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TREATISE ON RECENT TERRESTRIAL
PULMONATE MOLLUSCS

Part 14

Helicodontidae, Ciliellidae,
Hygromiidae



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HYGROMIOIDEA Tryon, 1866

Tryon, 1866: 55 (pro subf.).

Shell mostly hygromioid, flat to globose. Color either uniformly dark (often with diffuse peripheral light band), or white, mostly with dark bands. Lamellar tooth on parietal wall of aperture absent.

Sole not divided.

Head wart absent.

Jaw odontognathous.

Talon generally simple. Flagellum and epiphallus initially present. Penial caecum missing. Verge initially present. Penial gland absent or present. Penis sheath originally present. Vaginal papilla sometimes present. Perivaginal gland absent. Vaginal accessory organs arranged in three horizontal rows: upper row — mucus glands situated circumferentially around vagina, middle and lower rows — stylophores; primary number of stylophores 4, often reduced to 2, 1, or stylophores secondarily completely disappeared. In some cases stylophores modified into vaginal appendages. Diverticle of spermathecal stalk absent. Reservoir of spermatheca bulky, lying on surface of spermoviduct. Spermatophore typically thread-like, T-shaped in cross-section, on upper surface of "T" there are several rows of short spines.

DISTRIBUTION. Eurasia, Africa.

HELICODONTIDAE Kobelt, 1904

Kobelt, 1904: 131 (Helicidae subf.).

Shell strongly depressed to nearly flat, uniformly corneous. Sculpture granulate or radial (weak striation to ribbing); spiral striation absent; often hairs on shell present. Whorls narrow, tightly coiled, suture deep. Aperture margins not lie in one plane, reflexed and somewhat expanded to form a cuff. Sometimes there are teeth on basopalatal margin, situated at some distance from margin or having appearance of swellings on reflection of the margin. Umbilicus cylindrical or wide, rarely dot-like.

Stylophores 2 or 1, in the former case they situated one under another on one side of vagina, or sometimes stylophores missing. Mucus glands simple or forked, 3, 2 or 1 in number; rarely glands three- or four-branched. Dart, when present, short and much bent. Flagellum present or absent; when present, its diameter approximately

equal to diameter of epiphallus, in any case thickness of these ducts not much different. Verge present or absent. Spermathecal duct slender. Penial retractor arising from diaphragm or columellar muscle.

DISTRIBUTION. Europe, NW Africa, Canaries, Azores.

TRISSEXODONTINAE Nordsieck, 1987

Nordsieck, 1987: 30 [as Trissexodontini (Ciliellinae, Hygromiidae)].

Baso-palatal margin of aperture bears folds; aperture sometimes vertically elongated.

Stylophores 2. Mucus glands 2 or 1 in number, one of them always forked. Penis contains a verge and equipped with a long flagellum. Penial retractor arising from diaphragm.

DISTRIBUTION. Iberian Peninsula.

Mastigophallini Schileyko, 1991

Schileyko, 1991: 225.

Baso-palatal margin of aperture bears teeth. Radial striation of shell surface rather delicate. Umbilicus not wide.

Both stylophores almost identical, one above another. Mucus glands 2: one simple and one forked.

DISTRIBUTION. Pyrenees Mts.

Mastigophallus Hesse, 1918 Fig. 2427

Hesse, 1918b: 103.

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

Shell lens-shaped, rather solid, of 6-6.5 a little convex whorls. Last whorl slightly ascending in front, acutely carinated. Embryonic whorls smooth. Postnuclear whorls densely radially striated. Aperture narrow, subvertical; margins simple, sinuated above, strongly recurved at keel; basal margin thickened, reflexed, scrobiculate externally, with 1 or 2 tuberculiform teeth. Umbilicus rather narrowly open, perspective. Height 4-5, diam. 7-11 mm (4.4 × 10.2 mm).

Talon exposed, drop-like. Vas deferens enters at right angle. Flagellum very long,

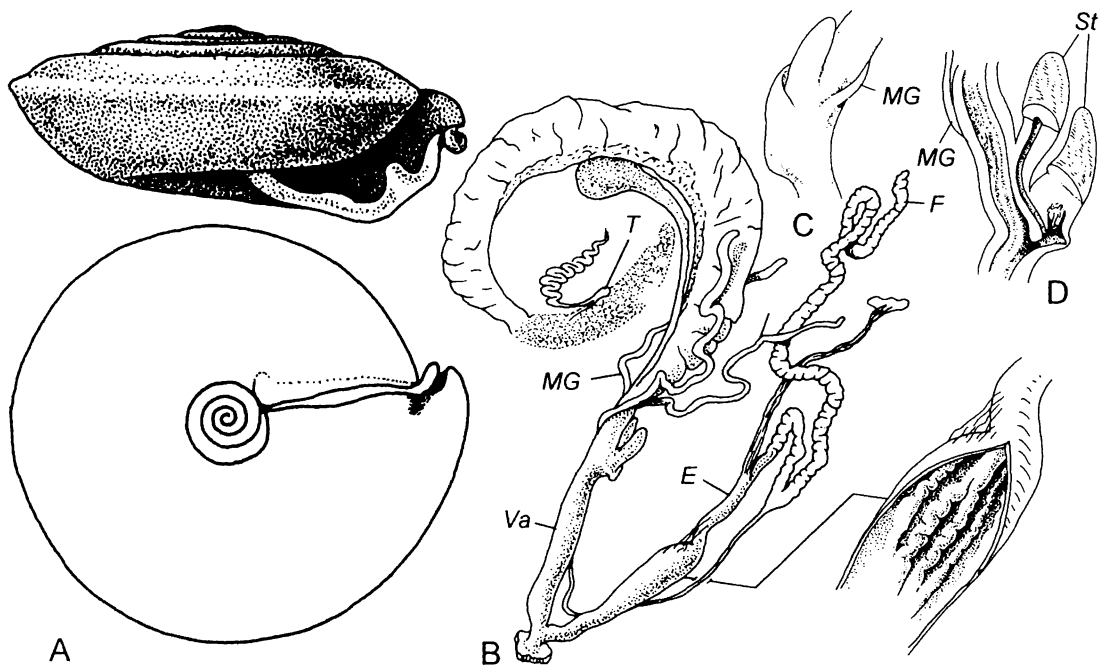


Fig. 2427 *Mastigophallus rangianus* (Férussac, 1821).

A — shell: Pyrenees. Vienna. B, C, D — Spain, prov. Gerona, Port Bou (ca. 20 km NE of Figueras), April 1969. B — reproductive tract and interior of penis. C — vagina from opposite side. D — interior of vagina. Leiden.

thickened, with numerous transversal grooves. Epiphallus slender, its distal part of same appearance as flagellum. Penis clavate, internally with several sinuous pilasters. Penial retractor attached to distal half of epiphallus. Free oviduct rather short. Vagina long, somewhat widened, stylophores situated on upper part of vagina. Stylophores small, not much differing from each other in size, tightly joined, with highly muscled walls. External stylophore in dissected specimen contained remnants of dart; inner stylophore with narrow lumen, which enters cavity of dart. Mucus glands 3, simple, long, tubular, entering vagina by united duct; pore of duct located above orifice of stylophores. Spermathecal stalk rather short, slender; reservoir not large, lies on upper half of spermoviduct.

DISTRIBUTION. Pyrenees Mts. 1 sp.

Trissexodontini Nordsieck, 1987

Nordsieck, 1987: 30.

Baso-palatal margin of aperture without

teeth. Aperture constricted, subvertical, narrowly lunate. Radial sculpture of shell surface well expressed. Umbilicus broad.

Lower stylophore developed much better than upper, which compressed between vagina and lower stylophore. Mucus gland solitary, forked.

DISTRIBUTION. Pyrenees Mts., S Spain.

Trissexodon Pilsbry, 1895

Fig. 2428

Pilsbry, 1895 (1893-1895): 288 (*Helicodonta* sect.).

— *Protodrepanostoma* Germain, 1929: 205 [t.-sp. *Helix plio-auriculata* Sacco, 1889 (foss.); OD].

Gittenberger, 1968: 166.

TYPE SPECIES — *Helix constricta* Boubée, 1836; SD Wenz, 1923 (1923-1930).

Shell much depressed, moderately solid, somewhat silky, of 5-6 slightly shouldered whorls, last whorl obsoletely angulated above, not deflected in front. Color uniformly corneous. Embryonic whorls smooth, glossy, with vague radial wrinkles, which on

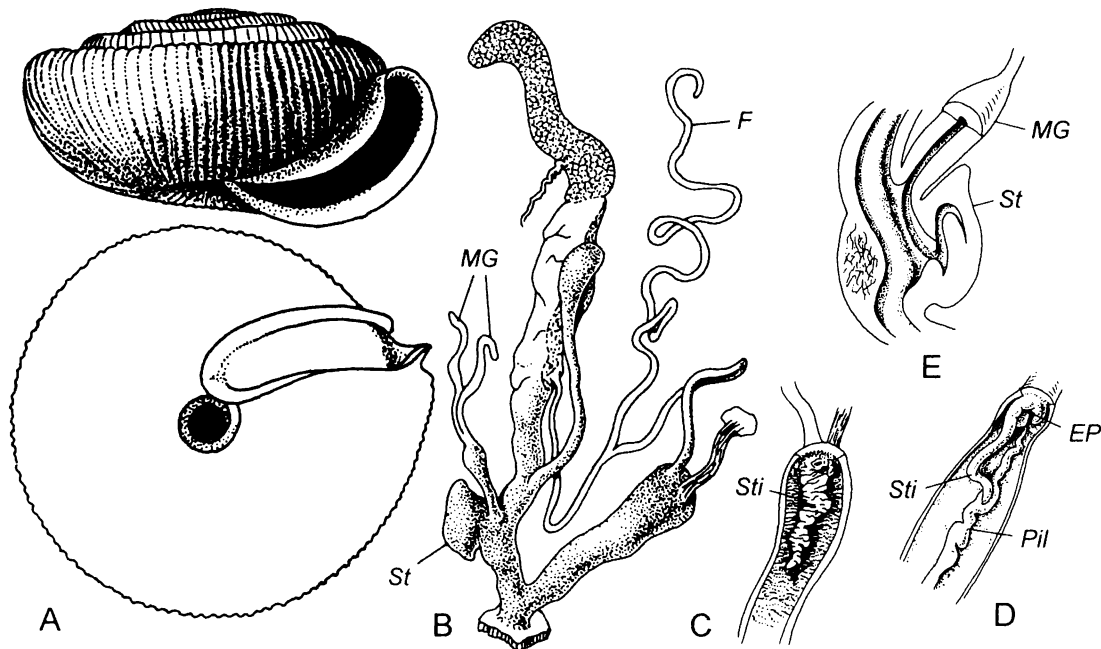


Fig. 2428. *Trissexodon constrictus* (Bouée, 1836).
 A — shell: "Basser Pyreneés" SPb. B, C, D — "Grottes de Sare, Pyreneés Atlantiques, August 6, 1983" B — reproductive tract. C — interior of penis. Cardiff No. Z.1993.052.013.
 D, E — Lahonce, Pyreneés Atlantiques, November 16, 1980. D — interior of penis. E — interior of dart apparatus. Paris.

subsequent whorls turn to thin, regular, distinct, rounded riblets. Aperture semilunar, entire, its margins connected by a parietal lamella; upper margin sinuated, expanded, basal margin narrowly reflexed. Behind aperture an annular depression present. Umbilicus relatively broad, cylindrical. Height 3-4, diam. 6-8 (3.4 × 7.2 mm).

Talon hidden. Vas deferens rather short. Flagellum very long, slender, sinuous. Epiphallus at least 2 times shorter than flagellum, just a little thicker than vas deferens. Penis clavate, internally with very short verge which supplied with long, tongue-shaped, lateral stimulator. Penial retractor attached to proximal end of penis. Modified stylophore with narrow lumen, lacks a dart, with highly muscular walls and a process risen from lower wall of stylophore. Portion of vagina opposite to stylophore markedly thickened and filled with loose tissue. Mucus gland biramous, with expanded common duct, entering angle between free oviduct and stylophore. Free oviduct and vagina subequal in length. Spermathecal stalk cylindrical, moderately long; reservoir ovoid, not attending albumen gland.

DISTRIBUTION. Pyrenees Mts. S Spain.
 1 or 2 Recent spp.

GITTENBERGERIINAE Schileyko, 1991

Schileyko, 1991 225.

Basal margin of aperture with 2 tuberculiform teeth.

Flagellum absent. Penis with a slender verge; distally of it there is a strong longitudinal pilaster divided by a deep longitudinal furrow; opposite wall of penis bears a complex of short, conic spines. Penial retractor originating from diaphragm. Stylophore 1. Mucus gland biramous, its base connected with stylophore cavity by 2 additional ducts.

DISTRIBUTION. Iberian Peninsula.

Gittenbergeria Schileyko, 1991 Fig. 2429

Schileyko, 1991 225. Puente, 1996: 74.

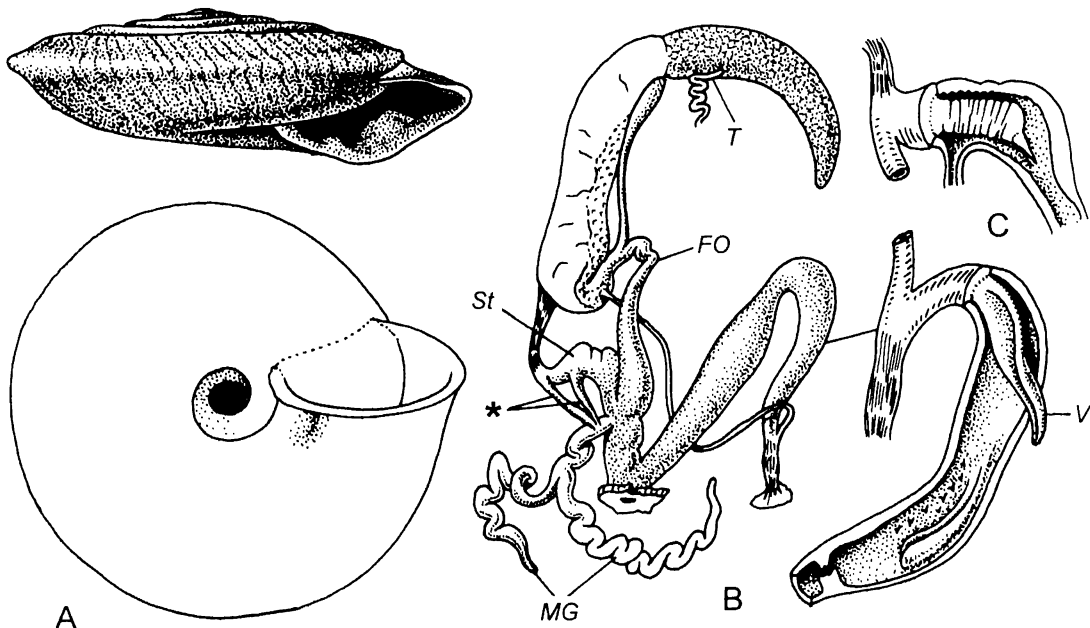


Fig. 2429 *Gittenbergeria turriplana* (Morelet, 1845). Sierra-da-Kabesa (Moncarapacho), Portugal, May 2, 1961
 A — shell. B — reproductive tract and interior of penis. C — interior of stylophore. SPb. Asterisk — additional ducts connecting stylophore with common ducts of mucus gland.

TYPE SPECIES — *Helix turriplana* Morelet, 1845; OD.

Shell lens-shaped, moderately thin, somewhat translucent, of 6 shouldered whorls. Last whorl slightly descending in front. Color corneous. Embryonic whorls with fine radial wrinklets. Postnuclear whorls covered with widely spaced radial striae and delicate granulation; granules mostly elongated, radially arranged. Aperture narrow, rhomboid, moderately oblique, with shortly reflexed margins. Baso-palatal margin with a strong tubercle-like tooth, directed across aperture plane; baso-columellar tooth smaller and more rounded. Outside there are depressions corresponding to the teeth. Umbilicus not broad, open, subcylindrical. Height 5-6, diam. 13-15 mm (5.6 × 14.2 mm).

Talon small, rod-like. Epiphallus externally not demarcated. Verge bears a narrow longitudinal groove. Both halves of penial pilaster truncated at distal ends. Stylophore of irregular shape, its summit connected with basal part of spermooviduct by muscular band, internally with a fleshy process topped with a very short, conic dart. Arms

of mucus gland convoluted, common duct rather long. Free oviduct about 2 times longer than vagina. Spermathecal stalk not long.

DISTRIBUTION. Portugal. Probably 1 sp.

HELICODONTINAE Kobelt, 1904

Kobelt, 1904: 131

— Gonostomatinae Kobelt, 1904: 62 (Helicidae subf.; based on preoccupied name *Gonostoma*).

Shell strongly depressed, with slightly elevated spire. Aperture rounded-triangular or rounded-quadrangular, its basal and palatal (or basal only) margins with swellings or tubercular teeth.

Flagellum absent or vestigial. Penis has a short verge and a valve distally of it which consists of a pair of opposite semicircular transverse folds. One of these folds bears a complex of conic spines, on the other there are conic depressions corresponding to mentioned spines. Distally of valve there is a principal pilaster subdivided by a longitudinal groove; besides, there are several sim-

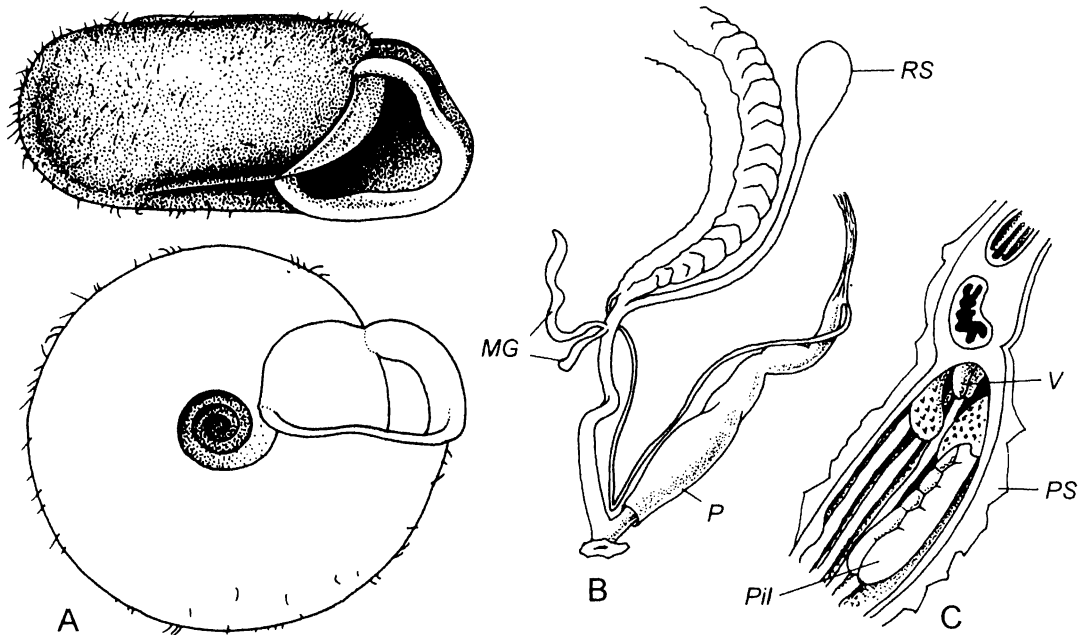


Fig. 2430. *Helicodonta obvolvata* (Müller, 1774). Zádiel, Slovakia, July 9, 1962.
A — shell. B — reproductive tract. C — interior of penis. After Schileyko, 1978b.

ple axial folds. Penial retractor arising from common trunk of columellar muscle. Stylophores missing. Mucus gland consists of 2 unequal branches or gland missing.

DISTRIBUTION. Europe.

Helicodonta Férussac, 1821

Fig. 2430

Férussac, 1821 27, 37

— *Chilodon* Ehrenberg, 1831 (nom. nud.).

— *Trigonostoma* Fitzinger, 1833: 97 [nom. praeocc., non Blainville, 1825 (Cancellariidae); t.-sp. *Helix obvolvata* Müller, 1774; SD J. Gray, 1847].

— *Vortex* Beck, 1837: 29 [nom. praeocc. non Rafinesque, 1810 (Pisces); *Helix* subg.; t.-sp. *Helix obvolvata* Müller, 1774; SD J. Gray, 1847].

— *Gonostoma* Held, 1837: 915 [nom. praeocc., non Rafinesque, 1810 (Pisces); t.-sp. *Helix obvolvata* Müller, 1774; SD J. Gray, 1847].

— *Euphemia* Leach in Beck, 1847: 122 [nom. praeocc., non Robineau-Desvoidy, 1830 (Diptera); *Helix* subg.; t.-sp. *Helix (Euphemia) obvolvata* Müller, 1774; monotypy].

TYPE SPECIES — *Helix obvolvata* Müller, 1774; SD Risso, 1826.

Shell flat, rather thin, dull, of 6 convex whorls. Body whorl evenly rounded, almost straight. Color uniformly corneous. Embryonic whorls smooth. Postnuclear whorls with irregular radial striation and rather long hairs. Aperture rounded-triangular, slightly or moderately oblique; margins thickened. Basal margin slightly sinuous when viewed from beneath. Umbilicus moderately wide, perspective. Height 5-6, diam. 10-14 mm (5.5 × 12.1 mm).

Epiphallus and penis coated by a very thin, transparent common sheath. Inner surface of penis bears several strong longitudinal pilasters; one of them shorter and wider than others, and supplied with a longitudinal groove. Proximal portion of this pilaster embraced with a pad-like thickening, surface of which covered with numerous conic depressions. Opposite to this thickening there is another saddle-like thickening bearing minute conic spines corresponding to depressions on opposite side. Combination of these structures creates a conspicuous valve, capable to isolate distal division of penis from proximal one. In proximal part of penis, behind valve, there is a short two-lobed verge. Penial retractor

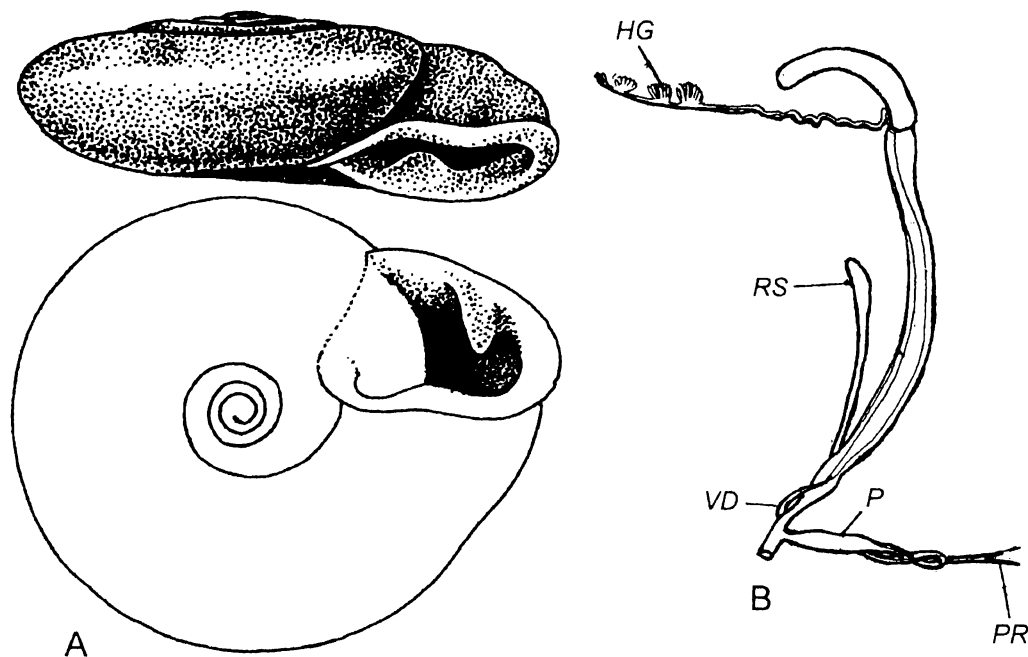


Fig. 2431 *Soosia diodonta* (Férussac, 1821).

A — shell: "Romania, Moldova, neben Donau" Leiden. B — reproductive tract. After Soós, 1917

arises from columellar muscle and inserts on epiphallus terminally. Vagina long, slender, internally smooth or with vague longitudinal folds. Mucus gland forked; longer branch is gland properly; shorter one probably serves as a reservoir for accumulation of secret. Spermatheca of moderate length, without a sharp boundary between stalk and reservoir.

DISTRIBUTION. Central and S Europe. 4-5 spp. & subspp.

? *Soosia* Hesse, 1918

Fig. 2431

Hesse, 1918b: 104.

TYPE SPECIES — *Helicodonta diodonta* Férussac, 1821; OD.

Shell nearly flat, discoidal, rather thin, of 4.5 scarcely convex whorls. Last whorl distinctly angulate, descending in front, constricted at aperture and impressed above. Color brownish-corneous. Embryonic whorls smooth, rest surface minutely granularly striate. Aperture narrow, very oblique; margins reflexed, with 1 parietal

and 1 basal teeth. Umbilicus wide. Height 3.3-3.8, diam. 10-12 mm (3.3×10.1 mm).

Vas deferens enters cylindrical-fusiform penis apically. Penial retractor inserts to vas deference at some distance from penis. Vagina rather short. Length of spermatheca a little more than a half of spermoviduct.

DISTRIBUTION. Romania, N Serbia. 1 sp.

REMARK. As it is seen from the descriptions, the shell of *Soosia* markedly differs from that of *Helicodonta*; besides, in *Soosia* the mucus gland is missing. To clarify the taxonomic position of *Soosia* we need to re-investigate the anatomy of *Soosia diodonta*, in particular, to reveal the inner structure of the penis. The absence of mucus gland might be a secondary phenomenon.

Falkneria Nordsieck, 1989

Fig. 2432

Nordsieck, 1989: 166.

TYPE SPECIES — *Helix camerani* Lessona, 1880; OD.

Shell discoidal, nearly flat, moderately thin, of 5.5 quite convex whorls. Last whorl scarcely angulated above mid-line, abruptly

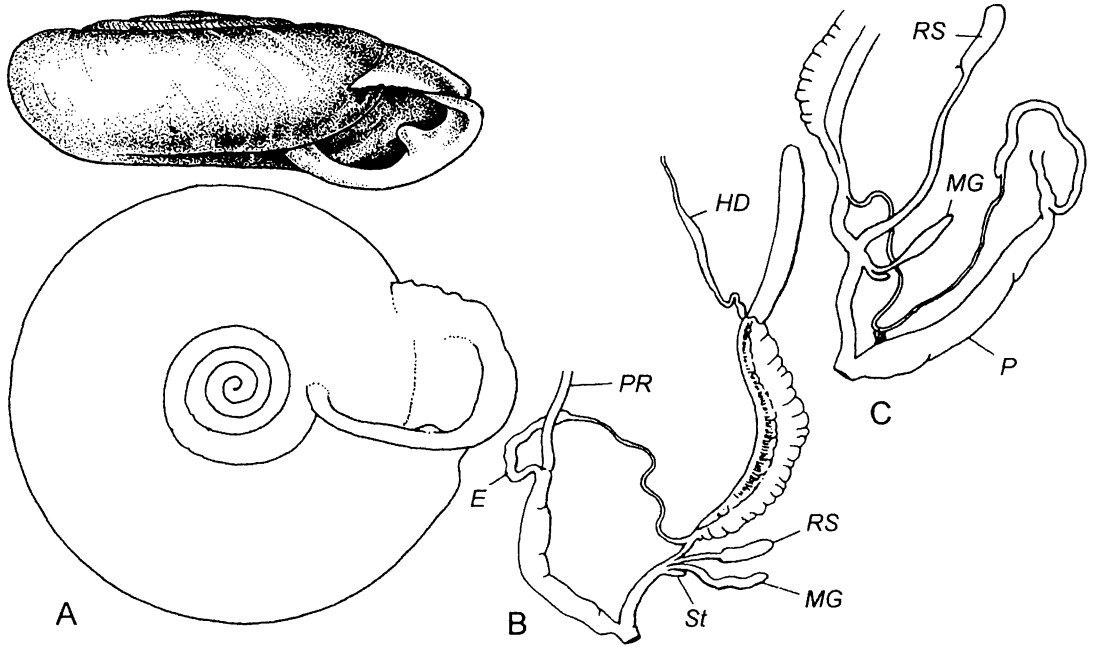


Fig. 2432. *Falkneria camerani* (Lesson, 1880).

A — shell: Piemonte, Val del Cervo, Piedicavallo, 1075 m. Private collection of Dr. G. Falkner. B — reproductive tract. After Hesse, 1931 C — reproductive tract of other specimen. After Hesse, 1934.

descending in front. Color uniformly light-corneous. Embryonic whorls smooth. Rest surface finely radially rib-striated above; on base this sculpture becomes a little weaker. Aperture rounded-triangular, narrow; its upper palatal part very oblique, lower palatal subvertical; margins thickened, reflexed; on lower palatal margin there is a large tuberculiform tooth. Umbilicus broadly open, shallow. Height 4.0-4.2, diam. 10-11 mm (4.1 × 10.3 mm).

Flagellum vestigial or absent. Epiphallus slender, of moderate length. Penis somewhat enlarged. Arms of mucus gland much different in size. Spermathecal stalk short to medium in length, reservoir distinctly demarcated from stalk.

DISTRIBUTION. NW Italy [Piedmont (Piemonte) Prov.]. 1 sp.

DREPANOSTOMATINAE Schileyko, 1991

Schileyko, 1991 226 (pro trib.).

Shell flat, involute, with sunken apex. Aperture narrowly lunate, its palatal margin

begins from wall of penultimate whorl behind plane of aperture.

Flagellum missing. Penis internally with a conspicuous, voluminous, elongated stimulator. Verge absent, pore of vas deferens star-like. Penial retractor arising from diaphragm. Stylophore absent. Mucus gland consists of 2 unequal branches; larger branch may be much swollen.

DISTRIBUTION. Italy and SE Switzerland.

Drepanostoma Porro, 1836

Fig. 2433

Porro, 1836: Taf. 71.

— *Contorta* Megerle in Villa & Villa, 1841 19 (as synonym of *Drepanostoma* Porro, 1836).

TYPE SPECIES — *Drepanostoma nautiliformis* Porro, 1836; monotypy.

Shell with sunken apex, rather thin, of about 5 convex whorls. Last whorl straight, widely rounded. Color brown. Embryonic whorls smooth. Postapical whorls lack regular sculpture, with thin, scattered hairs. Aperture lunate, narrow, moderately oblique, with thin, expanded margins; upper part of

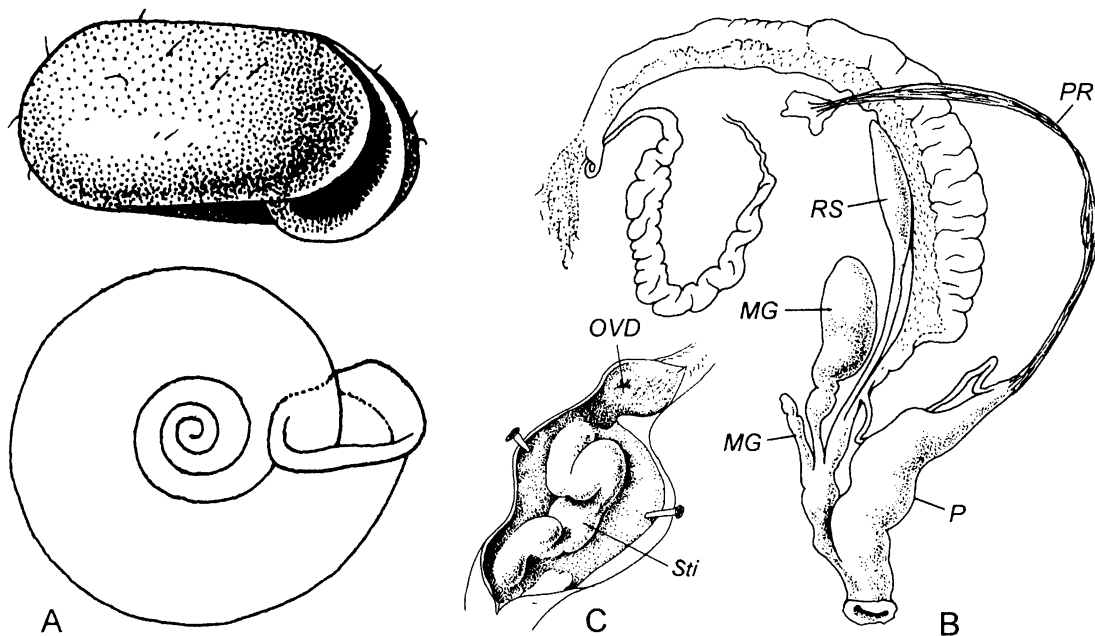


Fig. 2433. *Drepanostoma nautiliforme* Porro, 1836.

A — shell: Piemonte, Andarno biellese, Italy. Leiden. B, C — Boschetto, Prov. Novara, Italy, September 25, 1983. B — reproductive tract. C — interior of penis. Cardiff No. Z 1993.052; 1883.306.13.

palatal margin protruded forward. Umbilicus very broad, profound, perspective. Height 4.8-6.2, diam. 5-7 mm (3.0 × 6.0 mm).

Talon, a simple expanded part of hermaphroditic duct. Vas deferens short, entering apex of penis at sharp angle. Epiphallus short, epiphallic pore star-like. Penis bulky, internally with a large, folded, fleshy stimulator of irregular shape. Free oviduct very short, vagina much longer. Larger arm of mucus gland alveolar, roughly claviform. Spermathecal stalk rather short, slender; fusiform reservoir lies on distal section of spermoviduct.

DISTRIBUTION. NW Italy and SE Switzerland (Ticino Canton). 1 sp.

CARACOLLININAE Nordsieck, 1987

Nordsieck, 1987 30 (in Hygromiidae; pro trib.).

Shell much flattened. Aperture ovate, without teeth or swellings.

Flagellum vestigial or absent, but in latter case vas deferens enters not apically. Penis internally with small verge and strong longitudinal pilasters occupying almost en-

tire cavity of the organ. Penial retractor arising from diaphragm. Stylophore as such 1, sedentary; the other modified into a musculized elongated clavate appendage, opening into stylophore at base of dart. Mucus gland forked, with subequal arms.

DISTRIBUTION. W Mediterranean, Canary Islands.

Caracollina Beck, 1837

Fig. 2434

Beck, 1837 28 (*Helix* subg.).

— *Caesarella* Pfeffer, 1929: 129 (t.-sp. *Helix lenticula* Férussac, 1821; monotypy).

— *Paroestophora* Nordsieck, 1993: 9 (t.-sp. *Caracollina huloii* Pallary, 1913; OD).

Prieto et al. 1993: 64.

TYPE SPECIES — *Helix lenticula* Férussac, 1821; SD Herrmannsen, 1846.

Shell depressed, moderately thin, of about 5 flattened whorls. Last whorl scarcely deflected, with smoothed peripheral angle. Color corneous. Embryonic whorl smooth. Later whorls with fine, irregular radial striation. Aperture ovate, moderately oblique, with slightly thickened margins. Umbilicus

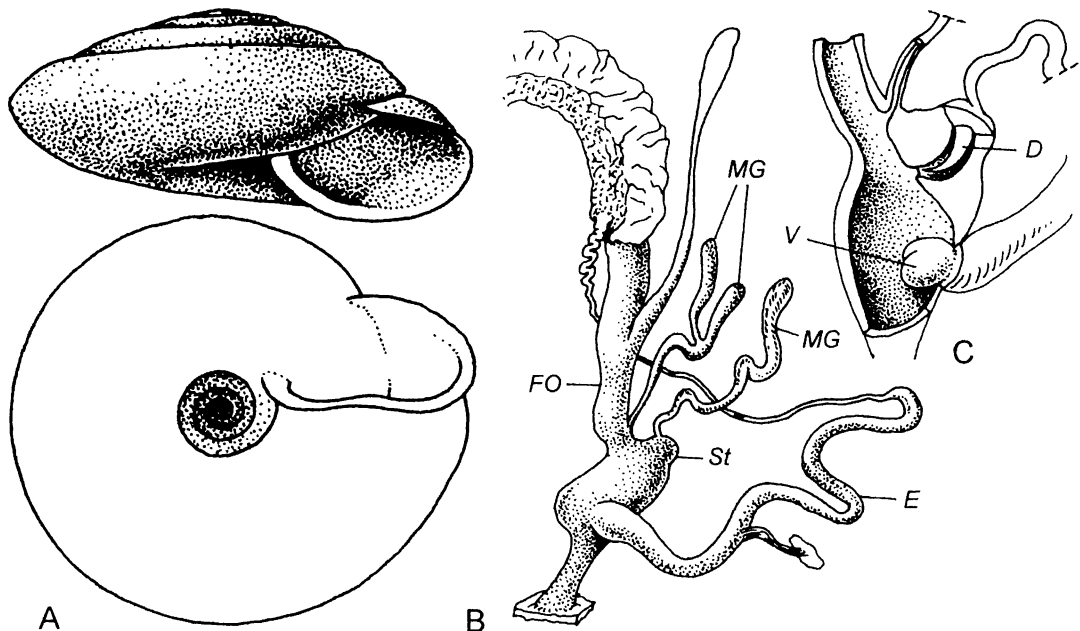


Fig. 2434. *Caracollina lenticula* (Férussac, 1821). Ceuta, NW Africa, December 10, 1979.
 A — shell. B — reproductive tract. C — interior of distal genitalia. Moscow No. Lc-28492.
 Asterisk — muscled appendix.

rather broad, quite perspective. Height 3-6, diam. 7-12 mm (3.5 × 7.6 mm).

Vas deferens rather long, somewhat convoluted in proximal part. Epiphallus long, cylindrical. Penis very short, with subglobular verge, protruded in lumen of vagina. Penial retractor attached to lower half of epiphallus. Stylophore thick-walled, lacking neck, contains a short, simple, bent, conic dart. Above stylophore there is a long, clavate, muscular appendix (? another, modified stylophore or additional mucus gland). Common duct of mucus gland rather long, arms not differ notably in length. Free oviduct and vagina moderately short. Spermathecal stalk not long, poorly defined reservoir lies on middle of spermoviduct.

DISTRIBUTION. W Mediterranean, Canary Islands. 2-3 spp.

OESTOPHORINAE Nordsieck, 1987

Nordsieck, 1987: 30 (in Hygromiidae; pro trib.).

Shell depressed. Aperture (narrowly) ovate, its margins without projections or swellings.

Flagellum short or absent. Penis with or without verge, its inner surface smooth or longitudinally folded. Penial retractor arising from diaphragm. Female section initially with a pair of stylophores (lower one highly modified) and tubular mucus glands; however lower or both stylophores and mucus glands may be secondarily missing.

DISTRIBUTION. Iberian Peninsula, Morocco, Azores.

Oestophorella Pfeffer, 1929

Fig. 2435

Pfeffer, 1929: 126.

TYPE SPECIES — *Helix buvignieri* Michaud, 1841; OD.

Shell obesely lens-shaped, rather solid, slightly shining, of 6-6.5 a little convex whorls. Last whorl bluntly angulated, slightly and gradually ascends in front. Spire low, dome-shaped. Color uniformly corneous. Embryonic whorls with flaccid radial wrinkles. Postnuclear whorls with thin, regular radial riblets becoming sharper behind aperture; locally there are traces of spiral striation. Aperture narrow, lunate, margins

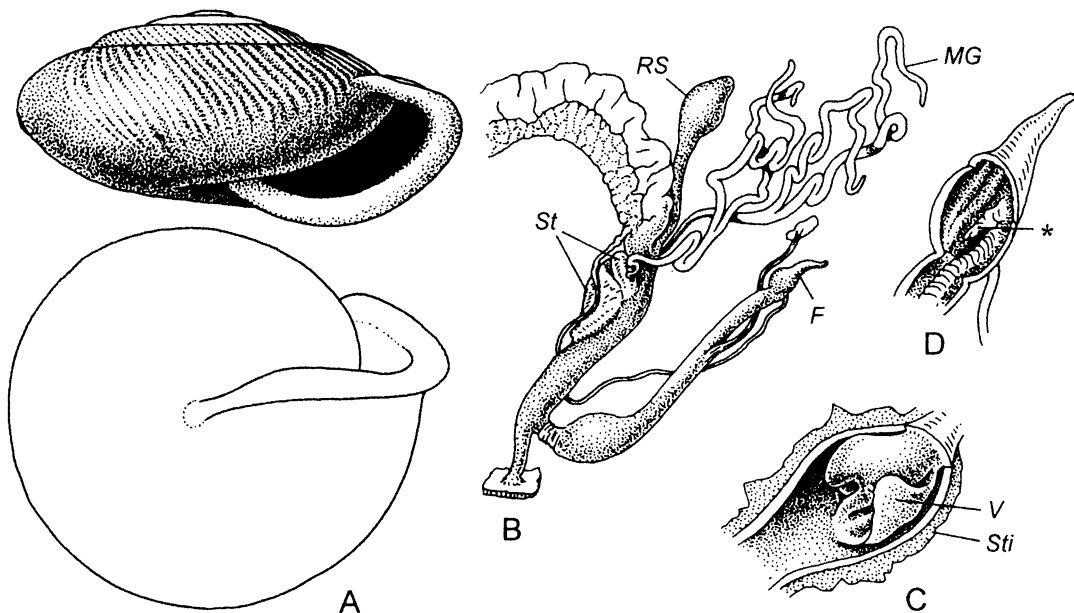


Fig. 2435. *Oestophorella buvignieri* (Michaud, 1841).

A — shell: Asturia, Spain. Vienna No. 56.950. B, C, D — Torrelavega near Santander, Prov. Cantabria, Spain, April 16, 1984. B — reproductive tract. C — interior of penis. D — interior of flagellum. Leiden. Asterisk — process in flagellum.

thickened and slightly reflexed, forming a cuff. Palatal margin with depression corresponding to lip. Umbilicus absent. Height 4-5, diam. 8-10 mm (4.0 × 8.7 mm).

Vas deferens long, entering base of flagellum laterally. Flagellum short, conic; pore of vas deferens covered up by a small, conic lobe (? stimulator); longitudinal, folded pilaster running from pore. Epiphallus rather long, cylindrical. Penis short, ovate, with verge of very complex structure and a flat lateral stimulator at side of verge. Penial retractor inserting on middle of epiphallus. Intimate sheath surrounds penis and distal section of epiphallus. Free oviduct very short; vagina, on the contrary, very long. Stylophore small, located on upper part of vagina. A dense, light-colored muscular thickening (? modified lower stylophore) situated on vagina just below stylophore; upper edge of this thickening detached and covers most part of stylophore laterally. 2 very long, biramous mucus glands enter base of stylophore symmetrically by very thin, long common ducts. Spermathecal stalk rather short, reservoir adheres to lower half of spermoviduct.

DISTRIBUTION. N Spain. 1 or 2 spp.

Oestophora Hesse, 1907

Fig. 2436

Hesse, 1907: 76.

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

Shell depressed, moderately solid, slightly translucent, of about 6 somewhat convex whorls. Last whorl rounded, not descending in front. Spire scarcely elevated, dome-shaped. Color generally corneous to brownish. Embryonic whorls microscopically spirally striated. Later whorls finely ribbed; sometimes in intervals between ribs there is exceptionally fine network; besides, spiral grooves sometimes present on body whorl. Aperture ovate, moderately oblique, with reflexed margins. Umbilicus rather wide, subcylindrical. Height 3.5-8.5, diam. 7-18 mm (7.0 × 15.1 mm).

Flagellum absent. Epiphallus and penis form a slender, subcylindrical tube without external demarcation. Internally this tube with longitudinal folds. Verge missing. Penial retractor attached to middle of epiphallus. Stylophore very large, with narrow neck, bent at base. 3 simple, very long, tubular, sinuous mucus glands enter vagina

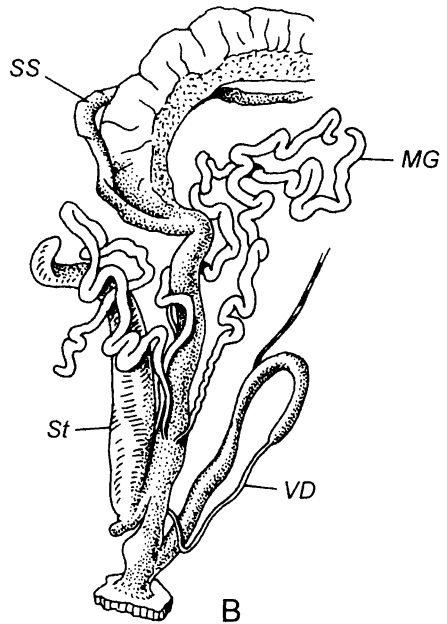
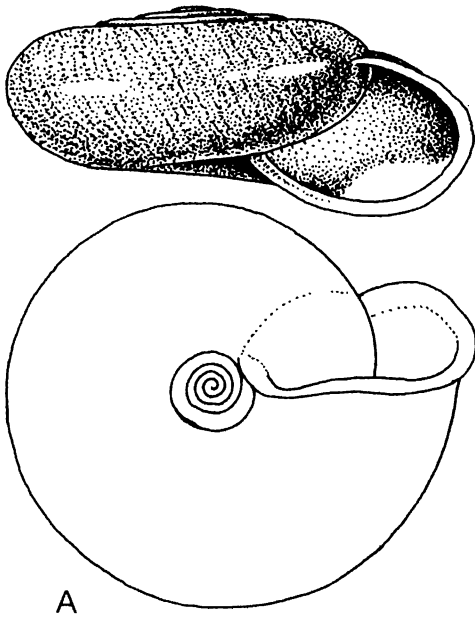


Fig. 2436. *Oestophora lusitanica* (L. Pfeiffer, 1841). Torreiro dos Padres, Terceira Island, Azores, June 7, 1969.

A — shell. B — reproductive tract. Moscow No. Lc-28495 (Leiden).

well above base of stylophore by narrow ducts. Free oviduct very short. Vagina very long. Spermathecal stalk long.

DISTRIBUTION. Iberian Peninsula, Azores. 7-9 spp.

Suboestophora Ortiz de Zarate
Antonio et Ortiz de Zarate Adolfo,
1961

Fig. 2437

Ortiz de Zarate Antonio & Ortiz de Zarate Adolfo, 1961 177 (pro sect.). Ortiz de Zarate Adolfo, 1962: 93 (*Oestophora* subg.).

—*Gasullia* Gittenberger, 1980: 206 (t.-sp. *Helix simplicula* Morelet, 1845; OD).

Parejo & Muños, 1992: 66.

TYPE SPECIES — *Helicodonta hispanica* Gude, 1910; SD Ortiz de Zarate Adolfo, 1962.

Shell flattened, rather thin, slightly translucent, of about 6 moderately convex whorls. Last whorl straight or a little ascending at aperture. Color corneous to pale-brown. Embryonic whorls with smoothed microscopical radial wrinklets. Postapical whorls almost smooth to finely costulate.

Aperture ovate, slightly to moderately oblique, with thin, simple or reflexed margins. Umbilicus open, perspective, more or less broad. Height 2.8-7.0, diam. 6.5-14.5 mm (*hispanica*: 6.7 × 14.2 mm; *simplicula*: 2.9 × 6.8 mm).

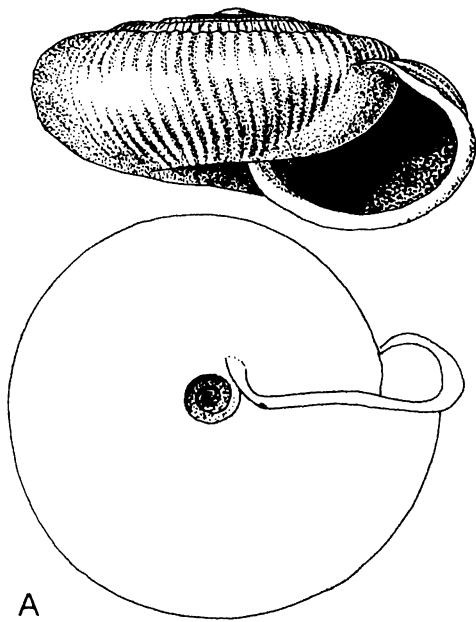
Talon hidden. Flagellum slender, vermiform, not long; epiphallus a little longer. Penis narrowly fusiform, internally with a few axial folds; verge small. Penial retractor inserting on penis/epiphallus junction. Free oviduct equal to vagina in length or somewhat shorter. Mucus glands missing or rudimentary, biramous. Spermathecal stalk slender, not long; reservoir attending about midway of spermoviduct.

DISTRIBUTION. S Iberian Peninsula, NW Morocco. 4-5 spp.

Gasullia Antonio Ortiz de Zarate
et Adolfo Ortiz de Zarate, 1961
Fig. 2438

Ortiz de Zarate Antonio & Ortiz de Zarate Adolfo, 1961 177, 178 (*Oestophora* subg.).

TYPE SPECIES — *Oestophora* (*Gasullia*) *gasulli* Antonio Ortiz de Zarate et Adolfo Ortiz de Zarate, 1961; OD.



Shell much flattened, moderately thin, not shining, of 5 rather convex whorls. Last whorl straight, rounded at periphery. Color light-corneous to brown. Embryonic whorls with obliquely-spiral microscopical threads. Later whorls distinctly granulated with rounded tubercles. Aperture broadly ovate, moderately oblique, with practically straight, scarcely thickened margins. Umbilicus broad, shallow. Height 4-5, diam. 11-13 mm (4.6 × 11.7 mm).

Talon hidden. Flagellum comparatively long, epiphallus somewhat shorter. Penis poorly demarcated from epiphallus. Penial retractor inserted on about middle of epiphallus. Free oviduct rather long. Stylophore 1, contains dart. Mucus glands 2, biramous; some arms may be branched. Spermathecal stalk moderately long; globular reservoir adheres to midway of spermoviduct.

DISTRIBUTION. Spain and Morocco. 2 spp.

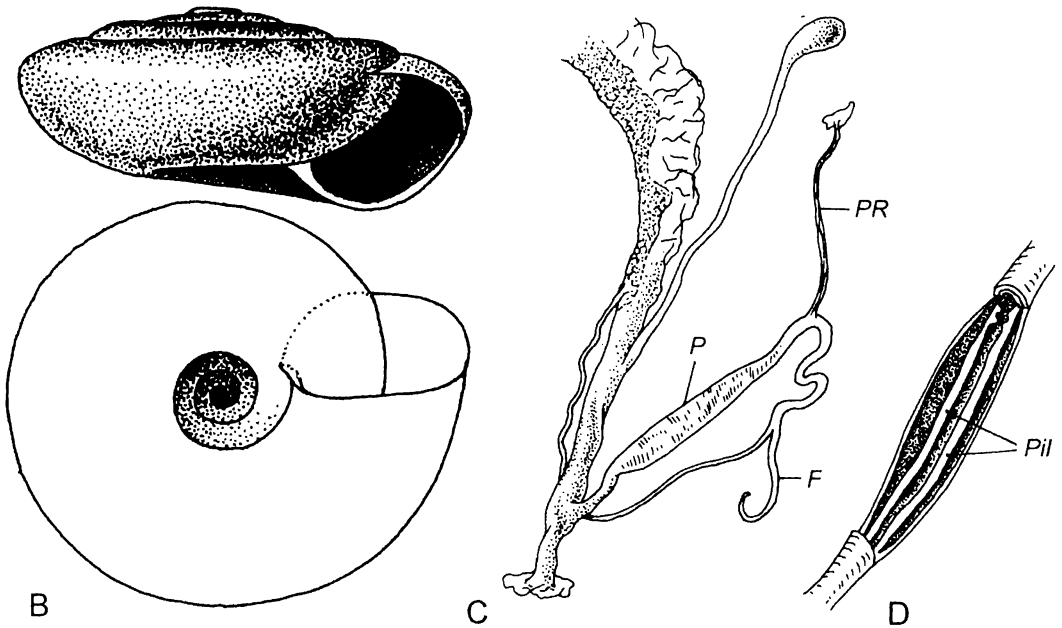


Fig. 2437 A — *Suboestophora hispanica* (Gude, 1910).

Shell: Tavernes de Valldigna, Umbria, Valencia, Spain. Leiden. B, C, D — ! *Suboestophora simplicula* (Morelet, 1845). B — shell: Tangier, Morocco. Leiden. C, D — Sierra de Arca N of San Roque, Cádiz, Spain, March 21, 1976. C — reproductive tract. D — interior of penis. Leiden.

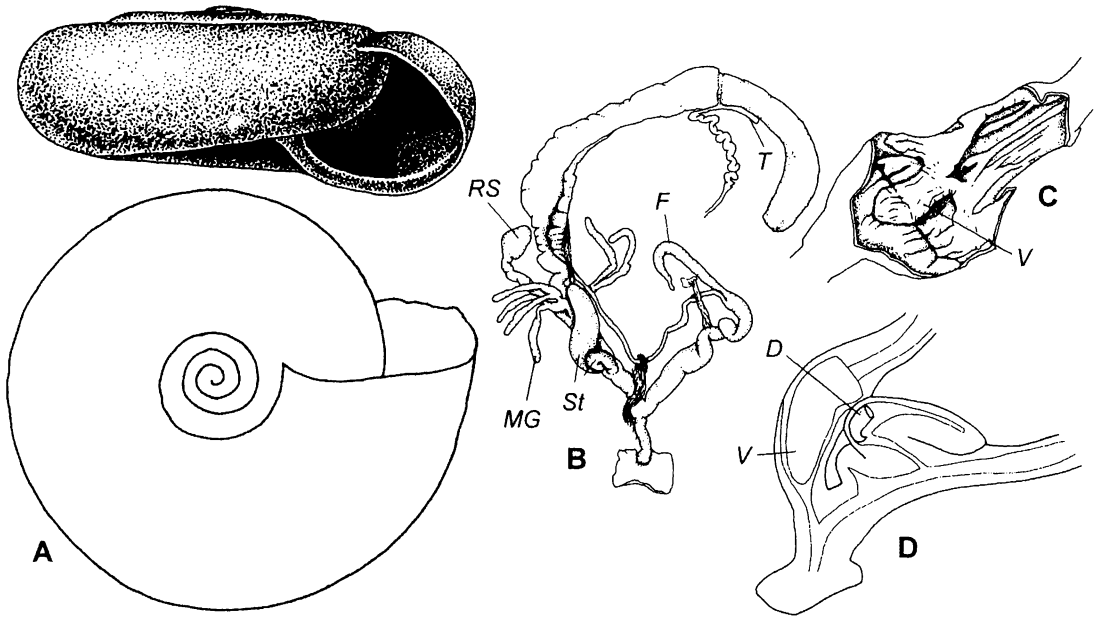


Fig. 2438. A — ! *Gasullia riffensis* (Pallary, 1936).

Shell: Burugú, Morocco. Leiden. B, C, D — *Gasullia gasulli* (Ortiz de Zarate Antonio et Ortiz de Zarate Adolfo, 1961). B — reproductive tract. C — interior of penis. D — interior of distal genitalia. After Muñoz & Parejo, 1992.

LINDHOLMIOLINAE Schileyko, 1978

Schileyko, 1978b: 116.

Shell much depressed to almost flat. Aperture margins lack projections or swellings.

Flagellum absent. Epiphallus entering penis non-apically through a simple pore; both ducts surrounded by a thin common sheath. Penis internally with small, vague folds. Verge absent. Penial retractor originating from diaphragm. Stylophore missing. Mucus gland solitary, not branched.

DISTRIBUTION. S and SE Europe.

Lindholmiola Hesse, 1931 Fig. 2439

Hesse, 1931 50.

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

Shell more or less lens-shaped, rather solid, dull, of 6.5-7.5 tightly coiled whorls. Last whorl slightly descending in front, bluntly to sharply angulated. Color uniformly corneous to chestnut. Embryonic sculpture of very delicate radial wrinkles. Postapical whorls finely radially ribbed, with microscopic granulation; thin hairs

also may be present. Aperture lunar, oblique, its margins form a cuff. Umbilicus narrow, deep, cylindrical. Height 4-7, diam. 8-15 mm (5.5 × 14.9 mm).

Epiphallus not long, its lumen strongly sinuous and twisted, with glandular inner walls. Penis internally with short axial folds. Penial retractor attached to proximal section of epiphallus. Penis sheath thin, surrounds penis and epiphallus. Free oviduct moderately long, slender; vagina somewhat longer, expanded; its anterior wall bears a strong, muscular, transversal thickening owing to which cavity of vagina connected with cavity of atrium by very narrow slit. Mucus gland enters very upper part of vagina through narrow duct. Spermathecal stalk not long, reservoir adheres to distal half of spermooviduct.

DISTRIBUTION. S and SE Europe, E Mediterranean. 3 spp. with a few subspp.

Atenia Gittenberger, 1968 Fig. 2440

Gittenberger, 1968: 169. Martínez-Ortí, 2005: 73.

TYPE SPECIES — *Helix quadrasi* Hidalgo, 1885; OD.

Shell depressed, thin, translucent, of 4

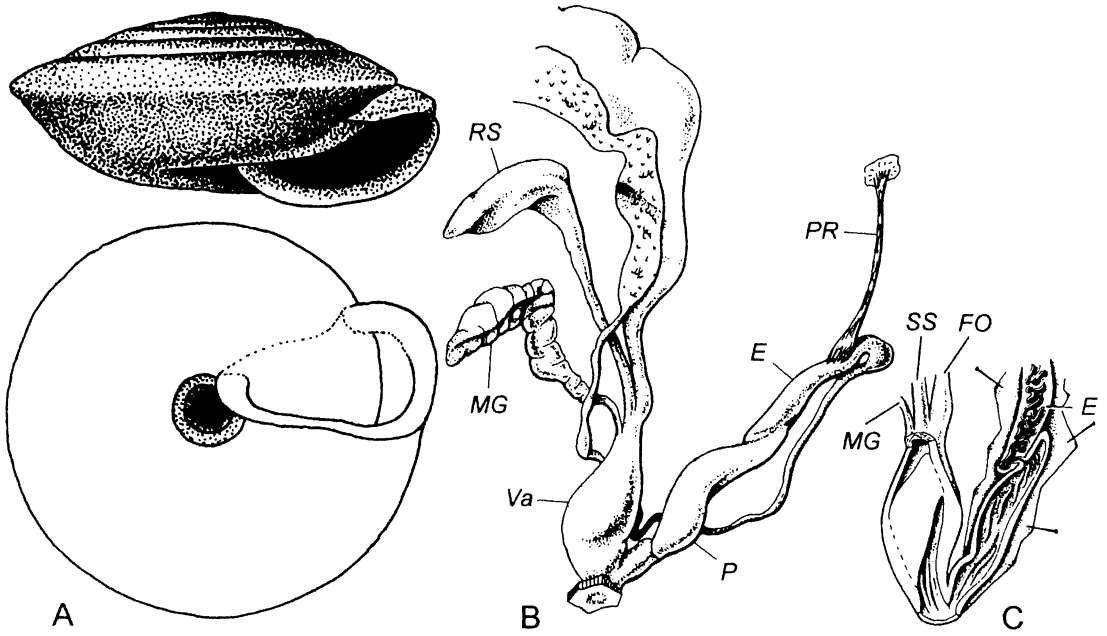


Fig. 2439. A — *Lindholmiola lens* (Férussac, 1821).
 Shell: Delphi, Greece. Phil. No. 171680. B, C — ! *Lindholmiola corcyrensis* (Férussac, 1839)
 B — reproductive tract. C — interior of penis and vagina. After Schileyko, 1978b.

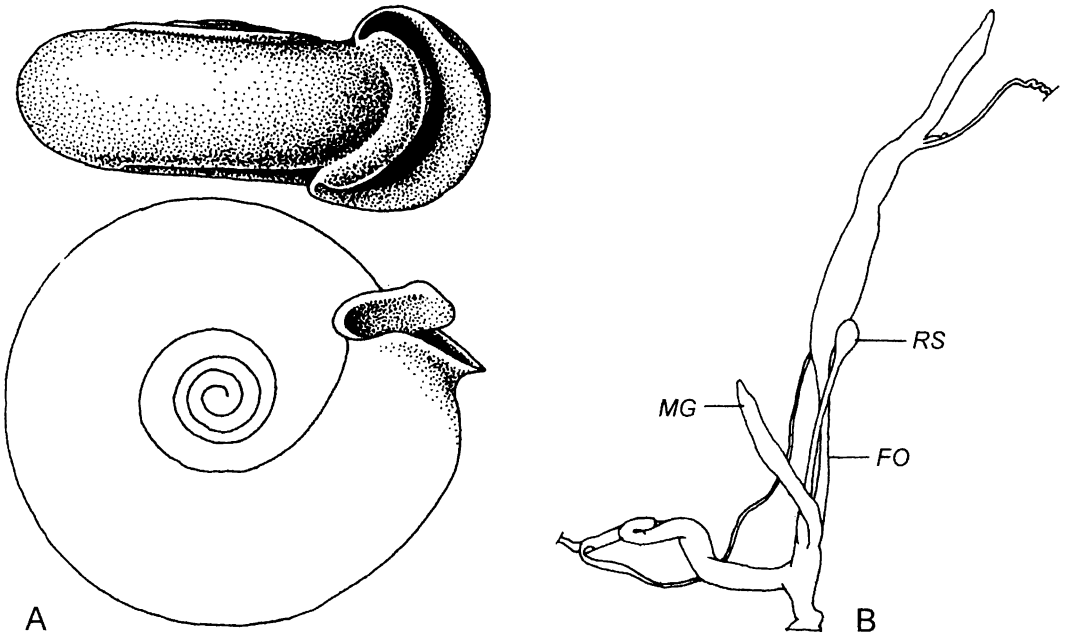


Fig. 2440. *Atenia quadrasi* (Hidalgo, 1885).
 A — shell: Cova del Lartanya, Tarragona, Spain. Leiden. B — reproductive tract. After
 Gittenberger, 1968.

slightly convex whorls. Spire scarcely elevated. Last whorl weakly angulated above middle line, somewhat ascending in front. Color light-corneous to practically colorless. Embryonic whorls bear weak radial wrinkles. Postapical surface with irregular, very fine radial wrinkles and minute, radially directed scales. There are also thin light hairs. Aperture narrowly lunar, vertical, not interrupted on parietal wall; parietal callus forms thin, protruded lamella; palatal margin strongly reflexed. Umbilicus shallow, very broad. Height 1.8-2.3, diam. 5-6 mm (2.0 × 5.3 mm).

Epiphallus rather short, slender. Penis somewhat swollen. Penial retractor inserted on vas deferens/epiphallus junction. Free oviduct long. Vagina very short. Tubular mucus gland entering vagina at base of spermathecal stalk. Latter rather short, poorly defined reservoir adheres to lower half of spermoviduct.

DISTRIBUTION. NE Spain. 1 sp.

CILIELLIDAE Schileyko, 1970

Schileyko, 1970: 1307 (Helicidae trib.).

Shell comparatively oligospiral, whorls not tightly coiled. Color usually uniformly dark. Spiral sculpture missing. Aperture margins not thickened, lip absent or very slightly developed.

Flagellum mostly short and slender, much contrasting with very enlarged, voluminous epiphallus. Penial verge present. Stylophores 2 or none; when present, they are very small, rudimentary and symmetrically situated on vagina or approached at the same level on one side of vagina. Darts not present. Mucus glands 0, 1, or 2. Each gland solitary, or forked, or consists of a few long, slender branches. Spermathecal shaft much enlarged, especially in basal section.

DISTRIBUTION. S and W Europe, Africa.

HALOLIMNOHELICINAE Nordsieck, 1986

Nordsieck, 1986: 116.

Shell periphery rounded. Umbilicus narrow.

2 minute rudimentary stylophores situated side-by-side on vagina at the same level. Slender mucus glands inserted be-

tween stylophores, all arising from a common base.

DISTRIBUTION. Tropical Africa.

Halolimnohelix Germain, 1913

Fig. 2441

Germain, 1913: 351.

— *Blayneiyella* Preston, 1914: 799 (t.-sp. *Blayneiyella percivali* Preston, 1914; OD). Verdcourt, 1973: 556.

— *Larogiella* Preston, 1914: 800 (t.-sp. *Larogiella venatoris* Preston, 1914; OD).

— *Nakuruella* Preston, 1914: 802 (t.-sp. *Zingis bullata* Preston, 1913; OD). Verdcourt, 1973: 556.

— *Mikenoella* Preston, 1914: 802 (t.-sp. *Mikenoella akena* Preston, 1914; OD). Verdcourt, 1981: 529.

— *Urguessella* Preston, 1914: 803 (t.-sp. *Urguessella urguesensis* Preston, 1914; OD).

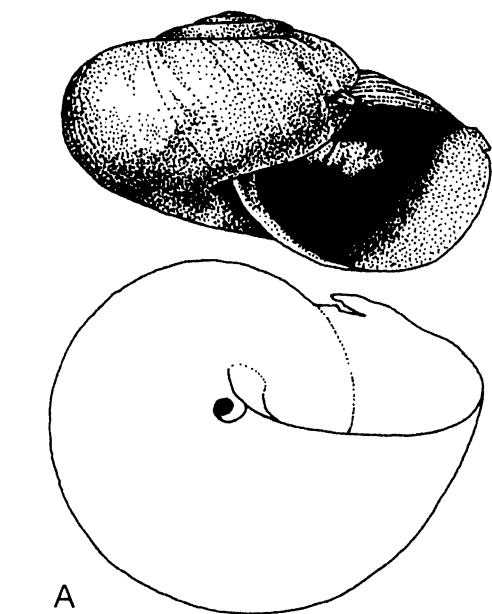
— *Congohelix* Pfeffer, 1931: 247, 272 (t.-sp. *Halolimnohelix langi* Pilsbry, 1919; monotypy).

TYPE SPECIES — *Helix bukobae* Martens, 1895; SD Pilsbry, 1919.

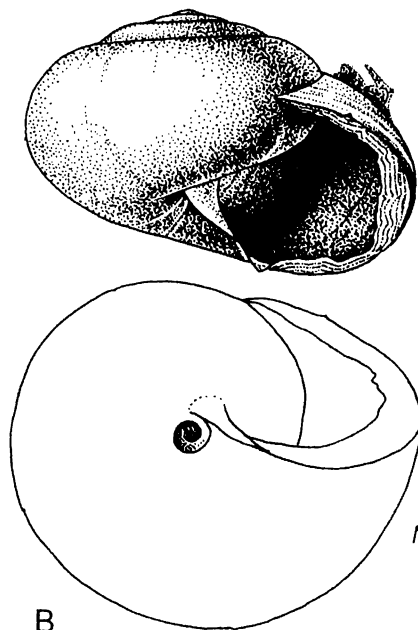
Shell depressed, thin, fragile, of 4-5 moderately convex whorls. Last whorl straight, evenly rounded at periphery. Color yellowish to dark-brown, uniform or with narrow, dark supraperipheral band. Embryonic whorls smooth. Subsequent whorls with smoothed, weak, irregular radial wrinklets and frequently with variously developed hairs. Aperture ovate, not strongly oblique, with thin, simple or slightly reflexed margins. Umbilicus narrowly open. Height 7-11, diam. 11-18 mm (*bukobae*: 8.2 × 14.4 mm; *percivali*: 8.8 × 13.3 mm; *langi*: 8.2 × 13.2 mm).

Jaw with many flat ribs divided by narrow intervals.

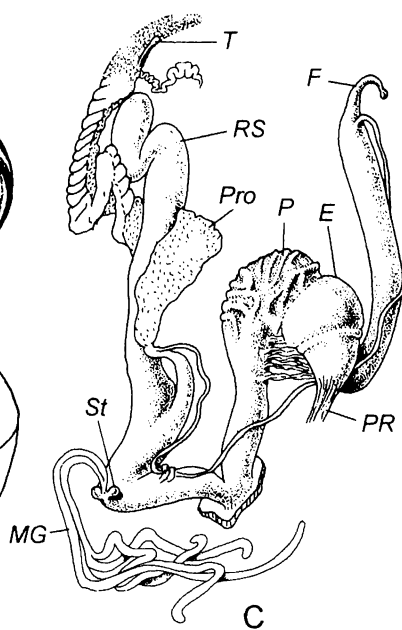
Talon exposed, with small head located on top of slender stalk. Vas deferens moderately to rather long. Flagellum short to moderately long. Epiphallus subcylindrical, thick-walled, connected with penis or atrium by muscular bands. Penis thin-walled, internally with chaotic relief of short ridgelets and verge of very variable shape: in *H. sericata* it simple, ovate, with small, slit-like apical pore, whereas in *H. venatoris* verge has a very conspicuous shape: outlines of verge roughly mushroom-like; hat of "mushroom" bears thin, conchiolinous, circular lamellae; epiphallic pore situated on base of broad, lateral, axial groove and covered by a fleshy lobe; on bottom of men-



A



B



C



D

tioned groove there is a thin, high, longitudinal fold. Mucus glands 2, each with 2-3 arms. Free oviduct short to moderately long. Vagina long, stout, internally with a large papilla directed upward. Spermathecal stalk expanded, long; reservoir (almost) attending albumen gland.

DISTRIBUTION. Equatorial Africa. Probably about 30 spp.

REMARK. Verdcourt (1983) listed 16 spp. of *Halolimnohelix* (including 2 unnamed spp.) for East Africa and added 44 more species names (including *urguessensis* Preston, 1914 — type species of *Urguessella*, *venatoris* Preston, 1914 — type species of *Larogiella* Preston, *eulotaeformis* Preston, 1914 — type species of *Elgonella* Preston, 1914, *urguessensis* Preston, 1914 — type species of *Urguessella* Preston, 1914, and 9 unnamed spp.) which “unknown anatomically and referred to *Halolimnohelix* pro tem” At the same time, as it is seen from the description and illustrations, the genus in current use is heterogeneous (in particular, the structure of verge in *H. percivali* and *H. sericata* is quite different).

Fig. 2441. A — *Halolimnohelix bukobae* (Martens, 1895).

Shell: Entebbe, Uganda. Leiden. B — ! *Halolimnohelix percivali* (Preston, 1914). Shell:

“Miss. De l’Omo, 1932-33, Kenya, Cherangani near Kitale, March 10, 1933” Paris. C, D

— ! *Halolimnohelix venatoris* (Preston, 1914). The same label. C — reproductive tract. D

— interior of penis. Paris.

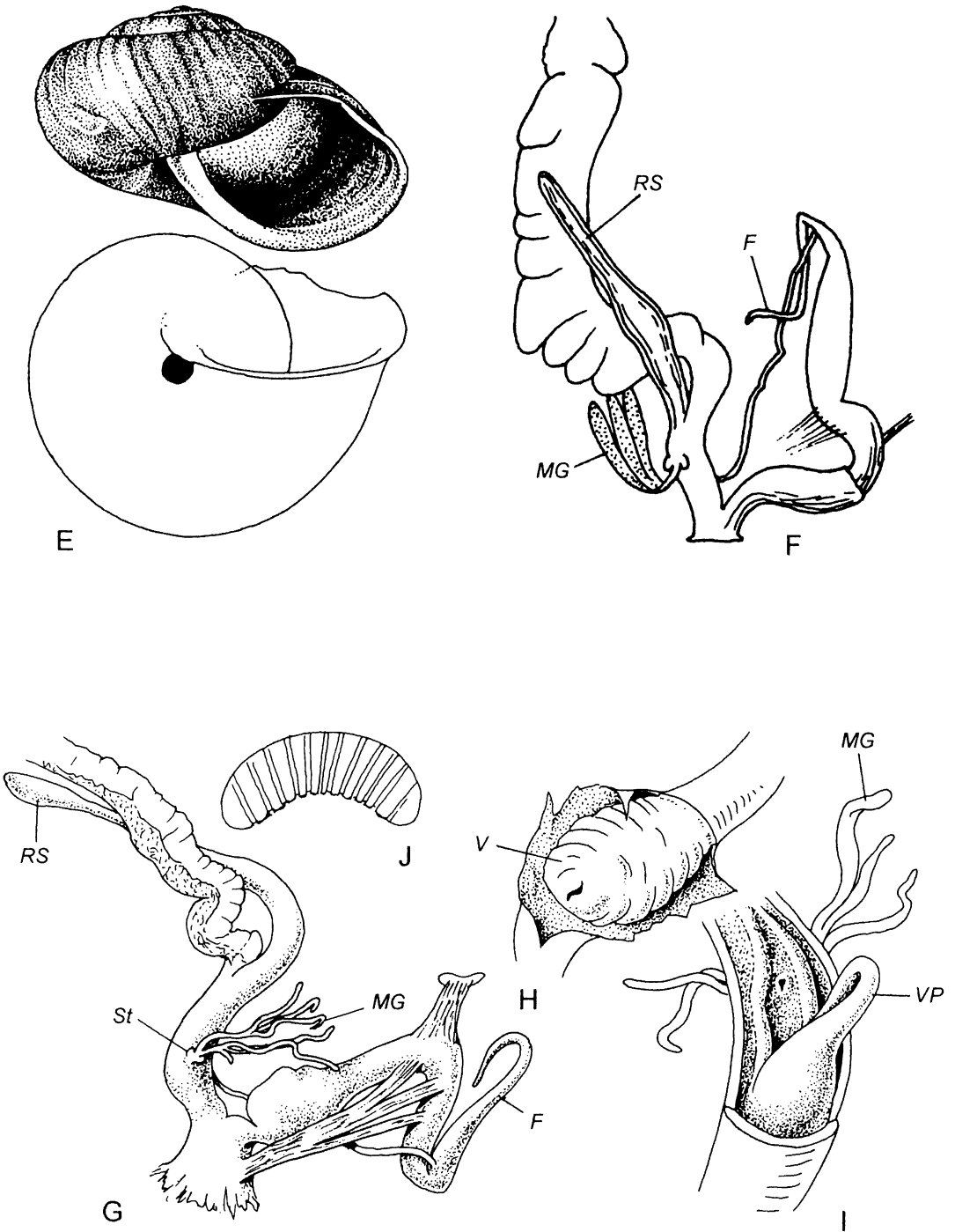


Fig. 2441 (Continued).

E, F — ! *Halolimnohelix langi* (Pilsbry, 1919). E — shell: "Medie, Belgian Congo" ? Syntype. Phil. No. 118531 F — reproductive tract. After Pilsbry, 1919. G, H, I, J — ! *Halolimnohelix sericata* (Pilsbry, 1919). "Beni und Urwald bei Beni N of Albert-Edward See", E Africa, July 1910. G — reproductive tract. H — interior of penis. I — interior of vagina. J — jaw. Vienna No. 53.097

? *Elgonella* Preston, 1914
Fig. 2442

Preston, 1914: 795.

TYPE SPECIES — *Elgonella eulotaeformis* Preston, 1914; OD.

Shell depressed-conic, thin, of about 5 moderately convex whorls. Spire dome-shaped. Last whorl rounded, slightly but quite distinctly, gradually descending in front. Color yellowish or pale-corneous. Embryonic whorls practically smooth. Later whorls with weak, irregular radial ridgelets. Aperture broadly ovate, not strongly oblique, with slightly reflexed, sharp, simple margins. Umbilicus open, rather narrow, somewhat perspective. Height 4-6, diam. 6.5-9.0 mm (4.9 × 7.4 mm).

DISTRIBUTION. Tropical E Africa. 1-3 spp.

REMARK. Taxonomic status of *Elgonella* should be confirmed.

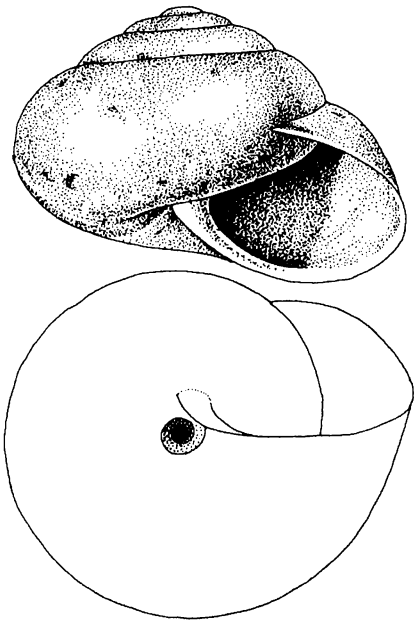


Fig. 2442. *Elgonella eulotaeformis* Preston, 1914.
A — shell: Kagambah, SW Uganda. Ho-
lotype. London No. 1937 12.30.1971

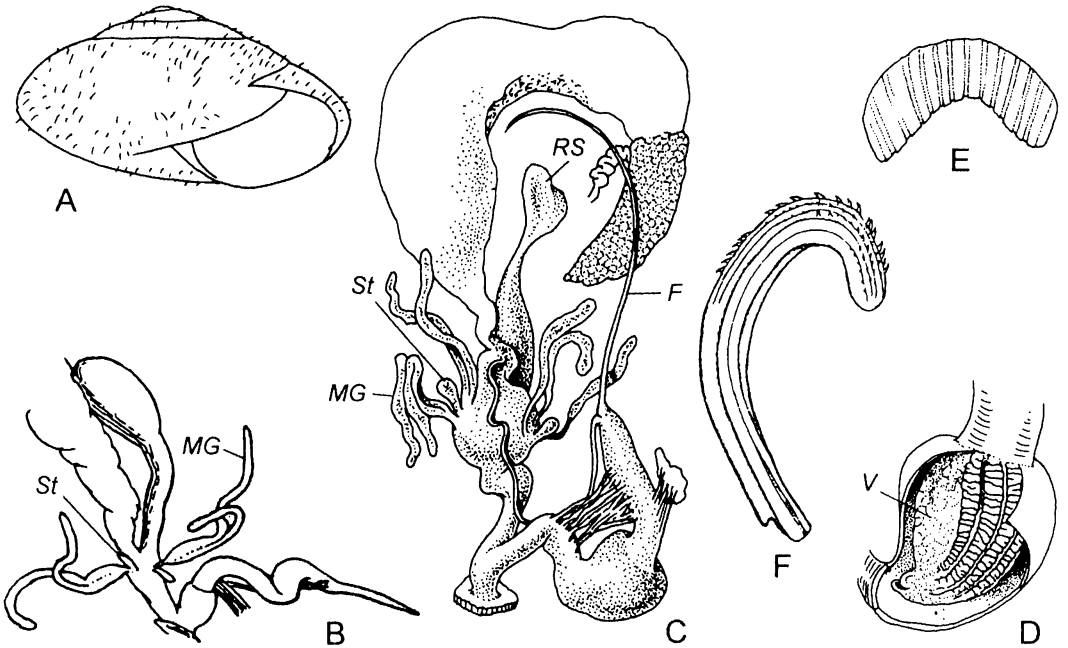


Fig. 2443. A, B — *Vicariihelix orthotricha* Pilsbry, 1919.
A — shell. B — reproductive tract. After Pilsbry, 1919. C, D, E — ! *Vicariihelix gregorii*
(Smith, 1895). Meru Forest, 6 km NW of Meru, November 24, 1978. C — reproductive
tract. D — interior of penis. E — jaw. Leiden. F — ! *Vicariihelix cicatricosa* Verdcourt,
1981 Tip of spermatophore. After Verdcourt, 1981

VICARIHELICINAE Schileyko, 1991

Schileyko, 1991: 227

Shell as in Halolimnohelicinae.

2 very small vestigial stylophores situated symmetrically: one on right and the other on left side of vagina. Mucus glands entering at base of each stylophore.

DISTRIBUTION. Equatorial Africa.

Vicariihelix Pilsbry, 1919

Fig. 2443

Pilsbry, 1919: 47 Verdcourt, 1974: 461.

TYPE SPECIES — *Vicariihelix orthotricha* Pilsbry, 1919; OD.

Shell depressed to subglobose, thin, of about 5 slightly to moderately convex whorls. Last whorl straight, rounded. Color corneous to cinnamon-brown or chestnut, sometimes with greenish tint. Embryonic whorls smooth. Postapical sculpture of weak, irregular radial striae; short, stiff hairs sometimes present. Aperture broadly lunate, moderately oblique, with simple margins. Umbilicus moderately narrow. Height 6.3-11.0, diam. 8.7-17.0 mm.

Jaw odontognathous, with broad, flat ribs.

Talon hidden. Flagellum slender, moderately to quite long. Epiphallus not long, stout. Penis clavate, its upper swollen chamber contains large, fleshy verge with apical slit-like pore; in *Vicariihelix gregorii* one side of verge covered with smoothed vermiculate relief, the other bears few longitudinal ridges consisting of many tubercles. Distal narrowed section of penis connected with epiphallus by several strong muscular fibers. Penial retractor attached to lower section of epiphallus. Free oviduct short. Vagina long, more or less expanded in upper part. Stylophores very small, of alveolar structure; 2-3 simple or forked mucus glands enter vagina at bases of stylophores. Spermathecal stalk rather short, more or less swollen basally; reservoir lies on lower half of spermoviduct. Spermatophore with sharp longitudinal ridges bearing small triangular thorns.

DISTRIBUTION. Equatorial, predominantly East Africa. 10-12 spp.

CILIELLINAE Schileyko, 1970

Shell periphery rounded or angular. Umbilicus of various width.

Vagina without stylophores or mucus glands, or a pair of mucus glands present.

DISTRIBUTION. S Europe, E Africa, Canary Islands.

Ciliella Mousson, 1872

Fig. 2444

Mousson, 1872: 60 (*Helix* sect.).

— *Lepinota* Westerlund, 1889: 2, 16 [*Helix* subg.; t.-sp. *Helix ciliata* Studer, 1820; SD Pilsbry, 1895 (1893-1895)].

TYPE SPECIES — *Helix ciliata* Studer, 1820; SD Pilsbry, 1895 (1893-1895).

Shell depressed-conic, thin, rather fragile, translucent, of 5-5.5 flattened whorls. Last whorl somewhat descending in front, keeled or angular at periphery. Color uniformly brown or corneous. Embryonic whorls with very delicate radial wrinkles. Postapical whorls decorated with short, scale-like periostracal processes situated on radial wrinkles. Aperture ovate, oblique, margins well expanded, somewhat thickened within. Umbilicus minutely open. Height 5-6, diam. 9-10 mm (5.5 × 9.5 mm).

Vas deferens slender, very long. Flagellum conic, stout, rather short. Epiphallus also short. Penis swollen, internally with fleshy, thick-walled verge which has a very narrow canal; a deep, narrow groove runs along its surface; beginning of groove covered up by a small, triangular lobe. Penial retractor inserting on middle of epiphallus. Free oviduct long. Vagina very short. Spermathecal stalk considerably swollen basally; reservoir voluminous, not attending albumen gland.

DISTRIBUTION. South-central Europe, Canary Islands. 1 or 2 spp.

Schileykiella Manganelli, Sparacio et

Giusti, 1989

Fig. 2445

Manganelli et al. 1989: 141

TYPE SPECIES — *Helix parlatoris* Bivona, 1839; OD.

Shell strongly depressed, thin, fragile, of 4-4.5 somewhat shouldered whorls. Body whorl descending in front, angulated at or above periphery. Spire very low conic. Color (dark) brown or blackish-brown. Embryonic whorls with fine radial wrinkles and tiny traces of hairs. Postapical sculpture consists of minute radial wrinkles and rows

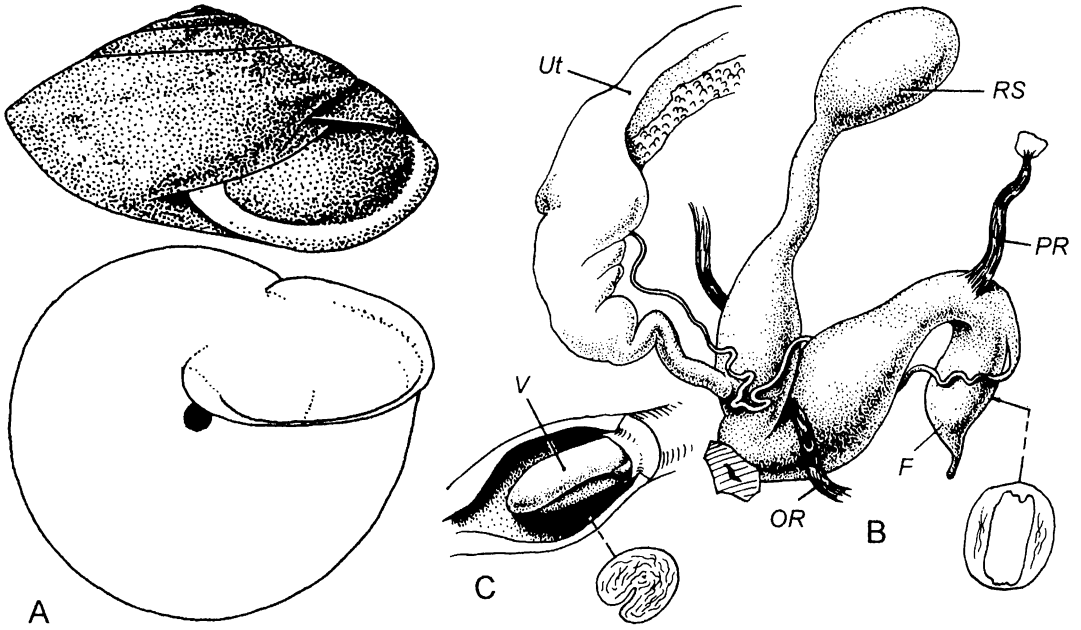


Fig. 2444. *Ciliella ciliata* (Studer, 1820). Bus-del-Que near Iseo, Lombardy, Italy, March 19, 1977
 A — shell. B — reproductive tract. C — interior of penis. Moscow.

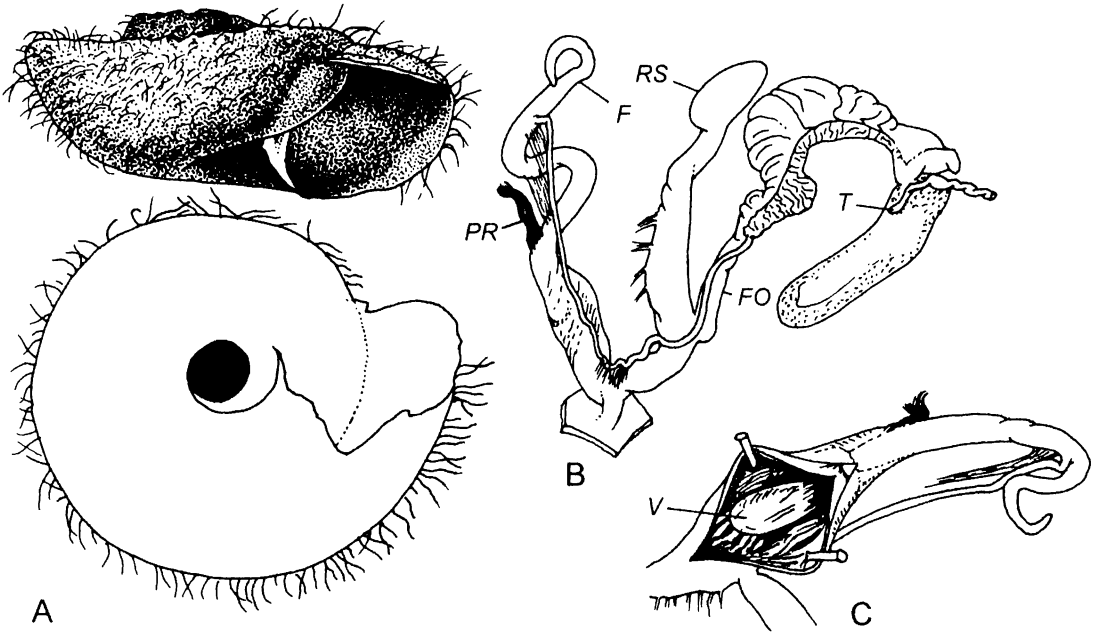


Fig. 2445. *Schileykiella parlatoris* (Bivona, 1839).
 A — shell: Sicily. Geneva. B — reproductive tract. C — interior of penis. After Manganeli et al., 1989.

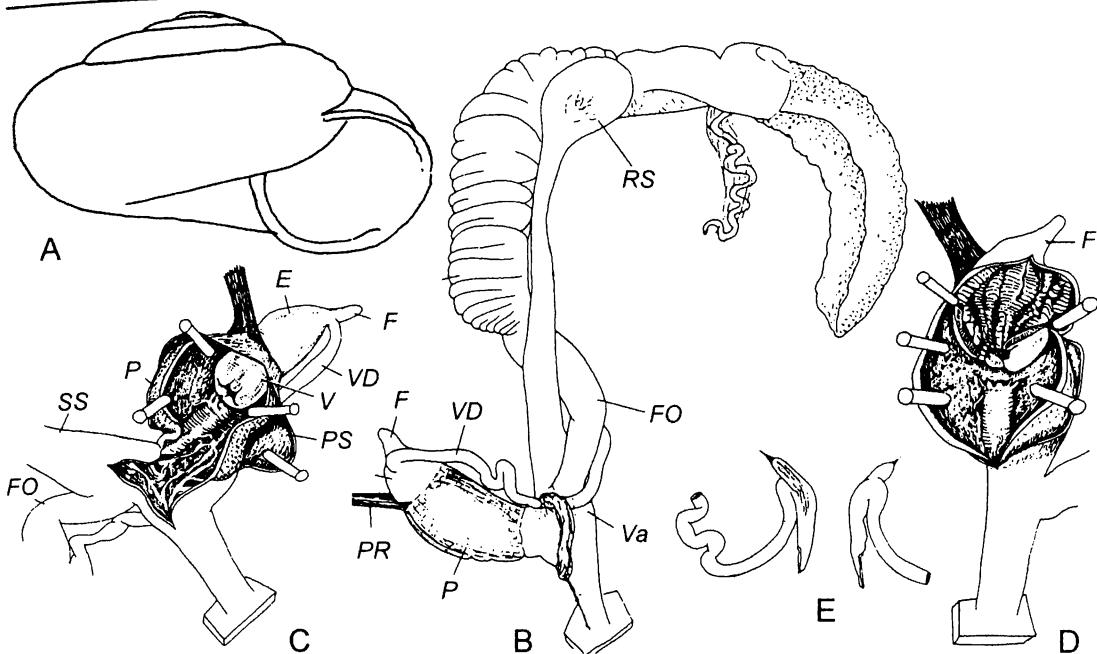


Fig. 2446. *Ciliellopsis oglasae* Giusti et Manganelli, 1990.

A — shell. B — reproductive tract. C — interior of penis. D — interior of flagellum and epiphallus. E — talon from two sides. After Giusti & Manganelli, 1990.

of long periostracal hairs. Aperture widely lunate, margins thin, columellar somewhat dilated, basal slightly reflexed. Umbilicus moderately wide, cylindrical. Height 3.5-4.5, diam. 6.5-8.0 mm (3.5 × 7.7 mm).

Flagellum conic or subcylindrical, short to very long. Epiphallus relatively short. Penis of irregular shape, coated by very thin, transparent sheath. Internally penis furnished with strong, irregular, longitudinal pilasters; verge of various shape and size as well as solid lateral knob (stimulator). Penial retractor arising from diaphragm and attaching to upper section of penis. Free oviduct rather long, vagina a little shorter. Reservoir of spermatheca small, stalk short and stout to very long, coiled and cylindrical; in any case its basal section enlarged.

DISTRIBUTION. Sicily. 2 spp.

Ciliellopsis Giusti et Manganelli, 1990
Fig. 2446

Giusti & Manganelli, 1990: 269

TYPE SPECIES — *Ciliellopsis oglasae* Giusti et Manganelli, 1990; OD.

Shell depressed-conic, thin, of 3.5-4 moderately convex whorls. Last whorl scarcely angled at periphery. Color brown.

Embryonic whorls with raised, undulating radial lines, spiral grooves and impressions of hair roots. Postnuclear sculpture of close radial lines, rows of short hairs and minute spiral crests. Aperture ovate or rounded, oblique, with thin margins; columellar and basal margins slightly reflexed. Umbilicus rather wide, profound. Height 2.8-3.4, diam. 5.3-6.0 mm.

Hermaphroditic gland of many lobes. Talon very small, with a wide latero-basal fecundation chamber which embraces middle portion of apically elongated receptacle portion. Vas deferens rather short, expanded. Flagellum and epiphallus very short. Penis shortly fusiform, internally with a small, subglobular verge; rim of verge lobate, one of lobes sometimes continuous with a wide pilaster. Walls of penis contain glandular tissue. Penis sheath thin, surrounds most of penis length. Penial retractor attached to upper edge of sheath. Free oviduct comparatively long. Vagina extremely short, lacking any additional organs. Atrium long. Spermathecal stalk moderately long, slightly enlarged basally; reservoir adheres to upper half of spermoviduct.

DISTRIBUTION. Italy (Montecristo Island, Tuscan Archipelago). 1 sp.

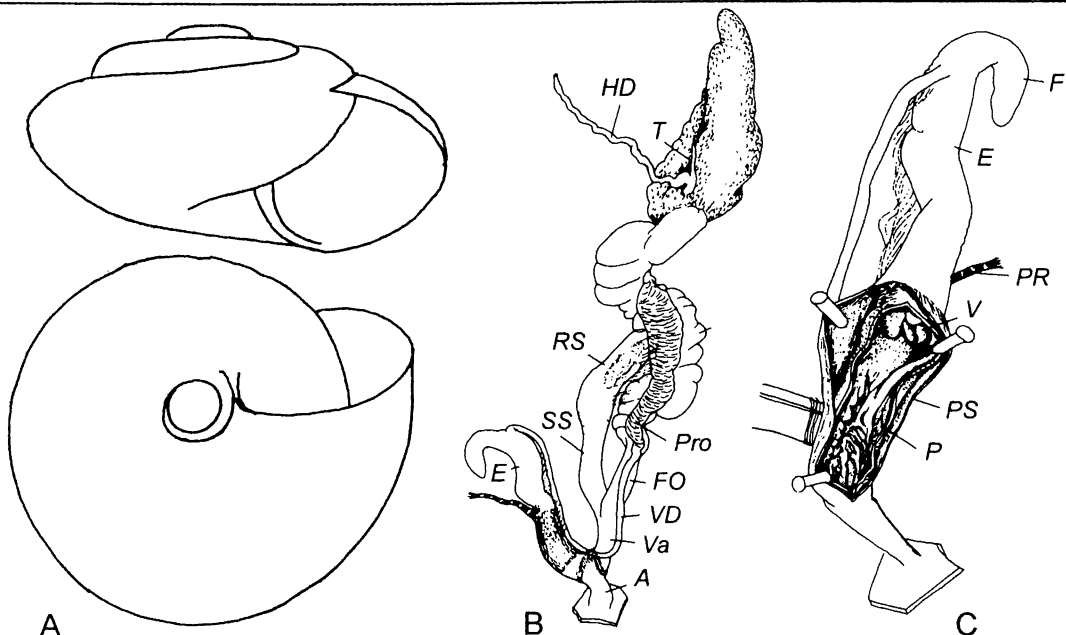


Fig. 2447 *Tyrrheniellina josephi* (Giusti et Manganelli, 1989).

A — shell. B — reproductive tract. C — interior of penis. After Giusti & Manganelli, 1989.

Tyrrheniellina Giusti et Manganelli,
1992
Fig. 2447

Giusti & Manganelli, 1992: 231 (nom. nov. pro *Tyrrheniella* Giusti et Manganelli, 1989).

— *Tyrrheniella* Giusti et Manganelli, 1989: 25 [nom. praeocc., non Riedl, 1959 (Plathelminthes); t.-sp. *Tyrrheniella josephi* Giusti et Manganelli, 1989; OD].

TYPE SPECIES — *Tyrrheniella josephi* Giusti et Manganelli, 1989; OD.

Shell moderately depressed, thin, fragile, of 4.5-4.75 convex whorls. Last whorl roundly angled at periphery. Color brown. Embryonic whorls with weak radial wrinklets, some hair scars and microsculpture of crowded, very thin spiral grooves. Postnuclear whorls with numerous thin radial wrinklets; periostracum thick, with spiral striation and radial rows of short curved hairs. Aperture oblique, ovate, with simple margins. Umbilicus rather wide and deep. Height 3.2-3.5, diam. 5.5-5.8 mm.

Talon rather long, slender, not embedded in albumen gland. Vas deferens entering epiphallus at sharp angle. Flagellum thick, short, narrowly rounded at summit. Epiphallus stout, not long. Penis with thin sheath; external surface of penis covered with more or less evident glandular tissue. Penial verge reduced, of a few lobes, which

are ends of longitudinal folds lying in epiphallus. Penial retractor short, lying to penis/epiphallus junction. Free oviduct of moderate length, vagina somewhat shorter. Spermathecal shaft short, enlarged, passing without sharp boundary into elongated sac-like reservoir, not attending albumen gland.

DISTRIBUTION. N Sardinia and Tuscan Archipelago (Islet of La Praiola near Capraia Island). 1 sp.

? *Haplohelix* Pilsbry, 1919
Fig. 2448

Pilsbry, 1919: 49. Verdcourt, 1975: 934.

TYPE SPECIES — *Haplohelix anadenia* Pilsbry, 1919; OD.

Shell depressedly conic to globular, very thin, fragile, of 4-5 moderately convex whorls. Last whorl not deflected, rounded at periphery. Color in general ochraceous tawny, more or less monochrome or with weak, dark peripheral band. Embryonic whorls smooth. Later whorls, especially last two, with obliquely radial, curved, low wrinkles. Aperture lunate to subcircular, usually irregular due to distortion of thin shell; margins not calcified, columellar margin rather broadly dilated partly over very narrow umbilicus. Height 8-12, diam. 11.5-13.0 mm (11.5 × 12.5 mm).

Talon exposed, drop-like. Flagellum

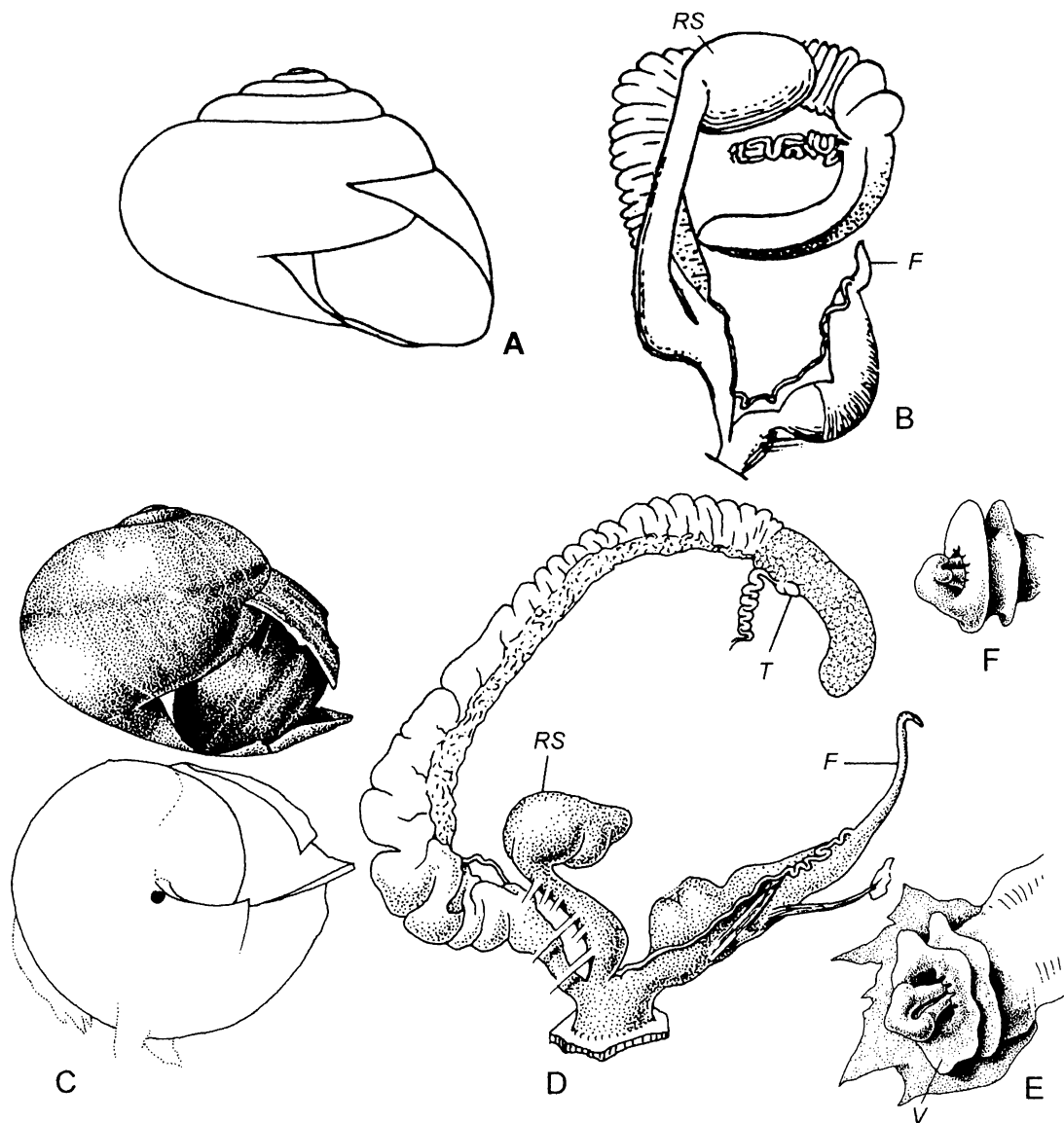


Fig. 2448. A, B — *Haplohelix anadenia* Pilsbry, 1919.

A — shell. B — reproductive tract. After Pilsbry, 1919. C, D, E, F — ! *Haplohelix purpureocincta* (Preston, 1914). "Tanganyika: E side Mt. Meru, 1700 m, X.28.1957" [Tanzania]. C — shell. D — reproductive tract. E — interior of penis. F — verge. Chicago No. 106129

comparatively (very) short, conic. Epiphallus+penis rather short, very large, somewhat swollen, having a narrowing near atrium. Penis containing a verge of very peculiar structure (in *purpureocincta*): it has 2 strong, sharp circular ridges and fleshy process with longitudinal groove in lumen of verge. Penial retractor inserted on lower part of epiphallus. Stylophores or mucus glands missing. Free oviduct rather long. Vagina short or almost absent. Spermathe-

cal stalk stout and rather short, with somewhat enlarged base; reservoir ovate, not reaching albumen gland.

DISTRIBUTION. E Africa. 7-9 spp.

REMARK. Formally *Haplohelix* should be assigned to Ciliellinae because of absence of any accessory organs on vagina and enlarged spermathecal stalk. However, it is quite possible that *Haplohelix* is a derivative of African *Vicariihalix* (Vicariihelicinae) or *Halolimnohelix* (Halolimnohelicinae).

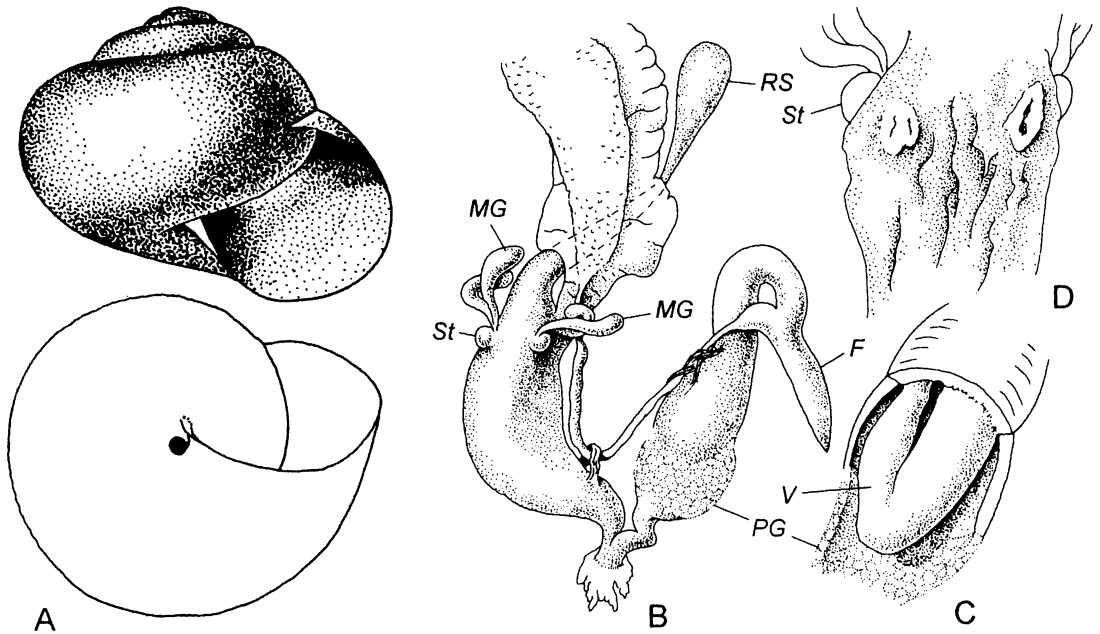


Fig. 2449. *Ponentina subvirescens* (Bellamy, 1839).

A — shell: Slapton Key, Devon, England. Leiden. B, C, D — Pembrokeshire, Wales, November 5, 1978. B — reproductive tract. C — interior of penis. D — interior of vagina. Cardiff No. Z 1993.052 (1978.33.1).

PONENTININAE Schileyko, 1991

Schileyko, 1991: 228 (as Ponentiniinae).

Shell rather small, subglobular, capacious, thin.

Vagina with a pair of minute stylophores containing short, conic darts; stylophores slightly approached on one side of vagina. 2 tubular forked mucus glands attached subapically to swollen appendices.

DISTRIBUTION. England, Portugal, S Spain, W France, NW Africa.

Ponentina Hesse, 1921

Fig. 2449

Hesse, 1921: 60, 62, 65 (*Fruticicola* sect. or subg.).

Prieto, 1986: 195, fig. 49.

TYPE SPECIES — *Helix subvirescens* Bellamy, 1839; OD.

Shell very thin, fragile, translucent, of 4-5 convex whorls. Last whorl inflated, straight or scarcely deflected, evenly rounded at periphery. Color uniformly greenish-corneous. Embryonic whorls smooth. Postembryonic whorls finely radially striated; short, thin hairs usually pre-

sent. Aperture subcircular, not strongly oblique, with thin, simple, fragile margins; columellar margin somewhat reflexed. Umbilicus minutely open. Height 3.3-4.6, diam. 5.0-8.3 mm (3.3 × 5.8 mm).

Flagellum well developed, stout, conic. Epiphallus rather short. Penis swollen, containing voluminous verge bearing a narrow axial groove; epiphallic pore situated on bottom of this groove. Pair of spherical stylophores located symmetrically on vagina. 2 biramous mucus glands enter upper section of vagina at bases of stylophores through very short common ducts. Free oviduct very short. Vagina capacious, strongly expanded. Spermathecal shaft rather short, somewhat enlarged at base; reservoir reaching midway of spermoviduct.

DISTRIBUTION. England, Portugal, S Spain, W France, NW Africa. 2 or 3 spp.

Addition to (?) Ciliellidae:

Debeauxhelix Bacci, 1943

Fig. 2450

Bacci, 1943: 136 (in Fruticicolidae).

TYPE SPECIES — *Fruticicola scioana* Pol-
lonera, 1888; OD.

Shell depressed, thin, fragile, translu-
cent, of 4 flattened whorls. Last whorl
straight, obtusely angulated. Color yel-
lowish-corneous, with a dark band. Postapi-
cal sculpture of fine radial riblets and small
hairs (in immature shells). Aperture angu-
lated, lunate, with simple, fragile margins.
Umbilicus narrowly open. Height 3.5,
diam. 6 mm.

Flagellum moderately long, tapering.
Epiphallus externally not demarcated from
penis. There is a sole comparatively large,
elongate-pyriform stylophore situated prac-
tically on atrium. Mucus glands absent.
Free oviduct exceptionally short. Vagina
rather long. Spermathecal stalk moderately
long, subcylindrical; lanceolate reservoir not
attending albumen gland.

DISTRIBUTION. Ethiopia. 1 sp.

REMARK. Taxonomical position of *De-
beauxhelix* is unclear. Position and shape of
the stylophore (if it is a genuine stylophore)
are unusual for Hygromioidea.

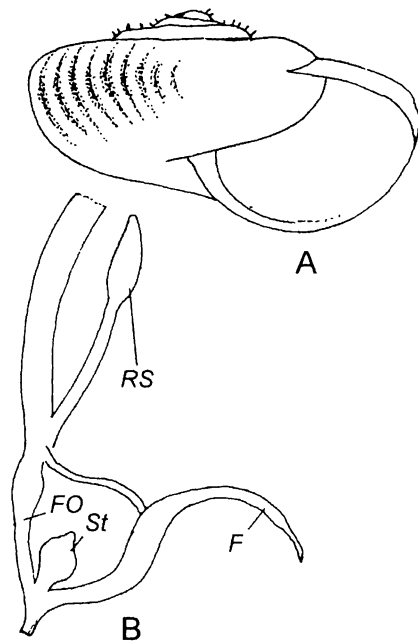


Fig. 2450. *Debeauxhelix scioana* (Pollonera,
1888).

A — shell. B — reproductive tract. After
Pollonera, 1888.

HYGROMIIDAE Tryon, 1866

Tryon, 1866: 55 (Helicidae subfam.).

— Xerophilidae Mörch, 1864: 281 (as Xero-
philae; based on invalid name *Xerophila*, ICZN
Opinion 431, 1956).

— Fruticolinae Kobelt, 1904: 65, 131 (Helici-
dae subfam.).

Shell comparatively oligospiral, whorls,
as a rule, not tightly coiled. Color initially
dark (corneous, brown, blackish) with dif-
fuse light band at periphery; xerophilous
species have white shell, mostly with dark,
variously expressed bands. Spiral elements
in sculpture may be present. Aperture mar-
gins not thickened, straight or variously re-
flexed, lip frequently present, lies at some
distance from edge.

Flagellum present, it makes no sharp
contrast with epiphallus. Penis contains
verge of various, sometimes very complex
structure. Penial retractor arises from dia-
phragm. Stylophores initially 4 in number,
frequently reduced down to 2, 1 or 0. Sty-
lophores may be transformed into vaginal
appendages of various structure. Darts,
when present, rather long and straight or
slightly bent. Mucus glands (sometimes ab-

sent) range from 2 to 4-5 in number, rarely
solitary, commonly 2 or 3 forked, open al-
ways above stylophores or their derivatives.

DISTRIBUTION. Eurasia (mostly
Palearctic), N Africa, Azores, Canaries, Ma-
deira.

REMARKS. 1. In many cases (especially
concerning xerophilous groups), without
anatomical study it is impossible to decide
to which genus some species belong; that is
why the below indications of number of
species are arbitrary. 2. I do not give the
conchological diagnoses of subfamilies be-
cause all shall characters widely overlap.

TROCHULINAE Lindholm, 1927

Lindholm, 1927a: 122 (Helicidae subfam.)

— Trichiinae Lozek, 1956: 200 [(Helicidae subf.;
nom. praecoc., non Fleming, 1821 (Coleop-
tera)]. Schileyko, 1978b: 163. Gittenberger,
2000: 17-20 (as Trichiinae). Bull. ZN, 61(3),
2004: 177

Right ommatophoran retractor passes
through or outside peni-oviducal angle.

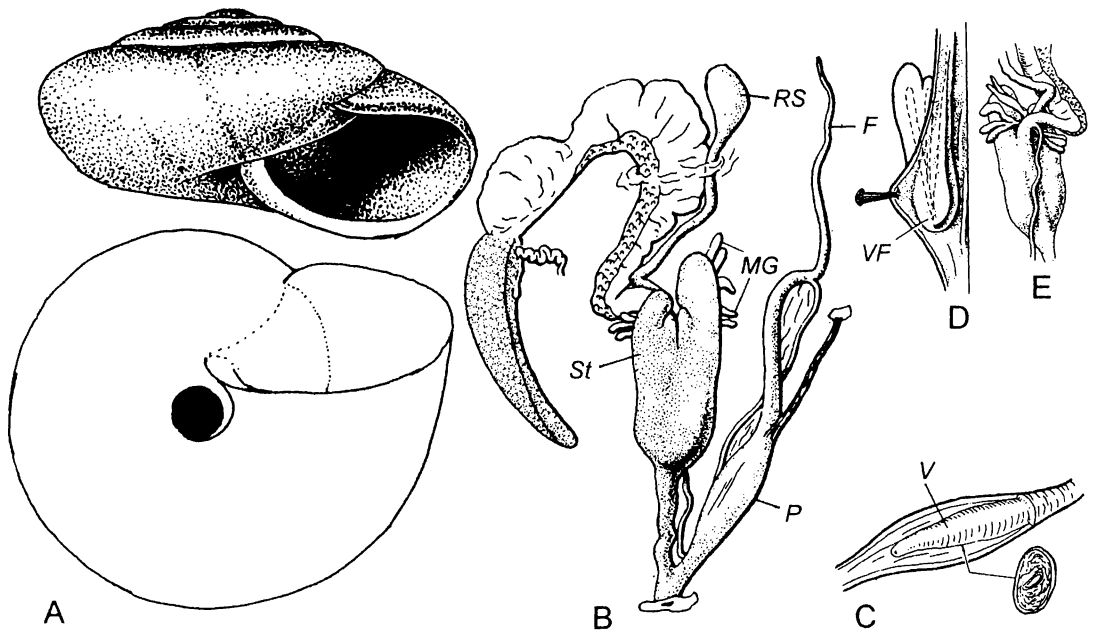


Fig. 2451 *Nanaja cumulata* Schileyko, 1978. Valley of Pskem River above Nanaj village [W Tien-Shan], May 21, 1972. Holotype (A) and paratype (B, C, D, E).
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. E — vagina from opposite side. After Schileyko, 1978b.

Base of verge not contains circular loosening of tissue. Verge during copulation moves out. Walls of verge usually contain a system of sinuses or divided into several chambers. Vagina long. Stylophores 4 or 2, situated symmetrically on vagina; if stylophores 2, inner (upper) pair disappears. Anyway number of darts 2. Mucus glands always present.

DISTRIBUTION. Europe, Caucasus, W and Central Asia, N Africa.

Trochulini Lindholm, 1927

Shell thin to rather solid, variously colored but not calcareous-white, mostly with light peripheral zone.

Right ommatophoran retractor passes through peni-oviducal angle (exception: *Hydrohelicopsis*).

DISTRIBUTION. Europe, Caucasus, Central Asia.

Nanaja Schileyko, 1978 Fig. 2451

Schileyko, 1978b: 164.

TYPE SPECIES — *Nanaja cumulata* Schileyko, 1978; OD.

Shell much depressed to nearly flat, rather thin, of 5.5-6 moderately convex to flattened whorls. Last whorl slightly angled, scarcely descending in front. Color light-brown or corneous. Embryonic whorls smooth. Rest surface decorated with hairs which may be lost in adult shells. Aperture lunate-ovate, oblique, with thin margins; columellar and basal margins somewhat reflexed. Umbilicus wide, quite perspective. Height 5.0-9.5, diam. 10.5-17.0 mm (8.7 × 16.5 mm).

Talon exposed, rod-like. Flagellum rather long, slender; epiphallus a little shorter, cylindrical. Penis fusiform, contains conic verge lacking inner cavities or vergic lacuna. Penial retractor inserted on penis/epiphallus junction. Free oviduct extremely short. Vagina very long, with large, elongated stylophores. Right and left pairs of stylophores approached on one side of vagina. Mucus glands 3, each of 2-3 arms. Vaginal folds form loops around openings of stylophores. Spermathecal stalk subcylindrical, moderately long; reservoir lies on middle of spermoviduct.

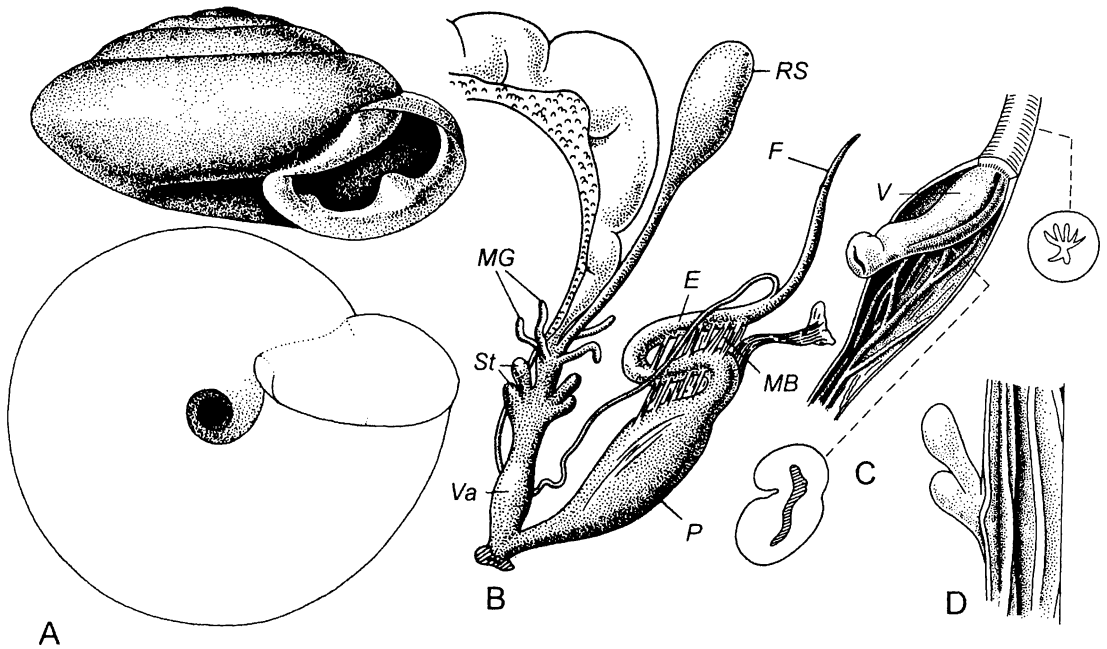


Fig. 2452. *Odontotrema diplodon* Lindholm, 1927 Sary-Cheleksky Natural Reserve, Chatkal Range [Tien-Shan], May 1972.
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. SPb. MB — muscular bands.

DISTRIBUTION. W Tien-Shan. 2 or 3 spp.

Odontotrema Lindholm, 1927
 Fig. 2452

Lindholm, 1927c: 268. Schileyko, 1978b: 166.

TYPE SPECIES — *Odontotrema diplodon* Lindholm, 1927; OD.

Shell depressed, more or less lens-shaped, rather thin but firm, of about 5 rather convex whorls. Last whorl scarcely deflected, with blunt peripheral angle. Color brown to reddish-brown. Embryonic whorls smooth. Postapical surface coarsely radially striated; short, scattered hairs may be present. Aperture semilunate, oblique, with inner lip and shortly reflexed margins. On basal part of lip there are 1-2 tubercular teeth. Height 3.2-5.5, diam. 6.6-10.0 mm (5.2 × 8.6 mm).

Flagellum moderately long. Epiphallus forms S-shaped bend, whose limbs connected by muscular bands. Penis spindle-shaped, internally with small, irregular, anastomosing folds and blunt verge that bears longitudinal superficial groove. Cavi-

ties in verge walls or vergic lacuna absent. Walls of penis contain patches of glandular tissue (penial gland). Penial retractor attached to distal part of epiphallus. Free oviduct extraordinary short. Vagina long, internally with axial folds. Stylophores small, clavate (especially upper ones), slightly united to each other and not enlarged in basal parts. Vaginal folds form small lobes at openings of stylophores and continue to atrium. Mucus glands 4, simple, tubular. Spermathecal stalk subcylindrical; reservoir attending middle of spermoviduct.

DISTRIBUTION. Tien-Shan (Chatkal and Kirghiz Ranges). 2 spp.

Leucozonella Lindholm, 1927

Lindholm, 1927c: 263. Schileyko, 1978b: 168.

TYPE SPECIES — *Helix rubens* Martens, 1874; OD.

Shell globose to depressed, rather thin to solid, of 5-6 moderately convex whorls. Last whorl scarcely descending in front, sometimes slightly angled at periphery. Color light-grey, yellowish, brownish or reddish

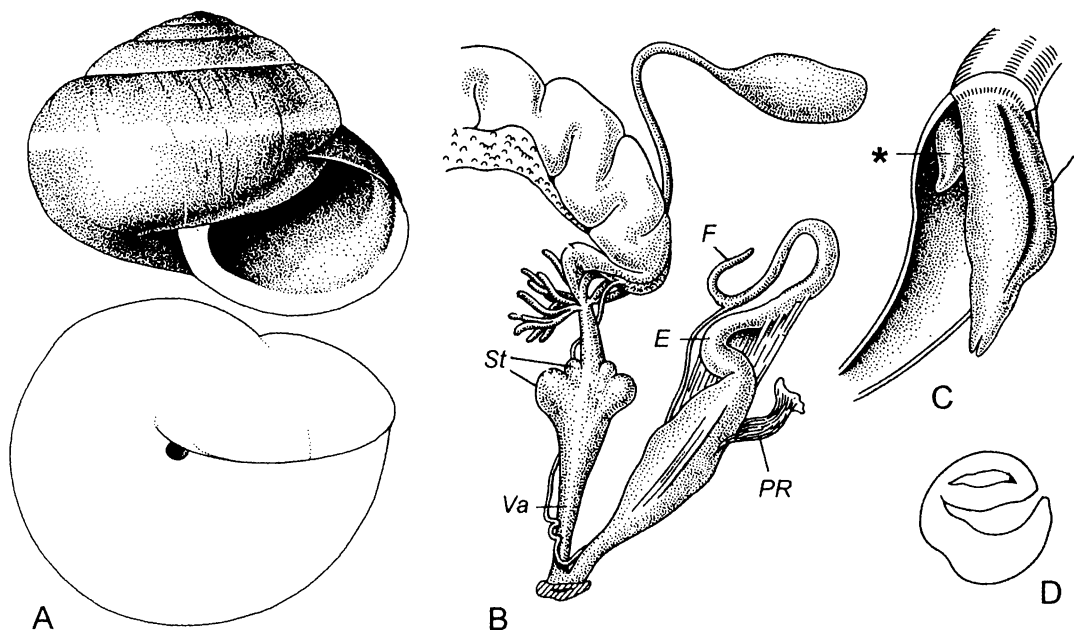


Fig. 2453. *Leucozonella (Leucozonella) rubens* (Martens, 1874). Alamedin Gorge, Kirghiz Range, June 12, 1972.

A — shell. B — reproductive tract. C — interior of penis. D — cross-section through middle part of verge. *Asterisk* — conic process. After Schileyko, 1978b.

with light, more or less diffuse peripheral band. Embryonic whorls smooth. Later whorls irregularly radially wrinkled. Aperture ovate, with thin or slightly thickened margins. Umbilicus point-like to broad.

Talon exposed, simple. Flagellum moderately long to short but never vestigial. Penis fusiform, connected with epiphallus by muscular bands. Penial verge with longitudinal groove, expressed to various degree, or groove closed, forming intraverge cavity, which connected with penis cavity by a lacuna; or, at last, intraverge cavity secondarily disappeared, but vergic lacuna retained (subg. *Narinula*). Free oviduct shorter than vagina. Stylophores (right and left pairs) not approached to each other on one side of vagina, their basal portions not swollen. Mucus glands 3-4, each with 1-3 arms. Spermathecal stalk slender throughout, reservoir lies on upper half of spermoviduct.

DISTRIBUTION. Central Asia.

Leucozonella (Leucozonella) s. str.

Fig. 2453

Upper and lower surfaces of shell colored approximately with equal intensity or

lower surface somewhat lighter. Shell sculptured to various degree, but radial ribs always absent. Height 4-17, diam. 7-20 mm (13.3 × 17.5 mm).

Penis rather capacious. Verge simple or with longitudinal groove, which sometimes closed along nearly entire length except for very proximal portion; this open part of groove represents vergic lacuna. A small conic process at base of verge may be present.

DISTRIBUTION. Tien-Shan and hillsides of Pamir Mts. 9-10 spp.

Leucozonella (Narinula)

Schileyko, 1979

Fig. 2454

Schileyko, 1979: 107 (nom. nov. pro *Narina* Schileyko, 1978).

— *Narina* Schileyko, 1978b: 178 [nom. praeocc. non Distant, 1906 (Insecta, Hemiptera); t.-sp. *Fruticicola hypophaea* Lindholm, 1927; OD].

TYPE SPECIES — *Fruticicola hypophaea* Lindholm, 1927; OD.

Upper surface of shell colored lighter

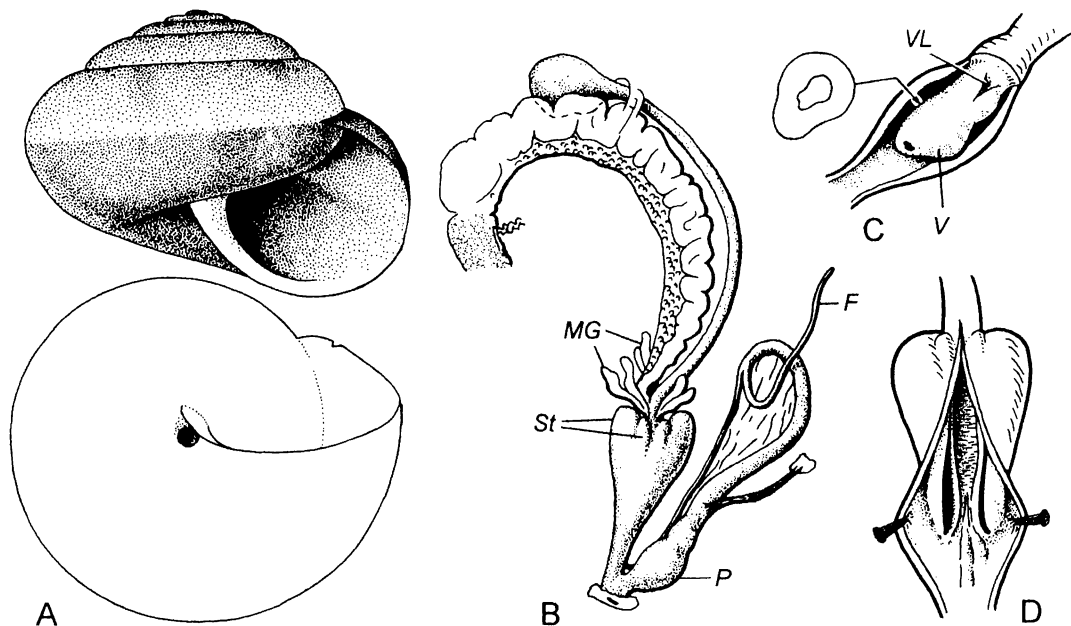


Fig. 2454. *Leucozonella (Narinula) hypophaea* (Lindholm, 1927). Bank of Naryn River above Tashkumyr [Fergansky Range], May 31, 1972.

A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow No. Lc-8030. VL — vergic lacuna.

than lower, or shell unicolor; in latter case shell radially ribbed. Height 6-11, diam. 10-15 mm (10.1 × 13.8 mm).

Penis very small. Verge lacks cavity in its walls, but vergic lacuna present. Basal stimulator absent.

DISTRIBUTION. Central Asia: Alaisky, Chatkalsky and Fergansky Ranges. 2 spp.

Hygrohelicopsis Schileyko, 1978

Fig. 2455

Schileyko, 1978a: 13.

TYPE SPECIES — *Hygrohelicopsis darevskii* Schileyko, 1978; OD.

Shell depressed, solid, opaque, silky, of 5 whorls; last whorl scarcely descending in front. Spire wide, dome-shaped. Coloration consisting of lilacish-chestnut background and lighter, wide, diffuse radial spots and streaks; lip snow-white. Embryonic whorls smooth. Rest surface with thin, irregular, smoothed radial wrinkles; locally weak spiral lines visible. Aperture large, broadly ovate, moderately oblique, with simple margins; columellar and basal margins slightly reflexed; inside there is a high, very strong lip. Umbilicus not broad but perspective.

Height 5.5-6.0, diam. 10.0-10.5 mm (6.0 × 10.5 mm).

Right ommatophoran retractor passes outside of peni-oviducal angle.

Flagellum quite long. Epiphallus sharply bent, its arms connected by strong muscular fibers. Penis clavate, its upper subglobular chamber contains voluminous verge. Latter internally with a paired internal cavity; lacuna very small. Penial retractor attached to middle part of epiphallus. Free oviduct short. Vagina with large stylophores; inner pair of stylophores not visible from outside. Mucus glands 4, simple or bifurcated. Spermathecal stalk subcylindrical, reservoir almost attending albumen gland.

DISTRIBUTION. Central part of Greater Caucasus (Chegemsky Gorge). 1 sp.

Teberdinia Schileyko, 1978

Fig. 2456

Schileyko, 1978a: 15.

TYPE SPECIES — *Helix (Fruticocampylaea) zolotarevi* Lindholm, 1913 (= *Helix flavolim-bata* O. Boettger, 1883); OD.

Shell depressed-subglobular, rather thin, of 5.5-6 flattened whorls. Last whorl scar-

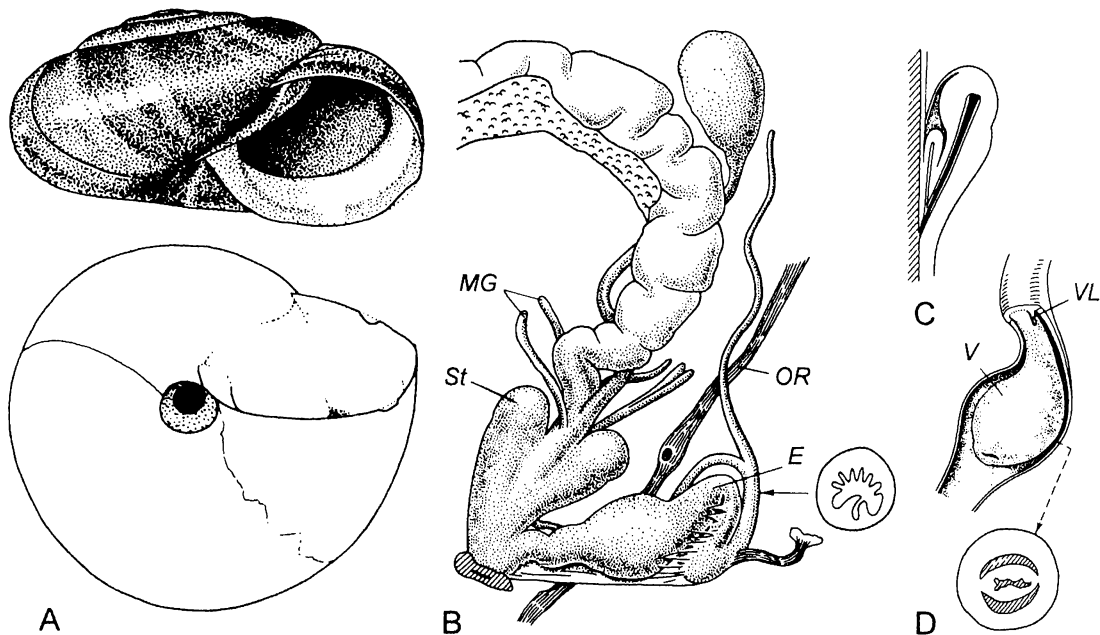


Fig. 2455. *Hygrohelicopsis darevskii* Schileyko, 1978. Chegemsky Gorge [Central part of southern slopes of Greater Caucasus], August 9-10, 1965.
 A — shell. B — reproductive tract. C — schematic sagittal section through stylophores.
 D — interior of penis and cross-section through verge. Holotype. SPb. VL — vergic lacuna.

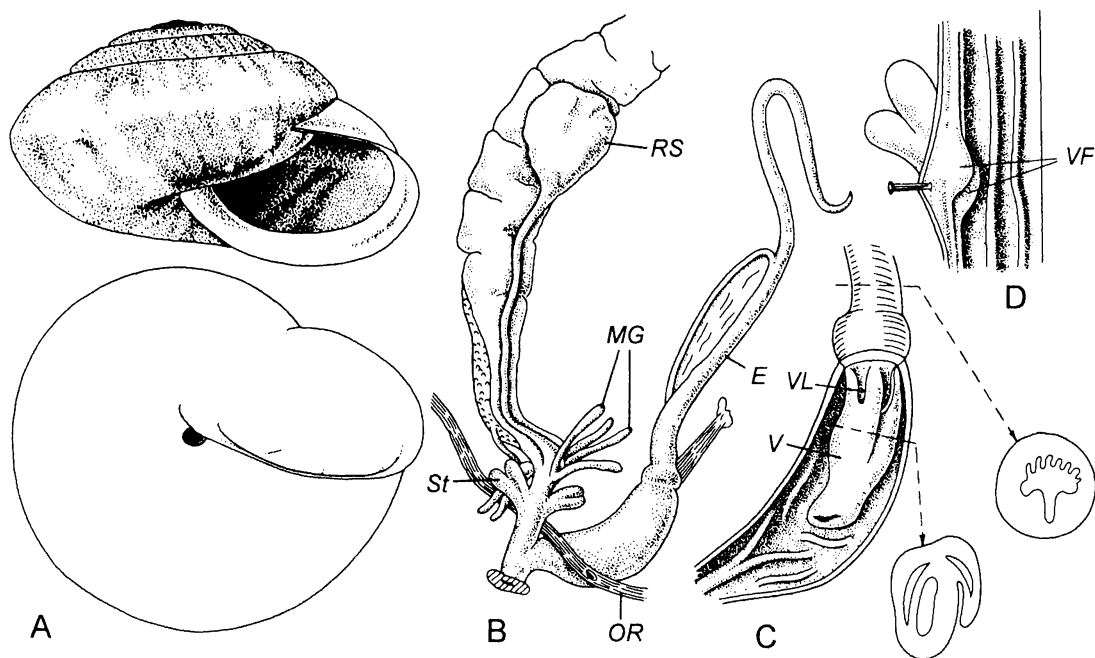


Fig. 2456. *Teberdinia flavolimbata* (O. Boettger, 1883). Teberdinsky Natural Reserve [NW Caucasus], July 24, 1958.
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. SPb.
 VL — vergic lacuna.

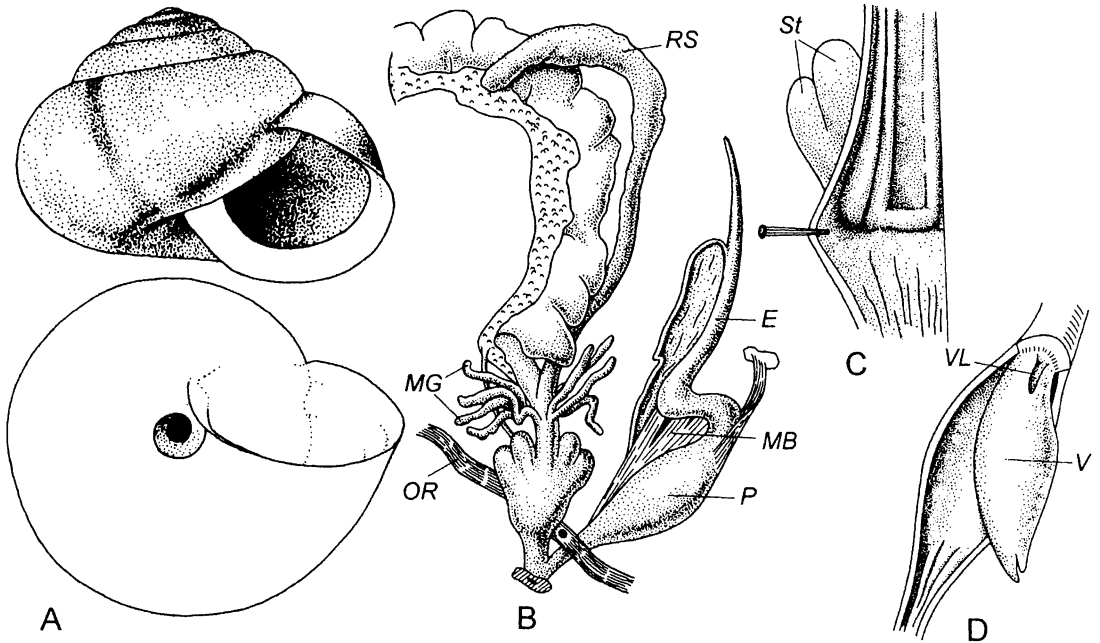


Fig. 2457 A — ! *Kokotschashvilia eberhardi* Schileyko, 1978.

Shell: southern slopes of Greater Caucasus, between Sioni and Kazbegi. Holotype. SPb. B, C, D — *Kokotschashvilia holotricha* (O. Boettger, 1884). Tsebelda near Sukhumi [Georgia], June 15, 1968. B — reproductive tract. C — interior of vagina. D — interior of penis. SPb. MB — muscular bands. VL — vergic lacuna.

cely angulated, slightly descending in front. Spire dome-shaped. Color olivaceous to brownish; peripheral band slightly lighter; lip white. Embryonic whorls smooth. Postapical sculpture of smoothed radial wrinkles and weak, spiral incised lines. Hairs absent. Aperture ovate, moderately oblique, with reflexed margins, with strong inner lip. Umbilicus minutely open. Height 6.4-7.5, diam. 11.0-12.5 mm (7.2 × 12.0 mm).

Flagellum rather long. Epiphallus shorter, almost cylindrical, without muscular bands or fibers. Penis bulky, internally with irregular pattern of small folds. Penial verge with deep longitudinal furrow and basal lacuna; inner canal of verge embraced by paired intravergic cavity. Penial retractor inserted on penis/epiphallus junction. Free oviduct very short. Vagina not long, internally with axial folds, which form a pair of semi-circular lobes, which surround openings of stylophores. Both pairs of stylophores comparatively small, subequal in size, tightly impressed to each other and separated from wall of vagina. Each of 3 mucus glands biramous. Spermathecal stalk slender, bulky reservoir a little not attending albumen gland.

DISTRIBUTION. NW Caucasus. 1 sp.

Kokotschashvilia Hudec et Lezhawa, 1969

Fig. 2457

Hudec & Lezhawa, 1969: 47 (*Trichia* subg.). Schileyko, 1978b: 184.

TYPE SPECIES — *Helix holotricha* O. Boettger, 1884; OD.

Shell depressedly-trochoid or subglobular, rather thin, of 5.5-7 moderately to markedly convex whorls. Last whorl rounded, more or less deflected. Outlines of spire generally conic. Color ivory-whitish to chestnut, sometimes with vague lighter band. Embryonic whorls smooth. Later whorls irregularly finely radially striated, sometimes with weak granulation and scarcely developed spiral elements; periostracal hairs may also be present. Aperture generally semicircular, somewhat oblique, with white inner lip; margins more or less reflexed. Umbilicus rather narrow to dot-like. Height 9-18, diam. 11-27 mm (10.3 × 14.5 mm).

Flagellum shorter than epiphallus. Epiphallus forms 2-3 bends, whose limbs con-

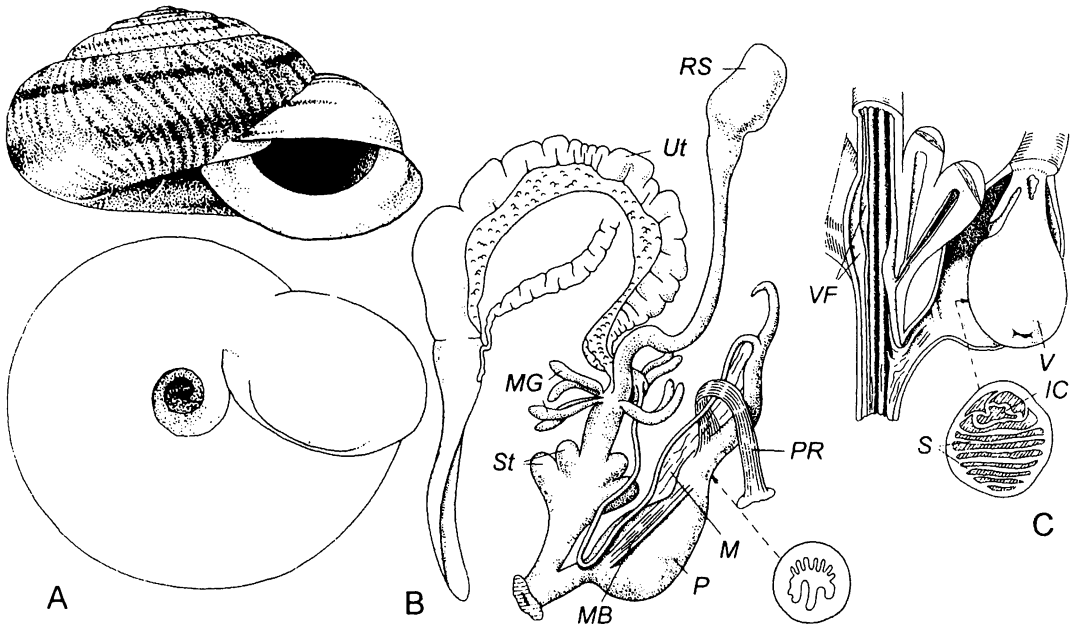


Fig. 2458. *Caucasicigena (Caucasicigena) eichwaldi* (L. Pfeiffer, 1846). Dar'yalskoye Gorge, Chmi village [Greater Caucasus], May 8, 1970. A — shell. B — reproductive tract. C — interior of distal section of genitalia and cross-section through verge. Moscow No. Lc-28454.

nected by variously developed muscular fibers. Penis fusiform or clavate, its inner surface lacks any special sculpture. Verge without groove on surface, intravergic cavity paired or one of longitudinal partitions disappeared; as a result mentioned cavity becomes entire. Vergic lacuna present. Penial retractor attached to boundary between epiphallus and penis. Free oviduct moderately long, vagina somewhat longer. Outer stylophores larger than inner. Vaginal folds may form weakly developed lobes at openings of stylophores. Mucus glands 4, each of 2-4 arms. Spermathecal stalk rather short to moderately long, capacious reservoir (almost) reaching albumen gland.

DISTRIBUTION. Greater Caucasus. 5 spp.

Caucasicigena Lindholm, 1927

Lindholm, 1927a: 123 (*Xerocampylaea* sect.).
Schileyko, 1978b: 191

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

Shell nearly flat and lens-shaped to trochoid, moderately thin to rather solid, of 5-6 flattened or convex whorls. Last whorl slightly angulated to sharply keeled, some-

what descending in front. Color white, with 2 dark spiral bands or uniformly greenish, yellowish, or reddish. Embryonic whorls glabrous. Postnuclear surface nearly smooth to radially ribbed; hairs generally absent (rarely in some specimens short scattered hairs may be present). Aperture subcircular to ovate, strongly to moderately oblique, with more or less reflexed margins, usually with inner lip. Umbilicus generally wide, rarely narrow.

Flagellum rather short to quite long. Inner canal of verge very narrow; intravergic cavity, surrounding canal, subdivided into 3-9 longitudinal cavities. Vergic lacuna well developed; no any other grooves on verge surface. Both pairs of stylophores well developed, tightly impressed to vagina.

DISTRIBUTION. Caucasus.

Caucasicigena (Caucasicigena s. str.)

Fig. 2458

Shell more or less flattened, rarely lens-shaped, moderately solid, of 5-6 whorls. Color light with 2 brown bands; sometimes bands developed so intensive that constitute ground color. Hairs on shell very weak

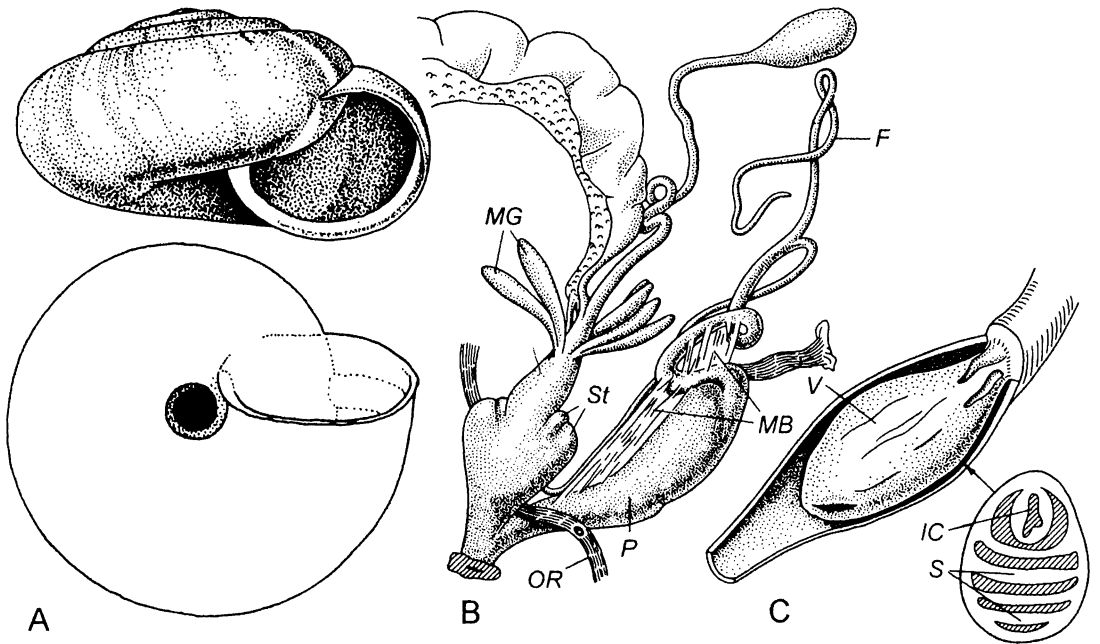


Fig. 2459. *Caucasicgena (Anoplitella) schaposchnikovi* (Rosen, 1911). Chegemskoye Gorge [N Caucasus], May 15, 1970.
 A — shell. B — reproductive tract. C — interior of penis and cross-section through verge.
 Moscow No. Lc-28478.

or absent. Umbilicus variously broad; if cylindrical, all the same one can see more than one whorl. Height 3.2-12.0, diam. 6.5-20.0 mm (9.0 × 18.1 mm).

Flagellum conic, short, its length not more than a half length of epiphallus, rarely equal to it. Penis capacious, its upper chamber contains a large, clavate verge, supplied by 1 or 2 basal lacunae. Inner canal of verge hanged by longitudinal ligaments inside the organ. Penial retractor attached to lower part of epiphallus. Free oviduct very short, vagina many times longer. Inner stylophores only a little smaller than outer. Inner folds in vagina form small lobes at openings of stylophores. Mucus glands 4, each composed of 2 arms. Spermathecal stalk long, cylindrical, reservoir reaching lower margin of albumen gland.

DISTRIBUTION. Greater and Lesser Caucasus. 8-9 Recent spp.

Caucasicgena (Anoplitella)
 Lindholm, 1929)
 Fig. 2459

Lindholm, 1929: 209 (pro gen.). Schileyko, 1978b: 199.

TYPE SPECIES — *Helix schaposchnikovi* Rosen, 1911; OD.

Shell depressed, white or chestnut-lilacish, mostly with 2 dark, variously developed bands. Shell surface smooth, without hairs. Umbilicus rather broad and perspective. Height 5.0-8.5, diam. 10.0-15.5 mm (6.0 × 10.4 mm).

Flagellum long, slender, somewhat longer than epiphallus. Inner canal of penial verge hanged by longitudinal ligament inside the organ. Inner stylophores much smaller than outer.

DISTRIBUTION. N slopes of Greater Caucasus. 1 sp.

Caucasicgena (Dioscuria)
 Lindholm, 1927)
 Fig. 2460

Lindholm, 1927a: 123, 129 (*Trochulus* sect.).

TYPE SPECIES — *Trochulus thalestris* Lindholm, 1927; OD.

Shell nearly trochoid, greenish, sometimes with reddish tint. Postembryonic whorls smooth, lacking hairs. Umbilicus very narrow, nearly covered. Height 10-13, diam. 15-19 mm (12.1 × 17.8 mm).

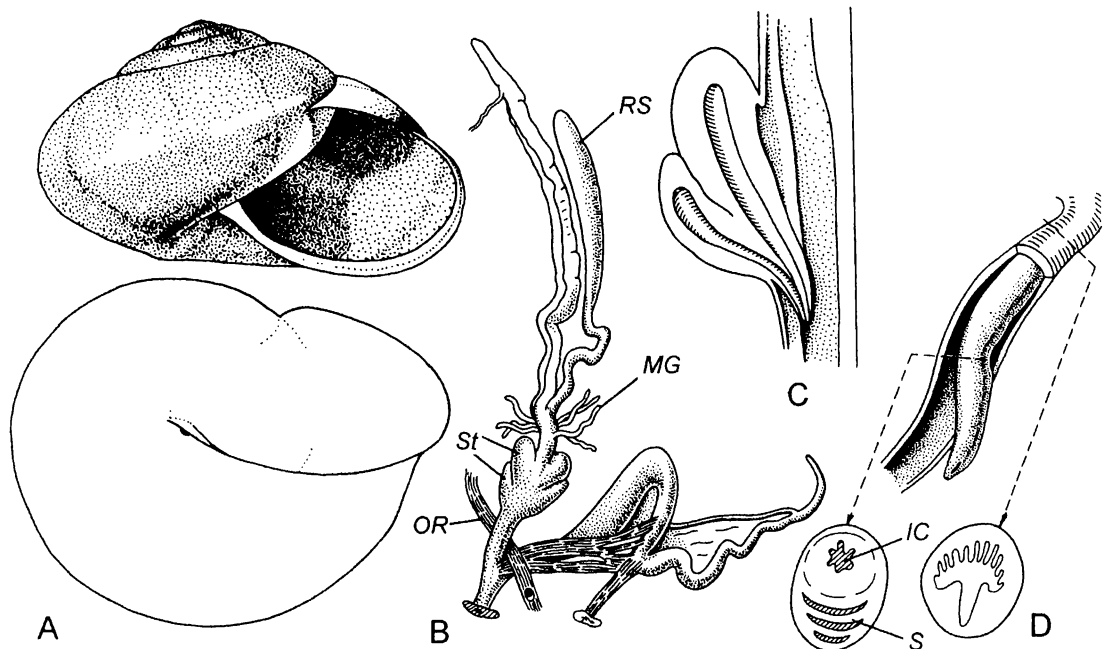


Fig. 2460. *Caucasicgena (Dioscuria) thalestris* (Lindholm, 1927). Novyi Afon [W part of Greater Caucasus], July 2, 1913.

A — shell. B — reproductive tract. C — sagittal section of vagina. D — interior of penis. SPb.

Flagellum slender, as much as twice shorter than epiphallus. Inner canal of penial verge not separated from wall of the organ. Inner stylophores larger than outer.

DISTRIBUTION. W Caucasus. 1 sp.

***Diodontella* Lindholm, 1929**

Fig. 2461

Lindholm, 1929: 206.

TYPE SPECIES — *Diodontella stschukini* Lindholm, 1929; OD.

Shell much depressed, solid, shining, of 4-6 weakly convex whorls. Last whorl rounded, scarcely descending in front. Spire rounded. Coloration consists of whitish background and 2 broad, dark bands above and below periphery; bands irregularly interrupted by light radial streaks. Embryonic whorls smooth, polished. Postnuclear whorls with weak, irregular, radial striation. Aperture ovately lunate, slightly oblique, with thin margins; at some distance from edges lies strong white lip bearing 2 large, rounded teeth — basal and palatal. Umbilicus cylindrical, rather narrow, perspective.

Height 2.85.5, diam. 5.25-10.0 mm (5.5 x 10.0 mm).

DISTRIBUTION. N Caucasus (Chegem Gorge). 2 spp.

***Plicuteria* Schileyko, 1978**

Fig. 2462

Schileyko, 1978a: 30.

TYPE SPECIES — *Helix (Fruticicola) lubomirskii* Ślósarski, 1881; OD.

Shell nearly trochoid, thin, of 4.5-5 convex whorls. Last whorl widely rounded, scarcely descending in front. Color uniformly yellowish to almost white. Both embryonic and later whorls smooth, just on postapical surface there is weak, irregular, radial striation. Juvenile shells with minute scattered hairs. Aperture rounded, moderately oblique, with straight, fragile margins, without lip. Umbilicus very narrow, open to semicovered. Height 5-7, diam. 7-9 mm (6.9 x 8.7 mm).

Flagellum conic, rather short, epiphallus 2-3 times longer. Penis fusiform, with conic verge. Inner canal of verge fixed by 2 diametrically situated longitudinal ligaments,

i.e. intravergic cavity paired. Besides vergic lacuna, there is a superficial longitudinal groove on verge surface. Penial retractor attached to upper section of penis. Free oviduct very short. Stylophores well developed, impressed to vagina. Inner surface of vagina furnished with rows of short, distinct, elongated, circularly directed prismatic folds. Mucus glands 4, each composed of 2-3 branches. Spermathecal stalk short, reservoir voluminous, adhering to lower half of spermooviduct.

DISTRIBUTION. Mountain regions of Central Europe (Tatra, Sudetic, Carpathian Mts.). 1 sp.

Trochulus Chemnitz, 1786

Chemnitz, 1786: 52.

- *Trichia* Hartmann, 1840: xiii, footnote [nom. praeocc., non De Haan (Brachyura); t.-sp. *Helix hispida* Linnaeus, 1758; SD Herrmannsen, 1849].
- *Fruticicola* Held, 1837: 914 [nom. praeocc. non MacGill, 1839 (Aves); t.-sp. *Helix hispida* Linnaeus, 1758; SD Martens in Albers, 1860].

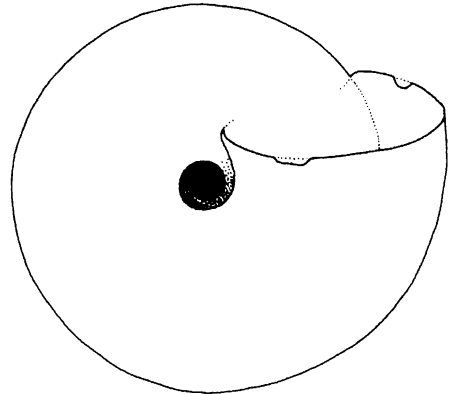
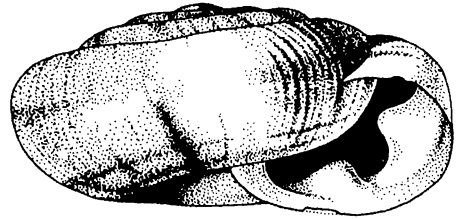


Fig. 2461. *Diodontella stschukini* Lindholm, 1929. Cliffs near Cherakh-Kend Peak in upper part of Chegemskoye Gorge [N Caucasus]. Holotype. SPb.

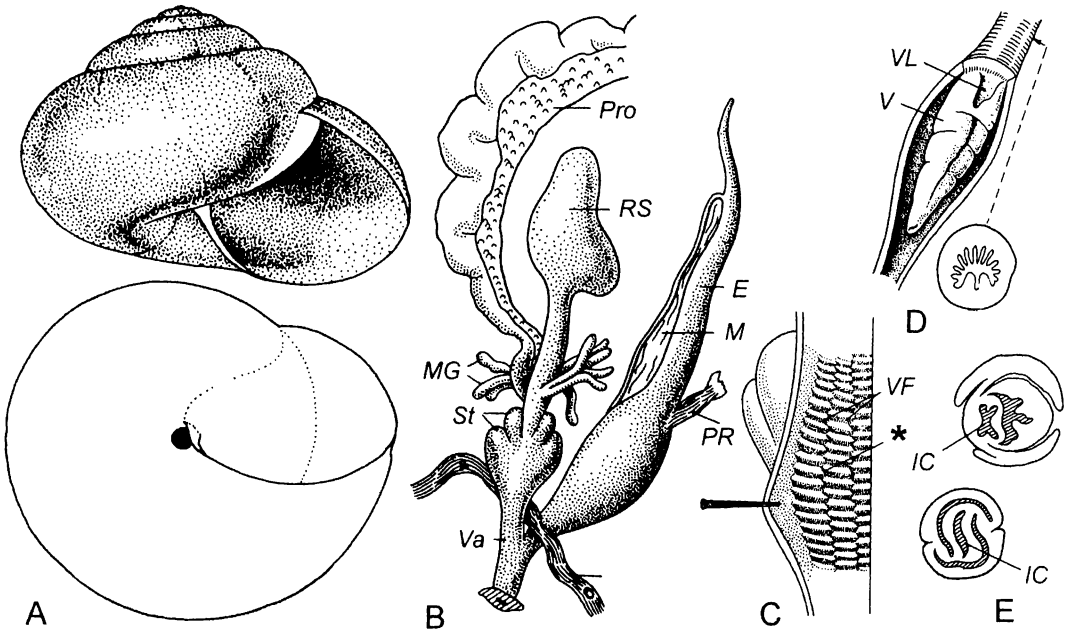


Fig. 2462. *Plicuteria lubomirskii* (Slósarski, 1881). Olomouc, Czechia, April 16, 1964. A — shell. B — reproductive tract. C — interior of vagina. D — interior of penis and cross-section through epiphallus. E — cross-sections through verge. After Schileyko, 1978b. Asterisk — opening of stylophores. M — membrane. VF — vaginal folds. VL — vergic lacuna.

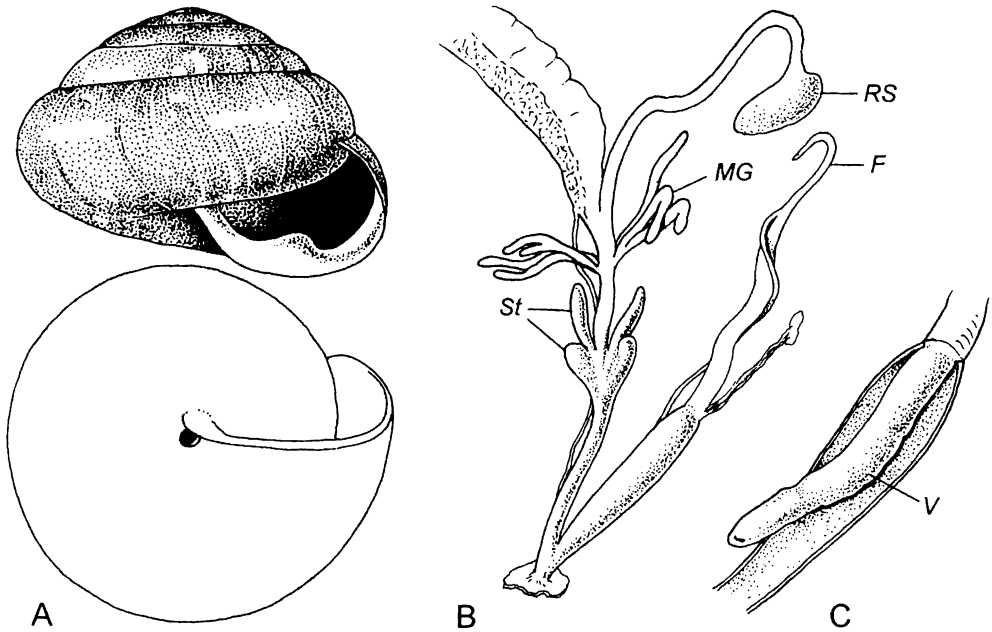


Fig. 2463. *Trochulus (Petasina) unidentata* (Draparnaud, 1805).

A — shell: Johnsbach near Admont, Styria, Austria. **Moscow** No. Lc-28460. B, C — “Allgäu: oberhalb Mittlerer Hasenedhalp, ca. 1610 m, August 10, 1982” [Germany]. B — reproductive tract. C — interior of penis. **Moscow**.

— *Erethismus* Gistel, 1848: XI [nom. nov. pro *Trichia*, non *Trichius* Fabricius, 1775 (Scarabaeidae)].

— *Capillifera* Honigmann, 1906: 190 (nom. nov. pro *Trichia* Hartmann, 1840).

Forcart, 1958: 153. Schileyko, 1978b: 205. Gittenberger, 2000: 21.

TYPE SPECIES — *Helix hispida* Linnaeus, 1758; SD Hermannsen, 1849.

Shell depressed-conic or subglobular, rather thin, of 4.5-6.5 moderately convex whorls. Last whorl straight or scarcely descending in front. Color generally brownish-corneous, with light, diffuse peripheral band. Embryonic whorls smooth. Sculpture of rest surface consists of irregular, fine radial striation; as a rule, there are hairs on shell surface, which often absent in adult shells. Aperture ovate, margins slightly reflexed; basal margin usually with lip situated at short distance from edge. Umbilicus point-like to rather wide.

Flagellum rather long, epiphallus of about same length or somewhat shorter. Penis fusiform, with a long verge. Inner canal of verge encircled by paired intravergic cavity. A narrow, additional cavity in walls of verge may be present. Penial retractor at-

tached to penis/epiphallus junction. Free oviduct 2-5 times shorter than vagina. Both pairs of stylophores well developed. Mucus glands 4, each of 1-3 arms. Spermathecal stalk subcylindrical, rather long; reservoir attending albumen gland.

DISTRIBUTION. Europe.

Trochulus (Petasina) Beck, 1847)

Fig. 2463

Beck, 1847: 132.

— *Petasiella* Gude et Woodward, 1921a: 180 [nom. nov. pro *Petasia* Beck, 1847 (Euconulidae); *Fruticicola (Capillifera)* sect.; t.-sp. *Helix unidentata* Draparnaud, 1805; OD].

TYPE SPECIES — *Helix unidentata* Draparnaud, 1805; SD Westerlund, 1902.

Shell subglobular. Basal margin of aperture bears more or less heavy, tubercular tooth. Umbilicus minutely open. Height 5-6, diam. 7-8 mm (5.2 × 7.2 mm).

Verge without lacuna at its base. Inner pair of stylophores separated from vagina, much longer than outer pair. Spermathecal reservoir bulky, of characteristic hammer shape.

DISTRIBUTION. Mountain systems of

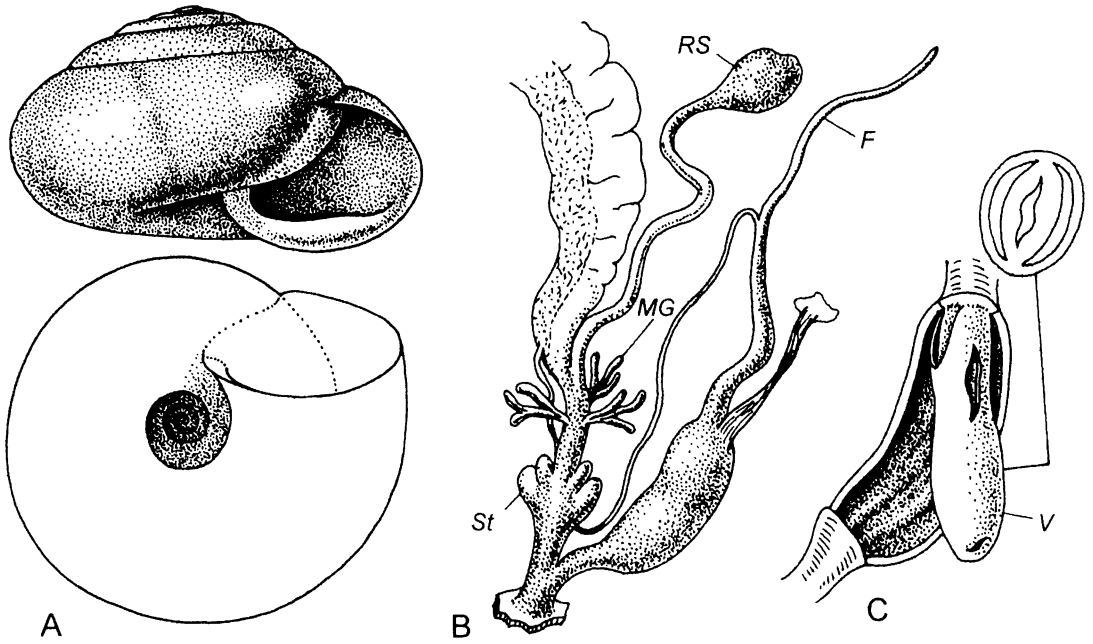


Fig. 2464. *Trochulus (Trochulus) hispidus* (Linnaeus, 1758). Valley of Serebryanka River, Moscow Region [Russia], August 15, 1970.
 A — shell. B — reproductive tract. C — interior of penis. After Schileyko, 1978b.

Central and E Europe. 2-3 spp. with few subsp.

Trochulus (Trochulus s. str.)
 Fig. 2464

Shell flattened. Basal margin of aperture with variously developed callosity. Umbilicus perspective, markedly wider than in *Petasina*. Height 3.57.0, diam. 7-10 mm (4.8 × 8.2 mm).

Verge with lacuna at its base. Inner pair of stylophores not so sharply separated from vagina, not longer than outer pair. Reservoir of spermatheca rather small, ovate.

DISTRIBUTION. Europe. At least 10 spp. with several subsp. and forms.

Edentiella Poliński, 1929
 Fig. 2465

Poliński, 1929: 158 (*Fruticicola* sect.).

— *Filicinella* Poliński, 1929: 158 (*Fruticicola* sect.; t.-sp. *Helix filicina* L. Pfeiffer, 1841; designated here).

TYPE SPECIES — *Helix edentula* Draparnaud, 1805; OD.

Shell subglobular-trochoid, thin, of 6-6.5 moderately convex whorls. Last whorl rounded, scarcely deflected. Outlines of spire dome-shaped. Color light-brown to yellowish, with much diffuse peripheral band. Embryonic whorls smooth. Postapical whorls with very fine radial striation; short, delicate, scattered hairs present. Aperture lunate, rather narrow, only slightly oblique; margins thin, with inner basal lip. Umbilicus very narrow. Height 2.3-2.8, diam. 6-7 (2.5 × 6.4 mm).

Flagellum long, its length equal to length of penis + epiphallus or a little shorter. Penis externally vaguely demarcated from epiphallus, contains a fusiform verge; inner structure of verge as in Caucasian *Caucasigena* (see Fig. 2458), i.e. there is system of intravergic cavities divided by longitudinal septae. Inner canal of verge connected with interior verge wall by a single longitudinal band. All 4 stylophores well developed. Mucus glands long, number of arms 6-8. Free oviduct short, vagina 3-4 times longer. Spermathecal stalk moderately long,

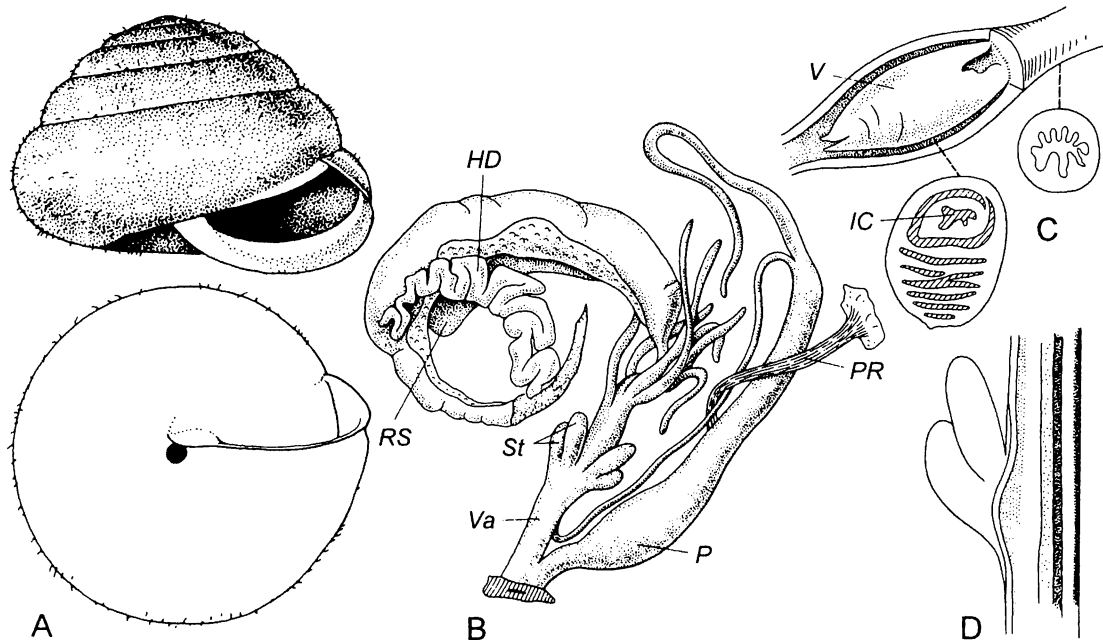


Fig. 2465. ! *Edentiella bakowskii* (Poliński, 1924). Environs of Rakhov, Transcarpathian region [W Ukraine], September 14, 1969.

A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow No. Lc-19199. IC — inner canal of verge.

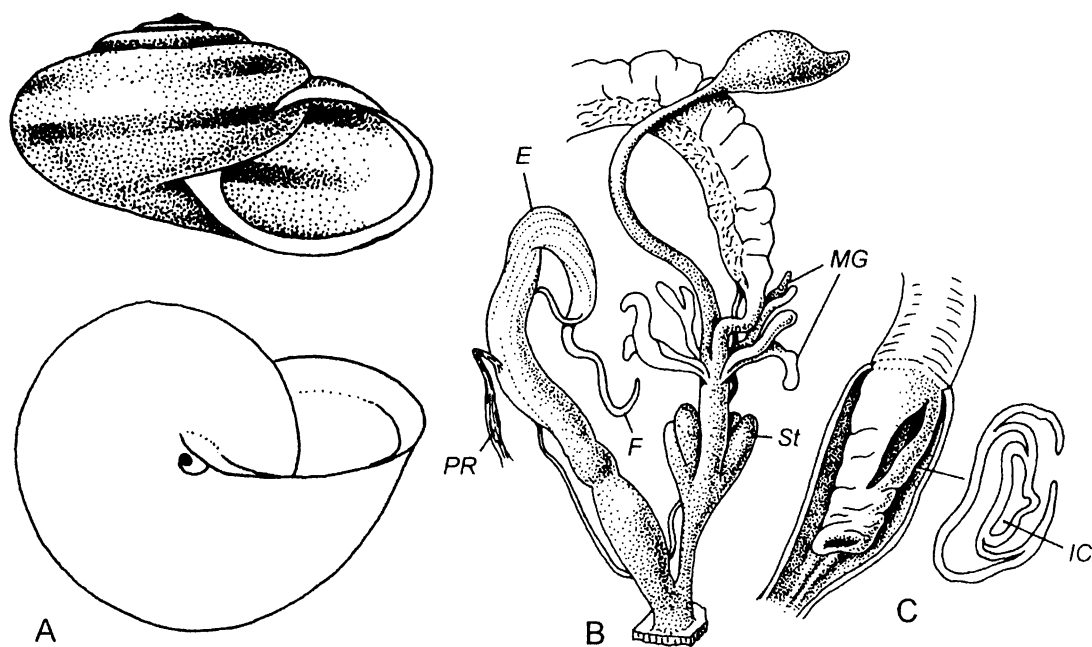


Fig. 2466. *Xerocampylaea zelebori* (L. Pfeiffer, 1853).

A — shell: Sarajevo, Bosnia and Herzegovina. SPb. B, C — Serbia. B — reproductive tract. C — interior of penis and cross-section through verge. Moscow No. Lc-20650.

voluminous reservoir (almost) attending albumen gland.

DISTRIBUTION. Central Europe. 2-3 spp.

Xerocampylaea Kobelt, 1871
Fig. 2466

Kobelt, 1871 15 ("Untergruppe *Xerophila*").

TYPE SPECIES — *Helix zelebori* L. Pfeiffer, 1853; monotypy.

Shell depressedly conic, moderately solid, somewhat translucent, of 5.5 shouldered whorls. Last whorl rounded, slightly descending in front. Outlines of spire conic. Color white, with two brown bands — above and below periphery. Embryonic whorls practically smooth. Later whorls with fine, irregular radial wrinkles and, locally, vague spiral striation; elements of malleate sculpture may also be present. Aperture ovate, moderately oblique, with thin, sharp, slightly reflexed margins and weak lip. Umbilicus dot-like, eccentric. Height 7.5-9.0, diam. 12-16 mm (8.3 × 14.6 mm).

Flagellum slender, moderately long. Epiphallus, on the contrary, unusually stout, markedly longer than flagellum. Penis internally with a few weak axial folds and well-developed verge having rather wide apical pore; intravergic canal surrounded by vast cavity and fixed by 2 longitudinal membranes. Mentioned cavity connected with lumen of penis through slit-like lacuna. Penial retractor inserts on distal half of epiphallus. Free oviduct rather short, vagina about 2 times longer. 4 stylophores of about same size. Mucus glands 4, each of 2 arms. Spermathecal stalk moderately long, subcylindrical, reservoir slightly not attending albumen gland.

DISTRIBUTION. Bosnia and Herzegovina, Serbia. 2-3 spp.

Helicellini Ihering, 1909

Ihering, 1909: 429 (pro subfam.)

— Jacostidae Pilsbry, 1948: 1091 (nom. nov. pro Helicellidae).

— Helicopsini Nordsieck, 1987: 28.

Shell relatively solid, yellowish or chalky-white, mostly with a number of dark bands.

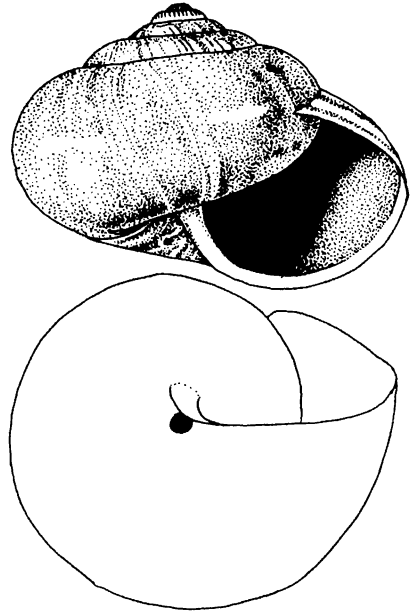


Fig. 2467 *Ereminella latastei* (Letourneux et Bourguignat, 1887).
Agedabia, Cyrenaica. Paris.

Right ommatophoran retractor free from peni-oviducal angle.

DISTRIBUTION. Europe, Central and W Asia, N Africa, Canaries.

Ereminella Pallary, 1919
Fig. 2467

Pallary, 1919: 66 (*Xerophila* sect.).

TYPE SPECIES — *Helix latastei* Letourneux et Bourguignat, 1887; OD.

Shell depressed-turbinate, moderately thin, of 5-6 convex whorls. Last whorl straight or scarcely descending in front. Outlines of spire conic, apex pointed. Color white or yellowish, often with dark bands and irregularly spaced, diffuse streaks. Embryonic whorls smooth, shining. Upper postapical whorls finely ribbed, body whorl with variously developed elements of malleate sculpture. Aperture subcircular, slightly oblique, with a little thickened margins. Umbilicus narrowly open. Height 8-15, diam. 12-16 mm (10.6 × 14.4 mm).

DISTRIBUTION. N Africa. 4-6 spp.

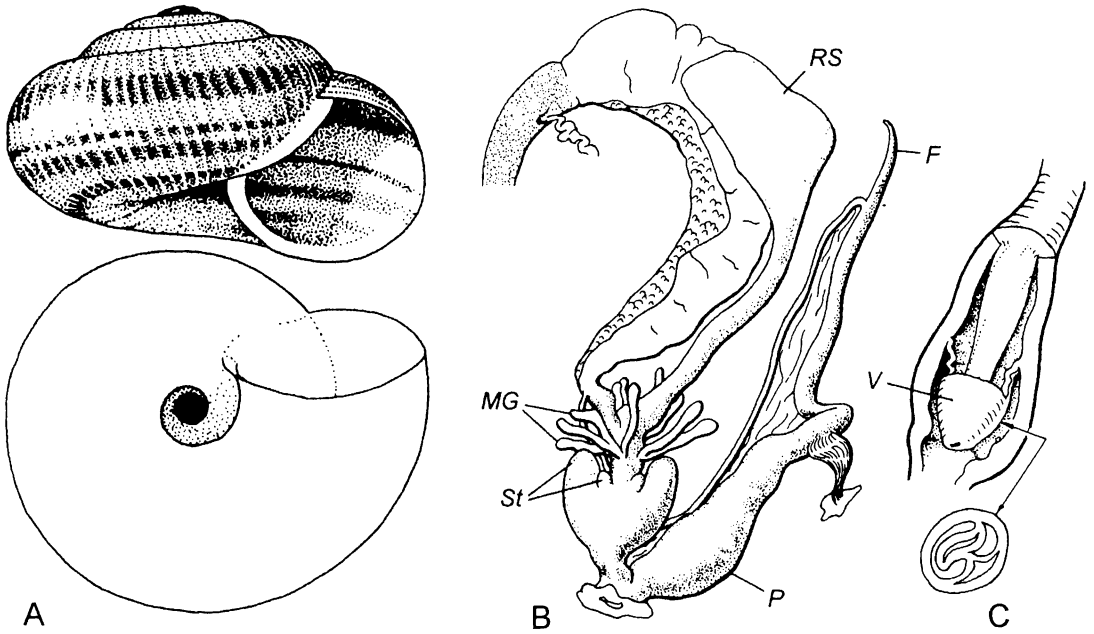


Fig. 2468. *Helicopsis striata* (Müller, 1774). Environs of Kursk [SW Russia], August 16, 1968. A — shell. B — reproductive tract. C — interior of penis. After Schileyko, 1978b.

***Helicopsis* Fitzinger, 1833**
Fig. 2468

Fitzinger, 1833: 101.

- *Striatinella* Clessin, 1876: 149 (*Xerophila* "Untergruppe"; t.-sp. *Helix striata* Müller, 1774; SD Lindholm, 1927a).
- *Striatella* Westerlund, 1877 (1877-1878): 105 [part.; nom. praeocc., non Brot, 1870 (Melaniidae); t.-sp. not designated].
- *Costatella* Kimakowicz, 1890: 78 [nom. praeocc., non Dall, 1870 (Physidae); *Xerophila* subg.; t.-sp. *Helix cereoflava* Bielz, 1851; monotypy].
- *Martha* A. Wagner in Sturany & Wagner, 1914: 69, 92 (t.-sp. *Helix striata* Müller, 1774; monotypy).

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

Shell low-conic to much flattened, opaque, of 4.5-6 rather convex whorls. Last whorl straight, rounded or keeled. Color calcareous-white, uniform or with several, variously expressed dark bands. Embryonic whorls glabrous, black or dark-brown. Postapical whorls almost smooth (lightly

striated) to distinctly ribbed. Shell surface (at least, in adults) without hairs. Aperture subcircular, only slightly oblique. Umbilicus rather narrow to broad, cylindrical to perspective. Height 4.5-11.0, diam. 7.0-18.5 mm (6.0 × 9.2 mm).

Talon, a simple curvature of hermaphroditic duct. Flagellum tapering, 2-4 times shorter than epiphallus. Penis generally bulky, with conic verge. Inner canal of verge hanged by 1-2 longitudinal bands; besides, intravergic cavity may be divided into 2-3 sections. Independently of these cavities at lower portion of epiphallus a slit-like cavity formed that may penetrate into penis walls and fuse with intravergic cavities. Vergic lacuna present or absent. Free oviduct 2-3 times shorter than vagina. Internally vagina with simple, strong longitudinal folds. Outer stylophores much bigger than inner ones. Mucus glands 2-4, each consists of 1-4 arms. Spermathecal stalk subcylindrical, voluminous reservoir lies on middle of spermoviduct or a little higher but never attends albumen gland.

DISTRIBUTION. Central, E and S Europe, Crimea, Kopetdagh; Asia Minor, N Africa. About 20 spp.

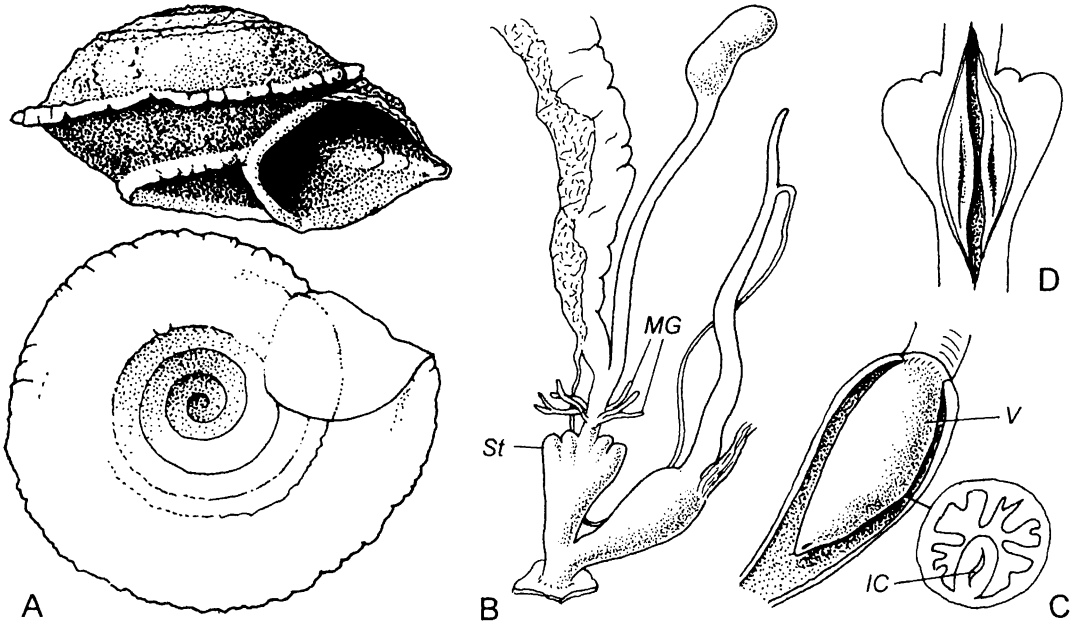


Fig. 2469. *Xeroleuca turcica* (Holten, 1802). 2.5 km WSW of Taftecht, Morocco, July 8, 1980. A — shell. B — reproductive tract. C — interior of penis and cross-section through verge. D — interior of vagina. Moscow No. Lc-28190 (Cardiff No. 2.1993.051.038).

Xeroleuca Kobelt, 1877

Fig. 2469

Kobelt, 1877: 25 [*Helicella* (*Helicella*) sect.].
Aparicio et al. 1991 48.

TYPE SPECIES — *Helix turcica* Holten, 1802; SD Pilsbry, 1895 (1893-1895).

Shell depressed to subglobose, solid, opaque, of 4-5.5 almost flat whorls. Last whorl with uneven peripheral angle or sharp, more or less crenulated keel, slightly descending in front. Basal surface sometimes bears another more or less distinct, often coarse keel encircling umbilicus. Color calcareous-white to light-brown, apex dark. Embryonic whorls smooth. Subsequent whorls coarsely irregularly tuberculate. Some populations have reduced sculpture, in other populations tubercles pronounced in radial lines. Umbilicus rather broad, open, profound, perspective. Height 7.7-13.9, diam. 10.9-22.6 mm (11.2 × 20.0 mm).

Vas deferens entering epiphallus at almost right angle. Flagellum moderately short. Epiphallus subcylindrical, about 3 times longer than flagellum, well demar-

cated from clavate penis. Internally penis with a large verge; canal in verge attached unilaterally to inner wall of verge; in cross-section of verge one can see several axial plicae of various height. Penial retractor inserted on very proximal part of penis. Free oviduct rather short, vagina 3-4 times longer. Inner stylophores only slightly smaller than outer. Mucus glands 2-4, simple or variously branched. Internally vagina with 2 strong lateral longitudinal folds; pores of stylophores open on bottom of narrow slits which located on mentioned folds. Spermathecal stalk rather long, cylindrical; reservoir (almost) attends lower margin of albumen gland.

DISTRIBUTION. NW Africa. 5-7 spp. with several forms.

Xeropicta Monterosato, 1892

Fig. 2470

Monterosato, 1892: 24 (*Helicella* subg.).

TYPE SPECIES — *Helix krynickii* Krynicki, 1833; monotypy.

Shell more or less depressed, opaque, moderately solid, of 5-6 somewhat convex

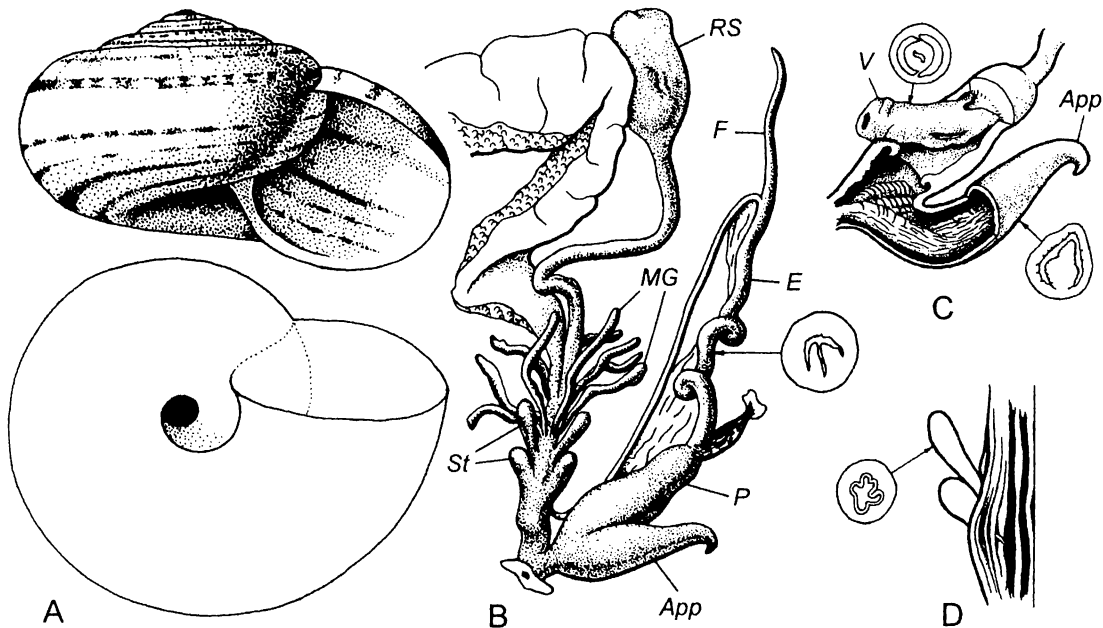


Fig. 2470. *Xeropicta krynickii* (Krynicky, 1833). Bulgaria, June 1969

A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. After Schileyko, 1978b.

whorls. Last whorl straight, evenly rounded at periphery. Color uniformly white or with 1-12 brown or blackish bands. Embryonic whorls smooth. Postnuclear sculpture of weak, irregular radial wrinkles. Aperture more or less rounded, slightly oblique, with simple margins; lip, when present, weak. Umbilicus funnel-like, narrow. Height 3-12, diam. 6-21 mm (8.7×14.0 mm).

Talon simple, exposed. Flagellum 2-5 times shorter than epiphallus. Epiphallus often twisted. Penis roughly fusiform, with verge. Inner canal of verge hanged by 1 or 2 bands; thus, intravergic cavity may be paired, but fused with circular cavity lying in lower part of epiphallus. Penial retractor attached to penis/epiphallus junction. Lower part of penis with conic appendix; internally appendix with a very strong axial pilaster. Free oviduct 2-3 times shorter than vagina. Lower and upper pairs of stylophores of about equal size; lower stylophores contain darts while upper ones, as in all other Hygromiidae, empty; however Taniushkin et al. (1999) found 7 specimens of *X. krynickii* from NE Caucasus with dart in each stylophore; moreover, in one specimen (of these 7) one of upper stylophores contained 2 darts. Mucus glands 4, each with

2-3 arms. Spermathecal stalk subcylindrical, reservoir adheres to upper half of spermooviduct.

DISTRIBUTION. Central Asia, Caucasus, Crimea, northern and western coasts of Black Sea, Balkan Peninsula, Asia Anterior, NE Africa. About 15 spp.

Helicella Férussac, 1821

Fig. 2471

Férussac, 1821 41 (*Helix* subg.).

— *Planatella* Clessin, 1876: 143 (*Xerophila* "Untergruppe"; t.-sp. *Helix ericetorum* Müller, 1774; designated here).

— *Xerolincta* Monterosato, 1892: 23 (*Xerophila* subg. t.-sp. *Helix arenaria* Bourguignat, 1863; SD Kobelt, 1892).

— *Xerobulla* Monterosato, 1892: 24 (*Xerophila* subg.; t.-sp. *Helix bollenensis* Locard, 1882; SD Kobelt, 1892).

— *Xerolaxa* Monterosato, 1892: 24 (*Xerophila* subg.; t.-sp. *Helix ericetorum* Müller, 1774; SD Kobelt, 1892).

— *Xerofriga* Monterosato, 1892: 24 (*Xerophila* subg.; t.-sp. *Helix nubigena* Charpentier, 1852; monotypy).

TYPE SPECIES — *Helix itala* Linnaeus, 1758 (ICZN Opinion No. 431, 1956).

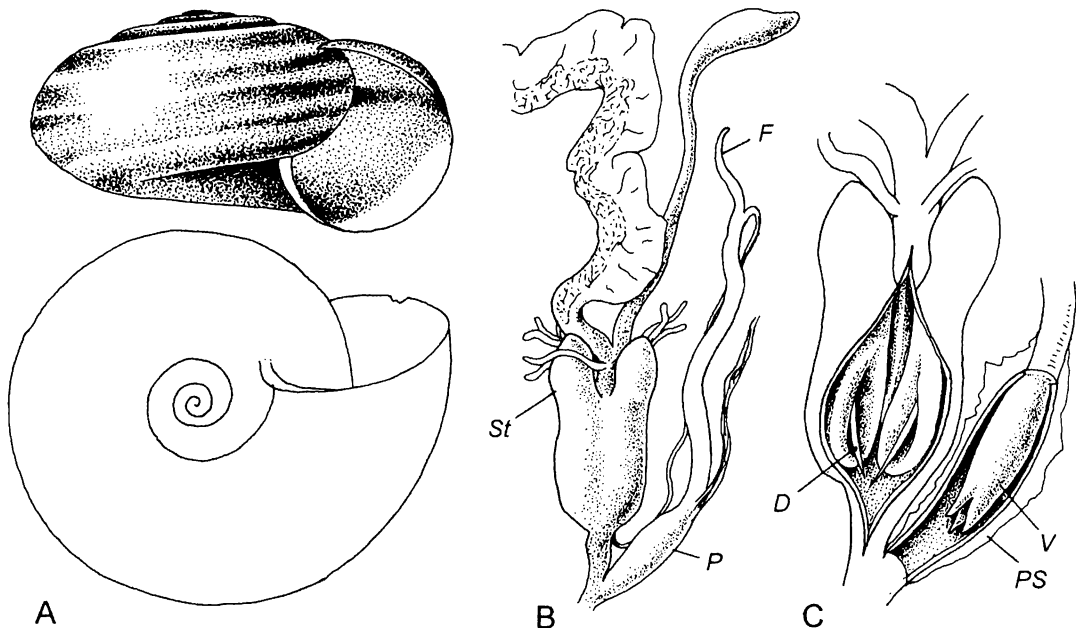


Fig. 2471 *Helicella itala* (Linnaeus, 1758). "Ziegenberg bei Benzingerode [Germany], May 1969"
 A — shell. B — reproductive tract. C — interior of penis and vagina. Moscow No. Lc-28197
 (gift of Dr. E. Clauss).

Shell depressed, opaque, of 5-6 moderately convex to flattened whorls. Last whorl straight, rounded to angulated or keeled. Color calcareous-white, monochromatic or with dark bands. Embryonic whorls smooth. Sculpture of later whorls weak. Surface hairless. Aperture broadly ovate, with thin margins. Umbilicus rather wide, funnel-shaped. Height 6-9, diam. 12-25 mm (7.6 × 13.3 mm).

Vas deferens entering epiphallus at acute angle. Flagellum slender, 2-3 times shorter than cylindrical epiphallus. Penis fusiform, with a large verge; pore of verge surrounded by 2-3 short lobes. Penis sheath very thin. Stylophores large, 2 in number; openings of darts situated in depressions formed by large, fleshy vaginal pilasters. Mucus glands 2, each composed of 1-4 arms. Free oviduct 2-4 times shorter than vagina. Spermathecal stalk subcylindrical, reservoir adhering to upper half of spermoviduct.

DISTRIBUTION. S and Central Europe. 15-20 spp.

Xerolenta Monterosato, 1892
 Fig. 2472

Monterosato, 1892: 24 (*Xerophila* subg.).

— *Xerothracia* Schütt, 1962: 152 [*Helicella* subg.; t.-sp. *Helicella* (*Xerothracia*) *pappi* Schütt, 1962; OD].

TYPE SPECIES — *Helix obvia* Menke, 1828 (= *Helix neglecta* Hartmann, 1821 non *Helix neglecta* Draparnaud, 1805: Gittenberger, 1975: 5); SD Kobelt, 1892.

Shell more or less depressed, rather solid, of about 5 slightly to moderately convex whorls. Last whorl straight, evenly rounded. Color white, unicolor or with 1-5 variously developed dark bands. Embryonic whorls smooth. Later whorls with very fine, irregular sculpture of radial wrinklets. Aperture subcircular, moderately oblique, with simple margins. Umbilicus (rather) widely open. Height 7-10, diam. 14-20 mm (8.2 × 15.8 mm).

Flagellum much shorter than epiphallus. Intravergic cavity within penial verge formed at the expense of development of circular cavity within lower section of epiphallus; this cavity penetrates to verge, to walls of penis and to walls of epiphallus. Stylophores 1 pair that is homology of outer stylophores of other genera; lower portion of stylophores containing broad cavity.

In specimen *in copuli* I found spermat-

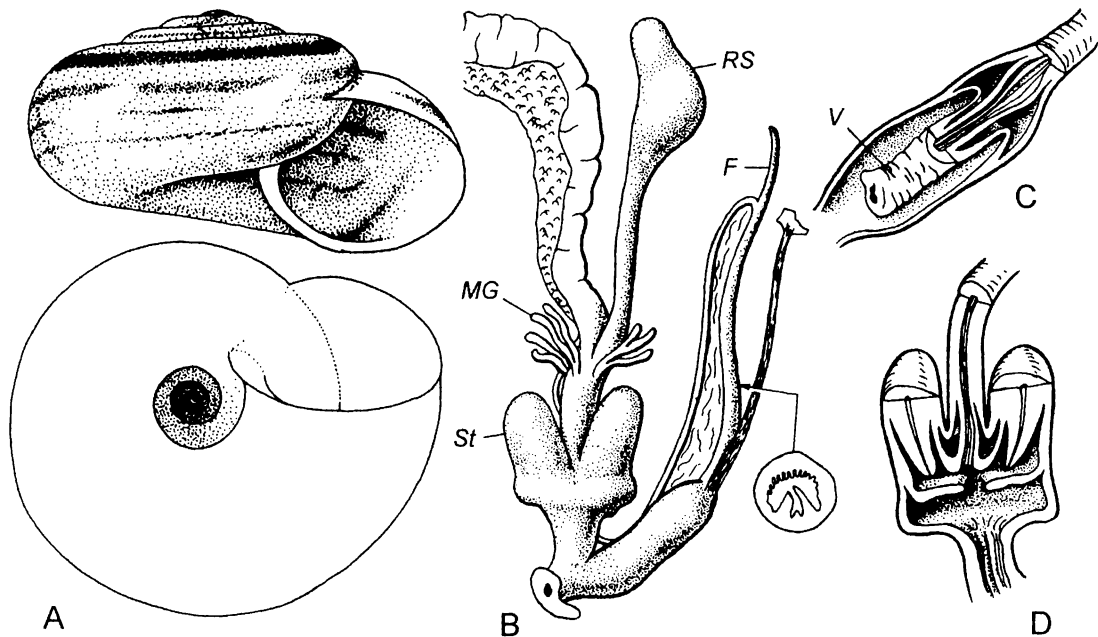


Fig. 2472. *Xerolenta obvia* (Menke, 1828). Environs of Plovdiv, Bulgaria, September 15, 1950.
A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. SPb.

phore having 2 spirally running folds and open tail; on upper part of everted verge there were 2 minute conchiolinous rings, whose diameter corresponds to diameter of spermatophore terminal pore.

DISTRIBUTION. Europe. About 5 spp.

Xerotricha Monterosato, 1892

Monterosato, 1892: 23.

— *Xeromicra* Monterosato, 1892: 23 (*Xerophila* subg.; t.-sp. *Helix apicina* Lamarck, 1822; monotypy).

— *Polytrichia* Pallary, 1922: 126 (*Xerophila* sect.; t.-sp. *Helix polytrichia* Ancey, 1882; OD).

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

Shell flattened to turbinoid, (rather) thin, of 5-6 (very) convex, somewhat shouldered whorls. Last whorl straight, rounded to angulated at periphery. Color white to pale-corneous; dark bands or spots may be present. Embryonic whorls smooth. Postapical sculpture of radial striation or ribs. Aperture slightly oblique, subcircular,

with thin margins; inner lip may be present. Umbilicus rather narrow.

Flagellum short, slender. Epiphallus not long, externally not demarcated from penis. Penis fusiform. Penial retractor attached to distal section of epiphallus. Free oviduct very short. Vagina with a pair of large stylophores. Spermathecal stalk moderately long, voluminous reservoir nearly attending albumen gland.

DISTRIBUTION. S and SW Europe, N Africa, Canary Islands.

Xerotricha (*Xerotricha* s. str.)

Fig. 2473

Shell flattened to depressed-conic, of 5-6 whorls. Last whorl rounded or scarcely angulated. Color white to pale-corneous, usually with brown streaks and spots. Postapical whorls finely, irregularly radially striated, with short, scattered hairs. Inner lip in aperture usually present. Height 2-5, diam. 5-8 mm (3.3 × 6.0 mm).

Penis with acorn-like verge; walls of verge contains circular cavity. Inner surface of penis lacks regular sculpture. Atrium,

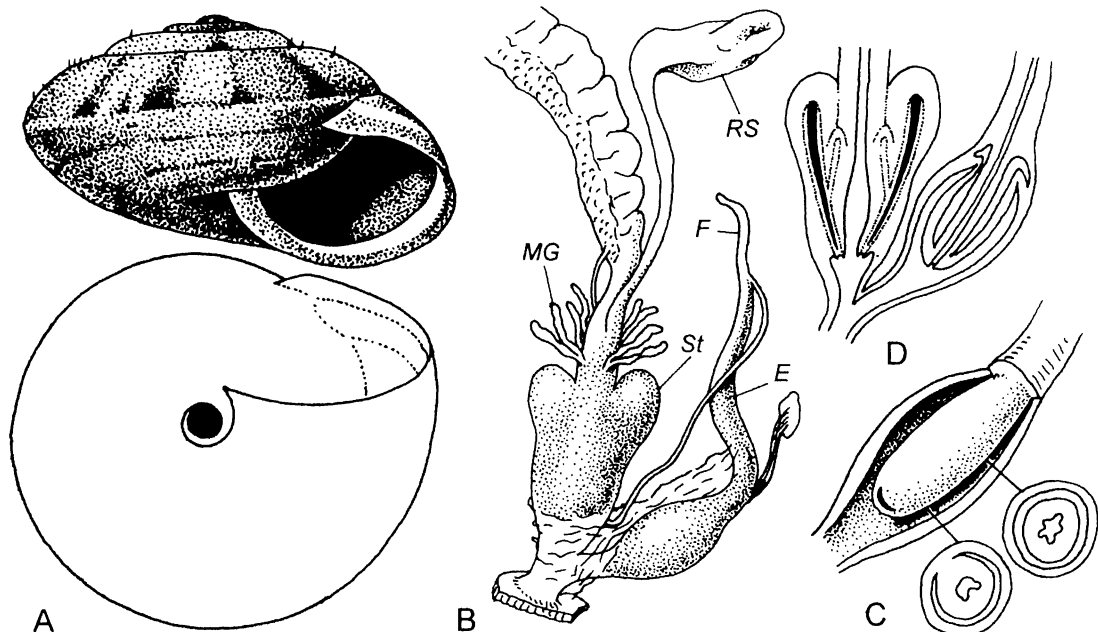


Fig. 2473. *Xerotricha (Xerotricha) conspurcata* (Draparnaud, 1801).

A — shell: "Crete, Pólwysep Akrotiri, Mone Guvernetu" Moscow No. Lc-28459. B, C, D — Beziers, S France, April 26, 1963. B — reproductive tract. C — interior of penis and cross-sections through verge. D — schematic longitudinal section through distal genitalia. Moscow No. Lc-19226.

lower section of vagina and penis coated by a thin, transparent membrane. Vagina long, swollen. Externally 2 large (lower) stylophores visible but there are 2 inner, rudimentary stylophores; united lumens of each pair of stylophores enter lumen of vagina on tops of small nipples; apical parts of stylophores somewhat inflated and separated by shallow grooves. Mucus glands usually 4, each consists of 2 arms.

DISTRIBUTION. S Europe, N Africa, Canary Islands. 5-7 spp.

Xerotricha (Castellana Adolfo Ortiz de Zarate, 1950)
Fig. 2474

Ortiz de Zarate Adolfo, 1950: 52 (pro sect.).
Vega & Altimira, 1967: 25.

TYPE SPECIES — *Helix (Jacosta) huidobroi* Azpeitia, 1925; designated here.

Shell turbanate, of about 5 very convex whorls. Last whorl straight, with distinct, rounded peripheral angle. Color uniformly white or somewhat banded, sometimes with

hydrophanous spots. Postembryonic whorls with heavy and wide radial ribs. Inner lip in aperture absent. Height 4.5-6.5, diam. 8.0-10.0 mm (5.0 × 7.1 mm).

Anatomically differs from *Xerotricha* s. str. by presence of 2 mucus glands, each composed of 4 branches, and by shape of stylophores lacking apical swellings.

DISTRIBUTION. Spain. 5 spp.

? *Ripkeniella* Hutterer et Gittenberger, 1998
Fig. 2475

Hutterer & Gittenberger, 1998: 117

TYPE SPECIES — *Ripkeniella petrophila* Hutterer et Gittenberger, 1998; OD.

Shell low-conic, quite solid, of 3.5-4.5 convex whorls. Last whorl with angular periphery and flattened zone just below it. Color whitish with numerous irregular reddish spots; basal surface generally darker, apex black. Embryonic whorls smooth. Later whorls densely covered with radial ribs; additionally, there is a vague mi-

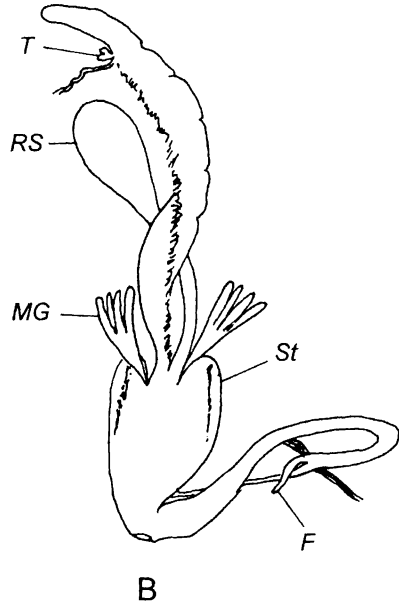
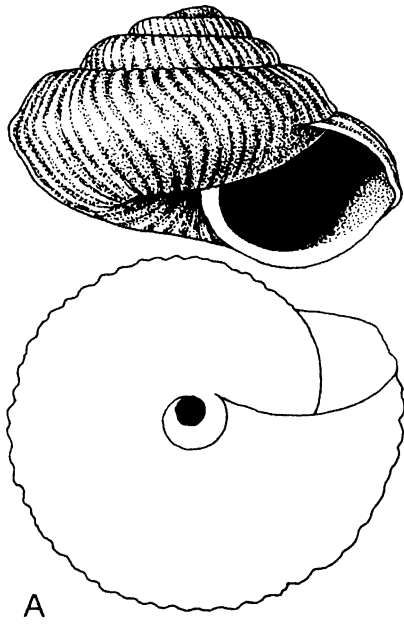


Fig. 2474. *Xerotricha (Castellana) huidobroi* (Azpeitia, 1925).

A — shell: San Miguel de Salinas, Alicante, Spain. Vienna No. K 50899. B — reproductive tract. After A. Ortiz de Zarate, 1950.

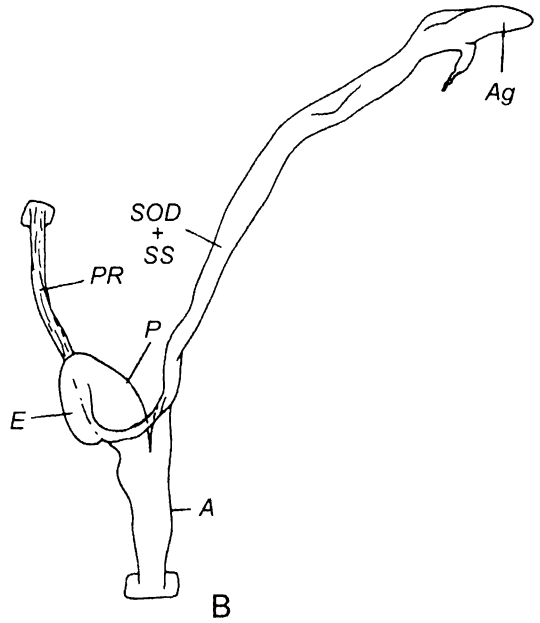
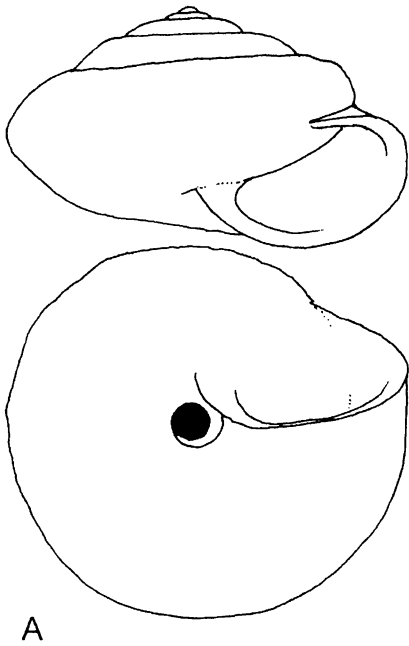


Fig. 2475. *Ripkeniella petrophila* Hutterer et Gittenberger, 1998.

A — shell. B — reproductive tract. After Hutterer & Gittenberger, 1998.

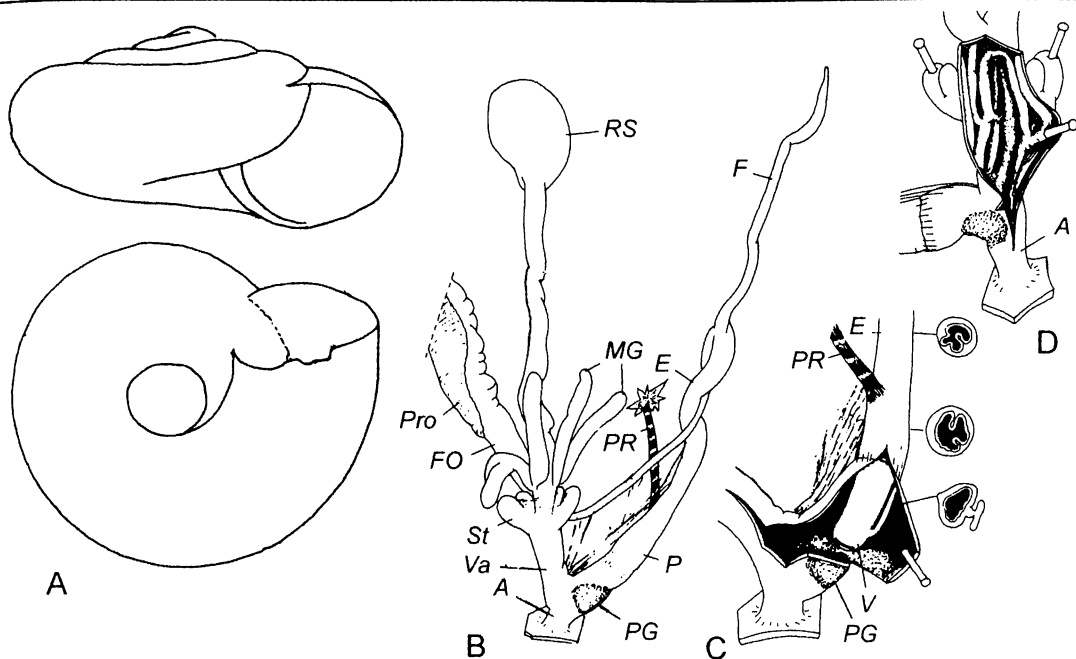


Fig. 2476. *Helicotricha carusoi* Giusti, Manganelli et Crisci, 1992.

A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. After Giusti et al., 1992.

crossculture of spiral lines. Aperture ovate, moderately oblique, with slightly thickened, not reflexed margins. Umbilicus rather narrow, deep, open. Height 1.7-2.5, diam. 2.8-3.5 mm.

Vas deferens extremely short. Flagellum vestigial. Epiphallus short. Penis also short, somewhat swollen. Penial retractor attached onto penis/epiphallus junction. Vagina without accessory organs.

DISTRIBUTION. Canary Islands (La Gomera Island). 1 sp.

REMARK. I tentatively place *Ripkeniella* next to *Xerotricha* because of similarity of their shells, although vagina in *Ripkeniella* has neither stylophores nor mucus glands. Anyway, the absence of accessory organs in Hygromiidae is a secondary phenomenon, and we do not know the initial condition from which the reduction started.

Helicotricha Giusti, Manganelli et Crisci, 1992
Fig. 2476

Giusti et al. 1992: 109.

TYPE SPECIES — *Helicotricha carusoi* Giusti, Manganelli et Crisci, 1992; OD.

Shell low-conic, opaque, of 4 (rather) convex whorls. Last whorl straight, roundly angulated. Color brown, with white flecks. Embryonic whorls with few faint growth lines and microsculpture of fine, close spiral grooves. Postembryonic whorls with superficially reticulated periostracum and radial rows of minute hairs. Aperture ovate, moderately oblique; margins simple, not thickened or reflexed. Umbilicus deep, rather narrow. Height 2.5-3.4, diam. 4.5-5.4 mm.

Hermaphroditic gland of many lobes. Talon with wide lateral fertilization chamber embracing basal portion of seminal receptacle complex; latter very slender, only slightly enlarged apically and containing 2-3 very small tubes. Flagellum almost as long as epiphallus+penis. Penis containing cylindrical, thin-walled verge; T-shaped (in cross-section) pilaster running for entire length of verge and joined to it by a peduncle, so cross-section of verge plus pilaster resembles card figure spades; pore terminal, slit-like. Penial walls in their atrial section contain glandular tissue (penial gland). Penial retractor attached to very distal part of epiphallus. Vagina long. Inner stylophores visible from outside. Opening of each pair of stylophores clearly visible half way

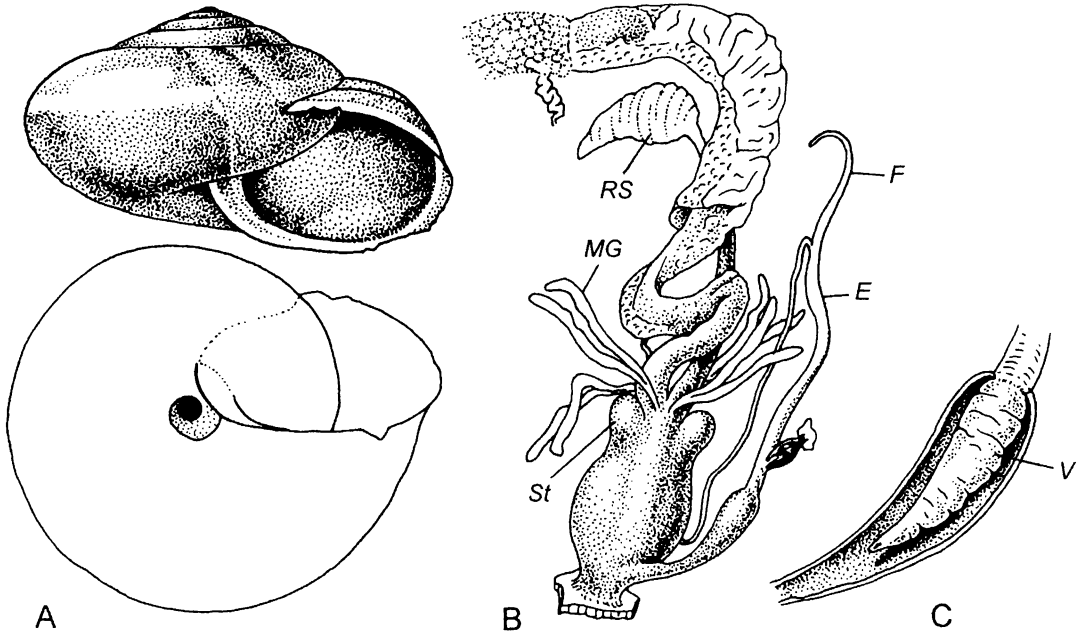


Fig. 2477 *Semifruticicola serbica* A. Wagner, 1914. "Durmitor, Jugoslavia, 21.IX.1980" [Serbia].
 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28124 (Leiden).

along vagina. Mucus glands 2, each of 2 arms, some of them may be biramous. Spermathecal stalk moderately long.

DISTRIBUTION. Aeolian Islands (S Italy).
 1 sp.

Semifruticicola A. Wagner, 1914
 Fig. 2477

Wagner A., 1914: 336.

TYPE SPECIES — *Semifruticicola serbica* A. Wagner, 1914; OD.

Shell depressed-conic, rather thin, of 5-5.5 slightly convex whorls. Last whorl rounded, scarcely deflected. Color white to pale-corneous, with 2 brown bands. Embryonic whorls smooth. Postapical sculpture of radial rib-striation. Aperture broadly ovate, moderately oblique, with thin margins and weak inner lip. Umbilicus funnel-like, somewhat eccentric, narrowly open. Height 7-9, diam. 13-15 mm (8.2 × 14.2 mm).

Flagellum moderately long, slender. Epiphallus cylindrical, about 2 times longer than flagellum. Penis rather small, internally with conic, folded verge. Free oviduct

rather long. Vagina much swollen, with 2 symmetrical stylophores. There are 4 biramous mucus glands. Spermathecal stalk moderately long, conic reservoir lies on upper half of spermoviduct.

DISTRIBUTION. S Bosnia and Herzegovina, Montenegro, Serbia, N Albania. 1 sp.

Jabalconia Adolfo Ortiz de Zarate,
 1952
 Fig. 2478

Ortiz de Zarate Adolfo, 1952: 87 (nom. nov. pro *Pseudoxerotracha* Adolfo Ortiz de Zarate, 1950).

— *Pseudoxerotracha* Adolfo Ortiz de Zarate, 1950: 63 [nom. praeocc. non C. Boettger, 1911 (fossil Hygromiidae); *Helicella* subg.; t.-sp. *Helicella* (*Pseudoxerotracha*) *zujarensis* Adolfo Ortiz de Zarate, 1950; monotypy].

TYPE SPECIES — *Helicella* (*Pseudoxerotracha*) *zujarensis* Adolfo Ortiz de Zarate, 1950; monotypy.

Shell subglobular, rather thin, of about 4.5 convex whorls. Last whorl almost

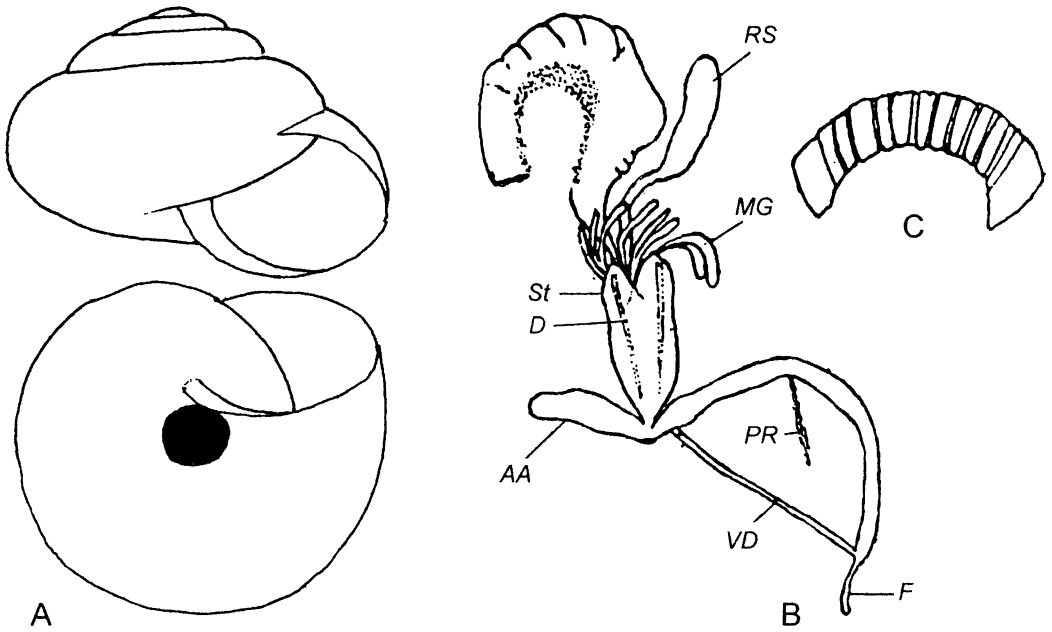


Fig. 2478. *Jabalconia zujarensis* (Adolfo Ortiz de Zarate, 1950).

A — shell. B — reproductive tract. C — jaw. After Adolfo Ortiz de Zarate, 1950.

straight, evenly rounded. Color white, with dark peripheral band; background often darker above band than below it. Embryonic whorls smooth. Postapical whorls coarsely radially striated. Aperture subcircular, moderately oblique, with simple margins. Umbilicus moderately broad, subcylindrical. Height 4.2-5.7, diam. 7.3-9.0 mm.

Flagellum short, slender; epiphallus 4-5 times longer. Penis small, fusiform. Penial retractor attached to distal half of epiphallus. Free oviduct moderately long. Stylophores 2, large. Mucus glands 4, biramous. Atrium supplied with elongated, sac-like appendix. Spermathecal stalk short, elongated reservoir lies on lower half of spermooviduct.

DISTRIBUTION. Spain. 1 sp.

Pseudoxerophila Westerlund, 1879

Fig. 2479

Westerlund in Westerlund & Blanc, 1879: 55 (*Xerophila* sect.).

TYPE SPECIES — *Helix* (*Pseudoxerophila*) *bathytera* Blanc, 1879; SD Kobelt, 1904.

Shell depressed, opaque, relatively solid,

of 5-6 rather convex whorls. Last whorl rounded, almost straight or a little descending in front. Color uniformly white to banded. Postnuclear whorls finely, irregularly radially striate. On body whorl there are elements of malleate sculpture. Aperture subcircular, moderately oblique; lip situated at some distance from edge of aperture. Umbilicus rather broad. Height 7-9, diam. 12-16 mm (8.4 × 14.7 mm).

Flagellum long, epiphallus almost twice shorter. Penis rather short, contains conic verge. Penial retractor inserts on penis/epiphallus junction. Vagina swollen, with 4 symmetrically located stylophores; upper ones sit on inner surfaces of lower (outer). Mucus glands 4, each with 2-4 branches. Spermathecal stalk moderately long, globular reservoir lies on upper half of spermooviduct.

DISTRIBUTION. Crete. 1 sp.; Hausdorf (1988) admits that 1 more species from Cyprus ("*Helicella*" *sitiensis* sensu Hesse, 1934) and 1 species from Egypt ("*Helix*" *guimeti* Bourguignat, 1876) may belong to this genus.

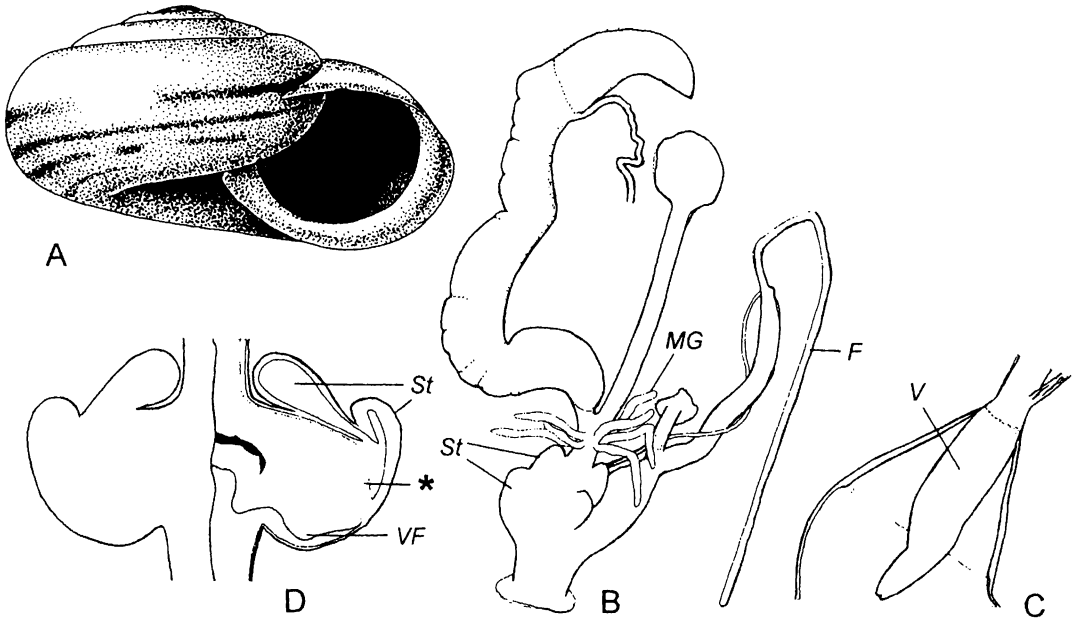


Fig. 2479. *Pseudoxerophila bathytera* (Blanc, 1879).

A — shell: Neápolis, Crete Island. Vienna No. E 58.831. B — reproductive tract. C — interior of penis. D — interior of vagina. After Hausdorf, 1988. Asterisk — thickening. VF — vaginal fold.

HYGROMIINAE Tryon, 1866

— Leptaxidinae C. Boettger, 1909: 4 (Helicidae subf.).

Bouchet & Rocroi, 2001: 173; 2005: 93.

Right ommatophoran retractor passes through or outside peni-oviducal angle. Base of verge not contains circular loosening of tissue. Verge during copulation moves out. Walls of verge mostly contain sinuses and lacunes. Vagina long. Stylophores initially 2, situated on one side of vagina, inner (upper) one may be reduced down to complete disappearance. In rare cases mucus glands may also be absent.

DISTRIBUTION. Palearctic.

Hygromiini Tryon, 1866

Shell dark-colored, usually with diffuse, light peripheral band.

Right ommatophoral retractor passes through peni-oviducal angle.

DISTRIBUTION. Palearctic.

Pyrenaearia Hesse, 1921

Fig. 2480

Hesse, 1921: 59, 61, 66. Ortiz de Zarate Adolfo, 1956: 35.

TYPE SPECIES — *Helix carascalensis* Férussac, 1821; monotypy.

Shell depressedly conic, rather thin, of 5-6 moderately convex whorls. Last whorl slightly angled at periphery, a little descending in front. Color grey to brown, often with lighter irregular radial stripes; light, weak peripheral band may be present. Embryonic whorls with vague radial wrinkles; on following whorls these wrinkles become stronger and irregular; spiral striation usually also present and expressed better on basal surface. Aperture rounded, oblique, with thin margins; columellar and basal margins slightly reflexed. Umbilicus narrow. Height 7-9, diam. 12-15 mm (8.0 × 13.0 mm).

Flagellum long, slender. Epiphallus cylindrical, distinctly demarcated from penis. Penis more or less fusiform, thin-walled, with verge provided with lateral, longitudinally bent ridge; terminal pore margined by 2 minute lobes. Free oviduct short. Vagina

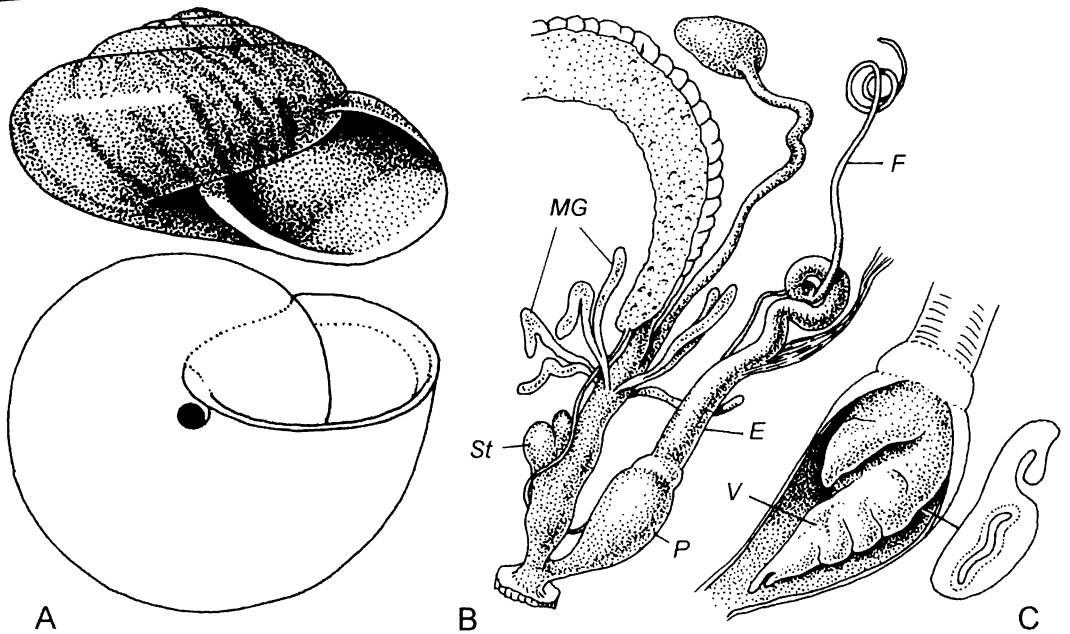


Fig. 2480. *Pyrenacaria carascalensis* (Férussac, 1821). France, Haute-Pyrénées, along road between Col des Tourmalet and Pic du Midi, August 30, 1967
 A — shell. B — reproductive tract. C — interior of penis and cross-section of verge. Moscow No. Lc-28500 (Leiden).

long. Stylophores 2, inner smaller but quite visible. Mucus glands 4, simple or forked. Spermathecal stalk long, reservoir attending albumen gland.

DISTRIBUTION. Pyrenees. About 15 spp. & forms.

Hygromia Risso, 1826

Risso, 1826: 66.

— *Hygromanes* Herrmannsen, 1847: 546 (t.-sp. *Helix cinctella* Draparnaud, 1805; OD).

TYPE SPECIES — *Helix cinctella* Draparnaud, 1805; SD Herrmannsen, 1847

Shell depressedly conic, rather thin to somewhat solid, of 5-6 moderately convex whorls. Last whorl with scarcely expressed peripheral angle, a little descending in front. Spire conic or slightly dome-shaped. Color light-corneous to chestnut, with variously developed light band. Embryonic whorl practically smooth. Postapical whorls finely irregularly wrinkled, very finely granulated, with radial rows of small nail-like scales. Aperture ovate, oblique, margins thin, sharp, slightly or not reflexed, sometimes with inner white lip. Umbilicus dot-like, semi-covered.

Flagellum (very) short. Penis no longer than epiphallus. Verge medium to long, with apical pore and 1 central canal; sometimes with a ring of small lacunae in its walls. Free oviduct short. Inner stylophore smaller than outer.

DISTRIBUTION. S England, S part of Central and S Europe, Corsica, Spain with Mallorca, N Africa (Algeria).

Hygromia (*Hygromia* s. str.)

Fig. 2481

Height 5.5-11.0, diam. 9-15 mm (5.8 × 9.2 mm).

Penis and epiphallus of medium length. 2 stylophores of equal size. Dart twisted. Spermathecal stalk long, reservoir large, oval.

DISTRIBUTION. As in genus. 1-3 spp.

Hygromia (*Riedelia* Schileyko, 1972)

Fig. 2482

— *Sciaphila* Westerlund, 1902: 92 [nom. praeocc., non Treitschke, 1829 (Lepidoptera)]; *Hygromanes* subg.; t.-sp. *Helix limbata* Draparnaud, 1805; OD].

Schileyko, 1972b: 1130.

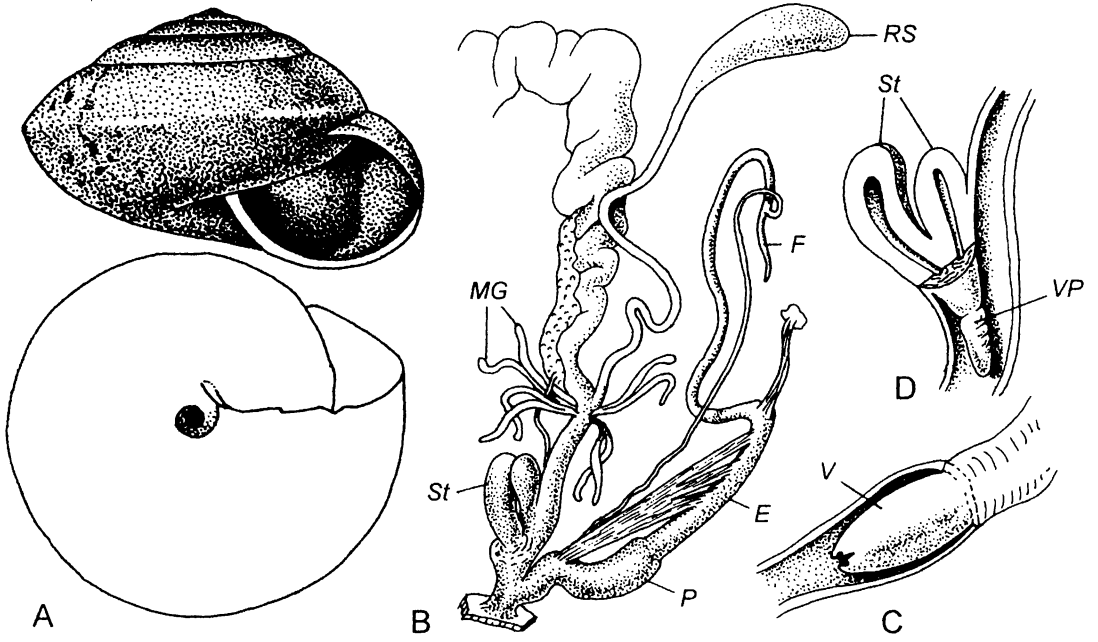


Fig. 2481 *Hygromia (Hygromia) cinctella* (Draparnaud, 1805). Bastia, Corsica.
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow
 No. Lc-20444.

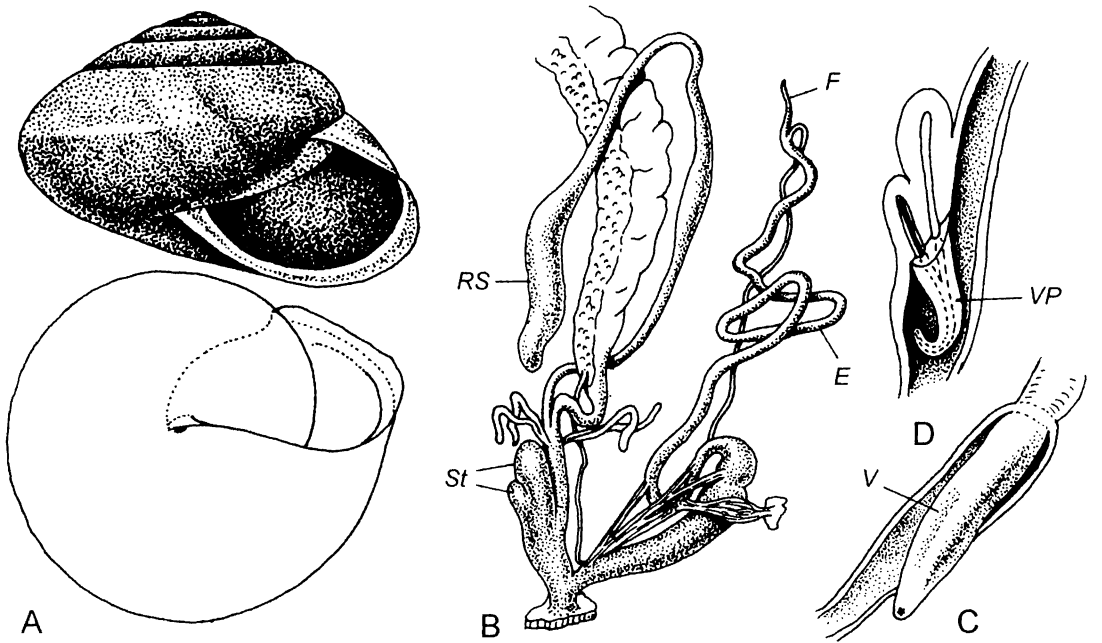


Fig. 2482 *Hygromia (Riedelia) limbata* (Draparnaud, 1805). Ariège, France.
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow.

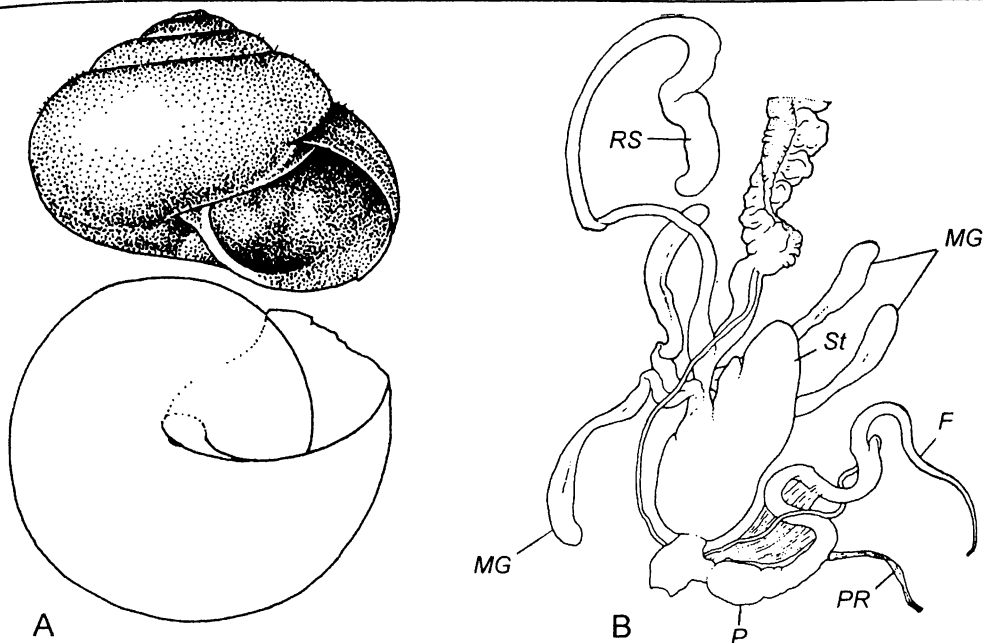


Fig. 2483. *Hygromia (Lozekia) transsylvanica* (Westerlund, 1876).

A — shell: Jungwald at Sibiu, Transylvania, Romania. Phil. No. 248235. B — reproductive tract. After Hudec, 1970.

TYPE SPECIES — *Helix limbata* Draparnaud, 1805; OD.

Height 9-11, diam. 11-16 mm (10.2×13.5 mm).

Penis and epiphallus very long, slender. 2 stylophores, external one slender, smaller than internal. Spermathecal stalk short, reservoir usually long, slender.

DISTRIBUTION. W Europe incl. S England. Probably 1 sp. with a few forms.

Lozekia Hudec, 1970

Fig. 2483

Hudec, 1970: 41

TYPE SPECIES — *Helix transsylvanica* Westerlund, 1876; OD.

Shell depressed-globular, thin, of 5-5.25 rather convex whorls. Last whorl rounded or bluntly angulated, not descending. Color (light) corneous. Embryonic whorls smooth. Postapical whorls with radial rows of small nail-like scales and minute, narrow, regularly spaced spiral crests. Aperture rounded, with sharp, simple margins. Umbilicus tiny, semicovered. Height 4.5-6.0, diam. 5.5-6.6 mm (5.0×6.6 mm).

Flagellum long to short, approximately as

long as epiphallus. Penis rather small, swollen. Verges with apical pore. Penial retractor inserted on lower half of epiphallus. Free oviduct rather short. Lower stylophore much bigger than inner which distinctly separated from enlarged vagina. Mucus glands 2, each of 2 branches having very short common ducts. Spermathecal stalk long; reservoir indistinctly demarcated from stalk, attending albumen gland.

DISTRIBUTION. Romania. 2 spp.

Ganula Gittenberger, 1969

Fig. 2484

Gittenberger, 1969: 64.

TYPE SPECIES — *Helix lanuginosa* Boissy, 1835; OD.

Shell somewhat depressed, thin, of 5-5.5 moderately convex whorls. Last whorl rounded, scarcely descending in front. Color yellow or pale-corneous. Embryonic whorls smooth. Later whorls with very short hairs, each of them sitting on minute tubercle. Aperture subcircular, moderately oblique, with simple or a little reflexed margins and inner lip. Umbilicus minutely

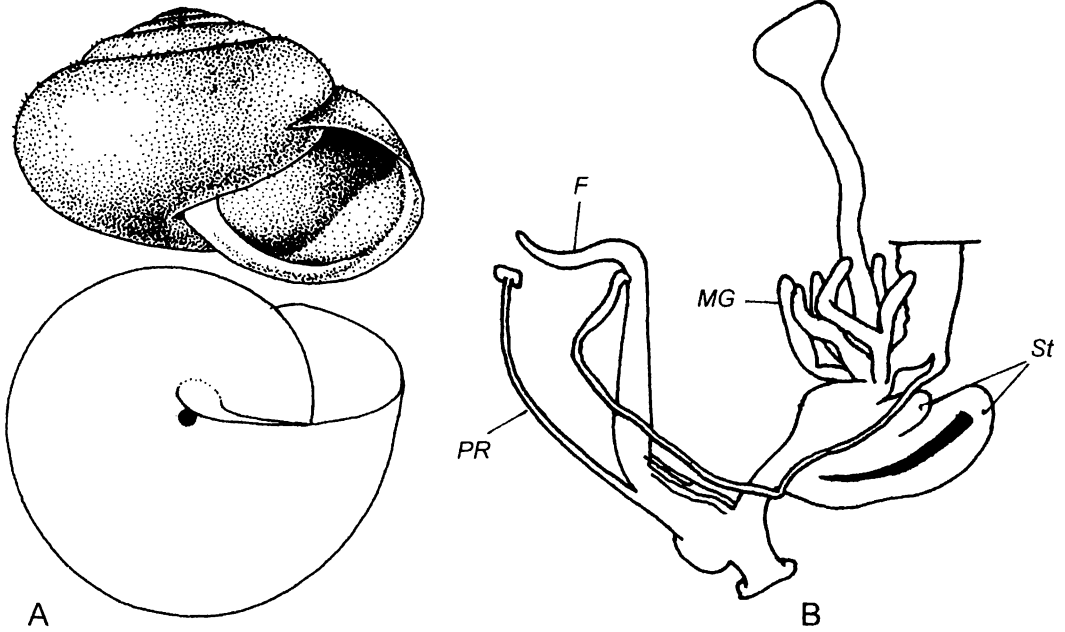


Fig. 2484. *Hygromia (Ganula) lanuginosa* (Boissy, 1835).

A — shell: Mallorca. Phil. No. 62517 B — reproductive tract. After Gittenberger, 1969.

open. Height 8-9, diam. 11-14 mm (8.4×12.0 mm).

Flagellum short, epiphallus about 2 times longer. Penis of variable length, more or less swollen. Verge with apical pore and thick walls which contain lacunae. Penial retractor attached to lower section of epiphallus; between distal part of epiphallus and penis there are muscular bands. Free oviduct moderately short. Inner stylophore much smaller than outer. Mucus glands 2-3, simple and/or forked. Spermathecal stalk moderately long; reservoir irregularly globular.

DISTRIBUTION. Algeria, Mallorca Island. 1 or 2 spp.

Zenobiella Gude et Woodward, 1921
Fig. 2485

Gude & Woodward, 1921a: 179 (nom. nov. pro *Zenobia* Gray, 1821).

— ? *Zenobia* J. Gray, 1821: 239 [nom. praeocc. non Oken, 1815 (Lepidoptera); t.-sp. "*Helix Zenobia corrugata*, undescribed."].

TYPE SPECIES — *Helix subrufescens* Miller, 1822; OD.

Shell moderately depressed, very thin, semitransparent, shining, of about 4.5 a little convex whorls. Last whorl straight, rounded or scarcely angulated. Color light-corneous, sometimes with greenish tint. Embryonic whorls glabrous. Postapical sculpture of fine, irregular radial ridgelets and (in fresh shells) small, scattered hairs. Aperture widely ovate, moderately oblique, with simple, fragile margins. Umbilicus minute, semicovered. Height 5-6, diam. 8-10 mm (5.1×8.2 mm).

Flagellum long, slender. Epiphallus also long, nearly cylindrical. Penis small, its lumen filled with a relatively very big, clavate verge having large lumen. Penis and distal section of epiphallus connected by a transparent membrane. Penial retractor in dissected specimen absent. Free oviduct moderately short, vagina somewhat longer. Stylophores subequal in size, protruded in lumen of vagina by a long, conic papilla having minute terminal pore. Mucus glands 4, simple and/or biramous. Spermathecal stalk long, reservoir fusiform, with apical process which attends albumen gland.

DISTRIBUTION. England, Ireland, W France. 1 sp.

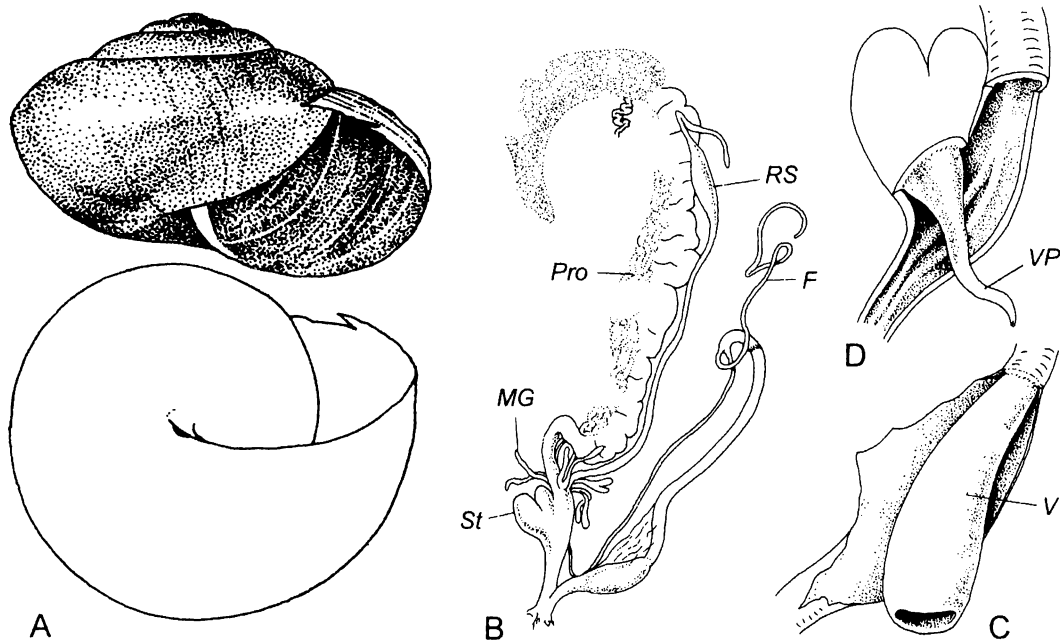


Fig. 2485. *Zenobiella subrufescens* (Miller, 1822).

A — shell: "Island of Walles" StB No. 18084. B, C, D — NW edge of Durweston, Dorset [England], April 10, 1983. B — reproductive tract. C — interior of penis. D — interior of vagina. Cardiff No. Z 1993.052.

Kovacsia Nordsieck, 1993

Fig. 2486

Nordsieck, 1993: 13.

TYPE SPECIES — *Hygromia kovacsi* Varga et Pinter, 1972; OD.

Shell conic-subglobose, thin, of 4.5-4.75 moderately convex whorls. Last whorl straight, scarcely, bluntly angulated; toward aperture angle disappears. Color corneous-brown. Embryonic whorls finely granulated. Later whorls with small, numerous, radially directed, semicircular scales. Aperture broadly ovate, moderately oblique, with thin, simple margins. Umbilicus minute, partly covered. Height 4.60, diam. 6.05 mm (holotype).

Flagellum long, slender; epiphallus of about same length. Penis elongate. Verge long, capped with thin, membranaceous sac ("Hüllmembran" after Nordsieck, 1993); internally proximal section of verge with corrugated axial folds. Penial retractor inserted on penis/epiphallus junction. Free oviduct short. Stylophores not large, subequal in size. Mucus glands absent. Spermathecal stalk long, reservoir voluminous.

DISTRIBUTION. Hungary. 1 sp.

Ichnusotricha Giusti et

Manganelli, 1987

Fig. 2487

Giusti & Manganelli, 1987: 160.

TYPE SPECIES — *Ichnusotricha berninii* Giusti et Manganelli, 1987 (= *Helix perlevis* Shuttleworth, 1852: Neubert & Gosteli, 2005); OD.

Shell subglobose to moderately depressed, thin, of 4.75-5.75 slightly convex whorls. Last whorl scarcely angled at periphery, somewhat deflected. Color of varying shades of yellow-brown. Embryonic whorls finely radially wrinkled and marked with minute spiral grooves. Postnuclear sculpture of narrow, somewhat regular, radial wrinkles which often broken into rows of small, drop-like structures; there are also rows of tiny hairs. Aperture widely ovate, oblique, with thin, straight margins; columellar margin slightly dilated. Umbilicus very narrow, covered or nearly so. Height 6.8-9.5, diam. 10-11 mm (7.3 × 10.8 mm).

Flagellum moderately long. Epiphallus

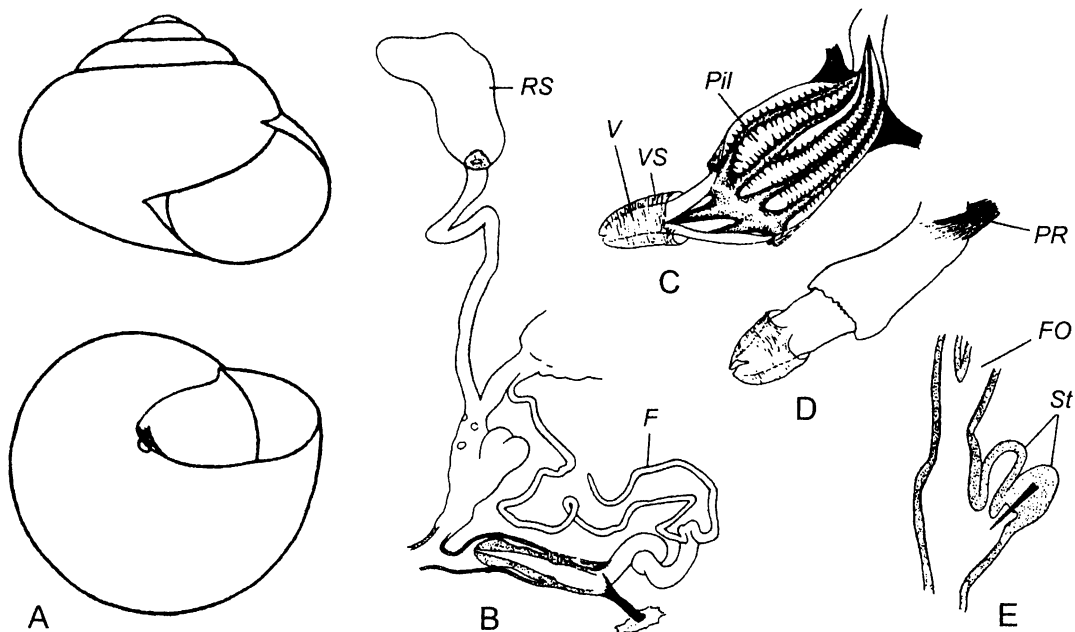


Fig. 2486. *Kovacsia kovacsi* (Varga et Pinter, 1972).

A — shell. B — reproductive tract. C — interior of verge. D — intact verge. E — schematic sagittal section of vagina and stylophores. After Varga, 1979. VS — vergic sac.

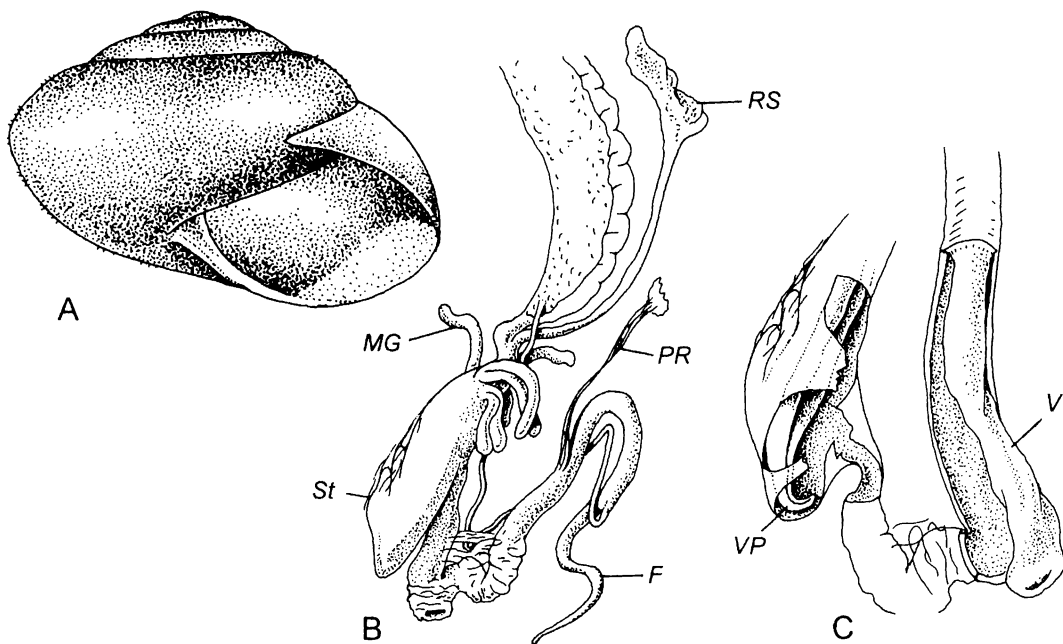


Fig. 2487 *Ichnusotricha perlevis* (Shuttleworth, 1852). 9 km NW of Bonifacio, Corsica, October 1994.

A — shell. B — reproductive tract. C — interior of penis and vagina. Moscow No. Lc-28485 (gift of Dr. Th. Ripken).

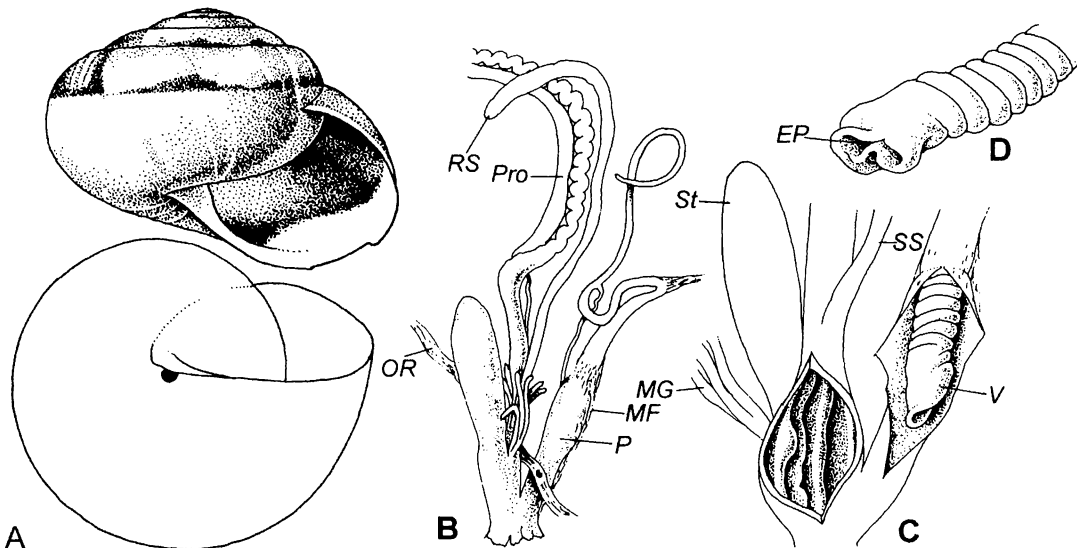


Fig. 2488. *Portugala inchoata* (Morelet, 1845).

A — shell: Portinho de Arrabida, Portugal. Cardiff. B, C, D — Spain, Prov. La Coruna, Aguino [4 km SSW of Santa Eugenia de Ribeira], June 2, 1981. B — reproductive tract. C — interior of penis and vagina. D — verge. MF — muscular fibers. Leiden No. 101944.

and penis of about equal length. Penial verge long, subcylindrical, its walls contain system of sinuses and lacunae. Penial muscular bands well developed. Penial retractor attached near penis/epiphallus junction. Free oviduct very short. Stylophores small, flattened; inner one smaller than outer; cavities of stylophores open independently into groove of long process, that extends as far as atrium. Mucus glands 3-4, splitted. Both lower and upper parts of vagina rather long, with very thin, semitransparent walls. Spermathecal stalk slender, moderately long; reservoir not attending albumen gland.

DISTRIBUTION. Sardinia and S Corsica. 1 sp.

Portugala Gittenberger, 1980

Fig. 2488

Gittenberger, 1980: 209

TYPE SPECIES — *Helix inchoata* Morelet, 1845; OD.

Shell subglobose, rather thin, somewhat translucent, of 5.5-5.75 moderately convex whorls. Last whorl rounded, scarcely descending in front. Color pale-yellow to yel-

lowish-brown, with narrow peripheral brown band and (frequently) whitish zone below it. Embryonic whorls smooth. Postapical sculpture of indistinct radial wrinkles and well expressed, wavy spiral grooves. Aperture ovate, not strongly oblique, with simple margins; columellar margin dilated above. Umbilicus dot-like. Height 13-20, diam. 17-23 mm (14.2 × 19.8 mm).

Talon exposed, small, drop-like. Flagellum long. Epiphallus slender, cylindrical. Penis thin-walled, with a long verge having apical pore. Penial muscular fibers well developed. Penial retractor attached to lower part of epiphallus. Free oviduct comparatively long. Vagina slender, internal with axial folds. Stylophore large, situated very low. Dart nearly straight, provided with a crown and 4 blades. Mucus glands 2, branched. Spermathecal stalk rather long; elongated reservoir adheres to very upper section of spermoviduct.

DISTRIBUTION. Iberian Peninsula. 1 sp.

Pseudotrichia Likharev, 1949

Fig. 2489

Likharev, 1949: 417 (*Tricheulota* subg.).

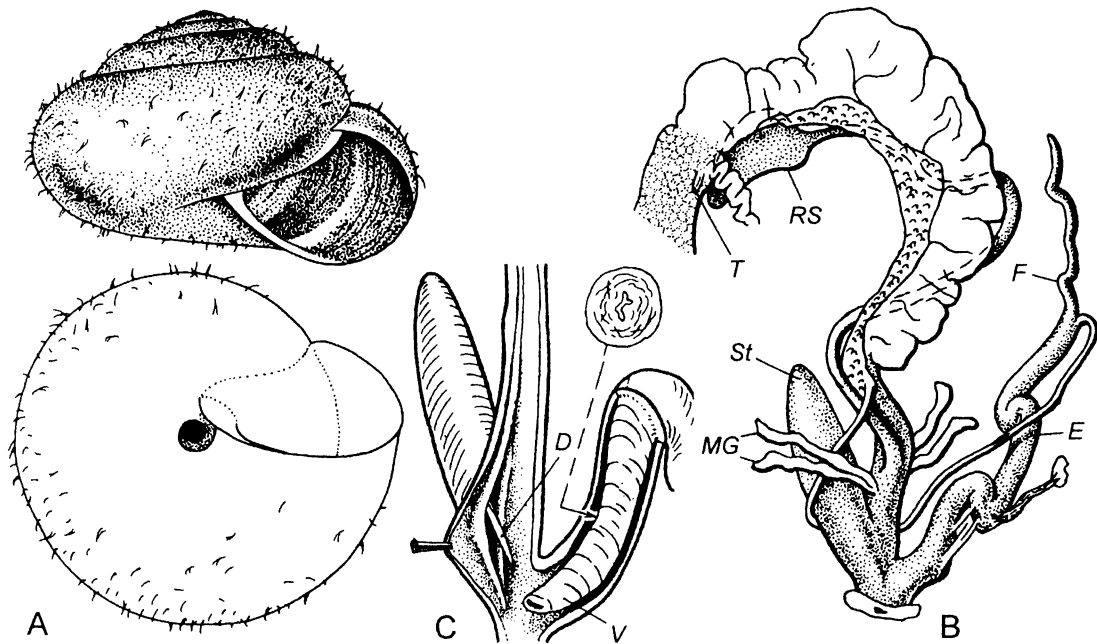


Fig. 2489. *Pseudotrichia rubiginosa* (A. Schmidt, 1853). Delta of Volga River, July 15, 1968.
A — shell. B — reproductive tract. C — interior of penis. SPb.

TYPE SPECIES — *Tricheulota* (*Pseudotrichia*) *shadini* Likharev, 1949 (= *Helix rubiginosa* A. Schmidt, 1853); SD Schileyko, 1978b.

Shell moderately depressed, very thin, of 4.5-5 rather convex whorls. Body whorl straight, evenly rounded. Spire dome-shaped. Color reddish- or dark-corneous, with very weak light peripheral band (sometimes it practically absent). Embryonic whorls smooth. Postapical surface irregularly, finely and sharply radially striated and densely covered with curved hairs. Aperture rounded, slightly oblique, with simple, sharp margins, only basal margin somewhat reflexed. Umbilicus narrow, slightly covered by reflection of columellar margin. Height 4.3-6.5, diam. 6-9 mm (6.0 × 8.3 mm).

Talon small, simple, exposed. Flagellum rather long, slightly shorter than epiphallus. Penis bent at its junction with epiphallus, both limbs connected by muscular fibers. Penial verge long, thick-walled, its walls evenly filled with loose tissue. Penial retractor inserting on lower section of epiphallus. Free oviduct and vagina subequal in length. Stylophore 1, fusiform, attached to very low section of vagina. Mucus glands 2, each of

2 arms; common ducts very short. Spermathecal stalk rather long, slender; reservoir attending albumen gland.

DISTRIBUTION. Europe, Siberia, Russian Far East. 1 sp.

Monachoides Gude et
Woodward, 1921
Fig. 2490

Gude & Woodward, 1921b: 179 (nom. nov. pro *Monachella* Gude & Woodward, 1921a).

— *Monachella* Gude et Woodward, 1921a: 179 [nom. praeocc., non Salvadori, 1874 (Aves); t.-sp. *Helix incarnata* Müller, 1774; OD].

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

Shell slightly depressed to trochoid, thin to moderately solid, of 4-6.5 rather convex whorls. Last whorl almost straight or somewhat descending in front. Color yellowish-corneous to dark-brown, monochrome or with a light peripheral band. Embryonic whorls smooth. Later whorls finely sculptured, mostly with granulation and/or periostracal scales. Aperture rounded, not strongly oblique; margins shortly reflexed,

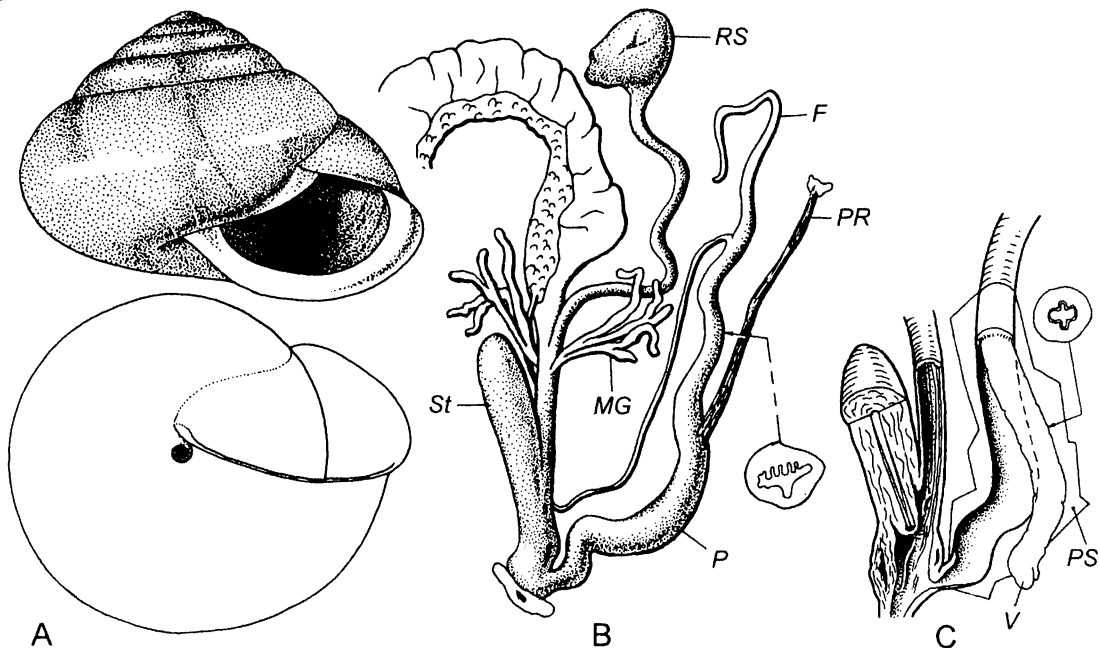


Fig. 2490. *Monachoides incarnata* (Müller, 1774).

A — shell: Storozhinets, Chernivitz, Ciscarpathian Region [W Ukraine]. Moscow. B, C — environs of Vratsa, Bulgaria, July 4, 1969. B — reproductive tract. C — interior of penis and vagina. SPb.

with inner lip. Umbilicus very narrow or closed. Height 5-12, diam. 7-16 mm (10.0 × 14.8 mm).

Flagellum developed to various degree. Epiphallus subcylindrical, not long. Penis contains long to very long, vermiform verge. Penial retractor attached to lower section of epiphallus. Penis sheath very thin, transparent. Free oviduct short, vagina 3-4 times longer. Stylophore 1, long, clavate, entering lumen of vagina through a small pore situated on tip of papilla. Mucus glands 2-3, each of 2-5 arms; common ducts (very) short. Walls of lower part of vagina contains circular layer of loose tissue. Spermathecal stalk long, (nearly) reaching albumen gland.

DISTRIBUTION. Europe. 3-4 spp.

Stygius Schileyko, 1970

Fig. 2491

Schileyko, 1970: 1318 (*Pseudotrichia* subg.).

TYPE SPECIES — *Zenobiella aculeata* Uvalieva, 1964; OD.

Shell moderately depressed, very thin, fragile, of 4-4.5 rather convex, sometimes a little shouldered whorls. Body whorl

straight or scarcely deflected, rounded or with smoothed angle. Color light-corneous to blackish, usually with weakly developed, diffuse peripheral band. Embryonic whorls practically smooth. Postapical sculpture of elongated radial ridgelets, each of them bears a curved periostracal scale or small triangular thorn. Aperture broadly ovate to subcircular, with simple, fragile margins; inner lip, if present, very weak. Umbilicus narrow, open or partially covered. Height 5.0-6.5, diam. 7.0-9.5 mm (6.3 × 8.0 m).

Vas deferens long, enters epiphallus laterally, leaving moderately short, slender, somewhat rudimentary flagellum. Epiphallus quite long, cylindrical. Penis externally poorly demarcated, containing clavate verge. Lumen of verge narrow, having appearance of a star with 3 or 4 rays in cross-section; walls of verge filled with very loose parenchymatous tissue saturated with numerous lacunae. Muscular bands, connecting penis with epiphallus, present or absent. Free oviduct and vagina subequal in length. Penial retractor inserted on lower half of epiphallus. Stylophore 1, large, without traces of inner one, situated just above atrium. 2-3 mucus glands located well above stylo-

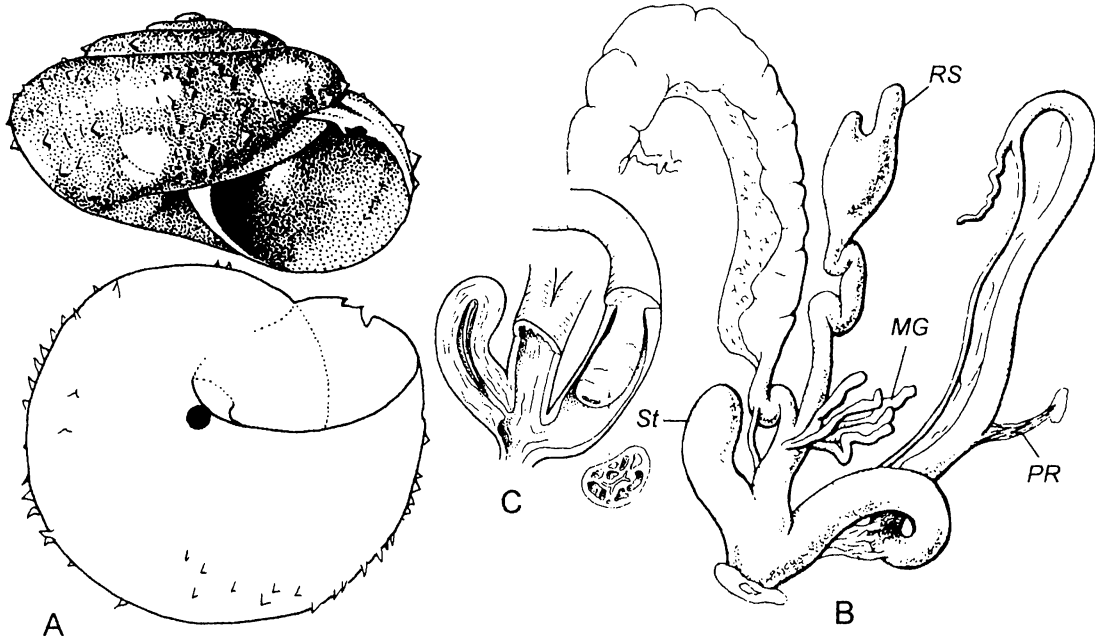


Fig. 2491 A — *Stygius aculeatus* (Uvalieva, 1964). Shell: environs of Verkhnekatunsk, Altai. SPb. B, C — ! *Stygius stuxbergi* (Westerlund, 1876). Yenisei River bank near Mirnoye [E Siberia], August 7, 1972. B — reproductive tract. C — interior of distal genitalia. Moscow No. Lc-28128.

phore, each with 1-3 arms. Spermathecal stalk moderately long, sometimes forms 1-2 sharp bends; reservoir ovate or notched on upper end, not reaching albumen gland.

DISTRIBUTION. E Siberia including Altai Mts. 3-4 spp.

Perforatella Schlüter, 1838

Fig. 2492

Schlüter, 1838: 4.

— *Trochiscus* Held, 1837: 915 [nom. praeocc. non Heyden, 1816 (Arachnida); t.-sp. *Helix bidens* Chemnitz, 1786 [non *Helix bidens* Müller, 1774 (Clausiliidae); = *Helix bidentata* Gmelin, 1791]; SD Herrmannsen, 1849].

— *Petasia* Beck, 1837: 21 [nom. praeocc., non Stephens, 1828 (Lepidoptera); *Helix* subg.; part; t.-sp. *Helix bidens* Chemnitz, 1786; SD Martens in Albers, 1860].

— *Dibothrion* L. Pfeiffer, 1855: 128 [*Helix* subg.; t.-sp. *Helix bidens* Chemnitz, 1786; SD Pilsbry, 1895 (1893-1895)].

TYPE SPECIES — *Helix bidentata* Gmelin, 1791; monotypy.

Shell dome-shaped, moderately solid, of 6.5-7.5 narrow, tightly coiled whorls. Last

whorl rounded or scarcely angulated, abruptly descending in front. Color light-corneous to brown and chestnut, with light peripheral band. Embryonic shell smooth. Later whorls covered with fine, dense radial striation; hairs absent. Aperture narrow, with 2 well developed, tubercular teeth on basal margin. Umbilicus dot-like, semicovered to nearly closed. Height 5-10, diam. 7-12 mm (6.2 × 8.2 mm).

Talon simple, exposed. Flagellum not shorter than epiphallus. Penis subcylindrical, with long verge; walls of verge rather solid, without expressed lacunae. Penial retractor attached to middle of epiphallus. Penis sheath very thin, transparent. Free oviduct rather long. Stylophore large, without trace of inner one, entering lumen of vagina through fleshy papilla. Mucus glands 3, each of 1-3 simple or branched arms. Lower part of vagina surrounded by a muscular collar; at base of collar there is a circular zone of loose tissue. Spermathecal stalk long, cylindrical, reservoir attending albumen gland.

DISTRIBUTION. Central and E Europe. 2 spp.

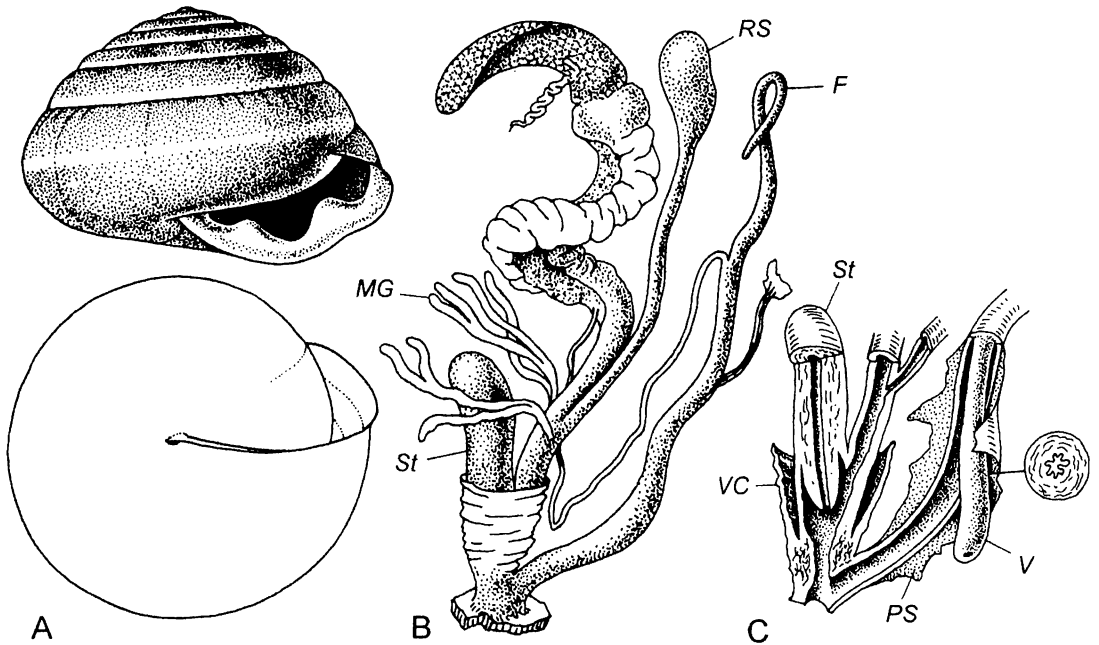


Fig. 2492. *Perforatella bidentata* (Gmelin, 1791). Aparinki village, Moscow Region [Russia], May 6, 1966.

A — shell. B — reproductive tract. C — interior of penis and vagina. Moscow. VC — vaginal collar.

Urticicola Lindholm, 1927

Fig. 2493

Lindholm, 1927a: 124 (*Zenobiella* sect.).

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

Shell much depressed, moderately solid, of 5-5.5 weakly convex whorls. Last whorl with blunt peripheral angle, abruptly descending in front. Color grayish-yellow to reddish-corneous, with weak light peripheral band. Embryonic whorls smooth. Postembryonic whorls finely, irregularly, radially striated and covered with fine distinct granulation. Aperture broadly ovate, quite oblique, toothless, margin insertions somewhat approached. Umbilicus rather wide, perspective. Height 5.5-7.0, diam. 10.5-14.0 mm (6.9 × 14.0 mm).

Talon exposed, small, simple. Flagellum longer than in any other genus of the subfamily; accordingly, spermathecal stalk also very long, much coiled. Epiphallus 4-5 times shorter than flagellum. Upper and lower ends of penis connected by muscular bands. Verge long, its walls filled with loose tissue, containing lacunae. Free oviduct

short. Outer stylophore long, without any traces of inner stylophore, entering lumen of vagina through a short, fleshy papilla. Vagina rather short, its lower part surrounded by enlarged collar of loose tissue.

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

Lindholmomneme Haas, 1936

Fig. 2494

Haas, 1936: 144 (*Euomphalia*? subg.). Kuznetsov & Schileyko, 1999: 28.

TYPE SPECIES — *Helix (Trichia) rhysota* var. *altaica* Westerlund, 1896; OD.

Shell depressed to nearly flat, moderately thin, of 5-6 rounded whorls. Body whorl rounded, scarcely descending in front. Color yellowish-corneous or grayish. Embryonic whorls smooth. Postnuclear sculpture of irregular, fine radial striation and much thinner spiral striae. Sometimes shell decorated with short hairs. Aperture more or less rounded, slightly oblique, with thin margins. Umbilicus rather wide, perspective. Height 6.4-7.2, diam. 14.0-15.0 mm (6.8 × 14.9 mm).

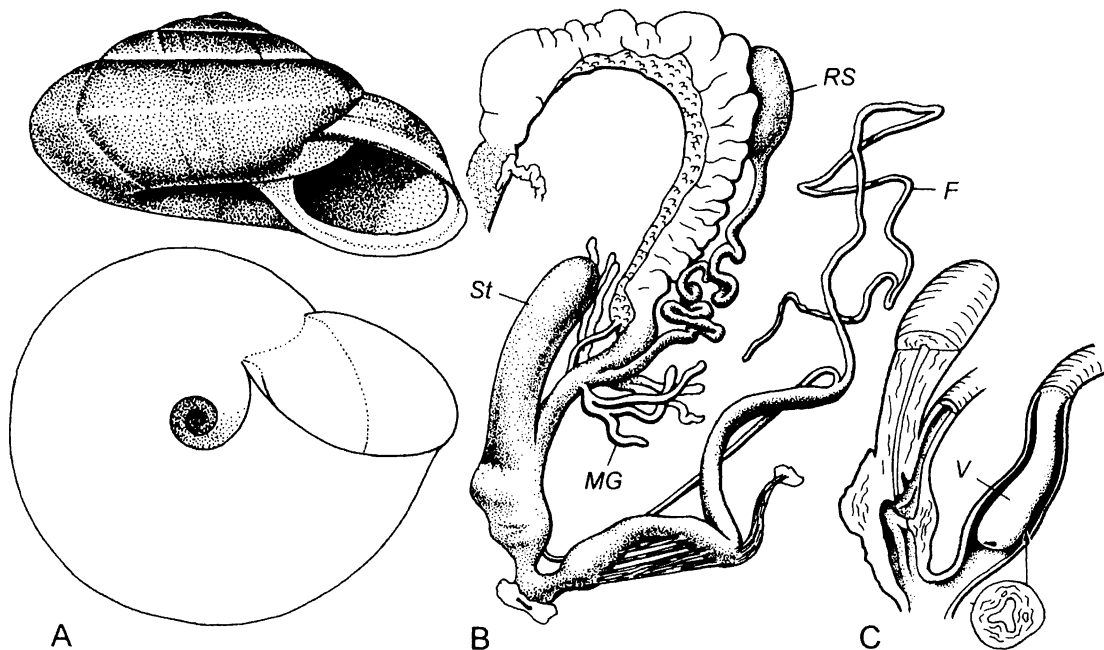


Fig. 2493. *Urticicola umbrosa* (C. Pfeiffer, 1828). Kasimierz Dolny, Poland, July 19, 1951
 A — shell. SPb. B — reproductive tract. C — interior of penis and vagina. After Schileyko, 1978b.

Flagellum vestigial. Epiphallus and penis of about equal length. Penial verge long, thick-walled, with smooth surface. Walls of verge filled with loose tissue. There are well-developed muscular bands connecting penis with epiphallus. Free oviduct comparatively long. Stylophore large, inner stylophore rudimentary, it may be found only if vagina dissected; stylophore enters lumen of vagina through short to rather long papilla. Mucus glands 2-3, each with 1-3 simple or forked arms. Spermathecal stalk moderately long, reservoir adheres to upper section of spermoviduct.

DISTRIBUTION. Siberia, Altai Mts., southern part of Russian Far East. 5 spp.

***Chilanodon* Westerlund, 1897**
 Fig. 2495

Westerlund, 1897b: 119.

— *Altaicola* Lindholm, 1927a: 124 (*Perforatella* subg.; t.-sp. *Helix bicalloso* L. Pfeiffer, 1853; OD).

TYPE SPECIES — *Helix (Chilanodon) sibirica* Westerlund, 1897 (non *Helix sibirica* L. Pfeiffer, 1853) (= *Helix gerstfeldti* Dybowski, 1901); monotypy.

Shell dome-shaped or broadly conic,

thin to rather solid, of 6-7.5 tightly coiled whorls. Last whorl with rounded peripheral angle, scarcely descending in front. Color gray to corneous, sometimes with light, diffuse band. Apical whorls smooth. Postnuclear surface finely radially striated, hairless. Aperture rather narrow, slightly oblique, with 1 or 2 basal teeth; when tooth 1, it may have appearance of elongated lip swelling at baso-columellar area. Height 5.5-7.0, diam. 6.5-9.5 mm (5.9 × 7.3 mm).

Talon, a simple curvature of hermaphroditic duct. Flagellum rudimentary. Epiphallus rather long. Penial verge long, its walls evenly filled with loose tissue. Muscular bands between penis and epiphallus (or between lower and upper portions of penis) developed to various degree. Penial retractor attached to penis/epiphallus junction. Free oviduct moderately short. Stylophores 2, inner one vestigial, not visible at superficial inspection; upper stylophore entering lumen of vagina via short papilla. Mucus glands 2-3, each of 1-4 arms. Spermathecal stalk subcylindrical, reservoir slightly not reaching albumen gland.

DISTRIBUTION. Altai Mts., surroundings of Baikal Lake, drainage-basin of Amur River. 2 spp.

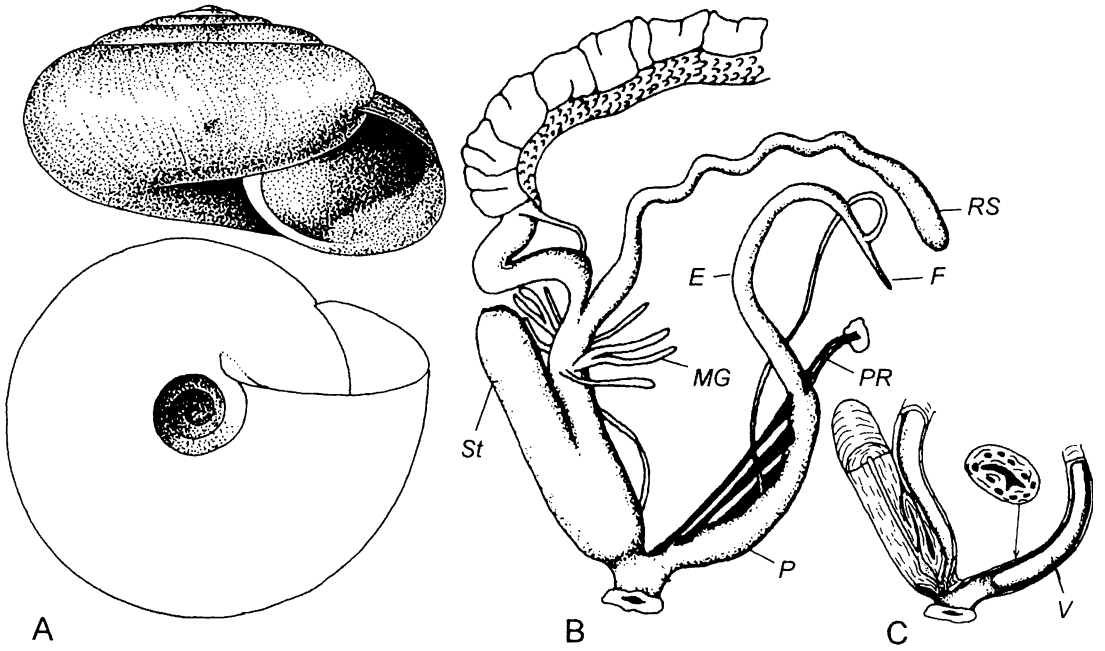


Fig. 2494. *Lindholmomneme altaica* (Westerlund, 1896). Ulbinsky Range, Kazakhstan, June 16, 1995. A — shell. B — reproductive tract. C — interior of penis and vagina. After Kuznetsov & Schileyko, 1999.

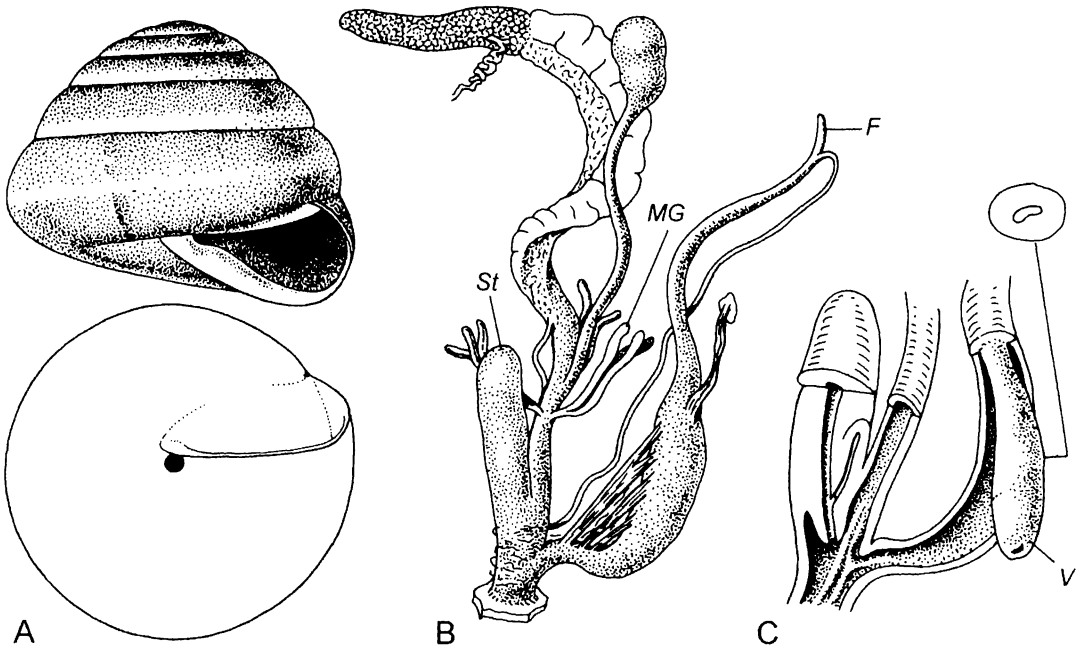


Fig. 2495. *Chilanodon gerstfeldti* (Dybowski, 1901). Bolshye Koty valley, shore of Baikal Lake, July 12, 1954. A — shell. B — reproductive tract. C — interior of penis and vagina. Moscow No. Lc-28122.

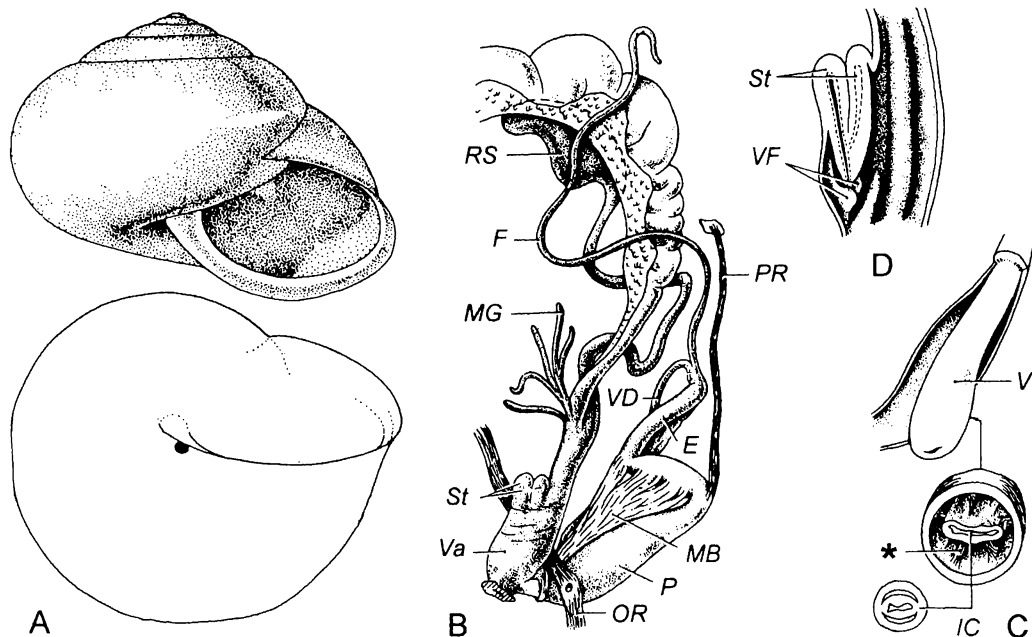


Fig. 2496. *Circassina circassica circassica* (Mousson, 1863). Bakuriani, Georgia, July 1953.
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. SPb.
 IC — inner canal of verge. MB — muscular band. VF — vaginal folds. Asterisk — radial bands in verge.

Circassina Hesse, 1921
 Fig. 2496

Hesse, 1921: 59, 62.

— *Hela* Hudec et Lezhawa, 1970: 16 [nom. praeocc., non Boeck, 1861 (Crustacea); t.-sp. *Hela stephaniae* Hudec et Lezhawa, 1970; OD].

— *Abchashela* Hudec, 1972: 276 (nom. nov. pro *Hela* Hudec et Lezhawa, 1970).

Schileyko, 1978b: 246.

TYPE SPECIES — *Helix circassica* Mousson, 1863; OD.

Shell globose-conic or slightly depressed, rather thin, glossy, of 5.5-7 convex whorls. Body whorl widely rounded, somewhat descending in front. Color greenish or yellow, rarely reddish, uniform or with diffuse light peripheral band. Embryonic whorls smooth. Postnuclear whorls sculptured with weak radial striae, well spaced spiral grooves and (mostly) delicate granulation. Aperture sub-circular, moderately oblique, with more or less reflexed, thin margins and weak inner

lip. Umbilicus very narrow. Height 10-20, diam. 13-27 mm (18.0 × 20.4 mm).

Flagellum very long. Epiphallus about 3 times shorter, bent in its middle. Penial verge long, usually clavate; tissue, filling its walls, disintegrated into a number of radial bands connecting inner canal with inner surface of the organ. Penial muscular bands well developed. Free oviduct rather long. Initially there is a pair of stylophores of about equal size and mucus glands; however among studied populations one can see complete disappearance of both stylophores and/or mucus glands in any combination. When stylophores exist, they protruded into lumen of vagina by a common papilla which situated between 2 short, high folds. Spermathecal shaft rather long, reservoir lies on upper half of spermoviduct.

DISTRIBUTION. Caucasus. 6 spp. & subspp.

Fruticocampylaea Kobelt, 1871
 Fig. 2497

Kobelt, 1871: 13 ("*Campylaea* Gruppe").

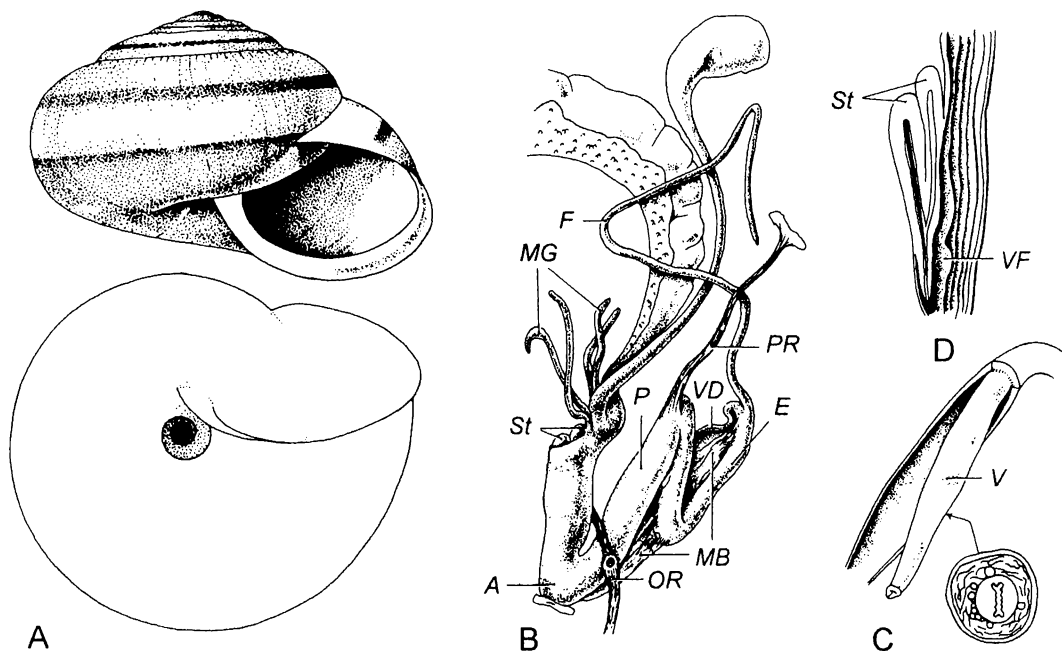


Fig. 2497 *Fruticocampylaea narzanensis* (Krynicky, 1836).

A — shell: Chmi village in Dar'yal'skoye Gorge [N Caucasus]. Moscow No. Lc-28453. B, C, D — environs of Vladikavkaz, N Caucasus, May 7, 1970. B — reproductive tract. C — interior of penis. D — interior of vagina and stylophores. Moscow No. Lc-19064. MB — muscular band. VF — vaginal fold.

TYPE SPECIES — *Helix narzanensis* Krynicky, 1836; SD Martens, 1873, in Zool. Rec. for 1871.

Shell nearly trochoid to somewhat depressed, (rather) solid, of 5-6 convex (rarely slightly shouldered) whorls. Last whorl rounded, scarcely to strongly descending in front. Color light, mostly with 2 brown bands — above and below periphery; upper band often developed better than lower; sometimes both bands developed so intensely that they form background with light peripheral band. Embryonic whorls smooth. Postnuclear surface with fine irregular striae and distinct, well spaced, slightly wavy spiral grooves. Aperture rounded or broadly ovate, quite oblique, with thin, slightly reflexed margins; columellar margin dilated; white lip situated at short distance from edges of aperture. Umbilicus moderately narrow. Height 8-15, diam. 11-24 mm (14.2 × 22.2 mm).

Flagellum long, epiphallus 2-2.5 times shorter, forms 2 sharp bends fixed by well developed membrane and muscular bands. Penial verge large, with sinuses and capillaries in its walls. Penial retractor inserted on

bend at penis/epiphallus junction. Penis sheath absent. Free oviduct short. Both stylophores well developed, outer one somewhat larger; stylophores enter lumen of vagina by papilla situated between thin, high folds. Mucus glands 2-3, each of 2-4 arms. Spermathecal stalk rather long, reservoir nearly attending albumen gland.

DISTRIBUTION. Caucasus. 2 spp.

Shileykoia Hudec, 1969 Fig. 2498

Hudec, 1969: 29 (*Circassina* subg.).

— *Shileykoia* Schileyko, 1972b: 1132 (nom. err. pro *Shileykoia* Hudec, 1969).

TYPE SPECIES — *Helix daghestana* Kobelt, 1877; OD.

Shell much depressed to nearly flat, (moderately) solid, of 5.5-6 moderately convex whorls. Last whorl rounded or bluntly angled, somewhat descending in front. Color nearly white to brownish-yellow, with 2 distinct dark bands of variable width; between bands there is a milk-white zone; sometimes white radial lines may be

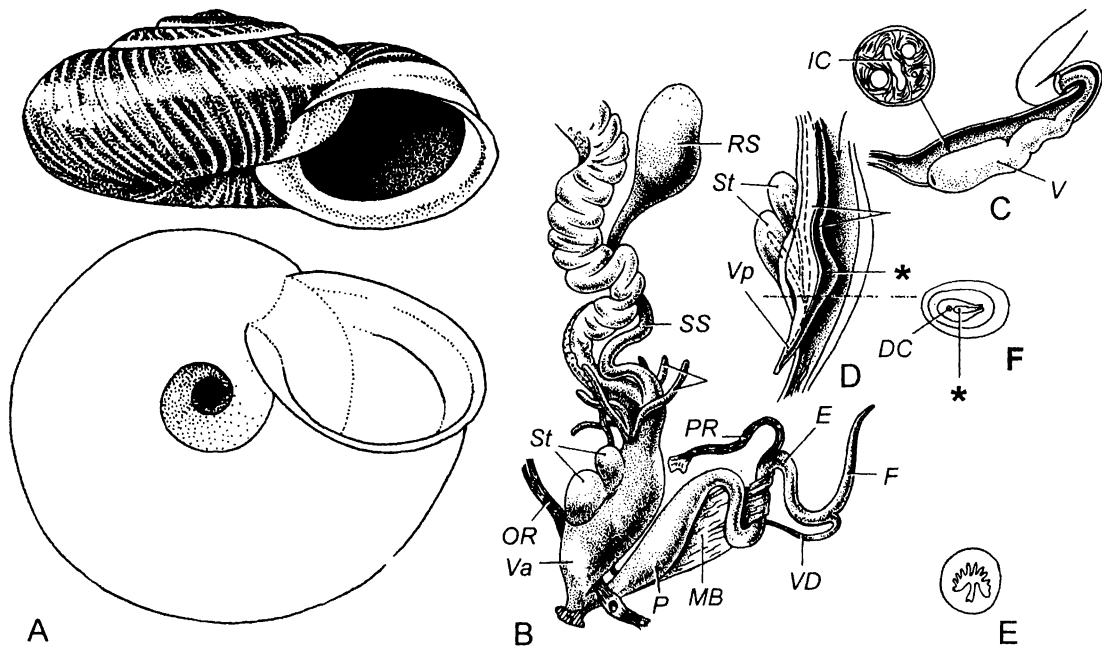


Fig. 2498. *Shileykoia daghestana* (Kobelt, 1877). Akusha, Dagestan (E Caucasus), June 25, 1967
 A — shell (holotype of *Schileykoia lithophila* Schileyko, 1972). SPb. B — reproductive tract.
 C — interior of penis. D — interior of vagina. E — cross-section through epiphallus. F —
 cross-section through vagina. Moscow No. Lc-4833. DC — dart canal. IC — inner canal
 of verge. MB — muscular band. Asterisk — furrow on vaginal papilla.

present. Embryonic whorls smooth. Postnuclear whorls bear irregular, coarse radial striation and spiral grooves. Aperture ovate, very oblique, with reflexed margins and a broad, white inner lip; peristome insertions approached. Umbilicus broad, perspective. Height 4.0-8.5, diam. 8-19 mm (8.2×18.0 mm).

Flagellum moderately long, epiphallus about 2 times shorter. Penial verge long, clavate, its walls contain well developed system of sinuses and lacunae. Penial muscular bands strongly developed. Penial retractor inserted on middle of epiphallus. Free oviduct short. Vagina swollen. Both outer and inner stylophores normally developed, they protrude into lumen of vagina by common papilla bearing deep longitudinal furrow on its surface.

DISTRIBUTION. E Caucasus (Dagestan). 1 sp.

Cryptosaccus Prieto et Puente, 1994
 Fig. 2499

Prieto & Puente, 1994: 110.

TYPE SPECIES — *Cryptosaccus asturiensis* Prieto et Puente, 1994; OD.

Shell depressed, rather thin, fragile, of 5-6 somewhat shouldered whorls. Last whorl rounded, straight. Color dark-corneous or brown. Embryonic whorls very finely radially wrinkled. Postapical whorls ornamented with minute periostracal triangular scales. Aperture narrowly ovate, somewhat oblique, with simple margins. Umbilicus circular, cylindrical, moderately narrow. Height 4.0-4.3, diam. 8.5-10.0 mm (4.2×9.8 mm).

Flagellum long, slender. Epiphallus narrow, long, cylindrical, about 1.5 times shorter than flagellum. Penis rather long, subcylindrical, contains conic, thick-walled verge with apical opening, its walls filled with dense tissue. Lumen of verge T-shaped in cross-section. Intimate, transparent penis sheath surrounds penis. Penial retractor attached to middle of distal half of epiphallus. Free oviduct and vagina moderately long, subequal in length. Outer stylophore long, inner rudimentary, scarcely visible from outside. Mucus glands 4, simple or forked. Spermathecal stalk long, convoluted; reser-

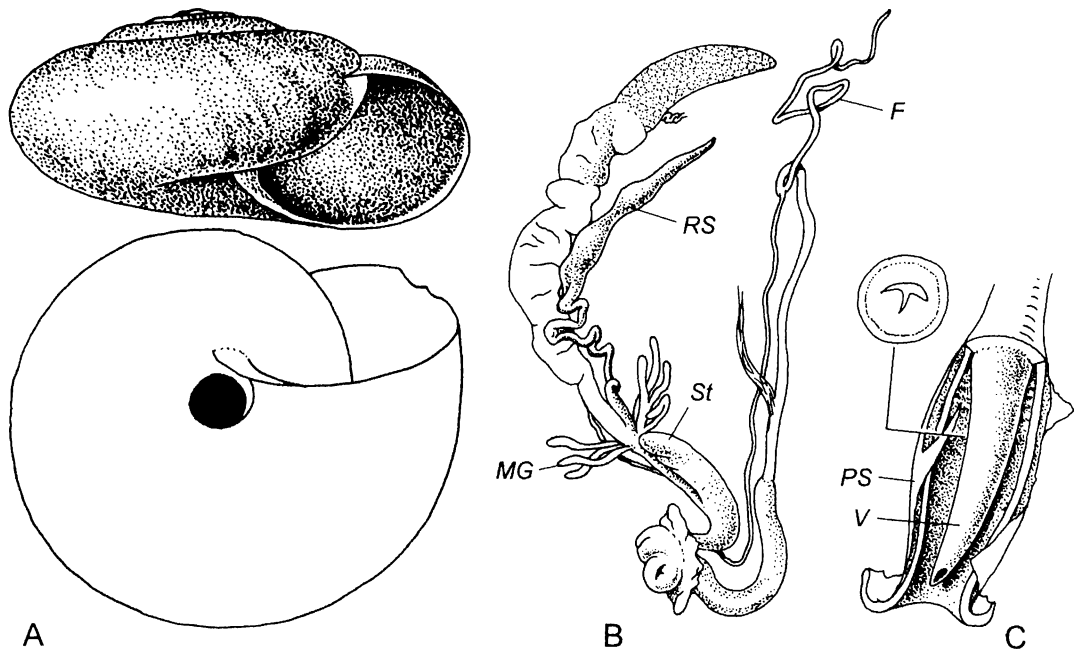


Fig. 2499 *Cryptosaccus asturiensis* Prieto et Puente, 1994. "Asturia, 2 km al sur de Pela de Somiedo, Spain, September 16, 1988" Paratype.
 A — shell. B — reproductive tract. C — interior of penis. Paris.

voir elongated, pointed, attending albumen gland.

DISTRIBUTION. NW Iberian Peninsula (SW Asturia). 1 sp.

Leptaxis Lowe, 1852

Fig. 2500

Lowe, 1852: 112 (*Helix* subg.).

— *Katostoma* Lowe, 1854: 166 (*Helix* subg.; t.-sp. *Helix phlebophora* Lowe, 1852; OD).

— *Cryptaxis* Lowe, 1854: 168 (*Helix* subg.; t.-sp. *Helix undata* Lowe, 1831; OD).

TYPE SPECIES — *Helix erubescens* Lowe, 1852; SD Lowe, 1854.

Shell depressedly conic to subglobular, rather thin, slightly translucent, of 5.5-6 rather convex whorls. Body whorl rounded to scarcely angulated, markedly descending in front. Color yellowish or creamy with 2-4 variously developed dark bands; sometimes uniformly corneous to dark-brown. Embryonic whorls mostly with microscopic,

chaotically scattered, dot-like depressions. Sculpture of later whorls of more or less coarse, oblique, not sharp ribs, over which there are elements of malleate sculpture. Aperture ovate, well oblique, with thin, slightly reflexed margins. Umbilicus absent. Height 14-17, diam. 20-25 mm (15.4 × 22.3 mm).

Talon simple, exposed. Flagellum moderately short, epiphallus of same length or somewhat longer. Penis with acorn-like to subcylindrical verge; walls of verge filled with loose tissue. Penial retractor attached to lower section of epiphallus or to penis/epiphallus junction. Penis sheath very thin. Free oviduct comparatively long. Stylophore 1, trace of inner stylophore absent. Stylophore enters lumen of vagina through a short papilla. Mucus glands 3-4, each with 2-5 end arms, or several simple glands situated around vagina circumferentially. Basal part of vagina supplied with semicircular collar. Spermathecal stalk moderately long; reservoir adheres to upper half of spermo-viduct.

DISTRIBUTION. Madeira, Azores, Cape Verde Islands. About 25 spp. & subspp.

Helixena Backhuys, 1975
Fig. 2501

Backhuys, 1975: 242.

TYPE SPECIES — *Bulimus Sanctae-Mariae* Morelet et Drouet, 1857; OD.

Shell bulimoid, elongate-ovate, thin, rather fragile, glossy, of 6-7 somewhat convex whorls. Last whorl straight, widely rounded. Color yellowish to olivaceous, uniform or with dark peripheral band. Embryonic whorls smooth. Later whorls with fine, irregular radial wrinkles. Aperture relatively large, slightly oblique, with thin, scarcely reflexed margins. Umbilicus practically absent; there is slit-like depression under reflection of columellar margin. Height 10-12, diam. 6.6-7.0 mm (11.3 × 6.8 mm).

Jaw with numerous thin, sharp riblets.

Flagellum moderately long, slender, tapering. Epiphallus somewhat longer, cylindrical. Penis fusiform, contains well-devel-

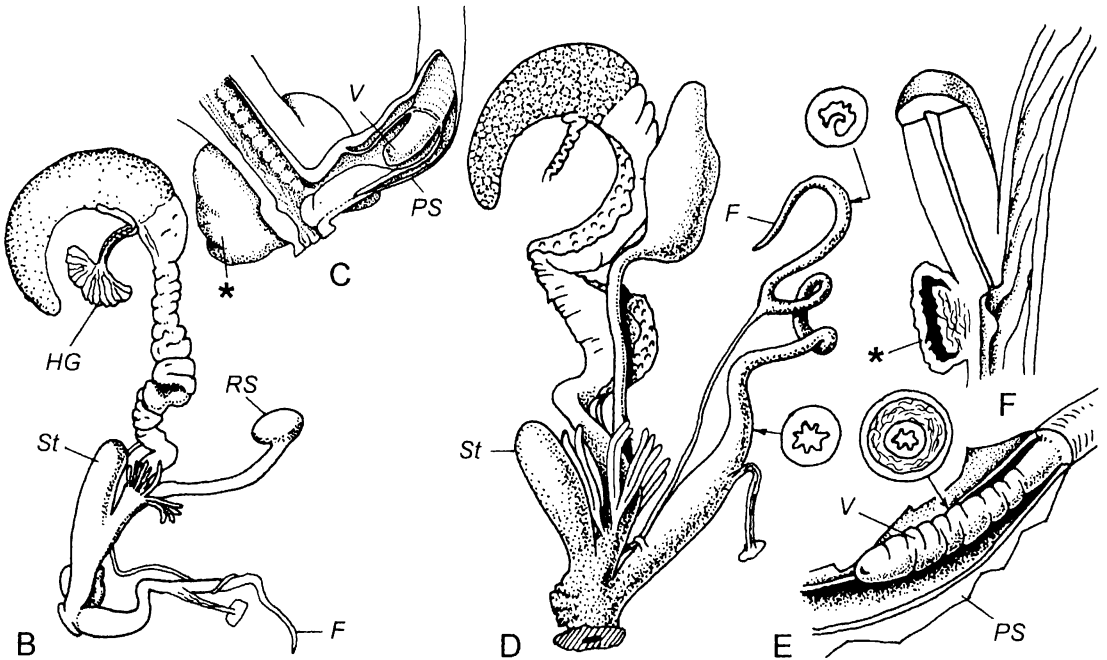


Fig. 2500. A — *Leptaxis erubescens erubescens* (Lowe, 1852). Shell: Madeira. Moscow.
B, C — ! *Leptaxis erubescens advenoides* Paiva, 1867 B — reproductive tract. C — interior of penis and distal part of vagina. After Mandahl-Barth, 1950. D, E, F — ! *Leptaxis undata* (Lowe, 1831). Env. of Funchal, Madeira, April 1912. D — reproductive tract. E — interior of penis. F — interior of vagina. Moscow No. Lc-28465. Asterisk — vaginal collar.

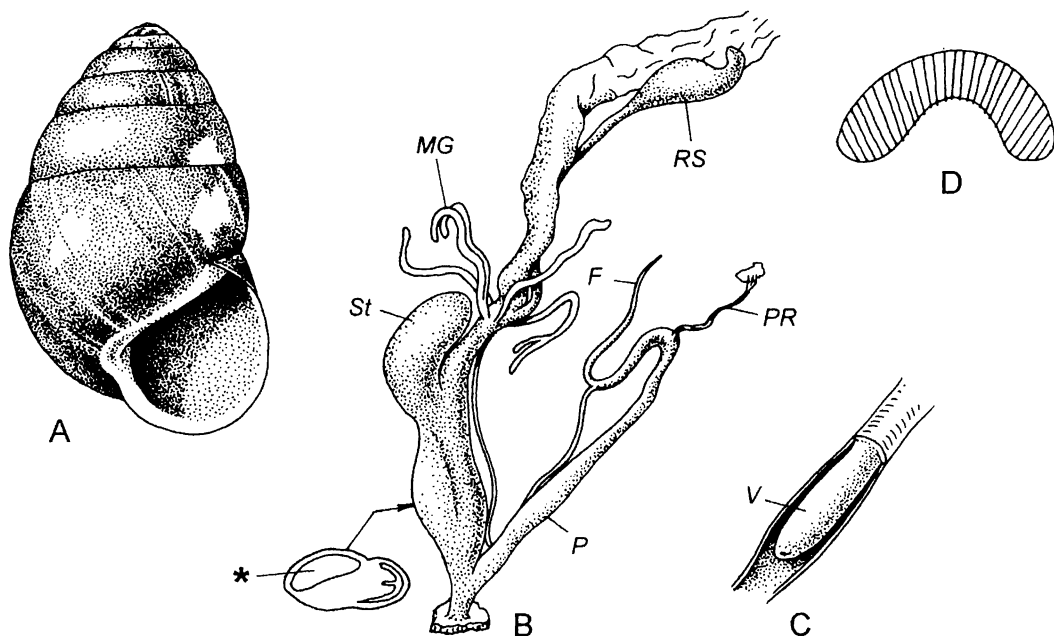


Fig. 2501 *Helixena sanctaemariae* (Morelet et Drouet, 1857). Top of Pico Alto, Santa Maria Island, Azores, May 24, 1969.

A — shell. B — reproductive tract and cross-section through vagina. C — interior of penis. D — jaw. Moscow No. Lc-19569 (Leiden). Asterisk — bladder in walls of vagina.

oped verge having terminal pore. Penial retractor attached to middle of epiphallus. Penis sheath missing. Free oviduct very short. Vagina long, its walls contain one-sided bladder in distal section. Stylophore ovate, opening in lumen of vagina by groove, which runs on surface of a short papilla. Mucus glands 4; some of them simple, the others forked. Spermathecal stalk moderately long, reservoir not attending albumen gland.

DISTRIBUTION. Azores. 1 sp.

Cernuellini Schileyko, 1991

Schileyko, 1991. 229.

Shell calcareous, light-colored, often with dark spiral bands.

Right ommatophoran retractor free from peni-oviducal angle (exception: *Cernuellopsis*).

DISTRIBUTION. Europe with Caucasus and Crimea, Asia Minor, N Africa, Madeira.

Microxeromagna Adolfo Ortiz de

Zarate, 1950

Fig. 2502

Ortiz de Zarate Adolfo, 1950: 65 (*Xeromagna* subg.).

TYPE SPECIES — *Helix vestita* Rambur, 1868; monotypy.

Shell depressed, relatively thin, dull, of 4-4.5 rather convex whorls. Last whorl (almost) straight, rounded. Color pattern of gray background and white, slightly elevated spots and streaks. Embryonic whorls smooth. Postapical sculpture of fine radial ribbing; small hairs often present. Aperture rounded, slightly oblique, with simple, fragile margins. Umbilicus moderately broad, perspective. Height 3.0-3.3, diam. 5-6 mm (3.1 × 5.6 mm).

Secondary ureter uncompleted.

Flagellum slender, vermiform; epiphallus somewhat shorter. Penis swollen, fusiform, contains verge of complex shape, with lateral "wings" and minute apical pore. Penial retractor inserting on epiphallus/penis junction. Penis sheath missing. Free oviduct short, vagina a little longer. Stylophores 2,

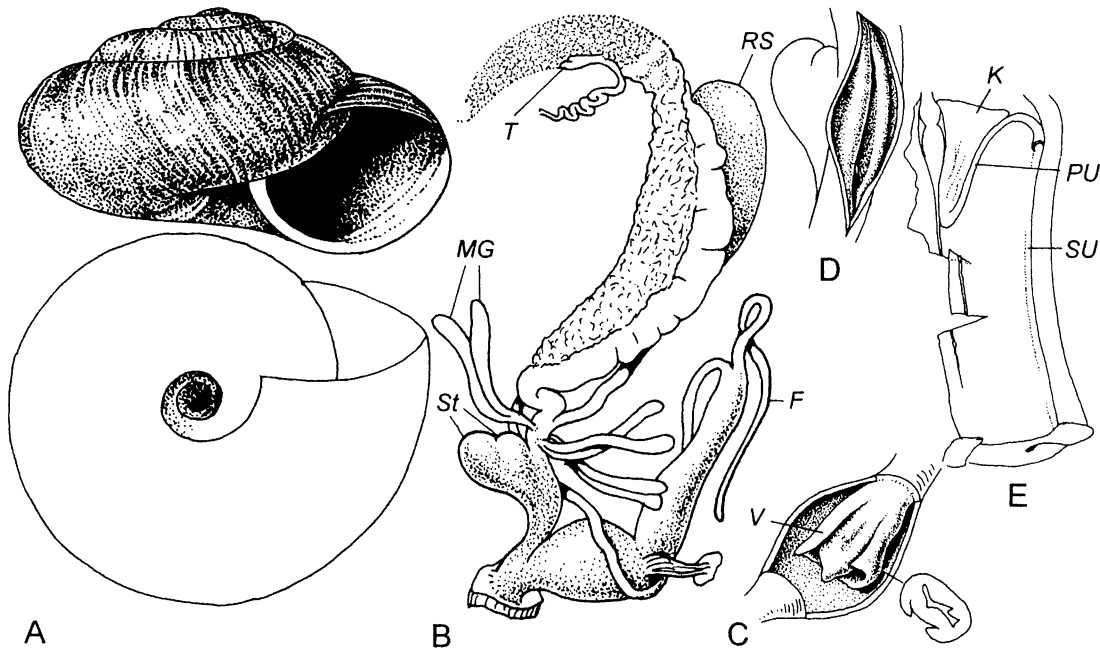


Fig. 2502. ! *Microxeromagna armillata* (Lowe, 1852).

A — shell: Madeira. Paris. B, C, D, E — “On walls in southern part of town of Lagoa, Dist. Faro, Algarve, Portugal, December 25, 1997 B — reproductive tract. C — interior of penis and cross-sections through verge. D — interior of vagina. E — lung. Phil. (no number, coll. of David Robinson).

rather small, inner one only slightly smaller than outer; stylophores enter lumen of vagina through a simple pore situated between fleshy folds. Mucus glands 3, each of them simple or forked. Spermathecal stalk slender or somewhat thickened; reservoir capacious, adheres to upper section of spermoviduct.

DISTRIBUTION. France with Corsica, Spain, Portugal with Madeira. 3-4 spp.

Xerosecta Monterosato, 1892

Fig. 2503

Monterosato, 1892: 21

— *Jacosta* J. Gray, 1821: 239 [t.-sp. *Helix albella* Draparnaud, 1805 (= *Helix explanata* Müller, 1774); monotypy].

— ? *Xeromoesta* Monterosato, 1892: 22 (t.-sp. *Helix moesta* L. Pfeiffer, 1848; SD Kobelt, 1892).

— *Xeromagna* Monterosato, 1892: 24 (t.-sp. *Helix cespitum* Draparnaud, 1805; SD Kobelt, 1892).

— ? *Xerambigua* Monterosato, 1892: 24 (*Xerophila* subg.; t.-sp. *Helix dantei* Bourguignat in Lo-

card, 1882; monotypy Richardson, 1980: 196, 584).

Manganelli & Giusti, 1987: 352.

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

Shell lenticular, moderately solid, of 4-5 flattened whorls. Last whorl straight, with sharp peripheral keel. Color yellowish-corneous to calcareous-white; apex black or dark-chestnut. Postnuclear whorls with irregular coarse radial wrinkles; on last whorl there are elements of malleate sculpture and scattered short spiral touches. Aperture angled, only slightly oblique. Umbilicus broad, shallow. Height 3.5-9.0, diam. 10-24 mm (Marseille: 6.2 × 18.1 mm; Cette: 4.0 × 11.3 mm).

Flagellum slender, epiphallus of about same length or somewhat shorter. Penis spindle-shaped. Verge short, conic, with 2 basal lacunae; in cross-section appears to be constituted by lateral canal surrounded by external envelope with lateral openings. Penial retractor attached to penis/epiphallus junction. Penis sheath missing. Free oviduct moderately short. Stylophores 2, subequal

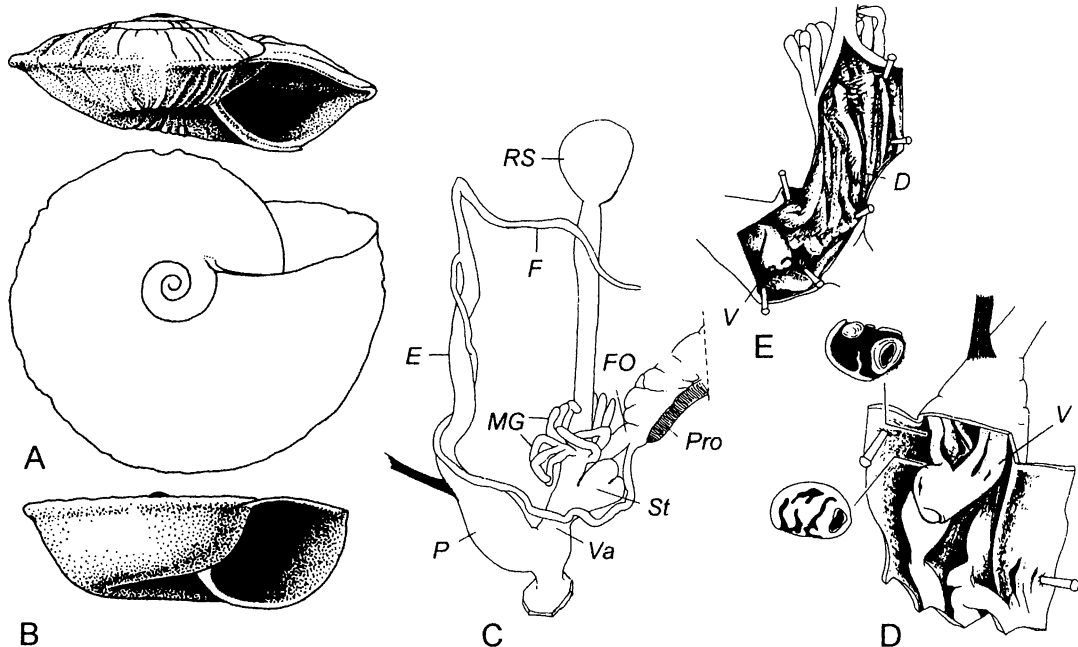


Fig. 2503. *Xerosecta explanata* (Müller, 1774).

A, B — shells: A — Marseille, France. Vienna No. K 38488. B — Cette [Sète, Languedoc-Roussillon], France. Moscow No. Lc-498 (juvenile shell). C — reproductive tract. D — interior of penis. E — interior of vagina and distal section of penis. After Manganelli & Giusti, 1987. D — dart.

in size; common duct of stylophores opens by a simple pore situated between 2 large folds. Mucus glands 5, each biramous or intensely branched, with very short common duct. Spermathecal shaft rather long, somewhat enlarged; reservoir globular.

DISTRIBUTION. W Mediterranean countries. 6-10 spp.

Polloneriella Alzona et Alzona
Bisacchi, 1940
Fig. 2504

Alzona & Alzona Bisacchi, 1940 (1937-1940): 153 (nom. nov. pro *Polloneria* Alzona et Alzona Bisacchi, 1939).

— *Polloneria* Alzona et Alzona Bisacchi, 1939 (1937-1940): 137 [nom. praeocc., non Sacco, 1886 (Clausiliidae); t.-sp. *Helix contermina* L. Pfeiffer, 1848; monotypy].

Manganelli & Giusti, 1987: 354 (*Xerosecta* subg.).

TYPE SPECIES — *Helix contermina* L. Pfeiffer, 1848; monotypy.

Shell globose-conic to turbate, rather thin, of about 6 convex whorls. Last whorl rounded, practically straight. Color white,

with corneous or blackish hydrophanous band and markings. Embryonic whorls smooth. Postapical surface with rather sharp, irregular radial riblets. Aperture subcircular, slightly oblique, with thin margins and weak inner lip. Umbilicus narrowly open. Height 7.0-7.5, diam. 6.5-7.2 mm (7.2 × 6.9 mm).

Flagellum slender, epiphallus 2-3 times longer. Penis swollen. Verge with apical pore, central canal of verge surrounded by an empty space; it seems that this space, as well as verge itself, appears at expense of invagination of distal portion of epiphallus into proximal portion of penis. Penial retractor attached to border between penis and epiphallus. Free oviduct moderately short. Stylophores 2, subequal in size, entering lumen of vagina by a simple pore located between 2 large swellings which produced by 2 large folds running on inner vagina surface. Mucus glands 2, both of 2 arms united in very short common ducts. Spermathecal stalk rather long; reservoir adhering to upper half of spermoviduct.

DISTRIBUTION. Italy [Tuscany (=Toscana), Lazio, Sardinia]. 1 sp.

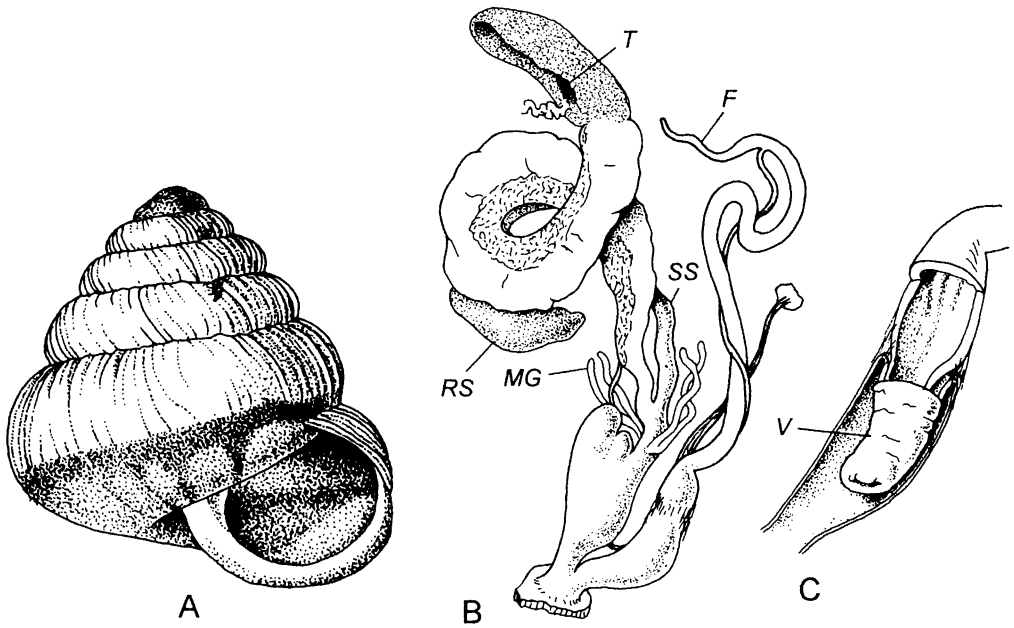


Fig. 2504. *Polloneriella contermina* (L. Pfeiffer, 1848). Torre su Pittu (Oristano), Sardinia, October 20, 1999.
 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28126 (gift of Dr. Folco Giusti).

REMARK. In the diagnosis of *Polloneriella* Manganelli & Giusti (1987: 354) write: "Penial papilla [= verge — A. Sch.] with apical opening, in transverse section it appears to be constituted by a central canal enveloped by an external sheath from which the canal is separated by an empty space. The external sheath is a simple continuous envelope with two basal openings [= lacunae — A. Sch.] through which the penial cavity communicates with the endopapillar space. However, in fig. 10D (p. 359) they do not show any "basal openings". I also have not found penial lacunae.

Xeroplana Monterosato, 1892
 Fig. 2505

Monterosato, 1892: 21 (*Xerophila* subg.).

— *Numidia* Issel, 1885: 8 [nom. praeocc., non Forster, 1817 (Aves) nec Cocco, 1832 (Crustacea); *Helix* subg.; t.-sp. *Helix idia* Issel, 1885; OD].

— *Xerofalsa* Monterosato, 1892: 21 (*Xerophila* subg.; t.-sp. *Helix idia* Issel, 1885; OD).

— *Numidica* Hesse, 1926: 127 (nom. err. pro *Numidia* Issel, 1885).

Manganelli et al., 1997: 62.

TYPE SPECIES— *Helix doumeti* Bourguignat, 1876; SD Kobelt, 1892.

Shell lenticular, thin, of 4.5-6 flattened whorls. Last whorl straight, strongly carinated. Color calcareous-white to grayish, sometimes with small hydrophanous spots. Embryonic whorls smooth. Postapical whorls finely to coarsely, more or less regularly ribbed or rib-striated. Aperture rostrate, quite oblique. Umbilicus (rather) wide, perspective, encircled by smoothed crest. Height 4.9-10.0, diam. 15.6-26.4 mm (*doumeti*: 8.8 × 23.9 mm; *idia*: 4.1 × 14.0 mm).

Talon consists of seminal receptacles (system of tubules, ending in 6-7 branches) and fertilization chamber. Vas deferens long, slender. Flagellum rather long; epiphallus of about same length. Penis short. Verge long, slender, with apical pore bordered by 2 or 3 "lips". Walls of verge thick, containing ring (in cross-section) of small lacunae. Free oviduct rather long. Stylophores 2, equal in size, their basal parts

fused in single voluminous structure; cavities of stylophores open independently one above other into groove running on conic papilla ("dart gun" after Manganelli et al., 1997) which projects into lumen of vagina between axial folds. Mucus glands 2, each of 2 forked arms; some of them splitted. Spermathecal stalk rather long; reservoir large, ovoid, not attending albumen gland.

DISTRIBUTION. N Africa (region Al Maghrib). About 5 spp.

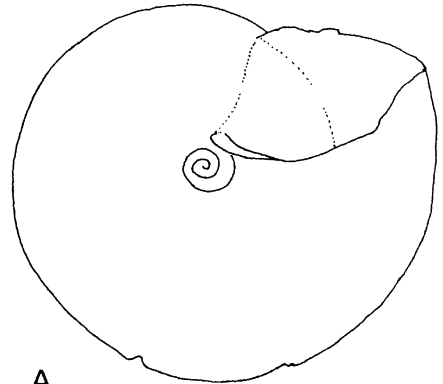
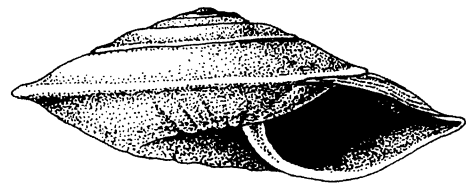
Xeroamanda Monterosato, 1892

Fig. 2506

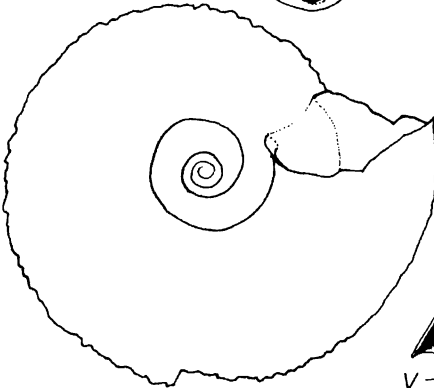
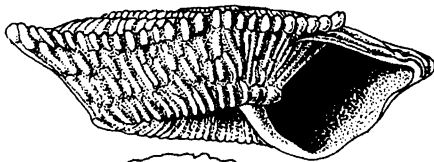
Monterosato, 1892: 22. Manganelli et al. 1996b: 349

TYPE SPECIES — *Helix amanda* Rossmässler, 1838; SD Kobelt, 1892.

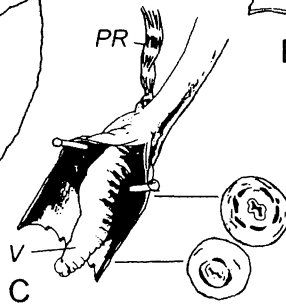
Shell subglobose, comparatively thin, slightly translucent, of 5-6 rather convex whorls. Last whorl straight, with cord-like keel. Color white with dark spots and irregular streaks; on base one can trace 4-6 narrow interrupted bands. Postnuclear



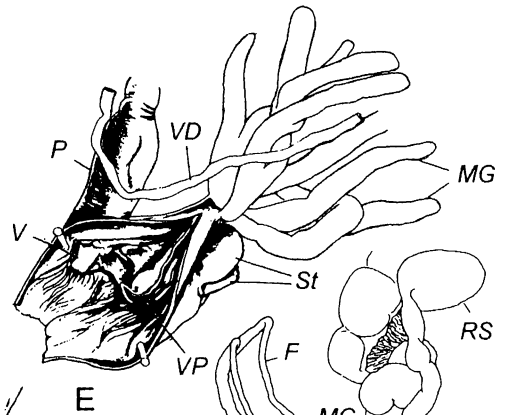
A



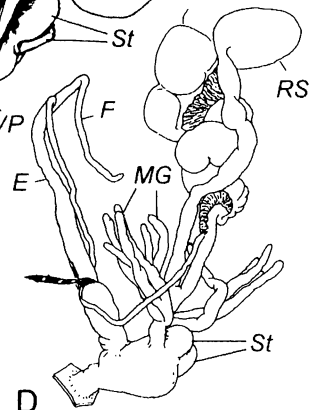
B



C



E



D

Fig. 2505. A — *Xeroplana doumeti* (Bourguignat, 1876). Shell: Tunisia. Vienna No. E 8578.

B, C, D, E — ! *Xeroplana idia* (Issel, 1885). B — shell: Preças, Djebel, Tunisia. Geneva.

C — reproductive tract. D — interior of penis. E — interior of vagina. After Manganelli et al. 1997

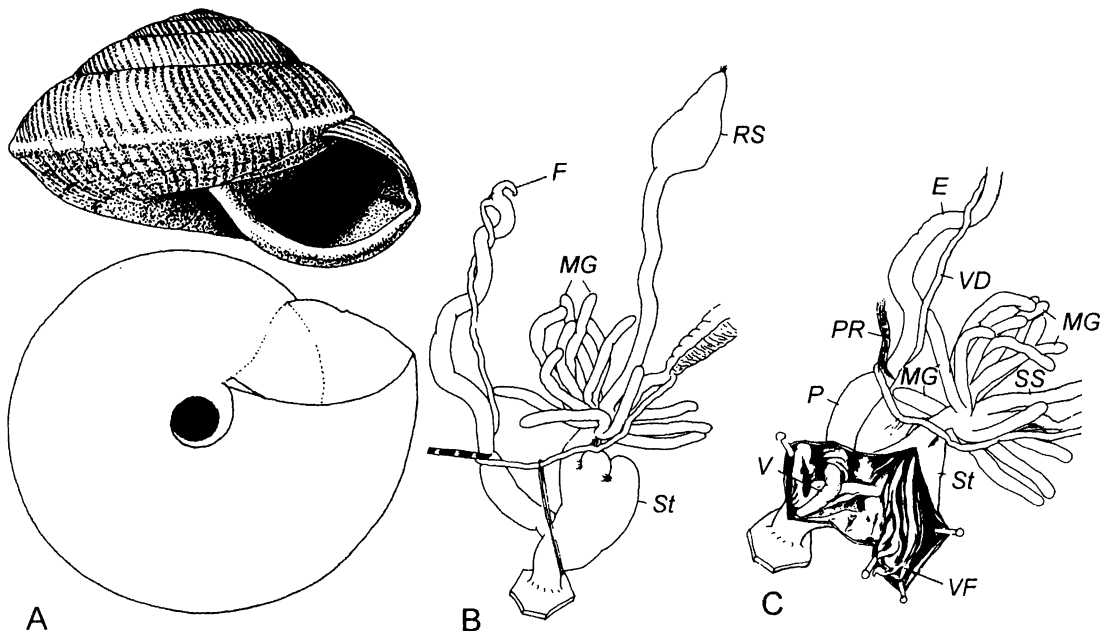


Fig. 2506. *Xeroamanda amanda* (Rossmässler, 1838).

A — shell: Algeria. Vienna No. E 28909. B — reproductive tract. C — interior of penis and vagina. After Manganelli et al., 1996. VF — vaginal folds.

whorls finely ribbed or rib-striated. Aperture ovate, angulated, only slightly oblique, with rather high and narrow inner lip. Umbilicus moderately narrow, profound. Height 7-8, diam. 11-13 mm (7.4×11.7 mm).

Talon consists of seminal receptacles ending in about 3 branches and fertilization chamber. Vas deferens long, slender. Flagellum very short; epiphallus about 9 times longer. Penis short. Verge long, slender, with apical pore bordered by 2 or 3 "lips"; base of verge connected to inner surface of penis by 3 small muscles ("frenula", after Manganelli et al., 1997). Walls of verge thick, containing only few, small lacunae. Penis opening into vagina bordered by sort of sphincter. Free oviduct rather long. Stylophores 2, subequal in size, their basal parts fused in single voluminous structure; cavities of stylophores open independently one above other into groove running on conic papilla; axial folds, bordering papilla, fused below it. Mucus glands 2, each of 3-4 forked arms. Spermathecal stalk rather long; reservoir large, pyriform, slightly not attending albumen gland.

DISTRIBUTION. Sicily, Malta, Algeria. Probably 2 spp.

Xeromunda Monterosato, 1892
Fig. 2507

Monterosato, 1892: 25.

— *Candidella* Hausdorf, 1990: 121 [*Xeromunda* subg.; t.-sp. *Xeromunda* (*Candidella*) *thessalica* Hausdorf, 1990; OD].

Hausdorf, 1993: 44.

TYPE SPECIES — *Helix turbinata* sensu Monterosato, 1892 and Kobelt, 1892, non Cristofori et Jan, 1832 (= *Helix candiota* Mousson, 1854); SD Kobelt, 1892.

Shell globular to discoid, rather thin, of 4.5-5.5 weakly convex whorls. Last whorl evenly rounded, straight. Coloration consisting of radial opaque white-calcareous and grey hydrophanous zones; edges of aperture reddish, lip white; besides, fulvous, indistinct radial streaks may be present. Embryonic whorls glabrous. Postnuclear whorls finely irregularly radially wrinkled to strongly ribbed. Aperture subcircular, with thin, straight margins; sometimes

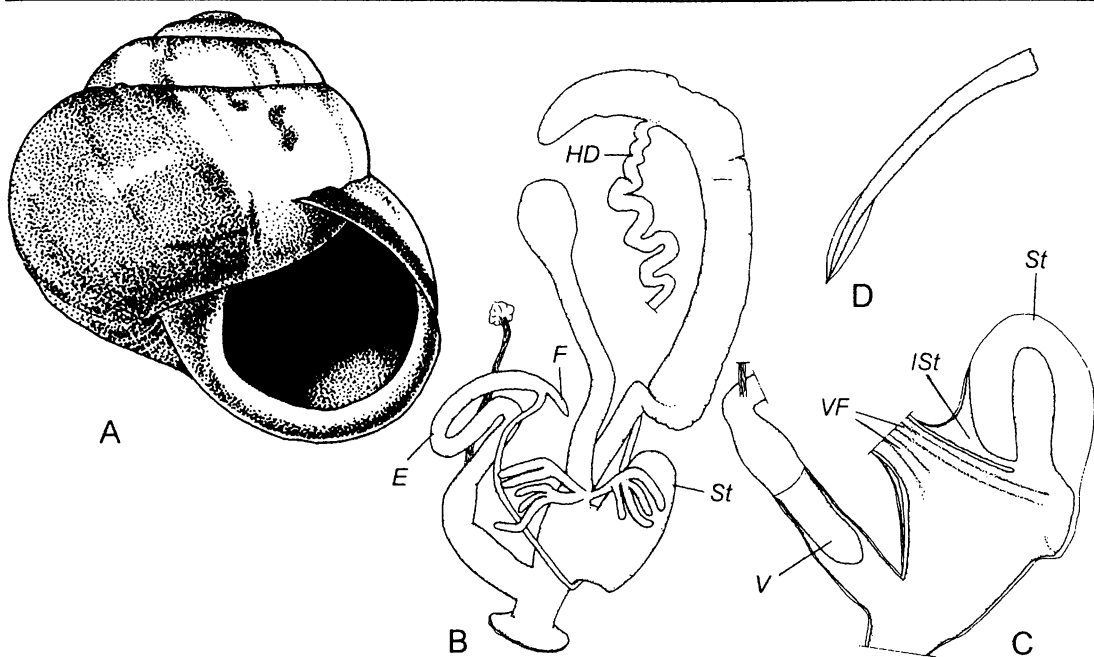


Fig. 2507 *Xeromunda candiota* (Mousson, 1854).

A — shell: Derna and Benghazi, Cyrenaica. Moscow No. Lc-28446 (Paris). B — reproductive tract. C — interior of distal genitalia. D — dart. After Hausdorf, 1990. *ISt* — inner rudimentary stylophore. *VF* — vaginal folds.

with inner lip. Umbilicus very narrow, semicovered to rather wide. Height 4.4-10.0, diam. 7.5-18.0 mm (9.4 × 9.9 mm).

Talon exposed, simple. Flagellum short, rudimentary; epiphallus about 10 times longer. Penis long, cylindrical, its border with epiphallus marked by insertion of penial retractor. Verge roughly acorn-like, occupies upper half of penis. Free oviduct rather long. Stylophore 2; inner vestigial, with very thin walls. Mucus glands 2 or 4, each of 2-4 simple or branched arms. Spermathecal stalk short to rather long.

DISTRIBUTION. Greece, S Italy, N Africa. About 10 spp. & subspp.

Cernuellopsis Manganelli et Giusti,
1987

Fig. 2508

Manganelli & Giusti, 1987 334.

TYPE SPECIES — *Cernuellopsis ghisottii* Manganelli et Giusti, 1987; OD.

Shell subglobose-conic, sometimes depressed, somewhat solid, of 5.5-6 slightly convex whorls. Last whorl straight,

rounded or scarcely angulated at periphery. Color calcareously white, monochromatic or with 2-3 dark bands; periphery white. Embryonic whorls smooth. Postnuclear sculpture of fine, rather regular radial ribbing. Aperture ovate to subcircular, moderately oblique, with sharp margins and white inner lip. Umbilicus deep, rather broad. Height 4.5-6.3, diam. 7.5-10.0 mm (4.9 × 7.5 mm).

Right ommatophoran retractor passes through peni-oviducal angle.

Talon small, simple, drop-like. Flagellum short; epiphallus about 3 times longer. Penis fusiform; penial muscular bands normally developed. Verge conic, with apical pore and thick walls containing a few lacunae. Penial retractor attached to lower part of epiphallus. Free oviduct rather long. Stylophores 2, of about equal size lying side-by-side, entering lumen of vagina through well developed, fleshy papilla with terminal pore that supplied with a small conic process. Mucus glands 4, each of 2-3 arms, which lack common ducts. Spermathecal stalk long; reservoir hammer-shaped, attending albumen gland.

DISTRIBUTION. S Italy (Calabria). 1 sp.

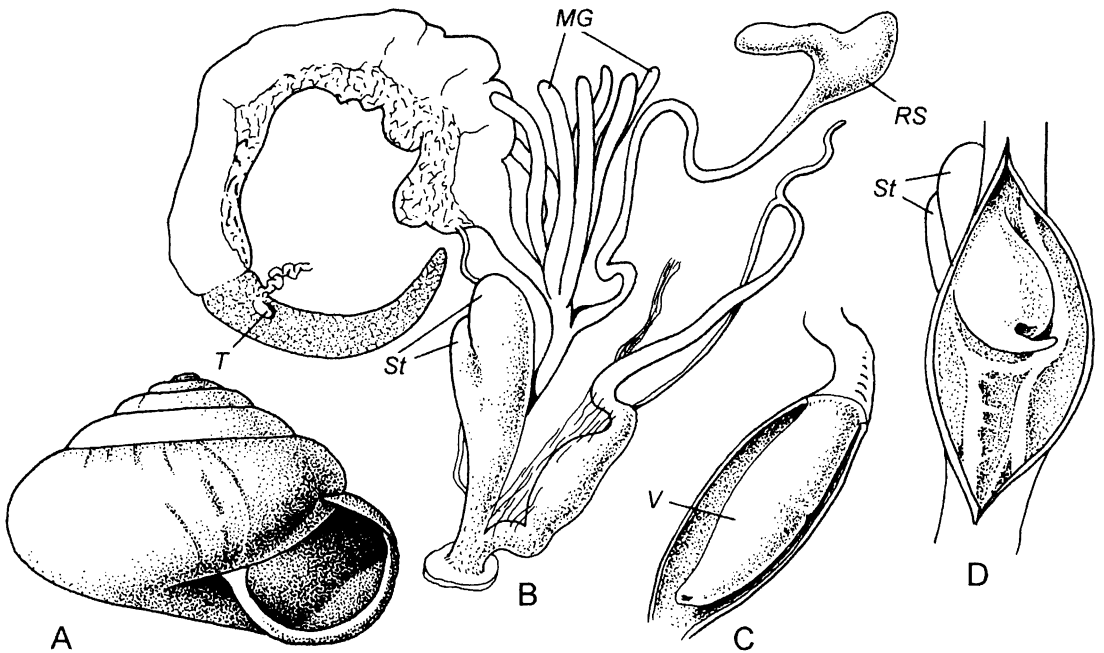


Fig. 2508. *Cernuellopsis ghisottii* Manganelli et Giusti, 1987

A — shell: "Monte Pollino, Timpone di Hezzo (Vaggunello, Potenza), Calabria, Italy" B, C, D — "M. Pollino, sopra il Passo del Dragone, 13.10.77" Paratype. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow No. Lc-28113 (gift of Dr. Folco Giusti).

***Kalitinaia* Hudec et Lezhawa, 1967**
Fig. 2509

Hudec & Lezhawa, 1967: 135 (*Xerosecta* subg.).

TYPE SPECIES — *Kalitinaia perspectiva* Hausdorf, 1993 [nom. nov. pro *Helix (Jacosta) schelkovnikovi* Bogatshev, 1936, non *Helix schelkovnikovi* Rosen, 1914]; SD Hausdorf, 1993.

Shell depressedly conic to flat, rather solid, of 4.5 convex whorls. Body whorl straight, slightly angulated to strongly keeled at periphery. Color white or gray, usually with dark bands. Embryonic whorls smooth. Surface of later whorls with distinct radial sculpture varying from delicate to very coarse ribbing. Aperture subcircular, rostrate in keeled forms, with thin, weakly reflexed margins. Umbilicus rather narrow to very broad. Height 4.5-7.0, diam. 8.0-15.0 mm (7.0 × 15.0 mm).

Talon simple, exposed. Flagellum long. Penial verge normally developed, conic or cylindrical. Within walls of male duct at penis/epiphallus junction there is a circular slit (cavity), deeply penetrating walls of penis, epiphallus and verge; as a result, upper

part of inner canal of verge encircled by slit-like cavity. Walls of lower part of verge filled with loose tissue, with weakly developed lacunar system. Penial muscular bands variously developed. Penial retractor inserting on distal end of epiphallus. Free oviduct moderately short. Stylophores 2, outer larger than inner; united papilla of stylophores protrudes into sac-like swelling of vagina. Mucus glands 3-4, each of 2-3 arms; their common ducts exceptionally short (almost absent).

DISTRIBUTION. Caucasus. 3 spp.

***Candidula* Kobelt, 1871**
Fig. 2510

Kobelt, 1871 22 (*Xerophila* sect.).

— *Xerovaga* Monterosato, 1892: 22 (*Xerophila* subg.; t.-sp. *Helix caperata* Montagu, 1803; SD Kobelt, 1892).

— *Xerotringa* Monterosato, 1892: 22 (*Xerophila* subg.; t.-sp. *Helix tringa* Fagot, 1884; SD Kobelt, 1892).

— *Xeroplexa* Monterosato, 1892: 23 (*Xerophila* subg.; t.-sp. *Helix setubalensis* L. Pfeiffer, 1850; SD Kobelt, 1892). Gittenberger, 1985: 59.

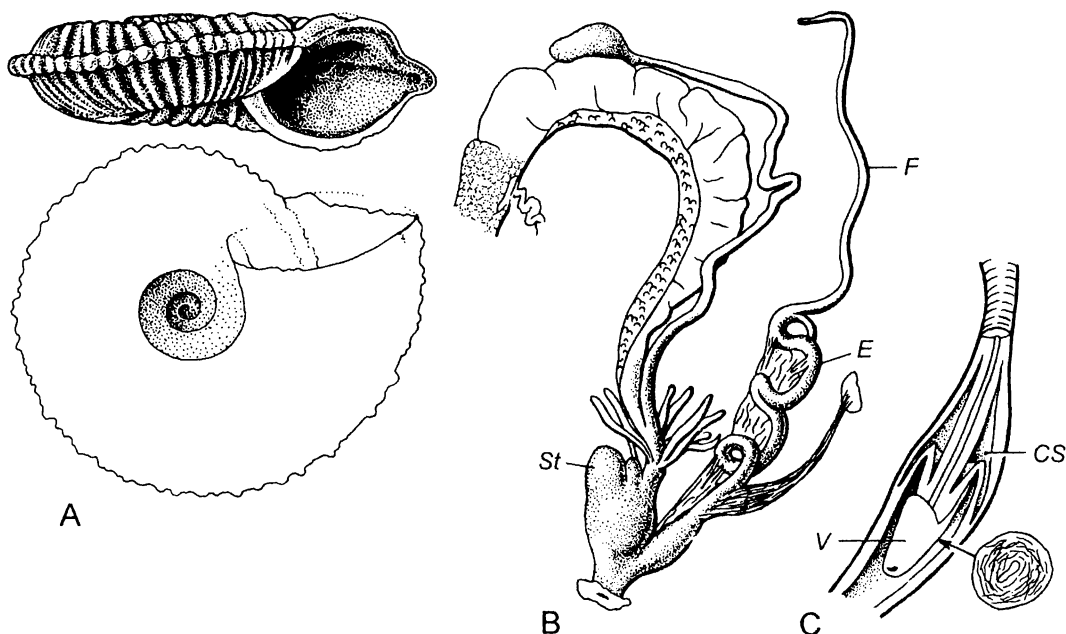


Fig. 2509. *Kalitinaia perspectiva* Hausdorf, 1993. Kaspi, Georgia, May 14, 1963.
 A — shell. B — reproductive tract. C — interior of penis. SPb.

— *Xeroalbina* Monterosato, 1892: 23 [*Xerophila* subg.; t.-sp. *Glischrus* (*Helix*) *candidula* Studer, 1820; SD Kobelt, 1892].

— *Xerocodia* Monterosato, 1892: 23 (*Xerophila* subg.; t.-sp. *Helix codia* Bourguignat, 1856; SD Kobelt, 1892).

— *Xerogyra* Monterosato, 1892: 24 (*Xerophila* subg.; t.-sp. *Helix spadae* Calcara, 1845; SD Kobelt, 1892).

Gittenberger, 1985: 59; 1993: 283.

TYPE SPECIES — *Glischrus* (*Helix*) *candidula* Studer, 1820 (= *Helix unifasciata* Poiret, 1801); tautonymy.

Shell more or less depressed, solid, of 4.5-5 rather convex whorls. Last whorl straight, rounded at periphery. Color uniformly white or with 1-7 variously developed dark bands. Embryonic whorls smooth. Postapical sculpture of weak, irregular radial wrinklets. Aperture broadly ovate or subcircular, not strongly oblique, with white or yellowish inner lip. Umbilicus open, moderately narrow. Height 3.5-9.0, diam. 5-15 mm (5.0 × 8.8 mm).

Vas deferens enters epiphallus at sharp angle. Flagellum very short, somewhat ru-

dimentary; epiphallus 4-6 times longer. Penis fusiform, thin-walled, internally with conic verge having minute, simple apical pore. Penial retractor attached to lower part of epiphallus or penis/epiphallus junction. Free oviduct moderately long. Stylophore 1, relatively large, entering atrium through conic papilla. Mucus glands 2, each of 2-3 arms; common ducts very short. Spermathecal stalk not long, reservoir lies on middle of spermoviduct.

DISTRIBUTION. Europe, NW Africa. At least 15 spp.

Cernuella Schlüter, 1838

Schlüter, 1838: 6 (*Helix* subg.).

— *Heliomanes* Brown, 1844: 49 [nom. praec. non Newman, 1840 (Coleoptera); *Helix* subg.; t.-sp. not designated].

— ? *Xerolena* Monterosato, 1892: 22 (*Xerophila* subg.; t.-sp. *Helix hamilcaris* Kobelt, 1877; SD Kobelt, 1892).

— ? *Xeroampulla* Monterosato, 1892: 22 (*Xerophila* subg.; t.-sp. *Helix aradasii* Pirajno, 1842; SD Kobelt, 1892).

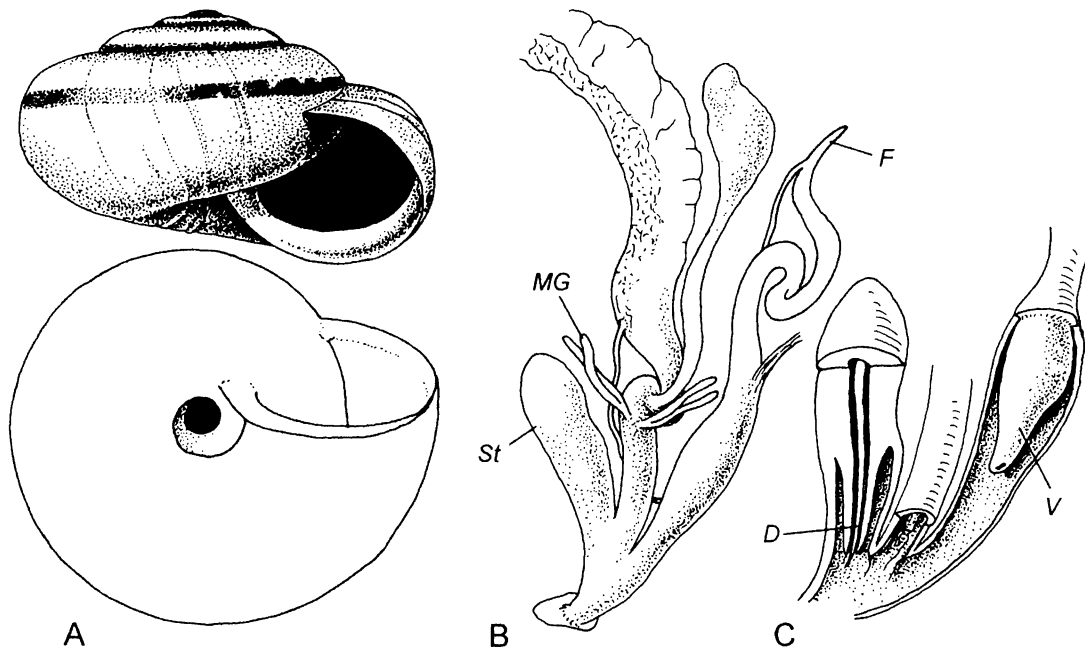


Fig. 2510. *Candidula unifasciata* (Poiret, 1801).

A — shell: Grignon [Bourgogne, France]. Paris. B, C — Roßhöhe bei Westerhausen [Germany], June 1969. B — reproductive tract. C — interior of penis and vagina. Moscow No. Lc-28115.

— *Xerofusca* Monterosato, 1892: 22 (*Xerophila* subg.; t.-sp. *Helix luctuosa* Westerlund, 1883 = *Helix virgata* Da Costa, 1778; SD Kobelt, 1892).

— *Xerovaria* Monterosato, 1892: 23 (*Xerophila* subg.; t.-sp. *Helix tergestina* Rossmässler, 1837; SD Kobelt, 1892).

— *Xerolauta*: Monterosato, 1892: 23; [t.-sp. *Helix lauta* Lowe, 1831 (= *Helix virgata* Da Costa, 1778); SD Kobelt, 1892].

— *Xerotropis* Monterosato, 1892: 23; [*Xerophila* subg.; t.-sp. *Carocolla gargottae* Philippi, 1836 (= *Helix rugosa* Lamarck, 1822); SD Kobelt, 1892]. Manganelli et al., 1996a.

— *Xerolutea* Monterosato, 1892: 24 (*Xerophila* subg.; t.-sp. *Helix luteata* L. Pfeiffer, 1853; SD Kobelt, 1892).

— *Xerovera* Monterosato, 1892: 25 (*Xerophila* subg.; t.-sp. *Helix subrostrata* Férussac, 1821; designated here).

— *Xerolissa* Monterosato, 1892: 25 (t.-sp. *Helix acompisia* Bourguignat, 1864; SD Kobelt, 1892). Richardson, 1980: 104, 548.

Manganelli & Giusti, 1987: 345.

TYPE SPECIES — *Helix variabilis* Drapar-

naud, 1801 (= *Cochlea virgata* Da Costa, 1778); SD Gude & Woodward, 1921a.

Shell much flattened to nearly globose, moderately thin, of 5-6.5 more or less convex whorls. Last whorl evenly rounded, (nearly) straight. Color light, rarely monotonous, usually with several dark bands. Embryonic whorls smooth. Postapical sculpture weak. Aperture rounded, slightly to moderately oblique, with sharp margins and low inner lip (sometimes missing). Umbilicus narrow, cylindrical to broad, cup-shaped.

Flagellum short to medium. Penis cylindrical to fusiform. Verge short to quite long, with terminal pore and thick walls containing a system of lacunae. Penial retractor attached to penis/epiphallus junction. Free oviduct moderately long. Stylophores 2, subequal in size, enter lumen of vagina by conic papilla. Mucus glands 2-6, intensively branched; common ducts very short to long. Spermathecal stalk rather short; reservoir not attending albumen gland.

DISTRIBUTION. Central and S Europe, E Mediterranean, Asia Minor, Crimea, Caucasus, N Africa, Madeira.

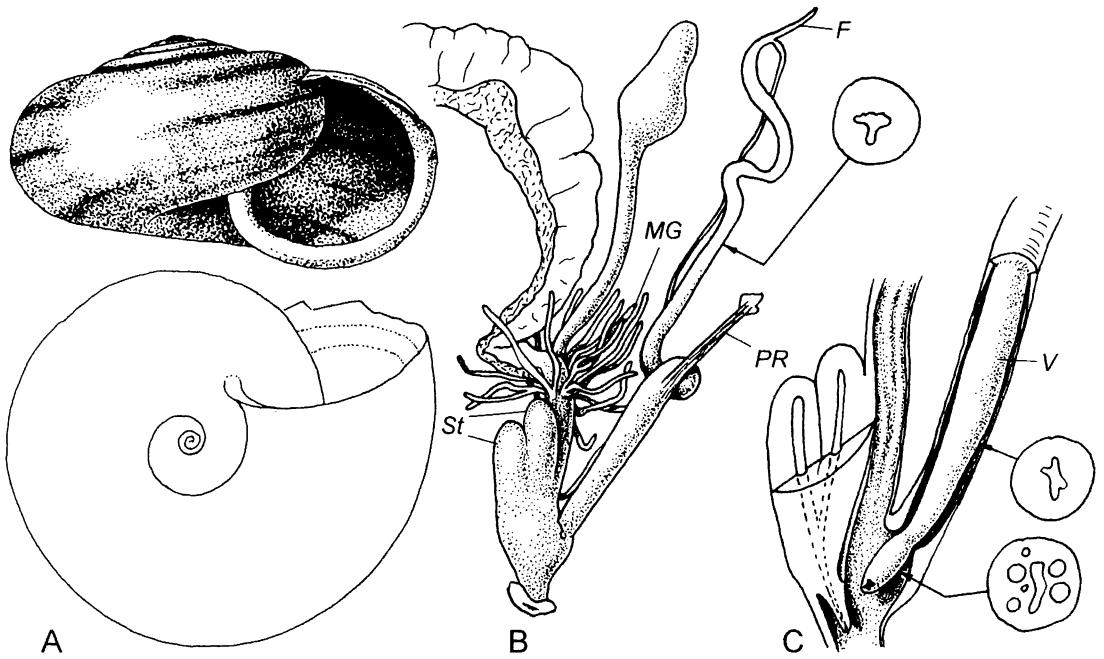


Fig. 2511. *Cernuella (Xerocincta) neglecta* (Draparnaud, 1805). "Austberg bei Benzingerode" [Germany].
 A — shell. B — reproductive tract. C — interior of penis and vagina. Moscow No. Lc-8370.

Cernuella (Xerocincta)
 Monterosato, 1892)
 Fig. 2511

Monterosato, 1892: 24 (*Xerophila* subg.). Manganelli & Giusti, 1987: 348.

TYPE SPECIES — *Helix neglecta* Draparnaud, 1805; monotypy.

Shell much depressed to nearly flat, of about 5 somewhat convex whorls. Color white or yellowish, with variously developed dark bands; aperture inside light. Postapical sculpture of very fine radial striation and delicate malleation. Aperture subcircular, only slightly oblique, usually with light inner lip. Umbilicus broad, perspective. Height 6.5-10.5, diam. 12-18 mm (9.3 × 16.0 mm).

Flagellum 6-8 times shorter than epiphallus. Verge long, without basal frenula. Mucus glands 5-6, with exceptionally short common ducts; in essence, there is a crown of circumferentially located, branched tubules.

DISTRIBUTION. Europe. 2-4 spp.

Cernuella (Cernuella s. str.)
 Fig. 2512

Shell depressed-turbinate, of 5-6.5 somewhat convex whorls. Color white, gray or yellowish, usually with variously developed, often interrupted, dark bands; aperture inside frequently brownish or dark-yellow. Postembryonic whorls very finely radially striated. Aperture rounded, moderately oblique, with rather distinct inner lip which may be either white or brownish or reddish-brown. Umbilicus not very narrow but perspective. Height 7-14, diam. 11-22 mm (9.8 × 15.2 mm).

Flagellum 4-5 times shorter than epiphallus. Verge rather short, with 2 or 3 small muscles ("frenula" after Manganelli & Giusti, 1987) which connect its basal section with inner surface of penis. Mucus glands 2, with short common ducts.

DISTRIBUTION. Central and S Europe, E Mediterranean, Asia Minor, Crimea, Caucasus; introduced to Madeira. About 10 spp. and forms.

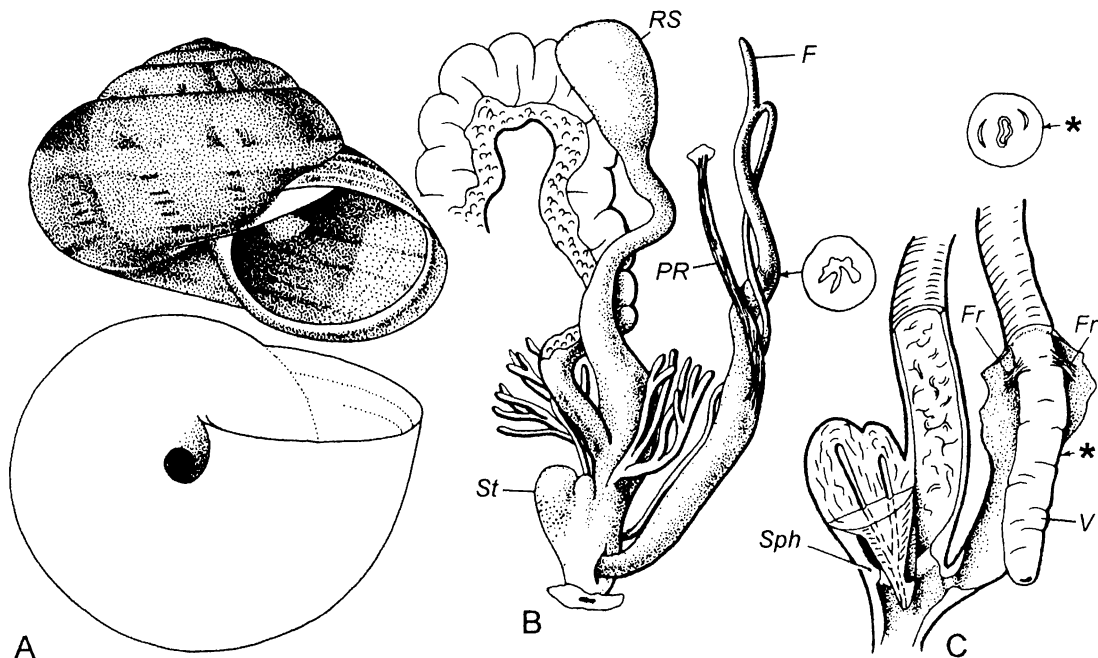


Fig. 2512. *Cernuella (Cernuella) virgata* (Da Costa, 1778). Yalta, Crimea, September 14, 1969. A — shell. B — reproductive tract. C — interior of penis and vagina. After Schileyko, 1978b, modified. *Fr* — frenula.

Cernuella (Alteniella) Clerx et Gittenberger, 1977
Fig. 2513

Clerx & Gittenberger, 1977: 53.

TYPE SPECIES — *Cernuella zilchi* Brandt, 1959; OD.

Shell conic-globose, rather solid, of 5 slightly convex whorls. Color calcareously white — uniform or with variously developed, dark, interrupted bands and diffuse radial streaks. Postapical sculpture of smoothed, irregular radial wrinkles. Aperture subcircular, moderately oblique, with simple margins; columellar margin reflexed. Umbilicus narrowly open, somewhat eccentric. Height 6.3-12.3, diam. 7.8-13.9 mm (6.3 × 7.9 mm).

Flagellum and epiphallus of about same length. Verge elongated, probably without frenula. Mucus glands 2, with long, strongly expanded common ducts and intensively branching thin arms (14-26 in number).

DISTRIBUTION. N Africa (Cyrenaica). 1 sp.

Ichnusomunda Giusti et Manganelli, 1998
Fig. 2514

Giusti & Manganelli, 1998: 319.

TYPE SPECIES — *Ichnusomunda sacchii* Giusti et Manganelli, 1998; OD.

Shell globose-conic, of 5-5.3 convex whorls. Last whorl evenly rounded, straight or slightly descending. Color whitish, with 2-8 ginger-brown bands usually fragmented into rows of spots of variable size. Embryonic whorls smooth. Postapical whorls with very fine, regularly spaced radial riblets clearly visible from sutures to periphery, and fading out on base. Aperture rounded, not much oblique, with simple margins. Umbilicus very narrow. Height 6.5-8.8, diam. 7.8-10.3 mm.

Talon exposed, club-like, consisting of 2 distinct structures, one long, slender, outward-projecting, containing seminal receptacles, other (fertilization chamber) globose, thin-walled. Flagellum vestigial, conic. Epiphallus cylindrical, penial retractor attachment marks its boundary with

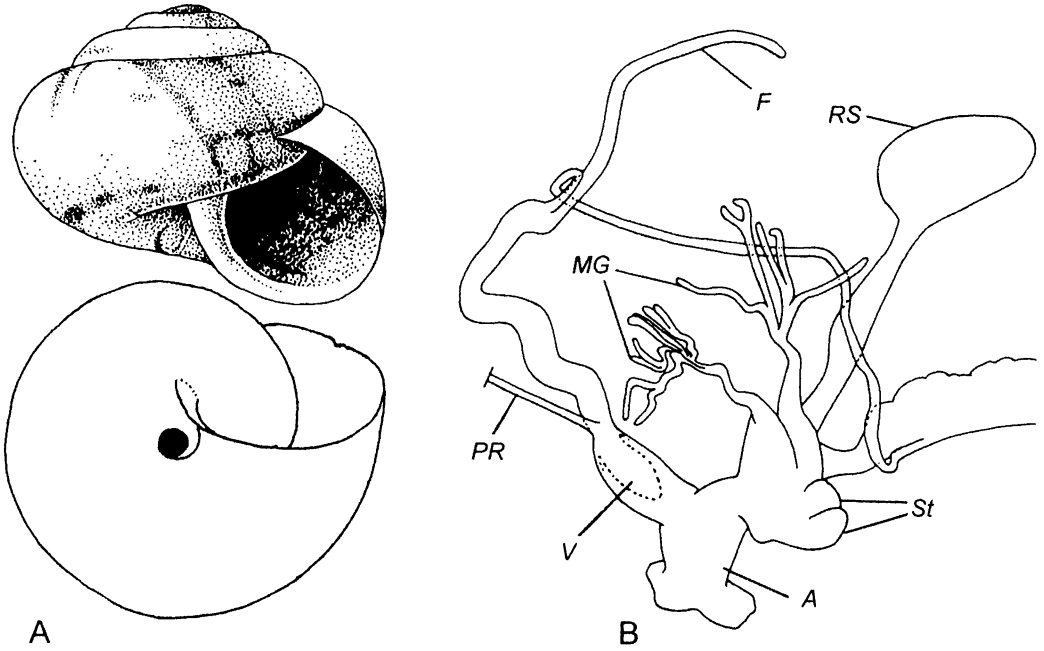


Fig. 2513. *Cernuella (Alteniella) zilchi* Brandt, 1959.
 A — shell: Ain Mara, W Derna, Cyrenaica. Vienna. B — reproductive tract. After Clerx & Gittenberger, 1977

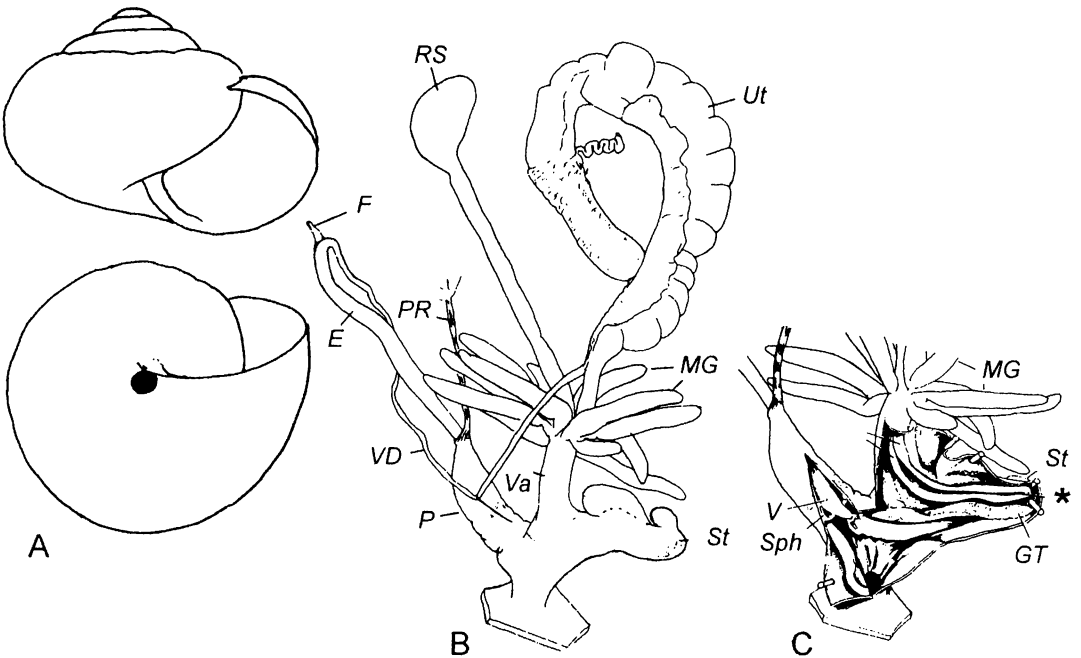


Fig. 2514. *Ichnusomunda sacchii* Giusti et Manganeli, 1998.
 A — shell. B — reproductive tract. C — interior of penis, atrium and vagina. After Giusti & Manganeli, 1998. *Asterisk* — opening of outer stylophore. *GT* — glandular tissue.

penis. Penis contains a rather long, conic verge having apical pore and 3 basal muscular bundles ("frenula", after Giusti & Manganelli) connecting it to inner surface of penis; cross-section of verge reveals compact structure (only 1, small lacuna). There is sphincter-like ring in distal part of penis. Penial retractor attached to penis/epiphallus junction. Free oviduct rather short, vagina a little longer. Stylophore complex entering very distal section of vagina and consisting of wide, cylindrical basal portion at apex of which 2 stylophores opening side-by-side; on internal upper wall of basal portion 2 large pleats originating in vagina distally fusing to form calotte covering outer stylophore opening; kind of pleat of glandular tissue bordering distal portion of pleats and calotte. Outer stylophore small, globular, with thick, muscular walls and small, short lumen containing dart. Dart very short, oval in cross-section near base, spear-shaped (with 1 lateral wing on opposite sides); inner stylophore difficult to discern externally because bent toward vagina and fastened to upper side of basal portion by strips of tissue. Mucus glands 3-4, each composed of 2-3 branches. Spermathecal stalk moderately long, reservoir roughly oval, not reaching albumen gland.

Spermatophore long, slender, smooth, apically pointed, ovate in cross-section.

DISTRIBUTION. Sardinia. 1 sp.

REMARK. Perhaps, the genus *Ichnusomunda* is related to the genus *Pseudoxerophila* (Trochulinae) because the structure of stylophores in these two genera is very similar and very conspicuous; phenomenon of unilateral reduction of stylophores is known among Hygromiidae (compare, for example, the Asian genera *Nanaja* and *Archaica*).

ARCHAICINAE Schileyko, 1978

Schileyko, 1978b: 256.

Right ommatophoran retractor passes through peni-oviducal angle.

Base of verge not contains circular loosening of tissue. Verge during copulation moves out. Walls of verge thick, solid, without sinuses or lacunae. Vagina long. Stylophores 2, situated on one side of va-

gina, inner smaller than outer, but always visible without dissection of vagina. Mucus glands present.

DISTRIBUTION. Tien-Shan.

Leucarchaica Schileyko et Pazylov, 1990 Fig. 2515

Schileyko & Pazylov, 1990: 871.

TYPE SPECIES — *Leucarchaica rudimentifera* Schileyko et Pazylov, 1990; OD.

Shell *Leucozonella*-like, somewhat depressed, rather solid, of 5-5.5 moderately convex whorls. Last whorl evenly rounded, scarcely descending in front. Spire dome-shaped, with slightly protruding apex. Color light-chestnut, with white narrow peripheral band. Embryonic whorls smooth. Postapical whorls with irregular crowded radial wrinkles, hair scars (in juvenile shells there are short, delicate hairs) and very fine spiral striae. Aperture rounded, slightly oblique, margins thin, not expanded, practically without lip. Umbilicus very narrow. Height 7.0-8.7, diam. 10.0-12.5 mm (8.7 × 12.0 mm).

Flagellum about 1.5 times shorter than epiphallus. Distal section of penis swollen, containing large, tubular verge. Enlarged walls of penis contain well-developed gland. Penial retractor attached to penis/epiphallus junction. Free oviduct moderately short. Outer stylophore large, inner much smaller, tightly impressed to outer which protruded into cavity of vagina through a short papilla; lumen of inner stylophore connected with cavity of vagina independently. On opposite side of vagina there is rudiment of another pair of stylophores, whose lumen divided into 2 cavities by longitudinal septum. Mucus glands 2, both biramous, with very short common ducts. Spermathecal stalk moderately long, reservoir a little not attending albumen gland.

DISTRIBUTION. Tien-Shan (Ferghansky Range). 1 sp.

Archaica Schileyko, 1970

Schileyko, 1970: 1307

TYPE SPECIES — *Helix apollinis* Martens, 1882; OD.

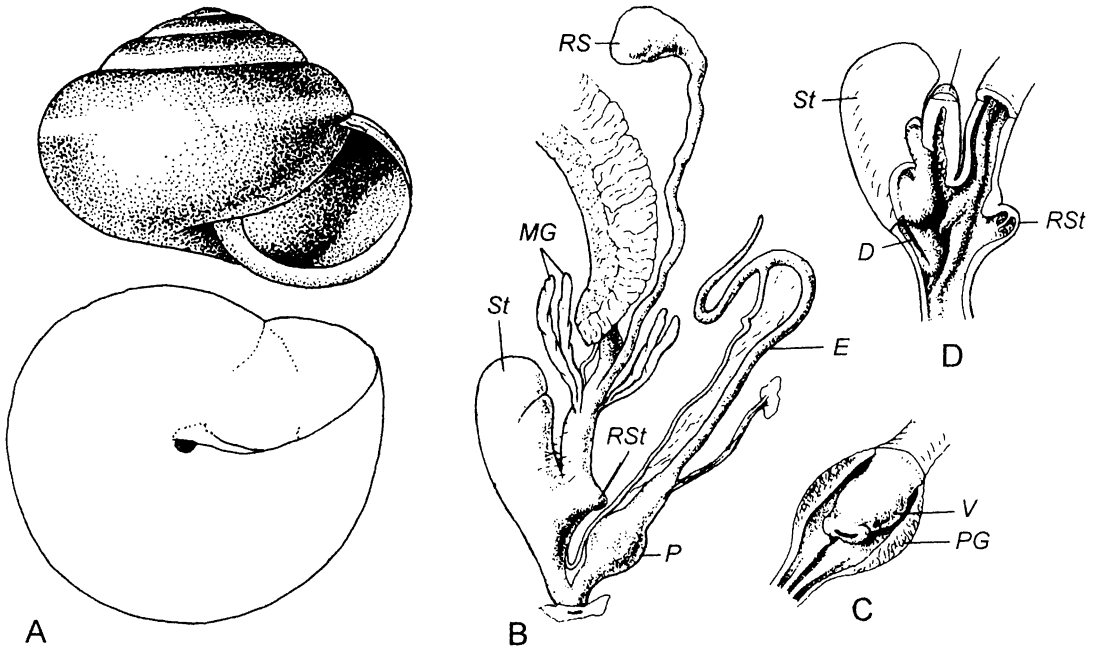


Fig. 2515. *Leucarchaica rudimentifera* Schileyko et Pazylov, 1990. Karabulak Gorge near Arslanbob, Fergansky Range, Tien-Shan, April 28, 1989.

A — shell. Holotype. Moscow No. Lc-15636. B, C, D — paratype. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow No. Lc-21634. *Rst* — rudimentary stylophore.

Shell almost flat to depressed, rather solid, of 5-6 moderately convex whorls. Last whorl rounded or slightly angulated, slightly or not deflected. Color pale-corneous to chestnut, unicolor or with light band. Embryonic whorls smooth. Sculpture of later whorls from delicate radial striation to strong ribbing; spiral lines may be present. Aperture shortly ovate to widely slit-like, not strongly oblique, with very light to strong inner lip. Umbilicus rather narrow.

Talon simple, small. Flagellum (rather) short; epiphallus of about same length or 0.5-3 times longer. Penial muscular bands or membrane variously developed. Penis fusiform, its walls thin to thickened, may contain loose tissue. Verge of variable shape, with thick walls and apical pore. Penial retractor inserting on penis/epiphallus junction or distal section of epiphallus. Free oviduct short. Outer stylophore larger than inner. Mucus glands 3-4, each with 1-2 arms. Spermathecal stalk moderately long; reservoir lies on upper half of spermo-oviduct.

DISTRIBUTION. Tien-Shan.

Archaica (Euarchaica)
Schileyko, 1970)
Fig. 2516

Schileyko, 1970: 1309.

TYPE SPECIES — *Cathaica heptapotamica* Lindholm, 1927; OD.

Shell much depressed, of 5.5-6 rather loosely coiled whorls. Last whorl rounded or a little angulated, straight or scarcely descending in front. Color (pale) corneous, usually with light peripheral band. Radial sculpture on postapical whorls represented by fine, irregular radial striation; spiral grooves absent or very weak. Aperture shortly ovate, margins not reflexed except columellar and adjacent portion of basal. Inner lip absent or very weak. Height 6-10, diam. 12-17 mm (8.8 × 16.2 mm).

Flagellum and epiphallus subequal in length. Penis thin-walled. Verge rather short, more or less flattened, usually with superficial depressions and folds; canal on cross-section occupies central position or nearly so. Apex of outer stylophore rounded. Opening of stylophores situated

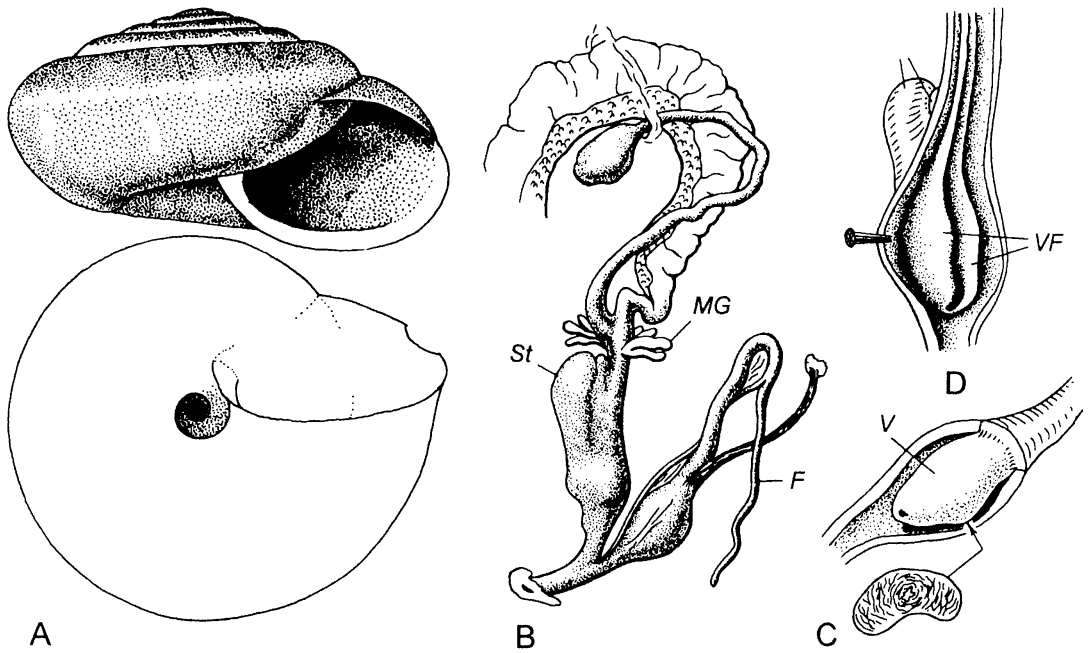


Fig. 2516. *Archaica (Euarchaica) heptapotamica* (Lindholm, 1927).

Pskem River valley above Toktogul [W Tien-Shan]. Moscow. B, C, D — Environs of Dzhabul [Taraz], June 27, 1937 SPb. VF — vaginal folds.

between 2 very strong folds connected by their lower ends.

DISTRIBUTION. Tien-Shan. 1 highly variable sp.

Archaica (Archaica s. str.)

Fig. 2517

Shell variously depressed, of 5 rather loosely coiled whorls. Last whorl rounded, scarcely descending in front. Color calcareous-white or bluish-grey, uniform or with spaced, diffuse, irregular fulvous streaks. Radial striation on postapical whorls very fine; spiral grooves vague. Aperture rounded, with thin non-reflexed margins. Height 7-9, diam. 10-16 mm (8.2 × 14.7 mm).

Flagellum 2-3 times shorter than epiphallus. Penis thick-walled. Penial verge globose or globose-fusiform, without superficial depressions or folds; canal on cross-section occupies central position or nearly so. Apex of outer stylophore more or less pointed. Opening of stylophores situated between 2 strong folds connected by their lower ends.

DISTRIBUTION. Ferghansky and Alaisky Ranges. 1 or 2 spp.

Archaica (Ugama Schileyko, 1978)

Fig. 2518

Schileyko, 1978b: 260.

TYPE SPECIES — *Archaica (Ugama) labianix* Schileyko, 1978; OD.

Shell nearly flat to depressed, of 6 narrow, tightly coiled whorls. Last whorl with gentle angle above middle line, not descending in front. Color corneous to chestnut, sometimes almost black, with weak light band running on angle. Postembryonic whorls with silky radial striation and very fine spiral grooves. Aperture, a broad curved slit, slightly oblique. Strong, high, snow-white lip lies well inside. Height 5.0-5.5, diam. 9.0-10.5 mm (5.4 × 10.0 mm).

Flagellum a little shorter than epiphallus. Penis thin-walled. Verge band-like, its inner canal in cross-section occupies strongly excentric position. Apex of outer stylophore rounded. Opening of stylophores situated between 2 very strong folds connected by their lower ends; opposite wall of vagina bears 3rd fold corresponding to space between two mentioned ones.

DISTRIBUTION. W Tien-Shan. 1 sp.

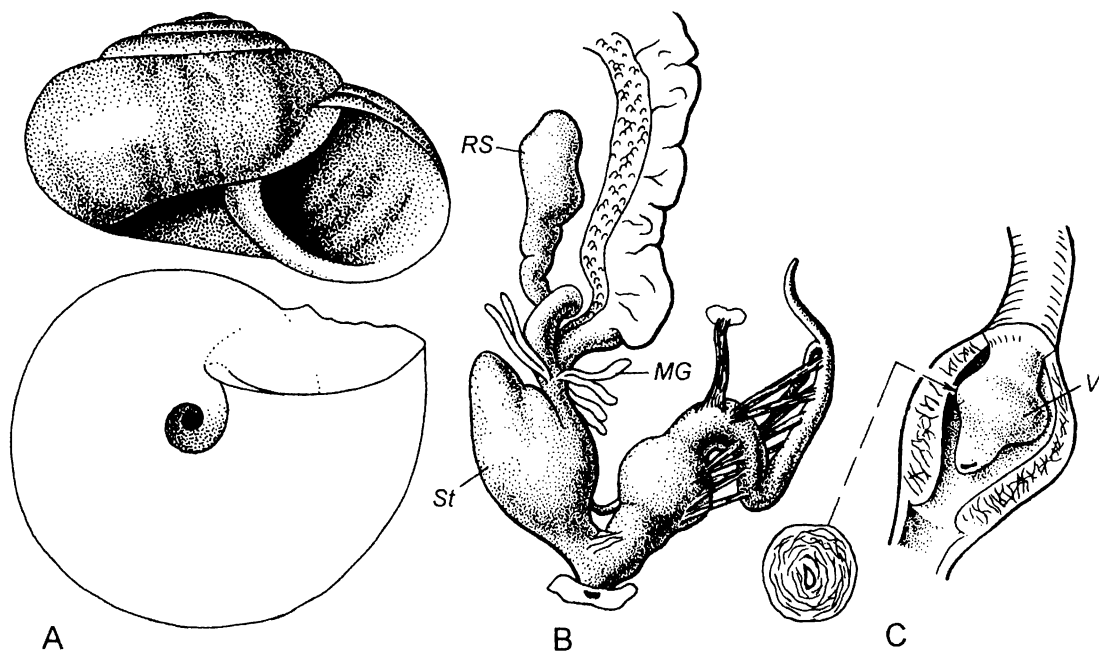


Fig. 2517 *Archaica (Archaica) apollinis* (Martens, 1882). Yangaryk, Gulcha River valley, Fergansky Range, June 23, 1928.
 A — shell. B — reproductive tract. C — interior of penis. SPb.

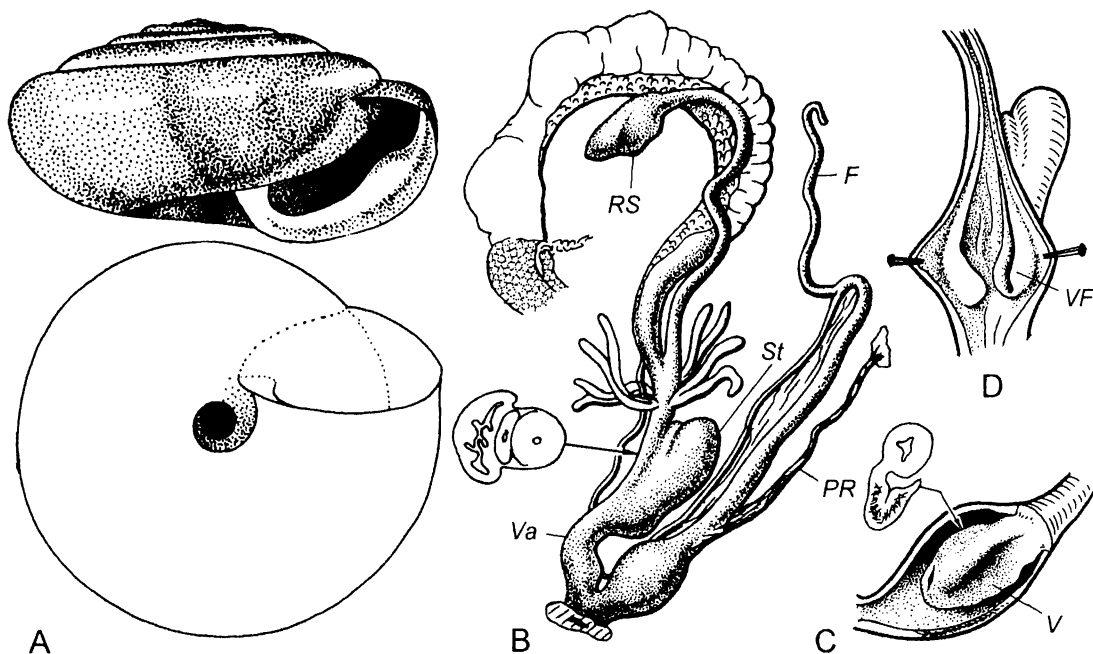


Fig. 2518. *Archaica (Ugama) labianix* Schileyko, 1978. Upper part of Pskem River valley, May 17-21, 1972.
 A — shell. Holotype. SPb. B — reproductive tract. C — interior of penis. D — interior of vagina. Paratype. Moscow No. Lc-28496. VF — vaginal folds.

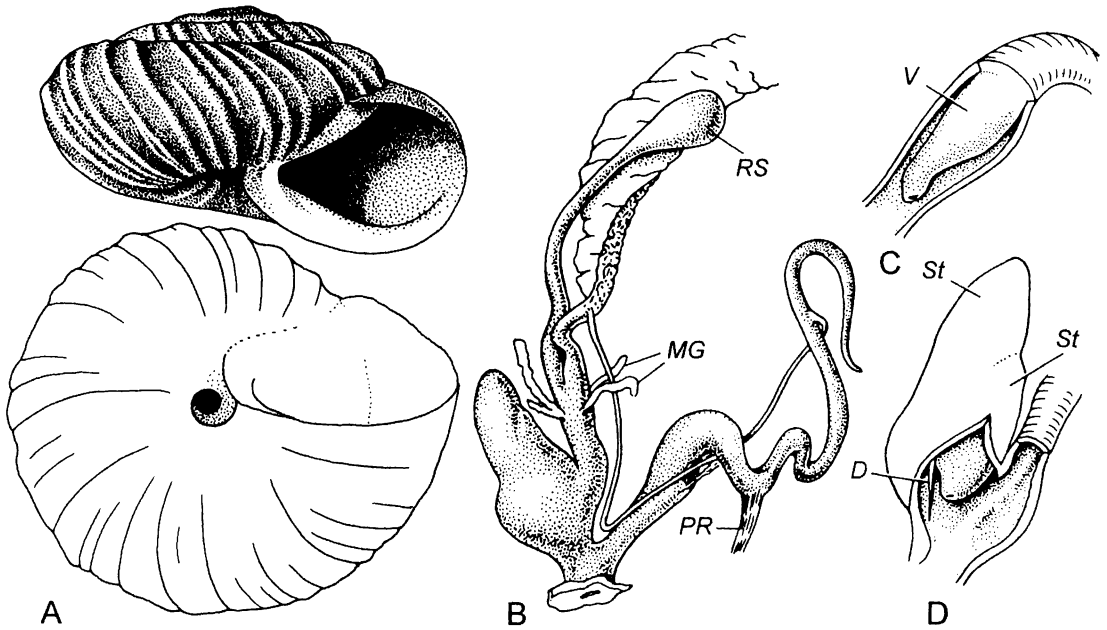


Fig. 2519. *Archaica (Archaicosta) suspecta* Schileyko et Moissejeva, 1989. Pchan River valley (right tributary of Ala-Buka River), Yangyskyr Mts. near E foothills of Ferghansky Range, August 10, 1986. A — shell. B — reproductive tract. C — interior of penis. Holotype. After Schileyko & Moissejeva, 1989.

Archaica (Archaicosta Schileyko, subg. nov.)
Fig. 2519

TYPE SPECIES — *Archaica suspecta* Schileyko et Moissejeva, 1989.

Shell much depressed, of 5-5.5 rather loosely coiled whorls. Last whorl slightly angulated, not descending in front. Color light-corneous or brownish. Postembryonic sculpture represented by coarse irregular light-colored ribs and by very weak, prominent periostracal threads. Aperture rounded or broadly ovate, with simple margins. Lip occupies basal margin. Height 5.2-7.5, diam. 9.5-11.2 mm (6.5 × 11.0 mm).

Flagellum 1.5-2 times shorter than epiphallus. Penis thin-walled. Penial verge conic, smooth-walled; canal in cross-section occupies central position. Apex of outer stylophore somewhat pointed. Lumen of outer stylophore connected with lumen of vagina through a simple pore; pore of inner stylophore situated independently on tip of fleshy papilla.

DISTRIBUTION. Ferghansky Range. 1 sp.

REMARK. Subgenus *Archaicosta* differs from all other subgenera by the presence of coarse ribs on postembryonic whorls and unusual structure of stylophores.

MONACHAINAE
Wenz, 1930 (1904)

Wenz, 1930: 3027 [as *Monachea*; non *Monachina* Gray, 1869 = *Monachinae* Trouessart, 1904 (*Mammalia*, *Pinnipedia*); nom. nov. pro *Thebea* Wenz, 1923]. Nordsieck, 1987: 31.

— *Carthusianini* Kobelt, 1904: 133 (as *Carthusiana*).

— *Euomphaliinae* Schileyko, 1978b: 261.

Bouchet & Rocroi, 2004: 155; 2005: 44, 111, 170.

Right ommatophoral retractor passes, as a rule, through peni-oviducal angle.

Base of verge contains variously developed circular loosening of tissue; in some cases it turns to more or less spacious cavity. In case of intensive development of this cavity and duplication of penial walls

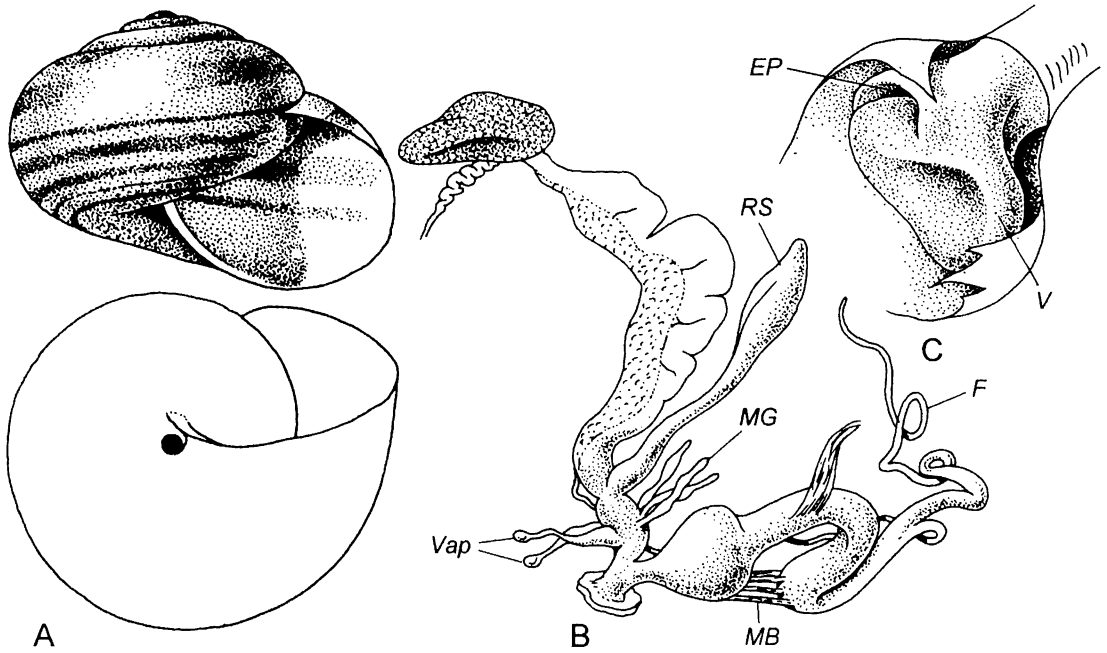


Fig. 2520. A — *Lejeania darnaudi* (L. Pfeiffer, 1856).

Shell: "Nakfa (Habab) Gebinge, Abessinien" Vienna. B, C — ! *Lejeania lejeanina* (Bourguignat, 1883). "Abyssinia, Hauts Plateaux de l'Hamacen, 1883" Syntype. B — reproductive tract. C — interior of penis. Paris.

verge partially moves out, partially everts during copulation. Vagina long. Stylophores initially 2, modified into conspicuous, bottle-shaped appendages. One or both appendages may be missing. Mucus glands present or absent.

DISTRIBUTION. W Palearctic, S Arabia, NE Africa.

Lejeania Ancey, 1887

Fig. 2520

Ancey, 1887: 75.

TYPE SPECIES — *Helix darnaudi* L. Pfeiffer, 1856; SD Pilsbry, 1895 (1893-1895).

Shell depressed-globose, thin, of 5-6 moderately convex whorls. Last whorl (almost) straight, rounded. Color white, creamy or pale-corneous, with variously developed dark bands. Embryonic whorls smooth. Later whorls delicately, irregularly radially striated. Aperture large, rounded, moderately oblique, with thin, simple margins. Umbilicus minutely open. Height 4.5-13.0, diam. 7-19 mm (12.4 × 17.0 mm).

Flagellum very long, convoluted, vermi-

form. Epiphallus markedly shorter, bent, connected with penis by strong muscular fibers. Penis globular, thin-walled, contains peculiar verge of approximately mushroom-shaped. Epiphallic pore slit-like, shifted toward one side. Penial retractor inserting on lower part of epiphallus. Free oviduct short. Vagina somewhat swollen, not long. Vaginal appendages 2, kingpin-like, sitting side-by-side on one side of vagina. Mucus glands 3-4, unbranched. Spermathecal stalk moderately long, reservoir poorly defined, not attending albumen gland.

DISTRIBUTION. NE Africa and S Arabia. About 10 spp.

Karabaghia Lindholm, 1927

Fig. 2521

Lindholm, 1927a: 124 (*Perforatella* subg.).

TYPE SPECIES — *Perforatella bituberosa* Lindholm, 1927; OD.

Shell more or less globose, relatively solid, of 5-5.5 tightly coiled whorls. Last whorl rounded, scarcely or not descending in front. Spire broadly dome-shaped. Color

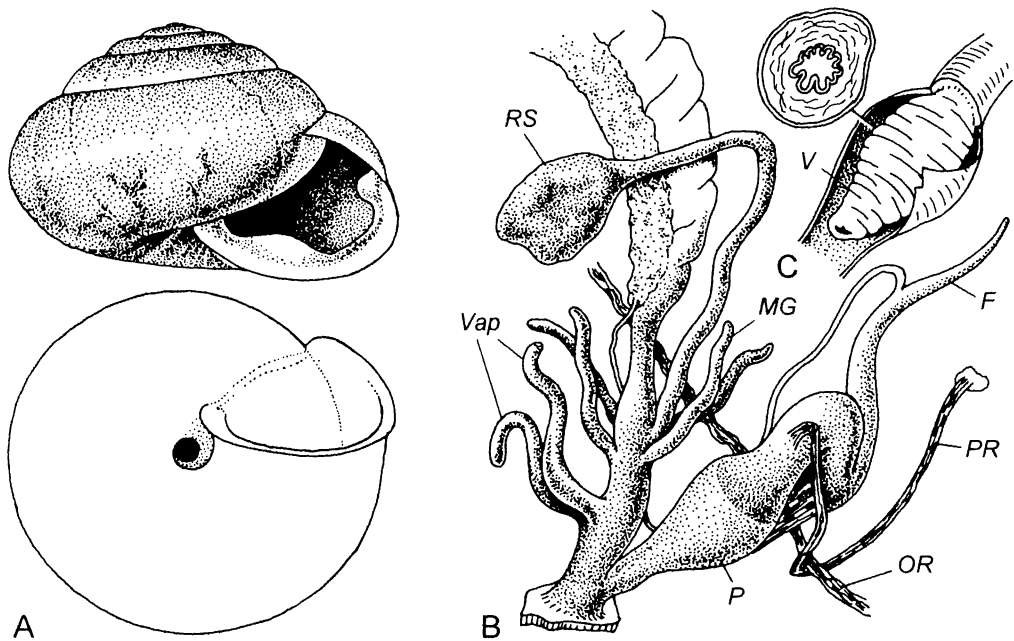


Fig. 2521 *Karabaghia bituberosa* (Lindholm, 1927). Arkhashan Peak, Armenia, August 9, 1952. A — shell. B — reproductive tract. C — interior of penis. Moscow (gift of N.N. Akramowski).

dark-corneous or yellowish, with diffuse light peripheral band. Embryonic sculpture absent. Postnuclear whorls covered with fine radial striation. Hairs on shell absent. Aperture rounded-triangular, moderately oblique, its upper margin simple, rest margins reflexed, with internal lip that bears 2 teeth: tuberculiform palatal and basal in form of elongate fold or callosity. Umbilicus narrow. Height 4.0-4.5, diam. 6.0-6.5 mm (4.4 × 6.3 mm).

Right ommatophoran retractor crossed with penial retractor, but free from peni-oviducal angle.

Flagellum rather short, epiphallus 2-3 times longer. Penis swollen, with thin, not splitted walls. Verge fusiform, thick-walled, with apical pore; walls not contain noticeable lacunae; inner canal in cross-section looks like star with many rays. Circular loosening of tissues in base of verge weakly developed. Penial retractor attached to lower part of epiphallus. Free oviduct rather long, vagina a little longer. Vaginal appendages 2, approached on one side of vagina. Mucus glands 4, simple, tubular. Spermathecal stalk long, reservoir (nearly) attending albumen gland.

DISTRIBUTION. Central part of Lesser Caucasus. 1 sp.

Prostenomphalia Baidashnikov, 1985
Fig. 2522

Baidashnikov, 1985: 206.

TYPE SPECIES — *Prostenomphalia carpathica* Baidashnikov, 1985; OD.

Shell depressed, rather thin, of 5 moderately convex whorls. Last whorl evenly rounded, moderately descending in front. Color brownish-corneous, with very weak, diffuse light band. Embryonic whorls glabrous, initial postapical whorls radially wrinkled, further wrinkles turn to distinct ribs broken into series of rounded tubercles. Aperture approximately rounded-quadrangular, not strongly oblique, with inner lip; columellar and basal margins well reflexed. Umbilicus narrowly open, cylindrical. Height 6.4-8.0, diam. 10.6-13.0 mm (8.0 × 13.0 mm).

Right ommatophoran retractor passes through peni-oviducal angle.

Talon small, exposed, simple. Flagellum short, conic, epiphallus 2-3 times longer.

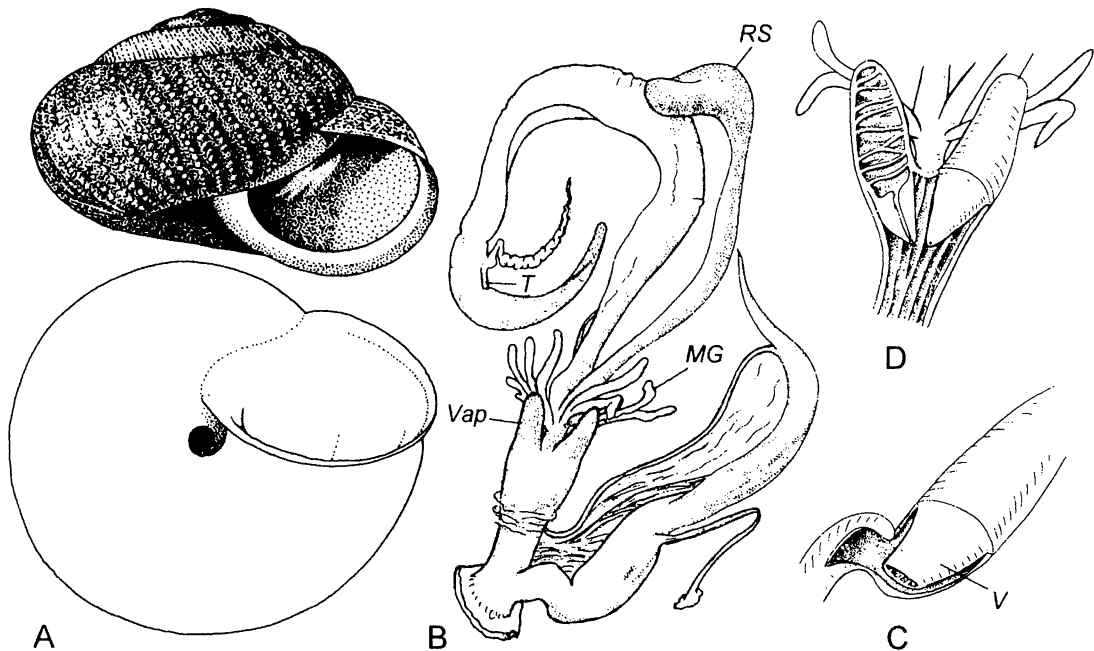


Fig. 2522. *Prostenomphalia carpathica* Baidashnikov, 1985. 12.5 km of Lugi village, Rakhov District, Transcarpathian Region, Ukraine, August 2, 1983.

A — shell. Holotype. B — reproductive tract. C — interior of penis. D — interior of vagina. SPb.

Upper chamber of penis contains short, thin-walled verge having broad canal. During copulation verge probably evaginates (unlike other Monachinae). Penial retractor inserting on penis/epiphallus junction. Free oviduct rather long. Vaginal appendages externally short, approached on one side of vagina, without tip swellings; their ends protruded into vagina as conic papillae having apical pores. Cavities of appendages subdivided into several transverse chambers by thin septae. Mucus glands 3, forked or slightly branched. Spermathecal stalk rather long; reservoir adhering to upper half of spermoviduct.

DISTRIBUTION. E Carpathians. 1 sp.

Stenomphalia Lindholm, 1927

Lindholm, 1927b: 316 (nom. emend. pro *Micromphalia* Lindholm, 1927a).

— *Micromphalia* Lindholm, 1927a: 125 (nom. praeocc., non Ancey, 1882; *Euomphalia* sect.; t.-sp. *Helix selecta* Klika, 1893; OD).

TYPE SPECIES — *Helix selecta* Klika, 1893; OD.

Shell depressed to globose, rather thin,

translucent, of 5-7 not strongly convex whorls. Last whorl only slightly deflected, rounded. Color pale-corneous to chestnut, mostly with light band. Embryonic whorls smooth. Postapical whorls with weak radial striation; granulation may also be present. Immature shells often with fine hairs. Aperture rounded, toothless, moderately oblique, with simple or more or less reflexed margins; inner lip mostly present. Umbilicus narrow to dot-like.

Right ommatophoran retractor passes through peni-oviducal angle.

Talon small, simple, exposed. Flagellum conic, epiphallus of about same length or 1.5-4 times longer. Epiphallus thin-walled, internally with high axial folds and vast lumen. Verge conic, with wide inner canal, sometimes with doubled walls. In base of penial verge there is circular loosening of tissues. Verge moves out, not everts during copulation. Penial muscular bands well developed. Penial retractor attached to lower section of epiphallus. Free oviduct moderately to rather long. Vaginal appendages not approached, consist of swollen tip, thin intercalar and enlarged basal portions; latter internally with many transverse septae,

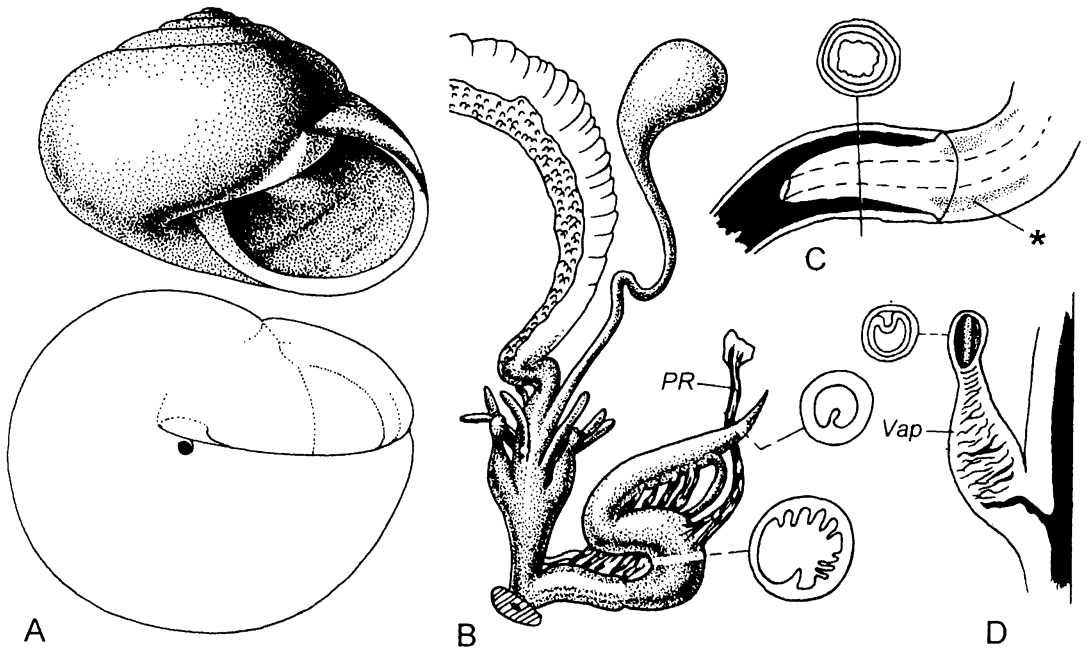


Fig. 2523. *Stenomphalia (Stenomphalia) selecta* (Klika, 1893). Khushtosyrt village, Cheghem Gorge, N Caucasus, May 15, 1970. A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. After Schileyko, 1978b. *Asterisk* — ring of loose tissue.

open to vagina through simple pore which may be located on a small pad. Spermathecal stalk moderately long; reservoir lies on upper half of spermooviduct.

DISTRIBUTION. Caucasus, Asia Minor; Kopetdagh, Afghanistan.

Stenomphalia (Stenomphalia s. str.)
Fig. 2523

Shell globose, shining, of 5-5.5 rather convex whorls. Color yellowish of various hues or shell almost colorless. Postembryonic sculpture consists of very fine radial striation and finer spiral grooves; sometimes there are scattered fine hairs. Aperture rounded, oblique, with simple, thin margins and narrow lip inside. Umbilicus dot-like. Height 7.0-8.5, diam. 8-12 mm (8.0 × 10.8 mm).

Flagellum 3 times shorter than short epiphallus. Vaginal appendages small, moderately swollen at base. Vagina internally with smoothed longitudinal folds.

DISTRIBUTION. Caucasus and Asia Minor. 1 or 2 spp.

Stenomphalia (Batumica)
Schileyko, 1978)
Fig. 2524

Schileyko, 1978b: 276.

TYPE SPECIES — *Euomphalia maiiae* Hudec et Lezhawa, 1969; OD.

Shell depressed-conic, of 6 convex whorls. Last whorl rounded (with light angulation at the very beginning). Color brown or chestnut; light peripheral band weak. Postembryonic whorls coarsely, densely striated; granulation represented by elongate granules; in juvenile shells each granule bears a curved scale. Aperture subcircular, oblique, with thick inner lip; its margins thin, sharp, strongly reflexed. Umbilicus narrow. Height 10-16, diam. 13.5-19.0 mm (10.5 × 17.2 mm).

Flagellum 3 times shorter than epiphallus. Vaginal appendages rather small, slightly enlarged at base. Vagina internally with conspicuous valve consisting of short longitudinal folds.

DISTRIBUTION. SW Transcaucasia, Turkey (Vilayet Trabzon). 2 sp.

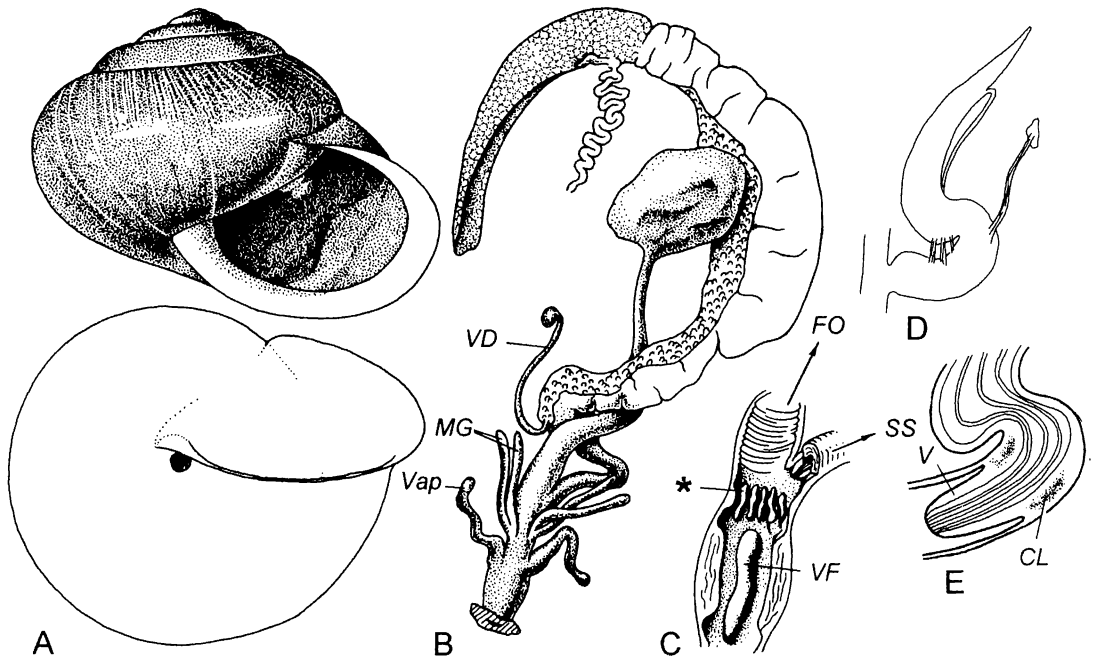


Fig. 2524. *Stenomphalia (Batumica) maiae* (Hudec et Lezhawa, 1969). Batumi, Botanical Garden [Adzharia], April 7, 1971.

A — shell. B — reproductive tract. C — longitudinal section of vagina. D — penis of other specimen. E — longitudinal section of penis. **Moscow No. Lc-28463. Asterisk** — vaginal valve. **CL** — circular loosening of tissue. **VF** — vaginal fold.

Stenomphalia (Harmozica)
Lindholm, 1927)

Fig. 2525

Lindholm, 1927a: 125 (*Euomphalia* sect.).

TYPE SPECIES — *Helix ravergiensis* Férussac, 1835; OD.

Shell more or less globular, of 6-7 somewhat convex whorls. Color light-gray or brownish, with narrow white peripheral band; another band wider and more diffuse, lies below suture. Postembryonic whorls with delicate radial striae and distinct granulation. Juvenile shells often with thin hairs. Aperture rounded, oblique, with narrow inner lip; margins sharp, reflexed. Umbilicus narrow. Height 8-13, diam. 12-18 mm (12.0 × 17.4 mm).

Flagellum and epiphallus of about equal length. All three divisions of vaginal appendages clearly visible, but basal sections of appendages not swollen. Inner surface of vagina with long and strong longitudinal folds.

DISTRIBUTION. Caucasus, northern Iran. Probably 1 sp.

Stenomphalia (Diplobursa)

Schileyko, 1968)

Fig. 2526

Schileyko, 1968: 344 (*Euomphalia* subg.).

— *Pseudhesseola* Nordsieck, 1993: 4, 7 (t.-sp. *Helix bactriana* Hutton, 1849); OD.

TYPE SPECIES — *Helix pisiformis* L. Pfeiffer, 1852 (= *Helix bactriana* Hutton, 1849); OD.

Shell variable in shape and size; generally subglobose or somewhat depressed, of 5.5 rather convex whorls. Color light- to dark-brown; light peripheral band very weak, sometimes absent. Postapical whorls with fine, irregular radial striation; granulation also present. Juvenile shells with thin hairs. Aperture subcircular to shortly ovate, oblique, with reflexed margins and thin inner lip. Umbilicus narrow, open to partly covered. Height 5-12, diam. 9-17 mm (9.6 × 14.8 mm).

Flagellum 1.5-2 times shorter than

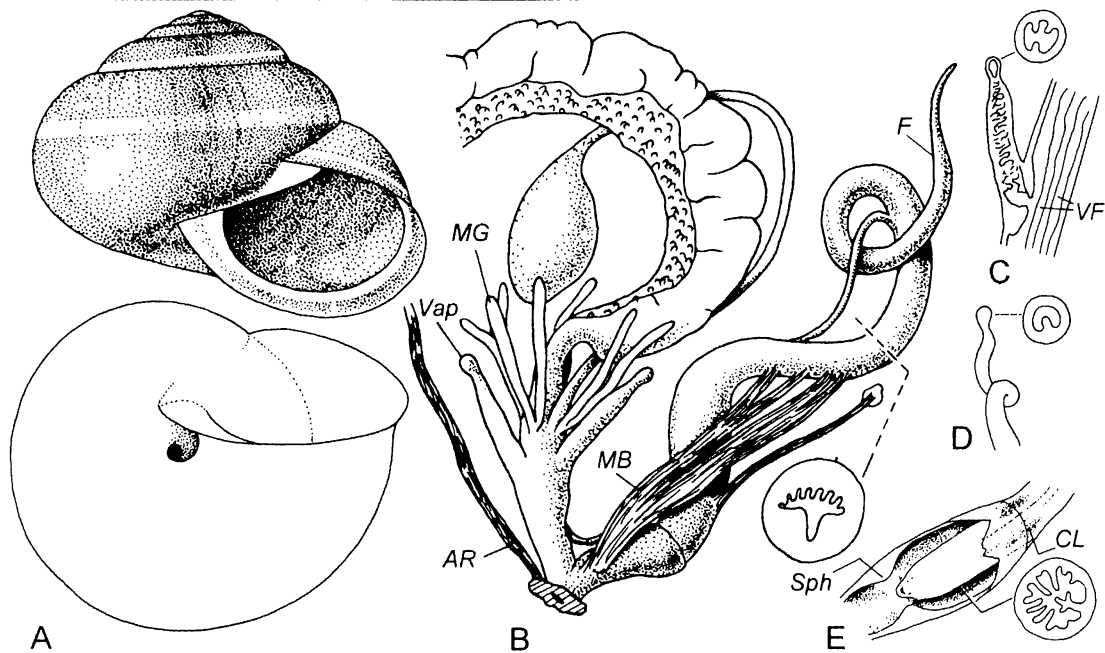


Fig. 2525. *Stenomphalia (Harmozica) ravergiensis* (Férussac, 1835). Ardon settlement ca. 40 km NW of Vladikavkaz, N Caucasus, September 19, 1970.

A — shell. B — reproductive tract. C — interior of vagina. D — vaginal appendix of other specimen. E — interior of penis. Moscow No. Lc-28447 CL — circular loosening of tissue. VF — vaginal folds.

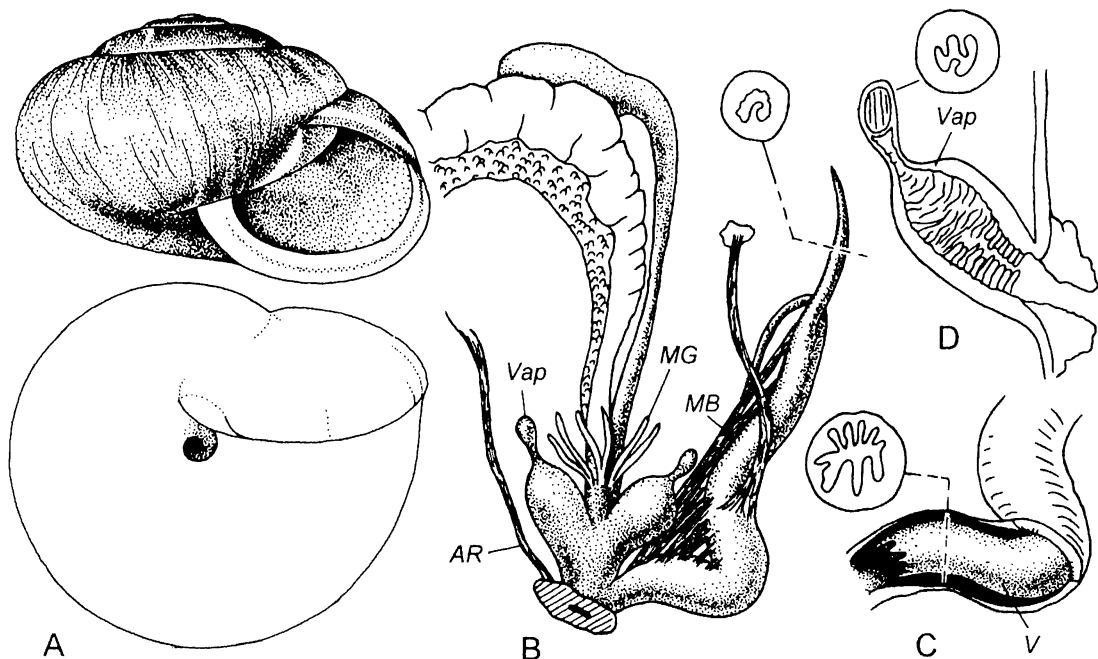


Fig. 2526. *Stenomphalia (Diplobursa) bactriana* (Hutton, 1849). Chmi village, Dar'yal'skoye Gorge, N Caucasus, May 8, 1970.

A — shell. B — reproductive tract. C — interior of penis. D — structure of vaginal appendage. After Schileyko, 1978b.

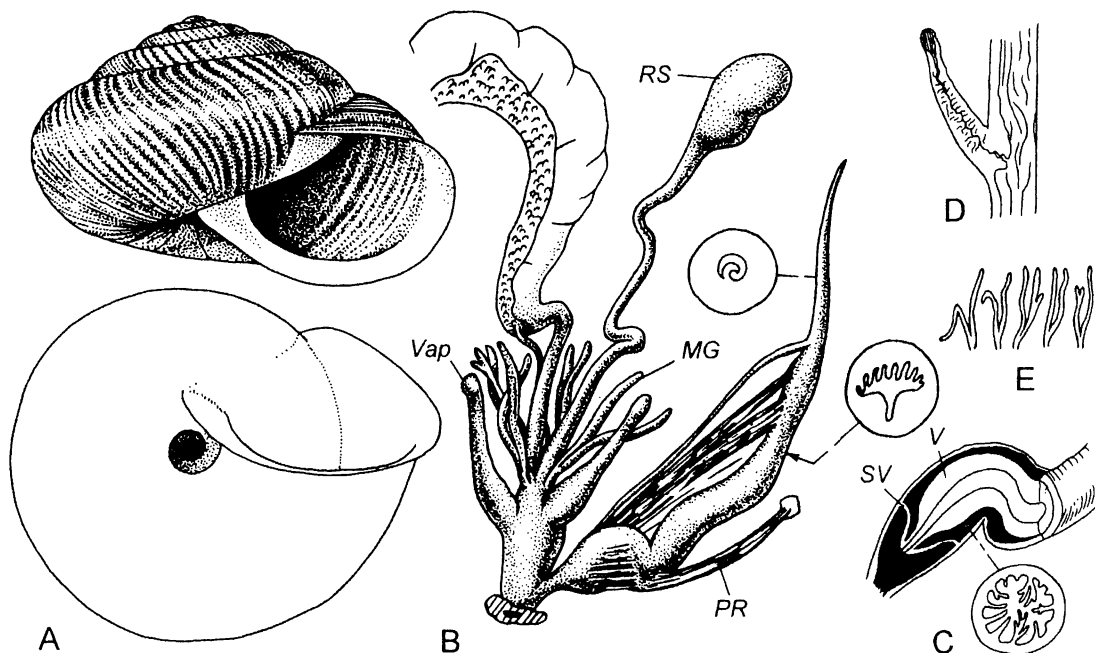


Fig. 2527 *Oscarboettgeria euages* (O. Boettger, 1883). Gagra, Georgia, September 19, 1966. A — shell. B — reproductive tract. C — interior of penis. D — longitudinal section through vaginal appendix. E — full set of mucus glands of other specimen. SPb. SV — sheath of verge.

epiphallus. Base of vaginal appendages thickened, separated from tip enlargement by distinct narrowing. Inner surface of vagina bears vague longitudinal folds.

DISTRIBUTION. Caucasus, NE Turkey, N Iran, Kopetdagh Mts., Afghanistan. Probably 1 widely variable sp.

Oscarboettgeria Lindholm, 1927
Fig. 2527

Lindholm, 1927a: 125 (*Euomphalia* sect.).

TYPE SPECIES — *Helix euages* O. Boettger, 1883; OD.

Shell depressed-conic, thin but firm, translucent, of 6-6.5 rather convex whorls. Body whorl strongly descending in front, angulated in the beginning but angle disappears towards aperture. Color whitish to brown, with light, diffuse peripheral band. Embryonic whorls smooth. Postapical radial ribs rather coarse, interspaces covered with fine spiral grooves having tendency to be broken into rows of granules. Aperture subcircular, oblique; margins sharp, reflexed, with distinct inner lip. Umbilicus

rather narrow. Height 9-13, diam. 14-16 mm (9.9×15.0 mm).

Right ommatophoran retractor passes through peni-oviducal angle.

Flagellum about 1.5 times shorter than epiphallus. Penis connected with epiphallus by strongly developed muscular bands. Verge supplied with its own sheath attached to the very tip of verge; as a result, this organ fully everted during copulation. Epiphallus and verge have much enlarged lumen and many high, thin folds, some of them (in cross-section) branched. Penial retractor attached to boundary between penis and epiphallus. free oviduct comparatively very long (longer than vagina). Vaginal appendages rather long, with thickened tips, internally with very narrow canal which opens in lumen of vagina via simple pore situated on a sort of pad. Mucus glands 5, each of 2 arms; some arms secondarily branched. Spermathecal stalk long; reservoir (nearly) attending albumen gland.

DISTRIBUTION. Caucasian coast of Black Sea. 1 sp. with a few subsp.

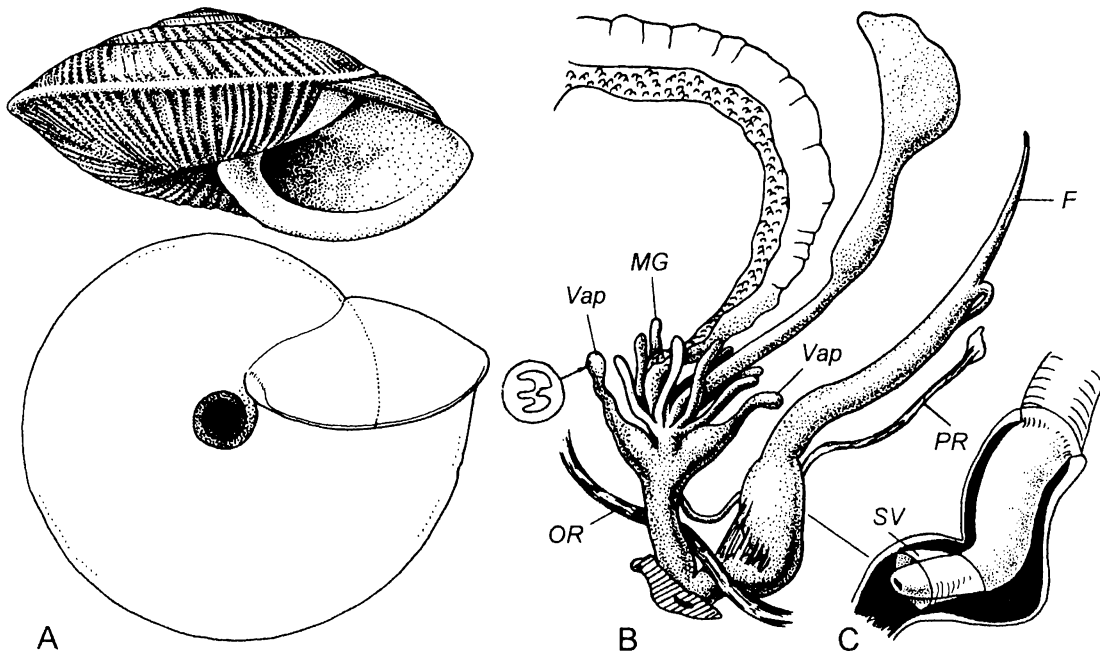


Fig. 2528. *Platytheba (Jasonella) mingrelica* (Hesse, 1931). Tekhuri River valley, W Caucasus, April 29, 1971
 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28109. SV — sheath of verge.

Platytheba Pilsbry, 1895

Pilsbry, 1895 (1893-1895): 268 [*Helicella* (*Theba*), sect.; nom. nov. pro *Nummulina* Kobelt, 1871].

— *Nummulina* Kobelt, 1871 12 [nom. praeocc. non d'Orbigny, 1860 (Protozoa); *Fruticicola* "Gruppe": t.-sp. *Helix nummus* Ehrenberg, 1831, tautonymy].

— *Caucasofixus* Lindholm, 1927a: 123 [*Trochulus* (*Xerocampylaea*) sect.; t.-sp. *Helix* (*Nummulina*) *prometheus* O. Boettger, 1883; OD].

TYPE SPECIES — *Helix nummus* Ehrenberg, 1831; OD.

Shell lens-shaped, thin, of 5-6 weakly convex to almost flat whorls. Last whorl straight or scarcely deflected, with a sharp keel. Color light-corneous to gray. Embryonic whorls smooth. Postapical whorls with variously developed radial ribs, which usually lighter than background. Hairs absent. Aperture ovoid-angulated, moderately to well oblique, with thin, shortly reflexed margins. Umbilicus open, moderately narrow.

Flagellum about 2 times shorter than

epiphallus. Penis more or less swollen, bent; curvature of penis fixed by a series of muscular bands. Verge rather long, provided with its own sheath attached to distal half of verge. Penial retractor, if present, attached to proximal part of penis. Free oviduct short. Vaginal appendages 2 or 1, not approached, with thickened tips. Mucus glands 4, each of 2 arms with very short common ducts. Spermathecal duct rather short; reservoir elongated, not reaching albumen gland.

DISTRIBUTION. W Caucasus, Syria, Palestine.

Platytheba (Jasonella)

Lindholm, 1927)

Fig. 2528

Lindholm, 1927a: 125, 133 (*Circassina* subg.).

TYPE SPECIES — *Circassina mingrelica* Hesse, 1931; OD.

Shell moderately thin, of 6 weakly convex whorls; last whorl with blunt peripheral keel, slightly descending in front. Color grayish or grayish-corneous, sometimes

with light greenish hue. Ribs smoothed and more or less widely spaced; interspaces with distinct granulation. Aperture ovate, oblique, with rounded palatal angle and thin margins. Umbilicus perspective. Height 9-12, diam. 20-24 mm (11.0 × 22.8 mm).

Penial retractor present. Vaginal appendages 2.

DISTRIBUTION. W Caucasus. 1 sp.

Platytheba (*Platytheba* s. str.)

Fig. 2529

Shell very thin, of about 5 almost flat whorls. Last whorl with sharp peripheral keel, scarcely descending in front. Color light-corneous, around umbilicus usually there is a lighter zone. Ribs thin and crowded; besides, there are very fine periostracal threads that visible mainly under suture on body whorl. Aperture ovate, very oblique, with angle and furrow on palatal margin corresponding to keel. Aperture margins thin and sharp, inside with wide low lip. Umbilicus moderately perspective, rather broad. Height 6-9, diam. 14-23 mm (7.8 × 19.6 mm).

Penial retractor absent. Vaginal appendage 1.

DISTRIBUTION. W Caucasus with adjacent regions of Turkey; Syria, Palestine. 2-3 spp.

Euomphalia Westerlund, 1889

Fig. 2530

Westerlund, 1889: 31, 192 (*Fruticicola* "Gruppe").

— *Euryomphala* Westerlund, 1897a: 205 [nom. praeocc., non Beck, 1837 (*Prosobranchia*); nom. err. pro *Euomphalia* Westerlund, 1889].

TYPE SPECIES — *Helix strigella* Draparnaud, 1805; SD Kobelt, 1904.

Shell more or less depressed, rather thin, of 6 rather convex whorls. Body whorl rounded, markedly descending in front. Color brownish or corneous, with diffuse peripheral band. Embryonic whorls smooth. Sculpture of later whorls of rather strong irregular striation; in some species there are hairs. Aperture rounded to broadly ovate, moderately oblique, with sharp, reflexed margins, often with thin inner lip. Umbilicus moderately wide. Height 9-15, diam. 13-21 mm (10.0 × 16.2 mm).

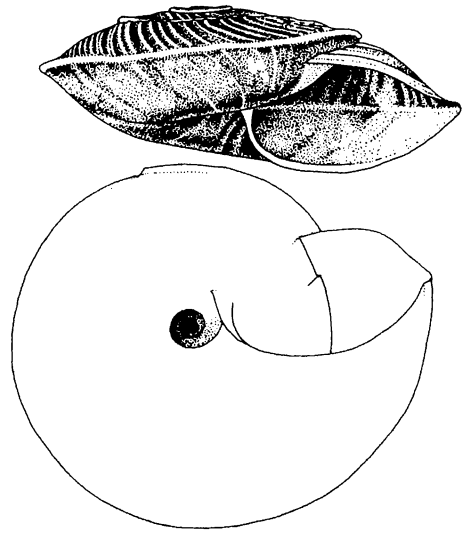


Fig. 2529. ! *Platytheba* (*Platytheba*) *prometheus* (O. Boettger, 1883). Tsageri, Georgia. SPb.

Flagellum and epiphallus of about same length or flagellum 2 times shorter. Penis surrounded by many longitudinal muscular fibers. Verge as in *Platytheba*. Epiphallus and verge with enlarged lumen and many high, thin folds. Penial retractor attached to distal end of epiphallus. Free oviduct short. Vaginal appendages very long, not approached, with thin trunk and swellings on tips. Inner surface of atrium with smoothed longitudinal bifurcated folds whose arms run to appendages. Mucus glands initially 4, each of 2 arms; there is a tendency to crownwise arrangement of glands. Spermathecal stalk rather long; reservoir nearly reaching albumen gland.

DISTRIBUTION. Central and E Europe northward to 61°N, Crimea, Caucasus. 3 spp.

Mengoana Adolfo Ortiz de Zarate,

1949

Fig. 2531

Ortiz de Zarate Adolfo, 1949: 285 (*Euomphalia* subg.).

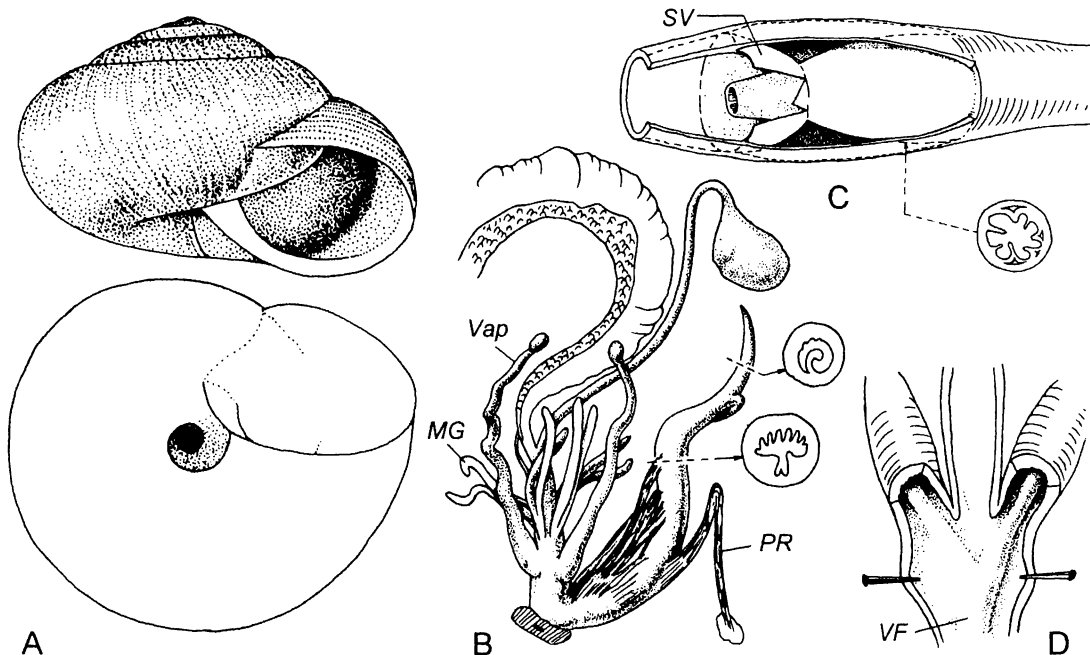


Fig. 2530. *Euomphalia strigella* (Draparnaud, 1805). Arkhangelskoye, Moscow Region [Russia], June 5, 1971
 A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow No. Lc-28448. SV — sheath of verge. VF — vaginal fold.

TYPE SPECIES — *Helix brigantina* Da Silva Mengo, 1867; OD.

Shell low-conic, moderately thin, glossy, of about 5 somewhat convex whorls. Last whorl evenly rounded, practically straight. Color yellowish-brown, with darker diffuse radial streaks. Embryonic whorls vaguely radially wrinkled. First 2-2.5 postapical whorls finely granulated; later whorls bear very fine irregular wrinkles (at first glance nearly smooth). Traces of spiral striation visible locally. Aperture ovate, moderately oblique, margins thin, straight, except columellar; inner lip not strong. Umbilicus narrow. Height 12-13, diam. 15-17 mm (12.4 × 16.5 mm).

Talon hidden. Flagellum very long, slender, convoluted; epiphallus somewhat shorter, cylindrical. Penis relatively small, internally with short, subcylindrical verge and large, fleshy axial pilaster. Penial retractor inserted on lower half of epiphallus. Free oviduct very short. Vagina long, somewhat expanded, with 1 rudimentary, club-shaped appendix that opens to lumen of vagina through a simple pore. Base of appendix supplied with short muscle bands.

Mucus glands 4, simple and branched. Atrium contains a flat, leaf-shaped stimulator. Spermathecal stalk rather short, cylindrical; reservoir consists of swollen, thin-walled distal and attenuated proximal parts attending middle of albumen gland.

DISTRIBUTION. Spain. 1 sp.

Monacha Fitzinger, 1833

Fitzinger, 1833: 95.

— *Theba* Hesse, 1931: 32 (nom. praeocc., non Risso, 1826; t.-sp. *Helix cartusiana* Müller, 1774; OD).

Hausdorf, 2000a: 63; 2000b: 1575.

TYPE SPECIES — *Helix cartusiana* Müller, 1774; SD Hermannsen, 1847 (as *carthusiana*).

Shell subglobose to flattened, of 5-7 moderately convex whorls. Last whorl rounded, without peripheral angle or keel, (nearly) straight. Color whitish to light-yellowish or pale-corneous to chestnut. Embryonic whorls smooth. Postnuclear sculpture various but never strong, sometimes malleate; small hairs may be present. Ap-

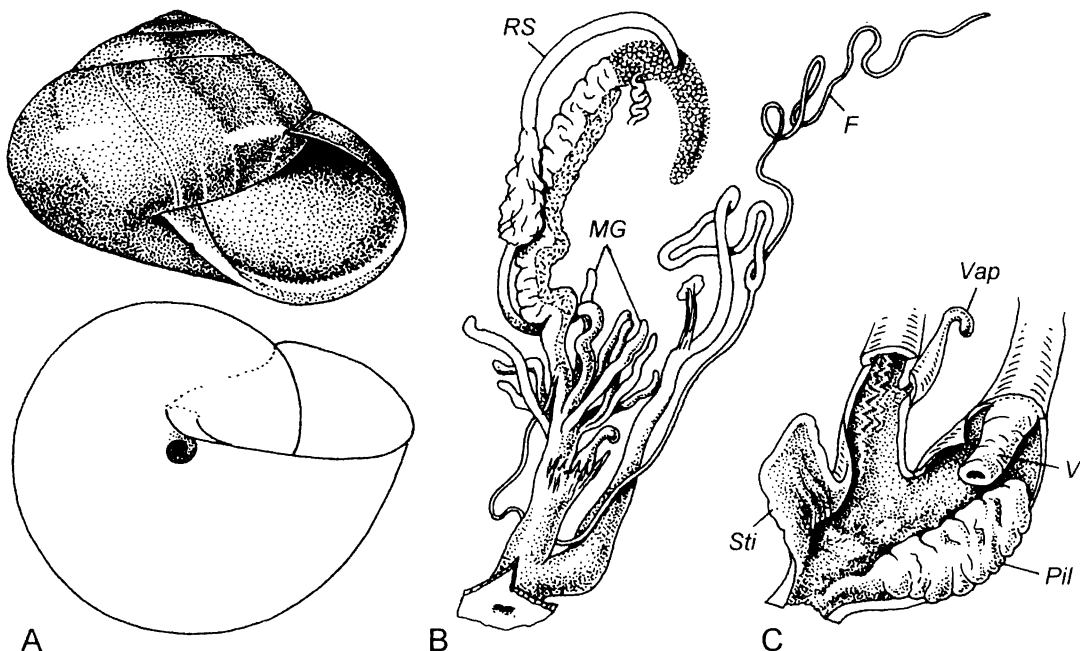


Fig. 2531 *Mengoana brigantina* (Da Silva Mengo, 1867). Llanes, Sierra del Cuerza, Prov. Oviedo, Spain, July 5, 1984.
 A — shell. B — reproductive tract. C — interior of penis, atrium and vagina. **Leiden.**

erture more or less rounded, moderately oblique; margins straight or slightly reflexed, with rather thin, sometimes wide inner lip. Umbilicus very narrow, sometimes semicovered.

Right ommatophoran retractor passes outside peni-oviducal angle.

Talon simple, slender. Flagellum almost equal to epiphallus in length or 1.5-3 times shorter. Sheath of penial verge absent, but there is united intravergic cavity, penetrating also into penis walls. Verge variable in shape. Penial retractor, when present, attached to boundary between penis and epiphallus or to distal portion of epiphallus. Free oviduct short to moderately long. Vaginal appendage I or wanting; mucus glands may also be absent.

DISTRIBUTION. Europe, Mediterranean countries, Crimea, Caucasus.

Monacha (Paratheba Hesse, 1914)
 Fig. 2532

Hesse, 1914: 268 (*Theba* subg.). Hausdorf, 2000a: 64.

TYPE SPECIES — *Helix fruticola* Krynicki, 1833; OD.

Shell subglobose to slightly depressed, moderately solid, of 5-7 somewhat convex whorls. Color uniformly chestnut, creamy, yellowish or white. Early postembryonic whorls finely radially striated; on body whorl there are sharp wrinkles and elements of malleate sculpture. Aperture rounded or widely ovate; margins slightly reflexed, with a thin light lip inside. Through umbilicus one can see no less than a half of penultimate whorl. Height 6.5-17, diam. 9-20 mm (14.2 × 16.5 mm).

Vaginal appendage present. Penial retractor and mucus glands present.

DISTRIBUTION. Crimea, Caucasus, Asia Minor. About 15 spp.

Monacha (Monacha s. str.)
 Fig. 2533

— *Carthusiana* Kobelt, 1871: 11 (t.-sp. *Helix carthusiana* Müller, 1774; SD Martens, 1873, in Zool. Rec. for 1871, Moll.: 152).

— *Szentgalya* Pintér, 1977: 54 (t.-sp. *Helix gregaria* Rossmässler, 1839; OD).

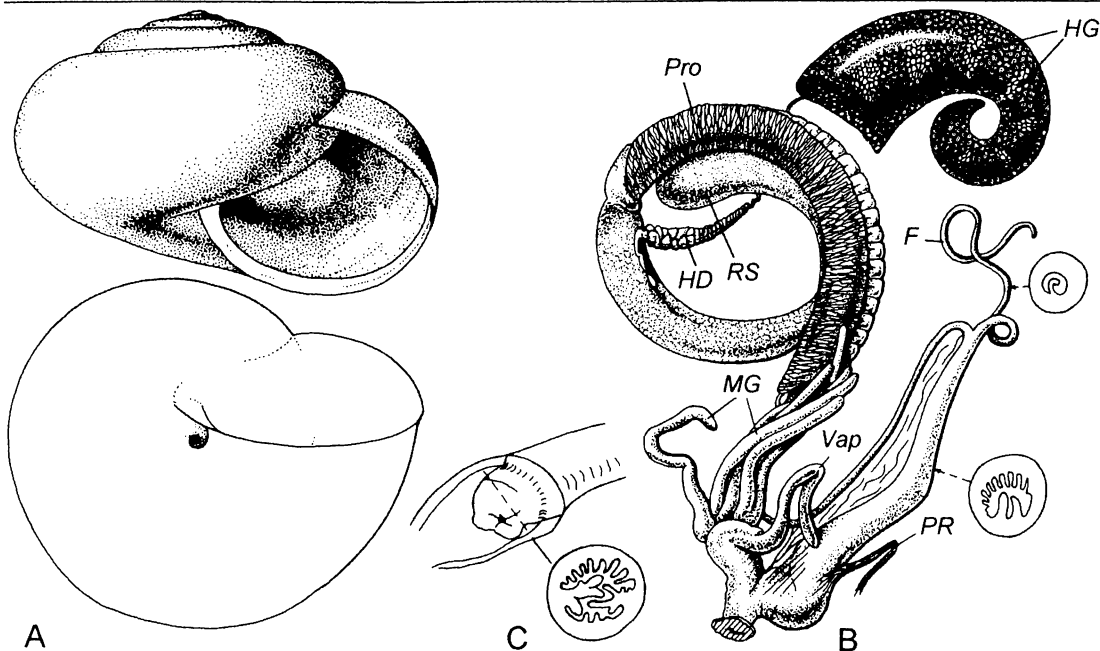


Fig. 2532. *Monacha (Paratheba) fruticola* (Krynicky, 1833). Krasnoles'ye SE of Simferopol, Crimea, August 3, 1962.
 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28445.

— *Eutheba* Nordsieck, 1993: 4, 7 (*Monacha* subg.; t-sp. *Helix cantiana* Montagu, 1803; OD).

Hausdorf, 2000a: 77

Shell much depressed, thin but rather firm, of 5-6 weakly convex whorls. Color milk-white to yellowish, aperture margins often reddish or brownish. Postembryonic sculpture, especially on body whorl, consists of many weak depressions; there is also fine, vague radial striation. Aperture broadly ovate, margins sharp, slightly reflexed except for upper part of palatal margin. At some distance from edge there is wide lip. Umbilicus usually more or less covered. Height 4-10, diam. 6-16 mm (7.7 × 14.2 mm).

Vaginal appendage and mucus glands present. Penial retractor missing.

DISTRIBUTION. Central Europe, Mediterranean countries, Crimea, Caucasus. About 30 spp.

Monacha (Metatheba) Hesse, 1914
 Fig. 2534

Hesse, 1914: 268 (*Theba* subg.).

— *Boemica* Schileyko, 1978b: 289 (*Monacha*

subg.; t-sp. *Helix subcarthusiana* Lindholm, 1913; OD).

Hausdorf, 2000a: 106.

TYPE SPECIES — *Helix samsunensis* L. Pfeiffer, 1868; OD.

Shell more or less depressed to nearly globose, rather thin, of 6-6.5 slightly convex whorls. Color light, monochromatic or with very diffuse lighter band. Postnuclear sculpture of thin radial striation; besides, usually there are thin and short hairs; sometimes vague spiral grooves visible locally. Aperture rounded, its basal margin slightly reflexed, columellar dilated and partly covers very narrow umbilicus. Height 8-12, diam. 10-15 mm (9.8 × 13.4 mm).

Vaginal appendage missing. Mucus glands and penial retractor present.

DISTRIBUTION. W Caucasus, N Asia Minor. 2-3 spp.

Cyrnotheba Germain, 1929
 Fig. 2535

Germain, 1929: 282, 422 (*Theba* subg.).

TYPE SPECIES — *Helix corsica* Shuttleworth, 1843; OD.

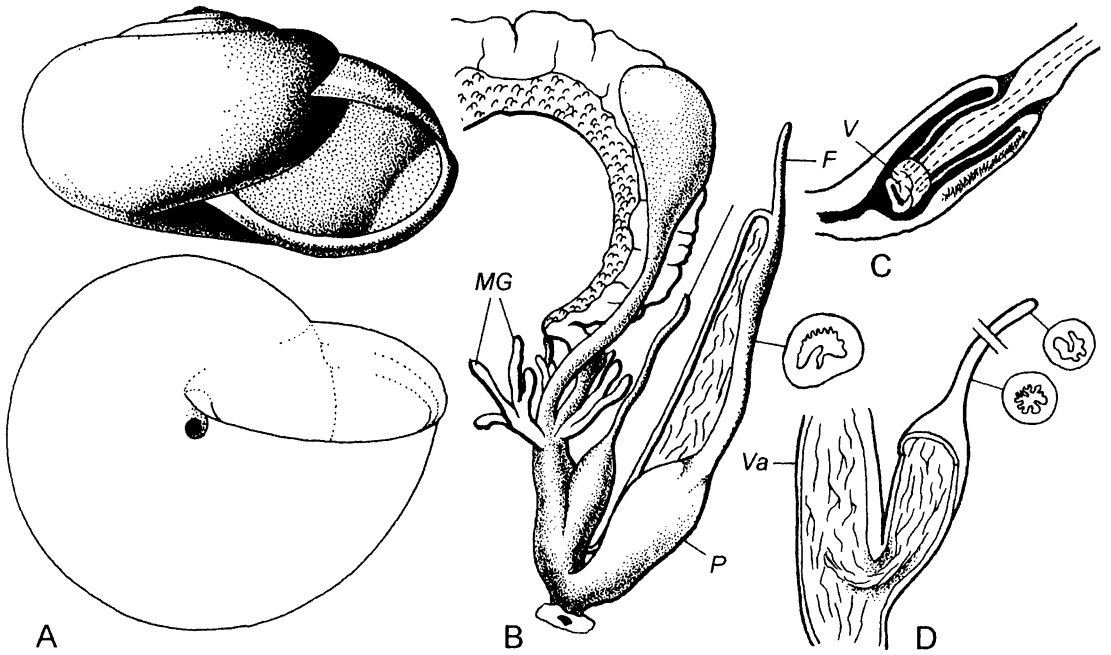


Fig. 2533. *Monacha (Monacha) cartusiana* (Müller, 1774).

A — shell: Golubinka, Crimea. Moscow. B, C, D — Kyustendil, Bulgaria, June 26, 1969.
 B — reproductive tract. C — interior of penis. D — interior of vagina. SPb.

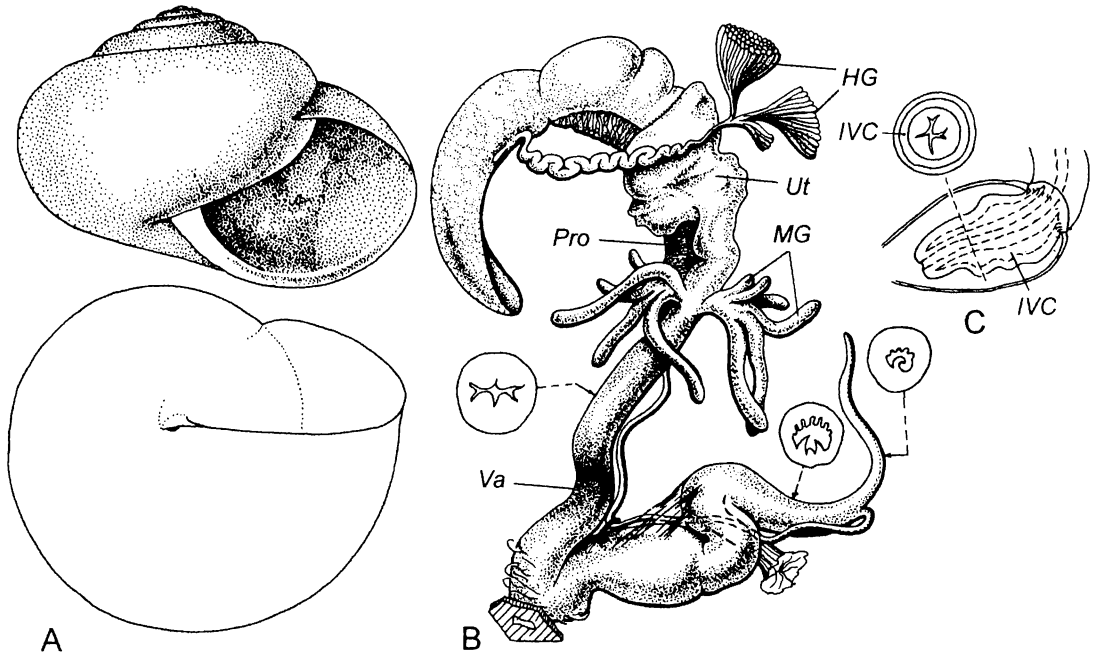


Fig. 2534. *Monacha (Metatheba) samsunensis* (L. Pfeiffer, 1868). Gagra, Georgia, September 1966.

A — shell. B — reproductive tract. C — interior of penis. SPb. IVC — intravaginal cavity

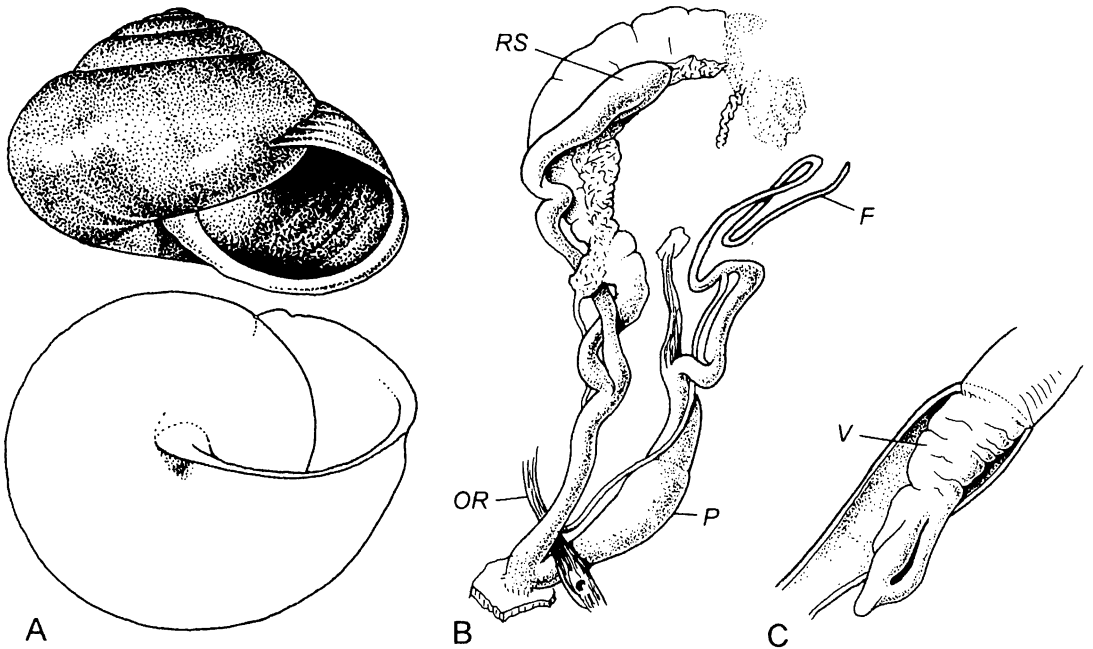


Fig. 2535. *Cyrnotheba corsica* (Shuttleworth, 1843).

A — shell: Bastia, Corsica. Phil. No. 214953. B, C — E of Vivario, Corsica, October, 1994. B — reproductive tract. C — interior of penis. Moscow No. Lc-28456 (gift of Theodorus Ripken).

Shell subglobose, rather thin, slightly translucent, of 5-5.5 slightly convex whorls. Last whorl a little angulated or rounded, scarcely descending in front. Color yellowish or light-corneous, with a light diffuse peripheral band. Embryonic whorls with spiral rows of small tubercles. Postapical whorls with radial series of nail-like scales and many minute radial crests, which frequently interrupted or broken into lines of small drop-like structures; on body whorl there is a gentle malleation and traces of spiral lines. Aperture subcircular or elliptical, moderately oblique, with thin inner lip. Umbilicus tiny or closed. Height 9.0-12.5, diam. 11.0-15.6 mm (11.5 × 15.1 mm).

Right ommatophoran retractor passes through peni-oviducal angle.

Flagellum long to short. Epiphallus rather long. Penis externally scarcely demarcated from epiphallus, internally without regular relief. Verge roughly pointed-cylindrical, with wrinkled surface; in cross-section it seems to be formed by an external sheath enveloping an empty cavity in center of which there is a canal with longitudinally wrinkled walls. Verge pore slit-like, lateral in position. Penial retractor at-

tached to distal half of epiphallus. Vaginal appendages or mucus glands missing. Free oviduct moderately short, vagina much longer. Spermathecal stalk moderately long; reservoir a little not attending albumen gland.

DISTRIBUTION. Corsica. 2 spp.

Hiltrudia Nordsieck, 1993

Fig. 2536

Nordsieck, 1993: 14.

TYPE SPECIES — *Helix mathildae* Westerlund, 1881; OD.

Shell somewhat depressed, rather thin, of about 5.5 slightly convex whorls. Last whorl rounded, only slightly deflected. Color corneous. Embryonic whorls with microscopic spiral lines. Later whorls with fine, irregular radial striae and minute radial scales. Aperture ovate, not strongly oblique, with simple, scarcely reflexed margins. Umbilicus rather narrow but perspective. Height 5-6, diam. 10-12 mm.

Flagellum shorter than epiphallus. Penis contains ovate verge. Penial retractor attached a little below middle of epiphallus.

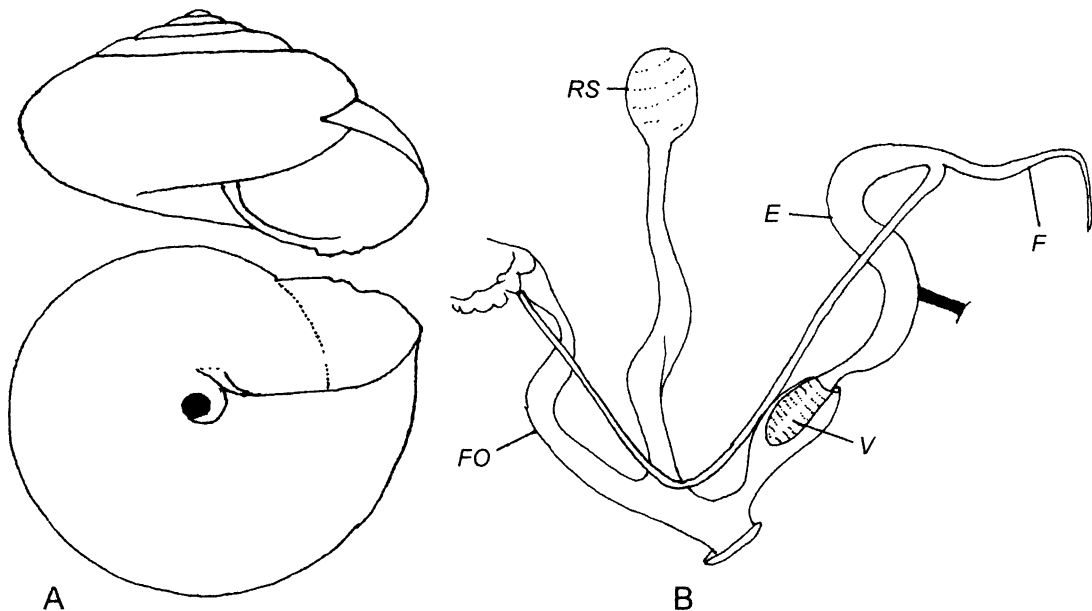


Fig. 2536. *Hiltrudia mathildae* (Westerlund, 1881).
A — shell. B — reproductive tract. After Maassen, 1995.

Free oviduct enormously long. Vagina short, lacking any additional organs. Spermathecal stalk moderately long, somewhat expanded; reservoir subglobose.

DISTRIBUTION. Croatia (Dalmatia). 2 spp.

? *Montserratina* Adolfo Ortiz de Zarate, 1946
Fig. 2537

Ortiz de Zarate Adolfo, 1946: 342. Giusti & Manganelli, 1988: 91, 96 — "insertae sedis"

TYPE SPECIES — *Helix bofilliana* Fagot, 1884; OD.

Shell depressed, thin, fragile, of 4.5-5 slightly convex whorls. Last whorl straight, with rounded angle at periphery. Color brown. Embryonic whorls initially smooth, then with many fine spiral striae. Later whorls with coarse, irregular radial wrinkles and dense spiral riblets and exceptionally fine and delicate, crowded periostracal threadlets; there are also rows of short hairs which longer near peripheral angle. Aperture ovate, moderately oblique, with simple margins; columellar margin ex-

panded. Umbilicus moderately broad, quite perspective, subcylindrical. Height 2-3, diam. 5-6 mm (2.3 × 5.2 mm).

Right ommatophoran retractor passes through peni-oviducal angle.

Flagellum slender, about 2 times shorter than epiphallus. Penis somewhat swollen, with large verge having subterminal pore; inner canal surrounded by circular cavity. Inner surface of penis with many straight, corrugated folds. Penis coated by a thin sheath. Penial retractor short, robust, attached to epiphallus above its boundary with penis. Free oviduct not long, vagina 2-3 times longer. Stylophores or their derivatives absent. Mucus glands 2 or 3, simple; 1 or 2 of them enter vagina at short distance from the other. Basal portion of latter enters base of a small muscle — a derivative of columellar muscle. Internally vagina with a series of pleats, sometimes divided to form rows of irregularly shaped papillae. Spermathecal stalk moderately long; reservoir voluminous, shoe-shaped (at least, in juvenile specimens), reaching albumen gland.

DISTRIBUTION. Spain (Catalonia). 1 sp.

REMARK. As Giusti & Manganelli (1988) noted, the genus *Montserratina* oc-

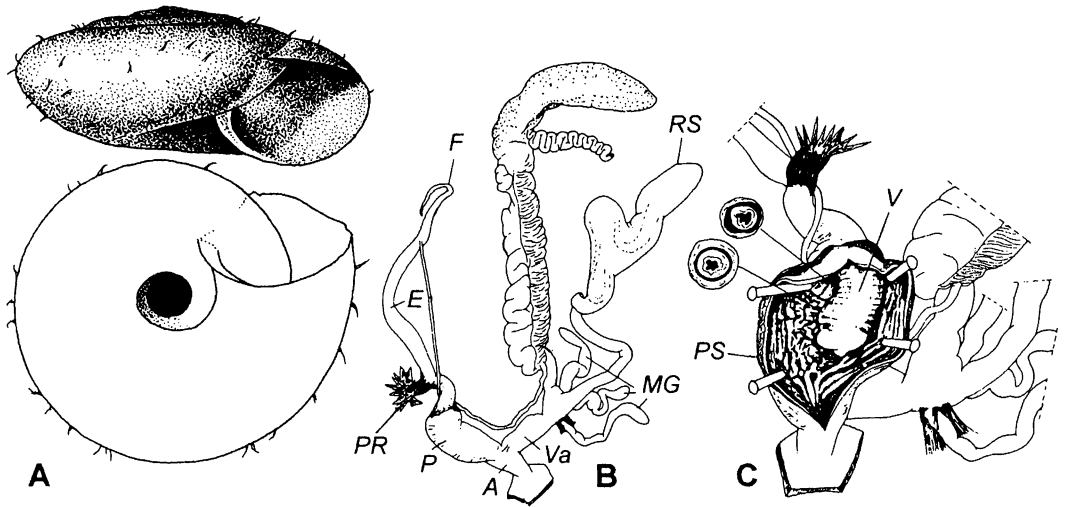


Fig. 2537 *Montserratina bofilliana* (Fagot, 1884).

A — shell: "Au dessus de San Geronimo, au Montserrat pres Barcelona" Lectotype. Geneva.
 B — reproductive tract. C — interior of penis. After Giusti & Manganelli, 1988.

cupies insular position and could be assigned to Helicodontidae as well as to Hygromiidae. However, these authors incline to place this genus in Hygromiidae. I, with some hesitation, include *Montserratina* in Monachainae mainly because of the presence of circular cavity in walls of verge (a characteristic feature of many Monachainae); besides, the 3rd "mucus gland" (supplied with its own retractor) could be interpreted as a modified vaginal appendix (comp. with *Mengoana* — Fig. 2531).

Nienhuisiella Giusti et
 Manganelli, 1987
 Fig. 2538

Giusti & Manganelli, 1987 167

TYPE SPECIES — *Nienhuisiella antonellae*
 Giusti et Manganelli, 1987; OD.

Shell obesely lenticular, slightly flattened, rather fragile, of 4.5-5 convex whorls. Last whorl variably angled at periphery, somewhat descending in front. Color yellow to light-brown, without peripheral band. Embryonic whorls slightly wrinkled and marked by a few minute spiral grooves. Subsequent whorls covered

with radial rows of long caducous hairs that leave scars after they have fallen. Periostracum marked by minute, more or less regular radial wrinkles which often interrupted or fragmented into rows of very small elongated tubercles. Aperture ovate, oblique, with straight or slightly reflexed margins. Height 6.0-7.2, diam. 9.0-11.5 mm (6.0 × 9.3 mm).

Right ommatophoran retractor passes through peni-oviducal angle.

Flagellum long; epiphallus about 2.5 times shorter. Boundary between epiphallus and penis marked by insertion of penial retractor. Penial muscular band well developed, connecting basal part of penis with its proximal part and distal section of epiphallus. Verge well developed, with central canal, without its own sheath; its walls contain a number of lacunae and capillaries. Free oviduct short. Vagina rather long, expanded. Vaginal appendages missing but at level of insertion of mucus glands vagina internally contains conspicuous ovate depression with fleshy process; in original description this structure interpreted as remnant of "dart-sac complex" Mucus glands 2, each of 2-4 arms; common duct very short. Spermathecal stalk stout, modera-

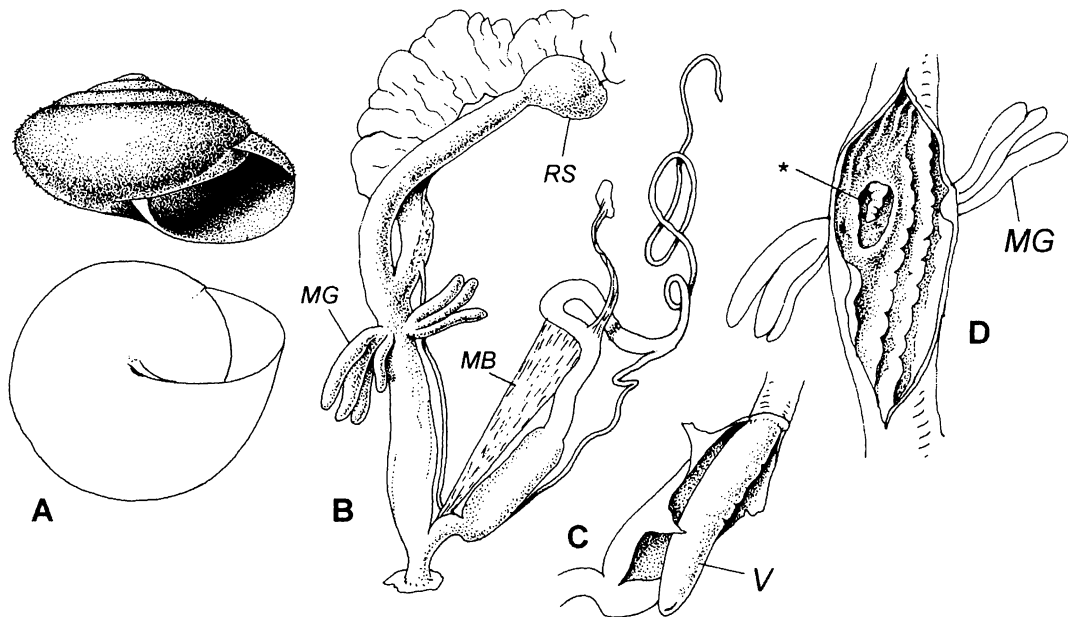


Fig. 2538. *Nienhuisiella antonellae* Giusti et Manganelli, 1987 Sardinia: Buggeru (Cagliari), November 20, 1986. A — shell. B — reproductive tract. C — interior of penis. D — interior of vagina. Moscow No. Lc-28512 (gift of Dr. F. Giusti). **Asterisk** — fleshy process. **MB** — muscular band.

tely short; globular reservoir adheres to upper half of spermoviduct.

DISTRIBUTION. Sardinia. 1 sp.

Ashfordia Taylor, 1917
Fig. 2539

Taylor, 1917 69.

TYPE SPECIES — *Helix granulata* Alder, 1830; OD.

Shell subglobose, thin, somewhat translucent, of about 5 a little convex whorls. Last whorl rounded, straight. Color uniformly corneous or slightly greenish. Embryonic whorls smooth. Later whorls with numerous, long, erect, whitish hairs arising from a bulbous base and arranged in obliquely-radial rows which cross radial ridgelets; in old shells hairs sometimes lost. Aperture broadly lunate, moderately oblique, with simple, fragile margins. Umbilicus minutely open, partially covered. Height 5-7, diam. 7-9 mm (5.3 × 7.2 mm).

Right ommatophoran retractor passes through peni-oviducal angle.

Talon hidden. Flagellum short, conic, somewhat rudimentary. Epiphallus thickened, its distal section enlarged, contains

broad longitudinal folds which continued into lumen of verge. Latter filling lumen of short penis, with wide cavity and large terminal pore. Penial retractor attached to proximal enlarged part of epiphallus. Free oviduct about 2 times shorter than vagina. Accessory organs on female side absent. Spermathecal stalk long, cylindrical; voluminous reservoir reaching lower margin of albumen gland. Spermatophore with thread-like tail and enlarged, pointed, closely serrate head.

DISTRIBUTION. Great Britain, Spain (Cantabria). Probably 1 sp.

Plentuisa Puente et Prieto, 1992
Fig. 2540

Puente & Prieto, 1992: 159

TYPE SPECIES — *Plentuisa vendia* Puente et Prieto, 1992; OD.

Shell almost flat, thin, of 4-4.5 convex whorls. Last whorl rounded, straight. Color uniformly brown. Embryonic whorls smooth. Postapical sculpture of coarse, irregular radial wrinkles and long, curved hairs; slopes of umbilicus granulated; exceptionally fine periostracal spiral threads

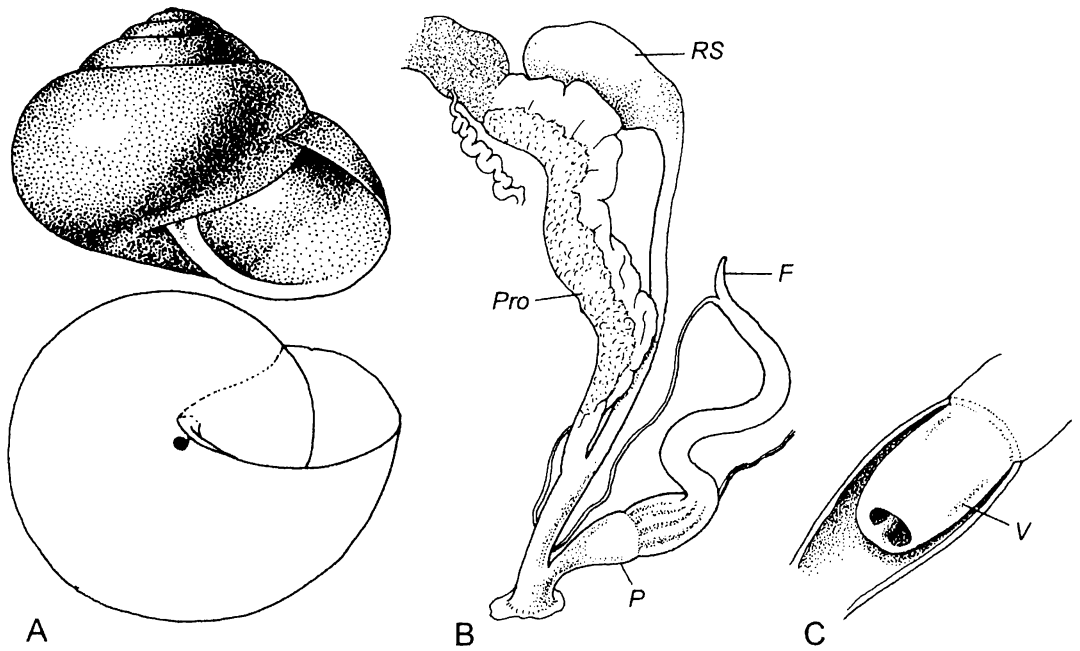


Fig. 2539. *Ashfordia granulata* (Alder, 1830). Near Cassiobury Park W of Watford, Hertfordshire, England, September 27, 1977
 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28538 (Cardiff No. 2.1993.052.003).

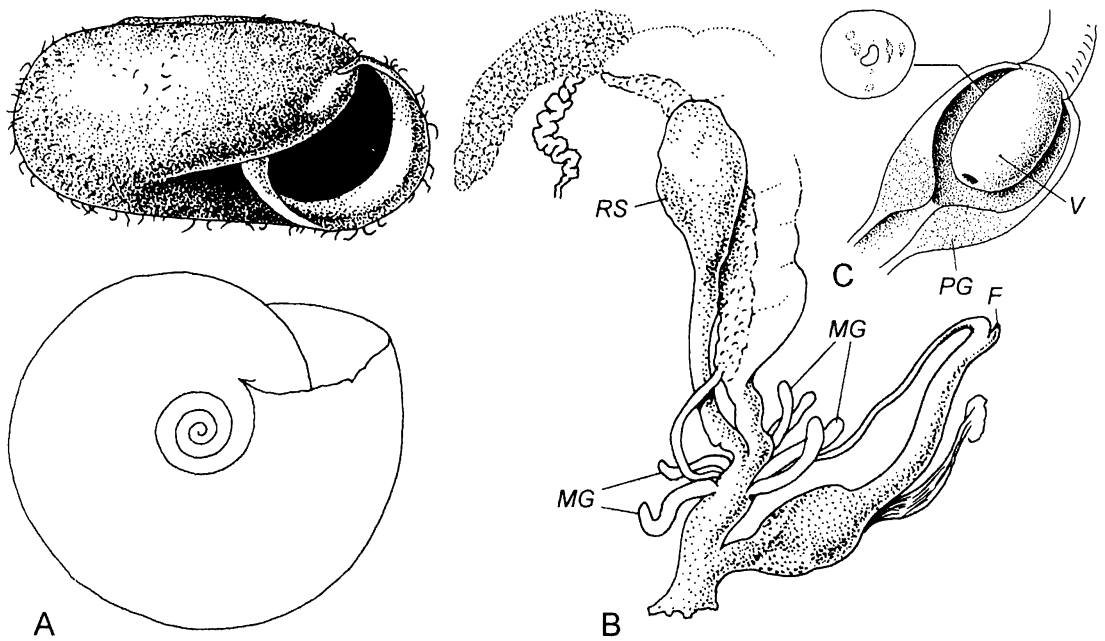


Fig. 2540. *Plentuisa vendia* Puente et Prieto, 1992. "Sotres (Asturias), Roquedo, 16.IX.1990" Paratype.
 A — shell. B — reproductive tract, interior of penis and cross-section of verge. Paris.

visible predominantly near suture. Aperture broadly semilunate, not strongly oblique, with simple margins and thick inner lip which visible from outside as a yellowish or whitish area. Umbilicus rather wide, quite perspective. Height 2.2-2.8, diam. 4.2-5.2 mm (2.5 × 4.9 mm).

Talon not located. Vas deferens enters epiphallus laterally, leaving small, conic, rudimentary flagellum. Epiphallus cylindrical, not long. Penis swollen, with strong, circular gland in lower section of its walls; inner surface of penis smooth. Verge large, ovate, thick-walled, with narrow canal; walls filled with loose tissue and contain many lacunae. Penial retractor attached to penis/epiphallus junction. Free oviduct moderately long, vagina subequal in length. Stylophores or their derivatives absent. Mucus glands 3-4, simple or forked. Spermathecal stalk moderately long, cylindrical; voluminous reservoir lies on upper half of spermoviduct, not attending albumen gland.

DISTRIBUTION. N Spain. 1 sp.

GEOMITRINAE C. Boettger, 1909

Boettger C., 1909: 4, 17

Right ommatophoran retractor passes through peni-oviducal angle.

Base of verge solid, walls of verge may contain sinuses and capillaries; rarely verge with its own sheath. Vagina long. Stylophores 2 or 1, rudimentary, modified into vaginal appendages in form of small, simple or clavate tubes without swellings on their tips (exceptions: in *Steenbergia* appendages absent, in *Helicomela* tips of appendages swollen). Mucus glands 1 or 2, simple to branched (in *Steenbergia* wanting).

DISTRIBUTION. Mediterranean countries; many genera in Madeira.

Trochoideini Nordsieck, 1987

Nordsieck, 1987: 31.

Shell mostly calcareous-white, monochromatic or with 1-2 dark band. Postapical whorls without granular sculpture.

Vaginal appendages 2.

DISTRIBUTION. Mediterranean and At-

lantic shores of France and South of Great Britain; Greece (with islands), Syria, Palestine, Jordan, Israel, N and NE Africa.

Trochoidea Brown, 1827

Fig. 2541

Brown, 1827: Pl. 41, fig. 80, 81.

— *Turricula* Beck, 1837: 10 (nom. praeocc., non Schumacher, 1817 (*Turridae*); t.-sp. *Helix elegans* Gmelin, 1791; SD Herrmannsen, 1849).

— *Ochthepera* Beck, 1837: 17 (t.-sp. *Helix pyramis* Philipi, 1836; SD Herrmannsen, 1847)

— *Trochula* Schlüter, 1838: 7 [t.-sp. *Helix terrestris* Pennant, 1801; SD Pilsbry, 1895 (1893-1895)]

— *Xeroclausia* Monterosato, 1892: 22; (*Xerophila* subg.; t.-sp. *Helix meda* Porro, 1840; monotypy).

— *Xeroclivia* Monterosato, 1892: 25 (*Xerophila* subg.; t.-sp. *Helix pyramidata* Draparnaud, 1805; designated here).

— *Xeronexa* Monterosato, 1892: 25 (*Xerophila* subg.; t.-sp. *Helix cumiae* Calcara, 1847; SD Kobelt, 1892).

— *Xerocochlea* Monterosato, 1892: 25; (*Xerophila* subg.; t.-sp. *Helix caroni* Deshayes, 1832; SD Kobelt, 1892).

— *Xeropytyca* Monterosato, 1892: 25 (*Xerophila* subg.; t.-sp. *Helix ptychodia* Bourguignat, 1863; SD Kobelt, 1892).

— *Xerolivia* Kobelt, 1892: 152 (nom. err. pro *Xeroclivia* Monterosato, 1892).

— *Tropidocochlis* Locard, 1893: 97, 98 (part.; for "Groupe du *Tr explanata*" and "Groupe du *Tr elegans*").

TYPE SPECIES — *Helix terrestris* Pennant, 1801 (= *Helix elegans* Gmelin, 1791); monotypy.

Shell depressed or trochoid to pagodiform, rather solid, of 6-8 weakly convex to nearly flat whorls. Last whorl straight, angulated to sharply keeled; keel sometimes serrated. Color white, unicolored or with dark bands of variable intensity. Embryonic whorls smooth. Postapical sculpture of fine radial riblets. Aperture ovate to rostrate, moderately oblique, with simple margins. Umbilicus minutely open. Height 5-11, diam. 5-12 mm (5.8 × 8.9 mm).

Vas deferens long, entering epiphallus at nearly right angle. Flagellum moderately long, mostly somewhat shorter than epiphallus. Penis short. Verge conic, with superficial axial groove; epiphallic pore

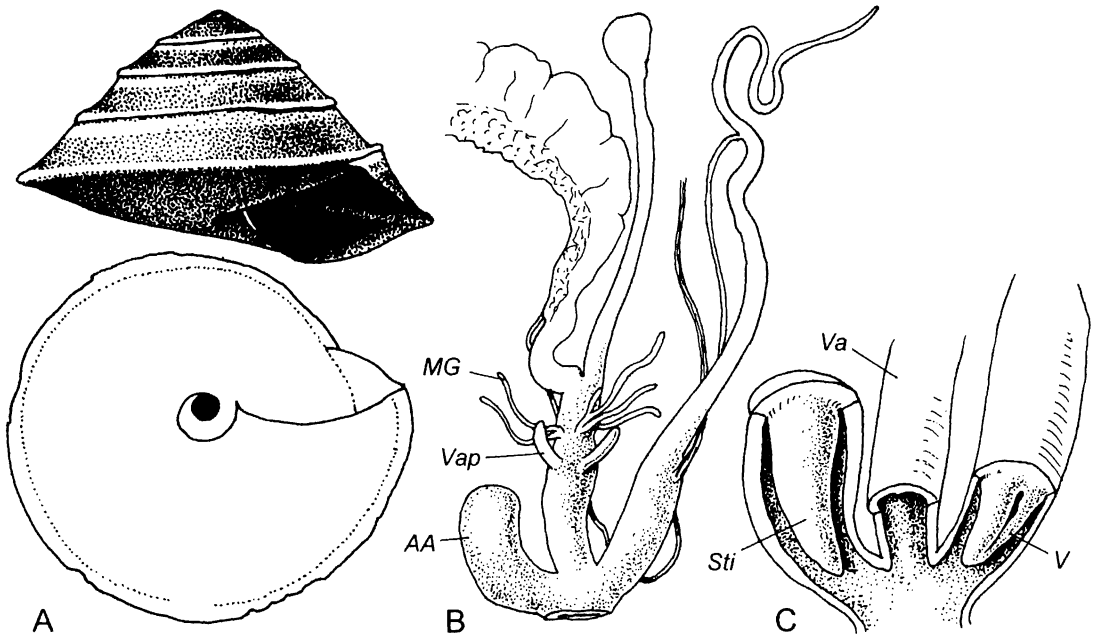


Fig. 2541. *Trochoidea elegans* (Gmelin, 1791). "Béziers, Dept. Hérault, France, April 26, 1963"
 A — shell. B — reproductive tract. C — interior of penis and atrial appendix. Moscow
 No. Lc-28112.

opens on bottom of this groove. Penial retractor attached to distal end of epiphallus. Free oviduct moderately long, vagina about 1.5-2 times longer. Vaginal appendages 2, slightly approached on one side of vagina. Mucus glands 3-4, forked. Atrium with a blunt appendix containing a conic, fleshy papilla (? stimulator) with very narrow lumen.

DISTRIBUTION. Mediterranean and Atlantic shores of France and S Great Britain. At least 20 spp.

***Xerobarcana* Brandt, 1959**
 Fig. 2542

Brandt, 1959: 110 (*Trochoidea* subg.).

TYPE SPECIES — *Trochoidea (Xerobarcana) huggani* Brandt, 1959; OD.

Shell subglobular, rather solid, of about 5 rather convex whorls. Last whorl scarcely deflected, rounded. Color uniformly white to intensively banded; peripheral, often interrupted band is most constant. Embryonic whorls smooth. Postapical whorls finely radially ribbed; body whorl with elements of malleation. Aperture rounded,

moderately oblique, with simple margins. Umbilicus narrowly open. Height 5.8-9.9, diam. 6.8-11.1 mm (8.4 × 10.5 mm).

Vas deferens moderately short, expanded. Flagellum minute, rudimentary. Epiphallus long, poorly demarcated from fusiform penis. Penial retractor attached to distal part of epiphallus. Free oviduct short, vagina not swollen, about twice longer. Vaginal appendages 2, rod-like, not approached. Mucus glands 2, each consists of 2 simple or biramous arms. Spermathecal stalk moderately long, ovate reservoir not attending albumen gland.

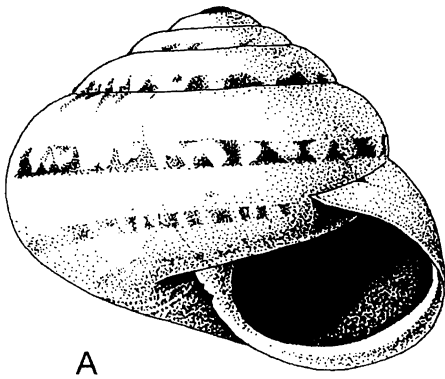
DISTRIBUTION. Cyrenaica. 1 sp.

***Xeroregima* Brandt, 1959**
 Fig. 2543

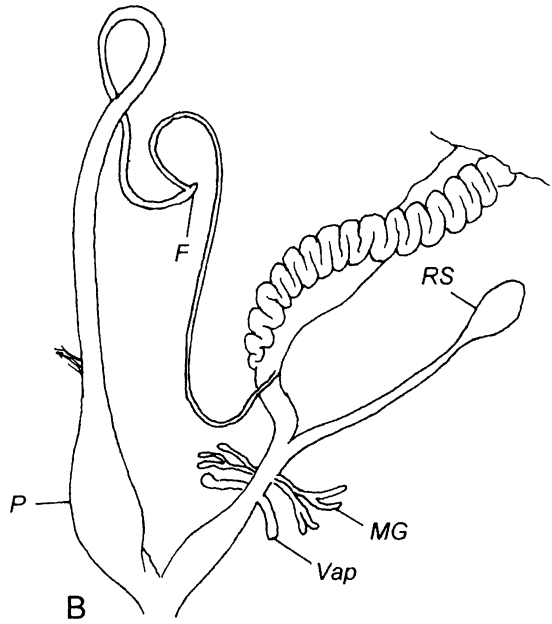
Brandt, 1959: 96 (*Trochoidea* subg.).

TYPE SPECIES — *Trochoidea (Xeroregima) regimaensis* Brandt, 1959; OD.

Shell conic-subglobose, rather solid, of about 5.5 convex whorls. Last whorl widely rounded, almost straight. Color chalky-white, usually with dark, more or less interrupted peripheral band. Embryonic



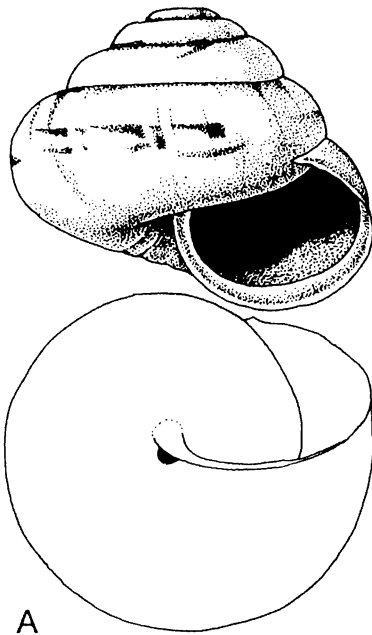
A



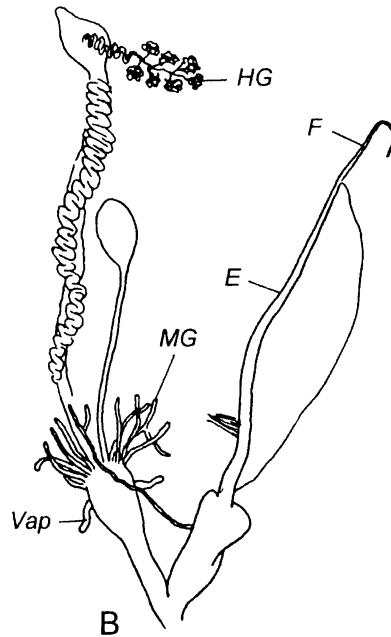
B

Fig. 2542. *Xerobarcana huggani* (Brandt, 1959).

A — shell: "Wadi el Hateia ö. Techis" [Libya]. Vienna. B — reproductive tract. After Brandt, 1959.



A



B

Fig. 2543. *Xeroregima regimaensis* (Brandt, 1959).

A — shell: "Cyrenaica: Slonta [= Sulunḥ ah]; track to Chadra [= Khadra]" [Libya]. Syntype. Paris. B — reproductive tract. After Brandt, 1959.

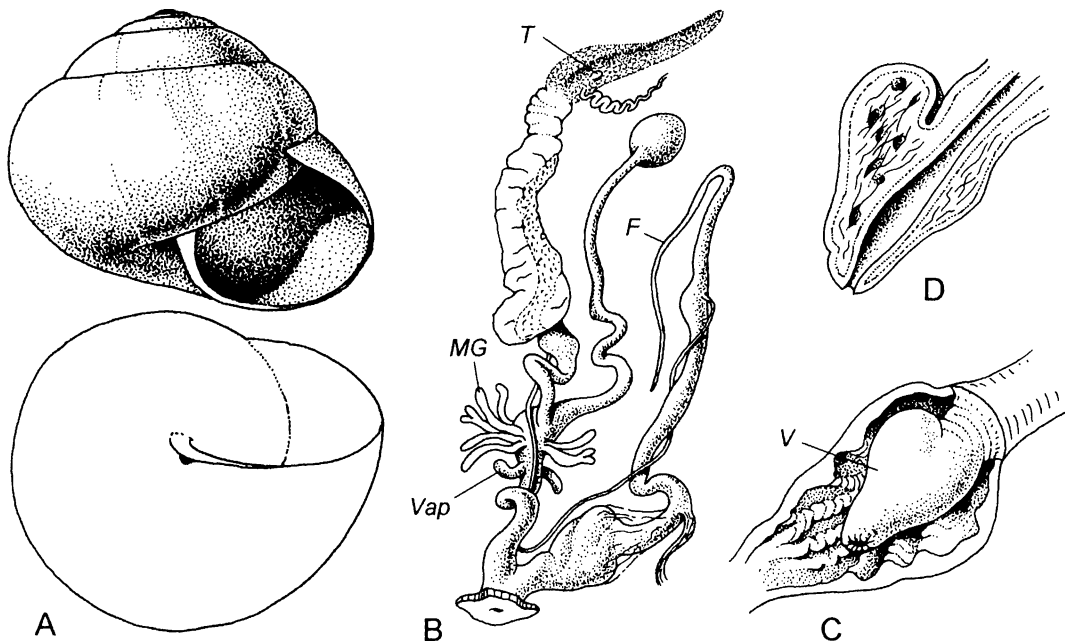


Fig. 2544. *Xerocrassa seetzeni* (L. Pfeiffer, 1846). "Azraq, Jordan, October 1982"
 A — shell. B — reproductive tract. C — interior of penis. D — longitudinal section through verge. London.

whorls smooth. Later whorls with vague, irregular radial striation; on body whorl light malleation may be present. Aperture rounded, moderately oblique, with distinct inner lip. Umbilicus minutely open, partially covered. Height 4.7-10.2, diam. 6.7-12.4 mm (9.8 × 12.0 mm).

Vas deferens long, thin. Flagellum not short to long. Epiphallus long, distinctly demarcated from penis. Penial retractor attached to distal part of epiphallus. Free oviduct rather long, vagina mostly swollen, less than twice longer. Vaginal appendages 2, rod-like, not or slightly approached. Mucus glands tubular or forked, either 2 in number or located almost circumferentially around vagina. Spermathecal stalk moderately long, ovate reservoir not attending albumen gland.

DISTRIBUTION. Cyrenaica. 5 spp. & subsp.

Xerocrassa Monterosato, 1892

Fig. 2544

Monterosato, 1892: 23 (*Xerophila* subg.).

— *Xerolaeta* Monterosato, 1892: 23 (*Xerophila*

subg.; t.-sp. *Helix aegusae* Kobelt, 1883; SD Kobelt, 1892). Richardson, 1980: 238, 550.

— *Xerocauta* Monterosato, 1892: 25 (t.-sp. *Helix cretica* Férussac, 1821; SD Kobelt, 1892). Richardson, 1980: 239, 582.

—? *Heldia* Hesse, 1926: 119, 135 (*Helicella* subg.; t.-sp. *Helicella cremai* Hesse, 1926; OD).

TYPE SPECIES — *Helix seetzeni* L. Pfeiffer, 1846; monotypy.

Shell inflated, (sub)globose, rather solid, of 5-7 moderately convex whorls. Last whorl straight or scarcely deflected, rounded to somewhat angulated at periphery. Color calcareous-white, monochromatic or with variously developed brown bands or spots. Embryonic whorls smooth. Postapical sculpture of fine to rather coarse radial striation. Aperture rounded, slightly to moderately oblique, with sharp margins and white, variously developed inner lip. Umbilicus narrowly to moderately open. Height 5.5-19.0, diam. 7-25 (17.0 × 21.0 mm).

Vas deferens long, entering epiphallus laterally. Flagellum long, slender, not shorter than epiphallus. Penis swollen, internally with large, fleshy, thick-walled verge and corrugated axial folds; canal of

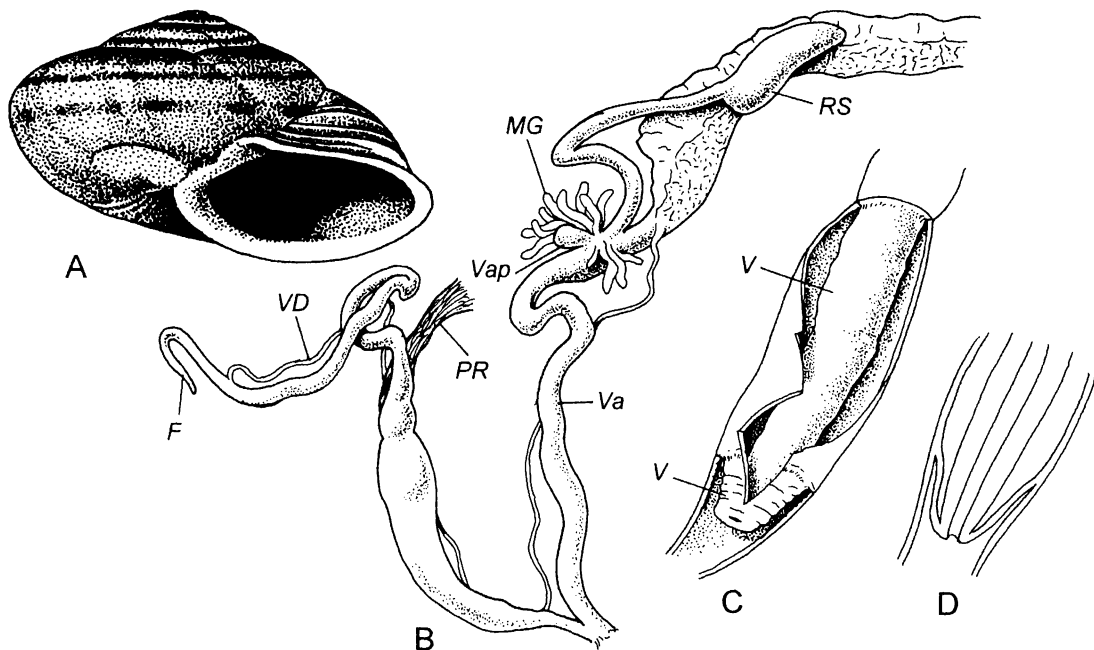


Fig. 2545. *Pseudocampylaea portosanctana* (Sowerby, 1824).

A — shell: Porto Santo, Madeira. Leiden. B, C, D — Madeira, July 11, 1987 B — reproductive tract. C — interior of penis. D — schematic longitudinal section through penis. Moscow No. Lc-28183 (gift of Edgar Waiengnier).

verge more or less shifted to one of walls. Penial retractor attached to distal part of epiphallus. Free oviduct rather long, vagina longer, sometimes convoluted. Vaginal appendages small, not approached, entering upper section of vagina through small pores surrounded by narrow, high, folded plicae. Mucus glands 2-3, some of them forked at ends. Spermathecal stalk long, reservoir attending albumen gland.

DISTRIBUTION. Greece (with islands), Syria, Palestine, Jordan, Israel, NE Africa. At least 12 spp.

Geomitriini C. Boettger, 1909

Shell not calcareous-white, often with 2-3 dark bands. Various developed granular sculpture on postapical whorls very characteristic.

Vaginal appendages 2 or 1; rarely (*Steenbergia*) absent.

DISTRIBUTION. Madeira, Porto Santo Islands, Azores.

Pseudocampylaea L. Pfeiffer, 1877

Fig. 2545

Pfeiffer L., 1877: 8 [*Helix*, sect. *Campylaea*; subsect.).

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

Shell depressed-conic, moderately solid, of about 5 slightly convex whorls. Last whorl rounded, distinctly deflected toward aperture. Color pale-corneous with 3 dark bands to uniformly chestnut; apex may be pinkish. Embryonic whorls nearly smooth or with light radial wrinklets. Postapical whorls coarsely granulate, usually with very short hairs. Aperture widely ovate, well oblique, with more or less reflexed margins. Umbilicus narrowly open. Height 9-30, diam. 20-50 mm (14.0 × 25.0 mm).

Vas deferens very long. Flagellum rather short, subcylindrical epiphallus 2-3 times longer. Penis elongate-clavate or elongate-fusiform, thin-walled. Internally penis with a long verge; its distal end supplied with its own sheath that attached to tip of verge. Penial retractor strong, inserting on upper end of penis. Free oviduct very

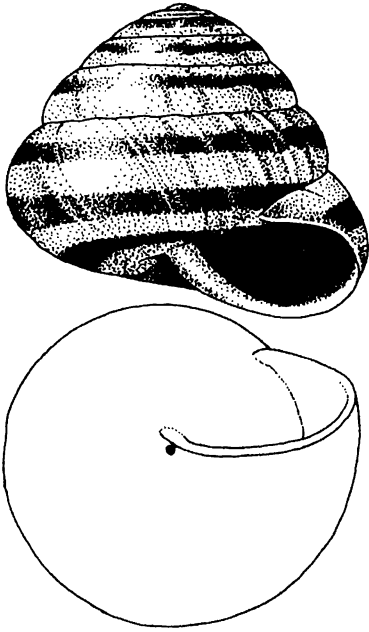


Fig. 2546. *Lemniscia michaudi* (Deshayes, 1830).
Madeira. Leiden ("cotype" of *Helix bicolor* Lowe et Wollaston, 1907).

short, vagina 5-8 times longer. Vaginal appendix 1, small, drop-shaped, open into lumen of vagina through a minute pore situated between longitudinal folds. Mucus glands 2, rather short, strongly branched. Spermathecal stalk moderately long; reservoir more or less distinctly hammer-shaped, not reaching albumen gland.

DISTRIBUTION. Madeira. 2 spp., 1 of them [*P lowei* (Férussac, 1835)] extinct recently.

***Lemniscia* Lowe, 1854**
Fig. 2546

Lowe, 1854: 170 (*Helix* subg.).

TYPE SPECIES — *Helix michaudi* Deshayes, 1830; OD.

Shell trochoid, rather thin, of 6.5-8 slightly convex whorls. Last whorl widely rounded, strongly to moderately descending in front immediately near aperture. Spire dome-shaped. Color whitish or yellowish, mostly with 3 dark bands: subsutural, subperipheral and basal. Embryonic whorls smooth. Postapical surface rather

regularly radially wrinkled; base nearly glabrous. Aperture ovoid, moderately oblique, with blunt, slightly thickened margins. Parietal callus very weak. Umbilicus dot-like. Height 6-11, diam. 7-12 mm (6.2 × 7.0 mm).

DISTRIBUTION. Madeira. 3 spp.

***Discula* Lowe, 1852**
Fig. 2547

Lowe, 1852: 116 (*Helix* group).

— *Tectula* Lowe, 1852: 117 (*Helix* group; t.-sp. *Helix bulveriana* Lowe, 1831; invalid des. Lowe, 1854).

TYPE SPECIES — *Helix (Discula) polymorpha* Lowe, 1831; SD Lowe, 1854.

Shell trochoid, quite solid, of 7-7.5 narrow, convex whorls. Last whorl strongly descending in front, angulated or with 1-2 keels. Color (pale) corneous or brown, usually with light peripheral zone and light flecks; dark band on basal surface often present. Embryonic whorls smooth. Later whorls with small to large, coarse tubercles. Aperture broadly ovate to subcircular, strongly oblique, with more or less thickened margins. Umbilicus rather narrow, more or less eccentric. Height 4-14, diam. 6-18 mm (8.2 × 11.0 mm).

Vas deferens long. Flagellum short, conic, epiphallus 3-5 times longer. Penis long, internally with a fleshy verge having rather broad canal and terminal pore. Distal section of epiphallus connected with proximal section of penis by well developed muscular bands. Penial retractor inserted on distal half of epiphallus. Free oviduct long, vagina markedly shorter. Vaginal appendix 1, clavate, entering free oviduct (above base of spermathecal stalk) through a simple pore. Mucus gland 1, biramous; its basal part greatly enlarged. Spermathecal shaft rather thick; reservoir adhering to upper section of spermoviduct.

DISTRIBUTION. Madeira. 24-25 Recent spp.

***Hystricella* Lowe, 1854**
Fig. 2548

Lowe, 1854: 186 (*Helix* subg.).

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

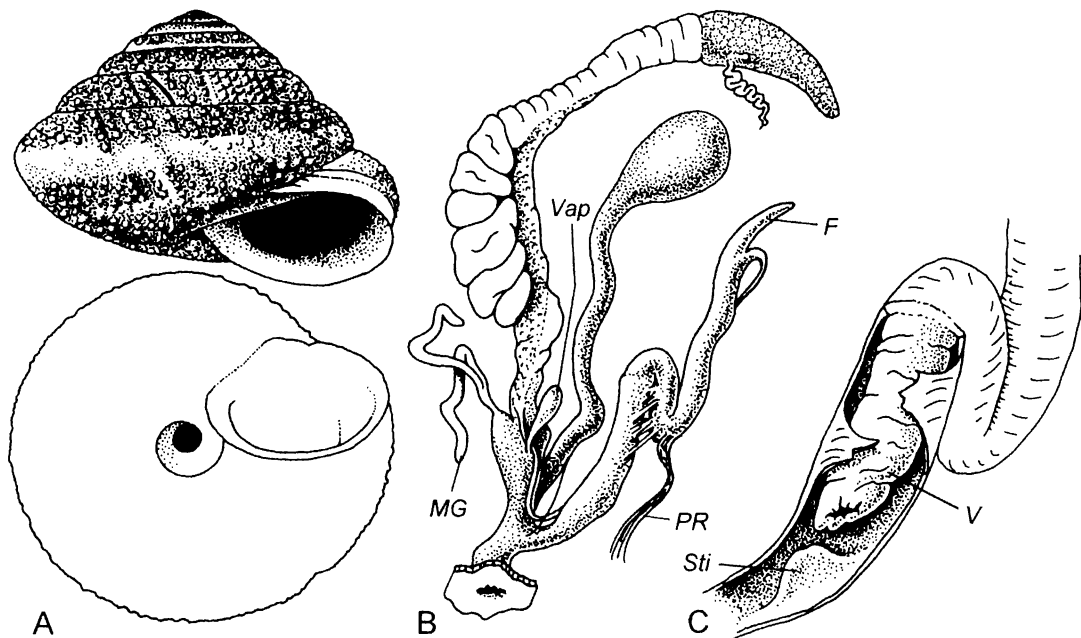


Fig. 2547 *Discula polymorpha* (Lowe, 1831).

A — shell: Madeira. Syntype ("co-type"). Leiden. B, C — Caniçal, Madeira, February 16, 1983. B — reproductive tract. C — interior of penis. Moscow No. Lc-28488 (gift of Theodorus Ripken).

Shell pagodiform, solid, of about 5 shouldered whorls. Last whorl with 1 or 2 keels, strongly descending in front. Color generally brown or reddish-brown, mostly with lighter, diffuse radial streaks. Embryonic whorls smooth. Postapical sculpture of distinct, coarse granulation; granules lighter than background. Aperture almost circular, entire, with thickened margins. Umbilicus moderately narrow, cylindrical. Height 4-8, diam. 5-10 mm (4.0 × 5.1 mm).

DISTRIBUTION. Madeira and Porto Santo Islands. 4 Recent spp.

Disculella Pilsbry, 1895

Fig. 2549

Pilsbry, 1895 (1893-1895): 243 [unnecessary nom. nov. pro *Ochthephila* Beck, 1837 ("Not *Ochthephila* Fallén, 1823 (Diptera)"]

— *Placentula* Lowe, 1852: 118 [nom. praeocc, non Lamarck, 1822 (Protozoa); t-sp. *Helix maderensis* Wood, 1828; SD Lowe, 1854].

TYPE SPECIES — *Helix maderensis* Wood, 1828; OD.

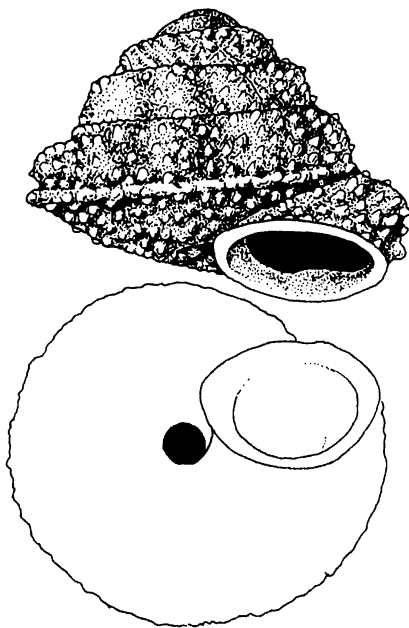


Fig. 2548. *Hystricella bicarinata* (Sowerby, 1824).

Porto Santo Island. Moscow No. Lc-23411

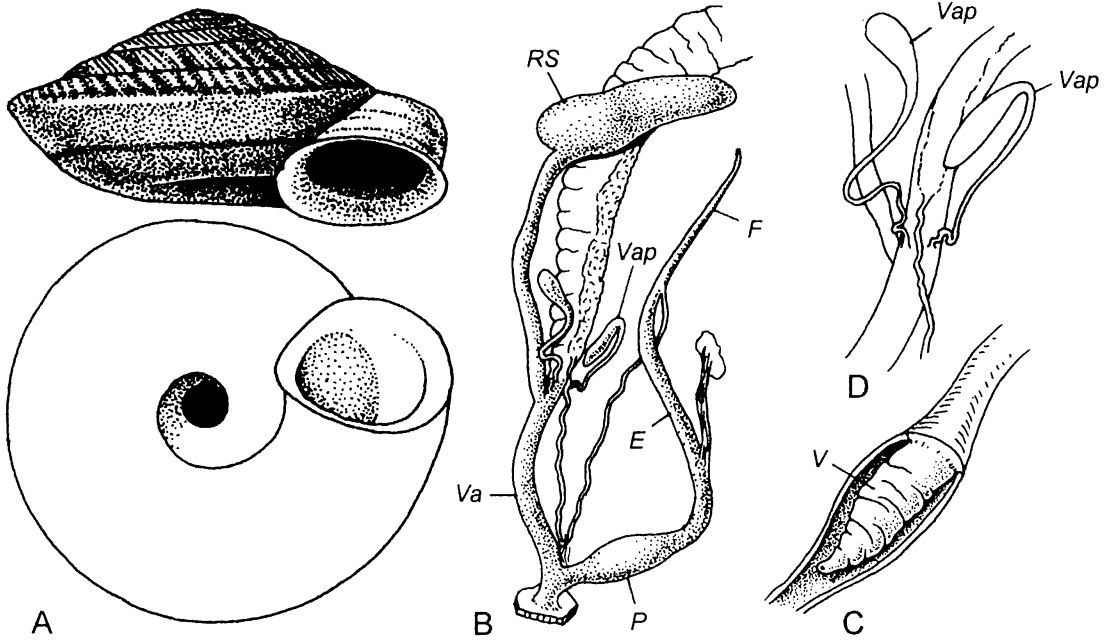


Fig. 2549. *Disculella maderensis* (Wood, 1828).

A — shell: Lombada in 2 km ENE of San Martinho, Madeira. Moscow No. Lc-19572. B, C, D — Caniçal, Madeira, February 16, 1983. B — reproductive tract. C — interior of penis. D — part of vagina enlarged. Moscow No. Lc-28487 (gift of Theodorus Ripken).

Shell depressed-conic, moderately solid, of 5.5-7 flattened whorls. Last whorl with rather sharp peripheral angle, deeply descending in front. Color corneous, with light keel and 2-3 dark bands, one of them on basal surface. Embryonic whorls smooth. Upper surface of postapical whorls with smoothed ribs, basal surface almost smooth. Aperture entire, subcircular, with shortly reflexed, thickened margins. Umbilicus moderately narrow, funnel-shaped, eccentric. Height 3-6, diam. 6-11 mm (4.1 × 8.2 mm).

Vas deferens rather long. Flagellum somewhat shorter than epiphallus. Penis internally without regular relief, contains conic verge having small apical pore. Penial retractor attached to middle of epiphallus. Free oviduct very short, vagina 3-4 times longer. Vaginal appendages slightly approached, claviform, with long, slender basal sections; enter at base of spermathecal stalk. Latter comparatively short; reservoir irregularly hammer-shaped, not attending albumen gland.

DISTRIBUTION. Madeira. 3 spp., one of them with 2 subsp.

Callina Lowe, 1854

Fig. 2550

Lowe, 1854: 183 (*Helix* subg.).

TYPE SPECIES — *Helix rotula* Lowe, 1831; OD.

Shell depressed-conic, rather solid, of about 7 much flattened whorls. Last whorl distinctly angulated, strongly deflected at aperture. Color corneous, sometimes slightly spotted with yellowish; lip white. Embryonic whorls almost smooth. Postapical whorls delicately shagreened or with minute squamulae; locally weak spiral lines may be present. Aperture ovate, well oblique, with strong, rounded inner lip; peristome more or less thickened. Umbilicus dot-like. Height 5.5-6.5, diam. 10-12 mm (6.5 × 11.9 mm).

Talon exposed, drop-like. Vas deferens long, entering epiphallus at right angle. Flagellum slender, not long; epiphallus about 3 times longer, cylindrical. Penis shortly fusiform, rather thick-walled; its upper part occupied by conic verge; epiphallic pore opens between 2 equal, fleshy lobes. Penial retractor inserted on penis/epiphallus junc-

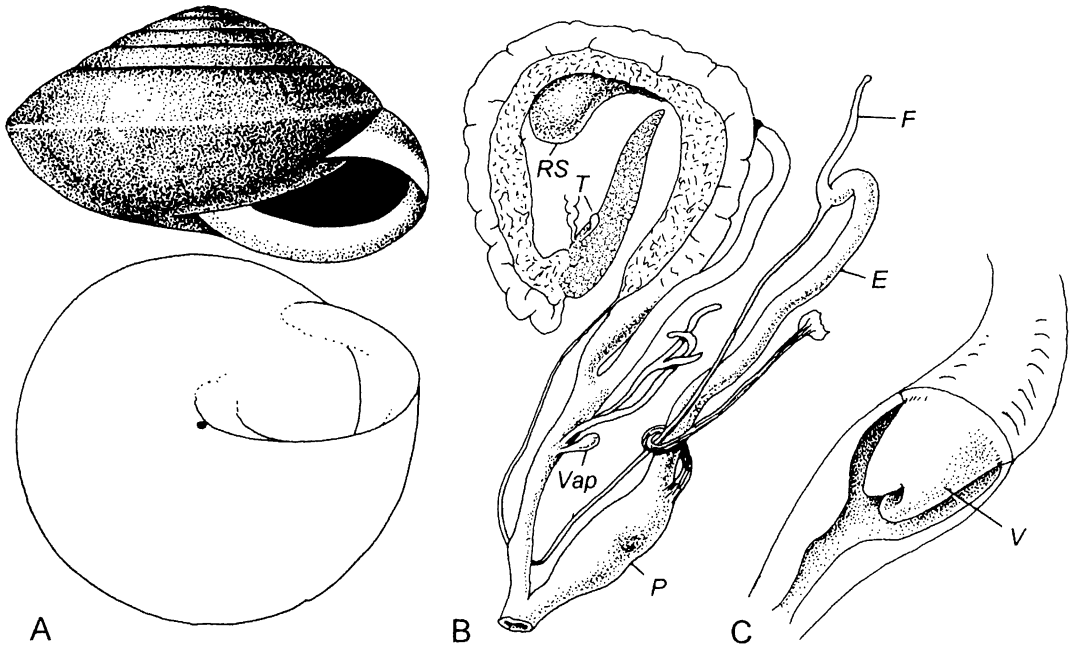


Fig. 2550. *Callina rotula* (Lowe, 1831).

A — shell: Madeira. StB. No. 09472. B, C — Pedragal, Porto Santo, February 1983. B — reproductive tract. C — interior of penis. Moscow No. Lc-28494 (gift of Theodorus Ripken).

tion. Free oviduct moderately short, vagina about 3 times longer. Vaginal appendix minute, clavate. Mucus glands 2, slender, simple or forked, entering vagina very close to base of appendix. Spermathecal stalk cylindrical, somewhat thickened; ovoid reservoir not attending albumen gland.

DISTRIBUTION. Madeira, Porto Santo. 1 sp.

Mandahlia Forcart, 1965

Fig. 2551

Forcart, 1965: 254 (*Discula* subg.; nom. nov. pro *Tectula* Mandahl-Barth, 1950, non Lowe, 1852).

— *Tectula* Mandahl-Barth, 1950: 36 (t.-sp. *Helix tectiformis* Sowerby, 1824; OD).

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

Shell lens-shaped, moderately solid, of about 6.5 flat whorls. Last whorl with sharp, uneven peripheral keel. Color gray-whitish, mostly with weak marble pattern. Embryonic whorls smooth. Later whorls with fine, irregular radial striation and (mainly on basal surface) delicate tuber-

cles. Aperture rostrate, very oblique, peristome below angle somewhat thickened and shortly reflexed. Umbilicus cylindrical, narrowly open. Height 6-8, diam. 13-16 mm (7.8 × 16.0 mm).

Talon buried. Vas deferens moderately long, entering epiphallus at sharp angle. Flagellum tapering, about 4 times shorter than epiphallus. Penis spindle-shaped. Penial retractor attached to very distal end of epiphallus. Free oviduct short, vagina 3-4 times longer. Vaginal appendix very small. Mucus glands 2, approached to each other, biramous, entering vagina above appendix. Spermathecal stalk long; elongate reservoir attending albumen gland.

DISTRIBUTION. Madeira. 1 Recent sp.

Actinella Lowe, 1852

Fig. 2552

Lowe, 1852: 118 (*Helix* subg.).

TYPE SPECIES — *Helix (Actinella) stellaris* Lowe, 1852 (= *Helix lentiginosa stellaris* Lowe, 1852); monotypy.

Shell obesely lentiform, rather thin, of about 5 slightly convex whorls. Last whorl

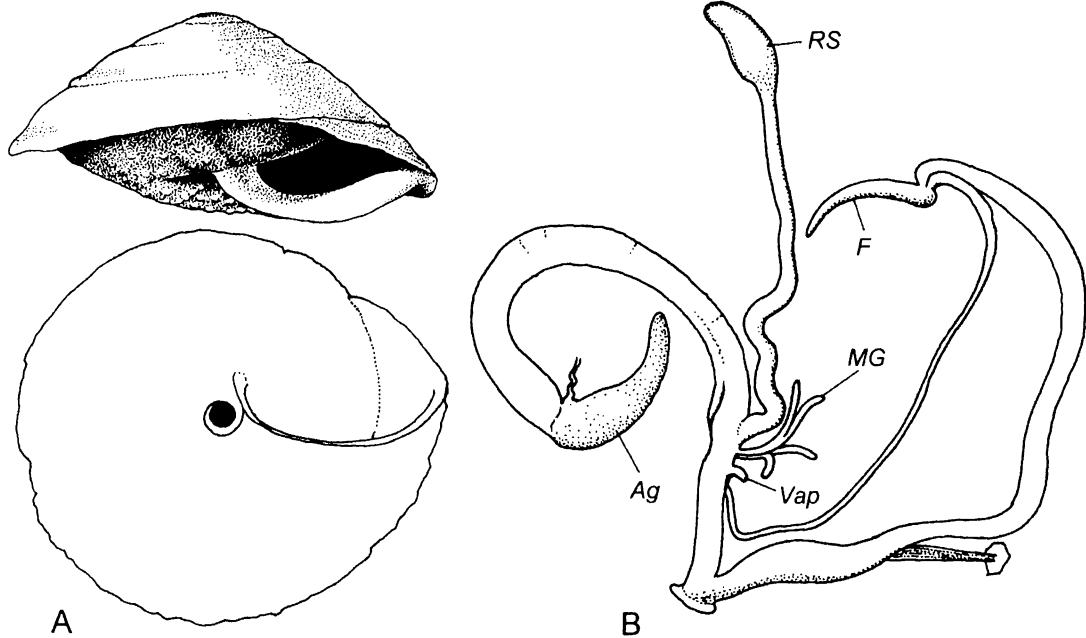


Fig. 2551. *Mandahlia tectiformis* (Sowerby, 1824).
 A — shell: Madeira. Vienna. B — reproductive tract. After Mandahl-Barth, 1950.

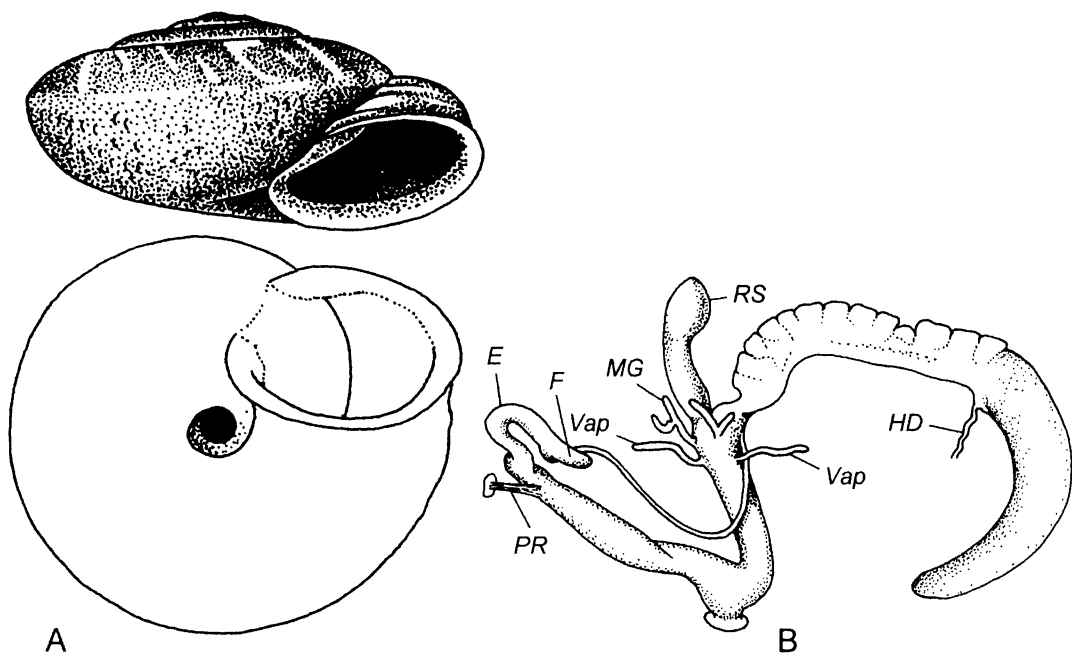


Fig. 2552. *Actinella lentiginosa stellaris* (Lowe, 1852).
 A — shell: Madeira. SPb (as *lentiginosa* Lowe, 1831). B — ! *Actinella laciniosa* (Lowe, 1852). Reproductive tract. After Mandahl-Barth, 1950.

gradually deflected, with blunt angle or keel. Color uniformly brown or with light flecks and streaks. Embryonic whorls smooth. Later whorls with radial ridgelets (mainly above), small tubercles and fine radial scales. Aperture rounded, rather strongly oblique, with thickened margins; peristome attachments approached and connected by well developed callus. Umbilicus moderately broad. Height 2.6-5.0, diam. 4-8 mm (4.4 × 7.5 mm).

Talon minute. Vas deferens comparatively short, entering epiphallus at nearly right angle. Flagellum short, rounded-conic; epiphallus about 2 times longer. Penis length subequal to flagellum+epiphallus. Penial retractor attached to penis/epiphallus junction. Free oviduct exceptionally short. Vagina expanded, with 2 unusually long, slender, not approached appendages. Mucus glands 2, biramous, entering vagina markedly above appendages. Spermathecal stalk enormously short, thick; poorly defined reservoir lies on lower part of spermoviduct.

DISTRIBUTION. Madeira. 5-7 Recent spp. & subspp.

***Faustella* Mandahl-Barth, 1950**
Fig. 2553

Mandahl-Barth, 1950: 25 (*Actinella* subg.; nom. nov. pro *Rimula* Lowe, 1854).

— *Rimula* Lowe, 1854: 181 (nom. praeocc., non Lowe, 1852 nec Blainville, 1824; t.-sp. *Helix cobresiana* Alten, 1812; OD).

TYPE SPECIES — *Helix fausta* Lowe, 1831; OD.

Shell obesely lentiform to depressed-conic, moderately solid, opaque, of about 5 slightly convex whorls. Last whorl bluntly angulated, abruptly descending in front. Basal surface convex. Color (pale) corneous, periphery usually somewhat lighter. Embryonic whorls smooth. Postapical whorls finely, irregularly radially striated, with more or less distinct granules. Aperture rather narrow, semilunate, moderately oblique, with thickened margins; basal margin with vague callosities or rounded tubercles. Umbilicus covered or semicovered. Height 3-4, diam. 5.5-7.0 mm (3.8 × 6.7 mm).

DISTRIBUTION. Madeira. At least 6 Recent spp.

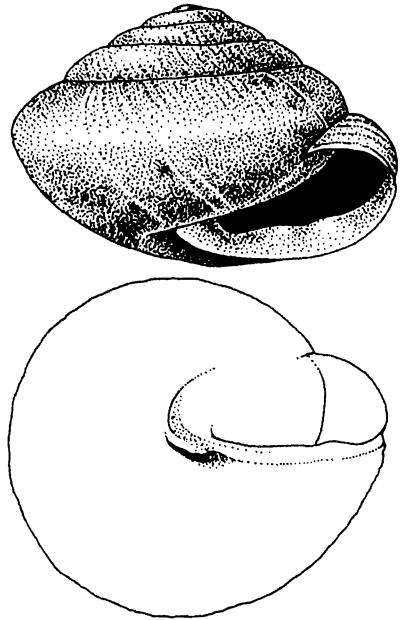


Fig. 2553. *Faustella fausta* (Lowe, 1831).
A — shell: Madeira. Syntype. Phil. No. 97099.

***Caseolus* Lowe, 1852**
Fig. 2554

Lowe, 1852: 115 (*Helix* group).

TYPE SPECIES — *Helix* (*Caseolus*) *sphaerula* Lowe, 1852 (? = *Helix compactus* Lowe, 1831); monotypy.

Shell depressed-conic to conic-globose, rather solid, of 5-6 convex whorls. Last whorl rounded to vaguely carinated, rather abruptly deflected. Color whitish, pale-corneous or brown; periphery often slightly lighter. Embryonic whorls smooth. Subsequent whorls with rather coarse, irregular radial ribs bearing small nodules; on basal surface sculpture generally weaker. Aperture broadly ovate, moderately oblique, with thickened margins; peristome insertions somewhat approached. Umbilicus dot-like. Height 3.5-7.5, diam. 4.5-9.0 mm (4.2 × 6.1 mm).

Vas deferens slender, enters epiphallus laterally, leaving short, conic flagellum which 3-5 times shorter than epiphallus. Penis not large, containing conic verge with minute terminal pore. Penial retractor inserts on lower half of epiphallus. Free ovi-

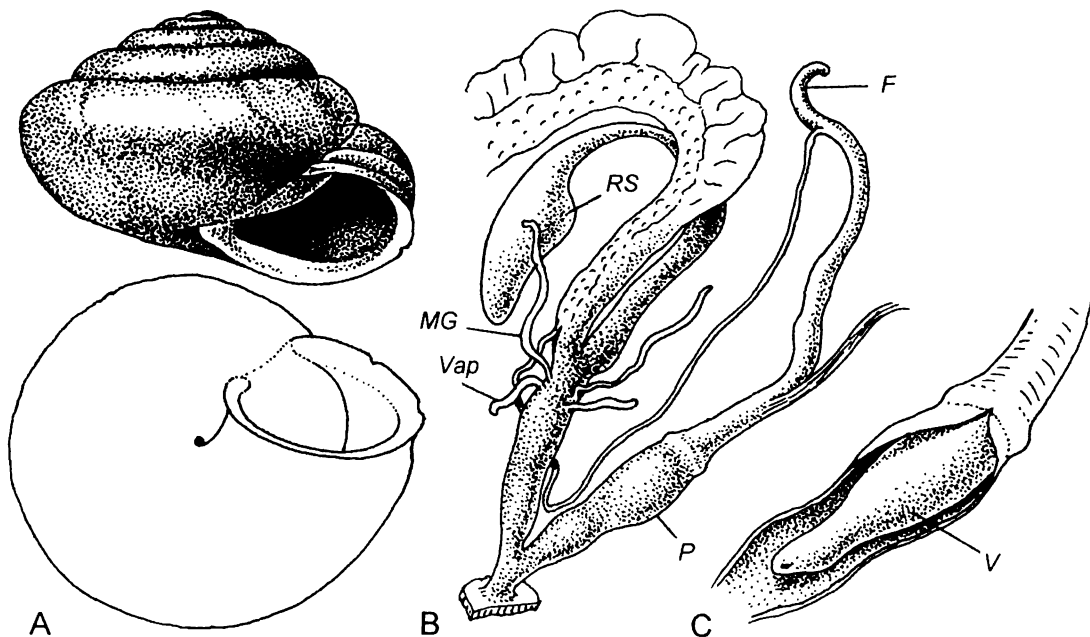


Fig. 2554. *Caseolus compactus* (Lowe, 1831). Punta do Sao Garajau, Madeira, February 15, 1983.

A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28491.

duct very short, vagina 4-5 times longer. Vaginal appendages 2, slender. Mucus glands 2 simple, tubular, situated slightly above appendages. Spermathecal stalk somewhat expanded; reservoir not attending albumen gland.

DISTRIBUTION. Madeira. 8 Recent spp. & subspp.

Leptostictea Mandahl-Barth, 1950
Fig. 2555

Mandahl-Barth, 1950: 21 (*Caseolus* subg.).

TYPE SPECIES — *Helix leptosticta* Lowe, 1831; OD.

Shell depressed-conic, thin, translucent, of about 5 moderately convex whorls. Body whorl with rounded peripheral angle, well deflected. Color grayish-yellowish, sometimes with light zone on periphery. Embryonic whorls smooth. Early postnuclear whorls with small elongated tubercles that become coarser and surface of last whorl covered with quite distinct granulation; on base this sculpture visible mainly near aperture. Aperture nearly entire, subcircular, strongly oblique, with thickened peristome.

Umbilicus narrowly to minutely open. Height 2.5-6.5, diam. 6.0-10.5 mm (4.0 × 7.5 mm).

Vas deferens rather short. Flagellum slender, 1.5-2.5 times shorter than epiphallus. Penis contains conic verge. Penial retractor short, robust, attached to distal half of epiphallus. Free oviduct short, vagina 2-3 times longer. Vaginal appendages long, slender. Mucus glands 2, simple, entering vagina at short distance above appendages. Spermathecal shaft moderately short; elongated reservoir not reaching albumen gland.

DISTRIBUTION. Madeira. 4 spp.

Plebecula Lowe, 1852
Fig. 2556

Lowe, 1852: 114 (*Helix* group).

TYPE SPECIES — *Helix vulgata* Lowe, 1852 (= *Helix nitidiuscula* Sowerby 1824); SD Lowe, 1854.

Shell subglobose, rather solid, somewhat shining, of 5-6 convex whorls. Last

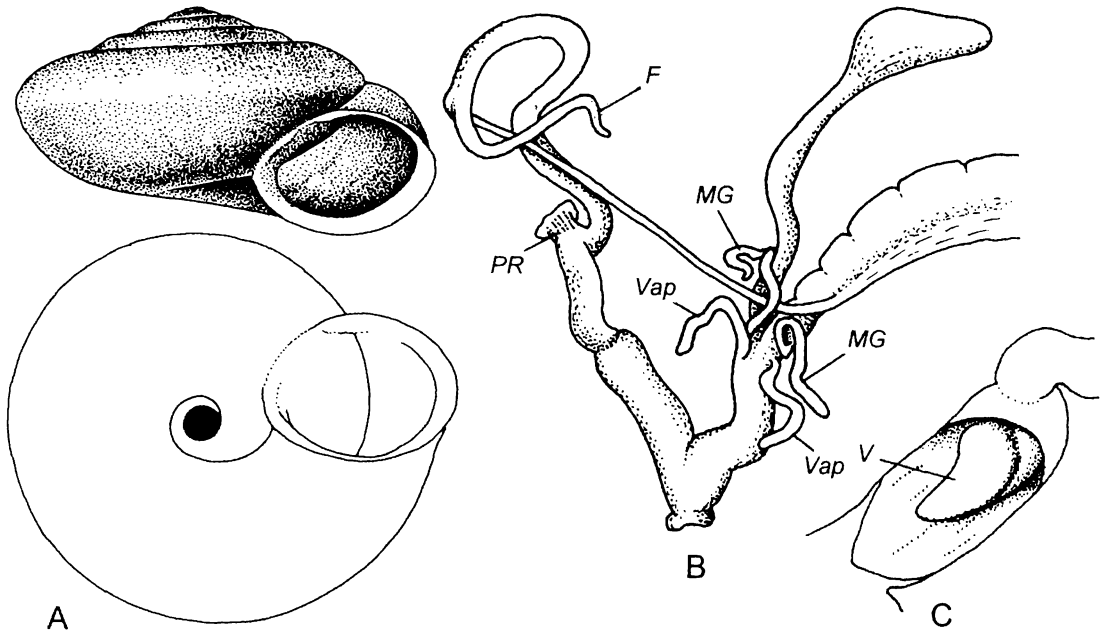


Fig. 2555. A — *Leptostictea leptosticta* (Lowe, 1831). Madeira. Syntype. Phil. No. 97107
 B, C — ! *Leptostictea fictilis* (Lowe, 1852). B — reproductive tract. C — interior of penis.
 After Mandahl-Barth, 1950.

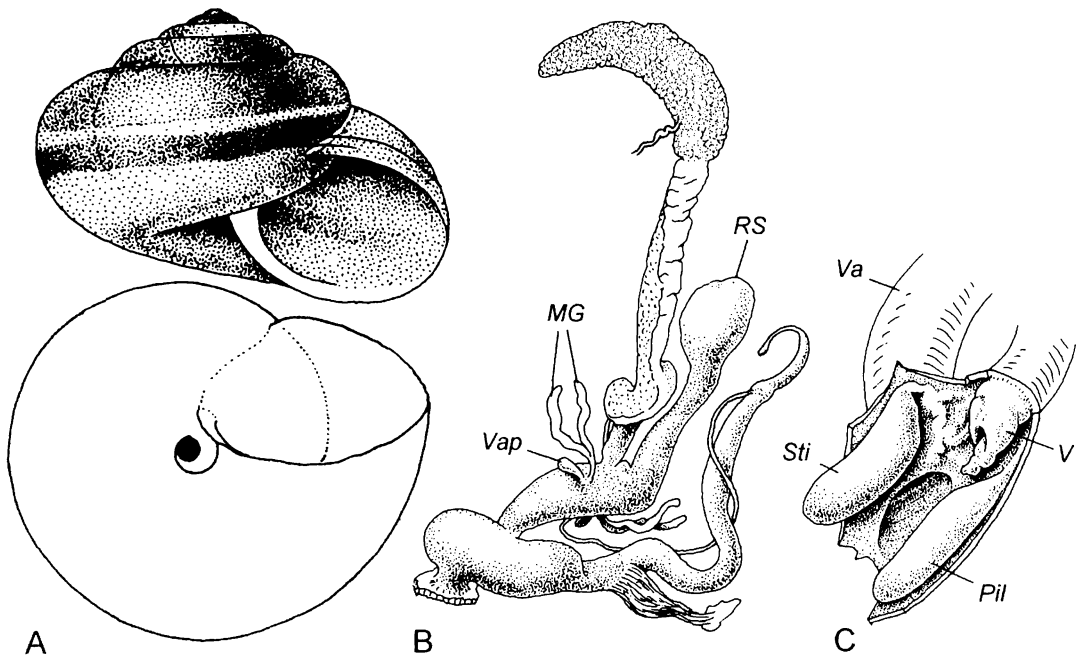


Fig. 2556. *Plebecula nitidiuscula* (Sowerby, 1824). Ca. 1.5 km of Caniçal (Pta de São Lourenço),
 E Madeira, December 31, 1985.
 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-23415 (Cardiff).

short, thick; reservoir lies on middle of spermoviduct or a little above.

DISTRIBUTION. Madeira. 4-5 Recent spp.

Hispidella Lowe, 1852
Fig. 2557

Lowe, 1852: 115 (*Helix* subg.).

TYPE SPECIES — *Helix armitageana* Lowe, 1852; monotypy.

Shell depressed, thin, of 4-5 (slightly) convex whorls. Last whorl straight, with blunt peripheral angle. Color brown. Embryonic whorls glabrous. Postembryonic whorls with rather coarse radial wrinkles and triangular periostracal scales, which toward aperture become semicircular. Aperture widely ovate, with slightly reflexed margins. Umbilicus narrowly open. Height 4.5-6.5, diam. 7-9 mm (3.9 × 5.8 mm).

DISTRIBUTION. Madeira. 1 sp.

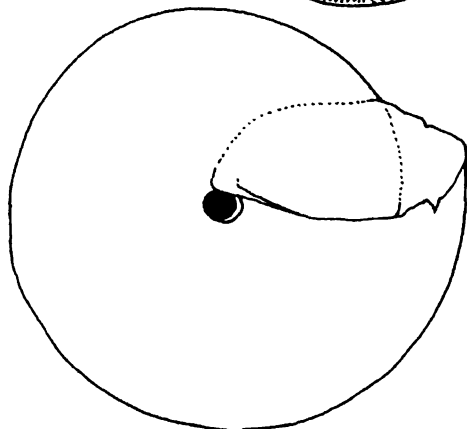
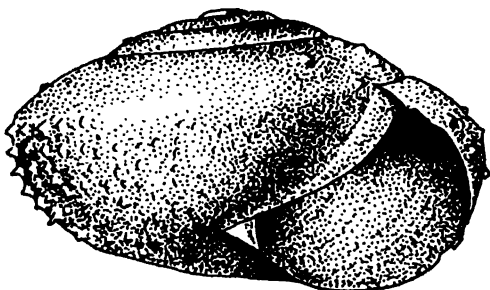


Fig. 2557 *Hispidella armitageana* (Lowe, 1852).
Madeira. ? Syntype (not fully adult specimen). Leiden.

Helicomela Lowe, 1854
Fig. 2558

Lowe, 1854: 172 (*Helix* subg.).

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

Shell subglobose, solid, of 5-6 convex whorls. Last whorl inflated, widely rounded, slightly deflected. Color pale-corneous, with 2-3 wide, dark bands. Embryonic whorls smooth. Later whorls with granulated radial wrinkles and short, scattered hairs. Aperture broadly rounded or subcircular, moderately oblique, with simple, thin or somewhat thickened margins. Umbilicus closed. Height 13-20, diam. 15-25 mm (*punctulata*: 14.5 × 16.8 mm; *bowdichiana*: 21.3 × 22.9 mm).

whorl rounded, gradually deflected toward aperture. Coloration consists of pale-corneous or yellowish background and 2 dark bands; upper band sometimes widened to form dark zone from periphery to suture. Embryonic whorls with smoothed radial wrinklelets. Postapical whorls with irregular radial striae and minute tubercles; in fresh shells each tubercle bears very short hair. Aperture subcircular, moderately oblique, with simple margins. Umbilicus narrow, open, funnel-shaped. Height 7-13, diam. 9-16 mm (10.0 × 12.4 mm).
Talon hidden. Vas deferens rather long. Flagellum slender, 2-3 times shorter than epiphallus. Penis juts out into atrium, internally with large, rounded, axial pilaster, and bulky stimulator. Verge conic, with a rather wide, semilunate pore and fleshy apical process. Penial retractor attached to distal end of epiphallus. Free oviduct and vagina subequal in length. Vaginal appendages 2, clavate. Mucus glands 2, biramous, with short common ducts, entering vagina just above appendages. Spermathecal stalk

Talon burrowed. Flagellum rather long, conic. Epiphallus of about same length or a little longer. Penis ovate, internally smooth, containing verge, which is a result of deep invagination of epiphallus into penis lumen; epiphallic pore slit-like. Penial retractor attached to distal half of epiphallus. Free oviduct short, vagina 3-4 times longer. Penial appendages 2, long, slender, with swollen tips. Mucus glands 2, each composed of 3-4 branches, entering vagina markedly above appendages. Spermathecal

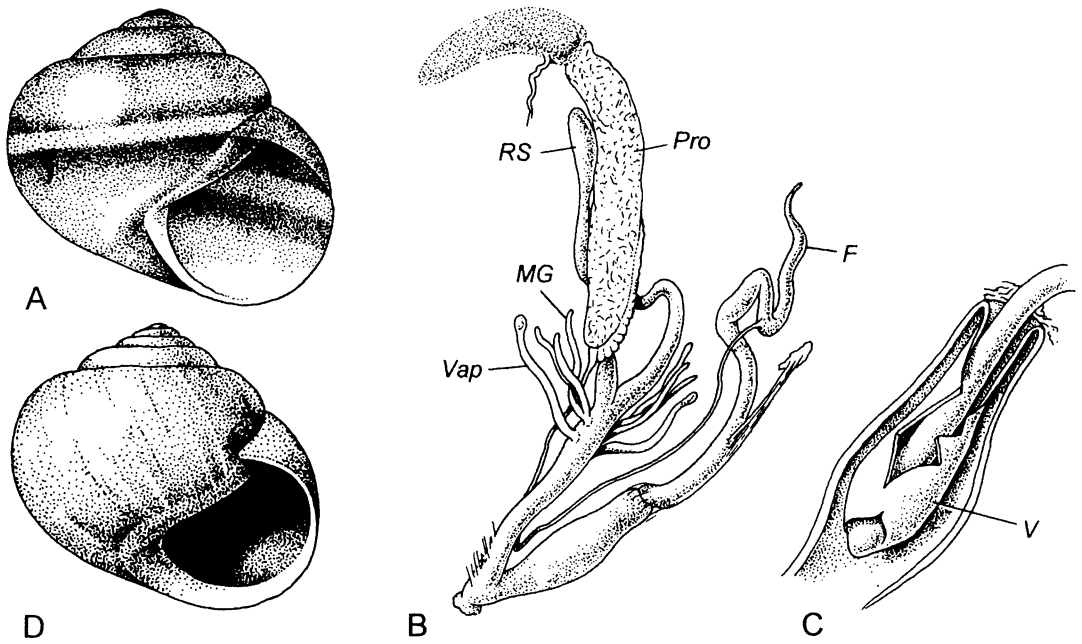


Fig. 2558. A, B, C — *Helicomela punctulata* (Sowerby, 1824). Porto Santo, February 1983. A — shell. B — reproductive tract. C — interior of penis. **Moscow No. Lc-28104** (gift of Theodorus Ripken). D — ! *Helicomela bowdichiana* (Férussac, 1832). Shell: Madeira. **Moscow No. Lc-28101** (subfossil).

stalk rather long, small; elongated reservoir (almost) attending lower margin of albumen gland.

DISTRIBUTION. Madeira, Porto Santo. 2-3 Recent spp.

***Steenbergia* Mandahl-Barth, 1950**
Fig. 2559

Mandahl-Barth, 1950: 16.

— *Heterostoma* Hartmann, 1843: 177 [nom. praeocc., non De Filippis, 1837 (Trematoda); t.-sp. *Helix semitectum* Hartmann, 1843 (= *Helix pauperula* Lowe, 1831); monotypy].

Lace, 1992: 115.

TYPE SPECIES — *Steenbergia duplex* Mandahl-Barth, 1950; OD.

Shell much depressed to nearly flat, rather solid, not shining, of 4-5 shouldered, strongly convex whorls. Last whorl with blunt, rounded angle above mid-line, strongly descending in front. Color corneous to dark-brown, sometimes with light

diffuse radial streaks. Embryonic whorls vaguely microgranulated. Postapical whorls with coarse, irregular radial wrinklets and variously developed, crowded tubercles. Aperture entire, subcircular, with thickened peristome; tubercular tooth or callosity may be present on palatal margin. Umbilicus moderately wide, eccentric. Height 1.6-3.5, diam. 4.2-7.0 mm (2.1 × 4.6 mm).

Flagellum (very) long, vermiform. Epiphallus short, expanded, externally not demarcated from penis. Internally epiphallus with a few longitudinal folds. Hemiphallic specimens (without flagellum and epiphallus) are known. Penis small, contains a simple, ovate verge with apical pore. Penial retractor attached to penis/epiphallus junction. Free oviduct and vagina of variable length. Vagina lacking appendages or mucus glands. Spermathecal shaft (rather) short; reservoir not attending albumen gland.

DISTRIBUTION. Madeira, Azores. 3-4 spp.

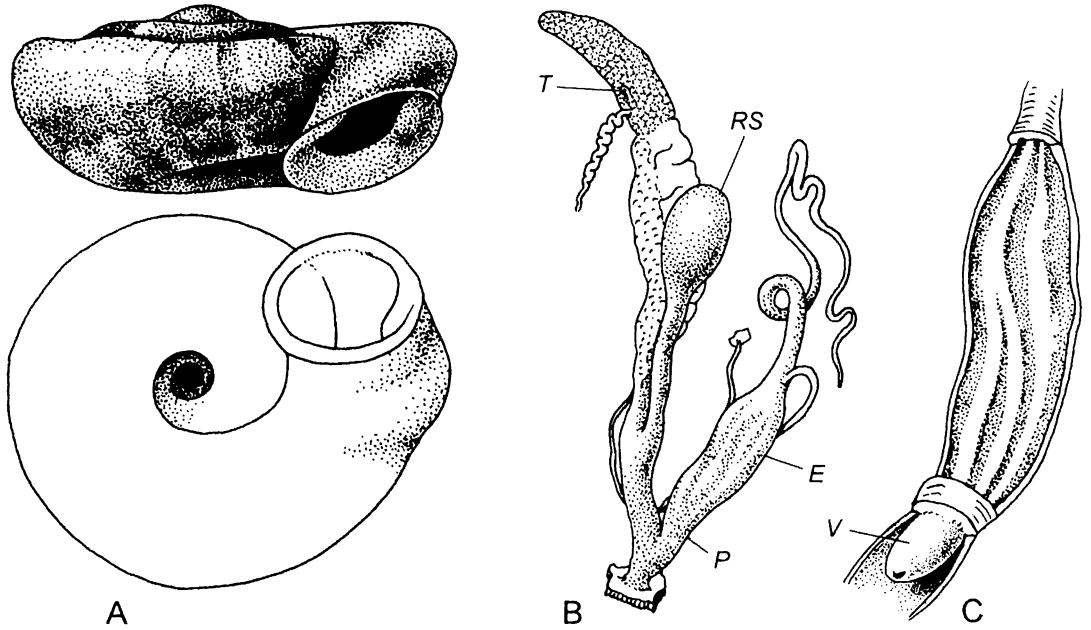


Fig. 2559. ! *Steenbergia paupercula* (Lowe, 1831). Ponta Delgada, Azores.
 A — shell. B — reproductive tract. C — interior of penis. Vienna No. 22.860.

Spirorbula Lowe, 1852

Fig. 2560

Lowe, 1852: 114 (*Helix* "group").

— *Irus* Lowe, 1852: 114 [nom. praeocc., non Oken, 1821 (Veneridae) *Helix* subg.; t.-sp. *Helix depauperata* Lowe, 1852; SD Lowe, 1854].

TYPE SPECIES — *Helix (Spirorbula) latens* Lowe, 1852; monotypy.

Shell much flattened, rather solid, of about 5 convex whorls. Body whorl with vague angle above mid-line, well deflected. Spire conoidal or flattened. Color corneous, sometimes with vague radial stripes. Embryonic whorls smooth. Later whorls smoothish to coarsely radially wrinkled, sometimes bearing recurved periostracal scales. Aperture entire, round or ovate, slightly oblique, parietal margin continuous and adnate; peristome thickened. Umbilicus moderately narrow. Height 4.5-5.2, diam. 7-10 mm (4.8 × 8.8 mm).

Talon simple, exposed. Vas deferens moderately long. Flagellum rather long; epiphallus of about same length. Penis fusiform, not long. Penial retractor attached

to distal half of epiphallus. Free oviduct markedly shorter than swollen vagina. Vaginal appendix 1, long, slender. Mucus gland 1, branched, enters vagina above base of appendix. Spermathecal stalk moderately long; reservoir adhering to upper half of spermoviduct.

DISTRIBUTION. Madeira. 5-6 sp.

Geomitra Swainson, 1840

Swainson, 1840: 166, 332 (*Geotrochus* subg.).

— *Coronaria* Lowe, 1852: 117 (*Helix* subg.; t.-sp. *Helix tiarella* Webb et Berthelot, 1833; SD Lowe, 1854).

TYPE SPECIES — *Helix tiarella* Webb et Berthelot, 1833; SD Herrmannsen, 1846.

Shell subglobular to much flattened, thin to solid, of 3.2-8 whorls. Last whorl sometimes rounded but mostly with 1 or 2 keels, strongly deflected. Color white, pale-corneous, or dark-brown. Embryonic whorls smooth to finely dotted or microgranulated. Postnuclear whorls with tubercles and/or spiral sculpture. Aperture entire or nearly so, rounded to rostrate, very oblique, with slightly to strongly thickened

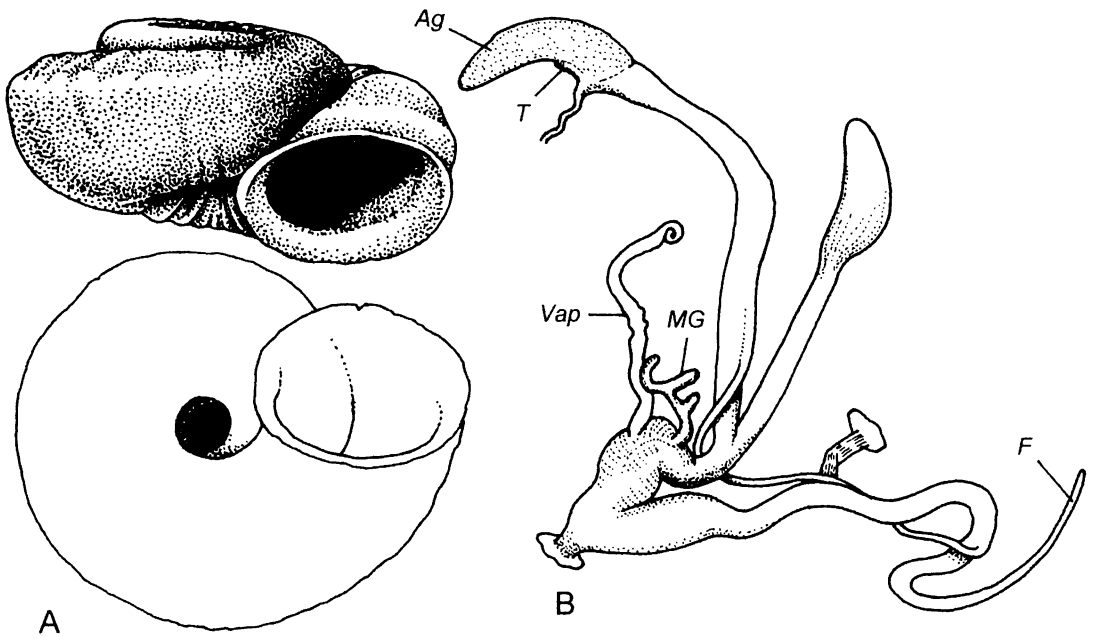


Fig. 2560. ! *Spirorbula obtecta* (Lowe, 1831).

A — shell; Porto Santo, Madeira. Syntype. Leiden. B — reproductive tract. After Mandahl-Barth, 1950.

margins. Umbilicus dot-like to moderately wide, perspective.

Flagellum short, conic. Epiphallus 4-6 times longer. Penis externally not demarcated from epiphallus, internally smooth, with fleshy verge having apical pore. Penial retractor inserting on distal part of epiphallus. Free oviduct short, vagina much longer. Vaginal appendages 2, long, slender, not approached, sit on upper portion of vagina. Mucus glands 2, biramous, with distinct common ducts, entering vagina just above appendages. Spermathecal stalk rather short; reservoir attending middle of spermoviduct.

DISTRIBUTION. Madeira.

***Geomitra* (*Geomitra* s. str.)**

Fig. 2561

Shell elevated to depressed-trochiform, solid, of 4.5-8 flattened, somewhat shouldered whorls. Last whorl rounded to somewhat keeled. Color brown. Embryonic whorls smooth to finely dotted or microgranulated. Later whorls with coarse tubercular sculpture formed by distinct spiral striae crossed by radial wrinkles; this sculp-

ture more prominent on basal side. Aperture rounded, (almost) entire, with thickened, more or less reflexed margins. Umbilicus dot-like to narrowly perspective. Height 4-8, diam. 4.5-7.5 mm (5.5 × 6.0 mm).

Anatomy as in genus.

DISTRIBUTION. Madeira. 6 spp.

***Geomitra* (*Serratorotula* Groh et Hemmen, 1986)**

Fig. 2562

Groh & Hemmen, 1986: 35.

TYPE SPECIES — *Geomitra* (*Serratorotula*) *gerberi* Groh et Hemmen, 1986; OD.

Shell depressed-pagodiform, thin, of 3.2-5.5 almost flat whorls. All postembryonic whorls with distinct peripheral angle or sharp, uneven, serrated keel. Color white to pale-corneous. Embryonic whorls dotted or with microscopical pustules. Postapical sculpture of widely spaced, irregular, thread-like spiral riblets; intervals with very fine radial striation. Aperture broadly ovate, somewhat rostrate, with shortly reflexed, a little thickened margins.

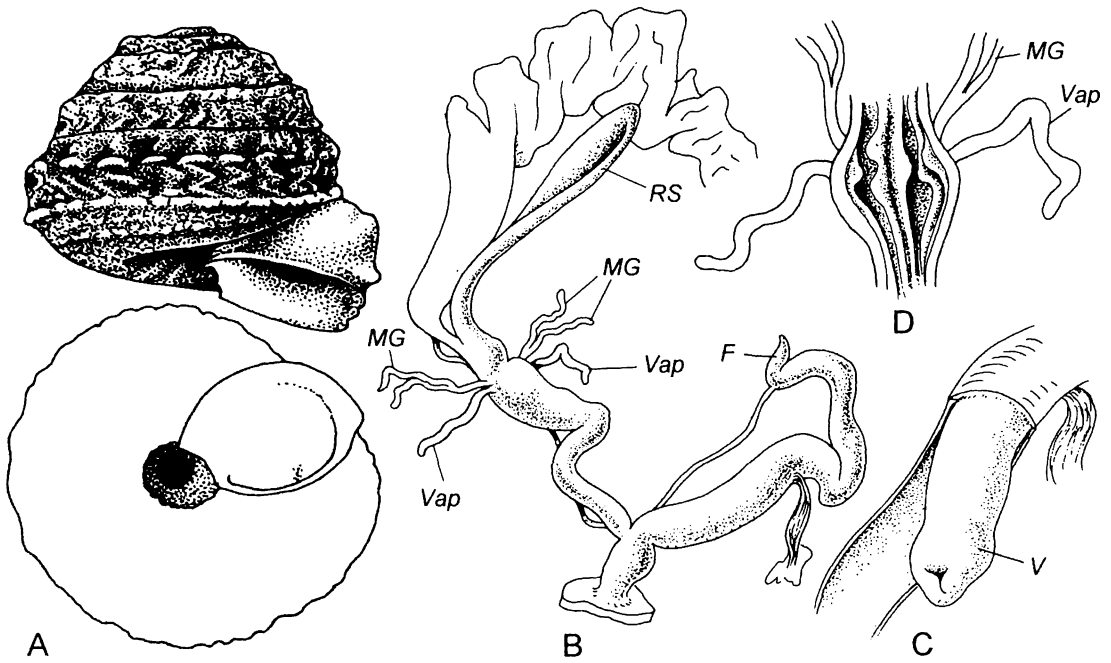


Fig. 2561 *Geomitra (Geomitra) tiarella* (Webb et Berthelot, 1833).
 A — shell: Caniçal, Madeira. Leiden. B, C, D — Ribeira do Inferno, Madeira, December 4, 1984. B — reproductive tract. C — interior of penis. D — interior of vagina. Cardiff.

Umbilicus moderately wide, perspective. Height 1.5–2.7, diam. 3.3–7.6 mm (2.7 × 7.6 mm).

DISTRIBUTION. Madeira (Porto Santo Island). 1 Recent and 2 fossil (Quaternary) spp.

Geomitra (Craspedaria Lowe, 1852)
 Fig. 2563

Lowe, 1852: 117

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

Shell high-trochoid to nearly flat, quite solid, of 5.5–6.5 much flattened whorls. Last whorl rounded to sharply keeled; keel more or less serrated. Color pale-corneous. Embryonic whorls (almost) smooth. Upper side of postapical whorls with complex sculpture of radial and spiral elements; basal side with granulated spiral ridgelets. Aperture subcircular, (almost) entire, more or less rostrate, with widely reflexed margins. Umbilicus broad, perspective. Height 8–14, diam. 15–23 mm (11.0 × 18.2 mm).

DISTRIBUTION. Madeira. 1 Recent and 1 fossil (Quaternary) spp.

Moreletina Frias Martins, 2002
 Fig. 2564

Frias Martins, 2002: 205.

TYPE SPECIES — *Helix obruta* Morelet, 1860; OD.

Shell depressed-conic, moderately solid, translucent, of 4–5.5 rather convex whorls. Last whorl angulate to subcarinate, only slightly deflected. Ground coloration whitish to light-brown, marbled with transverse, irregularly interrupted, white spots and 0–2 dark bands. Embryonic whorls with fine, irregular, smoothed radial riblets and very fine spiral striae. Postapical sculpture of very delicate, irregular radial wrinkles. Aperture ovate, moderately oblique, with sharp margins; columellar margin reflexed over narrowly open umbilicus. Height 4.2–6.3, diam. 6.1–9.1 mm.

Jaw with 7 strong, broad ribs.

Right ommatophoran retractor free from peni-oviducal angle.

Talon small, subglobular. Vas deferens comparatively short. Flagellum short, epiphallus of approximately same length; near base of flagellum there is a blunt caecum. Penis not long. Verge short, tubular,

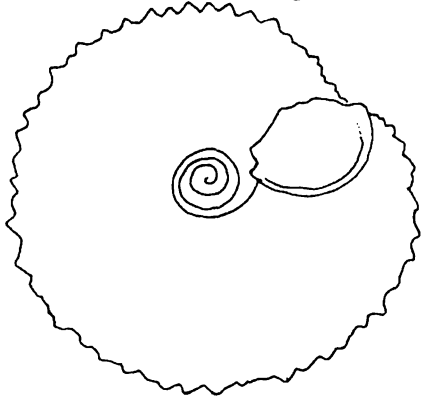
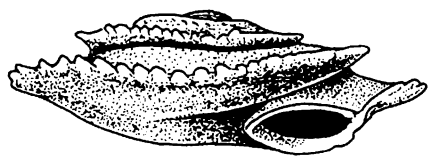


Fig. 2562. *Geomitra (Serratorotula) gerberi*
Groh et Hemmen, 1986.
"Porto Santo (SW-Küste): Trockental v. Ri-
beiros S'Ponta du Canavera: Quarter" Ho-
lotype. Senck. No. 257671

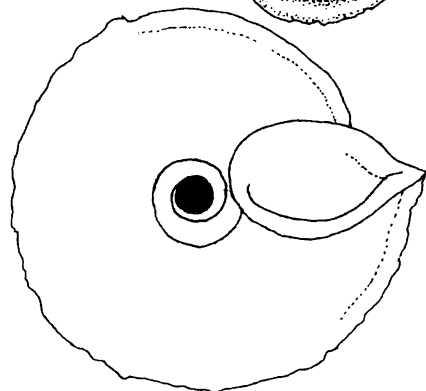
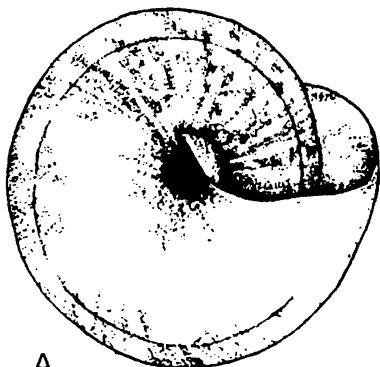
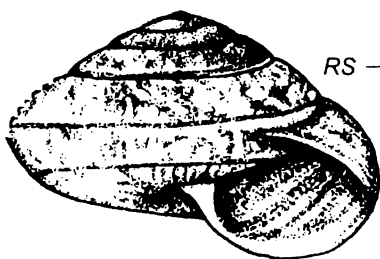
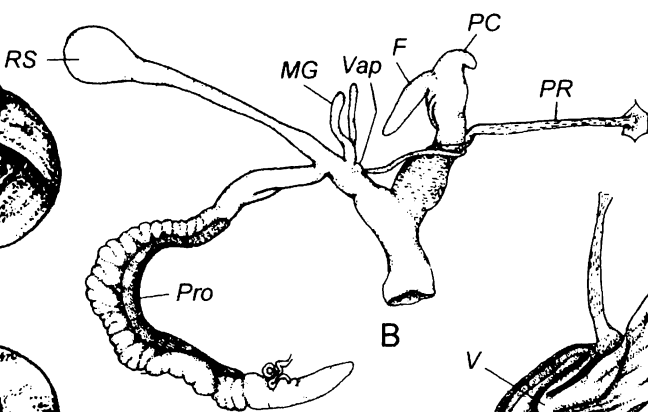


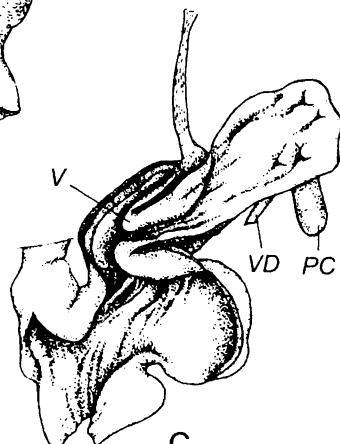
Fig. 2563. *Geomitra (Craspedaria) delphinula*
(Lowe, 1831).
Madeira. Moscow No. Lc-22542.



A



B



C

Fig. 2564. *Moreletina obruta* (Morelet, 1860).
A — shell. B — reproductive tract. C — interior of penis. After Frias Martins, 2002.

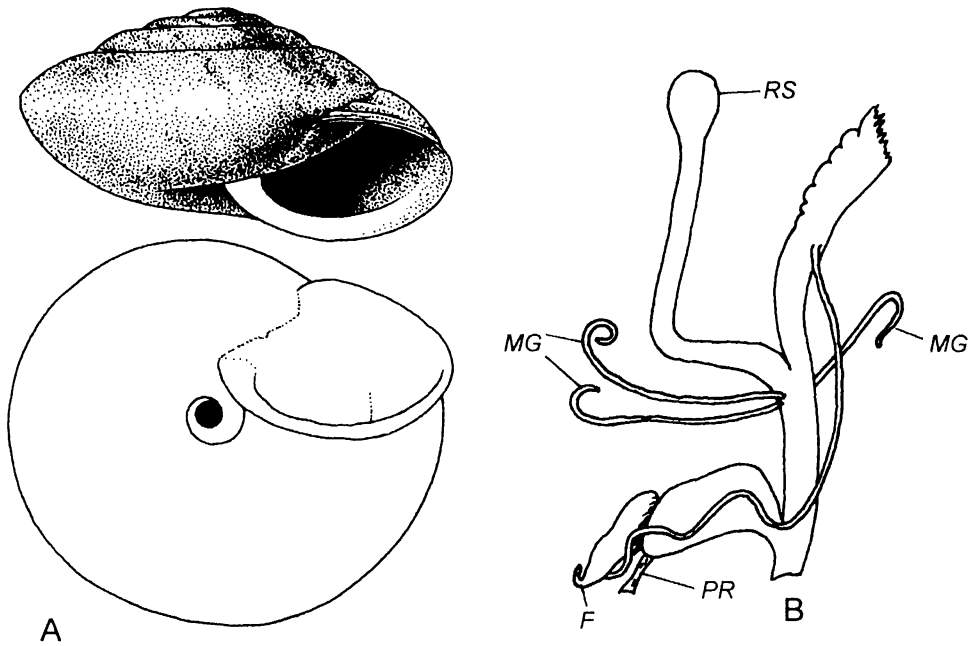


Fig. 2565. *Canariella (Canariella) hispidula* (Lamarck, 1822).

A — shell: Puerto de la Cruz, Tenerife Island. Vienna No. 3.1975. B — reproductive tract. After Krause, 1895.

double-walled, secured on one side by strong pilaster. Penis sheath surrounds penis; penial retractor attached to upper edge of penis sheath. Free oviduct and vagina very short. Stylophore vestigial, situated at base of mucus gland. Mucus gland 1, of 2 arms; small additional arm may be present. Atrium comparatively long. Spermathecal shaft moderately long; reservoir not reaching albumen gland.

DISTRIBUTION. Azores (Island of Santa Maria). 1 sp.

Canariellinae Schileyko, 1991

Schileyko, 1991: 227 (pro tribe).

Right ommatophoran retractor passes through peni-oviducal angle. Verge absent. Vagina long. Stylophores or vaginal appendages absent. Mucus glands 1 or 2, simple or (rarely) branched.

DISTRIBUTION. Canary Islands.

Canariella Hesse, 1918

Hesse, 1918b: 107 Ibáñez et al., 1995: 113.

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

Shell depressed-conic to lentiform, thin, translucent, of 4.5-6.75 slightly to moderately convex whorls. Last whorl roundly to sharply angled or keeled, almost straight or only slightly deflected. Color pale-corneous to brown or chestnut. Embryonic whorls almost smooth, faintly radially striated or with delicate tubercles. Later whorls more or less distinctly granulated, sometimes with short hairs. Umbilicus moderately wide, more or less eccentric, profound; sometimes partly covered.

Secondary ureter uncompleted.

Talon small, exposed, drop-like. Flagellum and epiphallus very short to rather long. Penis not differentiated from epiphallus externally (except for *Canariella* s. str.), boundary between them marked by penial retractor insertion. Verge missing. Stylophores or vaginal appendages missing. Mucus glands 1-6, if more than 1, enter vagina independently. Spermathecal stalk subcylindrical; reservoir attending albumen gland or nearly so.

DISTRIBUTION. Canary Islands (Tenerife, Gomera and Hierro).

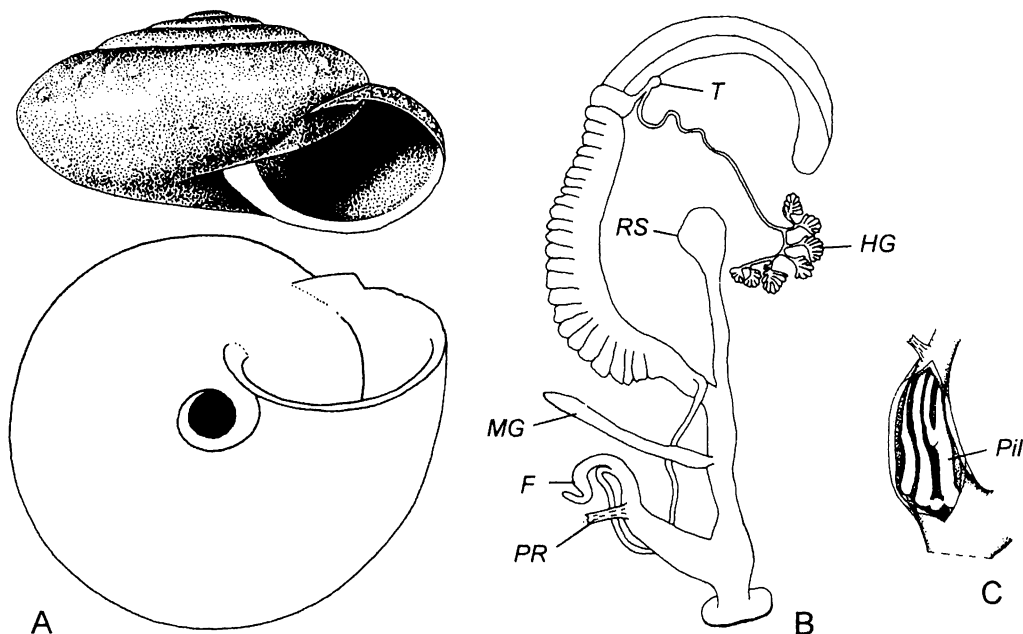


Fig. 2566. *Canariella (Alvaradoa) pthonera* (Mabille, 1883).

A — shell: Tenerife. Lectotype. Paris. B — reproductive tract. C — interior of penis. After Groh et al., 1994.

Canariella (Canariella s. str.)

Fig. 2565

Shell depressed, of about 5 moderately convex whorls. Last whorl with smoothed, rounded angle. Embryonic whorls lacking distinct sculpture. Postnuclear sculpture of delicate granulation because of crossing of irregular radial wrinkles and fine spiral lines. Umbilicus open. Height 2.8-7.0, diam. 7-18 mm (4.5 × 11.2 mm).

Flagellum short, conic, 2-3 times shorter than epiphallus. Penis bulky, distinctly demarcated from epiphallus. Free oviduct a little shorter than vagina. Mucus glands 3, long, slender, simple.

DISTRIBUTION. Canary Islands (Tenerife and Gomera). 2 spp.

Canariella (Alvaradoa) Ibáñez et Alonso, 1994)

Fig. 2566

Ibáñez & Alonso in Groh et al., 1994: 90.

TYPE SPECIES — *Helix pthonera* Mabille, 1883; OD.

Shell depressed, of 4.5-5 moderately

convex whorls. Last whorl with rounded angle. Embryonic whorls finely, irregularly radially wrinkled. Postapical sculpture of dense granulation. Umbilicus open. Height 3.4-6.9, diam. 6-10 mm (3.4 × 7.6 mm).

Flagellum a little longer than unusually short epiphallus. Internally penis differentiated from epiphallus only by a thickening of its pilasters. Free oviduct very short, vagina 5-7 times longer, internally with few simple axial folds. Mucus gland 1, simple or with few small lateral arms.

DISTRIBUTION. Canary Islands (Tenerife, Gomera and Hierro). 3 spp.

Canariella (Simplicula) Ponte-Lira et Alonso, 1997)

Fig. 2567

Ponte-Lira & Alonso in Ponte-Lira et al., 1997: 222.

TYPE SPECIES — *Helix plutonia* Lowe, 1861; OD.

Shell depressed-conic, of 5.25-6 almost flat whorls. Last whorl bluntly angled. Color chestnut. Embryonic whorls with elongated, scale-like tubercles. Postapical

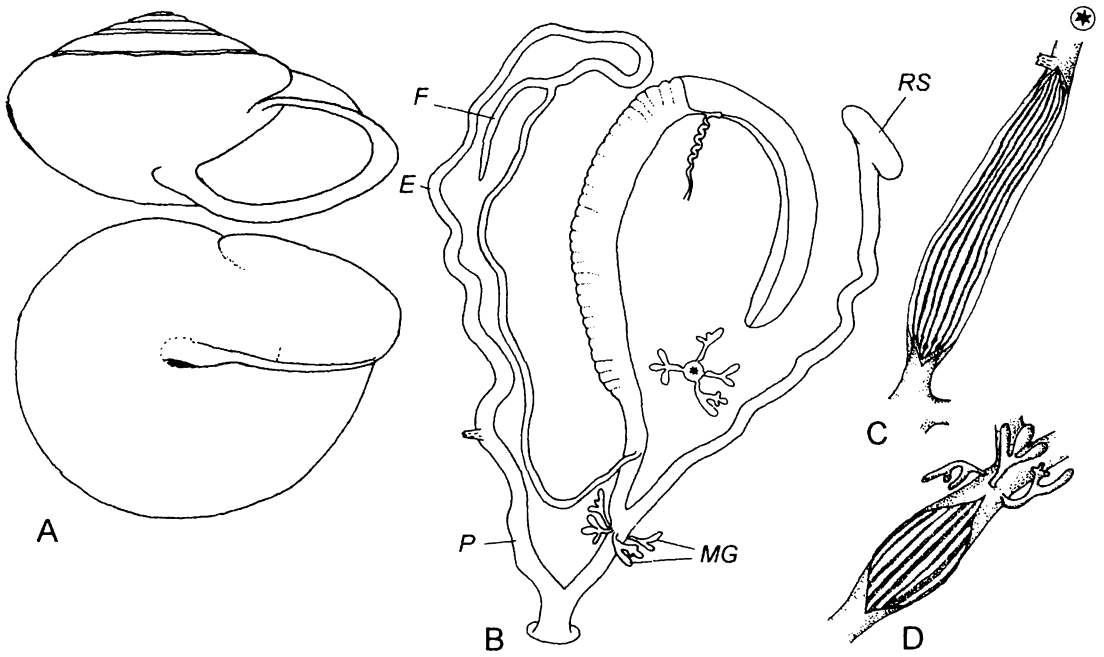


Fig. 2567 *Canariella (Simplicula) plutonia* (Lowe, 1861).

A — shell. B — reproductive tract and cross-section of vagina at level of mucus glands. C — interior of penis and cross-section of epiphallus. D — interior of vagina. After Ponte-Lira et al., 1997

sculpture of irregular radial riblets and very fine, dense spiral threadlets. Aperture irregularly ovoid, well oblique, with reflexed margins and inner lip. Umbilicus partly covered. Height 12.75-16.49, diam. 20.6-27.0 mm.

Flagellum 5-6 times shorter than epiphallus. Epiphallus long, subcylindrical. Penis has about same diameter as epiphallus, internally with 5-6 axial folds. Free oviduct not long, vagina a little longer, internally with 6-7 longitudinal folds. Mucus glands 4, each splitted at tip into 2-3 arms.

DISTRIBUTION. Fuerteventura and Lanzarote Islands (Canary Archipelago). 1 sp.

Canariella (Gara Alonso
et Ibáñez, 2002)
Fig. 2568

Alonso & Ibáñez in Ibáñez et al. 2002: 86.

TYPE SPECIES — *Caracolla ronceroi* Ponte-Lira, 2002; OD.

Shell lentiform, of 5-5.5 much flattened whorls. Last whorl straight or scarcely de-

scending, with cord-like keel. Embryonic whorls only faintly radially striated. Postapical whorls with prominent, regular radial ribs and 4-5 small riblets in interstices; ribs crossed by microscopic spiral threadlets. Aperture angulated, well oblique, with inner lip. Umbilicus open. Height 4.5-5.8, diam. 10.2-13.4 mm.

Flagellum vestigial, 5-6 times shorter than epiphallus. Latter rather short, with longitudinal folds ending distally as small papillae; one of papillae situated over proximal portion of pilaster. Penis internally with an eccentric orifice and a thick longitudinal pilaster opposite to insertion of penial retractor. Penial pilaster composed of 2 portions: proximal soft, short, ending in epiphallus, distal portion long, toughened, anklebone-like. Penial wall with a thickened ring-shaped portion joined to distal pilaster portion. Free oviduct of about same length as vagina. Vagina internally with axial folds. Mucus gland 1, simple, slightly shifted to base of spermathecal stalk.

DISTRIBUTION. Canary Islands. 2 Recent spp.

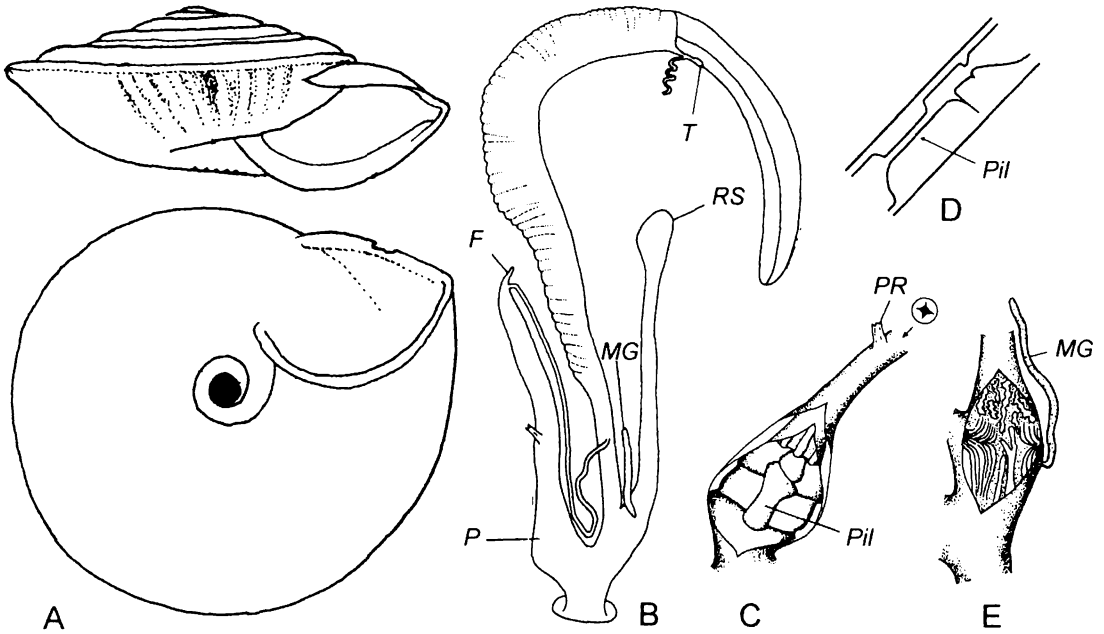


Fig. 2568. *Canariella (Gara) ronceroi* Ponte-Lira, 2002.

A — shell. B — reproductive tract. C interior of penis. D — schematic longitudinal section of penis. E — interior of vagina. After Ibáñez et al., 2002.

Canariella (Salvinia Alonso, Ibáñez et Ponte-Lira, 2003)
Fig. 2569

Alonso et al. 2003: 70.

TYPE SPECIES — *Canariella tenuicostulata* Alonso, Ibáñez et Ponte-Lira, 2003; OD.

Shell lentiform, of 5.5-6.75 almost flat whorls. Last whorl with a sharp keel, straight or scarcely descending. Embryonic whorls without distinct sculpture. Postapical surface granulated, with short hairs. Umbilicus open. Height 5.6-8.2, diam. 11.9-20.2 mm.

Flagellum of about same length as epiphallus. Penis internally with a small, spoon-like, grooved stimulator arising from 2 longitudinal epiphallar folds that merge distally and extend into cavity of penis. Free oviduct about 3 times shorter than vagina. Internally vagina with several axial folds separated from that of spermathecal stalk. Near orifice of free oviduct inner surface of vagina thickened like a pad with 2 crossed furrows — longitudinal and transversal; pad occupying almost entire vaginal lumen.

DISTRIBUTION. La Gomera and La Palma Islands (Canary Archipelago). 4 spp.

HESSEOLINAE Schileyko, 1991

Schileyko, 1991 230.

Right ommatophoran retractor passes outside peni-oviducal angle.

Verge double-walled due to circular cavity in base of verge. Latter during copulation at first moves out, then everts. Vagina long. Stylophores modified into highly muscularized fusiform appendages with very narrow lumen; appendages penetrate vaginal walls and terminate in vaginal cavity. Mucus glands present.

DISTRIBUTION. Caucasus and Kopetdagh Mts.

Hesseola Lindholm, 1927
Fig. 2570

Lindholm, 1927a: 125 (*Euomphalia* sect.).
Schileyko, 1978b: 263.

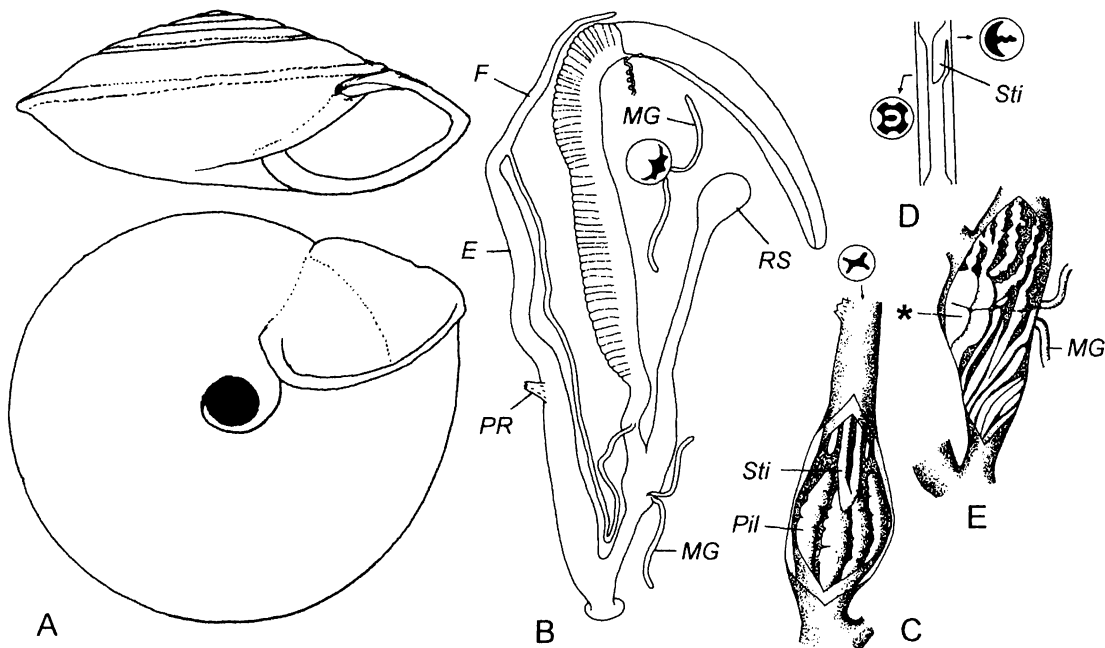


Fig. 2569 *Canariella (Salvinia) tenuicostulata* Alonso, Ibáñez et Ponte-Lira, 2003.
 A — shell. B — reproductive tract. C — interior of penis. D — schematic longitudinal section of penis. E — interior of vagina. After Alonso et al. 2003. Asterisk — pad-like structure in vagina.

TYPE SPECIES — *Helix (Fruticocampylaea) adshariensis* Lindholm, 1913 (= *Helix solidior* Mousson, 1873); OD.

Shell depressed-conic to semiglobose, rather solid, of 4.5-6.5 convex whorls. Last whorl evenly rounded, moderately descending in front. Color either white, usually with 2 brown bands above and below periphery, or corneous with light, diffuse peripheral band. Embryonic whorls smooth. Later whorls with coarse, irregular radial wrinkles and delicate spiral striae; fine, short hairs may be present. Aperture ovate, not strongly oblique; margins shortly reflexed, with inner lip. Umbilicus narrowly open. Height 6-12, diam. 9-13 mm (9.2 × 14.9 mm).

Right ommatophoran retractor crossed with penial retractor but free from peni-oviducal angle.

Talon small, exposed. Flagellum a little shorter than epiphallus. Epiphallus with a vast lumen, internally with high folds; 2 of them much higher than others. Penis small, with a short verge. Penial walls contain circular cavity, which penetrates walls of verge, thus verge is capable

to change its shape and length. Penial muscular bands well developed. Penial retractor attached unusually low — to distal section of penis. Free oviduct not long; vagina somewhat longer. Vaginal appendages fusiform, located side-by-side, pierce through wall of vagina; their tips within vagina approached. Mucus glands 3, each of 2-3 arms; common ducts short. Spermathecal stalk enlarged, its basal section may be narrowed; reservoir lies on upper half of spermo-viduct, not attending albumen gland.

DISTRIBUTION. Caucasus and Kopet-dagh Mts. 2-3 spp.

PAEDHOPLITINAE Schileyko, 1978

Schileyko, 1978b: 291

Right ommatophoran retractor passes through peni-oviducal angle.

Base of verge not contain circular loosening of tissue. Verge during copulation moves out. Walls of penis usually contain

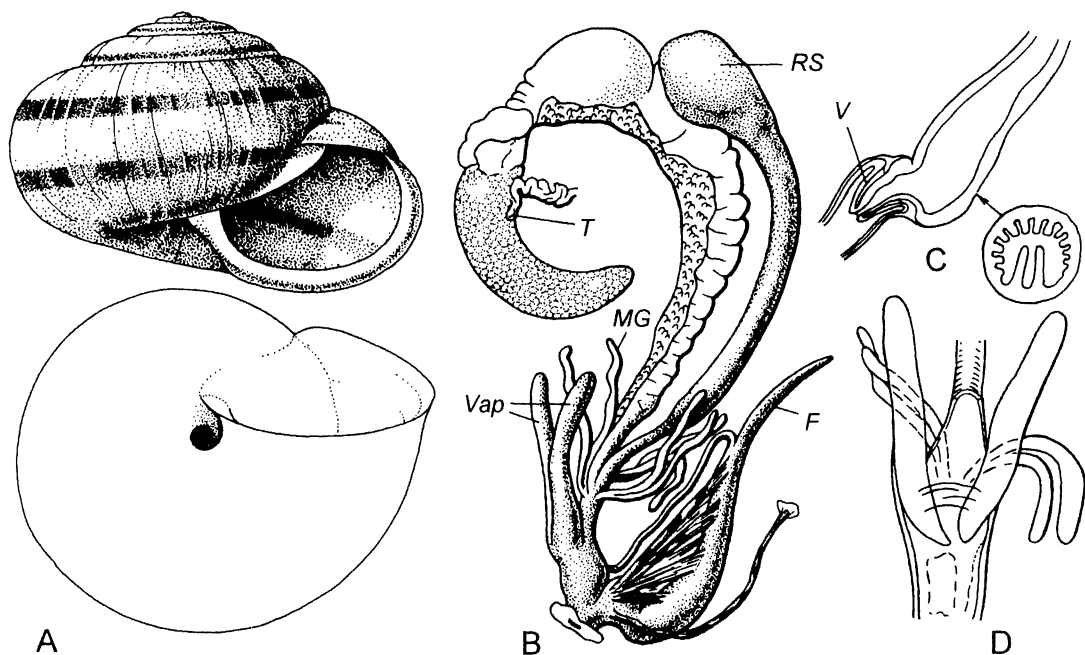


Fig. 2570. *Hesseola solidior* (Mousson, 1873). Gnishik village, Armenia, July 15, 1949. A — shell. B — reproductive tract. C — schematic longitudinal section of penis and cross-section through epiphallus. D — interior of vagina. Moscow No. Lc-28474.

penial gland. Vagina long. Stylophores modified into a pair of small, sac-like vaginal appendages. Opposite to some other subfamilies of Hygromiidae with reduced stylophores or their derivatives, not upper (inner) but lower (outer) appendages reduced to light swelling with slit-like cavity on lower side of each of appendage; sometimes these rudimentary appendages totally absent. Mucus glands present.

DISTRIBUTION. Tien-Shan.

Angiomphalia Schileyko, 1978

Fig. 2571

Schileyko, 1978b: 291.

TYPE SPECIES — *Helix regeliana* Martens, 1882; OD.

Shell depressed, trochoid or semiglobose, mostly rather solid, of 5-6 moderately convex, normally coiled whorls. Last straight or scarcely descending in front, rounded or slightly angled. Color whitish to dark-red, uniform or with dark dots; diffuse fulvous radial streaks or light periph-

eral zone may be present. Embryonic whorls smooth. Later whorls with weak, irregular radial wrinkles and sometimes with indistinct spiral striation. In some species there are thin, short hairs. Aperture ovate, slightly oblique, without teeth; margins more or less reflexed, often with inner lip. Umbilicus moderately broad to minute. Height 5.5-15.0, diam. 8-20 mm (13.8 × 17.7 mm).

Flagellum long, slender, either subequal to epiphallus in length, or somewhat longer or shorter. Penis swollen, its inner surface covered with axial folds or short, crowded transverse wrinkles. Penial gland variously developed. Verge large, inner canal occupies central position or shifted toward one side. Penial retractor attached to distal part of epiphallus or to penis/epiphallus junction. Free oviduct short to rather long. Vagina (very) long, cylindrical. Vaginal appendages small, not approached to each other, located on upper or lower section of vagina. Spermathecal shaft moderately long, attending midway of upper half of spermoviduct.

DISTRIBUTION. Tien-Shan. 6 spp.

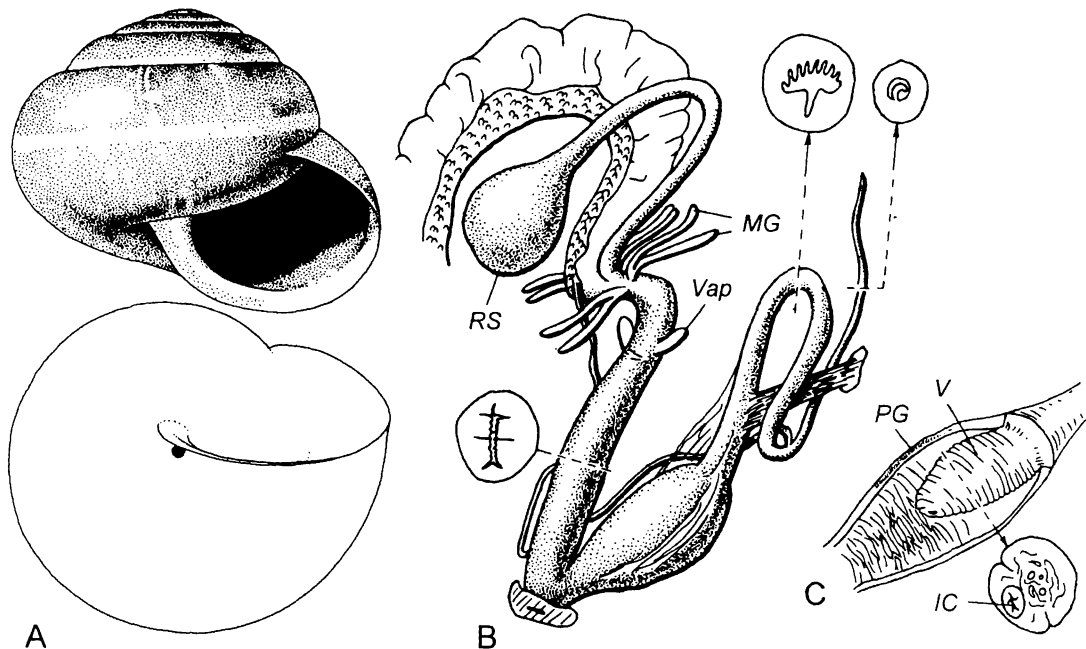


Fig. 2571 *Angiomphalia regeliana* (Martens, 1882). Talasskaya Trough [Tien-Shan], June 5, 1972.

A — shell. B — reproductive tract. C — interior of penis. After Schileyko, 1978b. IC — intravaginal canal.

Paedhoplita Lindholm, 1927

Lindholm, 1927c: 266. Schileyko & Moissejeva, 1989: 144.

TYPE SPECIES — *Paedhoplita laminata* Lindholm, 1927; OD.

Shell lens-shaped, moderately thin, of 5-6.5 flat to slightly convex, tightly coiled whorls. Last whorl with more or less sharp angle or keel, straight or scarcely deflected. Color corneous to brown; light peripheral zone, if present, weak and diffuse. Embryonic whorls smooth. Postembryonic sculpture of fine to rather coarse radial striation; very small hairs may be present. Aperture narrow, semilunate, not strongly oblique, with strong basal lip; parietal wall either smooth or bears 1-2 teeth: lamellar and (when present) tubercular. During postembryogenesis few sets of teeth are forming. Umbilicus narrowly to moderately open.

Flagellum 1.2-1.5 times longer than epiphallus. Penis enlarged to subcylindrical, its inner surface almost smooth or with pattern of longitudinal, even or tortuous folds; in 1 species there is horseshoe-like pilaster. Penial gland present or wanting.

Verge small to large, inner canal occupies central position. Penial retractor attached to distal part of epiphallus or to penis/epiphallus junction. Free oviduct short. Vagina (moderately) long, cylindrical or almost spindle-shaped. Vaginal appendages not approached; sometimes there are rudiments of the 2nd (external, lower) pair of appendages as small swellings which have very narrow lumens. Spermathecal stalk moderately long; reservoir lies on upper half of spermooviduct.

DISTRIBUTION. Tien-Shan.

Paedhoplita (*Paedhoplita* s. str.)

Fig. 2572

Periphery of shell with smoothed angle. Parietal wall of aperture with 1-2 teeth; sometimes they weakly developed. Height 3.5-6.0, diam. 6.5-10.0 mm (4.0 × 8.6 mm).

Rudiments of outer vaginal appendages usually present.

DISTRIBUTION. Tien-Shan (Kirghizsky and Zailiysky Ranges). 4 spp.

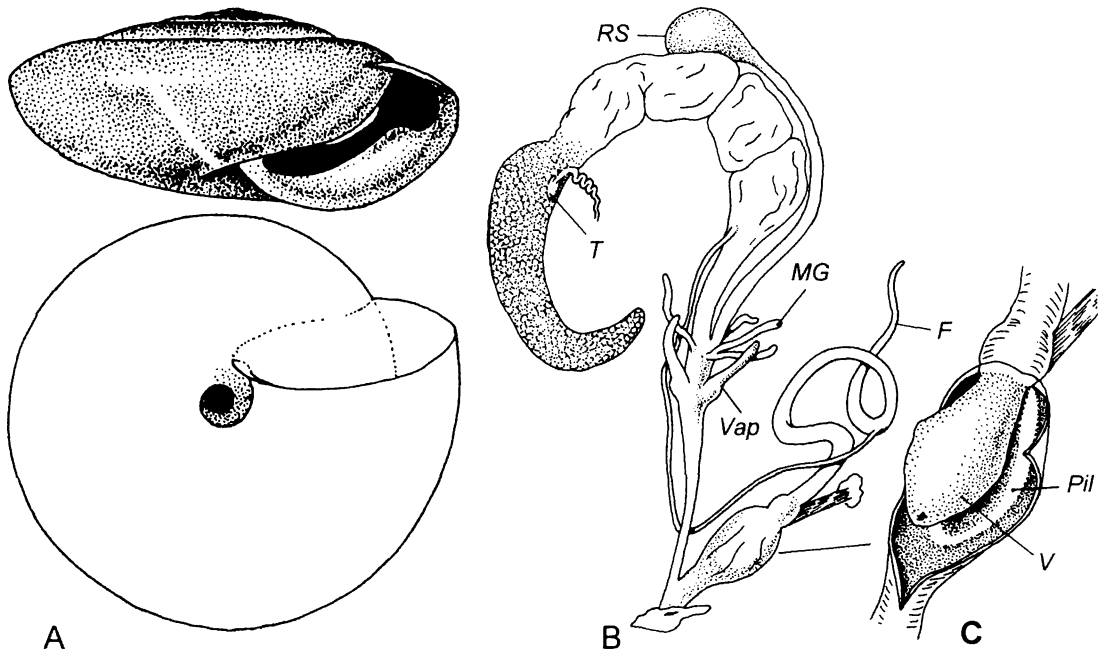


Fig. 2572. *Paedhoplita (Paedhoplita) laminata* Lindholm, 1927

A — shell: Eastern part of Kirghizsky Range. Lectotype. SPb. B, C — Eastern part of Kirghizsky Range, Kegnety above Tokmak, left bank of Kel-Tor River, June 24, 1986. B — reproductive tract. C — interior of penis. After Schileyko & Moissejeva, 1989.

Paedhoplita (Lentiga) Schileyko, 1978
Fig. 2573

Schileyko, 1978b: 300 (*Angiomphalia* subg.).

TYPE SPECIES — *Helix lentina* Martens, 1885; OD.

Periphery of shell with sharp keel. Parietal wall lacks teeth. Height 4.5-5.0, diam. 12-13 mm (4.7 × 12.7 mm).

Rudiments of outer vaginal appendages missing.

DISTRIBUTION. Tien-Shan (Ferghansky and Chatkalsky Ranges). 1 sp.

METAFRUTICICOLINAE
Schileyko, 1972

Schileyko, 1972c: 18.

Right ommatophoran retractor passes through peni-oviducal angle.

Base of verge and walls of distal part of epiphallus sometimes with circular cavity. Vagina very short — spermathecal shaft

branched off almost from atrium. Stylophores (or their derivatives) or mucus glands missing.

DISTRIBUTION. E Mediterranean, Caucasus.

Metafruticicola Ihering, 1892
Fig. 2574

Ihering, 1892: 452.

— *Pseudocampylaea* Hesse, 1884: 237 [nom. praeocc., non L. Pfeiffer, 1877; t.-sp. *Helix pellita* Férussac, 1821; SD Pilsbry, 1895 (1893-1895)].

— *Cressa* Westerlund, 1889: 4 [nom. praeocc. non Bock, 1871 (Amphipoda); *Helix* subg., for 7 spp. the 1st is *Helix pellita* Férussac, 1821].

— ? *Latonia* Westerlund, 1889: 30 [nom. praeocc., non Meyer, 1843 (Amphibia); *Fruticicola* "Gruppe"; t.-sp. *Helix schuberti* Roth, 1839; SD Kobelt, 1904].

— *Westerlundia* Kobelt, 1904: 131, 181 (*Latonia* Westerlund, 1889 as syn.; *Fruticicola* subg.; t.-sp. *Helix schuberti* Roth, 1839; monotypy).

Schileyko, 1972b: 18.

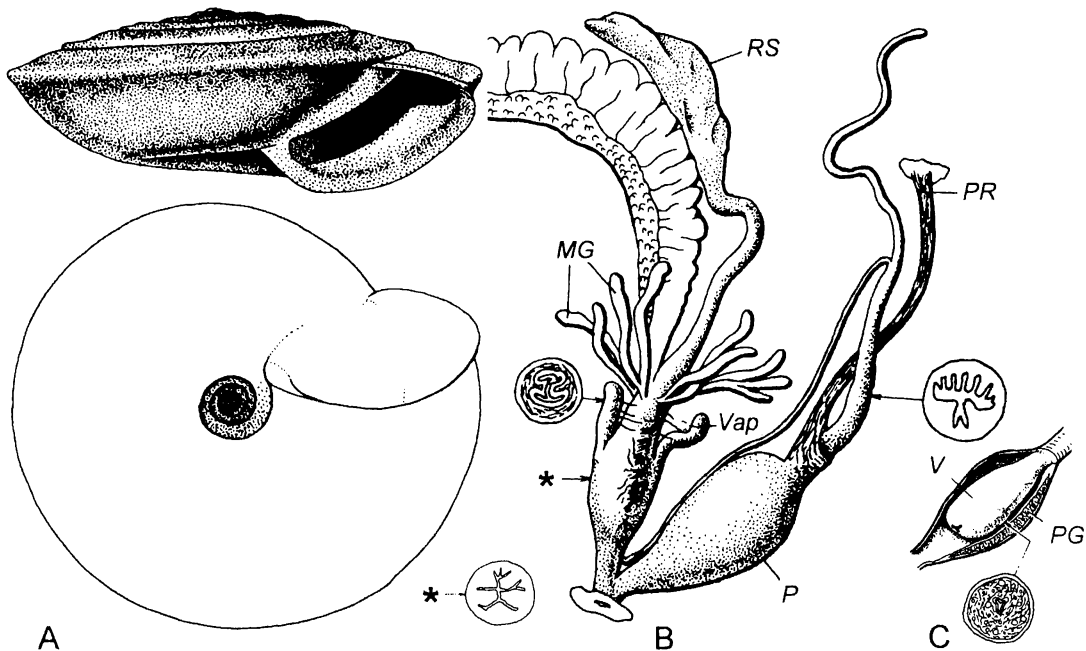


Fig. 2573. *Paedhoplita (Lentiga) lentina* (Martens, 1885). Right side of Narin River Valley above Toktoghul, June 1, 1972. A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-8598.

TYPE SPECIES — *Helix pellita* Ferussac, 1821; SD Pilsbry, 1895 (1893-1895).

Shell depressed-conic. Color gray, with 1 suprapерipheral dark band. Embryonic whorls smooth. Later whorls irregularly striated, with delicate granules and thin, tiny hairs. Umbilicus dot-like. Height 8-11, diam. 13-16 mm (10.1 × 15.0 mm).

Length of flagellum exceeds length of penis+epiphallus. Walls of epiphallus lack circular cavity. Penis thick-walled. Verge fleshy, with superficial groove, epiphallic pore situated in depth of mentioned groove; verge during copulation moving out. Reservoir of spermatheca distinctly demarcated from shaft. Folds within shaft longitudinal, variously developed, anastomosing.

DISTRIBUTION. NE Mediterranean. 3-5 spp.

Cretigena Schileyko, 1972
Fig. 2575

Schileyko, 1972b: 18.

TYPE SPECIES — *Helix sublecta* Hesse,

1884 (= *Helix naxiana* Férussac, 1821); OD.

Shell depressed-conic. Color white, with 2-3 dark bands. Embryonic whorls smooth. Postapical whorls with fine, irregular radial striation and well developed spiral lines; hairs absent. Umbilicus dot-like. Height 7-9, diam. 12-16 mm (8.5 × 14.0 mm).

Length of flagellum approximately equal to length of penis+epiphallus. Walls of epiphallus without or with weakly developed circular cavity. Penis thin-walled. Verge tubular, transversely folded, with thick walls, very narrow lumen and minute terminal pore; walls of verge contain narrow circular cavity. Verge during copulation moving out. Reservoir of spermatheca distinctly demarcated from shaft. Longitudinal folds in shaft arranged regularly and broken up into series of tubercles.

DISTRIBUTION. Crete. 2-5 spp.

Caucasocressa Hesse, 1921
Fig. 2576

Hesse, 1921 63 (*Fruticocampylaea* subg.).
Schileyko, 1972b: 18. Hausdorf, 2003: 2628.

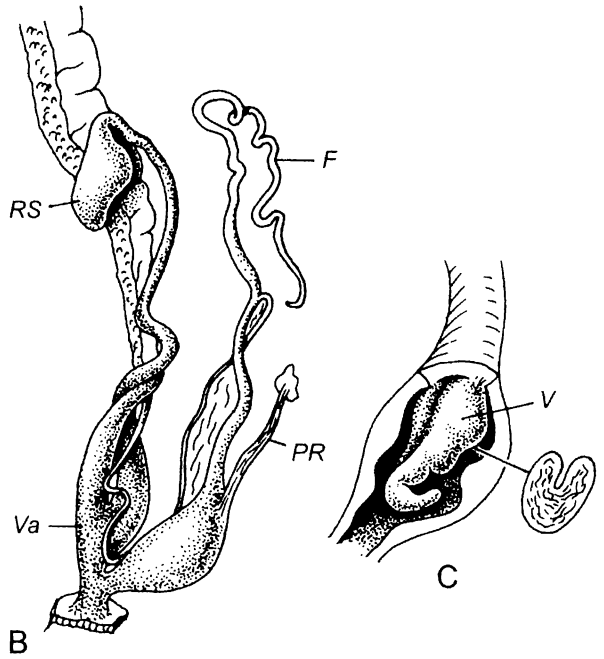
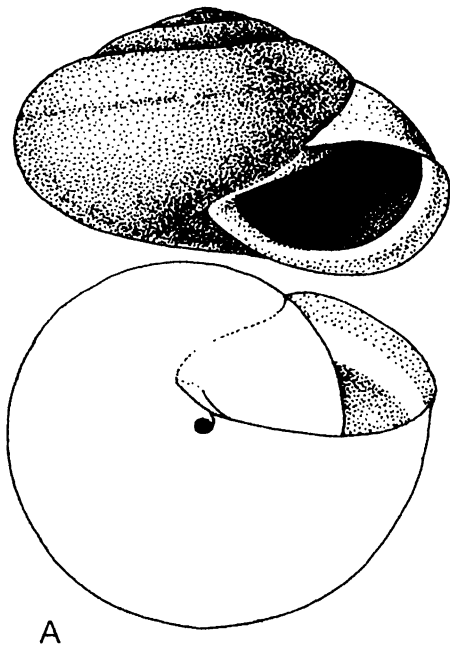


Fig. 2574. *Metafruticicola pellita* (Férussac, 1821). "Halepa bei Hania, Crete, August 30, 1959"
 A — shell. Moscow No. Lc-28444. B — reproductive tract. C — interior of penis. After Schileyko, 1972c.

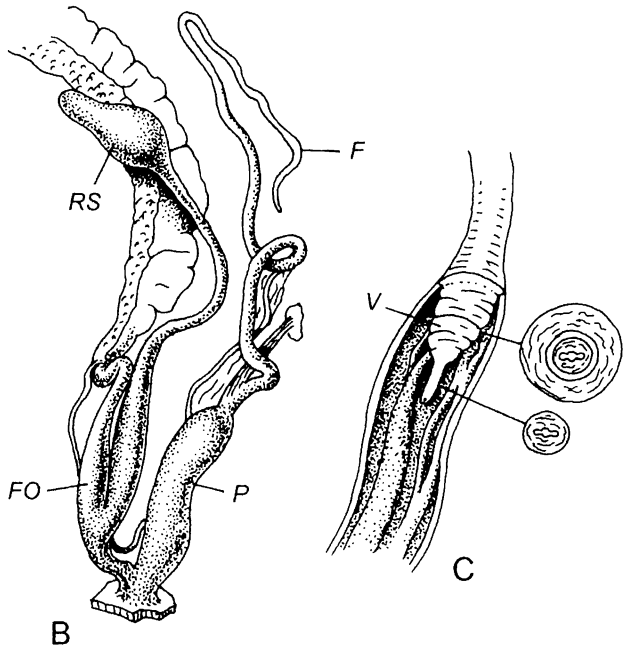
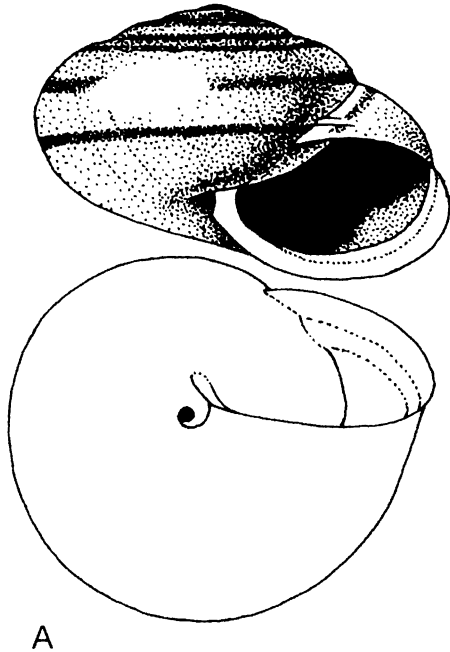


Fig. 2575. *Cretigena naxiana* (Férussac, 1821). Knosós near Iráklion, Crete, September 5, 1959
 A — shell. B — reproductive tract. C — interior of penis. Moscow No. Lc-28458.

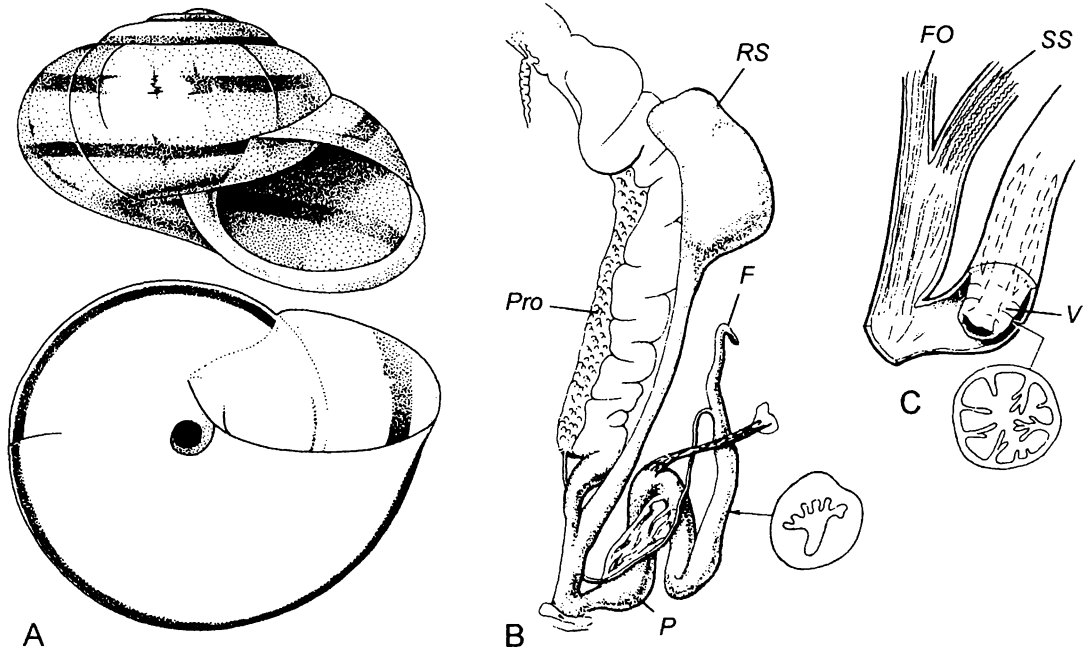


Fig. 2576. *Caucasosocressa johannis* (Mortillet, 1854). Lomashen near Artvin, NE Turkey, May 29, 1912.
 A — shell. B — reproductive tract. C — interior of penis. **Moscow No. Lc-28479 (SPb).**

TYPE SPECIES — *Helix joannis* Mortillet, 1854; OD.

Shell depressed-conic to nearly flat. Color white, mostly with 2 brown bands. Embryonic whorls smooth. Later whorls with fine, irregular radial striation, variously developed spiral lines and/or minute tubercles. Umbilicus dot-like to narrow. Height 8.5-16.0, diam. 16-28 mm (14.1×17.8 mm).

Length of flagellum equal to length of penis+epiphallus or less. Walls of distal

section of epiphallus contain circular cavity, partially penetrating walls of verge; thus, during copulation verge at first moves out, and then everts. Penis thin-walled. Verge tubular, with thin walls, vast lumen and large pore; high, thin folds in epiphallus continue to lumen of verge. Reservoir of spermatheca sleeve-like, without visible boundary with shaft. Longitudinal folds within shaft regular, corrugated.

DISTRIBUTION. SW Transcaucasia and adjacent regions of Turkey. 10-11 spp.

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