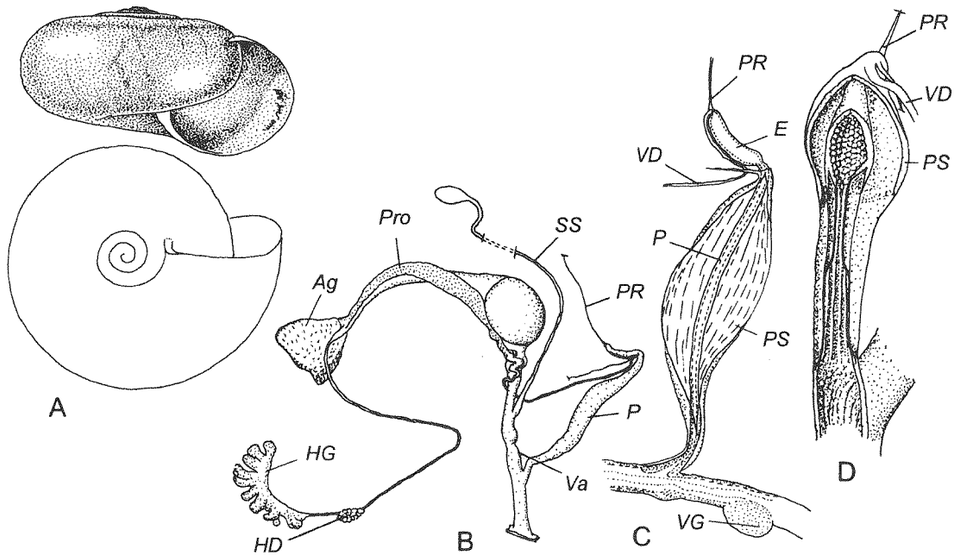


Fig. 985. A, B, C — ***Wayampia lutea*** (Tillier, 1980).
A — shell: "Kaw, Guyane française". Holotype. **Paris**. B — reproductive tract. C — interior of penis. After Tillier, 1980.
D — ! ***Wayampia cayennensis*** (L. Pfeiffer, 1842). Interior of penis and epiphallus. After Tillier, 1980. ***VG*** — vaginal gland.

duct not convoluted, vesiculae seminalis aggregated in a cluster at short distance from gonad. Talon as such not expressed. Prostate band-like. Vas deferens free from vagina or penis, but bound to epiphallus, entering subapically. Epiphallus elongated-ovate, internally with numerous tubercles. Penis long, narrow, surrounded by sheath, internally with longitudinal folds. Penial retractor thin, attached to epiphallus at base of vas deferens. Free oviduct approximately as long as vagina. There is a small gland on vagina. Atrium long. Spermathecal shaft thin, reservoir ovate, not large.

DISTRIBUTION. French Guyana. 2 spp.

Happia Bourguignat, 1889

Bourguignat, 1889: 39.

— *Ammonoceras* L. Pfeiffer, 1855: 122 (nom. praeocc., non Lamarck, 1822; t.-sp. *Helix ammonoceras* L. Pfeiffer, 1854; tautonymy).

TYPE SPECIES — *Helix vitrina* J. Wagner, 1827; SD Gude, 1902.

Shell (nearly) flat, thin, glossy, translucent, of 5-6 slightly convex whorls. Embryonic whorls smooth, later whorls without regular sculpture. Aperture with simple, thin margins; upper part of palatal margin flattened or concave. Umbilicus shallow.

Central tooth of radula only slightly differs in size from 1st lateral or, if it is less, its length exceeds its width at least 2 times.

Penis sheath absent.

DISTRIBUTION. S America.

Happia (*Happia* s. str.)
Fig. 986

Summit of shell sometimes a little sunken. Whorls 5-6. Color whitish or yellow. Postnuclear whorls with only very weak radial wrinklets. Aperture obliquely ovate, moderately oblique. Umbilicus moderately broad. Height 2-7, diam. 5-20 mm (*vitrina*: 6.0 × 15.0 mm; *guayaquilensis*: 3.9 × 9.1 mm).

Lateral teeth number 22 in radula.

DISTRIBUTION. S America. At least 12 spp.

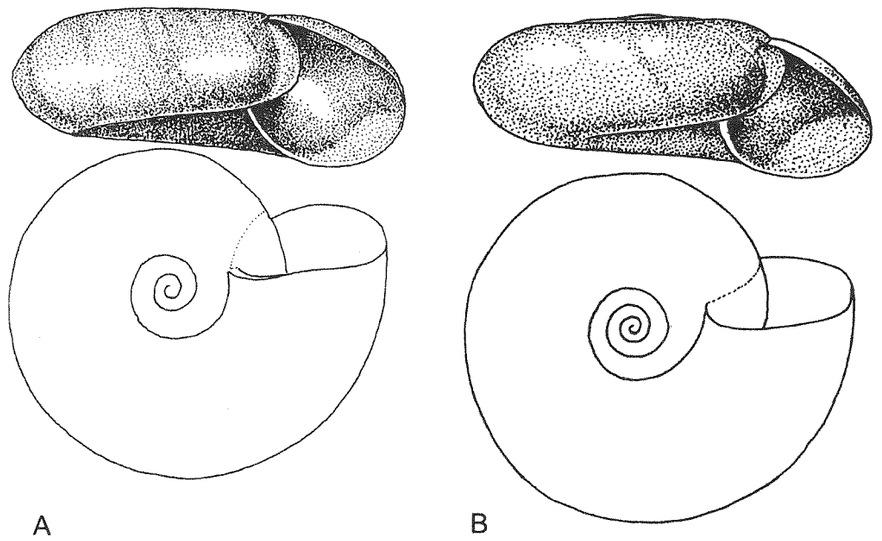


Fig. 986. A — ***Happia*** (***Happia***) ***vitrina*** (J. Wagner, 1827). Ilha Grande, Brazil. **Chicago** No. 43809.
B — ! ***Happia*** (***Happia***) ***guayaquilensis*** (L. Pfeiffer, 1852). Peru. **Moscow** No. Lc-16388.

Happia (*Systrophiella* Baker, 1925)
Fig. 987

Baker, 1925b: 15, 31 (*Scolodonta* subg.).

TYPE SPECIES — *Scolodonta* (*Systrophiella*) *eudiscus* Baker, 1925; OD.

Summit of shell scarcely elevated, not sunken. Whorls about 5, last whorl evenly rounded, not descending in front. Colorless or slightly yellowish. Postnuclear whorls almost glabrous, only with much smoothed irregular radial wrinklets. Aperture semicircular. Umbilicus very broad. Height 2.5-6.0, diam. 7-18 mm (5.0 × 13.6 mm).

Lateral teeth number 25 in radula.

Albumen gland comparatively small, roughly triangular. Vas deferens entering epiphallus at short distance from its apex and "fastened" to it by thin circular fascia. Upper part of epiphallus somewhat swollen. Penis long, cylindrical, with a minute thin-walled globular sac (caecum) near atrium. Internally penis and vagina with a few strong, narrow folds. Penial retractor thin, attached to epiphallus apically. Uterus containing several eggs and embryos. Spermathecal shaft long, slender, with small bean-shaped reservoir.

DISTRIBUTION. N and NW parts of S America, especially along the Andes. About 10 spp. & subspp.

Tamayoini Tillier, 1980

Tillier, 1980: 93.

Foot with variously developed caudal horn. Suprapedal groove running parallel to peripedal groove up to caudal end.

Central tooth of radula larger than in Systrophiini. 1st lateral tooth just a little smaller than 2nd.

Length of kidney 2 times more than its width; kidney shorter than a half of mantle cavity. Rectum removed from inner part of kidney.

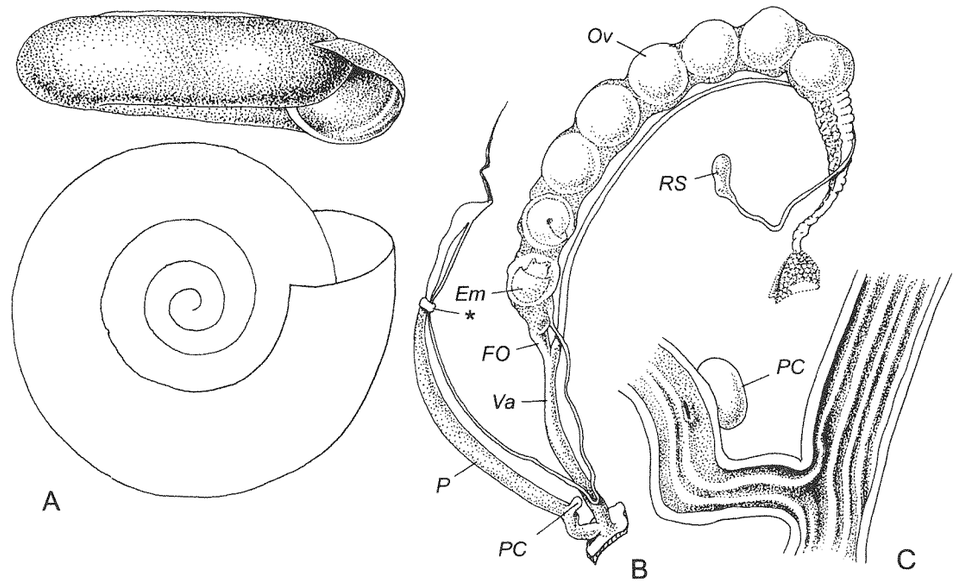


Fig. 987. ***Happia*** (***Systrophiella***) ***eudiscus*** Baker, 1925.
Sierra de Perija, El Roncon, Dept. Cesar, Colombia, September 12-22, 1969. A — shell. B — reproductive tract. C — interior of penis and distal part of vagina. **Moscow** No. Lc-24945. (**Chicago** No. 167951). ***Asterisk*** — circular fascia.

Ommatophoran retractor passes outside peni-oviducal angle.

Prostate short, compact. Penis sheath of mainly circular fibers.

Oviparous animals.

DISTRIBUTION. North of S America.

Tamayoa Baker, 1925

Baker, 1925b: 15, 34.

TYPE SPECIES — *Tamayoa trinitaria venezuelensis* Baker, 1925; OD.

Shell nearly flat, thin, transparent, shining, glass-like, of 3-3.5 moderately convex whorls. Colorless. Embryonic whorls smooth, subsequent with extremely weak, irregular radial striae. Aperture ovate, subvertical, with simple margins; upper margin more or less protruded forward. Umbilicus open, not wide.

Central tooth of radula rectangular, lateral teeth denticulate.

Penis with 2 caeca. Penis sheath covers basal half of penis.

DISTRIBUTION. North of S America.

Tamayoa (*Tamayoa* s. str.)
Fig. 988

Shell with a spiral keel, which constricts umbilicus. Height 1.1-1.2, diam. 2.5 mm.

Central tooth of radula tri-cuspid. Lateral teeth number 39.

Hermaphroditic duct not convoluted, with a cluster of vesiculae seminalis situated not far from gonad. Talon not developed. Vas deferens somewhat thickened proximally, entering epiphallus apically. Inner walls of epiphallus with a series of small pockets. There are 2 penial caeca: proximal caecum vermiform, entering at base of epiphallus; distal caecum shorter, entering base of penis. Penis sheath surrounds penis and distal caecum. Free oviduct thin, of moderate length; vagina absent. Atrium with conspicuous sac-like amatorial organ. Spermatheca with very short stalk and voluminous reservoir.

DISTRIBUTION. Venezuela, Trinidad. 1 sp.

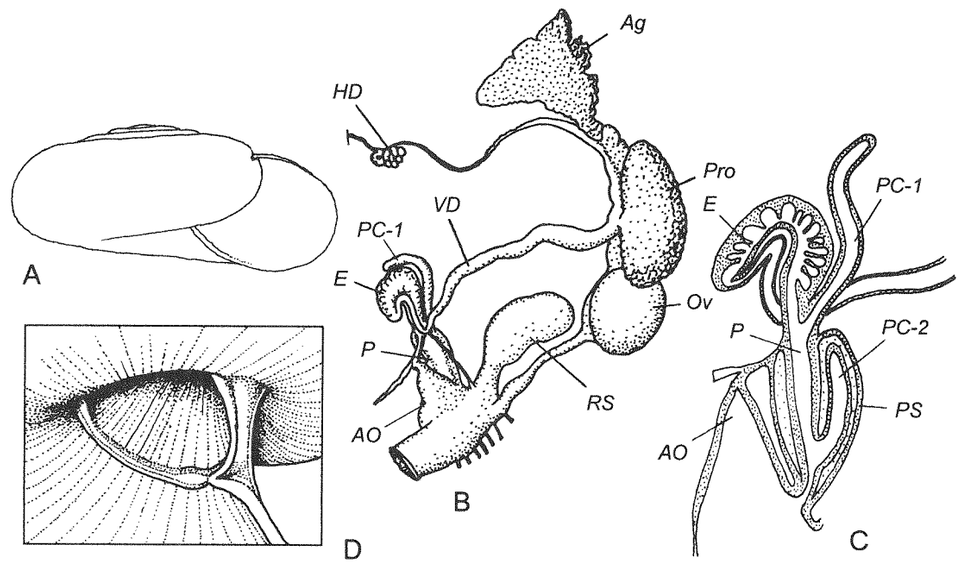


Fig. 988. A, B, C — ! ***Tamayoa*** (***Tamayoa***) ***decolorata*** (Drouët, 1859).
A — shell. B — reproductive tract. C — structure of distal male ducts. After Tillier, 1980. D — ***Tamayoa*** (***Tamayoa***) ***trinitaria venezuelensis*** Baker, 1925. Fragment of shell showing umbilical keel. After Baker, 1925b. ***AO*** — amatorial organ.

Tamayoa (*Tamayops* Baker, 1928)
Fig. 989

Baker, 1928: 126 (pro sect.).

TYPE SPECIES — *Happia banghaasi* Thiele, 1927; OD.

Spiral keel around umbilicus absent. Height 1.6-2.2, diam. 4.0-4.5 mm (1.9×4.1 mm).

Central tooth in radula denticulate. Lateral teeth number 44 (in *decolorata*).

DISTRIBUTION. Northern and central parts of S America. 2-3 spp.

Miradiscops Baker, 1925

Baker, 1925b: 15, 34.

TYPE SPECIES — *Miradiscops variolata* Baker, 1925; OD.

Shell strongly depressed, thin, shining, subtransparent, glass-like, of 3.5-4.5 rather convex whorls. Colorless (often whitish when animal dead). Embryonic whorls with microscopical dots arranged in spiral rows; later whorls densely radially striated. Aperture subcircular, a little oblique, with sharp, simple margins. Umbilicus very broad, perspective.

DISTRIBUTION. Venezuela.

Miradiscops (*Miradiscops* s. str.)
Fig. 990

Shell of 3.5-4 whorls. Embryonic sculpture of obscure radial wrinklets; dotted closely with oval to circular pits separated by reticulating wrinkles. Subsequent whorls with regular, crowded, dense regular threads connected by fine ridges to form irregular oval pits; these latter not spirally arranged. Aperture almost vertical, lunate-subcircular. Umbilicus open, about 1/3 of shell diameter. Height 0.66-0.68, diam. 1.20-1.31 mm (0.66 × 1.22 mm).

DISTRIBUTION. Venezuela. 1 sp.

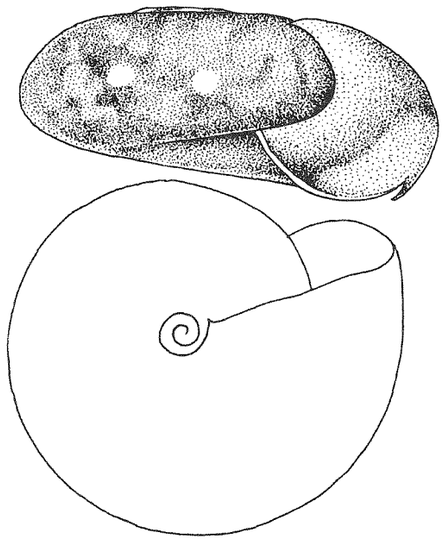


Fig. 989. ***Tamayoa* (*Tamayops*) *banghaasi*** (Thiele, 1927).
Villarrica, Paraguay. **Senck**. No. 283817.

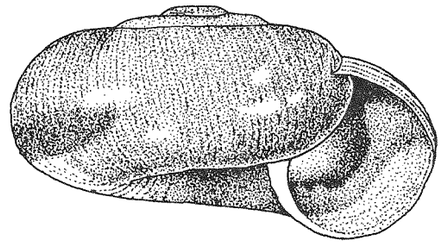


Fig. 990. ***Miradiscops* (*Miradiscops*) *variolata***
Baker, 1925.
Quebrada, La Fria, Venezuela. Paratype. **Phil**. No. 140968.

Miradiscops (*Punctodiscops* Baker, 1925)
Fig. 991

Baker, 1925b: 26.

TYPE SPECIES — *Scolodonta* (*Punctodiscops*) *punctata* Baker, 1925; OD.

Shell of 4-4.5 evenly rounded whorls. Embryonic whorls with indistinct radial wrinklets and spiral rows of tiny papillae. Postnuclear whorls with dots arranged in spiral rows plus dense rib-striation; this combination gives an impression of microscopical reticulation. Aperture lunate, subcircular, a little oblique. Umbilicus open, a little more than 1/3 of shell diameter. Height 0.76-0.95, diam. 1.55-2.10 mm (0.92 × 2.04 mm).

DISTRIBUTION. Venezuela. 1 or 2 spp.

Drepanostomella Bourguignat, 1889
Fig. 992

Bourguignat, 1889: 42.

TYPE SPECIES — *Helix ammoniformis* Orbigny, 1835; monotypy.

Shell flat, thin, shining, of about 4.5 slightly convex whorls; last whorl very rapidly expanded. Color whitish to pale-yellow. Embryonic whorls polished. Postnuclear whorls with prominent radial wrinkles. Aperture irregularly ovate, moderately oblique, with sharp margins; upper part of palatal margin distinctly concave. Umbilicus very wide, shallow. Height 5, diam. 14-16 mm (5.0 × 16.0 mm).

Central tooth of radula circular. 1st lateral tooth large. Lateral teeth number 19.

DISTRIBUTION. S America. 2-3 spp.

Happiella Baker, 1925

Baker, 1925b: 15 (*Happia* sect.).

— *Occultator* Pilsbry, 1926: 129 (t.-sp. *Occultator olssoni* Pilsbry, 1926; OD).

TYPE SPECIES — *Stenopus ? guildingi* Bland, 1865; OD.

Shell of 4.5-5 slightly convex whorls; last whorl evenly rounded at periphery. Color yellowish, olivaceous or ivory. Embryonic whorls smooth. Postnuclear whorls either lacking regular sculpture or with thin radial riblets. Aperture rounded, slightly oblique,

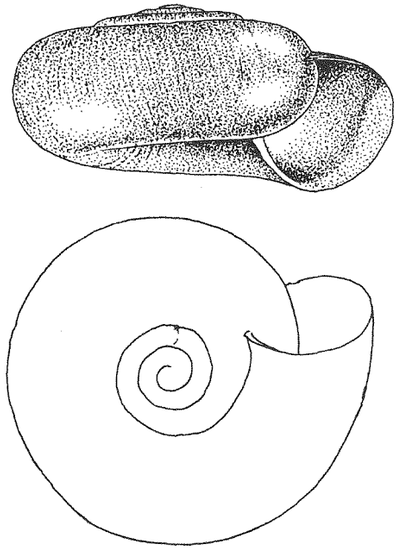


Fig. 991. ***Miradiscops* (*Punctodiscops*) *punctata***
Baker, 1925.
"Venezuela, Est. Falcon, Dist. Acosta". **Basel** No. 4961-a.

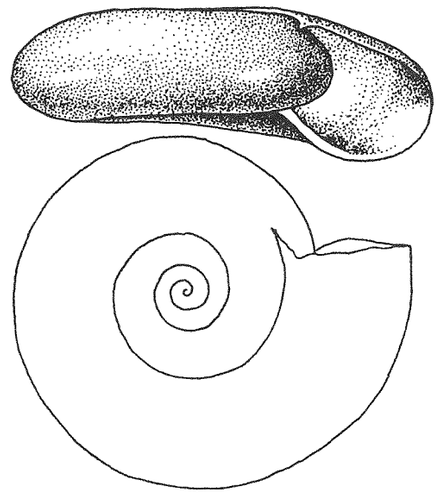


Fig. 992. ***Drepanostomella ammoniformis*** (Orbigny, 1835).
Albancay near Cuzco, 2400 m, Peru. **Chicago** No. 30685.

with thin margins. Umbilicus dot-like, funnel-like or closed.

Central tooth of radula biconcave laterally.

Penis sheath covers entire penis.

DISTRIBUTION. S and Central America.

Happiella (*Happiella* s. str.)
Fig. 993

Shell flattened, of 4.5 rather convex whorls. Color yellowish to ivory. Postembryonic whorls without regular sculpture. Basal margin of aperture not protruded forward. Umbilical depression wide, umbilicus narrowly funnel-shaped. Height 2.25-5.19, diam. 5.00-9.76 mm (4.91 × 9.43 mm).

Caudal horn present.

Lateral teeth number 75 in radula.

Talon not expressed. Vas deferens very short, entering epiphallus apically. Epiphallus ovate, its inner walls with a series of narrow chambers and small epiphallic caecum. Penis with a short caecum coated, together with penis, by a sheath. Free oviduct and vagina stout, not long, of about similar length. Spermatheca thin, vermiform, lacking reservoir.

DISTRIBUTION. S America. 4 spp.

Happiella (*Prohappia* Thiele, 1927)
Fig. 994

Thiele, 1927: 313 (*Happia* subg.).

TYPE SPECIES — *Helix besckei* Dunker, 1847; OD.

Shell depressedly trochoid, thin, translucent, shining, of about 5 moderately convex whorls. Color olivaceous. Upper surface of postapical whorls with thin, rounded, low, spaced riblets; basal surface nearly smooth. Basal margin of aperture a little protruded forward. Umbilicus rather broad, perspective. Height 4.0-4.5, diam. 7.0-7.5 mm (4.5 × 7.4 mm).

Caudal horn missing.

Lateral teeth number 50-60 in radula.

DISTRIBUTION. Brazil. 1 sp.

Microhappia Thiele, 1927
Fig. 995

Thiele, 1927: 320.

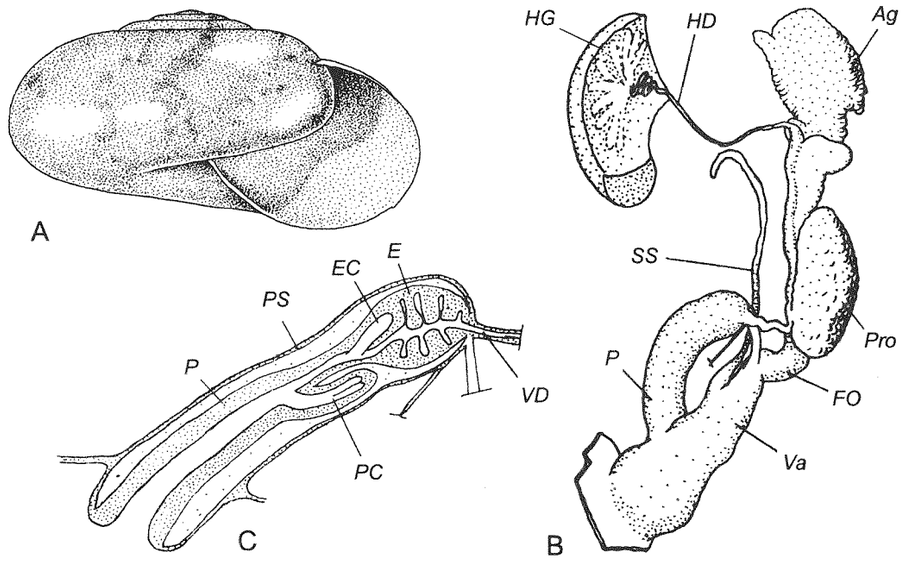


Fig. 993. A — ***Happiella* (*Happiella*) *guildingi*** (Bland, 1865). "Pto Cabello, Venezuela." **Phil**. No. 48789.
B, C — ! ***Happiella* (*Happiella*) *surinamensis*** (L. Pfeiffer, 1872). B — reproductive tract. C — interior of penis. After Tillier, 1980.

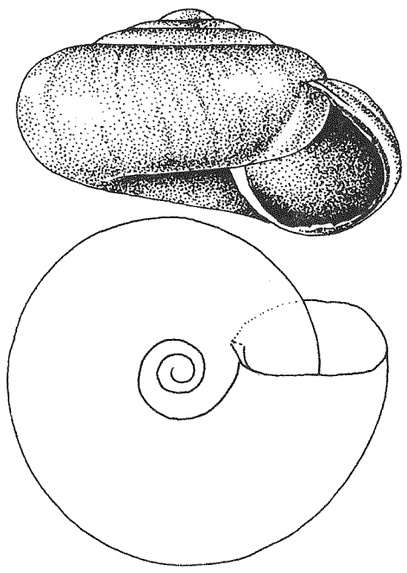


Fig. 994. ***Happiella* (*Prohappia*) *besckei*** (Dunker, 1847).
Parana, Brazil. **Senck**. No. 158413.

TYPE SPECIES — *Microhappia brasiliensis* Thiele, 1927; OD.

Shell flattened, thin, shining, transparent, glass-like, of 3.25-3.5 moderately convex whorls. Last whorl with gently rounded angle below mid-line. Colorless. Regular sculpture practically absent. Aperture comparatively ample, widely semilunate, markedly oblique, with thin, fragile margins; columellar margin oblique, shortly reflexed. Umbilicus moderately broad, funnel-like. Height 0.9-1.2, diam. 2.0-2.6 mm (1.0 × 2.6 mm).

DISTRIBUTION. Brazil, ? Trinidad, Venezuela. 2-3 spp.

Guestieria Crosse, 1872
Fig. 996

Crosse, 1872: 199.

TYPE SPECIES — *Helix powisiana* L. Pfeiffer, 1848; OD.

Shell quite involute, thin, translucent, shining, rounded at periphery. Color corneous. Regular sculpture absent. Aperture

broadly semilunate, moderately oblique, with slightly reflexed margins. Umbilicus closed. Height 4-6, diam. 8.5-16.0 mm (4.0 × 8.5 mm).

Central tooth of radula absent. Inner lateral teeth of radula multicuspid.

DISTRIBUTION. S America. 7 spp.

HAPLOTREMATIDAE Baker, 1925

Baker, 1925a: 88.

— Selenitidae Fischer, 1883: 456 (based on praeocc. name *Selenites* Fischer in Shuttleworth, 1877).

— Circinariidae Pilsbry, 1898: 127 (based on genus *Circinaria*, which is a syn. of *Vallonia*; but Pilsbry meant "agnathous" group).

— Austroselenitinae Baker, 1941a: 134.

— Zophinae Franc in Grasse, 1968: 563.

Shell depressed to flat, rather thin, more or less translucent, smooth to finely radially wrinkled. Aperture toothless, with thin margins; palatal margin usually somewhat

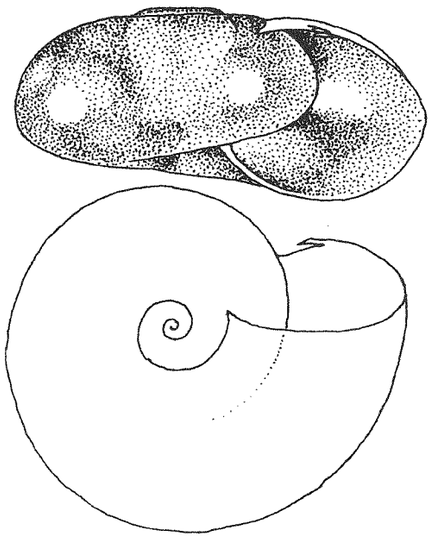


Fig. 995. ***Microhappia brasiliensis*** Thiele, 1927. Nova Teutonia, Santa Catarina, Brazil. **Chicago** No. 69166.

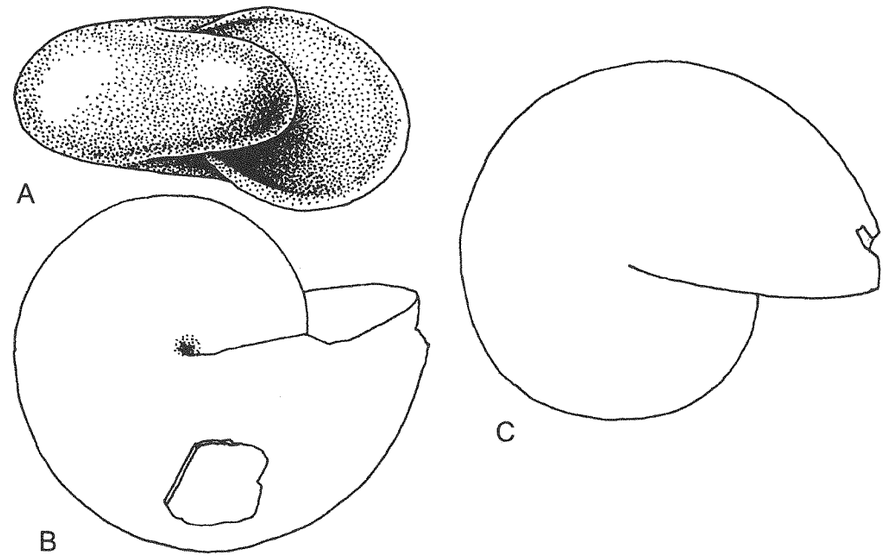


Fig. 996. ***Guestieria powisiana*** (L. Pfeiffer, 1848).
Bogota, Columbia. A — apertural view. B — umbilical view. C — apical view. **Leiden**.

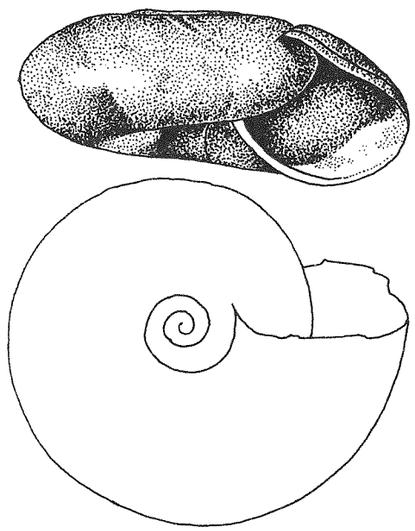


Fig. 997. ***Austroselenites euspira*** (L. Pfeiffer, 1854).
Venezuela. **Phil**. No. 23908.

straightened or curved downward. Umbilicus wide.

Foot holopodous, lacking pedal furrows.

Jaw reduced (vestigial) or absent.

Central tooth of radula vestigial or absent. Lateral teeth aculeate.

Kidney elongated-triangular. Primary ureter completed, secondary ureter open.

Hermaphroditic gland consisting of a variable number (2 to many) of clumps of acini. Albumen gland differentiated into an apical region above talon and a basal, less coarsely alveolate series of swellings. Penial retractor arising on diaphragm (except in subgenus *Ancotrema*).

DISTRIBUTION. S and N America; Cuba.

Austroselenites Kobelt, 1905
Fig. 997

Kobelt, 1905 (1905-1906): 49, 70 (*Scolodonta* subg.).

TYPE SPECIES — *Helix euspira* L. Pfeiffer, 1854; SD Baker, 1925b.

Shell (nearly) flat, thin, lusterless, of 4.5-5 slightly convex, somewhat shouldered whorls. Last whorl not descending. Color brown to yellowish-corneous. Embryonic whorls smooth, later whorls finely radially striated. Aperture broadly ovate, moderately oblique, columellar margin evenly passes to basal margin. Columellar and basal margins a little reflexed. Palatal margin curved downward. Umbilicus wide, shallow. Height 9.0-11.5, diam. 25-26 mm (11.1 × 25.0 mm).

DISTRIBUTION. Venezuela. Probably 1 sp. (Baker, 1931: 423).

Zophos Gude, 1911
Fig. 998

Gude, 1911: 269 (nom. nov. pro *Mörchia* E. Martens, 1860).

— *Mörchia* Martens in Albers, 1860: 71 (nom. praeocc., non A. Adams, 1860; *Hyalina* subg.; t.-sp. *Helix concolor* Férussac, 1821; OD).

— *Selenites* Fischer in Shuttleworth, 1877: 8 [nom. praeocc., non Hope, 1840 (Coleoptera); nom. nov. pro *Mörchia* E. Martens, 1860).

— *Baudonia* Binney, 1885: 81 (nom. praeocc., non Mabille, 1868; apparently nom. nov. pro *Mörchia* E. Martens, 1860: Baker, 1925b).

TYPE SPECIES — *Helix concolor* Férussac, 1821; OD.

Shell depressedly dome-shaped, rather fragile, shining, of 3.5-4 moderately convex, slightly shouldered whorls. Last whorl straight. Color dark-brown with paler radial streaks. Embryonic whorls smooth, subsequent whorls finely, irregularly, radially striated. Aperture ovate-triangular, compressed, moderately oblique, columellar margin very short, passes to basal margin with rounded angle; columellar and basal margins shortly reflexed; palatal margin indented, sharp. Umbilicus wide. Height 7-12, diam. 15-25 mm (11.2 × 15.2 mm).

Jaw absent: jaw fold without evident cornification.

Right ommatophore free from penioviducal angle.

Kidney narrow, about 1.5 times length of pericardium.

Hermaphroditic duct not convoluted, swollen. Talon digitiform; carrefour largely exposed. Vas deferens adherent to free oviduct and penis, entering epiphallus subapically through a simple pore. Epiphallus ("apical chamber of penis", after Baker, 1931) subspherical, internally with coarse, convoluted, longitudinal plicae; demarcated basally by marked thickening of penial wall. Penis short, thick-walled, internally with a low thickenig along course of vas deferens and a very heavy, complicated pilaster on opposite side. Penial retractor attached to epiphallus terminally. Atrium long, narrow. Free oviduct long, vagina practically absent as spermathecal stalk branched off immediately from atrium. Reservoir small, reaching albumen gland. Baker (1931: 423) found in epiphallus a cantaloupe-shaped spermatophore with conchiolinous wall.

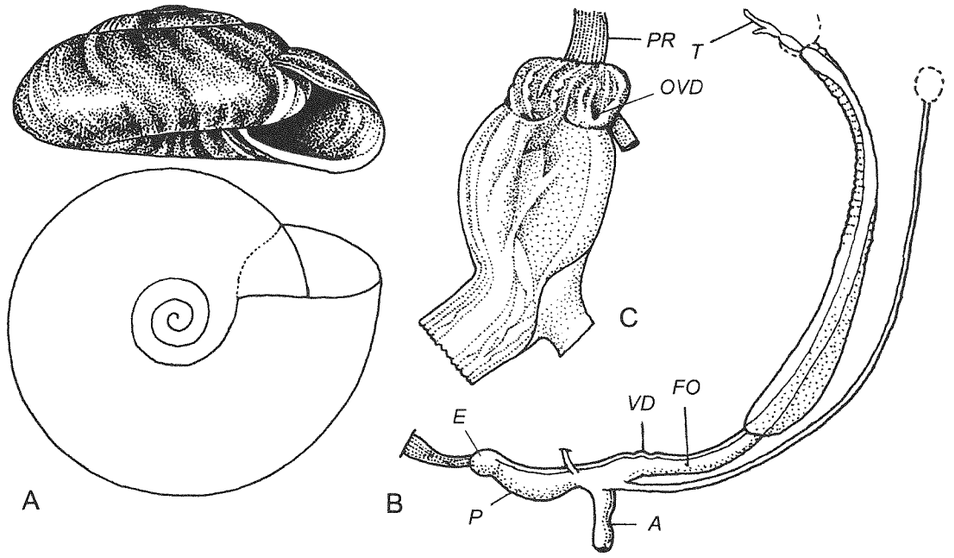


Fig. 998. ***Zophos concolor*** (Férussac, 1821).
A — shell: Puerto Rico. **Phil**. No. 23910. B — reproductive tract. C — interior of penis. After Baker, 1931.

DISTRIBUTION. Puerto Rico, Guadeloupe, Hispaniola. 3-4 spp.

Haplotrema Ancey, 1881

Ancey, 1881a: 453.

— *Hoplobienia* Binney, 1885: 86 (nom. err. pro *Haplotrema* Ancey, 1881: Baker, 1925b).

— *Haptotrema* Binney, 1885: 474 (nom. err. pro *Haplotrema* Ancey, 1881).

— *Hoptotiema* Binney, 1885: 516 (nom. err. pro *Haplotrema* Ancey, 1881).

Baker, 1931: 405. Pilsbry, 1946: 202.

TYPE SPECIES — *Helix duranti* Newcomb, 1864; monotypy.

Shell strongly depressed to nearly flat, rather thin, more or less translucent, of few whorls. Color light. Embryonic whorls smooth, later whorls with variously developed radial striae or wrinkles, usually with some impressed spiral striae across or between radial elements of sculpture. Aperture mainly with thickened or slightly reflexed margins; upper part of palatal margin usually flattened or even concave.

Jaw reduced to a narrow plate.

Epiphallus missing or short, subglobular. Penis internally with axial folds which sometimes represented by a more or less developed series of tubercles. Stimulator in penis absent, in atrium sometimes present.

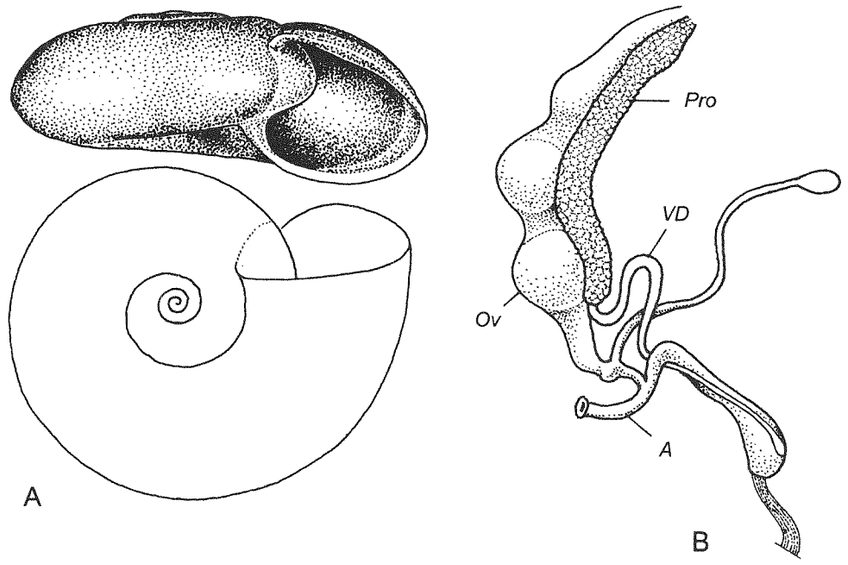


Fig. 999. ***Haplotrema*** (***Haplomena***) ***paucispira*** (Poey, 1852).
A — shell: Monte Verde, [Oriente prov.] Cuba. **Phil**. No. 23905. B — reproductive tract. After Baker, 1931.

DISTRIBUTION. N America.

Haplotrema (*Haplomena* Baker, 1931)
Fig. 999

Baker, 1931: 406, 409.

TYPE SPECIES — *Helix paucispira* Poey, 1852; OD.

Shell much flattened, thin, shining, of 4-4.5 rather convex, somewhat shouldered whorls. Suture margined. Color yellow. Postnuclear sculpture of scarcely visible spiral striae (looking glabrous). Height 1.5-4.3, diam. 3.3-10.5 mm (4.3 × 10.5 mm).

Orifice of genital atrium located near base of right ocular tentacle.

Jaw thin but quite large, transparent.

Central tooth of radula missing. Only 1st lateral tooth bicuspid, remaining teeth unicuspid.

Right ommatophoral retractor free from peni-oviducal angle.

Vas deferens free from female section (slightly swollen here) but tightly bound to penis. Epiphallus exceptionally short. Penis not long, clavate. Penial retractor attached to epiphallus terminally. Uterus in figured specimen distended by 2 large eggs with calcareous shells. Free oviduct and vagina not long. Atrium elongated. Spermathecal stalk cylindrical, slender.

DISTRIBUTION. E and (?) central Cuba. 2-3 spp.

Haplotrema (*Haplotrema* s. str.)
Fig. 1000

Shell thin, more or less glossy. Suture impressed. Color pale-corneous. Postnuclear whorls with delicate periostracal radial riblets. Height 1.5-4.3, diam. 3.5-6.5 mm (1.5 × 3.9 mm).

Orifice of genital atrium situated close to base of right ommatophore.

Kidney short, triangular.

Right ocular retractor passes through peni-oviducal angle.

Hermaphroditic gland of 2 clumps of acini, its duct stout, a little convoluted terminally. Talon exposed, its apex differentiated as a spherical knob. Vas deferens

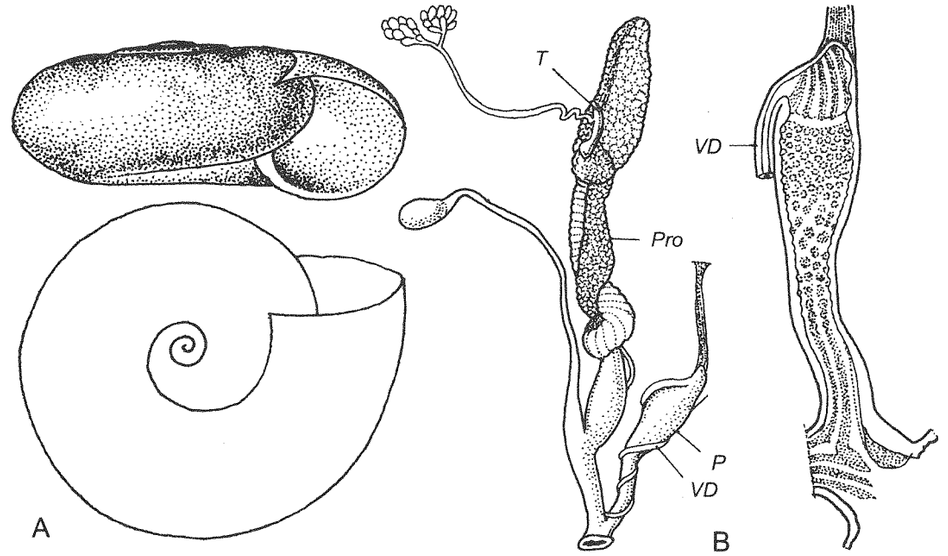


Fig. 1000. ***Haplotrema*** (***Haplotrema***) ***duranti duranti*** (Newcomb, 1864).
A — shell: Santa Barbara Island, California. Holotype. **Phil**. No. 11815.
B — ***Haplotrema*** (***Haplotrema***) ***duranti continentis*** (Baker, 1931). Reproductive tract and interior of penis. After Baker, 1931.

slender, wound spirally around penis, entering epiphallus through a simple pore. Epiphallus small, with a short projection inside base of penial retractor, internally with few axial folds, demarcated by a low transverse fold. Penis clavate, internally with small, closely-packed, pointed papillae in upper third, much coarser and more widely spaced projections in middle third and axial folds in basal third. Free oviduct large, thick-walled, with coarse internal pilasters. Vagina elongated, without definite muscular collar. Spermathecal stalk only slightly thickened at its base. Atrium short, with a heavy lateral stimulator.

DISTRIBUTION. Coastal regions of southern and Lower California. 5 spp. & subspp.

Haplotrema (*Geomene* Pilsbry, 1927)
Fig. 1001

Pilsbry, 1927 (April): 169 (pro sect.)

— *Proselenites* Thiele, 1927 (?December): 313 (t.-sp. *Helix concava* Say, 1821; SD Baker, 1928).

TYPE SPECIES — *Helix concava* Say, 1821; OD.

Shell comparatively heavy. Suture impressed. Postnuclear sculpture of relatively weak radial wrinkles. Height 5.3-9.5, diam. 11-22 mm (7.8 × 13.4 mm).

Orifice of genital atrium distant from base of right ommatophore.

Right ocular retractor passes through peni-oviducal angle.

Hermaphroditic duct somewhat convoluted. Talon small, clavate. Vas deferens slender, not adherent throughout its length, entering penis subapically through a simple pore surrounded by short plicae radiating from it. Internally penis in apical half with scattered, sometimes convoluted folds; basal part with numerous papillae that develop conchiolinous, claw-shaped tips. Penial retractor arising half way up diaphragm, attached to penis apically. Free oviduct long, more or less swollen, narrowed at junction with rather short vagina which lacks muscular collar. Spermathecal shaft slender, reservoir reaching albumen gland. Atrium rather shallow, very thick-walled, swollen laterally, internally with

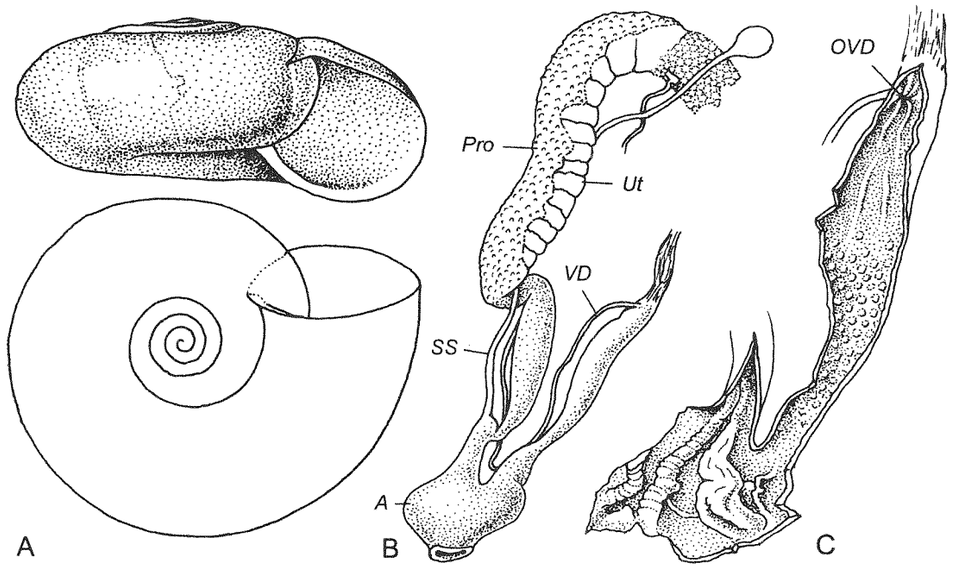


Fig. 1001. ***Haplotrema*** (***Geomene***) ***concavum*** (Say, 1821).
A — shell: Silver Springs State Park, bank of Fox River, 2 km W of Fox, Illinois, U.S.A. **Moscow** No. Lc-24943. B — reproductive tract. C — interior of penis. Macon Co., N Carolina [USA], May 25, 1983. **Chicago** No. 214215.

heavy, longitudinal folds and a large stimulator.

DISTRIBUTION. Eastern N America. 1 sp.

REMARK. Baker (1931: 412) noted a short flagellum in lower part of penis in this species. I have not found the flagellum.

Haplotrema (*Ancotrema* Baker, 1931)
Fig. 1002

Baker, 1931: 406, 408.

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

Shell thin, of 4-6.5 rather convex whorls. Suture impressed. Color greenish-yellow. Embryonic whorls smooth, subsequent whorls with distinct spiral striation. Aperture generally rounded-triangular, oblique, with well reflexed margins. Palatal margin distinctly indented. Umbilicus moderately broad. Height 4.0-11.5, diam. 12.7-25.4 mm (8.0 × 16.5 mm).

Central tooth of radula usually bicuspid. Inner lateral teeth with weak entocones.

Kidney over twice as long as its base and about 1.5 times of pericardium length.

Hermaphroditic duct convoluted in its distal part. Talon rather long, with a spherical knob on its recurved tip. Vas deferens free from female side, adherent to penis, opening in summit of lateral pilaster in epiphallus (apical penial chamber, after Baker, 1931). Epiphallus small, subspherical, internally with axial plication, demarcated basally by a high sphincteric ridge. Penis internally with 6-7 heavy longitudinal folds with high crests toward their upper ends. Penial retractor arising from left side of columellar muscle. Free oviduct not long. Vagina very short, almost covered by heavy muscular collar. Atrium short. Spermathecal stalk strongly swollen at base.

DISTRIBUTION. Pacific coast north of central California. 6 spp. & subspp.

Ancomena Baker, 1931
Fig. 1003

Baker, 1931: 406, 409 (*Haplotrema* subg.).

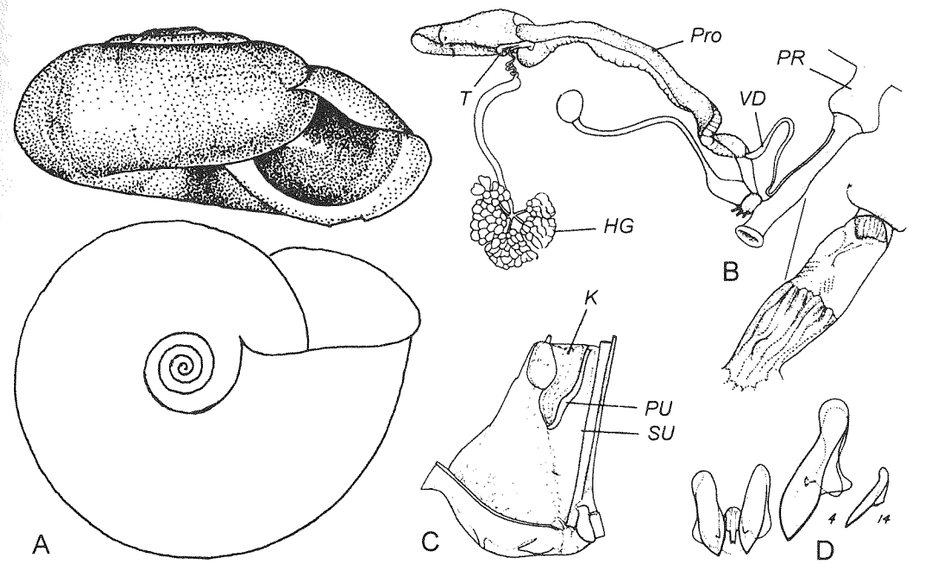


Fig. 1002. ***Haplotrema*** (***Ancotrema***) ***sportella*** (Gould, 1846).
A — shell: James Place near Mora, 3 km above mouth of Quillaute River, Washington [USA]. **Phil**. No. 158321. B — reproductive tract and interior of penis. C — roof of lung cavity. D — fragment of radula. After Baker, 1931.

TYPE SPECIES — *Helix vancouverense* Lea, 1839; OD.

Shell thin, fragile, of 5-6 rather convex whorls. Suture impressed. Color yellow to pale-greenish, sometimes with diffused radial darker rays. Postembryonic whorls finely, densely, irregularly, radially striated; closely spaced spiral striation (often obsolescent) also present. Aperture subcircular, slightly oblique, columellar and basal margins shortly reflexed, palatal margin distinctly indented, protruding. Umbilicus deep, moderately wide, funnel-like. Height 3.3-15.0, diam. 9-32 mm (14.2 × 29.0 mm).

Orifice of genital atrium distant from base of ocular tentacle.

Jaw narrowly crescentic, rather thick in middle but very attenuated toward outer ends.

Central tooth of radula unicuspid.

Right ocular retractor passes outside of peni-oviducal angle.

Hermaphroditic duct much swollen, loosely convoluted. Talon minute, clavate. Vas deferens with very long, complexly looped, descending limb, which greatly swollen in basal half; ascending limb slender, straight and firmly attached along side of penis; terminally continuous with penial apex although latter has thicker wall. Epiphallus absent. Penis slender, thick-walled, internally with few longitudinal folds which often represented by series of tubercles. Penial retractor arising from diaphragm, inserting on vas deferens/penis junction. Free oviduct rather short, vagina a little longer, with muscular collar near middle of its length. Spermathecal stalk long, more or less thickened basally; reservoir reaching albumen gland. Atrium short, without stimulator.

DISTRIBUTION. Pacific coast of N America from California to Alaska. About 10 spp., subspp. & forms.

Greggiella Baker, 1941
Fig. 1004

Baker, 1941a: 131 (*Haplotrema* subg.).

TYPE SPECIES — *Selenites caelatum* Mazyck, 1886; OD.

Shell flattened, moderately thin, of 3.5-

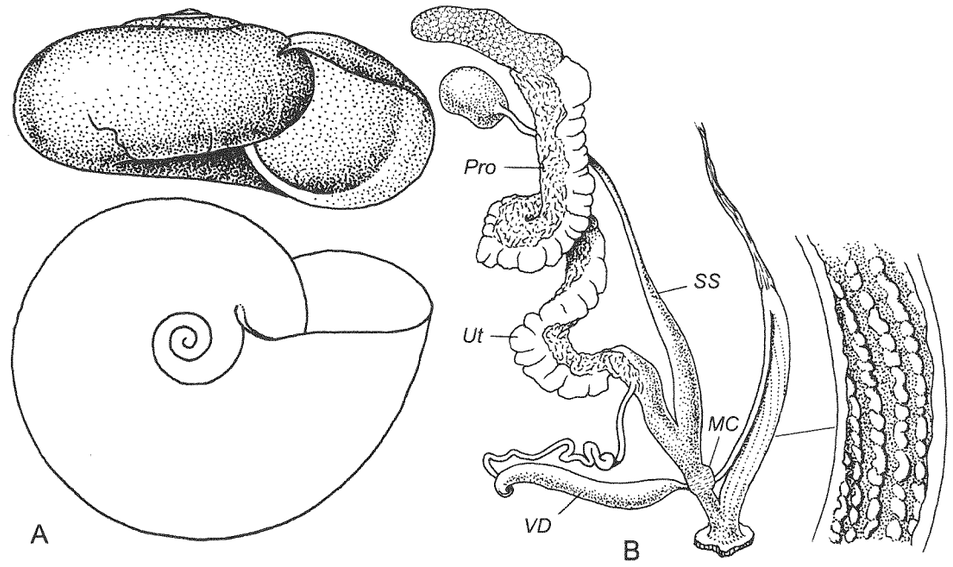


Fig. 1003. ***Ancomena vancouverense*** (Lea, 1839).
A — shell: Shinglehouse Slough, Coos Bay Area, Coos Co., Oregon [USA]. **Moscow** No. Lc-24948. (**Phil**. No. 301369). B — reproductive tract and interior of penis. Just S of Astoria, Clatsop Co., Oregon [USA], August 6-7, 1929. **Phil**. No. A-15735. ***MC*** — muscular collar on vagina.

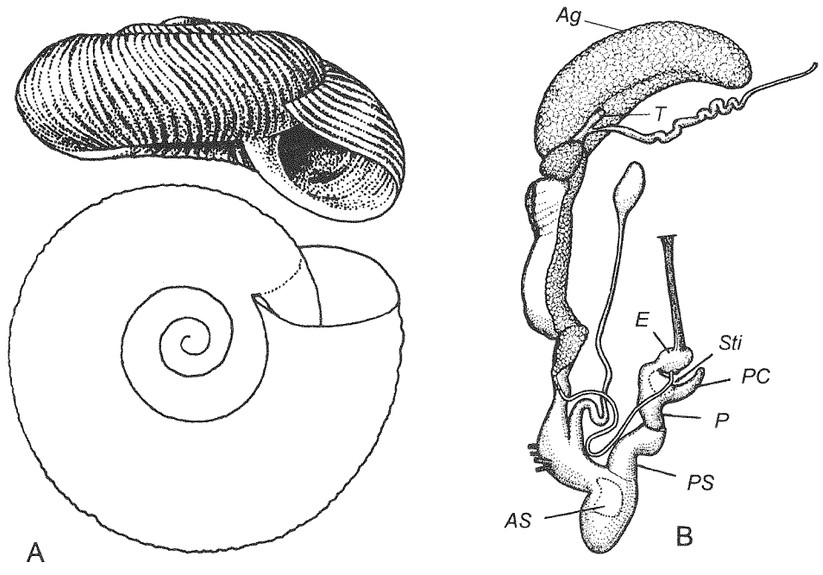


Fig. 1004. ***Greggiella caelata*** (Mazyck, 1886).
A — shell: Millard's Canyon near Pasadena, California. **Phil**. No. 143089. B — reproductive tract. After Baker, 1941a. ***AS*** — atrial stimulator.

4 rather convex, inflated below whorls. Last whorl not or slightly, gradually descending toward aperture. Suture impressed. Color whitish to brownish-corneous. Embryonic whorls finely radially ribbed, following whorls coarsely, closely, regularly ribbed. Aperture subcircular, well oblique, with simple, sharp margins; columellar margin dilated. Umbilicus very wide. Height 2.8-4.3, diam. 6.9-8.0 mm (4.3 × 8.0 mm).

Right ocular retractor free from penioviducal angle.

Talon short, cylindrical. Vas deferens entering epiphallus laterally. Epiphallus short, somewhat constricted at base. Penis with sheath and tapering caecum, internally with subapical stimulator. Penial retractor attached to epiphallus subapically. Atrium containing a conic stimulator. Free oviduct and vagina not long, of about equal length. Spermathecal stalk long, a little expanded at base.

DISTRIBUTION. Southern and Lower California. 1 or 2 spp.

STREPTAXOIDEA J. Gray, 1860

Gray J., 1860: 268 (pro fam.).

Shell extremely variable in size and shape: there are almost all shell types known for land pulmonates (helicoid, zonitoid, enoid, pupilloid, chondrinid shells, and, above all, conspicious shells with distorted axis), thin to quite solid, often glass-like, sometimes with peripheral keel or angle. Periostracum mostly absent, rarely present. Surface from smooth and polished to strongly ribbed; fine spiral striation may be present. Aperture vertical to oblique, simple to heavily toothed, its margins often more or less reflexed. Umbilicus open to closed.

Jaw absent.

Reproductive tract mostly without accessory organs; sometimes flagellum and penial caecum present. Penis internally with peculiar conchiolinous hooks; rarely hooks secondarily disappear. Spermatheca rarely absent.

DISTRIBUTION. S America, Africa, Arabian Peninsula, Seychelles, Mascarene Islands, S and SE Asia including Indonesia.

STREPTAXIDAE J. Gray, 1860

Gray J., 1860: 268.

Conchological characters of superfamily.

Hermaphroditic duct cylindrical, without externally visible seminal vesicles or with a single large vesicle. Conchiolinous hooks in penis directed by their tips toward atrium.

DISTRIBUTION. As in superfamily.

REMARK. The current classification of the family at both subfamily and genus/subgenus level is artificial. It is evident that subdivision of Streptaxidae into Streptaxinae and Enneinae adopted by Zilch (1960) is inadequate because of widely overlapping characters of included taxa. As it concerns anatomical characters, for understanding of the system of the family it is necessary to investigate as many species as possible.

STREPTAXINAE J. Gray, 1860

— Artemonidae Bourguignat, 1889: 36.

Shell small to medium, helicoid to streptaxoid. Axis straight to curved. Aperture with or without teeth.

Penis sheath present. Vas deferens evenly cylindrical, not passing under penis sheath. Hooks inside penis not differentiated.

DISTRIBUTION. As of the family.

Scolodonta Döring, 1875
Fig. 1005

Döring, 1875: 143 (*Streptaxis* "grupo").

TYPE SPECIES — *Streptaxis semperi* Döring, 1875; monotypy.

Shell flattened, thin, shining, translucent, with dome-shaped spire and broadly rounded apex. Whorls up to 4.5, moderately convex, last whorl straight, evenly rounded in profile. Color uniformly light-corneous. Embryonic whorls smooth, later whorls with very weak radial striation. Aperture rounded, slightly oblique, with thin, simple margins. Umbilicus broad, shallow, perspective. Height up to 1.7, diam. up to 4.0 mm (1.2 × 3.1 mm).

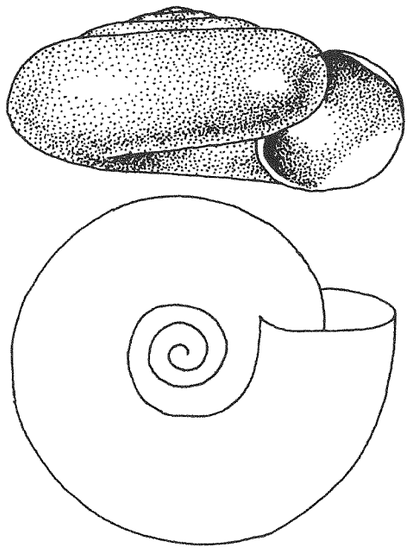


Fig. 1005. ***Scolodonta semperi*** (Döring, 1875). Cabana, Cordoba, Argentina. **Chicago** No. 72248.

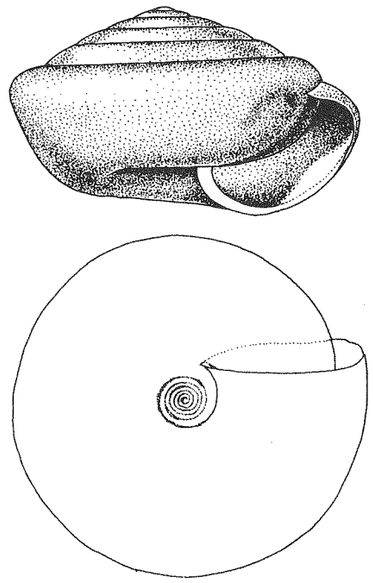


Fig. 1006. ***Martinella martinella*** Jousseaume, 1887.
Ecuador. Syntype. **Paris**.

DISTRIBUTION. Argentina. 1 or 2 spp.

Martinella Jousseaume, 1887
Fig. 1006

Jousseaume, 1887: 173.

TYPE SPECIES — *Martinella martinella* Jousseaume, 1887; OD.

Shell subglobose, thin, semitransparent, glass-like, shining, of 7-8 convex, tightly coiled whorls; last whorl straight, with rounded angle above mid-line. Colorless. Embryonic whorls smooth, subsequent whorls finely, regularly, radially ribbed. Aperture narrow, semilunate, only slightly oblique, toothless, with thin margins; columellar margin somewhat dilated. Umbilicus moderately broad, profound, subcylindrical, perspective. Height 2.0-4.5, diam. 3.5-5.0 mm (2.0 × 3.7 mm).

DISTRIBUTION. Ecuador, S Brazil. 2-3 spp.

Rectartemon Baker, 1925
Fig. 1007

Baker, 1925b: 36.

TYPE SPECIES — *Rectartemon jessei* Baker, 1925; OD.

Shell depressedly turbinate, moderately solid, of 6.75-7.5 slightly convex whorls; last whorl evenly rounded or scarcely subangulate at periphery, not descending in front. Color uniformly whitish or yellowish. Embryonic whorls nearly smooth but with obscure radial wrinkles, postembryonic sculpture of fine rib-striation. Aperture subcircular, rather oblique, toothless, with more or less reflexed and somewhat thickened margins. Umbilicus moderately broad. Height 12-25, diam. 18-35 mm (15.0 × 23.2 mm).

Penis long, slender, with basal part coated by heavy, muscular sheath which connected with uterus by ligament. Penis internally with very weak wrinkles, with

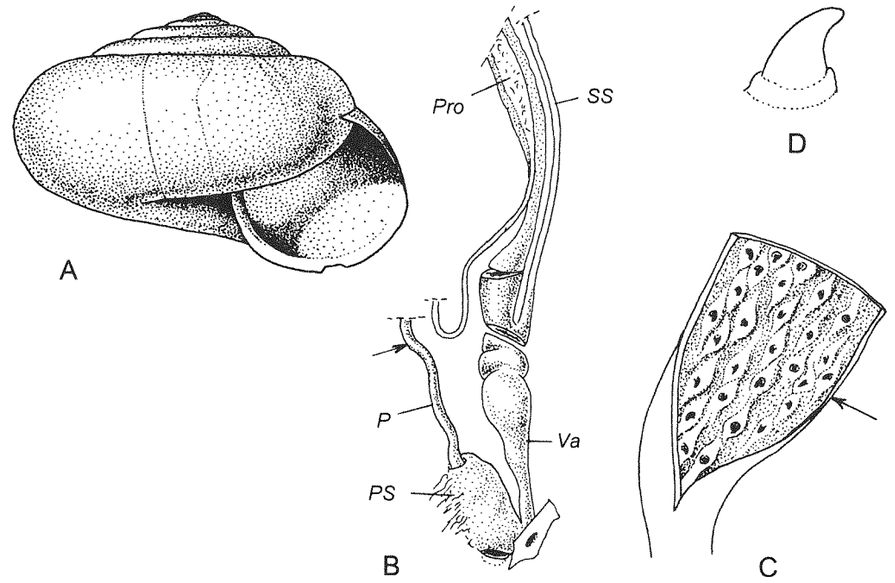


Fig. 1007. ***Rectartemon jessei*** Baker, 1925.
A — shell: Brazil. **SPb**. B, C, D — Rio Lobaterita, Estacion Tachira, Estado Tachira, Venezuela, April 4, 1920. **Phil**. No. A-17158. B — reproductive tract. C — interior of penis. D — hook in penis strongly enlarged. ***Arrows*** on "B" and "C" indicate same parts of penis.

very small, scattered conchiolinous hooks. Free oviduct and vagina rather long, of about equal length. Spermathecal stalk slender.

DISTRIBUTION. Brazil, Venezuela, Caribbean Islands. 4-6 spp.

Streptaxis J. Gray, 1837
Fig. 1008

Gray J., 1837: 484.

— *Artemon* Beck, 1837: 48 (t.-sp. *Helix candidus* Spix in Wagner, 1828; SD Ancey, 1884).

— *Alcidia* Bourguignat, 1889: 46 (nom. praeocc., non Westwood, 1879; t.-sp. *Helix cypsele* L. Pfeiffer, 1849; SD Gude, 1902).

TYPE SPECIES — *Helix contusa* Férussac, 1820; SD Herrmannsen, 1846.

Shell subglobose, moderately thin, translucent, glossy, of 6-7 rather convex whorls; last whorl rounded or slightly angled at periphery, scarcely descending in front. Color light-grey or yellowish, or shell colorless. Embryonic sculpture absent, postnuclear whorls covered with regular fine ribs, which disappear on lower side of body whorl. Aperture semiovate to subcircular, toothless or with a weak parietal tubercle. Aperture margins more or less thickened, shortly reflexed. Umbilicus open, dot-like. Height 17.4-20.5, diam. 20-30 mm (17.5 × 20.0 mm).

DISTRIBUTION. Brazil, Colombia, Venezuela. At least 12 spp.

Hypselartemon Wenz, 1947
Fig. 1009

Wenz, 1947: 36.

TYPE SPECIES — *Streptaxis alveus* Dunker, 1845; OD.

Shell high-trochoid, thin, translucent, of 8-10 slightly convex whorls; last whorl scarcely elevated at aperture, evenly

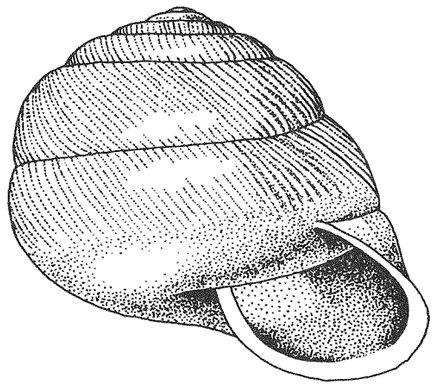


Fig. 1008. ***Streptaxis contusus*** (Férussac, 1820). Brazil. **SPb**.

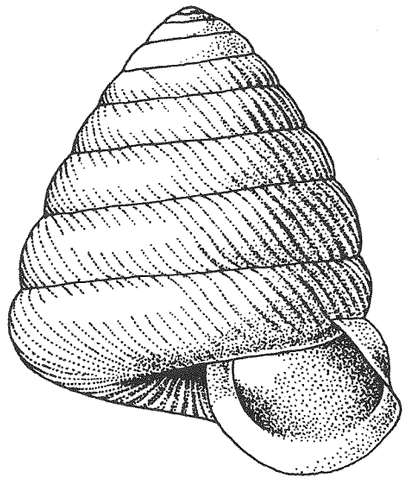


Fig. 1009. ***Hypselartemon alveus*** (Dunker, 1845). Brazil. **SPb**.

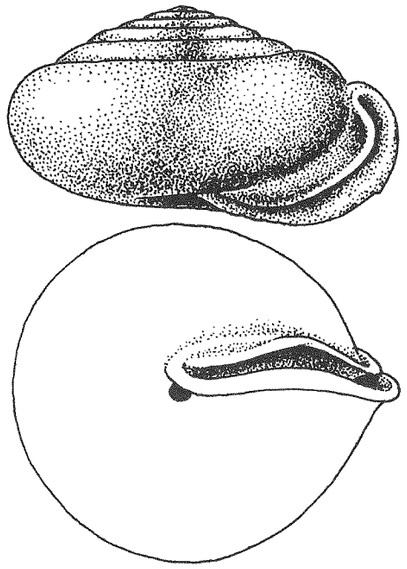


Fig. 1010. ***Sairostoma perplexum*** Haas, 1938. Inside of Lake Salao do Funil, Ubajara, Ceará, Brazil. **Phil**. No. 378609.

rounded at periphery. Color white or light-grey. Embryonic whorls silky radially striatulate, postembryonic surface covered with regular distinct oblique striae; in interspaces there is very fine spiral striation. Aperture very oblique, toothless, its palatal margin slightly sinouos; aperture margins not thickened, more or less reflexed. Umbilicus dot-like. Height 7-24, diam. 7.5-28.0 mm (9.5 × 7.8 mm).

DISTRIBUTION. Brazil, Columbia. 2-3 spp.

Sairostoma Haas, 1938
Fig. 1010

Haas, 1938: 207.

TYPE SPECIES — *Sairostoma perplexum* Haas, 1938; OD.

Shell flattened, helicoid, rather thin, of 6-6.25 moderately convex whorls. Last whorl straight, rounded at periphery. Color whitish (shell probably colorless when fresh). Embryonic whorls smooth, later whorls with delicate radial ribs on upper surface; basal surface al-

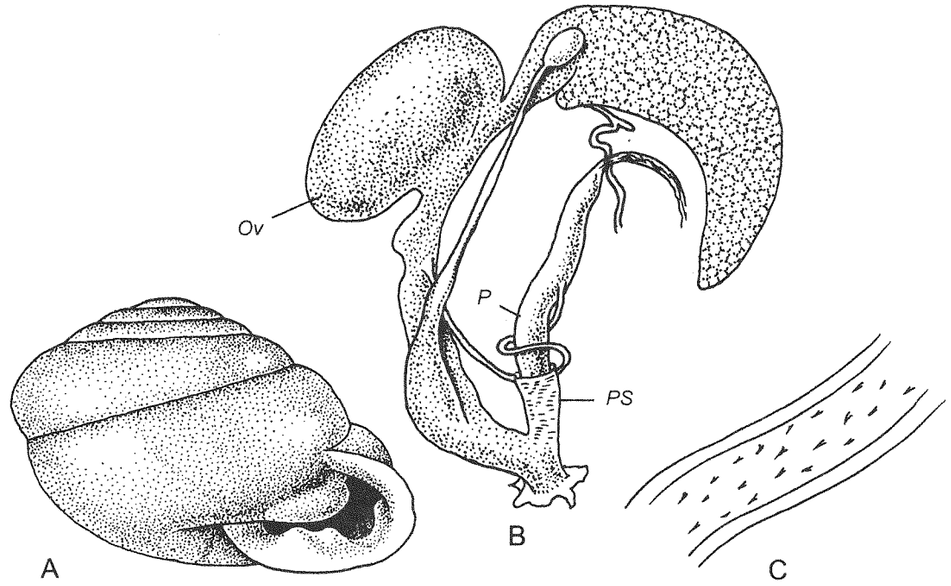


Fig. 1011. A — ! ***Streptartemon dejectum*** (Petit, 1842). Brazil. **Phil**. No. 1206. B, C — ! ***Streptartemon glaber*** (L. Pfeiffer, 1849). Kyk-over-Al, Mazaruni-Potaro District, Essequibo Co., Guyana. B — reproductive tract. C — hooks in penis. **Phil**. No. A-16028.

most smooth. Aperture semilunate, very narrow, nearly vertical, with reflexed margins, obstructed by strong parietal lamella looking like a derivative of parietal callus. Umbilicus circular, narrow, cylindrical. Height 4, diam. 6.0-7.5 mm (4.0 × 7.5 mm).

DISTRIBUTION. NE Brazil. 1 sp.

Streptartemon Kobelt, 1905
Fig. 1011

Kobelt, 1905 (1905-1906): 33 (*Streptaxis* subg.).

TYPE SPECIES — *Helix* (*Streptaxis*) *streptodon* Moricand, 1851; OD.

Shell subglobose, with curved axis, rather solid, a little translucent, of 6-8 rather convex whorls. Last whorl somewhat flattened, slightly descending in front. Color whitish to ivory. Entire surface practically smooth, polished. Aperture oblique, relatively narrow, with thickened and reflexed margins. There are 2-3 teeth: elongated parietal lamella, basal tubercle (sometimes doubled) and, often, palatal tooth. Umbilicus narrow. Height 6.5-10.0, diam. 5.0-13.5 mm (4.8 × 6.7 mm).

Hermaphroditic duct only slightly convoluted, with single small seminal vesicle. Vas deferens slender, of constant diameter along entire length, connected by thin muscular fibers with upper edge of penis sheath. Vas deferens enters penis far from its upper end. Internally penis with many small scattered hooks. Penial retractor attached apically. Uterus contains one large yellow or orange egg. Free oviduct markedly longer than vagina. Base of spermathecal duct strongly enlarged, reservoir reaching albumen gland.

DISTRIBUTION. S America (Brazil, Bolivia, Colombia, Venezuela, Guyana). 6-8 spp.

Seychellaxis Schileyko, gen. nov.
Fig. 1012

TYPE SPECIES — *Helix souleyetiana* Petit, 1841.

Shell subglobose, strongly distorted, thin, shining, semitransparent, glass-like, of

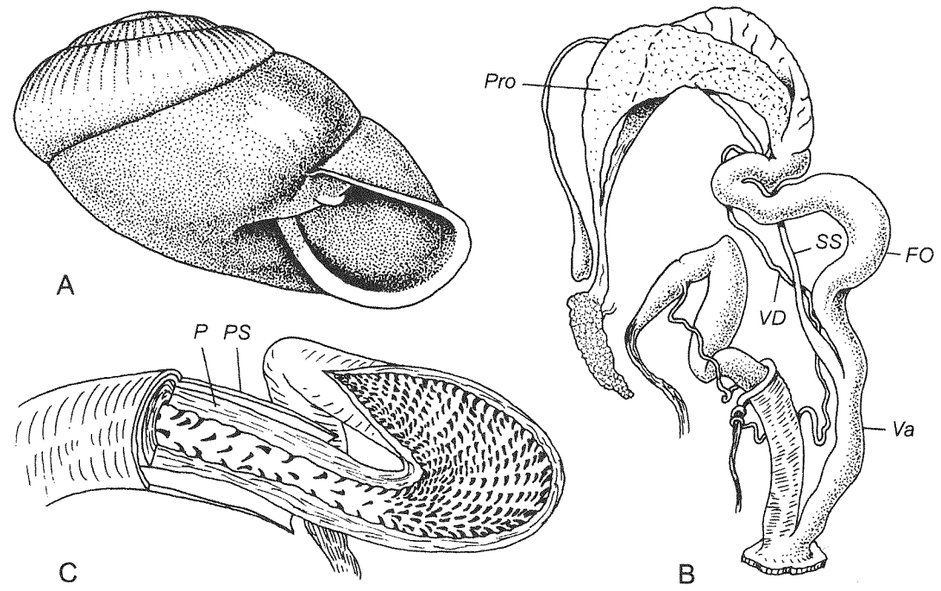


Fig. 1012. ***Seychellaxis souleyetianus*** (Petit, 1841).
A — shell: Near La Passe, Silhouette Island, Seychelles. **Moscow** No. Lc-24930. B, C — above La Passe, Silhouette Island, Seychelles, August 22-25, 1984. B — reproductive tract. C — interior of penis. **Moscow** No. Lc-24961.

6-8 rather convex whorls. Colorless. Embryonic whorls smooth, subsequent finely, regularly ribbed to rib-striated above, with few irregular wrinkles below. Aperture ovate, oblique, with incrassate, reflexed margins. Parietal wall with a small, short lamella. Umbilicus dot-like. Height 8.2-14.9, diam. 9.3-14.9 mm (10.2 × 12.0 mm).

Talon hidden. Prostate contacts with uterus by its upper and lower edges, being free in middle section. Vas deferens unusually long, slightly thickened in middle, fastened to upper edge of penis sheath by muscular ligament, entering penis at short distance from its summit by a simple pore. Internally penis with numerous, rather small hooks that are more numerous and crowded in upper half. Penis sheath occupies about a half of penis length. Penial retractor attached apically. Free oviduct very long, vagina somewhat shorter. Spermathecal stalk slender, a little thickened basally; reservoir small, attending albumen gland.

DISTRIBUTION. Seychelles. 1 sp.

REMARK. Gerlach & van Bruggen (1999: 40) tentatively attributed *Helix souleyetiana* Petit, 1841 to the genus *Gonaxis* and stated: "This species almost certainly deserves to be classified with a genus of its own ... However, the authors refrain from naming and defining such a genus because of absence of comparative anatomical details as regards the many *Gonaxis* s.l. species on the African continent." Conchologically this genus is similar not only to *Gonaxis*, but also to a number of other taxa with distorted shell axis (*Indoartemon*, *Haploptychius*, etc.). Anatomically *Seychellaxis* differs from all studied species by the structure of prostate (partially detached from uterus) and unusually long vas deferens and free oviduct.

Indoartemon Forcart, 1946
Fig. 1013

Forcart, 1946: 215 (nom. nov. pro *Odontartemon* Kobelt in Moellendorff, 1905).

— *Odontartemon* Moellendorff & Kobelt, 1905 (1902-1905): 91 (non L. Pfeiffer, 1856; t.-sp. *Streptaxis eburneus* L. Pfeiffer, 1861; OD).

TYPE SPECIES — *Streptaxis eburneus* L. Pfeiffer, 1861; OD.

Shell subglobose to ovoid, with more or less curved axis, comparatively solid, of 4.5-7 rather convex whorls. Last whorl straight or a little descending in front. Color white to yellowish. Embryonic whorls smooth, rest whorls from glabrous to finely radially striated. Aperture generally rounded, oblique, with reflexed and more or less thickened margins. Parietal callus variously developed. Parietal tooth strong, tuberculiform to lamellate; palatal margin often with weaker tooth. Umbilicus dot-like. Height 2-11, diam. 3-14 mm (10.2 × 14.0 mm).

DISTRIBUTION. Ceylon, SE Asia, Hainan Island. At least 10 spp.

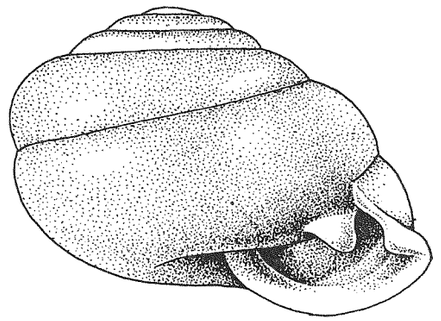


Fig. 1013. ***Indoartemon eburneus*** (L. Pfeiffer, 1861).
"Cochin China" [S Vietnam]. **Cardiff**.

Stemmatopsis Mabille, 1887
Fig. 1014

Mabille, 1887a: 6.

— *Stremmatopsis* Mabille, 1887b: 131 (nom. err. pro *Stemmatopsis* Mabille, 1887a).

TYPE SPECIES — *Stemmatopsis poirieri* Mabille, 1887; monotypy.

Shell unusually distorted streptaxoid, rather solid, glass-like, very shining, colorless, transparent, of 4.5 whorls; last whorl compressed at periphery. Embryonic whorls absolutely smooth, polished; postnuclear whorls with weak, scarcely visible and widely irregularly spaced radial wrinkles. Aperture toothless, practically not visible at standard position of shell because it is strongly oblique. Upper portion of palatal wall forms a sinuosity, lower portion strongly arched forward; another sinuosity located on basal margin. Peristome thickened, almost not reflexed. Umbilicus tightly closed by thickened columellar callus. Height 5.5, diam. 6.7 mm.

DISTRIBUTION. N Vietnam. 1 sp.

Perrottetia Kobelt, 1905
Fig. 1015

Kobelt, 1905 (1905-1906): 91, 108 (*Odontartemon* subg.).

TYPE SPECIES — *Helix peroteti* Petit, 1841; OD.

Shell subglobose, with curved axis, comparatively solid, translucent, of 5-6.5 weakly convex whorls; last whorl not descending in front, somewhat flattened at periphery. Color uniformly white or shell colorless. Embryonic whorls smooth, rest whorls with fine crowded riblets, which may disappear on body whorl, but behind aperture they appear again. Aperture ovate to nearly circular, moderately oblique, with thickened and reflexed margins. Parietal wall with 1 or 2 lamellae: variously developed angular (may be absent), which sometimes fused with palatal margin, and strong parietal; columellar side toothless or with small lamella; basal edge with 1-3 lamellar plicae, on palatal — 0-2 tubercles. Umbilicus narrow, cylindrical. Height 5-15, diam. 5-14 mm (10.0 × 10.1 mm).

Hermaphroditic duct strongly convoluted, without external seminal vesicle. Talon minute, rod-like. Vas deferens slender along entire length, only very proximal portion enlarged. This duct pierces upper

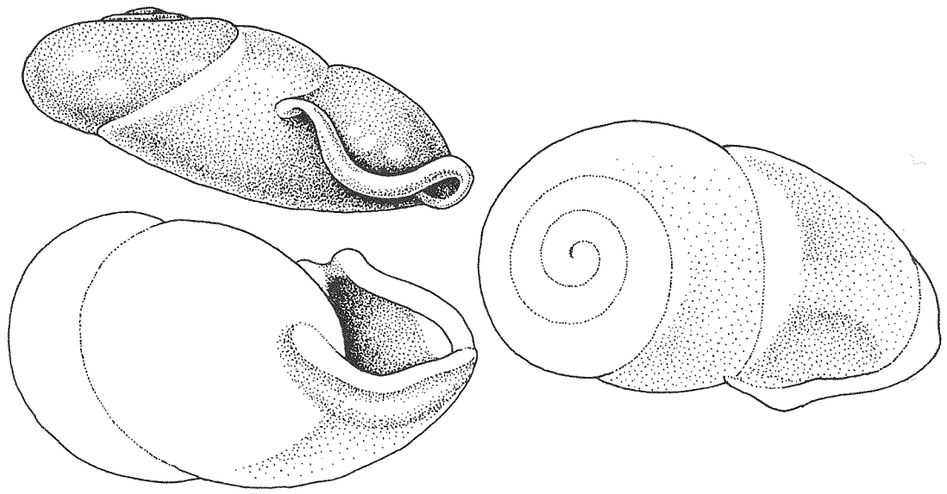


Fig. 1014. ***Stemmatopsis poirieri*** Mabille, 1887
"Tonkin" [N Vietnam]. Lectotype. **Paris**.

part of penis sheath and enters penis subapically through a simple pore. Penial retractor, a branch of columellar muscle, attaching terminally. Penis sheath embraces not more than 1/3 of penis length and has its own slender retractor. Penis internally without distinct pilasters, its inner surface with rather big, strongly curved hooks, each sitting on a small papilla. In upper portion of penis there are only papillae, no hooks. Free oviduct 2.5-3 times shorter than vagina, which internally with same hooks on papillae as in penis. Spermathecal duct slender, reservoir reaching albumen gland.

DISTRIBUTION. S India, SE Asia, Mascarenes Islands. About 25 spp. & subspp.

Acanthennea E. Martens, 1898
Fig. 1016

Martens in Martens & Wiegmann, 1898: 8 (*Ennea* subg.).

TYPE SPECIES — *Ennea* (*Acanthennea*) *erinaceus* E. Martens, 1898; monotypy.

Shell pupiform, rather solid, translucent, shining, glass-like, of 7-8.5 quite convex whorls. Last whorl straight. Apex nearly flat, embryonic whorls (about 2.5) slightly sunken. Shell colorless. Embryonic whorls smooth, early postnuclear whorls with widely spaced, flange-like riblets; central part of each rib attenuated into a large, laterally compressed spine. Later whorls with stronger radial ribs; basal parts of many ribs with a second, but smaller spines. Surface between ribs smooth. Aperture ovate, subvertical, with nearly straight parietal wall. Columellar margin with deeply lying lamella. Palatal margin markedly concave. Umbilicus closed, in immature shells rather wide, deep. Height 4.2-6.3, diam. 3.7-4.6 mm (5.8 × 4.9 mm).

Vas deferens long, not connected with penis sheath, entering penis apically. Penis elongated, its lower half surrounded by well developed sheath. Internally penis with long, gently curved, bicuspid hooks, arranged in 6 oblique series in proximal part and in 2 series in basal half. Penial retractor attached terminally. Free oviduct and vagina subequal in length. Spermathecal stalk rather long, slender.

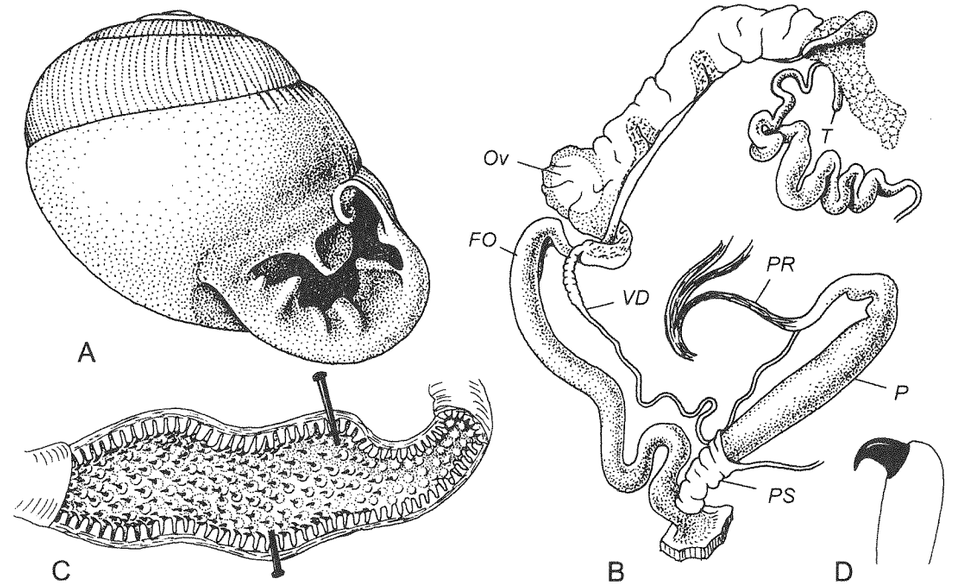


Fig. 1015. ! ***Perrottetia gudei*** (Fulton, 1915).
Buen-Loi, S Vietnam, June 15 — July 8, 1982. A — shell. B — reproductive tract. C — interior of penis. D — hook on papilla, enlarged. **Moscow** No. Lc-24940.

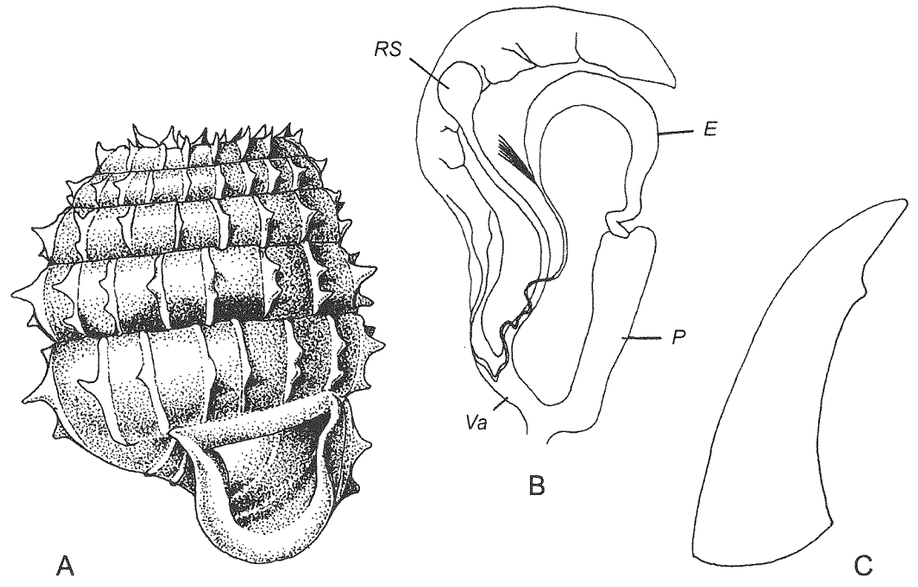


Fig. 1016. ***Acanthennea erinaceus*** (E. Martens, 1898).
A — shell: Mahé, Seychelles. Paralectotype. **Berlin** No. 56915. B — reproductive tract. C — hook in penis, strongly enlarged. After Gerlach & van Bruggen, 1999.

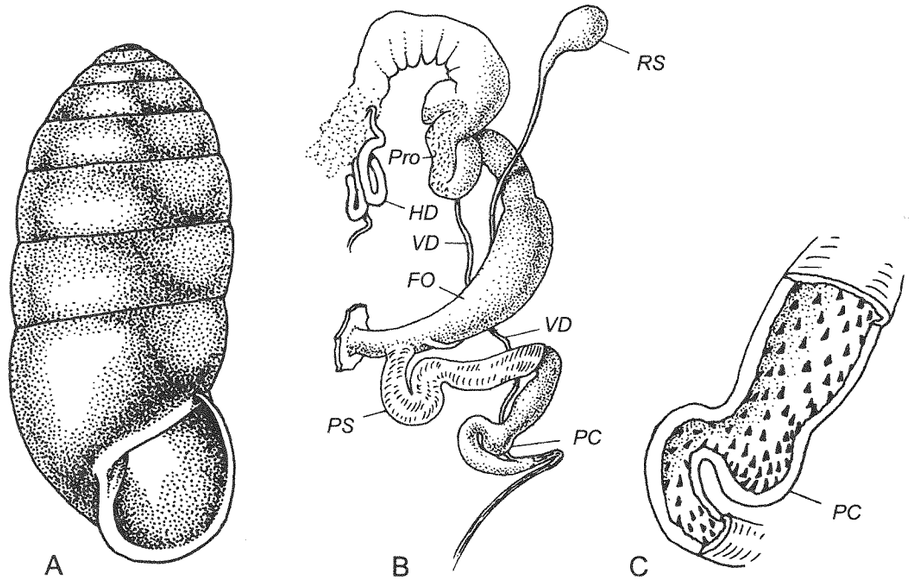


Fig. 1017. ***Glabrennea gardineri*** (Sykes, 1909).
A — shell. B — reproductive tract. C — interior of penis. Mt. Pot-à-Eau, Silhouette Island, Seychelles, August 23, 1984. **Moscow** No. Lc-19551.

DISTRIBUTION. Seychelles (Silhouette and Mahé Islands). 1 sp.

Glabrennea Schileyko, gen. nov.
Fig. 1017

TYPE SPECIES — *Gulella gardineri* Sykes, 1909.

Shell ovate to ovate-cylindrical, thin, silky glossy, translucent to semitransparent, of 5.5-8.5 slightly convex whorls. Last whorl a little ascending where palatal margin joins shell wall. Color light-yellowish or pale-corneous. Embryonic and later whorls lacking regular sculpture. Aperture ovate to subquadrate, toothless, only slightly oblique, with a little thickened, scarcely reflexed and thickened margins. Columellar margin slightly twisted. Umbilicus tiny. Height 4.0-6.8, diam. 1.3-2.7 mm (5.8 × 2.4 mm).

Hermaphroditic duct loosely looped. Talon not visible. Vas deferens long, evenly thin, entering penis subapically at sharp angle. Penis rather long, with subglobular caecum at its proximal end. Hooks in penis and caecum small, short, conic. Penis sheath occupies more than 0.5 of penis length. Free oviduct very long, stout, internally with high, oblique folds. Vagina extremely short. Spermathecal stalk evenly thin, long, reservoir reaching albumen gland.

DISTRIBUTION. Seychelles. 2 or 3 spp.

REMARK. Conchologically this genus resembles *Gulella* (*Pupigulella*) (Enneinae) in the shell outline and absence of aperture teeth; but the anatomy of type species corresponds to diagnosis of Streptaxinae (hooks in penis are not differentiated, penis sheath well developed, vas deferens evenly slender, not passing under sheath).

Stereostele Pilsbry, 1919
Fig. 1018

Pilsbry, 1919a: 7, 183 (*Streptostele* subg.).

TYPE SPECIES — *Ennea* (*Elma*) *nevilli* H. Adams, 1868; OD.

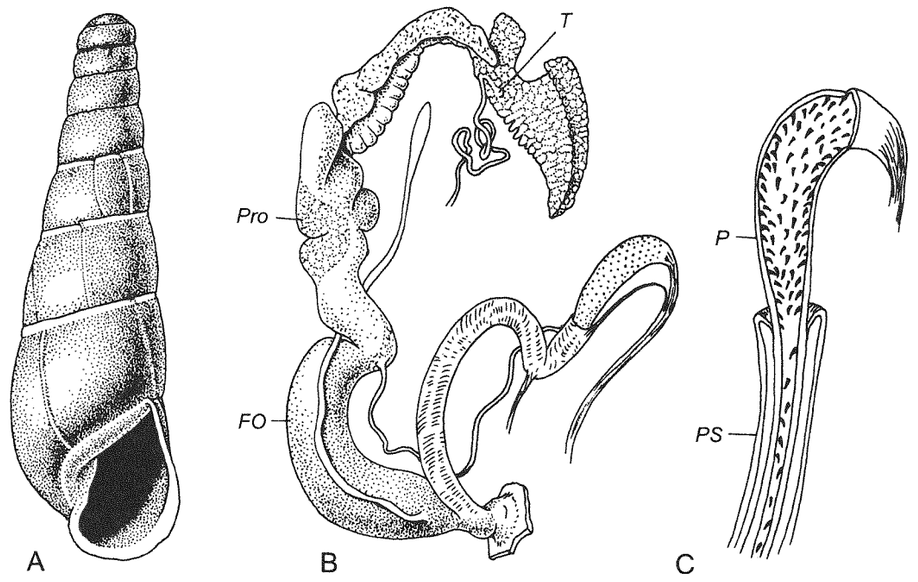


Fig. 1018. ***Stereostele nevilli*** (H. Adams, 1868).
Mt. Pot-à-Eau, Silhouette Island, Seychelles, August 23, 1984. A — shell. B — reproductive tract. C — interior of penis. **Moscow** No. Lc-19599.

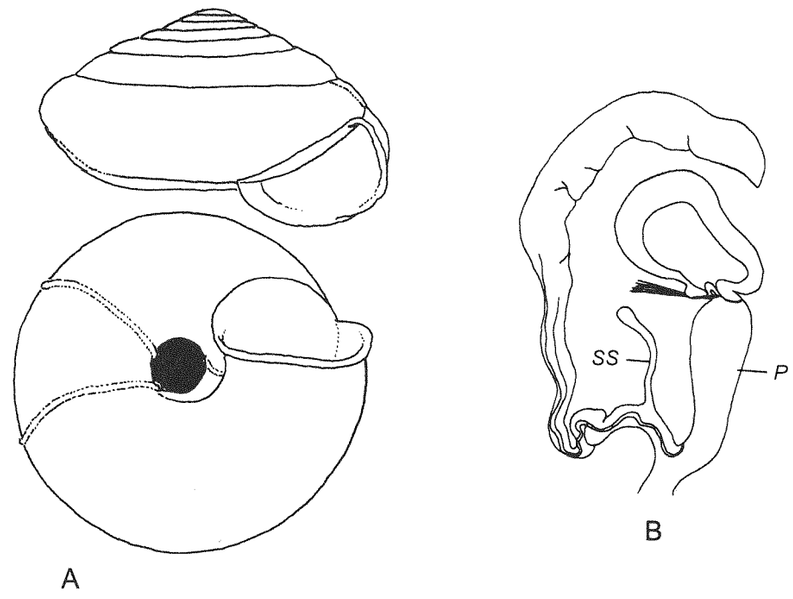


Fig. 1019. ***Silhouettia silhouettae*** (E. Martens, 1898).
A — shell. B — reproductive tract. After Gerlach & Bruggen, 1999.

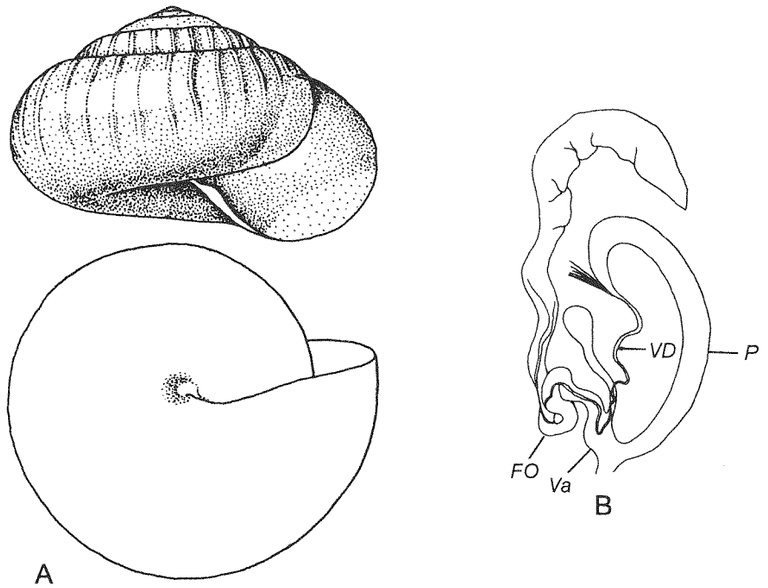


Fig. 1020. ***Augustula braueri*** (E. Martens, 1898).
A — shell: forest above La Passe, Silhouette Island, Seychelles. **Moscow** No. Lc-20919. B — reproductive tract. After Gerlach & van Bruggen, 1999.

Shell turrited-conic, rather thin, slightly translucent, with broadly rounded apex, of 8 flattened whorls. Last whorl straight, scarcely subangulate in lower part. Color yellowish. Embryonic whorls smooth, postembryonic with exceptionally fine silky radial striation and with elements of spiral striation. Aperture subquadrangular, nearly vertical, with a little thickened, shortly reflexed margins. Parietal callus well developed. Columellar margin bears light spiral lamella. Umbilicus absent. Height 14.0-20.1, diam. 4.5-6.4 mm (17.8 × 5.6 mm).

Talon small, with globular head. Vas deferens thin, not bound to female ducts or penis, connected with upper edge of penis sheath which occupies 2/3-3/4 of penis length. Penis slender, long, cylindrical, with additional retractor of sheath. In proximal portion of penis not surrounded by sheath, hooks numerous, scattered; in narrower distal portion hooks less numerous and more spaced. Free oviduct long, stout, vagina 6-7 times shorter. Spermathecal duct evenly slender.

DISTRIBUTION. Seychelles. 1 sp. with 2 subspp.

Silhouettia
Gerlach et van Bruggen, 1999
Fig. 1019

Gerlach & van Bruggen, 1999: 45.

TYPE SPECIES — *Streptaxis* (*Imperturbatia*) *constans* var. *silhouettae* E. Martens, 1898; OD.

Shell depressed, lens-shaped, glossy, of 8-8.5 distinctly convex whorls. Last whorl somewhat angled above midline. Color white. Embryonic whorls smooth, later whorls with regular radial ribs extending onto basal surface and into umbilicus. Ribs on last whorl regular, widely spaced. Aperture broad, square, angled, toothless, with clearly reflexed, slightly thickened margins. Umbilicus open, profound, comparatively narrow. Height 3.8-5.5, diam. 6.2-6.6 mm.

Vas deferens long, entering penis apically. Penis long, its lower half surrounded by a muscular sheath. Internally penis with simple black hooks which are visible through wall of penis. Penial retractor attached terminally. Free oviduct much longer than vagina. Spermatheca somewhat reduced, with short stalk and small reservoir.

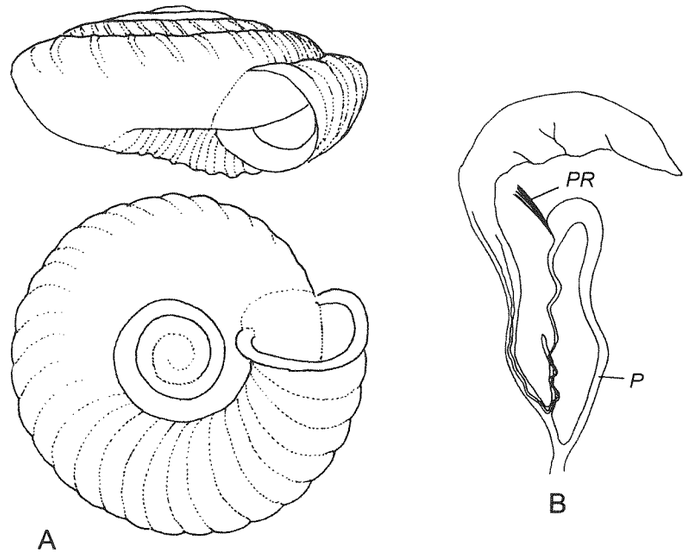


Fig. 1021. ***Careoradula perelegans*** (E. Martens, 1898).
A — shell. B — reproductive tract. After Gerlach & Bruggen, 1999.

DISTRIBUTION. Seychelles (Silhouette Island). 1 sp.

Augustula Thiele, 1931
Fig. 1020

Thiele, 1931: 727. Gerlach & van Bruggen, 1999: 48.

TYPE SPECIES — *Streptaxis* (*Imperturbatia*) *braueri* E. Martens, 1898; monotypy.

Shell depressedly conic, thin, glass-like, with dome-shaped outline of spire and more or less flattened apex. Whorls 4-5, moderately convex, gently rounded in profile. Colorless. Embryonic whorls smooth, later with fine, widely spaced radial riblets on upper side; on base these riblets become weaker. Aperture rounded, with sharp, simple margins; columellar margin with subvertical thickening. Umbilicus closed. Height 1.8-3.7, diam. 3.6-5.9 mm (2.3 × 4.0 mm).

Vas deferens long, entering penis apically. Penis long, hooks inside it represented by weakly chitinized conic papillae. Penis sheath missing (?). Penial retractor attached terminally. Free oviduct very long; vagina, on the contrary, extremely short. Spermathecal stalk short.

DISTRIBUTION. Seychelles (Silhouette and Mahé Islands). 1 sp.

Careoradula
Gerlach et van Bruggen, 1999
Fig. 1021

Gerlach & van Bruggen, 1999: 47.

TYPE SPECIES — *Streptaxis* (*Imperturbatia*) *perelegans* E. Martens, 1898; OD.

Shell depressed, rather thin, shining, translucent, glass-like, of 6-8 slightly convex whors. Last whorl angled at periphery. Colorless. Embryonic whorls smooth, later whorls with faint, irregular radial wrinklets and regular, widely spaced, rounded ribs; they extend onto underside where they distinctly S-shaped. Aperture semilunate, oblique, toothless, its margins thickened by last rib. Umbilicus wide, deep. Height 1.9-3.1, diam. 4.4-6.1 mm.

Radula and odontophore not developed (Gerlach & van Bruggen, 1998).

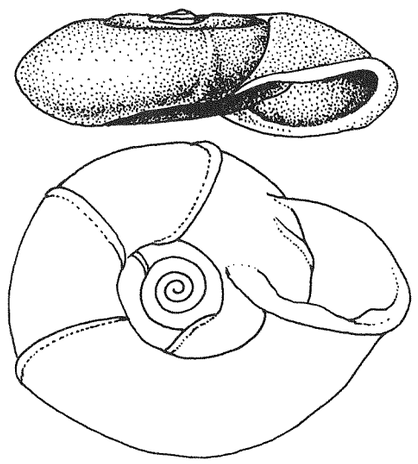


Fig. 1022. ***Discartemon discus*** (L. Pfeiffer, 1851).
Annam [Laos]. **Phil**. No. 109271.

Vas deferens long, entering penis terminally. Internally penis without ornamentation. Penial retractor attached (sub)apically. Penis sheath and spermatheca not located.

DISTRIBUTION. Seychelles (Silhouette and Mahé Islands). 1 sp.

Discartemon L. Pfeiffer, 1856
Fig. 1022

Pfeiffer L., 1856: 173 (*Streptaxis* subg.).

TYPE SPECIES — *Streptaxis discus* L. Pfeiffer, 1851; SD Ancey, 1884.

Shell almost flat, with scarcely prominent summit, moderately thin, translucent, shining, of 5-7 shouldered whorls. Last whorl strongly deflected toward aperture. Color hyaline-white. Regular sculpture weak or absent except for few varices which are visible also within umbilicus. Aperture subhorizontal, transversely auriform, with reflexed margins; upper margin uneven, obsoletely dentate. Parietal wall with not long, low lamella. Columellar margin often with small tubercles. Palatal margin with stronger tooth, basal margin transversely callous. Umbilicus very broad, shallow. Height 1.2-4.2, diam. 3-16 mm (4.0 × 13.8 mm).

DISTRIBUTION. SE Asia, Sumatra, ? Sulawesi. About 15 spp.

Glyptoconus Moellendorff, 1894
Fig. 1023

Moellendorff in Quadras & Moellendorff, 1894: 90.

TYPE SPECIES — *Glyptoconus mirus* Moellendorff, 1894; OD.

Shell microhelicoid, comparatively solid, shining, much translucent, of 7.5 convex, distinctly shouldered whorls. Colorless. Embryonic whorls practically smooth, later whorls with clear, well spaced, regular ribs. Aperture roughly semilunate, vertical and even turned a little upward, so, its basal margin slightly protruded forward; margins thin, straight, columellar margin oblique, markedly dilated. Umbilicus tiny, dot-like. Height 3.5, diam. 3.7 mm.

DISTRIBUTION. Philippines (Busuanga Island). 1 sp.

Micrartemon Moellendorff, 1890
Fig. 1024

Moellendorff, 1890: 190 (*Streptaxis* subg.).

TYPE SPECIES — *Streptaxis* (*Micrartemon*) *boettgeri* Moellendorff, 1890; monotypy.

Shell nearly flat, thin, semitransparent, glass-like, of 3.5-4 flattened whorls. Colorless. Embryonic whorls smooth, later whorls with distinct, well spaced spiral incised lines visible on both sides. Aperture ovate, somewhat oblique, with simple margins. Parietal lamella almost horizontal, stands by its anterior end on strongly developed callus. Basal lamellar thickening abruptly truncated at right end. Umbilicus tiny or hidden by parietal callus. Height 0.5, diam. 1.4 mm.

DISTRIBUTION. Philippines (Cebu, Negros and Guiamaras Islands). 1 sp.

Platycochlium Laidlaw, 1950
Fig. 1025

Laidlaw, 1950: 370. Vermeulen, 1991: 166.

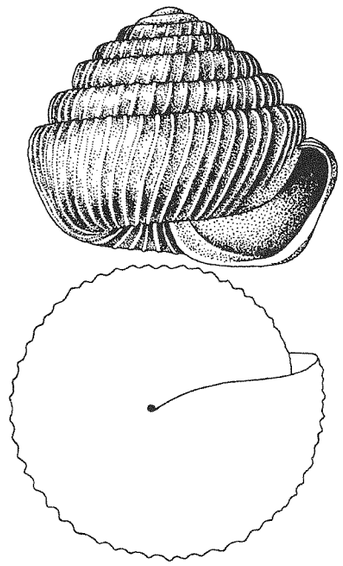


Fig. 1023. ***Glyptoconus mirus*** Moellendorff, 1894.
Busuanga, Bintuan, Philippines. Lectotype. **Senck**. No. 136847.

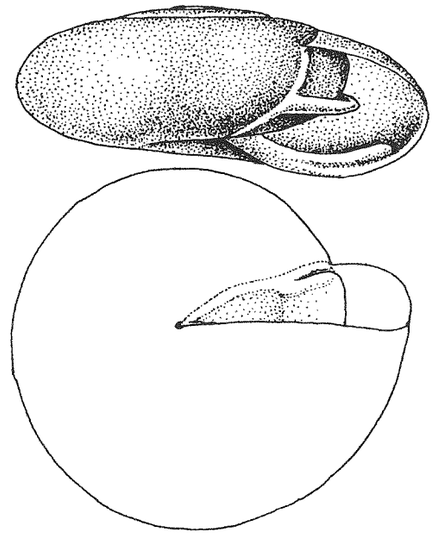


Fig. 1024. ***Micrartemon boettgeri*** (Moellendorff, 1890).
"Philippinen: Insel Cebu, Bantagan". Lectotype. **Senck**. No. 136827.

TYPE SPECIES — *Platycochlium sarawakense* Laidlaw, 1950; OD.

Shell flattened, more or less elliptical viewed from above and below, rather thin, glass-like, glossy, of 4-5 rather convex whorls. Last whorl straight, with peripheral keel. Colorless. Embryonic whorls with spaced spiral striae which continue on postapical whorls; besides, there are irregularly located varices; riblets present on slopes of umbilicus. Aperture rounded, oblique, nearly uninterrupted, with reflexed, thickened margins. Parietal wall with long longitudinal lamella. 2 basal tubercles situated at short distance from margin of aperture. Upper part of palatal margin bears thickening. Umbilicus very broad, ovate. Height 1.1-1.4, diam. 2.3-3.0 mm (1.3 × 2.9 mm).

DISTRIBUTION. Kalimantan (Borneo). 3 spp.

Tonkinia Mabille, 1887
Fig. 1026

Mabille, 1887a: 9.

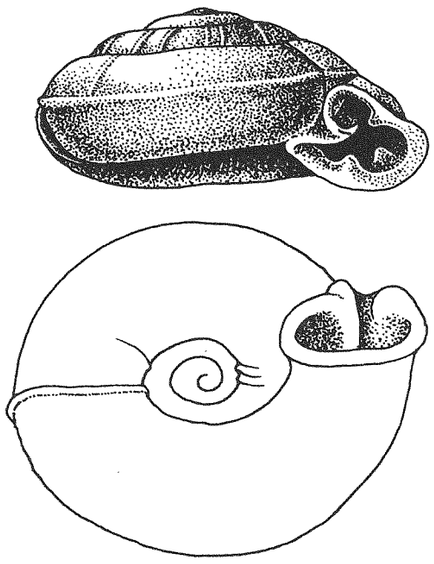


Fig. 1025. ***Platycochlium sarawakense*** Laidlaw, 1950.
Sarawak, near Serian, Kalimantan. **Moscow** No. Lc-19578 (gift of J.J. Vermeulen).

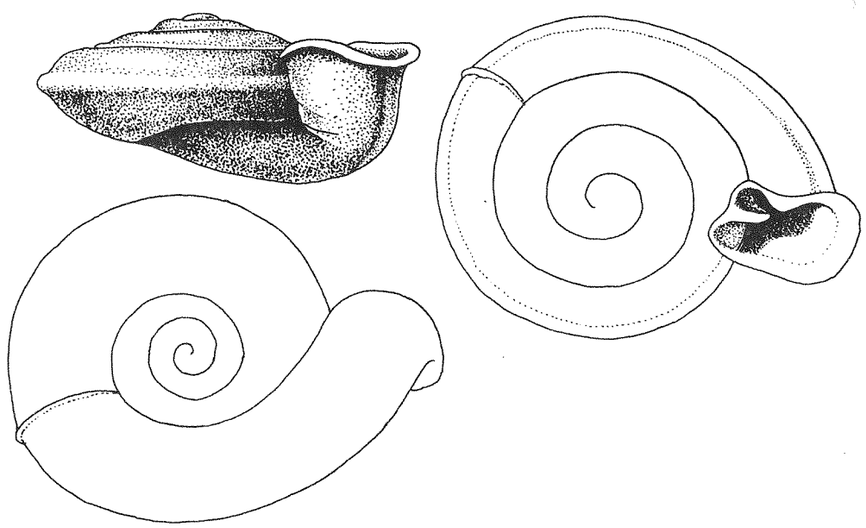


Fig. 1026. ***Tonkinia mirabilis*** Mabille, 1887.
"Tonkin" (N Vietnam). Syntype. **Paris**.

TYPE SPECIES — *Tonkinia mirabilis* Mabille, 1887; monotypy.

Shell depressed, lenticular, thin, transparent, glass-like, of 3-4 slightly convex, somewhat shouldered whorls. Last whorl turned upward, with peripheral keel or angle. Colorless. Embryonic whorls smooth, subsequent whorls without regular sculpture. Aperture solute, irregularly quadrangular, nearly horizontal, with a little thickened, expanded margins and small parietal lamella. Palatal margin with thickening. Umbilicus wide, perspective. Height 1.5-2.0, diam. 4.3-5.0 mm (1.5 × 4.3 mm).

DISTRIBUTION. N Vietnam. 1 sp.

GIBBINAE Steenberg, 1936

Steenberg, 1936: 146.

— Orthogibbidae Germain, 1921: 415, 461 (based on *Orthogibbus*, syn. of *Gonospira*).

— Gonidominae Steenberg, 1936: 146.

Shell mostly elongated, sometimes distorted, medium to large, rarely small and dome-shaped. Axis straight, rarely curved. Teeth in aperture mostly missing, sometimes present.

Penis sheath present. Vas deferens at first thickened, running down to sheath, passing under sheath parallelly with reduction of its diameter. Penial caecum not present. Hooks in penis not differentiated.

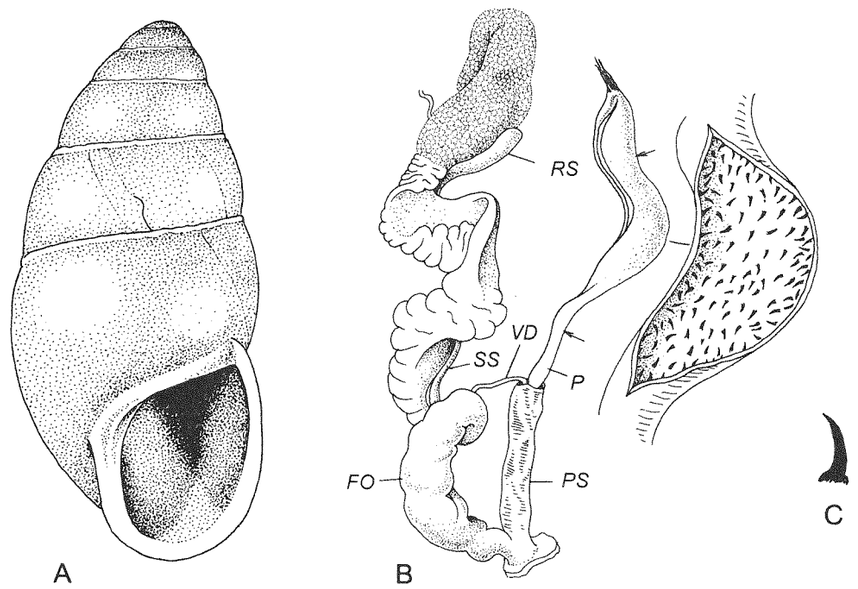
DISTRIBUTION. E Africa, Madagascar, Comoro, Mauritius, Canary Islands; 1 genus in SE Asia.

Edentulina L. Pfeiffer, 1855
Fig. 1027

Pfeiffer L., 1855: 173 (*Ennea* subg.). Emberton, 1999: 97.

TYPE SPECIES — *Bulimus ovoideus* Bruguière, 1789; SD Martens in Albers, 1860.

Shell elongated-ovate, solid to rather thin, mat, with convex outline of spire and rounded apex. Whorls 6-8, weakly convex, last slightly ascending in front. Color white to light-brown. Embryonic whorls finely



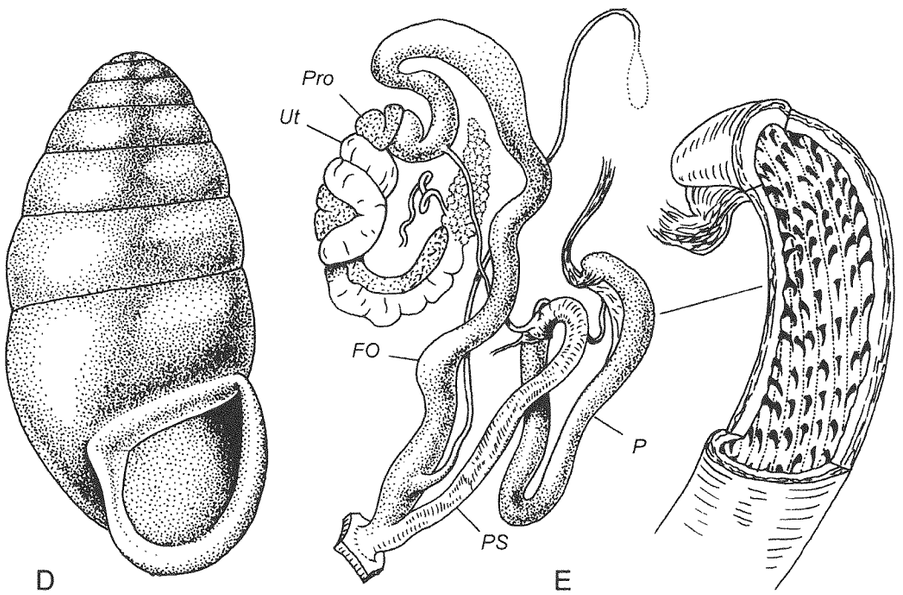


Fig. 1027. A, B, C — ***Edentulina ovoidea*** (Bruguière, 1789).
A — shell: Mayotte Island, Comoros. **Geneva**. B, C — Mayotte Island, Comoros. B — reproductive tract and interior of penis. C — hook in penis, enlarged. **Paris**.
D, E — ! ***Edentulina dussumieri*** (Dufo, 1840). Silhouette Island, Seychelles, August 25, 1984. D — shell. E — reproductive tract and interior of penis. **Moscow** No. Lc-24963.
Arrows in Fig. "B" indicate lower and upper boundaries of zone covered with hooks.

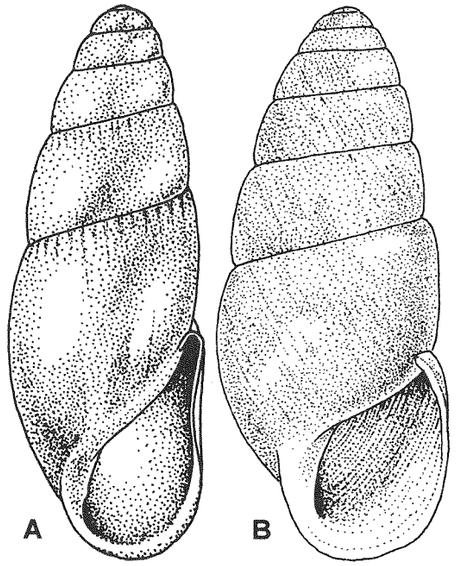


Fig. 1028. A — ***Pseudelma incisa*** (Morelet, 1881). Mayotte Island [Comoros]. **Phil**. No. 23789.
B — ***Pseudelma inconspicua*** (Morelet, 1881). Mayotte Island [Comoros]. **Vienna**.

spirally striated; fine crowded riblets may be present on postembryonic whorls as well; on body whorl sculpture usually obsolete or missing. Aperture ovate, slightly oblique, without teeth, with somewhat thickened and reflexed margins. Parietal callus usually well developed, columellar margin widely reflexed, especially at its upper part. Umbilicus dot-like. Height 13-53, diam. 6-27 mm (*ovoidea*: 40.1 × 20.6; *dussumieri*: 18.0 × 8.5 mm).

Talon embedded. Vas deferens relatively short, slender, entering penis subapically. Penis very long, internally sometimes with several variously developed, spirally ascending pilasters, on each of them there is a row of rather large curved hooks; in distal part of penis hooks more scattered and arranged less regular. Sometimes hooks cover only part of penis (Fig. 1027 B, arrows); distal part of penis with axial folds. Penis sheath surrounds 1/3 to 1/2 of penis. Free oviduct 8-10 times longer than vagina. Spermathecal duct long, slender; reservoir reaching albumen gland.

DISTRIBUTION. E Africa, Comoro Islands, Seychelles. At least 17 spp. & subspp.

REMARK. As one can see from the figures, *Edentulina ovoidea* markedly differs from *E. dussumieri*, mainly in the inner structure of penis. However more species of *Edentulina* should be dissected to take a decision on taxonomic structure of the genus.

Pseudelma Kobelt, 1904
Fig. 1028

Kobelt, 1904a: 29 (*Ennea* "Gruppe").

— *Fultonelma* Haas, 1951a: 133 (*Elma* subg.; t.-sp. *Bulimus inconspicuus* Morelet, 1881; OD).

TYPE SPECIES — *Ennea incisa* Morelet, 1881; SD Kobelt, 1905 (1905-1906).

Shell elongated-ovate, thin, glass-like, translucent, of 6.5-7.5 slightly convex whorls. Height of last whorl about a half or more of shell height. Color whitish or shell colorless. Embryonic whorls smooth, later whorls glabrous to finely radially striated. Aperture pear-shaped or pointed-ovate, with simple margins, toothless or with small parietal tubercle. Palatal margin vertical, usually somewhat concave in middle and sometimes narrowly curved above. Umbilicus absent. Height 9-16, diam. 3.0-6.4 mm (*incisa*: 11.5 × 4.0 mm; *inconspicua*: 15.7 × 6.2 mm).

DISTRIBUTION. Mayotte Island (Comoro Islands). 3 spp.

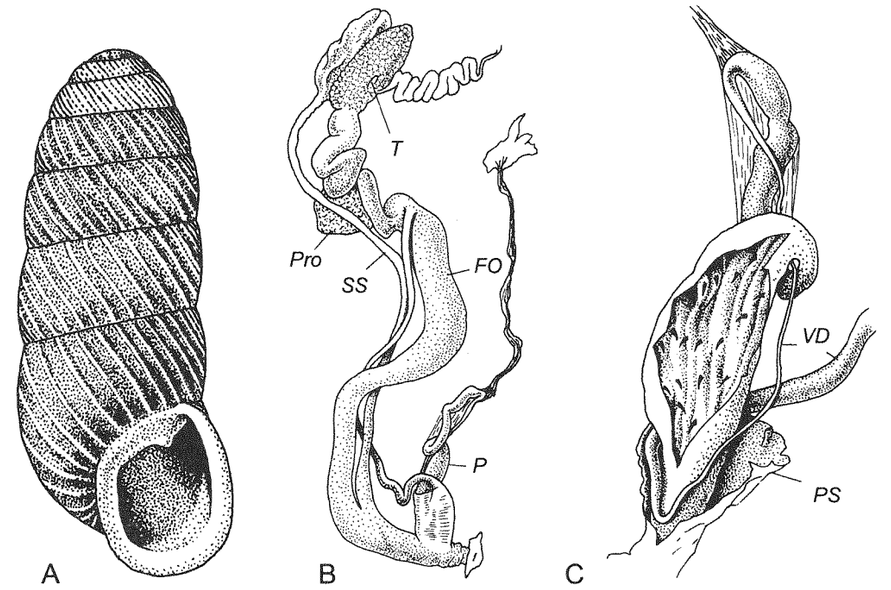
Gonospira Swainson, 1840
Fig. 1029

Swainson, 1840: 333 (*Pupa* subg.).

— *Orthogibbus* Germain, 1919: 264 [t.-sp. *Helix* (*Cochlodonta*) *modiolus* Férussac, 1821; OD].

TYPE SPECIES — *Helix* (*Cochlodonta*) *palanga* Férussac, 1821; OD.

Shell pupiform to elongated-ovate or subcylindrical, (moderately) solid, slightly translucent, of 6-8 a little convex whorls. Last whorl, as a rule, gradually ascending toward aperture. Color whitish to yellowish-corneous. Embryonic whorls finely radially ribbed, on later whorls ribs become stronger. Aperture rounded, subvertical, with thin, reflexed margins. Parietal wall sometimes with variously developed tuberculiform tooth. Umbi-



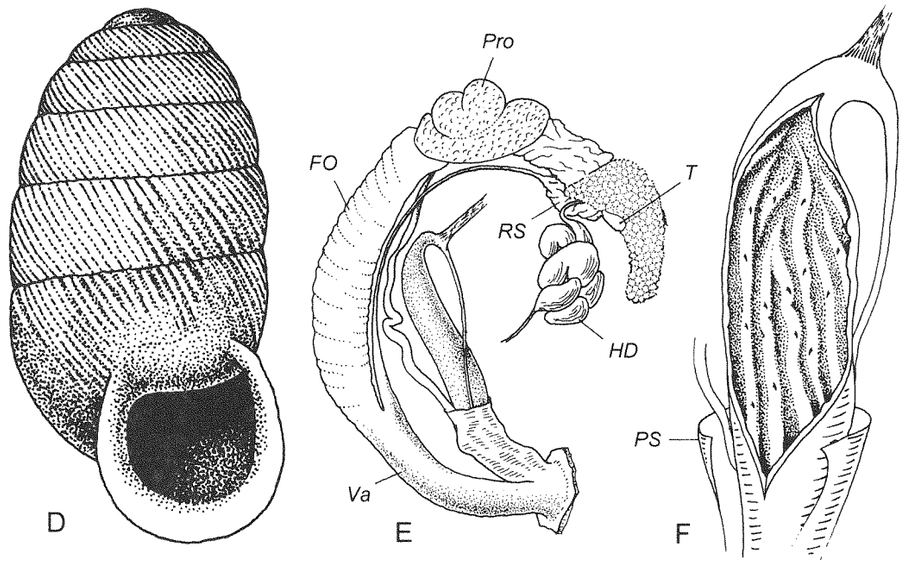


Fig. 1029. A, B, C — ***Gonospira palanga*** (Férussac, 1821).
A — shell. B — reproductive tract. C — interior of penis. Cascade River valley, Mauritius, April 22, 1983. **Moscow** No. Lc-20729.
D, E, F — ***Gonospira modiola*** (Férussac, 1821). D — shell. E — reproductive tract. F — interior of penis. Crater Trou-aux-Cerfs near Curepipe, Mauritius. **Moscow** No. Lc-12478.

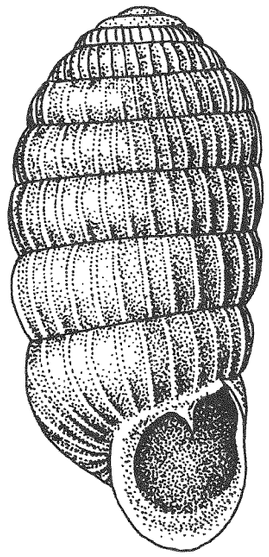


Fig. 1030. ***Microstrophia clavulata*** Lamarck, 1822.
Mauritius. **Moscow** No. Lc-12472.

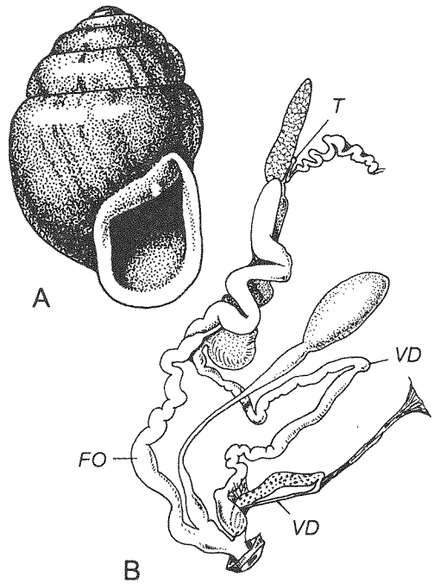


Fig. 1031. ***Gonidomus pagoda*** (Férussac, 1821). A — shell: Mauritius. **SPb**. B — reproductive tract. After Steenberg, 1936.

licus comma-like, small. Height 4.5-31.0, diam. 2-12 mm (*palanga*: 23.6 × 10.3 mm; *modiola*: 16.9 × 8.7 mm).

Talon small, ovate, exposed. Vas deferens at first thickened, passes under penis sheath; after this strongly narrowed, enters penis apically. Penis subcylindrical, sometimes slightly narrowed and sinuous in upper part, internally with smoothed longitudinal folds; each fold bears (rather) small, sharp hooks arranged in 1 row. Free oviduct very long, much longer than vagina. Spermathecal stalk long, thin, reservoir voluminous, lying on albumen gland.

DISTRIBUTION. Mauritius, Réunion and Rodrigues Islands. About 30 nominal spp. & forms; judging by wide variety of shells I think that revision of this genus will reduce this number considerably.

REMARK. The only character which separates *Gonospira* from *Orthogibbus* is the presence of parietal tooth in the former and the absence of this tooth in the latter. However one can compose a large continuous series of shells taken from the same locality (in particular — in the crater Trouaux-Cerfs in Mauritius): from those with well developed parietal tooth to shells without a tooth. Thus, I do not see reasons to separate these two taxa.

Microstrophia Moellendorff, 1887
Fig. 1030

Moellendorff, 1887: 22 (*Pupa* sect.; nom. nov. pro *Nevillia* E. Martens, 1880).

— *Nevillia* Martens in Möbius, 1880: 204 [nom. praeocc., non H. Adams, 1868 (Rissoidae); t.-sp. *Pupa clavulata* Lamarck, 1822; OD].

TYPE SPECIES — *Pupa clavulata* Lamarck, 1822; SD Kobelt, 1910.

Shell subcylindrical to clavate, moderately solid, dull, of 8-10 convex whorls. Last whorl straight, evenly rounded in profile. Upper spire conic. Color pale-yellow or greyish. Embryonic whorls smooth, following whorls regularly ribbed. Aperture ovate, nearly vertical, sometimes solute, with well reflexed (especially on basal part), slightly thickened margins. Parietal callus developed, with a short parietal lamella on it. In upper part of palatal margin a variously developed thickening situated.

Umbilicus dot-like. Height 3-9, diam. 1.3-4.2 mm (8.4 × 3.9 mm).

DISTRIBUTION. Mauritius and Réunion Islands. 3-4 spp.

Gonidomus Swainson, 1840
Fig. 1031

Swainson, 1840: 332 (*Geotrochus* subg.).

— *Idolum* L. Pfeiffer, 1856: 174 (*Pupa* subg.; t.-sp. *Helix pagoda* Férussac, 1821; monotypy).

TYPE SPECIES — *Helix* (*Cochlodonta*) *pagoda* Férussac, 1821; monotypy.

Shell shortly ovate, comparatively thin, shining, of about 7 convex, a little shouldered whorls. Last whorl in profile rounded, slightly ascending toward aperture. Apex rounded. Color olivaceous, with irregular brown streaks of various width and intensity. Embryonic whorls with very weak radial wrinklets, following whorls with radial ribs — sharper and crowded on early whorls and smoothed on two last whorls; here there are also elements of malleate sculpture. Aperture ovate to rounded-quadrangular, a little oblique, with slightly thickened, widely reflexed margins. Parietal wall smooth or with a small tubercle. Umbilicus very narrow, not perspective. Height 31-41, diam. 20-30 mm (32.2 × 20.2 mm).

Talon small, exposed, with globular summit. Vas deferens long, strongly expanded down to penis sheath, along penis runs as a narrow tube; entering penis subapically, at base of penial retractor. Penis not long, internally with rather large hooks. Free oviduct very long, convoluted; vagina very short. Basal part of spermathecal stalk expanded, reservoir large.

DISTRIBUTION. Mauritius. 1 sp. (extinct ?).

Plicadomus Swainson, 1840
Fig. 1032

Swainson, 1840: 332 (*Pupa* subg.).

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

Shell ovate subconic, rather solid, of about 7 flattened whorls. Apex obtuse. Color brownish to corneous. Embryonic whorls finely radially wrinkled; subsequent whorls with distinct, oblique, rounded ribs. Aperture widely ovate, only slightly oblique, with reflexed, thickened margins. Parietal wall smooth. Umbilicus closed. Height 20.5-33.0, diam. 12-19 mm (30.5 × 17.1 mm).

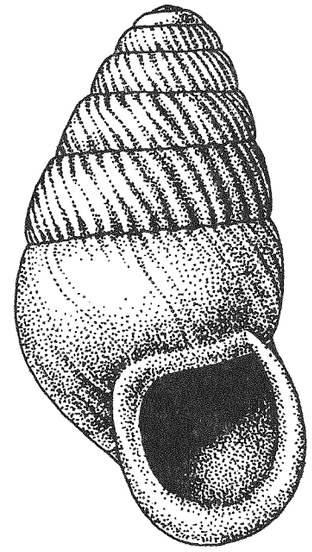


Fig. 1032. ***Plicadomus sulcatus*** (Müller, 1774). Mauritius.
Moscow No. Lc-12484.

DISTRIBUTION. Mauritius. 2 or 3 spp. (extinct ?).

Gibbus Montfort, 1810
Fig. 1033

Montfort, 1810: 302.

TYPE SPECIES — *Helix lyonetianus* Pallas, 1780; monotypy.

Shell conic, solid, of about 7 whorls; few first whorls form regular conus, last whorl in profile widely angulate, compressed dorsoventrally, strongly but gradually ascending. Color brown to yellowish. Embryonic whorls smooth or slightly radially wrinkled, later whorls with coarse sculpture of sharp radial riblets; last whorl with elements of malleate sculpture. Aperture rounded-quadrangular, nearly vertical, scarcely turned upward, with thickened, reflexed margins. Parietal wall smooth or with a small tubercle; parietal callus thin,

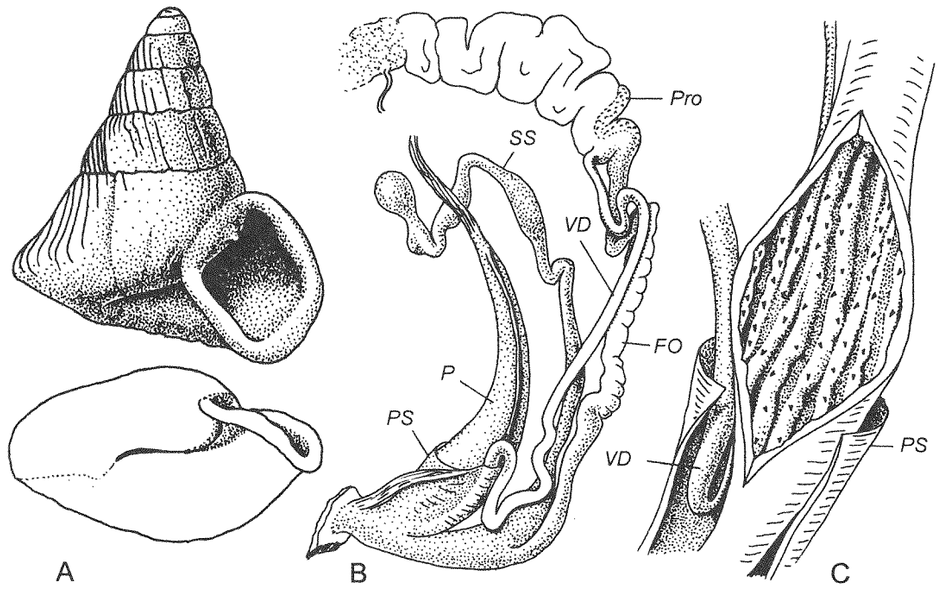


Fig. 1033. ***Gibbus lyonetianus*** (Pallas, 1780).
A — shell: Mauritius. **Moscow** No. Lc-12482. B — reproductive tract. C — interior of penis. Mauritius. **Vienna** No. 42.670.

shining. Palatal margin usually with variously developed thickening of lip. Umbilicus, a short, narrow slit. Height 25.5-35.0, diam. 21-32 mm (33.4 × 30.0 mm).

Talon hidden. Vas deferens consisting of expanded proximal and narrow distal parts, enters upper part of penis. Penis generally conic; penis sheath together with loop of vas deferens surrounds lower third of penis. Inner surface of penis bears longitudinal, locally anostomozing folds; each fold bearing very small hooks arranged in one row. Free oviduct very long, vagina short. Base of spermathecal stalk expanded, reservoir comparatively small.

DISTRIBUTION. Mauritius. 1 sp. (extinct ?).

Gibbulinella Wenz, 1920
Fig. 1034

Wenz, 1920:16.

— *Oppenheimiella* Pfeffer, 1929: 192 (342) [nom. praeocc., non Meunier-Chalmas, 1893; t.-sp. "*Oppenheimiella resurrecta* (Oppenheim)" (fossil); monotypy].

— *Webbia* Odhner, 1931: 70 (t.-sp. *Pupa dealbata* Webb et Berthelot, 1833; OD).

TYPE SPECIES — *Pupa dealbata* Webb et Berthelot, 1833; OD.

Shell (obesely) cylindrical, moderately solid, with rounded apex, of 7-8 slightly convex whorls. Last whorl a little ascending toward aperture. Color uniformly whitish or light-corneous. Embryonic whorls microscopically radially ribbed, later whorls with fine, regular, crowded, oblique riblets. Aperture rounded, only slightly oblique, with shortly reflexed, thickened margins. Parietal callus rather well developed. Umbilicus, a minute crack. Height 6-18, diam. 4-7 mm (14.3 × 6.6 mm).

Hermaphroditic duct not convoluted, with seminal vesicle located at some distance from albumen gland. Talon not visible. Vas deferens forms a loop inside penis sheath, enters penis apically. Penis sheath as long as about 0.5 penis length. Internally penis with comb-like hooks arranged in oblique rows. Free oviduct moderately long, vagina much shorter. Spermathecal stalk long, reservoir adhering to lower part of albumen gland.

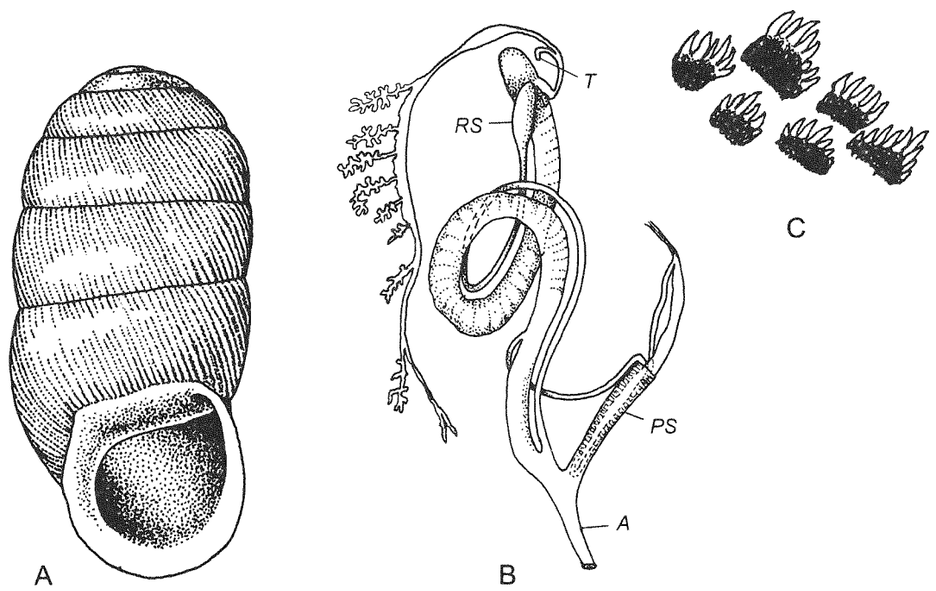


Fig. 1034. ***Gibbulinella dealbata*** (Webb et Berthelot, 1833).
A — shell: Gomera Island, Canary Islands. **SPb**. B — reproductive tract. C — hooks in penis, enlarged. After Odhner, 1931. ***SV*** — seminal vesicle.

DISTRIBUTION. Canary Islands. 1 sp. with many forms.

Imperturbatia E. Martens, 1898
Fig. 1035

Martens in Martens & Wiegmann, 1898: 11 (*Streptaxis* subg.).

TYPE SPECIES — *Streptaxis* (*Imperturbatia*) *constans* E. Martens, 1898; OD.

Shell depressedly helicoid, thin, translucent, with broad, dome-shaped spire and rounded apex. Whorls 7-9, narrow, tightly coiled, moderately convex. Last whorl straight, convex below, with scarcely marked rounded angle above midline. Color white. Embryonic whorls smooth, subsequent whorls with distinct rounded riblets above; in lower part of whorls riblets become much weaker. Aperture rather narrow, semilunate, somewhat oblique, with shortly reflexed, thin margins. Umbilicus comparatively broad, subcylindrical, deep, perspective. Height 2.1-4.0 diam. 3.7-6.0 mm (3.2 × 4.2 mm).

Talon, a simple curvature of hermaphroditic duct. Proximal part of vas deferens thickened; inside penial sheath diameter of this duct abruptly diminished after its adatrial bending, then vas deferens ascends along penis and enters it subapically, at penial retractor attachment. Penis rather small, internally with not many comparatively large hooks. Free oviduct long, vagina 4-5 times shorter. Spermathecal stalk very long, slender; reservoir voluminous.

DISTRIBUTION. Seychelles. 2 spp.

Priodiscus E. Martens, 1898
Fig. 1036

Martens in Martens & Wiegmann, 1898: 14. Gerlach, 1995: 357.

TYPE SPECIES — *Discus serratus* H. Adams, 1868; monotypy.

Shell lens-shaped, thin, glass-like, of 5-6 slightly convex whorls. Last whorl with serrated keel. Colorless to brownish. Embryonic whorls smooth, later whorls distinctly radially ribbed; ribs projecting at keel, sometimes forming irregular, curved, narrow spines. Aperture rather narrow, tooth-

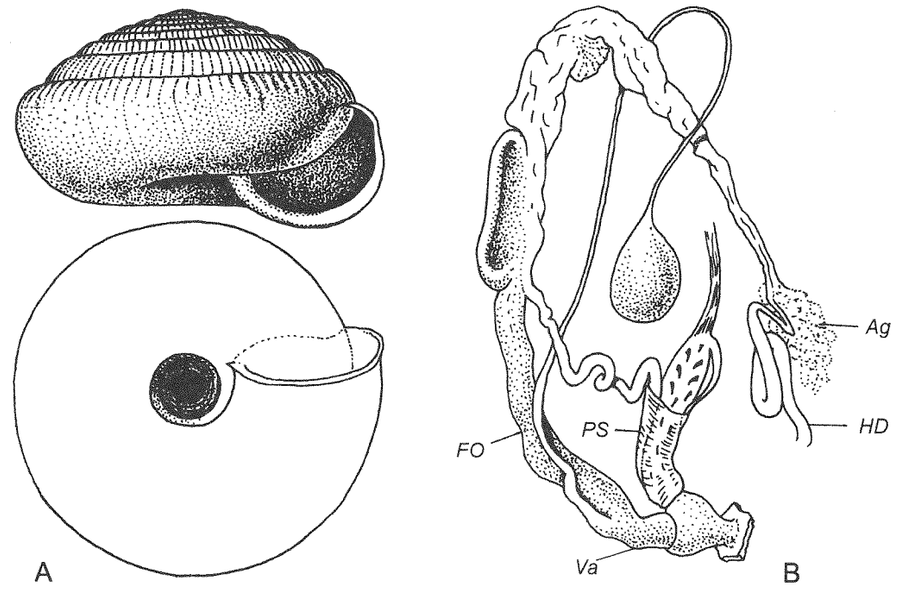


Fig. 1037. ***Imperturbatia constans*** (E. Martens, 1898).
Tropical forest above La Passe, Silhouette Island, Seychelles, August 25, 1984. A — shell. B — reproductive tract. **Moscow** No. Lc-20933.

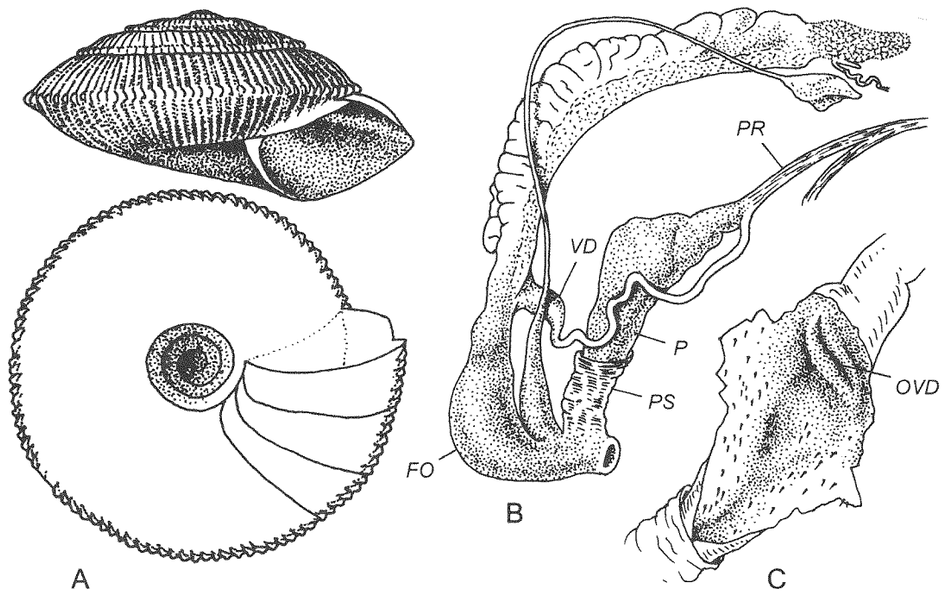


Fig. 1036. ***Priodiscus serratus*** (H. Adams, 1868).
Labivia above La Pass, Silhouette, Seychelles, August 25, 1984. A — shell. B — reproductive tract. C — interior of penis. **Moscow** No. Lc-24960.

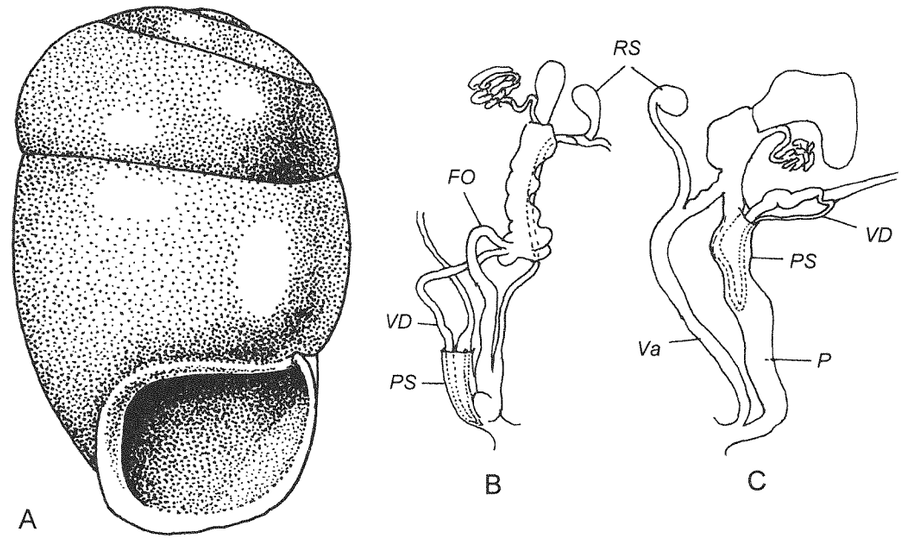


Fig. 1037. A — ***Gonaxis gibbonsi*** Taylor, 1877. Shell: S Africa. **Leiden**.
B — !? ***Gonaxis lamottei*** Binder, 1963. Reproductive tract. C — !? ***Gonaxis montisnimbae*** Binder, 1963. Reproductive tract. After Binder, 1963.

less, slightly oblique, with simple, sharp margins. Umbilicus rather wide, deep. Height 2.2-4.6, diam. 4.5-7.9 mm (2.9 × 5.8 mm).

Talon exposed, minute. Short proximal part of vas deferens markedly thickened. Rest part of vas deferens evenly cylindrical, only slightly passes under penis sheath, enters penis through wide, slit-like pore. Penis internally with many, tiny, scattered hooks. Penis sheath surrounds basal third of penis. Penial retractor arising on columellar muscle, attaching to penis apically. Free oviduct long, more or less expanded. Vagina extremely short. Base of spermathecal stalk more or less swollen.

DISTRIBUTION. Seychelles. 3 spp.

Gonaxis Taylor, 1877
Fig. 1037

Taylor, 1877: 252.

TYPE SPECIES — *Gonaxis gibbonsi* Taylor, 1877; monotypy.

Shell ovate, slightly distorted, rather thin, shining, translucent to semitransparent, of 5.5-7 flattened whorls; last whorl straight, somewhat compressed at periphery. Penultimate whorl inflated. Axis a little curved. Color uniformly whitish or ivory. Embryonic whorls glabrous, rest surface nearly smooth to finely radially striatulate. Aperture ovate to rounded-rhombic, oblique, without teeth, its margins somewhat thickened and slightly reflexed. Parietal callus variously developed, sometimes with a short lamella or tubercle. Umbilicus small to completely closed. Height 5-30, diam. 3-20 mm (8.2 × 5.0 mm).

For details of anatomy see figs. 1037 B & C and Remark.

DISTRIBUTION. Equatorial and S Africa. At least 7 spp. & subspp.

REMARK. Anatomy of type species of the genus is unknown. The descriptions and drawings of reproductive tracts of 2 other species given by Binder (1963) show: 1. Differences between them are enough to attribute them to different genera. 2. They belong to Gibbinae (vas deferens passes under penis sheath). 3. Taxa with typical streptaxid shells (i.e. having curved

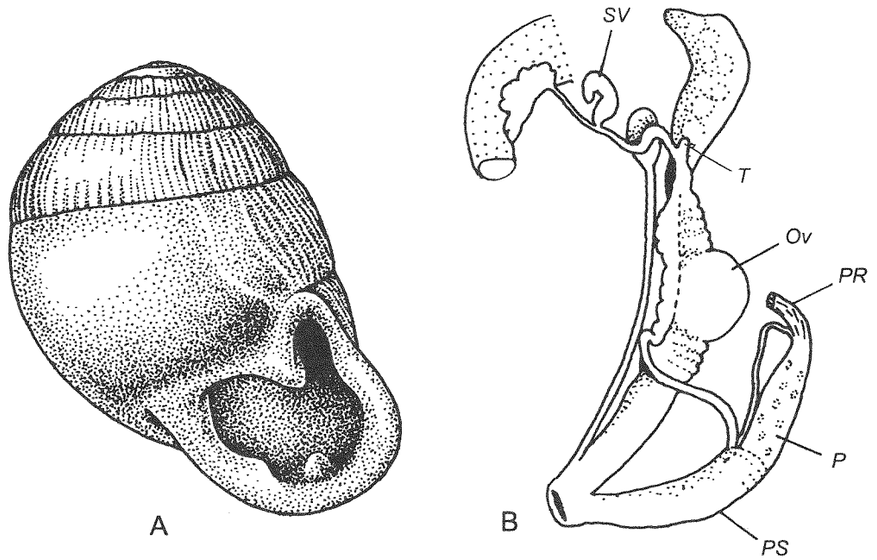


Fig. 1038. A — ***Oophana bulbulus*** (Morelet, 1962). Shell: "Cochin China" [S Vietnam]. **Phil.** No. 4600.
B — ! ***Oophana diaphanopepla*** Benthem Jutting, 1955. Reproductive tract. After A. Berry, 1963. ***SV*** — seminal vesicle.

axis) do not form a natural taxon, belong to different subfamilies and it is impossible to establish their systematical position without anatomical study of type species of each genus.

Oophana Ancey, 1884
Fig. 1038

Ancey, 1884: 508.

TYPE SPECIES — *Ennea bulbulus* Morelet, 1862; SD Kobelt, 1905 (1905-1906).

Shell ovate, thin but rather firm, translucent to opaque, of 6-7 flattened whorls. Body whorl rounded or slightly flattened at periphery, not descending in front. Color white to yellowish. Embryonic whorls practically smooth, early postembryonic whorls regularly rib-striated, on last whorl this sculpture sometimes disappear. Aperture ovate to squarish, oblique, with thickened and reflexed margins. Palatal wall with 1-2 tubercles, on basal and palatal margins 3-5 teeth or local thickenings usually present. Umbilicus narrow. Height 8-17, diam. 5-10 mm (14.5 × 9.0 mm).

Hermaphroditic duct not convoluted, on its middle a single large seminal vesicle of "crooked" shape situated. Talon small, exposed. Vas deferens entering penis subapically, its thicker proximal section passes into more slender distal section inside penis sheath. Sheath surrounds lower half of penis. Hooks in penis rather small, not numerous. Uterus usually contains one large egg. Free oviduct rather long, stout; vagina extremely short. Spermathecal duct evenly cylindrical.

DISTRIBUTION. SE Asia. About 15 spp.

Haploptychius Moellendorff, 1905
Fig. 1039

Moellendorff in Kobelt, 1905 (1905-1906): 127.

— *Pseudartemon* Mabille, 1887b: 125 (t.-sp. *Pseudartemon bourguignati* Mabille, 1887; monotypy).

TYPE SPECIES — *Streptaxis sinensis* Gould, 1856; OD.

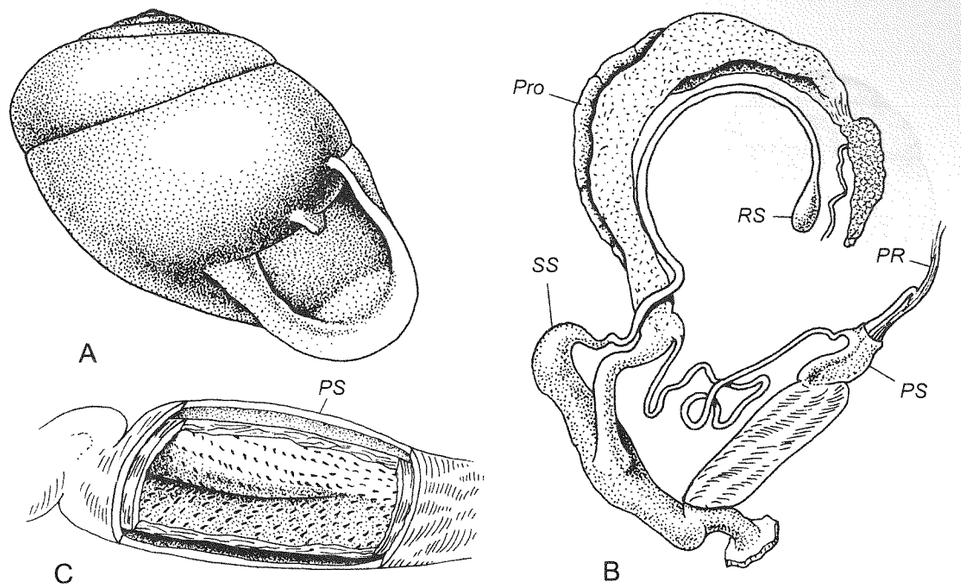


Fig. 1039. ***Haploptychius sinensis*** (Gould, 1856).
Van-Mai village, Mai-tao district, Chao-bin Province, Vietnam, December 12, 1981. A — shell. B — reproductive tract. C — interior of penis. **Moscow** No. Lc-20597.

Shell irregularly globose, distorted, thin, transparent, glass-like, of 5-7 slightly convex whorls. Body whorl somewhat flattened at periphery, scarcely ascending just behind aperture. Colorless. Embryonic whorls smooth, later whorls with fine regular riblets which because of transparency of shell not visible at first glance, so surface looking smooth. Behind aperture sometimes there are fine spiral striae between riblets. Aperture ovate to subcircular, moderately oblique, with slightly thickened, reflexed margins; palatal part usually slightly arched forward. Parietal wall smooth or with variously developed (but never strong) lamella. Umbilicus dot-like. Height 5-18, diam. 5-18 mm (6.2 × 7.6 mm).

Talon hidden. Vas deferens cylindrical, at first slender, than passes under penis sheath, where it a little enlarged, forms a loop, then narrows again and enters penis subapically, accompanying by penial retractor. Sheath surrounds entire penis. Internally penis with 2 wide axial pilasters, which bear numerous small hooks arranged in longitudinal rows. Free oviduct and vagina subequal in length. Spermathecal duct long, with strongly enlarged basal part; reservoir small, reaching albumen gland.

DISTRIBUTION. Andaman Islands, S India, SE Asia, southern and central China, north of Sulawesi. About 40 spp. & subspp.

ENNEINAE Bourguignat, 1883

Bourguignat, 1883: 74 (pro fam.).

— Streptocionidae Dohrn, 1866: 129 (nom. inval., as generic name *Streptocion* does not exist; actually named after *Streptostele*).

— Streptostelidae Bourguignat, 1889: 118, 205.

Shell elongated, small to medium, with straight axis. Aperture often obstructed with a system of teeth, often very complex; sometimes toothless.

Penis sheath present or missing. Vas deferens evenly cylindrical. Penis sometimes with 1 or (rarely) 2 caeca. Hooks in penis not differentiated into groups.

DISTRIBUTION. Africa, Seychelles, Mascarene Islands, S and SE Asia.

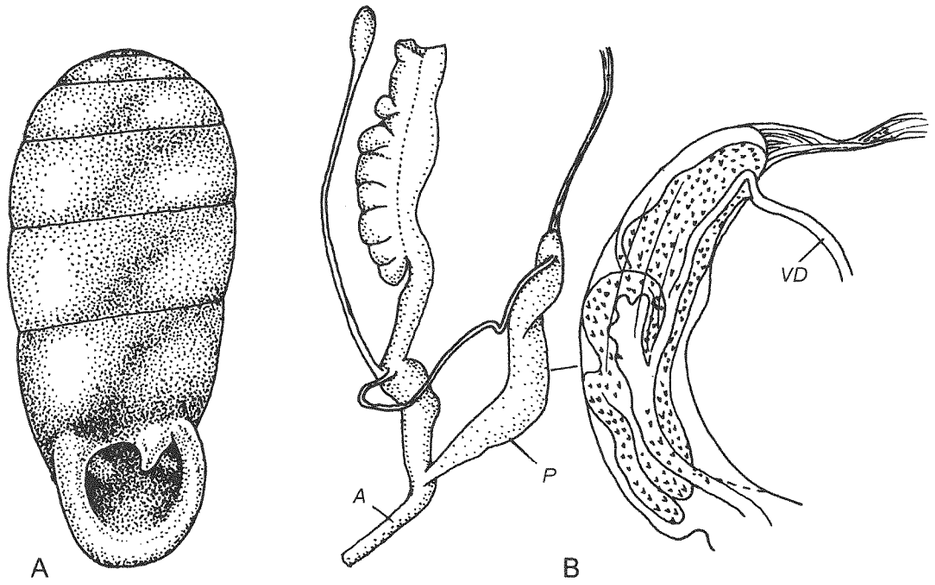


Fig. 1040. A, B, C — ***Ennea elegantula*** (L. Pfeiffer, 1846)
A — shell: Cape Palmas, Liberia. **Chicago** No. 106418. B — reproductive tract. C — interior of penis. After Degner, 1934.

Ennea H. Adams et A. Adams, 1855
Fig. 1040

Adams H., Adams A., 1855: 171 (*Pupa* subg.).

— *Enneastrum* L. Pfeiffer, 1856: 173 (*Ennea* subg.; t.-sp. *Pupa elegantula* L. Pfeiffer, 1846; monotypy).

— *Carychiopsis* E. Martens, 1895b: 122 [nom. praeocc., non Sandberger, 1872; *Ennea* subg.; t.-sp. *Ennea* (*Carychiopsis*) *paradoxula* E. Martens, 1895; monotypy].

TYPE SPECIES — *Pupa elegantula* L. Pfeiffer, 1846; SD Martens in Albers, 1860.

Shell subcylindrical to clavate, rather thin, shining, nearly glass-like, of 7-9 flattened whorls; last whorl narrow, sometimes sulcated externally in middle. Apex obtuse, rounded. Colorless. Regular sculpture practically missing; on early postapical whorls radial engraved lines may be present. Aperture ovate to subcircular, with expanded margins. Parietal lamella extending inward, situated close to right margin, sometimes absent. Palatal wall with 2 long, deeply lying, entering for about 0.5 whorl plicae to which furrows on external surface correspond. Umbilicus absent. Height 2.4-19.0, diam. 1.0-7.5 mm (6.3 × 2.8 mm).

Hermaphroditic duct sinuous, without visible seminal vesicles. Talon, a simple curvature of duct. Vas deferens not adherent, entering penis subapically through a simple pore. Penis long, internally with short, triangular, more or less chaotically arranged hooks of about same size throughout entire length of penis. Penial retractor attached terminally. Free oviduct short. Vagina rather long, somewhat swollen. Spermathecal stalk long, thin, reservoir (nearly) reaching albumen gland.

DISTRIBUTION. Tropical Africa, especially western part. At least 20 spp.

Maurennea Schileyko, gen. nov.
Fig. 1041

TYPE SPECIES — *Ennea* (*Enneastrum*) *poutrini* Germain, 1818.

Shell ovoid-cylindrical, moderately thin, translucent, shining, of 6-8 flattened whorls. Last whorl straight or scarcely ascending toward aperture. Suture margined.

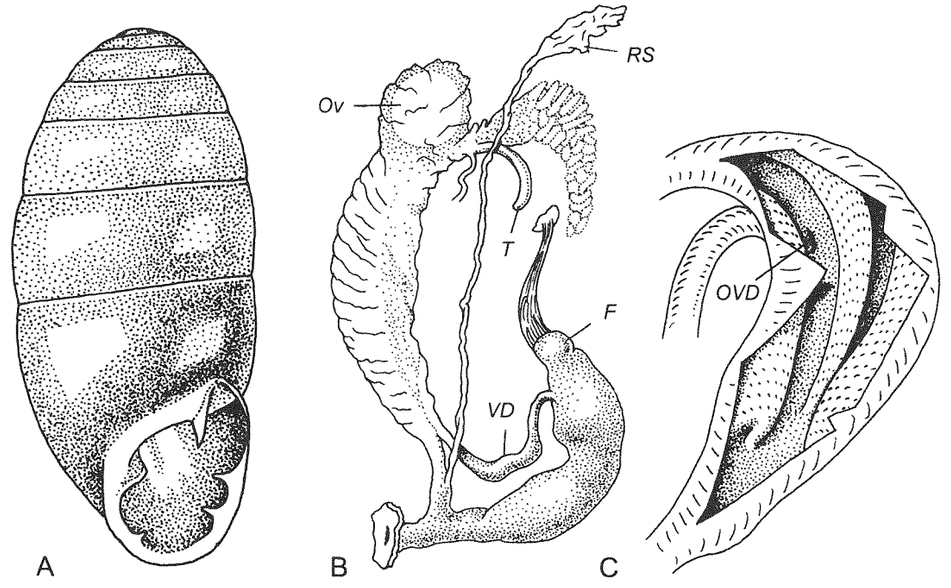


Fig. 1041. ***Maurennea poutrini*** (Germain, 1918).
Cascade River valley, Mauritius, April 22, 1983. A — shell. B — reproductive tract. C — interior of penis. **Moscow** No. Lc-24925.

Color pale-yellow. Regular sculpture absent. Aperture ovate, vertical, with shortly reflexed, slightly thickened margins. Angular lamella thin, high, curved. Columellar margin with oblique lamella. Baso-columellar margin often bears a small, pointed tooth. Palatal margin with 2 similar teeth. Umbilicus closed. Height 6.5-8.0, diam. 3.5-4.2 mm (7.6 × 3.7 mm).

Talon enormously long, exposed, rod-like. Vas deferens unusually short, thickened, entering penis at short distance from apex by a simple pore. Penis internally with a few large pilasters covered with numerous very small hooks arranged in transverse rows. Penial retractor attached to flagellum apically. Free oviduct and vagina very short, of about equal length. In upper part of uterus I found a large, shelled egg. Spermathecal stalk thin, very long, reservoir reaching albumen gland.

DISTRIBUTION. Mauritius, ? Comoro Islands. 2 or 3 spp.

REMARK. This genus occupies a somewhat isolate position because of presence of at least three unique characters: unusually large talon; very short free oviduct and vagina; also very short vas deferens. Conchologically *Maurennea* is somewhat similar to some species of *Gulella* (Ptychotrematinae) (entering palatal plicae missing) but, judging by anatomical characters (all hooks in penis are uniform), it should be attributed to Enneinae.

Indoennea Kobelt, 1904
Fig. 1042

Kobelt, 1904a: 28 (*Ennea* subg.).

TYPE SPECIES — *Ennea blanfordiana* Godwin-Austen, 1872; SD Moellendorff & Kobelt, 1905 (1902-1905).

Shell cylindrical to clavate, moderately thin, glass-like, of 7-9 nearly flat whorls. Mostly colorless. Embryonic whorls smooth, later whorls with variously developed radial striae or ribs. Aperture subquadrate, rounded or ovate, with widely reflexed nargins. Angular lamella strong, curved. Columellar lamella subvertical, deeply located. Basal tubercle may be present. Palatal margin often with callouse

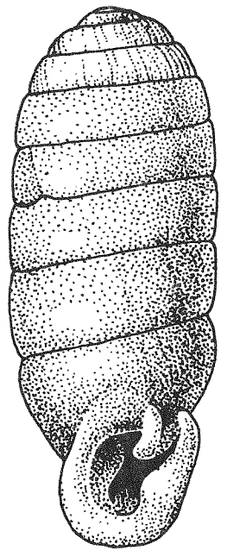


Fig. 1042. ***Indoennea blanfordiana*** (Godwin-Austen, 1872).
"Cachar Hills, Bengal" [India]. **Chicago** No. 36790.

thickening. Umbilicus slit-like. Height 2.5-10.0, diam. 1.0-3.5 mm (7.0 × 2.6 mm).

DISTRIBUTION. N and S India, Malaya, Sumatra. At least 15 spp.

Sinoennea Kobelt, 1904
Fig. 1043

Kobelt, 1904a: 27 (*Ennea* subg.).

TYPE SPECIES — *Ennea strophioides* Gredler, 1881; OD.

Shell elongated-ovate to clavate, moderately thin, of 6-7 convex whorls. Last whorl behind aperture slightly ascending, more or less flattened at periphery. Color light-grey to light-corneous. Embryonic whorls smooth, following whorls with regular, rounded ribs. Aperture entire, nearly vertical, with thickened, widely reflexed margins, angular region curved backward. Parietal lamella strong, bent, connected with parietal callus. Columellar margin expanded, flattened, with a strong, steeply ascending lamella in lower part. Basal tooth may be present. Middle of palatal margin occupied by strong thickening, from which a stout, short, rounded plica branched inwardly. Palatal thickening and parietal lamella form a distinct sinulus. Armature appears in aperture in early post-embryogenesis. Umbilicus narrow, cylindrical, encircled by a rounded ridge. Height 2.5-6.6, diam. 1.3-3.5 mm (4.0 × 2.2 mm).

Hermaphroditic duct loosely convoluted, with a large, globular seminal vesicle. Talon ovate, usually partly buried in albumen gland. Prostate of large acini. Vas deferens adherent to vagina and penis, entering penis at about half length of penis. Penis internally without hooks but furnished with hardened corrugations and papillae. Penial retractor attached to flagellum apically. Uterus may contain a single large egg. Free oviduct not long, swollen, vagina shorter. Spermathecal stalk long, narrow; reservoir ovate, reaching albumen gland.

DISTRIBUTION. Foothils of Himalayas, S India, Indo-China, China, Malay Peninsula, Sumatra, Japan, S Korea. About 25 spp.

Diaphera Albers, 1850
Fig. 1044

Albers, 1850: 210 (*Cylindrella* subg.).

— *Diaphora* Martens in Albers, 1860: 41 (nom. err. pro *Diaphera* Albers, 1850).

TYPE SPECIES — *Cylindrella cumingiana* L. Pfeiffer, 1848; monotypy.

Shell sometimes decollated, subcylindrical to pupiform, moderately thin, glass-like, transparent, of 8-20 flattened to quite convex whorls. Colorless. Embryonic whorls smooth, later whorls nearly smooth to finely ribbed. Aperture solute, rounded to irregularly ovate, more or less oblique, with reflexed margins. Aperture armature rarely missing, usually comprises 1 angular lamella, 1 columellar lamellae and 1 palatal tooth. Height 4-16, diam. 1.3-4.5 mm (*helenae*: 7.8 × 2.8 mm; *cumingiana*: 8.7 × 2.5 mm).

DISTRIBUTION. Philippines, Kalimantan (Borneo), SE Asia. About 50 spp. & subspp.

Bruggennea Dance, 1972
Fig. 1045

Dance, 1972: 131.

TYPE SPECIES — *Sinoennea laidlawi* Dance, 1970; OD.

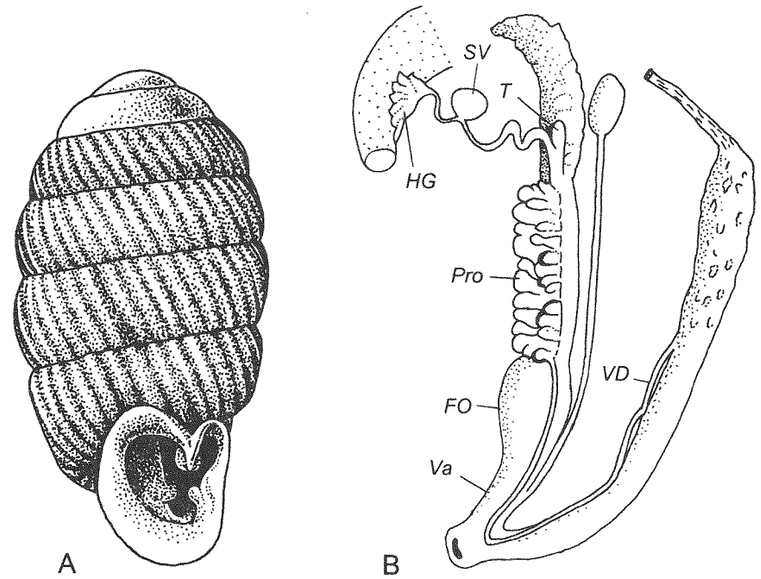


Fig. 1043. A — ***Sinoennea strophioides*** (Gredler, 1881). Shell: Hunan, China, **SPb**.
B — ! ***Sinoennea kanchingensis*** (Tomlin, 1948). Reproductive tract. After A. Berry, 1963.
SV — seminal vesicle.

Shell ovoid, moderately thin, glass-like, shining, translucent, of 5-6 rather convex whorls; last near aperture laterally compressed. Embryonic whorls smooth, later whorls also smooth, with 3-4 very strong varices. Aperture ovate, continuous, with reflexed, expanded margins. Teeth 4: very strong parietal, deep-lying vertical columellar, tuberculate basal, and weak superficial palatal. Umbilicus relatively broad, cylindrical. Height 2.2-3.8, diam. 1.4-2.7 mm (3.7 × 2.7 mm).

DISTRIBUTION. Kalimantan (Borneo). 2 spp.

Elma H. Adams, 1866
Fig. 1046

Adams H., 1866: 317 (*Ennea* sect.).

TYPE SPECIES — *Ennea* (*Elma*) *swinhoei* H. Adams, 1866; OD.

Shell ovate-conic, thin, shining, of 7.5-8.5 slightly convex whorls. Last whorl a little, gradually ascending near aperture, rounded in profile. Color white or light-grey. Embryonic whorls smooth, sub-

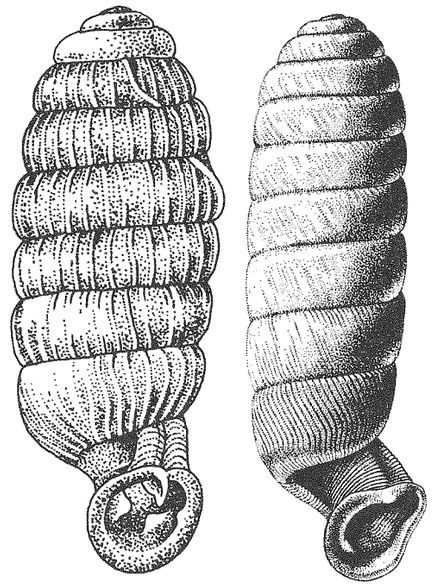


Fig. 1044. A — ! ***Diaphera helenae*** Vermeulen, 1990. "Indonesia, Sabah, 40 km SSW of Lahad Datu". Paratype. **Moscow** No. Lc-24918 (gift of J.J. Vermeulen).
B — ***Diaphera cumingiana*** (L. Pfeiffer, 1848). Lectotype. After van Bruggen, 1975.

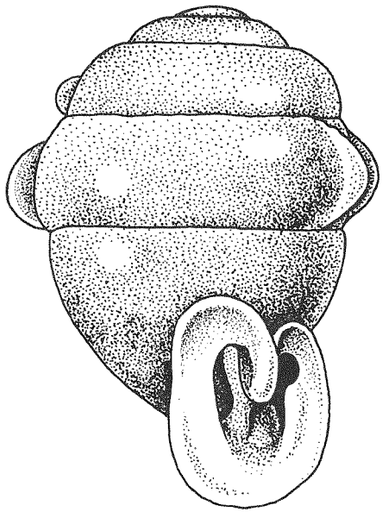


Fig. 1045. ***Bruggennea laidlawi*** (Dance, 1970). Bukit Sarang, 20 mi SE of Tatau, Sarawak [Kalimantan]. Holotype. **Cardiff**.

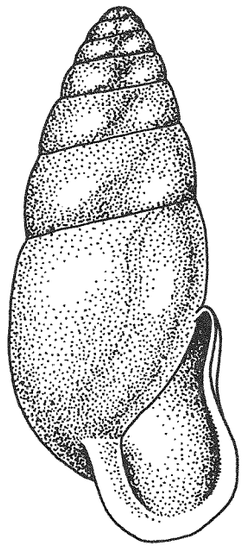


Fig. 1046. ! ***Elma mansuyi*** (Dautzenberg et Fischer, 1905). Pac-kha, N Vietnam. **SPb**.

sequent whorls nearly smooth, only with accidental, vague, radial wrinklets. Aperture pear-shaped, nearly vertical, lacking armature, its upper part curved backward. Lip insertions widely remoted. Parietal callus very weak. Aperture margins shortly reflexed, a little thickened. Umbilicus very small, drop-shaped. Height 14-17, diam. 5.0-6.5 mm (15.2 × 5.8 mm).

DISTRIBUTION. Taiwan, Vietnam. 2-3 spp.

Streptostele Dohrn, 1866

Dohrn, 1866: 128.

— *Campylaxis* Ancey in Vignon, 1888: 68 (t.-sp. *Bulimus folini* Morelet, 1848; monotypy).

TYPE SPECIES — *Bulimus fastigiatus* Morelet, 1848; SD E. Smith, 1890.

Shell slender, many-whorled, thin to rather solid, of 5.25-11.5 flattened to slightly convex whorls. Last whorl straight. Color light. Embryonic whorls smooth or with spiral striae, later whorls smooth to delicately striated or ribbed. Aperture small, rounded, without teeth or with a weak parietal and palatal swellings. Umbilicus minute to closed.

DISTRIBUTION. Tropical Africa, Prince's Islands, Madagascar, Fernando Poo, Seychelles, Comoros, Mascarene Islands.

Streptostele (***Makrokonche*** Emberton, 1994) Fig. 1047

Emberton, 1994: 166.

TYPE SPECIES — *Streptostele* (*Makrokonche*) *manumbensis* Emberton, 1994; OD.

Shell subcylindrical, slender, rather solid, shining, of about 11.5 slightly convex, scarcely shouldered whorls. Apex broad. Color whitish-golden. Embryonic whorls smooth. Later whorls with fine, low radial wrinklets that are stronger at suture to produce light crenulation; there are occasional slight traces of microscopical spiral striae. Aperture small, ovate, toothless, slightly oblique, with shortly reflexed basal margin. Umbilicus minute, extended by rolled columellar margin. Height 26.3, diam. 7.2 mm (holotype).

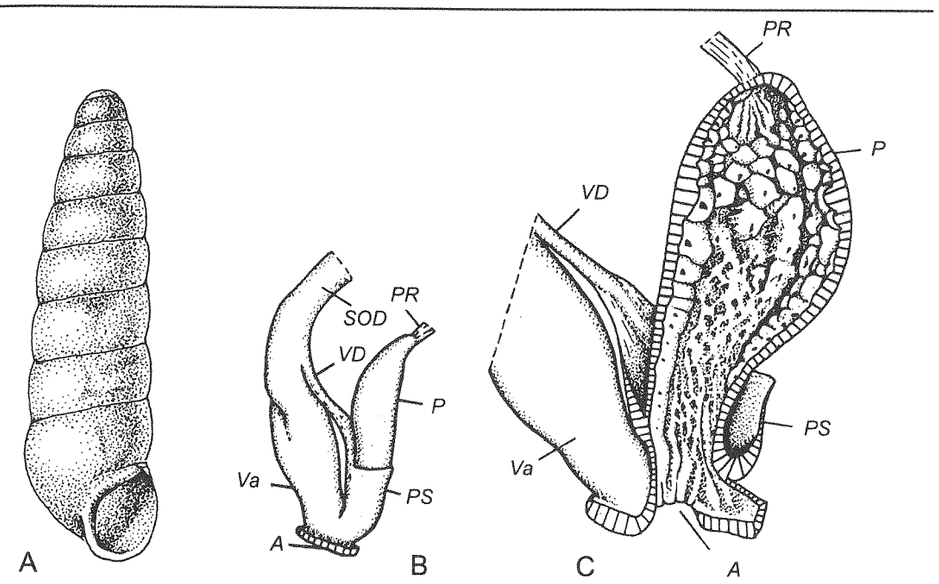


Fig. 1047. ***Streptostele*** (***Makrokonche***) ***manumbensis*** Emberton, 1994. A — shell: village Manombo, 33 km S of Farafangana, Fianarantsao Prov., Madagascar. Holotype. **Phil**. No. 396662. B — distal part of reproductive tract. C — interior of penis. After Emberton, 1994.

Vas deferens short, entering penis apically through a simple pore. Internally distal section of penis with diamond-shaped, thin-rimmed depressions; in proximal section these depressions puff out into fleshy nodes, each depression and node bears a short, hard, curved hook. Base of penis surrounded by a muscular sheath into which vas deferens incorporated. Penial retractor attached terminally. Free oviduct and vagina not long, somewhat swollen, subequal in length.

DISTRIBUTION. SE Madagascar. 1 sp.

Streptostele (***Textostele*** Venmans, 1959) Fig. 1048

Venmans, 1959: 47.

TYPE SPECIES — *Streptostele* (*Textostele*) *jaeckeli* Venmans, 1959; OD.

Shell tower-shaped, thin, fragile, of 5.25-6 slightly convex whorls. Except for 1st half of embryonic whorl, surface of shell engraved with a network of microscopic radial and spiral lines. Aperture ovate, subvertical. Palatal margin strongly arched forward and sinuous, not expanded. Columellar margin not truncated but curving into basal margin. Umbilicus absent. Height 3.0-3.1, diam. 0.9-1.1 mm (3.1 × 1.0 mm).

DISTRIBUTION. Congo valley. 1 sp.

Streptostele (***Graptostele*** Pilsbry, 1919) Fig. 1049

Pilsbry, 1919a: 191.

TYPE SPECIES — *Streptostele teres* Pilsbry, 1919; OD.

Shell nearly cylindrical, thin, glossy, apex widely rounded. Whorls about 7, moderately convex, last whorl straight. Apical sculpture of quite distinct spiral incised lines, last surface practically smooth. Aperture small, toothless, with thin sharp margins; columella thin, vertical. Height 4.3-4.5, diam. 1.3-1.4 mm (4.3 × 1.3 mm).

Holotype (**American Mus. Nat. Hist., New York**, No. 2113) destroyed.

DISTRIBUTION. E Africa (Ruwenzori). 1 sp.

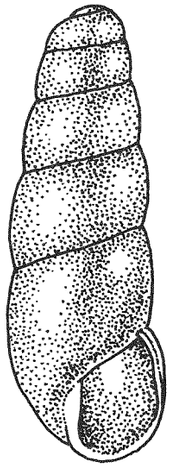


Fig. 1048. ***Streptostele*** (***Textostele***) ***jaeckeli*** Venmans, 1959.
"Yaleko, Belgian Congo." Holotype. **Leiden**.

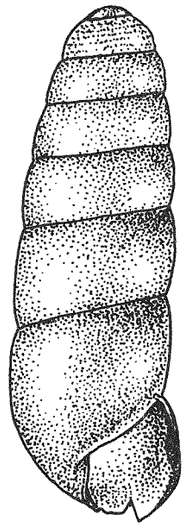


Fig. 1049. ***Streptostele*** (***Graptostele***) ***teres*** Pilsbry, 1919.
Ruwenzori [E Africa]. **Phil**. No. 118719.

Streptostele (*Streptostele* s. str.)
Fig. 1050

Shell turrited, translucent, shining, of 9-10 moderately convex whorls; last whorl straight. Color ivory. Embryonic whorls smooth, rest whorls finely ribbed; riblets (especially on early whorls) more expressed near suture, so suture somewhat crenulate. Aperture subquadrate to ovate, parietal wall without tubercle; peristome more or less thickened and slightly reflexed. Columellar margin vertical. Umbilicus closed. Height 23-26, diam. 6-7 mm (23.4 × 6.9 mm).

Prostate small, compact. Vas deferens entering at short distance from penis apex. Penis without caecum, internally with numerous, small, scattered hooks of similar size. Penial retractor attached at entrance of vas deferens. Uterus contains a few large embryos. Spermathecal stalk long, reservoir rather large.

DISTRIBUTION. Tropical Africa, Prince's Islands, Fernando Poo, Seychelles. No more than 8 spp.

Streptostele (*Raffraya* Bourguignat, 1883)
Fig. 1051

Bourguignat, 1883: 66 (pro gen.).

— *Ischnostele* C. Boettger in Boettger & Haas, 1915: 373 (t.-sp. *Ischnostele leroii* C. Boettger, 1915; OD).

TYPE SPECIES — *Raffraya milne edwardsi* Bourguignat, 1883; SD Pilsbry, 1919.

Shell turrited, shining, with narrowly rounded apex, of 7-8 moderately convex whorls; last whorl straight or scarcely ascending in front. Colorless to pale-corneous. Embryonic whorls smooth, postnuclear whorls bear more or less widely spaced rounded riblets; often they are stronger in upper portion. Suture crenulate. Aperture small, mostly subquadrate, its margins a little thickened, slightly reflexed; columellar margin reflexed stronger. On parietal wall there are thin, transparent angular tubercle and variously developed but never strong lamella. Umbilicus dot-like. Height 2.8-9.0, diam. 0.8-2.8 (5.2 × 1.5 mm).

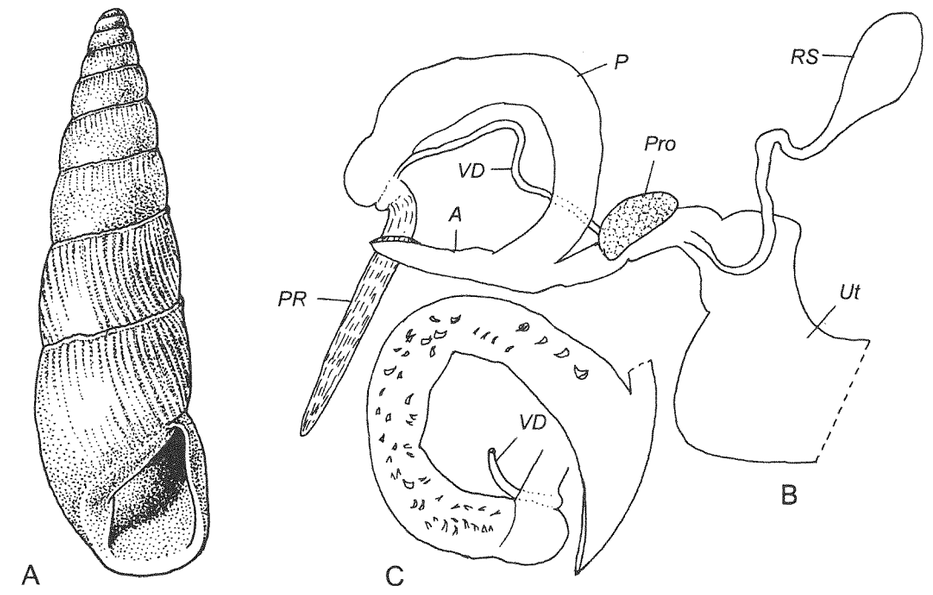


Fig. 1050. ***Streptostele*** (***Streptostele***) ***fastigiata*** (Morelet, 1848).
A — shell: Prince's Islands, W Africa. **Paris**. B, C — ! ***Streptostele*** (***Streptostele***) ***lenta*** (E. Smith, 1880). B — reproductive tract. C — interior of penis. After Verdcourt, 1982.

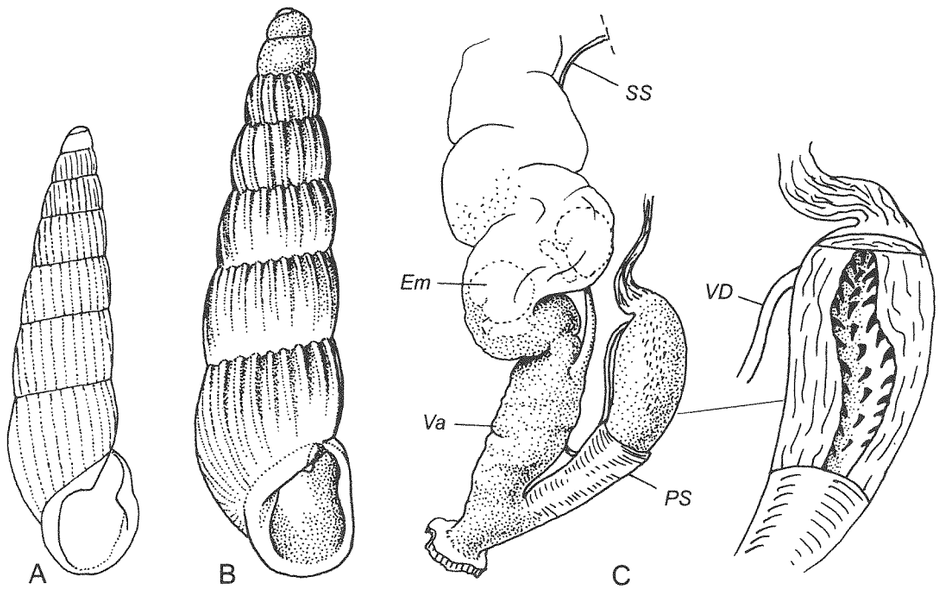


Fig. 1051. A — ***Streptostele*** (***Raffraya***) ***milneedwardsi*** (Bourguignat, 1883). Shell. After Bourguignat, 1883.
B, C — ! ***Streptostele*** (***Raffraya***) ***acicula*** (Morelet, 1877). Poivre Island, W Indian Ocean, August 8, 1984. B — shell. C — reproductive tract and interior of penis. **Moscow** No. Lc-24933 (dry shells); Lc-24958 (alcohol specimens).

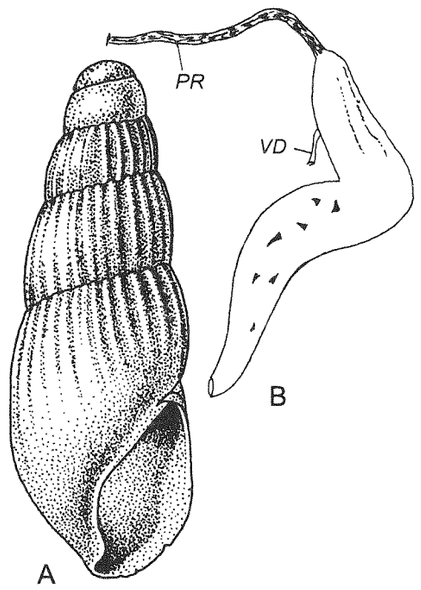


Fig. 1052. A — ***Streptostele*** **(*Tomostele*)** ***musaecola*** (Morelet, 1860). Shell: Barro Colorado Island, Canal Zone, Panama. **Phil.** No. 353911.
B — ! ***Streptostele*** **(*Tomostele*)** ***truncata*** Germain, 1915. Penis. After L. Ortiz de Zarate & R. Ortiz de Zarate, 1956.

Vas deferens thin, without thickenings, entering penis subapically. Penis (rather) short, bulky, clavate, thick-walled, with narrow lumen; sometimes with a short caecum [in particular, in *S.* (*R.*) *horei* E. Smith, 1890: H. Watson, 1955]. Internally penis with relatively large conic hooks arranged in longitudinal rows. Penial retractor arising on columellar muscle, attaching to penis apically. Free oviduct and vagina swollen, of about same length. Uterus contains a few embryos. Spermathecal duct very thin.

DISTRIBUTION. W, Central and E Africa; Comoros, Seychelles, Mascarene Islands. About 15 spp.

Streptostele (***Tomostele*** Ancey, 1885)
Fig. 1052

Ancey, 1885: 143.

— *Eustreptostele* Germain, 1915: 285 [*Streptostele* subg.; t.-sp. *Streptostele* (*Eustreptostele*) *truncata* Germain, 1915; OD].

TYPE SPECIES — *Achatina musaecola* Morelet, 1860; OD.

Shell obtusely conic, translucent, of 5.5-7 moderately convex whorls; last whorl straight, rounded at periphery. Color whitish or grey. Embryonic whorls smooth, sculpture of postnuclear whorls consists of regular smoothed riblets which become weaker downwards. Suture crenulate. Aperture narrowly ovate, without teeth, its margins thin or slightly thickened; columella truncated. Umbilicus closed. Height 5-11, diam. 1.6-3.2 mm (8.0 × 2.8 mm).

Vas deferens entering at short distance from apex of penis. Penis internally with several not large, short hooks located in distal 2/3 of penis. Penial retractor attached apically.

DISTRIBUTION. Tropical W Africa, basin of Congo River, Fernando Poo, Prince's Islands; 1 sp. introduced into Central America. 3-4 spp.

Varicostele Pilsbry, 1919
Fig. 1053

Pilsbry, 1919: 193.

TYPE SPECIES — *Varicostele bequaertiana* Pilsbry, 1919; OD.

Shell lanceolate, glossy, moderately thin, of 6.5-10 slightly convex whorls, having inconspicuous varices or lines of growth arrest. Aperture ovate, outer lip thin and sharp, unexpanded, not retracted above; columella vertical, rounded, not truncated. Height 12.3-17.6, diam. 3.2-6.0 mm.

Male organs very large relative to female. Penis bears a caecum as long as itself.

DISTRIBUTION. Central Africa, Congo basin. 4 spp.

? ***Obeliscella*** Jousseaume, 1889
Fig. 1054

Jousseaume, 1889: 359 (nom. nov. pro *Obeliscus* Beck, 1837).

TYPE SPECIES — *Bulimus lucidissimus* Paladilhe, 1872; monotypy.

Shell turrited, slender, rather solid, very glossy, of 9-10 flattened whorls. Apex obtuse, rounded. Color amber, white-hyaline or reddish-corneous. Embryonic whorls smooth, subsequent whorls only weakly

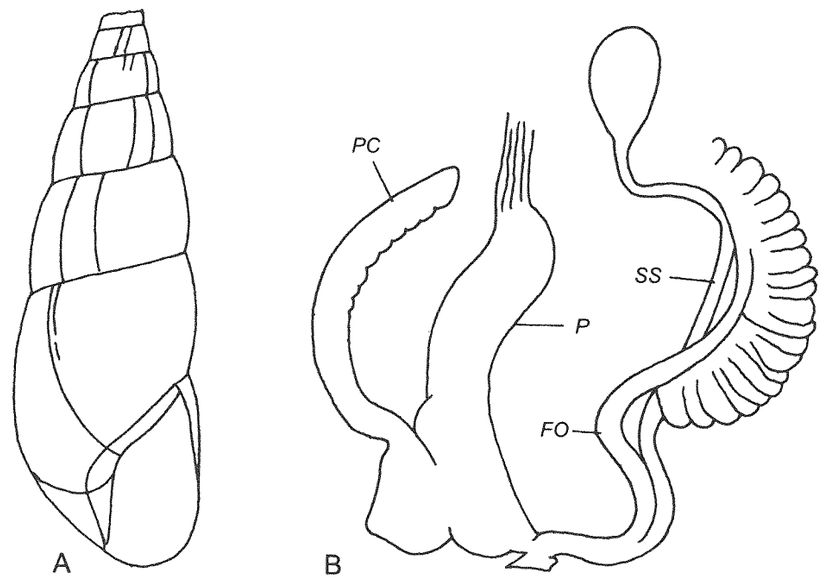


Fig. 1053. ***Varicostele bequaertiana*** Pilsbry, 1919.
A — shell. B — reproductive tract. After Pilsbry, 1919.

sculptured with vague irregular radial wrinkles. Aperture ovate, moderately oblique, margins straight, a little thickened, not reflexed. Columella straight or slightly concave, continuous with basal margin. Umbilicus absent. Height 13.5-17.0, diam. 3.4-5.0 mm (14.1 × 3.4 mm).

DISTRIBUTION. S Arabia (Yemen) and probably E Africa (Runssoro). 2-3 sp.

REMARK. Pilsbry [1906 (1906-1907): 101] suggested that *Obeliscella* may belong to Streptaxidae rather than to Subulinidae. Decision on this problem should be postponed until anatomy of *Bulimus lucidissimus* is known.

PTYCHOTREMATINAE Pilsbry, 1919

Pilsbry, 1919: 180 (pro fam.).

Shell elongated, small to medium, with straight axis. Aperture primarily with teeth, sometimes armature disappears.

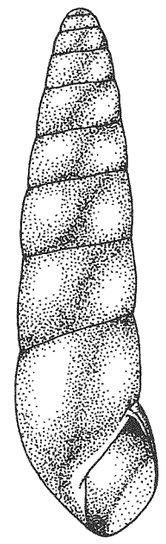


Fig. 1054. ***Obeliscella lucidissima*** (Paladilhe, 1872).
"W. Aden Protect.". **Leiden.**

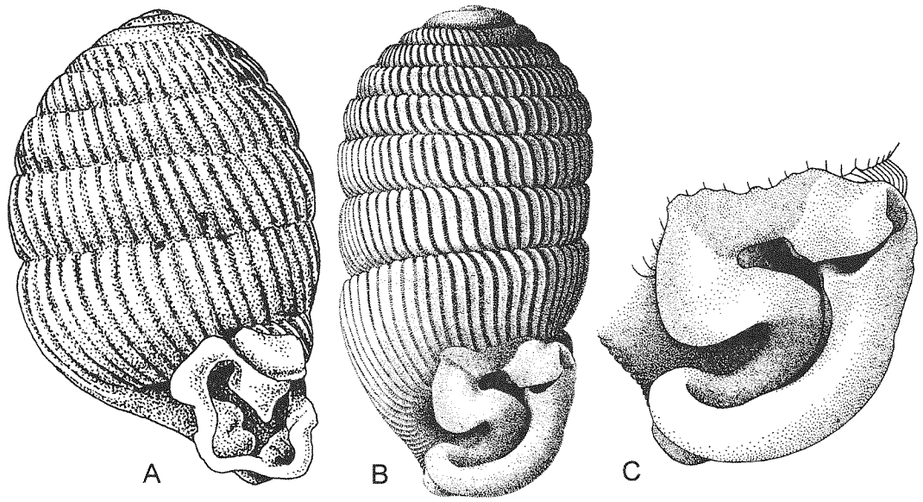


Fig. 1055. A — ***Gulella*** (***Aenigmigulella***) ***aenigmatica*** (E. Smith, 1890). Usagara, Africa. **Phil.** No. 118191.
B, C — ! ***Gulella*** (?***Aenigmigulella***) ***incurvidens*** van Bruggen, 1972. B — shell. C — aperture, enlarged. After van Bruggen, 1972.

Penis sheath absent. Vas deferens evenly cylindrical. Penis sometimes with a caecum. Hooks in penis differentiated into 2 or 3 groups by their size.

DISTRIBUTION. Africa and adjucent islands.

Gulella L. Pfeiffer, 1856

Pfeiffer L., 1856: 173 (*Ennea* subg.). Van Bruggen & Van Goethem, 1997: 6.

TYPE SPECIES — *Pupa menkeana* L. Pfeiffer, 1853; SD Martens in Albers, 1860.

Shell ovate to nearly cylindrical, rather thin to solid, generally (sub)transparent and glass-like, of 5-8 whorls. As a rule, colorless. Embryonic whorls smooth or spirally striated; sometimes spiral striation combined with fine radial riblets. Postnuclear whorls smooth to strongly ribbed; in latter case spiral striation between ribs may be present. Aperture simple to heavily toothed.

Hooks in penis represented by 2 series: large hooks (1-6) in proximal part of penis and many small ones in rest surface [rarely number of hooks much reduced, in this case large hooks missing, as, for example, in *G. farquhari* (Melvill et Ponsonby, 1895): van Bruggen, 1992, p. 415, fig. 14].

DISTRIBUTION. Arabia; Africa southward of Sahara, Somalia; Madagascar; Comoro Islands, Seychelles (Aldabra), Mauritius. 1 sp. introduced in some greenhouses of Europe (Bratislava, Slovakia; Richmond, England; Edinburgh, Scotland).

REMARK. Taxonomical structure of this enormous genus (in the current sense) is very far from being satisfactory. It is not incidental that in numerous works by various authors many species are named without referring to their subgeneric positions. At the same time, as it is evident from the anatomical data given below, the structure of penial sections of the genitalia is very variable. Moreover, there is a number of species whose shells do not permit to assign them to any known subgenus.

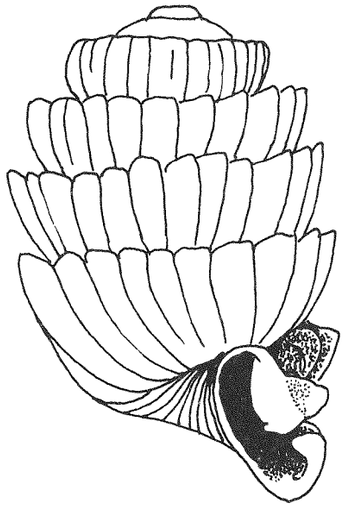


Fig. 1056. ***Gulella*** (***Mirigulella***) ***mirifica*** (Preston, 1913).
After Preston, 1913.

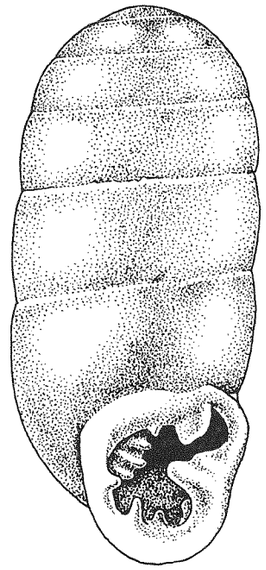


Fig. 1057. ***Gulella*** (***Pliciguleila***) ***bistriplicina*** Pilsbry, 1919.
Penge, Ituri Forest, Zaire, Africa. Holotype. **American Mus. Nat. Hist., New York.** No. 2153.

Gulella (***Aenigmigulella*** Pilsbry et Cockerell, 1933) Fig. 1055

Pilsbry & Cockerell, 1933: 372 (pro sect.).

TYPE SPECIES — *Ennea aenigmatica* E. Smith, 1890; OD.

Shell ovoid, thin, glass-like, of 7-8 convex whorls. Colorless. Embryonic whorls smooth, later whorls regularly ribbed. Aperture ovate-quadrangular, subvertical, with reflexed margins. Orifice of sinulus turned rightward. Angular lamella very large, its superior end broad, channelled. Columellar margin with rounded tubercle. Palatal margin with 1 or 2 tubercles. Umbilicus dot-like. Height 4.4-4.5, diam. 2.8 mm (4.4 × 2.8 mm).

DISTRIBUTION. E (? and S) Africa. 4 or 5 sp.

REMARK. Van Bruggen (1972) described *Gulella incurvidens* from S Africa (Transvaal) without discussion of its subgeneric position. Perhaps, this species could be placed in the subgenus *Aenigmigulella* (however, see Remark on genus *Gulella*). Dimensions of *G. incurvidens* are as follow: height 2.6-3.9, diam. 1.3-2.0 mm.

Gulella (***Mirigulella*** Pilsbry et Cockerell, 1933) Fig. 1056

Pilsbry & Cockerell, 1933: 372 (pro sect.).

TYPE SPECIES — *Ennea mirifica* Preston, 1913; OD.

Shell pupiform, rather thin, glass-like, of about 7 expanded laterally, angular whorls. Apex dome-shaped. Colorless. Apical whorls smooth, later with strong lamellar ribs. Aperture of irregular shape, obliquely elliptical, somewhat pointed below, with shortly reflexed margins. Angular lamella strong, curved. Sinulus opening laterally. Columella toothless. Palatal margin with a rather small tooth. Height 4.25, diam. 3.0 mm.

DISTRIBUTION. E Africa (Kenya). 1 sp.

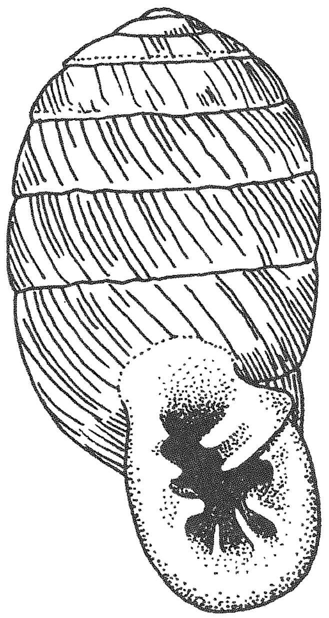


Fig. 1058. ***Gulella* (*Primigulella*) *linguifera*** (E. Martens, 1895).
After Pilsbry, 1919.

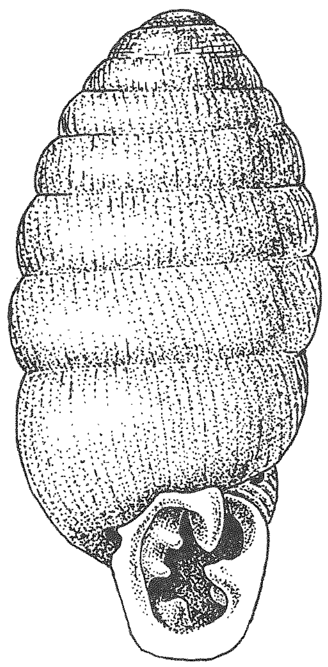


Fig. 1059. ***Gulella* (*Tortigulella*) *heteromphala*** Pilsbry, 1919.
Mt. Ruwenzori, Butagu Valley, Zaire, Africa. Syntype. **American Mus. Nat. Hist., New York.** No. 2148.

Gulella (*Plicigulella* Pilsbry, 1919) Fig. 1057

Pilsbry, 1919: 216 (pro sect.).

TYPE SPECIES — *Gulella* (*Plicigulella*) *bistriplicina* Pilsbry, 1919; OD.

Shell ovate-cylindrical, rather thin, glass-like, shining, with rounded summit, of 6-7 slightly convex whorls. Last whorl a little ascending just before aperture. Colorless. Embryonic whorls smooth, later whorls nearly so, but finely radially wrinkled; however remnants of riblets can be traced below suture and behind aperture. Aperture rounded ear-shaped, vertical, with reflexed and a little enrolled margins. Angular lamella high, bipartite. Columellar margin, a strong triplicate vertical callus: 3 horizontal folds situated in its posterior surface; besides, superficial columellar tubercle often present. Basal wall usually with 2 small teeth. Palatal wall somewhat arching forward; behind this region a deep foss located, to which very strong palatal tooth corresponds. Umbilicus minute, in shape of curved drop. Height 3.7-11.0, diam. 2.2-4.5 mm (6.5 × 2.9 mm).

DISTRIBUTION. Central and S Africa. At least 15 spp.

Gulella (*Primigulella* Pilsbry, 1919) Fig. 1058

Pilsbry, 1919: 215 (pro sect.). Verdcourt & Venmans, 1956: 65.

TYPE SPECIES — *Ennea* (*Gulella*) *linguifera* E. Martens, 1895; OD.

Shell ovate, pupiform, moderately thin, more or less translucent, of 7-8 flat whorls. Colorless or yellowish. Embryonic whorls smooth, later whorls radially striated to finely ribbed. Aperture irregularly ovate, (sub)vertical, with broadly reflexed, expanded margins and many teeth. Sinulus opening laterally. Angular lamella arcuate in basal view, complex, its emerging end elevated. On parietal wall more 1-3 small lamellae may be present. Columellar margin with 2-4 tubercular or lamellar teeth.

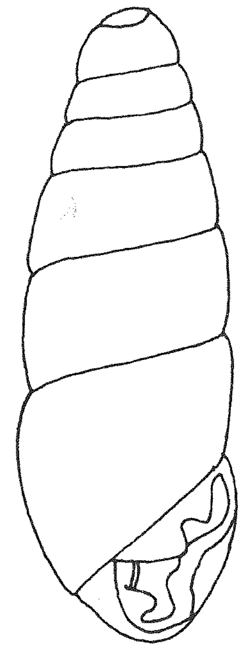


Fig. 1060. ***Gulella* (*Sphincterocochlion*) *sphincterocochlion*** Verdcourt, 1985.
After Verdcourt, 1985.

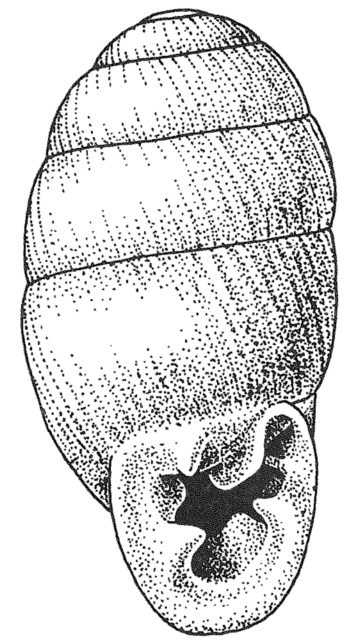


Fig. 1061. ***Gulella* (*Digulella*) *capitata*** (Gould, 1843).
Kakatown to Gloanga, Liberia. **Phil.** No. 160305.

Basal tubercles 1-2; palatal margin with 2-3 teeth. Columella large, hollow but umbilicus nearly or quite closed. Height 11-21, diam. 6-12 mm.

DISTRIBUTION. E Africa (Uganda, Kenya, Tanzania). 7-9 spp. & subspp.

Gulella (*Tortigulella* Pilsbry, 1919) Fig. 1059

Pilsbry, 1919b: 231 (pro sect.).

TYPE SPECIES — *Gulella* (*Tortigulella*) *heteromphala* Pilsbry, 1919; OD.

Shell ovate-cylindrical with conic upper spire, rather thin, glass-like, of 5-8.5 convex whorls. Last whorl scarcely descending (nearly straight), with basal crest and 2 short grooves bordering it. First 2 whorls spirally and radially striated, later whorls with radial ribs, without spiral sculpture between ribs. Aperture irregularly ovate, vertical, with thin, slightly reflexed margins. Parietal lamella protruding, moderately long, a little sinuous. Columella with 1 or 2 teeth. Basal plica corresponding to adumbilical groove; sinuous, emarginate, oblique palatal plica — to palatal (abumbilical) groove. Umbilicus cylindrical, open, moderately narrow. Height 2.7-3.8, diam. 1.5-1.9 mm (3.77 × 1.88 mm).

DISTRIBUTION. E Africa (Ruwenzori). 2-3 spp.

Gulella (*Sphincterocochlion* Verdcourt, 1985) Fig. 1060

Verdcourt, 1985: 109.

TYPE SPECIES — *Gulella* (*Sphincterocochlion*) *sphincterocochlion* Verdcourt, 1985; OD.

Shell tapering subcylindrical, of 7 flattened whorls. Color creamy-white, more or less transparent in fresh state. Surface sculptured with very fine incised spiral striae and occasional radial lines. Aperture severely constricted, roughly L-shaped. Parietal wall with 2 relatively large rounded teeth. Columellar margin convex but with

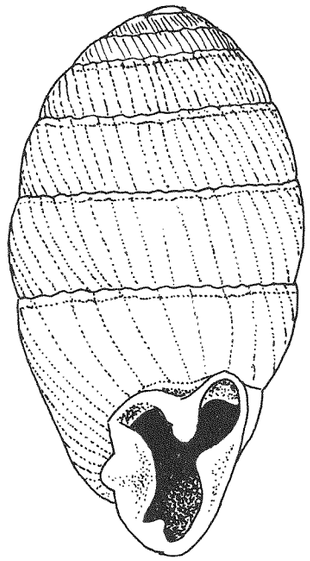


Fig. 1062. ! ***Gulella*** (***Sphinctostrema***) ***joubini*** (Germain, 1912).
After Germain, 1912.

a shallow concavity causing this margin to be margined and with a rounded process beneath it. Palatal wall with a large central convex infolding which when viewed laterally seen as 2 equal rounded emarginations, junction of which appears as a median projection of peristome. Height 4.2, diam. 1.4 mm.

DISTRIBUTION. Uganda, Mt. Ruwensori, below alpine zone. 1 sp.

Gulella (*Digulella* Haas, 1934)
Fig. 1061

Haas, 1934: 355 (pro sect.).

TYPE SPECIES — *Pupa* (*Ennea*) *capitata* Gould, 1843; OD.

Shell elongated-ovate, moderately solid, shining, of 5-6 slightly convex whorls. Last whorl straight. Color ivory or whitish. Embryonic whorls smooth, following whorls finely regularly ribbed. Aperture ovate-triangular, with thickened, widely reflexed margins. Parietal wall with 2 teeth: strong, lamellar angular and tubercular proper parietal. Columellar margin with 2 teeth: deep-lying upper and superficial lower. Basal wall with more or less strong tubercle standing at some distance from edge. Palatal wall with 2 teeth: upper is a plica bordering sinulus and lower is tuberculiform. Height 10-14, diam. 5.5-6.5 mm (13.0 × 6.1 mm).

DISTRIBUTION. W Africa. 5 spp.

?*Gulella* (*Sphinctostrema* Girard, 1894)
Fig. 1062

Girard, 1894: 206 (*Ennea* sect.).

— *Sphinctotrema* Thiele, 1931: 734 (nom. err. pro *Sphinctostrema* Girard, 1894).

TYPE SPECIES — *Ennea* (*Sphinctostrema*) *bocagei* Girard, 1894; monotypy.

Shell ovate, solid, somewhat translucent, a little shining, of 7.5-8.5 flattened whorls. Suture more or less margined. Last whorl gradually ascending in front. Embryonic whorls microscopically radially striated. Postnuclear whorls smooth to radially ribbed; very fine spiral striation may be present. Aperture irregularly ovate, subvertical, compressed below, with thickened, somewhat reflexed margins, obstructed by heavy armature. Angular lamella well developed, entire or a little sulcated; columellar lamella vertical; small baso-columellar tooth may be present; palatal margin with 1 or 2 superficial thickenings. Height 5.5-6.0, diam. 3.0-3.3 mm.

DISTRIBUTION. Prince's and Anno-Bon Islands (W Africa, Guinea Bay). 2 spp.

REMARK. Adam et al. (1995) included *Sphinctostrema* in the genus *Ptychotrema* as a subgenus. However in the species of *Ptychotrema* there are long palatal plicae which are absent in *Sphinctostrema*. At the same time all conchological characters of *Sphinctostrema*, judging from literature (I did not see the shells), quite correspond to the diagnosis of *Gulella*.

Gulella (*Molarella* Connolly, 1922)
Fig. 1063

Connolly, 1922: 500.

TYPE SPECIES — *Ennea consanguinea* E. Smith, 1890; OD.

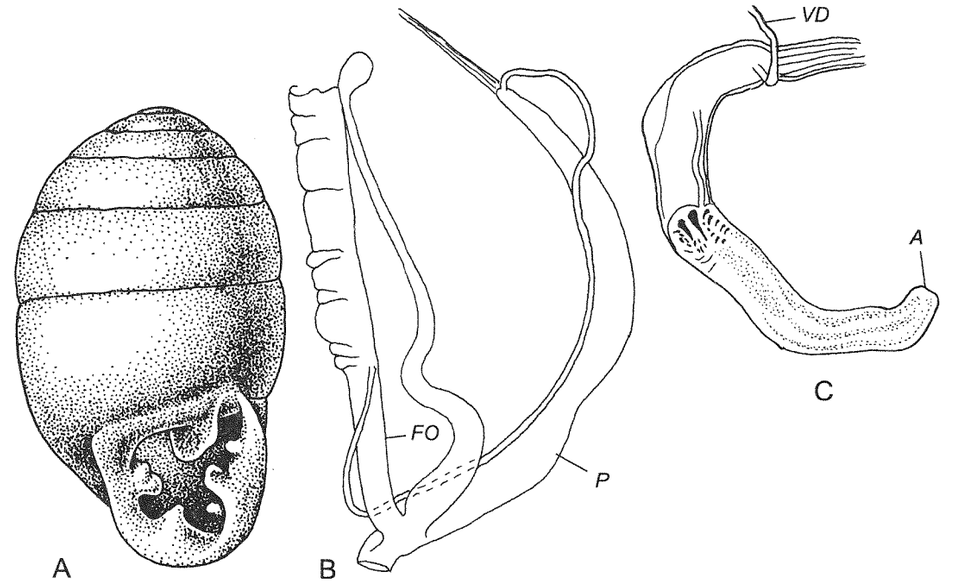


Fig. 1063. A — ! ***Gulella*** (***Molarella***) ***optata*** (Preston, 1911). Shell: Mt. Kenya [E Africa]. **Phil**. No. 220315.
B, C — ! ***Gulella*** (***Molarella***) ***kemblei*** Degner, 1934. B — reproductive tract. C — interior of penis. After Degner, 1934.

Shell ovate to ovate-cylindrical, more or less solid, of 6-7 not very convex whorls. Color whitish or ivory. Embryonic whorls smooth, subsequent whorls without regular sculpture. Aperture rounded, a little oblique, with widely reflexed, thickened margins. Angular lamella strong. Columella with 2, rarely 3 rounded teeth. Basal tubercle usually pesent. Palatal wall usually with 3 teeth: middle of them strongest, lowest more or less distant from peristome. Height 2.5-12.0, diam. 1.2-6.5 mm (10.2 × 6.0 mm).

Vas deferens thin, bound to penis along most of its length, entering subterminally. Proximal part of penis lacks regular relief or hooks, at boundary between proximal and distal portions two rather large principal hooks located, next to them several small hooks situated. Penial retractor attached apically. Distal part of female side represented by free oviduct since vagina as such absent: base of spermatheca enters peni-oviducal angle. Spermathecal stalk long, tapering.

DISTRIBUTION. Central, S and NE Africa. About 15 spp.

REMARK. Verdcourt (1961: 6) believed that this section [subgenus] is very artificial because the included species share mainly the structure of columellar teeth; other characters are widely variable. Therefore the given anatomical description may concern only *Gulella kemblei* Degner, 1934 and *G. incisa* Degner, 1934 whose anatomy has been described by Degner (1934).

Gulella (*Conogulella* Pilsbry, 1919)
Fig. 1064

Pilsbry, 1919: 233 (pro sect.).

TYPE SPECIES — *Ennea conospira* E. Martens, 1892; OD.

Shell ovate-conic, thin, of 6-7 quite convex whorls. Colorless. Embryonic whorls in very beginning smooth, then spirally striatulate. Postnuclear whorls finely regularly ribbed. Aperture triangularly ovate, with more or less reflexed margins. Angular lamella large, curved, sometimes doubled. Columellar lamella smaller, tuberculiform, baso-columellar tooth lamellar. Basal tooth

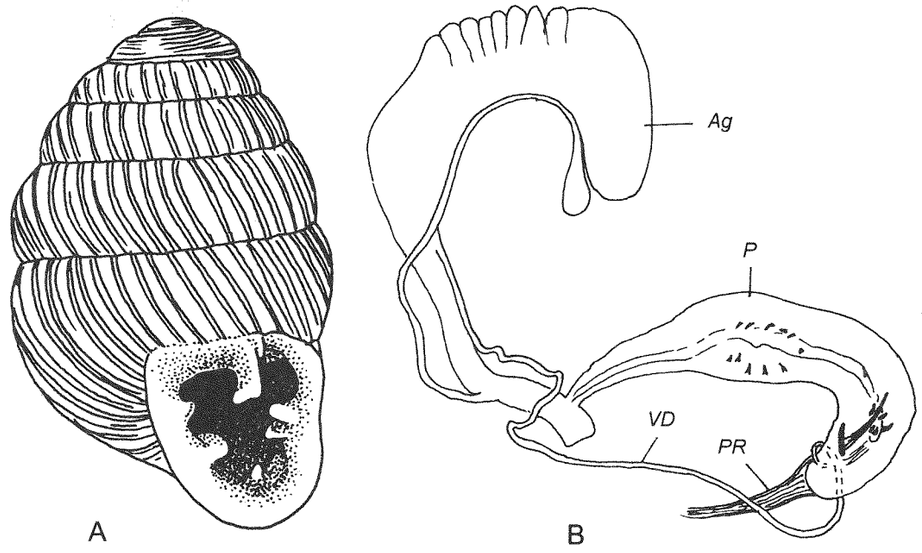


Fig. 1064. A — ***Gulella*** (***Conogulella***) ***conospira polynematica*** (Pilsbry, 1919). After Pilsbry, 1919. B — ! ***Gulella*** (***Conogulella***) ***opoboensis liberiana*** Degner, 1934. Reproductive tract. After Degner, 1934.

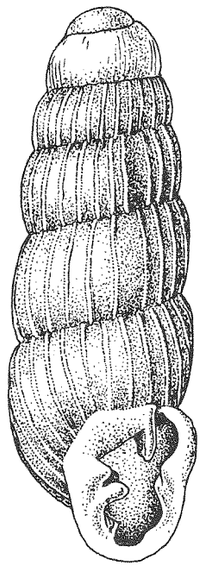


Fig. 1065. ***Gulella*** (***Silvigulella***) ***osborni*** Pilsbry, 1919.
Rutshuru, near Rutshuru River, Zaire, Africa. Holotype. **American Mus. Nat. Hist., New York.** No. 2154.

small, shifted inward. Palatal fold mostly bifid. Height 5-9, diam. 3-5 mm.

Vas deferens bound to free oviduct, than detached and runs free to its subapical entering. Penis comparatively very large, internally with 1 principal long, thin hook in its proximal part and few scattered minor hooks below principal hook and in middle part of penis. Penial retractor attached apically. Free oviduct moderately long, vagina somewhat shorter. Spermathecal stalk slender, cylindrical, reservoir reaching summit of albumen gland.

DISTRIBUTION. Tropical Africa. 3-4 spp. & subspp.

Gulella (***Silvigulella*** Pilsbry, 1919)
Fig. 1065

Pilsbry, 1919: 228 (pro sect.).

TYPE SPECIES — *Gulella* (*Silvigulella*) *osborni* Pilsbry, 1919; OD.

Shell elongated, conic-turrited, moderately thin, shining, glass-like, of 6-8 rather convex whorls. Colorless. Embryonic whorls with extremely fine radial riblets

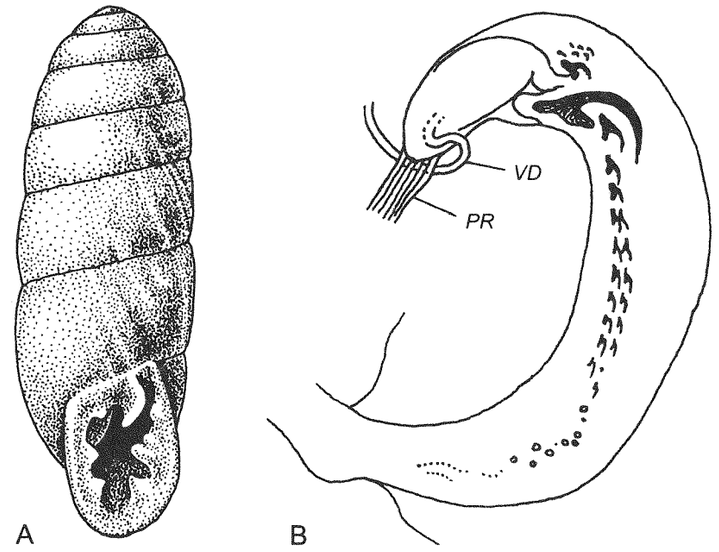


Fig. 1066. ***Gulella*** (***Rhabdogulella***) ***buchholzi*** E. Martens, 1876.
A — shell: Buea, W Africa. **Phil.** No. 78416. B — interior of penis. After Degner, 1934.

and sometimes spiral striae, later whorls well ribbed. Spiral sculpture totally missing. Aperture of irregular shape, subvertical, with a little thickened margins. Sinulus curved backward. Angular lamella strong, columellar variously developed saddle-shaped, slightly ascending inward; above its external end a small tubercle located. Baso-columellar plica low, lamellar. Palatal tooth consisting of superficial tubercle separated from submerged part by depression. Umbilicus closed, umbilical depression drop-like. Height 2.9-8.0, diam. 1.0-2.5 mm (2.96 × 1.00 mm).

DISTRIBUTION. Tropical Africa. 2 or 3 spp.

Gulella (***Rhabdogulella*** Haas, 1934)
Fig. 1066

Haas, 1934: 356.

TYPE SPECIES — *Ennea buchholzi* E. Martens, 1876; OD.

Shell subcylindrical, moderately solid, somewhat shining, of about 8 flattened whorls. Last whorl a little ascending at aperture. Color yellowish. Embryonic whorls silky radially striated, later whorls without regular sculpture. Aperture elongated-ovate, with thickened, broadly reflexed margins. Parietal callus well developed. Parietal wall with 2 teeth: parietal proper high, slightly curved; subparietal, a small tubercle. Columellar side with 2 superficial equal teeth and deeply lying vertical lamella. Palatal margin with 3-4 tuberculiform teeth; on neck there are depressions corresponding to teeth. Umbilicus absent. Height 13-14, diam. 4.2-4.3 mm (13.0 × 4.2 mm).

Vas deferens entering penis subterminally. Penis internally with proximal epiphallic chamber, below which a large, curved principal hook stands; minor hooks arranged in 1 or 2 longitudinal rows; their size gradually diminishing distalward.

DISTRIBUTION. Cameroon. 1 sp.

Gulella (***Gulella*** s. str.)
Fig. 1067

— *Aberdaria* Blume, 1965: 13 (t.-sp. *Aberdaria franzi* Blume, 1965; OD: Verdcourt, 1970).

Shell generally ovate, thin to rather so-

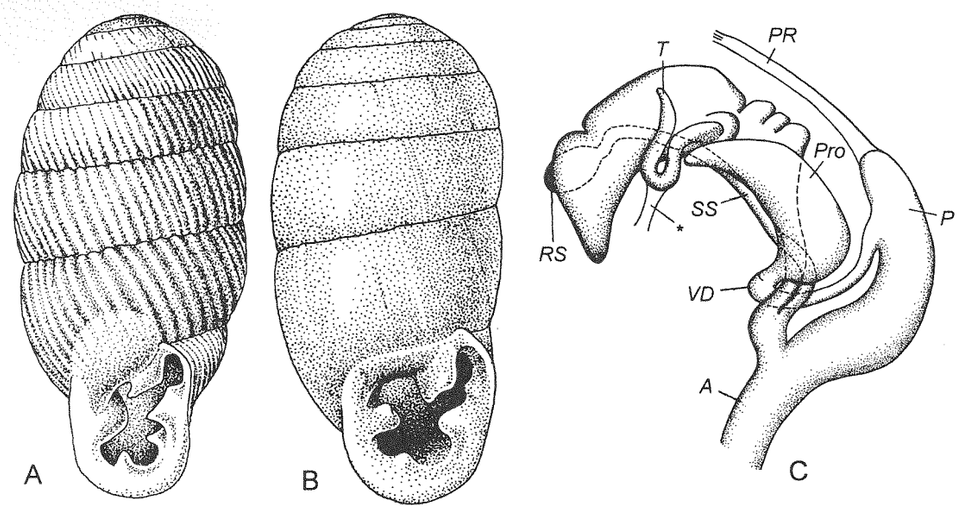


Fig. 1067. A — ***Gulella*** **(*Gulella*)** ***menkeana*** (L. Pfeiffer, 1853). Shell: Port Natal, S Africa. **Moscow** No. Lc-24942.
B — ! ***Gulella*** **(*Gulella*)** ***ugandensis cheranganiensis*** Verdcourt, 1970. Shell: Chepkotet, Cherangani Hills, 11055 feet, Kenya. Paratype. **Moscow** No. Lc-24791 (gift of B. Verdcourt).
C — ! ***Gulella*** **(*Gulella*)** ***planidens*** (E. Martens, 1892). Reproductive tract. After Binder, 1969. ***Asterisk*** — retractor of talon.

lid, shining, of 6-8 slightly convex whorls. Color uniformly white to ivory. Embryonic whorls smooth, subsequent whorls radially ribbed to glabrous. Aperture ovate, vertical, with shortly reflexed, more or less thickened margins. Angular lamella strong, subquadrangular. Columella with 1 strong lamella which may be bifid. Basal tooth variously developed. Palatal side usually with 2 inequal teeth. Height 1.5-15.0, diam. 0.6-6.5 mm (*menkeana*: 10.7 × 4.9 mm; *ugandensis cheranganiensis*: 12.2 × 5.6 mm).

Talon enormously developed, vermiform, supplied with its own retractor. Prostate compact. Vas deferens unusually short, entering penis laterally at some distance from its tip. Penial retractor attached apically. Free oviduct and vagina not long, subequal in length. Spermathecal reservoir reaching albumen gland.

DISTRIBUTION. Central and S Africa. At least 20 spp.

Gulella (*Costigulella* Pilsbry, 1919)
Fig. 1068

Pilsbry, 1919: 229. Adam, 1984: 1.

TYPE SPECIES — *Gulella* (*Costigulella*) *langi* Pilsbry, 1919.

Shell subglobular to cylindrical-pupiform, moderately thin, glass-like, shining, of 4.5-6 convex whorls. Last whorl a little descending in front. Colorless. Embryonic whorls smooth to finely radially ribbed. Postapical sculpture of radial ribs and very fine but distinct spiral striae in interspaces. Aperture ovate, vertical, with thin, a little reflexed margins. Angular lamella forked anteriorly; parietal lamella missing or small. Columellar lamella subhorizontal to steeply ascending, baso-columellar and basal teeth as short crests, palatal wall with oblique, sometimes doubled thickening. Umbilicus closed. Height 2.7-3.4, diam. 1.7-2.1 mm (*langi*: 3.32 × 2.05 mm; *hedwigae*: 2.40 × 1.71 mm).

Vas deferens slender, free, entering penis almost apically. Penis long, thick-walled, internally with a few large principal hooks at upper end and not numerous, scattered, minor hooks in remaining surface. Penial retractor attached apically. Free oviduct short, vagina practically missing since spermathecal stalk inserting on

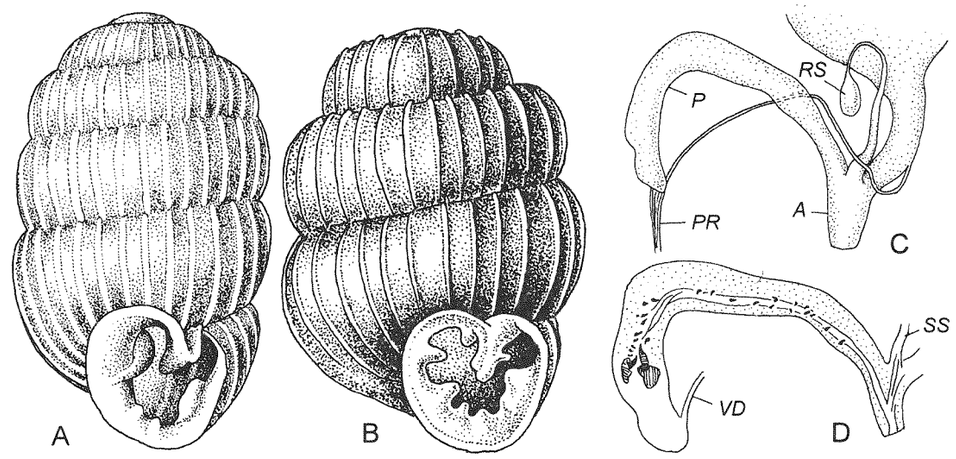


Fig. 1068. A — ***Gulella*** **(*Costigulella*)** ***langi*** Pilsbry, 1919. Shell: Thysville, in a cave, Zaire, Africa. Holotype. **American Mus. Nat. Hist., New York.** No. 2008.
B, C, D — ***Gulella*** **(*Costigulella*)** ***hedwigae*** (Degner, 1934). B — shell: "Réserve du Mt. Nimba, Guinèe. Forêt Base." **Geneva**. C — distal part of reproductive tract. D — interior of penis. After Degner, 1934.

angle between penis and distal part of female section. Shaft of spermatheca comparatively short, tapering; reservoir not reaching albumen gland.

DISTRIBUTION. Tropical Africa, Fernando Poo Island. 5 spp.

Gulella (*Avakubia* Pilsbry, 1919)
Fig. 1069

Pilsbry, 1919b: 234 (pro sect.).

TYPE SPECIES — *Gulella* (*Avakubia*) *avakubiensis* Pilsbry, 1919; OD.

Shell ovate or pupiform, moderately thin, transparent, glass-like, of 5-6 quite convex to more or less flattened whorls. Colorless. Embryonic whorls at first (0.5 whorl) smooth, then with distinct spiral threadlets. Subsequent whorls regularly ribbed, with fine spiral lines between ribs. Aperture ovoid to rounded-triangular, vertical, margins moderately reflexed. Parietal lamella somewhat protruding, rather long (about 0.5 whorl). Columellar and basal margins smooth. Small palatal tubercle superficial or missing. Umbilicus as such absent but deep umbilical depression present. Height 3.1-3.3, diam. 1.9-2.0 mm (3.12 × 1.92 mm).

Vas deferens free, comparatively short. Penis not long, with ovate caecum. A single principal hook situated in lower part of caecum; this hook surrounded by zone covered with numerous minor hooks; similar, less numerous hooks presented in distal part of caecum duct and in penis. Penial retractor attached to penis apically. Free oviduct and vagina subequal in length, very short. Spermathecal stalk slender, cylindrical, not long; reservoir voluminous.

DISTRIBUTION. Zaire. 2 or 3 spp.

Gulella (*Paucidentina* E. Martens, 1897)
Fig. 1070

Martens E., 1897: 16 (pro sect.).

— *Paucidentata* Preston, 1916: 260 (?nom. err. pro *Paucidentina* E. Martens, 1897).

TYPE SPECIES — *Ennea curvilamella* E. Martens, 1897 (= *Ennea ovalis* Thiele, 1911); SD Kobelt, 1904b.

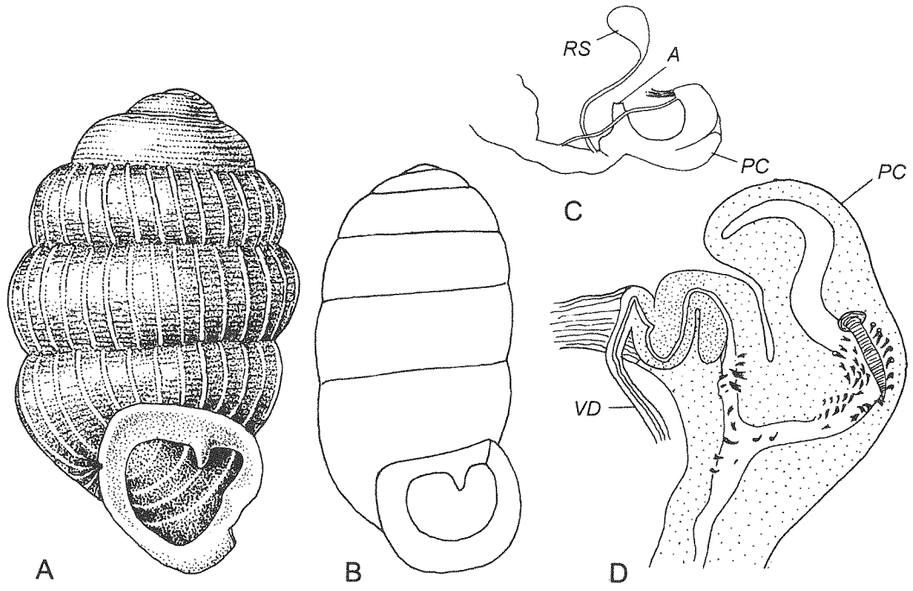


Fig. 1069. A — ***Gulella*** (***Avakubia***) ***avakubiensis*** Pilsbry, 1919. Shell: Avakubi, Ituri Forest, Zaire, Africa. Holotype. **American Mus. Nat. Hist., New York.** No. 2150.
B, C, D — ! ***Gulella*** (?***Avakubia***) ***dautzenbergi*** Connolly, 1928. B — shell. C — distal part of reproductive tract. D — interior of penis. After Degner, 1934.

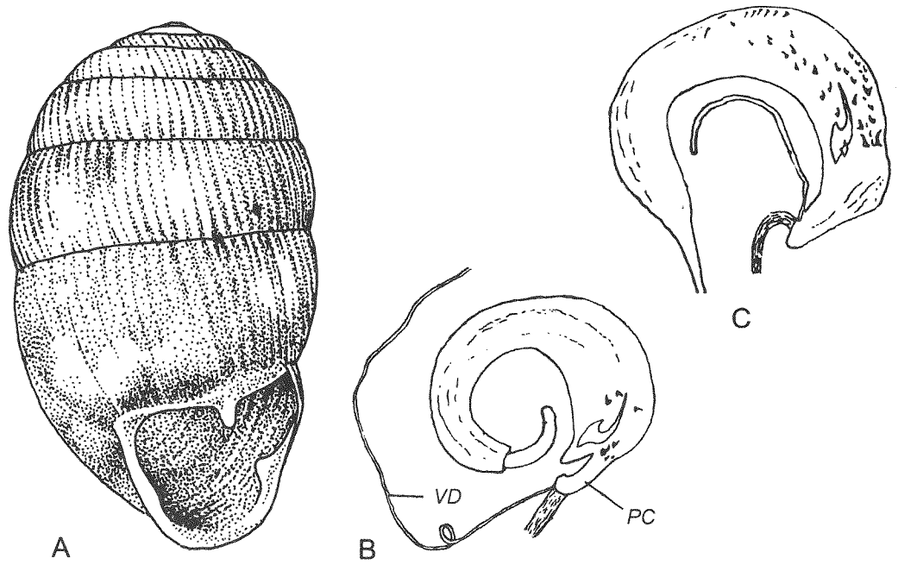


Fig. 1070. A — ***Gulella*** (***Paucidentina***) ***ovalis*** (Thiele, 1911).
Shell: "Tshibinda, Belgian Congo". **Phil.** No. 159342. B, C — ! ***Gulella*** (***Paucidentina***) ***dohrni*** (E. Smith, 1882). Penes of 2 specimens. After L. Ortiz de Zarate & R. Ortiz de Zarate, 1956.

Shell ovate to cylindrical-oblong, moderately solid, shining, somewhat translucent to semitransparent, of 6.5-8 slightly convex whorls. Last whorl straight. Color whitish to ivory or cream. Embryonic whorls smooth, later whorls with thin riblets and sometimes with a delicate shagreenation on upper whorls. Aperture rounded or rounded-triangular, with thin, a little reflexed margins. Parietal lamella short. Columellar margin often with callous vertical thickening. Palatal margin with tuberculiform superficial tooth. Umbilicus closed, but usually a shallow umbilical depression present. Height 3.5-13.0, diam. 1.5-7.5 mm (7.3 × 4.3 mm).

Vas deferens long, slender, free. Penis with or without vestigial caecum. A single principal hook inside penis located in upper part of penis, minor hooks more or less numerous, occupy no more than proximal half of penis.

DISTRIBUTION. Tropical and S Africa. About 12 spp.

Gulella (*Uniplicaria* E. Martens, 1895)
Fig. 1071

Martens E., 1895a: 175 (*Ennea* subg.).

TYPE SPECIES — *Ennea* (*Uniplicaria*) *exogonia* E. Martens, 1895; monotypy.

Shell ovate, solid, translucent, shining, of 6-7 slightly convex whorls. Last whorl gently ascending toward aperture. Color whitish or ivory. Embryonic whorls smooth or with microscopical spiral striae. Following whorls mostly finely rib-striated. Aperture ovate, with thickened, well reflexed margins. Angular tooth strong, crest-like, short. Columellar margin smooth or with variously developed, callouse, oblique lamella. Umbilicus closed. Height 9-15, diam. 5.5-8.3 mm (14.0 × 8.1 mm).

DISTRIBUTION. E Africa (Runssoro), Comoro Islands. 3-5 spp.

Gulella (*Paucidentella* Thiele, 1933)
Fig. 1072

Thiele, 1933: 285 (pro sect.).

TYPE SPECIES — *Ennea conica* E. Martens, 1876; OD.

Shell high-conic, moderately thin, shining, glass-like, of 7-8 slightly convex whorls. Last whorl slightly ascending toward aperture. Colorless. Embryonic and later whorls without regular sculpture. Aperture rounded-triangular, slightly oblique, with shortly reflexed margins. Lip insertions remote. Parietal lamella short. Palatal margin with vestigial tubercle or thickening. Height 10.0-14.5, diam. 4.2-4.6 mm (10.5 × 4.4 mm).

Penis with a blunt caecum. A single principal hook situated in uppermost part of penis; numerous minor hooks distributed throughout inner surface of penis and caecum; some of them sit on rounded papillae.

DISTRIBUTION. W Africa. 2-3 spp.

Gulella (*Pupigulella* Pilsbry, 1919)
Fig. 1073

Pilsbry, 1919: 228 (pro sect.).

TYPE SPECIES — *Ennea pupa* Thiele, 1911; OD.

Shell ovoid, pupiform, glass-like, of 5.5-

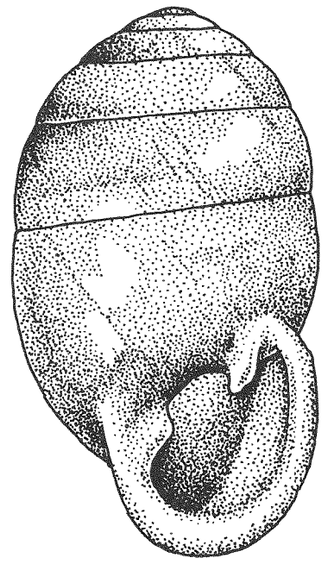


Fig. 1071. ! ***Gulella*** (***Uniplicaria***) ***cerea*** (Dunker, 1848).
Moheli, Comoro Islands. **Chicago** No. 127422.

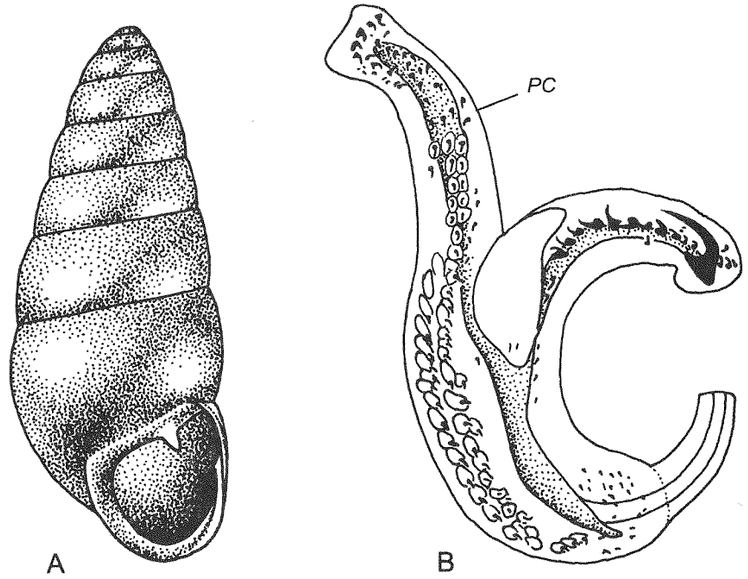


Fig. 1072. ***Gulella* (*Paucidentella*) *conica*** (E. Martens, 1876).
A — shell: Buea, W Africa. **Phil**. No. 78414. B — interior of penis. After Degner, 1934.

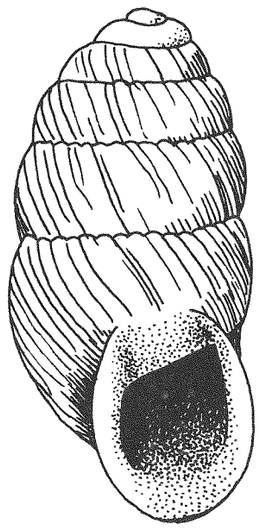


Fig. 1073. ***Gulella* (*Pupigulella*) *pupa ituriensis*** (Pilsbry, 1919).
After Pilsbry, 1919.

6.5 rather convex whorls. Last whorl more or less ascending toward aperture. Colorless. Embryonic whorls smooth, subsequent whorls more or less coarsely radially striated; striae may be enlarged below suture, forming short folds which crenulate suture. Aperture ovate, toothless, with well expanded margins. Umbilicus perforate, with a long, curved crease. Height 5.5-7.5, diam. 2.0-2.4 mm.

DISTRIBUTION. Tropical Africa. 1 sp. with 2 subspp.

Mirellia Thiele, 1933
Fig. 1074

Thiele, 1933: 283 (*Ptychotrema* sect.).

— *Thaumatogulella* Haas, 1951: 134 (t.-sp. *Ennea prodigiosa* E. Smith, 1902; OD).

TYPE SPECIES — *Ennea prodigiosa* E. Smith, 1902; OD.

Shell pupiform or shortly cylindrical, thin, glass-like, of 4-5 quite convex whorls. Last whorl extended forward. Colorless. Embryonic whorls smooth, later nearly so,

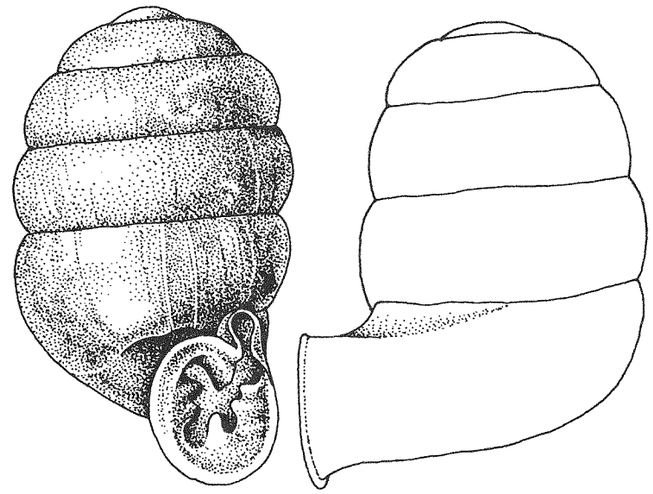


Fig. 1074. ***Mirellia prodigiosa*** (E. Smith, 1902).
Uganda. **Phil**. No. 89828.

only with incidental radial wrinklets. Aperture solute, ovate, with reflexed margins. Sinulus circular, almost closed, strongly curved backward. Angular lamella strong. Columella with 2 nearly equal teeth. Basal and 2 palatal teeth tuberculiform, standing at short distance from edge. Height 2.5-3.0, diam. 1.4-1.6 mm (2.8 × 1.5 mm).

DISTRIBUTION. E Africa (Kenya, Uganda). 1 sp.

Huttonella L. Pfeiffer, 1856
Fig. 1075

Pfeiffer L., 1856: 174. Naggs, 1989: 165.

TYPE SPECIES — *Pupa bicolor* Hutton, 1834; SD Stoliczka, 1871 (see Remark 1).

Shell narrowly- to ovate-cylindrical, rather thin, glass-like, shining, translucent to transparent, of 6-8 slightly convex whorls. Colorless. Embryonic whorls smooth, later whorls glabrous to radially striated or ribbed. Aperture irregularly ovate to squarish, only slightly oblique, with more or less reflexed, thickened margins. Lip insertions remote, connected by parietal callus. Angular lamella pointed, columellar lamella steeply ascending; palatal tooth tuberculiform; small basal tooth may be present. Umbilicus, a minute slit. Height 3.5-12.0, diam. 1.6-5.5 mm (*bicolor*: 7.4 × 2.1 mm; *kraussi*: 6.0 × 2.6 mm).

DISTRIBUTION. The question of distribution is connected with taxonomic decision about volume of the genus (see Remarks). In the current sense the genus distributed in S and E Africa, Comoro Islands, Hindustan Peninsula, Ceylon. One species [*H. bicolor* (Hutton, 1834)] was introduced to many tropical countries. At least 8 spp.

REMARKS. 1. "... Stoliczka (1871, p. 169) designated it [*Pupa bicolor*] the type species of *Huttonella*... Stoliczka's choice of words "If we consider *E. bicolor* Hutton as the type of *Huttonella*..." might be construed as equivocal and coming within the terms of Article 67 c (3) (ICZN, 1985), in which case Nevill's (1878, p. 6) designation of *H. bicolor* would seem to resolve the question of type species. This has been overlooked by some workers and Bourguignat's (1889, p. 126) designation of *Pupa kraussi*,

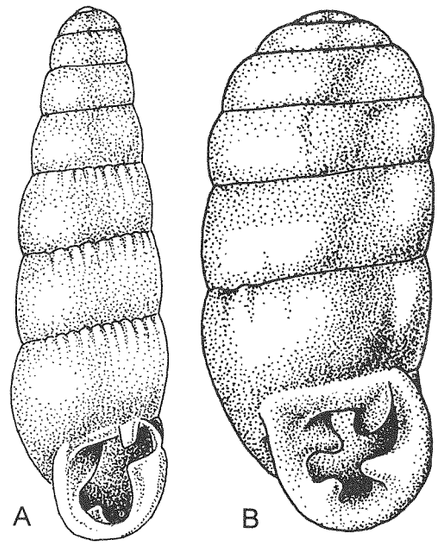


Fig. 1075. A — ***Huttonella bicolor*** (Hutton, 1834).
"Mirzapore and Agra" [India]. ? Syntype. **London** No. 1856.9.15.75. B — ! ***Huttonella kraussi*** (L. Pfeiffer, 1855). Durban [S Africa]. **Phil**. No. 47203.

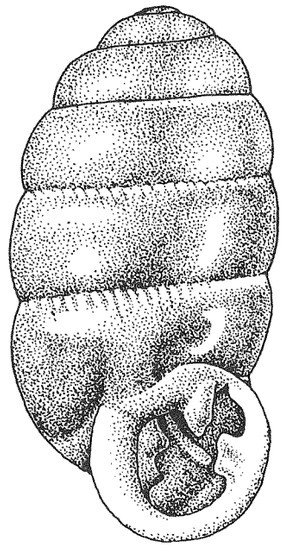


Fig. 1076. ! ***Parennea*** (***Parennea***) ***scintilla*** (Pilsbry et Cockerell, 1933).
"Tshibinda, Belgian Congo". Holotype. **Phil**. No. 159669a.

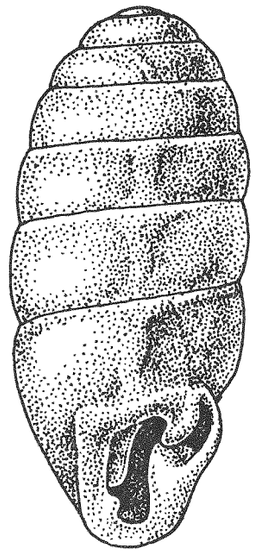


Fig. 1077. ***Parennea*** (***Wilmattina***) ***wilmattae*** (Pilsbry et Cockerell, 1933).
"Tshibinda, Belgian Congo." Holotype. **Phil**. No. 159671a.

from Natal, South Africa, as the type of *Huttonella*, has become entrenched in the literature following the use of Zilch (1960, p. 570)". (Naggs, 1989: 166).

2. I am not sure if the species *bicolor* and *kraussi* belong to the same genus because of difference in conchological characters and geographical distribution. That is why I am presenting the drawings of shells of both species. Presumably, *kraussi* belong to *Gulella* s. str. The definite taxonomical decision should be postponed until their anatomy is known.

Parennea Pilsbry, 1919

Pilsbry, 1919: 210 (*Ptychotrema* subg.).

TYPE SPECIES — *Ptychotrema* (*Parennea*) *mukulense* Pilsbry, 1919; OD.

Shell generally ovate, thin, shining, translucent to subtransparent. Angular and columellar lamellae well developed. Upper palatal plica deeply entering, its place marked externally by a single spiral furrow.

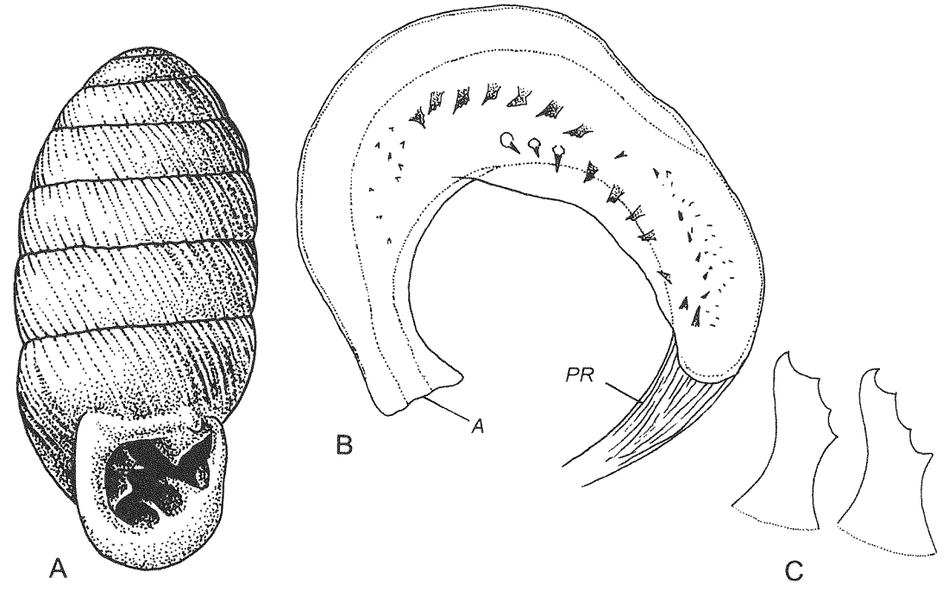


Fig. 1078. ! ***Ptychotrema deruptum*** Degner, 1934.
A — shell: Du River, Liberia. **Phil**. No. 166803. B — interior of penis. C — hooks in penis, enlarged. After Degner, 1934.

DISTRIBUTION. Africa (Angola, Zambia, Malawi, Zaire, Tanzania, Kenya, Uganda, Ethiopia, Somalia, Nigeria, Liberia).

Parennea (*Parennea* s. str.) Fig. 1076

Shell glass-like, of 5-7 (moderately) convex whorls. Last whorl gradually ascending toward aperture. Embryonic whorls with spiral threadlets, later whorls with variously developed radial ribs, or smooth. Aperture rounded, vertical, with reflexed margins. Angular lamella high, frequently somewhat sinuated. Columella thickened inside, with 1-3 lamellae on this thickening. Palatal plica thin, high, its edge situated opposite to edge of parietal lamella. Superficial tubercle on palatal margin not connected with palatal plica. Umbilicus comparatively wide. Height 1.7-7.9, diam. 1.1-2.5 mm (2.24 × 1.16 mm).

DISTRIBUTION. As in genus. About 45 spp. & subspp.

Parennea (Wilmattina Pilsbry et Cockerell, 1933) Fig. 1077

Pilsbry & Cockerell, 1933: 370 (*Ptychotrema* subg.).

TYPE SPECIES — *Ptychotrema* (*Wilmattina*) *wilmattae* Pilsbry et Cockerell, 1933; OD.

Shell of 6.5-7.5 convex whorls. Angular lamella sigmoid in basal view. Columellar lamella receding, very broad, with concave face. Palatal margin with a large median tooth having a corresponding external pit behind aperture, preceded by a wave. Upper palatal fold deeply immersed, slanting downward inwardly, or turning toward base. Height 2.7-3.4, diam. 1.1-1.7 mm (3.40 × 1.65 mm).

DISTRIBUTION. East-Central Africa (E Congo, Uganda, Kenya). 3 spp.

Ptychotrema L. Pfeiffer, 1853

Pfeiffer L., 1853: 192. Adam et al., 1995: 89.

TYPE SPECIES — *Bulimus mörchi* L. Pfeiffer, 1853; monotypy.

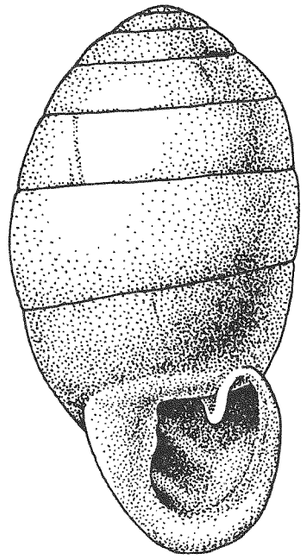


Fig. 1079. ***Ptychotrema*** (***Ptychoon***) ***affectatum*** (Fulton, 1902).
Zanzibar. Syntype. **Phil**. No. 84698.

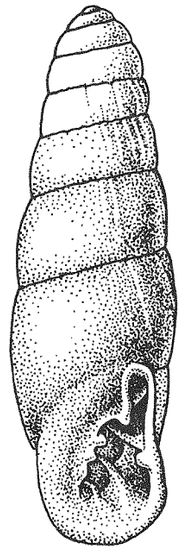


Fig. 1080. ***Ptychotrema*** (***Haplonepion***) ***quadrinodata*** E. Martens, 1895.
"Penghe (Penge)" [Zaire]. **Phil**. No. 118609.

Shell subcylindrical to ovate, moderately solid, mostly translucent, of 6-8 moderately convex to flattened whorls. Color whitish or shell colorless. Embryonic whorls smooth, rest whorls nearly smooth to delicately radially ribbed. Aperture rounded to ovate, with reflexed, more or less thickened margins. Angular lamella 1, columellar margin with 1-3 lamellae. Palatal side with 3-5 entering plicae; suprapalatal plica (sometimes immersed) or tooth defining, along with angular lamella, a deep sinulus.

DISTRIBUTION. Tropical Africa.

Ptychotrema (*Ptychotrema* s. str.)
Fig. 1078

Shell ovate-cylindrical to subcylindrical, moderately solid, of 7-8.5 slightly convex whorls. Color whitish. Embryonic whorls smooth, later whorls striated or delicately ribbed. Aperture ovoid, subvertical, with reflexed, mostly thickened margins. Armature in aperture exists at any stages of postembryogenesis. Angular lamella thin; in front of it a small tubercle may be present. Lower ends of columellar lamellae subhorizontal. Palatal plicae attending margin of aperture. Height 5.0-25.5, diam. 2.2-8.0 mm (7.0 × 3.1 mm).

Penis internally with 2 sorts of hooks: larger, having somewhat crenulated ridges, and tiny conic ones. Penial retractor attached terminally.

DISTRIBUTION. Africa (Zaire, Cameroon, Fernando Poo Island, Nigeria, Liberia, Guinea, Angola, Sierra Leone, Ethiopia). About 15 spp.

Ptychotrema (*Ptychoon* Pilsbry, 1919)
Fig. 1079

Pilsbry, 1919: 7, 201 (pro sect.). Adam et al., 1995: 106.

TYPE SPECIES — *Ennea affectata* Fulton, 1902; OD.

Shell ovate, widest in middle, rather solid, of 7.5-8 nearly flat whorls; apex short, convexly conic. Color whitish. Embryonic whorls smooth, later whorls with light oblique striation. Aperture widely ovate, a little oblique, with shortly reflexed margins. Angular lamella interrupted, its inner part sometimes not visible in apertural view. Palatal and suprapalatal plicae deeply immersed; corresponding furrows on neck shallow. Umbilicus moderately narrow, cylindrical. Height 10.5-13.5, diam. 5.2-6.0 mm (11.3 × 5.8 mm).

DISTRIBUTION. Tanzania, Zanzibar, Angola. 1 or 2 spp.

Ptychotrema (*Haplonepion* Pilsbry, 1919)
Fig. 1080

Pilsbry, 1919: 7, 201 (pro sect.). Adam et al., 1993: 137.

TYPE SPECIES — *Ennea* (*Ptychotrema*) *quadrinodata* E. Martens, 1895; OD.

Shell elongated-ovate to ovate-cylindrical, moderately thin, shining, of 7.5-11 moderately convex whorls. Color whitish. Embryonic whorls with microscopical reticulation; early postembryonic whorls retain a weak spiral striation; all postnuclear whorls more or less radially ribbed. Aperture ovoid or somewhat ear-shaped, a little oblique, with more or less reflexed margins. Sinulus well developed, rounded or ovate. Angular lamella continuous, deeply entering, its edge slightly undulating. Parietal or palatal teeth absent at earlier stages of postembryogenesis. Columellar margin with 3 deeply lying nodules. Palatal side with 3-4 plicae, suprapalatal defining a sinulus; 2-3 grooves on neck correspond to upper palatal and palatal plicae. Height 8.0-30.6, diam. 3.0-7.7 mm (18.5 × 5.5 mm).

DISTRIBUTION. Tropical Africa (Zaire, Tanzania, Nigeria, Fernando Poo Island, Cameroon, Uganda). About 15 spp.

Ptychotrema (*Adjua* Chaper, 1885)
Fig. 1081

Chaper, 1885: 45 (pro gen.).

TYPE SPECIES — *Adjua brevis* Chaper, 1885; OD.

Shell generally fusiform, thin, shining, of 7-8 moderately convex whorls. Color whitish. Embryonic whorls finely costulate, postnuclear sculpture of fine obliquely-radial riblets. Aperture continuous or nearly so, ovate to subquadrangular, with a little reflexed, thin margins. Sinulus slit-like. Angular lamella strong, thin, curved, not interrupted, deeply entering. Columellar margin with 2 small lamellae. Basal and palatal side with 4-6 immersed teeth; basal and 2 lower palatal plicae rather long, lamellar; small basal tubercle may be present. Height 12-20, diam. 5-8 mm (15.5 × 6.3 mm).

DISTRIBUTION. W Africa (Côte d'Ivoire). 2 or 3 spp.

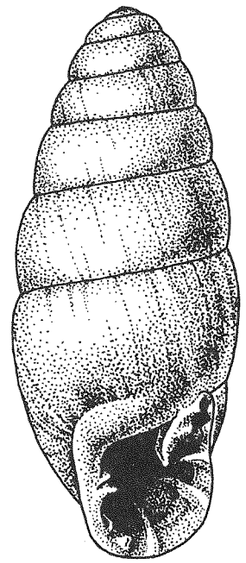


Fig. 1081. ***Ptychotrema*** (***Adjua***) ***breve*** (Chaper, 1885).
"Assinie, Africa" [Côte d'Ivoire]. **Phil**. No. 23833.

Ptychotrema (*Excisa* Ailly, 1896)
Fig. 1082

Ailly, 1896: 20 (*Ennea* sect.). Adam et al., 1995: 102.

TYPE SPECIES — *Ennea boangolense* Ailly, 1896; SD Pilsbry, 1919b.

Shell subfusiform, tapering toward apex, thin, of 6.75-9 slightly convex whorls. Spire produced, sides slightly convex, apex blunt, somewhat acuminate. Color creamy-white. Embryonic whorls smooth, later whorls with regular, a little curved, rather prominent riblets; interstices vaguely granulate. Aperture subquadrangular, with reflexed margins. Sinulus long, narrow, slit-

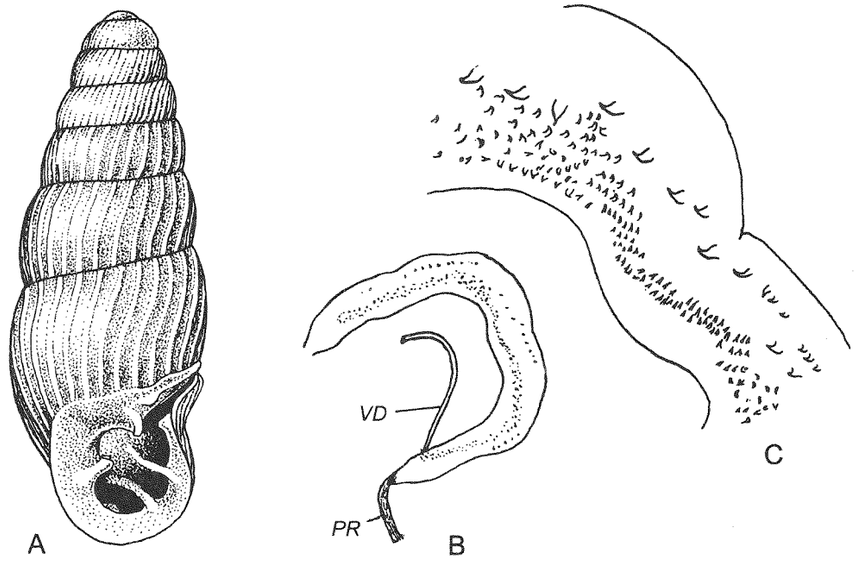


Fig. 1082. ***Ptychotrema*** **(*Excisa*)** ***boangolense*** (Ailly, 1896).
A — shell: "Is. Fernando Poo: Moka". **Paris**. B — penis. C — interior of penis. After L. Ortiz de Zarate & R. Ortiz de Zarate, 1956.

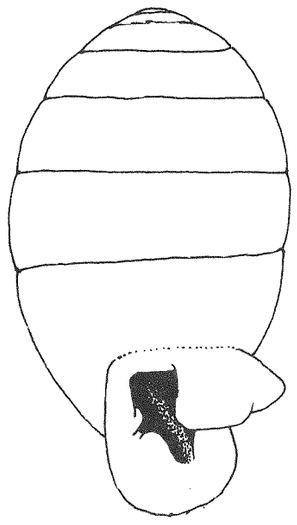


Fig. 1083. ***Ptychotrema*** **(*Nsendwea*)** ***nobrei*** Dupuis et Putzeys, 1923.
After Adam et al., 1995.

like. Angular lamella uninterrupted. Columellar lamella subhorizontal; supracolumellar tubercle may be present. Basal tooth small or absent. Palatal margin with 2-4 long plicae. Umbilicus very narrow. Height 5.1-10.7, diam. 2.0-3.7 mm (5.8 × 2.1 mm).

Vas deferens entering penis at short distance from apex. Penis internally with 2 longitudinal series of conic, curved hooks: larger, arranged in one irregular row, and scattered smaller. Penial retractor attached apically.

DISTRIBUTION. W Africa (Ghana, Cameroon, Fernando Poo Island, Congo, Angola). 2 spp.

Ptychotrema (*Nsendwea* Dupuis et Putzeys, 1923)
Fig. 1083

Dupuis & Putzeys, 1923: 72. Adam et al., 1995: 105.

TYPE SPECIES — *Ptychotrema* (*Nsendwea*) *nobrei* Dupuis et Putzeys, 1923; OD.

Shell ovate, pupiform, moderately solid, of 7 slightly convex whorls. Last whorl compressed behind aperture. Embryonic

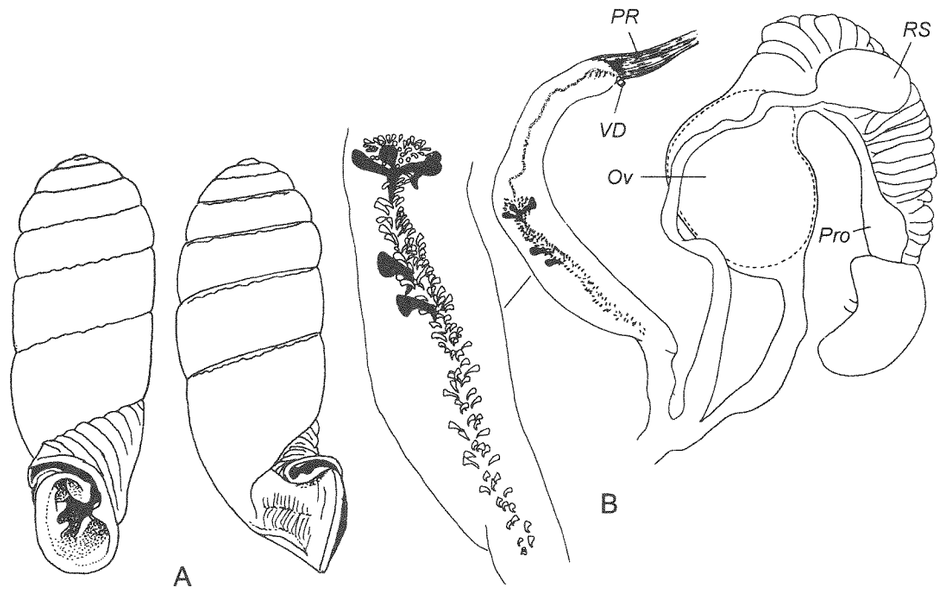


Fig. 1084. A, B — ***Sinistrexcisa cameruniae*** Winter, Gomez et Prieto, 1999.
A — shell. B — reproductive tract and interior of penis. After Winter et al., 1999.

whorls smooth, later regularly radially ribbed. Aperture continuous, irregularly ovate, subvertical. Sinulus slit-like (similar to that of *Excisa*). Parietal margin of aperture forms a small semicircle turned upward, descending to columellar margin. Angular lamella very large. Columellar lamella small. Basal tubercle well developed. Height 5.2, diam. 2.6 mm.

DISTRIBUTION. Zaire (Congo Valley). 1 sp.

Sinistrexcisa Winter, Gomez et Prieto, 1999
Fig. 1084

Winter et al., 1999: 209.

TYPE SPECIES — *Sinistrexcisa cameruniae* Winter, Gomez et Prieto, 1999; OD.

Shell elongated (sub)cylindrical to ovoid, rather thin, subtransparent when fresh, shining, of 6.5-8.25 flattened to weakly convex whorls. Colorless or pale-brown. Embryonic whorls smooth, later radially ribbed but ribs sometimes reduced and represented mainly by their upper ends below suture. Aperture ovoid, strongly detached, shifted leftward; margins shortly reflexed. Sinulus extremely long, running from angular-palatal corner above angular lamella to the left, well outside normal position of aperture, with 1 or 2 small (sub)circular terminal dilatations. Columellar, basal and palatal walls each with a single external furrow corresponding to columellar lamella, basal and palatal plicae respectively. Umbilicus closed. Height 5.3-7.3, diam. 2.1-2.6 mm.

Vas deferens not adherent, entering penis subapically. Point of entry obscured by dense fibres of penial retractor. Internally penis divided into 3 different portions: upper with very narrow lumen lacking hooks; central with numerous small and medium-sized and 5-7 principal hooks around penial lumen; lower with or without small hooks. Uterus may contain a large egg. Free oviduct rather long, vagina virtually absent. Spermathecal stalk long, reservoir voluminous.

Inside penis of *S. fang* Winter, Gomez et Prieto, 1999 these authors discovered a spermatophore. It is tubular, longitudinally ribbed, with a falciform apex.

DISTRIBUTION. SW Cameroon, Equatorial Gunea. 4 spp.

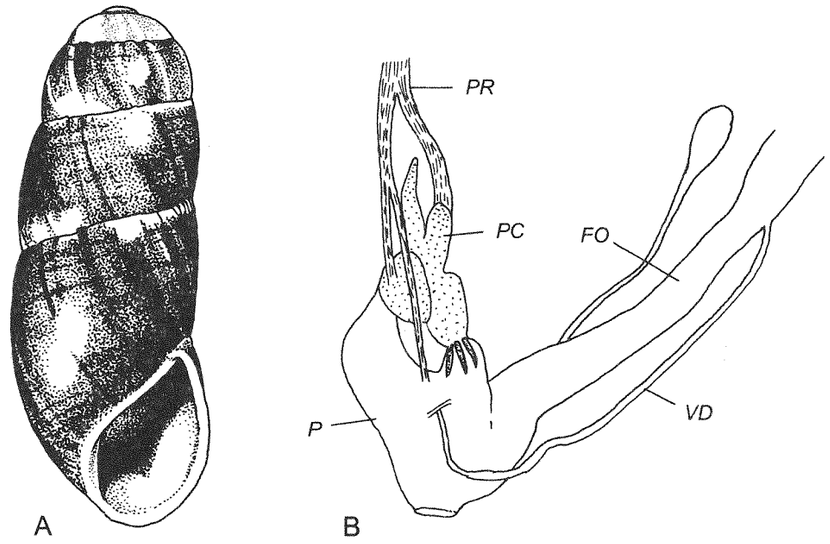


Fig. 1085. A — ***Stenomarconia jeanneli*** (Germain, 1934). Shell: Kenya. ? Syntype. **Moscow** No. Lc-24937 (**Paris**).
B — ! ***Stenomarconia mzinga*** (Tattersfield, 1999). Reproductive tract. After Tattersfield, 1999.

MARCONIINAE
Schileyko, subfam. nov.

Shell ovate to subcylindrical, with straight or slightly curved axis. Aperture toothless, only vestigial parietal tooth may be present.

Penis sheath extremely short. Vas deferens evenly cylindrical, not connected with sheath. Penis with well developed caecum. Hooks in penis differentiated.

DISTRIBUTION. Africa.

Stenomarconia Germain, 1934
Fig. 1085

Germain, 1934: 262 (*Marconia* subg.).

TYPE SPECIES — *Marconia* (*Stenomarconia*) *jeanneli* Germain, 1934; OD.

Shell ovoid to elongated, cylindrical, rather thin, glossy to shining, of 4-6 slightly convex whorls; last whorl straight, evenly rounded at periphery. Color blackish-olive, with darker radial irregular streaks, or pale yellowish-brown to cream or yellowish-white. Embryonic whorls smooth or microscopically spirally striated. Later whorls with very weak, irregular, widely spaced wrinkles. Aperture pointed-ovate, without teeth, white inside, with somewhat thickened, not expanded or reflexed margins. Umbilicus absent. Height 7.5-18.6, diam. 3.1-6.6 mm (11.2 × 4.9 mm).

Penis short, stout, thick-walled, with caecum which has one or more lobes or extensions. Internally caecum with a large number of hard, reddish-brown hooks, which are visible from outside through rather thin wall. 6 of these hooks near junction of caecum and penis distinctly larger than other; and have elongated basis and visible as short dark stripes through caecum wall. Remaining hooks smallest at proximal end of caecum and gradually increase toward penis; they visible as subcircular reddish dots through wall of caecum. Penial retractor of 3 arms: main arm attaches to proximal lobe of caecum, 2 thinner arms — to penis at base of caecum. Free oviduct long, vagina very short. Stalk of spermatheca rather short, reservoir not reaching albumen gland.

DISTRIBUTION. Kenya, Tanzania. 3 spp.

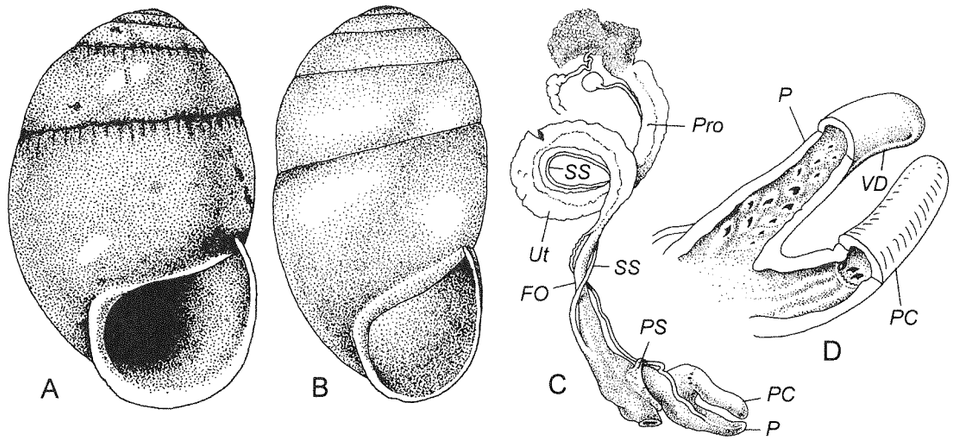


Fig. 1086. A — ! ***Marconia gibbosa*** (Bourguignat, 1889). Shell: Mt. Tongwe, Tanganyika [Tanzania]. **Leiden**.
B, C, D — ! ***Marconia elgonensis*** (Preston, 1922). Kakamega Forest Complex, Isecheno, W Kenya, August 5, 1993. B — shell. **Moscow** No. Lc-24944 (**Cardiff** No. Z 1993.062.267). C — reproductive tract. D — interior of penis. **Cardiff** No. Z 1993.062.267.

REMARK. Initially the subgenus *Stenomarconia* has been erected by Germain for a single species — *Marconia jeanneli*. Recently Tattersfield (1999) described 2 new species of *Marconia* from Tanzania and discussed their subgeneric position within the genus. This author did not come to definite conclusion, but most conchological characters of the new species make me think that *Marconia mzinga* Tattersfield 1999 and *M. kizinga* Tattersfield 1999 belong to *Stenomarconia*. Verdcourt (1961), after dissection of *Stenomarconia jeanneli*, raised *Stenomarconia* to generic rank, but did not mention internal armature of penis or triple penial retractor arrangement found in *Stenomarconia mzinga*.

Marconia Bourguignat, 1889
Fig. 1086

Bourguignat, 1889: 135. Verdcourt, 1966: 71.

TYPE SPECIES — *Ennea lata* E. Smith, 1880; SD Kobelt, 1906 (1905-1906).

Shell ovoid, moderately thin, translucent, shining, of 5-7 slightly convex whorls. Axis only little distorted. Last whorl inflated, scarcely ascending at aperture. Color whitish to pale-ivory. Embryonic whorls smooth, later nearly so, but sometimes there are traces of radial ribs below suture. Aperture broadly rounded, somewhat oblique, toothless, with shortly reflexed, a little thickened margins. Umbilicus open, narrow, bordered by rounded crest. Height 10-20, diam. 6.6-13.0 mm (*gibbosa*: 10.8 × 6.8 mm; *elgonensis*: 9.0 × 4.9 mm).

Talon not visible. Vas deferens free from female ducts but fastened to penis sheath and bound to penis; entering penis through a simple pore. Penis short, with a large basal caecum as long as penis. Internally penis with several scattered hooks; in upper part hooks smaller. Caecum contains 5-6 hooks located circumferentially near entrance. Penis sheath quite distinct, extraordinally short. Penial retractor missing. Free oviduct rather long, vagina short, markedly swollen. Spermathecal stalk evenly slender, globular reservoir reaching albumen gland.

DISTRIBUTION. Tropical and S Africa, Comoros. At least 6 spp. & subspp.

Macrogonaxis Thiele, 1932
Fig. 1087

Thiele, 1932: 11 (*Gonaxis* sect.).

TYPE SPECIES — *Streptaxis enneoides* E. Martens, 1878; OD.

Shell irregularly globose, shining, much translucent, of 5.5 moderately convex whorls; body whorl evenly rounded, not descending in front. Color white or pale-corneous; sometimes glass-like and colorless when fresh. Embryonic part and body whorl polished, just on last whorl with traces of ribbing below suture. Early postnuclear whorls finely radially striated or ribbed. Aperture rounded, toothless, with somewhat thickened and slightly reflexed margins. Palatal margin more or less concave. Umbilicus, a minute perforation. Height 13.5-28.4, diam. 9.0-19.8 mm (15.4 × 10.3 mm).

DISTRIBUTION. E Africa, Seychelles. About 5 spp.

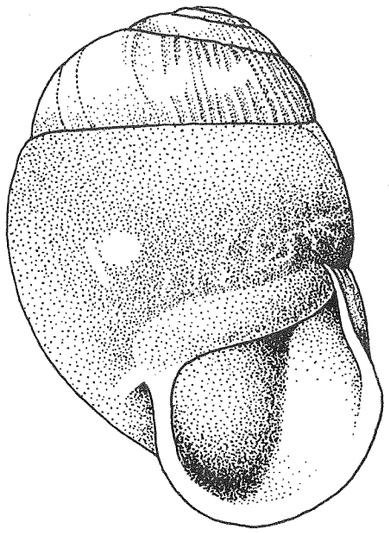


Fig. 1087. A — ***Macrogonaxis enneoides*** (E. Martens, 1878).
Kilimanjaro [E Africa]. **Senck.** No. 157987a.

ODONTARTEMONINAE
Schileyko, subfam. nov.

Shell flattened to (sub)globular, with straight or more or less curved axis. Aperture toothless or with variously developed parietal lamella or tubercle.

Penis sheath surrounds entire penis or absent. Vas deferens thickened in distal end. Penis without caecum. Hooks in penis not differentiated.

DISTRIBUTION. Africa.

Somalitayloria Verdcourt, 1962
Fig. 1088

Verdcourt, 1962: 21 (*Tayloria* subg.).

TYPE SPECIES — *Zonites somaliensis* Connolly, 1931; OD.

Shell lenticular, thin, semitransparent, of 5 moderately convex whorls. Last whorl angled at periphery. Color faded corneous-yellow. Surface sculptured all over except at extreme apex with strong, close, regular, slightly oblique, curved radial riblets. Aperture horizontally acuminate-ovate, with simple margins. Columellar margin concave, reflexed. Umbilicus wide, deep, perspective. Height 8.0, diam. 20.0 mm.

Vas deferens free, entering penis terminally. Penis long, with twisted basal portion. Penial retractor attached apically. Free oviduct shorter, and vagina longer than in *Tayloria*. Spermathecal stalk shorter than in *Tayloria*.

DISTRIBUTION. NE Africa (Somalia). 2-3 spp.

Artemonopsis Germain, 1908
Fig. 1089

Germain, 1908: 98 (*Streptaxis* subg.).

TYPE SPECIES — *Streptaxis* (*Artemonopsis*) *chevalieri* Germain, 1908; monotypy.

Shell somewhat zonitoid, transparent, of 4.25-5 flattened whorls, last whorl subangulate at periphery, not descending in front. Color yellowish to light-corneous (often whitish when dead). Embryonic whorls smooth, rest surface finely regularly ribbed; riblets sinuated as a peristome. Aperture slightly oblique, toothless, margins somewhat sinuated backwards in middle of palatal wall and ahead at upper part. Umbilicus shallow, rather broad. Height 2.9-3.1, diam. 6.2-6.5 mm (3.1 × 6.5 mm).

DISTRIBUTION. W Africa (Côte d'Ivoire). 1 sp.

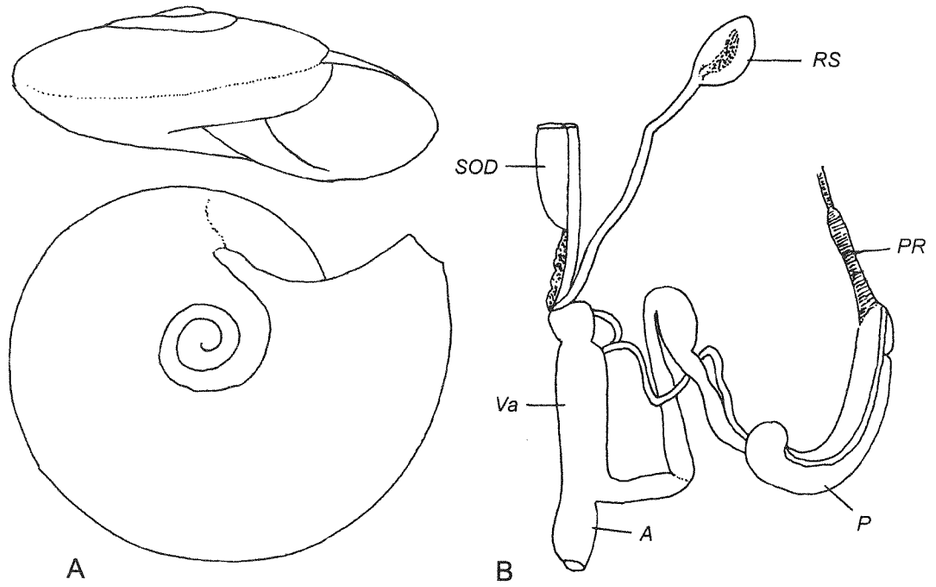


Fig. 1088. ***Somalitayloria somaliensis*** (Connolly, 1931).
A — shell. After Connolly, 1931. B — reproductive tract. After Verdcourt, 1962.

Tayloria Bourguignat, 1889

Bourguignat, 1889: 38. Verdcourt, 1958: 267.

TYPE SPECIES — *Tayloria jouberti* Bourguignat, 1889; OD.

Shell depressedly helicoid, thin but rather solid, of 4-6 slightly convex whorls. Last whorl rounded at periphery, scarcely or not descending in front. Embryonic whorls smooth. Aperture semiovate to rounded, toothless, with reflexed, not thickened margins. Umbilicus moderately broad.

DISTRIBUTION. E Africa.

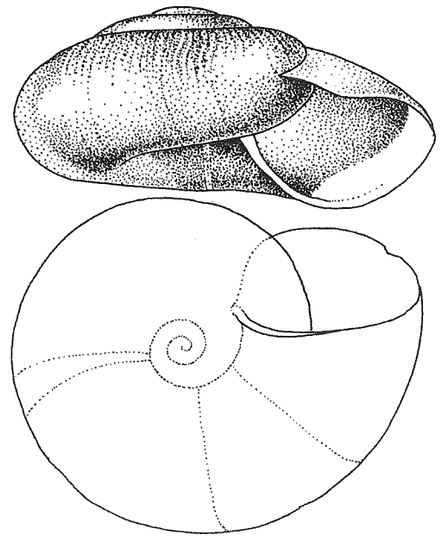


Fig. 1089. ***Artemonopsis chevalieri*** (Germain, 1908).
"Bouroukrou, Côte d'Ivoire". Syntype. **Paris**.

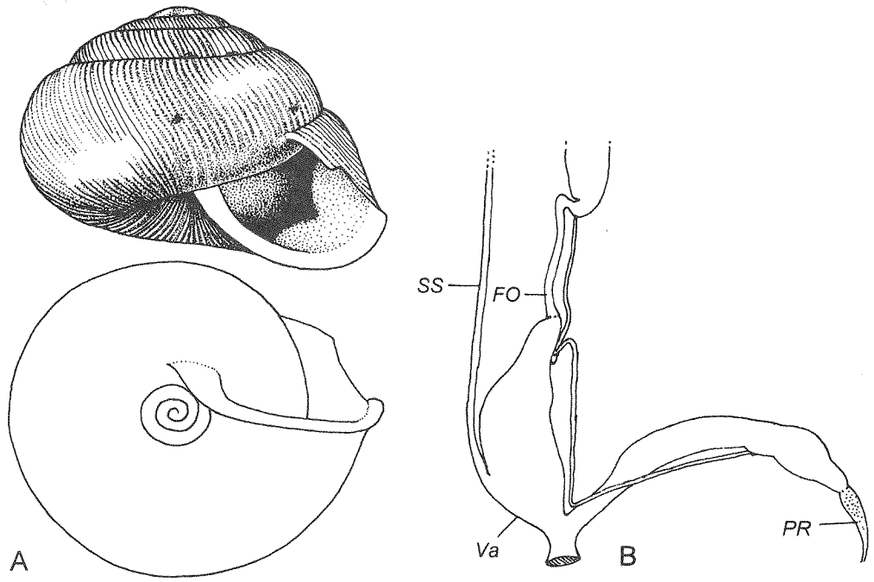


Fig. 1090. ***Tayloria*** (***Tayloria***) ***jouberti*** (Bourguignat, 1889). A — shell: Nyantaga, E Africa. Syntype. **Paris**.
B — ! ***Tayloria*** (***Tayloria***) ***amaniensis*** Verdcourt, 1960. Distal part of reproductive tract. After Verdcourt, 1960.

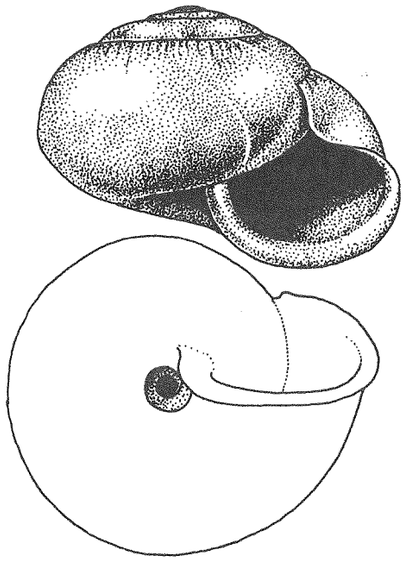


Fig. 1091. ***Tayloria*** (***Colpanostoma***) ***leroyi*** (Bourguignat, 1889).
Ukami, Tanganyika Territory [Tanzania]. **Chicago** No. 36647.

Tayloria (*Tayloria* s. str.)
Fig. 1090

Shell of 4-6 whorls. Color white. Postembryonic whorls coarsely radially rib-striated, especially behind aperture. Aperture semiovate, upper part of palatal margin not or only slightly protruded ahead. Height 3-12, diam. 4.5-17.0 mm (6.8 × 9.9 mm).

Vas deferens free, entering penis subapically. Penis subcylindrical, sometimes slightly swollen at upper end. Penial retractor attached apically. Free oviduct very thin at upper section; its lower section, together with vagina, greatly swollen. Spermathecal stalk narrow, cylindrical.

DISTRIBUTION. E Africa (Kenya, Somalia, Ethiopia, ?Zanzibar). About 20 spp. & subspp.

Tayloria (*Colpanostoma* Bourguignat, 1889)
Fig. 1091

Bourguignat, 1889: 43 (pro gen.). Verdcourt, 1958: 267 (as syn. of *Tayloria*).

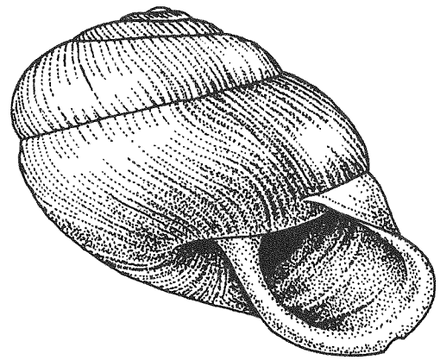


Fig. 1092. ***Pseudogonaxis nsendweensis*** (Putzeys, 1899).
Nsendwe, Congo. **Phil**. No. 83540.

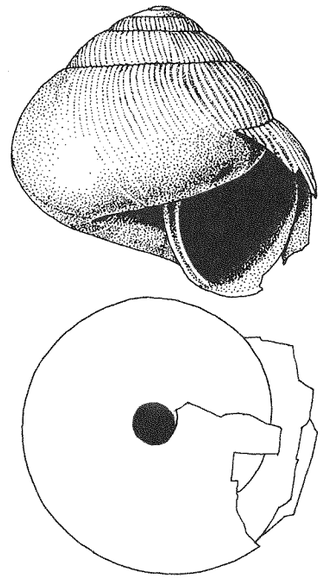


Fig. 1093. ***Gigantaxis gigas*** (E. Smith, 1881). "Between lake Nyassa and the East coast" [E Africa]. Holotype. **London** No. 880.12.20.176-7.

TYPE SPECIES — *Colpanostoma leroyi* Bourguignat, 1889; monotypy.

Shell of about 5 whorls. Body whorl evenly rounded at periphery, not descending in front. Color ivory. On postapical whorls there are smoothed ribs only below suture, rest surface polished. Aperture rounded, upper part of palatal wall concave, protruding ahead. Height 15-17, diam. 22-25 mm (15.0 × 22.0 mm).

DISTRIBUTION. E Africa (Tanzania). 2-3 sp.

Pseudogonaxis Thiele, 1932
Fig. 1092

Thiele, 1932: 11 (*Tayloria* subg.); 1933: 281 (*Tayloria* subg.)

TYPE SPECIES — *Streptaxis nsendweensis* Putzeys, 1899; OD.

Shell semiglobose, with distinctly curved axis, rather thin, of 4-5 moderately convex whorls; last whorl not descending in front, evenly rounded or flattened at periphery. Colorless. Embryonic whorls smooth, later finely, rather regularly ribbed, including basal surface. Aperture rounded, toothless, with thin, reflexed margins. Umbilicus very narrow. Height 7.8-14.0, diam. 10-11 mm (8.2 × 11.0 mm).

DISTRIBUTION. Congo basin. 5-6 spp.

Gigantaxis Tomlin, 1930
Fig. 1093

Tomlin, 1930: 23 (nom. nov. pro *Gibbonsia* Bourguignat, 1889).

— *Gibbonsia* Bourguignat, 1889: 38 (nom. praeocc., non Cooper, 1864 (Pisces); t.-sp. *Streptaxis gigas* E. Smith, 1881; monotypy].

TYPE SPECIES — *Streptaxis gigas* E. Smith, 1881; OD.

Shell conic-subglobose, rather solid, whitish, probably colorless and translucent when fresh, of 5.5-6 slightly convex whorls. Body whorl not descending in front. Embryonic whorls smooth, rest whorls finely regularly ribbed, so suture slightly corrugate; radial sculpture disappears below periphery. Very fine spiral striation visible behind aperture. Aperture round, with simple toothless margins. Umbilicus moderately

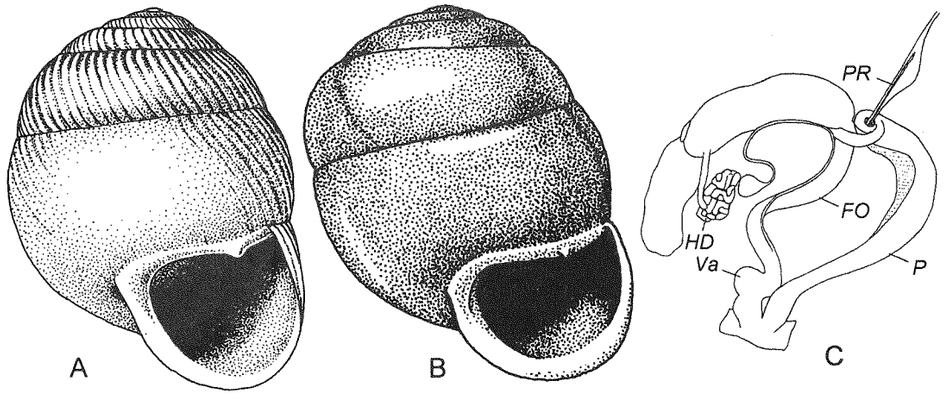


Fig. 1094. A — ***Afristreptaxis vosseleri*** (Thiele, 1932). "Amani, D. Ost-Afrika". **Basel** No. 8598-a.
B — ***Afristreptaxis bloyeti*** (Bourguignat, 1889). Ukami, Liberia. **SPb**.
C — ! ***Afristreptaxis elongatus*** (Fulton, 1899). Reproductive tract. After van Bruggen, 1964.

narrow, round, cylindrical. Height 29-30, diam. 30-33 mm (29.4 × 30.8 mm).

DISTRIBUTION. E Africa. 1 sp.

Afristreptaxis Thiele, 1932
Fig. 1094

Thiele, 1932: 12; 1933: 281.

— *Eustreptaxis* Pfeiffer L., 1877: 5 (*Streptaxis* sect.; nom. nud.).

TYPE SPECIES — *Streptaxis vosseleri* Thiele, 1932; OD.

Shell dextral (sinistral specimens known), globose, solid, glossy, with nearly straight or slightly curved axis, of 5-6.5 moderately convex whorls; last whorl evenly rounded or somewhat flattened at periphery, a little ascending in front. Color greenish-olive, monotonous or with irregular radial darker streaks. Surface nearly smooth to finely ribbed. Aperture somewhat oblique, semicircular; parietal wall smooth or with a small tubercle. Aperture margins thin, light colored, shortly reflexed. Umbilicus very narrow or closed. Height 9-30, diam. 7-22 mm (*vosseleri*: 16.7 × 12.5 mm; *bloyeti*: 14.0 × 11.2 mm).

"The long penis is completely enclosed in a thick muscular sheath; this sheath has an opening at the apex from which the retractor muscle emerges. From the same opening springs a duct which leads to a gland, diverticulum or epiphalloid sac which appears to be attached with its apex to the retractor muscle. The vas deferens is very short and thick and springs from the tip of the penis sheath, but not from the above-mentioned aperture; it coils around the apex of the sheath before entering the prostate, which latter is hidden behind the swollen female duct ... the spermatheca has a very long duct." (van Bruggen, 1964: 116).

DISTRIBUTION. Tropical and S Africa. 5-6 spp.

Odontartemon L. Pfeiffer, 1856
Fig. 1095

Pfeiffer L., 1856: 172.

— *Lamelliger* Ancey, 1884: 508 (t.-sp. *Streptaxis troberti* Petit, 1841; OD).

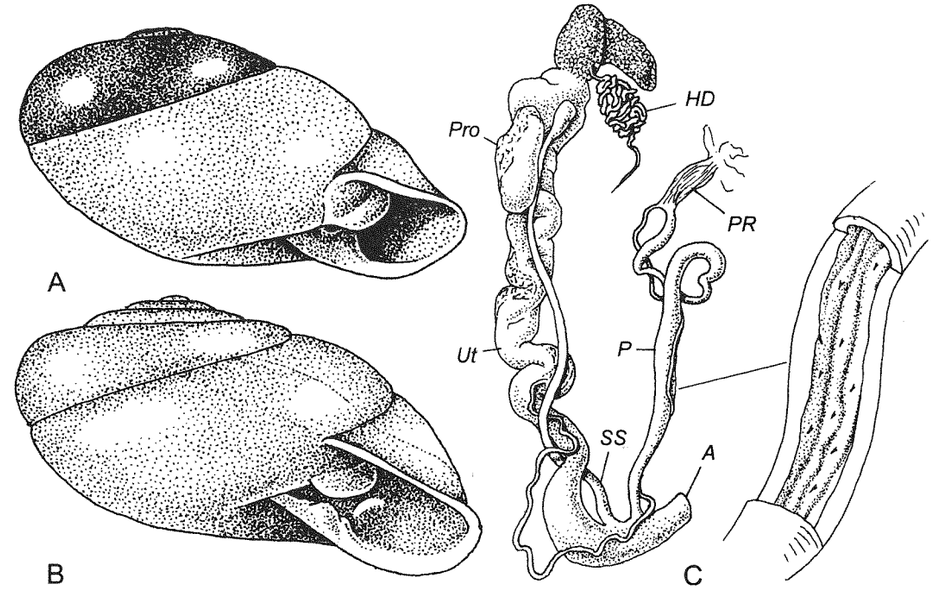


Fig. 1095. A — ! ***Odontartemon troberti*** (Petit, 1841). Shell: Bolahun, Liberia. **Senck**. No. 16081.
B, C — ! ***Odontartemon*** sp. B — shell. C — reproductive tract and interior of penis. Mts. Loma Savana, alt. 1280 m, Sierra Leone, July 23, 1964. **Moscow** No. Lc-24946 (gift of A.J. de Winter).

TYPE SPECIES — *Helix distorta* Jonas, 1843; SD Kobelt, 1880.

Shell obliquely ovate, strongly distorted, rather thin, shining, of 4-5 slightly convex whorls. Last whorl a little descending. Color pale-yellowish. Embryonic whorls smooth, polished; subsequent whorls with fine radial striae. Aperture rounded-squarish, strongly oblique, with markedly thickened, moderately reflexed margins. Parietal lamella well developed. Columellar margin with 0-2 small tubercles. Palatal wall toothless or with 1-3 small, lamellar teeth in depth of aperture. Umbilicus closed. Height 3.5-7.0, diam. 6-11 mm (*troberti*: 4.0 × 7.7 ; *Odontartemon* sp.: 6.6 × 10.8 mm).

Hermaphroditic duct very strongly convoluted. Talon hidden. Vas deferens long, free from female ducts but bound to most of penis length, after this detached and forms a marked fusiform swelling; before entering penis it narrows again. Penis long, slender, internally with a few rounded axial folds and scattered, very small conic hooks. Penis sheath not present. Penial retractor arising on diaphragm, inserting on proximal part of swelling of vas deferens. Free oviduct long, thickened. Vagina very short. Spermathecal shaft long, narrow, cylindrical throughout, reservoir small, lying on upper part of spermoviduct just below albumen gland.

DISTRIBUTION. W Africa. 4-6 spp.

OLEACINOIDEA
H. Adams et A. Adams, 1855

Adams H. & Adams A., 1855: 103 (pro fam.).

Shell elongated-ovate to turrited, sometimes reduced, generally thin, without peripheral keel or angle. Periostracum usually present. Surface smooth to rib-striated and ribbed, often with varices. Aperture (sub)vertical, simple or with weak inner tubercles, its margins mostly sharp, not reflexed. Umbilicus narrowly open to closed.

Jaw absent, rarely vestigial.

Reproductive tract simple or with penial caecum and/or flagellum. Penis internally

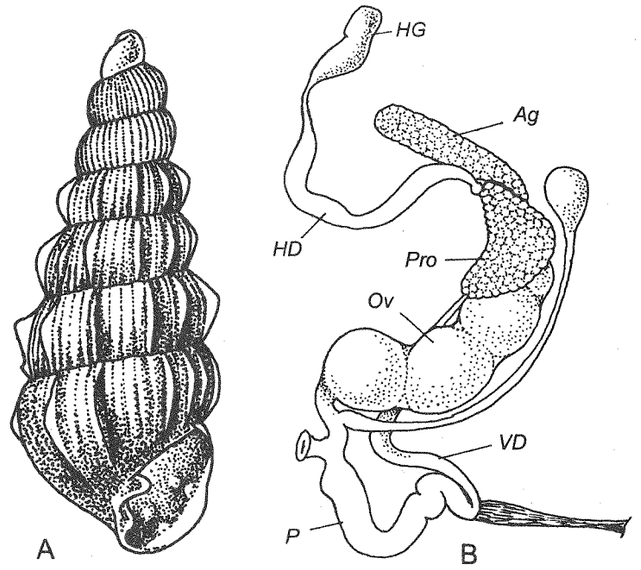


Fig. 1096. ***Spiraxis*** (***Spiraxis***) ***inusitatus*** (C. Adams, 1849).
A — shell: Somerset, Manchester Parish, Jamaica. **Phil**. No. 165798. B — reproductive tract. After Baker, 1939.

without conchiolinous hooks. Spermatheca usually with a long stalk.

DISTRIBUTION. New World, S Europe.

SPIRAXIDAE Baker, 1939

Baker, 1939: 9 (pro subfam.).

Shell tirrited, subcylindrical or high conic, (rather) small to medium-sized, thin, often glass-like, of many whorls.

Foot long, slender, pointed posteriorly; lower pedal groove distinct.

Kidney U-shaped, both ureters closed. Main pulmonary vein often bordered by bands of muscle. Minor venation indistinct.

Hermaphroditic gland composed of a single, rarely 2 clusters of acini. Talon very short. Prostate separated from uterus (at least in larger mollusks). Vas deferens fairly heavy and muscular but without epiphallic enlargement (except in *Micromena*); opening into penial apex without definite verge (except in *Micromena*). Penis without appendages, its inner surface irregularly folded. Penial retractor arising high on diaphragm and inserting on or near penial apex. Atrium opening situated below base of right ommatophore. Length of vagina variable. Spermathecal stalk rather long, subcylindrical; reservoir embedded in base of albumen gland.

DISTRIBUTION. Cuba, Jamaica, mainland central and northern S America.

SPIRAXINAE Baker, 1939

Vas deferens lacking epiphallic enlargement. Penis without verge.

DISTRIBUTION. As in family.

Spiraxis C. Adams, 1851

Adams C., 1851: 87.

TYPE SPECIES — *Achatina inusitata* C. Adams, 1849; OD.

Shell turrited or elongated-ovate, thin. Embryonic whorls smooth or after first whorl striated. Columella ascending in a spiral curve which projects into aperture more or less, and at base curves into basal margin without truncation or excision, sometimes having a callous lamella superimposed upon convex columella.

Uterus contains a few eggs or embryos, longer than prostate and much larger and longer than free oviduct plus short vagina.

DISTRIBUTION. Antilles and Mexico.

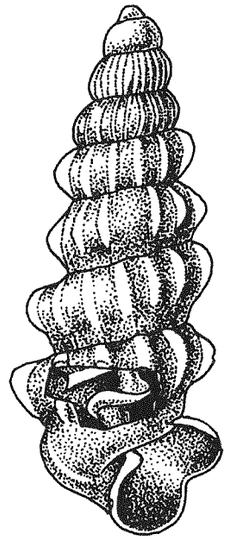


Fig. 1097. ***Spiraxis*** (***Dignaxis***) ***mirabilis*** (C. Adams, 1849).
Jamaica. **Phil**. No. 24718.

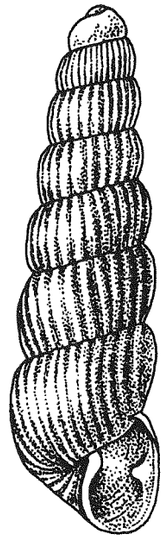


Fig. 1098. ***Spiraxis*** (***Euspiraxis***) ***costulosus*** C. Adams, 1850.
Sf Anns, Jamaica. Lectotype. **Phil**. No. 24719.

Spiraxis (*Spiraxis* s. str.) Fig. 1096

Shell turrited, thin, of 7-9 convex whorls. Color ivory. Early postembryonic whorls finely costulate, contracted, last 4-5 whorls with widely spaced radial ribs and fine spiral striae in intervals. Aperture elongated, contracted in middle by a palatal tooth and very strong projecting spiral columellar lamella, entering more than one whorl. There is a long deeply lying parietal lamella, not visible in aperture. Palatal wall with a pair of tubercles developing periodically during growth of shell. Height 3.4-4.0, diam. 1.1-1.5 mm (3.4 × 1.3 mm).

Hermaphroditic gland clavate. Talon not distinct. Vas deferens swollen toward entrance into penis, which internally with longitudinal folds.

DISTRIBUTION. Jamaica. 1 or 2 spp.

Spiraxis (*Dignaxis* Baker, 1939) Fig. 1097

Baker, 1939: 11, 15 (pro sect. or subg.).

TYPE SPECIES — *Bulimus mirabilis* C. Adams, 1849; OD.

Shell differs from *Spiraxis* s. str. by only one columellar lamella and later whorls markedly inflated below suture. Shell glass-like. Embryonic whorls with fine, accurate radial thread-like riblets and spiral striation. Later whorls with strong, rounded-triangular, well spaced ribs. Aperture about 8-shaped, with simple margins. Single columellar lamella strongly developed. Palatal margin concave in middle. Umbilicus, a tiny perforation. Height 3.6-3.7, diam. 1.4-1.5 mm (3.7 × 1.5 mm).

Radula with 4 laterals and 6 marginals.

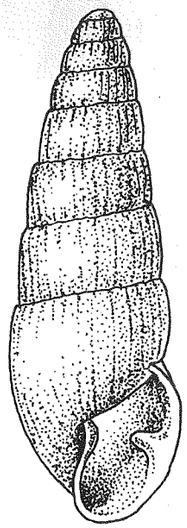


Fig. 1099. ***Spiraxis*** **(*Ravenia*)** ***blandi*** (Crosse, 1873).
Los Roques Island [Venezuela]. **Paris**.

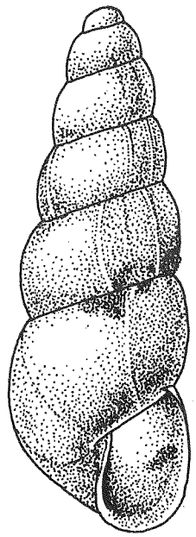


Fig. 1100. ***Spiraxis*** **(*Repressaxis*)** ***terebella*** (C. Adams, 1849).
Around Mandeville, Jamaica. **Phil**. No. 101446.

Hermaphroditic gland weakly lobed. Penis simple, sheath easily separated.

DISTRIBUTION. Jamaica. 1 sp.

Spiraxis (*Euspiraxis* L. Pfeiffer, 1855) Fig. 1098

Pfeiffer L., 1855: 167. Pilsbry, 1907 (1907-1908): 16.

TYPE SPECIES — *Spiraxis costulosa* C. Adams, 1850; SD Martens in Albers, 1860.

Shell elongated-conic to narrowly turrited, regularly tapering, thin but rather firm, of 7-10 very convex whorls; last 1-3 whorls more or less flattened at periphery. Apex obtuse. Color whitish to corneous. Postembryonic sculpture of rather closeset, delicate radial ribs. Aperture subvertical, with thin margins. Parietal lamella missing. Columellar margin concave below, strongly twisted above into an entering lamella which projects strongly into aperture lumen. Palatal margin with tubercular tooth. Height 3.5-8.8, diam. 0.8-2.0 mm (3.5 × 0.8 mm).

DISTRIBUTION. Jamaica. 2-3 spp.

Spiraxis (*Ravenia* Crosse, 1873) Fig. 1099

Crosse, 1873: 69 (pro gen.). Baker, 1939: 11.

TYPE SPECIES — *Ravenia blandi* Crosse, 1873; monotypy.

Shell translucent, of about 8 moderately convex, slightly shouldered whorls. Color light-yellowish-corneous. Whorls not markedly inflated below suture. Embryonic whorls smooth, later whorls obsoletely plicately striated; striae rather distant, more distinct near suture. Aperture narrow, acuminated above; margins slightly thickened, palatal margin arched forward and bears a tooth. Columellar lamella rather weak. Height 3.3, diam. 1.1 mm.

Radula with only 1 lateral tooth.

DISTRIBUTION. Los Roques Island (Venezuela). 1 sp.

Spiraxis (*Repressaxis* Baker, 1939) Fig. 1100

Baker, 1939: 11, 16.

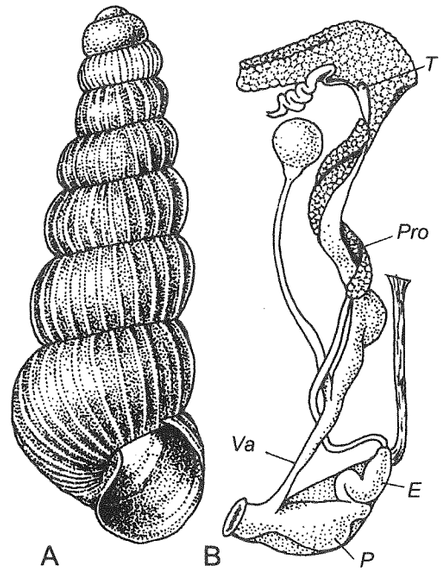


Fig. 1101. ***Volutaxis sulciferus*** (Morelet, 1851).
A — shell: Orizaba, Mexico. **Phil**. No. 61657. B — reproductive tract. After Baker, 1939.

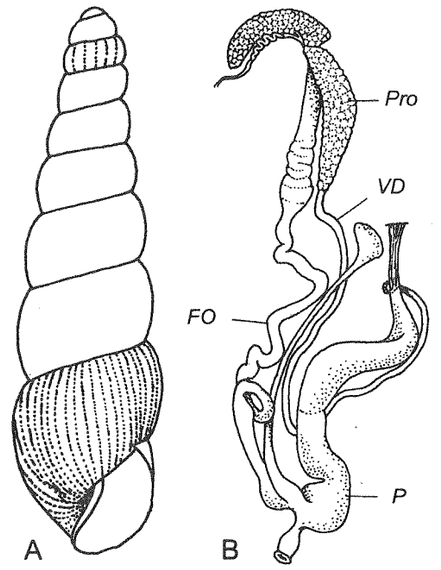


Fig. 1102. ***Mirapex acus enigmaticus*** Baker, 1939.
A — shell. B — reproductive tract. After Baker, 1939.

TYPE SPECIES — *Bulimus terebella* C. Adams, 1849; OD.

Shell turrited, subulate, thin, glass-like, of 6-7 convex whorls. Body whorl somewhat compressed laterally. Color greyish-white. Embryonic whorls smooth, polished. Postnuclear whorls very weakly, regularly striated, striae low, blunt, as wide as intervals or wider; they begin in middle of second whorl. Aperture small, narrow, palatal margin strongly arched forward above middle. Cord-like columella moderately sigmoid, has a weakly spiral convex fold above. Height 4.4-8.0, diam. 1.5-1.8 mm (4.4 × 1.5 mm).

Hermaphroditic gland composed of 2 lobes. Prostate much reduced. Vas deferens not enlarged. Penis rather small. Uterus contains a few embryos.

DISTRIBUTION. Jamaica. 1 sp.

Volutaxis Strebel et Pfeffer, 1882 Fig. 1101

Strebel & Pfeffer, 1882: 110. Baker, 1939: 10.

TYPE SPECIES — *Bulimus sulciferus* Morelet, 1851; SD Pilsbry, 1907 (1907-1908).

Shell turrited, thin, glossy, of 5-13 whorls. Color corneous or pale-yellow. Initial embryonic whorls smooth, later with closely spaced radial threads. Postapical whorls radially striated to ribbed. Aperture small, with thin, simple margins. Columella only slightly thickened, not markedly truncated, heavily sigmoid. Umbilicus absent. Height up to 11.5, diam. up to 3.5 mm (5.5 × 1.8 mm).

Radula with unicuspid central tooth.

Talon minute. Prostate elongated, free for most of its length. Vas deferens entering epiphallus apically. Penis usually elongated, internally longitudinally folded, without heavy pilasters or marked verge; at least its apical end surrounded by sheath. Uterus about as long as prostate and shorter than free oviduct plus vagina. Vagina narrow, comparatively long. Reservoir of spermatheca globular, adherent to basal section of albumen gland.

Apparently oviparous.

DISTRIBUTION. Central America. 7-8 spp.

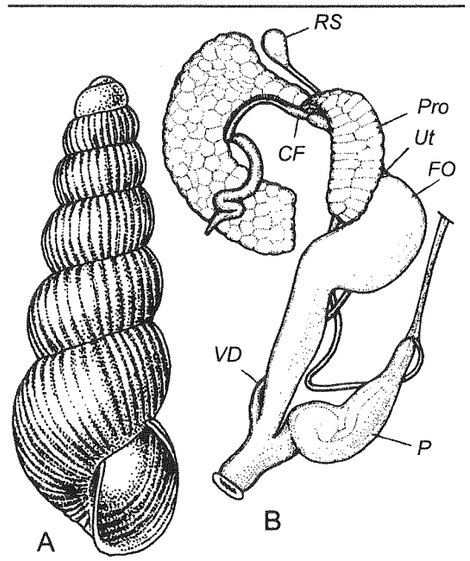


Fig. 1103. A — ***Rectaxis decussata*** (Baker, 1926). Shell: Quebrada, La Fria, Venezuela. Paratype. **Phil**. No. 140963.
B — ! ***Rectaxis granum*** (Baker, 1939). Reproductive tract. After Baker, 1940a.

Mirapex Baker, 1939
Fig. 1102

Baker, 1939: 11, 13.

TYPE SPECIES — *Spiraxis* (*Mirapex*) *acus enigmaticus* Baker, 1939; OD.

Shell subulate-turrited, somewhat translucent, of 9.5 convex to flattened (two last) whorls. Color greenish-white. Embryonic whorls form nipple-shaped apex, 1st almost smooth with very weak spiral striae, last whorl with radial riblets. Postnuclear whorls with low angular threads and progressively narrower, concave interspaces; spiral striae becoming obsolete. Aperture truncated reniform, with slightly thickened and very little arcuate margins. Columella sigmoid, strongly thickened. Umbilicus closed. Height 9.92, diam. 2.57 mm.

Talon exposed, tiny. Spermoviduct extremely short. Prostate detached from uterus for most of its length. Vas deferens long, entering penis at sharp angle. Penis swollen basally. Free oviduct enormously long, somewhat convoluted. Vagina practically absent. Spermathecal reservoir far not attending albumen gland.

DISTRIBUTION. Mexico. 1 or 2 spp.

Rectaxis Baker, 1926
Fig. 1103

Baker, 1926: 7 (*Pseudosubulina* subg.).

TYPE SPECIES — *Pseudosubulina* (*Rectaxis*) *decussata* Baker, 1926; OD.

Shell turrited, thin, of 7 convex, moe or less shouldered whorls. Colorless when fresh. 1st embryonic whorl with very faint radial wrinkles which become more prominent away from apex, 2nd whorl with regular radial riblets, without spiral sculpture. On postembryonic whorls ribs prominent, quite regular, evenly spaced; intervals and sides of ribs with minute, nodulose spiral ridgelets. Aperture elongated-ovate, with simple, sharp margins. Columellar margin slightly oblique, a little dilated, weakly subtruncated, almost straight. Palatal margin slightly sinuous. Umbilicus absent. Height 4.4-9.0, diam. 1.4-2.8 mm (4.52 × 1.41 mm).

Radula with 0-4 short-cusped laterals ans 6-31 marginals with one or both cusps long and needle-like.

Talon not developed. Carrefour exposed. Spermoviduct very short. Prostate compact, of large acini. Vas deferens entering penis apically at sharp angle. Penis convoluted within semitransparent sheath. Penial retractor attached to boundary between vas deferens and penis. Free oviduct greatly enlarged, much longer than spermoviduct; vagina practically absent since spermathecal stalk enters just opposite to base of penis. Atrium long. Reservoir of spermatheca adherent to lower part of albumen gland.

DISTRIBUTION. Venezuela, Central America. About 5 spp.

Pseudosubulina Strebel et Pfeffer, 1882
Fig. 1104

Strebel & Pfeffer, 1882: 117. Baker, 1939: 11.

TYPE SPECIES — *Achatina berendti* L. Pfeiffer, 1862; OD.

Shell slender, turrited, thin, subtransparent, of 9-12 convex whorls. Color pale. Embryonic whorls smooth. Later whorls covered with delicate radial ribs. Aperture subcircular, slightly oblique, with thin, sharp margins. Columella usually more or less distinctly truncated at base. Height 4.5-18.0, diam. 1.1-4.0 mm (10.5 × 2.5 mm).

Jaw composed of narrow plates, represented by slight crescentic thickening of epithelium, distinct on its lower border, but passing insensibly into general integument at sides and above.

Talon minute, cylindrical. Prostate band-like, free for most its length, so spermoviduct extremely short. Vas deferens entering penis apically through base of penial retractor. Penis not long, internally with 1 very heavy and 2 smaller convoluted pilasters. Atrium swollen above. Free oviduct enormously long and rather thick. Spermathecal shaft long, slender; reservoir globose.

DISTRIBUTION. Central America, Cuba, ?Jamaica. 15-17 spp.

Miraradula Baker, 1939
Fig. 1105

Baker, 1939: 10.

TYPE SPECIES — *Volutaxis similaris* Strebel et Pfeffer, 1882; OD.

Shell turrited, slender, thin, translucent, of 8-8.5 convex, often weakly shouldered whorls. Color silvery-white, columella white. Embryonic whorls 2.5, first almost smooth, second gradually assuming low, very closely spaced threads and last with widening interspaces. Postnuclear whorls with thin radial riblets crested below suture, weakening basally and much narrower than interspaces, which are granulate-striated but without distinct spiral striae. Aperture elliptic-trapezoidal, subvertical, with simple margins. Columella subvertical, although spirally twisted. Height 5-8, diam. 1.6-2.0 mm.

Radula with over 100 short-cusped laterals or marginals on either side of tricuspid central tooth.

Talon exposed, small, ovate. Prostate short, compact. Vas deferens entering penis at sharp angle. Penis large, internally with a pyramidal apical chamber furnished with axial beaded folds; large basal chamber with a very heavy pilaster, which terminates in a large, apparently almost cartilaginous, partially free, subspherical enlargement, and 2

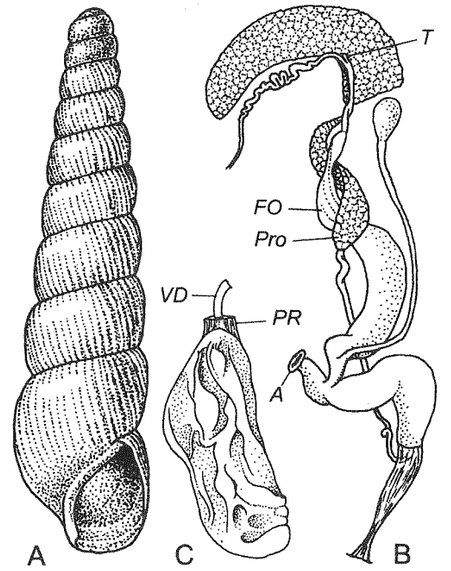


Fig. 1104. ***Pseudosubulina berendti*** (L. Pfeiffer, 1862).
A — shell: Old Canal above Necaxa, northern Puebla state, Mexico. **Phil**. No. 256793.
B — reproductive tract. C — interior of penis. After Baker, 1939.

minor longitudinal folds. Penial retractor attached to vas deferens/penis junction. Free oviduct enlarged, long. Vagina very short. Reservoir of spermatheca adherent to basal part of albumen gland.

DISTRIBUTION. Mexico. 1 or 2 spp.

Versutaxis Baker, 1939
Fig. 1106

Baker, 1939: 11, 13.

TYPE SPECIES — *Spiraxis* (*Versutaxis*) *opeas* Baker, 1939; OD.

Shell cylindrical-turrited, thin, translucent, of 7-8 moderately flattened whorls. Color whitish-corneous. Embryonic whorls in beginning almost smooth, later with incised radial lines that separate flattened threads. Postnuclear whorls with sharp but shallow radial lines which become weaker on base of body whorl. Aperture ovate to ovate-trapezoidal, almost vertical; margins thin, weakly arcuate. Columella narrow,

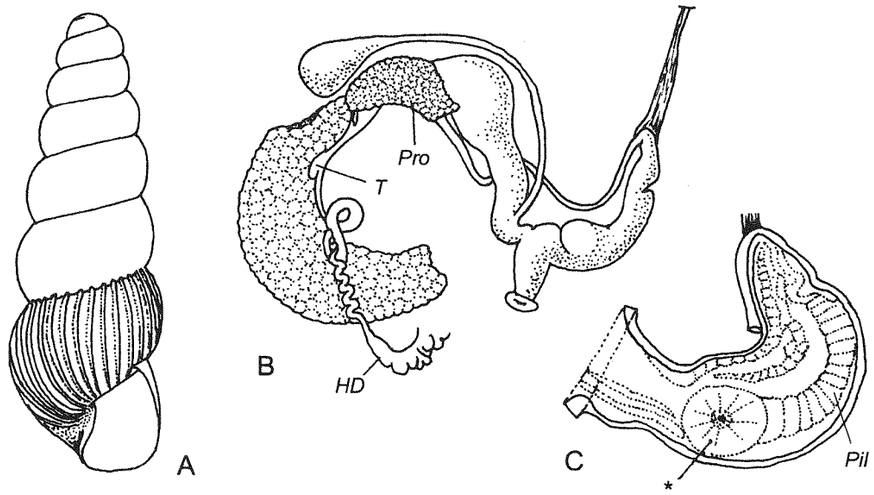


Fig. 1105. ***Miraradula similaris*** (Strebel et Pfeffer, 1882).
A — shell. B — reproductive tract. C — interior of penis. After Baker, 1939. ***Asterisk*** — enlargement of penial pilaster.

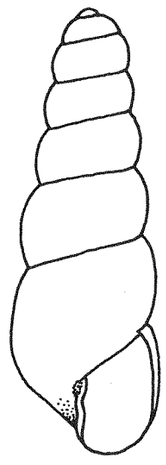


Fig. 1106. ***Versutaxis opeas*** (Baker, 1939). After Baker, 1939.

slightly twisted. Umbilicus absent. Height 4-5, diam. 1.6-1.8 mm.

Free oviduct less than twice as long as uterus. Vagina practically obsolete.

DISTRIBUTION. Mexico. 6 spp.

Tornaxis E. Martens, 1898
Fig. 1107

Martens E., 1898: 311.

TYPE SPECIES — *Tornaxis singularis* E. Martens, 1898; monotypy.

Shell cylindric-turrited, slender, thin, translucent, not shining, of 6-7 very convex whorls. Color silvery-white. Embryonic whorls smooth, rest finely radially ribbed; ribs widely spaced. Aperture ovate, subvertical, with simple, arcuate margins. Columellar margin very thick, strongly twisted, separated by a deep and narrow notch from basal margin. Umbilicus absent. Height 11.2, diam. 3.0 mm.

DISTRIBUTION. Guatemala. 1 sp.

MICROMENINAE
Schileyko, subfam. nov.

Vas deferens with epiphallic enlargement. Penis with verge.

DISTRIBUTION. Central America, Jamaica.

Micromena Baker, 1939
Fig. 1108

Baker, 1939: 11, 14 (*Spiraxis* subg.)

TYPE SPECIES — *Spiraxis* (*Micromena*) *minutus* Baker, 1939; OD.

Shell turrited, thin, translucent, of about 6.5-7.25 convex whorls. Apex obtuse. Color silvery-white. Embryonic whorls weakly punctate (almost smooth); last half whorl closely radially striated. Postapical whorls with spaced thread-like riblets, attenuated at both ends, and with prominent, continuous, spiral striae. Aperture slightly oblique, broadly ovate-trapezoidal. Margins slightly but distinctly arcuate; columella almost straight, tapering and scarcely truncated. No umbilicus. Height 2.2-3.1, diam. 0.8-1.1 mm.

Radula without laterals and with subequal needle-like cusps on 29-31 marginals.

Hermaphroditic gland weakly lobate. Prostate small, of a few acini. Vas deferens swollen to form fusiform epiphalloid sac. Penis contains very large, completed, acuminate verge. Penial retractor attached to vas deferens/penis junction. Free oviduct very long, vagina nearly missing. Globular reservoir of spermatheca reaching albumen gland.

DISTRIBUTION. Mexico, Jamaica. 3-4 spp.

OLEACINIDAE
H. Adams et A. Adams, 1855

Adams H., Adams A., 1855: 103.

— Glandininae Strebel, 1878 (1873-1882): 5 ("Unterfamilie Glandinidae").

Shell elongated, more or less translucent, variously sculptured, often with radial varices, usually polished. Aperture mostly high and narrow. Columella either entire, truncated or sinuous. Umbilicus absent.

Foot rather long, narrow, holopodous, without pedal grooves or caudal apparatus; sole undivided.

Jaw rudimentary or absent.

Kidney sigmurethral, triangular, or secondarily elongated and produced backward and laterally, but it does not extend forward of pericardium. Both ureters completed or secondary ureter open.

Hermaphroditic gland of several to many clusters of acini. Talon wanting. Penis often with an epiphallus and blind appendix. Female side mostly without additional organs.

Oviparous.

DISTRIBUTION. Tropical and subtropical regions of America; 1 genus in Mediterranean countries and W Caucasus.

VARICELLINAE Baker, 1941

Baker, 1941c: 52 (as tribe Varicellarum).

Shell always able to contain animal.

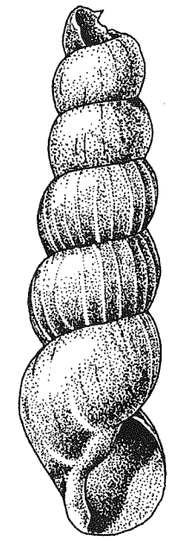


Fig. 1107. ***Tornaxis singularis*** E. Martens, 1898. Panzos, Guatemala. "Type". **Berlin** No. 51207.

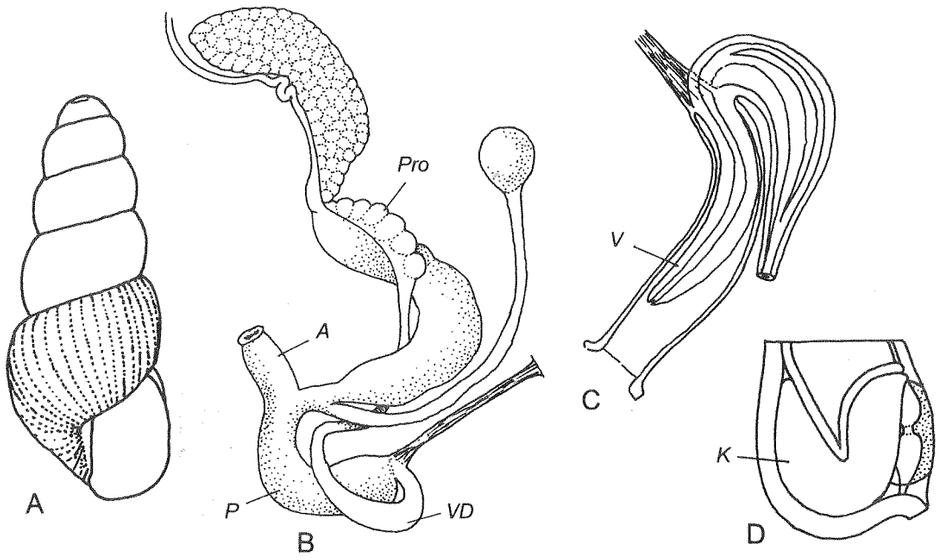


Fig. 1108. ***Micromena minuta*** (Baker, 1939).
A — shell. B — reproductive tract. C — interior of penis. D — kidney. After Baker, 1939.

Ureter runs along margin of triangular kidney, with moderately broad and oblique base. Minor lung veins indistinct.

Prostate as long as uterus. Epiphallus (frequently with flagellum) continuous with penis.

DISTRIBUTION. Antilles, Florida; ? Central America.

Varicella L. Pfeiffer, 1856

Pfeiffer L., 1856: 172.

TYPE SPECIES — *Voluta leucozonias* Gmelin, 1790; SD Martens in Albers, 1860.

Shell oblong or turrited, thin but often firm, of 5-6 weakly convex whorls. Color whitish to yellowish. Embryonic whorls (2-3.5 in number) smooth or radially ribbed. Later whorls with occasional varices or varix-lines, more or less conspicuously differentiated from the other sculpture, and often preceded by dark streaks. Aperture moderately narrow, less than half total length; margins narrowly expanded or simple, columella more or less strongly truncated at base.

Epiphallus terminating in a flagellum.

DISTRIBUTION. Antilles, S Florida.

Varicella (*Varicella* s. str.)
Fig. 1109

— *Melia* Albers, 1850: 195 [nom. praeocc., non Billberg, 1820 (Crustacea); *Achatina* subg.; t.-sp. not designated].

Shell composed of 6-8.5 whorls. Embryonic whorls (2.5-3 in number) obtusely conic or pupiform, smooth or rarely with fine radial striae on last half whorl. Later whorls radially striated between varices; striae wider than intervening grooves, or whorls with widely spaced grooves. Spiral sculpture totally absent. Columella straight or concave. Height 6.5-41.0, diam. 1.5-14.0 mm (40.6 × 14.0 mm).

Right ommatophoran retractor free from peni-oviducal angle.

Carrefour, a small globular swelling of hermaphroditic duct hidden in albumen gland. Flagellum thin, vermiform, of various length. Epiphallus externally demarcated from penis by a sphincter, internally with irregularly rhomboid folds. Penial retractor attached to

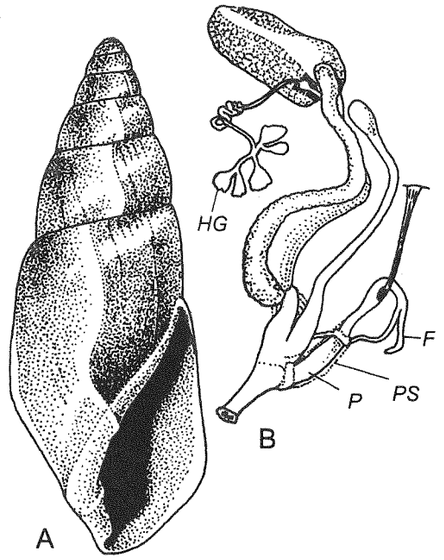


Fig. 1109. ***Varicella*** (***Varicella***) ***leucozonias striatella*** Pilsbry, 1907.
A — shell: Jamaica. Holotype. **Phil.** No. 9924. B — reproductive tract. After Baker, 1941b.

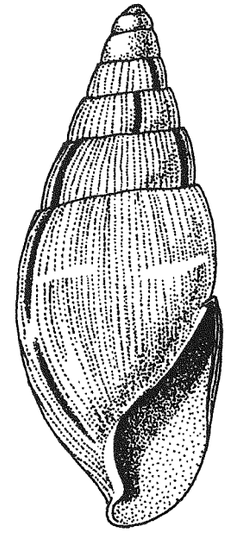


Fig. 1110. ***Varicella*** (***Varicellaria***) ***procera*** (C. Adams, 1849).
Jamaica. **SPb.**

epiphallus. Penis not long, internally with 5 beaded axial pilasters.

DISTRIBUTION. Jamaica, Cuba, Hispaniola, Puerto Rico. Over 40 spp. & forms.

Varicella (*Varicellaria* Pilsbry, 1907)
Fig. 1110

Pilsbry, 1907 (1907-1908): 79 (pro sect.).

TYPE SPECIES — *Achatina procera* C. Adams, 1849; OD.

Shell elongated ovate-conic, rather thin but solid, glossy, of 7-9.5 slightly convex, shortly shouldered whorls. Color whitish, yellowish or pinkish, with dark radial-oblique streakes. First 0.5 to 1.5 embryonic whorls smooth; subsequent whorls regularly radially ribbed or rib-striated; spaces as wide as striae. Besides, several inconspicuous varices (about 4 on each whorl) also present. Suture crenulated by ribs. Aperture rather narrow, with simple margins. Columella distinctly truncated at base. Height 15-31, diam. 5.0-11.5 mm (19.0 × 7.5 mm).

DISTRIBUTION. Jamaica. 7-8 spp. & forms.

Varicella (*Varicellopsis* Pilsbry, 1907)
Fig. 1111

Pilsbry, 1907 (1907-1908): 85 (pro sect.).

TYPE SPECIES — *Achatina peruviana* Lamarck, 1822; OD.

Shell elongated-ovate, obese, rather thin, of 7 convex, distinctly shouldered whorls. Suture very deep, grooved, crenulate. Color whitish, with complex brown pattern of radial streaks and generally radially oriented lines, anostomozing in places. Embryonic shell of 3.3 whorls, with initial 0.75 whorl smooth; subsequent whorls with sharp radial riblets and spiral sulci (mainly in intervals). Aperture high, columella markedly truncated. Height 25-28, diam. 10-11 mm (25.5 L 10.2 mm).

DISTRIBUTION. Hispaniola. 2 spp.

Varicella (*Varicellina* Pilsbry, 1907)
Fig. 1112

Pilsbry, 1907 (1907-1908): 88 (pro sect.).

TYPE SPECIES — *Glandina curvilabris* L. Pfeiffer, 1845; OD.

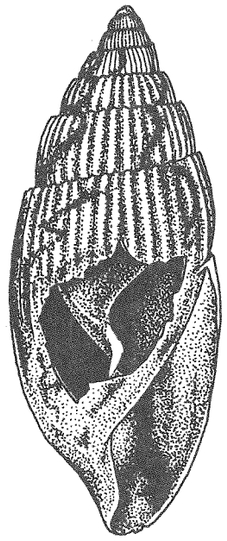


Fig. 1111. ***Varicella*** **(*Varicellopsis*)** ***peruviana*** (Lamarck, 1822).
"Peru" [? — A. Sch.]. **Phil.** No. 23950.

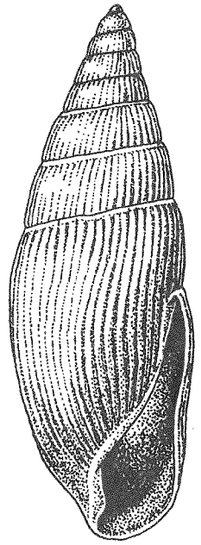


Fig. 1112. ***Varicella*** **(*Varicellina*)** ***curvilabris*** (L. Pfeiffer, 1845).
Jamaica. **Phil.** No. 10002.

Shell fusiform, thin, of 6.5-8 flattened whorls. Color uniformly yellowish, without colored varix-streaks. Embryonic shell of 2.5 whorls, first 1.5 smooth, next whorl with widely spaced grooves. Postnuclear whorls with regular, moderately to widely spaced, strongly sinuous grooves. Aperture narrow, margins a little thickened. Columellar margin short, strongly twisted and abruptly truncated. Palatal margin slightly arcuate. Height 12-17, diam. 3.7-5.9 mm (17.0 × 5.5 mm).

DISTRIBUTION. Jamaica. 2 spp., one of them of 2 subspp.

Varicella (*Varicellidea* Pilsbry, 1907)
Fig. 1113

Pilsbry, 1907 (1907-1908): 49 (pro sect.).

TYPE SPECIES — *Glandina texta* Weinland et E. Martens, 1860; OD.

Shell turrited, rather solid, shining, of 7.5-9 moderately convex whorls. Apex acute. Color pale-yellowish or yellowish-corneous, with narrow brown to reddish-violet straight or zigzag streaks. Embryonic shell of 3.5 whorl, closely striated except first 3/4 whorls. Surface of postembryonic whorls with rough, coarsely reticulate sculpture of nearly straight radial wrinkles and spiral grooves. Suture crenulated by ribs. Aperture narrowly ovate, vertical; columella smooth to abruptly truncated at base. Height 24-63, diam. 9-20 mm (24.4 × 9.8 mm).

DISTRIBUTION. Hispaniola (Dominican Republic). 2 spp.

Biangulaxis Pilsbry, 1907
Fig. 1114

Pilsbry, 1907 (1907-1908): 46 (*Spiraxis* subg.).

TYPE SPECIES — *Spiraxis moreletianus* L. Pfeiffer, 1866; OD.

Shell slenderly oblong, glossy, moderately solid, of 8 slightly convex whorls. Color pale, corneous-white. Upper whorls plicate at suture. Sculpture of fine, regular rib-striation. Aperture narrowly semioval; columella somewhat truncated at base, with

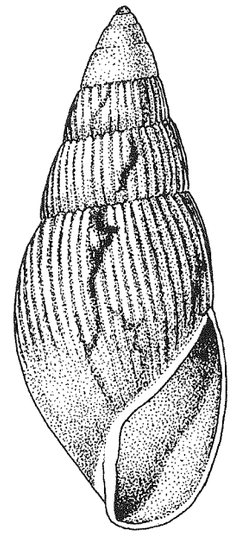


Fig. 1113. ! ***Varicella*** **(*Varicellidea*)** ***clathrata*** Pilsbry, 1933.
"Hermann's coffee finca, behind Paradis, S. Domingo". Holotype. **Phil.** No. 160999a.

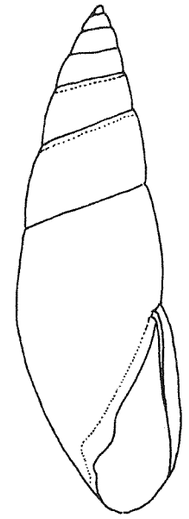


Fig. 1114. ***Biangulaxis moreletianus*** (L. Pfeiffer, 1866).
After Zilch, 1960.

an oblique lamella above. Height 18, diam. (estimated) 3.4 mm.

DISTRIBUTION. Cuba. 1 sp.

REMARK. Pilsbry (1907), following L. Pfeiffer (1866 [1860-1866]), included this taxon in Spiraxidae despite shell of *Biangulaxis* is quite oleacinoid in all aspects except for structure of columella; anatomy of single representative of the taxon is unknown.

Euvaricella Baker, 1935
Fig. 1115

Baker, 1935: 22 (*Varicella* sect.).

TYPE SPECIES — *Varicella similaris* Pilsbry, 1907; OD.

Shell slender, thin, much translucent to semitransparent, shining, of 8-9 whorls; upper ones a little convex, lower flattened. Color yellowish; reddish radial diffused streaks may be present. Embryonic whorls glabrous, later with widely spaced, irregular, shallow radial grooves. Aperture small, semiovate, vertical, with simple margins, its basal part curved backward. Columella distinctly truncated. Umbilicus absent. Height 16-18, diam. 3.5-4.3 mm (17.5 × 4.0 mm).

Vas deferens thin, entering epiphallus at very sharp angle. Flagellum long, vermiform. Penis long, convoluted in proximal part, coated by very thin, transparent sheath, internally with 4 axial folds corrugated at upper part. Free oviduct and vagina very short. Spermathecal reservoir small, reaching base of albumen gland.

DISTRIBUTION. Jamaica. 3 spp. & subspp.

Costavarix Baker, 1935
Fig. 1116

Baker, 1935: 22 (*Varicella* sect.).

TYPE SPECIES — *Varicella mandevillensis* Pilsbry, 1907; OD.

Shell slender, (sub)cylindrical, somewhat translucent, of 9-11 flattened, a little shouldered whorls. Color yellowish. Embryonic whorls form pointed apex covered with regular, even, thin riblets; later whorls with sculpture of major, more or less widely

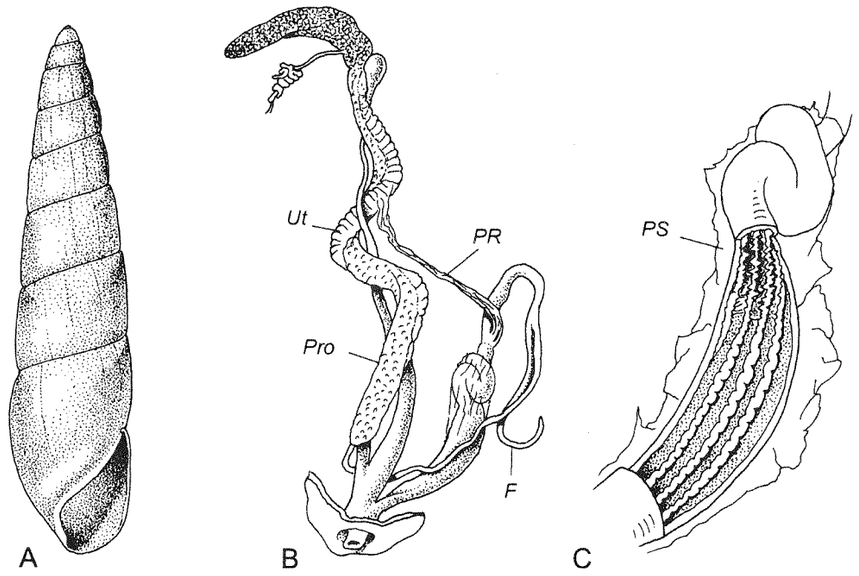


Fig. 1115. ***Euvaricella similaris*** (Pilsbry, 1907).
A — shell: Jamaica. Holotype. **Phil**. No. 59108a. B, C — 2-2.3 miles from Mandeville on road to Mile Gully [Jamaica], June-September, 1933. B — reproductive tract. C — interior of penis. **Phil**. No. A-1864E.

Fig. 1116. ***Varicella*** (***Costavarix***) ***mandevillensis*** Pilsbry, 1907.
Near Mandeville, Jamaica. **Phil**. No. 101411.

spaced, lamellar ribs and filiform, crowded minor riblets between major ribs. Aperture subvertical, with thin margins. Columellar margin more or less distinctly truncated. Palatal margin vertical, straight or a little concave. Height 8.8-20.0, diam. 1.5-4.0 mm (9.4 × 1.9 mm).

DISTRIBUTION. Jamaica. 8 spp.

Melaniella L. Pfeiffer, 1857

Pfeiffer L., 1857: 173 (*Bulimus* sect.).

— *Pichardiella* Fischer, 1887b: 200 [nom. nov. pro *Melaniella* L. Pfeiffer, non *Melanella* Bowdich, 1822 (Mollusca); t.-sp. *Bulimus* (*Melaniella*) *pichardi* Arango, 1862; SD Pilsbry, 1907 (1907-1908)].

TYPE SPECIES — *Bulimus acuticostata* d'Orbigny, 1845; SD Kobelt, 1880.

Shell slender, thin, of 7-10 convex whorls. Color yellowish to yellowish-brown. Embryonic whorls with quite distinct radial striae; later whorls bear widely spaced sigmoid ribs (varices), in intervals with beautiful network that consists of spaced radial

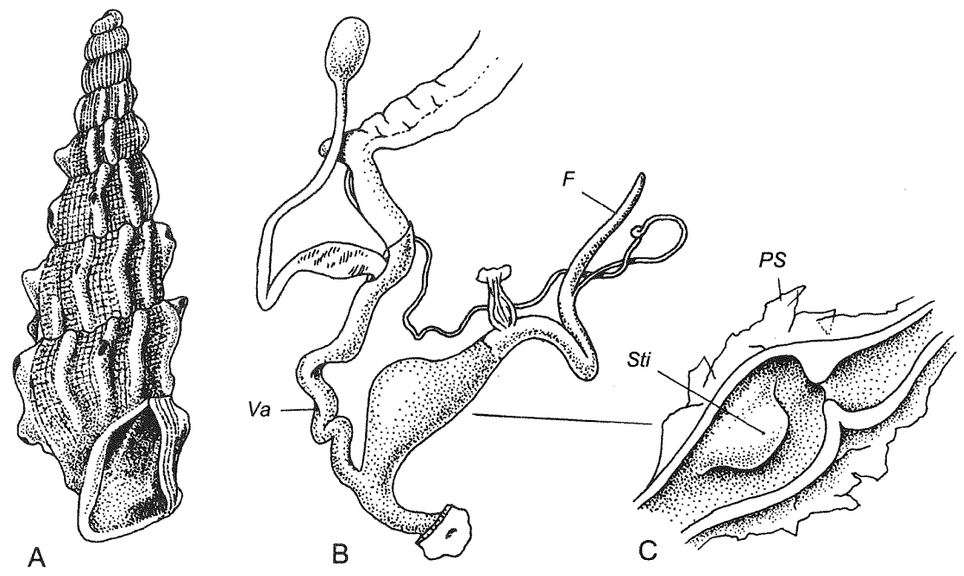


Fig. 1117. A — ***Melaniella*** (***Melaniella***) ***acuticostata*** var. ***horrida*** Pilsbry, 1907. Shell: Poras, Cuba. Holotype. **Phil**. No. 24740.
B — ***Melaniella*** (***Melaniella***) ***acuticostata*** (d'Orbigny, 1845). Reproductive tract and interior of penis. Mogote Zonte, San Andreas, Pinar del Rio, Cuba. **Phil**. No. A 1902-F.

lamellar riblets and distinctly spaced spiral threads. Aperture pear-shaped or about quadrangular. Columellar margin arcuate or straight, ranging from distinctly truncated to nearly entire at base. Umbilicus absent.

DISTRIBUTION. Antilles, S Florida.

Melaniella (*Melaniella* s. str.) Fig. 1117

Shell slender, turrited, thin, not shining, of 8-10 whorls. Apex pupiform or subcylindrical. Embryonic whorls radially striated. Subsequent whorls with low sigmoid varices and higher radial hollow ribs, which are narrower than their distinctly spirally striated intervals; in intervals there is also fine radial striation. Aperture narrow, irregularly quadrangular, with thin margins. Columella arcuate or straight, ranging from distinctly truncated to nearly entire at base. Height 5-20, diam. 1.5-5.5 mm (12.5 × 4.0 mm).

Flagellum well developed, somewhat tapering. Epiphallus not long, internally demarcated from penis by a sphincter. Penis swollen, internally with a large tuberculiform stimulator. Penis, along with vagina and base of free oviduct, coated by thin, transparent sheath. Penial retractor attached to lower part of epiphallus. Vagina long, a little convoluted, much longer than free oviduct. Basal portion of spermathecal stalk markedly swollen.

DISTRIBUTION. Greater Antilles, S Florida. About 30 spp. & forms.

Melaniella (*Glandinella* L. Pfeiffer, 1879) Fig. 1118

Pfeiffer L., 1879 (1878-1881): 328 (*Stenogyra* sect.).

TYPE SPECIES — *Bulimus poeyanus* L. Pfeiffer, 1854; OD.

Shell subulate-turrited, very thin, translucent, of about 8 slightly convex whorls. Color dull-yellow. First 1.5 embryonic whorls smooth, next whorl delicately closely striated; subsequent whorls with well spaced fine riblets and dark varix-streaks. Aperture oblong-ovate, with simple margins

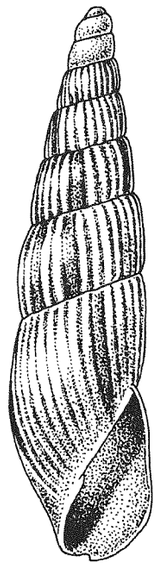


Fig. 1118. ***Melaniella*** **(*Glandinella*)** ***poeyana*** (L. Pfeiffer, 1854).
"Is. of Pines, Cuba". **Phil**. No. 3658.

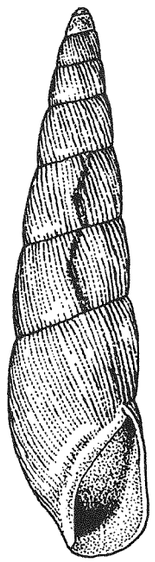


Fig. 1119. ***Melaniella*** **(*Varicellula*)** ***blandiana*** (C. Adams, 1850).
Jamaica. **Phil**. No. 2928.

and thin parietal callus. Columella oblique, ascending in a long weak spiral. Palatal margin arched forward. Height 11-12, diam. 2.8-3.0 mm (11.4 × 2.8 mm).

DISTRIBUTION. Cuba (Isle of Pines). 1 sp.

Melaniella (***Varicellula*** Pilsbry, 1907)
Fig. 1119

Pilsbry, 1907 (1907-1908): 73 [*Varicella* (*Pichardiella*); sect.].

TYPE SPECIES — *Achatina blandiana* C. Adams, 1850; OD.

Shell slender, thin, of 7-8.5 slightly convex whorls. Color yellowish, uniform or with narrow brownish streaks. First 0.5-1.5 of 2.5 embryonic whorls practically smooth; sculpture of later whorls of fine close ribstriae. Aperture narrowly ovate, with a little thickened, not reflexed margins. Columella straightened, with a weak, oblique basal truncation. Palatal margin simply arcuate. Height 8.5-22.0, diam. 1.9-6.0 mm (12.3 × 3.0 mm).

DISTRIBUTION. Jamaica. 7-8 spp. & forms.

Laevaricella Pilsbry, 1907
Fig. 1120

Pilsbry, 1907 (1907-1908): 123 (*Varicella* sect.).

TYPE SPECIES — *Achatina semitarum* L. Pfeiffer, 1842; OD.

Shell elongated-turrited, glossy, thin, of 7-8.5 flattened to flat whorls. Color greenish, yellowish or brown. Embryonic shell mostly pupiform, of 3-3.5 whorls; postnuclear whorls without distinct grooves or striae between varices, polished or with faint radial wrinklets only. Aperture ovate, with simple margins; columella strongly concave, more or less truncated. Palatal margin vertical, a little concave. Height 14.0-33.2, diam. 4-12 mm (27.3 × 7.0 mm).

Vas deferens slender throughout. Flagellum very short, thin, conic. Epiphallus markedly wider than vas deferens. Penis subglobular, with conic, tapering terminal caecum which has no internal cavity and filled with loose tissue. Internally penis with fleshy large pilaster on which epiphallic pore situated; from pore a shallow groove runs along pilaster down to atrium. At base of penial caecum there is a narrow circular

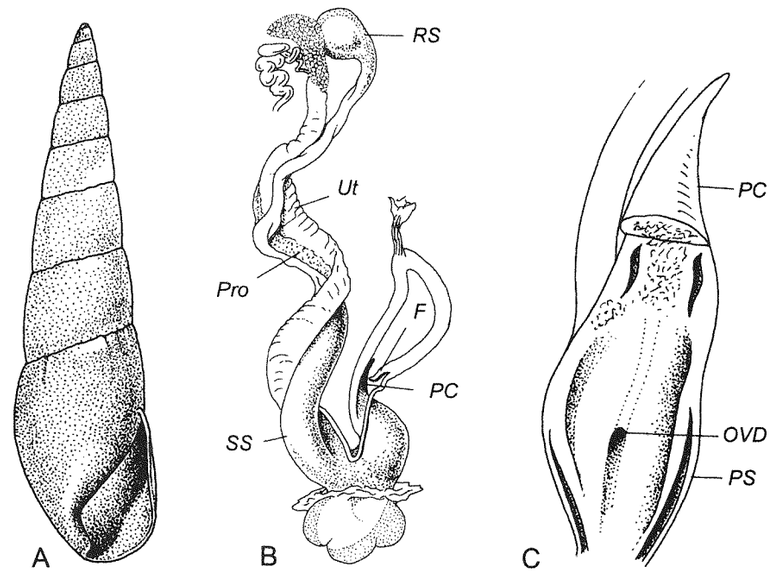


Fig. 1120. ***Laevaricella semitarum*** (L. Pfeiffer, 1842).
A — shell: Martinique. **Phil**. No. 23991. B — reproductive tract (atrium somewhat everted). C — interior of penis. Piton Dumanzé, Martinique, April 4, 1984. **Paris**.

cavity within walls of organ; thus, a penis sheath arises. Penial retractor attached to middle of epiphallus. Atrium large, vagina practically absent. Base of spermathecal stalk stout, expanded, reservoir attending albumen gland.

DISTRIBUTION. Martinique, Hispaniola, Guadeloupe, Puerto Rico. 5 spp.

Vagavarix Baker, 1941
Fig. 1121

Baker, 1941b: 25 (*Varicella* subg.).

TYPE SPECIES — *Achatina portoricensis* L. Pfeiffer, 1848; OD.

Shell oblong-turrited, glossy, polished, of 7-8 weakly convex whorls. Color yellow or greenish, with darker streaks. Embryonic shell (2.75 whorls) smooth, postembryonic whorls with radial sculpture of irregular wrinkles. Aperture shortly ovate, slightly oblique, with simple margins. Columella concave, abruptly truncated. Height 9-22, diam. 3-7 mm (21.9 × 6.1 mm).

Vas deferens entering epiphallus at right angle. Flagellum rather long. Epiphallus long, subcylindrical. Penis small, coated by thin, transparent sheath, internally with fleshy verge; epiphallic pore wide, located at about half length of verge. Penial retractor arising on columellar muscle, attaching to epiphallus below its middle. Free oviduct long, thin-walled. Vagina very short. Spermathecal stalk long, reservoir elongated, sleeve-like, indistinctly defined, reaching albumen gland.

DISTRIBUTION. Puerto Rico, Hispaniola. 4-5 spp.

Sigmataxis Pilsbry, 1907
Fig. 1122

Pilsbry, 1907 (1907-1908): 31 (*Spiraxis* subg.).

TYPE SPECIES — *Bulimus laeviusculus* C. Adams, 1845; OD.

Shell oblong-turrited, thin, glossy, translucent, of 5-10 slightly convex whorls. Color pale, often with distant dark varix-stripes. Embryonic whorls smooth, subsequent with radial grooves. Aperture long-ovate or pyriform, margins simple, palatal margin arched forward. Columella concave below, ascend-

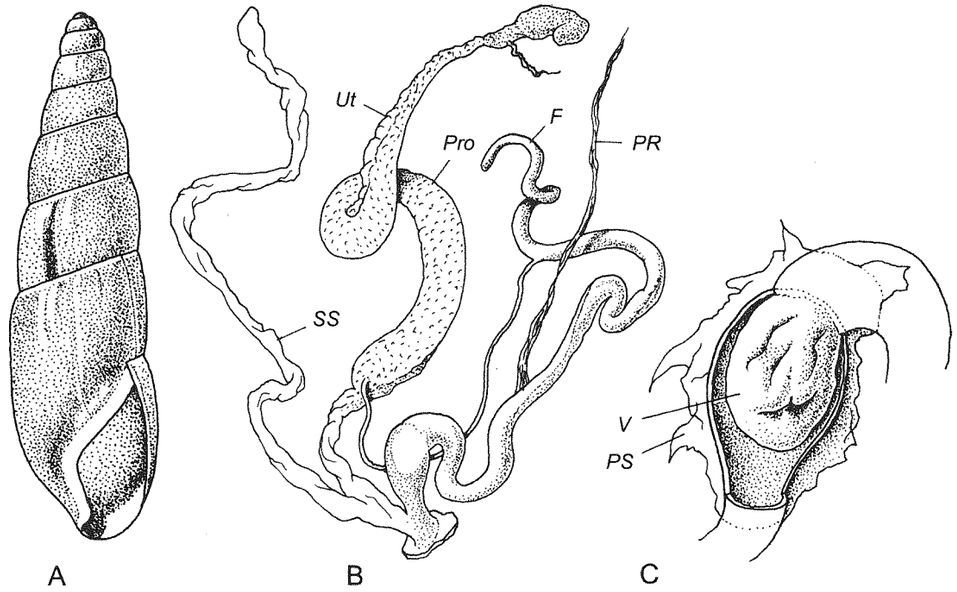


Fig. 1121. ***Vagavarix portoricensis*** (L. Pfeiffer, 1848).
A — shell: Puerto Rico. **Phil**. No. 23988. B — reproductive tract. C — interior of penis. S of Cataño, Puerto Rico, August-September, 1939. **Phil**. No. A-1914C.

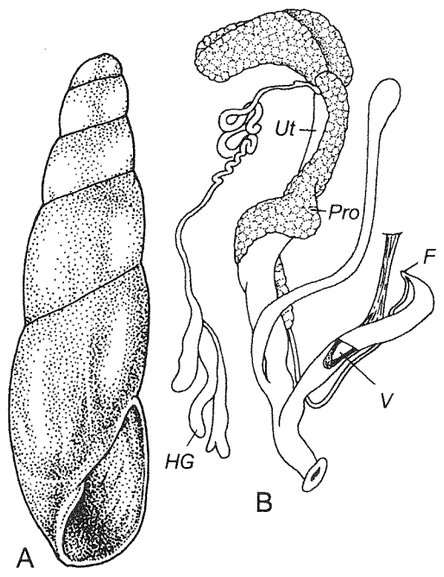


Fig. 1122. ***Sigmataxis laeviusculus*** (C. Adams, 1845).
A — shell: Jamaica. **Phil**. No. 3645. B — reproductive tract. After Baker, 1941b.

ing in a moderate or gentle spiral. Height 3.8-23.0, diam. 1.2-6.6 mm (5.8 × 1.5 mm).

Flagellum much reduced. Epiphallus + penis moderately long, penis internally with 2 beaded longitudinal pilasters and small verge. Epiphallic pore at 2/3 length of verge. Penial retractor inserted on lower part of epiphallus. Free oviduct and vagina short, of about equal length. Atrium long. Spermathecal reservoir poorly defined, reaching albumen gland.

DISTRIBUTION. Jamaica, Hispaniola. 12-15 spp.

?*Mayaxis* Thompson, 1995
Fig. 1123

Thompson, 1995: 79.

TYPE SPECIES — *Mayaxis leei* Thompson, 1995; OD.

Shell turrited, slender, opaque, of 10-12 moderately convex whorls. Color corneous. Protoconch consists of 2 whorls, 1st smooth, 2nd bears heavy radial ribs. Postnuclear whorls with wide, nearly flat ribs that crenulate suture. Ribs as wide as or wider than their interspaces. Aperture

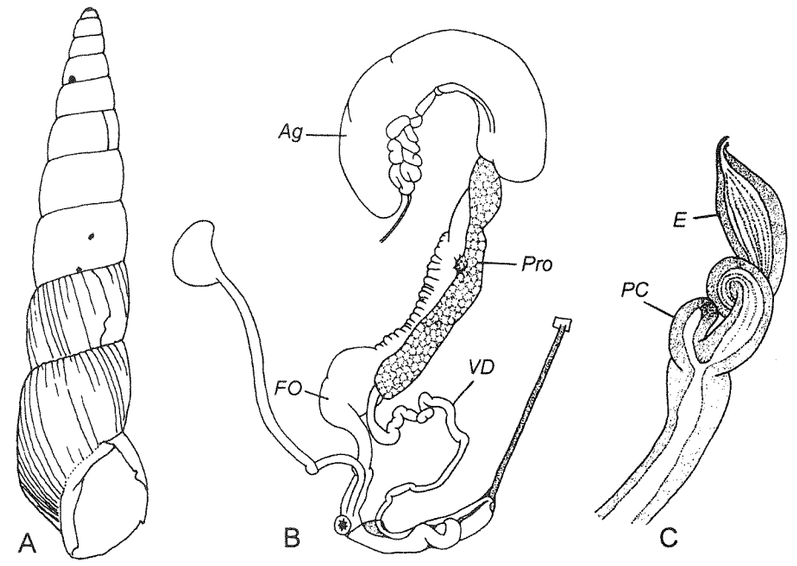


Fig. 1123. ***Mayaxis leei*** Thompson, 1995.
A — shell. B — reproductive tract. C — interior of penis. After Thompson, 1995.

rather small, widely semilunate, somewhat oblique, with thin, simple margins. Columella truncated. Height 20-25, diam. 5.0-5.5 mm (holotype of *M. leei*: 24.2 × 5.5 mm).

Talon and carrefour embedded within albumen gland. Vas deferens sinuous, long. Epiphallus twisted, large, stout, with voluminous chamber at its apical end and bears internally about 6 low longitudinal folds. Penis with a short caecum at boundary with epiphallus, inner surface of penis smooth. Penis, caecum, epiphallus and descending part of vas deferens enclosed within a thin sheath. Penial retractor diaphragmal, attached to vas deferens/epiphallus junction. Atrium very short. Free oviduct long, vagina practically absent since base of spermathecal stalk situated just above atrium.

DISTRIBUTION. Honduras, Guatemala, SE Mexico. 6 spp.

REMARK. This unique genus possesses slender, turrited shell as in *Pseudosubulina* (Spiraxidae) but anatomical characters make me to think that it could belong to Oleacinidae (Varicellinae): hermaphroditic gland consists of many clusters of acini; prostate not separated from uterus. Besides, species of *Mayaxis* live in mainland while the rest species of Varicellinae are Antillean. In all probability, *Mayaxis* deserves separation as independent subfamily; I refrain from this step because I have not seen the representatives of the genus.

OLEACININAE
H. Adams et A. Adams, 1855

— Streptostylarum Baker, 1941c: 53 (pro tribe).

Shell mostly able to contain animal, but sometimes reduced. Columella truncated, with involute edge.

Ureter runs along margin of triangular kidney, with broad, more oblique base than in Varicellinae. Minor lung veins prominent (excluding smallest representatives).

Prostate absent near uterine apex. Epiphallus, a swelling of vas deferens distant from penis.

DISTRIBUTION. Central America to Hispaniola.

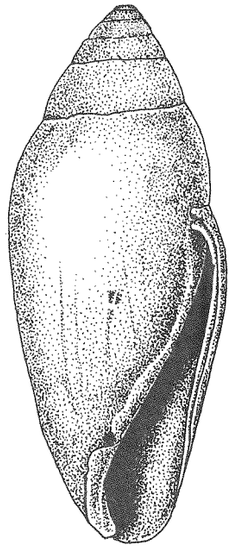


Fig. 1124. ***Oleacina voluta*** (Gmelin, 1790).
Miragoane, Haiti [= Hispaniola Island]. **Senck**. No. 157897.

Oleacina Bolten in Röding, 1798
Fig. 1124

Röding, 1798: 110.

— *Polyphemus* Montfort, 1810: 415 [nom. praeocc., non Müller, 1785 (*Cladocera*); t.-sp. *Bulimus glans* Bruguière, 1792; OD].

— *Glandina* Schumacher, 1817: 61, 202 [t.-sp. *Glandina olivacea* Schumacher, 1817 (= *Bulla voluta* Gmelin, 1790); monotypy].

— *Boltenia* L. Pfeiffer, 1881 (1878-1881): 7 [nom. praeocc., non Savigny, 1821 (Ascidia); *Oleacina* sect. (as "*Oleacina* Bolten typus")].

TYPE SPECIES — *Oleacina volutata* Röding, 1798 (= *Bulla voluta* Gmelin, 1790); monotypy.

Shell bullet-shaped, thin to solid, opaque to translucent, shining, of 7-8 slightly convex whorls. Summit obtuse. Last whorl in middle somewhat flattened. Color yellowish or olivaceous. Embryonic whorls smooth, polished, subsequent either smooth, with just very vague irregular radial wrinkles, or delicately radially striated. Aperture narrow, elongated, vertical, with thin, simple margins. Columella concave, abruptly truncated. Palatal margin arched forward in middle. Height 49.5-66.0, diam. 20-27 mm (64.7 × 26.0 mm).

DISTRIBUTION. Hispaniola. 1 sp.

Flavoleacina Pilsbry, 1908
Fig. 1125

Pilsbry, 1908 (1907-1908): xix (*Oleacina* sect.).

TYPE SPECIES — *Oleacina mulleri* Maltzan, 1888; OD.

Shell similar to that of *Laevoleacina* (see p. 855). Whorls 6-7. Height 9-27, diam. 4-11 mm (20.0 × 8.0 mm).

Penis swollen at upper end, supplied with a very long flagelliform caecum. Spermathecal duct very long, reservoir ovate.

DISTRIBUTION. Hispaniola. sp.

Laevoleacina Pilsbry, 1907
Fig. 1126

Pilsbry, 1907 (1907-1908): 131 (*Oleacina* sect.).

TYPE SPECIES — *Achatina straminea* Deshayes in Férussac, 1851; OD.

Shell elongated-ovate, relatively solid but somewhat translucent, shining, of 5.5-8 slightly convex whorls. Color dark- to greenish-yellow. Embryonic whorls smooth, subsequent whorls with delicate, widely spaced radial grooves. Aperture narrow, with simple margins. Columella abruptly truncated at base. Palatal margin vertical, slightly concave in middle. Height 8.9-40, diam. 2.5-13.3 mm (35.0 × 12.0 mm).

Talon hidden. Vas deferens with 1 or 2 fusiform swellings. Flagellum long, vermiform. Epiphallus somewhat longer than penis. Boundary between penis and epiphallus marked by a short, sac-like caecum. On inner surface of epiphallus a long pilaster situated, which forms a loop (probably stimulator) inside caecum. Penis internally with irregular, locally branched folds. Free oviduct longer than vagina. Spermathecal stalk thin, cylindrical; reservoir (nearly) reaching albumen gland.

Talon hidden. Vas deferens long, with fusiform swelling in middle. Flagellum clavate, internally with a few longitudinal folds part of which run from penis. Penis with caecum containing 2 longitudinal folds which run to penis lumen. Free oviduct extremely short, vagina comparatively long, thin-walled. Spermathecal stalk thin, reser-

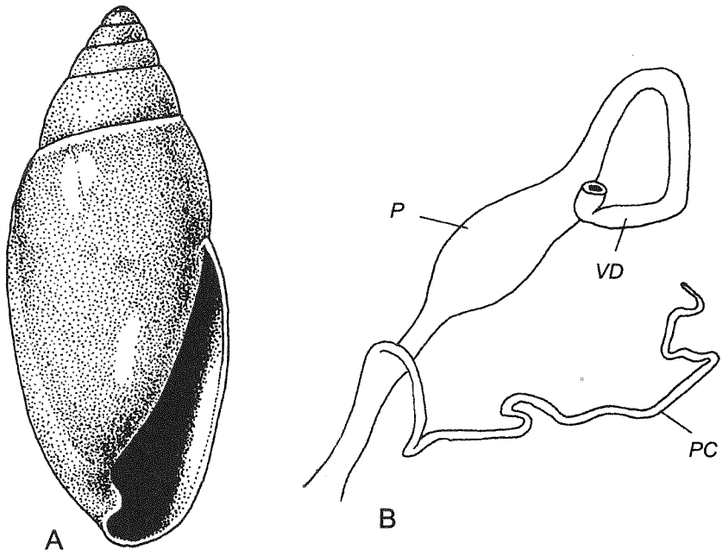


Fig. 1125. ***Flavoleacina mulleri*** (Maltzan, 1888).
A — shell: Haiti [= Hispaniola]. **Phil**. No. 24016. B — penis. After Pilsbry, 1908 (1907-1908).

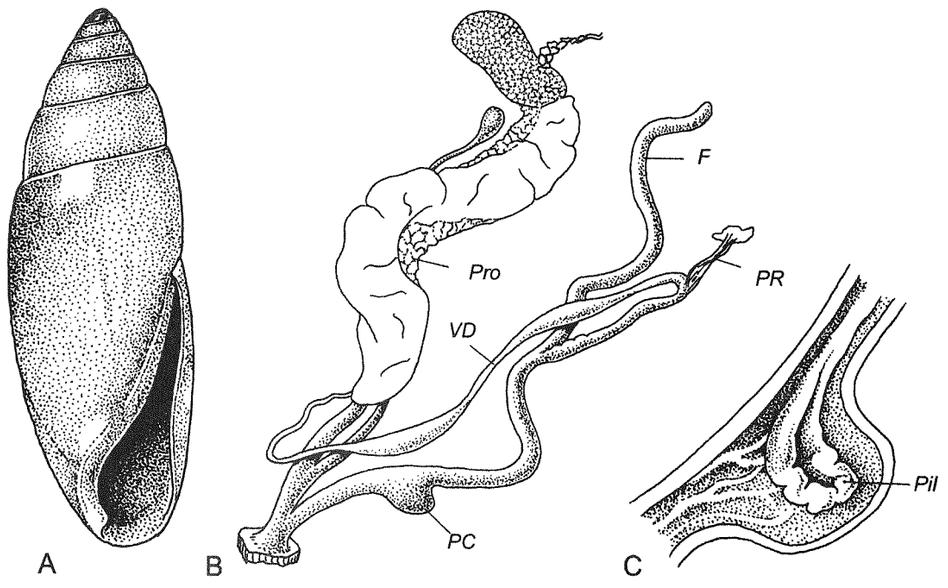


Fig. 1126. A — ***Laevoleacina straminea*** (Deshayes in Férussac, 1851). Matanzas Valley, Cuba. **Phil**. No. 94676.
B, C — ! ***Laevoleacina oleacea*** (Deshayes in Férussac, 1851). Hills Punta Alegre, Camaguey Prov., Cuba. B — reproductive tract. C — interior of penis. **Phil**. No. A-17104.

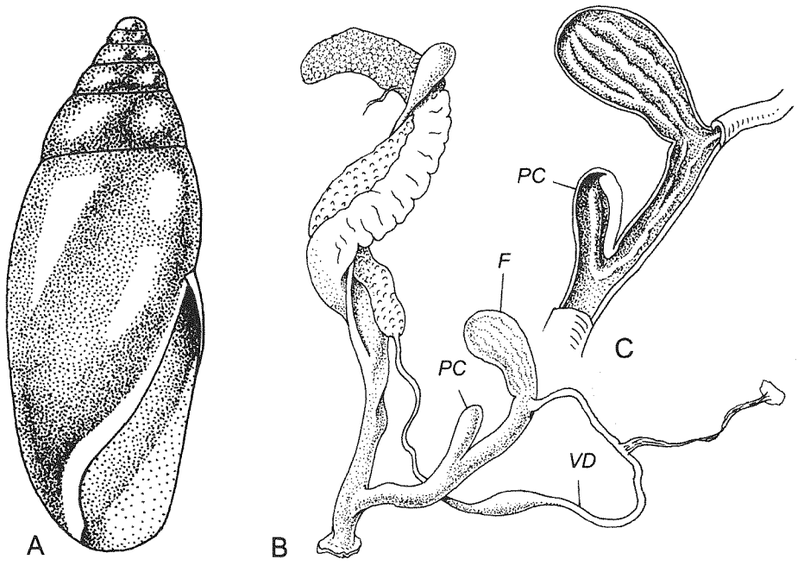


Fig. 1127. ***Cuboleacina solidula*** (L. Pfeiffer, 1840).
A — shell: San Jose near Habana, Cuba. **Moscow** No. Lc-24938. B, C — Pinar del Rio, Cuba. B — reproductive tract. C — interior of penis. **SPb**.

voir adhering to basal part of albumen gland.

DISTRIBUTION. Hispaniola, Cuba, Isle of Pines, Bahamas, New Providence. 12 spp. & subspp.

Cuboleacina Schileyko, gen. nov.
Fig. 1127

TYPE SPECIES — *Polyphemus solidulus* L. Pfeiffer, 1840.

Shell cylindrical-ovate, moderately thin, more or less glossy, of about 6 whorls: upper ones flattened, penultimate somewhat convex, last whorl with nearly flat sides. Color yellow to ochraceous. Embryonic whorls smooth, later whorls nearly so, without regular sculpture, only with incidental, curved radial wrinkles. Aperture high, narrow; columellar margin concave, distinctly truncated. Palatal margin straight, vertical. Height 12-14, diam. 4.5-5.3 mm (13.6 × 5.1 mm).

Kidney short, primary ureter completed, secondary ureter as a ciliary groove.

Talon hidden. Vas deferens long, with fusiform swelling in middle. Flagellum clavate, internally with a few longitudinal folds some of which run to penis. Penis with caecum containing 2 longitudinal plicae which run to penis lumen. Free oviduct extremely short, vagina comparatively long, thin-walled. Spermathecal stalk thin, reservoir adhering to basal part of albumen gland.

DISTRIBUTION. Cuba. 1 sp. Perhaps, some other conchologically similar Cuban species belong to this genus, but an anatomical study is required to refer them to *Cuboleacina*.

REMARK. This genus is related to *Laevoleacina*, conchologically differing mainly by oblique lower suture, anatomically — by short, ovate-elongated rather than long caecum, and clavate flagellum of conspicuous inner structure.

Plicoleacina Pilsbry et Vanatta, 1928
Fig. 1128

Pilsbry & Vanatta, 1928: 476 (*Oleacina* subg.).

TYPE SPECIES — *Oleacina* (*Plicoleacina*) *bondi* Pilsbry et Vanatta, 1928; OD.

Shell elongated, slender, cylindrical-fusiform, rather thin, shining, of 7.5 flattened whorls. Last whorl flattened in middle part. Color straw-yellow. Both embryonic and postembryonic whorls polished, without regular sculpture. Aperture very high and narrow, with simple margins. Columella short, distinctly truncated; at lower portion of parietal wall there is a rather strong not deeply entering lamella. Height 15.3, diam. 4.3 mm.

DISTRIBUTION. Hispaniola. 1 sp.

Rectoleacina Pilsbry, 1907
Fig. 1129

Pilsbry, 1907 (1907-1908): 142.

TYPE SPECIES — *Achatina cubensis* d'Orbigny, 1845; OD.

Shell oblong-fusiform, rather solid, shining, of about 6.75-9 whorls. Color yellowish. Embryonic whorls smooth, later with widely spaced, poorly defined varix-grooves, elsewhere smoothish or radially grooved. Aperture moderately narrow, with somewhat thickened margins. Columella vertical, a little convex in middle, spirally twisted; its truncation weakened and converted into a curve. Palatal margin arching forward in middle part. Height 11.0-30.5, diam. 4.7-10.7 mm (27.0 × 10.0 mm).

Talon not exposed. Vas deferens somewhat swollen in middle part, entering penis apically through a simple pore in a narrow slit which located between two longitudinal pilasters. This pilasters run in a (rather) large, conic or subglobular caecum. Penial retractor surrounds base of vas deferens. Free ovuduct enlarged, of moderate length. Vagina as such practically not present, as spermathecal stalk enters nearly atrium.

DISTRIBUTION. W Cuba. 3 or 4 spp.

Salasiella Strebel, 1878

Strebel, 1878 (1873-1882): 6, 29.

— *Selaniella* Ancey, 1886: 245 (nom. err. pro *Salasiella* Strebel, 1878).

Baker, 1940b: 81.

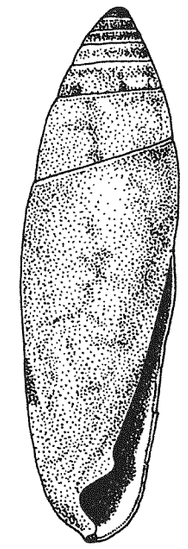


Fig. 1128. ***Plicoleacina bondi*** (Pilsbry et Vanatta, 1928).
"Southern Haiti" [Hispaniola]. **Phil**. No. 146699.

TYPE SPECIES — *Salasiella joaquinae* Strebel, 1878; OD.

Shell elongated-ovate, thin, glossy, of 5 slightly convex whorls. Color pale-corneous or light-brown. Regular sculpture wanting. Aperture with distinctly truncated columella.

Atrium orifice situated shortly behind and above inferior tentacle.

Hermaphroditic gland of few clavate acini. Talon not evident; carrefour globular, shallowly embedded or exposed. Uterus attenuate apically. Prostate ellipsoid, attached to uterus but with free apical end not reaching uterine apex. Epiphallus consists of an apical thin-walled sac, which internally papillate, and a long thick-walled basal region, which internally longitudinally plicate; incorporated terminally by penial retractor and opening into penis through a verge. Penial retractor arising from diaphragm and inserting mainly on penial apex around epiphallus. Penis with a lateral caecum, which contains a pilaster and solid at tip. Atrium short. Spermathecal shaft long, slender; reservoir small, globular.

DISTRIBUTION. Mexico.

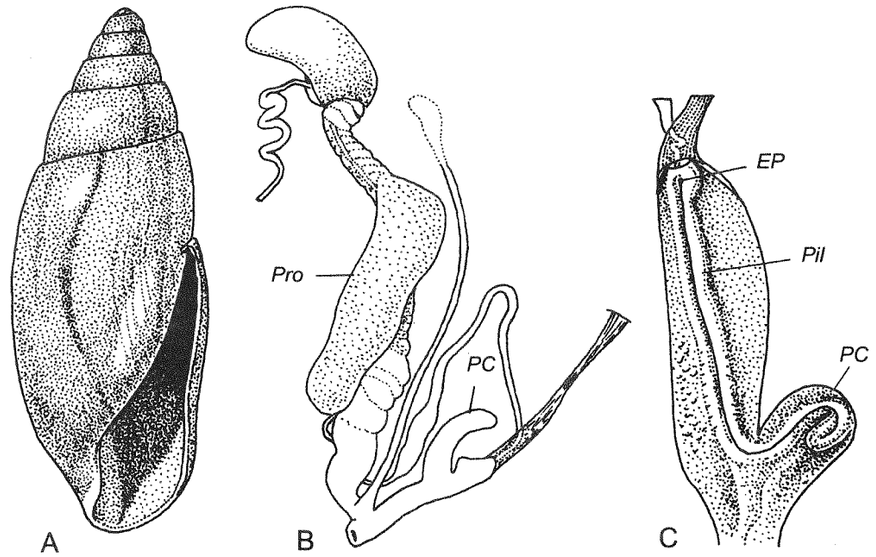


Fig. 1129. A — ***Rectoleacina cubensis*** (d'Orbigny, 1845). Shell: Cuba. **Phil**. No. 24035.
B — ! ***Rectoleacina lymnaeiformis*** (Shuttleworth, 1885). Reproductive tract.
C — ! ***Rectoleacina physoides*** (Shuttleworth, 1877). Interior of penis. B,C — after Baker, 1943.

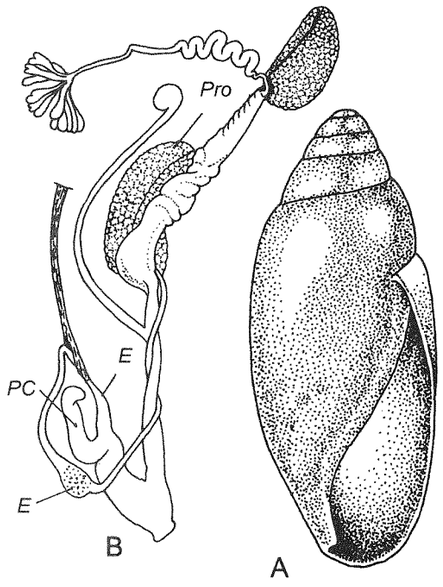


Fig. 1130. ***Salasiella*** (***Salasiella*** s. str.) ***joaquinae*** (Strebel, 1878).
A — shell: between Jalapa and Madingo, Mexico. ?Syntype. **Phil**. No. 131769. B — reproductive tract. After Baker, 1940b.

Salasiella (***Salasiella*** s. str.)
Fig. 1130

Shell elongated-ovate, fragile, thin, translucent, shining, of 4.3-5 whorls, body whorl predominating, flattened at periphery. Color yellowish. Surface of both embryonic and postapical whorls smooth. Aperture elongated, pear-shaped, much narrowed above, with thin, simple margins. Palatal margin arched forward. Height 3.8-11.5, diam. 1.5-3.0 mm (7.0 × 2.8 mm).

Papillate apex of epiphallus exceptionally short. Verge conic. Penial caecum rather long and narrow. Vagina long.

DISTRIBUTION. Mexico. 5 spp.

Salasiella (***Perpusilla*** Baker, 1940)
Fig. 1131

Baker, 1940b: 81.

TYPE SPECIES — *Oleacina perpusilla* L. Pfeiffer, 1866; OD.

Shell similar to *Salasiella* s. str.; differs by somewhat deeper, narrowly margined suture and presence of radial arcuate striation on postapical whorls. Whorls 5. Height 5-7, diam. 2.2-2.7 mm (5.4 × 2.3 mm).

Papillate apex of epiphallus at about 1/3 its length. Verge cylindrical. Penial caecum short and stout but larger than epiphallic branch. Vagina short.

DISTRIBUTION. Mexico. 3 spp.

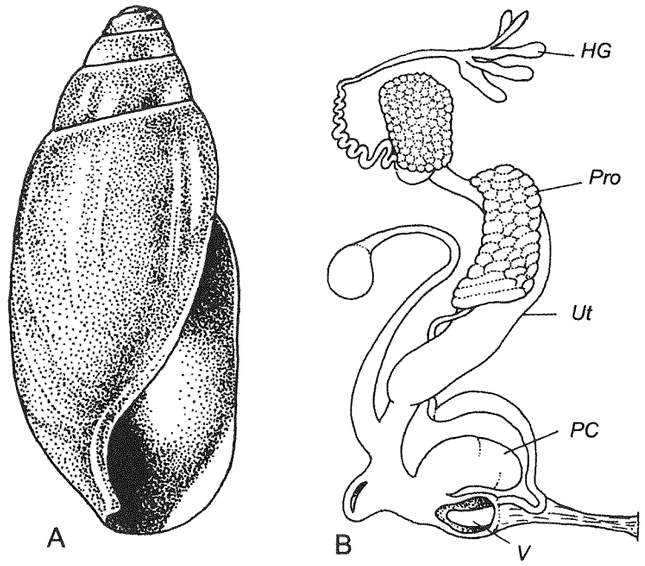


Fig. 1131. ***Salasiella*** (***Perpusilla***) ***perpusilla*** (L. Pfeiffer, 1866).
A — shell: Tanango Hills, near Necaxa, northern Pueblo state, Mexico. **Phil**. No. 256820. B — reproductive tract. After Baker, 1940b.

Streptostyla Shuttleworth, 1852

Shuttleworth, 1852: 203 (*Spiraxis* subg.).

TYPE SPECIES — *Achatina streptostyla* L. Pfeiffer, 1846; tautonymy.

Shell oblong, varying from cylindrical to biconic, (rather) thin, shining. Aperture usually high, narrow; columella strongly twisted spirally, bearing an entering callous lamella, passing in a broad curve into basal margin. Palatal margin arching forward in middle.

Hermaphroditic gland of few subdivided acini. Penial appendix present or wanting. Penial retractor inserted on epiphallus. Spermatheca caught in aorta but recurved; reservoir small, ovoid.

DISTRIBUTION. Mexico and Central America.

Streptostyla (***Eustreptostyla*** Baker, 1927)
Fig. 1132

Baker, 1927: 21.

TYPE SPECIES — *Spiraxis nicoleti* Shuttleworth, 1852; OD.

Shell thin but rather firm, shining, of about 7 whorls. Color dull-yellow to chestnut. Last whorl straight or scarcely elevated. Embryonic whorls finely costulate. Rest whorls with very regular radial riblets; on body whorl riblets become weaker; here there are shallow, widely spaced spiral grooves. Columellar spiral lamella very strong. Height 33.0-36.8, diam. 14-16 mm (36.8 × 15.7 mm).

Prostate attached along proximal half of spermoviduct. Vas deferens swollen in its middle portion which internally spongy,

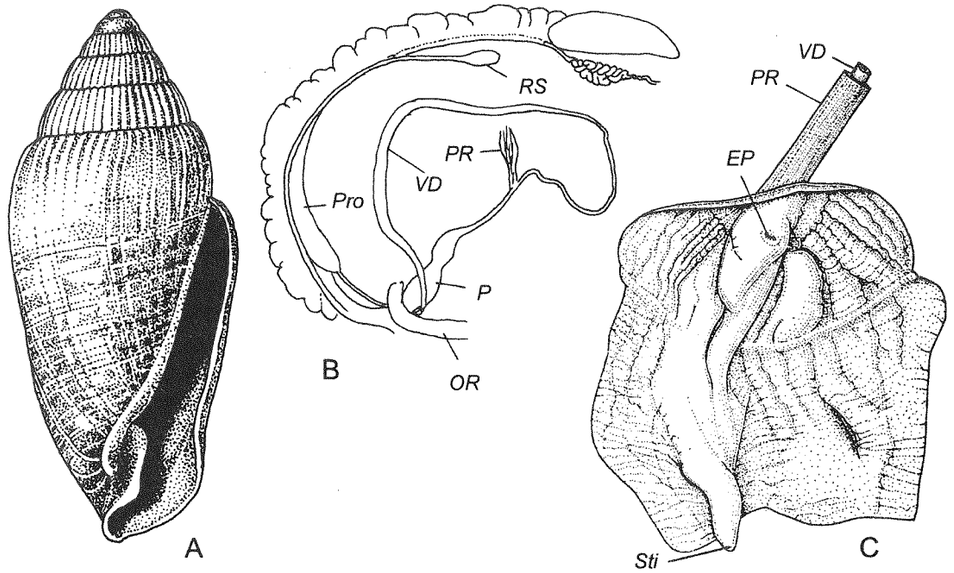


Fig. 1132. ***Streptostyla*** **(*Eustreptostyla*)** ***nicoleti*** (Shuttleworth, 1852).
A — shell: Mexico. **Paris**. B — reproductive tract. After Strebel, 1878 (1873-1882). C — interior of penis. After Baker, 1943.

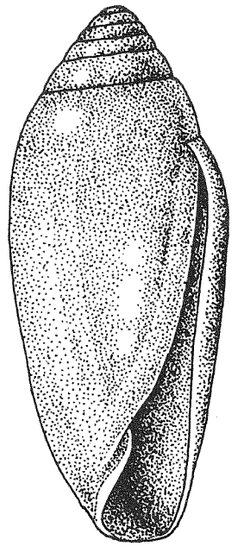


Fig. 1133. ***Streptostyla*** **(*Streptostyla*)** ***streptostyla*** (L. Pfeiffer, 1846).
Sumidero, Estado Vera Cruz [Mexico]. **Phil**. No. 256845.

with oblique folds connected by lower ones at right angles. Penis internally with 3 high folds with epiphallic pore on largest. One of folds ending as a conic stimulator. Penial retractor arising on diaphragm, inserting around epiphallus but continuing to penial apex. Free oviduct 2-3 times as long as vagina. Reservoir of spermatheca small, not attending albumen gland.

DISTRIBUTION. Mexico. 1 sp.

Streptostyla (*Streptostyla* s. str.)
Fig. 1133

Shell oblong. Embryonic whorls with fine radial riblets, only 1st half whorl or less being nearly smooth. Subsequent whorls also practically smooth. Columella twisted in a strong, calloused spiral lamella. Height 20, diam. 8.0-8.5 mm (20.0 × 8.3 mm).

Reproductive tract similar to that of *Salasiella*, differs by slenderer, closely attached prostate which is 2/3 length of uterus; penis simple, internally with 5 longitudinal folds (Baker, 1943: 6).

DISTRIBUTION. Mexico, Central America, ? Venezuela. About 15 spp.

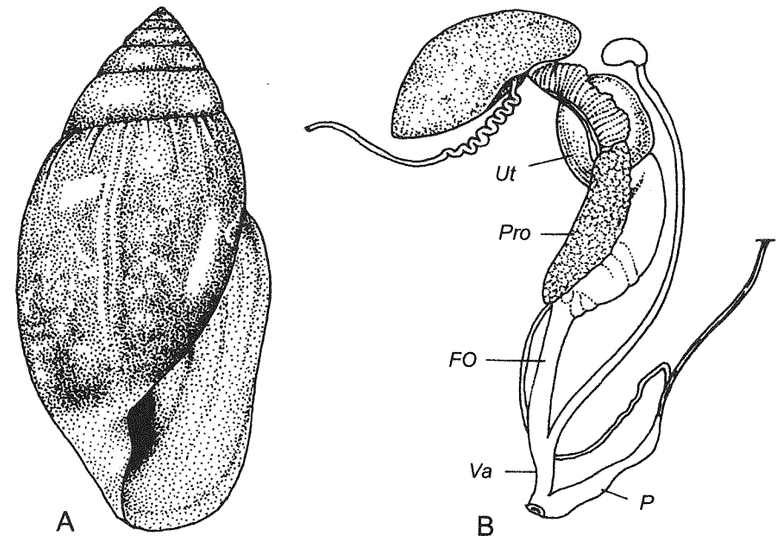


Fig. 1134. ***Streptostyla*** **(*Chersomitra*)** ***nigricans*** (L. Pfeiffer, 1845). A — shell: Guatemala. **Phil**. No. 24047.
B — ! ***Streptostyla*** **(*Chersomitra*)** ***irrigua*** (Shuttleworth, 1885). Reproductive tract. After Baker, 1943.

Streptostyla (*Chersomitra* E. Martens, 1860)
Fig. 1134

Martens in Albers, 1860: 33 (*Spiraxis* subg.).

TYPE SPECIES — *Glandina nigricans* L. Pfeiffer, 1845; OD.

Shell ovate-biconic to elongated-ovate, with varnish-like gloss, moderately thin to rather solid, of 6-7.5 flattened whorls. Color dark-yellow to chestnut with yellow streaks and often with variously developed subsutural yellow band. Embryonic whorls smooth, subsequent whorls glabrous or finely striated above. Aperture high, narrow, pyriform or lanceolate; spiral columellar lamella more or less convex and calloused. Height 7.5-43.0, diam. 3.0-17.5 mm (42.2 × 17.3 mm).

Talon not exposed. Vas deferens thin throughout. Epiphallus missing. Penis not long, irregularly cylindrical. Penial retractor attached to vas deferens/penis junction. Free oviduct markedly longer than vagina. Small reservoir of spermatheca reaching albumen gland.

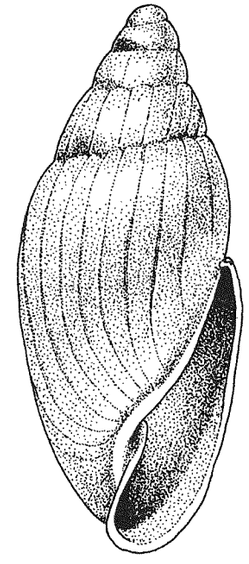


Fig. 1135. ***Myxastyla coxeni*** (Richards, 1938). Between Coxen Hole and West End, Roatán Island, Honduras. Holotype. **Phil**. No. 170020.

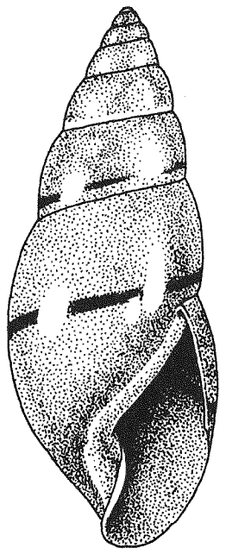


Fig. 1136. ***Peteniella ligulata*** (Morelet, 1849). Livingston, Guatemala. **Phil**. No. 107545.

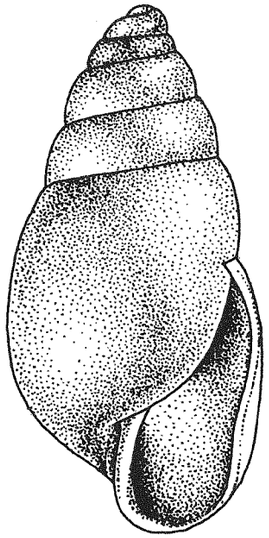


Fig. 1137. ***Oryzosoma tabiense*** (Pilsbry, 1891). Cave at Tabi, Yucatan, Mexico. Holotype. **Phil**. No. 61630.

DISTRIBUTION. Central America and Mexico. About 60 spp. & subspp.

Myxastyla Thompson, 1995
Fig. 1135

Thompson, 1995: 73.

TYPE SPECIES — *Streptostyla coxeni* Richards, 1938; OD.

Shell obesely fusiform to cylindrical-ovate, thin, glossy, of 4-6 slightly convex whorls. Color pale-yellowish. Embryonic whorls smooth, later whorls with regular, widely spaced, radial engraved lines or grooves. Aperture narrow, columellar lamella distinct, spirally ascending. Parietal wall with thin, white callus. Height 2.7-6.0, diam. 1.0-2.3 mm (6.0 × 2.3 mm).

DISTRIBUTION. Central America (Guatemala, Honduras). 3 spp.

Peteniella Pilsbry, 1907
Fig. 1136

Pilsbry, 1907 (1907-1908): 161 (*Streptostyla* subg.; nom. nov. pro *Petenia* Crosse et Fischer, 1869).

— *Petenia* Crosse et Fischer, 1869: 35 [nom. praeocc., non Gunter, 1862 (Pisces); t.-sp. *Glandina ligulata* Morelet, 1849; monotypy].

TYPE SPECIES — *Glandina ligulata* Morelet, 1849; OD.

Shell ovate-fusiform, thin but rather solid, very shining, of 6 slightly convex whorls. Color yellow, with narrow peripheral brown band. Practically no regular sculpture. Aperture elongated ovate, pointed above and below, slightly oblique, with simple margins. Columella twisted, narrowly truncated. Height 11-16, diam. 5-6 mm (16.0 × 6.0 mm).

DISTRIBUTION. Mexico, Guatemala. 2 spp.

Oryzosoma Pilsbry, 1891
Fig. 1137

Pilsbry, 1891: 9 (*Streptostyla* subg.).

— *Orizosoma* Pilsbry, 1891b: 311 (nom. err. pro *Oryzosoma* Pilsbry, 1891).

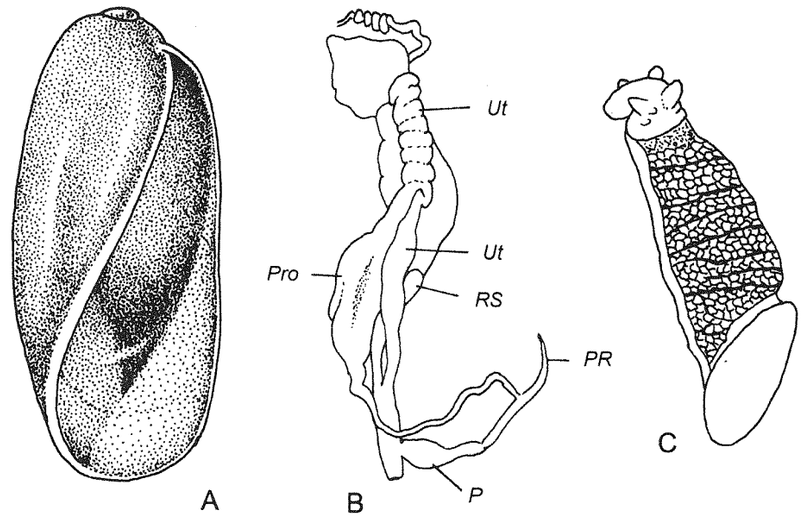


Fig. 1138. ***Strebelia berendti*** (L. Pfeiffer, 1861). A — shell: Texolo, V[era] C[ruz], Mexico. **Phil**. No. 77248. B — reproductive tract. C — animal with shell at posterior end. After Strebel, 1878 (1873-1882).

TYPE SPECIES — *Streptostyla* (*Oryzosoma*) *tabiense* Pilsbry, 1891; OD.

Shell ovate-turrited, thin but moderately solid, shining, of 6 moderately convex whorls. Spire conic with obtuse subglobular apex, composed of 1.5 whorls; next 0.75 whorl narrow. Color whitish. Embryonic whorls smooth, later whorls weakly radially striatulate. Aperture pyriform, half the height of shell, with simple margins. Columella concave below, straightened above, its edge rather heavy calloused; upper end of callus partially fills very narrow umbilicus. Palatal margin arched forward in middle, not retracted basally. Height 9.9, diam. 5.7 mm (Pilsbry indicates diameter 4.9 mm for the same specimen).

DISTRIBUTION. Mexico (Yucatan). 1 sp.

Strebelia Crosse et Fischer, 1868
Fig. 1138

Crosse & Fischer, 1868: 90 (nom. nov. pro *Physella* L. Pfeiffer, 1861).

— *Physella* L. Pfeiffer, 1861: 71 [nom. praeocc., non Haldeman, 1842 (Physidae); t.-sp. *Physella berendti* L. Pfeiffer, 1861; monotypy].

— *Spirobulla* Ancey, 1881b: 484 (nom. nov. pro *Physella* L. Pfeiffer, 1861).

TYPE SPECIES — *Physella berendti* L. Pfeiffer, 1861; OD.

Shell *Bulla*-shaped, elongated-ovate, thin, very fragile, shining, of 2-2.5 whorls. Spire extremely short, apex not prominent. Color yellow or fulvous-corneous. Surface smooth, practically lacking sculpture. Aperture very high, about as long as shell, widened below, with simple margins. Columella receding, palatal margin vertical, scarcely arched forward. Umbilicus absent. Height 5.5-6.0, diam. 2.4-2.5 mm (5.5 × 2.4 mm).

Animal too large for shell which lies at its posterior end.

Penis without appendage. Boundary between vas deferens and epiphallus marked by attachment of penial retractor. Spermathecal shaft rather short, reservoir not reaching albumen gland.

DISTRIBUTION. SE Mexico. 1 sp.

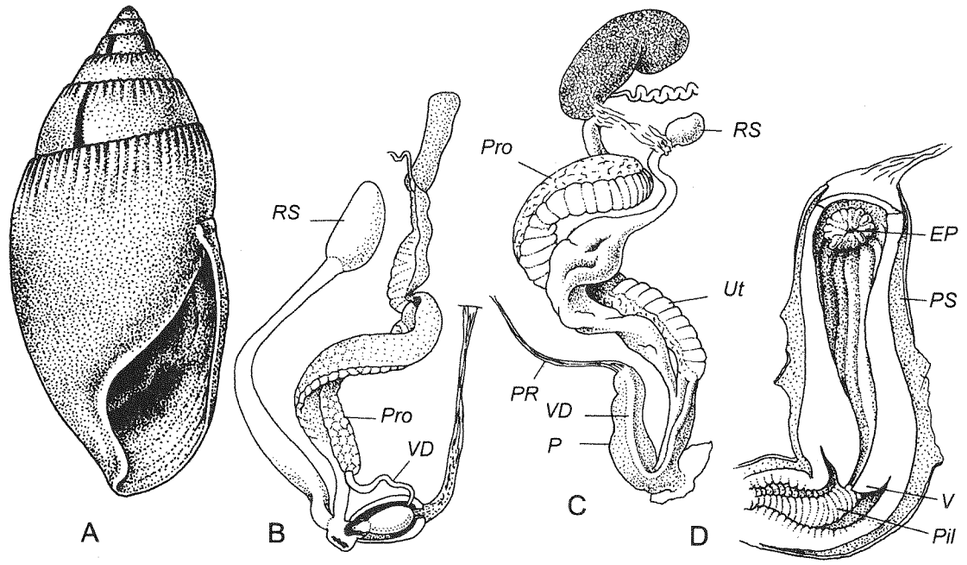


Fig. 1139. A, B — ***Boriquena glabra*** (L. Pfeiffer, 1846).
A — shell: Puerto Rico. **Phil**. No. 23995. B — reproductive tract. After Baker, 1941b.
C, D — ! ***Boriquena playa*** Baker, 1940. Rio Arecibo, Puerto Rico, August-September, 1939. **Phil**. No. A-1856C. C — reproductive tract. D — interior of penis.

EUGLANDININAE Baker, 1941

Baker, 1941c: 54 (as tribe Euglandinarum).

Shell never reduced. Columella truncated.

Ureter diverging at some distance from transversely ligulate, extremely oblique kidney. Minor lung veins prominent.

Prostate absent near uterine apex. Epiphallus often absent. Penis without verge.

DISTRIBUTION. S America to Florida, Hispaniola, Puerto Rico.

Boriquena Baker, 1941
Fig. 1139

Baker, 1941b: 26 (*Varicella* subg.).

TYPE SPECIES — *Achatina glabra* L. Pfeiffer, 1846; OD.

Shell pointed-ovate, inflated, thin, shining, of 8 flattened, slightly shouldered whorls. Suture finely crenulately margined. Color corneous, with widely spaced reddish strigations, fading out on last whorl. Surface practically smooth, but below suture there are rudiments of radial ribs. Aperture acutely triangular, with sharp margins; columellar margin concave, distinctly truncated. Palatal margin not incurved in middle. Height 23-38, diam. 10-16 mm (27.6 × 12.1 mm).

Both ureters completed.

Right ommatophoran retractor free from peni-oviducal angle.

Atrial orifice lies near mantle collar. Carrefour shallowly embedded. Vas deferens enters epiphallus apically, but runs down as plicate cavity in principal pilaster to near penis. Vas deferens opens through a pore which surrounded by short plicae arranged crownwise. Epiphallus with much thickened wall and containing several high folds besides broad pilaster. Penis short, covered (along with epiphallus) by thin sheath, internally with a strong pilaster segmented by narrow, circular grooves. Verge rather short. Penial retractor arising on diaphragm or columellar muscle, attached to penis apically. Spermathecal stalk subcylindrical to swollen in its middle part. Reservoir reaching albumen gland.

DISTRIBUTION. Puerto Rico. 2 spp.

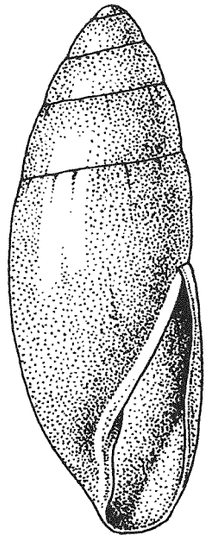


Fig. 1140. ***Streptostylops mira*** Pilsbry, 1933. "Hermann's coffee finca, back of Paradiz, S.D." [Santo Domingo = Dominican Republic, Hispaniola]. Holotype. **Phil**. No. 160726.

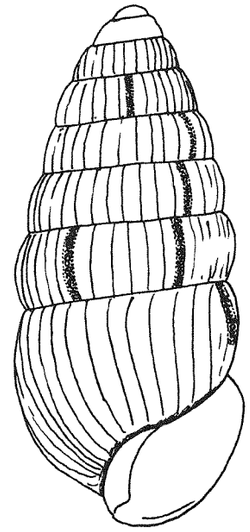


Fig. 1141. ***Varicoturris dubia*** (L. Pfeiffer, 1856). After Zilch, 1960.

Streptostylops Pilsbry, 1933
Fig. 1140

Pilsbry, 1933: 155.

TYPE SPECIES — *Streptostylops mira* Pilsbry, 1933; OD.

Shell cylindric-fusiform, rather thin, glossy, of 5 flattened whorls. Color yellow. Surface almost smooth, only with very weak radial wrinkles. Aperture as long as 0.5 shell height, narrow, with simple margins. Columellar side with spiral ridge-like lamella revolving around upper part of columella and continued along its face to base, where it tapers rapidly. Palatal margin arched forward in middle, receding at base. Height 9.5, diam. 3.8 mm.

DISTRIBUTION. Hispaniola. 1 sp.

Varicoturris Pilsbry, 1907
Fig. 1141

Pilsbry, 1907 (1907-1908): 161 (*Streptostyla* subg.).

TYPE SPECIES — *Spiraxis dubia* L. Pfeiffer, 1856; OD.

Shell oblong-turrited, thin, moderately solid, glossy, of about 9 narrow, convex whorls. Color pale, with narrow radial dark streaks. Embryonic whorls smooth, subsequent whorls radially ribbed. Aperture short, diagonal, with simple margins. Columella excised at base, not much twisted. Palatal margin not arched forward. Umbilicus absent. Height 9.5, diam. nearly 5 mm.

DISTRIBUTION. Mexico (state Chiapas). 1 sp.

Ghiesbreghtia Baker, 1941
Fig. 1142

Baker, 1941c: 52, 56 (*Euglandina* subg.).

TYPE SPECIES — *Euglandina* (*Ghiesbreghtia*) *flammulata* Baker, 1941; OD.

Shell ovate-turrited, fairly solid, translucent, of 8 weakly convex, tightly coiled whorls. Color light-buff with varices preceded by broad chestnut lines, which are broken near middle of body whorl. Embryonic whorls (2.75) in beginning with very fine contiguous arcuate radial threadlets,

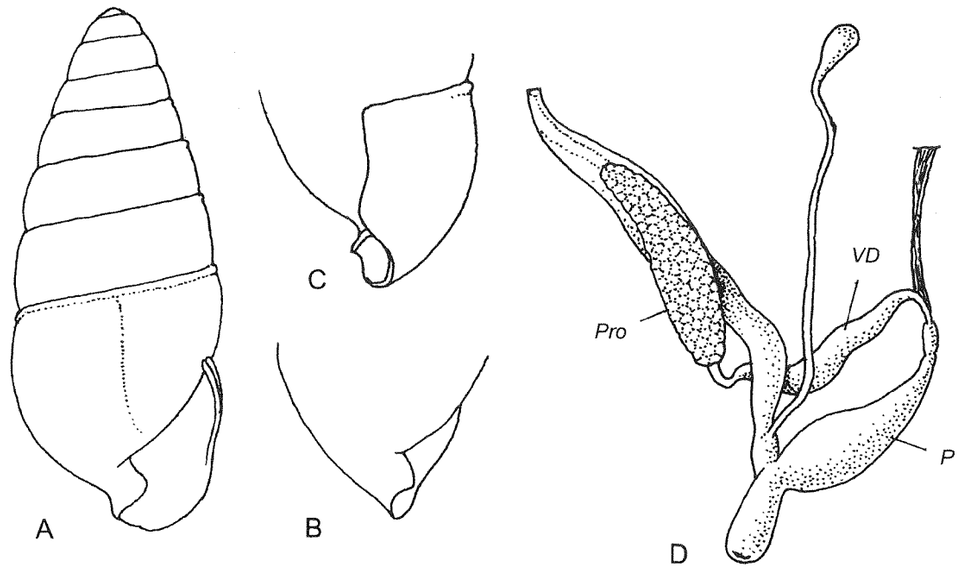


Fig. 1142. ***Ghiesbreghtia flammulata*** (Baker, 1941).
A, B, C — shell. After Baker, 1941c. D — reproductive tract. After Baker, 1943.

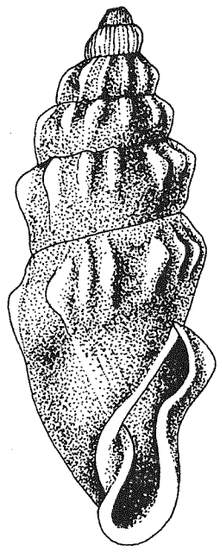


Fig. 1143. ***Streptostylella botteriana*** (Crosse et Fischer, 1869).
Orizaba, Mexico. Syntype. **Paris**.

which on postapical whorls gradually change into major radial threads with microscopic minor ones in intervals. Aperture relatively small, narrowly pointed above and broad below; margins thickened internally and weakly concave. Palatal margin viewed laterally, is almost angularly arcuate. Columella very short, concave with lightly thickened edge and so twisted that its abrupt truncation apparent only when viewed from left side; twist still broader in penultimate whorl. Height 6.5, diam. 2.7 mm.

Prostate elongated, compact, somewhat detached by its lower end from uterus. Vas deferens with long, distinct spindle-shaped swelling. Penis fusiform, internally with about 15 wavy longitudinal folds. Penial retractor attached to distalmost part of vas deferens. Free oviduct markedly longer than vagina.

DISTRIBUTION. Mexico (Córdoba). 1 sp.

Streptostylella Pilsbry, 1907
Fig. 1143

Pilsbry, 1907 (1907-1908): 161 (*Streptostyla* subg.).

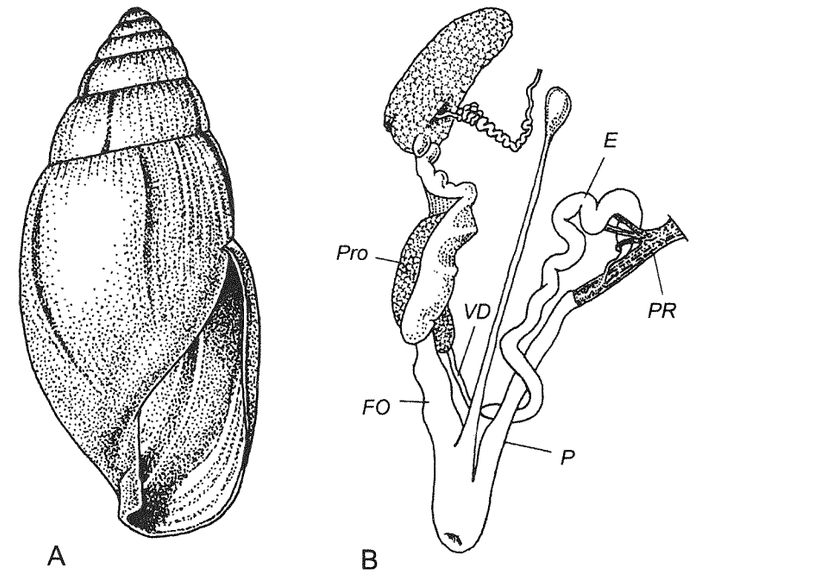


Fig. 1144. ***Varicoglandina monilifera*** (L. Pfeiffer, 1845).
A — shell: Mexico. **Phil**. No. 24817. B — reproductive tract. After Baker, 1943.

TYPE SPECIES — *Streptostyla botteriana* Crosse et Fischer, 1869; OD.

Shell slender, more or less fusiform, thin, of 7-8 convex, angular above whorls. Color light-brown. Embryonic whorls finely regularly ribbed; ribs on subsequent whorls become less regular, some of them decorated with membranous scales on supraperipheral angle. Aperture very narrow, 8-shaped, with slightly thickened margins; peristome insertions connected by plate-like callus. Columella lamellar, spirally entering, not truncated. Height 8.0-8.5, diam 3.0-3.1 mm (8.5 × 3.1 mm).

DISTRIBUTION. Mexico (Orizaba). 1 sp.

Varicoglandina Pilsbry, 1908
Fig. 1144

Pilsbry, 1908 (1907-1908): 204 (*Euglandina* sect.).

TYPE SPECIES — *Glandina monilifera* L. Pfeiffer, 1845; OD.

Shell obtusely fusiform, moderately thin, glossy, of 6-8.5 slightly convex whorls. Color yellow to yellowish-pink, with very widely spaced brown streaks. Embryonic whorls smooth, subsequent whorls finely, regularly radially striated. Aperture elongated-ovate, with blunt, rounded margins. Columella truncated below. Height 14-35, diam. 5.3-14.0 mm (31.9 × 14.0 mm).

Right ommatophoran retractor free from peni-oviducal angle. Genital orifice situated halfway back on head. Prostate 2/3 as long as uterus. Proximal part of vas deferens thin, very short, rest part long, enlarged, convoluted; distalmost part narrowed again. Penis cylindrical, internally with anastomosing, mainly transverse zigzag folds, passing near base into dorsal and ventral thickenings, which continue into atrium. Penial retractor attached by several arms to distal portion of vas deferens. Free oviduct not long, somewhat expanded, vagina extremely short.

DISTRIBUTION. Mexico. 16 spp. & forms.

Guillarmodia Baker, 1941
Fig. 1145

Baker, 1941c: 52, 57 (*Euglandina* subg.).

TYPE SPECIES — *Euglandina* (*Guillarmodia*) *pupa* Baker, 1941; OD.

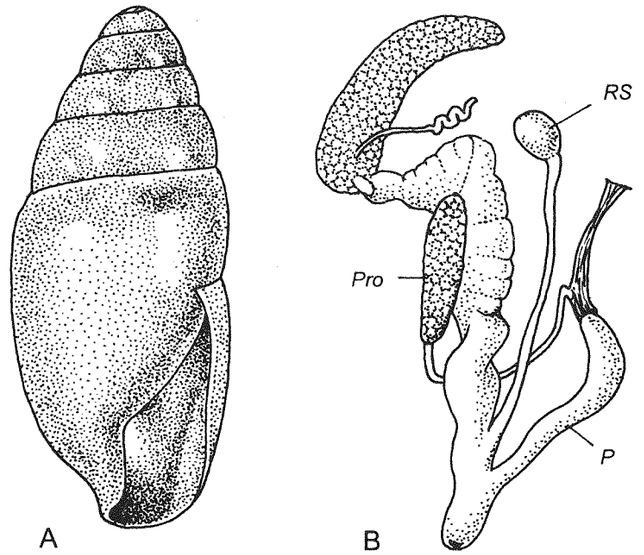


Fig. 1145. ***Guillarmodia pupa*** (Baker, 1941).
A — shell: Atoyac gorge, Vera Cruz, Mexico. Syntype. **Phil**. No. 256867. B — reproductive tract. After Baker, 1941c.

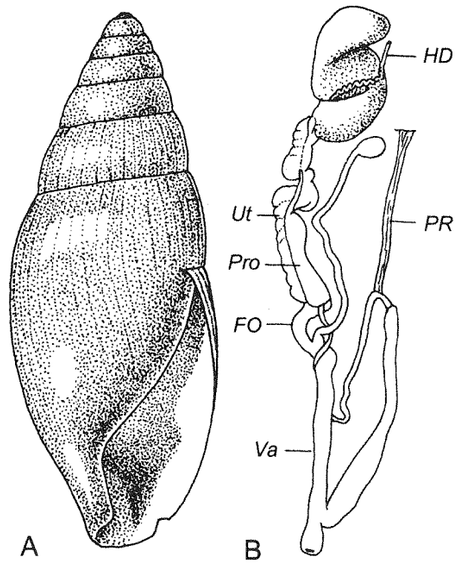


Fig. 1146. A — ***Proameria saxatilis convallis*** (Baker, 1941). Tepexic, near Necaxa, northern Puebla State, Mexico. Syntype. **Phil**. No. 256872. B — ***Proameria saxatilis saxatilis*** (Baker, 1941). Reproductive tract. After Baker, 1943.

Shell elongated-ovoid, obtuse, moderately thin, shining, semitransparent, nearly glass-like, of 6 somewhat convex whorls. Embryonic whorls smooth, later whorls polished, only with obsolescent radial wrinkles and occasional, not strongly developed varices. Aperture small, broadest near base; margins well thickened internally, palatal margin arched forward. Columella moderately long, concave, obliquely truncated, with thickened edge. Height 7.0-12.5, diam. 3.0-4.6 mm (7.3 × 3.0 mm).

Atrial orifice located at 2/3 way back on head. Hermaphroditic gland composed of 5 bifid or trifid acini. Vas deferens without epiphallic swelling. Penial retractor attached to base of vas deferens. Penis, vagina and free oviduct internally with eight wavy longitudinal folds. Free oviduct expanded, moderately long; vagina extremely short.

DISTRIBUTION. E Mexico. 2 or 3 spp.

Proameria Baker, 1941
Fig. 1146

Baker, 1941c: 52, 57 (*Euglandina* subg.).

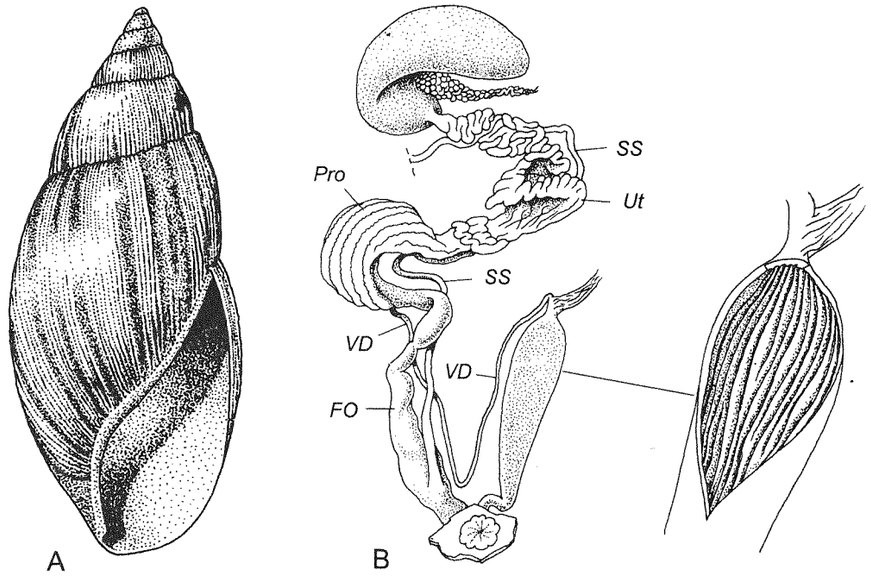


Fig. 1147. A — ***Euglandina aurata lignaria*** (Reeve, 1849). Shell: Orizaba, Mexico. **Paris**. B — ! ***Euglandina rosea*** (Férussac, 1821). Reproductive tract and interior of penis. Flat below Peak, El Infernillo, Nuevo Leon, Mexico. **Phil**. No. A-9407E.

TYPE SPECIES — *Euglandina* (*Proameria*) *saxatilis* Baker, 1941; OD.

Shell turrited, rather slender, gradually tapering above and more abruptly below, moderately thin, highly glossy, translucent, of 7-8 a little convex whorls. Color very pale olive-brown, often with slightly darker streaks preceding varices (if they present). Embryonic whorls almost smooth, subsequent whorls with regular radial grooves and microscopic, spiral, obsolete striae. Aperture comparatively small, narrowed above; its margins more or less thickened internally. Columella fairly long, weakly concave; palatal margin slightly arcuate. Height 17-29, diam. 7-12 mm (19.4 × 7.5 mm).

Vas deferens not enlarged, entering penis apically. Penis slender, narrow, internally with 11 (in type species) axial folds in distal half. Penial retractor arising high on diaphragm, inserting on distalmost part of vas deferens. Free oviduct short, vagina much longer, subcylindrical to more or less enlarged. Spermathecal reservoir small, reaching albumen gland.

DISTRIBUTION. Mexico. About 10 spp. & subspp.

Euglandina Fischer et Crosse, 1870
Fig. 1147

Fischer & Crosse, 1870 (1870-1902): 97.

— *Pfaffia* Behn, 1845: 131 [nom. nud. (for unidentified species)].

TYPE SPECIES — *Achatina aurata* var. *lignaria* Reeve, 1849; SD Pilsbry, 1907 (1907-1908).

Shell oblong, fusiform or ovate, rather thin, translucent, of about 8 moderately convex whorls. Color straw to pinkish, with weak, reddish radial rays. Embryonic whorls smooth, later whorl distinctly granulate because of crossing of radial and spiral incised lines; rarely surface nearly smooth, sometimes weak varices may be present. Suture mostly crenulate. Aperture ample, ovoid, with simple margins. Columella shortly truncated. Palatal margin straight or arched forward. Height 94-116, diam. 40-45 mm (98.2 × 40.8 mm).

Hermaphroditic duct very strongly convoluted. Prostate longitudinally plicate. Vas deferens long, free, entering penis apically. Epiphallus missing. Penis long, lacking cae-

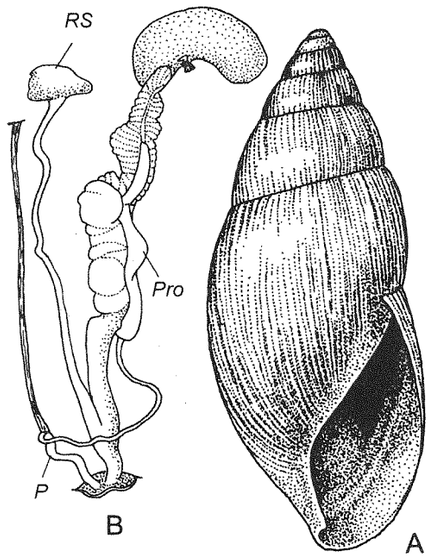


Fig. 1148. ***Cosmomenus cumingi*** (Beck, 1837). A — shell: Polvon, Nicaragua. **Phil**. B — reproductive tract. After Baker, 1943.

cum, internally with numerous, sharp axial plicae. Penial retractor attached apically. Free oviduct very long, with local swellings. Vagina extremely short. Spermathecal stalk slender, reservoir reaching albumen gland.

DISTRIBUTION. S and Central America. About 10 spp.

Cosmomenus Baker, 1941
Fig. 1148

Baker, 1941c: 52, 54 (*Euglandina* subg.).

TYPE SPECIES — *Glandina cumingi* Beck, 1837; OD.

Shell similar to those of *Euglandina*, of 7 whorls. Radial sculpture on postembryonic whorls represented by distinct fine riblets and crowded spiral striae; latter run over radial riblets without reticulation, or in intervals; striae tend to coalesce into even sutural cord. Height 50-60, diam. 20-24 mm (58.0 × 23.0 mm).

Atrial orifice located 0.3 way back on head. Penis somewhat rudimentary, small, internally with 7 longitudinal folds. Penial retractor arising on left side of columellar tail fan, inserting on boundary between vas deferens and penis. Free oviduct markedly longer than vagina, both internally with longitudinal folds. Reservoir of spermatheca nearly reaching albumen gland.

DISTRIBUTION. S and Central America (from Venezuela to Yucatan). 3-5 spp.

Singleya Baker, 1941
Fig. 1149

Baker, 1941c: 52, 54 (*Euglandina* subg. or sect.).

TYPE SPECIES — *Glandina singleyana* Binney, 1891; OD.

Shell elongated-ovate, thin, glossy, of 6.5-7.3 moderately convex whorls. Spire with convex outlines and a very obtuse rounded apex. Suture not crenulated. Color uniformly light-brown. Embryonic whorls nearly smooth, only with microscopic radial wrinkles; sculpture of subsequent whorls of distinct radial and spiral striation which becomes much weaker below periphery of last whorl. Aperture pyriform, narrowed above, with simple, sharp margins. Columella concave, truncated. Palatal margin straightened above. Height 39-51, diam. 15-18 mm (39.9 × 15.2 mm).

Atrium opening situated near front edge of mantle collar. Right ommatophoran retractor free from peni-oviducal angle. Hermaphroditic gland composed of 5 conic lobes. Penis internally with many (13 in type species) wavy longitudinal folds at base, which branch into 31 towards apex. Penial retractor inserted by broad fan to distal portion of vas deferens and apical part of penis. Short vagina and lower third of free oviduct internally with coarse longitudinal folds, which broken by transverse ones towards uterus. Spermathecal shaft long, slender, cylindrical; reservoir ovoid, reaching base of albumen gland.

DISTRIBUTION. ? Brazil to Texas. 4-7 spp.

Pittieria E. Martens, 1901
Fig. 1150

Martens E., 1901: 617 (*Streptostyla* subg.).

TYPE SPECIES — *Streptostyla* (*Pittieria*) *bicolor* E. Martens, 1901; OD.

Shell high conic, rather solid, glossy, of 7.5 slightly convex whorls. Spire long conic,

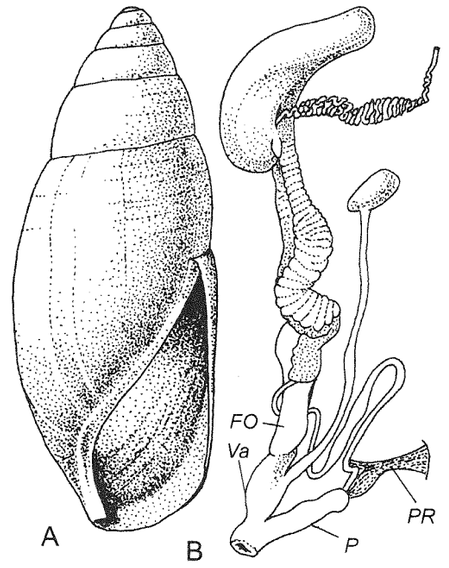


Fig. 1149. ***Singleya singleyana*** (Binney, 1891). A — shell: San Antonio, Texas. **Phil**. No. 76837. B — reproductive tract. After Baker, 1943.

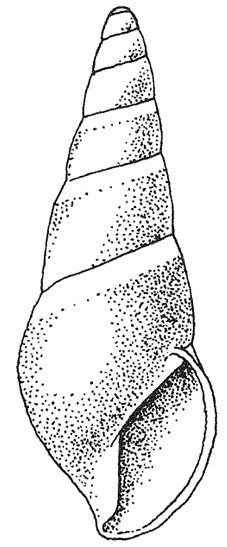


Fig. 1150. ***Pittieria bicolor*** (E. Martens, 1901). After E. Martens, 1901.

apex rather obtuse. Color rufous-brown with a wide sulphur subsutural zone. Embryonic whorls smooth, later whorls very lightly radially striatulate; spiral sculpture missing. Aperture subvertical, elliptic but angular above and below. Columella somewhat thickened and very lightly twisted spirally, truncated; basal margin slightly produced in a sort of rostrum; palatal margin slightly arcuate above, more so below. Height 21, diam. 10.3 mm.

DISTRIBUTION. E Costa Rica. 1 sp.

Shuttleworthia Baker, 1941
Fig. 1151

Baker, 1941c: 52, 59 (*Pittieria* subg.).

TYPE SPECIES — *Pittieria* (*Shuttleworthia*) *arborea* Baker, 1941; OD.

Shell turrited, thinnish, shining, translucent, of about 7 rather convex whorls. Spire strongly conic, with narrowly rounded apex. Color opaque whitish, tinted with brownish or lavender, especially on spire, and rarely in radial streaks, with narrow, bright, chestnut band below white subsutural line. Embryonic whorls (about 3) smooth, rest surface with weak, irregular, incised radial striae. Aperture short and broad, with sharp margins. Columella short, concave, twisted, abruptly truncated, with white, weakly thickened edge. Height 19-22, diam. 8.5-8.8 mm (19.0 × 8.5 mm).

Atrial orifice located near mantle collar. Retractor of right ommatophore passes outside of peni-oviducal angle. Hermaphroditic gland of 7 fans of acini. Vas deferens with slender branch, which passes between acini of conspicuous gland to enter lower end of vagina; penial branch only slightly enlarged. Penis internally with 2 apical circles of large papillae with teat-like tips, followed by 3 pilasters and numerous axial folds. Penial retractor arising near apical end of diaphragm. Free oviduct basally with sphincteric thickening, to which attaches band of very heavy muscles. Vagina internally with shallow pouch honeycombed by openings of numerous clavate alveoli, which are grouped to form mentioned gland. Spermathecal shaft subcylindrical, reservoir nearly reaching albumen gland.

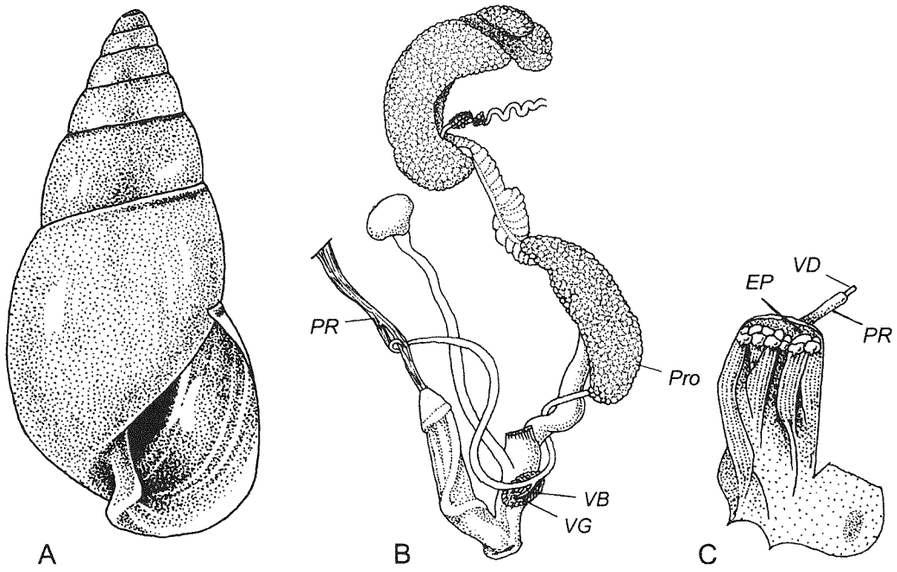


Fig. 1151. ***Shuttleworthia arborea*** (Baker, 1941).
A — shell: Hidden Valley below Neçaxa, state Puebla, Mexico. Syntype. **Phil**. No. 256887. B — reproductive tract. C — interior of penis. After Baker, 1943. ***VB*** — vaginal branch of vas deferens. ***VG*** — vaginal gland.

DISTRIBUTION. Central America. 3-5 spp.

Laeviglandina Pilsbry, 1908
Fig. 1152

Pilsbry, 1908 (1907-1908): 201 (*Euglandina* sect.).

TYPE SPECIES — *Oleacina underwoodi* Fulton, 1897; OD.

Shell ovate-conic, moderately thin, shining, of 5-7 slightly convex whorls. Body whorl more or less inflated. Spire conic, with blunt apex. Suture margined. Color chestnut-brown; no varices or bands. Embryonic shell smooth, later whorls with smoothed, weak radial wrinkles. Aperture broadly ovate, with simple margins. Columella slightly concave, distinctly truncated. Palatal margin convexly, evenly arched. Height 18-30, diam. 9.0-12.5 mm (18.5 × 9.7 mm).

Talon hidden. Carrefour exposed. Vas deferens furnished with conspicuous atrial branch, lumen of which begins as a small hole, but soon enlarges, becomes axially plicate, and opens into apex of bulbous thick-walled atrial diverticulum. Diverticulum internally with very coarse irregular folds. Penial branch of vas deferens slenderer than atrial branch. Penis subcylindrical, internally with thickening and zigzag axial plicae, which become irregular toward apex. Penial retractor attaching by 2 branches to distal part of vas deferens. Free oviduct somewhat longer than vagina. Reservoir of spermatheca reaching albumen gland.

DISTRIBUTION. Central America. 8 spp.

Poiretia Fischer, 1887
Fig. 1153

Fischer, 1887a: 452. Subai, 1980: 152.

TYPE SPECIES — *Bulimus algirus* Bruguière, 1792; monotypy.

Shell elongated-cylindrical, ovate-cylindrical or spindle-shaped, rather thin, glossy, of 4.75-7 flattened whorls. Suture crenulate. Color whitish to dull-yellow, sometimes with darker radial streaks. Embryonic

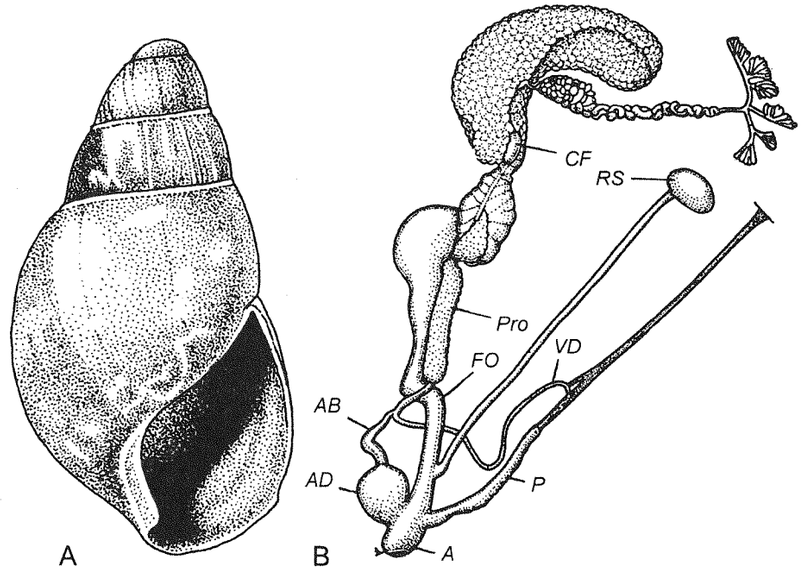


Fig. 1152. A — ***Laeviglandina underwoodi*** (Fulton, 1897). Shell: Costa Rica. **Paris**.
B — ! ***Laeviglandina chiriquiensis*** (Da Costa, 1900). Reproductive tract. After Baker, 1943. ***AB*** — atrial branch of vas deferens. ***AD*** — atrial diverticulum.

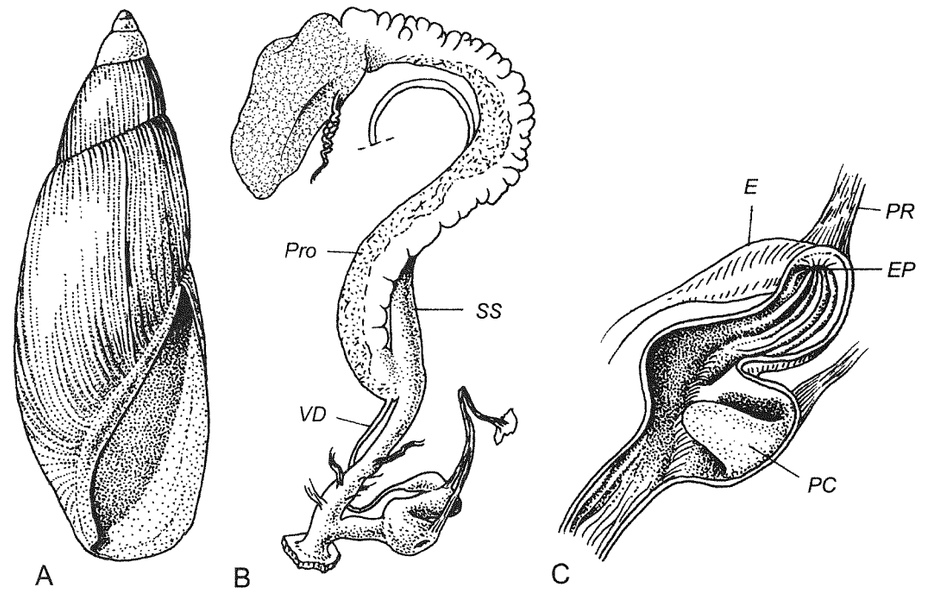


Fig. 1153. ***Poiretia algira*** (Bruguière, 1792).
Petrovac, Yugoslavia, May 1, 1974. A — shell. B — reproductive tract. C — interior of penis. **Moscow** No. Lc-24956.

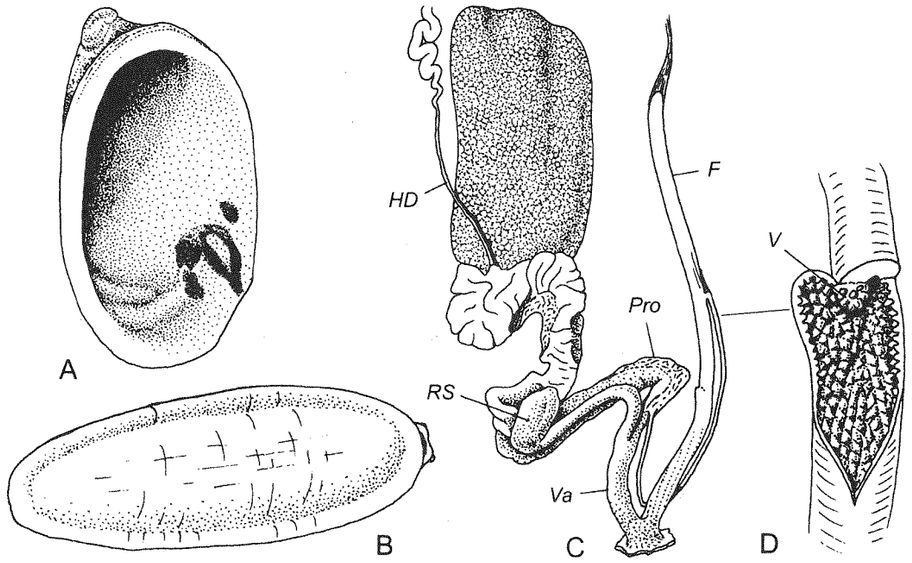


Fig. 1154. ***Testacella haliotidea*** Draparnaud, 1801.
A — shell of lectotype. France. **Vienna**. B, C — "Mediterranean". B — foot sole. C — reproductive tract and interior of penis. **SPb**.

whorls smooth, postnuclear whorls more or less sharply radially striated. Aperture elongated, narrowed above, half height of shell, with simple margins; columella straight to concave near base, truncated. Height 27.0-46.5, diam. 10.0-19.5 mm (36.0 × 11.4 mm).

Talon absent. Carrefour hidden. Vas deferens short, entering very short epiphallus terminally. Epiphallus opens in penis by a simple pore from which narrow plicae radiating. Penis rather small, sac-like, with a blunt caecum which can be invaginated, internally with longitudinal pilasters which sometimes more or less deeply cut by numerous transverse grooves. Penial retractor biramous, one branch attached to boundary between vas deferens and epiphallus, the other — to penial caecum. Free oviduct as such practically missing, vagina moderately long. Spermathecal shaft long, basally expanded and muscularized; reservoir small, globular.

DISTRIBUTION. Algeria, Sicily, S Apennines, ex-Jugoslavia, Albania, west of mainland Greece, islands of Ionian Sea, Crete, W Caucasus. 8 spp. & subspp.

TESTACELLOIDEA Gray, 1840

Gray in Turton, 1840: 124 (pro fam.)

Semislugs. Shell reduced, small, auriculate, located at posterior end of animal. Periostracum present. Sculpture not strong. Aperture with simple margins, lacking teeth. Umbilicus absent.

Foot with lateral longitudinal grooves, sole smooth.

Jaw absent.

Reproductive tract simple except for presence of a long flagellum and variously developed caecum, internally without conchyolinous hooks. Spermatheca with a short stalk.

DISTRIBUTION. Mediterranean countries.

TESTACELLIDAE J. Gray, 1840

J. Gray in Turton, 1840: 124.

Characters and distribution of superfamily.

Testacella Draparnaud, 1801
Fig. 1154

Draparnaud, 1801: 33, 99.

— *Testacellus* Férussac, 1819: 88 (nom. err. pro *Testacella*).

— *Testacelloides* A. Wagner, 1914: 335 (*Testacella* subg.; t.-sp. *Testacella gestroi* Issel, 1873; OD).

TYPE SPECIES — *Testacella haliotidea* Draparnaud, 1801; monotypy.

Conchological characters of family. Height of shell up to 17, diam. up to 9 mm (10.8 × 5.7 mm).

Hermaphroditic duct at first convoluted, its distal part straight. Talon not exposed. Vas deferens narrow, cylindrical throughout, not bound to vagina or penis, entering penis laterally. Penis with a lateral caecum, internally with distinct, numerous, rhombic tubercles arranged in oblique rows; at penial caecum there is a small, tubercular verge (? stimulator). Penial retractor attached to flagellum apically. Free oviduct very short, vagina 2-3 times longer. Spermathecal stalk short, reservoir impressed to middle part of spermoviduct.

DISTRIBUTION. Mediterranean countries. 5-7 spp. & subspp.

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Part 2, November 1998: 129-261, figs. 141-316.
Gastrocoptidae, Hypselostomatidae, Vertiginidae, Truncatellinidae, Addition To Vertiginoidea, Pachnodidae, Enidae, Sagdidae

Part 3, April 1999: 263-436, figs. 317-566.
Partulidae, Aillyidae, Bulimulidae, Orthalicidae, Megaspiridae, Urocoptidae

Part 4, December 1999; 437-564, figs. 567-732.
Draparnaudiidae, Caryodidae, Macrocyclidae, Acavidae, Clavatoridae, Dorcasiidae, Sculptariidae, Plectopyloidea, Corillidae, Plectopylidae, Megalobulimidae, Strophocheilidae, Cerionidae, Achatinidae, Subulinidae, Glessulidae, Micractaeonidae, Ferrussaciidae

Part 5, May 2000: 565-729, figs. 733-949.
Clausiliidae

Part 6, December 2000: 731-880, figs. 950-1154.
Rhytididae, Chlamydephoridae, Systrophiidae, Haplotrematidae, Streptaxidae, Spiraxidae, Oleacinoidae, Testacellidae