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NEW SOUTH AMERICAN CLAUSILIIDAE FROM THE COLLECTIONS OF THE FLORIDA MUSEUM OF NATURAL HISTORY (GASTROPODA, CLAUSILIIDAE, NENIINAE)

Eike Neubert and Hartmut Nordsieck

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NEW SOUTH AMERICAN CLAUSILIIDAE FROM THE COLLECTIONS OF THE FLORIDA MUSEUM OF NATURAL HISTORY (GASTROPODA, CLAUSILIIDAE, NENIINAE)

Eike Neubert[1] and Hartmut Nordsieck[2]

ABSTRACT

The material described here contains 32 taxa of Neniinae. The following new genus is described: *Brevinenia* n. gen. The following species or subspecies are new to science: *Bequaertinenia delicata* n. sp., *Columbinia (Steatonenia) pachygastris* n. sp., *Cyclonenia albosuturalis* n. sp., *Cyclonenia gibber* n. sp., *Cylindronenia violacea* n. sp., *Hemicena polinskiana ancashensis* n. ssp., *Incaglaia leucostoma* n. sp., *Incania papillosa papillosa* n. sp. n. ssp., *Incania papillosa imbecilla* n. sp. n. ssp., *Incania platystoma* n. sp., *Steeriana cajamarcana sororminor* n. ssp., *Steeriana sororminor* n. sp., *Temesa gradata* n. sp., *Temesa pilsbryi perfectecostata* n. ssp., *Zilchiella palatalis* n. sp., *Zilchiella scala* n. sp. All species except *Incaglaia huanucensis* were found to live in areas dominated by limestone substrata. Several species seem to persist even when the vegetation type changed due to human activities.

Key words: Gastropoda, Pulmonata, Clausiliidae, new species, Peru.

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INTRODUCTION

The knowledge on Neniinae, the subfamily of Clausiliidae living in the neotropical realm, is still fragmentary. Large parts of the potentially inhabited area are unknown. This is especially true for Colombia, Venezuela, Ecuador and Bolivia. The Neniinae of Peru are better understood since they have been intensively studied by Weyrauch. In the beginning of his engagement in Clausiliidae, Weyrauch gave his material to Pilsbry (1945, 1949a, b), who described several species from these collections. Later, Weyrauch started a cooperation with Zilch and published several articles on the Neniinae alone or together with Zilch (Zilch, 1954; Weyrauch, 1957, 1963, 1964). His collection of preserved animals as well as material from additional sources was then used by Loosjes (Loosjes & Loosjes-van Bemmel, 1966). Loosjes dissected many species and used the morphology of the radula and the genital organs altering Zilch's (1960) taxonomy of the group, which was based on shell characters only. Recently, the material of Loosjes (Loosjes & Loosjes-van Bemmel, 1984, 1989) has been reinvestigated by Nordsieck (1999), who also described new species from the collection of Loosjes. The present study was necessary to integrate a considerably high number of species new to science, which were collected by F. G. Thompson in northern Peru, especially in the departamentos of Cajamarca, Amazonas, and Huanuco.

MATERIALS AND METHODS

Abbreviations: AH = height of aperture; AD = diameter of aperture; D = diameter of shell; depto. = departamento; H = height of shell; R_1 = rib number on 1 mm of the penultimate whorl; W = number of whorls. Terms of the clausilial apparatus follow Pilsbry (1949b).

Collections:

ANSP = Academy of Natural Sciences Philadelphia

UF = Florida Museum of Natural History, Gainesville, USA (F. G. Thompson = FGT).

NEUB = private collection Neubert.

NHM = Natural History Museum, London.

SMF = Senckenberg Museum, Frankfurt, Germany (R. Janssen).

RESULTS

Genus *Columbinia* Polinski, 1924

1924 *Nenia* (*Columbinia*) Polinski, Bulletin de l'Académie Polonaise des Sciences et des Lettres Cracovie, (B) 1924: 743.

Subgenus *Columbinia* (*Columbinia*)

Columbinia (Columbinia) bryantwalkeri (Pilsbry, 1922)

1922 *Nenia bryantwalkeri* Pilsbry, The Nautilus, 35 (3): 95, pl. 2, figs. 4, 5, 12-14 [Peru, prov. of Huallaga].

Material.— UF 268765: Depto. Huanuco, 4.7 km S of Tingo María , 750 m alt., FGT-1094.

Note.— The collection of Thompson contains another specimen from a locality nearby, which is not the same as *C. bryantwalkeri*. It is bigger (H = 19.9 mm, D = 4.6 mm) and more densely ribbed than the latter. The preservation state of this specimen does not allow a further judgment on its taxonomic status.

Material.— UF 268772: Depto. Huanuco, 9.2 km S of Tingo María, 800 m alt., FGT-1102.

Columbinia (Steatonenia) Pilsbry, 1926

1926 *Nenia* (*Steatonenia*) Pilsbry, Proceedings of the Academy of Natural Sciences Philadelphia, 78: 9.

Note.— The subgenus *Steatonenia* was redefined by Nordsieck (1999: 172) and comprises the species of *Columbinia* with ventricose shells.

Columbinia (Steatonenia) pachygastris n. sp.

(Fig. 1)

Diagnosis.— A *Columbinia* (*Steatonenia*) species with moderately thick apical part of the shell, roundish aperture and posterior lower palatal plica. Differs from *C.* (*S.*) *juninensis* (M. Smith, 1943) by the more slender apical part of the shell; aperture more roundish; inferior lamella more spirally ascending; posterior lower palatal plica more distinct; clausilium plate less pointed. In comparison with *C.* (*S.*) *bartletti* (H. Adams, 1866) and similar species shell with more slender apical part; sculpture simple; inferior lamella more spirally ascending; posterior lower palatal plica present.

Description.— Shell with a blunt broadly conical apical part, suture shallow; yellowish brown; teleoconch whorls ± regularly and obliquely rib-striated, somewhat more coarsely on the neck; neck rounded; aperture detached and protruding, obliquely oval or roundish-oval, white inside, peristome somewhat expanded; superior lamella high, continuous with the spiral lamella by a ± marked curve, occasionally somewhat elongated by its side; inferior lamella relatively high in position, straightly ascending with a weak spiral, of different height inwards, in front ending on the columellar edge with a weak or without thickening; subcolumellar lamella descending to the lunellar; lunellar dorsal-dorsolateral in position, principal plica ending dorsolaterally or more laterally; upper palatal plica divergent from principal plica, continuous with the lunella by a curve, posterior lower palatal plica present, connected with the lunella by an obtuse angle; clausilium plate in oblique view fully visible, relatively

broad, leaving a gap at the palatal side, distally blunt, wih an inconspicuous outer corner. Spiral lamella penetrating inwards to a dorsolateral position, inferior lamella to a ventral one (one specimen examined).

Type Material.— Peru: Depto. Piura, 23 miles E of Canchaque on road to Huancabamba, 9400 ft. alt., K. Campbell leg., 11.04.1970. Holotype UF 268818. Paratypes UF 298618 (1+1 fragment). Paratypes UF 268820 (2 complete shells, 6 fragments with aperture), SMF 311954/1, same locality, 18.04.1970.

Measurements.— Holotype: H = 27.45 mm; D = 6.85 mm; AH = 6.35 mm; AD = 6.3 mm; W = 8. Paratypes (in mm, n = 4): H = 25.2 – 28.2 ; D = 6.4 – 7.3; W: 7¾ – 8½.

Etymology.— The specific epithet is derived from Greek *pachys* (= thick), and Greek *gastron* (= venter, belly).

Genus *Incania* Polinski, 1922

1922 *Nenia* (*Incania*) Polinski, Bulletin de l'Académie Polonaise des Sciences et des Lettres Cracovie, (B) 1921: 125.

Incania platystoma n. sp.
(Fig. 10)

Diagnosis.— A small-sized *Incania* species with flared aperture with thickened lip and complete clausilial apparatus with posterior lower palatal plica. In comparison with other *Incania* species superior lamella separated from spiral lamella; posterior lower palatal plica present.

Description.— Shell with relatively thick conical apical part, suture shallow; yellowish reddish-brown; teleoconch whorls densely rib-striated, more densely on the lower whorls, on the neck more coarsely, riblets in part white, at the suture patches of white riblets alternating with non-white weakly sculptured ones, on the upper whorls patches of white riblets in part giving rise to protractive rib-folds; neck rounded, longitudinally enlarged (in part with indistinct dorsal keel); aperture adnate, oblong rhombic-oval, basally somewhat pointed, brown inside, peristome much expanded and except interlamellar part thickened, white, interlamellar covered by a transparent callus; superior lamella high, ± widely separated from the spiral lamella; inferior lamella steeply ascending, low to moderately high inwards, in front ending or bent on the columellar edge with a thickening, occasionally continued to the peristome; subcolumellar lamella descending to the lunellar; lunellar dorsolaterally situated, principal plica ending about laterally, in front far from the peristome; upper palatal plica continuous with the oblique lunella by a curve or an angle, posterior lower palatal plica present, short to nearly reduced, connected with the lunella by an obtuse angle; clausilium plate in oblique view nearly fully or fully visible, occasionally leaving a gap at the palatal side, moderately broad, distally rounded, in part with an inconspicuous outer corner. Spiral lamella penetrating inwards to a lateral position, inferior lamella to the beginning of the penultimate whorl (one specimen examined).

Type Material.— Peru: Depto. Amazonas, 11 km SSW of Leimebamba, 2810 m alt., F. G. Thompson leg., 25.04.1972 (FGT-1835). Holotype: UF 268805. Paratypes: UF 298616 (6), SMF 311950/3. UF 268803: paratype specimen ex UF 268805, radula removed by F. G. Thompson.

Measurements.— Holotype: H = 13.15 mm; D = 3.25 mm; AH = 4.5 mm; AD = 3.2 mm; W = 7½. Paratypes (in mm, n = 9): H = 12.9 – 15.2; D = 3.3 – 3.6; W: 7¼ – 8.

Etymology.— The name *platystoma* is derived from Greek *platys* (= broad, flat) and *stoma* (= mouth), referring to the flat and recurved aperture.

Incania papillosa n. sp.
Incania papillosa papillosa n. sp. n. ssp.
(Fig. 8)

Diagnosis.— A medium-sized *Incania* species with characteristic papillae and reduced clausilial apparatus.

Description.— Shell with a relatively slender conical or somewhat attenuated apical part, suture shallow; yellowish reddish- to greyish-brown; teleoconch whorls densely rib-striated, in part more densely on the lower whorls, on the neck more coarsely, riblets in part white, at the suture a brighter ribbon with white riblets, especially at the base of the upper whorls papilla-like nodes as basal parts of indistinct rib-folds; neck rounded, somewhat longitudinally enlarged; umbilicus ± open; aperture detached, occasionally adnate, oblong oval to rhombic-oval, brown inside, peristome somewhat expanded, white; superior lamella reduced to a weak callus at the peristome; inferior lamella s-like ascending, ending or bent on the columellar edge, not continued to the peristome; other lamellae and plicae and clausilium missing. Inferior lamella penetrating inwards to a lateral or ventrolateral position (three specimens examined).

Type material.— Peru: Depto. Amazonas, 24 km SSW of Leimebamba, 3370 m alt., F. G. Thompson leg., 25.04.1972 (FGT-1834). Holotype: UF 268801. Paratypes: UF 298614 (22 + 3 fragments), SMF 311951/8, NEUB (3). UF 268802: paratype specimen ex UF 268801, radula removed by F. G. Thompson.

Measurements.— Holotype: H = 18.7 mm; D = 4.2 mm; AH = 5.1 mm; AD = 3.3 mm; W = 9¾. Paratypes

(in mm, n = 31): H = 16.5 – 21.0; D = 3.8 – 4.7; W (n = 20): 9 – 10¾.

Etymology.— This species is called *papillosa* from Latin *papilla* (= small wart), because of the suprasutural papillae of its shell.

Incania papillosa imbecilla n. ssp.
(Fig. 9)

Diagnosis.— In comparison with *I. p. papillosa* shell smaller, superior lamella well-developed, but inferior lamella reduced.

Description.— Smaller and more ventricose than *I. p. papillosa*; upper whorls with rib-folds, forming basal nodes; aperture adnate; superior lamella well-developed, short; inferior lamella reduced, minute s-like on the thickened columellar edge.

Type Material.— Peru: Depto. Amazonas, 11 km SSW of Leimebamba, 2810 m alt., F. G. Thompson leg., 25.04.1972 (FGT-1835). Holotype: UF 298626. Paratype: SMF 311964/1.

Measurements.— Holotype: H = 13.2 mm; D = 3.9 mm; AH = 3.85 mm; AD = 2.8 mm; W = 9. Paratype (in mm): H = 12.6; D = 3.5; W: 8.

Etymology.— This subspecies is called *imbecilla* from Latin *imbecillus* (= weak, weakened) for the reduced inferior lamella.

Genus *Cyclonenia* Nordsieck, 1999
1999 *Cyclonenia* Nordsieck, Basteria, 63 (4/6): 172.

Cyclonenia gibber n. sp.
(Fig. 2)

Diagnosis.— A *Cyclonenia* species with prominent dorsal keel, brown aperture and with posterior but without anterior lower palatal plica. In comparison with *C. cyclostoma* (L. Pfeiffer, 1850) sculpture stronger (rib-striation less fine and undulate); dorsal keel more prominent; superior lamella constantly connected with spiral lamella (without a curve, spiral lamella high); inferior lamella lower.

Description (of type series).— Shell with somewhat attenuated apical part, suture shallow; reddish-brown, apical part darker; teleoconch whorls densely rib-striated, lower whorls in part more densely, on the neck more coarsely, riblets in part white, at the suture patches of white riblets alternating with non-white weakly sculptured ones; neck with prominent dorsal keel, divergent from the indistinct continued basal edge of the body whorl, fading before the peristome, with neck furrow and sutural bulge, basal keel ill-defined; aperture detached and protruding, obliquely oval, brown inside; peristome expanded, lighter in colour; superior lamella high, continuous with the spiral lamella without a curve; inferior lamella straightly ascending with a weak spiral, low to moderately high inwards, in front bent on the columellar edge with a thickening; subcolumellar lamella descending to the lunellar; lunellar dorsal-dorsolateral to dorsolateral in position, principal plica ending nearly laterally to ventrolaterally; upper palatal plica of different length and divergent, continuous with the straight lunella by a curve or an angle, posterior lower palatal plica present, connected with the lunella by an obtuse angle; clausilium plate in oblique view fully visible, relatively narrow, leaving a gap at the palatal side, in part with an outer corner.

Spiral lamella penetrating inwards to a nearly lateral position, inferior lamella to a nearly ventral or ventral one (three specimens examined).

Type Material.— Peru: Depto. Amazonas, 24 km SSW of Leimebamba, 3370 m alt., F. G. Thompson leg., 24.04.1972 (FGT-1832). Holotype: UF 268799. Paratypes: UF 298620 (36 + some fragments), SMF 311955/5, NEUB (2).

Additional Material.— UF 268804: 11 km SSW of Leimebamba, 2810 m alt., FGT-1835.

Measurements.— Holotype: H = 25.9 mm; D = 5.3 mm; AH = 5.3 mm; AD = 4.8 mm; W = 10¾. Paratypes (in mm, n = 32): H = 19.9 – 25.4; D = 4.8 – 5.7; W (n = 20): 9¼ – 11; R_1 (n = 20): 11 – 18, mean 15.1. 11 km SSW of Leimebamba (in mm, n = 3): H = 19.1 – 20.2; D = 4.1 – 4.5; W: 9½ – 9¾.

Etymology.— This species is called *gibber* from Latin *gibber* (= humped).

Cyclonenia sanmarcos Grego & Szekeres, 2004
(Fig. 3)

2004 *Cyclonenia sanmarcos* Grego & Szekeres, Schriften zur Malakozoologie, 21: 7, fig. 3.

Description.—Shell with conical or attenuated apical part, suture shallow; yellowish reddish-brown, apical part in part darker; teleoconch whorls regularly densely rib-striated, lower whorls more densely, on the neck more coarsely, except at the suture riblets hardly white, at the suture patches of white riblets alternating with non-white weakly sculptured ones, on the lower whorls a spiral sculpture visible; neck nearly rounded, with broad basal keel and more distinct dorsal keel, both weakly developed, neck furrow and sutural bulge indistinct; aperture detached and ± protruding, obliquely broad-oval, brown inside, peristome expanded, white; superior lamella high, continuous with the spiral lamella by a marked curve, ± distinctly elongated by its side; inferior lamella straightly ascending, in part with a weak spiral, low to moderately high inwards, in front ending or bent on the columellar

edge ± with a thickening; subcolumellar lamella descending to the lunellar (as far as anterior lower palatal plica); lunellar dorsal-dorsolateral to dorsolateral in position, principal plica ending nearly laterally or laterally; upper palatal plica continuous with lunella by a curve, anterior and posterior lower palatal plicae present, both connected with lunella, anterior lower palatal plica of different length, posterior one long; clausilium plate in oblique view fully visible, leaving a gap at the palatal side, relatively broad, with an outer corner. Spiral lamella penetrating inwards to a nearly lateral position, inferior lamella to a ventral one (one specimen examined).

Material.— UF 268810, 268811, 298615, SMF 311956/1: Depto. Amazonas, 10 km SE of Tingo, 1820 m alt., FGT-1839.

Measurements.— FGT-1839 (in mm, n = 7): H = 24.6 – 26.9; D = 6.0 – 6.6; W = 11 – 12; R_1 (n = 6): 11 – 15, mean 12.8.

Note.— In comparison with *C. cyclostoma* (L. Pfeiffer, 1850) shell bigger; sculpture different (rib-striation less undulate); dorsal keel weaker; inferior lamella more spirally ascending; anterior lower palatal plica present.

Cyclonenia albosuturalis n. sp.
(Fig. 15)

Diagnosis.— A *Cyclonenia* species which in comparison with other Peruvian species of the genus is characterized by its small size, weakly developed dorsal keel and deeply situated lunellar.

Description.— Shell with broad conical apical part, suture of upper whorls deep, of lower whorls shallow; yellowish reddish-brown or reddish-brown; teleoconch whorls densely rib-striated, on the neck somewhat more coarsely, riblets in part white, especially above and below at the suture, at the suture patches of white riblets alternating with non-white weakly sculptured ones, a more or less pronounced white sutural thread present; neck nearly rounded, with swollen basal keel and filiform dorsal keel continuing the indistinct basal edge of the body whorl, both weak, sutural bulge ± distinct; aperture detached and protruding, obliquely oval to oval-piriform, brown inside, peristome somewhat expanded, lighter in colour; superior lamella continuous with the spiral lamella without a curve, in part elongated by its side, lamellae at the connection lowered; inferior lamella straightly ascending, of different height inwards, in front ending or indistinctly bent on the columellar edge ± with a thickening; subcolumellar lamella descending to the lunellar, in oblique view hardly visible; lunellar dorsolaterally or nearly laterally situated, principal plica ending laterally or nearly ventrolaterally; upper palatal plica continuous with lunella by a curve or an angle, posterior lower palatal plica present, of different strength, connected with the lunella by an obtuse angle; clausilium plate in oblique view only partly visible, occasionally nearly fully, with or without an indistinct outer corner. Spiral lamella penetrating inwards to a dorsolateral position, inferior lamella to the beginning of the penultimate whorl (three specimens examined).

Type Material.— Peru: Depto. Cajamarca, 2.6 km NE of Encañada, 3650 m alt., F. G. Thompson leg., 22.04.1972 (FGT-1815). Holotype: UF 268788. Paratypes: UF 298609 (75 + apical fragments), SMF 311958/8, NEUB (4).

Measurements.— Holotype: H = 13.55 mm; D = 3.5 mm; AH = 3.4 mm; AD = 2.75 mm; W = 8½. Paratypes (in mm, n = 60): H = 11.4 – 14.7; D = 3.2 – 3.6; W (n = 15): 8 – 9; R_1 (n = 20): 13 – 20, mean 16.4.

Etymology.— This species is called *albosuturalis* from Latin *albus* (= white) and *sutura* (= suture).

Genus *Bequaertinenia* Weyrauch, 1964

1964 *Bequaertinenia* Weyrauch, Acta Zoologica Lilloana, 20: 150.

Note.— Supplemented diagnosis of the genus see Nordsieck (1999: 177).

Bequaertinenia delicata n. sp.
(Fig. 14)

Diagnosis.— A slender *Bequaertinenia* species with rib-folds on the whole teleoconch and pronounced dorsal keel. In comparison with *B. bequaerti* (Weyrauch, 1957) shell more slender and delicate; with rib-folds and more distinct sutural patches.

Description.— Shell with attenuated apical part, suture deep; yellowish reddish-brown; teleoconch whorls densely rib-striated, lower ones in part more densely, on the neck less densely, riblets more or less white, at the suture patches of white riblets alternating with non-white weakly sculptured ones, on the lower or on all whorls the patches of white riblets giving rise to protractive rib-folds; neck with indistinct basal keel and prominent filiform dorsal keel continuing the basal edge of the body whorl, sutural bulge pronounced behind; aperture much protruding, roundish-oval to rhombic-oval, brownish inside, peristome somewhat expanded, lighter in colour; superior lamella high, continuous with the spiral lamella by a weak curve, in part elongated by its side; inferior lamella straightly ascending, moderately high to high inwards, in front ending or bent on the columellar edge; subcolumellar lamella descending to the lunellar, in oblique view hardly visible; lunellar dorsolaterally or nearly laterally situated, principal plica ending laterally or nearly

ventrolaterally; upper palatal plica continuous with the lunella by a curve or an angle, posterior lower palatal plica present, of different length, connected with the lunella by an angle; clausilium plate in oblique view nearly fully visible, moderately broad, distally rounded, ± with an outer corner. Spiral lamella penetrating inwards to a dorsolateral position, inferior lamella to a ventral one (one specimen examined).

Type Material.— Peru: Depto. Cajamarca, 13 km by road E of Celendin, 2980 m alt., F. G. Thompson leg., 23.04.1972 (FGT-1822). Holotype: UF 268795. Paratypes: UF 298622 (3), SMF 311957/1.

Measurements.— Holotype: H = 17.0 mm; D = 2.9 mm; AH = 3.15 mm; AD = 2.7 mm; W = 10¼. Paratypes (in mm, n = 2): H = 14.3, 14.0; D = 3.0, 3.0; W = 9¼; R_1 = 17, 19, 20.

Etymology.—This species is named from Latin *delicatus* (= delicate).

Genus *Hemicena* Pilsbry, 1949

1949 *Nenia* (*Hemicena*) Pilsbry, Proceedings of the Academy of Natural Sciences Philadelphia, 101: 229.

Hemicena polinskiana (Pilsbry, 1949)

1949 *Nenia* [*Hemicena*] *polinskiana* Pilsbry, Proceedings of the Academy of Natural Sciences Philadelphia, 101: 229, pl. 20 figs. 1-1b.

Hemicena polinskiana ancashensis n. ssp.
(Fig. 7)

Diagnosis.— In comparison with *H. p. polinskiana* (fig. 6) shell smaller and more coniform; clausilial apparatus more reduced (no rudimentary spiral lamella, inferior lamella more weakly developed).

Description.— Shell conical, apical part conical to somewhat attenuated; yellowish-brown; teleoconch whorls densely rib-striated, more coarsely on the neck, at the suture nodes formed by bundles of white rib-striae, giving rise to indistinct protractive rib-folds, rib-folds on the neck strong; neck rounded; aperture detached, occasionally adnate, broadly oval, yellowish-white within, peristome expanded; superior lamella short, of different strength; inferior lamella low, steeply ascending on the columellar edge or reduced; other lamellae and plicae and clausilium missing.

Type Material.— Peru: Depto. Ancash, Llupash, 3310 m alt., F. G. Thompson leg., 18.03.1972 (FGT-1757). Holotype: UF 210212. Paratypes: UF 298621 (11), SMF 323435/4.

Measurements.— Holotype: H = 18.1 mm; D = 4.55 mm; AH = 4.55 mm; AD = 3.5 mm; W = 9¼. Paratypes (in mm, n = 15): H = 16.4 – 19.7; D = 4.3 – 5.0; W = 8¾ – 10¼.

Etymology.— This subspecies is called *ancashensis* for its type locality which is situated in Depto. Ancash.

Note.— Florida State Museum and SMF house specimens of *H. p. polinskiana* (fig. 6) collected by Weyrauch (UF 203136/5, 118936/6, SMF 62672/7, 89492/5, 199116/1). The new subspecies was compared with the holotype and the above listed voucher specimens from the type locality (Tapacocha, Rio Fortaleza, at 3000 – 3500 m, on the western slope of the Andes (inland from Pativilca in the northwestern part of Depto. Lima)). From these lots it is evident that the spiral lamella of the nominal subspecies (Pilsbry, 1949: 230) is sometimes very low and nearly invisible.

Genus *Peruinia* Polinski, 1922

1922 *Nenia* (*Peruinia*) Polinski, Bulletin de l'Académie Polonaise des Sciences et des Lettres Cracovie, (B) 1921: 125.

Peruinia tingamariae (Pilsbry, 1922)

1922 *Nenia flachi tingamariae* Pilsbry, The Nautilus, 35 (3): 94, pl. 2, fig. 3 [Peru, Tinga Maria].

1957 *Peruinia albicolor* Weyrauch, Archiv für Molluskenkunde, 86 (1/3): 13, pl. 1, fig. 11 [Peru: Near entrance of a cave on the left side of Río Tulumayo, affluent of Río Huallaga, near to the bridge at the road from Huanuco to Pucallpa, 23 km NE of Tingo María, 670 m alt.].

Material.— UF 268776, SMF 323449/7: Depto. Huanuco, 16.6 km NE of Tingo María, 800 m alt., FGT-1106 (= *P. albicolor*); UF 268774: 4.6 km N of Tingo María, 750 m alt., FGT-1103; UF 268767: 1.5 km SW of Tingo María, 750 m alt., FGT-1096; UF 268763, 268764, SMF 323448/10: 4.7 km S of Tingo María, 750 m alt., FGT-1094; UF 268769: 7.9 km S of Tingo María, 750 m alt., FGT-1099; UF 268771, SMF 323450/3: 9.2 km S of Tingo María, 800 m alt., FGT-1102; UF 268778: Cayumba, 850 m alt., FGT-1110.

Note.— Because of the differences in genital morphology (Loosjes and Loosjes-van Bemmel, 1966: figs. 6–10) *P. tingamariae* is separated from *P. peruana* (Troschel, 1847) as an independent species. *P. albicolor* is regarded as a colour form of *P. tingamariae*. Besides the whitish shell colour in *P. albicolor*, no essential character states can be found to separate these two nominal taxa.

Genus *Pseudogracilinenia* Loosjes & Loosjes-van Bemmel, 1984

1984 *Pseudogracilinenia* Loosjes and Loosjes-van Be-

mmel, Zoologische Verhandelingen, Leiden, 212:10.

Pseudogracilinenia huallagana (Pilsbry, 1949)

1949 *Nenia* [*Gracilinenia*] *huallagana* Pilsbry, Proceedings of the Academy of Natural Sciences Philadelphia, 101: 231, pl. 22, figs. 4-4f [Peru, Tingo María, in a dense and rocky thicket at the west end of the Rio Huallaga bridge to the airport].

Pseudogracilinenia huallagana huallagana
(Fig. 17)

Material.— UF 268766, SMF 323440/10: Depto. Huanuco, 4.7 km S of Tingo María, 750 m alt., FGT-1094; UF 268768: 5 km W of Tingo María, 750 m alt., FGT-1097.

Pseudogracilinenia huallagana amoena n. ssp.
(Fig. 18)

Diagnosis.— In comparison with *P. h. huallagana* (fig. 17) shell bigger, more densely ribbed; superior lamella higher.

Description.— Shell ± decollated, apical part ± attenuated, suture deep, whorls more or less shouldered; yellowish-brown; uppermost whorls of teleoconch densely rib-striated, following whorls densely ribbed, riblets in part white, patches of white riblets alternating with non-white weakly sculptured ones, patches on lower whorls with more riblets and extended over the whole whorl, sculpture on the neck more irregular and in part stronger; neck rounded; last half of body whorl detached from penultimate whorl, aperture much protruding, roundish-oval, yellowish inside, peristome not expanded; superior lamella continuous with spiral lamella by a more or less weak curve, lamellae at the connection lowered; inferior lamella high in position (near to superior and spiral lamella), ascending with a spiral, relatively high inwards, not continued to the peristome; subcolumellar lamella descending to the lunellar, ± connected with the lunella, in oblique view visible far inwards; lunellar dorsal-dorsolateral in position, principal plica ending dorsolaterally, in part more laterally; upper palatal plica short, upper part of lunella and upper palatal plica ± weakened or nearly missing; clausilium plate in oblique view fully visible, occasionally leaving a gap at the palatal side, relatively broad, distally pointed, ± with an indistinct outer corner. Spiral lamella penetrating inwards to a nearly dorsolateral position, inferior lamella to a nearly ventral one (one specimen examined).

Type Material.— Peru: Depto. Huanuco, 14.9 km NE of Tingo María, 800 m alt., F. G. Thompson leg., 17.03.1969 (FGT-1105). Holotype: UF 268775. Paratypes: UF 298610 (15), SMF 323441/3.

Measurements.— Holotype: H = 15.0 mm; D = 3.1 mm; AH = 2.34 mm; AD = 2.16; W = 10 (less decollated, from decollation closure W = 7). Paratypes (in mm, n = 18): H = 11.5 – 14.2 (– 15.0, if less decollated); D = 2.9 – 3.2; W (n = 14): 6 – 7½ (– 10¼, if less decollated); R_1 (n = 18): 10 – 18, mean 13.5.

Etymology.— The subspecies is called *amoena* from Latin *amoena* (= pleasant, delightful), because of the nice appearance of the shell.

Note.— The new subspecies was compared with the holotype and voucher specimens of *P. h. huallagana* from the type locality (SMF 62674/14, 89493/5, 199114/1). The investigated populations of the nominal subspecies display no noteworthy variation in shell characteristics. They are recorded from areas south and west of Tingo María, while the new subspecies comes from the northeast of Tingo María.

Genus *Temesa* H. & A. Adams, 1855

1855 *Balea* (*Temesa*) H. & A. Adams, The genera of recent Mollusca, 2: 175.

Note.— The genus *Temesa* was redefined and discussed by Nordsieck (1999: 177).

Temesa clausilioides (Reeve, 1849)
(Figs. 24-25)

1849 *Bulimus clausilioides* Reeve, Conchologia Iconica, 5: pl. 73, sp. 523 [Peru, Andes of Caxamarca].

Note.— The type species of *Temesa* has not been found again since its description and is only known by three syntypes in NHM. Therefore, the sample collected by Thompson is described; one syntype (fig. 24) and a specimen from this sample (fig. 25) are figured.

Description.— Shell conical, with conical apical part, suture of upper whorls deep, whorls in part shouldered by a blunt edge, aperture in part shifted to the left; greyish-brown or bluish-grey, protoconch brown; teleoconch whorls densely rib-striated, on the neck in part more coarsely, riblets ± white, especially at the suture, greater part of the shell covered with bluish-grey surface layer, with a spiral sculpture, especially on the neck; neck nearly rounded, basal edge of body whorl running to the peristome like an indistinct dorsal keel, occasionally with sutural bulge, umbilicus ± open; aperture ± protruding, in part adnate, oval to triangular-piriform, brown inside, peristome somewhat expanded, lighter in colour; superior lamella reduced to a weak callus near to the peristome or missing, inferior lamella ± weak, steeply ascending on the columellar edge; other lamellae and plicae and clausilium missing.

Material.— UF 268783, SMF 323444/10: Depto. Cajamarca, 15 km SW of Encañada, 3110 m alt., FGT-

1807.

Measurements.— FGT-1807 (in mm, n = 104): H = 11.3 – 15.9; D = 3.0 – 4.0; W (n = 18): 7 – 8½.

Temesa gradata n. sp.
(Fig. 23)

Diagnosis.— A *Temesa* species with reduced clausilial apparatus with white surface layer, shouldered whorls and distinct rib-striation. In comparison with *T. incarum* Pilsbry, 1926 and *T. bicolor* Pilsbry, 1949 shell less conical; whorls more rounded (shouldered); sculpture stronger; aperture mostly detached.

Description.— Shell ± conical, with broad conical apical part, suture deep, whorls much rounded (shouldered), especialy upper ones; bluish greyish-brown, protoconch brown; teleoconch whorls densely ribbed, lower ones and on the neck more densely and irregularly, ribs white, in part white surface layer also between the ribs, thus intervals bluish-white to brown, with a spiral sculpture; neck nearly rounded; aperture detached, in part adnate, oval, brown within, peristome not expanded; superior lamella reduced to a diffuse callus near to the peristome or missing; inferior lamella weak, steeply ascending on the columellar edge or indistinct; other lamellae and plicae and clausilium missing.

Type material.— Peru: Depto. Cajamarca, 30 km NE of Encañada, 3550 m alt., F. G. Thompson leg., 22.04.1972 (FGT-1818). Holotype: UF 268790. Paratypes: UF 298625 (6), SMF 311960/3.

Measurements.— Holotype: H = 12.45 mm; D = 3.1 mm; AH = 3.1 mm; AD = 2.45 mm; W = 7½. Paratypes (in mm, n = 9): H = 11.5 – 13.2; D = 3.2 – 3.7; W = 7 – 8; R_1 (n = 10): 9½ – 12, mean 10.9.

Etymology.— This species is called *gradata* from Latin *gradatus* (= stepped) for the stepped whorls of its shell.

Temesa pilsbryi Weyrauch, 1956

1956 *Temesa pilsbryi* Weyrauch, Archiv für Molluskenkunde, 85 (4/6): 146, pl. 11, figs. 1-4.

Temesa pilsbryi perfectecostata n. ssp.
(Fig. 22)

Diagnosis.— In comparison with *T. p. pilsbryi* (fig. 21) whorls more rounded; sculpture stronger.

Description (of type series).— Shell conical-fusiform, apical part slender conical, suture deep, especially upper whorls much rounded; yellowish- to greyish-brown, protoconch brown; teleoconch whorls coarsely ribbed, on the neck more irregularly, ribs ± white, intervals finely striated; neck nearly rounded, umbilicus ± open; aperture detached and ± protruding, obliquely oval, yellowish inside, peristome not expanded; superior lamella a diffuse callus near to the peristome or missing; inferior lamella on the columellar edge indistinct or missing; other lamellae and plicae and clausilium missing.

Type Material.— Peru: Depto. Ancash, 5 km SW of Chavin de Huantar, 3300 m alt., F. G. Thompson leg., 02.04.1972 (FGT-1771). Holotype: UF 268781. Paratypes: UF 298617 (22), SMF 311961/4, NEUB (2). Additional material.— UF 268782: 5 km SW of Chavin de Huantar, 3150 m alt., FGT-1782.

Measurements.— Holotype: H = 13.3 mm; D = 2.85 mm; AH = 2.75 mm; AD = 2.05 mm; W = 10¼. Paratypes (in mm, n = 16): H = 11.6 – 13.7; D = 2.7 – 3.2; W = 9¼ – 11; R_1 (n = 20): 3½ – 8, mean 5.9. 5 km SW of Chavin de Huantar, 3150 m alt. (in mm, n = 25): H = 10.5 – 13.3; D = 2.6 – 3.0; W (n = 12): 8¾ – 10; R_1 (n = 20): 4 – 9½, mean 6.4.

Etymology.— This subspecies is called *perfectecostata* from Latin *perfectus* (= perfect) and costa (= rib) because of the even and straight ribs of its shell.

Note.— The new subspecies was compared with the holotype, paratypes and additional voucher specimens of *T. p. pilsbryi* from the type locality (El Infiernillo, right side of Rio Rimac, 3360 – 3370 m alt.) (Holotype *T. p. pilsbryi* SMF 155296; paratypes SMF 155297/2, 155298/1, 155299/7, 156280/50, 162116/100; additional specimens SMF 199139/11, 209347/14, 264391/10).

Temesa parcecostata (Polinski, 1922)

1922 *Nenia parcecostata* Polinski, Bulletin de l'Académie Polonaise des Sciences et des Lettres Cracovie, (B) 1921: 130 [Peru]

Material.— UF 268773: Depto. Huanuco, 9.2 km S of Tingo María, 800 m alt., FGT-1102.

Genus *Incaglaia* Pilsbry, 1949

1949 *Nenia* (*Incaglaia*) Pilsbry, Proceedings of the Academy of Natural Sciences Philadelphia, 101: 215.

Note.— This genus was defined and delimited by Nordsieck (1999: 178).

Incaglaia huanucensis (Pilsbry, 1949)

1949 *Nenia* [*Neniatracta*] *angrandi huanucensis* Pilsbry, Proceedings of the Academy of Natural Sciences Philadelphia, 101: 228, pl. 21, figs. 4-4c, 5. [Peru, Huánuco, 1900 m alt.].

Material.— UF 268757: Depto. Huanuco, 13.1 km N of Huanuco, 6100 ft. alt., FGT-1038; UF 268756: 13 km N of Huanuco, 6200 ft. alt., FGT-1037; UF 268760: 9.7 km NE of Huanuco, 1900 m alt., FGT-1076; UF 268755, SMF 323445/10: 9.5 km N of Huanuco, 6300 ft.

alt., FGT-1034; UF 268754, SMF 323446/10: 6.9 km N of Huanuco, 6200 ft. alt., FGT-1029; UF 268753: 2.3 km N of Huanuco, 6200 ft. alt., FGT-1028; UF 268761: 3.1 km W of Huanuco, 1900 m alt., FGT-1082; UF 268758: 0.4 km N of Ambo, 6800 ft. alt., FGT-1039; UF 268759: 7.4 km S of Ambo, 7200 ft. alt., FGT-1040; UF 268780: 7.7 km S of Ambo, 2300 m alt., FGT-1114; UF 268750, SMF 323447/8: 6.1 km S of Vichaycoto, 6300 ft. alt., FGT-1024; UF 268751: 2.5 km N of Tomayquichua, 6500 ft. alt., FGT-1026; UF 268752: 1.7 km S of Tomayquichua, 6500 ft. alt., FGT-1027; UF 268762: 4.4 km NW of Tambillo, 1900 m alt., FGT-1089.

Incaglaia leucostoma n. sp.
(Fig. 19)

Diagnosis.— Differs from the other species of the genus by the following character states: shell with pronounced dorsal keel; inferior lamella high in position, very low; rudimentary anterior lower palatal plica present.

Description.— Shell with conical or somewhat attenuated apical part; yellowish-brown; teleoconch whorls densely rib-striated, lower ones in part somewhat more densely, on the neck much more coarsely, rib-striation between the keels and in the neck depression fading, riblets largely white, at the suture patches of white riblets alternating with non-white weakly sculptured ones; neck with rounded basal keel and more prominent dorsal keel, the latter long and diverging from the basal keel behind, with distinct neck depression and sutural bulge, umbilicus ± open; aperture much protruding, oblique broadly oval to roundish, yellowish inside, peristome expanded and somewhat thickened, white; superior lamella high, continuous with the spiral lamella by a marked curve, in part indistinctly elongated by its side, lamellae at the connection much lowered, spiral lamella ± low, principal plica close to spiral lamella, in front elongated into the sinulus; inferior lamella high in position, ascending with a spiral, very low inwards, far inwards very close to the spiral lamella, in front more or less indistinct, mostly bent and continued with two branches to the peristome; subcolumellar lamella descending to the lunellar, ± approaching the lunella, in oblique view visible far inwards; lunellar nearly dorsally or dorsally situated, principal plica ending nearly dorsolaterally to nearly laterally; upper palatal plica continuous with lunella by a curve, lunella thick below, ending with a spur-like anterior lower platal plica, posterior lower palatal plica short to reduced; clausilium plate in oblique view fully visible, relatively broad, distally narrower, palatal edge distally bent up, with a differently pronounced outer corner. Spiral lamella low, penetrating inwards to a dorsal position, inferior lamella to a lateral or ventrolateral one (two specimens examined).

Type Material.— Peru: Depto. Cajamarca, 25 km E of Celendin, 2510 m alt., F. G. Thompson leg., 23.04.1972 (FGT-1824). Holotype: UF 268797. Paratypes: UF 298624 (35 + some fragments), SMF 311959/6, NEUB (3).

Measurements.— Holotype: H = 15.75 mm; D = 3.7 mm; AH = 3.45 mm; AD = 3.3 mm; W = 10. Paratypes (in mm, n = 39): H = 13.2 – 17.5; D = 3.3 – 4.0; W (n = 20): 8½ – 10; R_1 (n = 20): 11½ – 16, mean 13.6.

Etymology.— This species is called *leucostoma* from Greek *leukos* (= white) and *stoma* (= mouth).

Genus *Cylindronenia* Ehrmann *in* Pilsbry, 1949

1949 *Nenia* (*Cylindronenia*) Ehrmann *in* Pilsbry, The Nautilus, 62 (3): 104.

Note.— *Cylindronenia* is frequently cited with the authorship of Ehrmann in Zilch, 1949, Archiv für Molluskenkunde, 78 (1/3): 95 (15th June 1949). This publication of Zilch was based on unpublished manuscripts of Ehrmann, and Zilch remarks in a footnote that he received the printed copy of The Nautilus, 62 (3) already on 19th April 1949. In fact, this volume was issued in January 1949 and predates Zilch's work by half a year. The note on *Cylindronenia* in The Nautilus is authored by "P. Ehrmann, Ms", and it is very likely (as Zilch also points out) that Pilsbry took the opportunity to publish Ehrmann's description posthum. Thus we consider the correct citation of *Cylindronenia* as Ehrmann in Pilsbry, 1949.

The relationship of *Cylindronenia* and *Steeriana* was discussed by Nordsieck (1999: 179), the classification of *Nenia cumulloana* Pilsbry, 1949 with *Cylindronenia* by Nordsieck (1999: 182).

Cylindronenia cicatricosa (Loosjes & Loosjes-van Bemmel, 1989)

1989 *Steeriana* (*Cylindronenia*) *cicatricosa* Loosjes and Loosjes-van Bemmel, Basteria, 53 (4/6): 84, fig. 3 [Peru, dept. Amazonas, between Leimebamba and Balsas].

Cylindronenia cicatricosa cicatricosa

Material.— UF 268815: Depto. Amazonas, 21 km ENE of Balsas, 1850 m alt., FGT-1856.

Cylindronenia cicatricosa leimebambensis H. Nordsieck, 1999

1999 *Cylindronenia cicatricosa leimebambensis* H. Nordsieck, Basteria, 63 (4/6): 180, figs. 13-14 [Peru, dept. Amazonas, Leimebamba].

Material.— UF 268807, UF 268808, SMF 323438/8: Depto. Amazonas, 11 km SSW of Leimebamba, 2810 m alt., FGT-1836.

Cylindronenia cumulloana (Pilsbry, 1949)

1949 *Nenia* [*Cylindronenia*] *cumulloana* Pilsbry, Proceedings of the Academy of Natural Sciences Philadelphia, 101: 224, pl. 20, figs. 3-3f [Road from Cajamarca to Celendin at kilometer 73, in the Cordillera de Cumulloa].

Material.— UF 268789, 268791, SMF 323439/5: Depto. Cajamarca, 30 km NE of Encañada, 3550 m alt., FGT-1818; UF 268792: 25 km SW of Celendin, 3300 m alt., FGT-1819; UF 268812: 3 km E of Celendin, 2800 m alt., FGT-1820; UF 268794: 3 km ESE of Celendin, 2800 m alt., FGT-1821; UF 268796, SMF 311965/3: 13 km by road E of Celendin, 2980 m alt., FGT-1823; UF 268798, 298611, SMF 311966/8: 25 km E of Celendin, 2510 m alt., FGT-1825.

Cylindronenia violacea n. sp.

(Fig. 16)

Diagnosis.— A small *Cylindronenia* species with rib-folds on the whole teleoconch and protruding aperture. In comparison with *C. cumulloana* (Pilsbry, 1949) shell with strong rib-folds on all whorls; neck nearly rounded; aperture more protruding; inferior lamella in part nearer to superior and spiral lamella.

Description.— Shell decollated, suture shallow; yellowish reddish-brown; teleoconch whorls densely rib-striated, lower ones in part more densely, riblets partly white, at the suture indistinct patches of white riblets alternating with non-white weakly sculptured ones, giving rise to oblique protractive rib-folds on all whorls, more distinct on the neck forming nodes on the dorsal keel; body whorl compressed, neck nearly rounded (dorsal keel indistinct, with sutural bulge behind); aperture detached and far protruding, obliquely piriform or rhombic oval, violet-brown inside, peristome expanded, light in colour; superior lamella high, continuous with the spiral lamella by a curve, occasionally elongated by its side; inferior lamella straightly ascending with a weak spiral, moderately high inwards, in front ending or bent on the columellar edge with a thickening, occasionally continued to the peristome; subcolumellar lamella descending to the lunellar, not or indistinctly connected with it; lunellar dorsolateral, occasionally dorsolateral-lateral in position, principal plica ending laterally or more ventrolaterally; upper palatal plica divergent, in part long, continuous to the lunella by an angle, occasionally posterior lower palatal plica present; clausilium plate in oblique view fully visible, leaving a gap at the palatal side, relatively broad, with an indistinct outer corner. Spiral lamella penetrating inwards to a ventrolateral position, inferior lamella nearly to the beginning of the penultimate whorl (one specimen examined).

Type Material.— Peru: Depto. Huanuco, 10.8 km W of Huancapallac, 2950 m alt., F. G. Thompson leg., 21.03.1969 (FGT-1111). Holotype: UF 268779. Paratypes: UF 298612 (7 + 1 fragment), SMF 311962/1.

Measurements.— Holotype: H = 15.95 mm; D = 3.75 mm; AH = 4.15 mm; AD = 3.5 mm; W = 6½ (decollate). Paratypes (in mm, n = 7): H = 14.2 – 16.7; D = 3.7 – 4.1; W = 6 – 7½; R_1 (n = 9): 12 – 18, mean 14.5.

Etymology.— This species is called *violacea* from Latin *violaceus* (= violet) for the remarkably coloured aperture of its shell.

Genus *Andinia* Polinski, 1922

1922 *Nenia* (*Andinia*) Polinski, Bulletin de l'Académie Polonaise des Sciences et des Lettres Cracovie, (B) 1921: 124.

Andinia taczanowskii (Lubomirski, 1879)

1879 *Nenia taczanowskii* Lubomirski, Proceedings of the Zoological Society London, 47: 726, pl. 56, figs. 3, 4 [Peru, Bambamarca].

Material.— UF 210197 - 210200, SMF 323436/10: Depto. Cajamarca, 7 km by road SW of Bambamarca, 2920 m alt., FGT-1804.

Genus *Steeriana* Jousseaume, 1900

1900 *Steeriana* Jousseaume, Bulletin de la Société Philomatique Paris, (9) 2: 34.

Steeriana malleolata (Philippi, 1867)

1867 *Clausilia malleolata* Philippi, Malakozoologische Blätter, 14 : 194, Taf. 2, Fig. 3-4 [Peru, between Contumaza and Cajamarca].

Material.— UF 268785, 268786, SMF 323442/10 : Depto. Cajamarca, 2 km SW of Encañada, 3040 m alt., FGT-1809.

Steeriana cajamarcana Weyrauch & Zilch, 1954

1954 *Steeriana* (*S.*) *cajamarcana* Weyrauch & Zilch, Archiv für Molluskenkunde, 83 (1/3): 73, pl. 5, fig. 8, text-fig. 6.

Steeriana cajamarcana sororminor n. ssp.

(Fig. 13)

Diagnosis.— In comparison with *S. c. cajamarcana* (fig. 11) shell smaller and more slender; rib-striation stronger; peristome detached; inferior lamella

high, simply arched.

Description.— Shell decollated, suture shallow; yellowish-white; teleoconch whorls densely rib-striated, lower ones more densely, on the neck more coarsely, riblets white, at the suture patches of white riblets alternating with non-white weakly sculptured ones; neck nearly rounded, both keels weakly developed, umbilicus ± open; aperture detached and protruding, obliquely piriform, whitish inside; superior lamella moderately high, widely separated from the short spiral lamella; inferior lamella straightly ascending, arched, high inwards, in front ending on the columellar edge; subcolumellar lamella descending to the lunellar, relatively well visible; lunellar nearly dorsal to dorsal in position, principal plica ending nearly dorsolaterally, in front far from the peristome; upper palatal plica continuous to the lunella by an angle, both strongly developed, without posterior lower palatal plica; clausilium plate in oblique view fully visible, not filling the lumen of the body whorl, more or less narrow and pointed.

Type Material.— Peru: Depto. Cajamarca, 2 km SW of Encañada, 3040 m alt., F. G. Thompson leg., 21.04.1972 (FGT-1809). Holotype: UF 268784. Paratypes: UF 298623 (2).

Measurements.— Holotype: H = 9.8 mm; D = 3.2 mm; W = 4 (decollated). Paratypes (in mm, n = 2): H = 9.4, (9.0); D = 2.9, 2.9; W = 4¼.

Etymology.— The subspecies is called *sororminor* from Latin *soror* (= sister) and *minor* (= smaller), as it looks like the smaller sister of *S. c. cajamarcana.*

Note.— The new subspecies was compared with the holotype, paratypes and additional voucher specimens of *S. c. cajamarcana* from the type locality (Hacienda Cochambul, 18 km from Cajamarca, at the road to San Marcos, 2850 m alt.) (holotype *S. c. cajamarcana* SMF 135516; paratypes SMF 69818/14, 139782/1, 157914/1; additional specimens SMF 199131/4, 264382/10).

Steeriana sorormajor n. sp.
(Fig. 12)

Diagnosis.— A large *Steeriana* species with weak dorsal keel and clausilium plate filling nearly the lumen of the body whorl. In comparison with *S. c. cajamarcana* Weyrauch & Zilch, 1954 shell bigger; sculpture somewhat stronger, sutural patches distinct; dorsal keel somewhat stronger; aperture detached; superior lamella widely separated from spiral lamella; inferior lamella higher; clausilium plate nearly filling the lumen of body whorl. *S. malleolata* (Philippi, 1867) has a more ventricose shell, with distinct rib-folds and pronounced keels; inferior lamella lowered in front; clausilium plate narrower.

Description.— Shell decollated, suture shallow, that of upper whorls deeper; greyish-white; teleoconch whorls densely rib-striated, lower ones hardly more densely, less undulate, on the neck somewhat coarser, more undulate, riblets white with interruptions, at the suture patches of white riblets alternating with reddish-brown weakly sculptured ones, on the upper whorls indistinct protractive rib folds; neck nearly rounded (dorsal keel ± distinct, filiform, basal keel swollen), umbilicus ± open; aperture detached and ± protruding, rhombic-oval, brown inside, peristome somewhat expanded, white; superior lamella of different height, short, widely separated from the spiral lamella; inferior lamella straightly ascending, arched, high inwards, in front ending on columellar edge with ± distinct thickening; subcolumellar lamella descending to the lunellar; lunellar dorsal to dorsal-dorsolateral in position, principal plica ending laterally or more ventrolaterally, in front far from the peristome; upper palatal plica continuous to the lunella by a curve or an angle, lunella strongly developed, posterior lower palatal plica a basal plica-like broadening of the lunella; clausilium plate in oblique view nearly fully visible, mostly leaving a gap at the palatal side, moderately broad, distally pointed, forming an outer corner. Spiral lamella penetrating inwards to a lateral position, inferior lamella to a more ventrolateral one (one specimen examined).

Type Material.— Peru: Depto. Cajamarca, 2 km NE of Encañada, 3200 m alt., F. G. Thompson leg., 21.04.1972 (FGT-1811). Holotype UF 268787. Paratypes UF 298607 (10), SMF 311963/3, NEUB (1).

Measurements.— Holotype: H = 18.4 mm; D = 5.65 mm; AH = 5.05 mm; AD = 4.05 mm; W = 5½ (decollated). Paratypes (in mm, n = 11): H = 17.3 – 19.6; D = 5.5 – 6.2; W (n = 13): 4¾ – 6; R_1 (n = 14): 12 – 18, mean 15.4.

Etymology.— This species is called *sorormajor* from Latin *soror* (= sister) and *major* (= bigger), as it looks like the bigger sister of *S. cajamarcana.*

Steeriana celendinensis Weyrauch & Zilch, 1954

1954 *Steeriana* (*S.*) *celendinensis* Weyrauch & Zilch in Zilch, Archiv für Molluskenkunde, 83 (1/3): 70, Taf. 5, Fig. 6, Abb. 3 [Peru, 3 km SE Celendin, 2700 m alt.].

Material.— UF 268793, 268813, SMF 323443/10: Depto. Cajamarca, 3 km ESE of Celendin, 2800 m alt., FGT-1821, 1852; UF 268814: 4 km SE of Celendin, 2800 m alt., FGT-1854.

Brevinenia n. gen.

Diagnosis.— Shell decollate; neck nearly rounded;

streaked; superior lamella continuous with or separated from spiral lamella; subcolumellar lamella connected with the lunella; lower palatal plicae missing. Differs from *Ehrmanniella* Zilch, 1949 and *Andiniella* Weyrauch, 1958 by the fusion of the anterior end of the subcolumellar lamella with the lunella (cf. Nordsieck, 1999: 182).

The genital organs of one specimen of the type species (Balsas 65 km in direction to Leimebamba, 3350 m alt., leg. Hemmen) could be examined. It turned out that the new genus is more closely related to *Ehrmaniella* Zilch, 1949 than to *Andiniella* Weyrauch 1958. But the comparison with that genus is difficult, because the descriptions and figures of the male copulatory organs (Loosjes & Loosjes van Bemmel 1966: 6-8, figs. 2-3; 1984: 6, fig. 1) are insufficient (the demarcation of penis and epiphallus is unclear). The examined genitalia are characterised as follows: Female genitalia like in *Ehrmaniella*; male copulatory organs much different if compared to the cited figures: epiphallus consisting of parts of differing width, most distal one running into penis with a marked narrowing, penis consisting of two parts, proximal penis (seen from the gonad) forming a loop held together by muscular strands.

Type Species.— *Brevinenia richardsi* (Grego & Szekeres, 2004).

Brevinenia richardsi (Grego & Szekeres, 2004)
(Fig. 20)

2004 *Andiniella richardsi* Grego & Szekeres, Schriften zur Malakozoologie, 21: 6, fig. 2.

Description.— Shell decollated, suture moderately deep; yellowish reddish-brown to greyish-brown; teleoconch whorls strongly rib-striated, lower ones more densely, on the neck more coarsely, riblets more or less white, especially on the upper whorls and the neck, at the suture patches of white riblets alternating with brown weakly sculptured ones; neck rounded, inflated, with weak sutural bulge behind; aperture detached and protruding, obliquely roundish-oval or oval, ± brown inside, peristome somewhat expanded, lighter in colour; superior lamella continuous with the spiral lamella by a more or less marked curve, occasionally elongated by its side, lamellae at the connection ± lowered; inferior lamella high in position (near to superior and spiral lamella), straightly ascending with a weak spiral, mostly high inwards, in front bent on the columellar edge ± with a thickening; subcolumellar lamella descending to the lunellar, anterior end ± fused with the lunella, in oblique view farly visible inwards; lunellar in dorsal or more dorsolateral position, principal plica ending nearly dorsolaterally or dorsolaterally, in front elongated into the sinulus; upper palatal plica continuous with lunella by an angle or a curve, lunella strongly developed, basally ± continuous with the subcolumellar lamella; clausilium plate in oblique view fully visible, in part leaving a gap at the palatal side, moderately broad, distally rounded or somewhat pointed, occasionally with an indistinct outer corner. Spiral lamella penetrating inwards to a nearly dorsolateral or nearly lateral position, inferior lamella to a nearly ventral or ventral one (two specimens examined).

Material.— UF 268800, 298619, SMF 311970/10, NEUB (4): Depto. Amazonas, 24 km SSW of Leimebamba, 3370 m alt., FGT-1834. UF 268806: 11 km SSW of Leimebamba, 2810 m alt., FGT-1836.

Measurements.— 24 km SSW of Leimebamba (in mm, n = 57): H = 14.0 – 17.0; D = 3.7 – 4.3; W (n = 24): 4¾ – 6¾; R_1 (n = 20): 9 – 13, mean 11.2. 11 km SSW of Leimebamba (in mm, n = 3): H = 15.1 – 15.8; D = 3.9 – 4.1; W = 5¾ – 6.

Note.— In comparison with *B. dedicata* (Weyrauch & Zilch, 1954) shell more slender; sculpture stronger, sutural patches more distinct; superior lamella constantly connected with spiral lamella; inferior lamella higher in position (near to superior and spiral lamella); principal plica running farther to the peristome.

Brevinenia dedicata (Weyrauch & Zilch, 1954)

1954 *Andinia* (*Ehrmaniella*) *dedicata* Weyrauch & Zilch in Zilch, Archiv für Molluskenkunde, 83 (1/3): 68, Taf. 5, Fig. 5, Abb. 5 [Peru, valley of Rio Payanchan, at the road from Cerro de Pasco to Huanuco, 3800 m alt.].

Material.— UF 268770, SMF 323437/5: Depto. Huanuco, 9.2 km S of Tingo María, 800 m alt., FGT-1102; UF 268777, SMF 311969/7, NEUB (3): 27.1 km SE of Aucayacu, 650 m alt., FGT-1107.

Genus *Zilchiella* Weyrauch, 1957

1957 *Zilchiella* Weyrauch, Archiv für Molluskenkunde, 86 (1/3): 9.

Zilchiella scala n. sp.
(Fig. 5)

Diagnosis.— A *Zilchiella* species with shouldered whorls, weak sculpture and sharp dorsal keel. In comparison with *Z. grandiportus* (Weyrauch, 1957) shell occasionally more slender, constantly decollated, sutural edge of the whorls strong; sculpture weaker; dorsal keel more pronounced (mainly behind).

Description.— Shell decollated, suture shallow, whorls with a blunt sutural edge = shouldered, becoming weaker on the lower whorls, ending on the body whorl as sutural bulge, aperture more or less shifted to the left;

yellowish reddish-brown to greyish-violet; teleoconch whorls with very densely spaced weak rib-striae, more distinct on the upper whorls, above the sutural edge and on the neck, rib-striae white, mainly at suture and base of the whorls, on the neck also on dorsal keel and periomphalum, therefore whorls with diffuse white surface layer, forming a white band at the base continued on the dorsal keel; neck with sharp dorsal keel continuing the pronounced basal edge of the body whorl, basal keel indistinct, umbilicus open or closed; aperture detached and ± far protruding, ± rectangular, with a channel formed by the dorsal keel, brown inside, peristome expanded, lighter in colour; superior lamella a differently weak oblique callus near to the peristome, occasionally plica-like elongated; inferior lamella strong, not steeply ascending, of different height, in front ending far from the peristome; other parts of clausilial apparatus missing. Inferior lamella penetrating inwards to a lateral or nearly ventral position (two specimens examined).

Type Material.— Peru: Depto. Cajamarca, 20 km ESE of Magdalena, 1830 m alt., F. G. Thompson leg., 05.05.1972 (FGT-1859). Holotype: UF 268816. Paratypes: UF 298613 (54 + 2 fragments), SMF 311967/10, NEUB (5).

Measurements.— Holotype: H = 21.9 mm; D = 7.1 mm; AH = 6.35 mm; AD = 4.35 mm; W = 6 (decollate). Paratypes (in mm, n = 45): H = 16.1 – 24.6; D = 5.5 – 7.2; W (n = 18): 4½ – 7¼.

Etymology.— This species is named from Latin *scala* (= stair, staircase) for the characteristic form of its shell.

Zilchiella palatalis n. sp.

(Fig. 4)

Diagnosis.— A *Zilchiella* species with characteristic sculpture, sharp dorsal keel and with subcolumellar lamella and palatal plica. In comparison with *Z. grandiportus* (Weyrauch, 1957) shell more slender, constantly decollated, lighter in colour; sculpture coarser, rib-striae in part elevated to hollow ribs; dorsal keel more pronounced (mainly behind); inferior lamella less steeply ascending; subcolumellar lamella and long palatal plica present.

Description.— Shell decollated, suture shallow, aperture in part shifted to the left; yellowish-brown; teleoconch whorls densely rib-striated, rib-striae partly white, some elevated mainly at the suture and base of the whorls to hollow ribs, prominent on the dorsal keel, upper whorls with rib-folds; neck with sharp dorsal keel, continuing the pronounced basal edge of the body whorl, basal keel indistinct, umbilicus ± open; aperture detached and ± far protruding, rectangular, with a channel formed by the dorsal keel, brownish inside, peristome expanded, lighter in colour; superior lamella a weakly developed node near to the peristome or missing; inferior lamella not steeply ascending, high, in front ending far from the peristome; subcolumellar lamella present, steeply ascending, only visible in oblique view; palatal plica in the middle of the palatal wall present, running inwards from a dorsal position of the body whorl to the penultimate whorl; other lamellae and plicae and clausilium missing. Inferior lamella penetrating inwards to the penultimate whorl (one specimen examined).

Type material.— Peru: Depto. Cajamarca, 2 km E of Magdalena, 1280 m alt., F. G. Thompson leg., 05.05.1972 (FGT-1861). Holotype: UF 268817. Paratypes: UF 298608 (3), SMF 311968/1.

Measurements.— Holotype: H = 22.8 mm; D = 5.5 mm; AH = 4.9 mm; AD = 4.0 mm; W = 7½ (decollate). Paratypes (in mm, n = 2): H = 22.2, 21.5; D = 5.5, 5.0; W (n = 4): 7 – 7½.

Etymology.— This species is called *palatalis* for the unusual presence of a palatal plica in a *Zilchiella* species.

ECOLOGICAL REMARKS

As in many groups of snail species worldwide, precise information on basic environmental factors influencing the habitats as well as autecological observations are missing. For the species of Clausiliidae mentioned here we are able to present some of these data, because F. Thompson provided us with his notes taken in the field. Although not overall complete they offer a basic understanding of the habitats inhabited by these species.

Browsing the field notes for information on the substrata it becomes obvious that the majority of the species live on limestone or marbles, a fact, which matches the observations in many parts of the world. A remarkable exception is *Incaglaia huanucensis*, which is exclusively recorded from non-limestome areas (10 places). For this species, substrata like gneisses and schists are characteristic in combination with a xeric environment. The vegetation of these habitats mainly consists of Agavacea, Bromeliacea (*Tillandsia*) and Cactacea (*Opuntia*), and the specimens were recorded from under leaves, grasses, stones and ground slabs. The altitudes of these habitats range from 750 to 2300 m. Another species recorded from non-limestone substratum is *Hemicena polinskiana ancashensis* from Llupash, Depto. Ancash. The substratum consisted of granits and basalts in an altitude of 3310 m with some trees in ravine, but a mostly herbaceous vegetation.

An interesting combination of species can be found in lowland habitats around Tingo María (Depto.

Table 1. Sympatric occurences of species of Neniinae.

Species/Locality	FGT-1094	FGT-1102	FGT-1809	FGT-1818	FGT-1820/21	FGT-1822/23	FGT-1824/25	FGT-1835/36
Columbinia bryantwalkeri	x	x						
Incania platystoma								x
Incania p. imbecilla								x
Cyclonenia gibber								x
Bequaertinenia delicata						x		
Peruinia tingamariae	x	x						
Pseudogracilinenia h. huallagana	x							
Temesa gradata				x				
Temesa parcecostata		x						
Incaglaia leucostoma							x	
Cylindronenia c. leimebambensis								x
Cylindronenia cumulloana				x	x	x	x	
Steeriana malleolata			x					
Steeriana c. sororminor			x					
Steeriana celendinensis					x			
Brevinenia dedicata		x						
Brevinenia richardsi								x

Huanuco). The area is characterised by wet tropical forests or often with second growth trees and bushes. The key species for this area seems to be *Peruinia tingamariae*, which was recorded from 7 out of 10 places. It was found to live in sympatry with *Columbinia bryantwalkeri* (FGT-1094, FGT-1102), and *Pseudogracilinenia huallagana huallagana* (FGT-1094). At FGT-1102 (9.2 km S of Tingo María, 800 m alt.), it was found together with *Columbinia bryantwalkeri, Temesa parcecostata*, and *Brevinenia dedicata* (Tab. 1).

Most other species originate from mesic to submesic limestone habitats in considerably high altitudes ranging from 2500 to 3600 m. The potential vegetation seems to consist of low shrubs with small interspersed tufts of trees, the latter under more favourable conditions in ravines etc. and grassy hillslopes. Many of these areas visited by Thompson are more or less intensively cultivated and thus, their vegetation has changed to a type of vegetation dominated by grass. Still, many species of Clausiliidae persist under this environmental pressure, and in several cases even sympatric occurence can be found (Tab. 1, FGT-1809, 1820/1821, 1824/1825, 1835/1836). The *Zilchiella* species both occur in lower altitudes, *Zilchiella scala* from a limestone cliff at 1830 m, and *Zilchiella palatalis* from slabs and sandstones above road cut at 1280 m.

No other observations concerning autecological topics were recorded. *Temesa pilsbryi perfectecostata* and *Cyclonenia albosuturalis* were found actively crawling on wet mosses and limestone rubble. Others aestivated under dead leaves or were found attached to bare rock faces. All species found by Thompson seem to belong to the ecotype of rock-dwelling clausiliids. Tree living species or species living in decaying wood were not recorded yet.

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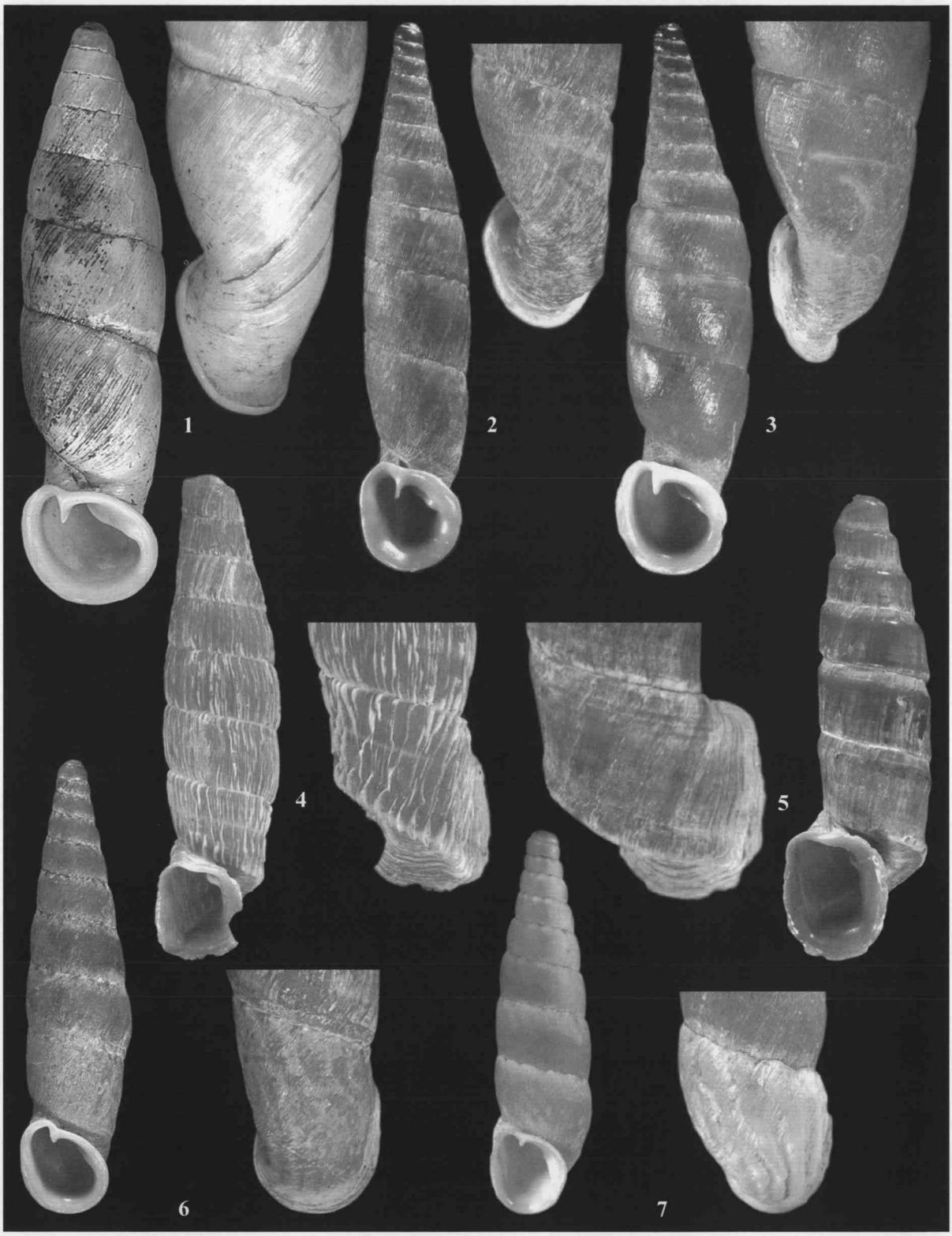
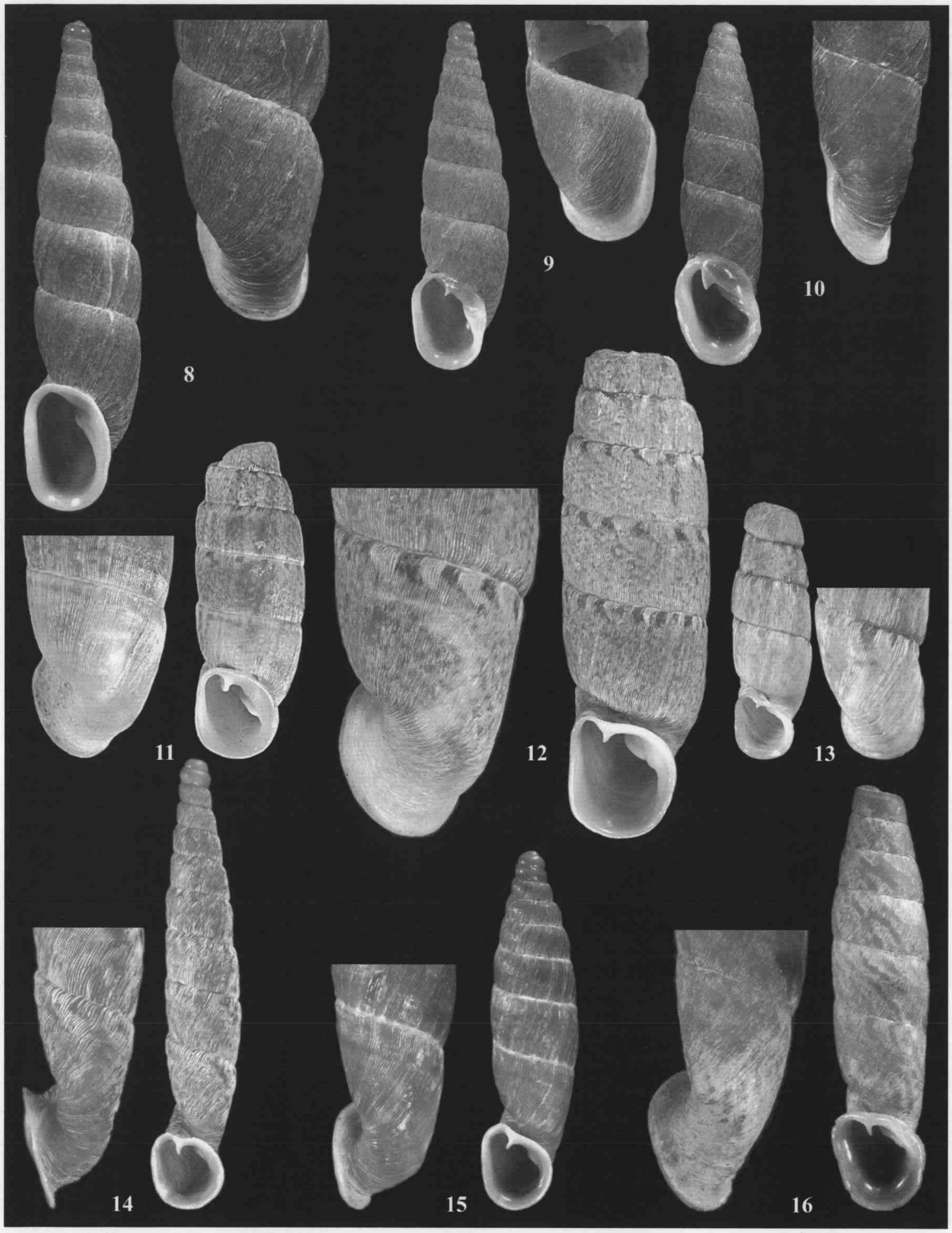
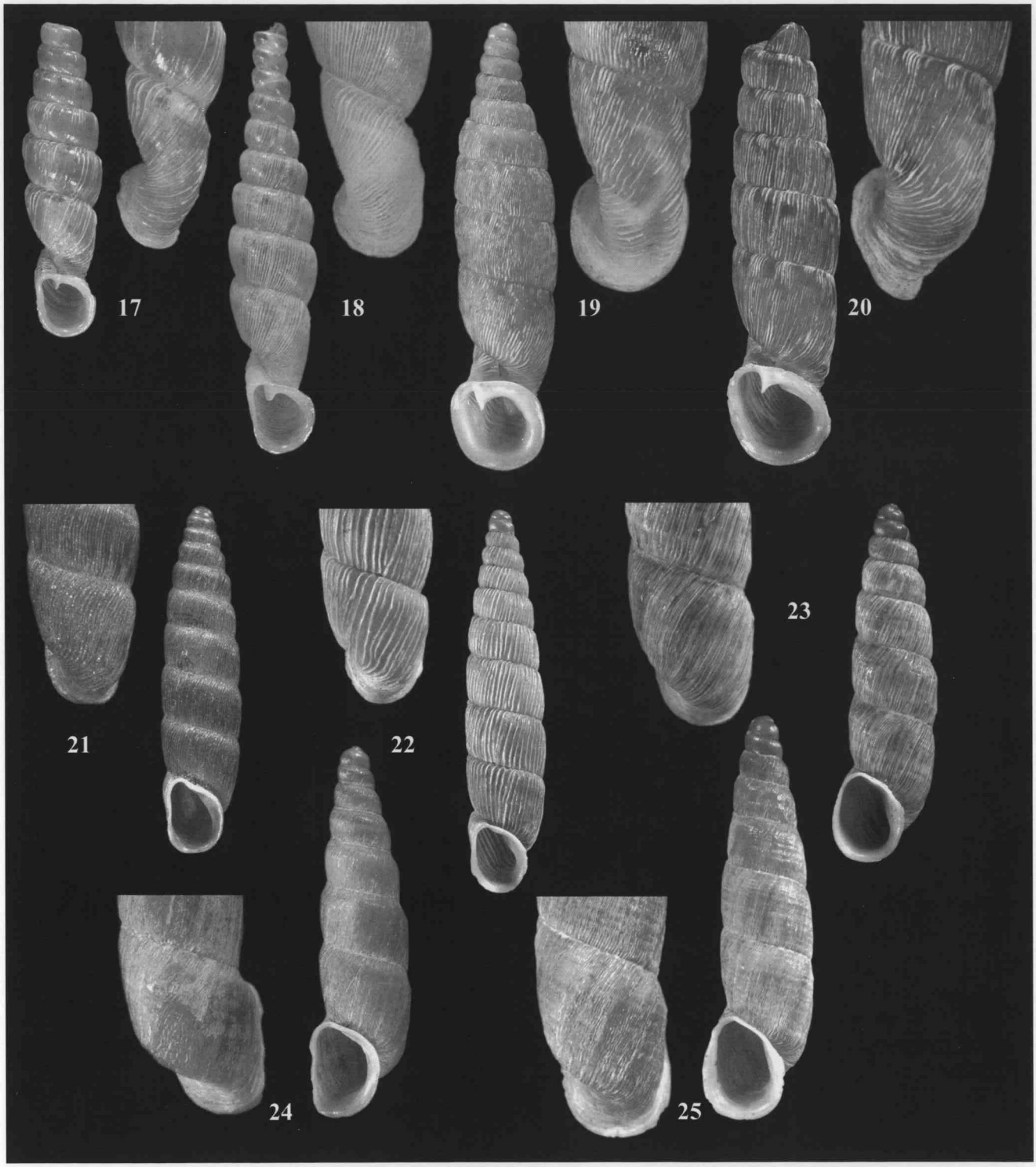


Figures. 1–7 (all figures frontal view x4, dorsal view x6, phot.: E. Neubert). Shells of Neniinae. Fig. 1: *Columbinia* (*Steatonenia*) *pachygastris* n. sp., holotype (UF 268818), H = 27.45 mm. Fig. 2: *Cyclonenia gibber* n. sp., holotype (UF 268799), H = 25.90 mm. Fig. 3: *Cyclonenia sanmarcos* Grego & Szekeres, 2004, H = 26.10 mm. Fig. 4: *Zilchiella palatalis* n. sp., holotype (UF 268817), H = 22.8 mm. Fig. 5: *Zilchiella scala* n. sp., holotype (UF 268816), H = 21.90 mm. Fig. 6: *Hemicena polinskiana polinskiana* (Pilsbry, 1949), holotype (ANSP 185113a), H = 21.40 mm. Fig. 7: *Hemicena polinskiana ancashensis* n. ssp., holotype (UF 210212), H = 18.10 mm.



Figures. 8–16 (all figures frontal view x5, dorsal view x7, phot.: E. Neubert). Shells of Neniinae. Fig. 8: *Incania papillosa papillosa* n. sp., holotype (UF 268801), H = 18.70 mm. Fig. 9: *Incania papillosa imbecilla* n. ssp., holotype (UF 298626), H = 13.20 mm. Fig. 10: *Incania platystoma* n. sp., holotype (UF 268805), H = 13.15 mm. Fig. 11: *Steeriana cajamarcana cajamarcana* Weyrauch & Zilch, 1954, holotype (SMF 135516), H = 12.00 mm. Fig. 12: *Steeriana sorormajor* n. sp., holotype (UF 268787), H = 18.40 mm. Fig. 13: *Steeriana cajamarcana sororminor* n. ssp., holotype (UF 268784), H = 9.80 mm. Fig. 14: *Bequaertinenia delicata* n. sp., holotype (UF 268795), H = 17.0 mm. Fig. 15: *Cyclonenia albosuturalis* n. sp., holotype (UF 268788), H = 13.55 mm. Fig. 16: *Cylindronenia violacea* n. sp., holotype (UF 268779), H = 15.95 mm.



Figures. 17–25 (all figures frontal view x5, dorsal view x7, phot.: E. Neubert). Shells of Neniinae. Fig. 17: *Pseudogracilinenia huallagana huallagana* (Pilsbry, 1949), holotype (ANSP 185174a), H = 11.00 mm. Fig. 18: *Pseudogracilinenia huallagana amoena* n. ssp., holotype (UF 268775), H = 15.00 mm. Fig. 19: *Incaglaia leucostoma* n. sp., holotype (UF 268797), H = 15.75 mm. Fig. 20: *Brevinenia richardsi* (Grego & Szekeres, 2004), UF 268800, H = 15.40 mm. Fig. 21: *Temesa* (*Temesa*) *pilsbryi pilsbryi*, holotype (SMF 155296), H = 12.05 mm. Fig. 22: *Temesa (Temesa) pilsbryi perfectecostata* n. ssp., holotype (UF 268781), H = 13.30 mm. Fig. 23: *Temesa (Temesa) gradata n.* sp., holotype (UF 268790), H = 12.45 mm. Fig. 24: *Temesa (Temesa) clausilioides* (Reeve, 1849), syntype NHM 1969273, H = 12.90 mm. Fig. 25: *Temesa clausilioides* (Reeve, 1849), UF 268783, H = 14.0 mm.

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