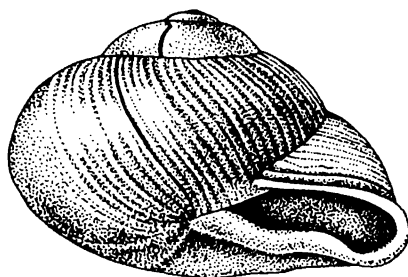


A. A. Schileyko

TREATISE ON RECENT TERRESTRIAL
PULMONATE MOLLUSCS

Part 13

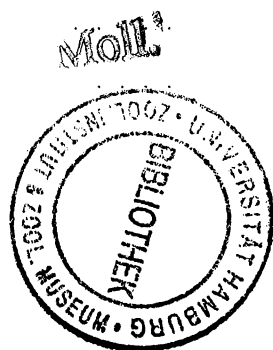
Helicidae, Pleurodontidae, Polygyridae,
Ammonitellidae, Oreohelicidae,
Thysanophoridae



Ruthenica, Supplement 2
Moscow ♦ May, 2006

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Editors of the volume: A. V. Sysoev, D. L. Ivanov,
Zoological museum of Moscow State University
Camera-ready copy: Yu. I. Kantor,
A.N. Severtzov Institute of Ecology & Evolution, Russian Ac. Sci.
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HELICOIDEA Rafinesque, 1815

Rafinesque, 1815: 143 (as *Helicina*).

Shell generally helicoid, globose to flat, sometimes obesely lens-shaped, without lamellar parietal tooth (exception — *Isognomostoma*).

Sole not divided.

Head wart absent.

Jaw ribbed to almost smooth.

Talon simple, sometimes hidden. Flagellum generally long to very long, rarely reduced. Epiphallus present. Penial caecum absent. Penis containing 1 or 2 verges. Penial gland missing. Penis sheath, when present, intimate, thin, transparent. Vaginal papilla or perivaginal gland absent. Stylophore 1 (rarely secondarily disappearing), accompanied by a pair of simple to intensively branched tubular mucus glands. Spermathecal stalk with variously developed diverticle which sometimes secondarily absent. Reservoir of spermatheca "fastened" to bottom of lung cavity by connective-tissued bands. Spermatophore long, thread-like, its tail spirally convoluted longitudinally.

DISTRIBUTION. Europe, N Africa, Madeira, Canary Islands, Asia Minor, Arabian peninsula, Crimea, Caucasus. A few species introduced to many countries of the world.

HELICIDAE Rafinesque, 1815

Shell of medium to large size, of various shape and color, umbilicated to imperforate. Rarely there are hairs on shell surface. Aperture of various shape, very rarely toothed.

Jaw odontognathous.

Right ommatophoran retractor passing through peni-oviducal angle.

Flagellum long. Epiphallus without caecum. Penial verge formed by tissue of bottom of penis cavity; often below 1st verge there is another one formed at expense of folds of inner surface of penis. Often there is a tubercular stimulator in distal part of penis lumen. Penis sheath very thin, transparent, sometimes poorly visible. Stylophore 1, accompanied by 2 tubular (uniramous to intensively branching) mucus glands entering vagina at base of stylophore. Spermathecal stalk slender, not swollen basally, initially with diverticle; reservoir rather small, globular, impressed to lower part of albumen gland and fixed by a

connective-tissue band to bottom of lung cavity near pericardium.

DISTRIBUTION. Europe, N Africa, Madeira, Canary Islands, Asia Minor, Arabian Peninsula, Crimea, Caucasus. A few species introduced to many countries of the world.

ARIANTINAE Mörch, 1864

Mörch, 1864: 284 (pro fam.).

— *Helicigoninae* Wenz, 1915: 65.

— *Murellinae* Hesse, 1918: 35.

Shell globose to flat, usually of medium size, very diverse in all conchological characters; in rare cases with lamellar parietal tooth.

Stylophore sessile or with very short neck. Mucus glands tubular, simple or biramous. Diverticle of spermathecal duct well developed; membrane between it and spermooviduct mostly strong, highly vascularized. Penial verge 1, rarely consisting of 2 lobes.

DISTRIBUTION. Europe, N Africa, Madeira, Canary Islands.

Ariantini Mörch, 1864

Shell flat to turbinate or depressed-conic. Last whorl widely rounded to sharply angulated.

Mucus glands simple, not splitted.

DISTRIBUTION. Europe.

Helicigona Férussac, 1821

Férussac, 1821 27, 40.

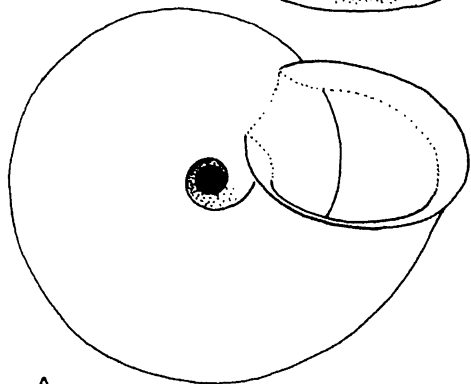
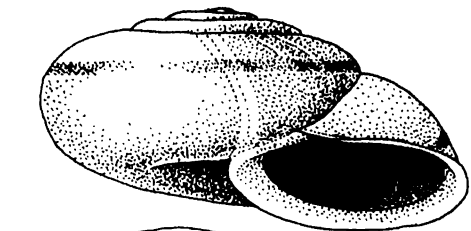
— *Chilotrema* Turton, 1831 66 (t.-sp. *Helix lapicida* Linnaeus, 1758; monotypy).

— *Latomus* Fitzinger, 1833: 97 (t.-sp. *Helix lapicida* Linnaeus, 1758; monotypy).

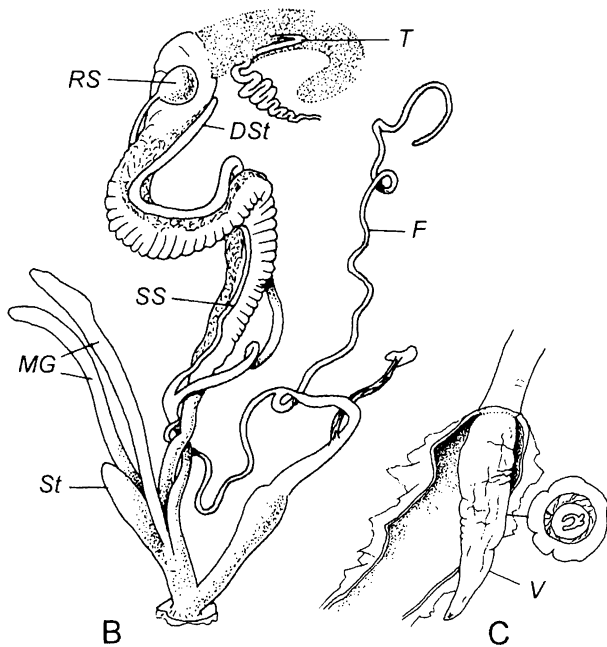
— *Lenticula* Held, 1837 913 (t.-sp. *Helix lapicida* Linnaeus, 1758; monotypy).

TYPE SPECIES — *Helix lapicida* Linnaeus, 1758; SD Pilsbry, 1895 (1893-1895).

Shell depressed to nearly flat, sometimes lenticular, moderately thin, opaque to slightly translucent, dull or somewhat glossy, of 5-6 slightly convex whorls. Last whorl well deflected, rounded to sharply angulate at periphery. Color light-corneous to fulvous, uniform or with a dark suprapерipheral band and lighter zones above and below this band; sometimes there are 3 bands. Embryonic whorls smooth, microgranulated or with vague spiral striae. Later



A



B

C

Fig. 2260. *Helicigona (Cingulifera) cingulata* (Studer, 1820).

A — shell: Staffel Mts. E of Staffelstein near Bamberg [Germany, Bavaria]. Leiden. B, C — Soave, prov Verona, Italy, September 1974. B — reproductive tract. C — interior of penis and cross-section through verge. Geneva.

whorls with delicate irregular radial striae and fine, crowded spiral lines; delicate hairs and light granulation may be present. Aperture ovate, well oblique, with thin, slightly reflexed margins; peristome insertions remote or more or less approached. Umbilicus open, moderately narrow, profound, perspective.

Flagellum long, sometimes twisted, epiphallus much shorter. Penis generally clavate, not large, internally with conic verge. Walls of verge contain circular cavity; inner canal of verge connected with inner surface of mentioned cavity by numerous fibers. Inner surface of penis lacking regular relief. Penial retractor inserted on about middle of epiphallus or nearer to its distal end. Free oviduct and vagina subequal in length. Stylophore rather small. Mucus glands 2, simple, tubular.

DISTRIBUTION. Europe.

REMARK. Subdivision of the genus *Helicigona* into subgenera is at present conditional and based mainly on conchological features whereas anatomy of their type species is very similar. Nevertheless, I present the drawings of reproductive tracts of all type species except for the subgenus *Josephinella* whose anatomy is unknown.

Helicigona (Cingulifera) cingulata (Studer, 1820)
Fig. 2260

Held, 1837 911

TYPE SPECIES — *Helix cingulatum* Studer, 1820; SD Zilch, 1960.

Shell depressed to almost flat, moderately thin, somewhat shining, of 4.5-5 more or less convex whorls. Last whorl rounded, strongly descending in front. Color light-grey, with dark (reddish to brown), narrow supraperipheral band. Embryonic whorls vaguely microgranulated. Later whorls finely radially striate, sometimes locally with traces of spiral striation. Peristome insertions not approached. Height 8-16, diam. 18-32 mm (13.2 × 25.0).

DISTRIBUTION. Alps. At least 35 spp. & forms.

Helicigona (Campylaeopsis)
Sturany et Wagner, 1914)
Fig. 2261

Sturany & Wagner, 1914: 26, 93 (*Campylaea* subg.).

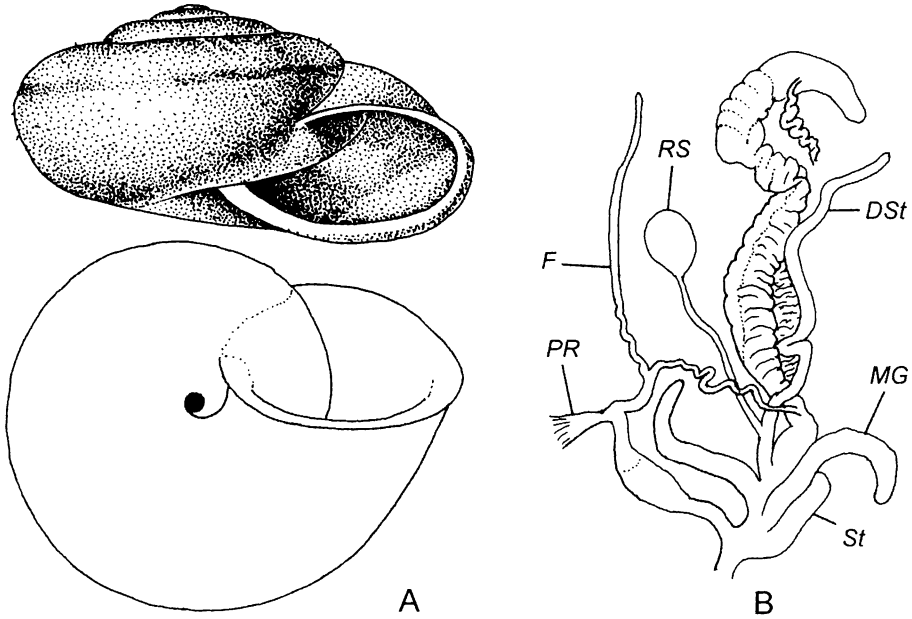


Fig. 2261 *Helicigona (Campylaeopsis) moellendorffi* (Kobelt, 1871).

A — shell: "Novipazar, Sutyeska-Ravine, Bulgaria" Phil. No. 248445. B — reproductive tract. After Sturany & Wagner, 1914.

TYPE SPECIES — *Helix moellendorffi* Kobelt, 1871; SD Zilch, 1960.

Shell depressed, thin, translucent, shining, of 5.5 rather convex whorls. Last whorl markedly deflected, rounded. Color corneous-brown, usually with darker suprapraperipheral band and (sometimes) with a few light varices. Embryonic whorls smooth. Later whorls delicately radially striated, with minute, scattered hairs. Peristome insertions somewhat approached. Height 8-11, diam. 14-18 mm (9.5 × 16.5 mm).

DISTRIBUTION. Serbia, Bulgaria. 2 spp.

Helicigona (Kosicia Brusina, 1904)

Fig. 2262

Brusina, 1904: 162 (*Campylaea* subg.).

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

Shell depressed, rather thin, lustrous, of about 5 moderately convex whorls. Last whorl rounded, strongly deflected. Color white or light-grey, uniform or with 1-3 dark bands which sometimes interrupted in series of spots; besides, irregular indistinct radial dark streaks may be present. Embryonic whorls with very fine and vague spiral

striae. Postapical sculpture of irregular delicate radial wrinklets and distinct wavy spiral striation. Peristome insertions somewhat approached. Height 6.5-8.5, diam. 14-16 mm (7.8 × 15.2 mm).

DISTRIBUTION. Carpathians, E Alps, N Italy. 3-4 spp.

Helicigona (Thiessea Kobelt, 1904)

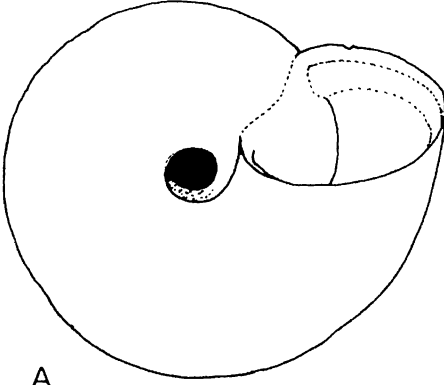
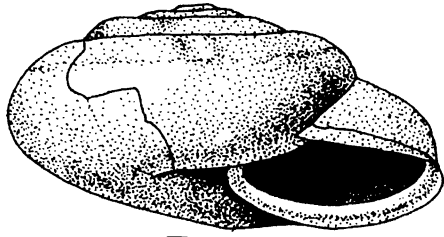
Fig. 2263

Kobelt, 1904: 76, 131, 154, 187 (*Campylaea* subg.).

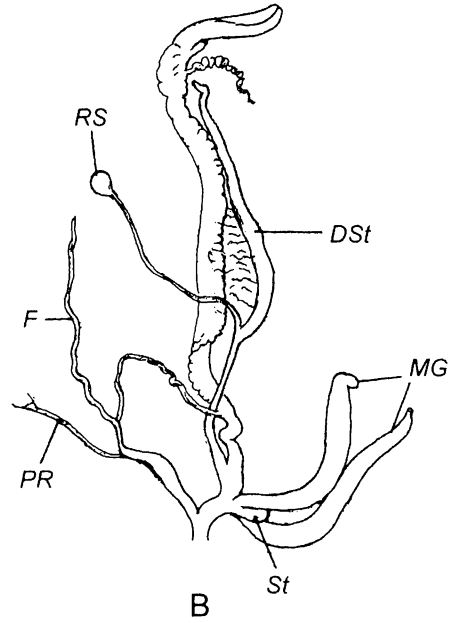
TYPE SPECIES — *Helix cyclolabre* Férussac, 1839; OD.

Shell much depressed to almost flat, moderately thin, of 4-4.5 slightly convex whorls. Last whorl strongly descending in front, rounded at periphery. Color whitish to corneous, with dark, narrow suprapraperipheral band margined with light, diffuse zones. Sculpture of very fine granulation throughout and extremely short setae. Aperture nearly entire, subcircular. Height 9-12, diam. 15-25 mm (10.4 × 20.4 mm).

DISTRIBUTION. Southern part of Balkan Peninsula. 6 spp.



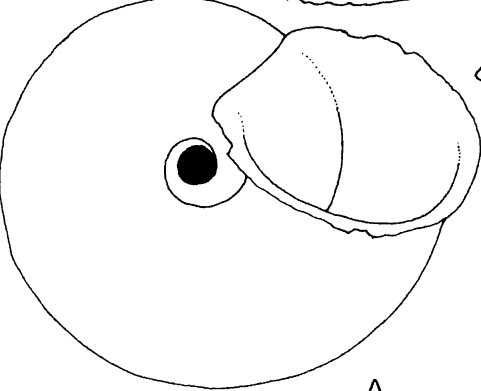
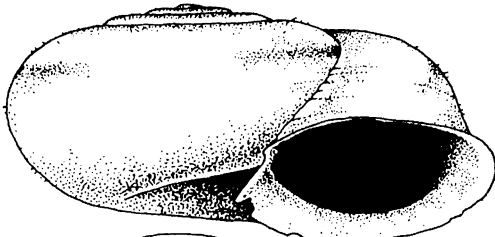
A



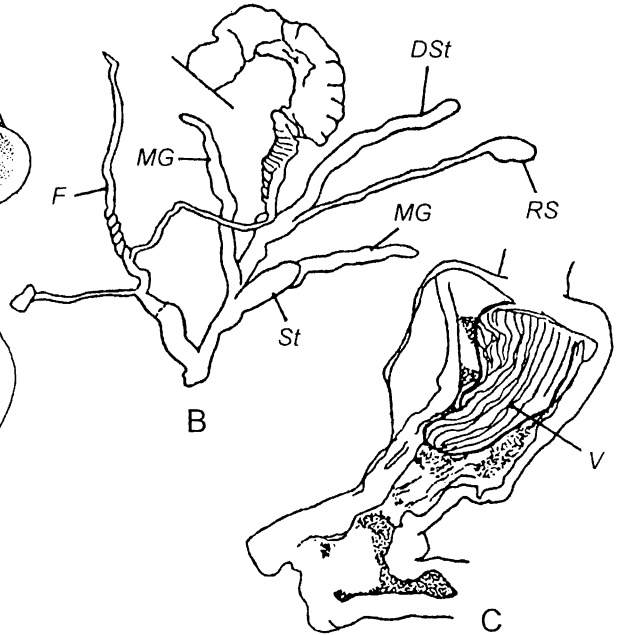
B

Fig. 2262. *Helicigona (Kosicia) intermedia* (Férussac, 1821).

A — shell: Tirol [Austria]. Moscow No. Lc-506. B — reproductive tract. After Sturany & Wagner, 1914.



A



B

C

Fig. 2263 *Helicigona (Thiessa) cyclolabre* (Férussac, 1839).

A — shell: Greece. Paris. B — reproductive tract. C — interior of penis. After Subai, 1996.

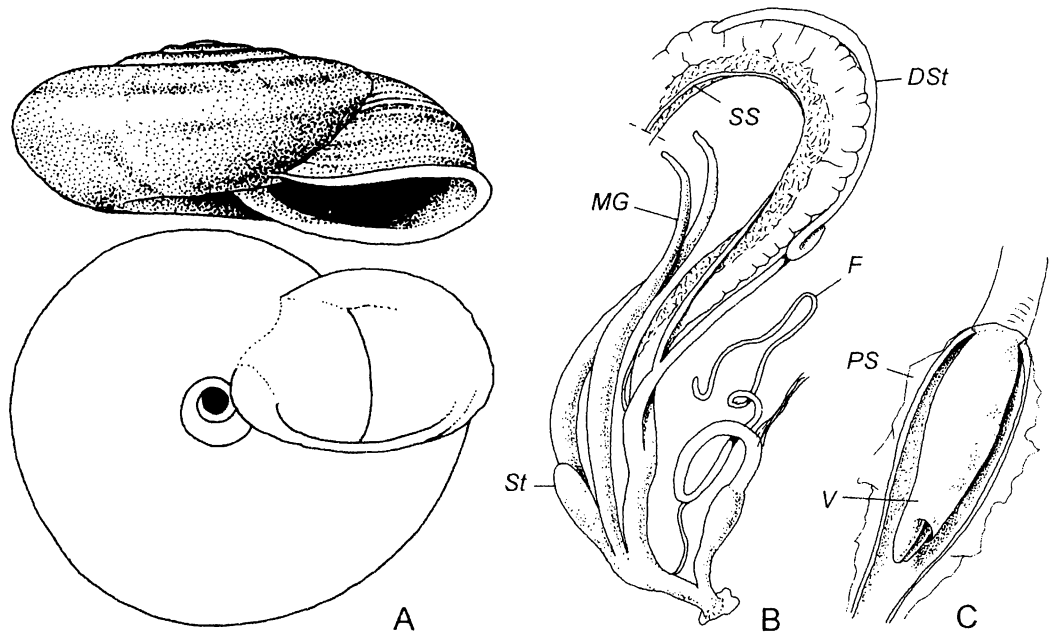


Fig. 2264. A — *Helicigona (Chilostoma) foetens* (Studer, 1820). Shell: Carynthia, Austria. Phil. No. 30536. B, C — ! *Helicigona (Chilostoma) achates* (Rossmässler, 1835). Ca 18 km N of Cortina d'Ampezzo, Col Rosa Mt region Veneto, Italy, April 27, 1998. B — reproductive tract. C — interior of penis. Moscow No. Lc-28177

Helicigona (Chilostoma)
Fitzinger, 1833)
Fig. 2264

Fitzinger, 1833: 98.

— *Corneola* Held, 1837 912 (t.-sp. *Helix cornea* Draparnaud, 1801; SD J. Gray, 1847).

TYPE SPECIES — *Helix foetens* Studer, 1820; SD J Gray, 1847

Shell depressed to almost flat, thin, shining, of about 5.5 moderately convex whorls. Last whorl rounded to scarcely angulated, strongly but gradually deflected. Color yellowish-corneous, with dark supraperipheral band. Embryonic whorls smooth. Postapical sculpture weak, of delicate, irregular radial lines. Peristome insertions more or less approached, connected by variously developed parietal callus. Height 9-12, diam. 18-27 mm (9.8 × 22.0 mm).

DISTRIBUTION. Alps. About 10 spp. & forms.

Helicigona (Josephinella) Haas, 1936)
Fig. 2265

Haas, 1936: 130 (*Campylaea* subg.).

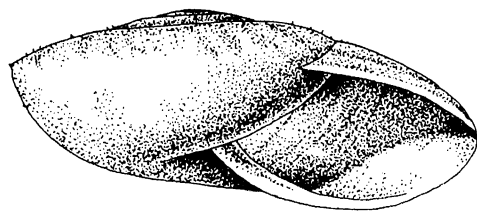


Fig. 2265. *Helicigona (Josephinella) hemonica* (Thiesse, 1884). Kalambata, Greece. Cardiff.

TYPE SPECIES — *Helix hemonica* Thiesse, 1884; OD.

Shell depressed, very thin, fragile, much translucent, of 4.5-5 nearly flat whorls. Last whorl angled at periphery, gradually but quite markedly descending in front. Color light-yellow to brown. Embryonic whorls finely granulate, same granulation retained on postnuclear whorls, where rather coarse radial wrinkles added; besides, there are numerous, small setae. Peristome insertions

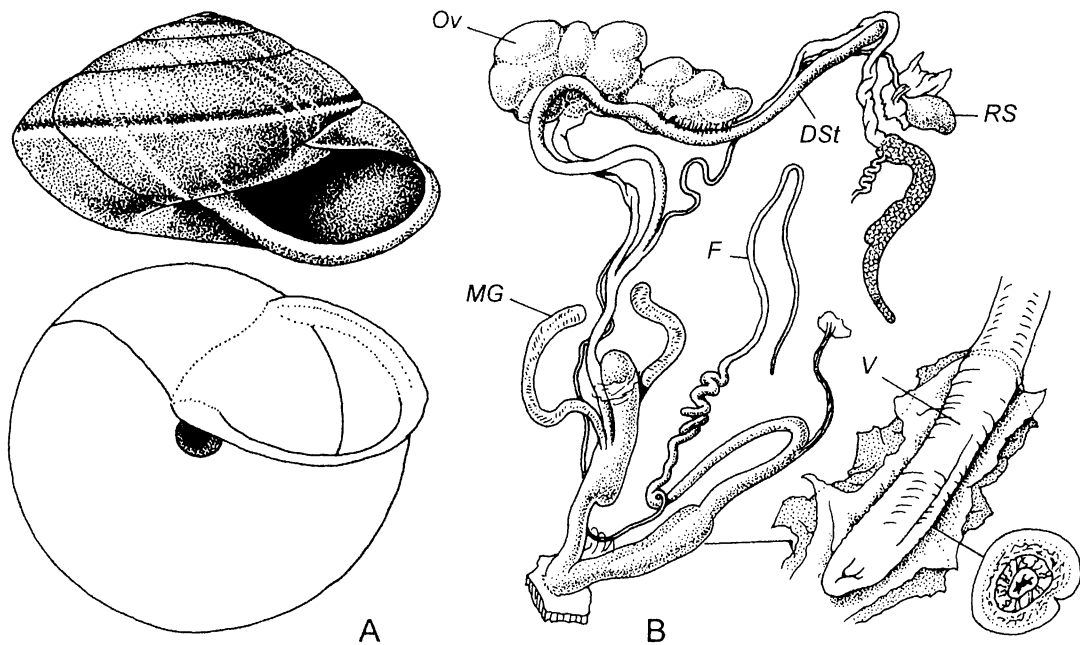


Fig. 2266. *Helicigona (Drobacia) banatica* (Rossmässler, 1838).
 Near Khust, Transcarpathia, Ukraine, September 13, 1983. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-6863 (gift of A. A. Baidashnikov).

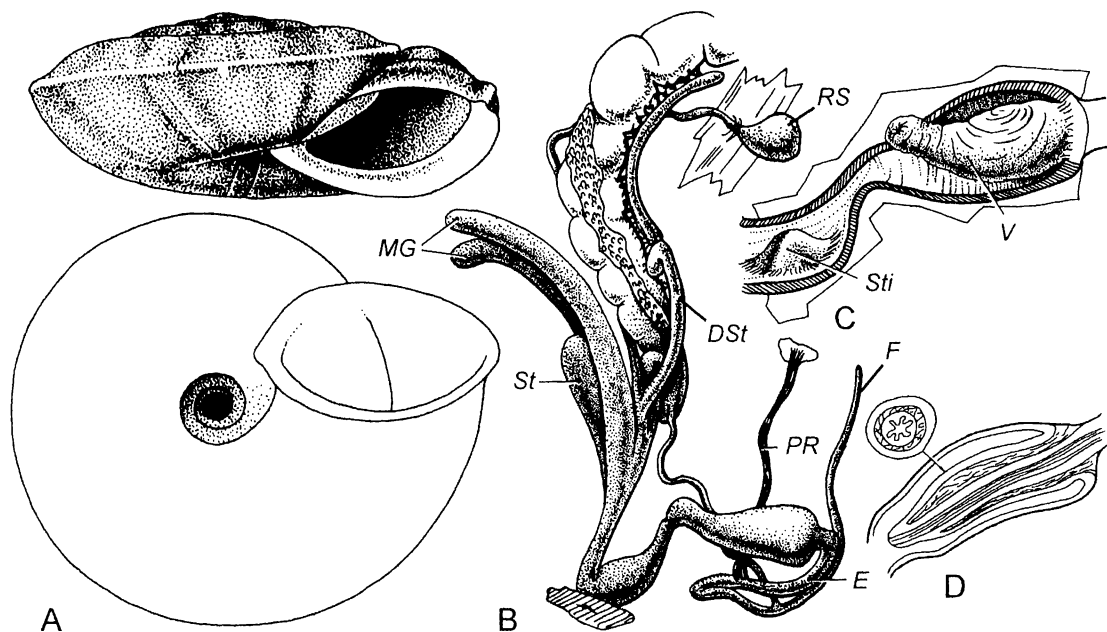


Fig. 2267 *Helicigona (Helicigona) lapicida* (Linnaeus, 1758).
 Český Krumlov, Czech Republic, May 19, 1969. A — shell. B — reproductive tract. C — interior of penis. D — longitudinal section through verge. After Schileyko, 1978.

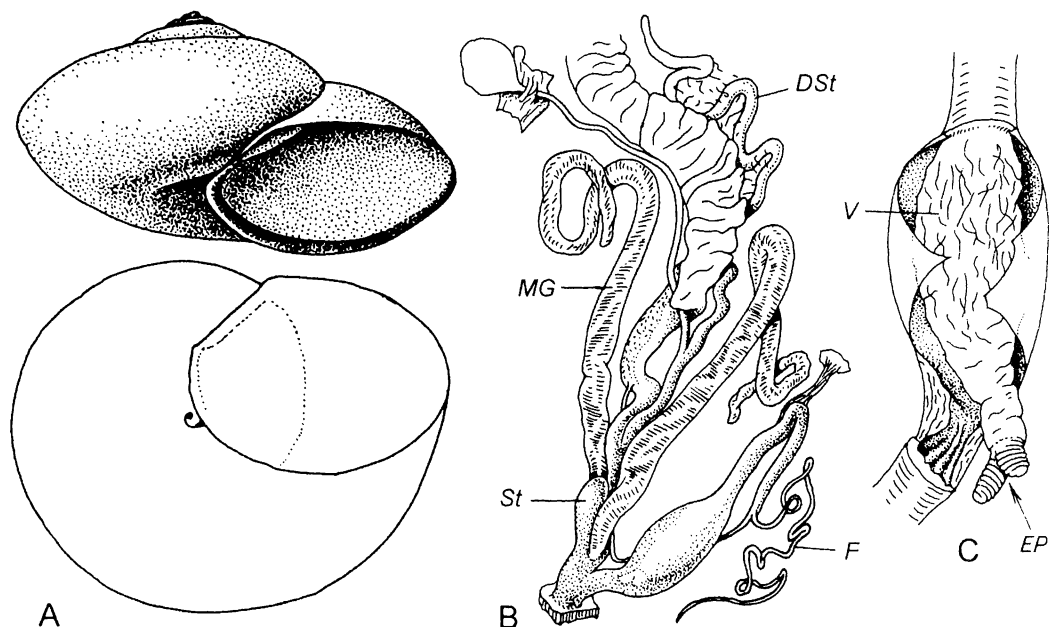


Fig. 2268. *Vidovicia caerulans* (C. Pfeiffer, 1828). "Dalmatia, Ylija bei Orebiè" A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-20636 (Vienna No. 74.107).

remote. Height 9-10, diam. 20-23 mm (9.4 × 20.1 mm).

DISTRIBUTION. Thessalia (Greece). 1 sp.

***Helicigona (Drobacia* Brusina, 1904)**

Fig. 2266

Brusina, 1904: 162 (*Campylaea* subg.).

— *Partschia* C. Boettger, 1911a: 21 (*Campylaea* sect.; t.-sp. *Helix banaticum* Rossmässler, 1838; OD).

— *Dobracia* Ehrmann, 1933: 138 (nom. err. pro *Drobacia* Brusina, 1904).

Schileyko, 1978: 317

TYPE SPECIES — *Helix banaticum* Rossmässler, 1838; OD.

Shell lenticular, moderately solid, slightly shining, of 6 strongly flattened whorls. Last whorl descending in front, with blunt but distinct peripheral angle. Color yellowish to brown, sometimes with darker zones above and below peripheral angle. Embryonic whorls smooth. Postapical sculpture of weak radial wrinklets and distinct spiral lines. Peristome insertions not approached. Height 14-18, diam. 25-30 mm (15.3 × 26.7 mm).

DISTRIBUTION. Carpathians. 1 sp.

***Helicigona (Helicigona* s. str.)**

Fig. 2267

Shell lenticular, moderately solid, slightly shining, of 6 strongly flattened whorls. Last whorl descending in front, with sharp peripheral angle. Color yellowish to brown, sometimes with darker zones above and below peripheral angle. Embryonic whorls smooth. Postapical sculpture of weak radial wrinklets and distinct spiral lines. Peristome insertions not approached. Height 14-18, diam. 25-30 mm (15.3 × 26.7 mm).

DISTRIBUTION. Central and N Europe, eastward to Kaliningrad region (Russia) and Latvia. 1 sp.

***Vidovicia* Brusina, 1904**

Fig. 2268

Brusina, 1904: 162 (*Campylaea* subg.)

— *Hazaya* Soós, 1909: 43 (t.-sp. *Helix caerulans* C. Pfeiffer, 1828; OD).

TYPE SPECIES — *Helix caerulans* C. Pfeiffer, 1828; OD.

Shell low-conic, rather thin but opaque, dull, of 4.5-5 quite convex whorls. Last whorl strongly descending in front, slightly,

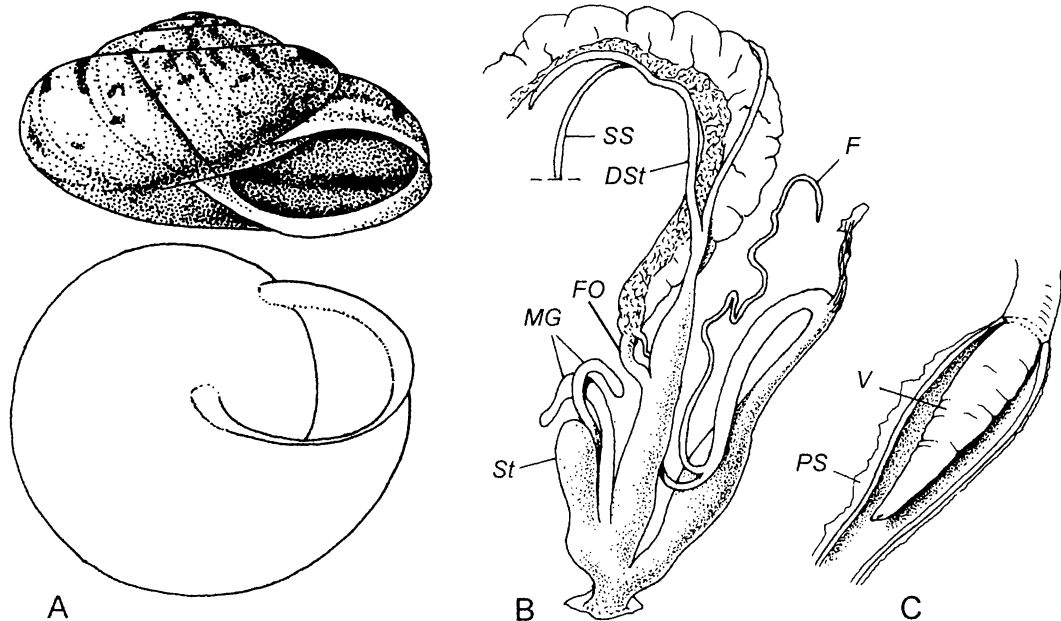


Fig. 2269 *Murella muralis* (Müller, 1774).

A — shell: Sicily Moscow No. L-1636. B, C — Coliseum, Roma, Italy, November 1, 1995. B — reproductive tract. C — interior of penis. Moscow No. Lc-28179

roundly angulate at periphery. Color whitish-grey, often with bluish tint; summit dark; peristome light-brown to blackish; aperture internally whitish or dull-yellow. Embryonic whorls lack regular sculpture. Postapical sculpture of variously developed, sometimes rather coarse, smoothed, irregular radial wrinkles. Aperture subspherical, very oblique, nearly entire. Umbilicus minutely open, excentric. Height 9-12, diam. 14-20 mm (11.1 × 19.4 mm).

Flagellum very long, slender, sinuous. Epiphallus moderately long, sharply bent in middle. Penis fusiform, thin-walled, internally with a large, fleshy, inflated verge; vergic (epiphallic) pore situated between 2 contractile apical lobes. Penial retractor attached to knee of epiphallus. Free oviduct short, vagina 2-3 times longer. Stylophore small. Mucus glands 2, enormously developed. Neck of spermathecal stalk moderately long; diverticle stout.

DISTRIBUTION. Croatia. 1 sp.

Murella L. Pfeiffer, 1877

Fig. 2269

Pfeiffer L., 1877 8 (*Helix*, sect. *Iberus*; subsect.).

TYPE SPECIES — *Helix muralis* Müller, 1774; SD Kobelt, 1904.

Shell depressed, mostly comparatively thin, slightly translucent, of 4-4.5 moderately convex whorls. Last whorl near aperture strongly deflected, rounded. Outline of spire nearly conical. Coloration consisting of calcareous-white background and dark marble pattern; light peripheral band may be present. Embryonic whorl smooth. Postapical surface with fine radial wrinklets and extremely delicate radial striae. Aperture ovate, strongly oblique; margins not thickened, a little reflexed. Umbilicus closed. Height 8.5-14.0, diam. 14-27 mm (9.8 × 16.5 mm).

Vas deferens comparatively short. Flagellum long, epiphallus 1.5-2 times shorter. Penis fusiform, surrounded by very thin, transparent sheath. Verge rather large, conic. Penial retractor attached to middle of epiphallus. Free oviduct short, slender. Vagina long, stout. Stylophore situated very low, close to atrium. Mucus glands rather short. Neck of spermathecal stalk not very short, more or less swollen basally. Diverticle thin.

DISTRIBUTION. SW Italy, Sicily, Malta. About 15 spp. with numerous forms.

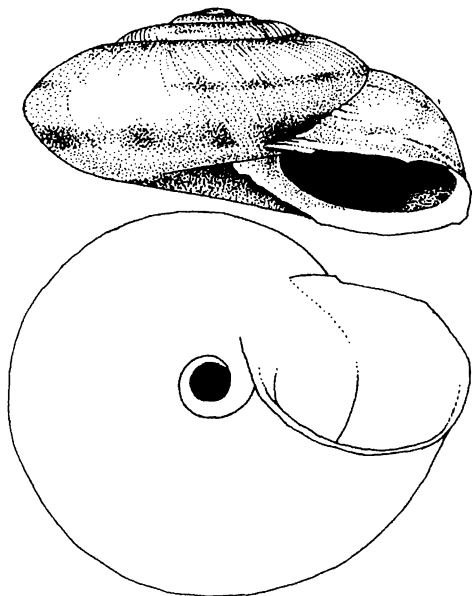


Fig. 2270. *Ambigua signata* (Férussac, 1821).
Italy Paris (as *tetrazona*).

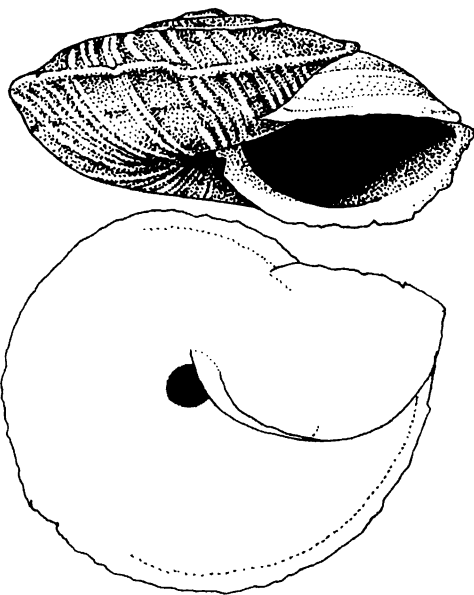


Fig. 2271 *Tyrreniberus sardonius* (Martens,
1884).
Sardinia. Paris.

Ambigua Westerlund 1902

Fig. 2270

Westerlund, 1902: 96.

— *Opica* Kobelt, 1904: 156, 198 (*Iberus* subg., t.-sp. *Helix strigata* Müller, 1774; OD).

TYPE SPECIES — *Helix tetrazona* Cristofori et Jan, 1832 (= *Helix signata* Férussac, 1821); OD.

Shell depressed, solid, of 4-4.5 moderately convex whorls. Last whorl rounded or a little angulate, well descending in front. Color white, with 3-4 fulvous bands, uppermost often very weak or missing. Embryonic whorls smooth. Postnuclear whorls with very delicate radial wrinklets. Aperture widely ovate, strongly oblique, with slightly reflexed margins. Umbilicus cylindrical, moderately wide. Height 7-12, diam. 14-23 mm (8.4 × 17.6 mm).

DISTRIBUTION. Central and S Italy 3 spp.

Tyrreniberus Hesse et Kobelt, 1904

Fig. 2271

Hesse & Kobelt in Kobelt, 1904: 132 (*Iberus* subg.).

TYPE SPECIES — *Helix sardonica* Martens, 1884; OD.

Shell sublenticular, much flattened, moderately solid, of 4-4.5 almost flat whorls. Last whorl strongly deflected, with cord-like, uneven keel which is visible above suture on penultimate whorl. Color generally corneous; upper surface somewhat variegated, with 1 band below keel, usually interrupted by light streaks. Embryonic whorls smooth. Later whorls coarsely, irregularly radially ribbed. Aperture ovate-rostrate, very oblique, with slightly reflexed margins. Umbilicus rather narrow, usually a little covered. Height 7-13, diam. 15-27 mm (9.5 × 19.8 mm).

DISTRIBUTION. E Sardinia, Toscana (= Tuscany). About 10 spp. & forms.

Isognomostoma Fitzinger, 1833

Fig. 2272

Fitzinger, 1833: 97

— *Plicostoma* Schlüter, 1838: 4 (t.-sp. *Helix isognomostoma* Schröter, 1784; monotypv).

— *Isognomostoma* Hartmann, 1840 (without pagination; evidently nom. err. pro *Isognomostoma* Fitzinger, 1833).

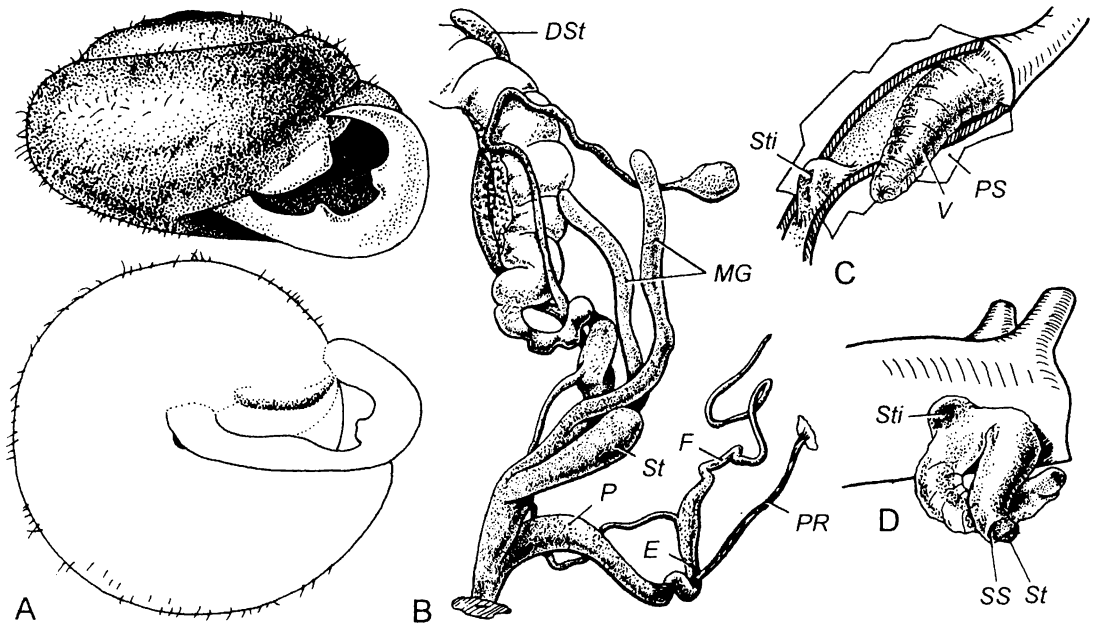


Fig. 2272. *Isognomostoma isognomostomum* (Schröter, 1784).

Kvasy village near Rakhov, Transcarpathian region, W Ukraine, September 10-22, 1969. A — shell. Moscow No. Lc-6876. B — reproductive tract. C — interior of penis. D — anterior end of specimen with everted genitalia. After Schileyko, 1978.

— *Isognomonostoma* Agassiz, 1846: 197 (nom. err. pro *Isognomostoma*).

— *Ulostoma* Albers, 1850: 95 (*Helix* subg.; part.). Schileyko, 1978: 315.

TYPE SPECIES — *Helix isognomostoma* Schröter, 1784; monotypy

Shell semiglobose, moderately thin, of 5 convex whorls. Last whorl evenly rounded, sharply deflected. Color reddish-corneous, brown or chestnut. Postapical sculpture of irregular radial striation and fine granulation; in fresh shells each granule bears minute triangular scale. Besides, there are numerous long, curved hairs. Aperture rounded triangular, with strongly reflexed, expanded margins. There is strong lamellar parietal tooth; thick lip furnished with tubercular basal and palatal teeth. Umbilicus closed or slit-like. Height 5.5-6.5, diam. 7.8-11.5 mm (5.9 × 10.7 mm).

Flagellum long, vermiform. Epiphallus rather short. Penis cylindrical or somewhat tapering. Penial verge relatively long, with terminal pore, occupies entire lumen of penis between epiphallus and well developed tubercular penial stimulator. Penial retractor attached to penis/epiphallus junction.

Stylophore clavate. Mucus glands long. Neck of spermatheca moderately short; diverticle stout.

DISTRIBUTION. Mountain regions of Central and W Europe. 1 sp.

Causa Schileyko, 1971 Fig. 2273

Schileyko, 1971 997; 1978: 317

TYPE SPECIES — *Helix holosericum* Studer, 1820; OD.

Shell nearly flat, rather thin, of 6 narrow, rather convex whorls. Body whorl deflected, rounded. Color light-corneous to brown; peristome white. Embryonic whorls practically glabrous. Postapical sculpture of thin, irregular radial striation and delicate granulation; fresh shells bear short, scattered hairs. Aperture not strongly oblique, with well reflexed margins which supplied with 2-3 tubercular teeth: 1 palatal and 1-2 basal. Umbilicus moderately broad, sub-cylindrical, perspective. Height 5-6, diam. 9.0-10.5 mm (5.2 × 10.2 mm).

Flagellum very short. Epiphallus quite long. Penis distinctly divided into 2 sec-

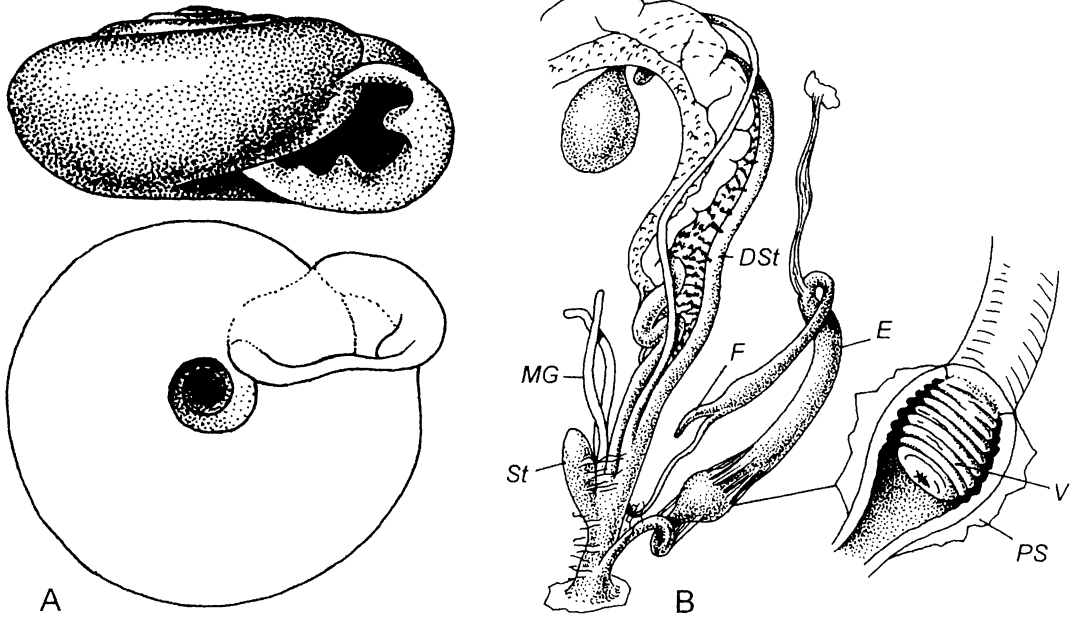


Fig. 2273. *Causa holosericea* (Studer, 1820).
 Krakow Gorge, Tatra Mts, July 25, 1958. A — shell. B — reproductive tract and interior
 of upper chamber of penis. After Schileyko, 1971

tions: globular proximal and slender cylindrical distal. Stimulator (penial tubercle) located at very atrium. Penial verge contractile, occupies globular chamber of penis and covered with numerous circular folds; at smoothing of folds verge may be lengthened considerably. Penial retractor attached to middle section of epiphallus. Stylophore relatively small, mucus glands of moderate length. Neck of spermathecal shaft short, diverticle stout, reservoir capacious, nearly reaching albumen gland.

DISTRIBUTION. Mountain regions of Europe (Alps, Tatra, western Carpathians, Sudety). 1 sp.

Arianta Leach, 1831

Fig. 2274

Leach in Turton, 1831 35.

— *Arianta* Martens in Albers, 1860: 127 (t.-sp. *Helix arbustorum* Linnaeus, 1758; OD). ICZN Opinion 335, 1955: 47 Schileyko, 1978: 310.

TYPE SPECIES — *Helix arbustorum* Linnaeus, 1758; monotypy

Shell somewhat depressed to globose, moderately thin, of 5-6 not very convex whorls. Body whorl markedly descending in front, evenly rounded. Color variable, from white with a dark supraprotopharyngeal band to consisting of yellow, chestnut or brown background and light-yellow streaks and spots. Embryonic whorls smooth. Postembryonic sculpture generally of irregular fine radial wrinklets and dense spiral striae. Aperture ovate to rounded, oblique; margins reflexed, sharp, with a strong inner lip. Umbilicus narrow to almost closed. Height 10-24, diam. 15-24 mm (18.2 × 20.4 mm).

Flagellum long, vermiform, epiphallus about 2 times shorter. Penis swollen, bulky, internally with numerous circular folds. Verge with 2 deep, superficial, longitudinal grooves and minute apical pore. Stimulator (penial tubercle) well developed. Penial retractor attaching to epiphallus below its middle. Stylophore relatively small, elongate to subglobose. Mucus glands very long. Spermathecal stalk with moderately long neck and very stout diverticle; reservoir attending albumen gland.

DISTRIBUTION. Central, E and N Europe. 4-5 spp.

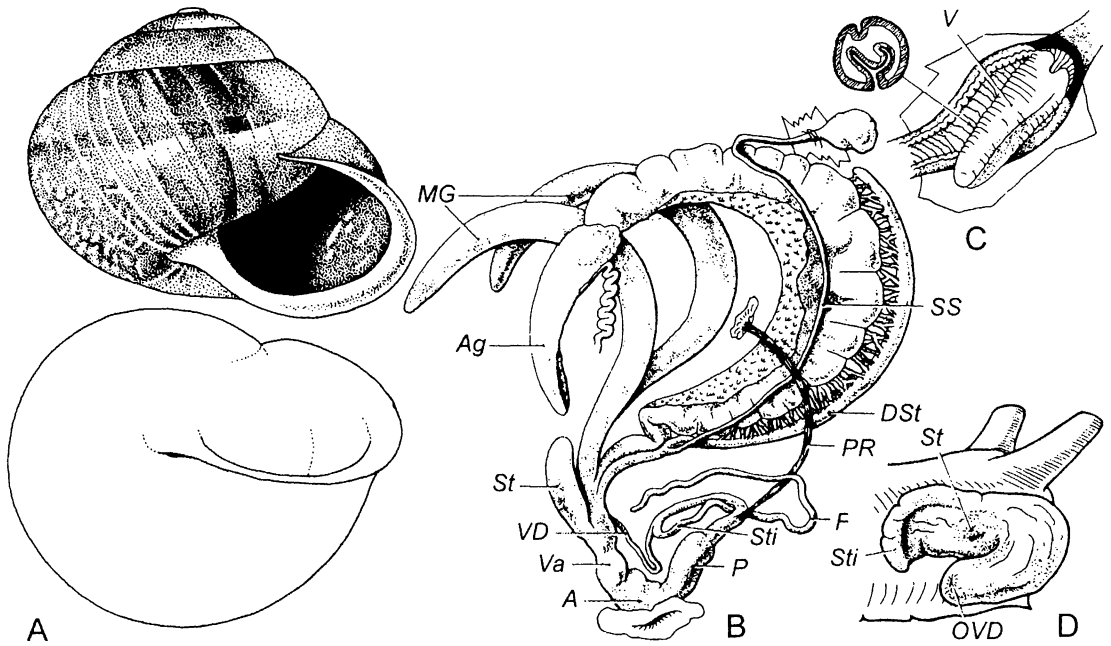


Fig. 2274. *Arianta arbustorum* (Linnaeus, 1758). Kvasy village near Rakhov, W Ukraine, September 16, 1969. A — shell. B — reproductive tract. C — interior of penis. D — anterior end of specimen with partly everted penis. Moscow No. Lc-19711

Campylaeini Kobelt, 1904

Kobelt, 1904: 71, 131 (pro subfam.)

Shell as in Ariantini.

Mucus glands biramous.

DISTRIBUTION. Central and SE Europe, N Africa.

Campylaea Beck, 1837

Beck, 1837 24 (*Helix* subg.).

— *Eucampylaea* L. Pfeiffer, 1879 (1878-1881): 144 (t.-sp. *Helix planospira* Lamarck, 1822; here designated).

TYPE SPECIES — *Helix planospira* Lamarck, 1822; SD Martens in Albers, 1860.

Shell depressed, (moderately) thin to solid, mostly somewhat shining, of 4.5-6 rather convex to flattened whorls. Last whorl more or less deflected, evenly rounded (rarely bluntly angulated). Color lemon-yellow, reddish, light-corneous, monochromatic or with 1-2 dark bands. Postnuclear sculpture of fine irregular wrinklets; spiral striation or hairs may be present. Aperture ovate, oblique, with

poorly developed lip. Umbilicus not very wide, perspective.

Flagellum vermiform, quite long. Penis more or less inflated in proximal portion. Verge mostly large, sometimes consisting of 2 lobes strongly differing in size. Stimulator (penial tubercle) present. Penial retractor attached to distal portion of epiphallus. Penis sheath very thin, transparent. Stylophore bulky, shortly clavate. Mucus glands long. Neck of spermatheca short, diameter of diverticle considerably exceeds diameter of spermathecal duct proper.

DISTRIBUTION. Central and SE Europe, N Algeria.

Campylaea (*Liburnica* Kobelt, 1904) Fig. 2275

Kobelt, 1904 (October): 74, 131, 154, 185 (*Campylaea* subg.).

— *Botteria* Brusina, 1904 (October): 162 (t.-sp. *Helix setosa* Rossmässler, 1836; monotypy).

Schileyko, 1971 991 Subai, 2002: 1

TYPE SPECIES — *Helix setosa* Rossmässler, 1836; monotypy.

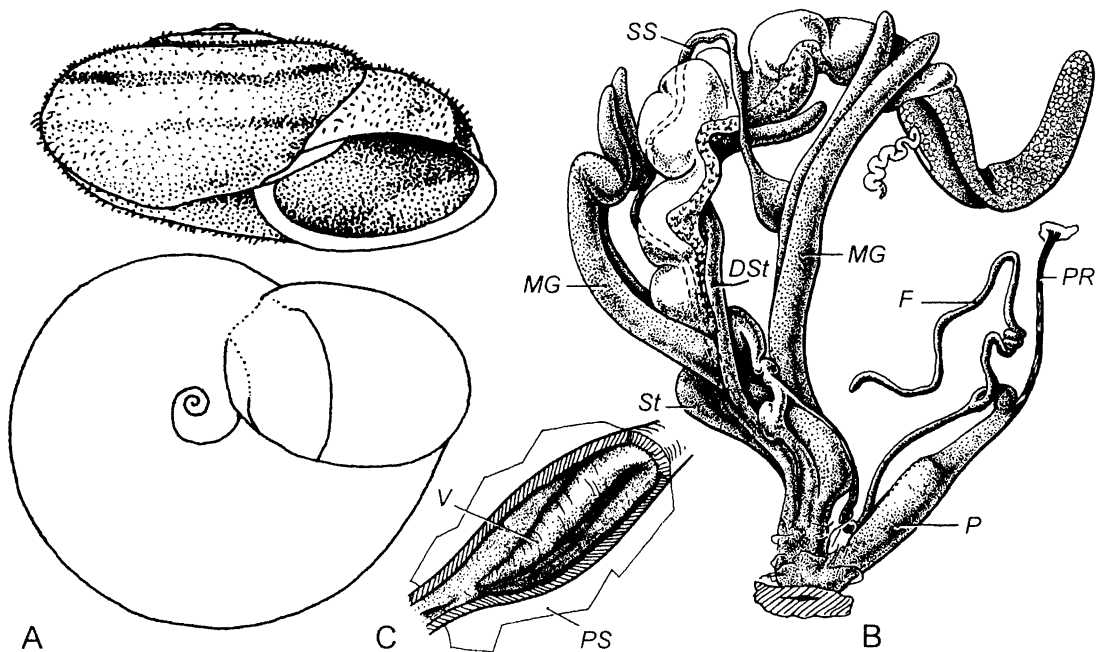


Fig. 2275. *Campylaea (Liburnica) setosa* (Rossmässler, 1836). Makarska, Dalmatia [S Croatia]. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-6883.

Shell translucent, of about 5 slightly convex whorls. Last whorl strongly descending in front. Color mostly whitish-yellow, with 2 dark bands — above and below periphery. Embryonic whorls almost smooth or very finely granulate. Postembryonic whorls also with fine granulation; there are also fine radial wrinklets and dense golden hairs. Aperture strongly oblique, peristome insertions much approached and connected by thin but distinct callus. Aperture margins thin, shortly reflexed. Umbilicus deep, moderately broad. Height 7-15, diam. 15-35 mm (12.0 × 26.2 mm).

Epiphallus thicker than flagellum and 3-5 times shorter. Verge large, conic, lacking additional lobe, with variously developed superficial longitudinal groove. Common ducts of mucus glands rather long.

DISTRIBUTION. Coastal territories of Adriatic Sea from Istria to S Montenegro. 12-15 spp.

Campylaea (Cattania) Brusina, 1904

Fig. 2276

Bruzina, 1904: 162 (*Campylaea* subg.).

TYPE SPECIES — *Helix trizona* Rossmässler, 1835; OD.

Shell glossy, of about 5 moderately convex whorls. Last whorl strongly descending toward aperture. Color yellowish to corneous, usually with 3 dark bands. Embryonic whorls smooth. Postapical sculpture of fine, irregular radial wrinklets and spiral striae. Aperture widely ovate, quite oblique, with thin, slightly reflexed margins. Umbilicus moderately wide. Height 10-16, diam. 24.0-32.5 mm (12.7 × 27.2 mm).

Epiphallus 1.5-2 times shorter than flagellum; diameters of these ducts subequal. Verge large, with very thin, semitransparent walls and broad inner canal. Common ducts of mucus glands rather long.

DISTRIBUTION. SE Europe. About 5 spp.

Campylaea (Campylaea) s. str.)

Fig. 2277

Shell somewhat glossy, of 5-6 rather convex whorls. Last whorl more or less descending in front. Color yellowish to pale-corneous, with distinct, reddish-brown suprapерipheral band. Embryonic whorls smooth. Postnuclear sculpture of fine

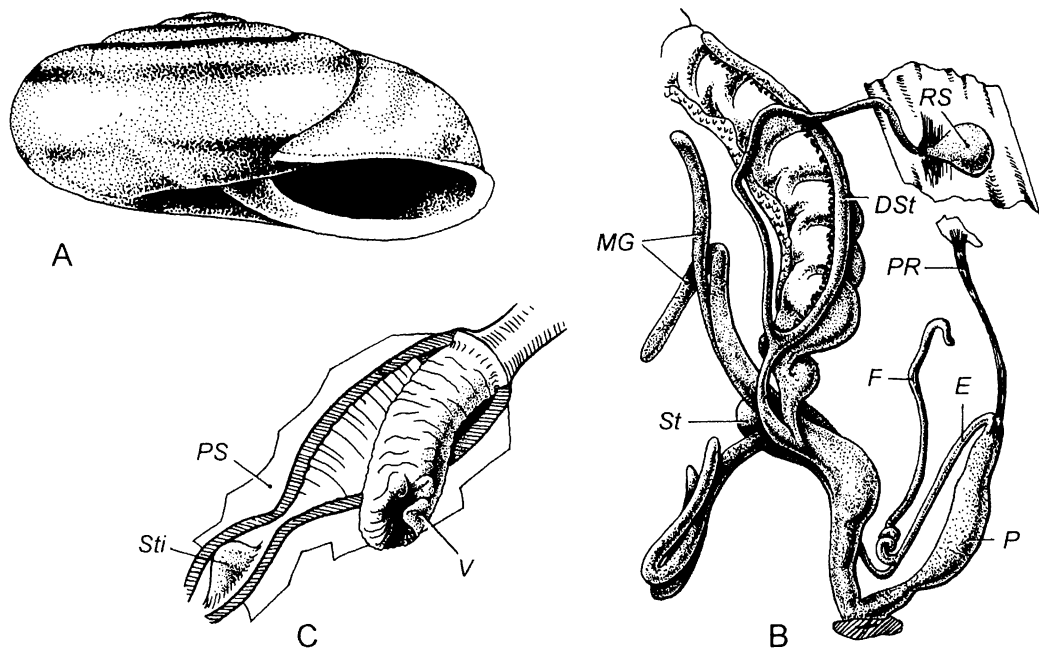


Fig. 2276. *Campylaea (Cattania) trizona* (Rossmässler, 1835).

A — shell: Mehadia, Banat [Romania]. Vienna. B — reproductive tract. C — interior of penis. After Schileyko, 1971

granulation, or surface nearly smooth; short, scattered setae may be present. Aperture well oblique, with reflexed margins and inner lip. Umbilicus rather broad. Height 10-14, diam. 20-30 mm (11.0 × 24.2 mm).

Epiphallus 2-2.5 times shorter and a little thicker than flagellum. Common ducts of mucus glands long (not shorter than branches).

DISTRIBUTION. E Alps to S Greece, Italy, Sicily, N Algeria (Petite Kabylie). About 25 spp. & forms.

Campylaea (Wladislawia

A. Wagner, 1927)

Fig. 2278

Wagner A. 1927 379 (*Campylaea* subg.). Urbański, 1964: 38.

TYPE SPECIES — *Campylaea (Wladislawia) polinskii* A. Wagner, 1927 monotypy

Shell dull to somewhat glossy, of 4.5-5 moderately convex whorls. Last whorl well deflected. Color opaque-whitish, usually with dark supraproperipheral band. Embryonic whorls smooth. Postembryonic whorls with

variously developed radial ribs and delicate spiral lines. Aperture subcircular, moderately or rather strongly oblique, with shortly reflexed margins and inner lip. Umbilicus moderately broad, deep. Height 5-10, diam. 9.5-18.0 mm (7.8 × 16.2 mm).

Epiphallus about 2 times shorter than flagellum. Common ducts of mucus glands of about same length as branches.

DISTRIBUTION. N Macedonia (part of former Yugoslavia). 2 or 3 spp.

Campylaea (Faustina) Kobelt, 1904

Fig. 2279

Kobelt, 1904: 131, 186 (*Campylaea* subg.). Schileyko, 1971 992; 1978: 308.

TYPE SPECIES — *Helix faustina* Rossmässler, 1835; monotypy.

Shell depressed to almost flat, glossy, of 4.5-6 slightly convex whorls. Last whorl markedly deflected. Color whitish to corneous, uniform or with 1 supraproperipheral dark band. Embryonic whorls smooth. Later whorls lack regular sculpture. Aperture broadly ovate, well oblique, with reflexed

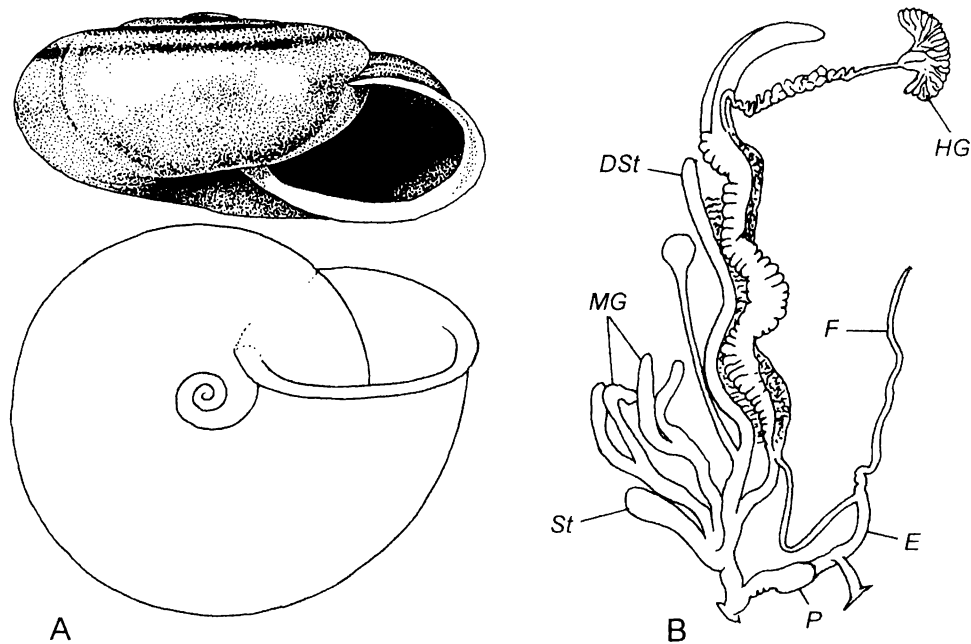


Fig. 2277 *Campylaea (Campylaea) planospira* (Lamarck, 1822).
 A — shell: "Sulzbach [an der Murr], Baden-Württemberg, Germany" Vienna. No. 18785
 B — reproductive tract. After Hesse, 1931

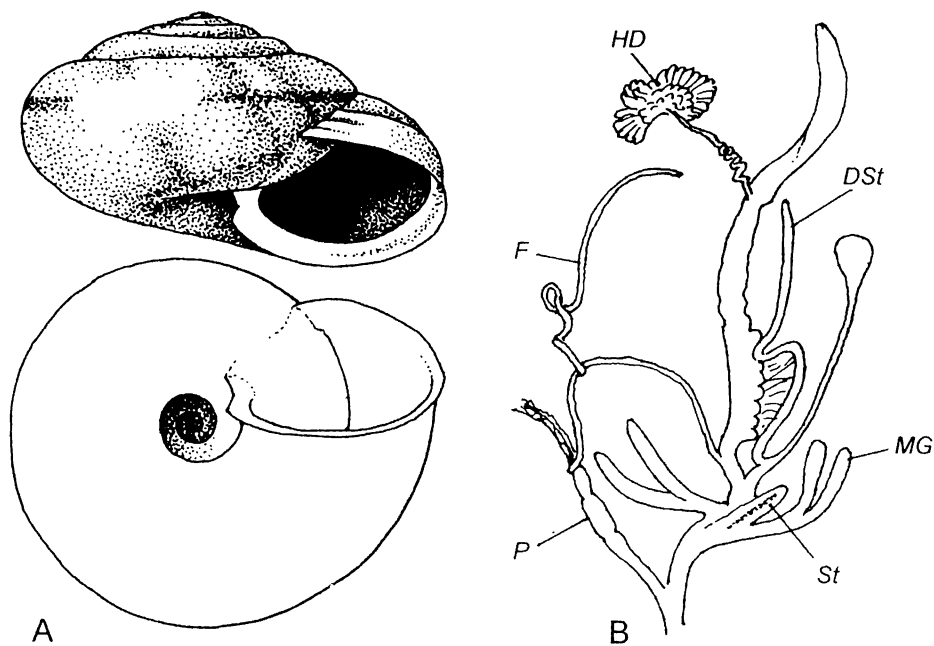


Fig. 2278. *Wladislawia polinskii* (A. Wagner, 1927).
 A — shell: Macedonia. SPb. B — reproductive tract. After Urbański, 1964.

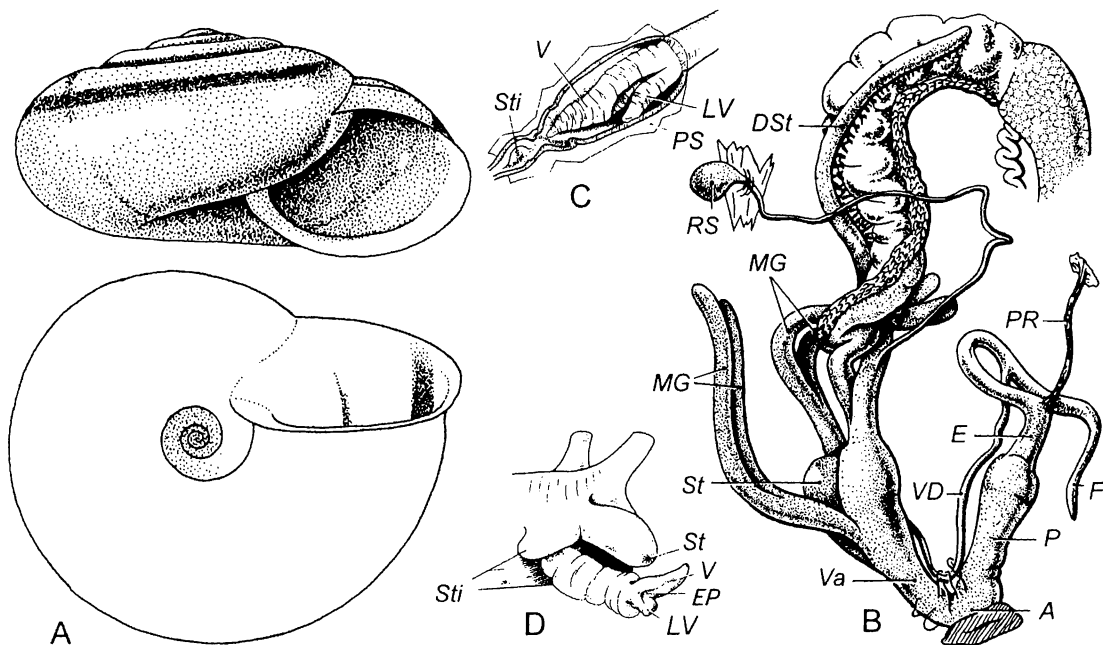


Fig. 2279 *Campylaea (Faustina) faustina* (Rossmässler, 1835).

Kvasy village near Rakhov, W Ukraine, September 12-18, 1969. A — shell. B — reproductive tract. C — interior of penis. D — specimen *in copuli*, penis everted. Moscow No. Lc-19692. LV — lobe of verge.

margins, peristome insertions somewhat approached. Umbilicus rather wide. Height 9-14, diam. 14.0-27.5 mm (10.0 × 16.3 mm).

Epiphallus and flagellum of approximately equal length. Verge bilobed, lobes of unequal size, epiphallic pore situated between them. Common ducts of mucus glands rather short (about 2 times shorter than branches).

DISTRIBUTION. SE Europe from Carpathian Mts. and E Alps to northern Aegean Islands. 2-4 spp.

Campylaea (Dinarica) Kobelt, 1902

Fig. 2280

Kobelt, 1904: 60, 61

— *Sabljaria* Brusina, 1904: 162 (t.-sp. *Helix stenomphala* Menke, 1830; OD).

— *Joossia* Pfeffer, 1930: 96 (t.-sp. *Helix insignis* Zeiten, 1832; monotypy).

TYPE SPECIES — *Helix pouzolzi* Deshayes, 1830; monotypy.

Shell glossy, of about 6 rather convex whorls. Last whorl gradually deflected. Color mostly consisting of yellowish or light-corneous background and 3 chestnut

bands, middle of them being narrowest and most distinct; above it there is a wider less distinct band; the lowest is the widest (occupies nearly all basal surface of shell). Embryonic whorls smooth. Postnuclear sculpture of smoothed radial wrinkles and wavy spiral grooves. Aperture ovate, strongly oblique, with blunt margins; columellar and basal ones shortly reflexed, upper part nearly straight and flattened. Umbilicus moderately wide, profound. Height 14-27, diam. 25-50 mm (25.3 × 45.4 mm).

Epiphallus at least 3 times shorter than flagellum. Penial verge folded, with complicated lateral pore. Mucus glands enormously developed, very long, glossy, with muscularized outer layers of walls; common ducts 1.5-2 times shorter than branches.

DISTRIBUTION. Croatia (N Dalmatia) to S Serbia. About 15 spp. & forms.

Campylaea (Delphinatia)

Hesse, 1931)

Fig. 2281

Hesse, 1931 60.

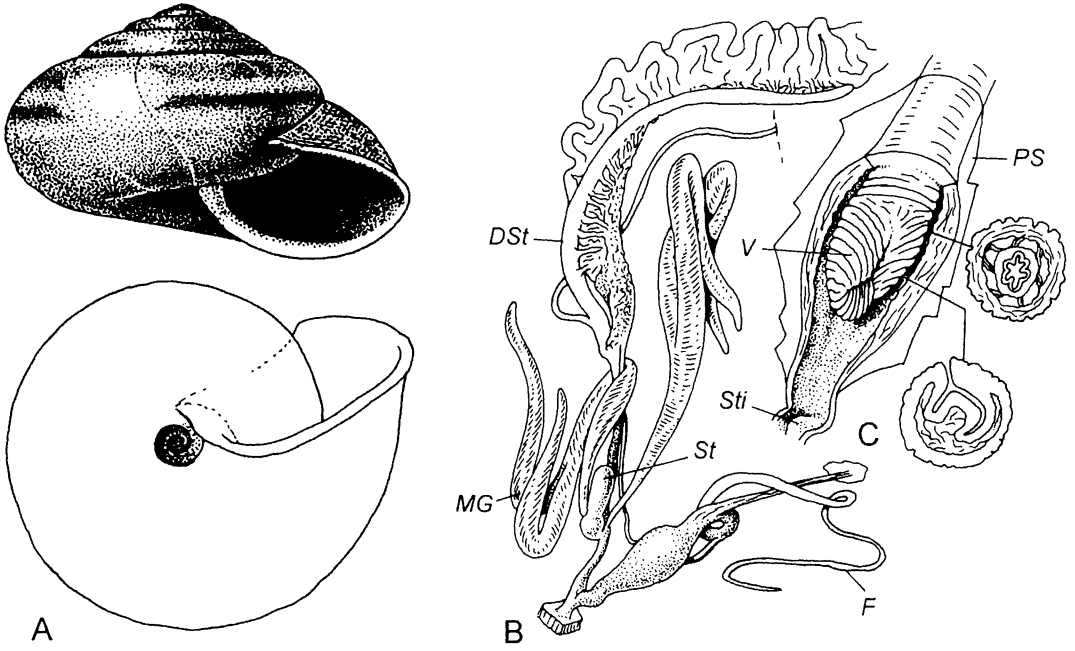


Fig. 2280. *Campylaea (Dinarica) pouzolzi* (Deshayes, 1830). Kotor, Montenegro, May 1, 1974. A — shell. B — reproductive tract. C — interior of penis and cross-sections through verge. Moscow No. Lc-6871

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

Shell rather solid, of 5-6 moderately convex to flattened whorls. Last whorl rounded or bluntly angulated, slightly descending in front. Color whitish to (dark) corneous, often somewhat spotted with dark and sometimes with weak dark supraperipheral band. Embryonic whorls smooth. Later whorls delicately, irregularly radially striated; locally traces of spiral striation may be present. Aperture rounded to widely ovate, with weak inner lip; margins shortly reflexed. Umbilicus moderately narrow. Height 7-16, diam. 13-30 mm (10.1 × 19.0 mm).

DISTRIBUTION. Alps of SW France and NW Italy. 2-3 spp.

Campylaea (Ariantopsis)
A. Wagner, 1927)
Fig. 2282

Wagner A., 1927: 377

TYPE SPECIES — *Helicigona (Arianta) pelia* Hesse, 1912; monotypy

Shell somewhat translucent, shining, of 6-6.5 moderately convex whorls. Last whorl

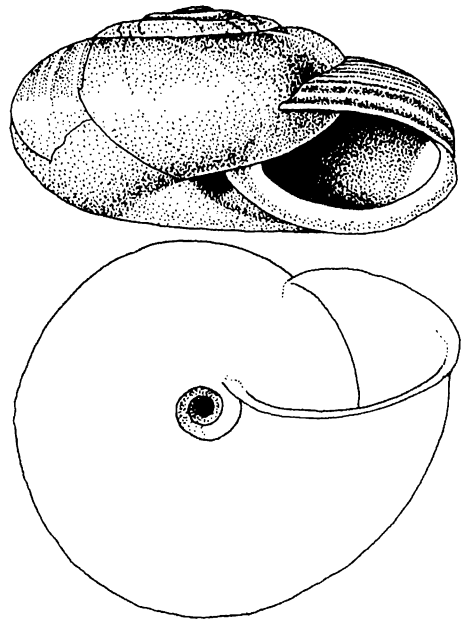


Fig. 2281 *Campylaea (Delphinatia) alpina* (Férussac, 1821). Chartreuse [France]. Phil. No. 30528.

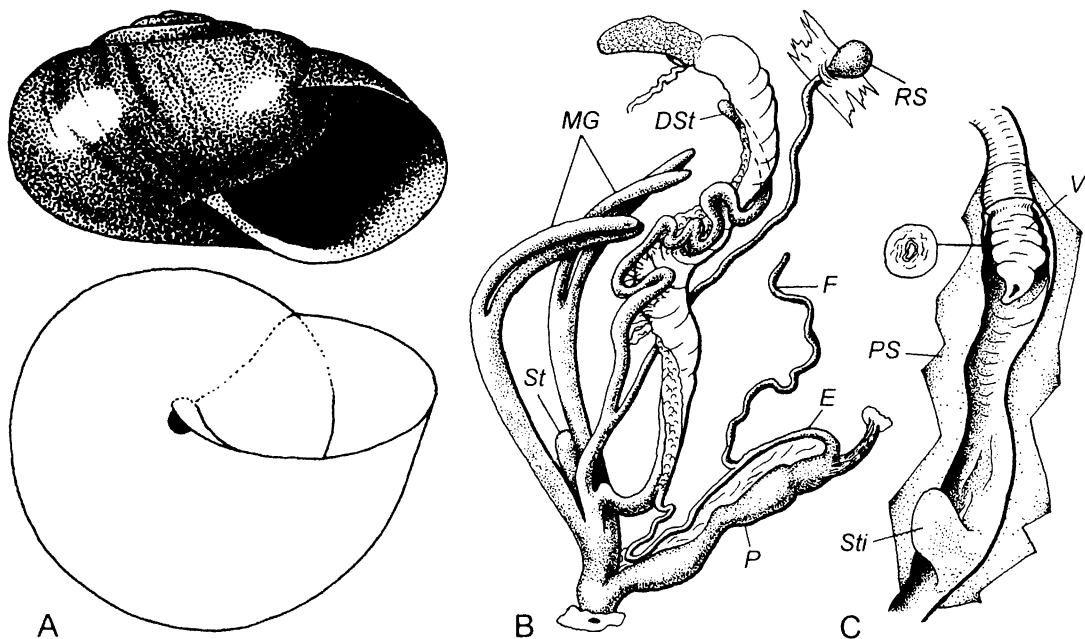


Fig. 2282. *Campylaea (Ariantopsis) pelia* (Hesse, 1912).

A — shell: Bulgaria. Moscow No. L-1691 B — reproductive tract. C — interior of penis. After Schileyko in Damjanov & Likharev, 1975.

evenly rounded at periphery, only slightly descending in front. Color buff-yellow or ochraceous, without bands; irregularly spaced, darker radial streaks often present. Embryonic whorls smooth. Later whorls with irregular, fine radial wrinklets, delicate spiral striae and sometimes with fine granulation. Aperture shortly ovate, with a little reflexed thin margins and thin light lip. Umbilicus narrow, partly covered. Height 7.5-13.0, diam. 11-22 mm (10.5 × 16.2 mm).

Epiphallus 2-2.5 times shorter than flagellum. Verge comparatively small, with circular folds and subapical pore. Common ducts of mucus glands long, not shorter than branches.

DISTRIBUTION. Bulgaria. 1 sp.

Macularia Albers, 1850

Fig. 2283

Albers, 1850: 80 (*Helix* subg.).

TYPE SPECIES — *Helix niciensis* Férussac, 1821; SD Lowe, 1854.

Shell depressed-conoid, moderately solid,

somewhat glossy, of 4.5-6 slightly convex whorls. Body whorl rounded, markedly descending in front. Color whitish, normally with 5 brown bands broken into series of spots. Embryonic whorls smooth. Postapical whorls with smoothed, irregular radial wrinkles and sometimes, locally, short spiral touches. Aperture ovate, moderately oblique, with thin or slightly thickened margins; baso-columellar margin with variously developed lip. Umbilicus very narrow, usually partly or completely covered. Height 11-17 diam. 15-27 mm (12.3 × 19.3 mm).

Flagellum extremely long. Epiphallus rather short. Penis with a long verge having bilobed apex; lobes almost equal, epiphallic pore situated between lobes. Upper chamber of penis, containing basal part of verge, invaginated into lower chamber. Free oviduct comparatively long, vagina 1.5-2 times shorter. Stylophore large, situated very low — just above atrium. Mucus glands attached to base of stylophore, common ducts of glands very short. Neck of spermathecal stalk quite long, diverticle very long, strongly convoluted.

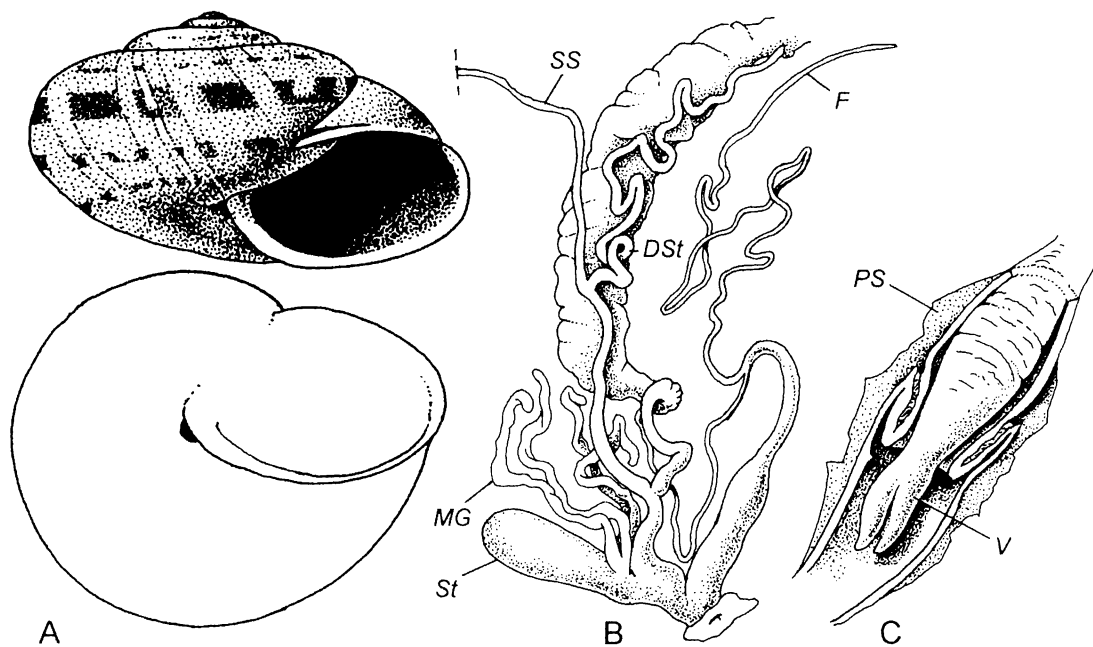


Fig. 2283 *Macularia niciensis* (Férussac, 1821).
 Carros, Alpes Maritimes, SE France, July 6, 1982. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28138 (shell), Lc-28187 (soft parts).

DISTRIBUTION. Italy, Sardinia, Corsica.
 About 20 spp. with numerous forms.

Marmorana Hartmann, 1844

Fig. 2284

Hartmann, 1844: 210.

TYPE SPECIES — *Helix serpentina* Férussac, 1821; monotypy

Shell depressed, moderately solid, somewhat shining, of about 4.5-5 slightly convex whorls. Last whorl rounded at periphery, rather abruptly descending in front. Color whitish or yellow tinged, with 5 more or less distinctly interrupted bands, or radially maculate and strigate above; sometimes with whole ground-color deep chestnut, upon which there are white zigzag vermiculations and strigations. Embryonic whorls smooth. Postapical surface lightly obliquely striatulate. Aperture broadly ovate, quite oblique, with almost straight or shortly reflexed margins. Umbilicus closed or slit-like. Height 8-16, diam. 15-28 mm (10.0 × 17.8 mm).

DISTRIBUTION. Italy, Tyrrhenian Islands, Corsica, Sardinia. Probably 1 variable sp.

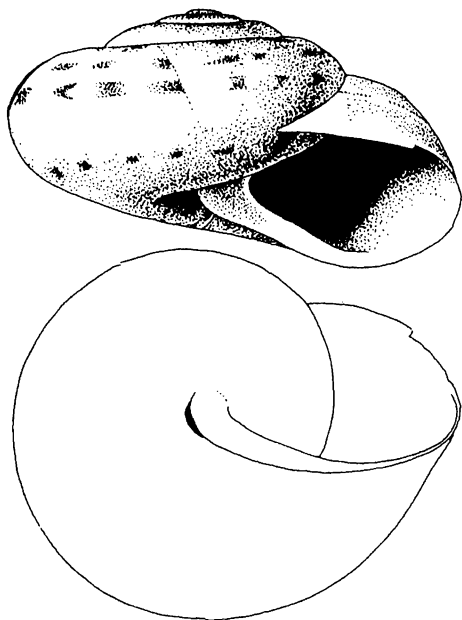


Fig. 2284. *Marmorana serpentina* (Férussac, 1821).

Toscana: Livorno. Vienna No. E 3939

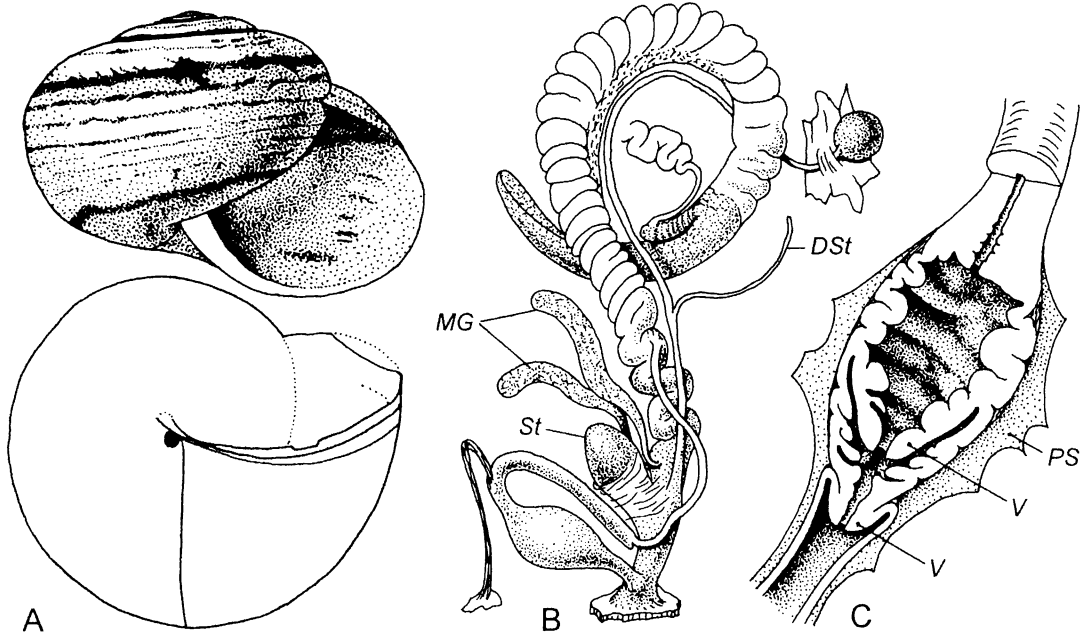


Fig. 2285. *Theba pisana* (Müller, 1774). Larnaca, Cyprus, February 20, 1980. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-19724.

Thebini Wenz, 1923

Wenz, 1923: 381

— Euparyphinae Perrot, 1939: 35

Shell semiglobose to almost lens-shaped, of medium size.

Flagellum rudimentary. Proximal chamber of penis entering distal chamber through a broad verge; another verge protruded into atrial section of penis. Stylophore sessile. Mucus glands 2, internally of alveolar structure. Diverticle of spermathecal stalk thin, somewhat rudimentary, membrane between it and spermooviduct exceptionally thin, without visible vascularization.

DISTRIBUTION. Circummediterranean.

Theba Risso, 1826

Fig. 2285

Theba Risso, 1826: 73 (ICZN Opinion 431, 1956).

— *Xerophila* Held, 1837: 913 (invalid name: ICZN Opinion 431, 1956).

— *Euparypha* Hartmann, 1843: 204 [t.-sp. *Euparypha rhodostoma* Hartmann, 1843 (= *Helix pisana* Müller, 1774); monotypy].

TYPE SPECIES — *Helix pisana* Müller,

1774; SD Gray, 1847 (ICZN Opinion 431, 1956).

Shell subglobose to sublenticular, (moderately) solid, glossy, of about 5 slightly to moderately convex whorls. Last whorl widely rounded, almost straight. Color whitish, mostly with many dark, irregular bands; peristome often pinkish. Embryonic whorls smooth, polished. Postapical sculpture of fine, irregular radial lines and spiral grooves. Aperture large, subcircular to angulate, slightly oblique, with almost straight margins and smoothed lip. Umbilicus minutely open, often partly covered. Height 12-16, diam. 16-21 mm (14.2 × 20.2 mm).

Talon large, exposed, hermaphroditic duct joins talon subapically. Vas deferens moderately long, entering epiphallus subapically, leaving rudimentary flagellum. Epiphallus not long. Penis swollen, with proximal chamber having a vast lumen; walls of this chamber transversely folded. Proximal chamber entering distal one through a broad verge which fills most of lumen of distal chamber; latter also with folded walls, enters narrow, distalmost section of penis through a short, sphincter-like verge. Penial retractor inserted on lower half of epiphallus. Free oviduct long, convo-

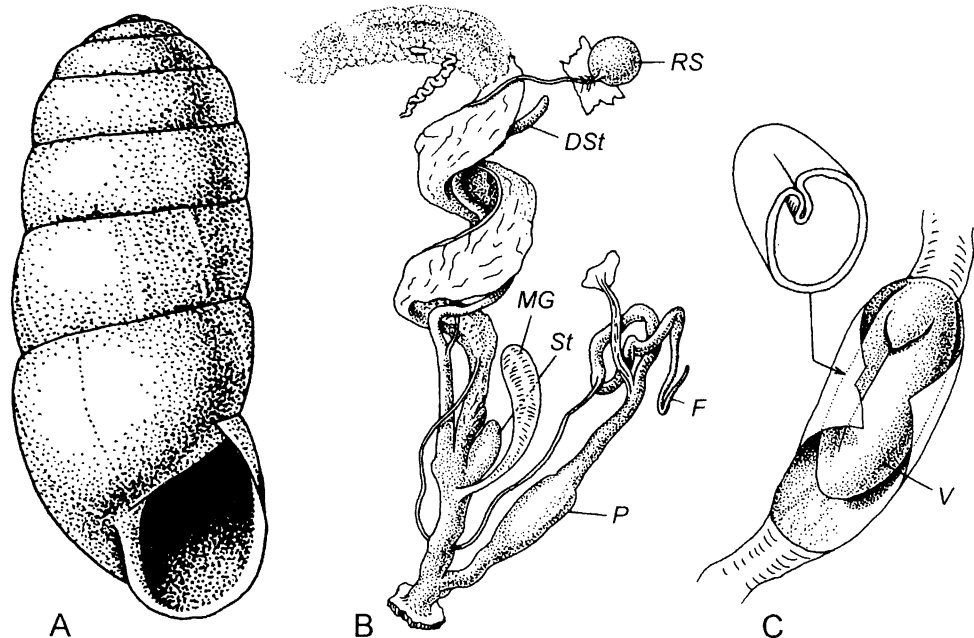


Fig. 2286. *Cylindrus obtusus* (Draparnaud, 1805). "Austria, Schneeberg; Weg kurz vor Tischehütte, Austria, June 14, 1981" A — shell. B — reproductive tract. C — interior of penis and cross-section through verge. **Vienna.**

luted. Vagina rather short. Stylophore ovate, without accented neck. Mucus glands look like alveolar in structure, attached to vagina a little above base of stylophore. Spermathecal stalk slender, long, with very thin, somewhat rudimentary diverticle; neck long; reservoir globular, not large, attending albumen gland.

DISTRIBUTION. Circummediterranean. Probably 2 spp. with numerous subsp. or forms.

Cylindruini Schileyko, trib. nov.

Type genus — *Cylindrus* Fitzinger, 1833.

Shell cylindrical, pupiform, solid, opaque, chalky. Umbilicus absent.

Flagellum long, slender. Penis contains ovate verge; epiphallus situated near base of verge, semicovered with a small triangular lobe. Penis sheath absent. Stylophore narrowed basally. Mucus glands simple, tubular, without alveolar inner structure; one of them or both may be more or less reduced. Diverticle of spermathecal stalk moderately developed, membrane between it and spermoviduct thin, weakly vascularized.

DISTRIBUTION. Austrian Alps.

Cylindrus Fitzinger, 1833 Fig. 2286

Fitzinger, 1833: 107

— *Cochlopupa* Jan, 1830: 5 (pro subg., t.-sp. *Pupa obtusa* Draparnaud, 1805; monotypy; nom. oblit.).

Schileyko, 1996: 37; Schileyko et al., 1997: 535.

TYPE SPECIES — *Pupa obtusa* Draparnaud, 1805; monotypy.

Shell of 6.5-8.5 moderately convex, slightly compressed whorls. Embryonic whorls smooth. Later whorls finely, irregularly radially wrinkled. Aperture widely ovate, not strongly oblique. Height 9.5-17.0, diam. 4.0-5.3 mm (11.5 × 4.6 mm).

Flagellum moderately long, slender. Epiphallus of approximately same length. Penis ovate, with thin, semitransparent walls. Verge large, thin-walled, with very broad lumen; epiphallus situated at base of verge, covered by a small triangular lobe; variously developed, narrow longitudinal superficial groove on verge leads to epiphallus. Penis sheath absent. Penial retractor attached to lower half of epiphal-

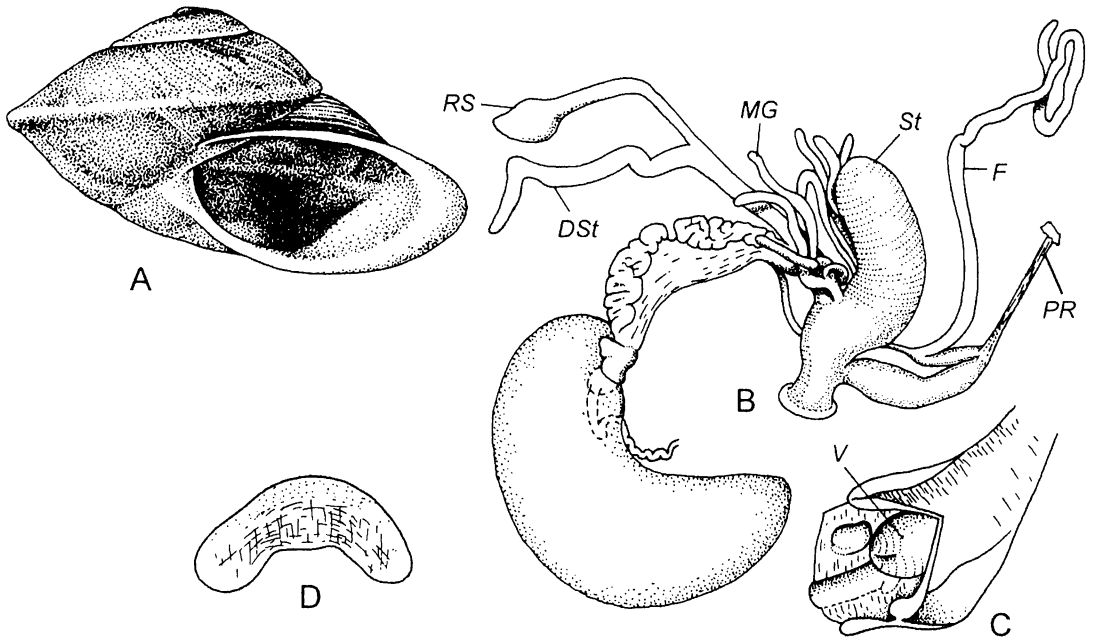


Fig. 2287 *Lampadia webbiana* (Lowe, 1831).

A — shell: Porto Santo Island, Madeira. Phil. No. 128299 B — reproductive tract. C — interior of penis. D — jaw. After Mandahl-Barth, 1950.

lus. Free oviduct moderately long, vagina somewhat longer. Stylophore relatively small, ovate. Mucus glands initially 2, mace-shaped, but in some eastern populations process of reduction of one of them down to complete disappearance has been observed. Spermathecal stalk very slender, diverticle thicker; neck moderately long; reservoir globular, attending albumen gland.

DISTRIBUTION. Austrian Alps. 1 sp.

REMARK. The name *Cylindrus* was formally preoccupied by Montfort, 1810 (as *Cylinder*) for the genus of Conidae. The only person who has used *Cylindrus* Montfort as a valid genus-group taxon after 1900 is Da Motta (1991: 35). I directed a petition to the International Commission on Zoological Nomenclature where I asked to conserve the name by Fitzinger. I am indebted to Dr. Alan Kohn who kindly gave me helpful information on this subject.

Lampadiini Schileyko, trib. nov.

Type genus — *Lampadia* Albers, 1854.

Shell vitrinoid, with peripheral angle.

Jaw nearly smooth, with delicate vertical

and horizontal striation and weak median process (i.e. formally oxygnathous).

Flagellum very long. Penis containing a small verge with apical pore. Stylophore not narrowed basally. Mucus glands branched. Diverticle of spermathecal stalk short, stout.

DISTRIBUTION. Madeira, Canary Islands.

REMARK. The tribe Lampadiini differs from all other tribes of Ariantinae by vitrinoid shell, oxygnathous jaw and peculiar combination of anatomical features.

Lampadia Albers, 1854

Fig. 2287

Albers, 1854: 53 (*Helix* subg.).

— *Mitra* Albers, 1850: 115 [nom. praeocc. non Martyn, 1784 (*Pectinibranchia*); *Helix* subg.; t.-sp. *Helix webbiana* Lowe, 1831; monotypy].

TYPE SPECIES — *Helix webbiana* Lowe, 1831; monotypy.

Shell trochiform, thin, translucent, of 3-4 flattened to nearly flat whorls. Last whorl markedly deflected, with a sharp peripheral keel or angle. Color corneous or dark-yellow, keel lighter. Embryonic whorls smooth.

Postapical whorls with accurate granulation. Aperture broadly ovate, strongly oblique, with thin, reflexed and expanded margins; peristome insertions approached. Umbilicus absent. Height 4-11, diam. 7-20 mm (10.0 × 18.0 mm).

Talon hidden, a simple curvature of hermaphroditic duct. Vas deferens rather short, enters very short, bent epiphallus laterally, leaving very long, vermiform flagellum. Epiphallus very short, sharply bent. Penis rather small, internally with subglobular verge. Penial retractor attached to curvature of epiphallus. Spermooviduct relatively very short. Free oviduct short, vagina somewhat longer. Stylophore very large. Each of mucus glands composed of 3-4 arms. Spermathecal stalk with rather long neck, shorter stalk proper, small reservoir and diverticle which is longer than stalk proper + reservoir.

DISTRIBUTION. Madeira, Canary Islands. 1 or 2 spp.

HELICINAE Rafinesque, 1815

- Pentataeniinae Mörch, 1864: 286 (as Pentaeniinae).
 - Allognathidae Westerlund, 1902: 88.
 - Paurotaeniinae Westerlund, 1902: 92 (as Paurotaeniinae).
 - Schizoteniinae Westerlund, 1902: 100 (as Schizoteniinae).
 - Tacheocampylinae Germain, 1928: 128.
 - Cepaeini Pfeffer, 1930: 136 (as Cepaeae).
 - Otalini Pfeffer, 1930: 138 (as Otalae).
- Schileyko, 1978: 319

Shell medium to large, flattened to globose, rarely obesely lentiform.

Penis internally mostly with 2 verges: proximal and distal; more rarely 1 verge. Stylophore without accented neck. Mucus glands multibranched (rarely secondarily weakly branched, simple, or wanting). Diverticle of spermathecal stalk initially and mostly present, sometimes reduced, rarely absent.

DISTRIBUTION. W Palearctic including NW Africa and N Saudi Arabia.

Eremina L. Pfeiffer, 1855
Fig. 2288

Pfeiffer L., 1855: 139

— *Erinna* Mörch, 1865: 387 [nom. praeocc., non H. Adams et A. Adams, 1858; t.-sp. "*Erinna desertorum* Forskål, 1775": monotypy].

— *Eremophila* Kobelt, 1871 19 (t.-sp. *Helix desertorum* Forskål, 1775; SD Martens, 1873, in Zool. Rec. for 1871).

— *Eremiopsis* C. Boettger, 1909: 10, 11 (*Otala* sect.; t.-sp. *Otala duroi* Hidalgo, 1886; monotypy).

— *Nomma* Pallary, 1924b: 9 (*Eremina* sect., t.-sp. *Eremina zittelii* Pallary, 1909; monotypy).

— *Exiliberus* Iredale, 1942: 126 (t.-sp. *Exiliberus jacksoni* Iredale, 1942; OD).

TYPE SPECIES — *Helix desertorum* Forskål, 1775; monotypy.

Shell subglobose, quite solid, opaque, of about 5 rather convex, somewhat shouldered whorls. Last whorl rounded or scarcely angulated, slightly, gradually deflected. Color whitish to yellowish-corneous, with reddish bands or yellowish streaks. Embryonic whorls smooth. Postapical sculpture of rather sharp, irregular radial striation. Aperture rounded, sometimes slightly angulated, moderately oblique, with somewhat thickened, straight or a little reflexed margins. Umbilicus very small or absent. Height 14-26, diam. 22-35 mm (15.8 × 24.4 mm).

Talon hidden. Vas deferens rather short, enters epiphallus subterminally leaving conic, rudimentary flagellum. Epiphallus not long, sharply bent at its boundary with penis. Proximal chamber of penis with a large axial fold, within which there is lumen ending in pore of verge; this fold surrounded by a very narrow empty space. Distal chamber of penis contains strongly muscularized, transversely folded verge having apical pore. Penis sheath very thin. Penial retractor attached to penis/epiphallus junction. Free oviduct moderately long, vagina slightly longer. Stylophore comparatively small, without distinct neck. Each of 2 mucus glands consists of short common duct, from which 2 or 3 secondary arms branched out; each secondary arm ramified intensively at its ends. Spermathecal stalk slender, long; reservoir lies on albumen gland; diverticle not found.

DISTRIBUTION. N Africa. 4-6 highly variable spp.

Iberus Montfort, 1810
Fig. 2289

Montfort, 1810: 146.

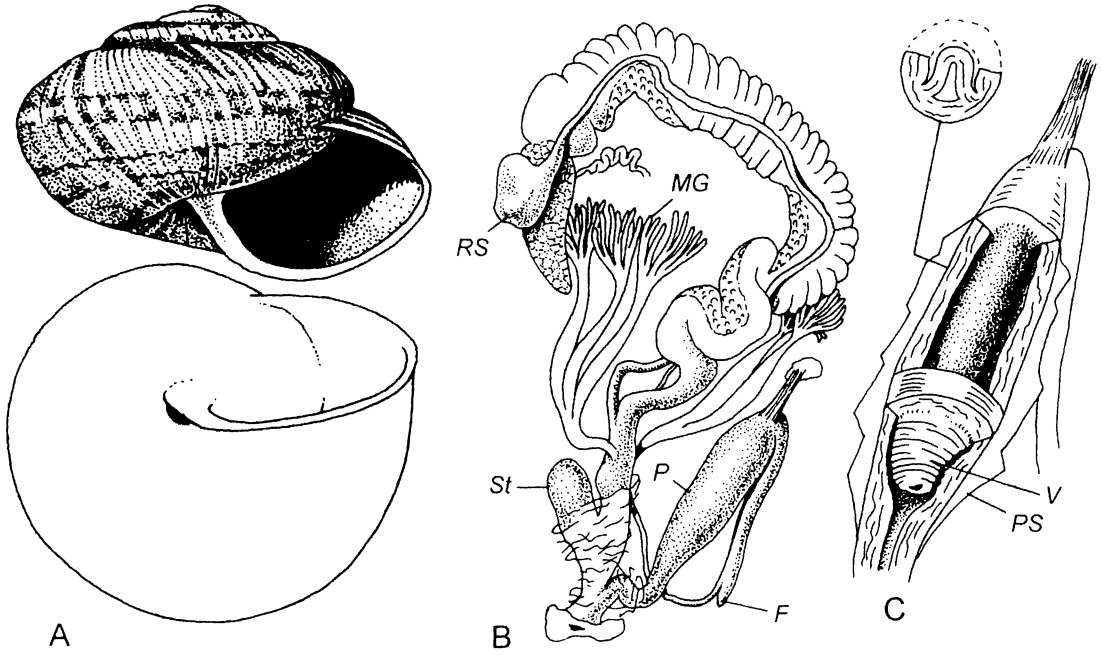


Fig. 2288. *Eremina desertorum* (Forskål, 1775).
 Egypt. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-20640.

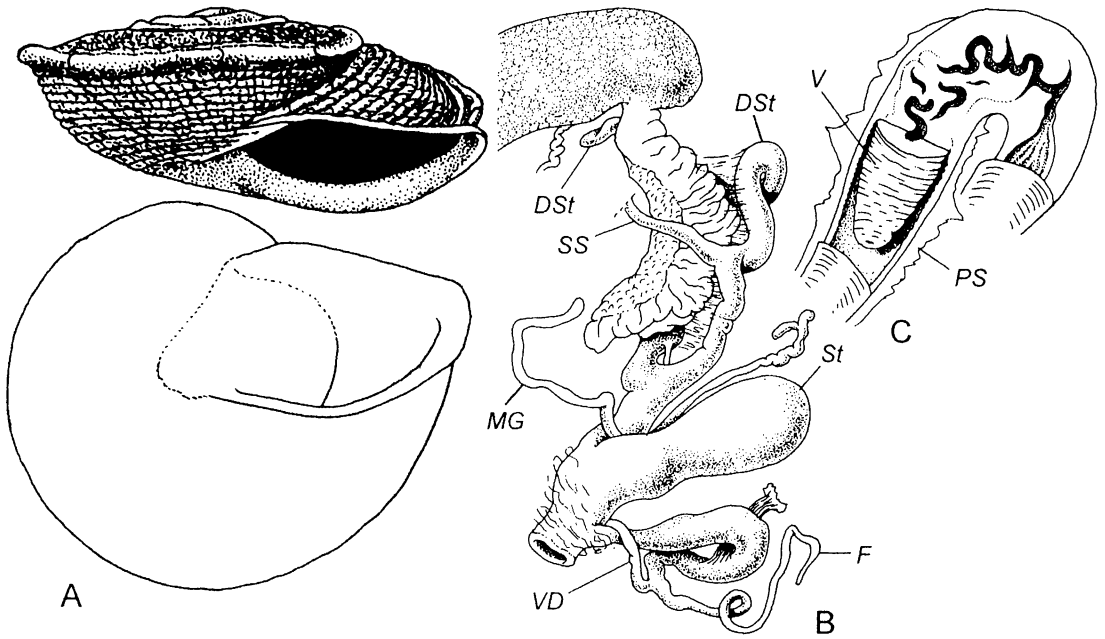


Fig. 2289 *Iberus gualterianus* (Linnaeus, 1758).
 A — shell: Prov Granada, Spain. Moscow No. Lc-28171 B, C — 0.5 km of Pinos Puente, prov Granada, Spain, April 1982. B — reproductive tract. C — interior of penis and epiphallus. Leiden.

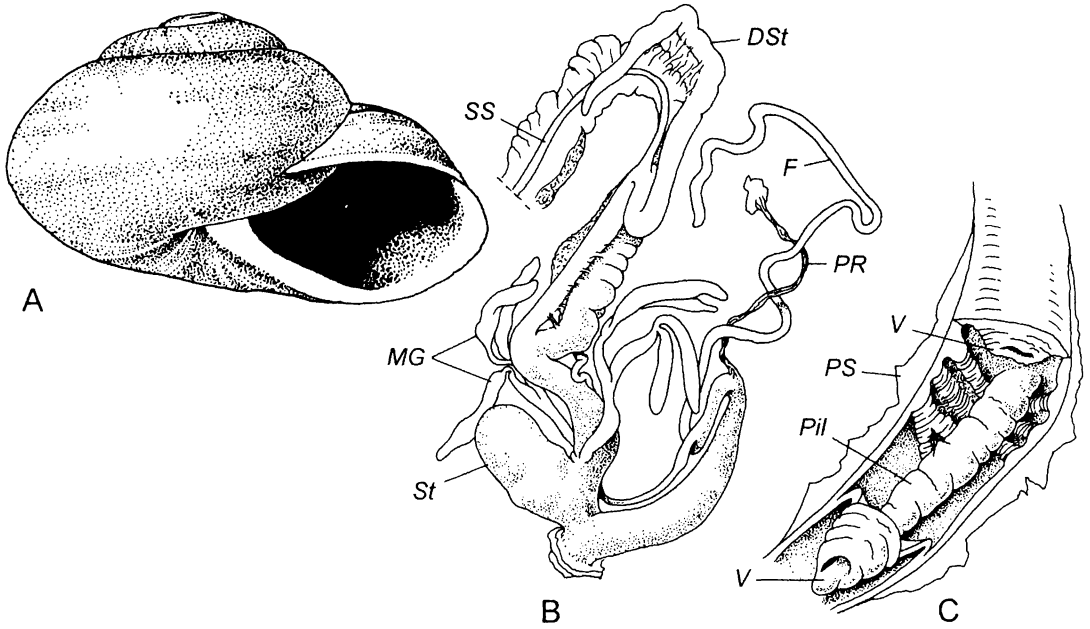


Fig. 2290. *Nesiberus pythiusensis* (Bofill et Aguilar-Amat, 1825).

A — shell: "Illa de Frare" Syntype. Paris. B, C — Bleda Plana, Balearic Islands, June 10, 1979 B — reproductive tract. C — interior of penis. Leiden.

— *Euiberus* Westerlund, 1889: 367 [*Helix* (*Iberus*), "Gruppe" t.-sp. *Helix gualterianus* Linnaeus, 1758; monotypy].

— ? *Transiberus* Monterosato, 1892: 32 (no species mentioned).

Garcia San Nicolás, 1957 51

TYPE SPECIES — *Helix gualterianus* Linnaeus, 1758; monotypy.

Shell depressed-globose to irregularly lentiform, (rather) solid, of 4-5 moderately convex to almost flat whorls. Last whorl deflected, rounded to sharply keeled. Color whitish to corneous, sometimes with dark bands. Embryonic whorls smooth. Later whorls nearly smooth to heavily sculptured with coarse radial and spiral cords. Aperture ovate to rostrate, well oblique, with shortly reflexed margins. Umbilicus absent. Height 8-25, diam. 16-50 mm (18.4 × 43.9 mm).

Vas deferens rather short. Flagellum long, vermiform. Epiphallus externally not demarcated from penis, thick-walled. Lumen of epiphallus narrow, strongly sinuous. Verge with thick, muscularized walls, narrow inner canal and apical pore. Penis sheath thin, surrounds penis and distal part of epiphallus. Free oviduct very short, vagina much longer, stout. Stylophore enormously developed, with slight narrowing

near base. Both mucus glands tubular, simple or bifurcated at tips. Spermathecal stalk with rather long neck; diverticle expanded, not very long; reservoir attends albumen gland.

DISTRIBUTION. Central and S Spain. About 15 spp. & forms.

Nesiberus Haas, 1934

Fig. 2290

Haas, 1934: 354 (*Iberus* subg.).

TYPE SPECIES — *Helix pythiusensis* Bofill et Aguilar-Amat, 1825; OD.

Shell depressed-subglobose, rather thin, somewhat translucent, of about 4 rather convex whorls. Last whorl rounded, well deflected. Color grey or light-corneous, with 4-5 variously developed, uneven bands — 2-3 above and 2 below periphery. Embryonic whorls smooth. Postapical sculpture of fine radial striation and very delicate, interrupted spiral striae below suture. Aperture broadly ovate, well oblique, with thin, slightly reflexed margins. Umbilicus closed but umbilical depression present. Height 12-14, diam. 20-22 mm (13.0 × 21.5 mm).

Vas deferens rather short. Flagellum very

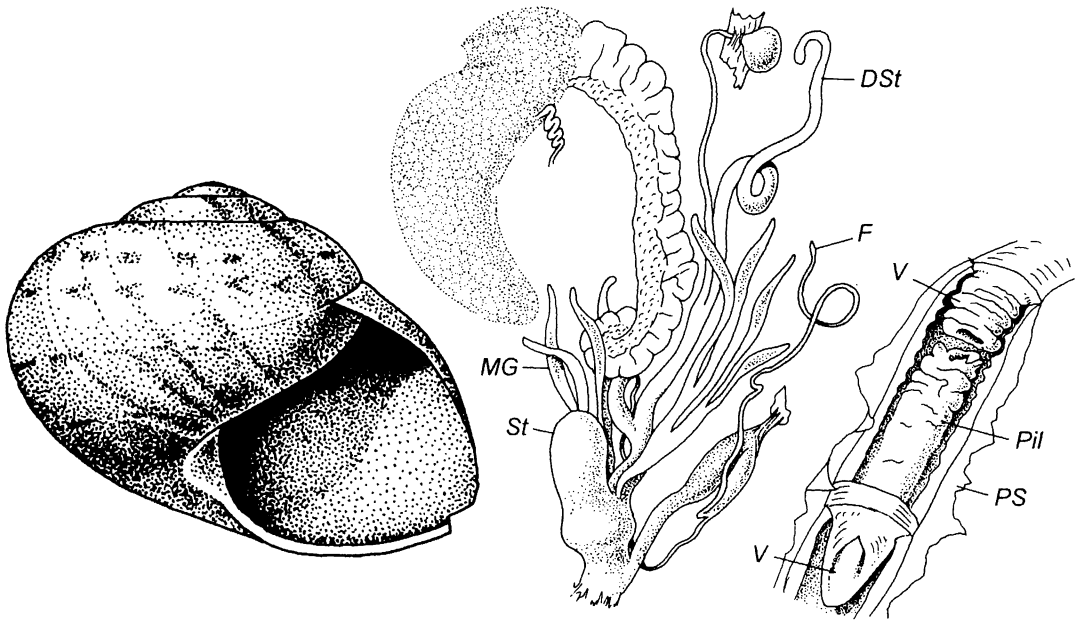


Fig. 2291 *Allognathus grateloupi* (Graells, 1846).

A — shell: Mallorca, Pollence. Moscow Lc-28141 B, C — Sa Colobra, Mallorca, Balearic Islands, November 18, 1968. B — reproductive tract. C — interior of penis. Leiden.

long. Epiphallus externally not demarcated from penis. Penis consists of 2 chambers. Lumen of proximal chamber separated from lumen of epiphallus by very short, sphincter-like verge; inner surface of this chamber bears a strong longitudinal pilaster continuing into lumen of distal verge; besides, there are few subcircular folds. Distal chamber of penis with conic verge. Free oviduct very short. Vagina long. Stylophore with muscular ring at its base. Mucus glands attached to vagina just above base of stylophore. Each of glands twice branched dichotomically; 1 or 2 end arms sometimes unbranched. Neck of spermathecal stalk rather long; diverticle not very long, thick; stalk proper markedly thinner.

DISTRIBUTION. Pythius Islands (Bledas Island near Ibiza). 1 sp.

Allognathus Pilsbry, 1888

Fig. 2291

Pilsbry, 1888: 121, 149 (*Helix*, *Pentataenia* group; sect.).

TYPE SPECIES — *Helix grateloupi* Graells, 1846; OD.

Shell (sub)globose, thin, shining, of 4 rather convex whorls. Body whorl large, inflated, convex below, rounded, gently descending in front. Color whitish-corneous, or suffused with light-brown, with 5 narrow chestnut-brown bands, frequently interrupted, or broken into nearly separate maculations. Embryonic whorls smooth. Later whorls with smoothed, irregularly spaced radial ridgelets. Aperture rotund-lunate, very oblique; margins thin, slightly expanded. Umbilicus absent. Height 13-16, diam. 16-22 mm (13.0 × 16.8 mm).

Jaw smooth.

Talon hidden. Vas deferens moderately long. Structure of distal male part similar to that of *Nesiberus*, differs mainly by much better development of proximal verge. Free oviduct rather long, vagina shorter, markedly swollen at base of stylophore. Mucus glands twice dichotomically branched. Neck of spermathecal stalk rather long, diverticle stout, well developed, stalk proper much thinner and shorter; reservoir small, globular.

DISTRIBUTION. Mallorca Island (Balears). 2 spp.

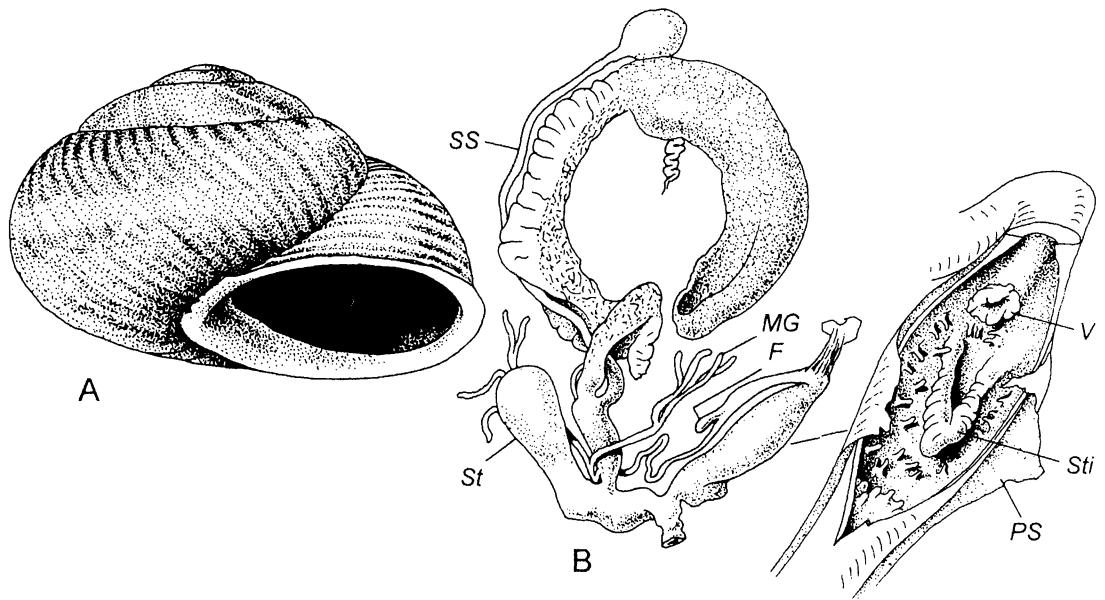


Fig. 2292. *Maurohelix raymondi* (Moquin-Tandon, 1848).

A — shell: "Algerie, Boy Saada" Paris. B — 4 km SW of Boy Saada, Algeria, August 8, 1984. Reproductive tract and interior of penis. Cardiff.

Maurohelix Hesse, 1917

Fig. 2292

Hesse, 1917 122 (nom. nov. pro *Wiegmannia* Hesse, 1916).

— *Gaetulia* Kobelt, 1898: 208, 357 (nom. praeocc. non Stål, 1864 (Hemiptera); *Helix* subg., t.-sp. *Helix raymondi* Moquin-Tandon, 1848; monotypy).

— *Wiegmannia* Hesse, 1916: 124 [nom. praeocc. non Collinge, 1901 (Ariophantidae); nom. nov. pro *Gaetulia* Kobelt, 1898; t.-sp. *Helix raymondi* Moquin-Tandon, 1848; monotypy].

TYPE SPECIES — *Helix raymondi* Moquin-Tandon, 1848; monotypy.

Shell depressed-conic or subglobular, rather solid, of about 4 slightly convex whorls. Body whorl rounded, strongly and gradually descending in front. Color whitish to yellowish-corneous, uniform or with 1-2 darker bands of various width. Embryonic whorls smooth. Later whorls with not very regular, variously developed, smoothed ribs which usually become weaker on base; on body whorl elements of malleation may be added. Aperture entire, strongly oblique, with expanded, reflexed margins. Umbilicus

absent, umbilical depression weak. Height 11-15, diam. 17-22 mm (13.2 × 19.8 mm).

Talon hidden. Flagellum short, rudimentary. Epiphallus rather short, its lumen continuing in penis within wall and opening into penial cavity on tip of very short, rosette-like verge. Penis irregularly fusiform, internally with a large V-shaped stimulator and rather long, scattered papillae. Penial retractor attachment marks border between epiphallus and penis. Penis sheath very thin, transparent. Free oviduct somewhat longer than vagina. Stylophore clavate, with circular widening at base. Mucus gland biramous, its branches leaving very short common duct which enters vagina just above base of stylophore. Spermathecal stalk long, diverticle rudimentary or absent, reservoir attending albumen gland.

DISTRIBUTION. Algeria. About 10 spp.

Hessea C. Boettger, 1911

Fig. 2293

Boettger C., 1911b: 128.

TYPE SPECIES — *Helix vermiculosa* Morelet, 1874; OD.

Shell conic-globose, moderately solid,

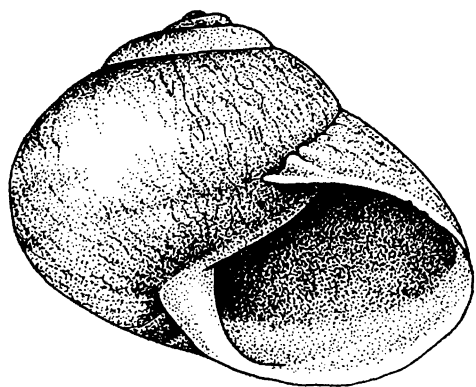


Fig. 2293. *Hessea vermiculosa* (Morelet, 1874).
"Marokko, Prov Sorno" Zürich No.
506453.

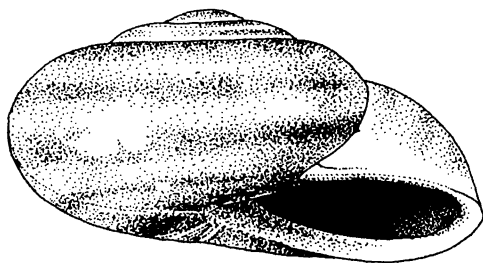


Fig. 2294. *Alabastrina (Guilia) bailloni* (Debeaux in Kobelt, 1887).
"Entre Ain Sefra et El Boyadh, Algerien"
Paris.

dull, of about 4 slightly or moderately convex whorls. Last whorl inflated, widely rounded, a little deflected. Color brownish, with 2-4 variously developed, interrupted, reddish bands. Embryonic whorls smooth. Later whorls with vermiculate sculpture, elements of which have predominantly radial orientation. Aperture irregularly circular or subquadrangular, quite oblique, with slightly thickened, not reflexed margins; columellar margin strongly expanded. Umbilicus very narrowly slit-like, sometimes closed. Height 19-22, diam. 22-28 mm (19.7 × 22.2 mm).

DISTRIBUTION. Morocco. 1 sp.

Alabastrina Kobelt, 1904

Kobelt, 1904: 132, 194.

— *Alabastra* Kobelt, 1904: 100 (seemingly nom. err pro *Alabastrina* Kobelt, 1904).

TYPE SPECIES — *Helix alabastrites* Michaud, 1833; monotypy.

Shell depressed, (rather) solid, sometimes shining, of 4-6 weakly to moderately convex whorls. Body whorl rounded (rarely with a blunt angle), strongly descending in front. Coloration consists of white, pale-yellow or greyish background and initially 3-5 dark, sometimes interrupted, bands; how-

ever number of bands may be reduced down to complete disappearance. Aperture widely ovate, strongly oblique to subhorizontal, with straight to shortly reflexed, usually thickened margins; baso-columellar margin more or less expanded, sometimes provided with thickening. Umbilicus closed.

Flagellum long, slender. Penis with 2 verges. Branches of mucus glands before entering common duct form distinct swellings.

DISTRIBUTION. N Africa (Algeria, Morocco).

Alabastrina (Guilia) bailloni (Debeaux in Kobelt, 1887) Fig. 2294

Pallary, 1926: 17 (*Helix* sect.).

TYPE SPECIES — *Helix bailloni* Debeaux in Kobelt, 1887; OD.

Shell solid, of 4 whorls. Early postapical whorls somewhat angulate. Color whitish to corneous, with 4 variously developed bands; aperture inside light. Embryonic shell enormously large (much larger than in any other subgenus). Both embryonic and postembryonic whorls lack regular sculpture. Aperture widely ovate, quite oblique, margins not reflexed but markedly thickened; basal margin lacks callosity. Height 12-15, diam. 22-27 mm (12.5 × 23.4 mm).

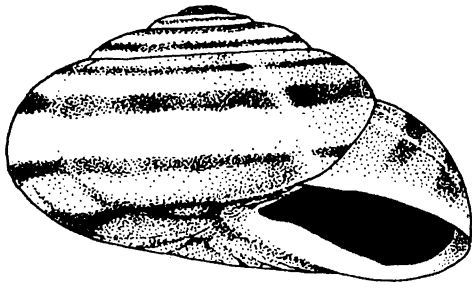


Fig. 2295. *Alabastrina (Lechateliera) lechatelieri* (Pallary, 1817).
A — shell: "El Mers" [Zaouia el Mers, Morocco]. Paris.

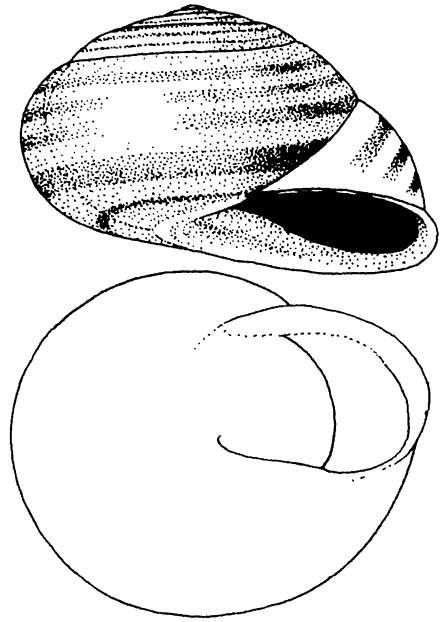


Fig. 2296. *Alabastrina (Alabastrina) alabastrites* (Michaud, 1833).
Oran, Algeria. Moscow No. Lc-1790.

DISTRIBUTION. Algeria. Probably 1 sp.

Alabastrina (Lechateliera)
Pallary, 1926)
Fig. 2295

Pallary, 1926: 20 (pro "Groupe").

TYPE SPECIES — *Archelix lechatelieri* Pallary, 1917 OD.

Shell rather solid, of 4-4.5 whorls. Early postapical whorls rounded. Color white, typically with 4 dark, uneven bands — 2 above and 2 below periphery; aperture inside white. Embryonic whorls not enlarged. Postapical whorls irregularly radially wrinkled, spirally grooved; on body whorl elements of malleation may be present. Aperture broadly ovate, strongly oblique, with not reflexed, slightly thickened margins; baso-columellar margin with a light callosity. Height 12-23, diam. 22-38 mm (18.0 × 28.5 mm).

DISTRIBUTION. E Morocco. 2 spp.

Alabastrina (Alabastrina s. str.)
Fig. 2296

Shell quite solid, of 5-6 whorls. Early postnuclear whorls scarcely angulate. Color

white, usually with 5 dark bands; however bands may be completely absent; aperture inside white. Embryonic whorls not enlarged. Postapical sculpture of fine, irregular radial striation. Aperture broadly ovate, very oblique to subhorizontal, with shortly reflexed margins, baso-columellar margin with light callosity. Height 14-18, diam. 20-27 mm (15.3 × 22.2 mm).

DISTRIBUTION. Algeria. 3-6 spp.

Alabastrina (Michaudia)
Pallary, 1926)
Fig. 2297

Pallary, 1926: 15 (*Helix* sect.).

TYPE SPECIES — *Helix hieroglyphicula* Michaud, 1833; OD.

Shell solid, of about 4-4.5 whorls. Early postembryonic whorls rounded to bluntly angulate, strongly oblique. Color usually grey to (pale) corneous, with 4 bands aperture inside brown. Embryonic whorls not enlarged. Postapical whorls with very fine radial wrinkles, weak spiral striae and, locally, with elements of malleate sculpture. Aperture broadly ovate, very oblique, with somewhat thickened, scarcely reflexed margins; baso-columellar margin with a light

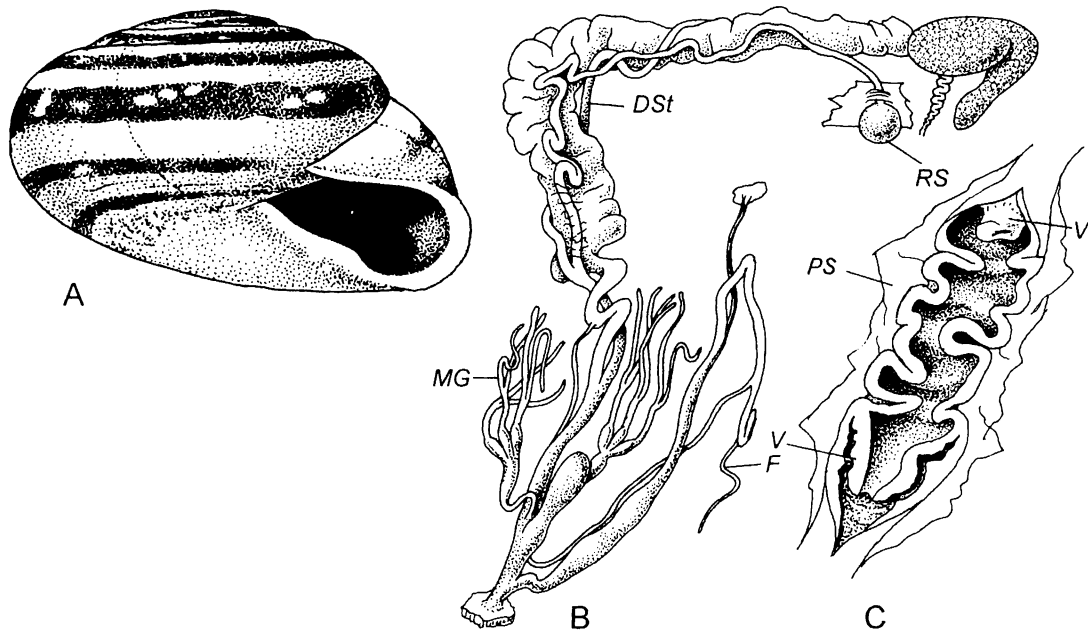


Fig. 2297 *Alabastrina (Michaudia) hieroglyphicula* (Michaud, 1833).

A — shell: Oran [Algeria]. Phil. No. 5743. B, C — "Oran, Djebel, Mourdjadjo, W Algerien"

B — reproductive tract. C — interior of penis. Vienna No. 56.175.

callosity. Height 14-15, diam. 22-26 mm (14.2 × 23.0 mm).

Vas deferens long, slender, entering epiphallus laterally. Flagellum moderately long, thin. Epiphallus long. Penis dumbbell-shaped. Both chambers of penis contain well-developed verges. Internally proximal chamber with strong, high transversal folds, distal chamber with smoothed, low, also transversal folds. Free oviduct comparatively long, vagina about 2 times longer. Stylophore not large, ovate, with muscular ring at its base. Mucus glands enter vagina just above base of stylophore. Neck of glands clavate, splitted in 3 branches biramous at their ends; basal parts of branches distinctly swollen. Neck of spermathecal stalk moderately long, stalk proper and diverticle long, convoluted (especially stalk proper).

DISTRIBUTION. Algeria. 1 sp.

Alabastrina (Loxana)
Bourguignat, 1898)
Fig. 2298

Bourguignat in Pallary, 1898: 168.

— *Beaumieriana* Pallary, 1926: 21 (t.-sp. *Helix*

beaumieri var. *rostrata* Pallary, 1926; monotypy).

TYPE SPECIES — *Helix beaumieri* Mousson, 1873; SD Pallary, 1928.

Shell comparatively thin, of about 4 whorls. Early postapical whorls not angulated. Color whitish or grey, uniform or with 1-4 dark interrupted bands; aperture inside whitish. Embryonic whorls not enlarged. Postapical sculpture of weak radial and irregularly spaced spiral striae. Aperture widely ovate, well oblique, with broadly reflexed, expanded, thin or scarcely thickened margins. Height 14-17, diam. 22-27 mm (14.5 × 23.0 mm).

DISTRIBUTION. Morocco. About 20 spp. & forms.

Alabastrina (Atlasica Pallary, 1917)
Fig. 2299

Pallary, 1917 135 (*Helix* subject.).

TYPE SPECIES — *Helix atlasica* Mousson, 1873; tautonymy

Shell solid, of 4-4.5 whorls. Early postapical whorls rounded. Dark bands initially 4, usually with uneven borders, some

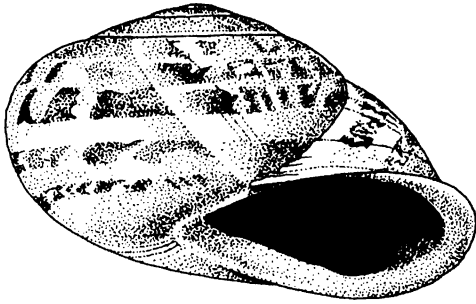


Fig. 2298. *Alabastrina (Loxana) beaumieri* (Mousson, 1873).
Demnat, Morocco. Paris.

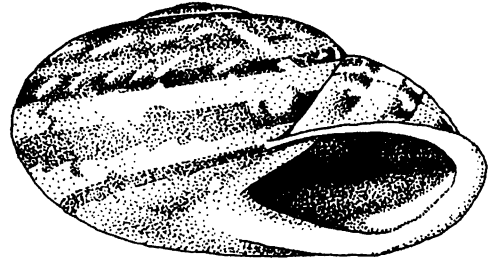


Fig. 2299. *Alabastrina (Atlasica) atlasica* (Mousson, 1873).
Aquergour [Morocco]. Phil. No. 154225.

of them irregularly interrupted; aperture inside light. Embryonic whorls not enlarged. Postapical surface with weak spiral striae and elements of malleation. Aperture broadly ovate, subhorizontal, with widely reflexed, somewhat thickened margins. Height 9-17, diam. 18-35 mm (13.6 × 24.0 mm).

DISTRIBUTION. Morocco. 2-4 spp.

Alabastrina (Siretia) pallaryi Pallary, 1926
Fig. 2300

Pallary, 1926: 19 (*Helix* sect.).

TYPE SPECIES — *Archelix pallaryi* Kobelt, 1914; OD.

Shell quite solid, of 4.5 whorls. Early postembryonic whorls rounded. Color white, typically with 3-4 dark bands; aperture inside brownish. Embryonic whorls not enlarged. Regular postapical sculpture absent. Aperture rounded-triangular, moderately oblique, with straight, shortly reflexed, somewhat thickened margins. Height 8-10, diam. 19-21 mm (9.4 × 20.2 mm).

DISTRIBUTION. Morocco. 1 sp. with a few forms.

Tingitana Pallary, 1918
Fig. 2301

Pallary, 1918: 51 (pro sect. of unnamed genus).

TYPE SPECIES — *Archelix minettii* Pallary, 1817; OD.

Shell depressed-subglobose, solid, dull, of about 5 slightly convex whorls. Last whorl bluntly angulated to keeled, well deflected. Color whitish to (pale) comeous, with variously developed dark bands; aperture internally dark (chestnut-brown or blackish). Embryonic whorls smooth. Postapical sculpture of irregular, rather coarse radial and finer spiral lines; elements of malleation on body whorl may be present. Aperture subcircular, slightly rostrate, moderately oblique, with thin, shortly reflexed margins. Basal margin smooth or with callosity. Umbilicus slit-like or closed. Height 12-18, diam. 20-35 mm (15.2 × 25.5 mm).

DISTRIBUTION. Morocco (Middle Atlas). 3-5 spp.

Otala Schumacher, 1817

Schumacher, 1817: 58, 191

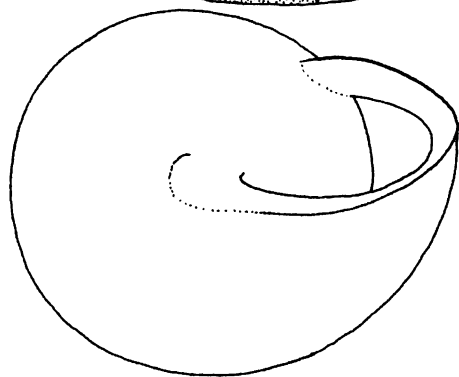
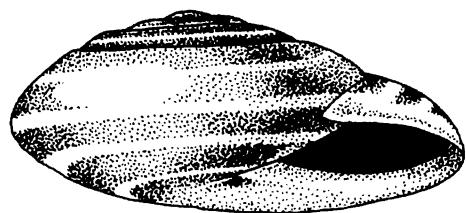


Fig. 2300. *Alabastrina (Siretia) pallaryi* (Kobelt, 1914).
Locux Mexera, Morocco. SPb.

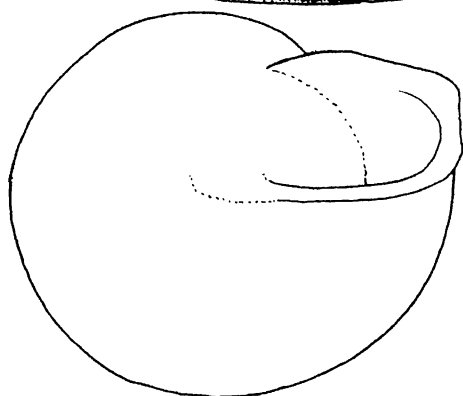
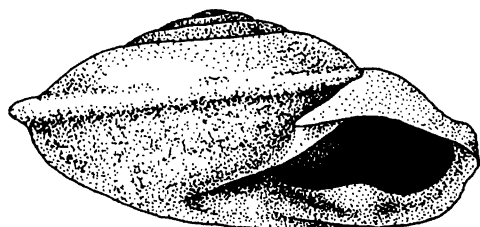


Fig. 2301 *Tingitana minettii* (Pallary, 1817).
Morocco. SPb.

— *Archelix* Albers, 1850: 98 (t.-sp. *Helix lactea* Müller, 1774; designated here).

TYPE SPECIES — *Helix lactea* Müller, 1774; SD Pilsbry, 1895 (1893-1895).

Shell depressed-subglobose, with dome-shaped spire, (rather) solid, of about 5 slightly to moderately convex whorls. Body whorl rounded, strongly deflected. Coloration consists of light (white, grey, yellowish) background and 4-5 dark bands. Embryonic whorls smooth. Postapical whorls irregularly radially striated and often with variously developed malleation. Aperture ovate, strongly oblique to subhorizontal, with shortly reflexed, more or less thickened margins; baso-columellar margin slightly to considerably thickened, sometimes with callosity or tuberculiform tooth; similar tooth on palatal side may be present. Umbilicus closed or very narrow, slit-like.

Talon buried. Flagellum (moderately) long. Penis with 2 subequal verges and tubercular basal stimulator. Stylophore comparatively small. Mucus glands intensively branched, 3-4 times. Free oviduct enormously long, much longer than vagina.

DISTRIBUTION. Mediterranean countries and NW Africa.

Otala (Dupotetia) Kobelt, 1904 Fig. 2302

Kobelt, 1904: 132, 195 (*Iberus* subg.).

TYPE SPECIES — *Helix dupotetiana* Terver, 1839; monotypy.

Shell solid but a little translucent, of about 5 moderately convex whorls. Color white, generally with 5 dark bands, 2nd and/or 3rd bands from above sometimes reduced or absent. Aperture broadly ovate, very oblique to almost horizontal, with sharp, more or less thickened margins; basal margin with callosity or elongated tubercular tooth. Umbilicus absent. Height 13-24, diam. 19-42 (21.6 x 32.7 mm).

Vas deferens not long. Flagellum moderately long, epiphallus of about same length. Penis fusiform, with narrowed distal section. Penial retractor inserted on distal section of epiphallus. Free oviduct uneven, somewhat convoluted, vagina very short. Stylophore comparatively small. Mucus glands enter vagina a little above stylophore, with rather short common ducts. Spermathecal stalk with rather long neck, well developed diverticle and more slender

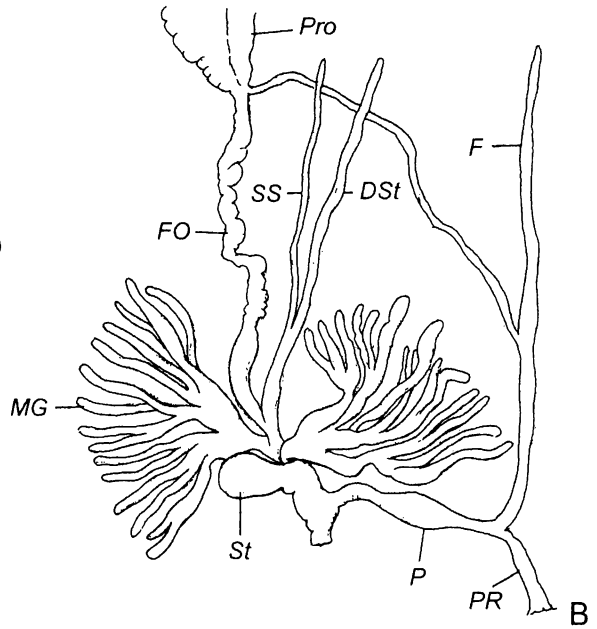
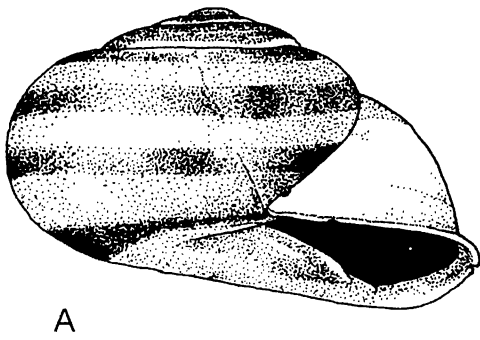


Fig. 2302. *Otala (Dupotetia) dupotetiana* (Terver, 1839).

A — shell: Oran, Algeria. Zürich No. 507477 B — reproductive tract. After Hesse, 1911

stalk proper; reservoir poorly defined or absent.

DISTRIBUTION. E Morocco (Oran Province). At least 17 spp. & forms.

***Otala (Deserticola)* Hesse, 1911)**

Fig. 2303

Hesse, 1911 95, 102 [*Archelix (Dupotetia)*; sect.].

TYPE SPECIES — *Helix tigri* Gervais, 1857; OD.

Shell very solid, shining, of about 5 moderately convex whorls. Color white, with 4-5 dark bands. Postapical sculpture of not strong, irregular radial wrinkles and variously developed elements of malleation. Aperture as in *Dupotetia*, but with 2 tubercular teeth — basal and palatal. Umbilicus absent. Height 12-21, diam. 20-35 mm (17.4 x 27.6 mm).

Vas deferens rather short. Flagellum moderately long. Epiphallus and penis slender; boundary between them marked by penial retractor insertion. Vagina not long. Mucus glands moderately developed, with amply branched, rather long common duct. Spermathecal stalk with comparatively short neck, subequal stalk proper and diver-

stle; reservoir small, (almost) attending albumen gland.

DISTRIBUTION. N Africa (W Algeria, E Morocco). About 15 spp. & forms.

***Otala (Otala)* s. str.)**

Fig. 2304

Shell solid, glossy, of about 5 slightly convex whorls. Color yellowish to pale-brown, mostly with 5 blackish bands of various width; peristome and aperture within dark. Postapical sculpture of fine, irregular radial lines and malleation. Aperture subcircular, quite oblique, with more or less reflexed, thickened margins. Umbilicus closed or very narrowly slit-like. Height 10-35, diam. 25-50 mm (20.8 x 30.0 mm).

Vas deferens long. Flagellum also long. Epiphallus slender, of about same width as flagellum. Penis forms a sharp bend in distal portion; upper chamber of penis with 2 verges; inner surface between verges with irregular, oblique-transversal folds. In distal, narrowed section of penis there is a well-developed sphincter; below sphincter, at atrium, a tubercular stimulator situated. Free oviduct twisted, convoluted; vagina not very short. Stylophore not large,

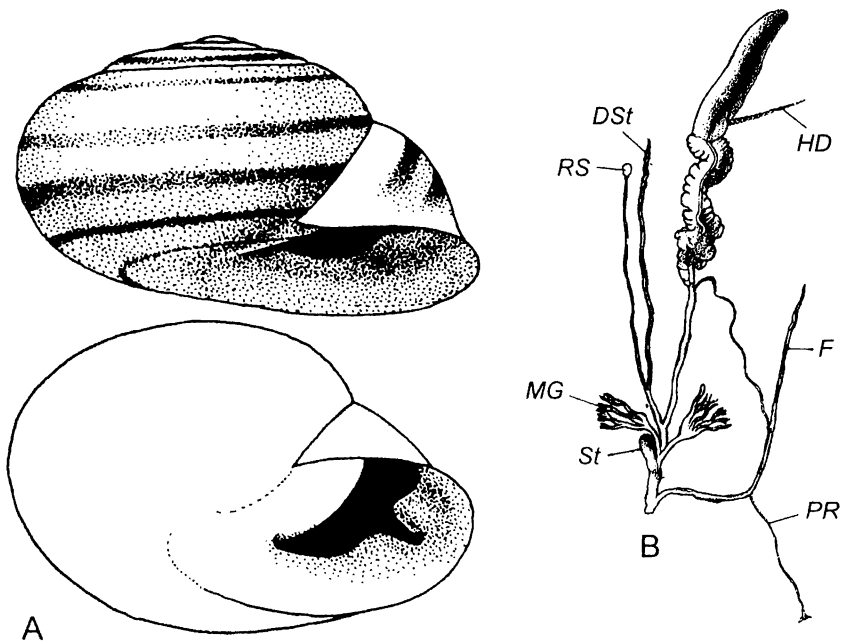


Fig. 2303. *Otala (Deserticola) tigris* (Gervais, 1857).

A — shell: Morocco. SPb. B — reproductive tract. After Hesse, 1911

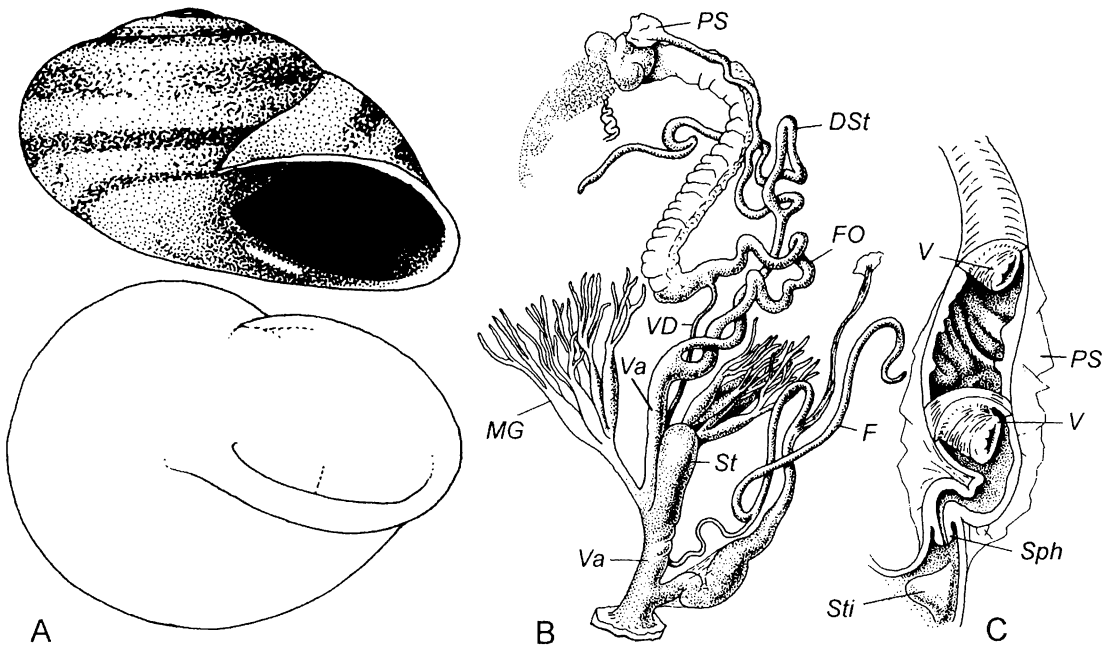


Fig. 2304. *Otala (Otala) lactea* (Müller, 1774).

Casablanca, Morocco, May 24, 1981 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-19726.

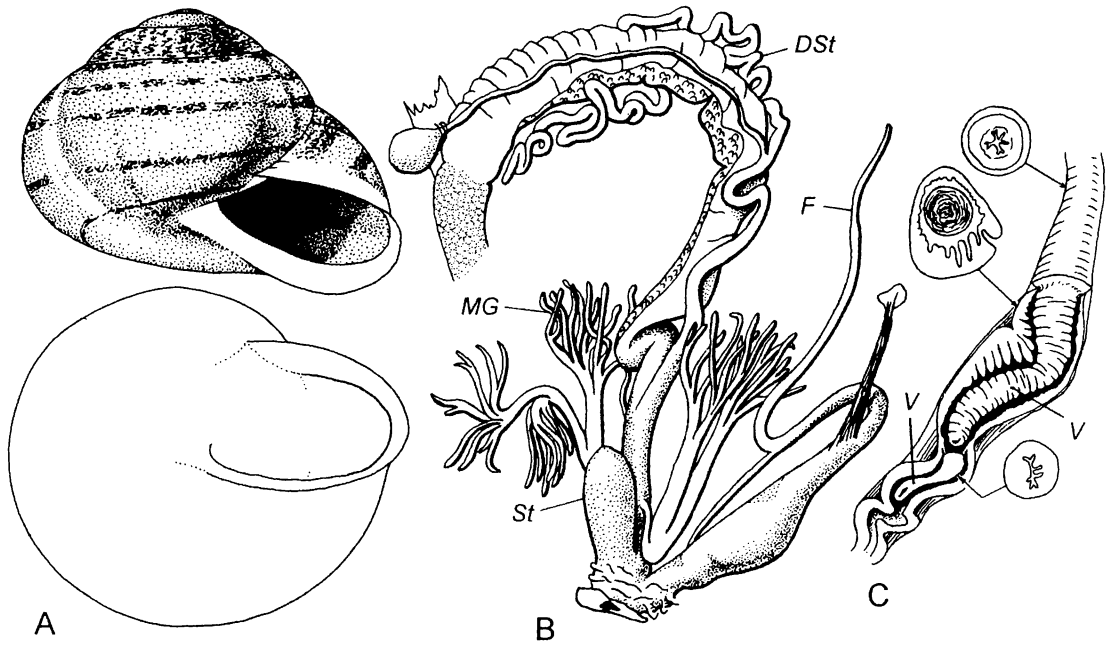


Fig. 2305. *Eobania vermiculata* (Müller, 1774).

A — shell: Yalta, Crimea. Moscow No. Lc-19729. B, C — Sevastopol [Crimea], August 12, 1962. B — reproductive tract. C — interior of penis. After Schileyko, 1978.

clavate. Mucus glands enter vagina just above base of stylophore, with well-developed common duct which splitted into 3-5 secondary branches whose basal sections strongly expanded; each of secondary branches with a few arms which also branched. Spermathecal stalk with a long neck, strongly sinuated diverticle and thin stalk proper; small reservoir (almost) attending albumen gland.

DISTRIBUTION. NW Africa (Algeria, Morocco), Balearic Islands, Spain, S France, Corsica. About 10 spp. & forms.

Eobania Hesse, 1913
Fig. 2305

Hesse, 1913: 13.

— *Macularia* sensu Martens in Albers, 1860: 132 [non Albers, 1850; *Helix* subg.; t.-sp. *Helix vermiculata* Müller, 1774 (invalid designation; not originally included species)].

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

Shell depressed-subglobose, (rather) solid, of about 5 moderately convex whorls. Last whorl rounded, strongly descending in

front. Ground color varies from almost white to brownish, uniform or with 4-5 dark bands, which sometimes desintegrated into series of spots; peristome and aperture within light. Embryonic whorls smooth. Later whorls with variously developed vermiculate sculpture; positive elements usually lighter. Umbilicus closed. Height 16-24, diam. 22-40 mm (17.4 × 26.8 mm).

Anatomically differs from *Otala* mainly by much shorter free oviduct, much longer proximal and distal verges and less intensive branching of mucus glands.

DISTRIBUTION. Mediterranean countries; 1 sp. introduced to Crimea and N America (New Orleans). 3-4 spp. with numerous forms.

Iberellus Hesse, 1908
Fig. 2306

Hesse, 1908a: 131 (nom. nov. pro *Balearica* Kobelt, 1904).

— *Balearica* Kobelt, 1904: 132, 157 200 [nom. praeocc., non Brisson, 1760 (Aves); t.-sp. *Helix balearicus* Rossmässler, 1838; SD Hesse, 1908a].

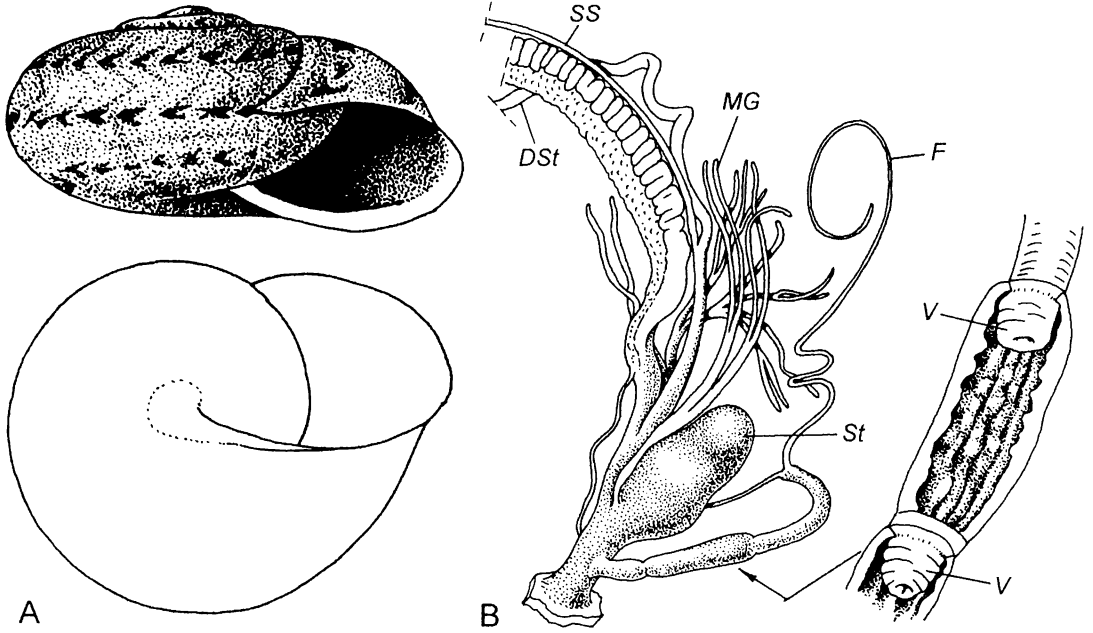


Fig. 2306. *Iberellus balearicus* (Rossmässler, 1838).
 Paguera, Mallorca, October 2, 1969. A — shell. B — reproductive tract and interior of penis. Vienna.

TYPE SPECIES — *Helix balearicus* Rossmässler, 1838; OD.

Shell strongly depressed, moderately thin, glossy, of about 4 rather convex whorls. Last whorl rounded, moderately and gradually deflected. Color whitish or pale-corneous, with zigzagged, radially oriented dark streaks; locally color of streaks more intensive, and these darker parts form interrupted spiral bands. Embryonic whorls smooth. Regular postapical sculpture missing. Aperture broadly ovate, well oblique, with thin or slightly thickened, a little reflexed margins. Umbilicus closed. Height 9-23, diam. 15-30 mm (14.6 × 20.0 mm).

Vas deferens not long. Flagellum long, very slender, thread-like. Epiphallus rather short. Proximal and distal chambers of penis with subequal completed verges. Inner surface of proximal chamber with uneven axial folds. Free oviduct rather short, vagina 2-3 times longer. Stylophore very large, with thickened basal section. Mucus glands long, branched 2-3 times. Spermathecal stalk with rather long neck, well-developed diverticle and thinner stalk proper.

DISTRIBUTION. Balearic Islands, E Spain (Catalonia), S France. 3-6 spp.

Tyrrhenaria Hesse, 1918

Fig. 2307

Hesse, 1918: 38 (*Helix* subg.).

— ? *Ercella* Monterosato, 1894: 168 (t.-sp. *Helix mazzullii* Cristofori et Jan, 1832; monotypy).

TYPE SPECIES — *Helix tristis* L. Pfeiffer, 1845; monotypy

Shell globose to globose-conic, thin, somewhat translucent, shining, of 4-4.5 slightly convex whorls. Body whorl inflated, rounded, slightly and gradually deflected. Color greenish- or brownish-olivaceous, initially with 5 brown or blackish bands; some of them sometimes missing. Embryonic whorls smooth. Postapical sculpture of fine, crowded, irregular radial lines crossed by finer spiral striae. Aperture subcircular, only slightly oblique, with thin, fragile, simple margins; columellar margin expanded. Umbilicus closed. Height 23-35, diam. 20-36 mm (24.0 × 20.4 mm).

DISTRIBUTION. S Corsica, Sicily. 2 spp.

REMARK. Provisionally I include "*Helix*" *mazzullii* Cristofori et Jan, 1832 in this genus. If this opinion is supported in future, this genus must be named *Ercella* Monterosato, 1894, by priority.

Cantareus Risso, 1826
Fig. 2308

Risso, 1826: 64.

— *Tapada* Gray in Turton, 1840: 127 [nom. praeocc. non Studer, 1820 (Succineidae); t. sp. *Helix aperta* Born, 1778; monotypy].

— *Cantareus* Pallary, 1924: 210 (unnecessary nom. nov. pro *Cantareus* Risso "puisque l'étymologie de ce nom est Cantarel").

TYPE SPECIES — *Helix naticoides* Draparnaud, 1801 (= *Helix aperta* Born, 1778); monotypy.

Shell globular (bubble-like), very thin, somewhat translucent, shining, of 3.75-4 rather convex whorls. Last whorl much inflated, straight, rounded. Color olive-brown, chestnut or greenish, sometimes with darker, diffuse radial streaks; thin parietal callus usually whitish. Embryonic whorls glabrous. Later whorls irregularly, sometimes quite coarsely, radially striated. Aperture subcircular, quite oblique, with thin margins. Umbilicus closed. Height 18-30, diam. 18-30 mm (24.0 × 22.2 mm).

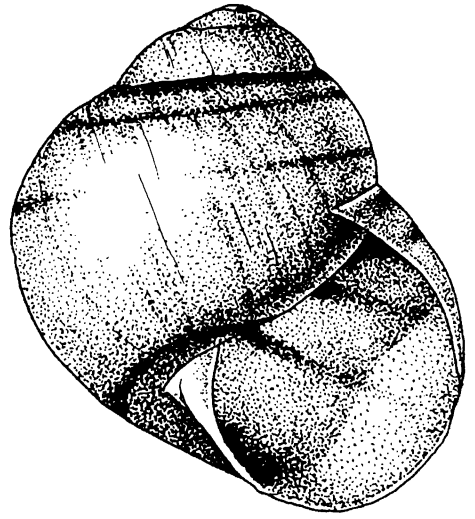


Fig. 2307 *Tyrrhenaria tristis* (L. Pfeiffer, 1845).
Campo del Oro, Ajaccio, Corsica. Vienna
No. R 5983.

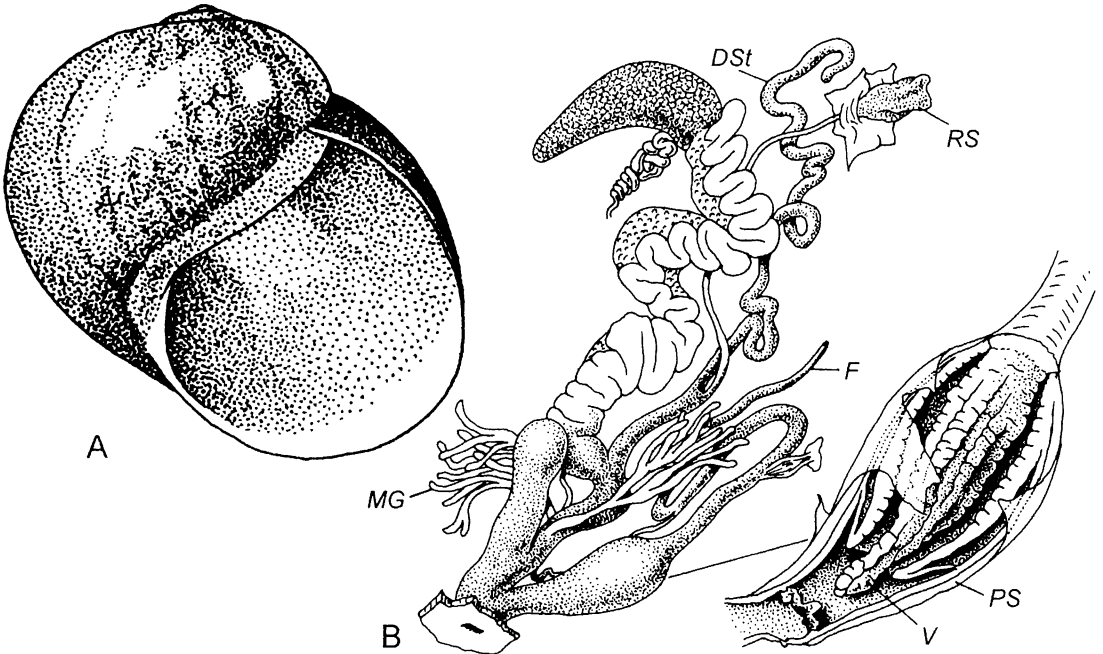


Fig. 2308. *Cantareus aperta* (Born, 1778).

A — shell: Arles [France]. SPb. B — Camping Torre Pentente, Pisa, Italy, August 29, 1992. Reproductive tract and interior of penis. Moscow.

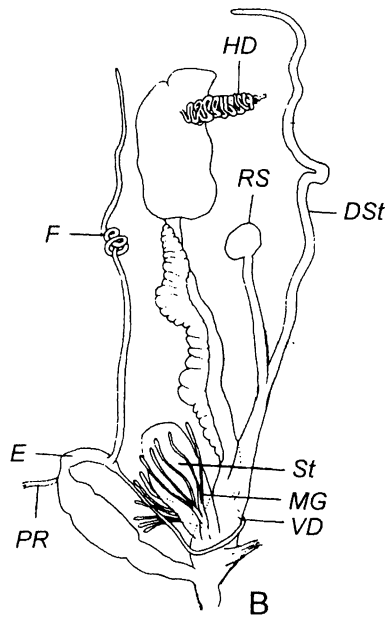
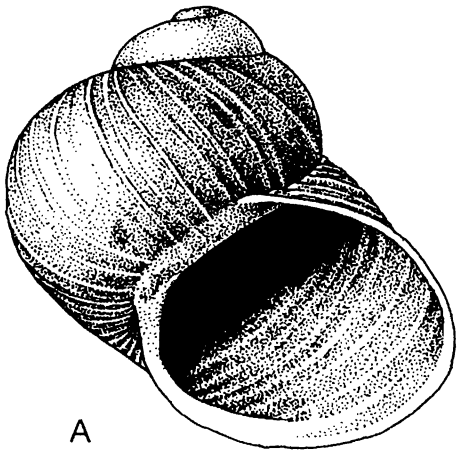


Fig. 2309. *Idiomela subplicata* (Sowerby, 1824).

A — shell: Porto Santo, Madeira. Paris. B — reproductive tract. After Hemmen & Groh, 1984.

Talon buried. Vas deferens rather short. Flagellum moderately long; epiphallus of similar length or somewhat longer. Penis swollen, internally with a single large verge having longitudinal furrows and numerous short transversal grooves. Upper chamber of penis with two-layer walls; below tip of verge there is transversal, sphincter-like thickening. Penis sheath very thin, transparent. Penial retractor inserted on lower half of epiphallus. Free oviduct short, vagina about 3 times longer. Stylophore clavate or dumbbell-shaped. Mucus glands branched 2-3 times; common ducts rather long. Spermathecal stalk with moderately long neck, very long, twisted and convoluted diverticle and markedly thinner, straight stalk proper.

DISTRIBUTION. S Europe, Saudi Arabia, N Africa (Algeria). 1 sp.

Idiomela Cockerell, 1921

Fig. 2309

Cockerell, 1921. 192. Hemmen & Groh, 1984: 17

TYPE SPECIES — *Helix subplicata* Sowerby, 1824; OD.

Shell turbinate-globose, rather thin, of

about 3.5 convex whorls. Body whorl inflated, rounded, a little descending in front. Color of upper spire mostly pinkish-brown, rest surface ochraceous, with lighter radial streaks. Embryonic whorls more or less distinctly pitted. Postapical sculpture coarsely irregularly ribbed. Aperture ample, rounded, well oblique, peristome insertions markedly approached; margins weakly thickened, shortly reflexed. Umbilicus closed. Height 30-35, diam. 29-35 mm (32.3 × 29.5 mm).

Talon hidden. Vas deferens rather short. Flagellum very long, twisted in some places. Epiphallus unusually short. Penis consists of 2 chambers. Penial retractor attached to boundary between epiphallus and penis. Free oviduct very short. Vagina not long, somewhat swollen. Stylophore large. Mucus glands rather small, with short common ducts, branched 2 times. Spermathecal stalk with short neck, long diverticle and comparatively very short stalk proper.

DISTRIBUTION. Madeira. 1 sp.

Tacheocampylaea L. Pfeiffer, 1877

Fig. 2310

Pfeiffer L., 1877 8.

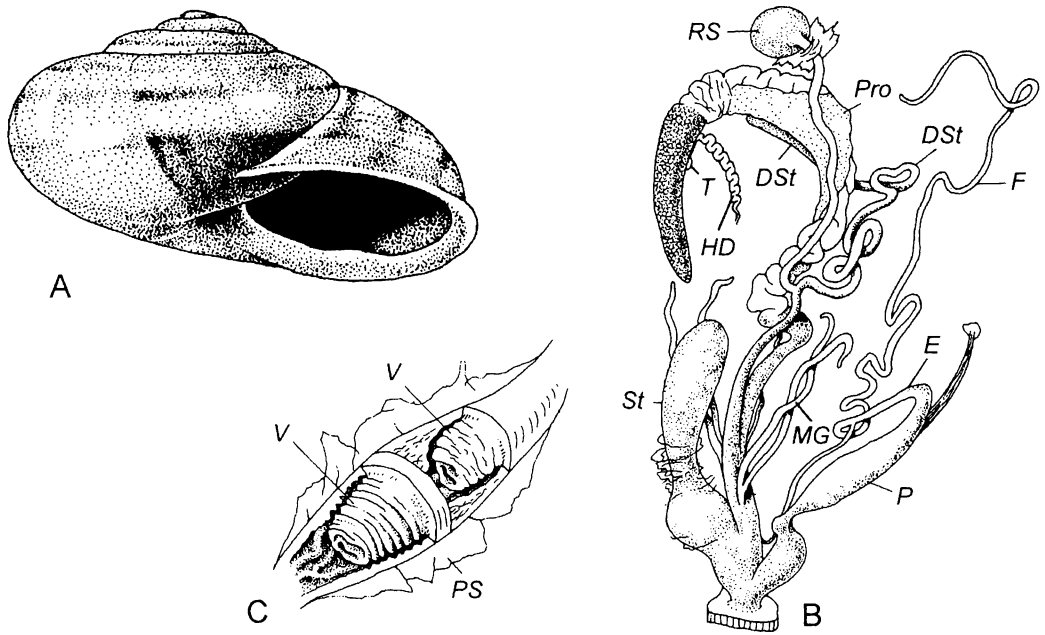


Fig. 2310. *Tacheocampylaea raspailii* (Payradeau, 1826).
Corte, Corsica, October 1994. A — shell. B — reproductive tract. C — interior of penis.
Moscow No. Lc-23801 (gift of Theodorus Ripken).

TYPE SPECIES — *Helix raspailii*
Payradeau, 1826; OD.

Shell depressed-conic to subglobose, rather thin, shining, of about 5 moderately convex whorls. Last whorl rounded, well deflected. Color brownish, yellowish or olive, with 3-4 brown bands: 2 above, 1 or 2 below periphery. Embryonic whorls almost smooth or with very light radial wrinklets; near suture microscopic spiral striae may be present. Later whorls nearly glabrous, without regular sculpture, sometimes with minute setae. Aperture broadly ovate, very oblique, with shortly reflexed margins; baso-columellar margin broadly reflexed. Parietal callus mostly distinct. Umbilicus closed or nearly so. Height 12-18, diam. 25-35 mm (16.2 × 31.1 mm).

Talon exposed. Vas deferens moderately long. Flagellum very long. Epiphallus short. Penis consists of 2 chambers, upper chamber contains 2 verges, distal one a little larger. Proximal chamber of penis with very thick walls and narrow lumen. Penis sheath very thin. Penial retractor attached to epiphallus/penis junction. Free oviduct very short, vagina slender, several times longer. Stylophore very long, considerably swollen basally. Mucus glands with very short com-

mon ducts, each of 2 long, simple arms. Spermathecal stalk with long neck, long, convoluted and twisted diverticle and shorter stalk proper.

DISTRIBUTION. Corsica, E Sardinia. 7 spp. with many forms.

Hemicycla Swainson, 1840

Swainson, 1840: 164, 165, 193, 194, 330, 331
— *Mycena* Albers, 1850: 123 (t.-sp. *Helix plicaria*
Lamarck, 1822; SD Herrmannsen, 1852).

TYPE SPECIES — *Helix plicaria* Lamarck, 1822; monotypy.

Shell more or less depressed, (rather) solid, of 4.5-6 rather convex whorls. Last whorl rounded to markedly angulated. Color uniformly pale-corneous to chestnut, with 0-5 darker bands. Embryonic whorls smooth. Later whorls with fine to coarse radial ribs, distinct tubercles or malleate sculpture. Aperture subcircular, very oblique to subhorizontal, with thin to slightly thickened, widely reflexed, flattened and expanded margins; parietal callus mostly well developed. Umbilicus rather narrow to closed.

Talon small, exposed. Vas deferens and flagellum moderately long. Epiphallus

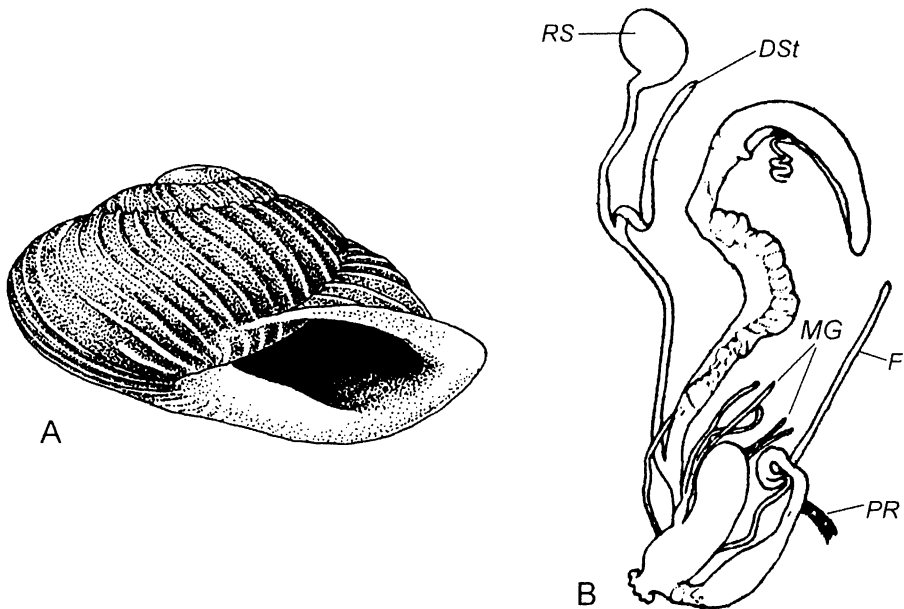


Fig. 2311 *Hemicycla (Hemicycla) plicaria* (Lamarck, 1822).

A — shell: La Candelaria, Tenerife. Paris. B — reproductive tract. After Ibáñez et al. 1987

rather short. Penis internally with 2 short verges; between them sometimes there is a sphincter. Penis sheath very thin. Penial retractor attached to lower section of epiphallus or boundary between penis and epiphallus. Free oviduct moderately short; vagina much longer. Stylophore rather large. Mucus glands with short neck, branched 1-2 times, end arms 5-8. Spermathecal stalk with or without diverticle.

DISTRIBUTION. Canary Islands.

Hemicycla (Hemicycla) s. str.

Fig. 2311

Height 10-22, diam. 16-35 mm (14.7 × 22.5 mm).

Diverticle of spermathecal stalk present.

DISTRIBUTION. Canary Islands. 5-7 spp. with numerous subsp. & forms.

Hemicycla (Adiverticula) Ibáñez,
1988)

Fig. 2312

Ibáñez in Ibáñez et al. 1988: 310.

TYPE SPECIES — *Helix adansoni* Webb et Berthelot, 1833; OD.

Height 14-16, diam. 21-26 mm (15.7 × 23.4 mm).

Diverticle of spermathecal stalk missing. DISTRIBUTION. Canary Islands. 1 spp.

Pseudotachea C. Boettger, 1909

Fig. 2313

Boettger C., 1909: 10, 11

TYPE SPECIES — *Helix splendida* Draparnaud, 1801; monotypy.

Shell much depressed, moderately solid, shining, of 4-4.5 slightly convex whorls. Last whorl rounded, slightly deflected. Color white, yellowish or corneous, with 0-5 variously developed dark bands; upper ones frequently interrupted or confluent. Embryonic whorls smooth. Postnuclear surface with fine, irregular radial striae. Aperture ovate, quite oblique, with thin, shortly reflexed margins. Umbilicus absent. Height 8.5-12.5, diam. 15-20 mm (9.2 × 17.2 mm).

Talon rod-like, slender. Vas deferens rather short. Flagellum long, slender. Epiphallus short. Penis fusiform, internally with 2 verges: short proximal and much longer distal; inner surface between verges with irregular, elongated, longitudinally ori-

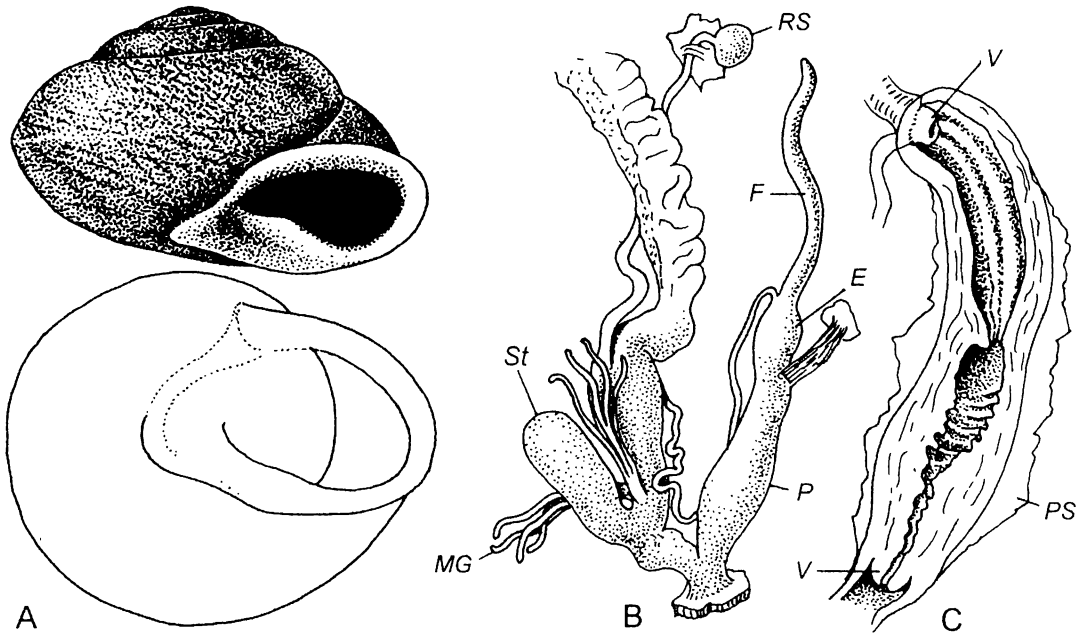


Fig. 2312. *Hemicycla (Adiverticula) adansoni* (Webb et Berthelot, 1833).
Teneriffe. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-20635.

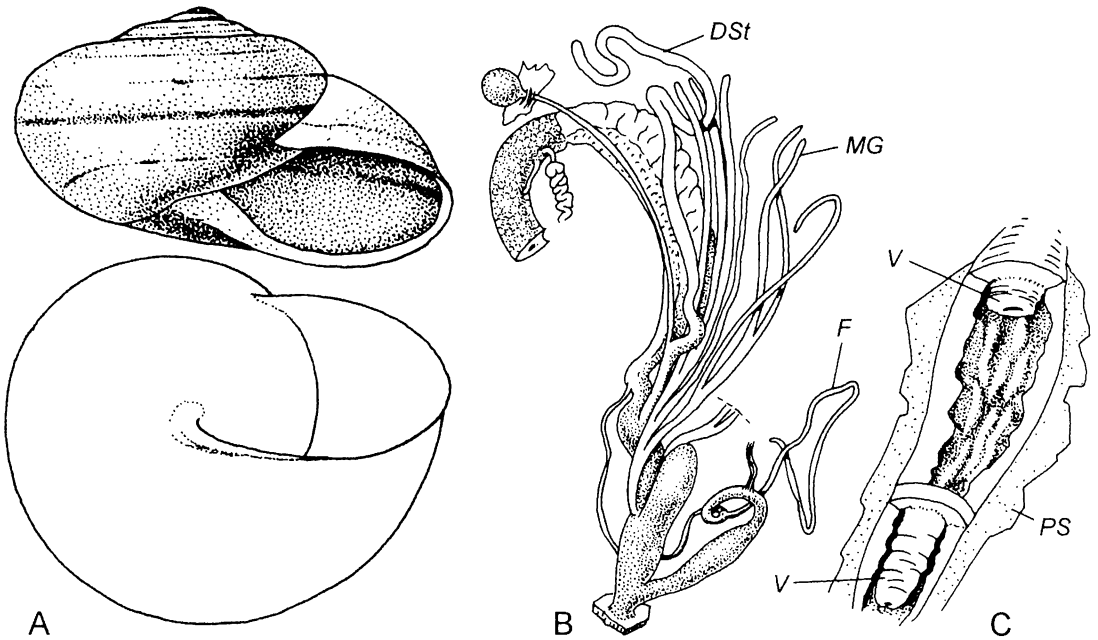
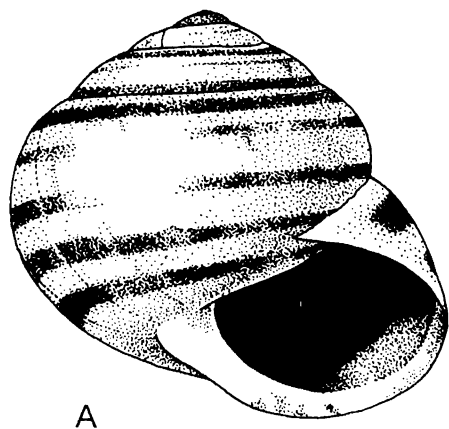
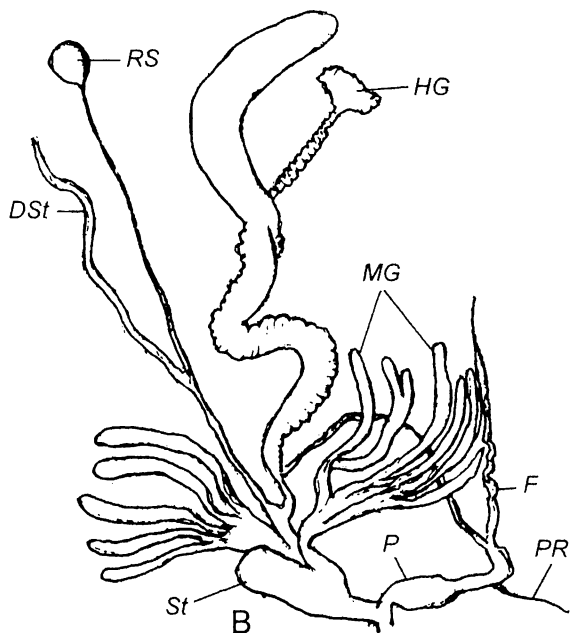


Fig. 2313. *Pseudotachea splendida* (Draparnaud, 1801).
Paguera, Mallorca, February 1969. A — shell. B — reproductive tract. C — interior of penis. Vienna No. 85.334.



A



B

Fig. 2314. *Rosσμαessleria sicanoides* (Kobelt, 1881).

A — shell: Tetouan, N Morocco. Paris. B — reproductive tract. After Hesse, 1907

ented folds. Penis sheath very thin. Penial retractor inserted on middle of epiphallus. Free oviduct very short. Stylophore comparatively small. Mucus glands with short neck and very long branches, number of end arms of each gland 6-8. Spermathecal stalk with short neck, very long, stout diverticle and slender, straight stalk proper.

DISTRIBUTION. Spain, S France. 1 sp.

Rosσμαessleria Hesse, 1907

Fig. 2314

Hesse, 1907: 8.

TYPE SPECIES — *Helix sicanoides* Kobelt, 1881; SD Hesse, 1918.

Shell globose, moderately solid, not very opaque, of about 5 slightly convex whorls. Last whorl inflated, rounded, well descending in front. Color white, uniform or (more often) with 1-5 brown or blackish bands. Embryonic whorls smooth; next 2-2.5 whorls granulated because of crossing of radial and spiral striae; spiral striation disappearing on body whorl; elements of malleation may be present. Aperture subcircular, quite oblique, with slightly reflexed margin and inner lip; basal margin flattened, usu-

ally with callus-like thickening. Umbilicus, a lateral crack or closed. Height 19-22, diam. 18-25 mm (18.5 × 19.2 mm).

Vas deferens not long. Flagellum moderately long. Epiphallus short. Penis not large, bulky. Free oviduct rather short. Stylophore not large. Mucus glands with short, more or less expanded common duct, branched 1-2 times. Spermathecal stalk with rather long neck, somewhat expanded diverticle and slender stalk proper; length of diverticle and stalk proper subequal.

DISTRIBUTION. S Spain, Morocco. 5-6 spp.

Massylaea Moellendorff, 1898

Fig. 2315

Moellendorff, 1898: 120 (sect. of *Helix* or *Macularia*).

TYPE SPECIES — *Helix massylaea* Morelet, 1851; tautonymy.

Shell depressed, solid, dull, of about 5 slightly convex whorls. Last whorl rounded, distinctly deflected. Color white, mostly with 5 variously developed dark bands which may be represented by series of spots. Embryonic whorls smooth. Postapical

sculpture of smoothed, irregular radial wrinkles and elements of malleate sculpture. Aperture ovate to rounded-quadrangular, well oblique, with shortly reflexed margins. Umbilicus closed. Height 15-28, diam. 26-45 mm (26.2 × 38.5 mm).

DISTRIBUTION. NW Africa (Tunisia, Algeria, Morocco). 2-3 spp.

Helix Linnaeus, 1758

Linnaeus, 1758: 768.

- *Cochlea* Da Costa, 1778: 67 (t.-sp. *Helix pomatia* Linnaeus, 1758; monotypy).
- *Pomatia* Röding, 1798: 73 (for 26 spp. of different families including Helicidae; t.-sp. not designated).
- *Helicogena* Férussac, 1821: 27 (part.; 1st sp. *Helix pomatia* Linnaeus, 1758).
- *Pomatia* Beck, 1837: 43 (*Helix* subg. t.-sp. *Helix pomatia* Linnaeus, 1758; SD Martens in Albers, 1860).
- *Pelasga* Hesse, 1908a: 139 [t.-sp. *Helix pelasgica* Kobelt, 1903 (= *Helix figulina* Rossmässler, 1839); partial tautonymy].
- *Pomatiella* Pallary, 1909: 21, 23 (*Pomatia* sect.; for *Helix melanostoma* Draparnaud, 1801 and *H. nucula* L. Pfeiffer, 1859).
- *Pseudofigulina* Hesse, 1917: 123 [unnecessary nom. nov. pro *Pelasga* Hesse, 1908: 123 “*Pseudofigulina* nom. nov. für *Pelasga* P Hesse nec *Pelasgis* Ragonot 1890 (Ins.)”].
- *Lindholmia* Hesse, 1918: 38 (*Caucasotachea* subg., t.-sp. *Helix christophi* O. Boettger, 1881, OD).
- *Physospira* C. Boettger, 1914: 103 (*Helix* subg.; t.-sp. *Helix vulgaris* Rossmässler, 1839; OD).
- *Cunula* Pallary, 1936: 47 (*Pomatia* subg., t.-sp. *Helix melanostoma* var. *doliolum* Pallary, 1936; monotypy).
- *Tammouzia* Pallary, 1939: 22 (*Pomatia* sect. t.-sp. *Helix cincta* var. *anctostoma* Martens, 1874; monotypy).

TYPE SPECIES — *Helix pomatia* Linnaeus, 1758; Opinion ICZN 94 (1926).

Shell globular to depressed-subglobose, (rather) solid, mostly not shining, of 4-5.5 slightly to moderately convex whorls. Last whorl inflated, rounded, straight or deflected. Color pale-yellow to dark-chestnut, initially with 5 dark bands but coloration highly variable. Embryonic whorls smooth. Postapical sculpture of fine to rather coarse,

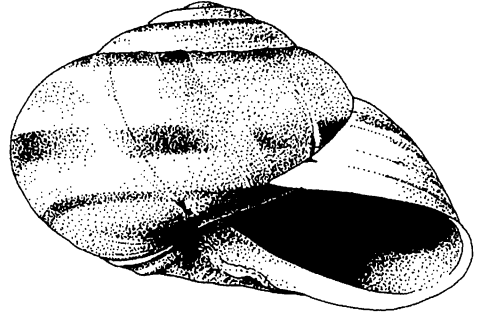


Fig. 2315. *Massylaea massylaea* (Morelet, 1851).
“Algerie, Province de Constantine” Vienna.

irregular radial striation. Aperture large, subcircular, not strongly oblique to subhorizontal, with simple, non-reflexed margins. Umbilicus closed or slit-like.

Talon, a mere curvature of hermaphroditic duct, buried or exposed. Flagellum moderately long to short. Penis long, with 2 verges. Diverticle of spermathecal stalk somewhat reduced down to complete disappearance. Stylophore and mucus glands developed or missing (subg. *Naegelea*).

DISTRIBUTION. Europe, N Africa, E Mediterranean including Asia Minor, Iran, W and S Caucasus and Crimea.

Helix (*Helix* s. str.)

Fig. 2316

Shell globular, moderately thin to rather solid, of 4-5.5 slightly convex whorls. Last whorl straight or scarcely deflected. Height 27-57, diam. 24-60 mm (39.9 × 37.0 mm).

Epiphallus very short, slender. Stylophore and mucus glands present. Diverticle of spermathecal stalk short, rudimentary; sometimes missing.

DISTRIBUTION. Middle and S Europe, Asia Anterior, N Africa. At least 20 spp.

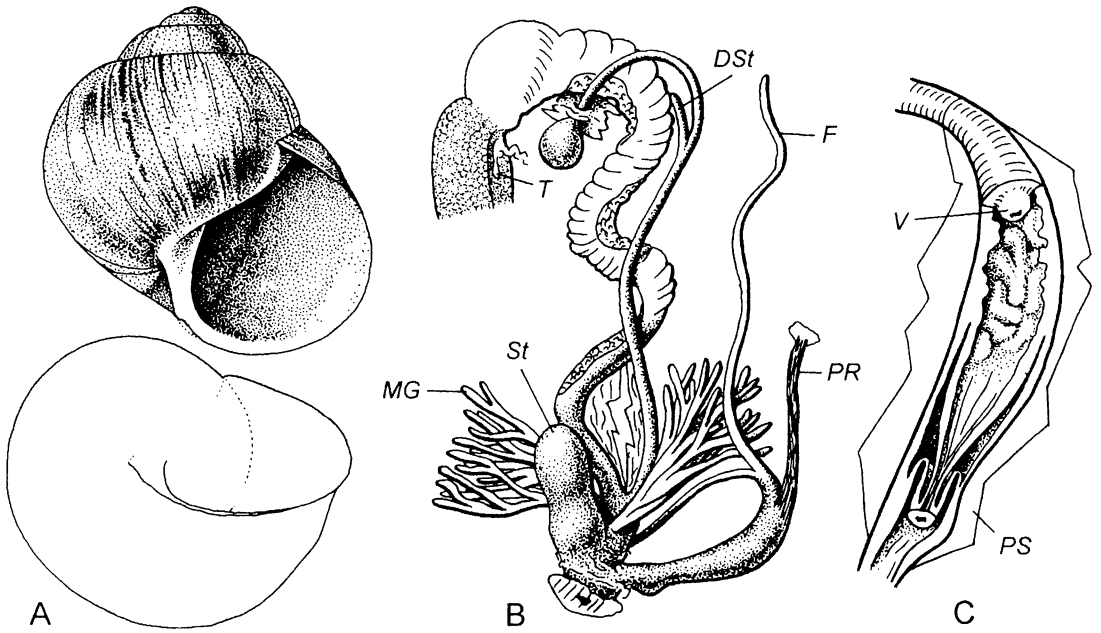


Fig. 2316. *Helix (Helix) pomatia* Linnaeus, 1758.

A — shell: Quedlinburg, Germany. Moscow No. Lc-19736. B, C — Environs of Smolyan, Rhodope Mts. SW Bulgaria, May 7, 1969. B — reproductive tract. C — interior of penis. After Schileyko, 1978.

Helix (Maltzanella) Hesse, 1917

Fig. 2317

Hesse, 1917 122 (nom. nov. pro *Maltzania* Hesse, 1908).

— *Maltzania* Hesse, 1908a: 140 [nom. praeocc. non O Boettger, 1881 (Reptilia); t.-sp. *Helix maltzani* Kobelt, 1883; OD).

TYPE SPECIES — *Helix maltzani* Kobelt, 1883; OD.

Shell as in *Helix* s. str. Height 35-42, diam. 35-42 mm (35.8 × 33.5 mm).

Epiphallus moderately short, slender. Stylophore and mucus glands present. Diverticle of spermathecal stalk moderately short.

DISTRIBUTION. Western Asia Minor. 2 spp.

Helix (Pachyphallus) Hesse, 1918

Fig. 2318

Hesse, 1918: 38 [*Helix (Helicogena)*; sect.].

TYPE SPECIES — *Helix ligata* Müller, 1774; OD.

Shell as in *Helix* s. str. Height 25-45, diam. 25-45 mm (34.0 × 34.4 mm).

Flagellum rather short. Epiphallus moderately short, unusually stout. Stylophore and mucus glands present. Diverticle of spermathecal stalk rudimentary.

DISTRIBUTION. Central and S Italy 1 sp.

Helix (Codringtonia) Kobelt, 1898

Fig. 2319

Kobelt, 1898: 208, 306 (*Helix* "Gruppe").

TYPE SPECIES — *Helix codringtoni* Gray, 1834; monotypy

Shell depressed-subglobose, of about 5 slightly convex whorls. Last whorl strongly descending in front. Color whitish or yellowish, with 4-5 dark, sometimes interrupted bands. Postapical sculpture of irregular, more or less coarse radial striation. Aperture ovate, much oblique to subhorizontal, with only slightly thickened, shortly reflexed margins; baso-columellar margin with variously developed, elongate thickening. Umbilicus closed or partly open. Height 20-35, diam. 30-50 mm (30.3 × 42.8 mm).

Flagellum very long. Epiphallus comparatively long, slender. Stylophore and mucus

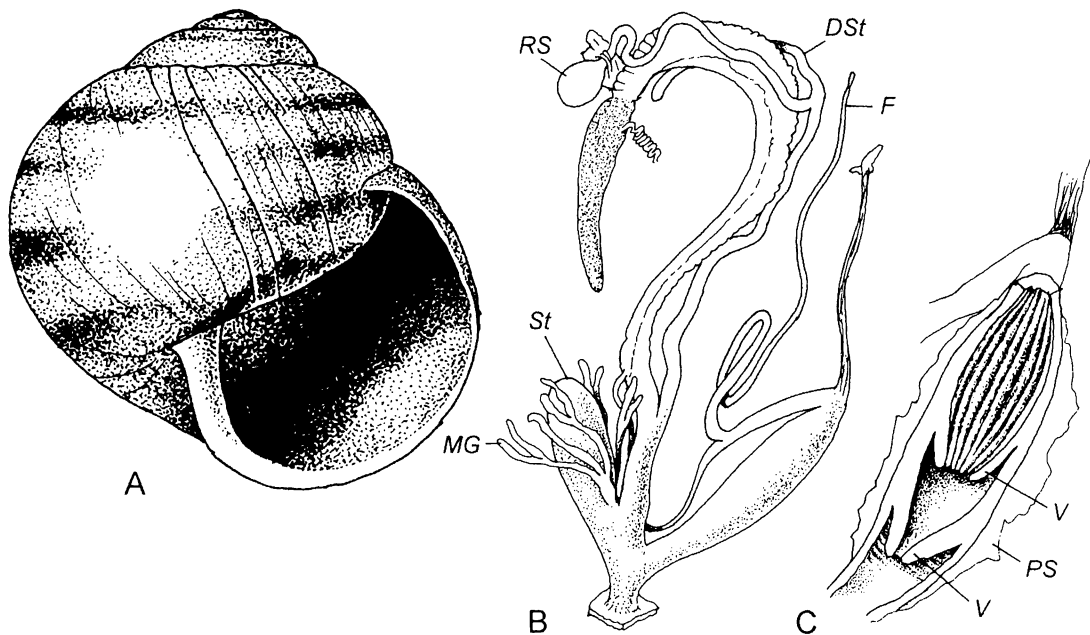


Fig. 2317 A — *Helix (Maltzanella) maltzani* Kobelt, 1883.

Shell: Smyrna. Vienna No. 34309 B, C — ! *Helix (Maltzanella) dickhauti* Kobelt, 1903.
 Bolkar-Daglari Ridge, Adana vilayet, Turkey, August 28-29, 1995. B — reproductive tract.
 C — interior of penis. Moscow No. Lc-28237

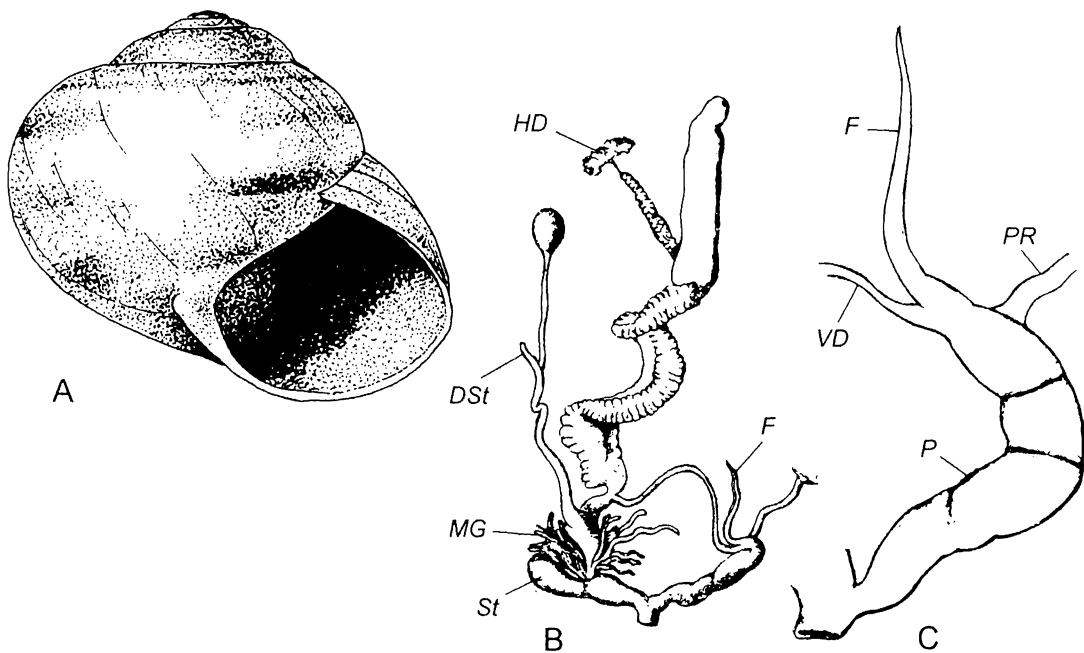


Fig. 2318. *Helix (Pachyphallus) ligata* Müller, 1774.

A — shell: "Italien, Leprano, Terra di Lavorno" Zürich No. 506351 B — reproductive tract. C — penis enlarged. After Hesse, 1918.

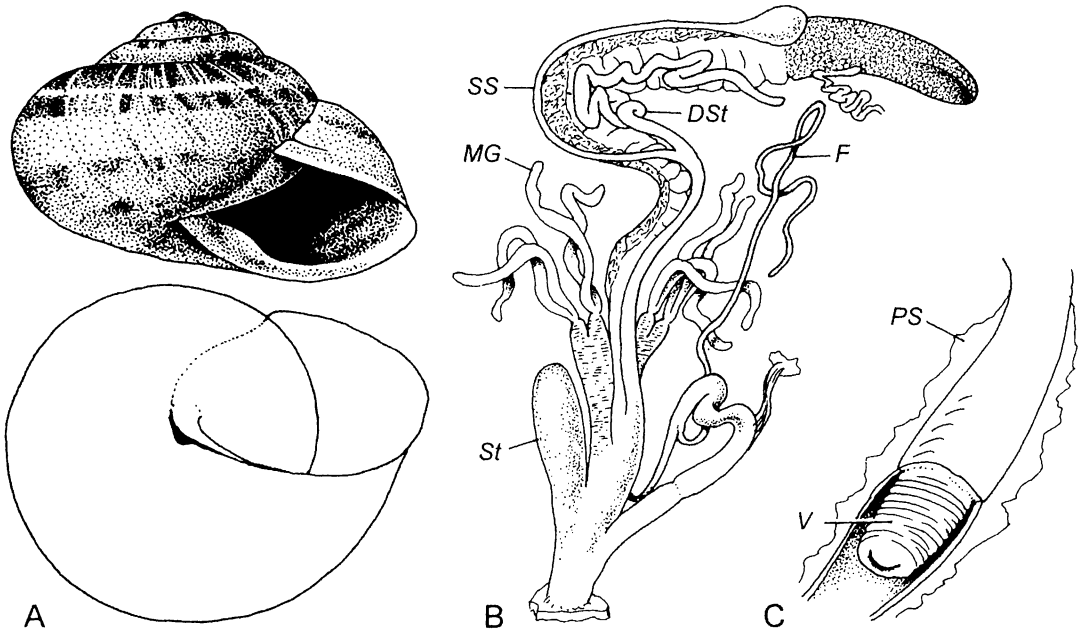


Fig. 2319 *Helix (Codringtonia) codringtoni* Gray, 1834.

A — shell: Rocks, 4 km E of Khora, Prov. Messinia, Greece. Moscow No. Lc-20473 (gift of H. Menkhorst). B, C — Sparti, Taygetos Mts., Peloponnissas, Greece, November 5, 1979. B — reproductive tract. C — interior of penis. Moscow No. Lc-28120.

glands present; common duct of glands expanded, muscularized. Diverticle of spermathecal stalk well developed, convoluted.

DISTRIBUTION. Greece. 10-15 spp.

Helix (Isaurica) Kobelt, 1902

Fig. 2320

Kobelt, 1902: 35, 36.

— *Isauria* C. Boettger, 1909: 10 (nom. err. pro *Isaurica* Kobelt, 1902).

TYPE SPECIES — *Helix praecellens* Nägele, 1901; monotypy.

Shell depressed-subglobose, solid, of 4-5 moderately convex whorls. Last whorl well deflected, rounded. Color mostly corneous, usually with 3 dark, often interrupted, bands: along, above and below periphery. Postapical sculpture of rather fine, crowded, irregular radial wrinkles. Aperture broadly ovate, quite oblique, with very shortly reflexed, slightly thickened margins. Umbilicus closed. Height 30-36, diam. 40-50 mm (33.6 × 47.0 mm).

Vas deferens comparatively short. Flagellum long, slender. Epiphallus short, slender. Stylophore and mucus glands present;

glands poorly branched. Diverticle of spermathecal stalk very long.

DISTRIBUTION. S Asia Minor. 3 spp.

Helix (Naegelea) Hesse, 1918

Fig. 2321

Hesse, 1918: 38 [*Helix (Pseudofigulina)*; sect.].

TYPE SPECIES — *Helix salomonica* Nägele, 1899; OD.

Shell of normal *Helix*-type. Height 25-30, diam. 25-30 mm (27.6 × 25.4 mm).

Flagellum moderately long. Epiphallus comparatively long, slender. Stylophore or mucus glands missing. Diverticle of spermathecal stalk short.

DISTRIBUTION. NW Iran. 1 sp.

Caucasotachea C. Boettger, 1909

Fig. 2322

Boettger C., 1909: 10, 11 (*Tachea* sect.).

TYPE SPECIES — *Helix atrolabiata* Krynicki, 1833; monotypy

Shell depressed-conic, moderately thin to quite solid, of about 5 slightly or moderately convex whorls. Last whorl rounded,

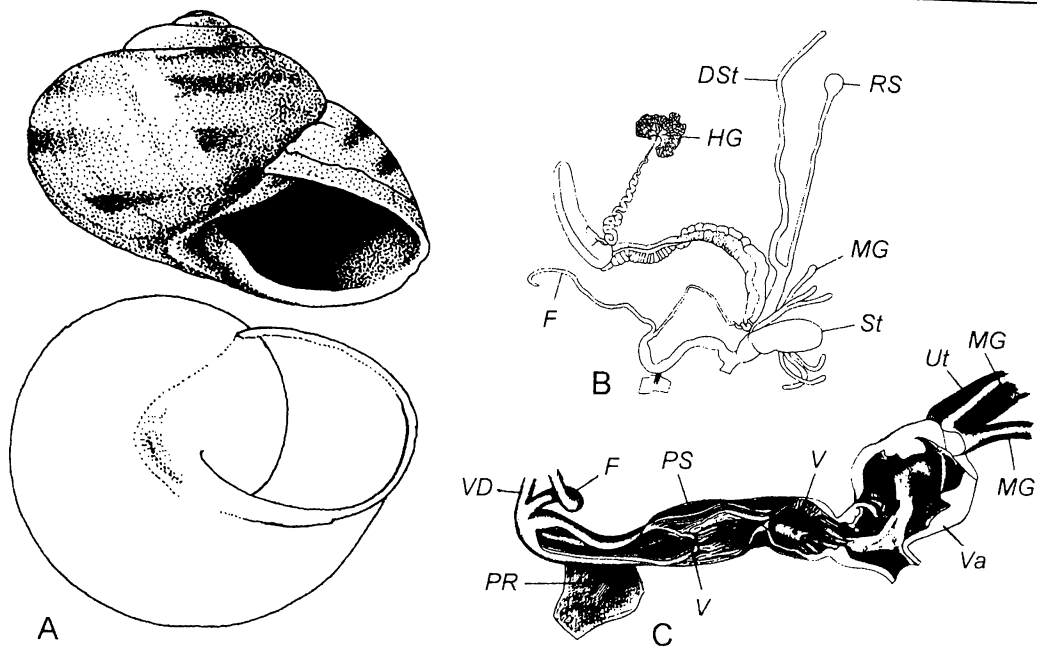


Fig. 2320. ! *Helix (Isaurica) lycica* Martens, 1889

A — shell: 6 km NNE of Kas, prov Antalya, Turkey. Moscow No. Lc-20474 (gift of H Menkhorst). B — reproductive tract. C — interior of penis. After K. Pfeiffer & Wächtler, 1939

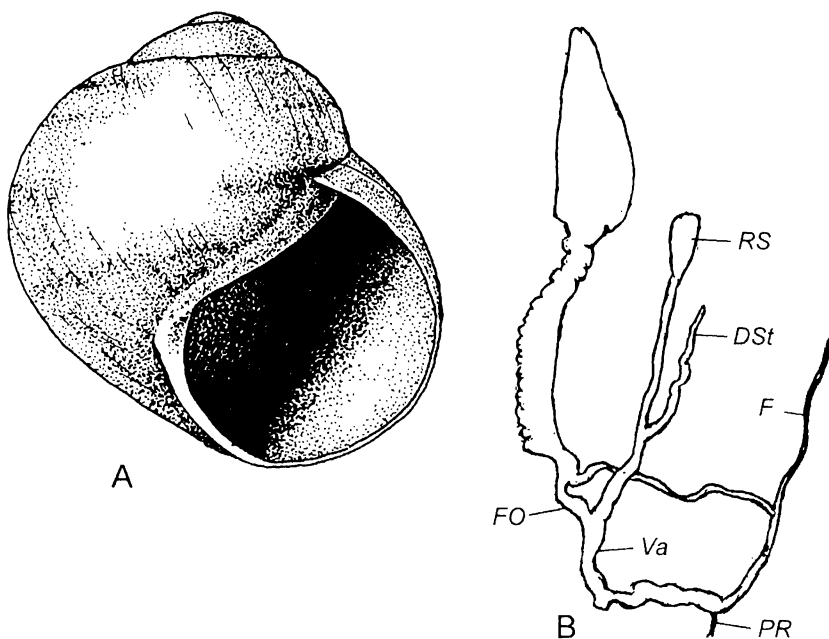


Fig. 2321 *Helix (Naegelea) salomonica* Nägele, 1899

A — shell: "Urmia, Persien" Vienna No. 34076. B — reproductive tract. After Hesse, 1918.

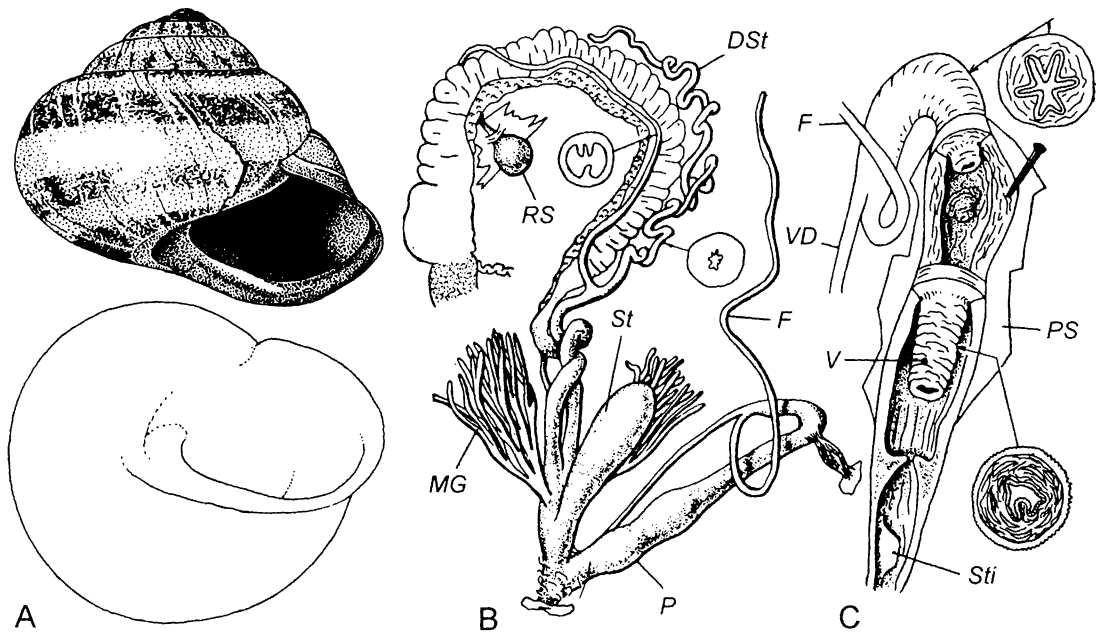


Fig. 2322. *Caucosotachea atrolabiata* (Krynicky, 1833).

A — shell: Khosta near Sochi, W Caucasus. Moscow No. Lc-6817 B, C — Enguri River Valley above Dzhvari, NW Caucasus, April 10, 1971 B — reproductive tract. C — interior of penis. Moscow No. Lc-19727

well deflected. Color yellowish to brownish-yellow or greenish-brown, with 0-5 brown to blackish bands. Embryonic whorls smooth. Sculpture of later whorls of fine to coarse radial striation; body whorl sometimes malleated. Aperture ovate, well oblique, with thin to thickened, reflexed margins. Umbilicus closed. Height 18-38, diam. 27-42 mm (25.2 × 35.6 mm).

Flagellum not coiled, longer than epiphallus + penis. Penis contains 2 verges, distal larger than proximal. Upper chamber of penis may contain a small tubercle. In distal section of penis there is a small tubercular stimulator. Penial retractor attached to middle of epiphallus. Free oviduct longer than vagina. Mucus glands intensively branched, common duct short. Diverticle of spermathecal stalk very long, twisted and convoluted.

DISTRIBUTION. W Caucasus and SE Transcaucasia. 3 spp. with many forms.

Tacheopsis C. Boettger, 1909

Fig. 2323

Boettger C., 1909: 10

TYPE SPECIES — *Helix aimophila* Bourguignat, 1859 (= *Helix nicaeensis* Férussac, 1821); monotypy.

Shell dome-shaped, solid, opaque, of 5-5.5 moderately convex whorls. Last whorl slightly descending in front, rounded at periphery. Color calcareous, monochromatic or with 1-5 brown bands. Embryonic whorls smooth. Subsequent whorls with irregular radial striation. Aperture well oblique, rounded-triangular, with slightly thickened margins. Columellar margin moderately expanded, short, subvertical; basal margin with a light callosity Umbilicus rather narrow, more or less covered by reflection of columellar margin. Height 17-20, diam. 21-26 mm (19.5 × 24.3 mm).

Flagellum about 2 times longer than penis+epiphallus. Epiphallus externally not demarcated from penis, internally with some folds and 1 fleshy pilaster; walls of epiphallus thickened, contain loose tissue. Penis short, sinuous in distal section, internally with a single, short verge. Penis sheath transparent. Penial retractor inserted on very proximal part of epiphallus, just below vas deferens insertion. Free oviduct rather short, vagina 2-3 times longer. Mucus glands

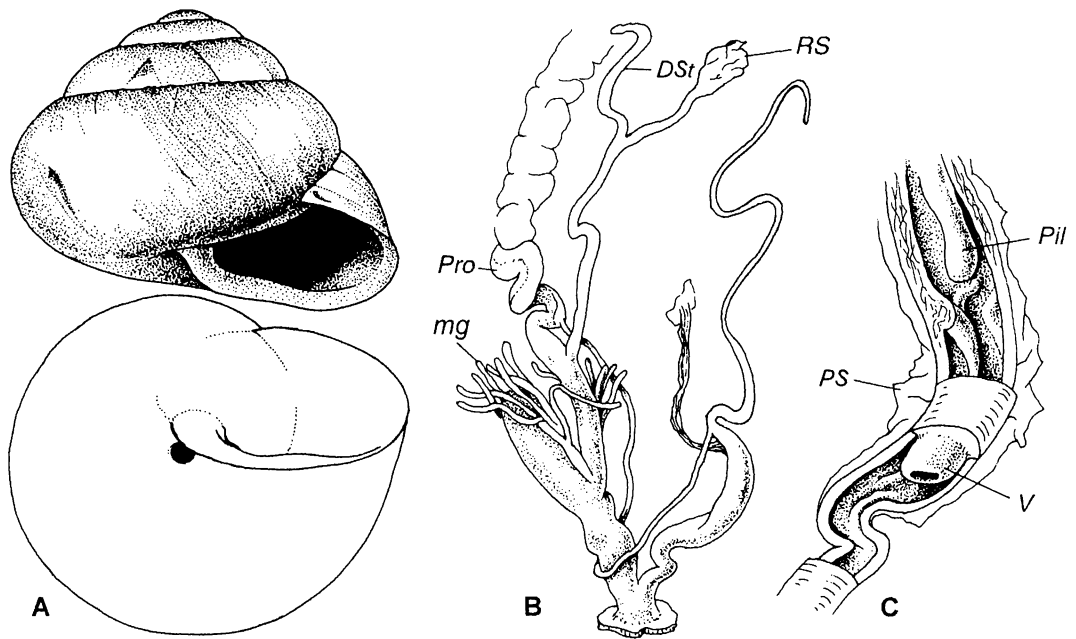


Fig. 2323. *Tacheopsis nicaensis* (Férussac, 1821).
 A - Abant-Golu Lake, vilayet Bolu, Turkey Moscow No. Lc-28230 (gift of A. G. Kuznetsov).
 B, C - "Abant, Bergsattel, Berghang mit Steinen, 9.6.1969" B - reproductive tract. C - interior of penis. Vienna No. 103480.

moderately branched, with quite distinct common duct. Spermathecal stalk with very long neck; diverticle about twice shorter; duct of reservoir of about same length.

DISTRIBUTION. Asia Minor. 2 or 3 spp.

Levantina Kobelt, 1871

Kobelt, 1871 19

TYPE SPECIES — *Helix spiriplana* Olivier, 1801; SD Martens, 1873 in Zool. Rec. for 1871

Shell depressed-conic to much flattened, thin to solid, of 4-5 slightly convex whorls. Last whorl rounded to (rarely) angulated, well descending in front. Color whitish to corneous, with 0-5 darker bands. Embryonic whorls smooth, indistinctly radially striated or finely granulated. Postapical sculpture of weak radial striation; a dense, delicate granulation may be present (subg. *Laevihelix*). Aperture ovate to subcircular, strongly oblique to subhorizontal, with reflexed margins; peristome insertion more or less approached. Umbilicus closed to rather widely open.

Flagellum very long, tightly coiled. Penis

contains 2 verges. Mucus glands markedly reduced in size and branching (sometimes simple). Diverticle of spermathecal stalk moderately to very long, mostly convoluted.

DISTRIBUTION. Transcaucasia, Asia Minor, Arabian Peninsula.

Levantina (*Levantina* s. str.)

Fig. 2324

Shell more or less solid. Initial postapical whorls angulate, in adult shell angle sometimes visible above suture. Whorls flattened, suture shallow. Shell surface mostly with 5, usually interrupted bands. Postapical sculpture of non-sharp, irregular radial wrinkles and, sometimes, weak spiral striation. Umbilicus narrowly open. Height 12-24, diam. 24-45 mm (14.8 × 28.6 mm).

Each mucus gland of 2-3 branches, common duct slightly swollen. Spermathecal stalk with very long, convoluted diverticle.

DISTRIBUTION. S Transcaucasia (Armenia, S Azerbaijan), Turkey, Asia Anterior from Aleppo (= Halab) and Beirut to Dead Sea, Saudi Arabia, Aegean islands (Rhodes, Kalymnos). 4-7 spp.

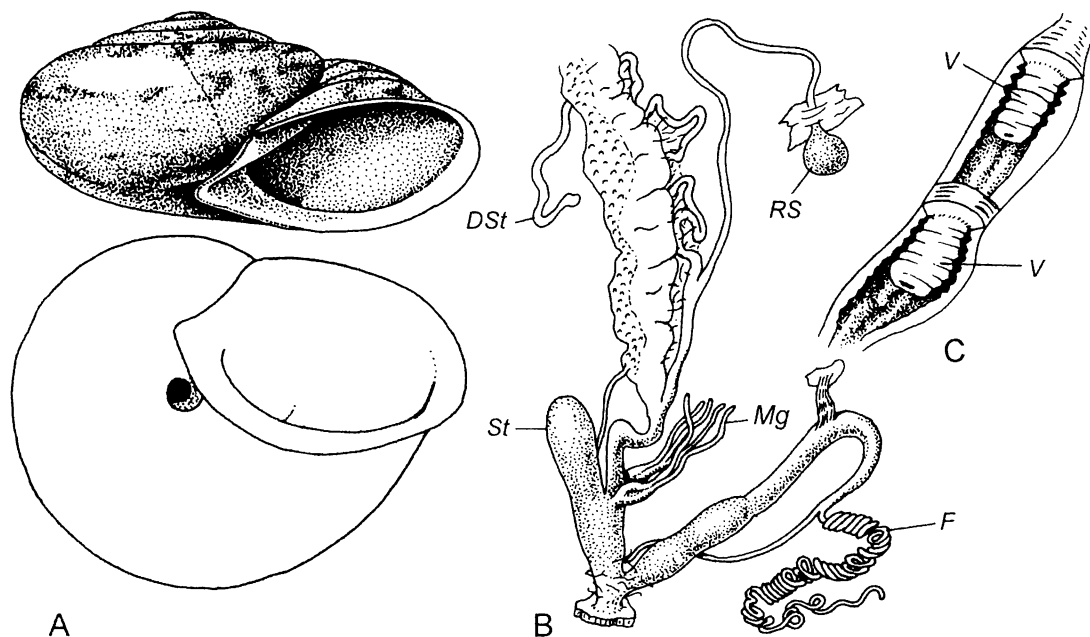


Fig. 2324. *Levantina (Levantina) spiriplana* (Olivier, 1801). Jerusalem. A — shell. B — reproductive tract. C — interior of penis. Vienna No. 74.137 Penis sheath not depicted.

Levantina (Assyriella) Hesse, 1908

Fig. 2325

Hesse, 1908b: 319 (*Levantina* "Gruppe"). Schütt & Subai, 1996: 117

TYPE SPECIES — *Helix guttata* Olivier, 1804; OD.

Shell more or less solid. Initial postapical whorls only slightly angulate, body whorl rounded. Whorls rather convex, suture deep. Shell surface with 2-5, not or a little interrupted bands. Postapical sculpture as in *Levantina* s. str. Umbilicus closed. Height 14-30, diam. 25-45 mm (21.2 × 36.4 mm).

Each mucus gland of 2 branches, common duct extremely short, not swollen. Spermathecal stalk and diverticle as in *Levantina* s. str.

DISTRIBUTION. Iran, Iraq, Armenia. 17 spp.

Levantina (Laevihelix) Neubert, 1998

Fig. 2326

Neubert, 1998: 430.

TYPE SPECIES — *Levantina (Laevihelix) symensi* Neubert, 1998; OD.

Shell thin. Initial postapical whorls sharply keeled, last whorl rounded. Whorls a little convex, suture moderately deep. Shell surface with 1-5 bands, some of them interrupted. Both embryonic and postembryonic whorls with fine, dense granulation. Umbilicus covered or partly open. Height 9.9-14.2, diam. 17.9-28.0 mm (14.2 × 28.0 mm).

Each mucus gland of 1-2 branches; sometimes there is only 1 gland or glands totally absent. When gland forked, common duct comparatively long to extremely short. Diverticle of spermathecal stalk enormously long, twisted and convoluted.

DISTRIBUTION. W Arabian Peninsula. 4 spp.

Levantina (Gyrostomella)

Hesse, 1911)

Fig. 2327

Hesse, 1911 113, footnote (nom. nov. pro *Gyrostoma* Hesse, 1909).

— *Gyrostoma* Hesse, 1909: 320 [nom. praeocc. non Kirby et Spence, 1828 (Hymenoptera); t.-sp. *Helix gyrostoma* Férussac, 1821; OD].

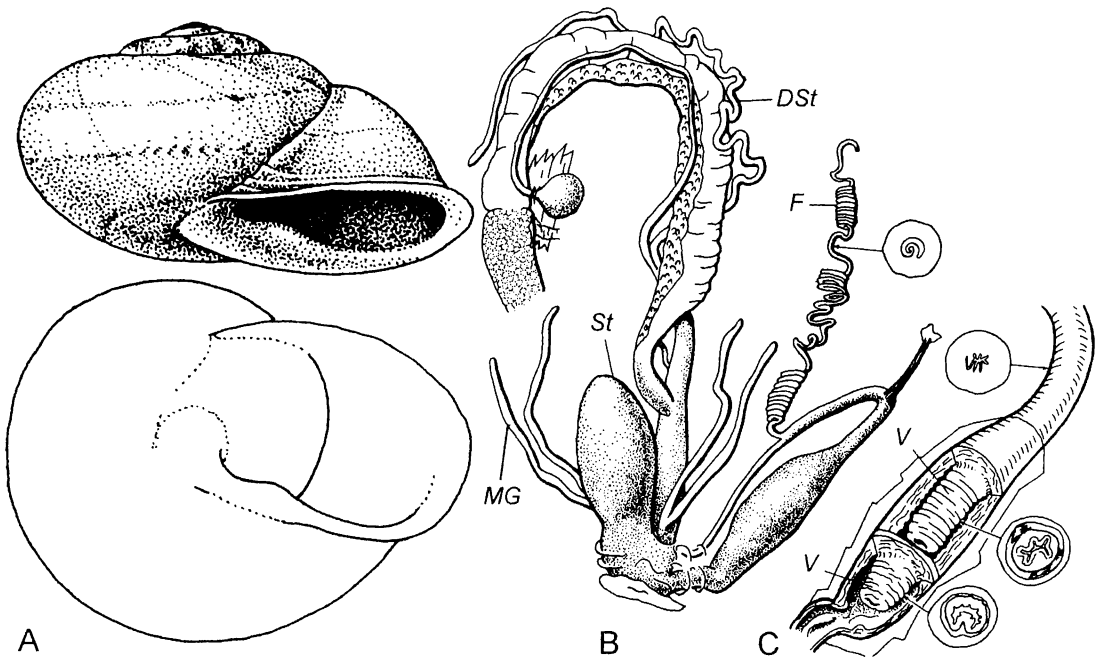


Fig. 2325. A — *Levantina (Assyriella) guttata* (Olivier, 1804). Shell: "Oberes Mesopotanien" SPb. B, C — ! *Levantina (Assyriella) escheriana* (Bourguignat, 1864). Areni village, Armenia, May 12, 1953. B — reproductive tract. C — interior of penis. Moscow No. Lc-19740.

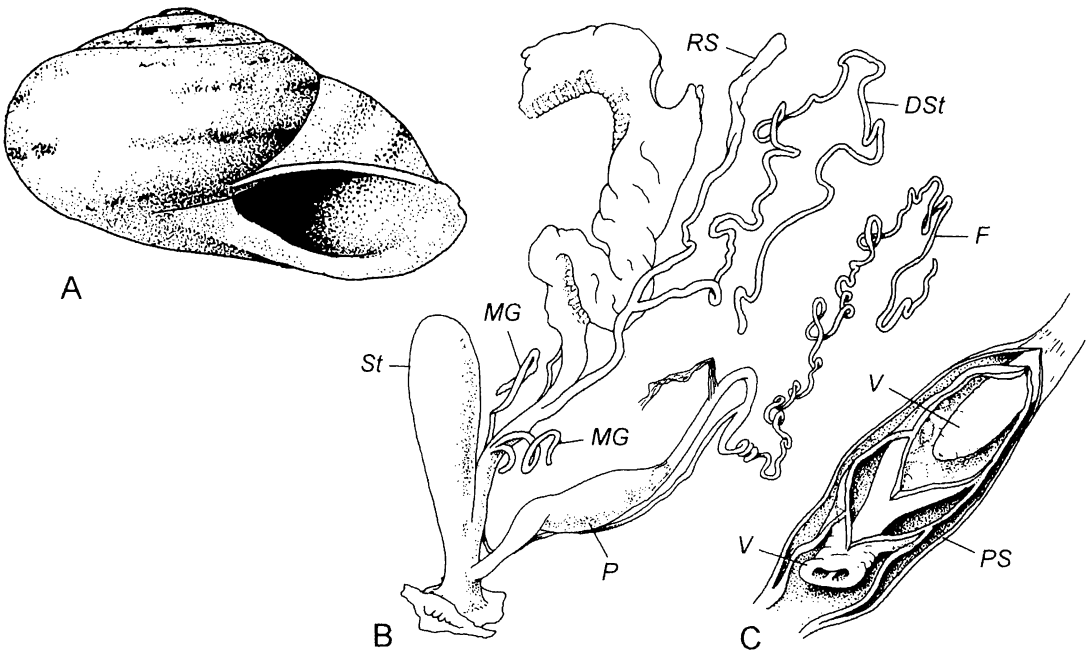


Fig. 2326. *Levantina (Laevihelix) symensi* Neubert, 1998. Saudi Arabia, Asir province, Djebel Dhaka SW of Ta'if, 2340 m. alt., *Juniperus* forest, 4.6.1995. Holotype. A — shell. B — reproductive tract. C — interior of penis. Senck. No. 311271

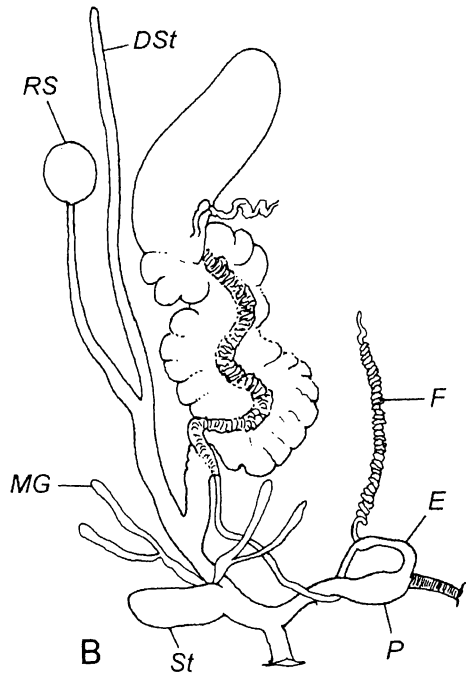
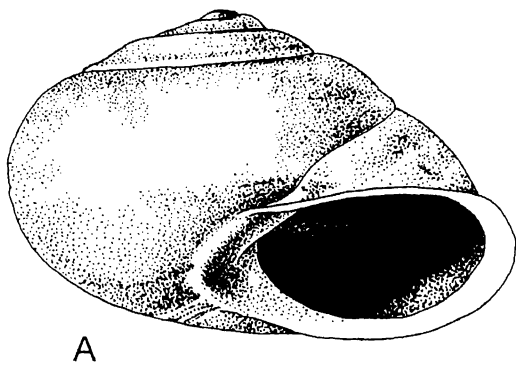


Fig. 2327 *Levantina (Gyrostomella) gyrostoma* (Férussac, 1821).

A — shell: "Lybia, Tripolis, Gasr Gharian" Vienna No. E 36174. B — reproductive tract. After Hesse, 1911 (hermaphroditic gland omitted).

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

Shell rather thin to quite solid. Initial postapical whorls sharply keeled; last whorl in the beginning with light, blunt keel. Whorls flattened, somewhat shouldered. Shell surface with darker pattern of indistinct, uninterrupted bands. Embryonic whorls smooth. Postapical sculpture varies from rib-striation to ribbing. Umbilicus closed. Height 10-14, diam. 16-20 mm (11.8 × 17.2 mm).

Each mucus gland of 2 branches, common duct rather long, tubular. Diverticle of spermathecal stalk comparatively short, not convoluted.

DISTRIBUTION. Libya. 2-3 spp.

Cepaea Held, 1837

Held, 1837 910.

— *Tachea* Turton, 1831 33 [nom. praeocc., non Fleming, 1822 (Aves); t.-sp. *Helix nemoralis* Linnaeus, 1758; SD J. Gray, 1847].

TYPE SPECIES — *Helix nemoralis* Linnaeus, 1758; SD J. Gray, 1847

Shell subglobose-conic, moderately thin to rather solid, of 4.5-5.5 slightly convex whorls. Last whorl rounded, distinctly deflected. Color whitish, grey, yellow, chestnut or pink, monochromatic or with 1-5 dark bands; peristome sometimes dark. Embryonic whorls smooth. Later whorls with radial striation or fine ribbing. Aperture wide, ovate, very oblique, with reflexed margins and inner lip; baso-columellar margin straight or a little convex. Umbilicus closed or nearly so.

Flagellum longer than penis+epiphallus. Penis contains 2 verges and tubercular stimulator at atrium. Mucus glands branch dichotomically 2 or 3 times, thus, end arms number 4 or 8. Diverticle of spermathecal stalk short.

DISTRIBUTION. Europe, Crimea, N Caucasus; some species introduced to N America.

Cepaea (*Cepaea* s. str.)

Fig. 2328

Ground color yellow, chestnut or pink. Postapical whorls finely radially striated. Umbilicus completely closed. Height 9-18, diam. 15-30 mm (17.0 × 22.6 mm).

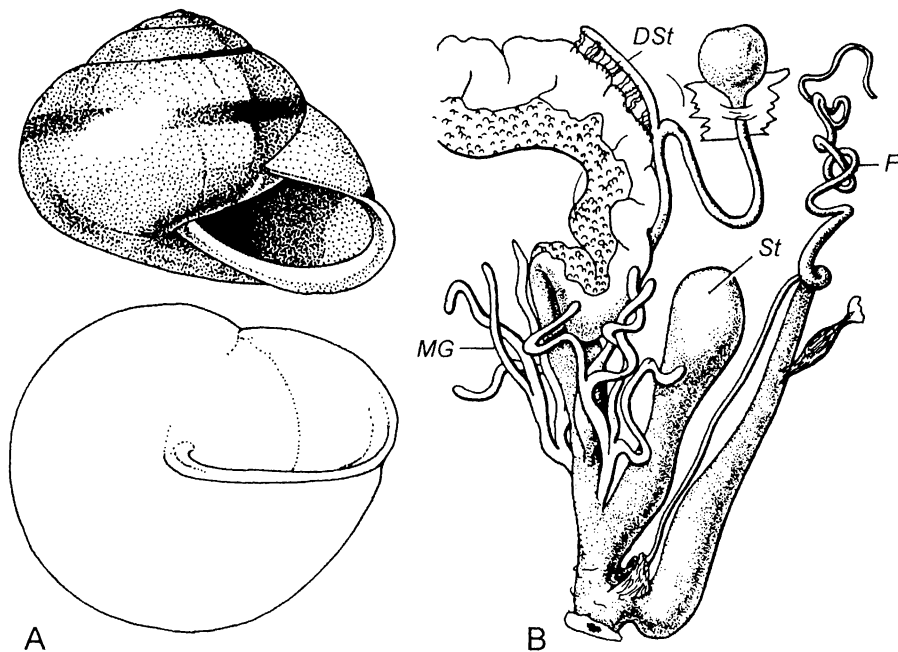


Fig. 2328. *Cepaea (Cepaea) nemoralis* (Linnaeus, 1758).
Osterzgebirge bei Schniedeberg, Germany, May 1969 A — shell. B — reproductive tract.
Moscow No. 19759

Upper section of penis shorter than lower. Each mucus gland splitted twice, thus, overall number of branches 4. Diverticle of spermathecal stalk much shorter than neck. Chromosome number = 22.

DISTRIBUTION. Europe. 2 spp.

Cepaea (Austrotachea) Pfeffer, 1930
Fig. 2329

Pfeffer, 1930: 143.

- *Hylotachea* Pfeffer, 1930: 144 (t.-sp. *Helix sylvatica* Draparnaud, 1801; monotypy).
- *Octadenia* Schileyko, 1978: 322 (t.-sp. *Helix vindobonensis* Férussac, 1822; OD).

TYPE SPECIES — *Helix austriaca* Mühlfeld in Rossmässler, 1835 (= *Helix vindobonensis* Férussac, 1822); monotypy.

Ground color whitish, grey or yellowish. Postapical whorls finely radially ribbed. Umbilicus closed or very narrowly slit-like. Height 14-20, diam. 16-24 mm (17.9 × 22.2 mm).

Upper and lower sections of penis approximately equal in length. Each mucus

gland splitted 3 times, thus, overall number of branches 8. Diverticle of spermathecal stalk not shorter than neck. Chromosome number = 25.

DISTRIBUTION. Europe, N Caucasus, Crimea. 2 spp.

Cryptomphalus Charpentier, 1837
Fig. 2330

Charpentier, 1837 5.

- *Cornu* Born, 1778: 371 [t.-sp. *Cornu copiae* Born, 1778 (= *Helix aspersa* Müller, 1774); monotypy; nom. oblit.].
- *Coenatoria* Held, 1837 910 (t.-sp. *Helix aspersa* Müller, 1774; designated here).

TYPE SPECIES — *Helix aspersa* Müller, 1774; SD Pilsbry, 1889 (1889-1891).

Shell subglobose, thin to rather solid, of 4-4.5 slightly convex whorls. Last whorl rounded, deeply deflected. Color yellow, typically with 3-5 chestnut-brown to chocolate bands interrupted by yellow flecks or streaks; rarely monochromatic. Embryonic whorls smooth. Later whorls finely radially striate, with variously developed malleation

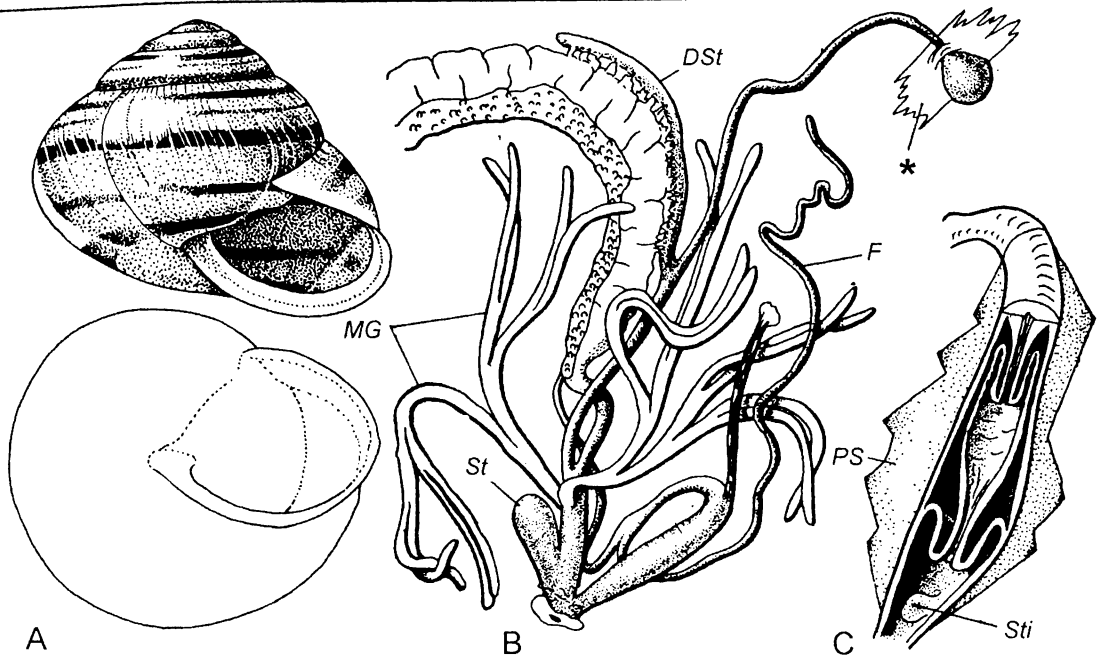


Fig. 2329 *Cepaea (Austrotachea) vindobonensis* (Férussac, 1822).

A — shell: Kishinev (Chipinău) [Moldova]. Moscow No. Lc-12931 B, C — Kyustendil, Bulgaria, June 28, 1969 B — reproductive tract. C — interior of penis. After Schileyko, 1978. Asterisk — lung wall.

(predominately on body whorl). Aperture large, subcircular, quite oblique, with a little thickened, reflexed and expanded all around margins. Umbilicus closed. Height of normal shells 20-40, diam. 24-45 mm (32.8 × 36.3 mm; scalariform shell: 52.6 × 32.8 mm).

Vas deferens rather short. Flagellum enormously long, slender; epiphallus 3-5 times shorter. Penis swollen, fusiform to clavate. Upper chamber of penis contains globular, thick-walled verge having coarsely tubercular surface; this chamber separated from lower by a strong semicircular fold (stimulator). Penis sheath very thin. Penial retractor attached to middle of lower half of epiphallus. Free oviduct comparatively long. Stylophore very large. Mucus glands intensively branched, with very short common ducts. Spermathecal stalk with rather long, sometimes a little expanded neck, long, strongly sinuated diverticle and thin, straight stalk proper.

DISTRIBUTION. Mediterranean countries, introduced to many coastal territories of nearly all continents. 1 sp. with numerous forms.

POLYGYROIDEA Pilsbry, 1895

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

Shell generally helicoid or hygromioid, rarely vitrinoid, monochromatic or banded. Lamellar parietal tooth characteristic for some groups (Polygyridae and some Pleurodontidae).

Sole not divided.

Head wart absent or indistinct.

Jaw odontognathous or (rarely) smooth.

Talon simple to multilobate. Flagellum well developed to rudimentary, sometimes missing. Epiphallus present or absent. Penial caecum sometimes present (some Pleurodontidae). Verge present or absent. Penial glands may be present. Penis sheath present (sometimes very strong) or absent. Vagina lacks any appendages. Spermathecal stalk without diverticle (exception: some Solaropsinae have diverticle). Spermatophore, when present, ornate or in form of elongated sac.

DISTRIBUTION. N and S America including Caribbean region.

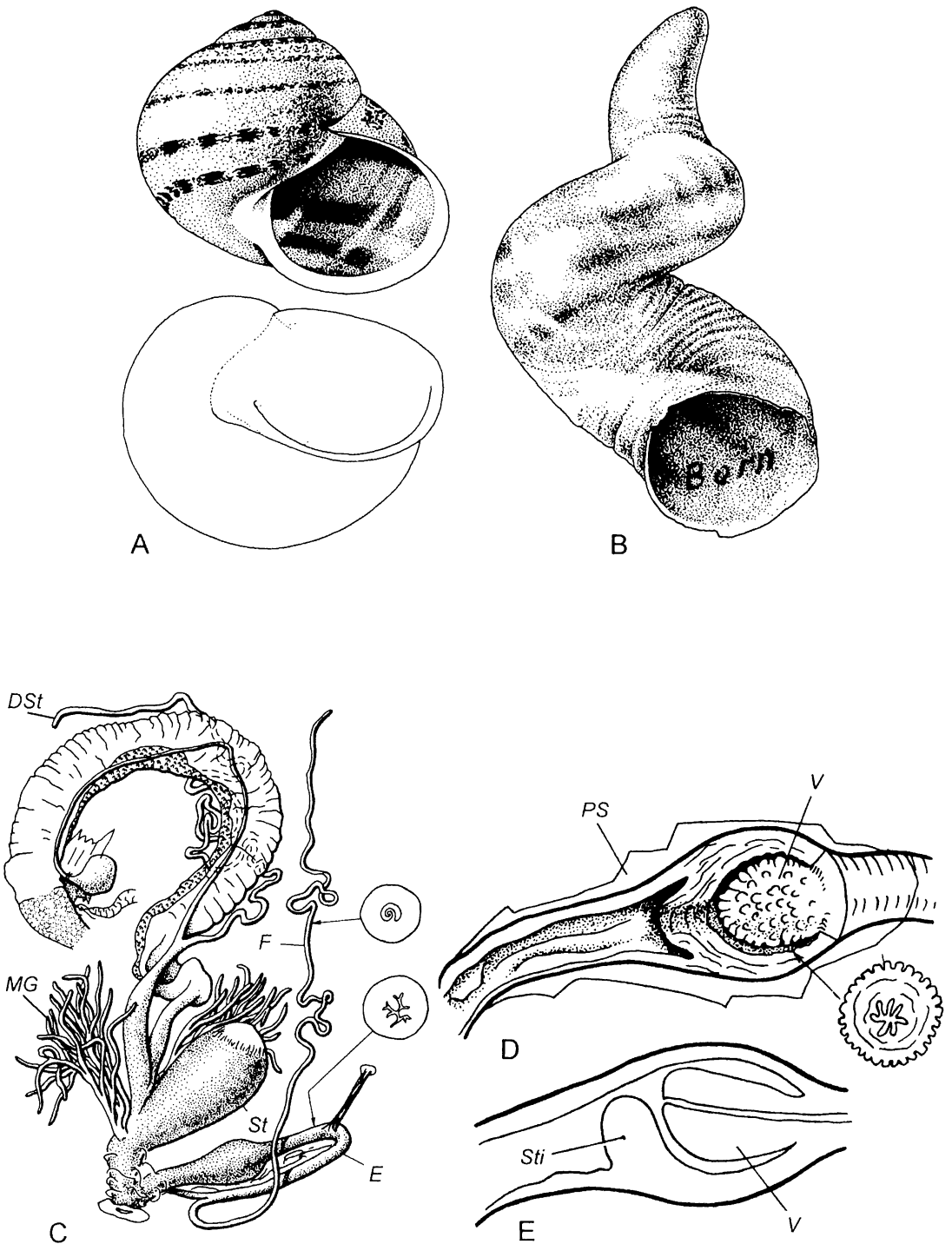


Fig. 2330. *Cryptomphalus aspersa* (Müller, 1774).

A, C, D, E — Montpellier, France, August 1971 A — shell. C — reproductive tract. D, E — interior of penis and longitudinal section through penis. Moscow No. Lc-19757 B — scalariiform specimen (holotype of *Cornu copiae* Born, 1778. Vienna, Born collection).

PLEURODONTIDAE Ihering, 1912

Ihering, 1912: 478.

— Lucerninae Swainson, 1840: 162, 328.

— Lampadiidae Winckworth, 1945: 146.

— Caracolinae Cuezso, 2003: 471

Scott, 1996: 65-73.

Shell varies from flat or lens-shaped to globular, medium-sized or large. Parietal wall of aperture without transverse lamella (entering lamella may be present).

Jaw ribbed to finely striated (almost smooth).

Kidney short, secondary ureter completed.

Talon simple, exposed or burrowed. Flagellum moderately long to vestigial (missing in Discolepinae). Epiphallus present or absent. Penis internally with or without verge, mostly with complex relief. Penial gland(s) and 1-2 caeca may be present. Spermathecal stalk with (rarely) or without diverticle. Accessory sac at base of spermathecal stalk present or absent.

DISTRIBUTION. Neotropics.

REMARK. An application to reject the name Lucerninae Swainson, 1840 will be presented to the Commission (Bouchet & Rocroi, 2005).

PLEURODONTINAE Ihering, 1912

Shell of medium or large size, very variable in shape, color and sculpture. Umbilicus closed to narrowly open.

Jaw ribbed or striate.

Talon simple or lobate. Flagellum 1, simple, sometimes rudimentary. Epiphallus normally developed, rarely missing. Penis consists of 1 chamber. Penial caecum absent. Verge present or missing. Stimulator in penis wanting. Penial gland absent. Penis sheath absent. Uterus of traditional structure, i.e. with more or less expressed transverse grooves. Vagina straight, short to moderately long.

DISTRIBUTION. Central and S America, E Cuba, Hispaniola, Puerto Rico, Jamaica, Virgin Islands.

Pleurodonte

Fischer von Waldheim, 1807

Fig. 2331

Fischer von Waldheim, 1807 229.

— *Caprinus* Montfort, 1810: 142 (t.-sp. *Caprinus recognitus* Montfort, 1810; OD).

— *Lucidula* Swainson, 1840: 329 (t.-sp. *Helix barbadensis* Lamarck, 1922; monotypy).

— *Lucernella* Swainson, 1840: 329 (t.-sp. *Helix hippocastaneum* Lamarck, 1792; monotypy).

— *Lucidella* Swainson, 1840: 329 (t.-sp. *Helix aureola* Swainson, 1820; monotypy).

— *Cyclodoma* Swainson, 1840: 329, footnote (as syn. of *Lucernella* Swainson, 1840).

— *Pleurodonta* Herrmannsen, 1847: 297 (nom. err. pro *Pleurodonte* Fischer von Waldheim, 1807).

Wurtz, 1955: 119.

TYPE SPECIES — *Helix lychnuchus* Müller, 1774; SD Herrmannsen, 1847

Shell subglobular to obesely lentiform, solid to rather thin, mostly dull, of about 5 slightly convex whorls. Last whorl more or less deflected, rounded to angulated at periphery. Color (light) corneous to dark-chestnut, sometimes with violet tint. Embryonic whorls smooth. Later whorls with variously developed but never strong radial striae and ridgelets. Aperture widely ovate, strongly oblique, simple or with 2 teeth — baso-columellar and basal. Umbilicus closed or slit-like. Height 7-26, diam. 12-38 mm (*lychnuchus*: 16.9 × 29.2 mm; *discolor*: 23.0 × 37.7 mm).

Talon simple, exposed. Vas deferens slender, sometimes forming a widening in its distal portion. Flagellum short to rather long. In *P lychnuchus* it bears many shallow semicircular thickenings, inside which a series of blunt, narrow canals located; besides, inner surface of flagellum supplied with a pair of longitudinal pilasters. In *P discolor* flagellum simple, hollow. Epiphallus not long, internally with axial folds which may consist of numerous, thin leaflets. Boundary between epiphallus and penis marked by penial retractor insertion. Penis internally with cylindrical verge having wide lumen and 1-2 inner longitudinal folds; in distal portion of penis there is a papilla- or nipple-like, inwardly directed sphincter. Free oviduct moderately to very long, vagina 2-4 times longer. Spermathecal stalk poorly demarcated from elongated reservoir provided with apical ligament; reservoir not attending albumen gland. In spermathecal reservoir of *P lychnuchus*, fragments of spermatophore were found: it is T-shaped in cross-section, with upper surface bearing

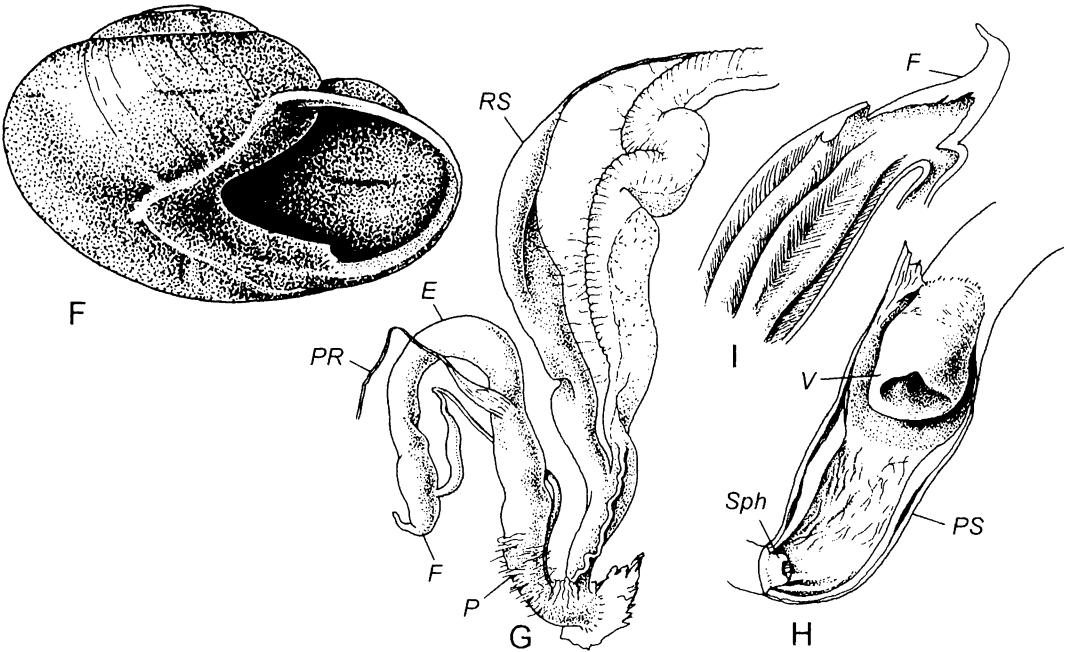
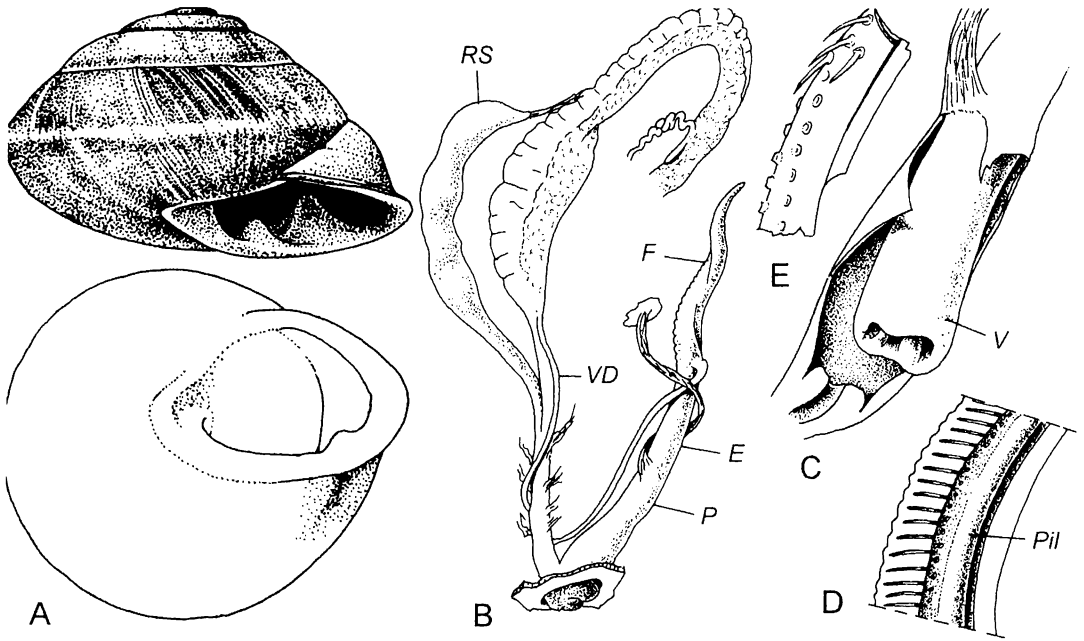


Fig. 2331 A, B, C, D, E — *Pleurodonte lychnuchus* (Müller, 1774).

A — shell: Guadelupe Island. SPb. B, C, D, E — "Guadeloupe, route de la Traversée maison de la Forêt, 210 m, 29.03.1981" B — reproductive tract. C — interior of penis. D — interior of flagellum. E — fragment of spermatophore. Paris. F, G, H, I — ! *Pleurodonte discolor* (Férussac, 1821). "Martinique, Morne Balisier, Forêt primaire mésophile sur pente; 550 m, 7.IV.1984" F — shell. G — reproductive tract. H — interior of penis. I — interior of epiphallus and flagellum. Paris.

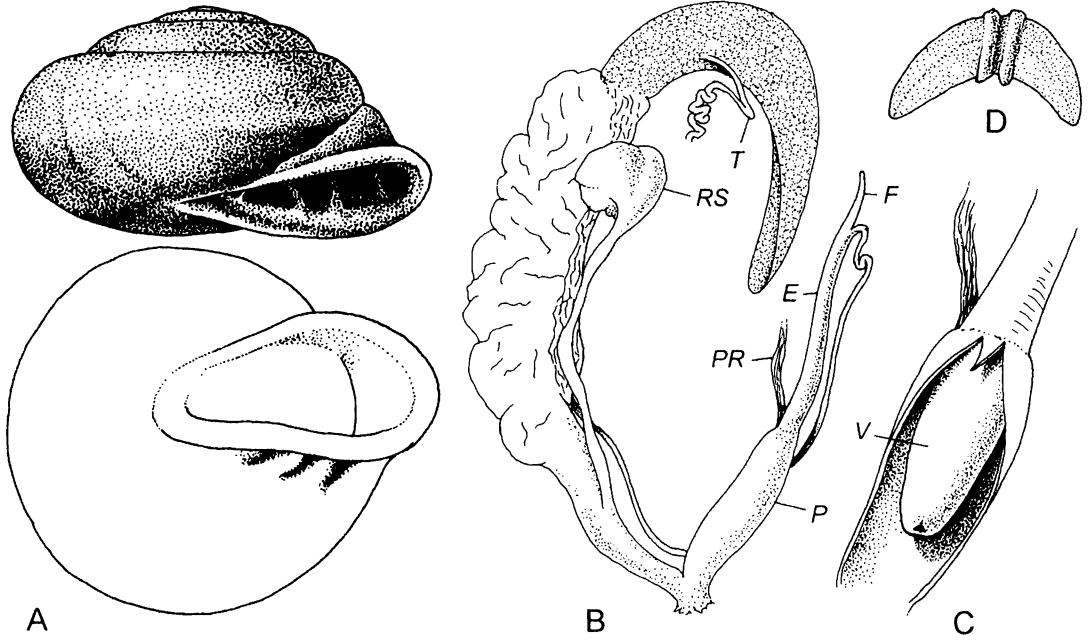


Fig. 2332. *Dentellaria sinuata* (Müller, 1774).

A — shell: Somerset, Manchester, Jamaica. Moscow No. Lc-21356 (Phil.). B, C, D — Dolphin Head near Askenish, Hanover Parish, NW Jamaica, May 11, 1988. B — reproductive tract. C — interior of penis. D — jaw Moscow No. Lc-28181

longitudinal rows of spines to which series of canals in flagellum walls correspond.

DISTRIBUTION. Lesser Antilles and Jamaica. At least 20 spp.

REMARK. The structure of flagellum and epiphallus of two species dissected by me is quite different (their shells are also different); perhaps, *Pleurodonte discolor* deserves a separation at generic level. However, there is a lot of so-called *Pleurodonte* whose anatomy is unknown. Therefore the decision of problem of the taxonomic structure of this genus should be postponed until thorough revision.

Dentellaria Schumacher, 1817

Fig. 2332

Schumacher, 1817 69, 230.

— *Lucerna* Swainson, 1840: 628 (t.-sp. *Helix acutissima* Lamarck, 1822; SD Hermannsen, 1847).

Wurtz, 1955: 125 (*Pleurodonte* sect.).

TYPE SPECIES — *Helix sinuata* Müller, 1774; SD Pilsbry, 1931.

Shell depressed orbicular to obesely len-

tiform, solid, of 4.5-6 moderately convex whorls. Last whorl strongly deflected, rounded or bluntly angulated at periphery. Color pale-brown to chestnut, usually with diffuse, light peripheral band. Embryonic whorls finely radially striated. Postapical sculpture of variously developed (mostly quite distinct) granulation. Aperture ovate, (nearly) entire, subhorizontal, baso-columellar margin with 4 entering lamellar teeth to which depressions on basal surface correspond. Umbilicus narrowly open to closed. Height 9-32, diam. 20-70 mm (15.5 × 28.0 mm).

Jaw with a few (mostly 2) strong ribs.

Talon, a sharp curvature of hermaphroditic duct. Vas deferens rather long, enters epiphallus laterally, leaving a short flagellum. Epiphallus moderately long. Penis subcylindrical, internally with elongate verge; inner surface of penis lacking regular sculpture. Penial retractor attached to epiphallus just above penis/epiphallus junction. Free oviduct and vagina subequal in length. Spermathecal stalk long, voluminous reservoir (nearly) reaching albumen gland.

DISTRIBUTION. Jamaica. 12-18 spp.

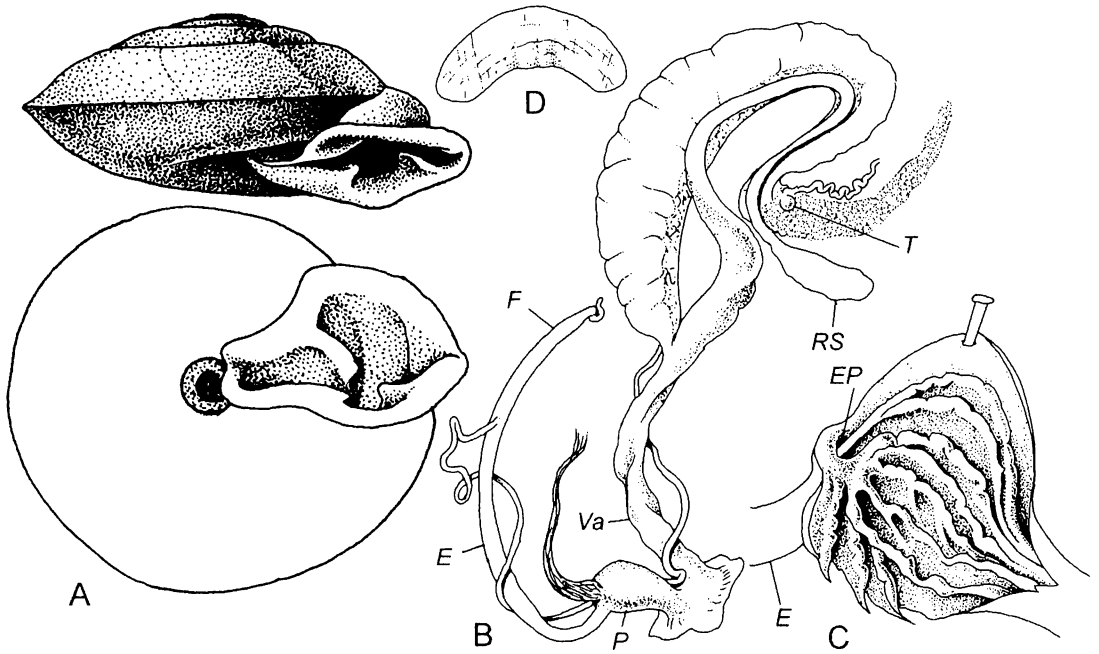


Fig. 2333. A — *Labyrinthus (Labyrinthus) otis* (Lightfoot, 1786). Shell: Columbia. SPb. B, C, D — ! *Labyrinthus (Labyrinthus) leprieurii* (Petit, 1840). "Guyane Française, Trois-Souts, 08.05.1978" B — reproductive tract. C — interior of penis. D — jaw. Paris.

Labyrinthus Beck, 1837

Beck, 1837 33 (*Helix* subg.).

— ?*Lampadion* Röding, 1798. 77 (t.-sp. *Helix otis* Lightfoot, 1786; SD J. Gray, 1847); nom. oblit.

— *Lyrostoma* Swainson, 1840: 329 (t.-sp. *Helix labyrinthus* "Chemnitz" Deshayes, 1838; monotypy).

— *Lyriostoma* Swainson, 1840: 329 (nom. err. pro *Lyrostoma* Swainson, 1840).

Wurtz, 1955. 113. Solem, 1966: 37

TYPE SPECIES — *Helix otis* Lightfoot, 1786; SD J. Gray, 1847

Shell lentiform, solid, opaque, of 5-5.5 much flattened whorls. Last whorl bluntly angulated to keeled, strongly and sharply descending in front. Color corneous or brown, monochromatic, banded or variously marbled. Embryonic whorls practically smooth or finely granulated. Later whorls finely granulated. Aperture of irregular shape, entire, mostly obstructed by complex system of lamellar teeth, strongly oblique to subhorizontal, with well reflexed, mostly thickened margins. Parietal tooth more or less enters body whorl; basal tooth

(rather) short; palatal teeth 2-3, upper one shorter than lower (in subgenus *Isomeria* palatal teeth absent). Umbilicus open, rather narrow.

Jaw nearly smooth, with a few rudimentary ribs.

Talon exposed, globular. Vas deferens rather long. Flagellum rather short to moderately long, thickened. Epiphallus subcylindrical, of various length. Penis more or less swollen, internally with irregular, sometimes branched pilasters and, sometimes, cusps. Verge absent. Penial retractor attached to lower section of epiphallus or to apex of penis. Free oviduct (rather) short. Vagina quite long, expanded. Spermathecal stalk long, swollen basally; reservoir attending albumen gland.

DISTRIBUTION. Central and S America, northward to Costa Rica, southward to Dept. Cusco, Peru.

Labyrinthus (Labyrinthus s. str.)

Fig. 2333

Shell keeled, with well developed aperture armament. Height 8.9-23.6, diam. 15-55 mm (18.9 × 42.2 mm).

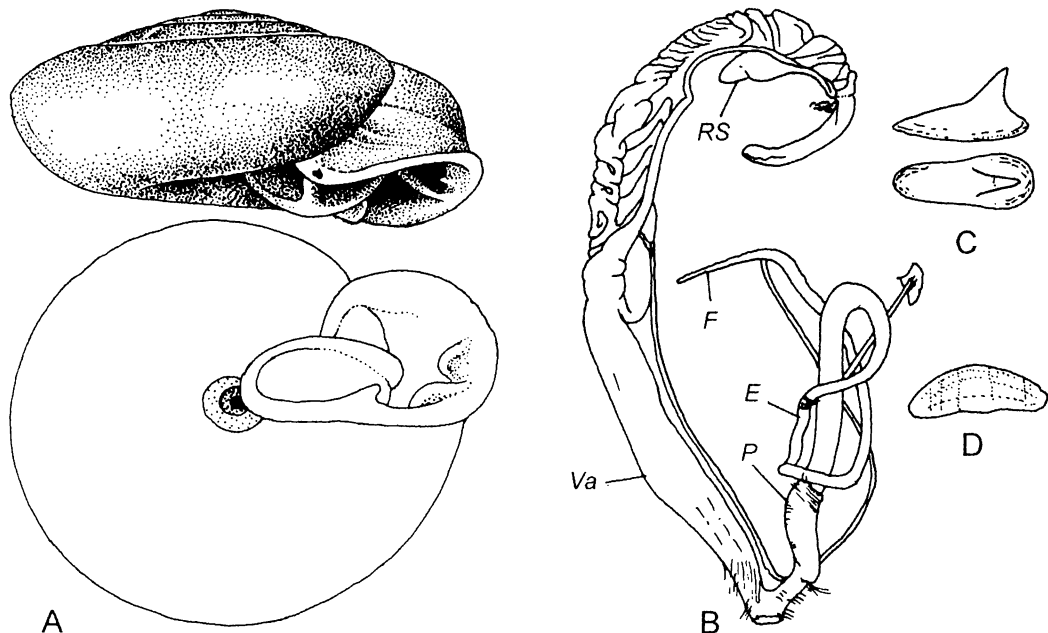


Fig. 2334. A — *Labyrinthus (Ambages) vexans* (Dohrn, 1875).

A — shell: Canas Gordas, Colombia. Lectotype. Senck. No. 8086. B, C, D — ! *Labyrinthus (Ambages) clappi* (Pilsbry, 1901). B — reproductive tract. C — side and top views of penial cusp. D — jaw. After Wurtz, 1955.

Penis internally lacking cusps. Penial retractor attached to penis apex.

DISTRIBUTION. From Costa Rica southward to Amazon Basin. About 40 spp. & subspp.

Labyrinthus (Ambages) Gude, 1912
Fig. 2334

Gude, 1912: 21 (pro gen.). Wurtz, 1955: 114 [*Labyrinthus (Isomeria)*; sect.]. Solem, 1966: 37 (as syn. of *Labyrinthus* Beck, 1837).

TYPE SPECIES — *Helix vexans* Dohrn, 1875; OD.

Shell bluntly angulated, with very strong aperture armature. Height 8-26, diam. 21-50 mm (14.0 × 27.7 mm).

Penis internally with cusps. Penial retractor attached to lower half of epiphallus.

DISTRIBUTION. At high elevation in NW of S America (Andes). 2 spp.

Labyrinthus (Isomeria) Albers, 1850
Fig. 2335

Fig. 2335. *Labyrinthus (Isomeria) oreas* (Koch, 1844).
Nueva Granada [Colombia]. Leiden.

Albers, 1850: 126 (*Helix* subg.). Wurtz, 1955: 114. Solem, 1966: 126.

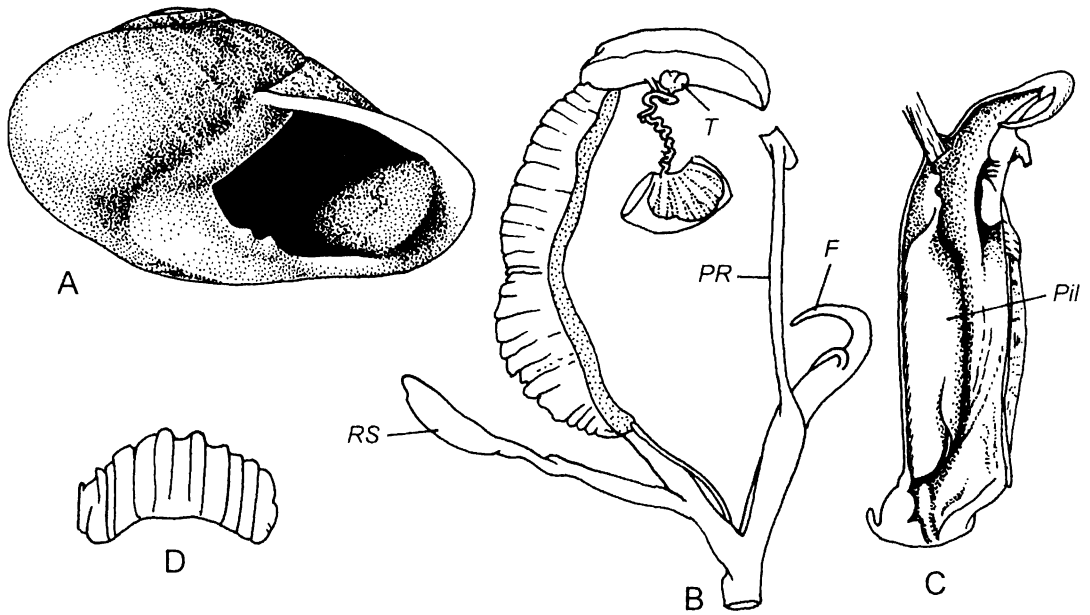


Fig. 2336. *Thelidomus aspera* (Férussac, 1821).

A — shell: Negril Hills, SW of retreat almost to Crosbie, Jamaica. Phil. No. 162794. B — reproductive tract. C — interior of penis. D — jaw. After Wurtz, 1955.

TYPE SPECIES — *Helix oreas* Koch, 1844; monotypy.

Shell obesely lentiform, of about 5 flattened whorls. Last whorl strongly and abruptly descending in front. Color uniformly chestnut to reddish. Embryonic whorls slightly granulated. Postapical whorls with distinct granulation. Aperture generally ovate; aperture armature tends to reduction down to full disappearance. Umbilicus narrowly open to closed. Height 13.6-37.3, diam. 20-70 mm (25.2 × 51.1 mm).

DISTRIBUTION. Andes in Ecuador, Colombia and Peru. More than 30 spp. & subspp.

Thelidomus Swainson, 1840

Fig. 2336

Swainson, 1840: 330.

— *Thelidonta* Swainson, 1840: 418 (nom. err. pro *Thelidomus* Swainson, 1840).

— *Thelydomus* Agassiz, 1846: 368 (nom. nov. pro *Thelidomus* Swainson, 1840).

— *Thelodomus* Herrmannsen, 1849: 572 ("vid. *Thelodomus*").

— *Thelodonta* Herrmannsen, 1849: 572 ("vid. *Thelidonta*").

— *Pachystoma* Albers, 1850: 125 [nom. praeocc. non Latreille, 1809 (Ampullariidae); t.-sp. *Helix aspera* Férussac, 1821, SD Herrmannsen, 1852].

— *Dendrocochlis* Pilsbry et Brown, 1910: 515 (t.-sp. *Helix aspera* Férussac, 1821; OD).

Wurtz, 1955: 128 (*Pleurodonte* subg.).

TYPE SPECIES — *Helix (Helicogena) aspera* Férussac, 1821; SD Pilsbry, 1931.

Shell depressed, heavy, dull, of 3-3.5 moderately convex whorls. Last whorl inflated, rounded at periphery, slightly and gradually descending in front. Color whitish to (pale) corneous. Embryonic whorls initially (0.3-0.4 whorl) smooth; rest surface as well as postapical whorls with fine, regular granulation. Aperture ovate, well oblique, with reflexed, expanded, thickened margins; basal margin with variously developed row of nodulous denticles (sometimes reduced). Umbilicus closed. Height 16-32, diam. 35-55 mm (29.2 × 49.0 mm).

Jaw has 2 heavy median ribs flanked by plait-like ribs.

Anatomically differs from *Pleurodonte* s.

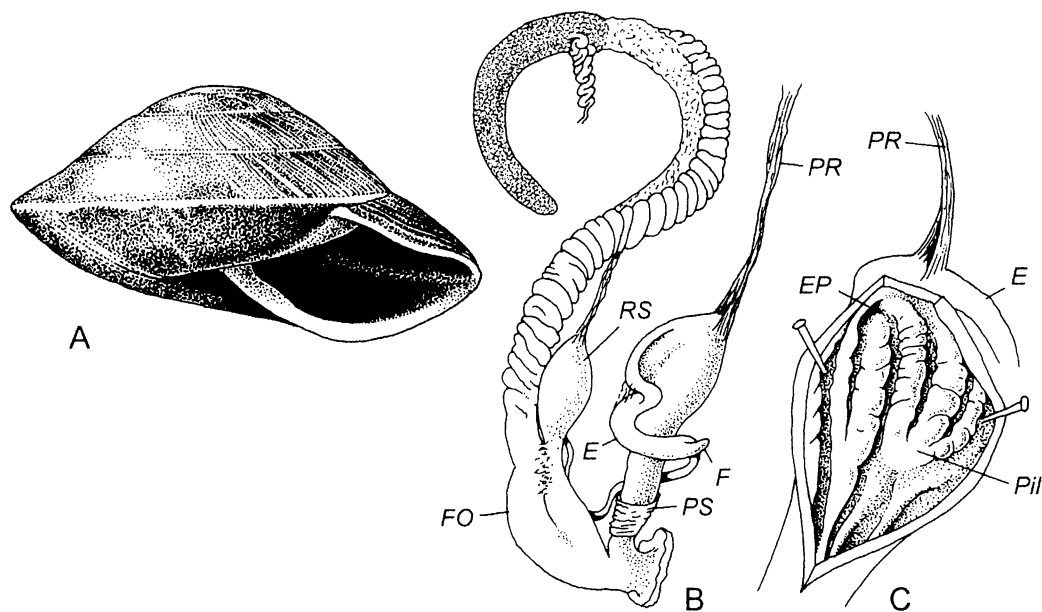


Fig. 2337 A — *Caracolus carocollus* (Linnaeus, 1758).

A — shell: Near Adjuntas, Puerto Rico. Phil. No. 177196. B, C — ! *Caracolus marginellus* (Gmelin, 1791). Cupey, Holguin Monte, Cuba, June 4, 1985. B — reproductive tract. C — interior of penis. Paris.

str by structure of talon which bears a lobed appendage and by presence of unique, large pilaster in penis.

DISTRIBUTION. Jamaica. 1 sp. with 2 subspp.

Caracolus Montfort, 1810

Fig. 2337

Montfort, 1810: 138.

— *Caracolla* "Montfort" Beck, 1837: 31 (nom. err. pro *Caracolus* Montfort, 1810).

— *Discodoma* Swainson, 1840: 329 (t.-sp. *Caracolla albilabris* Lamarck, 1822; SD Pilsbry, 1931).

— *Serpentulus* "Klein" H. Adams et A. Adams, 1858: 201 (*Lucerna* subg.; for 13 spp. including "*caracolla*, Linn.").

— *Vortex* "Oken" Kennard et Woodward, 1922: 151 (t.-sp. *Vortex caracolla* Oken, 1815; OD).

— *Wurtzorbis* Webb, 1970b: 82 (t.-sp. *Helix marginella* Gmelin, 1791; OD).

Wurtz, 1955: 117

TYPE SPECIES — *Helix carocolla* Linnaeus, 1758; OD.

Shell lentiform, quite solid, of 5-6 almost flat whorls. Last whorl sharply angulated, nearly straight. Color (pale) corneous

to chestnut, peripheral angle may be lighter. Embryonic whorls enlarged, smooth. Postapical sculpture of fine to rather coarse radial wrinkles. Aperture rostrate, well oblique, with thickened margins; columellar and basal margins somewhat reflexed. Umbilicus closed or narrowly open. Height 13-34, diam. 27-65 mm (32.6 × 61.8 mm).

Jaw smooth.

Distal section of secondary ureter uncompleted.

Talon, a simple curvature of hermaphroditic duct which forms a pronounced mass of convolutions near albumen gland. Vas deferens rather short. Flagellum conic, short, rudimentary. Epiphallus slender, entering penis laterally through a minute pore. Penis clavate, internally with longitudinal pilasters enlarged and forked in upper part. Penis sheath surrounds distalmost section of penis. Penial retractor attached to penis apically. Free oviduct much longer than vagina. Spermathecal stalk very short, enlarged basally, bound to free oviduct; reservoir lies on lower section of spermoviduct, supplied with apical ligament.

DISTRIBUTION. E Cuba, Hispaniola, Puerto Rico. About 10 spp. & subspp.

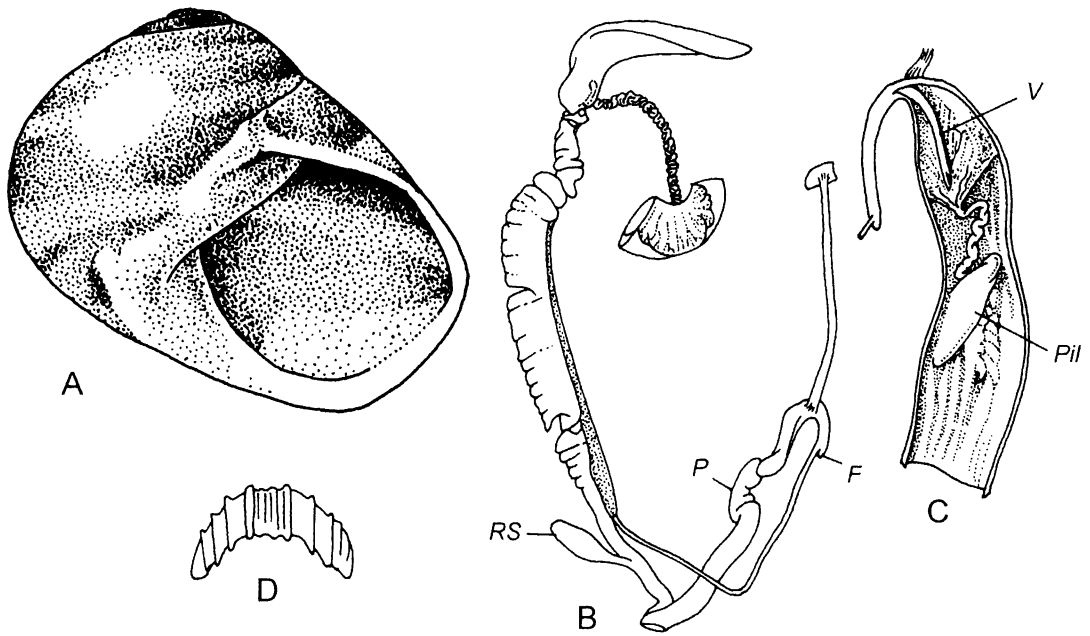


Fig. 2338. *Eurycratera jamaicensis* (Gmelin, 1790).
 A — shell: Jamaica. Moscow No. L-1522. B — reproductive tract. C — interior of penis.
 D — jaw. After Wurtz, 1955.

Eurycratera Beck, 1837
 Fig. 2338

Beck, 1837 45 (*Helix* subg.).

— *Leiostoma* Swainson, 1840: 308, 328 (t.-sp. *Helix jamaicensis* Gmelin, 1790; SD Pilsbry, 1931).

— *Leiocheila* Albers, 1850: 109 (for *Helix jamaicensis* Gmelin, 1790 and *Helix picta* Born, 1778).

— *Liochila* Martens in Albers, 1860: 146 (nom. err. pro *Leiochila* Albers, 1850; t.-sp. *Helix jamaicensis* Gmelin, 1790; OD).

Wurtz, 1955: 120 (*Pleurodonte* subg.).

TYPE SPECIES — *Helix jamaicensis* Gmelin, 1791; SD Hermannsen, 1847).

Shell *Helix*-like, globose, heavy, shining, of 3.5-4 moderately convex whorls. Last whorl inflated, rounded, gradually descending in front. Color typically yellowish, with 2-4 chestnut, rather wide bands. Embryonic whorls smooth. Later whorls with fine, rather regular, obliquely-radial lines. Aperture broadly ovate to subcircular, moderately oblique, with thickened margins. Parietal callus well developed. Umbilicus ab-

sent. Height 42-53, diam. 48-55 mm (44.6 × 49.7 mm).

Jaw with rough ribs.

Talon small, simple, clavate. Vas deferens moderately long, entering penis through a simple pore located on tip of very slender verge. Flagellum rudimentary, conic. Epiphallus as such missing. Penis long, internally with rounded pilaster. Penial retractor attached to upper part of penis. Free oviduct and vagina rather short, subequal in length. Spermathecal stalk very short, reservoir attending base of spermoviduct.

DISTRIBUTION. Jamaica. 1 sp.

POLYDONTINAE Schileyko,
 subfam. nov.

Type genus — *Polydonte* Montfort, 1810.

Shell not differing from that of *Pleurodonta*. Umbilicus closed or, at most, a narrow lateral crack.

Jaw ribbed.

Talon simple, sometimes hidden. Flagellum well developed, sometimes doubled.

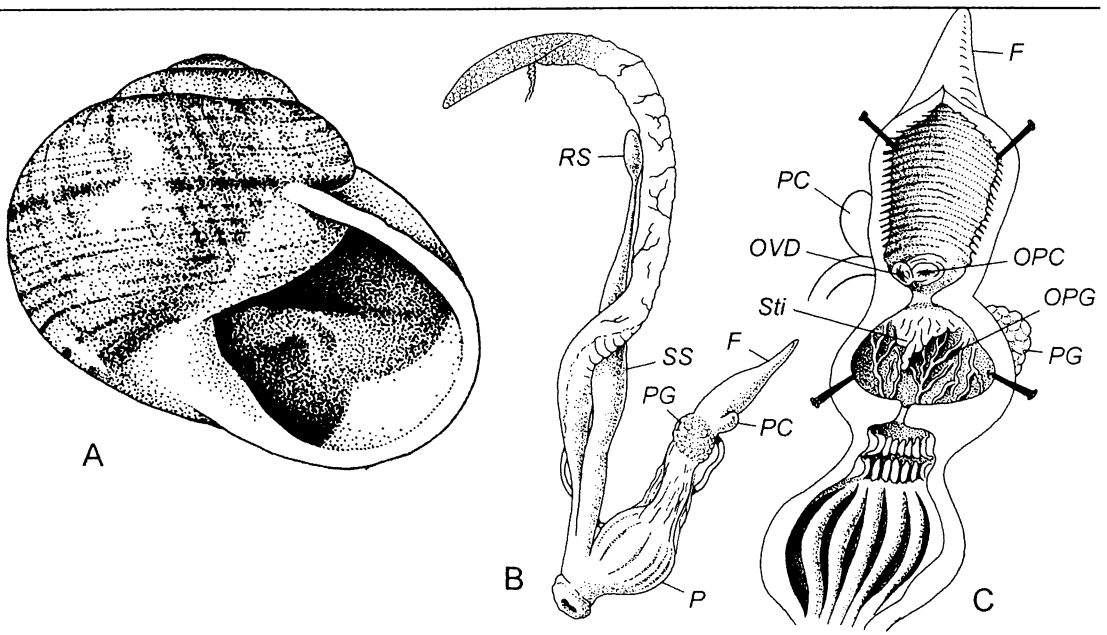


Fig. 2339 *Hispaniolana undulata* (Férussac, 1821).

A — shell: "Madre Vieja, Santo Domingo" Phil. No. 169551 B, C — "Haiti, 1840" B — reproductive tract. C — interior of male division. Paris. OPC — orifice of penial caecum. OPG — orifice of penial gland.

Epiphallus missing. Penis consists of 2 chambers. Penial caecum present. Verge present or absent. Stimulator in penis mostly present. Penial gland present, sometimes there are 2 glands (exception: penial glands missing in *Zachrysia*). Penis sheath absent. Vagina (rather) short, not convoluted. Uterus of traditional or lamellar structure.

DISTRIBUTION. Cuba, Hispaniola, Puerto Rico, Virgin Islands.

REMARK. Subfamily Polydontidae differs from Pleurodontinae by the presence of penial caecum and conspicuous penial gland(s).

Hispaniolana Pilsbry, 1933

Fig. 2339

Pilsbry, 1933b: 141 (*Polydotes* subg.). Wurtz, 1955: 134 (*Polydotes* subg.).

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

Shell globose, moderately thin, slightly shining, of about 5 moderately convex whorls. Last whorl straight, evenly rounded at periphery. Color greenish, with many brown bands; margins of aperture white.

Embryonic whorls with delicate shagreen sculpture, postnuclear whorls with fine, irregular, radial wrinklets. Aperture large, rounded, slightly oblique, with somewhat thickened, expanded, reflexed margins; columellar margin strongly dilated. Umbilicus absent. Height 20-48, diam. 30-68 mm (36.3 × 45.3 mm).

Talon hidden. Vas deferens moderately long, entering base of conic flagellum through a simple pore. There is an additional small, sac-like flagellum (derivative of epiphallic caecum?) which opens via pore near orifice of vas deferens. Upper part of epiphallus surrounded by an alveolar gland which opens through a slit-like pore. Flagellum internally with numerous, deep, narrow, circular grooves; cavity of flagellum separated from lumen of epiphallus by a strong sphincter; another sphincter separates epiphallus from penis. Internally epiphallus with irregularly tongue-like stimulator and thin, branched folds. Below sphincter which separates epiphallus and penis, there is a conspicuous valve consisting of 2 circular series of short, very sharp and strong leaflets; surface of penis below valve bears very strong, regular axial pilasters. Free oviduct and vagina subequal in

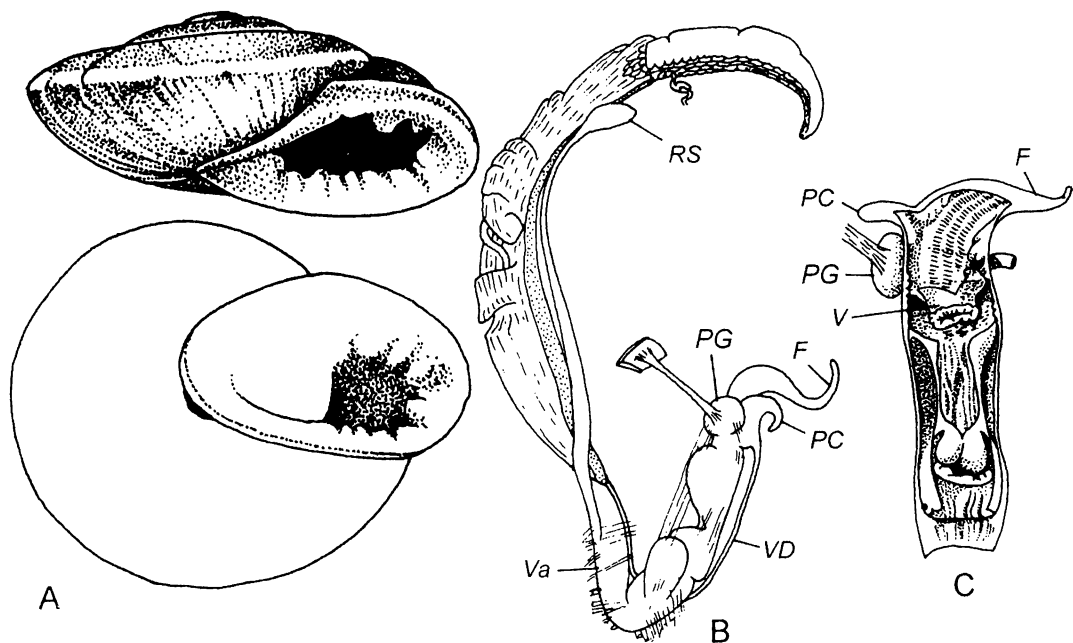


Fig. 2340. A, B — *Polydontes imperator* Montfort, 1810.

A — shell: Cuba. Leiden. B — reproductive tract. C — ! *Polydontes natensoni* Torre, 1938. Interior of penis. After Wurtz, 1955.

length, rather short. Spermathecal stalk long, enlarged; small reservoir not attending albumen gland.

DISTRIBUTION. Hispaniola. 2 or 3 spp.

Polydontes Montfort, 1810

Fig. 2340

Montfort, 1810: 154. Wurtz, 1955: 133.

TYPE SPECIES — *Polydontes imperator* Montfort, 1810; OD.

Shell lentiform, quite solid, of 4.5-5 convex whorls. Last whorl with blunt peripheral angle, gradually descending toward aperture. Color corneous, with thin peripheral band and usually with whitish radial streaks. Embryonic whorls finely granulated. Postapical sculpture of delicate shagreen over smoothed, irregular, radial wrinkles. Aperture widely ovate, very oblique, with strongly thickened, reflexed margins; peristome with variable number of superficial tubercular teeth. Umbilicus closed or nearly so. Height 20-34, diam. 40-70 mm (30.2 × 61.0 mm).

Jaw distinctly ribbed.

Talon minute, simple. Vas deferens moderately long, thin. Flagellum rather

short, tapering. Penis of irregular shape, with globular penial gland and conic caecum. Penis internally with rather short verge that has broad lumen, and a complex valve in its basal section. Penial retractor inserting on penial gland. Free oviduct and vagina moderately short, subequal in length. Spermathecal stalk long, subcylindrical; reservoir almost attending albumen gland.

DISTRIBUTION. E Cuba. 5 spp.

Lissembryon Pilsbry, 1933

Fig. 2341

Pilsbry, 1933b: 142. Wurtz, 1955: 134 (*Polydontes* subg.).

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

Shell globose, similar to *Hispaniolana*, except that embryonic whorls smooth. Umbilicus absent. Height 28.0-34.5, diam. 30.0-41.3 mm (28.0 × 30.0 mm).

Jaw ribbed.

Vas deferens rather long, entering penis subapically near base of flagellum and caecum. Flagellum short, curved, obtuse, corrugated inside; near its base there is a short,

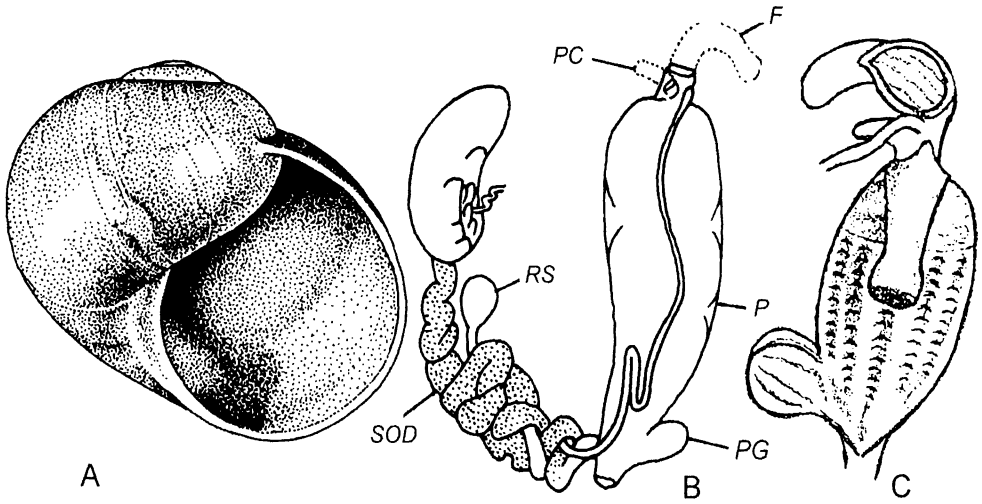


Fig. 2341. *Lissembryon dilatatus* (L. Pfeiffer, 1845).

A — shell: "Hayti" Phil. No. 4653. B — reproductive tract. After Wurtz, 1955. C — interior of penis. After Pilsbry, 1894 (1893-1895).

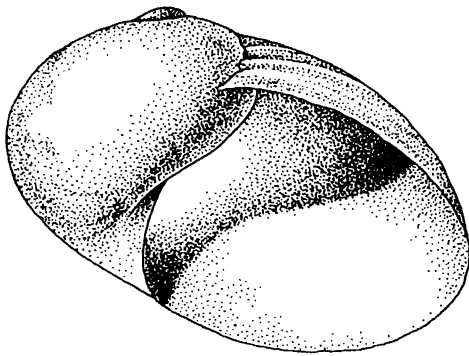


Fig. 2342. *Coloniconcha prima* Pilsbry, 1933.
"Del Monte's coffee finca, 5-6 km west of Barahona, Santo Domingo" Phil. No. 160821

teat-like, solid, fleshy, not perforated or hollow organ (caecum). Epiphallus missing. Penis large, bulky, internally with longitudinal folds consisting of series of leaflets; these folds disappearing in upper part of penis cavity; upper chamber of penis containing a large, pestle-shaped verge; besides, there is a large, globular appendix near base of penis (? penial gland). Penial retractor not seen. Free oviduct rather long, vagina much shorter. Spermathecal stalk quite long, reservoir globular, almost attending albumen gland.

DISTRIBUTION. Hispaniola. 2 spp.

Coloniconcha Pilsbry, 1933

Fig. 2342

Pilsbry, 1933b: 143.

TYPE SPECIES — *Coloniconcha prima* Pilsbry, 1933; OD.

Shell somewhat vitrinoid, thin, fragile, dull, polished in a basal area around umbilical depression, of about 2.5 moderately convex whorls. Body whorl inflated, straight, widely rounded at periphery. Color greenish-olivaceous or brownish. Embryonic whorls smooth. Postapical sculpture of very low radial wrinkles and a microscopic

texture of crisscross scratches; these wanting on an inconspicuous and very narrow glossy band which revolves above periphery. Aperture large, broadly ovate, well oblique, with simple margins. Umbilicus closed. Height 19.5-22.3, diam. 25-26 mm (22.3 × 25.9 mm).

DISTRIBUTION. Hispaniola. 1 sp.

Salleana Clench, 1962
Fig. 2343

Clench, 1962: 218 (*Polydontes* subg.).

TYPE SPECIES — *Polydontes* (*Salleana*) *russelli* Clench, 1962; OD.

Shell helicoid, subglobose, rather solid, only slightly translucent, of 4 slightly convex whorls. Last whorl evenly rounded at periphery, markedly descending in front. Color yellowish-brown, with narrow, reddish brown peripheral band and indistinct, dark radial streaks; aperture margins white. Embryonic whorls vaguely microgranulated. Later whorls coarsely, irregularly tuberculate; basal surface glossy, with widely spaced, shallow spiral grooves. Aperture ovate, strongly oblique, with thickened and reflexed margins. Baso-columellar margin strongly expanded, callous. Umbilicus absent. Height 21.6, diam. 30.0 mm.

DISTRIBUTION. Hispaniola. 1 sp.

Granodomus Pilsbry, 1931
Fig. 2344

Pilsbry, 1931: 140. Wurtz, 1955: 131 (*Polydontes* subg.).

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

Shell depressed-conoidal, (rather) solid, lusterless, of 4.5 slightly convex whorls. Last whorl decidedly deflected toward aperture, angular, sometimes becoming rounded behind aperture. Color yellowish, with ill-defined, narrow, chestnut or umber streaks; positive sculpture elements lighter than ground color. Embryonic and early postembryonic whorls almost smooth. Rest surface coarsely granulate. Aperture widely ovate, subhorizontal, with expanded, somewhat thickened margins; baso-columellar margin adnate, with a wide callus plate within, which is truncate more or less at its base, and bears about midway a strong fold. Umbilicus closed. Height 12-19, diam. 18-30 mm (15.6 × 26.1 mm).

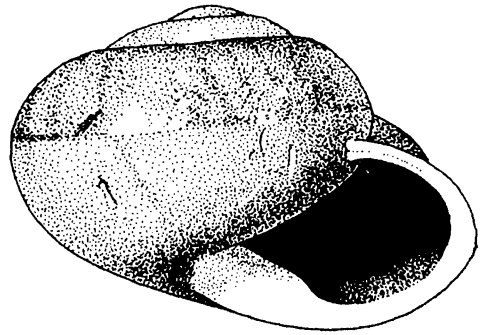


Fig. 2343. *Salleana russelli* (Clench, 1962).
N of Rucilla, Cordillera Central, Santo Domingo. Holotype. Cambridge No. 188212.

Jaw ribbed.

Talon hidden. Vas deferens moderately long, entering base of conic flagellum through a simple pore. Penis short, with a small, nipple-like caecum and 1-2 glands. Upper (smaller) gland internally with high, thin, chaotically directed folds; lower gland thick-walled, with very narrow lumen. Penis consists of lower and upper chambers, connected by a narrowed neck, internally with valve composed of strong axial folds. Upper chamber contains a very peculiar, clavate verge that directed inward (probably, it everts during copulation). Penial retractor inserts on upper penial gland. Free oviduct moderately long, vagina very short (almost absent). Spermathecal stalk of various length, reservoir small.

DISTRIBUTION. Puerto Rico, Virgin Islands. 2-3 spp.

Parthena Albers, 1850
Fig. 2345

Albers, 1850: 112. Wurtz, 1955: 130 (*Polydontes* subg.).

TYPE SPECIES — *Helix acutangula* Burrow, 1815; SD Pilsbry, 1894 (1893-1895).

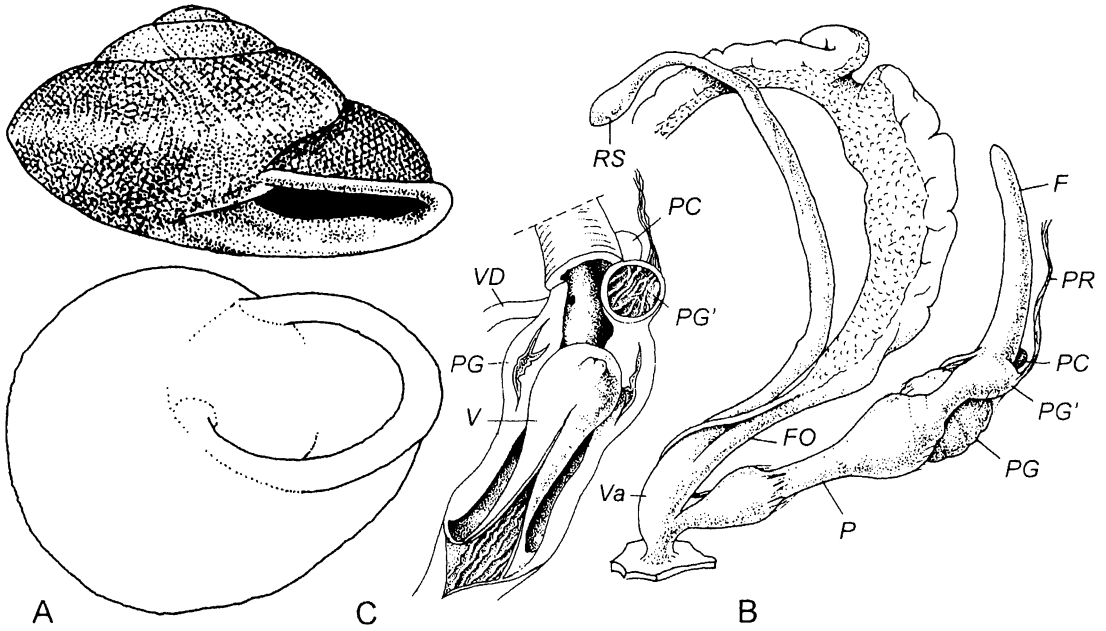


Fig. 2344. *Granodorus lima* (Férussac, 1821).

A — shell: Puerto Rico. Leiden. B, C — Jamaica. B — reproductive tract. C — interior of penis. Moscow No. Lc-28182 (Phil. No. A-1470).

Shell irregularly lens-shaped, rather thin, semitransparent, of 3-4.25 almost flat whorls. Last whorl straight, with sharp peripheral angle. Color straw or brownish. Embryonic whorls smooth. Later whorls finely granulated. Aperture large, angulated, with (widely) reflexed margins. Umbilicus absent. Height 15-25, diam. 30-50 mm (22.0 × 45.1 mm).

Jaw coarsely ribbed.

Vas deferens opens into epiphallus immediately above upper penial gland through a simple pore. Flagellum rather long, conic. Penis with 2 subglobular glands and a small, rounded caecum. Internally penis with a large conic verge. Penial retractor inserts on upper penial gland. Free oviduct about 2 times shorter than vagina. Spermathecal stalk moderately long, somewhat expanded basally; reservoir not attending mid-point of spermoviduct.

DISTRIBUTION. Puerto Rico and Hispaniola. 2 spp.

Luquillia Crosse, 1892

Fig. 2346

Crosse, 1892: 19 (*Helix* sect.). Wurtz, 1955: 132 (*Polydontes* subg.).

TYPE SPECIES — *Helix luquillensis* Shuttleworth, 1854; monotypy

Shell globose-conic, quite solid, glossy, of 5-5.5 rather convex whorls. Last whorl rounded, descending in front. Color chestnut, upper spire may be lighter; narrow light and dark bands may be present; peristome white. Embryonic whorls almost smooth. Postapical sculpture of distinct, very fine, regular pustulation. Aperture irregularly ovate, toothless, strongly oblique, with thickened, reflexed margins. Umbilicus closed. Height 35-70, diam. 35-70 mm (35.1 × 35.1 mm).

Vas deferens long, slender, entering epiphallus between bases of 2 conic, S-shaped flagella through a simple pore; internally each flagellum with numerous, distinct, slit-like openings. Epiphallus provided with 2 alveolar glands entering independently via small pores; pore of distal gland situated on a folded ridge. Penis short, stout, separated from cavity of epiphallus by a sphincter-like valve. Penial retractor attached to proximal penial gland. Uterus externally longitudinally banded because of internal ribbing. Free oviduct and vagina subequal in length. Spermathecal stalk rather long,

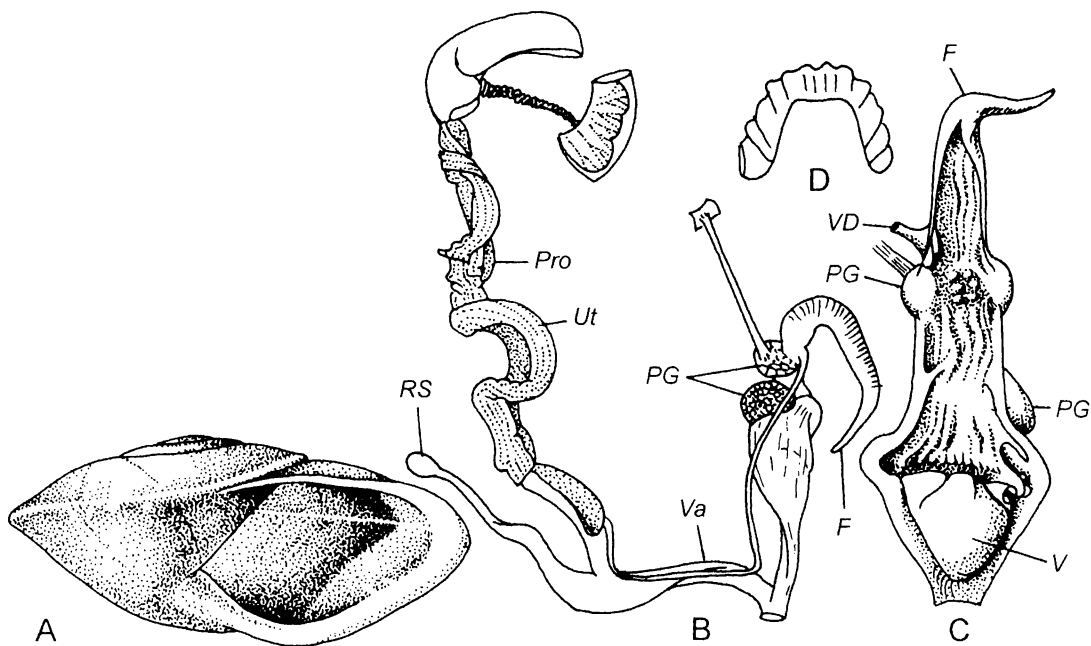


Fig. 2345. *Parthena acutangula* (Burrow, 1815).

A — shell: S of Cataño, San Juan Distr Puerto Rico. Phil. No. 256392. B — reproductive tract. C — interior of penis. D — jaw After Wurtz, 1955.

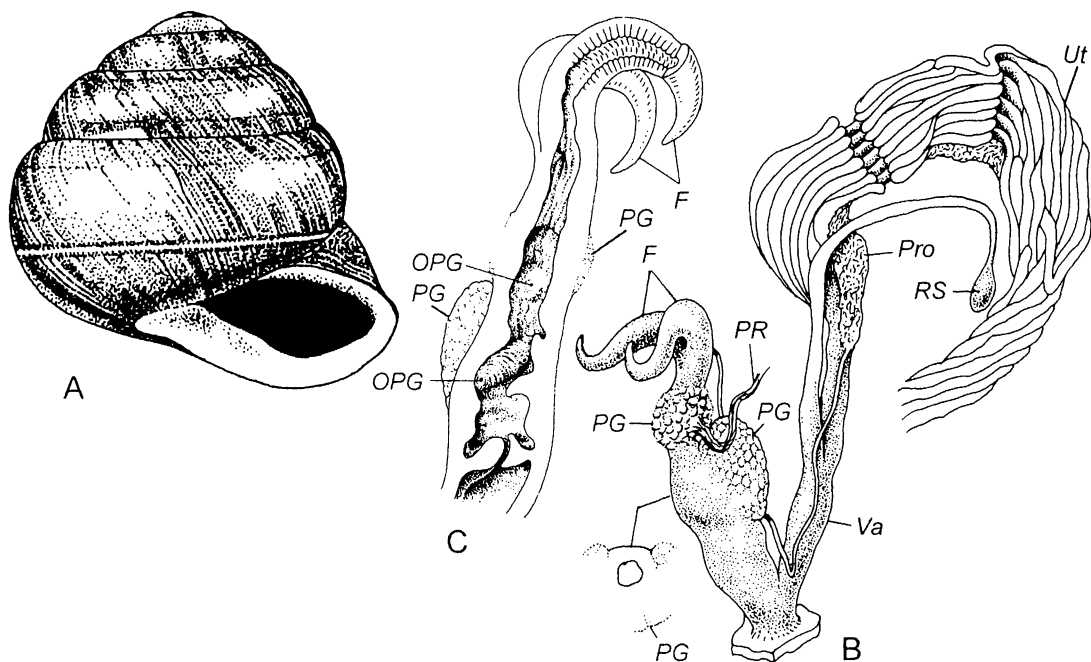


Fig. 2346. *Luquillia luquillensis* (Shuttleworth, 1854).

A — shell: Puerto Rico. Leiden. B, C — Puerto Rico. B — reproductive tract and cross-section of epiphallus. C — interior of penis. Phil. No. A-13344-D OPG — orifice of penial gland.

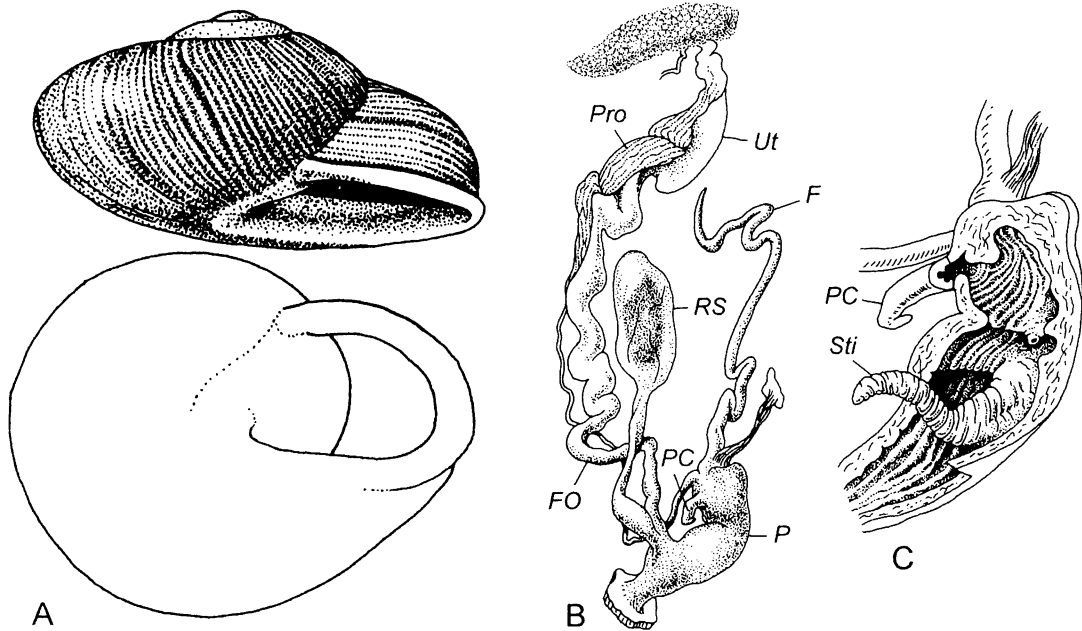


Fig. 2347 *Zachrysia (Auritesta) proboscidea* (L. Pfeiffer, 1856).

A — shell: Guantánamo, Cuba. Moscow No. Lc-28152. B, C — Cuba. B — reproductive tract. C — interior of penis. Phil. No. A-17098.

slender; reservoir small, ovate, not attending albumen gland.

DISTRIBUTION. Puerto Rico. 1 or 2 spp.

Zachrysia Pilsbry, 1894

Pilsbry, 1894 (1893-1895): 97

TYPE SPECIES — *Helix auricoma* Férussac, 1821; SD Pilsbry, 1929.

Shell generally depressed-subglobose, mostly solid, of 4-4.5 slightly convex whorls. Last whorl rounded, well deflected. Color whitish to straw. Embryonic whorls shining, more or less distinctly radially grooved. Postembryonic whorls almost smooth to sharply but finely radially ribbed. Aperture ovoid, well oblique to subhorizontal, with thickened, not strongly reflexed margins. Umbilicus absent.

Flagellum long to very short. Stimulator(s) in penis mostly present (in *Zachrysia* s. str. missing). Penial glands absent. Caecum small (in *Zachrysia* s. str. wanting). Verge absent. Vagina very short. Spermathecal stalk more or less swollen basally;

reservoir large, attending distal or middle part of spermoviduct.

DISTRIBUTION. Cuba, Cayman Islands.

Zachrysia (Auritesta) Pilsbry, 1929

Fig. 2347

Pilsbry, 1929: 586.

TYPE SPECIES — *Helix proboscidea* L. Pfeiffer, 1856; OD.

Postapical sculpture of distinct, thin, closely spaced radial ribs. On body whorl there is a radial depression behind aperture. Height 16-18, diam. 25-35 mm (17.1 × 33.3 mm).

Flagellum long. Penial caecum 1. Penis containing well developed, vermiform stimulator.

DISTRIBUTION. E Cuba. 2 spp.

Zachrysia (Chrysius) Pilsbry, 1929

Fig. 2348

Pilsbry, 1929: 585.

TYPE SPECIES — *Helix provisorica* L. Pfeiffer, 1858; OD.

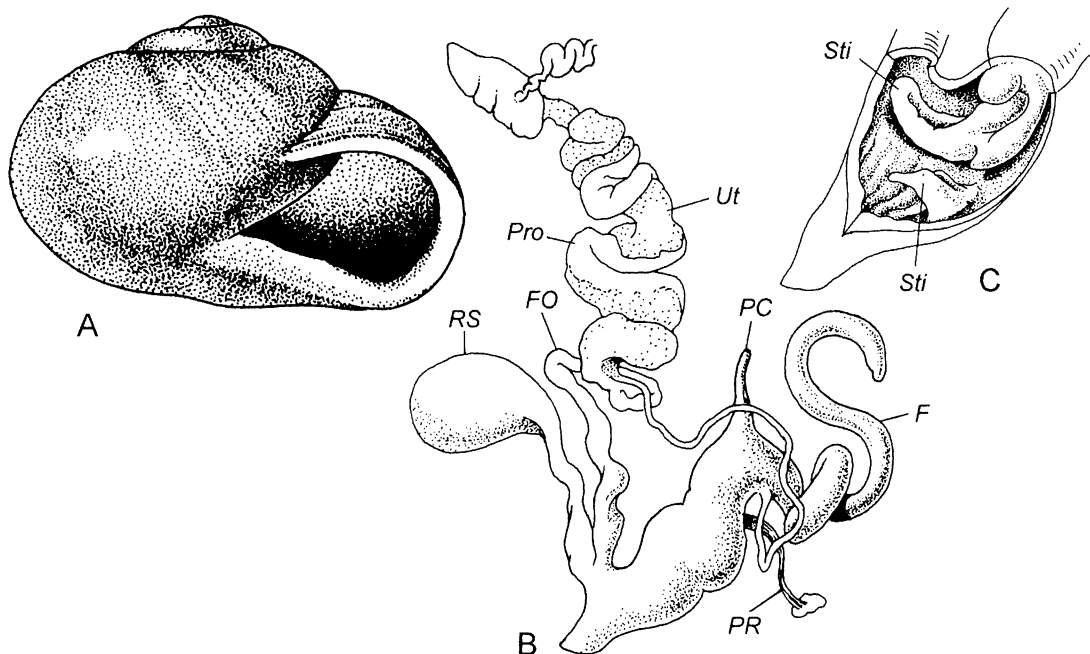


Fig. 2348. *Zachrysia (Chrysius) provisoria* (L. Pfeiffer, 1858).

A — shell: “Purgatorio” 2 km above dam. oack of Ensenada de Moro, Oriente, Cuba” Moscow No. Lc-21357 (Phil.). B, C — Woodland, SW corner of Walkers Road and Ellery Meuen Avenue, Georgetown, Grand Cayman, April 12, 1997 B — reproductive tract. C — interior of penis. Phil. No. A 18973.

Postapical sculpture very weak (shell almost smooth). Height 12-35, diam. 18-55 mm (18.2 × 28.0 mm).

Flagellum long. Penial caecum 1 Penis containing 2 stimulators: smaller, irregularly conic distal and much larger, fleshy, of complex shape proximal; pore of vas deferens situated at base of latter.

DISTRIBUTION. Cuba, Cayman Islands. 5 spp.

Zachrysia (Torreychrysius)

Moreno, 1936)

Fig. 2349

Moreno, 1936: 35

TYPE SPECIES — *Helix scabrosa* Poey, 1854; OD.

Postapical whorls irregularly radially striated. Height 27-29, diam. 42-45 mm (28.2 × 43.2 mm).

Flagellum short. Penis with a small caecum. Stimulator in form of irregularly pad-shaped, transverse thickening.

DISTRIBUTION. Cuba. 1 or 2 spp.

Zachrysia (Megachrysia)

Pilsbry, 1929)

Fig. 2350

Pilsbry, 1929: 585.

TYPE SPECIES — *Helix petitiiana* d’Orbigny, 1853; OD.

Postapical surface cut into excessively fine granules by decussation of radial striae by spiral lines. Columellar margin with a truncated plate-like callus. Height 32-36, diam. 60-70 mm (34.2 × 61.2 mm).

Flagellum short. Caecum of about same size and shape as flagellum. Stimulator tongue-shaped (see Remark).

DISTRIBUTION. Central Cuba. 1 sp.

REMARK. Poey (1856-1858 in 1851-1858: 67, tab. 6, fig. 1, 1-3) writes: “1 *Helix Petitiiana* — 2, idem, penis? aperto vestibulo in x—3, idem, lingua, minutissime decussata” But “x” in the fig. 1 indicates the base of spermathecal stalk, not penis. On the other hand, in other subgenera of *Zachrysia* tongue-shaped stimulators in the penis often present, but not in the base of sper-

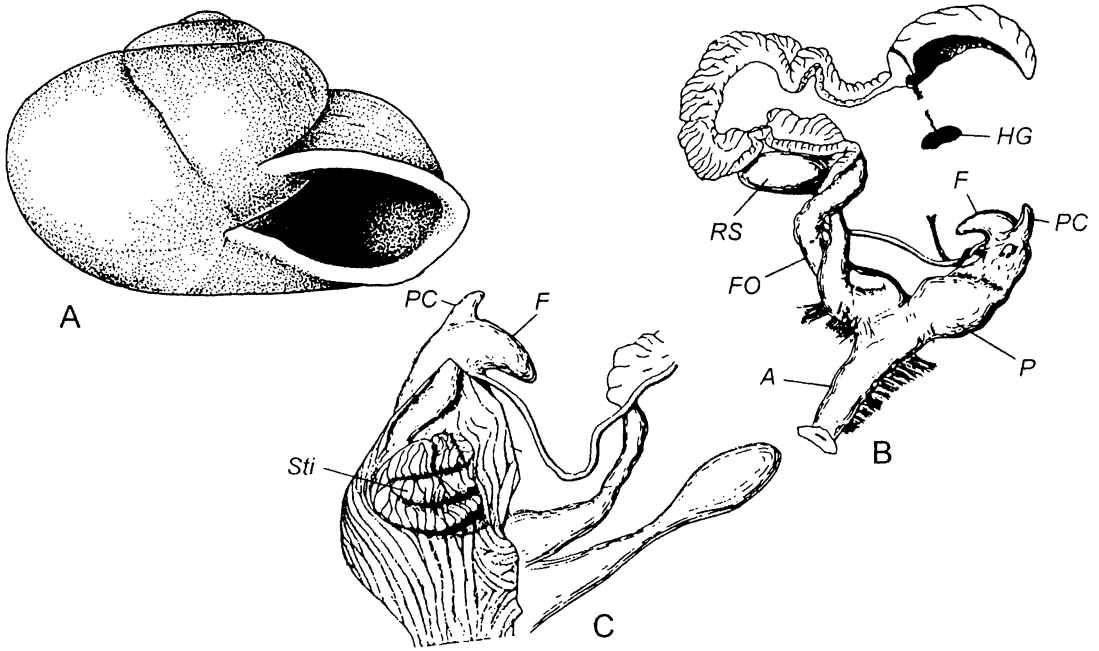


Fig. 2349 *Zachrysia (Torreychrysius) scabrosa* (Poey, 1854).
 A — shell: Cuba. Phil. No. 915 B — reproductive tract. C — interior of penis. After Moreno, 1936.

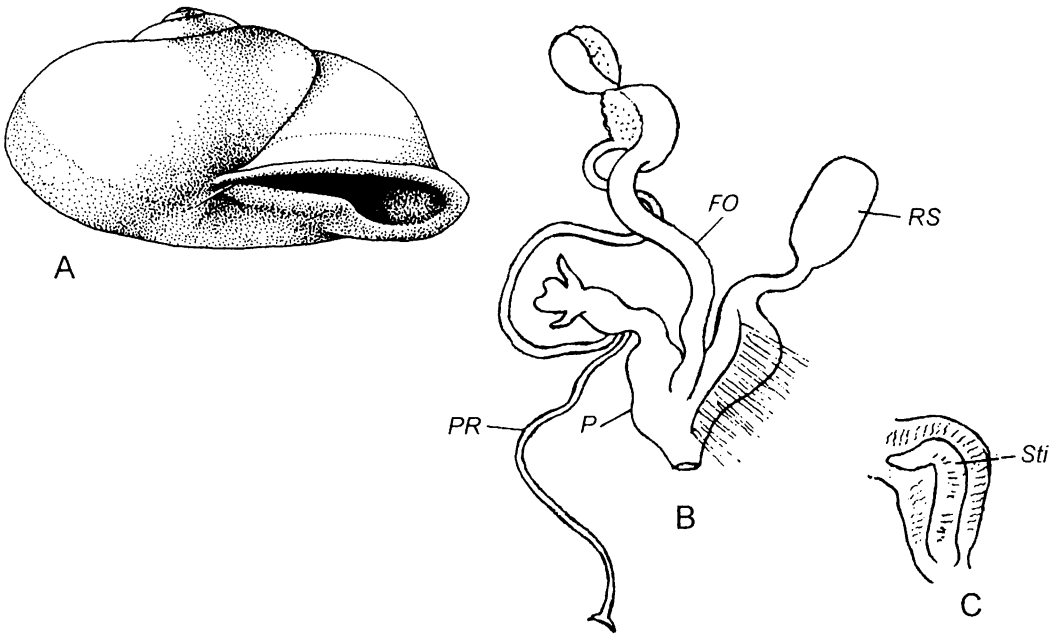


Fig. 2350. *Zachrysia (Megachrysia) petitiana* (d'Orbigny, 1841).
 A — shell: Cuba. Phil. No. 51240. B — reproductive tract. C — interior of base of spermathecal stalk (?). After Poey, 1856-1858 (1851-1858).

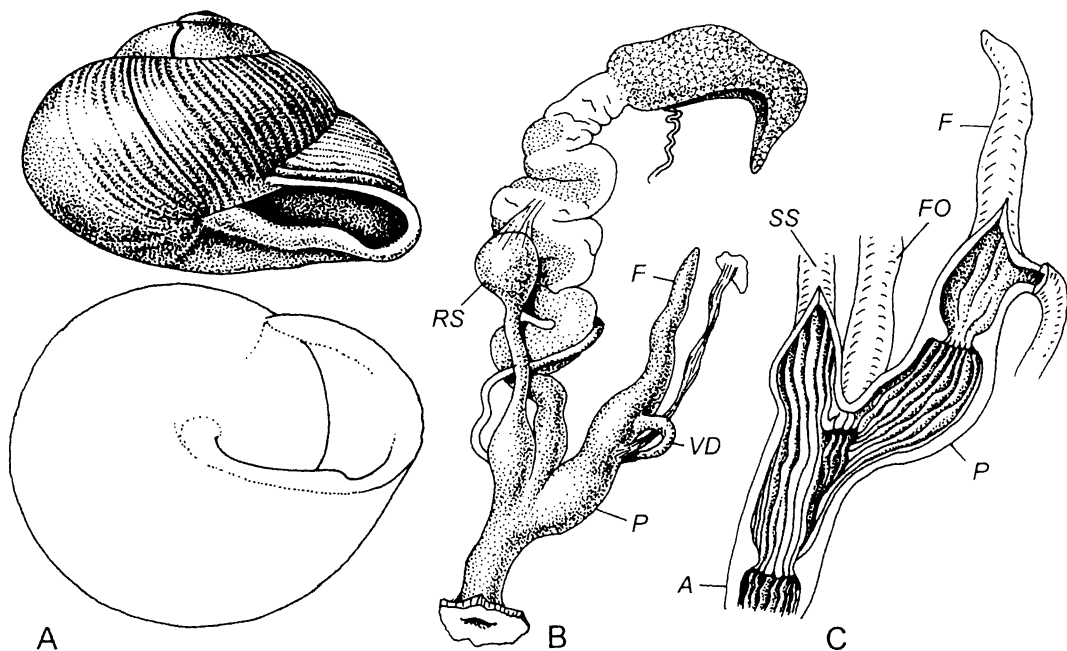


Fig. 2351 *Zachrysia (Zachrysia) auricoma* (Férussac, 1821).

Karst near Escalleros de Jaruco near Habana, W Cuba, April 2, 1981 A — shell. B — reproductive tract. C — interior of penis and vagina. Moscow No. Lc-19593.

mathecal stalk. So Poey's statement about position of the "lingua" should be checked.

Zachrysia (Zachrysia) s. str.

Fig. 2351

Postapical whorls distinctly, finely radially ribbed. Height 14-27 diam. 20-40 mm (22.4 × 32.3 mm).

Flagellum of medium length. Caecum or stimulator missing.

DISTRIBUTION. Cuba. 1 or 2 spp. with many forms.

bular, convoluted within very strong sheath [as in many Xanthomelontinae (Camaeniidae)]. Verge, stimulator or penial gland missing. Uterus of traditional structure. Vagina extraordinary long, much convoluted. Spermathecal stalk without diverticle.

DISTRIBUTION. Martinique.

REMARK. The main reason for separating the genus *Gonostomopsis* as a subfamily is the very peculiar structure of penis (hypertrophied penis sheath, slender and convoluted penis proper) which is non-comparable with that of any other Pleurodontidae.

Gonostomopsis Pilsbry, 1889

Fig. 2352

Pilsbry, 1889: 76, 92 (*Helix*, sect. *Dentellaria*; subsect.).

— *Chrysdon* Ancey, 1887: 54 [nom. praeocc., non Oken, 1815 (Polychaeta); t.-sp. *Helix auridens* Rang, 1834; OD].

TYPE SPECIES — *Helix auridens* Rang, 1834; monotypy

Shell much depressed, rather thin, slightly shining, of 4-4.5 convex whorls. Last whorl a little descending in front, with evenly rounded periphery. Color dark-

GONOSTOMOPSINAE

Schileyko, subfam. nov.

Type genus — *Gonostomopsis* Pilsbry, 1889.

Shell with flat or even sunken apex. Postapical whorls with weak, small hairs. Aperture with narrowly reflexed margins and small teeth: palatal and basal. Umbilicus not wide.

Jaw formally oxygnathous.

Talon hidden. Flagellum 1, long. Epiphallus present. Penial caecum absent. Penis long, tu-

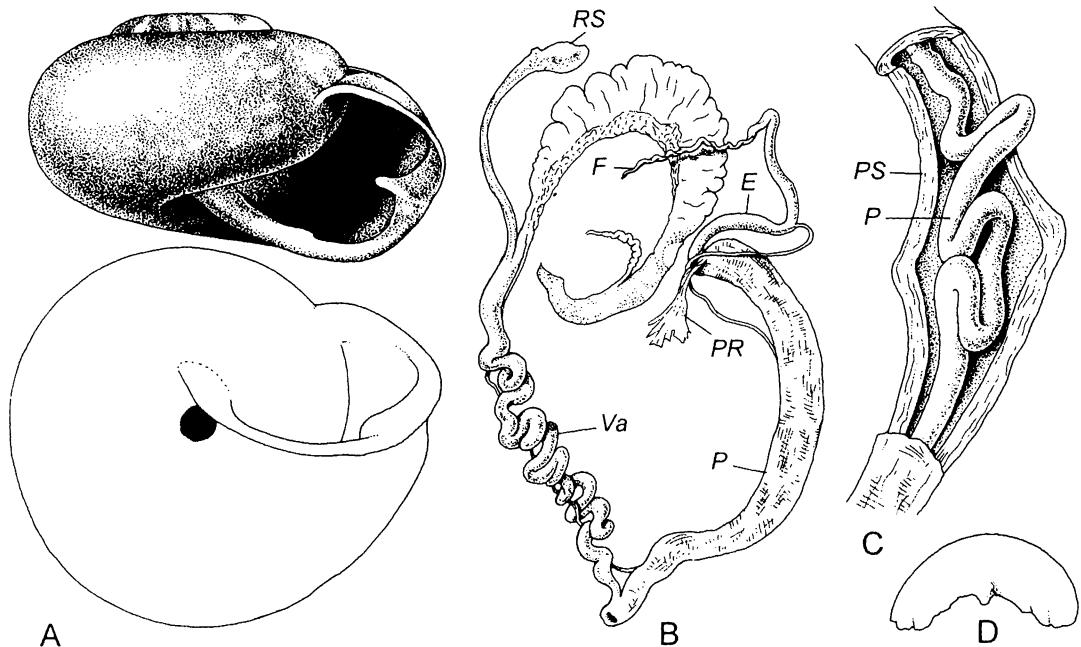


Fig. 2352. *Gonostomopsis auridens* (Rang, 1834).

A — shell: Montagne Peleé, Martinique. Syntype. Paris. B, C — Trace des Jesuites, Balisiers, Martinique, April 16, 1984. B — reproductive tract. C — penis, sheath dissected. D — interior of penis. E — jaw. Moscow No. Lc-28186 (Paris).

chestnut; aperture brown within. Embryonic whorls almost smooth. Subsequent whorls very delicately, radially striatulate and sparsely hirsute; hairs very short, arranged in quincunx. Aperture irregularly lunate, oblique, with narrowly expanded margins; palatal margin bears acute tooth, its position marked by a pit or scrobiculation outside peristome; basal margin with a small tooth. Umbilicus rather narrow, profound. Height 6.5-9.0, diam. 13-15 mm (9.0 × 15.0 mm).

Jaw smooth, with 1 rounded, protruded median rib.

Vas deferens long, very slender, bound to penis, entering epiphallus subapically. Upper half of flagellum thin, twisted, lower part somewhat enlarged. Epiphallus not long. Penis very long, sinuous, internally with irregular, corrugated longitudinal folds. Penis sheath surrounds penis throughout. Penial retractor attached to penis apex, at base of epiphallus. Free oviduct very short. Vagina enormously long, convoluted and twisted. Spermathecal stalk short, reservoir lies on middle part of spermo-oviduct, without apical ligament.

DISTRIBUTION. Martinique. 1 sp.

DISCOLEPINAE Schileyko, subfam. nov.

Type genus — *Discolepis* Ancy, 1904.

Shell flattened, narrowly umbilicated, with minute periostracal scales. Aperture lacks teeth. Umbilicus open, profound, not wide.

Jaw distinctly ribbed.

Talon hidden. Flagellum absent. Epiphallus slender. Penis consists of 2 chambers separated by partition with a narrow central opening (sphincter); longer proximal chamber contains a long, almost cylindrical verge having narrow canal. Shorter distal chamber sac-like, internally lacking special relief. Penial caecum, penial gland or penis sheath absent. Uterus of traditional structure. Vagina very short. Spermathecal stalk without diverticle.

DISTRIBUTION. Martinique.

REMARK. Until now the anatomy of a single species of the genus *Discolepis* was unknown, and the genus tentatively has been attributed to the Helminthoglyptidae (Zilch, 1960). However, as it follows from the above diagnosis and from fig. 2353, the anatomy of *Discolepis desidens* has nothing in

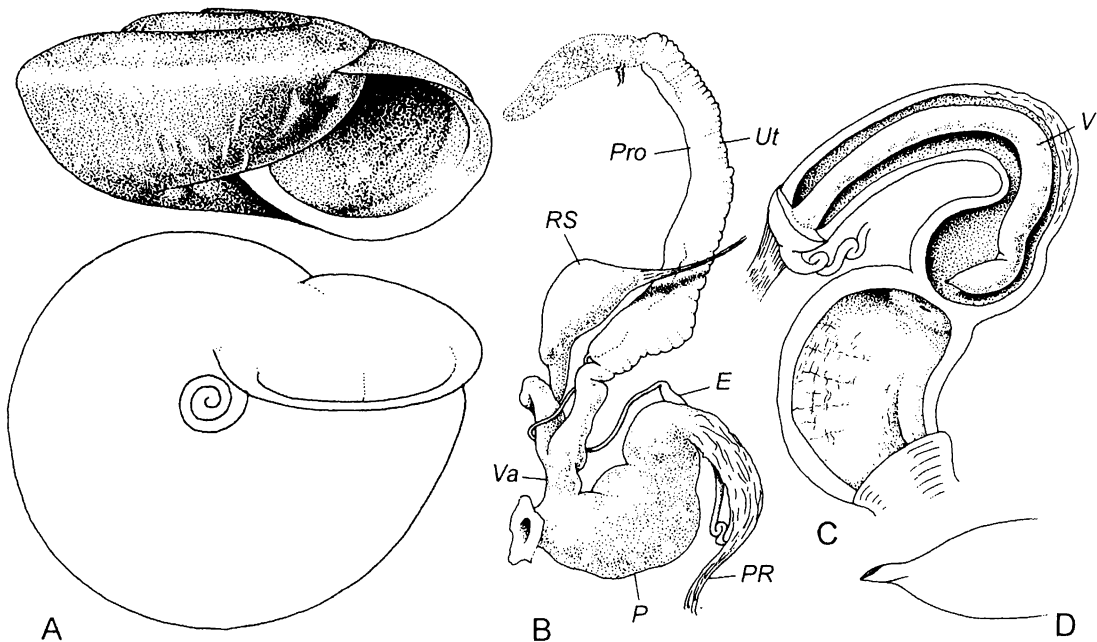


Fig. 2353. *Discolepis desidens* (Rang, 1834).

A — shell: Martinique. Syntype. Paris. B, C, D — Morne Jacob, Martinique, April 8, 1984.
 B — reproductive tract. C — interior of penis. D — tip of verge. Paris.

common with Helminthoglyptidae. Externally simple reproductive tract inclines me to assume that *Discolepis* might be an aberrant member of Pleurodontidae. On the other hand, the very conspicuous structure of the penis drastically differs *Discolepis* from any other representative of Pleurodontidae. Therefore, I admit that this genus might be segregated even as an independent family within Polygyroidea.

Discolepis Ancy, 1904

Fig. 2353

Ancy, 1904: 298.

TYPE SPECIES — *Helix desidens* Rang, 1834; OD.

Shell depressed, rather thin, dull, of about 4.5 convex whorls. Last whorl obtusely angulated, slightly but distinctly descending in front. Color yellowish-corneous to dark-brown. Embryonic whorls smooth. Later whorls finely irregularly wrinkled, with minute, triangular, periostracal scales. Aperture rounded, somewhat oblique, with thin, moderately reflexed margins. Umbili-

cus open, rather narrow. Height 7-8, diam. 15-16 mm (7.5 × 15.6 mm).

Vas deferens thin, moderately long, entering epiphallus apically. Epiphallus rather long, slender, convoluted before entrance to penis. Proximal section of penis externally irregularly folded; wall of this section filled with loose tissue (mainly in its middle part); inner surface almost smooth, verge with nipple-like tip. Distal section of penis internally nearly smooth, of fibrous appearance; perhaps, this section is a derivative of atrium. Free oviduct moderately long, vagina short. Spermathecal stalk not long, twisted and sinuous; reservoir large, with apical ligament, lies on distal half of spermoviduct.

DISTRIBUTION. Martinique. 1 sp.

SOLAROPSINAE Nordsieck, 1986

Nordsieck, 1986: 111 (pro fam.).

Shell more or less depressed to flat, of medium size to rather large. Aperture without teeth. Umbilicus mostly narrowly open, rarely slit-like.

Jaw with strong ribs.

Talon hidden. Flagellum present, moderately long to rudimentary. Epiphallus normally developed to much reduced. Penis of 1 chamber, without sheath, internally with longitudinal folds; stimulator may be present. Penial caecum or verge absent. Penial gland missing. Uterus of traditional folded structure. Vagina (very) short. Spermatophore simple, elongated, sac-like, with short, attenuated tail.

DISTRIBUTION. Central and S America.

Solaropsis Beck, 1837

Beck, 1837 27 (*Helix* subg.).

— *Solarium* Spix, 1827 23 (nom. praeocc., non Lamarck, 1799; t.-sp. *Helix pellis serpentis* Chemnitz, 1795; SD J. Gray, 1847).

— *Ophidermis* "Charpentier" Agassiz, 1847: 261 (nom. nud.).

— *Ophiospila* Ancey, 1887: 64 (for *Helix kuhni* L. Pfeiffer, 1872, *H. andicola* L. Pfeiffer, 1845, *H. catenifera* L. Pfeiffer, 1852 etc.).

TYPE SPECIES — *Helix pellis serpentis* Chemnitz, 1795 (= *Helix undata* Lightfoot, 1786); SD Herrmannsen, 1848.

Shell depressed, rather solid to thin, of 4-5 whorls. Body whorl straight or just a little deflected, its periphery either rounded, or with blunt, cord-like keel, or with shallow sulcus. Color generally yellowish, mostly with irregular, dark, zig-zagged markings. Embryonic whorls smooth or granulose. Postapical surface with weak, irregular radial striation or with more or less distinct granulation. Aperture rounded, not strongly oblique, toothless, with simple or reflexed margins. Umbilicus not wide, profound, sometimes partially covered.

Secondary ureter open to completed.

Spermathecal stalk with or without diverticle.

DISTRIBUTION. S and Central America from Argentina and S Brazil to Costa Rica.

Solaropsis (*Heliopsis*) Pilsbry, 1933

Fig. 2354

Pilsbry, 1933a: 69

TYPE SPECIES — *Helix praestans* L. Pfeiffer, 1854; OD.

Shell depressed-subglobose, rather thin to moderately solid, with dome-shaped

spire, of 4.5-5 slightly convex whorls. Last whorl rounded, slightly and gradually descending in front. Color yellowish-grey, with variously developed brown, a little zig-zagged radial streaks above periphery and spiral bands below. Embryonic whorls (2 in number) densely granulose after initial half whorl which is smoothish. Later whorls lack granulation. Aperture rounded-lunar, oblique, with briefly expanded, more or less thickened, reflexed margins. Umbilicus narrow or closed. Height 26-32, diam. 53-56 mm (31.6 × 56.0 mm).

Flagellum long. Epiphallus somewhat shorter. Penis internally with several uneven axial pilasters; stimulator missing. Penial retractor attached to penis/epiphallus junction. Free oviduct rather long, vagina very short. Spermathecal stalk with well-developed diverticle; neck of stalk about 2 times shorter than diverticle.

DISTRIBUTION. Colombia, ? Brazil. 2-4 spp.

REMARK. The anatomy of the type species of *Heliopsis* is unknown, so, I am not sure if "*Helix*" *brasiliiana* does belong to the subgenus *Heliopsis*, all the more that the locality of the dissected "*Helix*" *brasiliiana* (Rio de Janeiro) is far from Colombia. See also Tillier (1980: 127).

Solaropsis (*Solaropsis* s. str.)

Fig. 2355

Shell moderately depressed, (rather) solid, of about 5 moderately convex whorls. Body whorl straight, rounded or with blunt keel; sometimes with a shallow sulcus. Color yellowish, with dark, irregular, zig-zagged markings. Embryonic whorls smooth. Later whorls finely granulose (shagreened). Aperture ovate, only slightly oblique, with well reflexed and expanded margins. Umbilicus narrowly open. Height 19-55, diam. 30-85 mm (35.0 × 53.1 mm).

Secondary ureter uncompleted.

Flagellum short, horn-like, somewhat rudimentary. Epiphallus as such absent. Penis short, bulky, contains a few longitudinal, more or less corrugated, in places anastomosing pilasters; there is a conic stimulator at pore of vas deferens. Penial retractor bifurcated at base, one arm attached to vas deferens, the other — to flagellum. Free oviduct long, vagina about 2 times shorter. Spermathecal stalk long, slender, without diverticle; reservoir attending albumen gland.

DISTRIBUTION. Costa Rica to S Brazil.
At least 20 spp.

Solaropsis (*Psadariella*)
Weyrauch, 1956)
Fig. 2356

Weyrauch, 1956: 159

TYPE SPECIES — *Solaropsis* (*Psadariella*)
palizae Weyrauch, 1956; OD.

Shell much depressed, thin, dull, of about 5 slightly convex whorls. Last whorl rounded, slightly and gradually descending in front. Color uniformly creamy. Embryonic whorls finely, regularly rib-striated. Later whorls with weak axial wrinkles and small, scattered tubercles bearing delicate hairs. Aperture subcircular, moderately oblique; columellar and basal margins reflexed. Umbilicus comparatively broad, funnel-shaped. Height 6-10, diam. 13.3-19.5 mm (9.1 × 18.0 mm).

DISTRIBUTION. Peru. 2-3 spp.

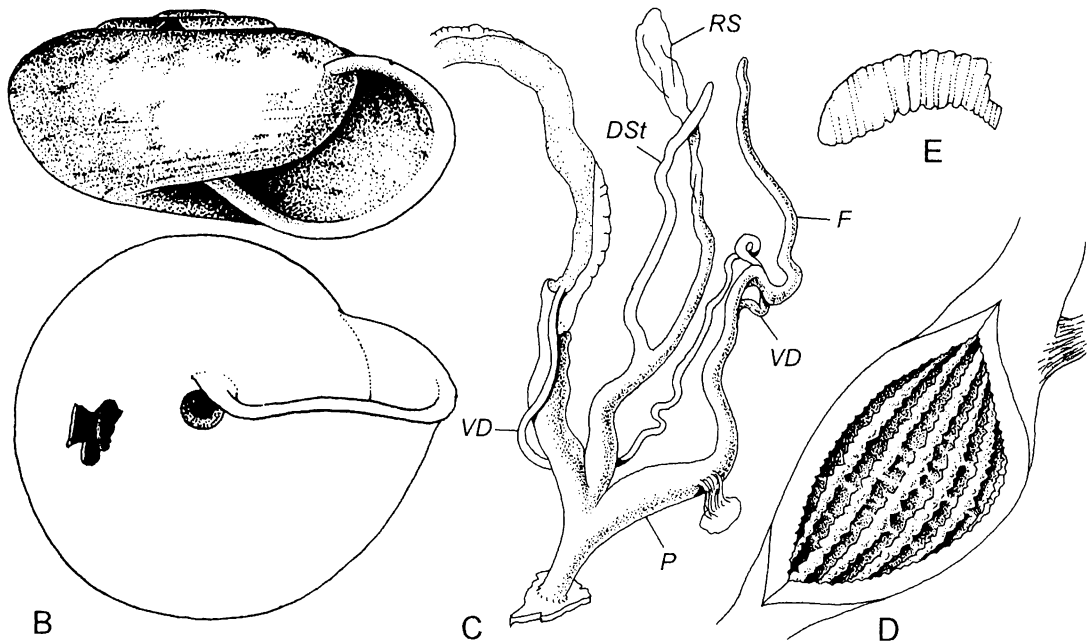
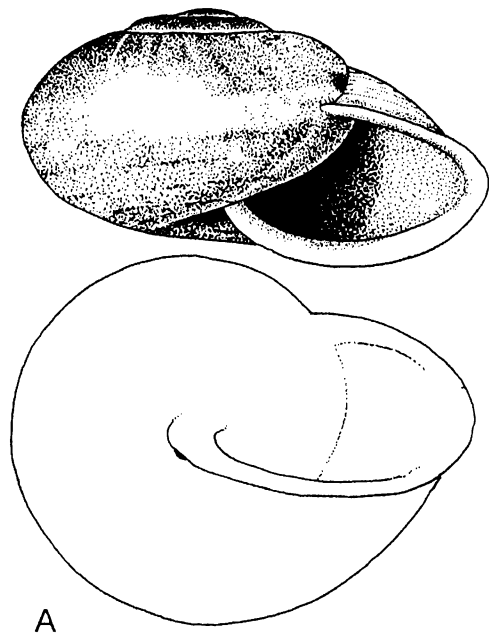


Fig. 2354. A — *Solaropsis* (*Heliopsis*) *praestans* (L. Pfeiffer, 1854).

Shell: "Colombie" Paris. B, C, D, E — *Solaropsis* (? *Heliopsis*) *brasiliiana* (Deshayes, 1830). Rio de Janeiro. B — shell. C — reproductive tract. D — interior of penis. E — jaw Paris.

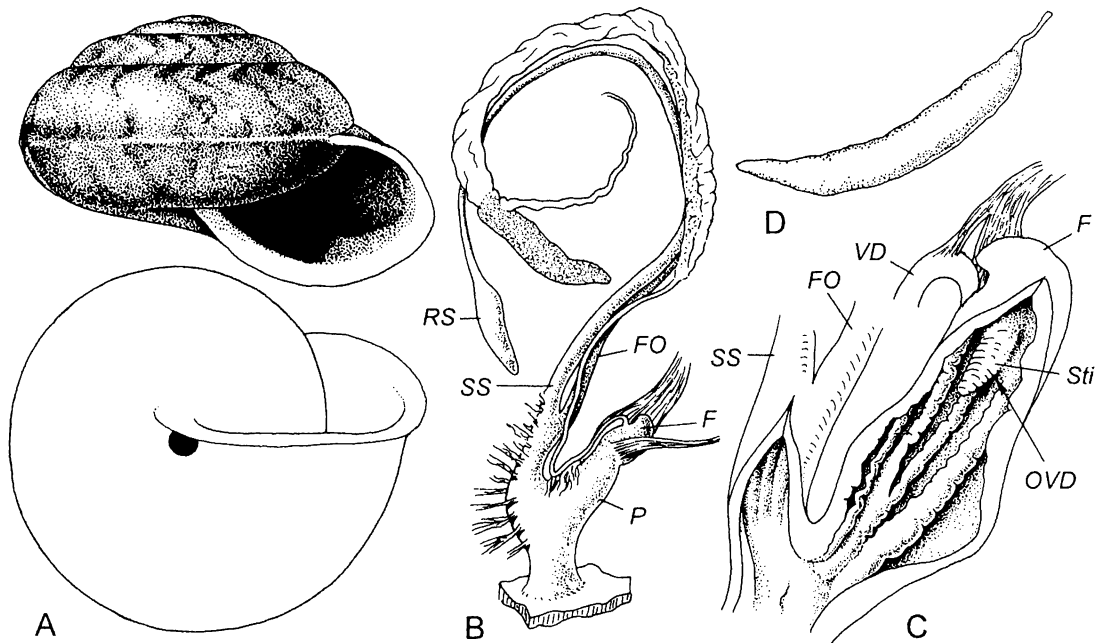


Fig. 2355 *Solaropsis (Solaropsis) undata* (Lightfoot, 1786).

A — shell: Guyana. Phil. No. 33127 (as *pellisserpentis*). B, C — “Guyane Francaise. Trois-Sants, May 1978” B — reproductive tract. C — interior of penis. Paris. D — spermatophore. After Tillier, 1980.

Solaropsis (Psadara K. Miller, 1878)

Fig. 2357

Miller K., 1878: 162 (*Helix* subg.). Tillier, 1980: 131 (pro gen.).

TYPE SPECIES — *Helix selenostoma* L. Pfeiffer, 1852; SD Pilsbry, 1926.

Shell flat, (rather) thin, of 4-5 convex whorls. Apex often more or less sunken. Last whorl straight, evenly rounded at periphery. Color mostly light-corneous, usually with pale-corneous to reddish bands broken into series of spots. Embryonic sculpture of extremely fine network of radial and spiral striae. Subsequent whorls with weak, irregular, radial ridgelets and tubercles which bear very short, stiff hairs (in adults often lost). Aperture subcircular, slightly oblique, with thin, reflexed margins; upper part of palatal margin somewhat protruded ahead. Umbilicus moderately wide, perspective. Height 10-14, diam. 17-28 mm (13.7 × 26.8 mm).

Secondary ureter completed.

Talon not located. Vas deferens thin, rather long, entering epiphallus laterally via a simple pore. Flagellum not long, vermiform. Epiphallus roughly elongate-ovate,

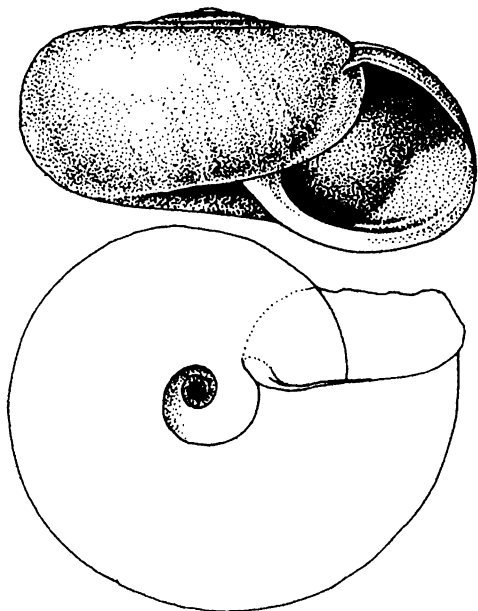


Fig. 2356. *Solaropsis (Psadariella) palizae* Wevrauch, 1956.

Chagual, Rio Marañon, 1300 m, North Peru. Paratype. Chicago No. 57258.

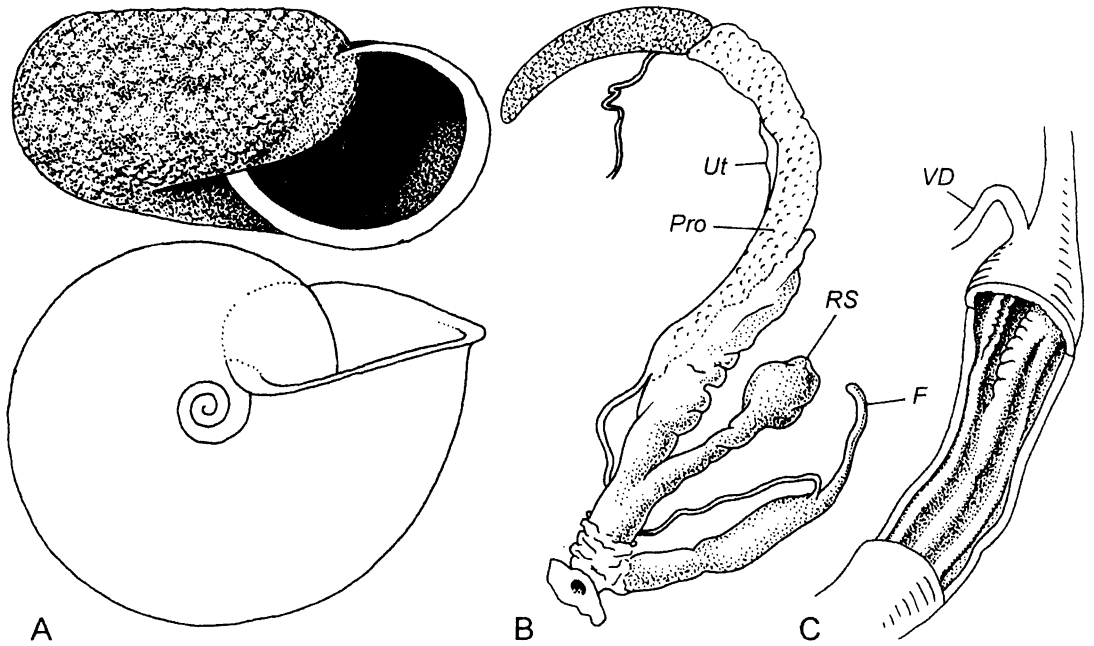


Fig. 2357 A — *Solaropsis (Psadara) selenostoma* (L. Pfeiffer, 1852). Shell: Ecuador. Senck. No. 26234. B, C — ! *Psadara (Psadara) marmatensis* (L. Pfeiffer, 1854). "Guyane Française, Trois Sauts, 01.04.1976" B — reproductive tract. C — interior of penis. Paris.

separated from penis by transverse narrowing. Penis short, internally epiphallus and penis with axial, in places anastomosing folds; stimulator very small or absent. Penial retractor, when present, inserted on epiphallus. Free oviduct and vagina not long, subequal in length. Spermathecal shaft (rather) short, reservoir adhering to distal part of spermoviduct; diverticle missing or rudimentary.

DISTRIBUTION. Peru and Guyana to S Brazil and Argentina. About 15 spp.

Solaropsis (Eupsadara) Pilsbry, 1926
Fig. 2358

Pilsbry, 1926: 112 (footnote).

TYPE SPECIES — *Psadara cearana* F. Baker, 1913; OD.

Shell flat, with concave spire, dull, of 4-4.5 quite convex whorls. Surface lacks regular color pattern. Embryonic sculpture of distinct, dense, radially elongated granules. Later whorls have same sculpture; on umbilicus slopes granules bear very short setae, so, fresh shell must be hirsute. Aperture nearly circular, subvertical, with thin, simple margins;

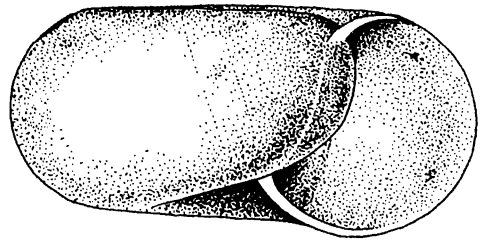


Fig. 2358. *Solaropsis (Eupsadara) cearana* (F Baker, 1913). State of Ceará, Brazil. Holotype. Phil. No. 109344.

POLYGYRIDAE Pilsbry, 1895

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

ICZN Opinion 1691, 1992. Emberton, 1989: 94.

Shell flat to subglobose, moderately thin to solid. Aperture initially armed with plicae and folds; most characteristic element — transversal parietal lamellar tooth standing parallel to aperture plane; in many cases elements of armature more or less reduced down to complete disappearance.

Jaw odontognathous.

Kidney typically sigmurethral, with completed ureters.

Talon exposed, mostly consisting of many chambers. Flagellum very short to absent. Epiphallus present or missing. Penis internally with or without verge, mostly with complex relief; penial gland, when present, in form of elongated sac. Penial caecum absent. Spermathecal stalk lacks diverticle or accessory sac.

DISTRIBUTION. Nearctic.

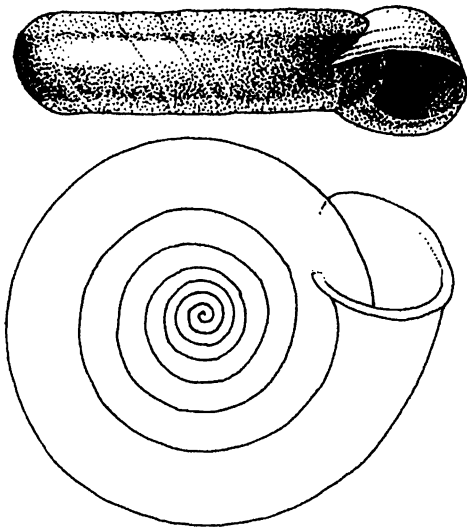


Fig. 2359 *Polygyratia polygyrata* (Born, 1778). "Brasilia" Holotype. Vienna, Born collection.

columellar margin dilated. Height 4.0-8.5 diam. 12.0-16.5 mm (8.5 × 16.5 mm).

DISTRIBUTION. Brazil. 2-4 spp.

Polygyratia J. Gray, 1847

Fig. 2359

Gray J. 1847: 173.

— *Ophiogyra* Albers, 1850: 91 (t.-sp. *Helix polygyrata* Born, 1778; monotypy).

TYPE SPECIES — *Helix polygyrata* Born, 1778; monotypy.

Shell planorboid, with sunken apex, moderately thin, slightly glossy, of 8-9.5 slowly increasing whorls. Last whorl compressed at periphery, well descending in front. Color chestnut, with darker, broad peripheral band. Embryonic whorls smooth. First 1-2 postapical whorls with fine radial wrinkles, on later whorls well spaced spiral grooves added; basal surface without spiral sculpture. Aperture small, subcircular, oblique, peristome insertions slightly approached, margins somewhat thickened and shortly reflexed. Umbilicus very broad, shallow, quite perspective. Height 10.0-14.5, diam. 40-62 mm (12.2 × 49.3 mm).

DISTRIBUTION. Brazil. 1 sp.

TRIODOPSINAE Pilsbry, 1940

Pilsbry, 1940: 789. Emberton, 1988: 159.

Vas deferens proximally more or less swollen, forming variously developed epiphallus. Flagellum absent. Penis internally with a small verge and a single dorsal pilaster covered with polygonal tubercles; same tubercles usually present on rest surface of penis. Penis sheath adnate to base of penis (sometimes quite imperfectly developed). Penial retractor inserted on epiphallus. Penial retentor muscle sometimes connects epiphallus with penis at upper border of sheath. Spermathecal stalk usually swollen basally.

DISTRIBUTION. N America north of Mexico.

Webbhelix Emberton, 1988

Fig. 2360

Emberton, 1988: 163, 188; 1995: 78.

TYPE SPECIES — *Helix multilineata* Say, 1821; monotypy.

Shell depressed-subglobose, rather thin, somewhat glossy, of 5-5.75 moderately con-

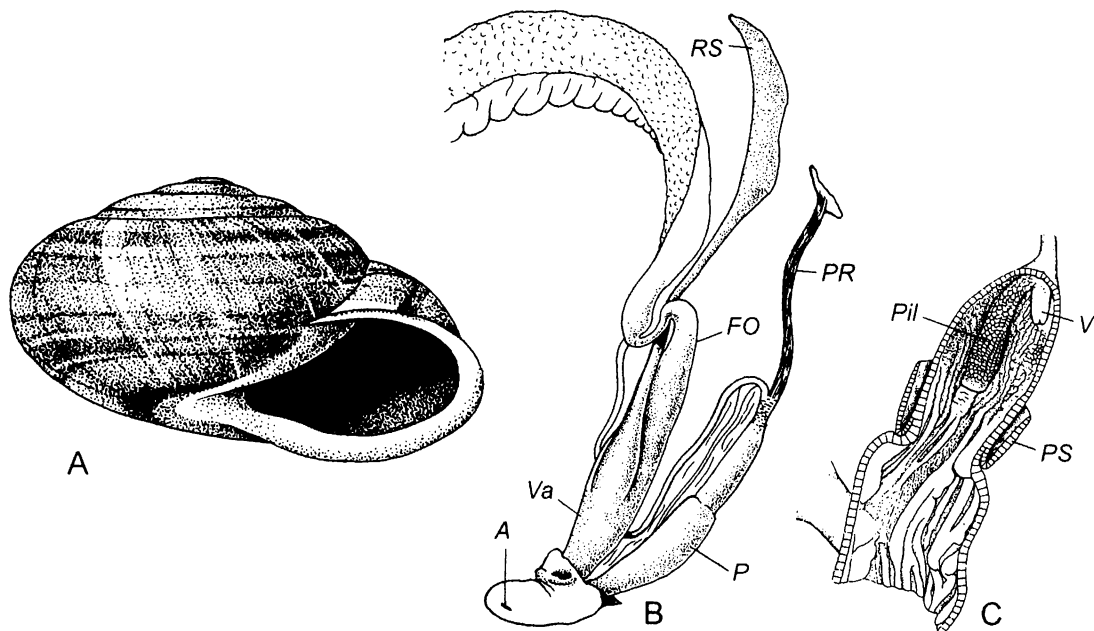


Fig. 2360. *Webbhelix multilineata* (Say, 1821).

A — shell: Silver Springs State Park, 2 km W of Fox, Illinois. Moscow No. Lc-28173. B — reproductive tract. Near "Parker Mill" Washtenaw Co., Michigan, August 20, 1970. Moscow No. Lc-28165. C — interior of penis. After Emberton, 1988.

vex whorls. Last whorl rounded, slightly descending in front. Coloration consists of ivory-yellow or olive-buff background and several variously developed darker bands. Embryonic whorls smooth. Postapical sculpture of delicate, dense, somewhat irregular rib-striation. Aperture subcircular, quite oblique, with thin, flatly reflexed margins. Umbilicus closed. Height 13-19, diam. 20-30 mm (13.6 × 20.2 mm).

Penis subcylindrical, with more or less enlarged apical half. Internally penis with rather large, laterally compressed verge having ventrally subapical pore and 2 broad, prominent terminal papillae; basal 2/3 of penis smooth with random folds; upper 1/2 uniformly sculpted with 25-35 adjacent, generally unmerging, equilateral columns of distinct, equal-sized pustules radiating from pore region; pustules indistinct on basal 2/3 of these columns. Penial retractor attached to vas deferens/penis junction. Penis sheath enclosing less than half of upper, sculpted region of penis. Free oviduct long, vagina much shorter. Spermathecal stalk a little swollen basally; reservoir not attending albumen gland.

DISTRIBUTION. Eastern N America

(Ohio, Michigan, Wisconsin, Indiana, Illinois, Minnesota, Iowa, Nebraska, Kansas, Missouri, Arkansas, Mississippi). 1 sp. with few forms.

Neohelix Ihering, 1892

Ihering, 1892: 482.

— *Paleohelix* Pilsbry, 1893: 130 (unnecessary nom. nov. pro *Neohelix* Ihering, 1892).

Emberton, 1988: 262; 1995: 78.

TYPE SPECIES — *Helix albolabris* Say, 1816; SD Pilsbry, 1930c.

Shell somewhat depressed, rather thin, glossy, of 5-6 flattened to rather convex whorls. Body whorl rounded, slightly to moderately deflected. Color uniformly pale-yellow to chestnut, peristome white. Embryonic whorls smooth or radially striated below suture. Postapical sculpture of fine radial riblets and variously developed spiral striae. Aperture ovate, well oblique, with thin or slightly thickened, broadly reflexed margins; basal margin usually with callosity. Parietal tooth may be present. Umbilicus closed.

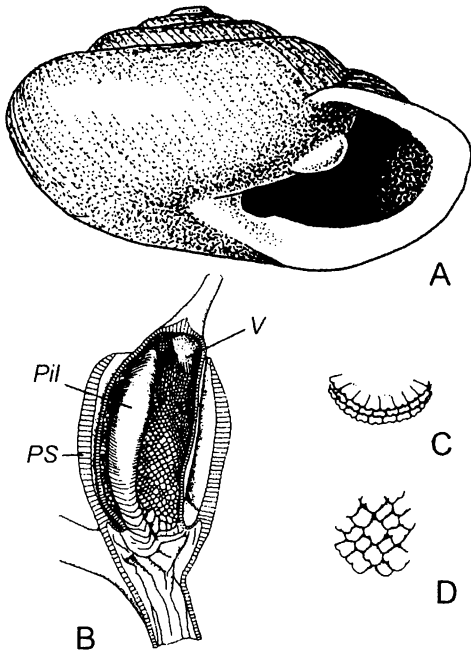


Fig. 2361 *Neohelix (Asamiorbis) dentifera* (Binney, 1837).

A — shell: "Amérique du Nord" Paris. B — interior of penis. C — diagrammatic detail of 3 lappets from center of pilaster of B, showing substructure of pustules. D — diagrammatic detail of central wall pustules of B, showing lateral cusps. After Emberton, 1988.

Talon exposed, distinctly multilobate. Vas deferens long, convoluted, entering penis apically. Penis ovate to somewhat clavate, internally with a single pilaster which bears smooth lappets (transversely, completely fused pustules). Pustules on internal walls of penis arranged in 25-35 contiguous, longitudinal columns. Verge not large. Penial retractor inserting on vas deferens. Penis sheath surrounds a half to entire length of penis, free at upper margin. Free oviduct longer than vagina. Spermathecal stalk short, more or less swollen basally, reservoir lies on lower half of spermoviduct.

DISTRIBUTION. Eastern N America.

Neohelix (Asamiorbis)
Emberton, 1995)
Fig. 2361

Emberton, 1995: 78.

TYPE SPECIES — *Helix dentifera* Binney, 1837; OD.

Shell with parietal tooth. Height 10-15, diam. 20-30 mm (10.5 × 21.5 mm).

Vas deferens long. Penis internally with doubled density of pustulate lappets on pilaster. Penis sheath surrounds nearly entire penis.

DISTRIBUTION. Eastern N America (Quebec, Ontario, Maine, New Hampshire, Vermont, Massachusetts, Missouri, New York, Pennsylvania, Maryland, Kansas, Arkansas, Oklahoma, Louisiana, West Virginia, Virginia, South Carolina). 3 spp.

Neohelix (Neohelix s. str.)
Fig. 2362

Shell toothless or with weak lamellar parietal tooth. Height 11.4-32.0, diam. 20-43 mm (18.7 × 29.2 mm).

Vas deferens long. Penis internally with a large pilaster consisting of leaf-like lappets; inner surface of penis lined with numerous pustules. Penis sheath surrounds basal half of penis.

DISTRIBUTION. Eastern N America (Maine, Massachusetts, New York, New Jersey, Pennsylvania, Virginia, North Carolina, Michigan). 2 spp.

Neohelix (Solemorbis)
Emberton, 1995)
Fig. 2363

Emberton, 1995: 80.

TYPE SPECIES — *Neohelix solemi* Emberton, 1988; OD.

Shell toothless. Height 13-20, diam. 20.5-31.5 mm.

Vas deferens short (only about twice as long as penis). Penis sheath surrounds basal half of penis.

DISTRIBUTION. Eastern N America (Minnesota, Iowa, Missouri, Kansas, Oklahoma, Arkansas, Illinois, Tennessee). 2 spp.

Xolotrema Rafinesque, 1819

Rafinesque, 1819: 425.

— *Cholotrema* Agassiz, 1847: 83 (nom. nov. pro *Xolotrema* Rafinesque, 1819).

Pilsbry, 1940: 823. Emberton, 1995: 85.

TYPE SPECIES — *Helix notata* Deshayes, 1830; SD Pilsbry, 1940.

Shell depressed, moderately thin, of 4.5-5.5 slightly to moderately convex whorls. Last whorl rounded or slightly angled or

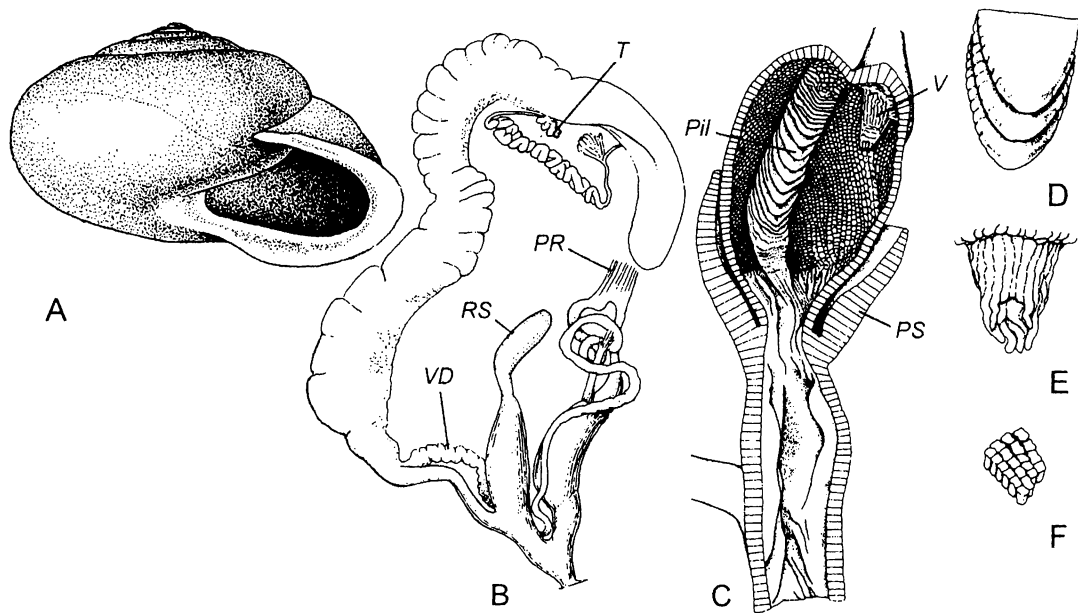


Fig. 2362. *Neohelix (Neohelix) albolabris* (Say, 1816).

A — shell: Philadelphia, Pennsylvania. Moscow No. Lc-28166. B — reproductive tract. After Pilsbry, 1940. C — interior of penis. D — detail of 3 lappets from center of pilaster. E — detail of other side of verge. F — detail of wall pustules. After Emberton, 1988.

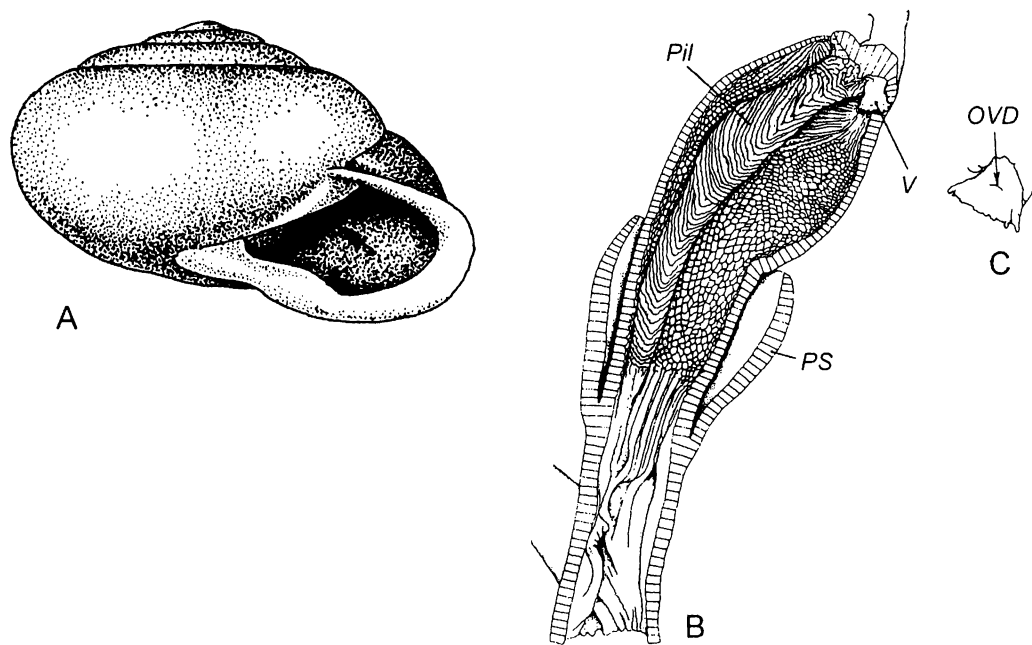


Fig. 2363. ! *Neohelix (Solemorbis) alleni* (Wetherby, 1881).

A — shell: Magazine Mts., Ark[ansas]. Phil. No. 91293. B — interior of penis. C — reverse side of verge. After Emberton, 1988.

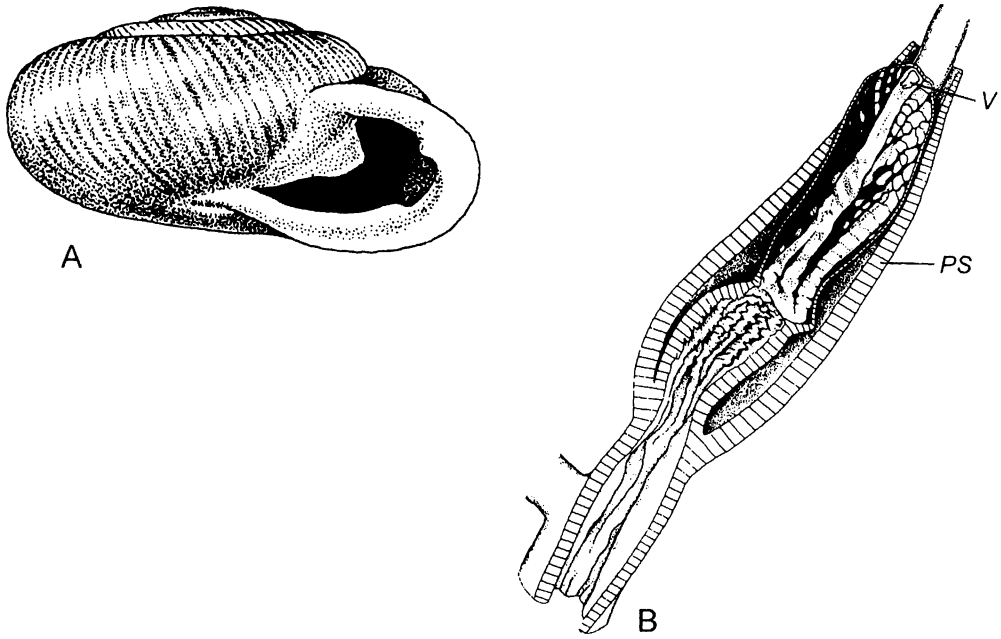


Fig. 2364. *Xolotrema (Wilcoxorbis) fosteri* (F Baker, 1932).
 A — shell: NE of Elisabethtown in Valley of Big Creek, Illinois. Paratype. Phil. No. 157437
 B — interior of penis. After Emberton, 1988.

with angled shoulder, a little descending in front. Color generally corneous. Embryonic sculpture of close radial striae. Postapical whorls with variously developed radial ribs or very short hairs. Aperture ovate, quite oblique, with widely reflexed margins. Parietal lamellar tooth large; basal margin bears long blade-like lamella which stands upon basal lip; this lamella terminating at notch where it joins palatal margin. Palatal tooth present. Umbilicus closed.

Vas deferens long. Penis more or less clavate, internally with greatly enlarged pustules on penial pilaster. Verge minute. Penial wall columns that merge mid-ventrally into 6-10 U-shapes that are tapered and slightly separated and that bear unequally sized pustules. Penial retractor attached to lower half of vas deferens. Penis sheath surrounds entire penis or its basal section. Free oviduct longer than vagina. Spermatheca as in *Neohelix*.

DISTRIBUTION. Eastern N America.

Xolotrema (Wilcoxorbis)
 G. Webb, 1952)
 Fig. 2364

Webb G. 1952: 7 Emberton, 1995: 85.

TYPE SPECIES — *Polygyra appressa fosteri* F. Baker, 1932; OD.

Postapical sculpture of (moderately) strong radial striae or ribs. Postapical surface free of pustules or hairs. Palatal tooth moderately developed to weak. Height 7-10, diam. 14-20 mm (9.0 × 17.0 mm).

Penis internally with axial pilaster covered with pustules forming a single column of abutting cubes. Verge occupies terminal position. Penis sheath entirely covering uneverged upper part of penis.

DISTRIBUTION. U.S.A. (Illinois, Iowa, Missouri, Arkansas, Mississippi, Louisiana, New Jersey, Arkansas). 2 spp.

Xolotrema (Xolotrema s. str.)
 Fig. 2365

Emberton, 1995: 85.

Postapical sculpture of fine, close-set, slightly curved radial striae. Shell not ribbed, with delicate hairs. Height 10-14, diam. 19-25 mm (11.0 × 21.2 mm).

Penis internally with a principal pilaster bearing ventrally subterminal penial verge. Penis sheath covering basal part of penis.

DISTRIBUTION. Eastern N America (On-

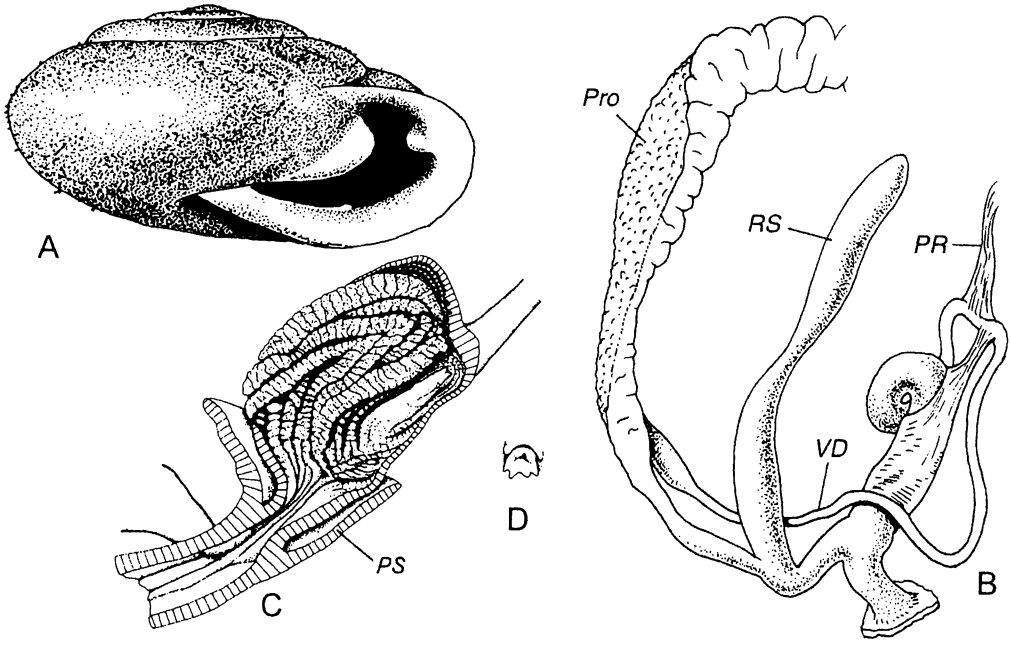


Fig. 2365. *Xolotrema (Xolotrema) notata* (Deshayes, 1830).

A — shell: Bradford, Pennsylvania. Vienna No. 11428. B — Warren Woods, Berrien Co. Michigan, July 25, 1992. Reproductive tract. Moscow No. Lc-28192 (gift of John Slapcinsky). C — interior of penis. D — reverse of verge. After Emberton, 1988.

tario, Vermont, Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Ohio, Michigan, Indiana, Illinois, Arkansas, Kentucky, Tennessee, North Carolina, Virginia, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Arkansas). 3 spp.

Triodopsis Rafinesque, 1819

Rafinesque, 1819: 425.

— *Menomphis* Rafinesque, 1831: 3 (*Triodopsis* subg.; t.-sp. *Triodopsis lunula* Rafinesque, 1831; monotypy).

— *Triodontopsis* Agassiz, 1847: 378 (nom. nov. pro *Triodopsis* Rafinesque, 1819).

— *Tridopsis* Beck, 1837: 24 (nom. err. pro *Triodopsis* Rafinesque, 1819).

Pilsbry, 1940: 790.

TYPE SPECIES — *Helix tridentata* Say, "1816" 1817, OD.

Shell depressed to nearly flat, of 4.5-6 moderately convex whorls. Last whorl slightly to distinctly descending in front, rounded or subangulated at periphery. Color generally uniformly comeous. Embryonic whorls smooth or with fine radial striae (sometimes partly obso-

lete). Postapical whorls initially radially ribbed, sometimes secondarily lack regular sculpture. Aperture irregularly ovate, with 3 teeth: parietal, basal and palatal (may be absent). Umbilicus (moderately) narrow to broad, sometimes excentric.

Epiphallus absent. Penis clavate, bulky to slender and elongated, internally with principal pilaster and a number of variously developed folds, covered with pustules. Verge missing or very small, as a fleshy peduncle on penial pilaster. Penis sheath surrounds basal section of penis, rarely (*Vagvolgyorbis*) embraces nearly entire penis. Free oviduct and vagina subequal in length. Spermathecal stalk short, swollen basally.

DISTRIBUTION. E North America.

Triodopsis (Shelfordorbis

G. Webb, 1959)

Fig. 2366

Webb G. 1959: 24 (*Triodopsis* sect.). Emberton, 1995: 85.

TYPE SPECIES — *Triodopsis fraudulenta vulgata* Pilsbry, 1940; OD.

Shell depressed, of 4.5-6 slightly convex

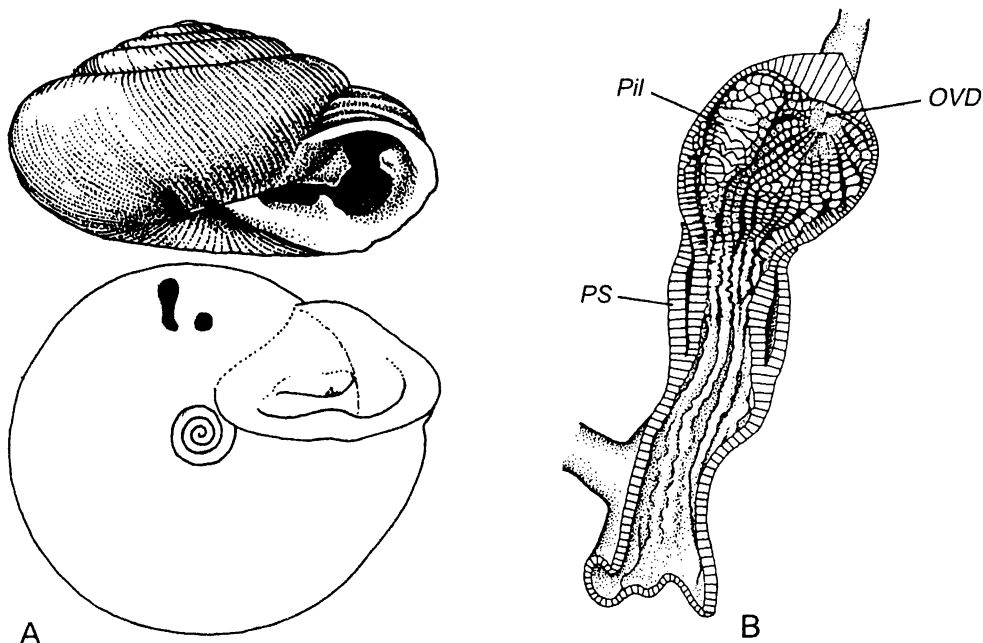


Fig. 2366. A — ! *Triodopsis (Shelfordorbis) claibornensis* Lutz, 1950.

A — shell: Claiborne Co., Tennessee. Paratype. Phil. No. 215860. B — interior of penis. After Emberton, 1988.

whorls. Embryonic whorls with weak radial striae. Postapical whorls with moderate to very strong radial striae. Aperture deeply dished, peristome with a squared-off appearance; parietal tooth straight, broadly wedge-like, symmetrical or slightly angled and tapered toward umbilicus; basal tooth peg-like, marginal; palatal tooth broad, squared, recessed. Height 7.0-10.5, diam. 10.0-19.5 mm (7.3 × 12.3 mm).

Penis mace-shaped, ventrally with a sub-terminal pore about 1/5 or 2/5-way from apex and indented into penial wall; sub-pore region erectile as a fleshy peduncle. Everted penis shaped like an angled baseball bat. Penis sheath surrounds basal half of penis.

DISTRIBUTION. N America (Ontario, New York, Pennsylvania, Maryland, District of Columbia, West Virginia, Virginia, North Carolina, Kentucky, Tennessee, Alabama, Ohio, Michigan, Indiana, Illinois, Missouri). 4 spp.

Triodopsis (Brooksorbis)

Emberton, 1995)

Fig. 2367

Emberton, 1995: 85.

TYPE SPECIES — *Polygyra platysayoides* Brooks, 1933; OD.

Shell nearly flat, thin, of about 5 rather convex whorls. Last whorl rounded, moderately deflected. Color light-corneous with a yellowish area on exterior surface of peristome which exhibits a punctate appearance. Embryonic whorls smooth. Postapical whorls radially-obliquely striated. Aperture oblong-lunate, moderately oblique; parietal tooth short, nearly straight, high-standing, symmetrical, and scooped internally; basal tooth very low, with broadly tapered sides; palatal tooth absent. Umbilicus open, very broad. Height 8, diam. 22-27 mm.

Penis clavate, internally with pilastral pustules fused into 2 columns of interdigitating rectangular box shapes; wall-pustular columns completely merging ventrally to form 10-12 obtuse V-shapes. Pore terminal. Penis sheath surrounds lower part of penis.

DISTRIBUTION. U.S.A. (West Virginia). 1 sp.

Triodopsis (Pilsbryorbis)

Emberton, 1995)

Fig. 2368

Emberton, 1995: 85.

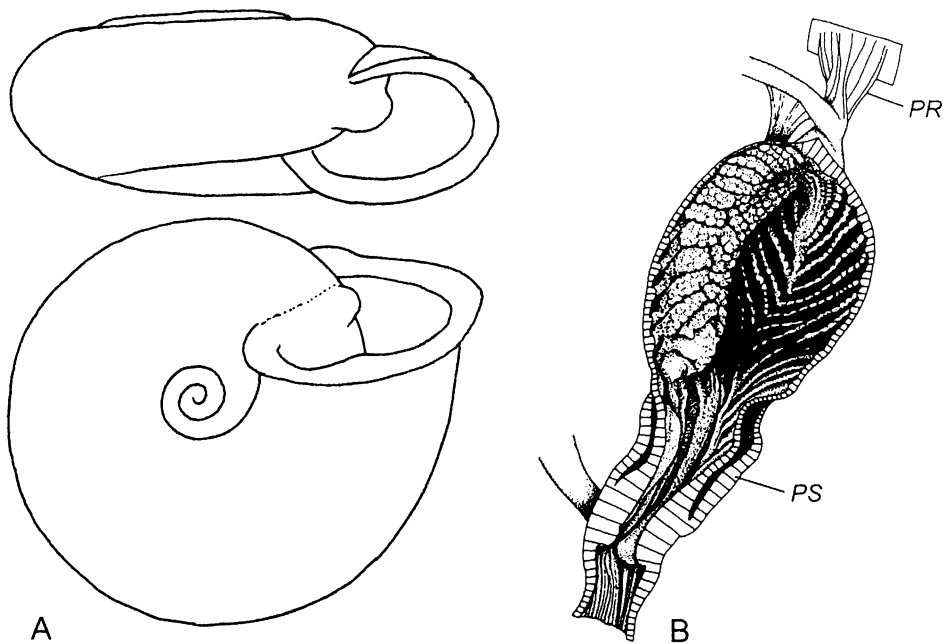


Fig. 2367 *Triodopsis (Brooksorbis) platysayoides* (Brooks, 1933).

A — shell. After Pilsbry, 1940. B — interior of penis. After Emberton, 1988.

TYPE SPECIES — *Polygyra tridentata tennesseensis* Walker et Pilsbry, 1902; OD.

Shell much depressed, of about 5 whorls. Embryonic whorls with delicate radial striae. Later whorls with weak to very strong radial ribs. Parietal tooth as in *Brooksorbis*; palatal tooth high, tiny, triangularly pointed, and marginal in position. Umbilicus rather narrow, excentric. Height 5.0-10.5, diam. 9-25 mm (8.7 × 18.2 mm).

Verge absent. Pustules on penial pilasters fused into a single, solid apical mass bearing 3-4 tiers of long, sharp spurs; wall-pustular columns completely smooth, ca. 15 in number, radiating from apical pore. Ventral penial-wall columns with pustules indistinct. Penis sheath surrounds lower part of penis.

DISTRIBUTION. U.S.A. (Tennessee, Kentucky, Alabama). 2 spp.

Triodopsis (Macmillanorbis
Emberton, 1995)

Fig. 2369

Emberton, 1995: 85.

TYPE SPECIES — *Triodopsis tridentata rugosa* Brooks et MacMillan, 1940; OD.

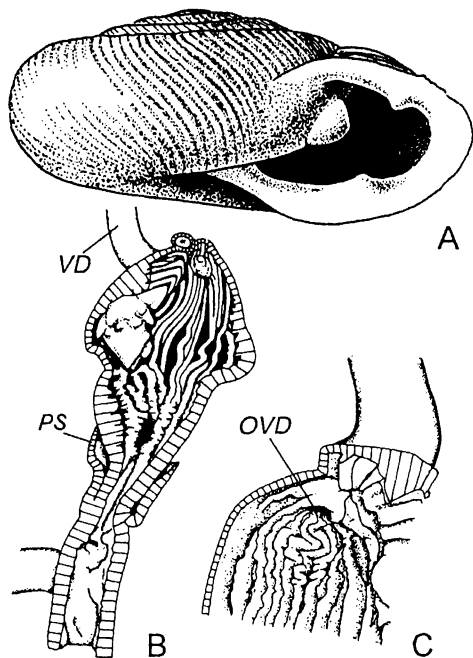


Fig. 2368. *Triodopsis (Pilsbryorbis) tennesseensis* (Walker et Pilsbry, 1902).

A — shell: Pickett Co., Tennessee. Paris. B — interior of penis. C — area around pore of vas deferens. After Emberton, 1988.

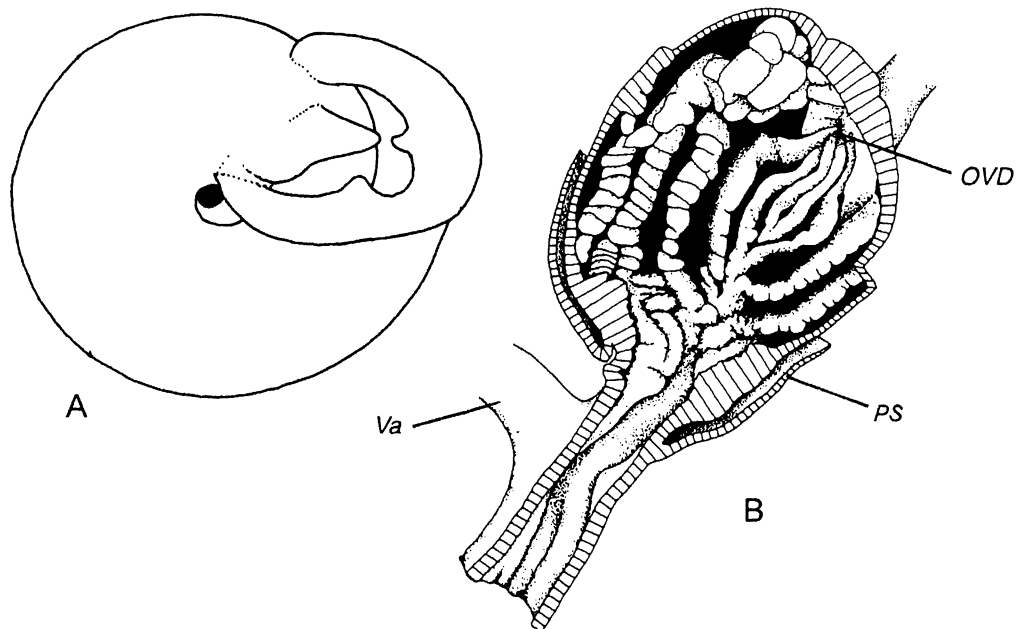


Fig. 2369. *Triodopsis (Macmillanorbis) rugosa* Brooks et MacMillan, 1940.
 A — shell. B — ! *Triodopsis (Macmillanorbis) fulciden* Hubricht, 1952. Interior of penis.
 After Emberton, 1988.

Shell somewhat depressed, rather thin, of 5.5 whorls. Embryonic whorls with very weak radial striae. Postapical whorls with very strong, moderately to widely spaced radial riblets. Aperture ovate-triangular, quite oblique; parietal tooth slightly angled and tapered toward umbilicus; basal and palatal teeth peg-like, strongly buttressed, slightly recessed. Umbilicus comparatively narrow. Height 5-6, diam. 8-11 mm.

Penial pilaster $2/3-3/4$ penis length, proximally tapered; pilastral pustules fused to form irregular polygons, each bearing 1-3 short, blunt spurs; wall-pustular columns either ca. 15 or ca. 9, partially fused basally, semi-smooth. Pore of vas deferens terminal. Penis sheath surrounds lower half of penis.

DISTRIBUTION. U.S.A. (West Virginia). 2 spp.

Triodopsis (Haroldorbis) Webb, 1959
 Fig. 2370

Webb, 1959: 25 (*Triodopsis* subg.). Emberton, 1995: 86.

TYPE SPECIES — *Triodopsis cragini* Call, 1886; OD.

Shell depressed-globose, shining, of 5 rather convex whorls. Last whorl rounded, slightly deflected. Color reddish-corneous, with yellowish blotches. Embryonic whorls smooth. Postapical whorls weakly to strongly radially striated; striae scarcely appear on base. Aperture ovate, with reflexed margins. Parietal tooth slightly to pronouncedly scooped externally; basal tooth with an umbilical extension varying from weak to equal in size to basal tooth itself, and slightly to deeply recessed; basal lip bearing a weak to strong convex ridge; palatal tooth broad, rounded, varying from moderately sized and recessed to very large and deeply recessed. Umbilicus narrow. Height 4.3-4.8, diam. 8.2-14.5 mm (4.5×8.8 mm).

Penis extremely long, thread-like (at least 25 times as long as wide). Verge absent. Penial pilaster the length of penis and bearing polygons armed with blunt spurs. Penial-wall columns merging mid-ventrally into 5-7 acute, equilateral, widely separated V-shapes bearing equally sized pustules. Penis sheath surrounds lower part of penis.

DISTRIBUTION. N America (Kansas, Missouri, Arkansas, Oklahoma, Louisiana, Texas). 3 spp.

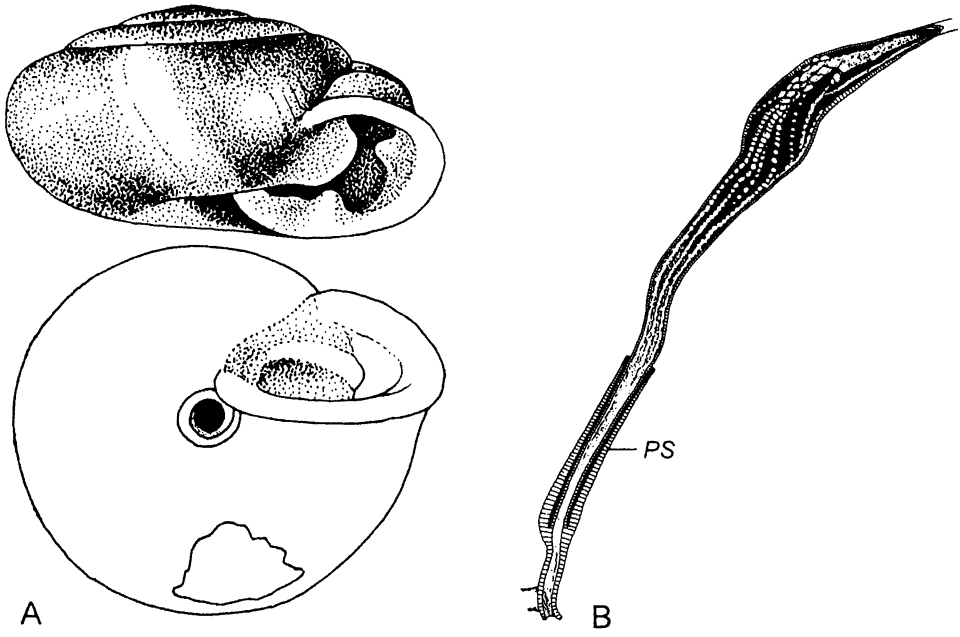


Fig. 2370. *Triodopsis (Haroldorbis) cragini* Call, 1886.
 A — shell: Thayer, Kansas. Phil. No. 60481 B — interior of penis. After Emberton, 1988.

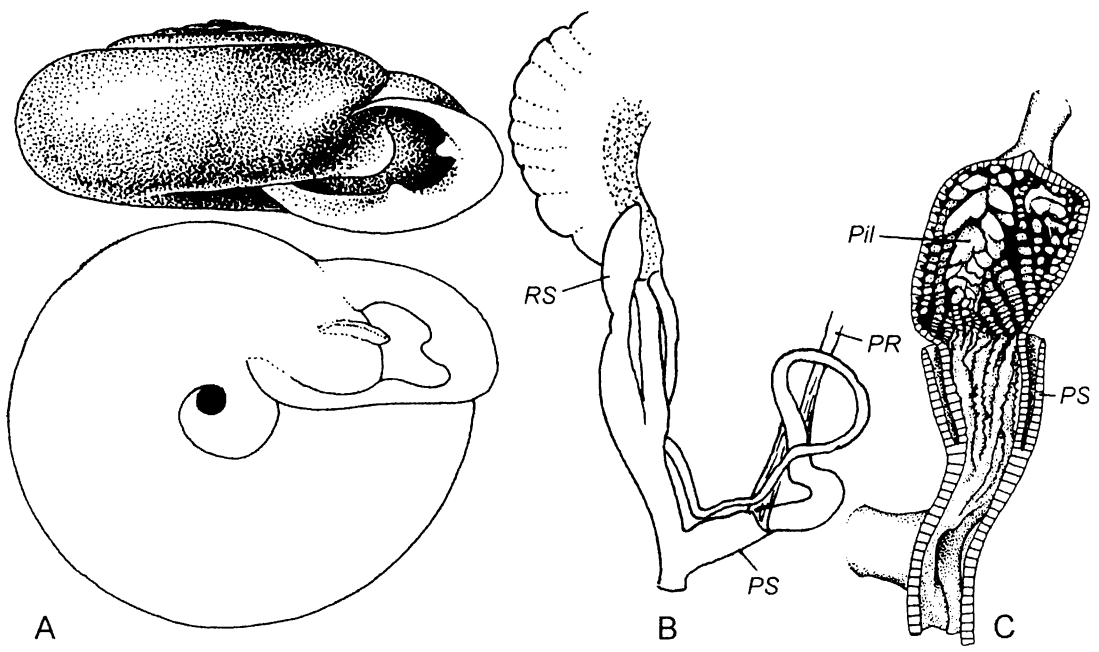


Fig. 2371 *Triodopsis (Triodopsis) tridentata* (Say, 1817).
 A — shell: Ohio. Moscow No. Lc-28154 (StB No. 03334). B — reproductive tract. After Pilsbry, 1940. C — interior of penis. After Emberton, 1988.

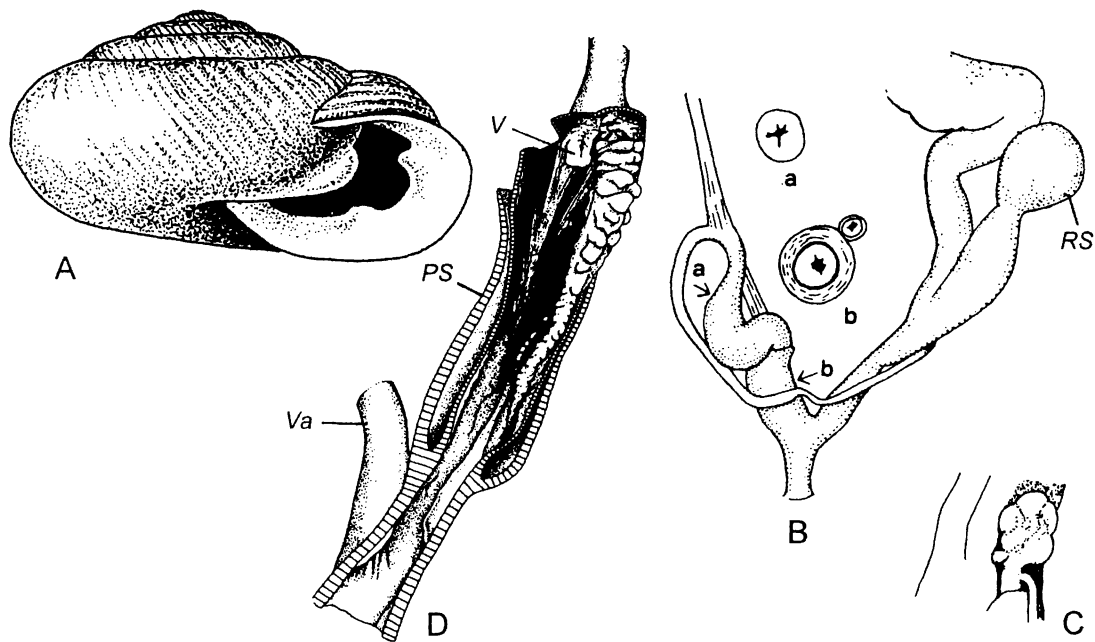


Fig. 2372. *Triodopsis (Vagvolgyorbis) juxtidentis* (Pilsbry, 1894).

A — shell: Reedville, Virginia. Paris. B — reproductive tract and cross-sections through penis. C — talon. After Pilsbry, 1940. D — interior of penis. After Emberton, 1988.

Triodopsis (Triodopsis s. str.)

Fig. 2371

Shell depressed, of 4.5-5.5 slightly convex whorls. Embryonic whorls smooth. Later whorls slightly to strongly ribbed. Parietal tooth as in *Macmillanorbis* or in *Pilsbryorbis*; basal tooth as in *Macmillanorbis* except either buttressed or unbuttressed (or rarely absent altogether); palatal tooth marginal. Umbilicus funnel-like, excentric. Height 4.5-8.5, diam. 8-18 mm (8.5 × 18.0 mm).

Mace-shaped penis with a ventrally subterminal pore and with a sub-pore region erectile as a fleshy peduncle, and derivations thereof (like *Shelfordorbis*). Penial pilaster penis length, bearing polygons armed with blunt spurs. Penial-wall columns merging mid-ventrally into 5-7 acute, equilateral, widely separated V-shapes bearing equally sized pustules (like *Haroldorbis*). Penis sheath surrounds lower part of penis.

DISTRIBUTION. E America (Ontario, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, West Virginia, Ohio, Michigan, Indiana, Illinois, Kentucky, North Carolina,

South Carolina, Alabama, Georgia, Tennessee, Alabama, Mississippi, Florida). 9 spp.

Triodopsis (Vagvolgyorbis)

Emberton, 1995)

Fig. 2372

Emberton, 1995: 86.

TYPE SPECIES — *Polygyra tridentata juxtidentis* Pilsbry, 1894; OD.

Shell moderately depressed to much flattened, of 4.5-6 whorls. Last whorl rounded. Embryonic whorls with variously developed, fine radial striae. Aperture dished but not so deeply as in *Shelfordorbis*; parietal tooth as in *Shelfordorbis*; palatal tooth marginal to moderately recessed, narrow to moderately broad, squared to pointed; basal tooth marginal, but rarely buttressed on columellar side. Umbilicus moderately to very wide. Height 4.5-10.2, diam. 9.8-19.5 mm (7.6 × 13.2 mm).

Penis mace-shaped, moderately long, with a ventrally subterminal pore and with sub-pore region erectile as a fleshy peduncle (verge). Penial pilaster of penis length and bearing polygons armed with blunt spurs.

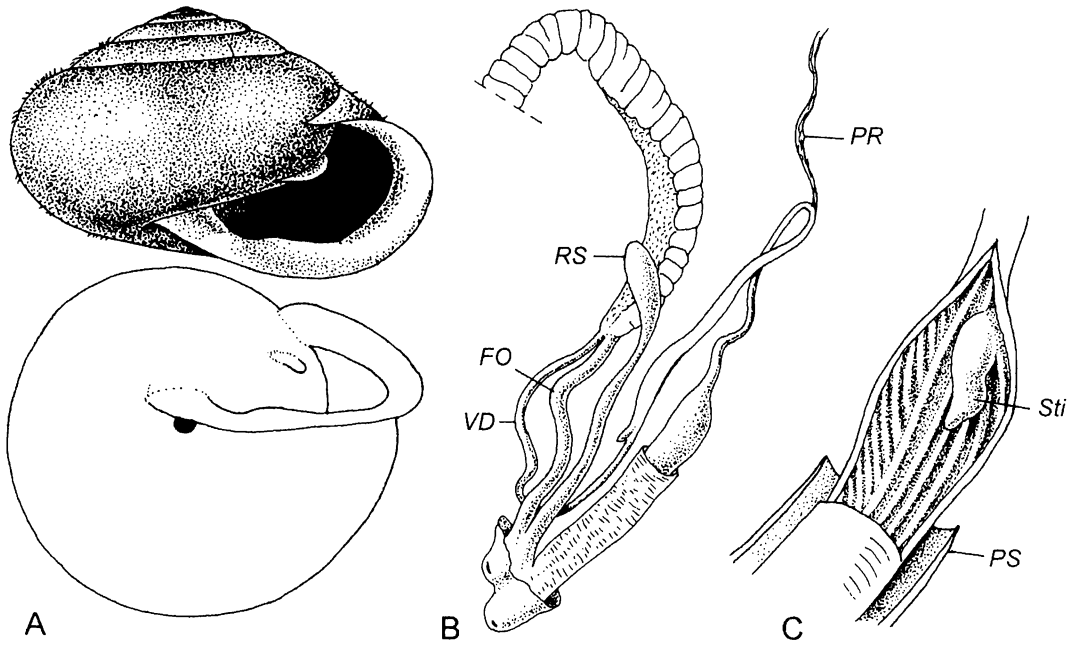


Fig. 2373. *Hochbergellus hirsutus* Roth et Miller, 1992. Sisters Rock, ca. 3.8 km N of Euchre Creek at Ophir, Curry Co. Oregon, July 16, 1991 Paratype.

A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28155 (shell and soft parts separately). (StB No. 35555).

Penial-wall columns merging mid-ventrally into 5-7 acute, equilateral, widely separated V-shapes bearing equally sized pustules. Position of ejaculatory pore approximately 2/5-way from penial apex, peduncle large (like *Haroldorbis*). Penis sheath surrounds nearly entire penis.

DISTRIBUTION. N America (New York, New Jersey, Pennsylvania, Maryland, District of Columbia, Virginia, West Virginia, Ohio, Indiana, Illinois, Missouri, Kansas, Arkansas, Oklahoma, North Carolina, South Carolina). 4 spp.

POLYGYRINAE Pilsbry, 1895

Vas deferens evenly slender. Flagellum vestigial or missing. Epiphallus present or absent, sometimes poorly expressed. Penis internally without verge, with several pilasters, stimulator(s) or apical chalice. Penis sheath present or absent. Penial retractor inserted on penis apically. Spermathecal stalk slender.

DISTRIBUTION. N America to Caribbean Islands.

Vespericolini Emberton, 1994

Emberton, 1994: 251

Parietal tooth in aperture, when present, vestigial. Free margins of aperture lack armature.

Flagellum vestigial, sometimes concealed as a small pocket in walls of epiphallus. Epiphallus rather long, slender. Penis internally with folds which may be either smooth or broken into series of polygonal tubercles. Penial gland absent.

DISTRIBUTION. NW of USA and adjacent territory of Canada.

Hochbergellus Roth et Miller, 1992

Fig. 2373

Roth & Miller, 1992: 222.

TYPE SPECIES — *Hochbergellus hirsutus* Roth et Miller, 1992; OD.

Shell depressed-conic, rather thin, of about 6 slightly convex whorls. Last whorl rounded, moderately descending in front, constricted behind aperture. Color tan, peristome white to slightly pinkish. Embryonic whorls with coarse, irregularly spaced papillae in diagonal trends and low, crowded, more or less granulose rugae.

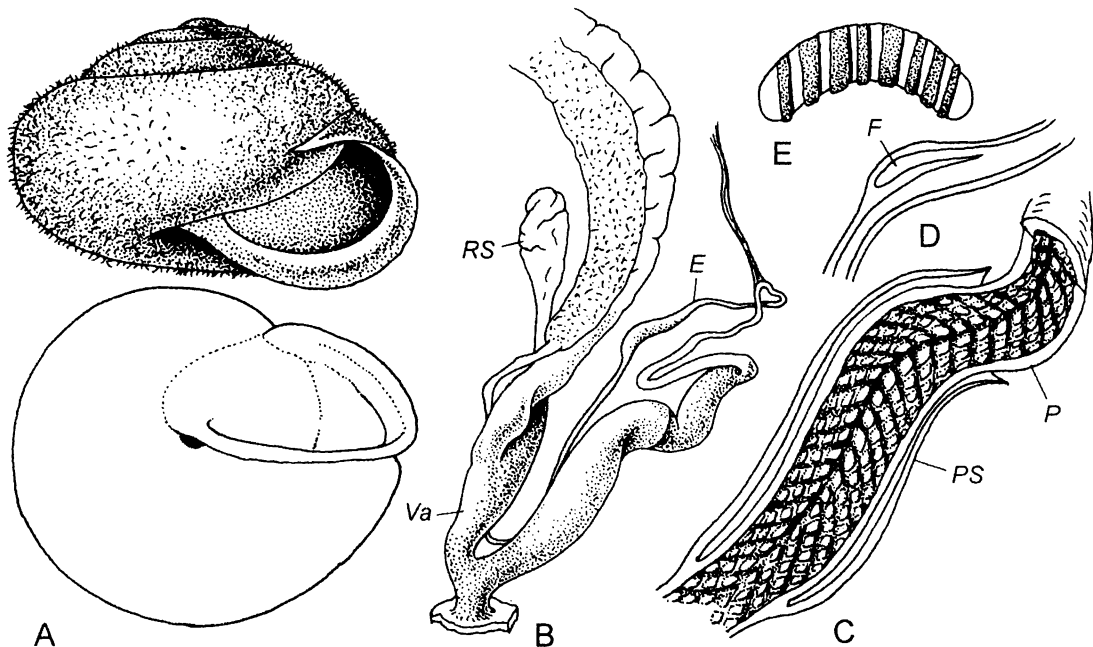


Fig. 2374. *Vespericola pilosa* (Henderson, 1928).

A — shell: Point Reyes National Reserve Park, N California. Moscow No. Lc-28153. B, C, D, E — Marin Co., California, April 19, 1989. B — reproductive tract. C — interior of penis. D — interior of proximal part of vas deferens. E — jaw. Moscow

Postapical sculpture weak, of fine radial wrinkles; besides, there are very fine, short hairs. Aperture broadly ovate, moderately oblique, with well reflexed, expanded margins; parietal tooth small; basal margin with a light thickening. Umbilicus narrow, partly covered. Height 9.0-12.5, diam. 13.7-17.2 mm (11.7 × 17.2 mm).

Flagellum rudimentary. Epiphallus long, slender. Penis subcylindrical, internally with small stimulator located in upper part of penis; inner surface of penis with axial and oblique folds. Penis sheath surrounds lower 2/3 of penis. Penial retractor attached to middle of epiphallus. Free oviduct very long. Vagina extremely short. Spermathecal stalk rather short, reservoir lies on lower part of spermoviduct.

DISTRIBUTION. NW of the U.S.A. (Oregon). 1 sp.

Vespericola Pilsbry, 1939

Fig. 2374

Pilsbry, 1939: XVII.

TYPE SPECIES — *Polygyra columbiana pilosa* Henderson, 1928; OD.

Shell globose-depressed, (moderately)

thin, of 5-6 rather convex whorls. Last whorl rounded, markedly deflected. Color mostly dark-brown or blackish. Embryonic whorls, after initial smooth area, closely granulate, or granules may partially run into striae; they fade out near lower suture; sometimes granulation absent and embryonic whorls smooth except for faint, irregular radial lines. Postapical whorls with weak radial wrinkles and usually hairs or their scars. Aperture broadly lunate, moderately oblique, with reflexed but not recurved lip; parietal tooth sometimes present. Umbilicus very narrow to moderately broad. Height 9-10, diam. 13-19 mm (9.6 × 13.5 mm).

Externally flagellum not visible but there is a rudimentary flagellum as a short branch of cavity at end of epiphallus. Epiphallus long, slowly tapering toward both penis and vas deferens, passing gradually into latter. Penis internally with series of rather large polygons arranged into oblique rows. Penial retractor inserted on epiphallus; sometimes there is an additional branch running to upper edge of penis sheath. Spermathecal stalk swollen, reservoir lies on distal half of spermoviduct.

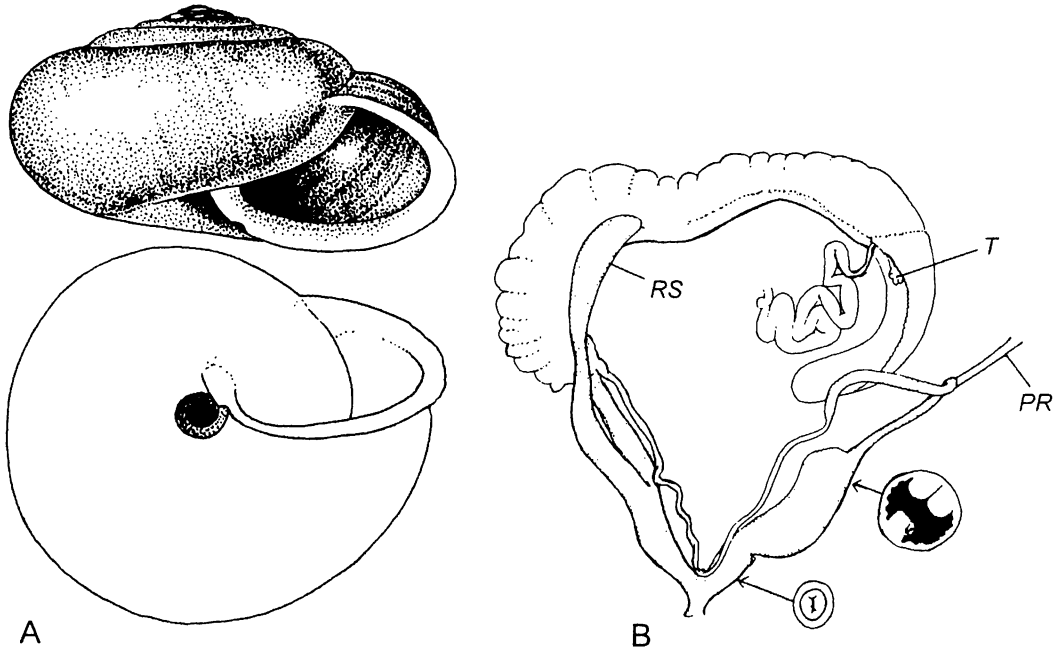


Fig. 2375. *Cryptomastix (Bupiogona) hendersoni* (Pilsbry, 1928).

A — shell: The Dalles, Oregon. Holotype. Phil. No. 145479 B — reproductive tract. After Pilsbry, 1940.

DISTRIBUTION. NW America (S Alaska, British Columbia, Pacific states of the U.S.A. to Monterey). About 20 spp. and subsp. Walter Miller told me (pers. comm.) that there are some more undescribed species.

Allogonini Emberton, 1995

Emberton, 1995: 87

Aperture with or without parietal tooth. Baso-columellar tooth absent or represented by a smoothed callosity Palatal tooth absent (exception: *Trilobopsis* has tubercular palatal tooth).

Flagellum missing. Epiphallus rather long, slender. Clasping disc during mating as voluminous as inserted portion of penis, or derivatives thereof. Penis internally with minute pustulate sculpture. Penial gland absent. Penial retractor attached by 2 arms to epiphallus and penis. Spermathecal stalk enlarged.

DISTRIBUTION. N America.

Cryptomastix Pilsbry, 1939

Pilsbry, 1939: XVII.

TYPE SPECIES — *Polygyra (Triodopsis) mul-lani* var. *olneyae* Pilsbry, 1891; OD.

Shell more or less depressed, glossy, of 5-6 moderately convex whorls. Body whorl rounded, moderately deflected. Embryonic whorls smoothish or radially striated (mainly a short distance below suture). Postapical whorls lack strong regular sculpture; elements of spiral striation and small hairs may be present. Aperture ovate, rather oblique, with reflexed margins; parietal tooth present or absent. Umbilicus narrowly open to closed.

Penis internally with paired dorsal pilaster, or derivative thereof. Penis sheath surrounds lower half of penis. Free oviduct and vagina subequal in length. Spermathecal stalk rather short, swollen basally; reservoir lies on lower half of spermoviduct.

DISTRIBUTION. SW Canada (British Columbia with Vancouver Island), north-west of the U.S.A. (Washington, Oregon, Idaho, Montana).

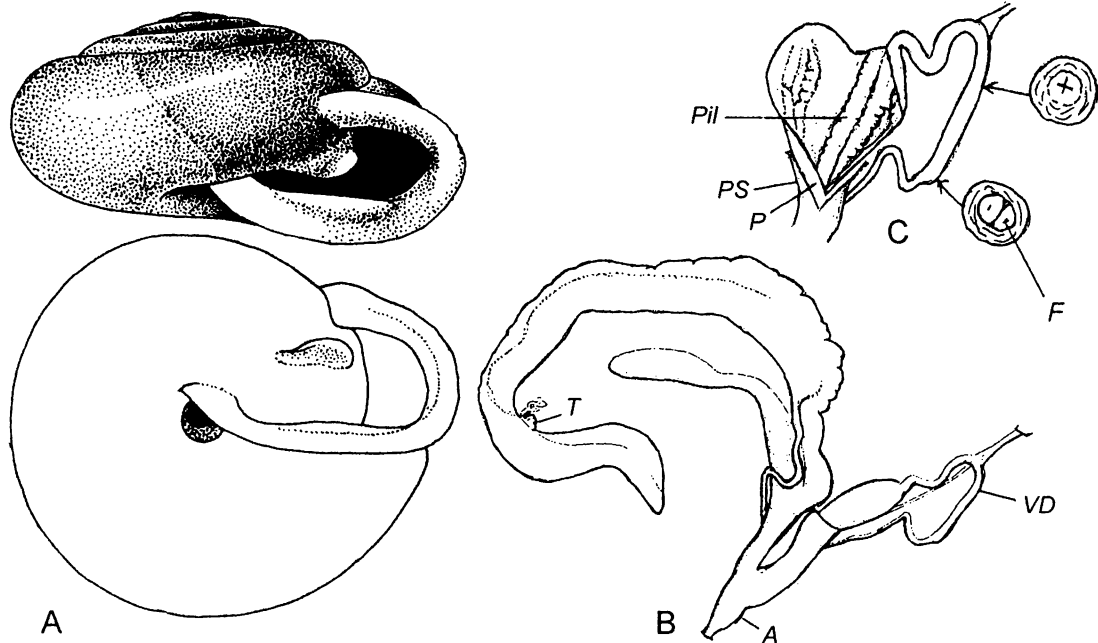


Fig. 2376. *Cryptomastix (Cryptomastix) mullani olneyae* (Pilsbry, 1891).
 A — shell: W of North Lapwai, Iava, Nez Perce Co., Idaho. Moscow No. Lc-28164 (Phil. No. 126). B — reproductive tract. C — interior of penis. After Pilsbry, 1940.

Cryptomastix (Bupiozona)
 Webb, 1970)
 Fig. 2375

Webb, 1970a: 77

TYPE SPECIES — *Polygyra mullani hendersoni* Pilsbry, 1928; OD.

Shell thin, fragile, translucent, of 5.5 slightly convex whorls. Color greenish or brownish. Postapical whorls with exceptionally delicate spiral threadlets. Aperture ovate, moderately oblique, with thin, reflexed margins; parietal tooth weak or missing; basal margin not thickened. Umbilicus rather narrowly open. Height 8.2-9.0, diam. 14.5-16.2 mm (8.5 × 16.0 mm).

Clasping disk rugose.

DISTRIBUTION. North-west of the U.S.A. (Washington, Oregon, Idaho). 1 sp.

Cryptomastix (Cryptomastix s. str.)
 Fig. 2376

Shell moderately thin, somewhat translucent, of 5-6 slightly convex whorls. Postapical sculpture very weak and irregular. Aperture ovate, quite oblique, with well developed parietal tooth; basal margin with

elongated callosity. Umbilicus rather narrow, may be partially covered. Height 5.7-15.6, diam. 10.0-23.2 mm (7.7 × 14.4 mm).

Flagellum vestigial. Epiphallus present, well differentiated from vas deferens. Penis internally with 1 principal pilaster and a few smaller ones. Clasping disk smooth.

DISTRIBUTION. SW Canada (Vancouver Island), north-west of the U.S.A. (Washington, Oregon, Idaho, Montana). 3 spp.

Cryptomastix (Micranepsia)
 Pilsbry, 1940)
 Fig. 2377

Pilsbry, 1940: 872 (pro sect.).

TYPE SPECIES — *Helix germana* Gould, 1851; OD.

Shell of about 5 moderately convex whorls. Postembryonic whorls minutely hairy. Aperture with an oblique, large parietal tooth and reflexed but not curved lip, which is thickened within but toothless. Umbilicus very narrow to closed. Height 4.0-5.5, diam. 6.5-8.2 mm (4.2 × 6.6 mm).

Reproductive tract as in *Cryptomastix s. str.* except that penial retractor inserted

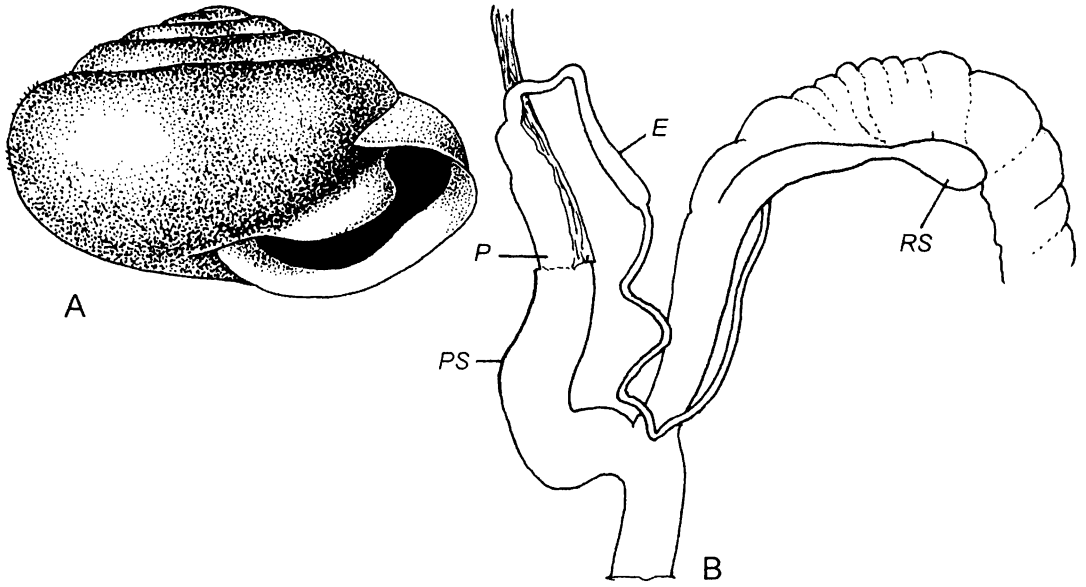


Fig. 2377 *Cryptomastix (Micranepsia) germana* (Gould, 1851).

A — shell: Seattle, Washington. Vienna No. K 30227 B — reproductive tract. After Pilsbry, 1940 (upper parts omitted).

lower on epiphallus, and vagina about equal to spermatheca in length.

DISTRIBUTION. NW America (British Columbia, Washington, Oregon). 1 sp. with 2 subsp.

Allogona Pilsbry, 1939

Pilsbry, 1939: XVII.

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

Shell depressed-globose to strongly depressed, rather solid, of 5.5 slightly to moderately convex whorls. Body whorl rounded, a little descending in front. Embryonic whorls smooth or radially wrinkled. Postapical whorls radially striated or malleated, usually with minute, impressed spiral lines. Aperture rounded, with reflexed margins; baso-columellar margin usually with a blunt tooth or a low callus; no other teeth. Umbilicus narrowly to moderately open.

Flagellum vestigial, as a tiny pocket within wall of epiphallus. Penial retractor attached to distal part of epiphallus. Free oviduct somewhat longer than vagina. Spermathecal stalk rather short; reservoir usually attending midway of spermoviduct.

DISTRIBUTION. SW Canada (British Columbia) and most territory of the U.S.A.

Allogona (Allogona s. str.)

Fig. 2378

Shell much flattened. Color chamois, monochromatic or with a cinnamon band above periphery; peristome white. Embryonic whorls with a few wrinkles following smooth tip, then whorls smooth except for short striae radiating from suture. Height 12.0-15.5, diam. 25.0-32.7 mm (12.8 × 25.2 mm).

Stimulator, wide at its base, projects forward in a single finger-like process.

DISTRIBUTION. Middle, eastern and southern United States (New York, Pennsylvania, Maryland, Virginia, West Virginia, Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Nebraska, Kansas, Missouri, Kentucky, Tennessee, Alabama, Mississippi). 1 sp.

Allogona (Dysmedoma) Pilsbry, 1939

Fig. 2379

Pilsbry, 1939: XVII.

TYPE SPECIES — *Helix townsendiana* Lea, 1838; OD.

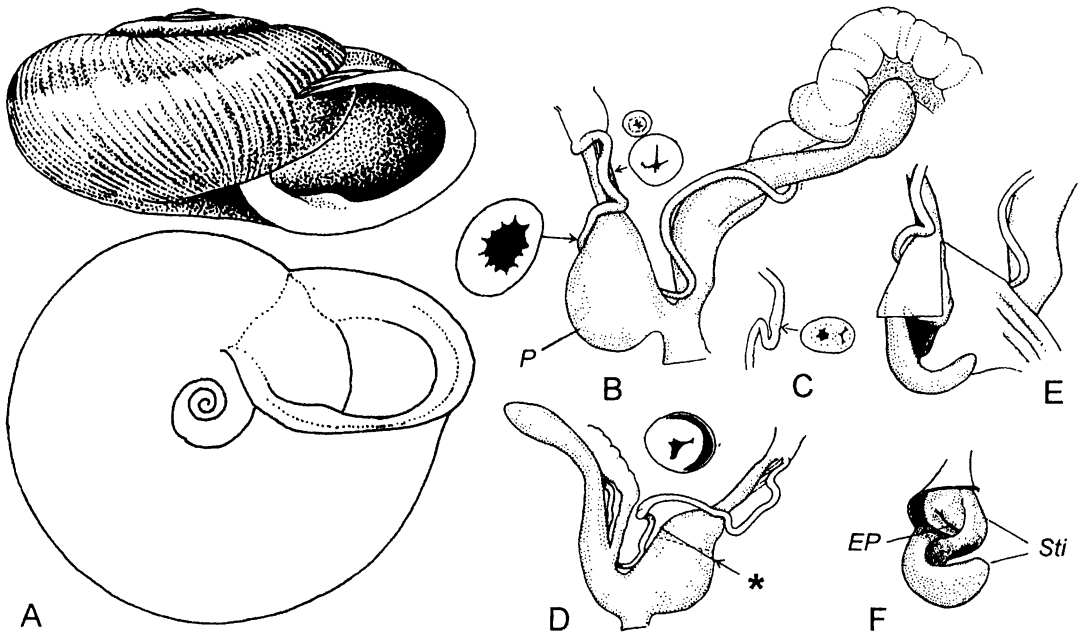


Fig. 2378. *Allogona (Allogona) profunda* (Say, 1821).

A — shell: Ohio. Moscow No. Lc-28158 (StB No. 03761). B, D — reproductive tract of two specimens. C — detail of end of epiphallus and beginning of vas deferens, with cross-section showing vestigial flagellum. E, F — two views of penis wall opened, showing epiphallic pore. After Pilsbry, 1940.

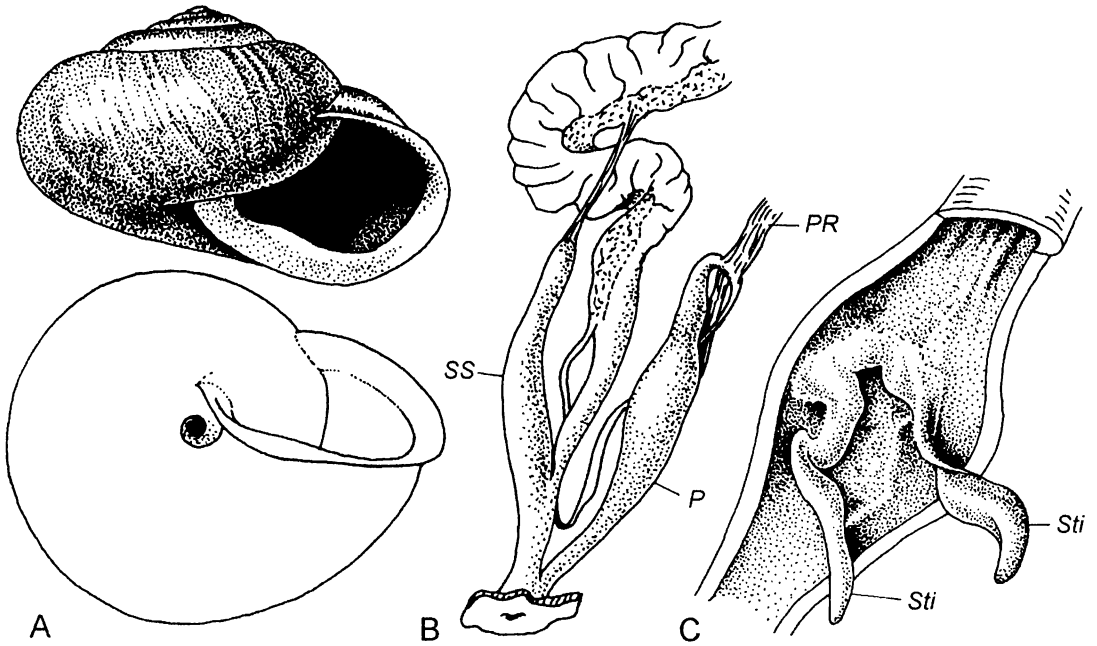


Fig. 2379. *Allogona (Dysmedoma) townsendiana* (Lea, 1838).

A — shell: Auburn, King Co., Washington. Moscow No. Lc-16017 B, C — Kirkland, Washington, September 1969. B — reproductive tract. C — interior of penis. Leiden.

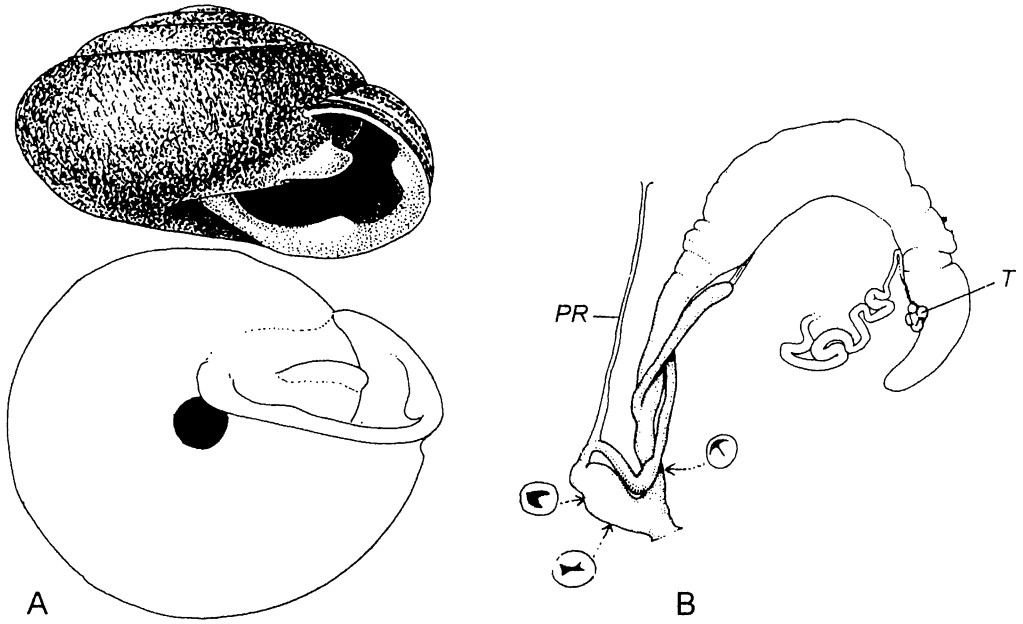


Fig. 2380. *Trilobopsis loricatus* (Gould, 1846).

A — shell: California. Paris. B — reproductive tract. After Pilsbry, 1940.

Shell depressed-globose. Color uniformly tawny-olive to cinnamon brown; aperture margins white or creamy. Embryonic whorls almost smooth. Height 11.1-22.7, diam. 18.2-33.0 mm (12.5 × 28.0 mm).

Stimulator has 2 irregular depending processes.

DISTRIBUTION. NW America (British Columbia, Montana, Idaho, Oregon, Washington). 3 spp.

Trilobopsis Pilsbry, 1939

Fig. 2380

Pilsbry, 1939: XVI. Pilsbry, 1940: 778.

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

Shell moderately to strongly depressed, of about 5 moderately convex whorls. Last whorl rounded, deflected. Color uniformly yellowish or buff. Embryonic whorls smooth except for some weak radial striae below suture. Subsequent whorls with interrupted thread-like or scale-like periostracal processes. Aperture narrow, oblique, with reflexed margins; parietal tooth curved, basal and palatal teeth tuberculiform, standing on lip. Umbilicus minutely to narrowly

open. Height 2.5-5.5, diam. 5.6-8.8 mm (5.5 × 8.5 mm).

Talon with a rather long stalk, free from albumen gland. Vas deferens very short. Epiphallus well differentiated from vas deferens. Flagellum absent. Penis stout, bulky, internally with a non-sharp longitudinal pilaster and a few weak folds. Penis sheath missing. Penial retractor attached to distal part of epiphallus. Free oviduct and vagina subequal in length. Spermathecal shaft rather short, may be either swollen, or not noticeably so. Reservoir shortly ovate, indistinctly demarcated from its duct, lies on lower half of spermoviduct.

DISTRIBUTION. NW of the U.S.A. (SW Oregon to San Francisco Bay region, and inland to Mariposa and Fresno Counties, California). 5 spp. with a few forms.

Ashmunellini Webb, 1954

Webb, 1954a: 18 (pro subfam). Emberton, 1995: 87

Aperture with 0-5 teeth. Parietal tooth, when present, not large, lamellar.

Flagellum extremely short. Epiphallus

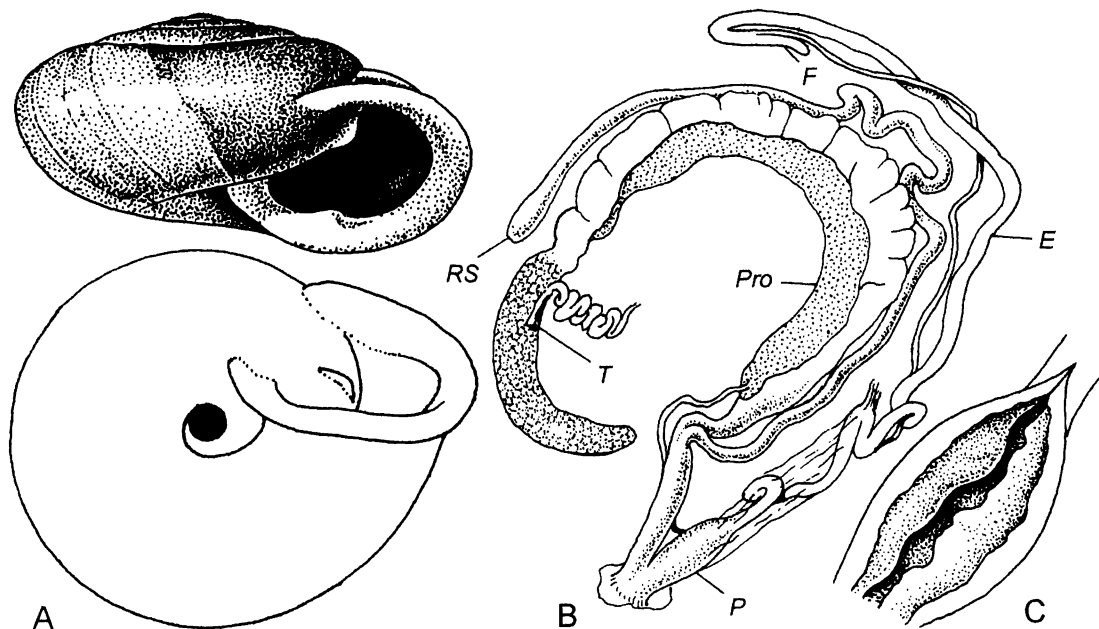


Fig. 2381 A — *Ashmunella rhyssa miorhyssa* (Dall, 1899).

A — shell: New Mexico, South Fork, Sierra Blanca, 8000 ft. Moscow No. Lc-28159. B, C — ! *Ashmunella chiricahuana* (Dall, 1895). Cave Creek Canyon near Portal, Chiricahua Mts., Arizona, April 16, 1993. B — reproductive tract. C — interior of penis. Moscow No. Lc-25684.

enormously long (longer than spermo-oviduct). Clasping disk during mating as voluminous as inserted portion of penis. Verge absent. Penial gland missing. Spermathecal stalk very long. Spermatophore conchyolinous, ornate.

DISTRIBUTION. Mountains of New Mexico and SE Arizona; S Mexico.

Ashmunella

Pilsbry et Cockerell, 1899

Fig. 2381

Pilsbry & Cockerell, 1899: 107

TYPE SPECIES — *Polygyra rhyssa miorhyssa* Dall, 1899; SD Pilsbry, 1905.

Shell depressed to much flattened, rarely lentiform, thin to rather solid, of 5-6.5 slightly convex whorls. Last whorl rounded to sharply angled or even keeled, slightly to moderately descending in front. Color pale-yellow to chestnut, without bands. Embryonic shell of 1.5 whorls, initially smooth but radial striae soon appearing below suture and, on last half whorl, extending across whorl, either as continuous striae or interrupted into long granules. Later whorls

mostly with weak, irregular sculpture of radial wrinklets (rarely ribs) and sometimes with traces of spiral engraved lines. Aperture rounded, with thickened, well reflexed margins; teeth number 0-5. Umbilicus open, rather narrow to moderately broad. Height 5-14, diam. 9-23 mm (8.2 × 15.0 mm).

Talon varying from lobular to nearly simple. Epiphallus very long. Penis short, more or less distinctly bipartite, internally with unequal axial pilasters. Penial retractor inserted on epiphallus (rarely wanting). Penis sheath present, connected with intimate sheath of epiphallus by a weak retentor. Reservoir of spermatheca poorly defined.

DISTRIBUTION. Mountains of New Mexico and SE Arizona; Mexico south to about 28°15' N in the Sierra Madre of Chihuahua. About 50 spp.

Stenotremini Emberton, 1994

Emberton, 1994: 251; 1995: 88.

Aperture with a straight, even-height parietal tooth isolated from both umbilicus

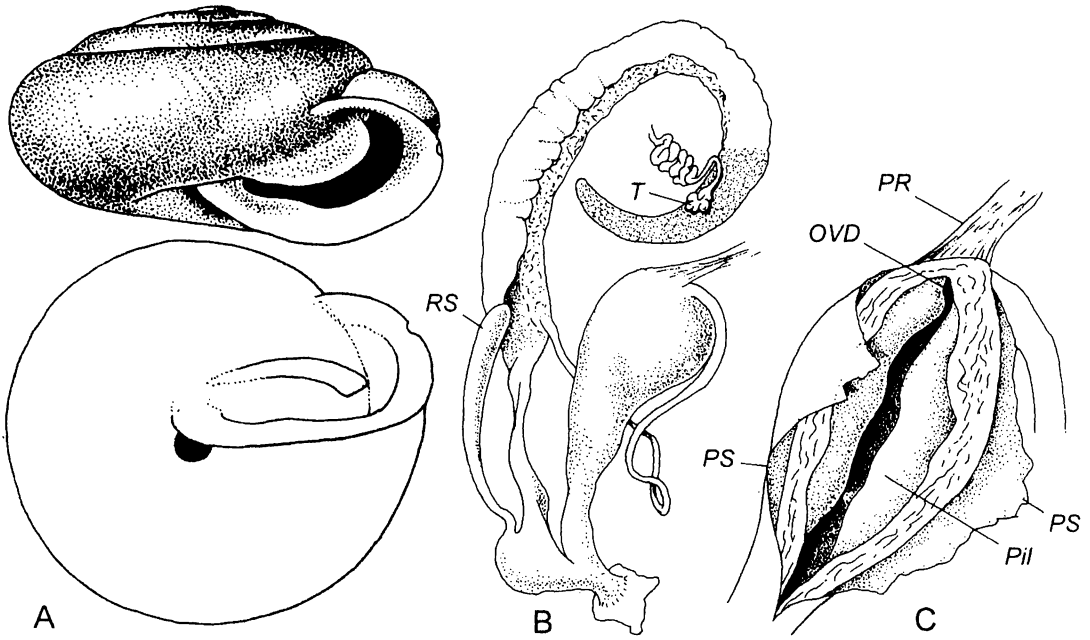


Fig. 2382. *Euchemotrema monodon* (Rackett, 1821).

A — shell: Iowa. Phil. No. 361840 (as *leai* Binney, 1840). B, C — 1/10 mile SW of Beck Lake, Northfield Township, Cook Co., Illinois, October 25, 1992. B — reproductive tract. C — interior of penis. Moscow No. Lc-25688 (gift of John Slapcinsky).

and aperture; complete basal lamella having a central trough half or more as broad as the lamella.

Flagellum absent. Epiphallus shorter than spermoviduct. Verge absent. Penial lateral pilasters apically modified into 2 fleshy-walled cups. Penial gland absent. Spermathecal stalk short.

DISTRIBUTION. E and Central U.S.A.

Euchemotrema Archer, 1939

Fig. 2382

Archer, 1939a: 98 (*Stenotrema* sect.). Pilsbry, 1940: 675. Emberton, 1995: 88.

TYPE SPECIES — *Helix monodon* Rackett, 1821; SD Archer, 1939b.

Shell flattened to lenticular or subglobular, moderately thin, of 4.5-6.5 slightly convex to flat whorls. Last whorl rounded, keeled or bluntly subangulate below suture, well deflected. Color yellowish-grey to brown; peristome white to brownish. Embryonic whorls with fine sculpture of radially lengthened granules, often running into striae, and generally almost or quite effaced in adult shells. Postapical whorls

with faint radial lines; variously developed hairs may be present. Aperture lunate, oblique, with well reflexed, thickened within margins; parietal tooth short, straight; basal margin simple, without a tooth or notch. Umbilicus closed to moderately open. Height 3.9-7.5, diam. 6.7-11.4 mm (4.5 × 8.6 mm).

Talon distinctly multilobate. Distal section of vas deferens externally not modified into epiphallus. Penis clavate, thick-walled, internally with a pair of longitudinal fleshy pilasters. Penis sheath thin, surrounds entire penis. Penial retractor attached to penis apically at entrance of epiphallus. Free oviduct longer than vagina that may be swollen. Reservoir of spermatheca poorly defined. During mating vagina everted and receives ejaculate from a pocket at tip of penis.

DISTRIBUTION. N America (Ontario, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Michigan, Ohio, Kentucky, Indiana, Illinois, Wisconsin, Minnesota, Iowa, South Dakota, Nebraska,

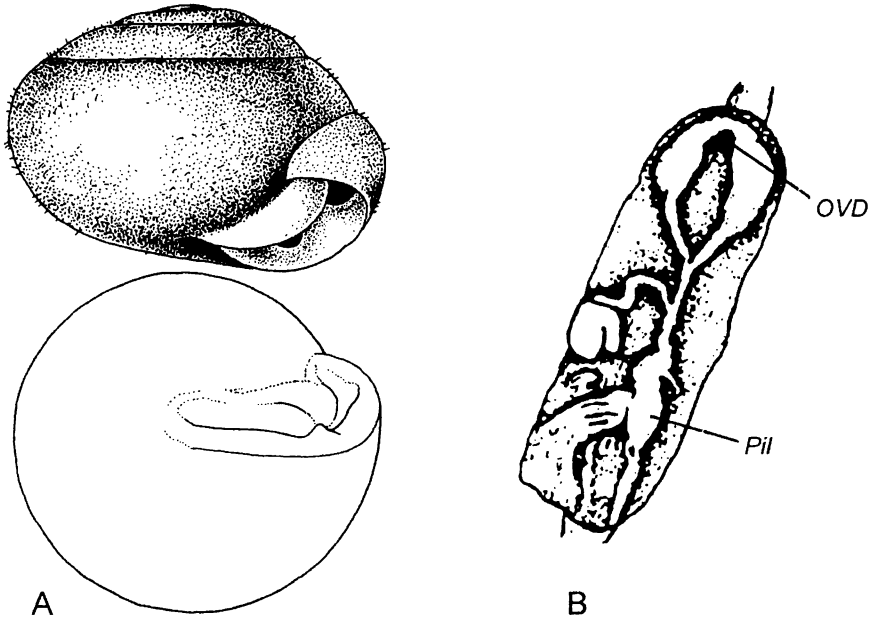


Fig. 2383. *Stenotrema (Cohutta) cohuttense* Clapp, 1914.

A — shell: Tennessee. Paris. B — interior of penis. After Emberton, 1995.

Kansas, Missouri, Georgia, Tennessee, Alabama). 9 spp., subsp. & forms.

Stenotrema Rafinesque, 1819

Rafinesque, 1819: 425.

— ? *Chimotrema* Rafinesque, 1819: 425 (t.-sp. *Chimotrema planiuscula* Rafinesque, 1819, nom. dubium).

— *Stenostoma* Rafinesque, 1831: 3 (t.-sp. *Stenostoma convexa* Rafinesque, 1819; monotypy).

Pilsbry, 1940: 639. Emberton, 1995: 88.

TYPE SPECIES — *Stenotrema convexa* Rafinesque, 1819 (nom. nud.) = *Helix stenotrema* L. Pfeiffer, 1842; SD Pilsbry, 1930c, as "*S. convexa* = *H. stenotrema*"

Shell globose-conic to lens-shaped, moderately thin, of 5-6.25 tightly coiled, moderately convex to almost flat whorls. Last whorl evenly rounded to sharply carinate, abruptly descending in front. Color buff to dark-brown. Embryonic whorls generally with a dense pattern of radially lengthened granules, or radially striated. Subsequent whorls with a minute radial lineolation and usually more or less hairy. Aperture semilunate, much narrowed by elements of armature. Parietal tooth long, lamellar, extending from umbilicus into aperture. Basal lip calloused, often notched in middle or

bluntly toothed. Baso-lamellar central trough about 1/3 or less as broad as lamella. Columella with a vertical buttress within body whorl at its last fourth. Umbilicus narrow or closed.

Jaw with 8-13 broad, close ribs, much wider than intervals between them.

Reproductive tract as in other Polygyridae, but penis passes into a short epiphallus, differentiated from vas deferens by its greater diameter. Penis internally with several longitudinal pilasters. Verge absent. Spermathecal stalk short, slender; reservoir oblong, adhering lower half of spermo-viduct.

DISTRIBUTION. Humid eastern N America from boreal zone to Gulf of Mexico.

Stenotrema (Cohutta) Archer, 1948

Fig. 2383

Archer, 1948: 49 (pro sect.).

TYPE SPECIES — *Stenotrema cohuttense* Clapp, 1914; OD.

Shell globose. Hairs on postapical whorls, when present, very small. Height 4-5, diam. 6.0-7.3 mm (4.4 × 7.0 mm).

A single penial lateral pilaster apically modified into a symmetrical, fleshy-walled cup

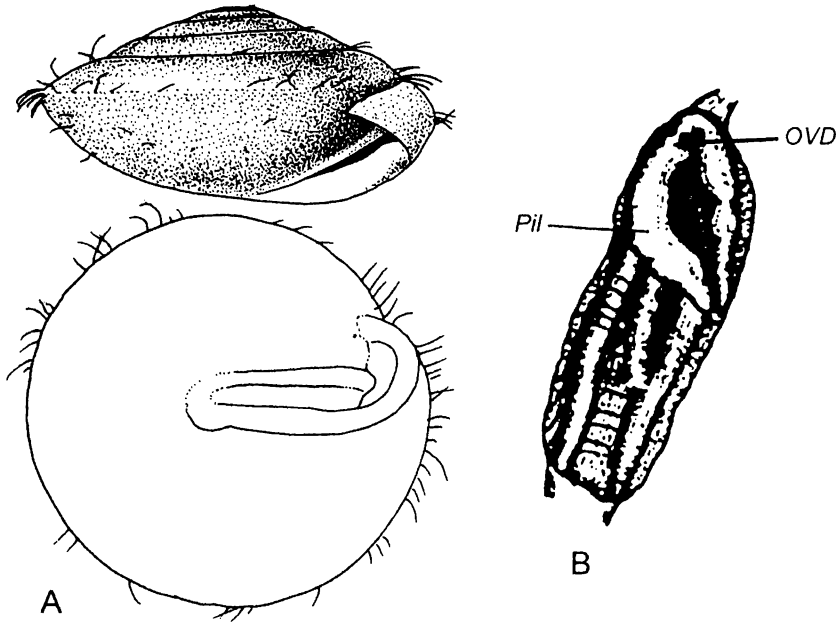


Fig. 2384. *Stenotrema (Archerelix) barbiger* (Redfield, 1856).

A — shell: Near Black Warrior Co., Alabama. Paris. B — interior of penis. After Emberton, 1995.

1/3 as long as penis, with a medial branch leading to a medial fleshy protuberance.

DISTRIBUTION. U.S.A. (Georgia, Tennessee). 1 sp.

Stenotrema (Archerelix)

Emberton, 1995)

Fig. 2384

Emberton, 1995: 88.

TYPE SPECIES — *Helix barbiger* Redfield, 1856; OD.

Shell lens-shaped. Hairs on postapical whorls long. Height 4.5-5.6, diam. 7.0-9.8 mm (4.6 × 9.0 mm).

Penis internally with a pair of large, fleshy lateral pilasters, both bearing apical V- or U-shaped structures, one up and one down:

DISTRIBUTION. U.S.A. (Pennsylvania, West Virginia, Virginia, Kentucky, North Carolina, Tennessee, South Carolina, Georgia, Alabama, Arkansas, Oklahoma). 4 spp.

Stenotrema (Toxotrema)

Rafinesque, 1819)

Fig. 2385

Rafinesque, 1819: 425.

— *Toxostoma* Rafinesque, 1831: 3 [t.-sp. *Toxostoma globularis* Rafinesque, 1819 (nom. nud.) (= *Helix hirsuta* Say, 1817); SD Pilsbry, 1930c].

Emberton, 1995: 89.

TYPE SPECIES — *Helix hirsuta* Say, 1817; SD Pilsbry, 1930b.

Shell (sub)globose. Hairs on postembryonic whorls short. Height 4.2-7.2, diam. 6.2-12.7 mm (7.0 × 9.6 mm).

Penis internally with 1 of 2 large, fleshy, lateral pilasters bearing an apical, cup-like depression about 1/10 as long as penis.

DISTRIBUTION. U.S.A. (New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Michigan, Wisconsin, Minnesota, Ohio, Indiana, Illinois, Iowa, Kansas, Missouri, Kentucky, Tennessee, Arkansas, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Oklahoma, Louisiana). 4 spp.

Stenotrema (Pilsbrelax)

Emberton, 1995)

Fig. 2386

Emberton, 1995: 89.

TYPE SPECIES — *Polygyra stenotrema exodon* Pilsbry, 1900; OD.

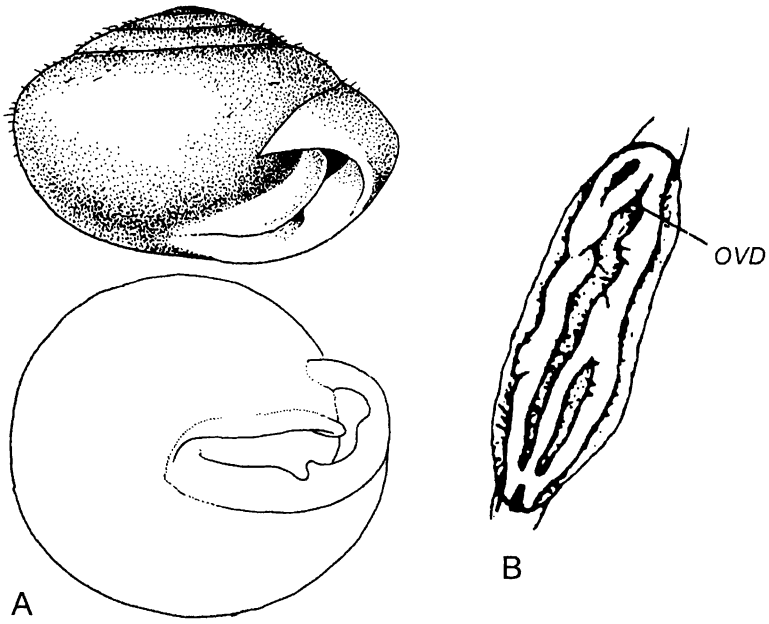


Fig. 2385. *Stenotrema (Toxotrema) hirsuta* (Say, 1817).
 A — shell: Tennessee. Paris. B — interior of penis. After Emberton, 1995.

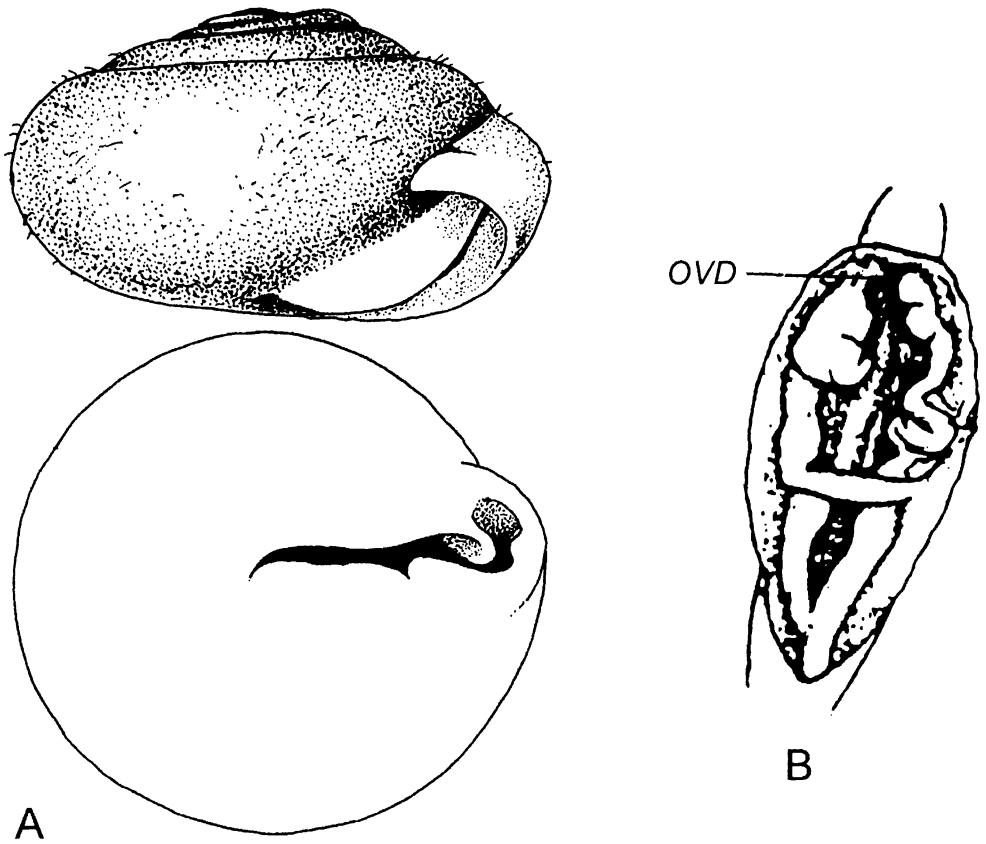
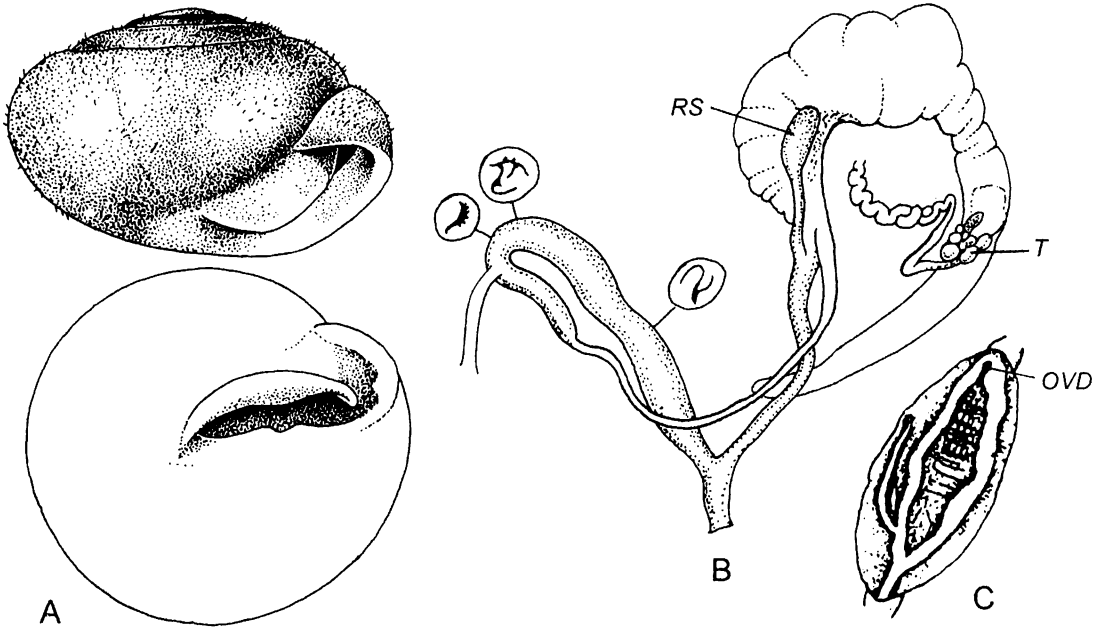


Fig. 2386. *Stenotrema (Pilsbrelia) exodon* (Pilsbry, 1900).
 A — shell: Woodville, Jackson Co., Alabama. Paris. B — interior of penis. After Emberton, 1995.



Shell (depressed) globose. Postembryonic whorls with short hairs or their rounded bases; rarely hairs wanting. Height 4.3-6.5, diam. 7.6-10.5 mm (6.1 × 9.6 mm).

Penis internally with 1 of 2 large, fleshy lateral pilasters bearing an apical, cup-like depression 1/5 to 1/2 as long as penis.

DISTRIBUTION. South of the U.S.A. (Missouri, Alabama, Georgia, Tennessee). 4 spp.

***Stenotrema* (*Stenotrema* s. str.)**

Fig. 2387

— *Maxillifer* Pilsbry, 1940: 674 (pro sect.; t.-sp. *Helix maxillata* Gould, 1848; OD).

— *Caracollatus* Archer, 1948: 19 (pro sect. t.-sp. *Helix spinosa* Lea, 1830; OD).

Emberton, 1995: 89.

Shell generally depressed-globose. Postembryonic whorls densely pilose, hairs short, in oblique trends. Height 4.0-8.7, diam. 5.7-14.8 mm (*stenotrema*: 6.3 × 9.0 mm; *maxillata*: 5.0 × 6.7 mm).

Penis internally with 2 large, fleshy lateral pilasters free of apical, cup-like structures.

DISTRIBUTION. U.S.A (Ohio, Indiana, Illinois, Missouri, Arkansas, Oklahoma, Louisiana, Virginia, West Virginia, North Carolina, South Carolina, Kentucky, Tennessee, Georgia, Alabama, Mississippi, Arkansas, Florida). 15 spp. & subspp.

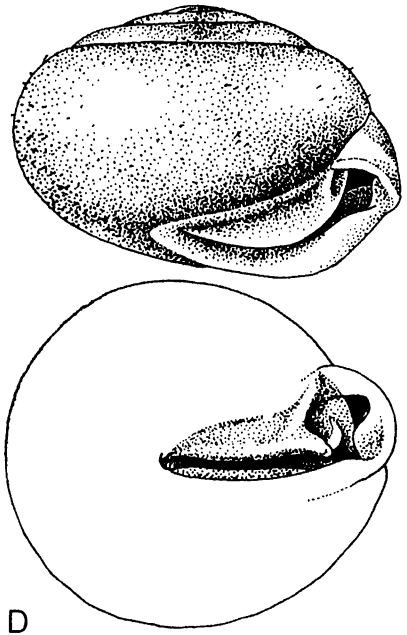
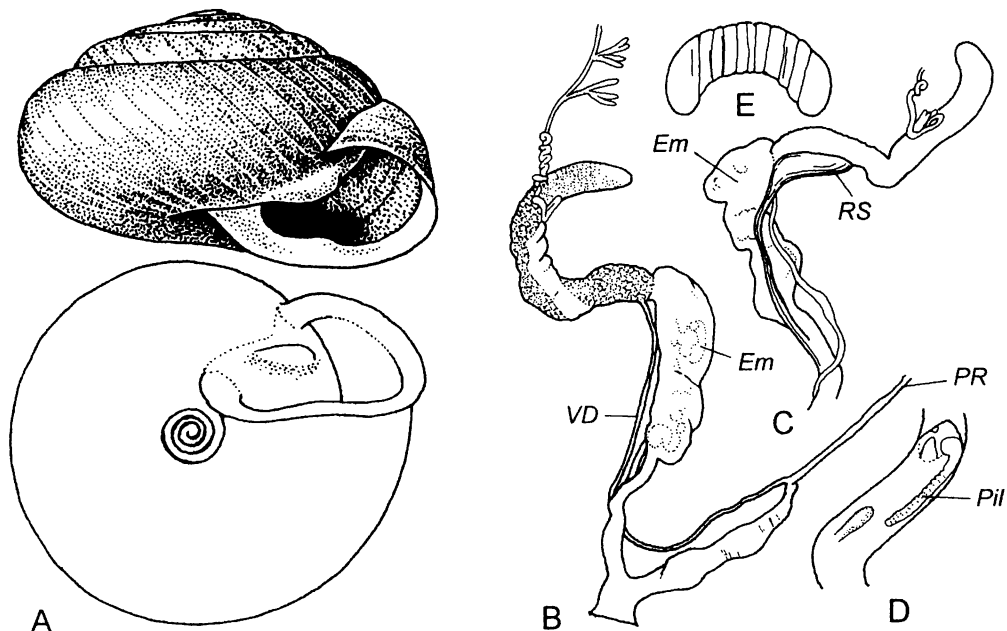


Fig. 2387 A, B — *Stenotrema* (*Stenotrema*) *stenotrema* (L. Pfeiffer, 1942).

A — shell: Brookville Island. Phil. No. 169145. B — reproductive tract. After Pilsbry, 1940. C — interior of penis. After Emberton, 1995. D — ! *Stenotrema* (*Stenotrema*) *maxillata* (Gould, 1848). Shell: Roanoke, Randolph Co., Alabama. Moscow



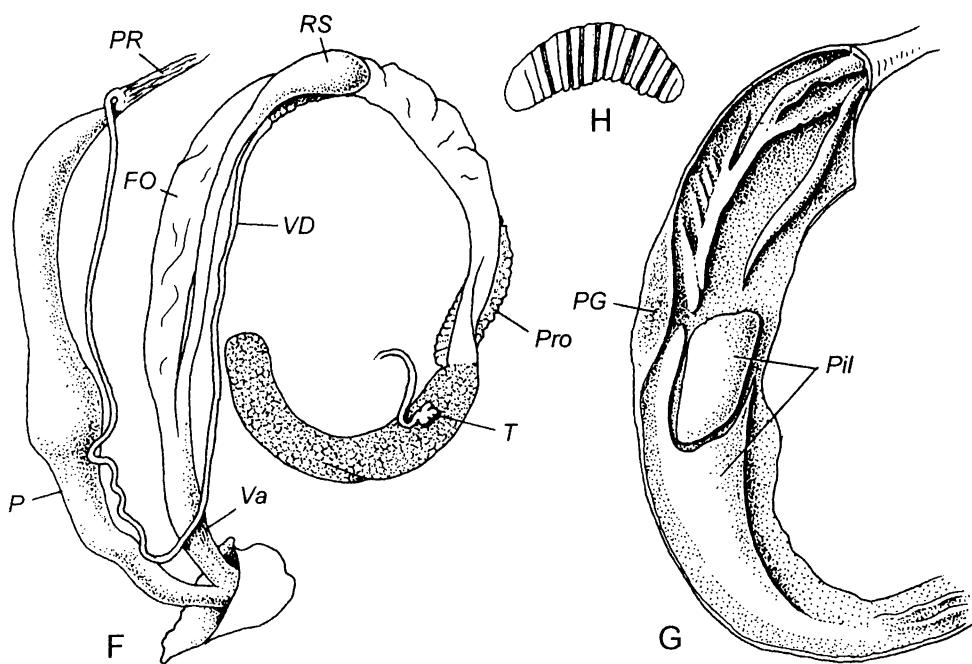
A

B

C

D

E



F

G

H

Fig. 2388. A, B, C, D, E — *Giffordius pinchoti* Pilsbry, 1930.

A — shell: "Below cleft of Split Hill, Old Providence" Holotype. Phil. No. 150865. B — reproductive tract. C — proximal part of genitalia. D — interior of penis. E — jaw. After Pilsbry, 1930a. F, G, H — ! *Giffordius corneliae* Pilsbry, 1930. "Between Twin Pin Nacles of High Peak, on north side, Providencia Isl., Colombia, Oct. 19, 1987" F — reproductive tract. G — interior of penis. H — jaw. Phil. No. A 12126 J.

Polygyrini Pilsbry, 1895

Emberton, 1995: 89

Aperture with a triangular parietal tooth. Basal or palatal tooth may be present.

Flagellum vestigial or missing. Epiphallus absent. Penis internally with a system of variously developed longitudinal folds or pilasters. Verge absent or small. Penial gland sometimes present. Penis sheath completely absent. Penial retractor inserted on or near apex of penis.

DISTRIBUTION. U.S.A. (Georgia to Texas, Alabama, Florida and north in Mississippi Valley to Indiana and Arkansas, Tennessee), Mexico, Nicaragua, Bermuda, western Bahamas, Cuba, Old Providence Island, Jamaica.

Giffordius Pilsbry, 1930

Fig. 2388

Pilsbry, 1930a: 142.

TYPE SPECIES — *Giffordius pinchoti* Pilsbry, 1930; OD.

Shell depressed-globose, thin, of about 5 rather convex whorls. Body whorl rounded, moderately descending in front. Spire dome-shaped. Color corneous. Embryonic whorls smooth. Later whorls with obliquely-radial striation and widely spaced, thin, periostracal riblets. Aperture irregularly ovate, oblique, with thin, reflexed margins; rather small, elongated parietal tooth may be present; basal lip with variously developed thickening. Umbilicus rather narrow but perspective. Height 4.0, diam. 6.6-7.4 mm (4.0 × 7.1 mm).

Jaw thin, delicate, with 8-11 very flat ribs.

Talon exposed, of 3-4 lobes. Vas deferens long, free of oviduct and vagina, entering penis apically. Epiphallus absent. Penis of medium length to long, internally with complex pattern of folds and pilasters. Penial retractor inserting on penis apex. Free oviduct long, may contain 3-4 embryos; vagina 1.5-2 times shorter. Spermathecal stalk moderately long, reservoir lies against lower part of prostate.

Ovoviviparous animals; embryos formed in upper section of free oviduct.

DISTRIBUTION. Old Providence Island. 2 spp.

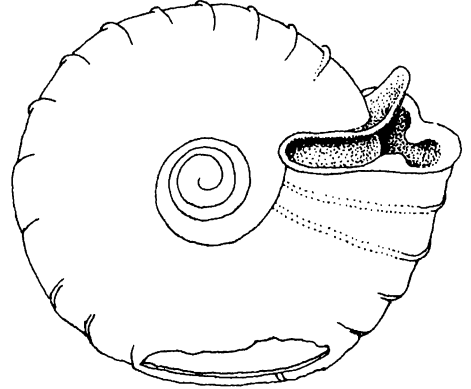
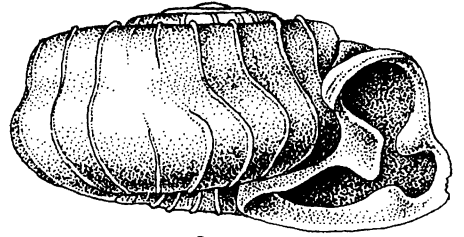


Fig. 2389. *Erectidens trichalus* Pilsbry, 1953. Along Rio Maurisco, Sierra Madre, Nuevo Leon, Mexico. Holotype. Phil. No. 164748.

? *Erectidens* Pilsbry, 1953

Fig. 2389

Pilsbry, 1953: 46.

TYPE SPECIES — *Erectidens trichalus* Pilsbry, 1953; OD.

Shell nearly flat, with scarcely elevated spire, thin, of 4.5 convex whorls. Last whorl slightly descending, with broad spiral depression (i.e. concave in profile). Color greyish-corneous (only seen shell is somewhat obsolete). Embryonic whorls with exceptionally fine spiral threadlets. Subsequent whorls with widely spaced, rounded radial riblets. In interspaces between riblets there are very delicate crowded radial striae. Aperture roughly triangular, only slightly oblique, adnate, with sharp, expanded margins and 3 teeth: parietal lamella subquadrangular, protruded, transverse, being thin erection of parietal callus; basal and palatal teeth tuberculi-form. Umbilicus broad, perspective. Height 1.65, diam. 3.35 mm.

DISTRIBUTION. E Mexico. 1 sp.

REMARK. Pilsbry (1953) stated that the taxonomic position of the genus is uncer-

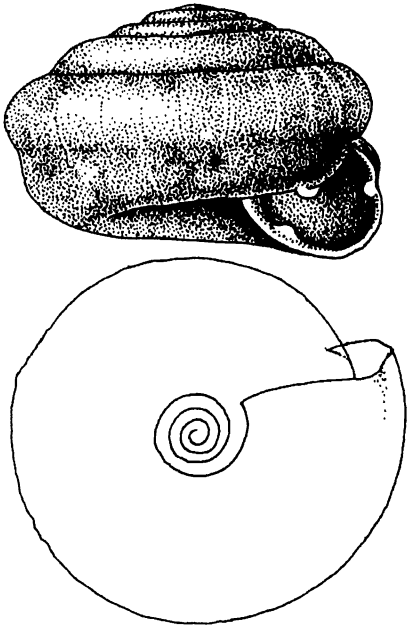


Fig. 2390. *Trifaux triodon* (Baker, 1935).
Hills N of Retreat Westmoreland, Jamaica.
Holotype. Phil. No. 163915.

tain and compared it with *Polygyra*. Zilch (1960) tentatively placed the genus in Polygyridae. Bogan (1992) transferred *Erectidens* to European family Spelaeodiscidae.

? *Trifaux* Baker, 1935
Fig. 2390

Baker, 1935: 135, 137 (*Volvidens* subg.).

TYPE SPECIES — *Volvidens (Trifaux) triodon* Baker, 1935; OD.

Shell depressedly dome-shaped, thin, of 4.75 convex, narrow, shouldered whorls. Last whorl straight, with peripheral sulcus. Color whitish-corneous. Embryonic whorls with spiral rows of extremely fine points. Postnuclear whorls with widely spaced major radial riblets and extremely fine, irregular, very closely spaced, minor wrinklets which are often beaded although continuous spiral lines absent. Aperture rounded-triangular, slightly oblique, with scarcely reflexed margins. Parietal wall with low, short, rounded lamella which is present as deep as visible. Baso-columellar and palatal teeth tuberculiform. Umbilicus rather broad, perspective. Height 1.75, diam. 2.63 mm.

DISTRIBUTION. Jamaica. 1 sp.

REMARK. Baker (1935) attributed this genus to Sagdidae as a subgenus of *Volvidens*. However, it is easy to see the shell similarity of *Trifaux* and *Erectidens* (the presence of peripheral sulcus, widely spaced radial riblets, 3 apertural teeth with similar location, shape of aperture and of umbilicus). So, if we refer *Erectidens* to Polygyridae, we have to place *Trifaux* in the same family. Anyway I think both these genera, until anatomical study, should go together.

Polygyra Say, 1818
Fig. 2391

Say, 1818: 276.

— *Cyclodoma* Swainson, 1840: 193 (t.-sp. *Helix septemvolva* Say, 1818; SD Pilsbry, 1930b).

— *Ulostoma* Albers, 1850: 95 (*Helix* subg.; t.-sp. *Helix septemvolva* Say, 1818; SD Pilsbry, 1930b).

— *Anchistoma* "Klein" H. Adams et A. Adams, 1855: 205 (nom. praeocc., non Herrmannsen, 1846; t.-sp. not designated).

Pilsbry, 1940: 578. Emberton, 1995: 89.

TYPE SPECIES — *Helix septemvolva* Say, 1818; SD Herrmannsen, 1847 (ICZN Opinion 1691, 1992).

Shell strongly depressed to flat, rather solid, of 7-9 convex whorls. Last whorl angular or carinate, well descending in front; apertural expansion rate abruptly increasing then decreasing so that successive whorls nearly equal in volume. At least 1 full whorl of growth beyond expansion-rate increase. Color whitish to corneous. Embryonic whorls either smooth or with fine radial ripples. Postnuclear whorls rib-striated or this sculpture retained only in subsutural area. Aperture margins continuous, reflexed, their ends connected by a raised parietal lamella, or by diverging of a V-shaped parietal tooth. Umbilicus broad, shallow. Height 2.2-5.5, diam. 7.0-15.3 mm (3.8 × 8.8 mm).

Vas deferens entering penis apically. Penis has a simple wall or a continuation downward of penial retractor, internally with a few axial folds. Verge absent. Penial retractor attached to vas deferens/penis junction. Free oviduct rather short. Vagina enormously long, slender. Spermathecal shaft short; reservoir lies on lower section of spermoviduct.

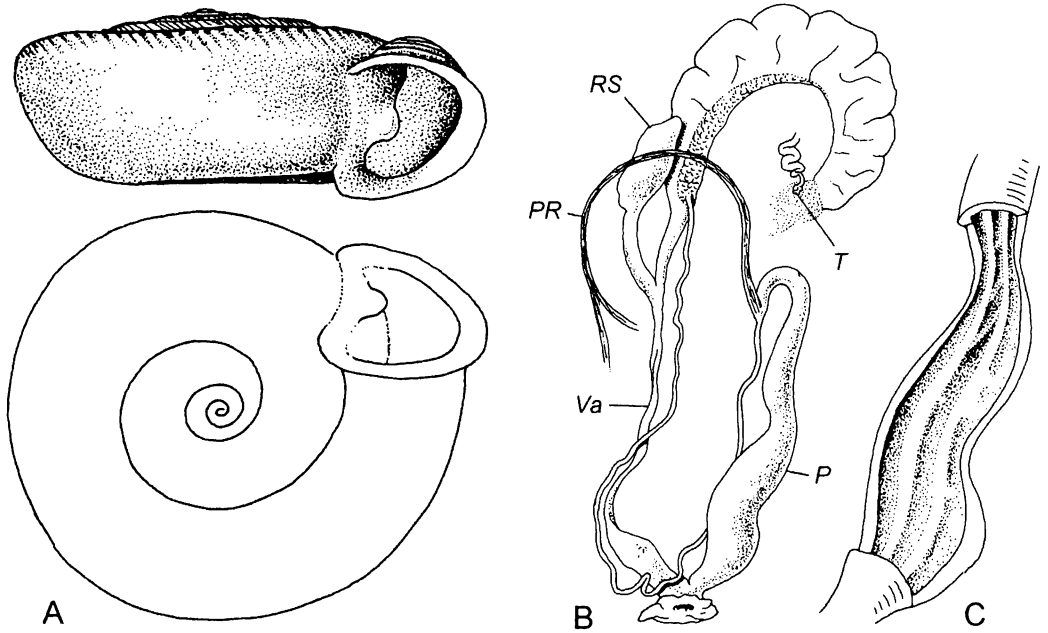


Fig. 2391 A — *Polygyra septemvolva septemvolva* (Say, 1818). Shell: Presa la Palma near Habana, Cuba. Moscow No. Lc-25655. B, C — ! *Polygyra septemvolva fabigeri* (Bland, 1866). Hillside Apartment, Carrollton (suburb of Dallas), Texas, April 12, 1993. B — reproductive tract. C — interior of penis. Moscow No. Lc-28174.

DISTRIBUTION. U.S.A. (Georgia to Texas, Florida), Mexico, Bermuda, western Bahamas, Cuba. 4-5 Recent spp. with many subsp. & forms.

Linisa Pilsbry, 1930
Fig. 2392

Pilsbry, 1930c: 315 [*Polygyra* (*Daedalochila*) sect.].

— *Solidens* Pilsbry, 1956: 27 (*Polygyra* subg.; t.-sp. *Helix anilis* Gabb, 1865; OD).

— *Erymodon* Pilsbry, 1956: 20 (*Polygyra* subg.; t.-sp. *Helix ventrosula* L. Pfeiffer, 1845; OD).

— *Monophysis* Pilsbry, 1956: 25 [*Polygyra* subg.; t.-sp. *Helix* (*Polygyra*) *behrii* Gabb, 1865; OD].

— *Acutidens* Pilsbry, 1956: 26 [*Polygyra* subg.; t.-sp. *Helix* (*Polygyra*) *acute-dentata* Binney, 1858; OD].

Emberton, 1995: 90.

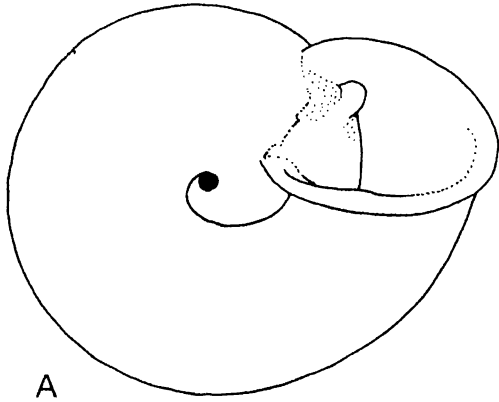
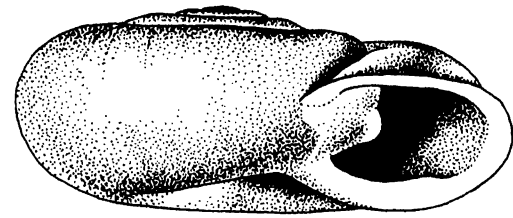
TYPE SPECIES — *Helix* (*Polygyra*) *anilis* Gabb, 1865; OD.

Shell subglobose to much flattened, rather solid, of 4.5-6 moderately convex whorls. Body whorl rounded, moderately to very deeply deflected. Apertural expansion

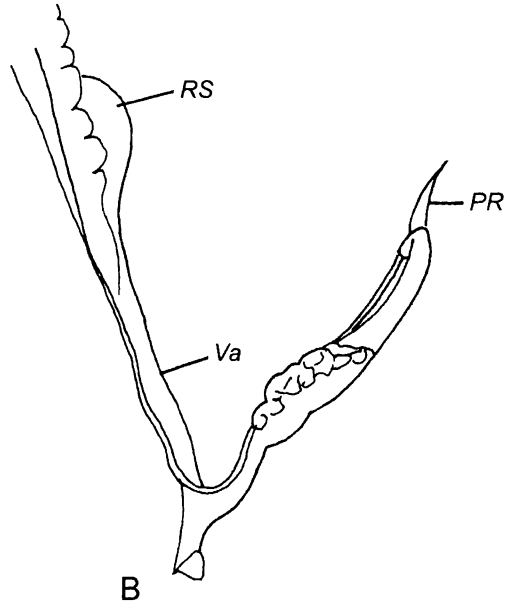
rate abruptly increasing then decreasing so that successive whorls nearly equal in volume. Color grey to dark-corneous, sometimes with a faintly darker supraperipheral band. Embryonic whorls mostly with faint short striae radiating from suture and microscopic, very close spiral striae, often lost by wear. Later whorls with variously developed radial wrinkles or even riblets which sometimes remain only below suture. Aperture rounded, well oblique, with reflexed, thickened margins. Parietal tooth tubercular or V- to U-shaped; peristome toothless or with 1-2 tubercles (basal and palatal) on lip. Umbilicus minutely to narrowly open, funnel-like, more or less excentric. Height 5-10, diam. 12-17 mm (*anilis*: 6.0 × 14.1 mm; *ventrosula*: 8.8 × 14.0 mm; *behrii*: 6.0 × 16.5 mm).

Lower section of penis with a small, sac-like, glandular appendix (penial gland). Above appendix there are patches of glandular cells on penial wall. Pustulation in penial apex completely lost. Free oviduct short, vagina 2-4 times longer. Spermathecal stalk very short, reservoir lies on lower section of spermoviduct.

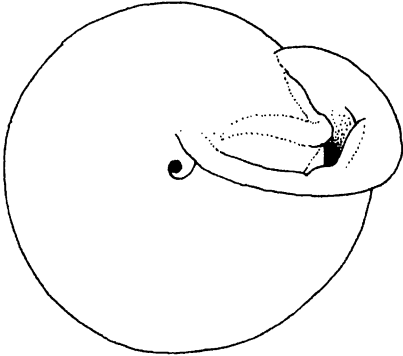
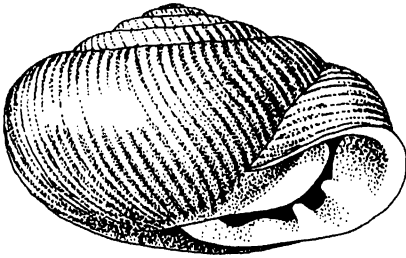
DISTRIBUTION. Mexico, northward to



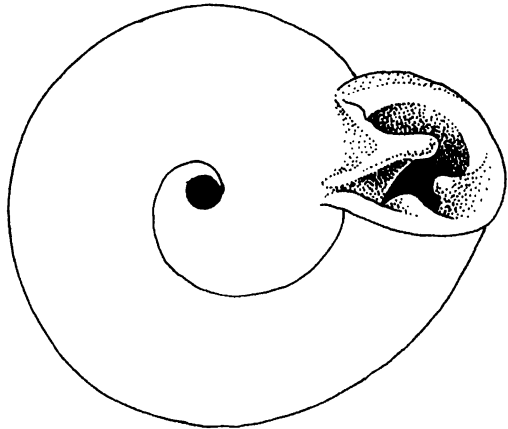
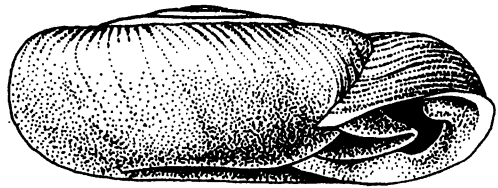
A



B



C



D

Fig. 2392. A — *Linisa anilis* (Gabb, 1865). Shell: Guaymas, Mexico. Holotype. Phil. No. 33447 B — ! *Linisa texasiana* (Moricand, 1833). Reproductive tract. After Emberton, 1995. C — ! *Linisa ventrosula* (L. Pfeiffer, 1845). Banks of Rio Tepic ca. 5 km below Tepic, Nayarit, Mexico. Phil. No. 166228. D — ! *Linisa behrii* (Gabb, 1865). S. of Guaymas, Mexico. Moscow No. Lc-28162 (Phil.).

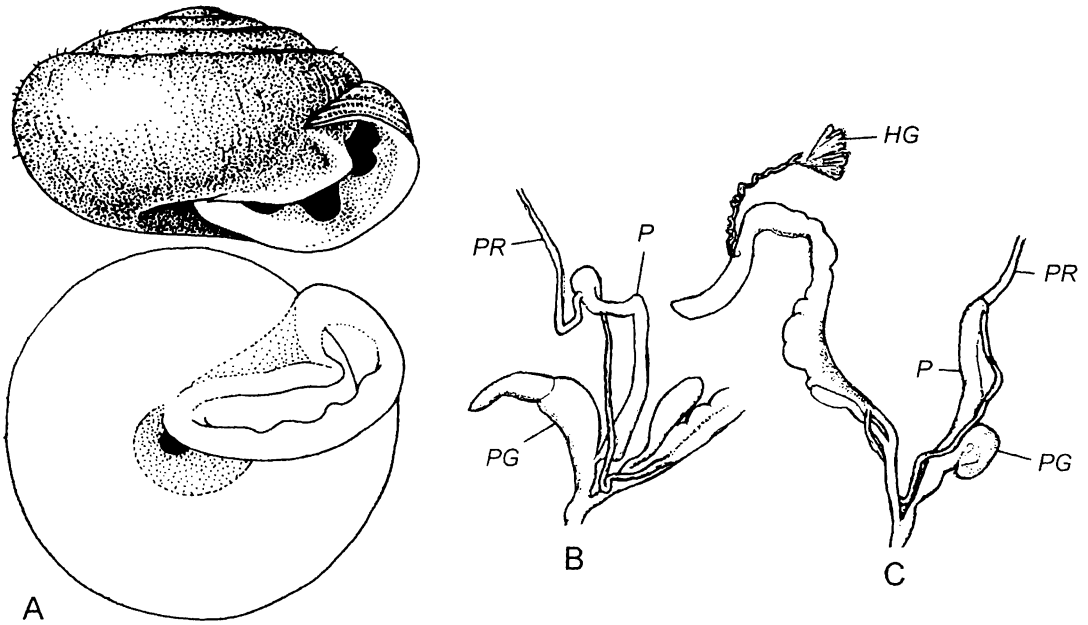


Fig. 2393. *Lobosculum pustula* (Férussac, 1822).
 A — shell: Cedar Keys, Florida. Phil. No. 149303. B, C — reproductive tracts of two specimens. After Pilsbry, 1940.

south of the U.S.A. (Texas, Louisiana, Oklahoma and Arkansas). 9-25 spp.

Lobosculum Pilsbry, 1930
 Fig. 2393

Pilsbry, 1930c: 319

TYPE SPECIES — *Helix pustula* Férussac, 1822; OD.

Shell depressed to nearly flat, moderately solid, of 4.5-7.25 moderately convex whorls. Last whorl markedly deflected, with rounded periphery. Color whitish to brown. Embryonic whorls with delicate oblique striae, or smooth except for striae radiating from suture. Postnuclear whorls not distinctly striate, more or less hairy. Aperture rather narrow, oblique; parietal lamellar tooth V- to U-shaped, lip bears 2-3 teeth divided by a notch. Within there is either a callous spiral ridge or a vertical buttress on columella. Umbilicus narrow, not enlarging in last whorl; sometimes umbilicus almost covered. Height 2.3-3.7, diam. 4.0-6.5 mm (3.0 × 5.1 mm).

Talon very small, simple, adnate on hermaphroditic duct. Vas deferens enters penis

apically. Penis very long, thin-walled, with sac-like, large (one-third to whole volume of penis), glandular appendix (gland) in its lower section, supplied with a secondary lobe. Internally penis smooth except for transverse rugae for a short distance at apex and a slight thickening extending down one side nearly to diverticle; pustulation in penial apex absent. Above gland there are patches of glandular cells on penial wall. Penial retractor terminal. Free oviduct and vagina moderately long, subequal in length. Spermathecal stalk short; oblong reservoir lying on lower half of spermoviduct.

DISTRIBUTION. U.S.A (Georgia to Texas, and north in Mississippi Valley to Indiana and Arkansas). 2 spp.

Praticolella Martens, 1892

Martens, 1892: 138 (nom. nov. pro *Praticola* Strebel et Pfeffer, 1880).

— *Praticola* Strebel et Pfeffer, 1880: 38 [nom. praeocc., non Swainson, 1837 (Aves); pro "Gruppe"; t.-sp. *Praticola ocampi* Strebel et Pfeffer, 1880 (= *Helix ampla* L. Pfeiffer, 1866); SD Pilsbry, 1940].

Pilsbry, 1940: 688. Emberton, 1995: 90.

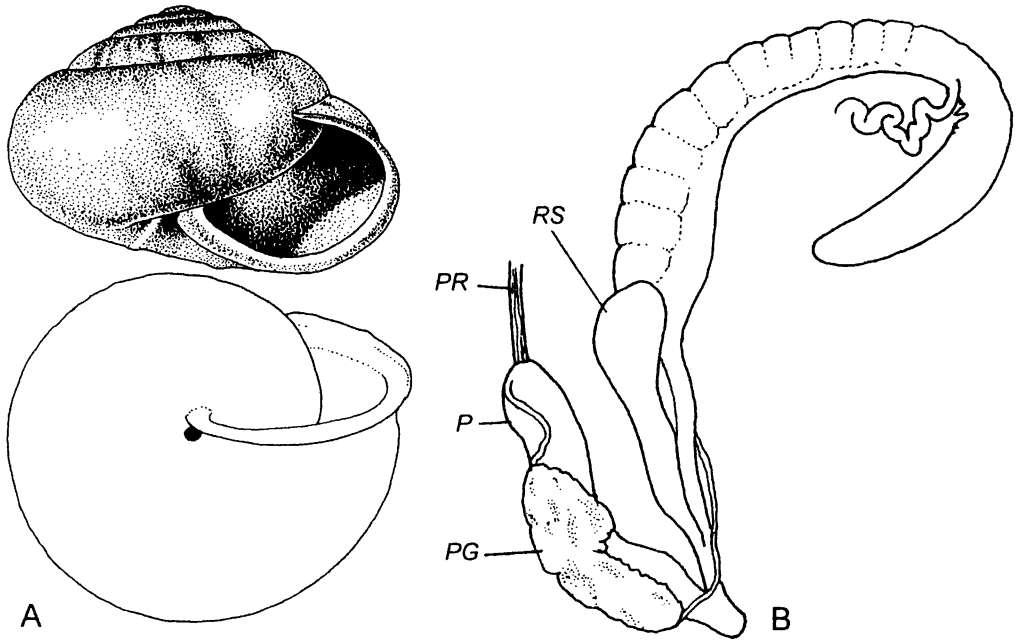


Fig. 2394. *Praticolella (Farragutia) mobiliana* (Lea, 1841).

A — shell: Baldwin Co., Alabama. StB No. 03419. B — reproductive tract. After Pilsbry, 1940.

TYPE SPECIES — *Praticola ocampi* Strebel et Pfeffer, 1880 (= *Helix ampla* L. Pfeiffer, 1866); OD.

Shell depressed to subglobose, moderately thin to rather solid, of 4.5-5.75 moderately convex whorls. Last whorl evenly rounded at periphery, straight or scarcely deflected. Color uniformly greyish or yellowish or with more or less developed dark bands. Embryonic whorls smooth and glossy or spirally striate. Later whorls weakly radially striate, sometimes with very fine spiral lines. Aperture lunate, free of teeth, moderately ample, its margins varying from scarcely expanded to narrowly reflexed, more or less thickened within. Aperture armature generally absent; rarely there is a small, curved parietal tooth. Umbilicus narrowly open to dot-like.

Talon exposed, of many lobes. Penis internally without verge, bearing laterally penial gland as a hollow appendix. Penial retractor simple or splitted distally. Spermathecal duct short, reservoir oblong.

DISTRIBUTION. Nicaragua and E Mexico, northward to northern Texas; Mississippi to Florida and North Carolina; W Cuba.

Praticolella (Farragutia)
Vanatta, 1915)
Fig. 2394

Vanatta, 1915: 196 (pro sect.). Emberton, 1995: 90.

TYPE SPECIES — *Helix mobiliana* Lea, 1841; OD.

Shell depressed-subglobose. Embryonic whorls smooth. Umbilicus minute. Height 5.0-6.8, diam. 7.3-9.1 mm (5.5 × 8.3 mm).

Penial gland, an adnate pad. Penial retractor simple.

DISTRIBUTION. U.S.A. (Alabama, Georgia, Florida). 1 sp. with 2 subspp.

Praticolella (Eduardus) Pilsbry, 1930)
Fig. 2395

Pilsbry, 1930c: 315 [*Polygyra (Daedalochila)*; sect.]. Emberton & Richardson, 1990: 33. Emberton, 1995: 90.

TYPE SPECIES — *Polygyra (?) martensiana* Pilsbry, 1907; OD.

Shell markedly depressed. Embryonic whorls smooth. Umbilicus comparatively

broad. Height 5.5-8.8, diam. 11-15, mm (5.5 × 11.0 mm).

Penial gland long, at least twice the volume of penis. Penial retractor long, simple.

DISTRIBUTION. Mexico. 1 sp.

Praticolella (Filapex) Pilsbry, 1940

Fig. 2396

Pilsbry, 1940: 697 (*Praticolella* sect.).

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

Shell depressed-subglobose. Embryonic whorls with spiral, sometimes interrupted threads. Umbilicus dot-like. Height 3.5-7.9, diam. 5.9-11.0 mm (5.2 × 7.2 mm).

Penial gland very large, long, at least twice the volume of penis. Penial retractor long, simple.

DISTRIBUTION. U.S.A. (Georgia, Florida, North Carolina, Tennessee, Alabama, Mississippi). 3 spp.

Praticolella (Praticolella) s.str.

Fig. 2397

Shell depressed-subglobose. Embryonic whorls smooth. Umbilicus narrow. Height

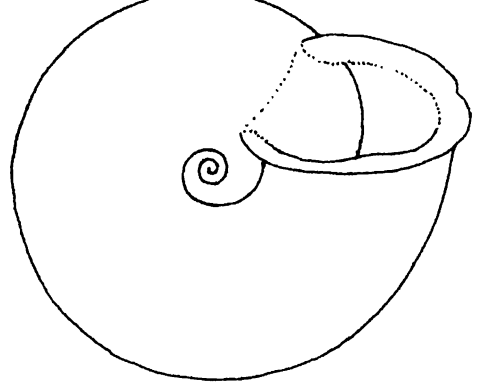
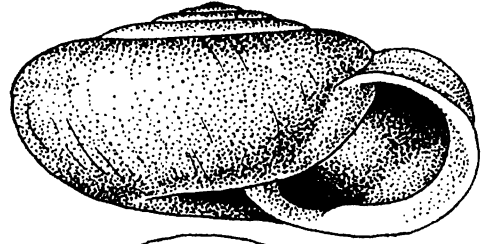
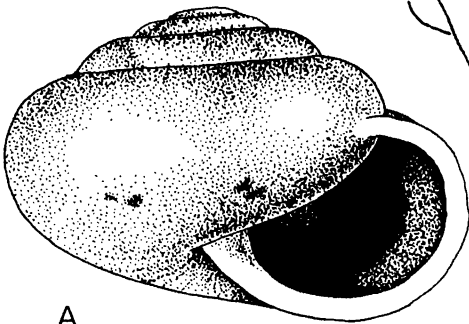
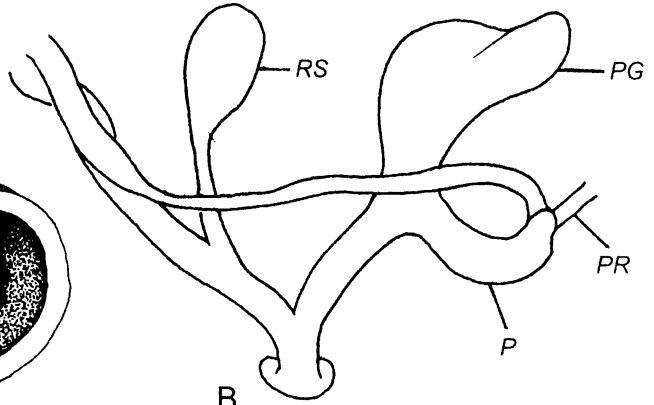


Fig. 2395. *Praticolella (Eduardus) martensiana* (Pilsbry, 1907).
El Abra, Tamulipas, Mexico. Chicago No. 150828.



A



B

Fig. 2396. A — *Praticolella (Filapex) jejuna* (Say, 1821).

A — shell: Lemon City, Florida. Vienna. B — ! *Praticolella (Filapex) lawae* (Lewis, 1874).
Reproductive tract. After Emberton, 1995.

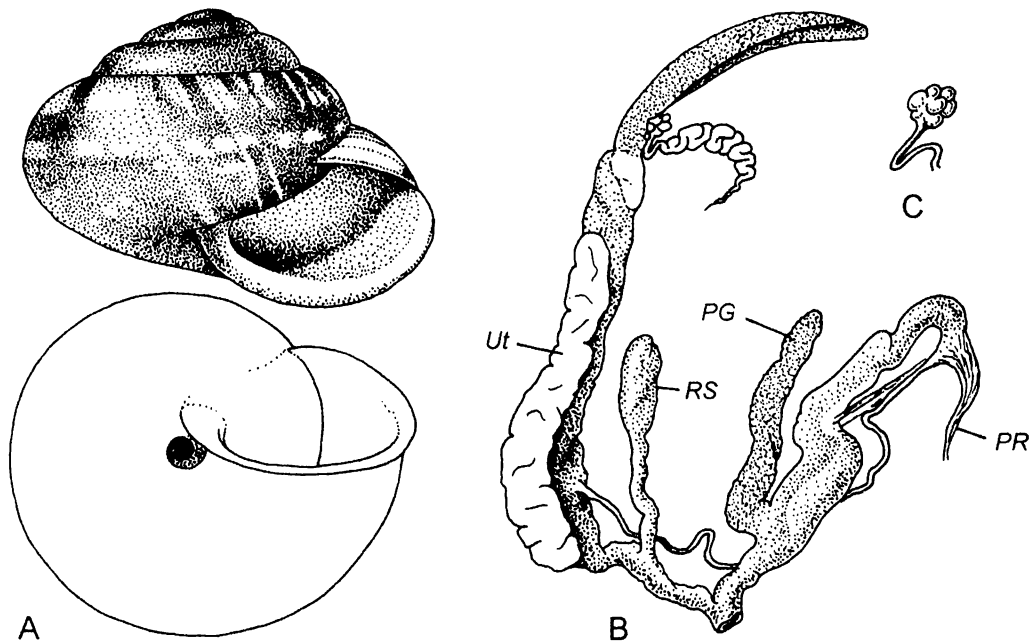


Fig. 2397 ! *Praticolella (Praticolella) griseola* (L. Pfeiffer, 1841).

A — shell: Presa la Palma near Habana, W Cuba. Moscow No. Lc-28142. B, C — Escaleros de Jaruco, W Cuba, November 9, 1986. B — reproductive tract. C — talon enlarged. Moscow.

4.0-11.7, diam. 6.0-14.5 mm (6.6 × 9.2 mm).

Penial gland long, not adnate. Penial retractor double or triple distally.

DISTRIBUTION. Cuba, Mexico, SE of the U.S.A. (Arkansas, Texas, Florida). 9 spp.

Millerelix Pratt, 1981

Pratt, 1981: 1352-B. Emberton, 1995: 91

TYPE SPECIES — *Helix mooreana* Binney, 1857; OD.

Shell depressed, of 5-6 flattened whorls. Body whorl rounded or compressed, moderately to strongly descending in front. Color (pale) corneous. Embryonic whorls lack pustulation. Postapical whorls lightly radially striated or with radial ribs that expressed predominately below suture. Apertural expansion rate abruptly increasing then decreasing so that successive whorls nearly equal in volume. Aperture of irregular shape, moderately oblique, with expanded margins. Parietal tooth lamellar or V- to U-shaped. Umbilicus funnel-like, minutely open, excentric.

Flagellum absent. Epiphallus vestigial.

Penis slender, internally with an apical, pendant, conic projection (verge?).

DISTRIBUTION. U.S.A. and adjacent territories of Mexico.

Millerelix (Millerelix) s. str.

Fig. 2398

Postapical whorls lightly radially striate or weakly ribbed. Parietal tooth lamellar. Height 3.0-6.0, diam. 5.5-11.2 mm (4.6 × 5.5 mm).

Vas deferens evenly slender. Penis extremely long, at least 15 times longer than wide.

DISTRIBUTION. U.S.A. (Illinois, Missouri, Kansas, Arkansas, Oklahoma, Louisiana, Texas), N Mexico. 5-7 spp.

Millerelix (Prattelix) Emberton, 1995

Fig. 2399

Emberton, 1995: 91.

TYPE SPECIES — *Polygyra plicata* Say, 1821; OD.

Postapical whorls (coarsely) radially

ribbed. Parietal tooth V- to U-shaped. Height 2.8-4.7, diam. 6.0-10.4 mm (3.3 × 6.9 mm).

Proximal section of vas deferens greatly enlarged, muscular. Penis moderately long, at most 12 times longer than wide.

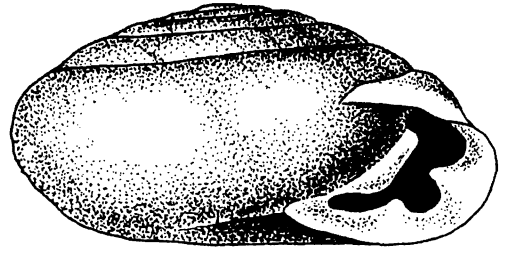
DISTRIBUTION. U.S.A. (Missouri, Arkansas, Oklahoma, Indiana, Kentucky, Tennessee, Alabama, Georgia), N Mexico. 7 spp.

Daedalochila Beck, 1837

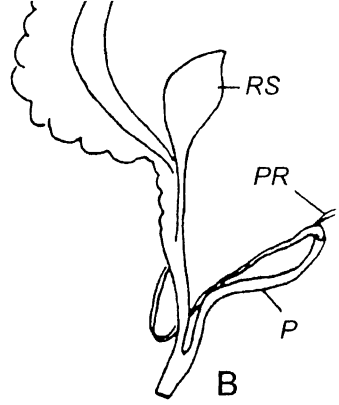
Beck, 1837: 21.

TYPE SPECIES — *Polygyra auriculata* Say, 1818; SD Herrmannsen, 1847

Shell depressed, solid, silky shining, of 4.5-6.5 convex whorls. Last whorl moderately to strongly deflected, rounded or slightly angulated. Color whitish to corneous. Embryonic whorls delicately radially wrinkled. Subsequent whorls regularly radially ribbed. Apertural expansion rate abruptly increasing then decreasing such that successive whorls nearly equal in volume. Aperture ear-shaped, with expanded and reflexed margins. Parietal tooth bira-



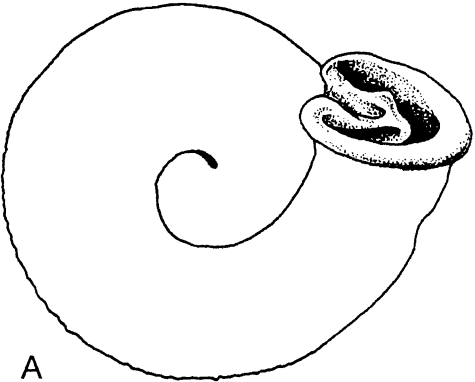
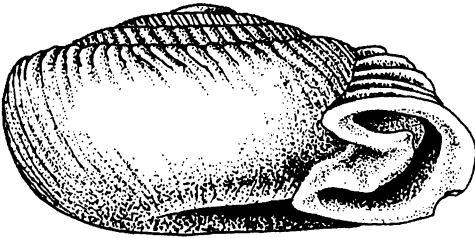
A



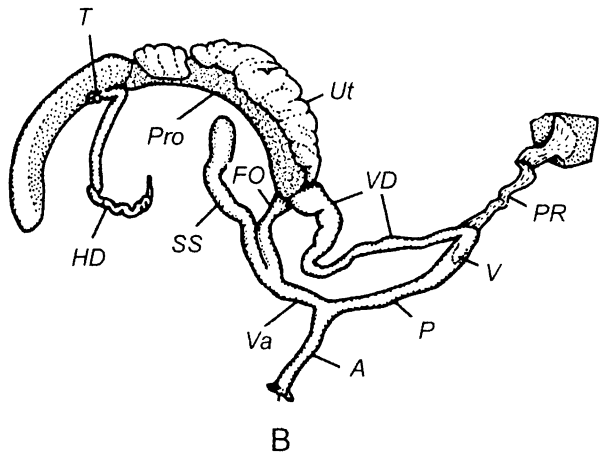
B

Fig. 2398. *Millerelix (Millerelix) mooreana* (Binney, 1857).

A — shell: Texas. Paris. B — reproductive tract. After Emberton, 1995.



A



B

Fig. 2399 *Millerelix (Prattelix) plicata* (Say, 1821).

A — shell: Cumberland Plateau, Stevenson, Jackson Co., Alabama. Paris. B — reproductive tract. After Emberton, 1995.

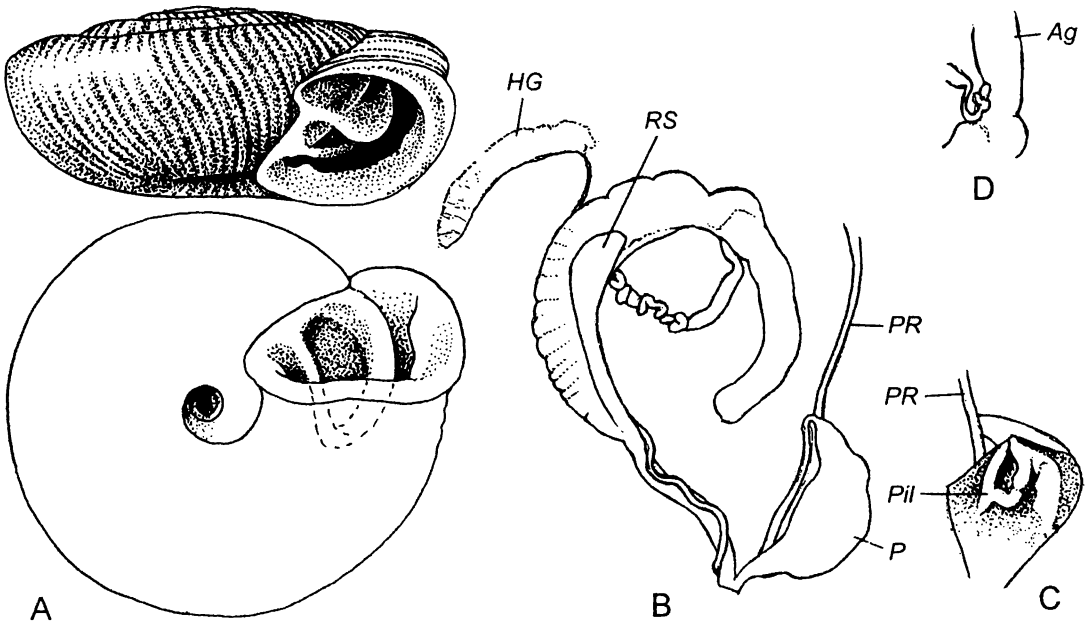


Fig. 2400. *Daedalochila (Upsilon) hippocrepis* (L. Pfeiffer, 1848).
 A — shell: 3-5 mi N of New Braunfels, Texas. Phil. No. 158377 B — reproductive tract.
 C — interior of penis. D — talon. After Pilsbry, 1940.

mous, V- or U-shaped or irregular; there are 2 teeth on lip, with baso-palatal interdenticular notch. Umbilicus dot-like, excentrically located in umbilical depression.

Vas deferens of even diameter, without trace of epiphallus. Flagellum absent. Penis sac-like, internally with elongated or of irregular shape pilaster. Penial retractor attached to penis apically, at entrance of vas deferens. Free oviduct short, vagina 3-5 times longer. Spermatheca short, without distinct boundary between stalk and reservoir.

DISTRIBUTION. South of the U.S.A., Mexico.

Daedalochila (Upsilon)
 Pilsbry, 1930)
 Fig. 2400

Pilsbry, 1930c: 315 [*Polygyra (Daedalochila)* sect].
 Emberton, 1995: 91

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

Shell flattened. Last whorl bluntly angulate above midline. Parietal lamella curved inward in a horse-shoe or U-shape. 2 lip-

teeth curving and approaching inward, slightly interrupted at their union, together forming another U. Umbilicus narrow. Height 2.8-5.5, diam. 5.7-12 mm (4.5 × 10.0 mm).

Penis stout (length/diameter <3.5) with a straight apex.

DISTRIBUTION. U.S.A. (Tennessee, Alabama, Mississippi, Illinois, Indiana, Missouri, Arkansas, Louisiana, Oklahoma, Texas), Mexico, ? Cuba. 8-10 spp.

Daedalochila (Daedalochila s. str.)
 Fig. 2401

Shell depressed-conic. Last whorl rounded. Parietal callus raised, parietal tooth well developed, V-shaped or irregular; lip teeth marginal, or if immersed not entering deeply. Umbilicus wider than in *Upsilon*. Height 3.0-10.0, diam. 5.4-17.0 mm (7.0 × 13.0 mm).

Penis moderately long (length/diameter 4), with a bent or convoluted apex.

DISTRIBUTION. S the U.S.A. (Florida, Georgia, Alabama, Texas, North Carolina), Mexico, Cuba. 10-11 spp.

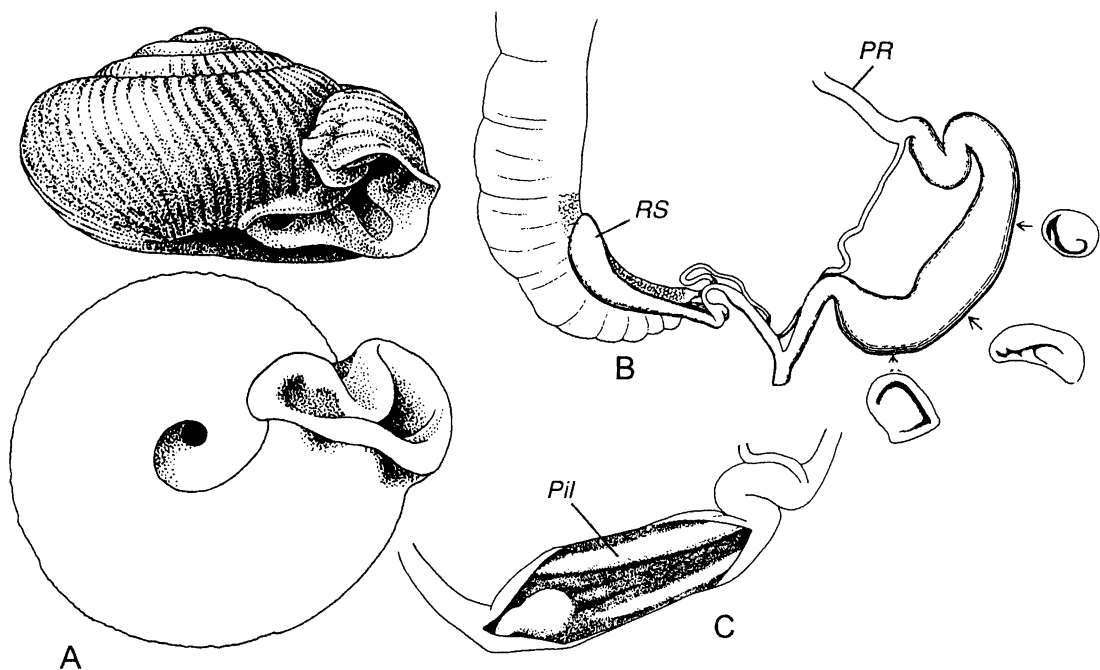


Fig. 2401 A — *Daedalochila (Daedalochila) auriculata* (Say, 1818). "Cab. Dalen, Brazilia" [error?]. Leiden. B, C — ! *Daedalochila (Daedalochila) uvulifera* (Shuttleworth, 1852). B — reproductive tract. C — interior of penis. After Pilsbry, 1940.

Mesodontini Tryon, 1866

Tryon, 1866: 306 (part. pro subfam.). Emberton, 1991 71, 152.

Aperture without parietal barrier, or it present as a simple straight to slightly curved tooth; palatal tooth absent or weak; basal barrier absent, a simple tooth, a long lamella, or a baso-columellar peg.

Flagellum absent. Epiphallus wanting. Penis short to extremely long. Upper, internally sculptured region of penis entirely absent; sperm exchanged externally by deposition on mate's everted basal penis; basal penis internally with 2 thin, longitudinal, lateral pilasters which varying from simple and uniform in length to unilaterally absent or thickened or extremely high and thin and to entirely absent. Opposite (dorsal) surface sometimes bearing an accessory pilaster, a system of ridges, or 1 or more large bulges. Apical part of penis bearing a basin-like, thin- to thick-walled, flexible to rigid, symmetric to asymmetric chalice; chalice continuous to discontinuous with lateral pilasters, and uneverted (a basin or scoop) to everted whenever functional. Penis sheath

absent. Penial retractor attached to apex of penis. Spermathecal stalk thin-walled.

DISTRIBUTION. E and Central U.S.A.

Patera Albers, 1850

Albers, 1850: 96 (*Helix* subg.).

— *Odotropis* Rafinesque, 1819: 425 (no species mentioned; t.-sp. *Helix appressa* Say, 1821; SD Pilsbry, 1930c) (nom. oblit.).

— *Trophodon* Rafinesque, 1831: 3 (t.-sp. *Helix appressa* Say, 1821; SD Pilsbry, 1930c) (nom. oblit.).

— *Odontotropis* Agassiz, 1847: 256 (nom. nov. pro *Odotropis* Rafinesque, 1819) (nom. oblit.).

Pilsbry, 1940: 747 Emberton, 1991 153.

TYPE SPECIES — *Helix appressa* Say, 1821; SD Pilsbry, 1930c.

Shell usually depressed, rarely globose, of about 4.5-5.5 slightly to moderately convex whorls. Last whorls rounded or subangular at periphery. Embryonic whorls radially striated; striae sometimes interrupted into granules. Postnuclear sculpture usually of delicate radial ribbing and spiral striae or lines of papillae; periostracal hairs or scales absent. Aperture well oblique; parietal tooth absent, slight or pronounced, blade-like.

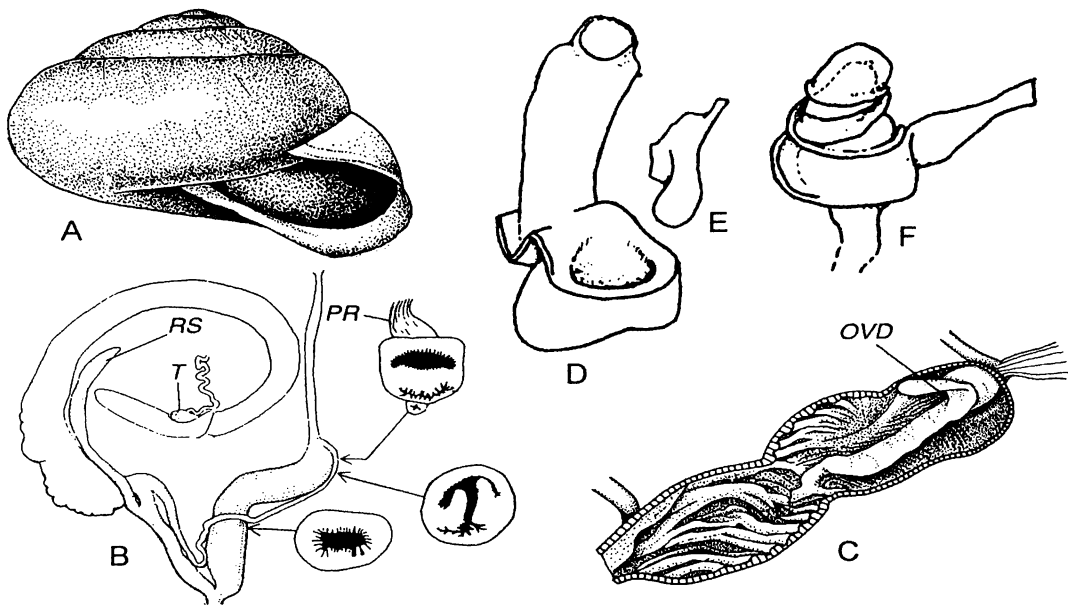


Fig. 2402. *Patera (Ragsdaleorbis) pennsylvanica* (Green, 1827).

A — shell: Near Chartier's Creek, Washington Co., Pennsylvania. Holotype. Phil. No. 11298.
 B — reproductive tract. After Pilsbry, 1940. C — interior of penis. After Emberton, 1991.
 D — pedestal with chalice. E — semen mass. F — entwisted penises. After Webb, 1954b.

Palatal margin toothless. Basal tooth absent or present as long, thin lamella truncated palatally. Umbilicus narrow, closed, broadly covered, chinked or open.

Both left and right lateral pilasters in penis variable. Chalice generally a simple hood, sometimes spatulate (right wall high and rounded, left wall inconspicuous) or seated atop barrel-shaped pedestal. Dorsal structures usually absent (only type species has dorsal structures: thin, subparallel anastomosing cords); ventral and peripheral structures absent.

DISTRIBUTION. U.S.A. (Ohio, Pennsylvania, Michigan, Indiana, Illinois, Arkansas, Oklahoma, Virginia, Tennessee, Kentucky, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida).

Patera (Ragsdaleorbis) Webb, 1954)

Fig. 2402

Webb, 1954b: 19, 20 (*Mesodon* subg.). Emberton, 1991: 153.

TYPE SPECIES — *Helix pennsylvanicus* Green, 1827; OD.

Shell subglobose. Aperture lacks teeth;

basal lip straight and pointing downward to make aperture somewhat triangular. Umbilicus closed. Height 11-15, diam. 15.0-20.0 mm (15.0 × 20.0 mm).

Left lateral pilaster in penis obsolete; right lateral pilaster thick, height twice exceeding width. Chalice moderately deep and seated atop a barrel-shaped, solid pedestal. Dorsal, ventral and peripheral structures absent.

DISTRIBUTION. East of the U.S.A. (Ohio, Pennsylvania, Michigan, Indiana, Illinois, Missouri). 1 sp.

Patera (Vesperpatera

Emberton, 1991)

Fig. 2403

Emberton, 1991: 154.

TYPE SPECIES — *Polygyra binneyana* Pilsbry, 1899; OD.

Shell depressed-globose. Aperture regularly ovate, with reflexed lip uniform in width throughout its palatal and basal regions, without basal tooth. Umbilicus

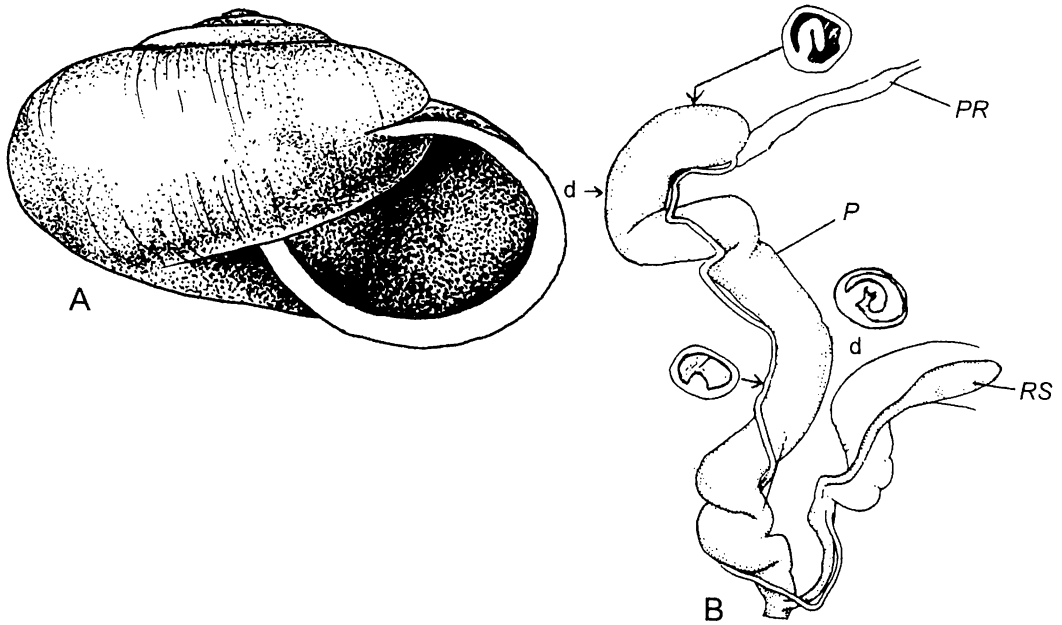


Fig. 2403. *Patera (Vesperpatera) binneyana* (Pilsbry, 1899).
 A — shell: Hardy, Sharp County, in drift of the Spring River, Arkansas. Holotype. Phil. No. 104182. B — reproductive tract. After Pilsbry, 1940.

closed to narrowly open. Height 7.5-14.0, diam. 14.0-28.6 mm (12.8 × 22.8 mm).

Left lateral pilaster in penis variable to inconspicuous or absent. Right lateral pilaster long, cord-like, usually variable in width. Chalice, a simple hood. Dorsal, ventral and peripheral structures in penis absent.

DISTRIBUTION. South of the U.S.A. (west of Mississippi River: Arkansas, Oklahoma). 6 spp.

Patera (Patera s. str.)

Fig. 2404

Shell generally depressed, rarely globose. Periostracal hairs or scales absent. Aperture with pronounced, blade-like parietal tooth. Palatal tooth absent. Basal tooth variously developed, as long, thin, palatally truncated lamella. Umbilicus closed, broadly covered. Height 7-13, diam. 13-27 mm (8.7 × 18.8 mm).

Left lateral pilaster in penis cord-like, running for entire length of penis. Right lateral pilaster variable. Chalice, a simple hood. Dorsal structures in penis generally absent, rarely present as thin, parallel, anas-

tomosing cords; ventral and peripheral structures absent.

DISTRIBUTION. East of the U.S.A. (Ohio, Indiana, Virginia, Arkansas, Tennessee, Kentucky, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida). 6 spp.

Inflectarius Pilsbry, 1940

Fig. 2405

Pilsbry, 1940: 766 (*Mesodon* subg.).

—? *Hubrichtius* Emberton, 1991: 157 (*Inflectarius* subg.; t.-sp. *Mesodon kalmianus* Hubricht, 1965; OD).

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

Shell (sub)globose, moderately thin, of 4.5-5 slightly convex whorls. Body whorl sometimes with crest before preapertural deflection. Embryonic whorls with interrupted radial striae. Postnuclear whorls with or without periostracal scales. Aperture moderately oblique, with (widely) reflexed margins; parietal tooth pronounced, small or absent. Palatal tooth pronounced, reduced or absent, flush with aperture or (rarely) recessed. Basal tooth present or ab-

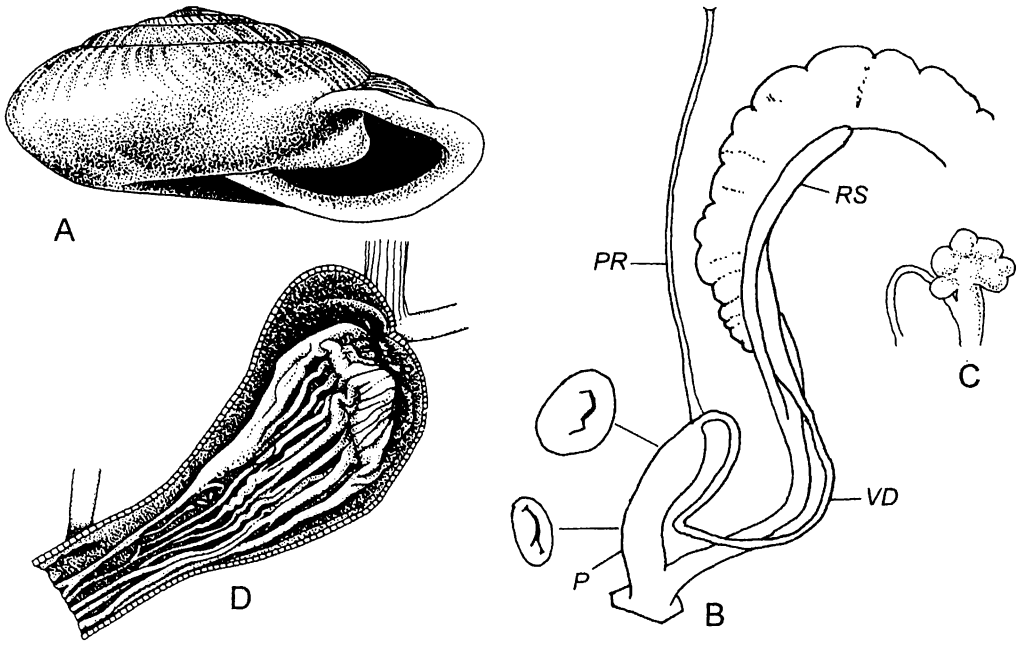


Fig. 2404. *Patera (Patera) appressa* (Say, 1821).
 A — shell: Ohio. Paris. B — reproductive tract. C — talon enlarged. After Pilsbry, 1940.
 D — interior of penis. After Emberton, 1991.

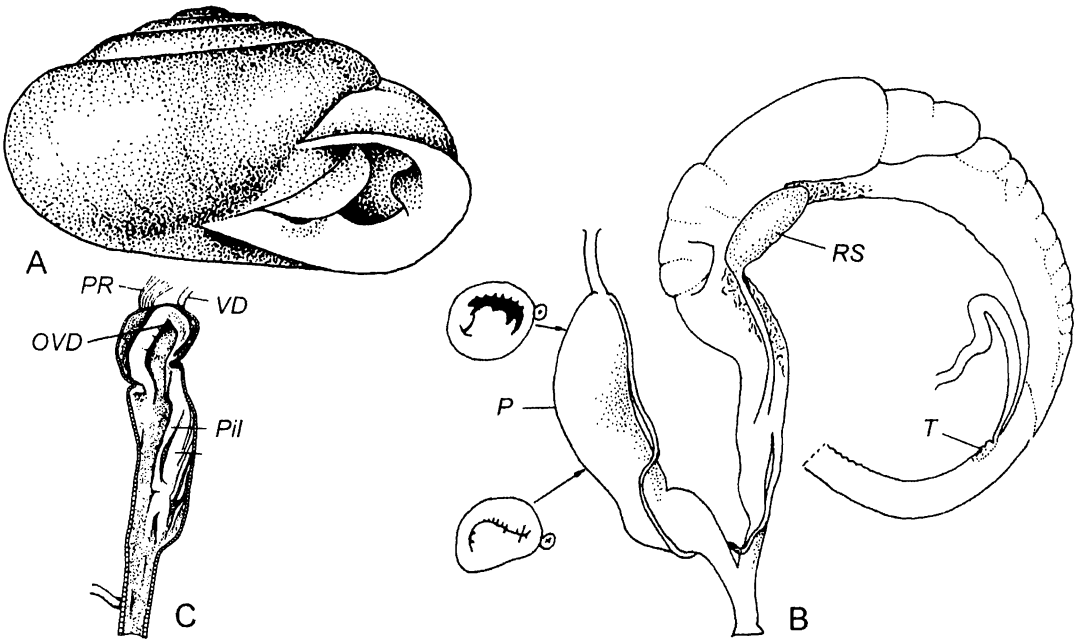


Fig. 2405. *Inflectarius inflecta* (Say, 1821).
 A — shell: near Valley Head, Alabama. Phil. No. 90923. B — reproductive tract. After Pilsbry, 1940. C — interior of penis. After Emberton, 1991

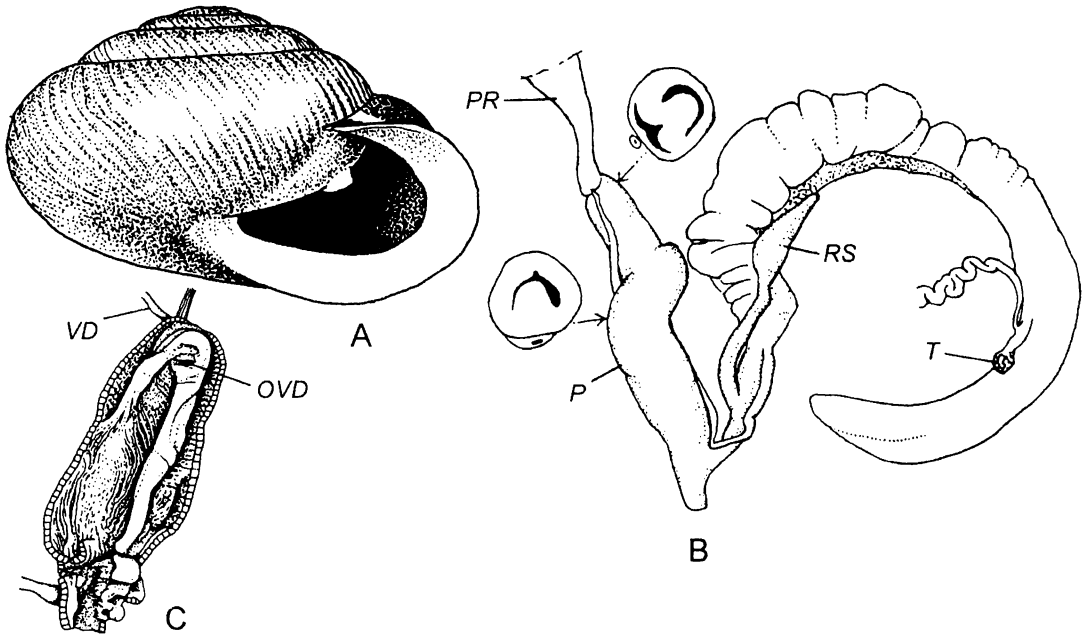


Fig. 2406. *Fumohelix wheatleyi* (Bland, 1860).

A — shell: N Carolina. Paris. B — reproductive tract. After Pilsbry, 1940. C — interior of penis. After Emberton, 1991

sent, rarely as a trace lamella. Umbilicus narrow, more or less covered, rarely creviced. Height 4.5-10.0, diam. 7.5-16.5 mm (7.5 × 11.7 mm).

Both left and right lateral pilasters in penis variable; 3rd pilaster may be present. Chalice generally a simple hood, rarely (in 1 species) shaped like a thick spoon. Dorsal structures absent (except for 3rd pilaster when present); ventral and peripheral structures absent.

DISTRIBUTION. Southeast of the U.S.A. (Kentucky, Tennessee, Arkansas, Alabama, Georgia). 10-11 spp.

REMARK. Emberton usually marks in bold diagnostic characters of his new taxa; he did not do so in the description of the subgenus *Hubrichtius*. I did not find any reliable characters for this subgenus, therefore I place this name in the synonymy of *Inflatarius* with a question mark.

Fumohelix Emberton, 1991

Fig. 2406

Emberton, 1991 160.

TYPE SPECIES — *Helix wheatleyi* Bland, 1860; OD.

Shell (sub)globose, moderately thin,

glossy, of 5-5.5 slightly convex whorls. Postapical whorls without periostracal hairs or scales. Aperture ovate, rather oblique, with widely reflexed margins. Parietal tooth pronounced; palatal tooth absent; basal tooth a faint trace of long, thin lamella. Umbilicus broadly to narrowly covered. Height 4.5-15.3, diam. 8.0-23.1 mm (10.7 × 16.0 mm).

Both left and right lateral pilasters in penis variable. Chalice, a thick-walled, hooded cup. Dorsal surface with or without a single or at most a pair of bulges; ventral surface sometimes with a bulge in midline; peripheral structures absent.

DISTRIBUTION. Southeast of the U.S.A. (Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama). 6 spp.

Mesodon Férussac, 1821

Férussac, 1821 37

— *Odomphium* Rafinesque, 1831 3 [no species mentioned; Pilsbry (1930c) designated *Helix thyroideus* Say, 1816 as t.-sp.).

— *Odontomphalum* Agassiz, 1847: 255 (nom. nov. pro *Odomphium* Rafinesque, 1831).

Pilsbry, 1940: 702. ICZN Opinion 1691, 1992.

Emberton, 1991 162.

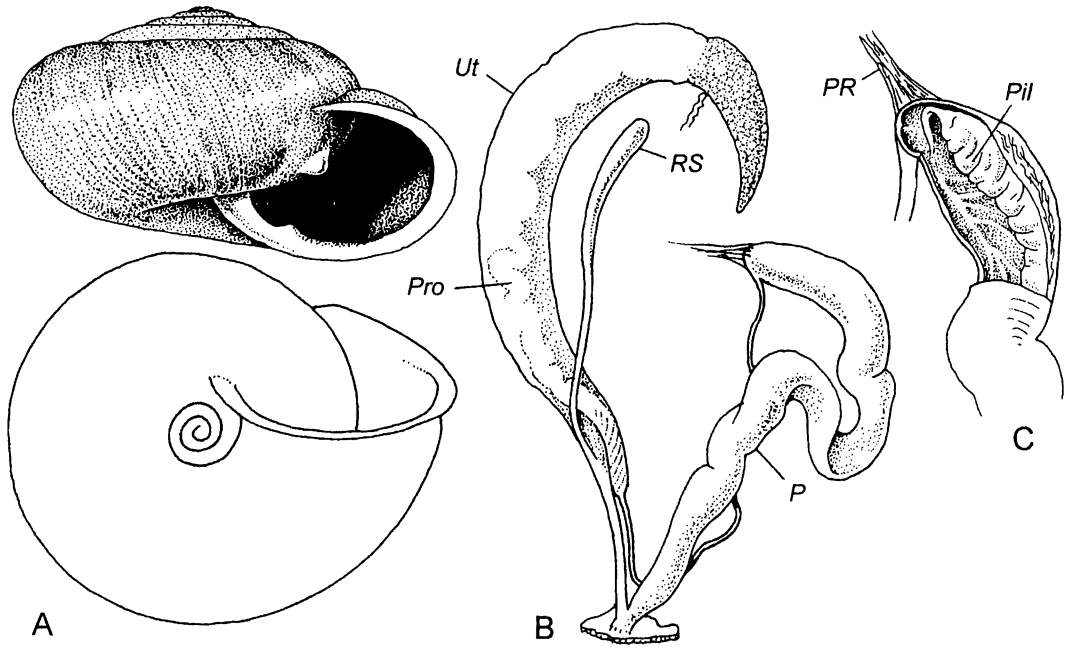


Fig. 2407 *Mesodon (Appalachina) sayana* (Pilsbry, 1906).

A — shell: Hamilton, Ontario. Phil. No. 67622. B, C — Beside road between campground and overlook coopers rock State forest, Preston Co., West Virginia, August 7-10, 1988. B — reproductive tract. C — interior of penis. Phil. No. A-17740.

TYPE SPECIES — *Helix thyroidus* Say, 1816; monotypy.

Conchologically *Mesodon* generally not separable from *Triodopsis* or *Allogona*.

Left lateral pilaster in penis rounded or cord-like, variable in length. Right lateral pilaster rounded or cord-like, variable in length or absent. Chalice variable, left wall higher than right; dorsal cords or ridges present, with or without enlarging into basal bulges, or absent. Ventral structures generally absent, rarely present as a mid-ventral pouch; peripheral structures generally absent, rarely present as a shoulder.

DISTRIBUTION. Eastern North America, westward to eastern Nebraska and Texas.

***Mesodon (Appalachina)* Pilsbry, 1940**
Fig. 2407

Pilsbry, 1940: 762.

TYPE SPECIES — *Polygyra sayana* Pilsbry, 1906; OD.

Shell large, subglobose. Periostracal hairs or scales absent. Aperture widely lunate, moderately oblique, with widely reflexed, expanded margins. Parietal tooth small or absent; palatal tooth

absent; basal tooth, a baso-columellar peg, or absent. Umbilicus open, moderately wide. Height 12.4-26.5, diam. 19.4-42.0 mm (13.0 × 22.6 mm).

Left lateral pilaster in penis rounded, variable in length; right lateral pilaster present or absent. Chalice somewhat spatulate, its left wall high and even. Dorsal, ventral and peripheral structures absent.

DISTRIBUTION. East of N America (Quebec, Ontario, Maine, Vermont, Massachusetts, Rhode Island, New York, Pennsylvania, Maryland, Ohio, Michigan, Kentucky, Virginia, North Carolina, Tennessee). 2 spp.

***Mesodon (Aphalogona)* Webb, 1954**
Fig. 2408

Webb, 1954b: 19 (pro sect.). Emberton, 1991 162.

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

Shell globose, medium to large. Periostracal hairs or scales absent. Aperture widely lunate, moderately oblique, with widely reflexed, expanded margins. Parietal tooth pronounced to absent; palatal tooth absent; basal tooth a long, thin lamella trun-

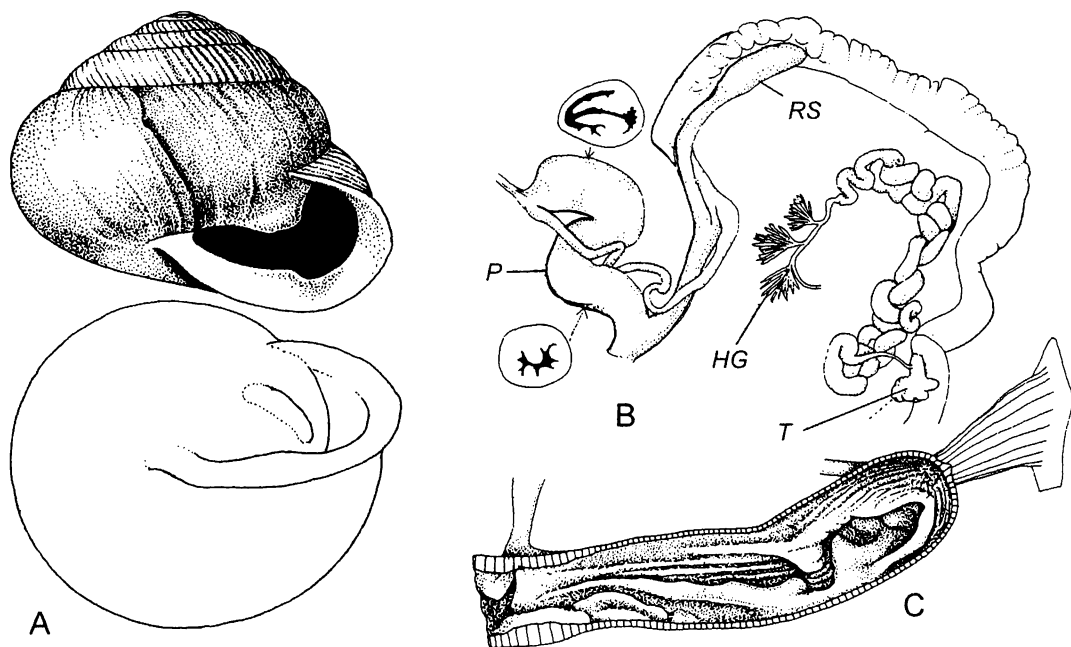


Fig. 2408. *Mesodon (Aphalogona) elevatus* (Say, 1821).

A — shell: Kentucky. Paris. B — reproductive tract. After Pilsbry, 1940. C — interior of penis. After Emberton, 1991.

cated palatally. Umbilicus narrow, broadly covered. Height 13.0-20.2, diam. 15-31 mm (17.6×22.0 mm).

Left lateral pilaster in penis cord-like, extending for 1/3 to full length of penis. Chalice either a V-shaped notch defined by massive walls, and which everts whenever penis everts, or a thin-walled, deep, scalloped-edged cylinder atop a solid, cylindrical pedestal; dorsal wall bearing 4-10 cord-like, subparallel, anastomosing ridges, running longitudinally to 30° obliquely; mid-ventral pouch present or absent; peripheral structures absent.

DISTRIBUTION. East of N America (Ontario, New York, Pennsylvania, Maryland, Virginia, North Carolina, Ohio, Michigan, Indiana, Illinois, Wisconsin, Iowa, Missouri, Arkansas, Kentucky, Tennessee, South Carolina, Alabama, Mississippi). 3 spp.

Mesodon (Akromesodon

Emberton, 1991)

Fig. 2409

Emberton, 1991: 163.

TYPE SPECIES — *Polygyra andrewsae normalis* Pilsbry, 1900; OD.

Shell globose, large. Periostracal hairs or scales on postapical whorls absent. Aperture irregularly quadrangular, with well expanded margins. Parietal tooth generally absent, rarely present as a trace; palatal and basal margins toothless. Umbilicus very narrow, broadly covered. Height 15.0-26.5, diam. 21-40 mm (27.3×33.4 mm).

Left lateral pilaster in penis cord-like, extending for full length of penis. Right lateral pilaster present or absent. Chalice, a deep, thin-walled scoop, with left wall much higher than right. Dorsal surface of penis bearing 8-12 cord-like, subparallel, anastomosing ridges, running longitudinally to 30° obliquely, many of which contiguous with one or both lateral pilasters, and many of which enlarged basally to form a network of large basal bulges. Ventral and peripheral structures absent.

DISTRIBUTION. Southeast of the U.S.A. (Tennessee, North Carolina, South Carolina, Georgia, Alabama). 3 spp.

Mesodon (Mesodon s. str.)

Fig. 2410

Shell (sub)globose, medium-sized to

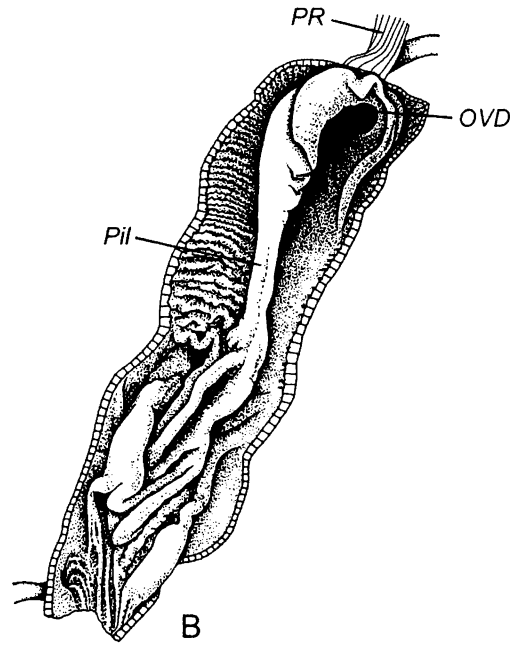
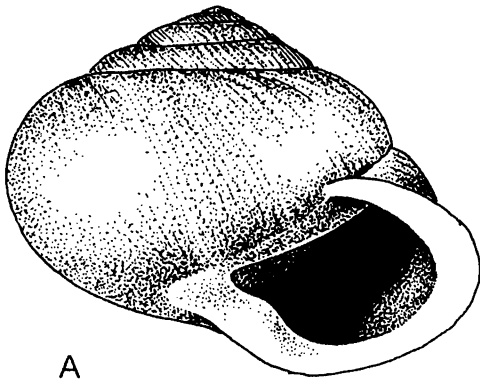


Fig. 2409. *Mesodon (Akromesodon) normalis* (Pilsbry, 1900).

A — shell: Nantahala Gorge, Swain Co., N Carolina. Paris. B — interior of penis. After Emberton, 1991.

large. Periostracal hairs or scales on postembryonic whorls absent. Aperture ovate, moderately oblique, with widely reflexed margins, toothless or with a vestigial parietal tooth only. Umbilicus narrow, partly to fully and broadly covered. Height 8.6-18.3, diam. 12.5-31.0 mm (13.6 × 20.5 mm).

Both lateral pilasters in penis cord-like, extending for full length of penis. Chalice, a thick-walled, rounded or pointed ear-like flap, flared to the left, rolled over right in unverted penis. Dorsal surface of penis bearing about 8-12 thin parallel ridges, equal in width, which is constant or gradually increases basally. Ventral structures absent; peripheral step-like shoulder may be present.

DISTRIBUTION. East of N America (Ontario, Massachusetts, Rhode Island, Connecticut, Ohio, Michigan, Indiana, Illinois, Minnesota, Iowa, Kansas, Missouri, Arkansas, Oklahoma, Kentucky, Tennessee, North Carolina, Alabama, Georgia, Texas). 4 spp.

AMMONITELLIDAE Pilsbry, 1930

Pilsbry, 1930c: 303 (Helicidae subf.) (December 13).

— Megomphicinae H. Baker, 1930: 96, 100 (January 15).

— Polygyrellinae H. Baker, 1955: 111 (footnote).

Shell generally of zonitoid appearance, much depressed to discoid, thin, finely sculptured. Last whorl rounded. Aperture simple or with 1-3 teeth; aperture margins not expanded or reflexed, sometimes thickened. Umbilicus rather broad and deep.

Jaw with flat ribs or delicate vertical striation.

Kidney short or medium, secondary ureter open or complete.

Talon of unusually great length, without externally visible chamber. Flagellum short, concealed or absent. Epiphallus poorly defined. Penis internally with longitudinal, more or less corrugated folds, without a verge. Spermathecal stalk long, evenly slender, without diverticle; at its base there is a well developed accessory (additional) sac, inner surface of which filled with strong, sometimes corrugated, longitudinal folds.

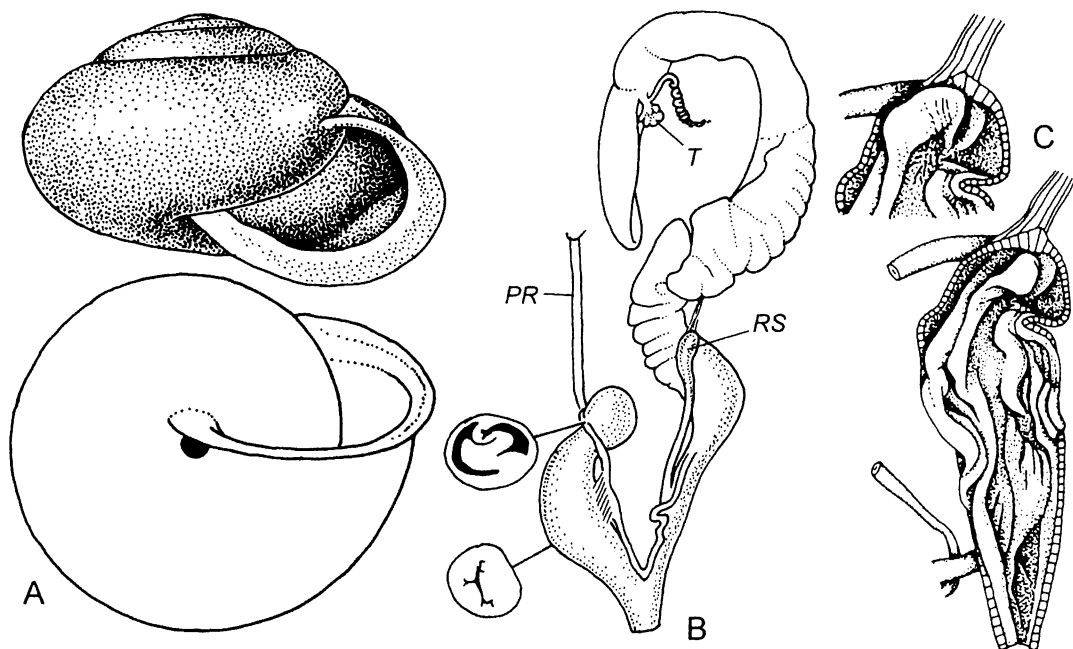


Fig. 2410. *Mesodon (Mesodon) thyroideus* (Say, 1816).

A — shell: Bladenboro, Bladen Co., N. C., roadside dump along SH 242. Moscow No. Lc-28146 (StB No. 3731). B — reproductive tract. After Pilsbry, 1940. C — interior of penis and its proximal part enlarged. After Emberton, 1991

DISTRIBUTION. West of the U.S.A. (western Montana, Idaho, Washington, Oregon, southward to southern California).

REMARK. Although the name *Megomphicinae* has priority over *Ammonitellidae*, the latter name has been and is in prevailing usage and therefore should be conserved (ICZN Art. 35.5).

Glyptostoma Bland et Binney, 1873

Fig. 2411

Bland & Binney, 1873: 244.

TYPE SPECIES — *Helix newberryanum* Binney, 1873; monotypy.

Shell depressed, thin, glossy, of 5.5-6 rather convex whorls. Last whorl not deflected. Color uniformly dark-brown or chestnut to black; aperture inside whitish, with bluish tint. Embryonic whorls smooth. Later whorls nearly smooth, just with weak radial wrinklets and faint traces of spiral striae. Aperture toothless, subcircular to ovate, moderately oblique, with thin and sharp margins. Parietal callus thin, bluish. Umbilicus widely open, profound, cup-

shaped. Height 12.2-20.4, diam. 25.7-39.3 mm (15.2 × 31.5 mm).

Vas deferens slender throughout entire length, entering epiphallus terminally. Flagellum absent. Epiphallus rather short, stout; there is no special orifice in place of its entering the penis, but slight narrowing. Penis more or less cylindrical, its inner surface with 3-4 corrugated pilasters and irregular semicircular folds and tubercles. Penial retractor inserting to penis/epiphallus junction. Accessory sac of spermathecal shaft shortly ovate, clavate or spindle-shaped, without a ligament.

DISTRIBUTION. S California (from San Gabriel Range to Ensenada de Todos Santos, Lower California). 2 spp., one of them of 2 subsp.

Megomphix H. Baker, 1930

Fig. 2412

Baker H. 1930: 96. Pilsbry, 1946: 506.

TYPE SPECIES — *Macrocyclus hemphilli* Binney, 1879; OD.

Shell depressed, with flattened to nearly

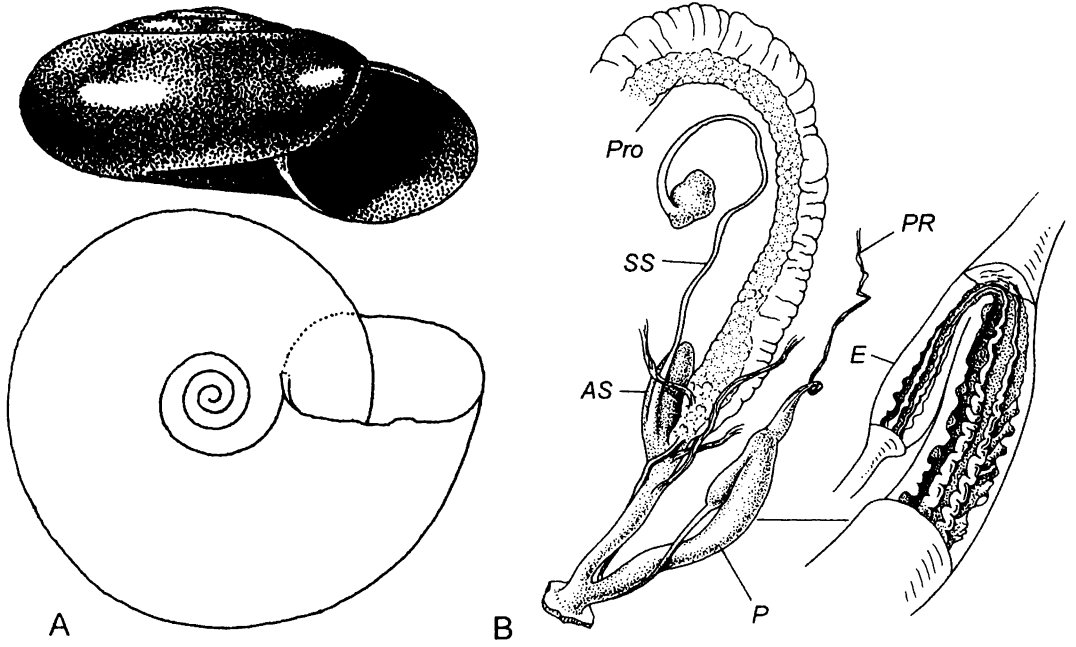


Fig. 2411 A — *Glyptostoma newberryanum* (Binney, 1873). Shell: San Diego Co., California. Chicago No. 49848. B — ! *Glyptostoma gabrielense* Pilsbry, 1938. Reproductive tract and interior of penis and epiphallus. Monrovia Canyon, Monrovia, St. Gabriel Mts., Los Angeles Co. [California], April 30, 1960. Chicago No. 98041.

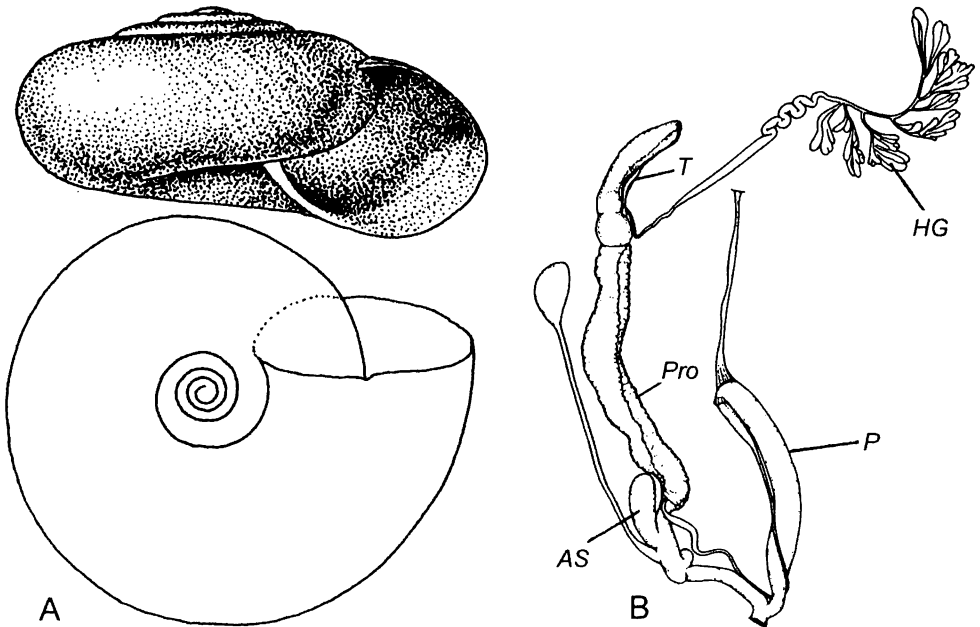


Fig. 2412. *Megomphix hemphilli* (Binney, 1879). A — shell: Oregon. Chicago No. 97786. B — reproductive tract. After H. Baker, 1930.

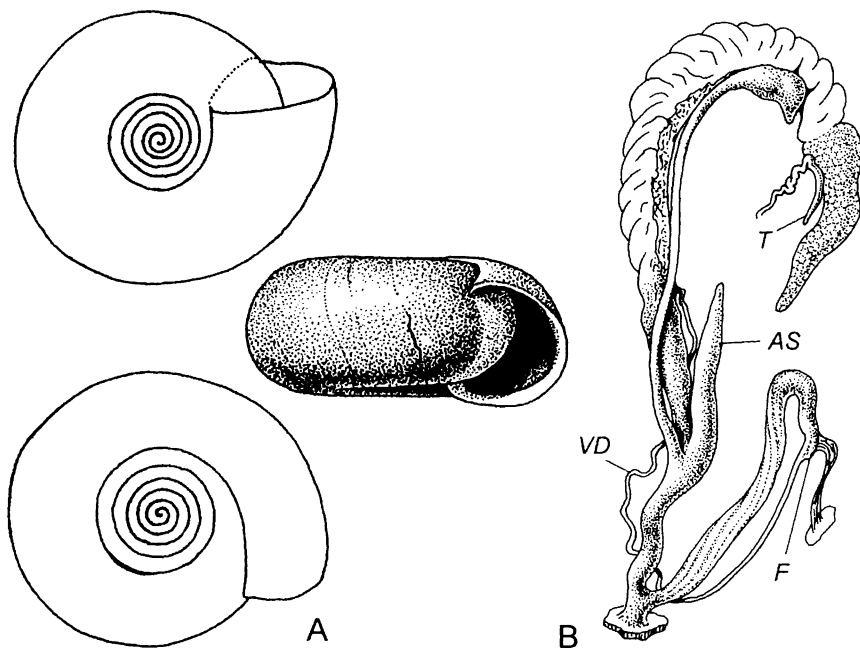


Fig. 2413. *Ammonitella yatesi* (Cooper, 1869).
Calaveras Co., California, February 26, 1972. A — shell. B — reproductive tract. Moscow

flat spire, thin, translucent, glossy, of 5.25-6 moderately convex whorls. Last whorl not descending in front. Color pale-yellow to greenish. Embryonic whorls smooth or with extremely delicate, closely spaced, spiral striae. Postapical whorls nearly smooth, polished. Aperture rounded, toothless, only slightly oblique, with thin, sharp margins. Umbilicus profound, perspective. Height 4.6-8.5, diam. 7.8-20.0 mm (8.0 × 17.3 mm).

Talon slender, fusiform. Vas deferens somewhat swollen along free oviduct, then narrowed and tightly adhering to penis. Flagellum missing. Epiphallus short, slightly enlarged, with thin wall passing into a pilaster along side opposite to penis and into a vague corona of low, knobby thickenings near termination; opening by a simple pore on one side of penial apex. Penis long, rather slender, with a large lumen, its inner surface with numerous, beaded, longitudinal folds, two of which form heavier pilasters at apical portion. Penial retractor attached to penis terminally. Accessory sac at base of spermathecal shaft ovate, without ligament.

DISTRIBUTION. Northwest of the U.S.A. (Washington, Oregon). 2 spp.

Ammonitella Cooper, 1869 Fig. 2413

Cooper, 1869: 209. Pilsbry, 1939: 560.

TYPE SPECIES — *Ammonitella yatesi* Cooper, 1869; monotypy.

Shell flat, planorboid, biconcave, glossy, of 6.25-7 convex, tightly coiled whorls. Last whorl slightly, gradually deflected. Color brownish or isabella shading into cream-buff behind aperture. Embryonic whorls smooth. Later whorls with faint, irregular radial wrinklets. Aperture narrow, lunar, not strongly oblique, without teeth, its margins thickened within. Umbilicus very broad, quite perspective. Height 3.2-4.0, diam. 6.6-8.8 mm (3.4 × 7.9 mm).

Talon slender, tapering, shorter than albumen gland. Vas deferens thin throughout entire length, not adhering to penis. Flagellum vestigial, tightly applied to vas deferens. Epiphallus not demarcated from penis. Penis slender, thin-walled, internally with regular, obliquely-longitudinal folds. Penial retractor short, attached to very proximal section of epiphallus. Accessory sac of spermathecal stalk slender, subcylindrical, tapering, without ligament. Spermathecal

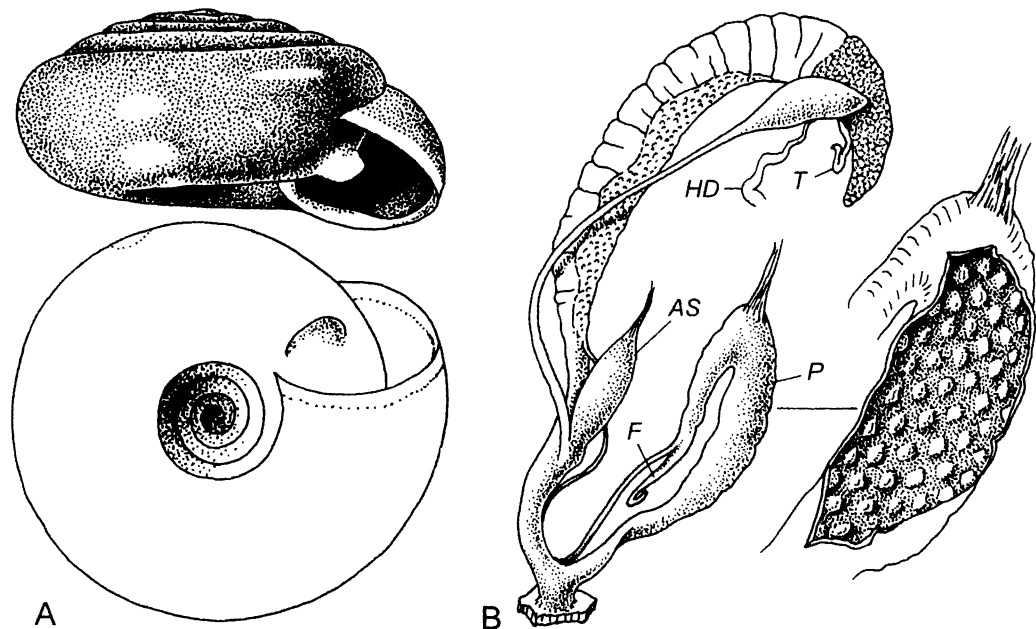


Fig. 2414. *Polygyrella polygyrella* (Bland et Cooper, 1861).

Glade Creek, Lochsa River, E of Lowell, Idaho Co., Idaho, April 24, 1960. A — shell. B — reproductive tract and interior of penis. Chicago No. 98164.

stalk slender; reservoir (nearly) reaching base of albumen gland.

DISTRIBUTION. N California (Calaveras Co.). Also known from Miocene of Oregon. 1 sp.

Polygyrella Binney, 1863

Fig. 2414

Bland in Binney & Bland, 1869: 112.

— *Adelodonta* Ancey, 1880: 334 (t.-sp. *Helix polygyrella* Bland et Cooper, 1861; OD).

TYPE SPECIES — *Helix polygyrella* Bland et Cooper, 1861; OD.

Shell almost flat, discoid, translucent, glossy, with somewhat convex to nearly flat spire, of 6.5-8.5 tightly coiled whorls. Last whorl a little descending in front. Color pale greenish-yellow. Embryonic whorls smooth. Postapical sculpture of rather strong radial riblets becoming obsolete near aperture and disappearing on base. Aperture lunate-triangular, with more or less thickened margins; parietal tooth erect, lamellar. Within last whorl there are 1 or 2 radial rows of 3 teeth each, visible through shell wall. Umbilicus wide, funnel-like, sometimes enlarged in

last half whorl. Height 3.7-6.0, diam. 9.3-12.5 mm (4.0 × 9.3 mm).

Talon vermiform. Flagellum well developed, tapering. Epiphallus of moderate length. Penial retractor insertion marks penis/epiphallus junction. Penis subcylindrical, its inner surface covered with regular pattern of rounded tubercles, more or less distinctly arranged in longitudinal rows. Accessory sac of spermatheca with apical ligament.

DISTRIBUTION. Northwest of the U.S.A. (Idaho, Montana, Washington, Oregon). 1 sp.

REMARK. Pilsbry [1894 (1894-1895): 79] indicated that the name *Polygyrella* has been introduced by Binney in his *Synopsis of North American land shells* (1863). At the same time Pilsbry mentioned that Joseph Henry, Secretary of the Smithsonian Institution, informed him that the *Synopsis* is "a mere proof" and "should not be quoted as authority or referred to as a published work." However Pilsbry believed that this suggestion cannot be followed because "Synopsis is not in any ordinary sense a proof-sheet. A large edition of it was printed and widely circulated, as an official publication of the Smithsonian Institution" Nev-

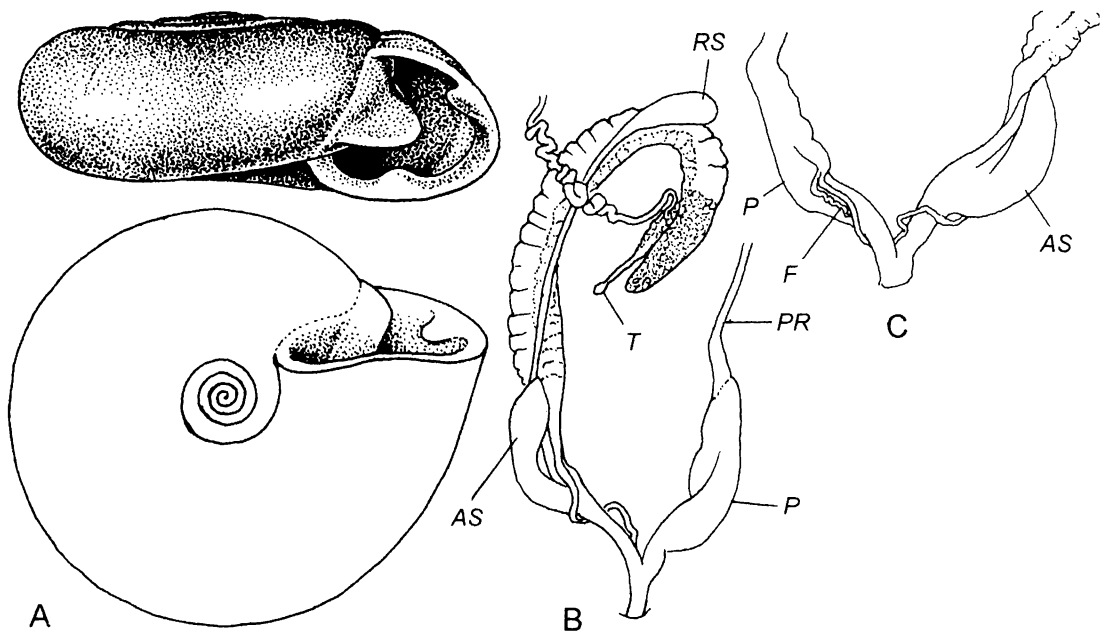


Fig. 2415. *Polygyroidea harfordiana* (Cooper, 1870).

A — shell: Fresno Co., California. Holotype. Phil. No. 11451 B — reproductive tract. C — distal part of reproductive tract from other side. After Pilsbry, 1939.

ertheless "Synopsis", indeed, is not a publication in sense of ICZN (Art. 8.1, 9.7), therefore the author of the name *Polygyrella* is Bland (1869). I am indebted to Drs. David Robinson (Philadelphia) and Igor Muratov who helped me to clarify this problem.

Polygyroidea Pilsbry, 1924

Fig. 2415

Pilsbry, 1924: 134 (*Polygyrella* subg.).

TYPE SPECIES — *Daedalochila harfordiana* Cooper, 1870; OD.

Shell nearly flat, with scarcely protruding spire, somewhat translucent, of 5 moderately convex whorls. Last whorl slightly to moderately descending just behind aperture. Color uniformly yellowish. Embryonic whorls smooth. Postnuclear sculpture nearly absent except for weakly and closely striated spire and sutural area. Aperture rounded-triangular, with margins slightly thickened inside. Parietal lamella compressed, obliquely entering; basal tubercle and stronger palatal teeth stand on margin thickening. Umbilicus conic, comparatively

narrow but quite perspective. Height 3.5-4.2, diam. 8.3-11.5 mm (4.0 × 10.5 mm).

Talon nearly as long as albumen gland, with enlarged summit. Flagellum short, slender, vermiform, tightly applied to penis. Epiphallus short, stout, entering penial chamber by a small orifice at some distance below apex of penis. Inner surface of penis closely ridged, all ridges being granulose. Accessory sac of spermatheca banana-shaped, lacking apical ligament; reservoir nearly attending albumen gland.

DISTRIBUTION. California (Fresno and Mariposa Co.). 1 sp.

OREOHELICIDAE Pilsbry, 1939

Pilsbry, 1939: 412 (*Camaenidae* subf.).

Shell dextral or (rarely) sinistral, depressed to pyramidal, opaque, dull or slightly glossy. Last whorl rounded or angled to keeled. Color uniform or with dark bands. Postapical whorls radially striate to roughly sculptured with radial or spiral cords. Aperture toothless.

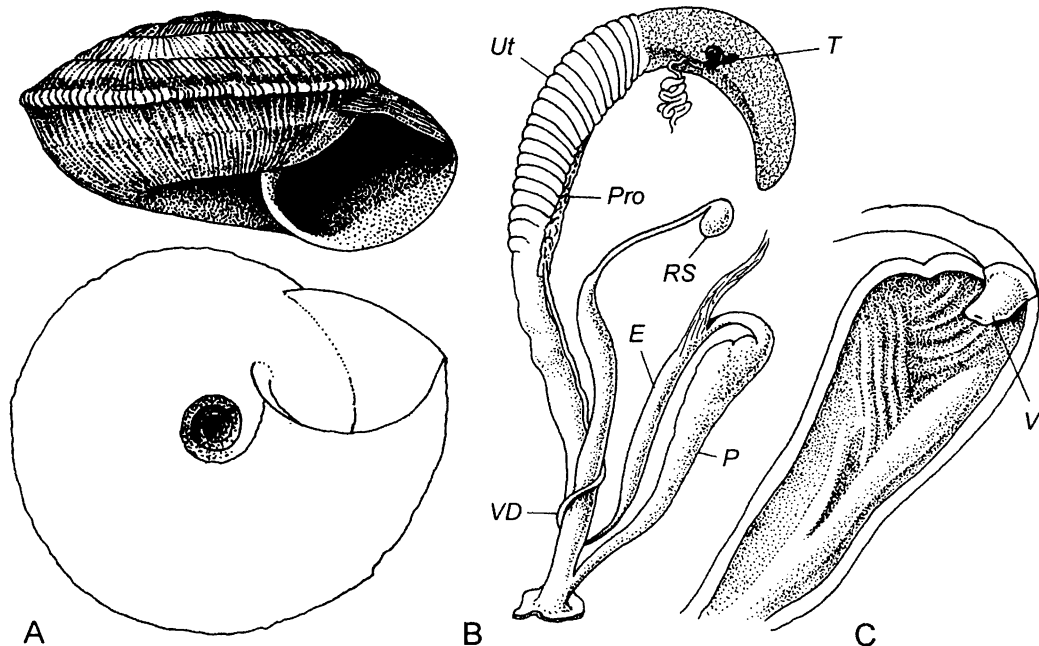


Fig. 2416. *Radiocentrum chiricahuana* (Pilsbry, 1905).

Cave Creek on trail to Crystal Cave, Chiricahua Mts., Arizona, April 16, 1993. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28231.

Jaw finely transversally and longitudinally striated.

Kidney short; primary ureter entirely or partially completed, secondary ureter open.

Talon exposed, involute, heavily pigmented. Flagellum absent. Epiphallus well developed. Penis internally with a system of smoothed folds. Verge present or wanting. Spermathecal stalk without diverticle or accessory sac, with swollen basal section.

DISTRIBUTION. N America: N Mexico and northward to Canada.

Radiocentrum Pilsbry, 1905

Fig. 2416

Pilsbry, 1905: 283 (*Oreohelix* subg.). Babrakzai et al., 1974: 4.

TYPE SPECIES — *Oreohelix chiricahuana* Pilsbry, 1905; OD.

Conchologically differs from *Oreohelix* (see next genus) by less number of radially ribbed embryonic whorls (about 1.5). Height 6-9, diam. 10.8-16.5 mm (6.6 × 11.1 mm).

Epiphallus about as long as penis, slender anteriorly. Penis club-shaped, wide and truncate at upper end, with distal portion

internally plain; proximal portion with oblique ridges irregularly in chevron; there is a minute verge. Penial retractor inserted on epiphallus a short distance from its entrance in penis.

Oviparous animals.

DISTRIBUTION. N America (southern New Mexico, Arizona, northwestern Chihuahua; Santa Catalina Island, California). 10 spp. & subsp.

Oreohelix Pilsbry, 1904

Fig. 2417

Pilsbry, 1904: 131

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

Shell usually depressed but varying from nearly discoidal or sublenticular to pyramidal, of 4-6 moderately convex whorls. Periostracum in adult shells thin or absent. Color yellowish to light-corneous, originally with 2 darker bands — above and below periphery; sometimes with many bands or none. Embryonic whorls (over 2 in number), with radial striae or riblets and usually some spiral sculpture. Later whorls varying from nearly smooth to heavily sculptured

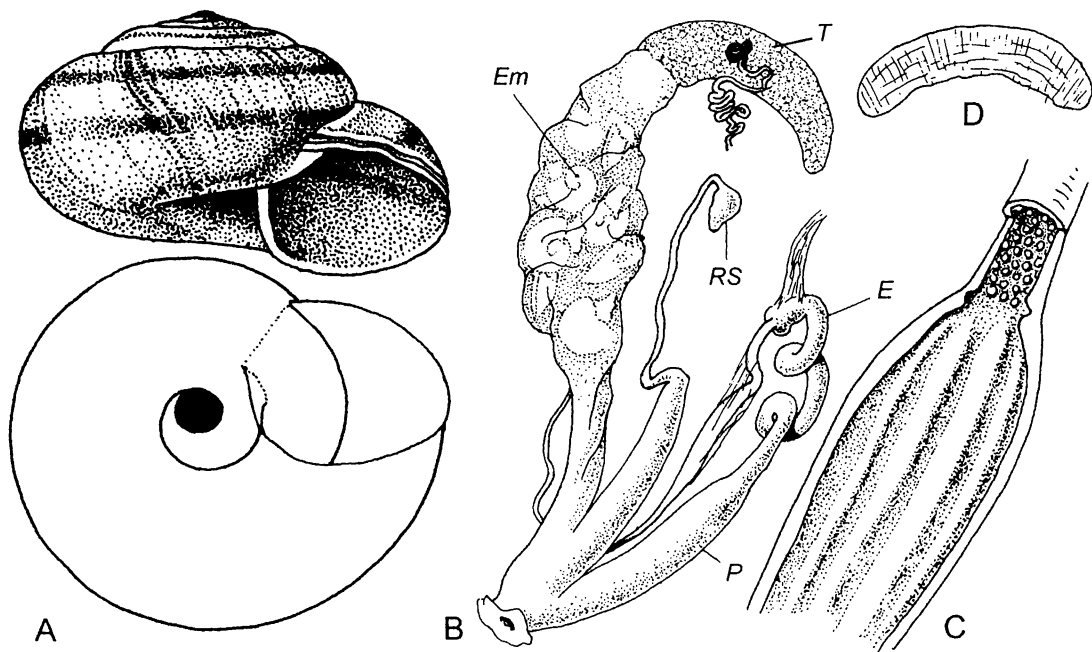


Fig. 2417 *Oreohelix strigosa* (Gould, 1846).

Ouray Co., Colorado, July 17, 1969. A — shell. B — reproductive tract. C — interior of penis. D — jaw. Moscow No. Lc-25686 (gift of C. Coney).

with radial ribs or with a few strong spiral cords. Aperture rounded or angular, with blunt or sharp simple margins; columellar margin dilated. Umbilicus moderately open. Height 5-20, diam. 9-28 mm (12.0 × 21.2 mm).

Epiphallus not shorter than penis, more or less fusiform. Penis irregularly cylindrical, with distal part internally folded or with irregular fleshy bodies, proximal part papillose; verge absent.

Ovoviviparous animals.

DISTRIBUTION. N America (S Saskatchewan and British Columbia southward through mountain states to W Chihuahua; South Dakota; loess of eastern Iowa). About 80 spp., subspp. & forms.

THYSANOPHORIDAE Pilsbry, 1926

Pilsbry, 1926: 107 (Sagdidae subf.).

Shell conic and subglobular to flat, thin, fragile, of 3.5-6 convex whorls. Postapical sculpture mostly comprises delicate, oblique, widely spaced, periostracal riblets.

Jaw with a few flat ribs.

Kidney moderately wide, its length between 2 and 3 times the greatest width, and 2 to 3 times length of pericardium. Primary ureter completed, secondary ureter completed or (rarely) partially open.

Talon simple, mostly exposed and well developed. Flagellum, when present, vestigial, located in walls of epiphallus (exception: *Suavitas* has a well-developed flagellum). Penis with or without verge. Spermathecal stalk of medium length, i.e., decidedly shorter than oviduct, without diverticle or accessory sac.

DISTRIBUTION. South of N America, Central America, Colombia, Bermudas, Puerto Rico, Cuba, Jamaica, Hispaniola, Trinidad.

Microconus Strebel et Pfeffer, 1880

Fig. 2418

Strebel & Pfeffer, 1880: 29.

TYPE SPECIES — *Helix wilhelmi* L. Pfeiffer, 1866; monotypy.

Shell depressed-subglobose, of about 4.5 quite convex whorls. Body whorl rounded, not deflected. Color varying from corneous-yellow to amber. Initial 0.5 whorl smooth,

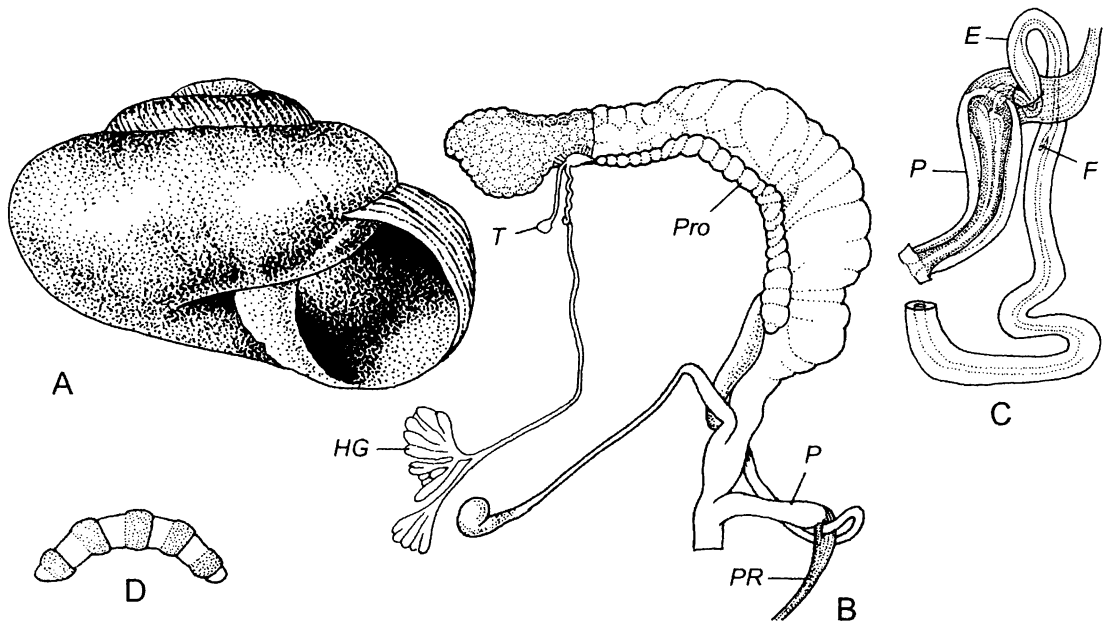


Fig. 2418. *Microconus wilhelmi* (L. Pfeiffer, 1866).

A — shell: Costa Rica. Paris. B — reproductive tract. C — interior of penis and epiphallus. D — jaw. After Baker, 1927

next about 1.5 finely, densely, obliquely-radially striated. Postnuclear surface with delicate, distant periostracal riblets; silky spiral striation also present. Aperture sub-circular, moderately oblique, with thin, simple margins; columellar margin broadly expanded. Umbilicus rather narrow, at most only partly obscured by reflection of columellar margin. Height 1.5-3.0, diam. 2-4 mm (2.1 × 3.6 mm).

Jaw solid, with 5-7 broad, flat ribs.

Hermaphroditic gland of 2 lobes, each lobe with a number of claviform acini. Talon exposed, with long, slender stalk and globular head. Vas deferens with thick, muscular walls. Epiphallus developed in terminal loop of vas deferens which is caught in penial retractor; marked off from remainder by a region with thick walls and small lumen, parallel to which lies a small, blind pouch (like a vestigial flagellum). Penis stout, short, cylindrical, internally with 3 axial pilasters which become heavier near apex; verge obsolescent. Penis surrounded by an intimate sheath which is thicker and more closely attached near apex. Penial retractor invests 1st limb of epiphallus and then splits to insert either side of 2nd limb on apex of penis; fibers continuous with

those of sheath. Vagina and atrium rather short. Spermathecal stalk long, reservoir embedded in albumen gland.

DISTRIBUTION. Central America from Canal Zone to Veracruz. 2 spp.

Miroconus Baker, 1927

Fig. 2419

Baker, 1927: 235 (*Thysanophora* sect.).

TYPE SPECIES — *Thysanophora paleosa* Strebel et Pfeffer, 1880; OD.

Shell shortly conic, of 4.5-5 moderately convex whorls. Last whorl rounded or scarcely angulated, straight. Color corneous. Initial 0.5 whorl smooth, next 1.5 whorls with dense, fine, regular, obliquely-radial striation. Postapical sculpture of radial periostracal threadlets and spiral striae; mentioned threadlets locally form short triangular processes (as in *Acanthinula*). Aperture widely ovate, moderately oblique, with simple margins. Umbilicus not wide, deep, perspective. Height 3.0-4.5, diam. 4-5 mm (3.0 × 4.2 mm).

Jaw similar to that of *Microconus*, but ribs (at least, in type species) narrower, more transparent and much less conspicuous.

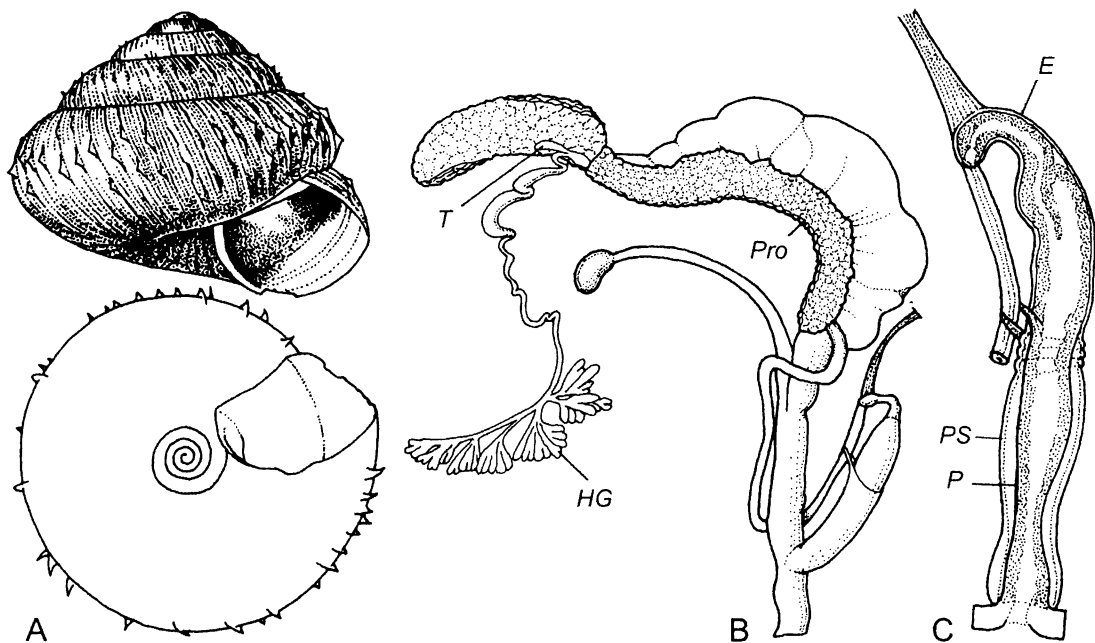


Fig. 2419. *Miroconus paleosa* (Strebel et Pfeffer, 1880).

A — shell: Tanango Hills near Necaxa, Puebla, Mexico. Phil. No. 256930. B — reproductive tract. C — interior of penis. After Baker, 1927

Hermaphroditic gland of 5-6 conic clusters, each composed of branched acini; duct slightly convoluted in distal part. Talon small, long claviform. Vas deferens stout, extending into peni-oviducal angle. Epiphallus short. Penis large, stout, internally with heavy axial folds. Intimate penis sheath surrounds more than a half of penis, attached by fibers to vas deferens. Penial retractor inserted on apex of epiphallus. Vagina long, quite slender. Spermathecal stalk moderately long, reservoir embedded between prostate and columellar muscle at 1/3 length of spermoviduct.

DISTRIBUTION. Mexico, Costa Rica. 2-3 spp.

Thysanophora

Strebel et Pfeffer, 1880

Fig. 2420

Strebel & Pfeffer, 1880: 30 [pro "Gruppe"].

TYPE SPECIES — *Helix impura* L. Pfeiffer, 1866; SD Pilsbry, 1887

Shell depressed, with more or less flattened spire, thin, lusterless, of about 4 convex, somewhat shouldered whorls. Last whorl rounded or scarcely angled above

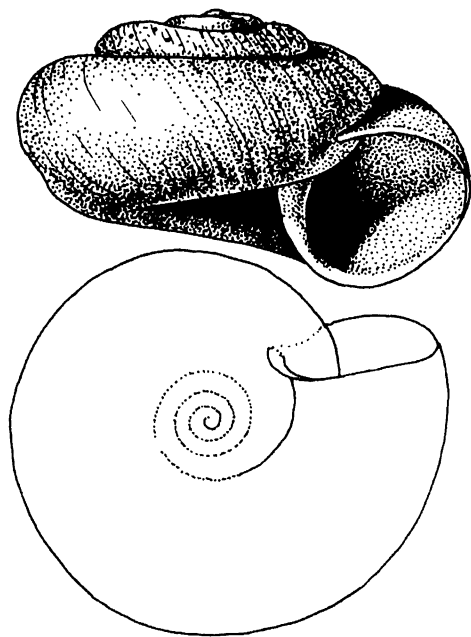


Fig. 2420. *Thysanophora impura* (L. Pfeiffer, 1866).

Tunkas, Yucatan [Mexico]. Phil. No. 8204.

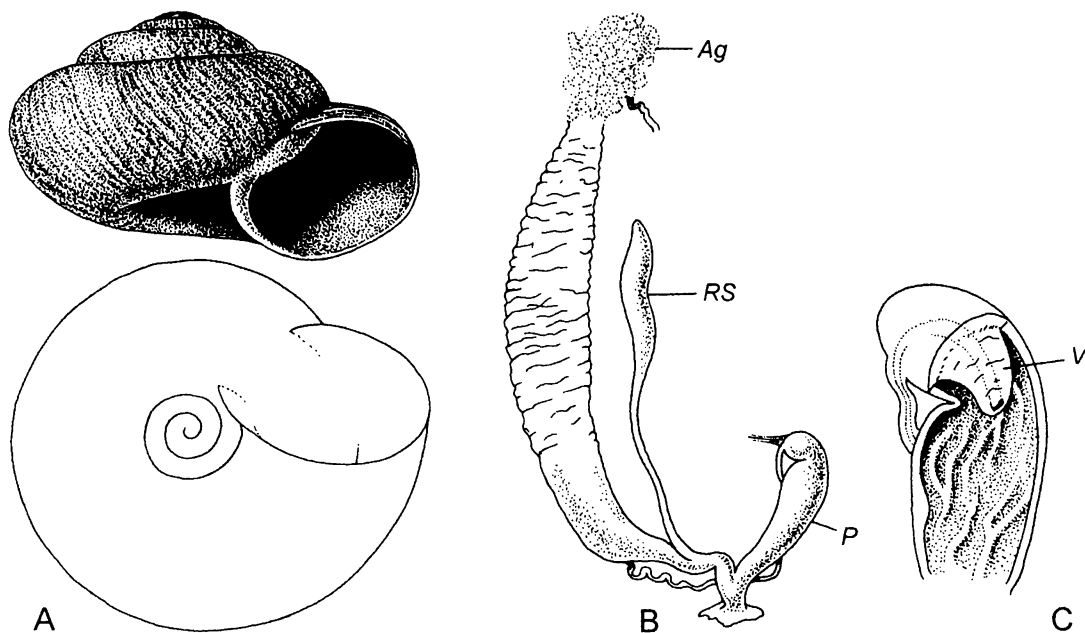


Fig. 2421 *Setidiscus hornii* (Gabb, 1866).

Cave Creek Canyon, Chiricahua Mts., Arizona, April 16, 1993. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28151.

mid-line, straight. Color (dark) corneous. Embryonic whorls with oblique threadlets. Postapical whorls with very fine, oblique, periostracal threads, delicate tuberculation and irregular radial striae; delicate scattered hairs may be present. Surface often dirty or with an earthy incrustation. Aperture broadly ovate, moderately oblique, with thin, simple margins. Umbilicus rather broad, perspective. Height 0.8-8.0, diam. 2-17 mm (2.3 × 4.3 mm).

Flagellum absent. Epiphallus weak. Penis well-developed, with retractor. Spermathecal duct of medium length.

DISTRIBUTION. Greater Antilles, Bermuda Islands, south-eastern N America, Central America. 5-7 spp.

Setidiscus H. Baker, 1927

Fig. 2421

Baker H., 1927: 235.

TYPE SPECIES — *Helix hornii* Gabb, 1866; OD.

Shell depressed, lusterless, of 4.5-5 moderately convex whorls. Color dark-corneous. Embryonic sculpture of radial threadlets

and fine spiral striae. Postapical whorls with delicate, rather irregular radial ridgelets and minute, scattered setae. Aperture widely lunate to rounded, moderately oblique, with simple margins. Umbilicus rather broad, perspective. Height 2.0-3.1, diam. 3.1-4.7 mm (2.0 × 3.2 mm).

Right ocular retractor passing through peni-oviducal angle.

Secondary ureter partially open.

Talon hidden. Epiphallus, an enlargement of vas deferens at some distance under penial retractor insertion. Penis clavate, with a small conic verge and irregular pattern of folds on inner surface. Penial retractor inserted on base of vas deferens and apex of penis. Free oviduct elongate, vagina a little shorter. Spermathecal stalk of medium length, reservoir elongated, not distinctly demarcated from stalk, not reaching albumen gland.

DISTRIBUTION. Colombia, Central America, south of United States. 2-4 spp.

Lyroconus H. Baker, 1927

Fig. 2422

Baker H., 1927: 235.

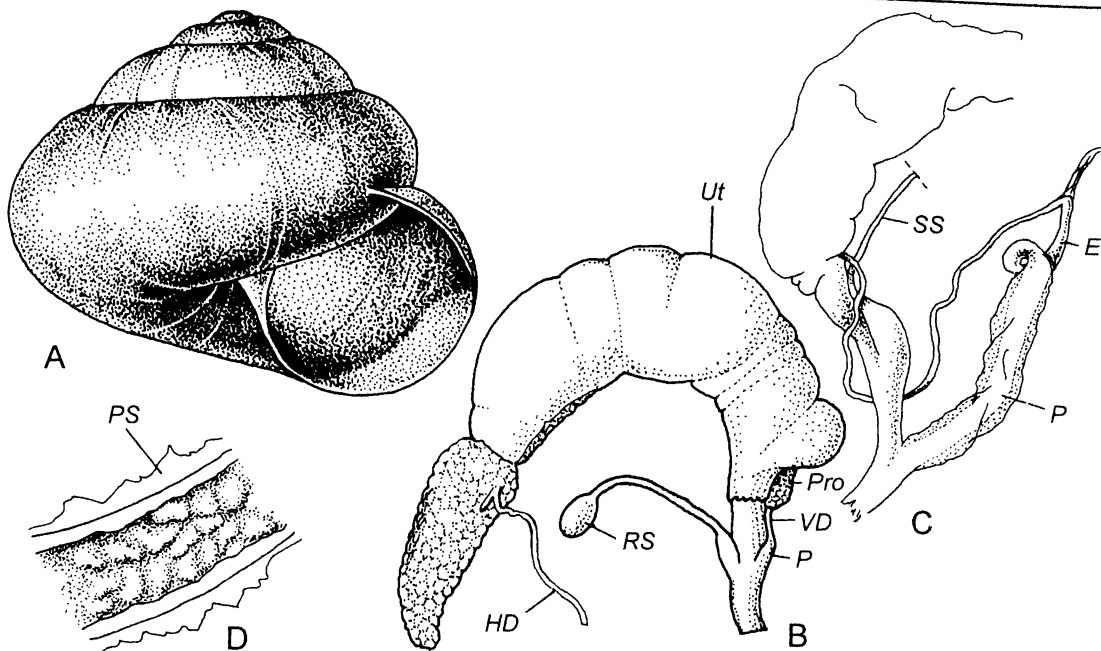


Fig. 2422. *Lyroconus plagiptychus* (Shuttleworth, 1854).

A — shell: Little Swan Island. Moscow No. Lc-28137 (Phil. No 150704). B — reproductive tract of specimen with reduced penis. After Baker, 1927 C, D — Cabo Rojo, Puerto Rico, August 10, 1939. C — reproductive tract. D — interior of penis. Phil. No. A 2678-C.

TYPE SPECIES — *Helix plagiptycha* Shuttleworth, 1854; OD.

Shell depressed-conic or subglobose, semi-transparent, slightly glossy, of about 4.5 strongly convex whorls. Body whorl rounded, scarcely deflected. Color brown. Embryonic whorls practically smooth. Postapical sculpture of weak radial striae and very obliquely retractive periostracal threadlets which may be more or less interrupted. Aperture subcircular, oblique, with thin, simple margins; columellar margin shortly dilate. Umbilicus narrowly open. Height 2.2-3.0, diam. 2.5-3.0 mm (2.6 × 3.0 mm).

Talon small, rod-like. Vas deferens rather long or short. Flagellum not located. Inner surface of penis with a system of smoothed tubercles of irregular shape. Free oviduct and vagina subequal in length. Spermathecal stalk rather short, swollen basally; reservoir attending middle section of spermoviduct.

DISTRIBUTION. Central America, south of United States, Puerto Rico, Swan Islands, Jamaica. 2-3 spp.

REMARK. H. Baker (1927) stated that vas deferens in this species is very short, epiphallus is absent, penis is vestigial, lacks

retractor, free oviduct is moderately long, vagina is almost absent. Perhaps, this is a case of sexual seasonal dimorphism, as, for example, in some Valloniidae. The material I dissected has been identified by H.B. Baker.

Pulchriconus Thompson, 1958

Fig. 2423

Thompson, 1958: 8 (*Microconus* subg.).

TYPE SPECIES — *Microconus (Pulchriconus) pilsbryi* Thompson, 1958; OD.

Shell ovate-globose, of 4-4.5 strongly convex, (strongly) shouldered whorls. Last whorl somewhat descending toward aperture. Color generally clay or corneous. Embryonic whorls with reticulate pattern of fine granules. Later whorls minutely but distinctly roughened by unequal, close, microscopic radial wrinkles, cut by weakly incised spiral lines. Aperture broadly ovate to rounded, moderately oblique, with columellar margin slightly reflexed over umbilicus. Umbilicus rather broad, profound. Height 2.2, diam. 2.1-2.5 mm (2.20 × 2.16 mm). Jaw with 7 broad ribs.

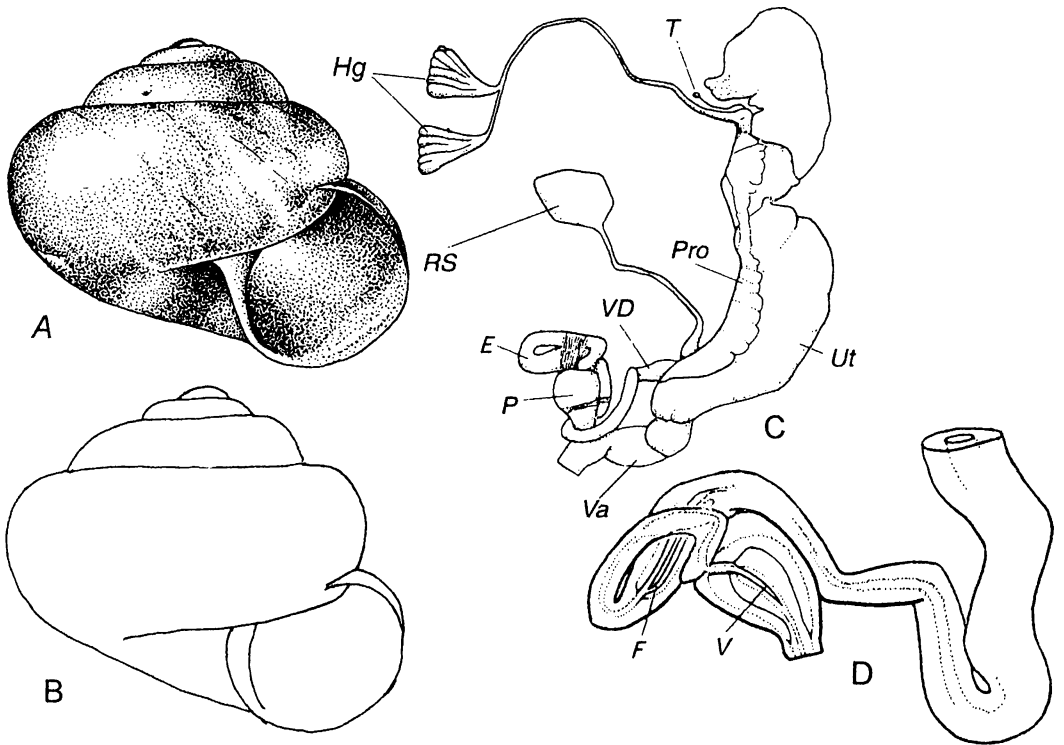


Fig. 2423. A — ! *Pulchriconus termitarum* (Pilsbry, 1926). "Barro, Colorado I. Canal Zone" Holotype. Phil. No. 140824. B, C, D — *Pulchriconus pilsbryi* (Thompson, 1958). B — shell. C — reproductive tract. D — interior of penis. After Thompson, 1958.

Hermaphroditic gland of 2 clusters; each cluster composed of 5-7 claviform acini. Talon very small, ovoid, compressed, with very long stalk. Vas deferens widened, especially near prostate, thick-walled, enters epiphallus apically, held in place by a muscular band that encircles it and middle of penis. Flagellum vestigial, not visible externally; it represented by a narrow duct in wall of epiphallus. Epiphallus developed in terminal loop and held to penial apex by another muscular band, which encircles both and connected to vas band by a slender muscle fibers. Penial retractor missing. Free oviduct very short. Spermathecal stalk slender, somewhat swollen basally; reservoir embedded at base of albumen gland.

DISTRIBUTION. Nicaragua, Panama. 2 spp.

Microphysula Cockerell, 1926
Fig. 2424

Cockerell in Pilsbry, 1926: 117

TYPE SPECIES — *Helix ingersolli* Bland, 1874; OD.

Shell strongly depressed to nearly flat, thin, glass-like, shining, transparent, of 4.5-6 slightly to moderately convex whorls. Last whorl straight. Colorless. Embryonic whorls with microscopic spiral lines. Postapical sculpture very weak, of fine radial and microscopic spiral lines on upper surface of 2-3 last whorls. Aperture deeply lunate, with thin, simple margins. Umbilicus moderately broad, perspective. Height 1.7-2.5, diam. 3.6-5.4 mm (2.0 × 4.6 mm).

Jaw with many flat ribs.

Talon not located. Vas deferens rather short, entering epiphallus apically. Epiphallus, a lanceolate, thin-walled, glandular sac. On junction of epiphallus and penis there is a rather long caecum. Penial retractor inserts on caecum terminally. Free oviduct and vagina rather long, subequal in length. Spermathecal stalk moderately long, rather stout; reservoir nearly attending mid-point of spermoviduct.

DISTRIBUTION. N America. 2 or 3 spp.

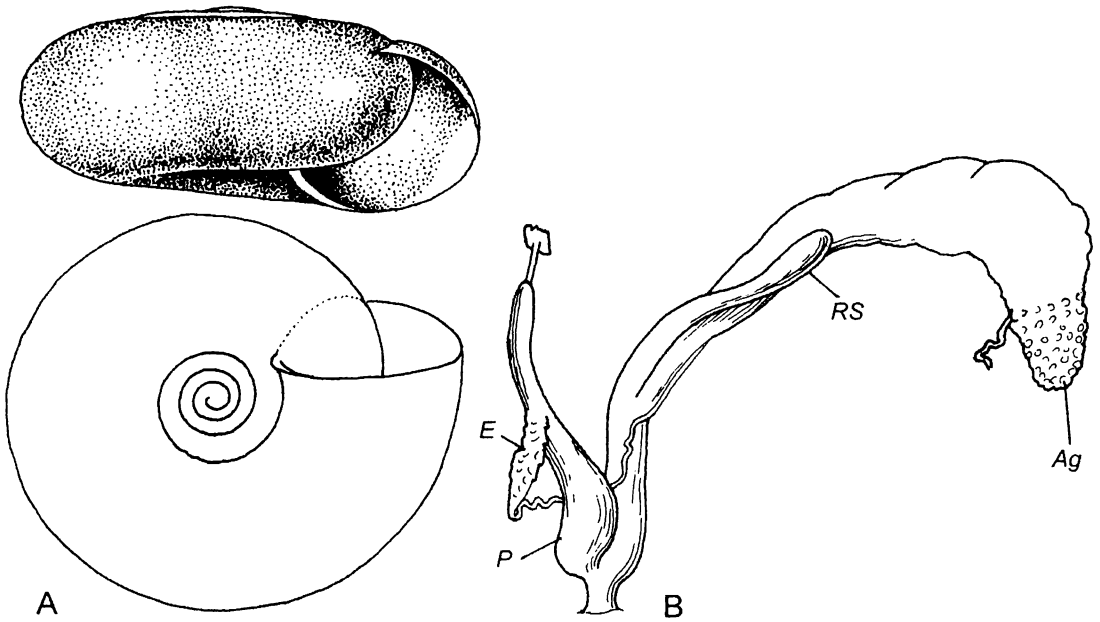


Fig. 2424. *Microphysula ingersolli* (Bland, 1874).
 A — shell: Sibola National Forest, Sandia Mts. Bernalillo Co., New Mexico. Moscow No. Lc-28229. B — reproductive tract. After Pilsbry, 1926.

Suavitas Pilsbry, 1926
 Fig. 2425

Pilsbry, 1926: 109.

TYPE SPECIES — *Helix suavis* Gundlach in L. Pfeiffer, 1857; OD.

Shell flat, very fragile, of about 4.5 rather convex whorls. Last whorl evenly rounded, slightly and gradually descending in front. Color yellowish to brown. Embryonic and usually later whorls with microscopic, shallowly pebbly surface; in typical forms postapical whorls with papillae or short bristles arranged in more or less regular oblique trends, forward and backward. Aperture broadly lunate, not strongly oblique, with thin, shortly reflexed margins. Umbilicus narrowly open. Height 5-12, diam 8-22 mm (6.4 × 11.8 mm).

Flagellum long, tubular. Epiphallus externally not expressed. Penis very long, slender; internally with a simple lumen in lower half, then with some longitudinal ridges, in upper part there are 2 low ridges and acute

pilaster. Penial retractor inserted on approximately middle part of penis. Atrium unusually long. Free oviduct short. Vagina as such absent. Spermathecal stalk of medium length, stout; reservoir poorly defined.

DISTRIBUTION. Cuba, Hispaniola. 2 spp.

Mcleania Bequaert et Clench, 1939
 Fig. 2426

Bequaert & Clench, 1939: 283. Thompson, 1977: 77

TYPE SPECIES — *Mcleania darlingtoni* Bequaert et Clench, 1939; OD.

Shell (obesely) lentiform, somewhat translucent, of 3.5-4 strongly flattened whorls. Last whorl well deflected, with sharp, serrated or denticulated keel. Color light- or dark-brown. Embryonic whorls at first smooth, then with fine, anastomosing, more or less retractive wrinkles, which separate elongate pits, and fairly coarse, irregular, protractive threadlets. Later whorls with fine, crowded, periostracal riblets, which are

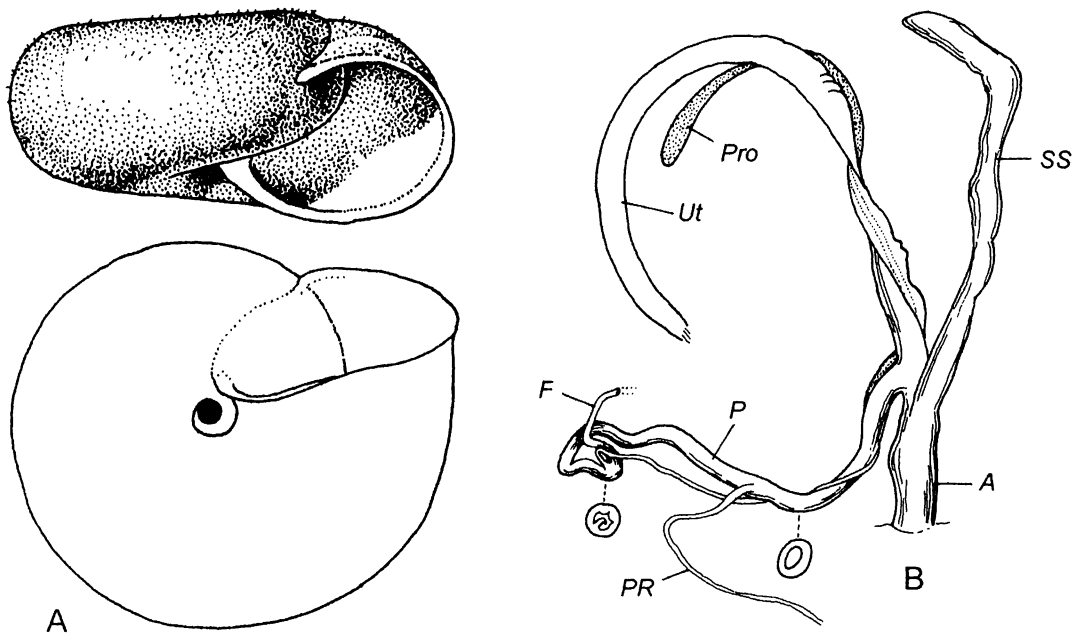


Fig. 2425. *Suavitas suavis* (Gundlach in L. Pfeiffer, 1857).

A — shell: W side Ia Vigia, Trinidad, Cuba. Phil. No. 137324. B — reproductive tract. After Pilsbry, 1926.

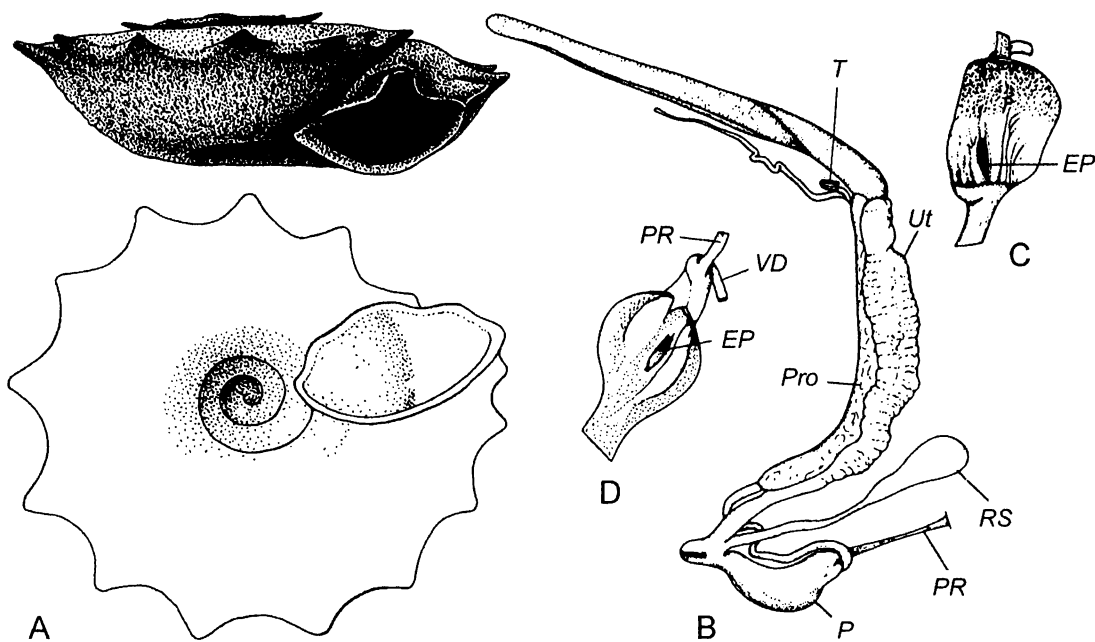


Fig. 2426. *Mcleania darlingtoni* Bequaert et Clench, 1939.

A — shell: Torro Negro National Forest, 7 km W junction of Hwy 149 and 143, 1140 m, Puerto Rico. Moscow No. Lc-28235 (Gain. No. FGT-4520). B — reproductive tract. C, D — interior of penis (C — from ventral side, D — from dorsal side). After H. Baker, 1940.

stronger on serrations, along irregular, anastomosing retractive bands above, and in patches below. Aperture elliptic, moderately oblique, with thin, reflexed margins; basal margin somewhat thickened internally; upper margin not reflexed but curved upward near middle to form a semicircular sinus, and downward more laterally as an indentation, or a weak projection into aperture. Umbilicus narrowly or broadly open. Height 3.5-7.7, diam. 8.8-14.6 mm (3.6 × 11.2 mm).

Jaw solid, with extremely low, rounded vertical thickenings, that barely undulate margins.

Hermaphroditic gland consists of fan-shaped or conic lobes. Talon slender, curved. Vas deferens rather short. Epiphallus extremely short. Penis bulky, internally with simple, slit-like epiphallic pore. Penial retractor inserts on penis apex, at base of vas deferens. Free oviduct moderately long. Vagina practically absent. Spermathecal stalk short, reservoir lies on lower part of spermooviduct; sometimes containing membranous sac, probably a spermatophore.

DISTRIBUTION. W Puerto Rico and Hispaniola. 3 spp.

References

- Adams H. Adams A. 1855. *The genera of recent Mollusca; arranged according to their organisation*. Vol. 2: 93-284.
- Adams H. Adams A. 1858. *The genera of recent Mollusca; arranged according to their organisation*. Vol. 2: 541-661
- Agassiz L., 1846. *Nomina systematica generum Molluscorum, tam viventium quam fossilium*. Jent & Gasmann, Soloduri. xiv+98 pp.
- Agassiz L., 1847 *Nomenclatoris Zoologici, Index Universalis, continens nomina systematica classium, ordinum, familiarum et generum animalium omnium, tam viventium quam fossilium*. Jent & Gasmann, Soloduri. viii+393 pp.
- Albers J.C., 1850. *Die Heliceen, nach natürlicher Verwandtschaft systematisch geordnet*. Berlin. 262 S.
- Albers J.C., 1854. *Malacographia Maderensis sive Enumeratio Molluscorum quae in insulis Maderae et Portus Sancti aut viva exstant aut fossilia reperiuntur*. Berlin. 94 S.
- Albers J.C., 1860. *Die Heliceen nach natürlicher Verwandtschaft systematisch geordnet*. Zweite Ausgabe, nach dem hinterlassenen Manuskript besorgt von Eduard von Martens. Leipzig. 359 S.
- Ancey C.F. 1880. Descriptions de mollusques nouveaux et de coupes subgénériques nouvelles. *Le Naturaliste*, vol. 1, no. 42: 334-335.
- Ancey C.F. 1887 Description of new genera or subgenera of Helicidae. *Conch. Exch.*, vol. 1 53-54, 64, 75-76; vol. 2: 22-23, 38-39.
- Ancey C.F. 1904. Notes critiques et synonymiques. *J. de Conch.* vol. 52: 288-316.
- Archer A.F., 1939a. A new section and a new subspecies of *Stenotrema*. *Nautilus*, vol. 52, no. 3: 98-99.
- Archer A.F., 1939b. The type of section *Euchemotrema* Archer. *Nautilus*, vol. 53, no. 1: 33.
- Archer A.F. 1948. Land snails of the genus *Stenotrema* in the Alabama region. *Geol. Survey Alabama, Mus. Paper*, 28: 1-85.
- Babrakzai N. Miller W.B. Ward O.G. 1974. Cytotaxonomy of some Arizona Oreohelicidae (Gastropoda: Pulmonata). *Bull. Amer. Malacol. Union*, 1974: 4-11
- Baker H.B., 1927 Minute Mexican land snails. *Proc. Acad. Nat. Sci. Philad.* vol. 79: 223-246.
- Baker H.B. 1930. New and problematic West American landsnails. *Nautilus*, vol. 43, no. 3: 95-101; no. 4: 121-128.
- Baker H.B., 1935. Jamaican land snails, 4. *Nautilus*, vol. 48, no. 4: 135-140.
- Baker H.B., 1940. Some Antillean Sagdidae or Polygyridae. *Nautilus*, vol. 54, no. 2: 54-62.
- Baker H.B., 1955. Heterurethrous and aulacopod. *Nautilus*, vol. 68, no. 4: 109-112.
- Beck H., 1837 *Index molluscorum praesentis aevi musei principis augustissimi Christiani Frederici*. Hafniae: 1-100.
- Bequaert J.C., Clench W.J. 1939. *Mcleania* a genus of land mollusks from Puerto Rico. *Mem. Soc. Cubana Hist. Nat.* vol. 13, no. 5: 283-284.
- Binney W.G., 1863. Synopsis of the species of air-breathing Mollusks of North America. *Smiths. Misc. Coll.* (without number), (9.XII).
- Bland T Binney W.G., 1873. On the lingual dentition and jaw of certain terrestrial Pulmonata from the United States, with remarks on their systematic value. *Proc. Acad. Nat. Sci. Philad.* 1873: 240-256.
- Boettger C.R., 1909. Ein Beitrag zur Erforschung der europäischen Heliciden. *Nachr.-Bl. dtsh. malak. Ges.* Bd. 41 1-19, 49-68.
- Boettger C.R., 1911a. Ein systematisches Verzeichnis der beschalten Landschnecken Deutschlands, Österreich-Ungaris und der Schweiz. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 43, Nr. 1 17-25.

- Boettger C.R., 1911b. Einige Worte zu: Noch einmal "Die Verwandtschaftsbeziehungen der *Helix*-Arten aus dem Tertiär Europas" von Prof. Dr. O. Boettger in Frankfurt (Main). *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 3: 99-103, 113-133.
- Boettger C.R., 1914. Zur Kenntnis der Landschneckengattung *Cepaea* Held. *Nachr.-Bl. dtsh. malak. Ges.* Bd. 46, Heft 3: 97-127
- Bogan A.E., 1992. *Erectidens* Pilsbry 1953 moved to the Spelaeodiscinae (Gastropoda: Pulmonata: Valloniidae). *Malac. Rev.*, vol. 25: 131-133.
- Born I., 1778. *Index rerum naturalium Musei Caesarei Vindobonensis, Pars I-ma Testacea. Verzeichnis der natürlichen Seltenheiten des k.k. Naturalien Cabinets zu Wien.* Erster Theil: Schalthiere. Vindobonae (ex Officina Krausiana). 458 pp.
- Bouchet P Rocroi J.-P 2005. Classification and nomenclator of gastropod families. *Malacologia*, vol. 47, no. 1-2: 1-397
- Brusina S., 1904. Zur Rettung unserer Mollusken-Fauna. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 36, No. 4: 157-168.
- Charpentier J. de, 1837 Catalogue des mollusques terrestres et fluviatiles de la Suisse. *Neue Denkschr. allg. schweiz. Ges. Naturw.*, Bd. 1, Nr. 2: 1-28.
- Clench W.J., 1962. New land mollusks in the families Camaenidae and Fruticicolinae from Hispaniola. *Comunic. Mus. Argent. Inst. nac. Cienc. nat. (Zool.)*, vol. 8: 213-227
- Cockerell T.D.A., 1921. The anatomy and relationships of *Helix subplicata*, Sowerby. *Proc. Malac. Soc. London*, vol. 14: 191-195.
- Cooper J.G., 1869. On a new Californian terrestrial mollusc. *Amer. J. Conch.*, N. S., vol. 4, no. 4: 209-210.
- Crosse H. 1892. Faune malacologique terrestre et fluviatile de l'île de Portorico. *J. de Conch.* vol. 40: 5-71
- Cuezzo M.G., 2003. Phylogenetic analysis of the Camaenidae (Mollusca: Stylommatophora) with special emphasis on the American taxa. *Zool. J. Linn. Soc.* vol. 138: 449-476.
- Da Costa E.M. 1778. *Historia naturalis testaceorum Britanniae, The British Conchology.* London. XII+254+VII pp.
- Damjanov S.G., Likharev I.M., 1975. Gastropoda terrestria. *Fauna Bulgarica*, vol. IV Sofia. 425 pp.
- Ehrmann P 1933. Weichtiere, Mollusca. In: P Brohmer, P Ehrmann & G. Ulmer, *Die Tierwelt Mitteleuropas*, Bd. II, Lief. 1. Leipzig. 264 pp.
- Emberton K.C., 1988. The genitalic, allozymic, and conchological evolution of the eastern North American Triodopsinae (Gastropoda: Pulmonata: Polygyridae). *Malacologia*, vol. 28, no. 1-2: 159-273.
- Emberton K.C., 1989. Polygyridae Pilsbry, 1894 (Mollusca, Gastropoda): proposed precedence over Mesodontidae Tryon, 1866. *Bull. Zool. Nomenclature*, vol. 46, no. 2: 94-96 (case 2642).
- Emberton K.C., 1991. The genitalic, allozymic and conchological evolution of the tribe Mesodontini (Pulmonata: Stylommatophora: Polygyridae). *Malacologia*, vol. 33, no. 1-2: 71-178.
- Emberton K.C., 1994. Polygyrid land-snail phylogeny: external sperm exchange, early North American biogeography, iterative shell evolution. *Biol. J. Linnean Soc.*, vol. 52: 241-271
- Emberton K.C., 1995. When shells do not tell: 145 million years of evolution in North America's polygyrid land snails, with a revision and conservation priorities. *Malacologia*, vol. 37, no. 1 69-110.
- Emberton K.C., Richardson L., 1990. *Eduardus* Pilsbry, 1930, a subgenus of *Praticolella* Martens, 1892 (Gastropoda: Stylommatophora: Polygyridae). *Nautilus*, vol. 104, no. 1: 33.
- Férussac J.B.L. d'Audebard de, 1821 Note sur le genre Partule, nouveau genre de limaçons terrestres. *J. de Physique, de Chimie, d'Hist. Nat. et des Arts*, t. 92: 459-462.
- Fischer von Waldheim G. 1807 *Museum Demidoff, ou catalogue systematique et raisonne des curiosites de la nature et de l'art...* Moscou. T. 3, 330 p.
- Fitzinger L.I. 1833. Systematisches Verzeichniss der im Erzherzogthume Oesterreich vorkommenden Weichthiere, als Prodrom einer Fauna desselben. *Beitr. Landesk. Oesterr. Enns (Ver. vaterl. Gesch. Wien)*, Bd. 3: 88-122.
- Garcia San Nicolás E. 1957 Estudio sobre la biologia, la anatomia y la sistemática del genero "Iberus" Montfort, 1810. *Bol. Real Soc. Española Hist. Nat.*, 55: 199-390.
- Germain L., 1928. Les Helicidae de la faune française. *Ann. Mus. Hist. nat. Lyon*, vol. 13: 421 pp.
- Gray J.E., 1847 A list of the genera of recent mollusca, their synonyma and types. *Proc. Zool. Soc. London*, vol. 15: 129-219
- Gude G.K., 1912. Characters of two undescribed land shells from the Republic of Colombia and a new genus of Helicoids. *Proc. Malac. Soc. London*, vol. 10: 21-23.
- Haas F., 1934. Kurze Bemerkungen, III. *Arch. Moll.* Bd. 66 (6): 354-357
- Haas F., 1936. Kurze Bemerkungen, VII. *Arch. Moll.* Bd. 68 (3): 127-131.
- Hartmann J.D.W., 1840. *Erd- und Süßwasser-Gastropoden der Schweiz. Mit Zugabe einiger merkwürdigen exotischen Arten.* St. Gallen. 1840: 1-60.
- Hartmann J.D.W., 1843. *Erd- und Süßwasser-Gastropoden der Schweiz. Mit Zugabe einiger mer-*

- kwurdiven exotischen Arten. St. Gallen. 1843: 157-204.
- Hartmann J.D.W., 1844. *Erd- und Süswasser-Gastropoden der Schweiz. Mit Zugabe einiger merkwürdiven exotischen Arten*. St. Gallen. 1844: 205-227
- Held F. 1837 Notizen über die Weichthiere Bayerns. *Isis* von Oken (4): 303-309; (12): 901-919.
- Hemmen J., Groh K., 1984. Die Gattung *Idiome-la* stat. nov. auf Porto Santo (Mollusca: Pulmonata: Helicidae). *Cour. Forsch.-Inst. Senckenberg*, Bd. 71: 17-26.
- Herrmannsen A.N., 1847 *Indicus generum malacozoorum primordia*. Casselis. Vol. 1: 233-637; vol. 2: 1-352.
- Herrmannsen A.N., 1848. *Indicus generum malacozoorum primordia*. Casselis. Vol. 2: 353-492.
- Herrmannsen A.N., 1849. *Indicus generum malacozoorum primordia*. Casselis. Vol. 2: 493-717
- Herrmannsen A.N., 1852. *Indicus generum malacozoorum primordia*. Casselis. Supplementa et corrigenda: 1-140.
- Hesse P 1907 In: E.A. Rossmässler, *Iconographie der Land- und Süswasser-Mollusken mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten*, (2) 14: 1-128.
- Hesse P 1908a. Kritische Fragmente. IV Berichtigung einiger Namen; V *Helix berytensis* Fer. und *fourousi* Bgt.; VI. Bemerkungen über das Genus *Theba* Risso (*Carthusiana* Kob.); VII. Das Genus *Helix* Lam. s.str. (*Helicogena* Fér.). *Nachr.-Bl. dtsh. malak. Ges.* Bd. 40: 131-141
- Hesse P 1908b. Die systematische Stellung von *Helix leachii* Fér. und *gyrostoma* Fér. *Zool. Jb.* (Syst.), Bd. 27 (2): 313-320.
- Hesse P., 1909. In: E.A. Rossmässler, *Iconographie der Land- und Süswasser-Mollusken mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten*, (2) 16: 142.
- Hesse P 1911. In: E.A. Rossmässler, *Iconographie der Land- und Süswasser-Mollusken mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten*, (2) 16: 67-119.
- Hesse P 1913. Zur Kenntnis der Molluskenfauna von Ostrumelien. II. *Nachr.-Bl. dtsh. malak. Ges.* Bd. 45: 1-16, 69-74.
- Hesse P 1916. Kritische Fragmente. XVI. Zur Nomenklatur. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 48: 122-124.
- Hesse P., 1917 Kritische Fragmente. XVII. Nochmals Nomenklaturfragen; XVIII. Ein neues Subgenus von *Aeme*. *Nachr.-Bl. dtsh. malak. Ges.* Bd. 49: 122-124.
- Hesse P 1918. Kritische Fragmente. XIX. *Helix jasonis* Dubois; XX. *Helix genezarethana* Mss.; XXI. Die Subfamilien Murellinae und Helicinae (Pentataenia Ad. Schmidt). *Nachr.-Bl. dtsh. malak. Ges.* Bd. 50: 34-40.
- Hesse P 1931. Zur Anatomie und Systematik palaearktischer Stylommatophoren. *Zoologica*, Bd. 31 (81): 1-118.
- Ibáñez M., Groh K., Alonso R., Cavero E., 1988. Revision of the genus *Hemicycla* Swainson, 1840 (Mollusca, Helicidae) from Tenerife: *Adiverticula* n. subgen. and description of three new taxa. *Bull. Mus. natn. Hist. nat.* Paris, 4 ser., 10, sect. A, no. 2: 309-326.
- Ibáñez M., Groh K., Cavero E., Alonso M.R., 1987 Revision of the genus *Hemicycla* Swainson 1840 on Tenerife: the group of *Hemicycla plicaria* (Lamarck 1816) (Mollusca: Helicidae). *Arch. Moll.*, Bd. 118 (1/3): 77-103.
- Ihering H. von, 1892. Morphologie und Systematik des Genitalapparates von *Helix*. *Z. wiss. Zool.* Bd. 54: 386-520.
- Ihering H. von, 1912. Analyse der Süd-Amerikanischen Heliceen. *J. Acad. nat. Sci. Philad.*, (2) 15: 473-500.
- Iredale T., 1942. Description of a Libyan desert land shell. *Rec. Austral. Mus.*, vol. 21, no. 2: 126.
- Jan G. 1830. *Scientiae naturalis cultoribus. Conspectus methodicus testaceorum in collectione mea extantium*. Anno 1830. Parma. 8 pp.
- Kennard A.S., Woodward B.B., 1922. Note on the genus *Vortex* of Oken. *Proc. Malac. Soc. London*, vol. 15: 151
- Kobelt W 1871 *Catalog der im europäischen Faunengebiet lebenden Binnenconchylien. Mit besonderer Berücksichtigung der in Rossmässler's Sammlung enthaltenen Arten*. Cassel. XVI+150 S.
- Kobelt W., 1898. *Studien zur Zoogeographie*. 2 Bände. Wiesbaden (Kreidel). Bd. II. Die Fauna der meridionalen Sub-Region: I-X, 1-368.
- Kobelt W 1902. In: E.A. Rossmässler, *Iconographie der Land- und Süswasser-Mollusken mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten*, (2) 9 (3/4): 25-56.
- Kobelt W 1904. In: E.A. Rossmässler, *Iconographie der Land- und Süswasser-Mollusken mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten*, (2) 11: I-XII, 1-342.
- Linnaeus C., 1758. *Caroli Linnaei systema naturae per regne tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis... Editio decima reformata. Impensis Direct. Laurentii Salvii, Holmiae*, Tome I. Animalia. 823 p.
- Lowe R.T 1854. *Catalogus molluscorum pneumonatorum insularum Maderensium: or a list of all the land and freshwater shells, recent and fossil, of the Madeiran Islands: arranged in groups according to their natural affinities; with diagnoses of the groups, and of the new*

- or hitherto imperfectly defined species. *Proc. Zool. Soc. London*, pt. 22: 161-218.
- Mandahl-Barth G. 1950. Systematische Untersuchungen über die Heliciden-Fauna von Madeira. *Abh. senckenb. naturf. Ges.*, Abh. 469 (1943): 1-93.
- Martens E. von, 1892. Land and freshwater mollusca. In: *Biologia Centrali-Americana*. London: 97-176.
- Miller K., 1878. Die Binnenmollusken von Ecuador. *Malak. Bl.* Bd. 25: 153-199.
- Moellendorff O.F. von, 1898. Studien zur Zoogeographie von Dr. W. Kobelt. II Band. Die Fauna der Meridionalen Sub-Region. *Nachr.-Bl. dtsh. malak. Ges.*, Bd. 30: 113-121.
- Monterosato T.A. di, 1892. Molluschi terrestri delle isole adiacenti alla Sicilia. *Atti r. Accad. Sci. Lett. e Belle Arti*, ser. 3, vol. II: 1-33.
- Monterosato T.A. di, 1894. Conchiglie terrestri viventi e fossili di Monte Pellegrino. *Natural. Sicil.* vol. 13: 165-173.
- Montfort P. Denys de, 1810. *Conchyliologie systematique et classification methodique de coquilles* Paris. Vol. 2. 676 pp.
- Mörch O.A.L., 1864. Fortegnelse over de i Danmark forekommende Land- og Ferskvandsblöddyr. *Vidensk. Medd. Naturhist. Foren. Kjöbenhavn*, 1863. Nr. 17-22: 265-367
- Mörch O.A.L., 1865. Quelques mots sur un arrangement des mollusques pulmones terrestres (Geophiles, Fér.) base sur le systeme naturel. *J. de Conch.* vol. 13: 265-283, 376-396.
- Moreno B.M.A., 1936. Estudio comparativo de *Zachrysia trinitaria* y *Z. scabrosa*. *Mem. Soc. cubana Hist. nat.* vol. 10, num. 1: 33-38.
- Motta A.J. da, 1991 *A systematic classification of the gastropod family Conidae at the generic level*. Published by "La Conchiglia", Roma. 48 pp.
- Neubert E., 1998. Annotated checklist of the terrestrial and freshwater molluscs of the Arabian Peninsula with descriptions of new species. *Fauna of Arabia*, vol. 17: 333-461
- Nordsieck H. 1986. The system of the Stylomatophora (Gastropoda), with special regard to the systematic position of the Clausiliidae. II. Importance of the shell and distribution. *Arch. Moll.* Bd. 117 (1/3): 93-116.
- Pallary P., 1898. Deuxieme contribution à l'étude de la faune malacologique du Nord-Ouest de l'Afrique. *J. de Conch.* vol. 46: 49-170.
- Pallary P. 1909. Catalogue de la faune malacologique de l'Egypte. *Mém. Inst. Egypte*, vol. 6 (1): 1-92, 177-185.
- Pallary P., 1917 Hélicidées nouvelles du Maroc. *J. de Conch.* vol. 63: 126-141.
- Pallary P., 1918. Diagnoses d'une cinquantaine de mollusques terrestres nouveaux du Nord de l'Afrique. *Bull. Soc. Hist. nat. Afr. Nord*, vol.9 (7): 137-152.
- Pallary P., 1924a. Faune malacologique du Sinai. *J. de Conch.* vol. 58: 182-217
- Pallary P. 1924b. Supplément à la faune malacologique terrestre et fluviale de l'Egypte. *Mém. Inst. Egypte*, vol. 7 (1): 1-61.
- Pallary P., 1926. Complements à la faune malacologique de la Berberie. *J. de Conch.* vol. 70: 1-50.
- Pallary P. 1936. Deuxieme complement à la faune malacologique de la Berberie. *J. de Conch.* vol. 80: 1-65.
- Pallary P., 1939. Deuxieme addition à la faune malacologique de la Syrie. *Mém. Inst. Egypte*, vol. 39: 1-141.
- Perrot M., 1939. Sur la position systematique d'*Euparypha pisana* Müll., d'après l'étude chromosomique. *Arch. Sci. Phys. et Nat. Genève*, ser. 5, 21, suppl.: 32-35.
- Pfeffer G., 1930. Zur Kenntnis tertiärer Landschnecken. *Geol. u. Palaeont. Abh.*, N.F., Bd. 17, Heft 3: 3-230 (153-380).
- Pfeiffer K.L., Wächtler W., 1939 Über *Codringtonia* und *Isaurica*. *Arch. Moll.* Bd. 71, Nu. 2/3: 57-74.
- Pfeiffer L., 1855. Versuch einer Anordnung der Heliceen nach natürlichen Gruppen. *Malak. Bl.* Bd. 2: 112-144.
- Pfeiffer L., 1877 Über die systematische Anordnung der Heliceen. *Malak. Bl.*, Bd. 24: 1-14.
- Pfeiffer L., 1878-1881. *Nomenclator Heliceorum viventium quo continentur nomina omnium hujus familiae generum et specierum hodie cognitarum disposita ex affinitate naturale. Opus postumum Ludovici Pfeiffer Dr. ed. S. Clessin. Casselis.* 606 pp.
- Pilsbry H.A., 1887 *Manual of Conchology*, ser. 2, vol. 3. Helicidae: vol. I. 313 pp.
- Pilsbry H.A., 1888. *Manual of Conchology*, ser. 2, vol. 4. Helicidae: vol. II. 296 pp.
- Pilsbry H.A., 1889. *Manual of Conchology*, ser. 2, vol. 5. Helicidae: vol. III. 216 pp.
- Pilsbry H.A., 1889-1891 *Manual of Conchology*, ser. 2, vol. 6. Helicidae: vol. IV 324 pp.
- Pilsbry H.A., 1893. Notes upon Dr. v. Ihering's observations. *Nautilus*, vol. 6, no. 11 129-130.
- Pilsbry H.A., 1893-1895. *Manual of Conchology*, ser. 2, vol. 9. (Helicidae, vol. 7). Guide to the study of Helices. 366+126 pp.
- Pilsbry H.A., 1904. *Oreohelix* [gen. n.]. *Nautilus*, vol. 17: 131 (footnote).
- Pilsbry H.A. 1905. Mollusca of the southwestern States, I: Urocoptidae; Helicidae of Arizona and New Mexico. *Proc. Acad. Nat. Sci. Philad.* vol. 57 (1905): 211-290.
- Pilsbry H.A., 1924. On *Triodopsis harfordiana* W.G.B. *Nautilus*, vol. 37, no. 4: 133-135.
- Pilsbry H.A., 1926. The land mollusks of the Republic Panama and the Canal Zone. *Proc. Acad. Nat. Sci. Philad.*, vol. 78: 57-126.

- Pilsbry H.A., 1929 Studies on West Indian mollusks: The genus *Zachrysia*. *Proc. Acad. Nat. Sci. Philad.* vol. 80 (1928): 581-606.
- Pilsbry H.A., 1930a. *Giffordius pinchoti* n. gen., n. sp. *Nautilus*, vol. 43: 142-143.
- Pilsbry H.A., 1930b. Results of the Pinchot South Sea expedition, I. Land mollusks of the Caribbean Islands, Grand Cayman, Swan, Old Providence and St. Andrew. *Proc. Acad. Nat. Sci. Philad.* vol. 82: 221-261
- Pilsbry H.A., 1930c. Anatomy and relationships of some American Helicidae and Polygyridae. *Proc. Acad. Nat. Sci. Philad.* vol. 82: 303-327
- Pilsbry H.A., 1931 Some type designations on helices and Ferrussaciidae. *Nautilus*, vol. 44, no. 4: 138-140.
- Pilsbry H.A., 1933a. Zoological results of the Matto Grosso Expedition to Brazil in 1931, II. Mollusca. *Proc. Acad. Nat. Sci. Philad.* vol. 85: 67-76.
- Pilsbry H.A., 1933b. Santo Domingan land mollusks collected by Daniel C. Pease, 1932, and by A.A. Olsson, 1916. *Proc. Acad. Nat. Sci. Philad.* vol. 85: 121-162.
- Pilsbry H.A., 1939. Land Mollusca of North America (North of Mexico). *Acad. Nat. Sci. Philad. Monogr.* No. 3, vol. I, pt. 1 I-XVII, 1-573, Index I-IX.
- Pilsbry H.A., 1940. Land Mollusca of North America (North of Mexico). *Acad. Nat. Sci. Philad., Monogr.* No. 3, vol. I, pt. 2: 575-994, Index I-IX.
- Pilsbry H.A., 1946. Land Mollusca of North America (North of Mexico). *Acad. Nat. Sci. Philad., Monogr.* No. 3, vol. II, pt. 1 1-520.
- Pilsbry H.A. 1953. Land mollusks from Nuevo Leon, Mexico. *Nautilus*, vol. 67, no. 2: 46-47
- Pilsbry H.A., 1956. Inland mollusca of Northern Mexico, III. Polygyryidae and Potadominae. *Proc. Acad. Nat. Sci. Philad.* vol. 108: 19-40.
- Pilsbry H.A., Brown A.P. 1910. The mollusca of Mandeville, Jamaica, and its environs. *Proc. Acad. Nat. Sci. Philad.* vol. 62: 510-535.
- Pilsbry H.A., Cockerell T.D.A., 1899. A new genus of helices. *Nautilus*, vol. 12: 107
- Poey F 1851-1858. *Memorias sobre la historia natural de la Isla de Cuba*. Vols. 1-2. Habana.
- Pratt W.L., 1981 A revision of the land snail genus *Polygyra* in Texas. *Dissertation Abstracts International*, vol. 42, no. 04: 1352-B.
- Rafinesque-Schmaltz C.S., 1815. *Analyse de la nature, ou tableau de l'univers et des corps organisés*. Palermo. 223 p.
- Rafinesque-Schmaltz C.S., 1819 Prodrôme de soixante-dix nouveaux genres d'animaux découverts dans l'intérieur des Etats-Unis d'Amérique, durant l'année 1818. *J. Phys., Chimie, d'Hist. nat.*, t. 88: 417-429.
- Rafinesque-Schmaltz C.S. 1831 *Enumeration and account of some remarkable natural objects in the cabinet of Prof. Rafinesque, in Philadelphia, being animal, shell, plants and fossils collected by him in North America between 1816 and 1831* Philadelphia. 8 pp.
- Risso A., 1826. *Histoire naturelle des principales productions de l'Europe méridionale et particulièrement de celles des environs de Nice et des Alpes Maritimes*, 4. Paris. 439 pp.
- Röding P.F. 1798. *Museum Boltenianum sive Catalogus cimeliorum e tribus regnis naturae quae collegerat Joa. Fried Bolten, M.D. p.d. Pars Secunda continens Conchylia sive Testacea univalvia, bivalvia & multivalvia*. Hamburgi. 199 pp.
- Roth B., Miller W.B., 1992. A new genus and species of Polygyrid land snail (Gastropoda: Pulmonata) from Oregon. *Veliger*, vol. 35, no. 3: 222-225.
- Say T 1818. Account of two new genera, and several new species, of fresh water and land shells. *J. Acad. Nat. Sci. Philad.* vol. 1, no. 10: 276-284.
- Schileyko A.A., 1971 A comparative anatomical study of some Ariantinae (Pulmonata, Helicidae). *Zool. J* vol. 50, no. 7: 990-1001 (in Russian).
- Schileyko A.A., 1978. Terrestrial mollusks of the superfamily Helicoidea. In: *Fauna USSR*, N.S., No. 117 Mollusca. Vol. III, no. 6. 384 pp. (in Russian).
- Schileyko A.A., 1996. On the peculiar features of the reproductive anatomy of *Cylindrus obtusus* (Draparnaud, 1805). *Arianta II. Arianta-Jahrbuch 1995 und Symposium 1996 "Alpine Landschnecken"*, Johnsbach/Steiermark (September 15-20 1996). Vienna: 37-38.
- Schileyko A.A., Baminger H. Sattmann H., 1997 On the variability of the distal genital tract of *Cylindrus obtusus* (Draparnaud, 1805) (Gastropoda: Helicidae). *Ann. Naturhist. Mus. Wien*, Bd. 99 B: 535-538.
- Schlüter F 1838. *Kurzgefasstes systematisches Verzeichniss meiner Conchylisammlung nebst Andeutung aller bis jetzt von mir bei Halle gefundenen Land- und Flussconchyliden*. Halle. I-VII, 1-40 S.
- Schmidt A., 1855. Der Geschlechtsapparat der Stylommatophoren in taxonomischer Hinsicht. *Abh. naturw. Ver. Halle*, Bd. 1 1-52.
- Schumacher C.F 1817 *Essai d'un nouveau système des habitations des vers testacés*. Copenhagen. 239 pp.
- Schütt H., Subai P 1996. Revision der Gattung *Assyriella* P Hesse 1908 (Gastropoda: Pulmonata: Helicidae: Helicinae). *Arch. Moll.* Bd. 125 (1/2): 117-161
- Scott B. 1996. Phylogenetic relationship of the Camaenidae (Pulmonata: Stylommatophora: Helicoidea). *J. Moll. Stud.* vol. 62: 65-73.
- Solem A. 1966. The Neotropical land snail genera

- Labyrinthus* and *Isomeria* (Pulmonata, Camaeni-
dae). *Fieldiana: Zoology*, vol. 50: 1-226.
- Soós L., 1909. Anatomy and systematic position
of *Campylaea coeruleans*. *Ann. Mus. nation.
Hung.*, vol. 7: 40-45.
- Spix J.B. de, 1827 *Testacea fluviatilia quae in
itinere per Brasiliam annis MDCCCXVII-
MDCCCXX jissu et auspiciis Maximiliani Josephi
I. Bacariae regis augustissimi suscepto collegit et
pingenda curavit Dr. J.B. de Spix, digessit, desc-
ripsit et observationibus illustravit Dr. J.A. Wag-
ner Lipsiae*. 36 pp.
- Strebel H. Pfeffer G., 1880. Beitrag zur Kennt-
nis der Fauna mexikanischer Land- und
Süßwasser-Conchylien. [1.] *Abh. naturw. Ver.
Hamburg*, Bd. 6, Heft IV: 1-112.
- Sturany R., Wagner A.J., 1914. Über schalent-
ragende Landmollusken aus Albanien und
Nachbargebieten. *Denksch. k. Akad. Wiss.
Wien, math.-nat. Klasse*, Bd. 91 19-138.
- Subai P 1996. Revision der Ariantinae. 1 Die
Helicigona-Untergattung *Thiessea* (Gastropo-
da: Pulmonata: Helicidae). *Arch. Moll.* Bd.
126, No. 1/2: 1-49.
- Subai P 2002. Revision der Ariantinae. 2. Die
Helicigona-Untergattung *Liburnica* (Gastropo-
da: Pulmonata: Helicidae). *Arch. Moll.* Bd.
131, No. 1/2: 1-65.
- Swainson W., 1840. *A treatise on Malacology; or
the natural classification of shells and shell fish*.
VIII+419 pp.
- Thompson F.G., 1958. The land snail genus *Mic-
roconus*. *Nautilus*, vol. 72, no. 1: 5-10.
- Thompson F.G., 1977 The polygyrid genus
Mcleania in Hispaniola. *Nautilus*, vol. 91 (2):
77-80.
- Tillier S. 1980. Gastéropodes terrestres et fluvi-
atiles de Guyane Française. *Mém. Mus. Nati-
onal d'Hist. Nat.* N.S., ser. A, Zoologie, t.
118: 1-189 pp.
- Tryon G.W 1866. Monograph of the terrestrial
Mollusca of the United States. *Amer. J.
Conch., Philad.* vol. 2: 218-277, 306-329.
- Turton W 1831 *A manual of the land and fresh-
water shells of British Islands, arranged according
to the more modern systems of classification: and
described from perfect specimens in the author's
cabinet: with coloured plates of every species*. Lon-
don. viii+150 pp.
- Turton W., 1840. *A manual of the land and fresh-
water shells of the British Islands*. London. Ed.
2 by J. E. Gray. 324 pp.
- Urbański L., 1964. Beiträge zur Kenntnis balka-
nischer Stylommatophoren. (Systematische,
zoogeographische und ökologische Studien
über die Mollusken der Balkan-Halbinsel,
VII). *Bull. Soc. amis Sci. et Lettr. Poznań*, ser.
D, IV: 19-56.
- Vanatta E.G., 1915. *Praticolella*. *Proc. Acad. Nat.
Sci. Philad.* vol. 67: 194-198.
- Wagner A.J. 1927 Studien zur Molluskenfauna
der Balkanhalbinsel mit besonderer Berück-
sichtigung Bulgariens und Thraziens, nebst
monographischer Bearbeitung einzelner
Gruppen. *Ann. Zool. Mus. Polon. Hist. Nat.*,
Tom 6, Zeszyt 4: 263-399.
- Webb G.R., 1952. Pulmonata, Polygyridae: A
sexological revision of some triodopsin lands-
nails, *Xolotrema*, *Neohelix* & *Wilcoxorbis*. *Gast-
ropodia*, vol. 1, no. 1 7-8.
- Webb G.R., 1954a. The life-history and sexual
anatomy data on *Ashmunella* with a revision
of the triodopsin snails. *Gastropodia*, vol. 1,
no. 2: 13-18.
- Webb G.R., 1954b. Pulmonata, Polygyridae, Po-
lygyrinae. The sexology and taxonomy of
seven species of landsnails of the genus *Me-
sodon*. *Gastropodia*, vol. 1, no. 2: 19-20.
- Webb G.R., 1959. Pulmonata, Polygyridae:
notes on the sexology of *Triodopsis*, a new
subgenus, *Haroldorbis*, and a new section,
Shelfordorbis. *Gastropodia*, vol. 1, no. 3: 23-25.
- Webb G.R., 1970. Fragmentary observations on
sexology of *Cryptomastix hendersoni* Pilsbry
and *C. magnidentata* Pilsbry and a new sub-
genus (Pulmonata, Polygyridae, Ashmunelli-
nae). *Gastropodia*, vol. 1, no. 8: 77-78.
- Wenz W 1915. Die Landschneckenkalke des
Mainzer Beckens und ihre Fauna. II. Paläon-
tologischer Teil. *Jb. nassau. Ver. Naturk. Wi-
esbaden*, Bd. 70: 30-154.
- Wenz W., 1923. Gastropoda extramarina terti-
aria. *Fossilium Catalogus I*. Berlin. Pt. I-VI:
1-1862.
- Westerlund C.A., 1889. *Fauna der in der Paläar-
ctischen Region (Europa, Kaukasien, Sibirien,
Turan, Persien, Kurdistan, Armenien, Mesopota-
mien, Kleinasien, Syrien, Arabien, Egypten, Tri-
polis, Tunesien, Algerien und Marocco) lebenden
Binnenconchylien. II. Genus Helix*. Berlin.
473+31 pp.
- Westerlund C.A., 1902. Methodus dispositionis
conchyliorum extramarinorum in regione pa-
laearctica viventium, familias, genera, subge-
nera et stirpes sistens. *Rad Jugosl. Akad. zna-
nosti i umjetnosti*, knjiga 151: 82-139.
- Weyrauch W.K., 1956. Neue Landschnecken
aus Peru. *Arch. Moll.*, Bd. 85 (4/6): 145-164.
- Winckworth, 1945. The types of the Boltenian
genera. *Proc. Malac. Soc. London*, vol. 26 (4/5):
136-148.
- Wurtz C.B., 1955. The American Camaeniidae
(Mollusca: Pulmonata). *Proc. Acad. Nat. Sci.
Philadelphia*, vol. 57: 99-143.
- Zilch A., 1960. Gastropoda Teil 2. Euthyneura.
Handbuch der Paläozoologie, Bd. 6. Lfg. 3: 401-
600; Lfg. 4: 601-834.