

**ON A COLLECTION OF PERUVIAN NENIINAE (MOLLUSCA:
GASTROPODA: CLAUSILIIDAE), WITH A CHECK-LIST AND A
PROVISIONAL KEY TO ALL THE PERUVIAN SPECIES KNOWN**

by

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and

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Loosjes, F. E., & A. C. W. Loosjes-van Bommel: On a collection of Peruvian Neniinae (Mollusca, Gastropoda, Clausiliidae), with a check-list and a provisional key to all the Peruvian species known.

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An annotated list is given of all Neniinae collected in 1975 by Dr. A. S. H. Breure in Peru. The localities that have been visited are also listed, together with the Neniinae collected there. *Pseudogracilinenia* gen. nov. is described for *P. huallagana* (Pilsbry, 1949) (type-species) and *P. jolyi* (O. Boettger, 1880); the latter species is only tentatively classified with *Pseudogracilinenia* because its anatomy is still unknown. *Temesa* (*T.*) *breurei* spec. nov. after eight specimens (shells) from 34 km N. of Junin. In addition a provisional key to all Peruvian Neniinae known is given, as well as a revised checklist.

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I. INTRODUCTION

In 1975 Dr. A. S. H. Breure collected land snails, in particular Bulimulidae, in Peru. He also obtained specimens of Neniinae from a number of localities. This material is preserved in the Rijksmuseum van Natuurlijke Historie at Leiden, The Netherlands. The curator of the Mollusca section, Dr. E. Gittenberger, kindly entrusted us with the study of these specimens. Moreover, we

are in debt to Dr. Gittenberger for his preparing and figuring of the genitalia of several specimens.

During our study we found that a key to the Peruvian Neniinae is indispensable. As the provisional key may be of assistance to other students, it has been incorporated as chapter III in the present publication. Chapter IV contains a revised list of Peruvian Neniinae.

II. THE COLLECTION

The localities at which Neniinae have been collected by Dr. Breure are given below; they are registered under nos. 2605–23, 2605–66, etc. Following the number and the description we record the species and/or subspecies found. If the number of shells collected is followed by “(alc.)”, the material is preserved in alcohol. Next we deal with the various species and subspecies separately in systematic order.

II–1. List of localities, with species/subspecies collected

23. Dept. of Puno; 8 km S. of Taruco, along the road to Pusi, 34 km NE. of Juliaca, 3840 m; 13-ii-1975.

Temesa (T.) peruviana (L. Pfeiffer, 1867): 1.

66. Dept. of Huancavelica; 41.9 km N. of Huancavelica, 3710 m; 3–iii–1975.

Temesa (Neniactra) adusta cuencaensis Weyrauch, 1964: 3 + 3 juv. and 9 + 1 juv. (alc.).

74. Dept. of Junin, prov. of Tarma; Cerro Huayuncayo near La Florida, ca. 7 km N. of Tarma, 2950–3150 m; 7–iii–1975.

Ehrmanniella quadrata (O. Boettger, 1880): 8 and 24 + 3 juv. (alc.).

Andiniella sztolcmani (Polinski, 1921): 2 (alc.).

75. Dept. of Junin; Rio Tarma valley, Cerro Huailahuichán, 13.7 km NE. of Tarma, 2825–2850 m; 7–iii–1975.

Ehrmanniella quadrata (O. Boettger, 1880): 53 and 12 (alc.).

76. Dept. of Junin; near Carpapata, 33.2 km NE. of Tarma, 2200–2220 m; 7–iii–1975.

Ehrmanniella boettgeri (Pilsbry, 1945): 1.

77. Dept. of Junin; Rio Tarma valley, Huacapistana, ca. 42 km NE. of Tarma, 1810 m; 7–iii–1975.

Andiniella sztolcmani (Polinski, 1921): 1.

78. Dept. of Junin; Rio Tarma valley, Pan de Azúcar, 12.6 km SW. of San Ramón, 1300–1350 m; 7–iii–1975.

Peruinia granulosa (Sykes, 1900): 3.

79. Dept. of Junin; 2.3 km below Mina Pichita Caluga, 19.5 km WNW. of San Ramón, 1850 m; 8—iii—1975.
Peruina flachi superba Weyrauch, 1960: 4.
Gracilinenia filocostulata filocostulata (Lubomirski, 1879): 39 and 3 (alc.).
Temesa (Neniactra) spec.: 1.
Incania pilsbryi (Sykes, 1901): 1 (alc.).
80. Dept. of Junin; ca. 17 km WNW. of San Ramón, along the road to Mina Pichita Caluga, 1700 m; 8—iii—1975.
Gracilinenia filocostulata filocostulata (Lubomirski, 1879): 5.
Incania pilsbryi (Sykes, 1901): 5 + 1 fragment.
88. Dept. of Junin; near Inca Pirca, 34 km N. of Junin, W. of Lake Junin, 4200—4260 m; 12—iii—1975.
Temesa (T.) breurei spec. nov.: 8.
92. Dept. of Huánuco, prov. of Ambo; ca. 7.5 km S. of the city of Ambo (32.5 km SSE. of Huánuco), 2360—2380 m; 13—iii—1975.
Weyrauchiella huanucensis (Pilsbry, 1949): 2 and 2 (alc.).
93. Dept. of Huánuco; Cerro Arcupumco, near Ambo, 2100—2225 m; 13—iii—1975.
Weyrauchiella huanucensis (Pilsbry, 1949): 16 and 10 (alc.).
95. Dept. of Huánuco, prov. of Huánuco; 8 km NE. of the city of Huánuco, 1890 m; 14—iii—1975.
Weyrauchiella huanucensis (Pilsbry, 1949): 75 and 106 (alc.).
99. Dept. of Huánuco; Tingo Maria, on a hill near the bridge on the road to the airport, 670—710 m; 16—iii—1975.
Peruina flachi tingamariae (Pilsbry, 1922): 1 fragment.
Pseudogracilinenia huallagana (Pilsbry, 1949): 1 fragment.
100. Dept. of Huánuco, prov. of Leoncico Prado; valley of the Rio Monzón, near the confluence with the Rio Huallaga, Cuevas de las Lechuzas, near Tingo Maria, 670 m; 16—iii—1975.
Pseudogracilinenia huallagana (Pilsbry, 1949): 11 + 2 juv. and 52 (alc.).
Columbinia callangana (Ehrmann, 1905): 1.
104. Dept. of San Martin; Ramal de Aspozana, 86.2 km NNE. of Tingo Maria, 590 m; 20—iii—1975.
Peruina flachi flachi (O. Boettger, 1889): 7 + 5 fragments and 5 (alc.).
Columbinia callangana (Ehrmann, 1905): 1.
105. Dept. of Huánuco, prov. of Leoncico Prado; Cueva de las Pavas, 9 km S. of Tingo Maria, ca. 670 m; 21—iii—1975.
Peruina flachi tingamariae (Pilsbry, 1922): 32 + 3 juv. and more than 100 (alc.).
Pseudogracilinenia huallagana (Pilsbry, 1949): 3.
Columbinia callangana (Ehrmann, 1905): 1.

II-2. Species and subspecies

Ehrmanniella Zilch, 1949

Type-species: *Clausilia (Nenia) quadrata* O. Boettger, 1880.

Ehrmanniella quadrata (O. Boettger, 1880) has been found at the localities 74 and 75, which are situated within the known area of distribution. The radula and genitalia were described and figured before (Loosjes & Loosjes-van Bommel, 1966: 7, 8). The lumen of the penis is a flat fissure in cross-section. The remarkable construction of the diverticulum, doubted by H. Nordsieck (1978: 81), was confirmed by us as well as by Gittenberger (fig. 1).

Ehrmanniella boettgeri (Pilsbry, 1945). Only one specimen has been found at the type-locality, near Carpapata (loc. 76).

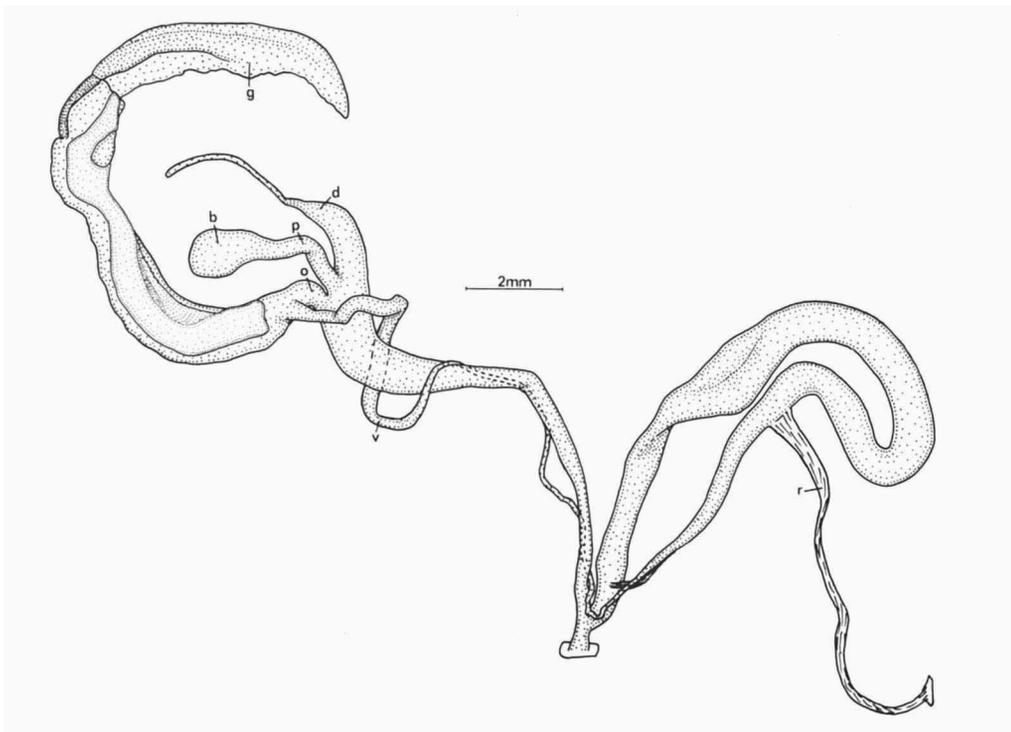


Fig. 1. *Ehrmanniella quadrata* (O. Boettger), genitalia; loc. 74. b, bulbus of receptaculum seminis; o, free oviduct; d, diverticulum; p, pedunculus; r, retractor penis; v, vas deferens; g, glandula albuminifera.

Andiniella Weyrauch, 1958

Type-species: *Andinia (Ehrmanniella) flammulata* Loosjes, 1957.

Andiniella sztolcmani (Polinski, 1921) has been collected at the localities 74 and 77. The radula and genitalia were described and figured previously (Loosjes & Loosjes-van Bommel, 1966: 11, 12). The two specimens from loc. 74 were used by Gittenberger for the preparation of the genitalia (fig. 2).

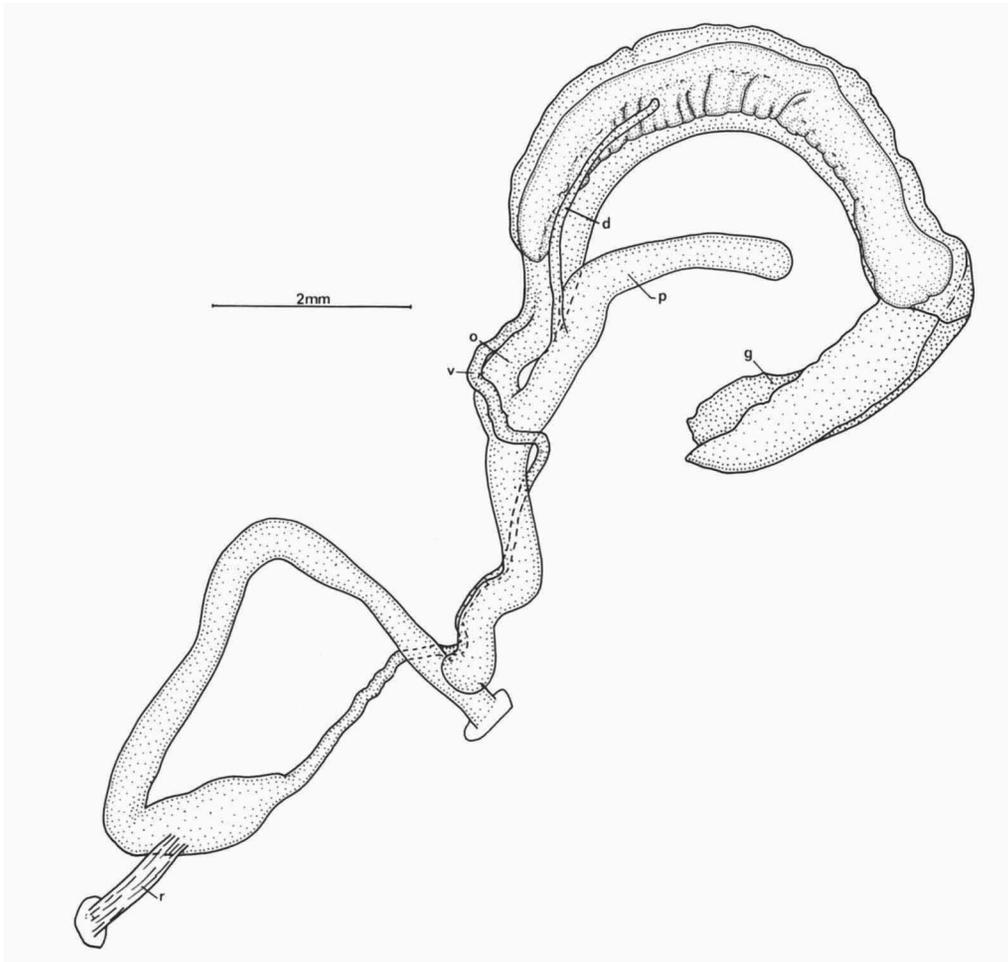


Fig. 2. *Andiniella sztolcmani* (Polinski), genitalia; loc. 74. o, free oviduct; d, diverticulum; p, pedunculus; r, retractor penis; v, vas deferens; g, glandula albuminifera.

Peruinia Polinski, 1921

Type-species: *Clausilia peruana* Troschel, 1847.

Peruinia granulosa (Sykes, 1900) has been found at loc. 78. Comparing Breure's specimens with other shells from the same and those of other localities, with material from related species and with descriptions in the literature, we concluded (with Boettger, 1910) that because of its flat whorls *P. granulosa* shows more affinity to *P. flachi* O. Boettger than to *P. peruana* Troschel. However, it does not have the brownish colour within the aperture, characteristic of all *P. flachi* subspecies. Therefore it seems advisable to consider *P. granulosa* a separate species until the variability of the congeneric species concerned is better known. According to our present views the data on the anatomy of *P. peruana peruana* and *P. peruana granulosa* in Loosjes & Loosjes-van Bemmelen (1966: 12–14) refer to *P. granulosa* only.

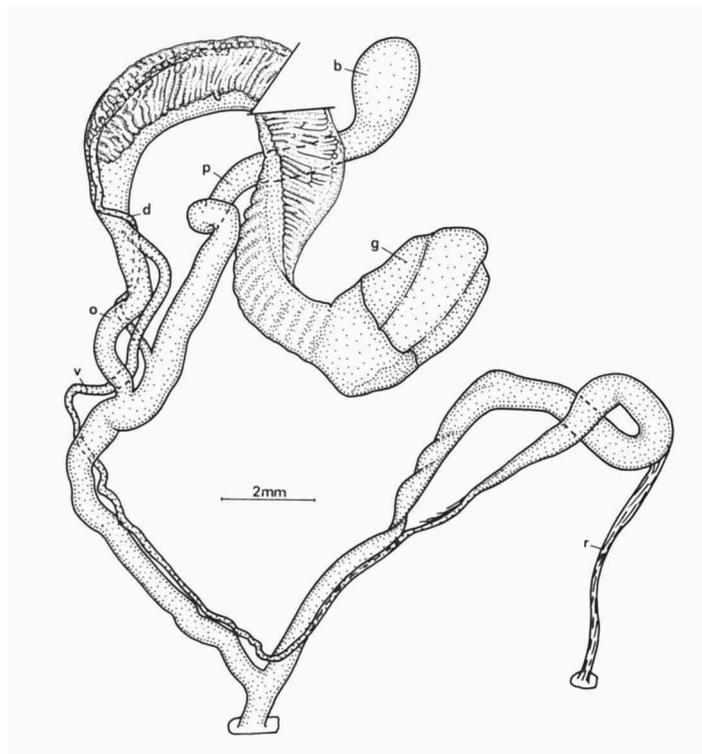


Fig. 3. *Peruinia flachi tingamariae* (Pilsbry), genitalia; loc. 105. b, bulbus of receptaculum seminis; o, free oviduct; d, diverticulum; p, pedunculus; r, retractor penis; v, vas deferens; g, glandula albuminifera.

Peruina flachi flachi (O. Boettger, 1889). In this subspecies, which has been collected at loc. 104, only the outer crests of the lamella superior and the lamella inferior are whitish; apart from that the inside of the aperture is brownish. None of the specimens in alcohol did contain well developed genitalia, although the shells seemed to be adult.

Peruina flachi superba Weyrauch, 1960. This subspecies has been collected near the type-locality (loc. 79).

Peruina flachi tingamariae (Pilsbry, 1922). Numerous specimens of this subspecies have been found near Tingo Maria (loc. 99, 105). The radula and the genitalia (fig. 3) were described and figured already by Loosjes & Loosjes-van Bemmél (1966: 16–19). The lumen of the penis is star-like in cross-section, because of four longitudinal keels on the wall.

Gracilinenia Polinski, 1921

Type-species: *Clausilia filocostulata* Lubomirski, 1879.

Gracilinenia filocostulata filocostulata (Lubomirski, 1879) has been collected at loc. 79 and 80. Data on the radula and the genitalia (fig. 4) have also been given by Loosjes & Loosjes-van Bemmél (1966: 19, 20).

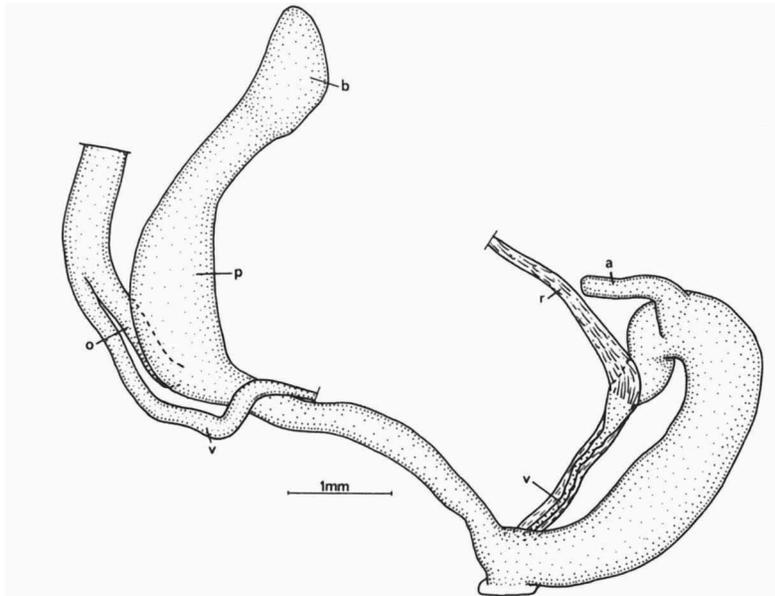


Fig. 4. *Gracilinenia filocostulata filocostulata* (Lubomirski), genitalia; loc. 79. b, bulbus of receptaculum seminis; o, free oviduct; p, pedunculus; a, penis appendix; r, retractor penis; v, vas deferens.

Pseudogracilinenia gen. nov.

For reasons specified below a new genus has to be introduced for the species generally known as *Gracilinenia huallagana* (Pilsbry, 1949): *Pseudogracilinenia* gen. nov.

P. huallagana was represented from three localities (99, 100, 105) near Tingo Maria, the type-locality included (99). Most of the specimens in alcohol showed immature genitalia, although the shells were full-grown. Some, however, were mature and one of these specimens is figured (fig. 5). In contrast to *Gracilinenia filocostulata* there is a small diverticulum inserted on the pedunculus of the receptaculum seminis. A penis appendix is absent. The free oviduct is somewhat more than half as long, or as long as, the vagina. The pedunculus is rather wide and provided with a narrow and rather short diverticulum. The epiphallus distinctly widens at its entrance into the penis.

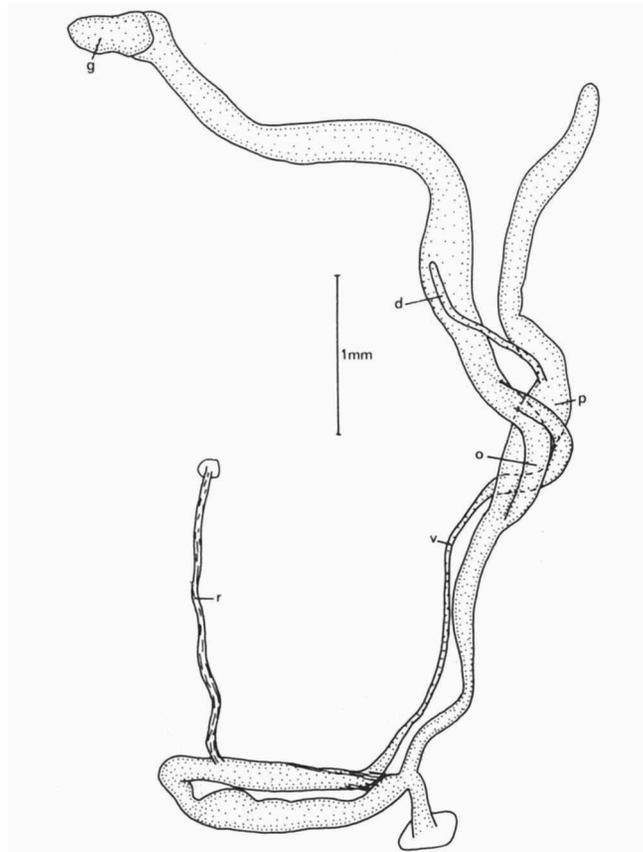


Fig. 5. *Pseudogracilinenia huallagana* (Pilsbry), genitalia; loc. 100. o, free oviduct; d, diverticulum; p, pedunculus; r, retractor penis; v, vas deferens.

The radula has the formula $\frac{c}{1} + \frac{2-3 l}{1} + \frac{6-7 m}{3-\text{many}}$. In its central part the two halves of the rows of teeth form an angle of about 90°, with the central tooth at the top; at the third tooth the rows regain a direction nearly vertical to the axis of the radula. The cusps of the central and lateral teeth are crescent-shaped. From the third lateral tooth on the elements (marginals) are all very small and elongated. Thus the radula closely resembles that of *G. filocostulata*.

It is clear that according to shell and radula features only *P. huallagana* seems closely related to *G. filocostulata*. However, because of the presence of a small diverticulum on the pedunculus and the absence of a penis appendix, the genitalia of *P. huallagana* differ conspicuously from those of *G. filocostulata*.

In an earlier publication (Loosjes & Loosjes-van Bemmél, 1966) we tentatively distinguished five groups of Neniinae on the base of the morphology of the genitalia and, to a lesser degree, on characters of the shell and the radula. The following four of these groups are of interest here (see also p. 15 of the present paper).

Group A (*Ehrmanniella*, *Andiniella*, *Peruinia*) with: 1, a diverticulum inserting on the pedunculus so far distally that a distinct proximal part of the pedunculus can be distinguished; 2, a decollated¹ shell; 3, a radula with a conspicuous angle in the middle of the rows of teeth.

Group B (*Zilchiella*, *Pfeifferiella*, *Temesa*, *Neniatracta*) with: 1, a diverticulum inserting where the pedunculus inserts on the vagina; 2, a complete, i.e. not decollated, shell (with the exception of *Zilchiella* a genus in which complete as well as slightly decollated shells occur); 3, a radula with slightly curved rows of teeth.

[Group C not of interest here.]

Group D (*Columbinia*, *Incania*, *Weyrauchiella*) with: 1, no diverticulum; 2, a complete shell; 3, a radula with slightly curved rows of teeth.

Group E (*Gracilinenia*) with: 1, no diverticulum; 2, a decollated shell; 3, a radula as in group A.

As we stated formerly, our grouping might be only partly based on true relationship: convergence might occur as well.

¹ A decollated shell is a shell of which the top whorls are missing and the resulting opening of which is closed with a callus. First there is resorption of lime from the top whorls, then the soft parts are withdrawn from these whorls and a septum is formed. The top whorls, weakened by a shortage of lime, usually break off, after which the septum closes the apical part of the shell. This phenomenon generally characterizes a species, but it may also occur in species which normally have complete shells, if the specimens mature under conditions of a severe lime shortage. We saw this in a population of an *Iphigena* species raised in captivity.

Obviously the species generally called *Gracilinenia huallagana* belongs to our group A, instead of with *Gracilinenia filocostulata*, the type-species of the genus, in group E. Because the species classified with *Ehrmanniella*, *Andiniella*, and *Peruinia* have clearly different shells, a new genus has to be introduced. We propose *Pseudogracilinenia* gen. nov., because the shell features of its type-species *P. huallagana* closely resemble those of *Gracilinenia*.

Although its anatomy is unknown, we tentatively also classify *P. jolyi* (O. Boettger, 1880) with *Pseudogracilinenia* gen. nov. This species agrees with *P. huallagana* in the configuration of the lamella superior and the lamella spiralis, which are connected but, in contrast to *Gracilinenia* species, not rectilinear.

Temesa H. & A. Adams, 1855, s. str.

Type-species: *Bulimus clausilioides* Reeve, 1849.

Temesa (Temesa) peruviana (L. Pfeiffer, 1867). One specimen has been collected near Taruco (loc. 23) in SE. Peru, which is within the area known for the species. For data on the radula and genitalia, see Loosjes & Loosjes-van Bommel (1966: 30).

Temesa (Temesa) breurei spec. nov.
(fig. 6)

Material. — Holotype and six paratypes are in the Rijksmuseum van Natuurlijke Historie at Leiden (nos. 55515 and 55516); one paratype is in coll. Loosjes.

Type-locality. — Peru, dept. of Junin, near Inca Pirca, 34 km N. of Junin, W. of lake Junin, at 4200–4260 m alt. (12–iii–1975).

Diagnosis. — A species of the subgenus *Temesa* of which the shell is not provided with lamellae, plicae or a clausilium. A weakly developed callous pad may occur instead of a lamella superior and the edge of the columella may be distinctly thickened. The 2–2 1/2 initial whorls are smooth and more or less darkish brown, often glossy; the following whorls are provided with whitish, faintly curved riblets. The upper post-embryonic whorls are brownish, the last 2–3 whorls are bluish. Length of the shells, 11.4–13.5 mm; diameter, 2.9–3.4 mm.

Description. — The shell is not decollated, sinistral, cylindrical-turreted, the lateral outlines of the upper half of the shell are slightly convex. The shell is about four times as long as wide. The 8–9 1/2 whorls are rather weakly convex, with the exception of the embryonic ones, which are distinctly convex; the last whorl is rounded at the base and not more coarsely striate than the

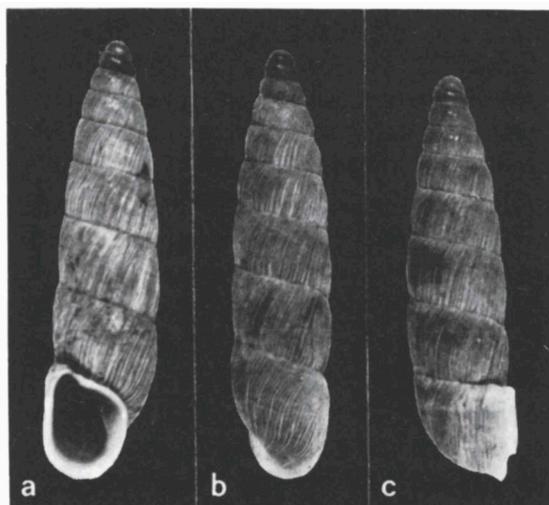


Fig. 6. *Temesa (Temesa) breurei* spec. nov. a, holotype, RMNH 55515; paratypes: b, RMNH 55516, c, Coll. Loosjes ($\times 4.2$).

previous whorls. The 2–2 1/2 whorls of the embryonic shell are smooth and more or less darkish brown, often glossy; the following whorls are provided with whitish, faintly curved riblets, often running from suture to suture and sometimes uniting, seven to nine per mm on the whorl above the aperture. The upper striate whorls are brownish, the lower two or three bluish.

The aperture is more or less quadrangular, yellowish inside; the sinulus is low. The length of the shell is 3.8–4.4 times the height of the aperture. The thin peristome is continuous, whitish and reflexed, clearly free from the preceding whorl. There is a weakly developed callous pad at the position of the lamella superior and a distinctly thickened edge of the columella; there is no other apertural armature.

The dimensions (in mm) and number of whorls are:

	length	shell		aperture		number of whorls
		diameter	height	width		
holotype	13.5	3.4	3.6	2.9	9	
paratypes	13.3	3.2	—	—	9 1/2	
	12.8	3.1	3.2	2.4	8 1/2	
	12.7	3.2	2.9	2.4	9 1/2	
	11.4	2.9	—	—	8	
	—	3.1	—	—	9 1/2	
	—	3.4	3.1	2.6	—	
	—	3.3	3.4	2.9	—	

Remarks. — The species differs from *T. (T.) bicolor* Pilsbry, 1949, most clearly by: (1) the colour of the shell, i.e. the embryonic and the next three or four post-embryonic whorls are not whitish; (2) the smaller dimensions of the shell (length less than 14.2–15.9 mm; diameter less than 3.8–3.9 mm); (3) the sculpture, which is coarser, i.e. with less than 15–20 ribblets per mm on the whorl above the aperture, and more regular.

T. (T.) breurei differs in structure from *T. (T.) incarum* Pilsbry, 1926, which has also been found in C. Peru. *T. incarum* has an almost smooth, malleated surface.

T. (T.) clausilioides (Reeve, 1849) from N. (?) Peru has distinctly shouldered whorls and very fine irregular, crenulate striae that give the surface of the shell a silky appearance. We greatly appreciate that Mr. J. F. Peake, British Museum (Natural History), London, lent us the holotype for comparison.

As no specimens of *T. (T.) breurei* were preserved in alcohol, a description of the genitalia and the radula cannot be given.

We dedicate this species to Dr. A. S. H. Breure.

Temesa (Neniactra) Pilsbry, 1926

Type-species: *Nenia belahubbardi* Pilsbry, 1922.

Temesa (Neniactra) spec. At loc. 79 a *Neniactra* without top whorls was collected. Because the apical opening is not closed, it is not a decollated shell. The measurements are: length 20.4, diam. 3.8 mm, aperture height 4.1, width 3.4 mm (8 whorls left).

The lamella inferior is rather high. The sculpture is more or less the same as that of *T. (N.) angrandi weyrauchi* (Pilsbry, 1945), but less strong. Because of the characters mentioned and the imperfection of the shell it is not possible to identify this specimen. Possibly it even represents a new species.

Temesa (Neniactra) adusta cuencaensis Weyrauch, 1964, was collected by Breure at loc. 66, near the type-locality. The genitalia (fig. 7) have no diverticulum, this in contrast to two other *Neniactra* species studied (see Loosjes & Loosjes-van Bemmelen, 1966: 34, 35). The free oviduct is almost half as long as the vagina. The pedunculus is wide. The radula has the formula

$\frac{c}{3} + \frac{8l}{2} + \frac{11m}{3-\text{many}}$. The rows are rectilinear. The cusps are daggershaped.

This is in accordance with the characters of the radulae of other *Neniactra* species.

T. (N.) adusta cuencaensis has no diverticulum, a complete shell and a radu-

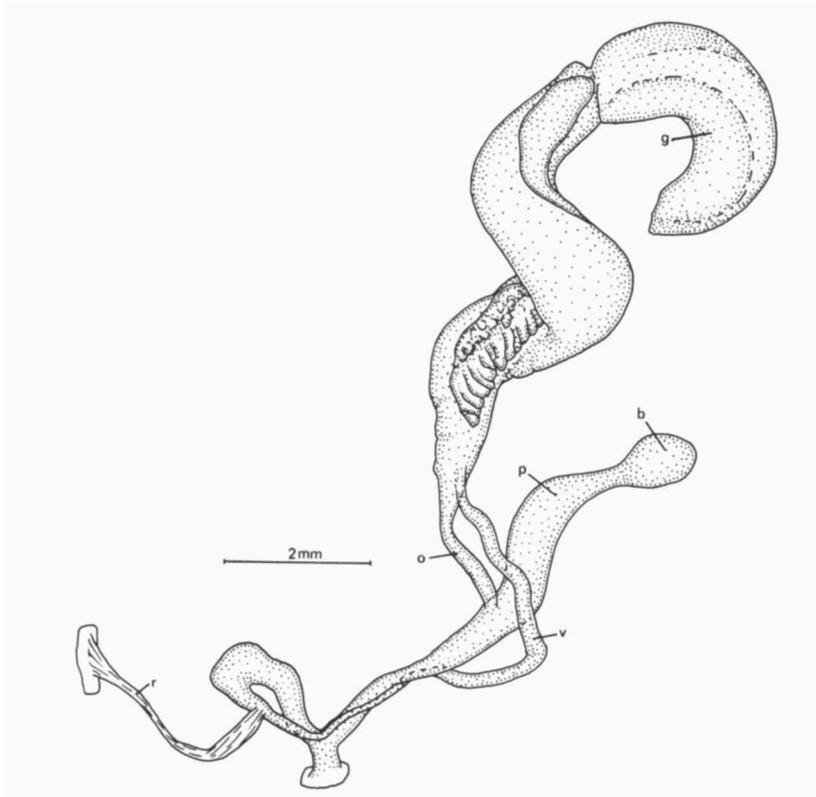


Fig. 7. *Temesa (Neniactra) adusta cuencaensis* Weyrauch, genitalia; loc. 66. b, bulbus of receptaculum seminis; o, free oviduct; p, pedunculus; r, retractor penis; v, vas deferens; g, glandula albuminifera.

la with slightly curved rows of teeth. It thus corresponds with our group D (see p. 11 of the present paper) and not with other known *Neniactra* species in group B. Unfortunately the genitalia of the type-species are not known in *Neniactra*.

As to the shell, *T. (N.) adusta cuencaensis* is a real *T. (N.) adusta*. The absence of a diverticulum may occur in all *T. (N.) adusta* subspecies, but no other alcohol material being available, this cannot be investigated. It may be suggested to refer the taxon to *Weyrauchiella* Loosjes & Loosjes-van Bommel, 1966, but the type-species of this genus [*W. huanucensis* (Pilsbry, 1949)] shows different shell features, e.g., convex instead of concave outlines of the upper half of the shell, and rather regularly striate whorls instead of whorls with very irregular brown and white striae. Because of lack of data, we prefer not to change the present classification.

Columbinia Polinski, 1924

Type-species: *Nenia columbiana* Polinski, 1924.

Columbinia callangana (Ehrmann, 1905). Three specimens (shells) were collected in the neighbourhood of Tingo Maria (loc. 100, 104, 105); all three are more or less corroded. The original description of *C. callangana* was based on one specimen from Callanga, some 300 km S. of Tingo Maria.

Tingo Maria is the type-locality of *C. bryantwalkeri* (Pilsbry, 1922). Its general shell-form, measurement and sculpture are about the same as in *C. callangana* but *C. bryantwalkeri* has a marked, strongly arched lunella and the lamella inferior is inconspicuous in front view. Our three shells have a lunella with an obsolete upper part, whereas the lamella inferior is visible in front view.

Incania Polinski, 1921

Type-species: *Clausilia chacaensis* Lubomirski, 1879.

Incania pilsbryi (Sykes, 1901) was collected at locs. 79 and 80, near its type-locality. Radula and genitalia could not be investigated because the one specimen in alcohol irretrievably dried out.

Weyrauchiella Loosjes & Loosjes-van Bemmelen, 1966

Type-species: *Nenia angrandi huanucensis* Pilsbry, 1949.

Weyrauchiella huanucensis (Pilsbry, 1949) was collected in the dept. Huánuco near Ambo (locs. 92, 93) and near Huánuco (loc. 95). These two localities are also mentioned in Pilsbry's original description. Specimens from both Ambo and Huánuco were used to study the genitalia (fig. 8). In accordance with a former description and figure of the genitalia of *W. huanucensis* (see Loosjes & Loosjes-van Bemmelen, 1966: 48) the specimens have no diverticulum. However, a penis appendix as present in specimens of the sample from Huánuco, which we investigated in 1966, does not occur in Breure's specimens. Dr. Gittenberger confirmed these results. Thus, there are specimens (populations?) of this species with a penis appendix as well as specimens without one.

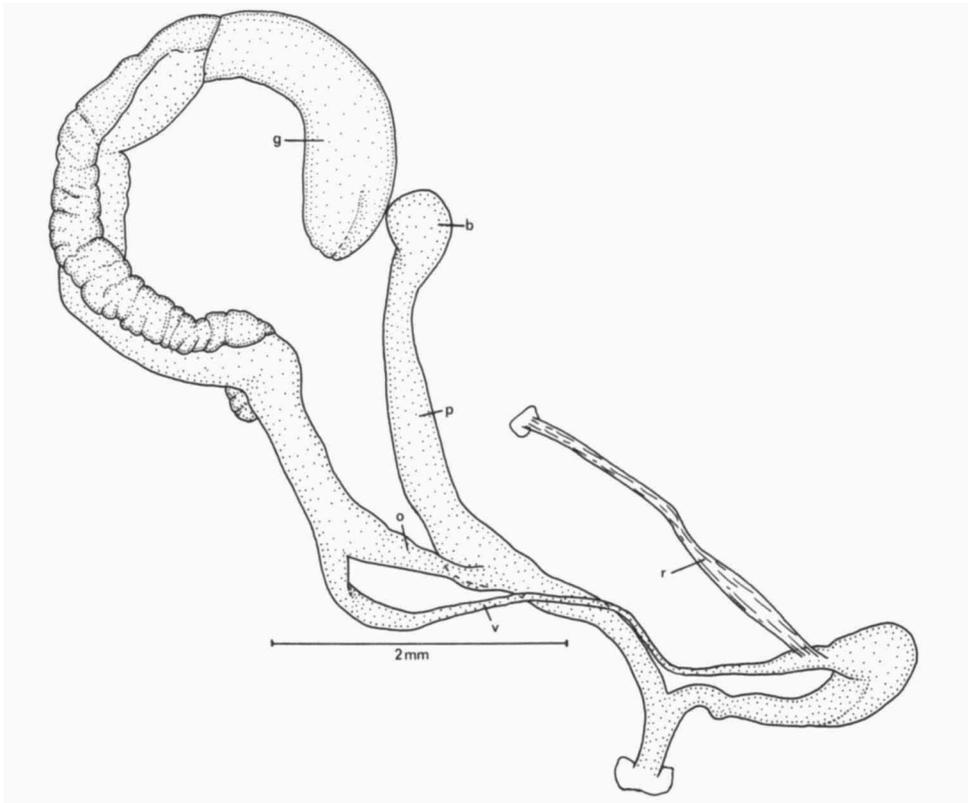


Fig. 8. *Weyrauchiella huanucensis* (Pilsbry), genitalia; loc. 95. b, bulbus of receptaculum seminis; o, free oviduct; p, pedunculus; r, retractor penis; v, vas deferens; g, glandula albuminifera.

III. PROVISIONAL KEY TO THE PERUVIAN NENIINAE, BASED ON SHELL CHARACTERS

This key was drafted on the basis of the original descriptions, additional published data, and a study of our own collection of Peruvian Neniinae, for which we are largely indebted to the late Dr. W. Weyrauch, then at San Miguel de Tucuman, Argentina. Moreover we express our thanks to Dr. A. Riedel, Polska Akademia Nauk, Instytut Zoologiczny, Warsaw, and to Mr. J. F. Peake, British Museum (Natural History), London, for lending us type-specimens of several species.

In preparing this key we followed in general the classification by Zilch (1960).

The first key deals with genera and subgenera, whereas the second conti-

nues for each genus or subgenus down to the species or subspecies. As usual one may need more than a single specimen of a species to be able to reach the correct identification.

While using the keys one should always bear in mind that although about a hundred species of Neniinae from Peru are known, there may be many more that have not been described as yet.

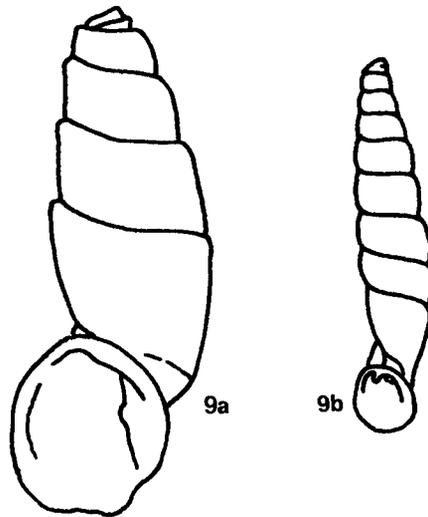


Fig. 9a. *Zilchiella grandiportus* Weyrauch; ventral side of the shell ($\times 3$).

Fig. 9b. *Gracilinenia f. filocostulata* (Lubomirski); ventral side of the shell ($\times 3$).

A. Key to genera and subgenera

1. Shell decollated 2
- Shell not decollated 10
2. Aperture of the shell very large, trumpet-like; whorls shouldered and rapidly increasing in diameter (fig. 9a); with a basal crest on the last whorl (usually only the uppermost whorls are wanting, or the shell is not decollated) *Zilchiella* Weyrauch, 1957 (p. 25).
- With another combination of characters 3
3. Shell very slender; the last part of the body whorl conspicuously neck-like, markedly descending (fig. 9b) 4
- Shell not strikingly slender; the last part of the body whorl not strongly neck-like descending 5
4. Lamella superior and lamella spiralis connected rectilinear, without any curve *Gracilinenia* Polinski, 1922 (p. 24)

- Lamella superior and lamella spiralis connected with a distinct curve *Pseudogracilinena* gen. nov. (p. 25)
- 5. Shell with fine, radial striae as well as irregular, coarse, white, very conspicuous, radial, rather widely spaced ridges; the last whorl basally rounded *Andinia* Polinski, 1922 (p. 31)
- Shell with more or less distinct radial striae or riblets, sometimes crossed by spiral striae; the last whorl basally rounded, or provided with one or two crests 6
- 6. Shell more or less fragile, translucent, sculptured with fine radial and spiral striae (chequered); aperture rather large (fig. 10) *Peruinia* Polinski, 1922 (p. 23)
- Shell rather solid, hardly translucent, sculptured with radial striae or riblets only 7

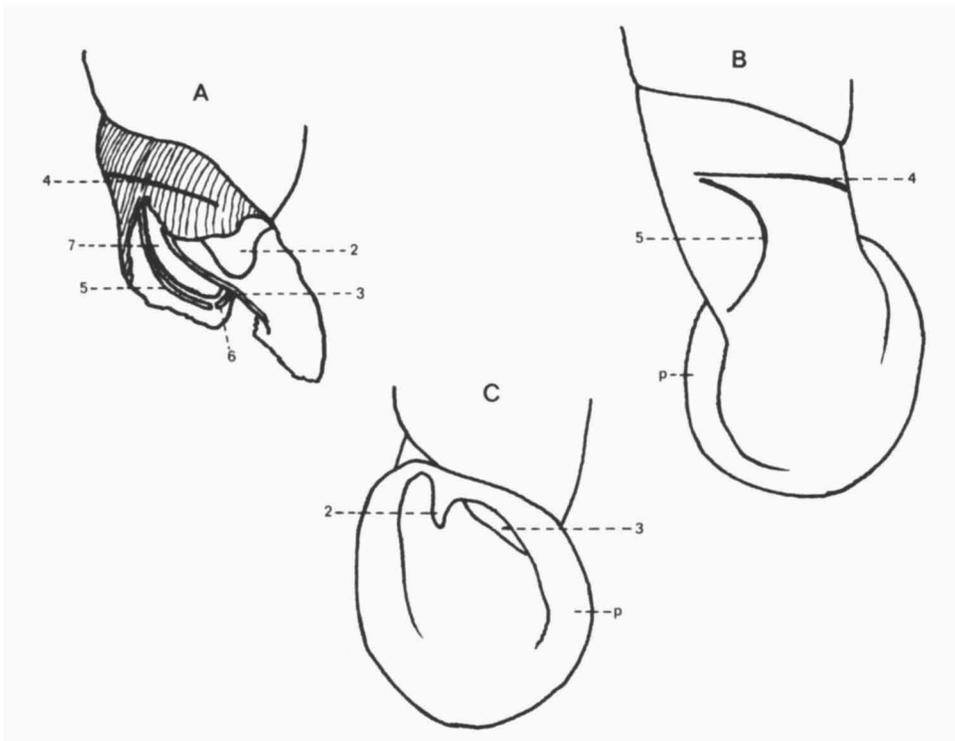


Fig. 10. *Peruinia flachi tingamariae* (Pilsbry); A, dorsal side of the last whorl partly omitted; B, dorsal side of the last whorl; C, ventral side of the last whorl. 7, clausilium; 5, lunella; 3, lamella inferior; 2, lamella superior; 6, lamella subcolumellaris; p, peristome; 4, plica palatalis principalis.

7. Shell with fine radial striae that are not interrupted by weakly sculptured patches *Ehrmanniella* Zilch, 1949 (p. 22)
- Shell with fine radial striae to rather strong riblets that are interrupted by weakly sculptured patches, often obliquely placed, sometimes arranged in a subsutural band 8
8. In the decollated shell the uppermost whorl, or part of it, is much narrower than the next one (fig. 11); shell more or less barrel-shaped
..... *Steeriana* Jousseau, 1900, s. str. (p. 31)
- Diameter of the initial whorls increasing more or less regularly 9
9. Diameter of the shell usually less than 5 mm; lamella spiralis straightly or by only a faint curve connected with the lamella superior (fig. 12)
..... *Andiniella* Weyrauch, 1958 (p. 23)
- Diameter of the shell usually more than 5 mm; lamella spiralis approaching or touching the lamella superior with a wide curve from the left side; generally the lamella superior is extending further inward from this point, but sometimes the two lamellae are united by this wide curve (fig. 13)
..... *Steeriana* (*Cylindronenia*) Ehrmann, 1949 (p. 32)
10. Aperture of the shell comparatively large 11
- Aperture of the shell not strikingly large 12
11. Aperture very large, trumpet-like; whorls shouldered and rapidly increasing in diameter (fig. 9a); with a basal crest on the last whorl (the shell is usually only slightly decollated or not decollated at all
..... *Zilchiella* Weyrauch, 1957 (p. 25)

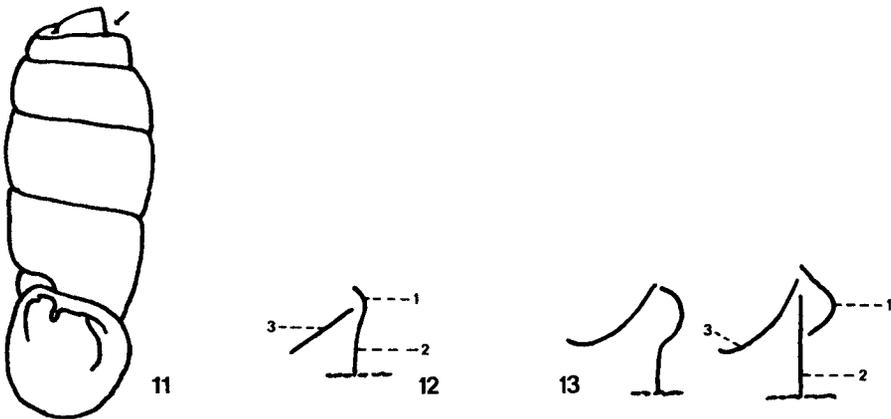


Fig. 11. *Steeriana* (*S.*) *malleolata* (Philippi); ventral side of the shell ($\times 3$). Fig. 12. *Andiniella flammulata* (Loosjes), location of lamella superior and lamella spiralis. 1, lamella spiralis; 2, lamella superior; 3, lamella inferior. Fig. 13. Location of lamella superior and lamella spiralis in *Steeriana* (*Cylindronenia*) *huarangoensis* Zilch, and *S.* (*C.*) *maranhonensis* (Albers). 1, lamella spiralis; 2, lamella superior; 3, lamella inferior.

- Aperture high or very high in comparison to the width and length of the shell (fig. 14); last whorl rounded, i.e. without a dorsal crest
 *Incania* Pilsbry, 1922 (p. 34)
- 12. Shell very obese fusiform, more or less barrel-like, with ca. six whorls, about 25 mm long*Steatonenia* Pilsbry, 1926 (p. 34)
- Shell more slender, spindle-shaped, fusiform, or more cylindrical 13
- 13. Last whorl of the shell distinctly narrowed, neck-like descending 14
- Last whorl neither distinctly narrowed nor neck-like descending 15
- 14. Dorsal part of the last whorl with two distinct basal knobs
 *Gibbonenia* Zilch, 1954 (p. 26)
- Dorsal part of the last whorl rounded or with a faint furrow at most
 *Columbinia* Polinski, 1924 (p. 33)
- 15. Length of the shell more than 15 mm; the last whorl with 8–13 parallel, broad, coarse, rounded folds, running from the suture to the base of the peristome *Hemicena* Pilsbry, 1949 (p. 32)
- Last whorl of the shell rounded or with one or two crests; if coarse round folds are present, then the shell is not longer than 15 mm 16
- 16. Shell with distinctly convex sides (fig. 15), about 10 mm long
 *Weyrauchiella* Loosjes, 1966 (p. 35)
- Shell with straight or concave sides 17
- 17. Shell solid, ventricose, spindle-shaped; yellowish to corneous, provided

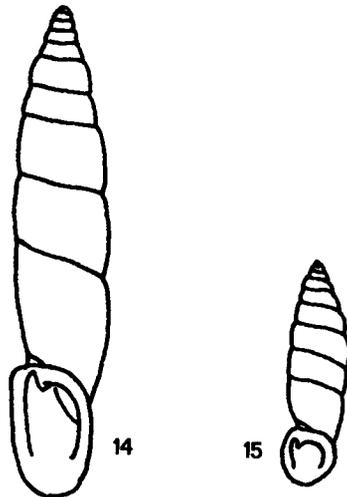


Fig. 14. *Incania pilsbryi* (Sykes); ventral side of the shell ($\times 3$). Fig. 15. *Weyrauchiella huanucensis* (Pilsbry); ventral side of the shell ($\times 3$).

- with fine, regular striae; apex blunt, thick; aperture rounded
 *Pfeifferiella* Weyrauch, 1957 (p. 25)
- Shell with an other combination of characters 18
18. Apertural armature of the shell totally or partly reduced; if all usual lamellae and plicae are present, then one or more are at least distinctly reduced in size *Temesa* H. & A. Adams, 1855, s. str. (p. 26)
- Apertural armature complete 19
19. The lower end of the lunella passes angularly into a white, straight, long and thin plica palatalis inferior, which ends at the basal edge of the lamella subcolumellaris, above its lower end
 *Bequaertinenia* Weyrauch, 1964 (p. 30)
- The lower end of the lunella is not provided with a long thin plica palatalis inferior; the lower ends of the lunella and the lamella subcolumellaris respectively, are usually connected or only narrowly separated; below the suture of the shell there are concentrations of both faint and (much) stronger striae, visible as dark and whitish patches, respectively
 *Temesa (Neniactra)* Pilsbry, 1926 (p. 29)

B. Keys to species and subspecies

Ehrmanniella Zilch, 1949

Shell cylindrical to spindle-shaped, strongly decollated, solid, hardly translucent; sculptured with fine, rather regular, axial striae; basal part of the last whorl rounded or provided with two rounded crests. Closing-apparatus present.

1. Shell less than 15 mm long; last whorl rounded; striae hardly ever interrupted; C. Peru *E. dedicata* (Weyrauch & Zilch, 1954)
- Shell over 15 mm long, last whorl with two more or less distinct basal crests; striae usually often interrupted 2
2. Plica palatalis principalis parallel to the suture; lunella regularly rounded; C. Peru *E. boettgeri* (Pilsbry, 1945)
- Plica palatalis principalis convergent with the suture; lunella with an angle in its upper part; C. Peru *E. quadrata* (O. Boettger, 1880)

Andiniella Weyrauch, 1958

Shell more or less slender, spindle-shaped, strongly decollated; reddish to dark-brown, whitish pruinose because of striae that are partly white and interrupted by weakly sculptured brown areas, often situated in a band below the suture; there are one or more basal crests on the last whorl. Closing apparatus present; lamella superior continuous with lamella spiralis, plica palatalis inferior hook- or T-like connected with the lunella.

- 1. The dorsal and the palatal side of the last whorl are provided with a number of low, rounded ridges, that run from the suture to the peristome and cross the fine axial striae; these low rounded ridges may also be present on the previous whorls 2
- The shell is not provided with low rounded ridges on the last whorl or on previous whorls; there are only axial white striae, alternating with brown, weakly sculptured patches 3
- 2. Low, rounded ridges are not distinctly visible on the penultimate and previous whorls. On these whorls higher lying areas with white striae alternate below the suture with lowered, more flat, brown patches; lamella superior extending up to the edge of the peristome; plica palatalis principalis extending distinctly inwards beyond the upper end of the lunella; N. Peru *A. cumulloana* (Pilsbry, 1949)
- Low, rounded ridges are also present on the upper whorls; lamella superior not extending to the edge of the peristome; plica palatalis principalis not or only slightly extending inwards beyond the upper end of the lunella; C. Peru *A. wagneri* (Polinski, 1921)
- 3. Length of the shell less than 14 mm; C. Peru
..... *A. flammulata* (Loosjes, 1957)
- Length of the shell more than 14 mm; C. Peru
..... *A. sztolcmani* (Polinski, 1921)

Peruinia Polinski, 1922

Shell slender to ventrose spindle-shaped, decollated, rather fragile, thin, translucent; sculptured with axial and spiral striae which give the surface a chequered appearance, last whorl basally rounded; aperture rather large, rounded pear-shaped. Closing apparatus present; lamella spiralis running in a rather wide curve to the palatal side of the lamella superior.

- 1. Diameter of the shell more than 6 mm 2

- Diameter of the shell less than 7 mm 5
- 2. Whorls distinctly convex, shell ventrose spindle-shaped; C. Peru
..... *P. peruana* (Troschel, 1847)
- Whorls rather flat, shell cylindrical to spindle-shaped 3
- 3. Shell greyish; Peru *P. granulosa* (Sykes, 1900)
- Shell yellowish to brown corneous 4
- 4. Shell corneous, inner palatal side of the aperture yellowish brown, axial
striae strong; C. Peru *P. flachi bradina* Pilsbry, 1945
- Shell dark corneous, last whorl dorsally dark reddish violet, inner palatal
side of the aperture dark brown to reddish violet; C. Peru
..... *P. flachi superba* Weyrauch, 1960
- 5. Shell whitish; lamella spiralis connected with lamella superior; lamella
superior proceeding inwards only as a thin thread beyond this place of
contact; C. Peru *P. albicolor* Weyrauch, 1957
- Shell pale brown to violet brown; lamella superior not partly thread-like
..... 6
- 6. Whorls swollen, more or less convex; axial striae rather strong, spiral
striae weak; lamella spiralis and lamella superior not connected; C. Peru .
..... *P. rosenbergi* (Preston, 1907)
- Whorls flat 7
- 7. Shell yellow to light brown; inside of the aperture light brown as well; C.
Peru *P. flachi tingamariae* (Pilsbry, 1922)
- Shell violet brown or chestnut brown; inside of the aperture whitish or
violet brown to chestnut brown 8
- 8. Shell violet brown; inside of the aperture whitish; shell over four times
longer than wide; S. Peru *P. slosarski* (Lubomirski, 1879)
- Shell and inside of the aperture violet brown to chestnut brown; only the
edge of the lamella inferior is whitish; shell less than four times longer
than wide; C. Peru *P. flachi flachi* (O. Boettger, 1889)

Gracilinenia Polinski, 1922

Shell very slender, spindle-shaped, decollated, mostly fragile, thin, sculptured with fine axial ribs which stand rather far apart; last whorl strongly neck-like descending; aperture turned more or less outward. Closing apparatus present; lamella superior and lamella spiralis rectilinear continuous.

- 1. Length of the rather solid, reddish brown, hardly translucent shell less
than 15 mm; undulating ribs and groups of undulating ribs are separated
by rather straight striae; C. Peru *G. eugeniae* (Polinski, 1921)

- Length of the fragile, yellowish brown, more or less translucent shell more than 15 mm; ribs or groups of ribs not separated by straight striae 2
- 2. Ribs regularly spread over the whorls, about eight per mm on the penultimate whorl above the aperture; C. Peru
..... *G. filocostulata aequistriata* Weyrauch, 1956
- Ribs irregularly spread over the whorls, i.e. single and in groups; C. Peru
..... *G. filocostulata filocostulata* (Lubomirski, 1879)

Pseudogracilinenia gen. nov.

Shell very slender, spindle-shaped, decollated, mostly fragile, thin, sculptured with fine axial ribs which stand rather far apart; last whorl strongly, neck-like descending; aperture turned more or less outward. Closing apparatus present; lamella superior and lamella spiralis connected by a distinct curve.

- 1. Whorls very convex; length of the shell usually less than 13 mm; C. Peru
..... *P. huallagana* (Pilsbry, 1949)
- Whorls little convex; length of the shell usually more than 13 mm; Peru
..... *P. jolyi* (O. Boettger, 1880)

Zilchiella Weyrauch, 1957

Shell cone-shaped, not or slightly decollated, dark violet-brown, sculptured with close fine axial whitish striae, whorls distinctly shouldered; last whorl provided with a basal crest: aperture very large. Closing apparatus strongly reduced.

The type-species, *Z. grandiportus* Weyrauch, 1957, is the only known representative of the genus; N. Peru.

Pfeifferiella Weyrauch, 1957

Shell ventrose, spindle-shaped, not decollated, solid, apex thick and blunt; sculptured with fine, close striae; with a band of white patches, the whitish thickened upper ends of the striae, below the suture. Closing apparatus reduced: lamella superior, however, strong and high.

- 1. Length of the shell less than 19 mm, diameter less than 5 mm; N. Peru
..... *P. subterranea* Weyrauch, 1957
- Length of the shell more than 19 mm, diameter more than 5 mm 2

2. Lamella spiralis, plica palatalis principalis and lunella not present; N. Peru *P. haasi* Weyrauch, 1957
 — Lamella spiralis and plica palatalis principalis present, lunella strongly reduced; N. Peru *P. koepcke* (Zilch, 1953)

Gibbonenia Zilch, 1954

Shell slender spindle-shaped, not decollated, fragile, translucent, sculptured with very fine, close, regular striae; last whorl strongly neck-like descending; base of the last whorl provided with two distinct basal knobs. Closing apparatus present.

The type-species, *G. raimondii* (Philippi, 1867), is the only known representative of the genus; N. Peru.

Temesa H. & A. Adams, 1855, s. str.

Shell turreted to spindle-shaped, not decollated, sculptured with (usually) uninterrupted striae or ribs; last whorl short, often hardly smaller than the penultimate one, not or scarcely protruding, basally rounded; upper part of the peristome present as a callosity on the penultimate whorl or just free of it. Closing apparatus absent or incomplete.

1. Apertural armature (lamellae, plicae, clausilium) practically absent 2
 — Apertural armature at least partly present 15
 2. Shell sculptured with distinct (often milky white), strong ribs, that are (rather) widely spaced 3
 — Shell smooth or closely sculptured with striae or ribs 7
 3. Shell with strong white ribs, otherwise brown or bluish violet 4
 — Shell corneous 6
 4. Shell brown-violet; upper whorls not strongly shouldered; the high white ribs are rather irregularly situated; C. Peru
 *T. (T.) decimvolvis crassicosata* Weyrauch, 1958
 — Colour of the shell blue-violet, upper whorls distinctly shouldered; the high, white ribs are rather regularly situated 5
 5. Length of the shell usually more than 11.5 mm; C. Peru
 *T. (T.) albocostata albocostata* Weyrauch, 1963
 — Length of the shell usually less than 11.5 mm; C. Peru
 *T. (T.) albocostata pygmaea* Weyrauch, 1963
 6. Length of the shell usually more than 17 mm; C. Peru
 *T. (T.) decimvolvis decimvolvis* Weyrauch, 1957

13. Shell slender cylindrical; ten to ten and a half whorls; length : diameter > 4.9; S. Peru *T. (T.) peruviana rhadina* Pilsbry, 1949
 — Shell turreted; eight to nine whorls; length : diameter < 4.7: 14
14. Shell with strongly shouldered whorls, sculptured with dense, very fine very undulating striae, that give it a silken aspect; N. (?) Peru
 *T. (T.) clausilioides* (Reeve, 1849)
 — Whorls of the shell not strongly shouldered, and sculptured with fine, rather straight, not undulating striae; S. Peru
 *T. (T.) peruviana* (Pfeiffer, 1867)
15. Diameter of the shell less than 3.2 mm 16
 — Diameter of the shell more than 3.2 mm 18
16. Shell sculptured with fine, oblique striae, that are crossed by wide, rounded, low folds, which are especially very distinct on the dorsal side of the last whorl; lunella absent; Peru *T. (T.) pusilla* (Polinski, 1921)
 According to the original description the species has no clausilium. In the holotype, however, a clausilium is present.
 — Shell sculptured with striae or riblets only; lunella present 17
17. Shell with fine, rather narrowly spaced, regular striae, or with riblets; if there are riblets, they are rather widely spaced; C. Peru
 *T. (T.) eka* Pilsbry, 1945 (= *T. (T.) minuscula* Pilsbry, 1945)
 — Shell with coarse irregular riblets or with irregular ribs that are rather widely spaced; C. Peru *T. (T.) parcecostata* (Polinski, 1921)
18. Shell with widely spaced ribs, 17–24 on the penultimate whorl; C. Peru
 *T. (T.) zilchi* Weyrauch, 1963
 — Shell with narrowly spaced striae, or ribs on the last four whorls 19
19. Shell with about three post-embryonic whorls sculptured with distinctly spaced striae or riblets; the lower whorls are more or less regularly, densely striate; C. Peru *T. (T.) latestriata* Weyrauch, 1958
 — Post-embryonic whorls and lower whorls sculptured with close striae or ribs (only on the last whorl behind the peristome the striae or ribs may be stronger than on the rest of the shell) 20
20. Lamella superior and lunella absent; lamella spiralis short and low; C. Peru
 *T. (T.) pilsbryi primigenia* Weyrauch, 1960
 — Lunella present; lamella superior most often present, either continuous or not continuous with the lamella spiralis 21
21. Shell slender (length : diameter > 4.4); the palatal side of the last whorl is usually a little inflated shortly behind the peristome; S. Peru
 *T. (T.) balnearum* (Crawford, 1939)
 — Shell less slender (length : diameter < 4.7); last whorl not inflated 22
22. Shell sculptured with very fine striae; C. Peru
 *T. (T.) kalinowski* Haas, 1955

- Shell more or less regularly, coarsely striated 23
- 23. Shell sculptured with axial striae and faint spiral striae; plica palatalis superior connected with the lunella, together forming a T; C. Peru
..... *T. (T.) decimvolvis mantaroensis* Weyrauch, 1963
- Shell striated or ribbed; plica palatalis superior connected with the lunella, together forming a seven; C. Peru *T. (T.) omissa* Weyrauch, 1957

Temesa (Neniactra) Pilsbry, 1926

Shell sinistral or dextral, more or less slender spindle-shaped to fusiform, not decollated; basal part of the last whorl rounded, but usually with one or two oblique crests. The shell is corneous with whitish striae or parts of striae, which may be clustered, forming white patches; there may be a pattern of white patches running diagonally over the whorls. Closing apparatus present; the lower end of the lunella is not provided with a long and thin plica palatalis inferior, but is usually connected with or more seldom narrowly separated from the lower end of lamella subcolumellaris.

- 1. Shell dextral (see also sub 11a); C. Peru
..... *T. (N.) adusta dextroversa* (Pilsbry, 1949)
- Shell sinistral 2
- 2. Length of the shell more than 23 mm; basal part of the last whorl rounded; C. Peru *T. (N.) belahubbardi* (Pilsbry, 1922)
- Length of the shell less than 23 mm 3
- 3. Basal crest on the last whorl weak or absent; apex of the shell rather wide and brown; inside of the aperture brown-corneous; otherwise the shell is mainly whitish; the striae run from suture to suture, being thicker at regular intervals; lamella inferior rather strong; C. Peru
..... *T. (N.) andecola* (Morelet, 1863)
- Shell with an other combination of characters 4
- 4. Basal part of the last whorl with a distinct external crest, separated by a furrow from a smaller internal crest; the apex of the shell is light corneous or dark violet; in general the shell is whitish 5
- Basal part of the last whorl rounded, with one crest, or with one or two faint crests; the apex of the shell is brown-corneous; corneous dominates in the colour of the shell 9
- 5. Shell closely sculptured with fine, locally more or less whitish striae, which are sometimes thickened, and which become irregular on the last whorl 6

- Shell with irregular striae, that are partially white and thickened at certain places, together giving the impression of irregular oblique rows of thickened white patches 8
- 6. Shell with irregular, close, thickened white parts of the striae; the combination of these white parts is limited in such a way that no oblique rows of white patches are seen, but a close design of long drawn thickened white patches; C. Peru *T. (N.) adusta cuencaensis* Weyrauch, 1964
- Shell with several white parts of the fine striae, that give the shell a whitish bloom 7
- 7. Shell slender, diameter less than 4.3 mm; C. Peru
..... *T. (N.) adusta adusta* (O. Boettger, 1880)
- Shell ventrose, diameter more than 4.2 mm; C. Peru
..... *T. (N.) adusta tumens* (Haas, 1955)
- 8. Length of the shell more than 15 mm, diameter more than 3 mm; C. Peru
..... *T. (N.) adusta callistoglypta* (Pilsbry, 1949)
- Length of the shell less than 15 mm, diameter less than 3 mm; C. Peru
..... *T. (N.) adusta olssoni* (Pilsbry, 1949)
- 9. Basal part of the last whorl with a strong crest; C. Peru
..... *T. (N.) angrandi angrandi* (Morelet, 1863)
- Basal part of the last whorl rounded or with a furrow and one or two faint crests 10
- 10. Diameter of the shell more than 3.7 mm; a basal furrow is present on the last whorl; C. Peru *T. (N.) angrandi pampasensis* (Pilsbry, 1910)
- Diameter of the shell less than 3.7 mm 11.
- 11. Basal part of the last whorl well rounded, although an indication of a furrow may be present (dextral specimens are more frequent than usual in Clausiliidae); C. Peru *T. (N.) angrandi weyrauchi* (Pilsbry, 1945)
- Basal part of the last whorl provided with a furrow and sometimes with two more or less distinct crests; S. Peru
..... *T. (N.) angrandi urubambensis* (Pilsbry, 1945)

Bequaertinenia Weyrauch, 1964

Shell more or less ventrose spindle-shaped, brown, not decollated; basal part of the last whorl provided with a very oblique high crest; the post-embryonic whorls are sculptured with strong, regular, mostly white rib-striae. Closing apparatus present; the lower end of the lunella curves into a long, straight, white plica palatalis inferior that ends with a sharp angle in the basal edge of the lamella subcolumellaris.

The type-species, *B. bequaerti* (Weyrauch, 1957), is the only known representative of the genus; N. Peru.

Andinia Polinski, 1922

Shell cylindrical to spindle-shaped, strongly decollated, solid, not translucent; sculptured with fine axial striae and irregular coarse white ridges that lay rather far apart; the last whorl is basally rounded. Closing apparatus present, lower end of the lunella widely separated from the lower end of lamella subcolumellaris.

The type-species, *A. taczanowski* (Lubomirski, 1879), is the only known representative of the genus; N. Peru.

Steeriana Jousseume, 1900, s. str.

Shell cylindrical to spindle-shaped, more or less barrel-like, strongly decollated; juvenile shell with many whorls, rather abruptly increasing in diameter where the five or six permanent whorls of the adult shell begin; sculptured with fine, close whitish striae, which usually alternate with brownish faintly sculptured patches below the suture; the basal side of the last whorl is rounded, provided with one or two faint crests, or with a strong crest. Closing apparatus present; the lower end of lamella subcolumellaris is distinctly separated from the wide, blunt lower end of the lunella.

- 1. Basal side of the last whorl with a high strong crest 2
- Basal side of the last whorl rounded or with one or two faint rounded crests 4
- 2. Diameter of the shell usually more than 6.7 mm; N. Peru
..... *S. (S.) celendinensis celendinensis* Weyrauch & Zilch, 1954
- Diameter of the shell usually less than 6.7 mm 3
- 3. Diameter of the shell usually less than 5.2 mm; lamella spiralis extremely thin and low; N. Peru *S. (S.) celendinensis minor* Weyrauch, 1958
- Diameter of the shell usually more than 4.9 mm; lamella spiralis not extremely thin and low; N. Peru
..... *S. (S.) celendinensis isidroensis* Weyrauch & Zilch, 1954
- 4. Length of the shell more than 14 mm, diameter more than 5.5 mm; N. Peru
..... *S. (S.) malleolata* (Philippi, 1867) (= *S. (S.) steeriana* (Sykes, 1893))
- Length of the shell less than 14 mm, diameter less than 5.5 mm; N. Peru
..... *S. (S.) cajamarcana* Weyrauch & Zilch, 1954

Steeriana (Cylindronenia) Ehrmann, 1949

Shell cylindrical to spindle-shaped, strongly decollated; juvenile shell gradually merging into the five to eight permanent whorls of the adult shell; sculptured with close whitish striae that are locally less pronounced and brownish; below the suture white patches with distinct sculpture often alternate with brown weakly sculptured patches; the basal part of the last whorl is rounded or provided with a faint outer crest. Closing apparatus present; lower end of the lunella with a short top or bluntly widened; clausilium with a finger-like projection or regularly pointed.

1. Clausilium with a finger- or hook-like projection 2
- Clausilium regularly pointed below, without projection 3
2. The decollated shell has seven to eight whorls; the palatal side of the last whorl is not furrowed; N. Peru
..... *S. (C.) maranhonensis maranhonensis* (Albers, 1854)
- The decollated shell has about six whorls; the palatal side of the last whorl has a slight furrow outside, at the site of the plica palatalis principalis; N. Peru *S. (C.) maranhonensis terrestris* Weyrauch, 1964
3. The lamella spiralis reaches the lamella superior from the left hand (palatal) side, from there the lamella superior continues inwards; N. Peru
..... *S. (C.) canescens* (Polinski, 1921)
- The lamella spiralis runs in a wide curve from the palatal side to the inner end of the lamella superior and is connected with it; N. Peru
..... *S. (C.) huarangoensis* (Zilch, 1949)

Hemicena Pilsbry, 1949

Shell spindle-shaped, not decollated, solid, brownish; sculptured with fine, irregularly connected undulating axial striae; at the suture regularly broadly incised; basal part of the last whorl provided with 8–13 parallel, wide, coarse, rounded folds, that run to the peristome. Closing apparatus often reduced.

1. Shell with complete apertural armature 2
- Shell with incomplete apertural armature, i.e. the lunella and the plica palatalis superior are always absent 3
2. The eight to ten wide, coarse, rounded folds on the last whorl sometimes begin at the suture, but become strong only below the region of the plica palatalis principalis; the rounded folds are not visible on the upper whorls; C. Peru *H. polinskiana cerrateae* Weyrauch, 1958

- The eight to ten wide, coarse, rounded folds on the last whorl begin at the suture, becoming more slender downward; such broad obliquely running folds are indicated on the upper whorls; on the crests of these weak folds the axial striae are whitish; C. Peru
..... *H. polinskiana damianensis* Zilch, 1959
- 3. Only the lamella superior and the lamella inferior are present, the rest of the apertural armature is absent; on all post-embryonic whorls traces of the wide, oblique folds are present, being strong only on the last whorl; C. Peru
..... *H. polinskiana polinskiana* (Pilsbry, 1949)
- The apertural armature does not only consist of the lamella superior and the lamella inferior, but usually also of some of the other lamellae and plicae; traces of oblique, wide folds only occur on the upper post-embryonic whorls, whereas strong folds occur on the last whorl; C. Peru
..... *H. polinskiana colcabambensis* Zilch, 1959

Columbinia Polinski, 1924

Shell spindle-shaped, slender or more or less pupaeform, not decollated; last whorl strongly narrowed and neck-like descending; sculptured with more or less straight, obliquely running axial striae. Closing apparatus present.

- 1. Shell more or less pupaeform or cylindrical 2
- Shell fusiform, spindle-shaped 4
- 2. Last whorl of the shell with a shallow but distinct basal furrow; shell closely sculptured with slightly oblique, fine striae; aperture comparatively small; the height of the aperture is distinctly less than the diameter of the shell; N. Peru *C. huancabambensis* (Rolle, 1904)
- Last whorl of the shell basally rounded, sculptured with strongly oblique striae; the height of the aperture is more, equal or less than the diameter of the shell 3
- 3. Length of the shell usually more than 20 mm, diameter more than 5.8 mm; N. Peru *C. bartletti* (H. Adams, 1866) (= *C. obesa* Haas, 1949)
- Length of the shell usually less than 20 mm, diameter less than 5.8 mm; S. Peru *C. binkiae* (Pilsbry, 1949)
- 4. Length of the shell usually more than 26 mm, diameter more than 6 mm; C. Peru *C. juninensis* (Smith, 1943)
- Length of the shell usually less than 26 mm, diameter less than 6 mm 5
- 5. Aperture higher than wide 6
- Height and width of the aperture almost equal, or the aperture is wider than high 7

- 6. Length of the shell usually less than 18 mm; C. Peru
..... *C. bryantwalkerii* (Pilsbry, 1922)
- Length of the shell usually more than 18 mm; C. Peru
..... *C. sublutea* (O. Boettger, 1909)
- 7. Lunella incomplete, i.e. the upper part is obsolete 8
- Lunella complete 9
- 8. Length of the shell usually less than 17 mm, diameter less than 3.5 mm;
shell faintly and irregularly striated; C. Peru
..... *C. callangana* (Ehrmann, 1905)
- Length of the shell usually more than 17 mm, diameter more than 3.5
mm; C. Peru *C. gracilis* (Pilsbry, 1949)
- 9. Length of the shell usually more than 17 mm, diameter more than 4 mm;
C. Peru *C. adamsiana* (L. Pfeiffer, 1860)
- Length of the shell usually less than 17 mm, diameter less than 4 mm ... 10
- 10. Lunella slightly curved; S. Peru (and Bolivia).....
..... *C. marshalli* (Pilsbry, 1926)
- Lunella strongly curved; N. Peru *C. atracta* (Pilsbry, 1949)

Steatonenia Pilsbry, 1926

Shell thick spindle-shaped, not decollated; six whorls sculptured with irregular rounded folds; last whorl basally rounded. Closing apparatus present.

The type-species, *S. cooki* (Pilsbry, 1919), is the only known representative of the genus; C. Peru.

Incania Polinski, 1922

Shell spindle-shaped to slender tower-shaped, not decollated; sculptured with fine axial striae; base of the last whorl rounded; aperture large, much higher than wide. Closing apparatus present or reduced.

- 1. Length of the shell less than 16 mm 2
- Length of the shell more than 16 mm 5
- 2. Diameter of the shell more than 3 mm; lamella spiralis, plica palatalis and
clausilium not present; Peru *I. warszewiczi* Polinski, 924
- Lamella spiralis, plica palatalis and clausilium present 3
- 3. Lamella superior at its inner end most often slightly S-like connected with
the lamella spiralis; lunella regularly curved; C. Peru
..... *I. chacaensis* (Lubomirski, 1879)

- Lamella superior at its inner end not connected with the lamella spiralis; lunella almost straight 4
- 4. The lamella spiralis approaches the lamella superior halfway its palatal side and is usually connected with it; S. Peru *I. florezi* Weyrauch, 1964
- Lamella spiralis and lamella superior short and separated; C. Peru *I. mariae* Zilch, 1954
- 5. Diameter of the shell more than 4 mm; lunella regularly curved; the plica palatalis principalis reaches the lateral right side of the shell and distinctly reaches beyond the upper end of the lunella; C. Peru *I. pilsbryi* (Sykes, 1901)
- Diameter of the shell less than 4 mm; the inner end of the plica palatalis principalis does not or hardly reach beyond the upper end of the lunella 6
- 6. Lunella almost straight; Peru *I. jelskii* (Polinski, 1921)
- Lunella regularly curved; C. Peru *I. trigonostoma* (O. Boettger, 1880)

Weyrauchiella Loosjes & Loosjes-van Bommel, 1966

Shell spindle-shaped, with the sides of the upper half of the shell convex, not decollated; apex blunt; sculptured with irregular axial striae, below the suture very small faintly sculptured brown patches may alternate with whitish striated patches; basal part of the last whorl provided with a more or less distinct furrow and two ridges. Closing apparatus complete.

The type-species, *W. angrandi huanucensis* (Pilsbry, 1949), is the only known representative of the genus; C. Peru.

For further information we refer to the original descriptions and to Loosjes & Loosjes-van Bommel (1966), enumerating the most important literature.

IV. REVISED LIST OF PERUVIAN NENIINAE

In 1966 we gave a survey of the species and subspecies of Neniinae classified according to distribution, genus and species. In this paragraph we bring the list of Peruvian species up to date. Species of which anatomical data are known, are marked with an asterisk.

- Ehrmanniella boettgeri* (Pilsbry, 1945)*
E. dedicata (Weyrauch & Zilch, 1954)
E. quadrata (O. Boettger, 1880) (= *Nenia lubomirskii* Polinski, 1921)*
- Andiniella cumulloana* (Pilsbry, 1949)
A. flammulata (Loosjes, 1957)*
A. sztolcmani (Polinski, 1921) [According to Pilsbry (1949: 223) = *Nenia acobambensis* Pilsbry, 1945]*
A. wagneri (Polinski, 1921)
- Peruinia albicolor* Weyrauch, 1957*
P. flachi flachi (O. Boettger, 1889)
P. flachi bradina Pilsbry, 1945
P. flachi superba Weyrauch, 1960*
P. flachi tingamariae (Pilsbry, 1922)*
P. granulosa (Sykes, 1900)*
P. peruana (Troschel, 1847)
P. rosenbergi (Preston, 1907) [According to O. Boettger (1910: 77) = *Nenia flachi* O. Boettger, 1889]
P. slosarski (Lubomirski, 1879)
- Gracilinenia eugeniae* (Polinski, 1921)
G. filocostulata filocostulata (Lubomirski, 1879)*
G. filocostulata aequistriata Weyrauch, 1956*
- Pseudogracilinenia huallagana* (Pilsbry, 1949)*
P. jolyi (O. Boettger, 1880)
- Zilchiella grandiportus* Weyrauch, 1957*
- Pfeifferiella haasi* Weyrauch, 1957*
P. koepckei (Zilch, 1953)*
P. subterranea Weyrauch, 1957
- Gibbonenia raimondi* (Philippi, 1867)
- Temesa (T.) albocostata albocostata* Weyrauch, 1963*
T. (T.) albocostata pygmaea Weyrauch, 1963*
T. (T.) balnearum (Crawford, 1939)*
T. (T.) bicolor Pilsbry, 1949
T. (T.) clausilioides (Reeve, 1849)
T. (T.) decimvolvis decimvolvis Weyrauch, 1957
T. (T.) decimvolvis crassicostata Weyrauch, 1958
T. (T.) decimvolvis mantaroensis Weyrauch, 1963
T. (T.) decimvolvis minor Weyrauch, 1963
T. (T.) dohrniana (Nevill, 1881)
T. (T.) eka (Pilsbry, 1945) [According to Weyrauch (1963: 279) = *Nenia minuscula* Pilsbry, 1945.
 See also *T. (T.) parcecostata*.
T. (T.) incarum Pilsbry, 1926*
T. (T.) kalinowski Haas, 1955
T. (T.) latestriata Weyrauch, 1958*
T. (T.) omissa Weyrauch, 1957*
T. (T.) parcecostata (Polinski, 1921)

According to Weyrauch (in litt., 13--xi--1967; not 1963: 268) *Temesa (T.) eka* (Pilsbry) is not a synonym of *Temesa (T.) parcecostata* (Polinski). Weyrauch concluded this after comparing two paratypes of the latter (Warsaw Museum) with specimens of the former species from the type-locality.

- T. (T.) peruviana peruviana* (Pfeiffer, 1867)*
- T. (T.) peruviana rhadina* Pilsbry, 1949
- T. (T.) pilsbryi pilsbryi* Weyrauch, 1956*
- T. (T.) pilsbryi laraosensis* Weyrauch, 1960*
- T. (T.) pilsbryi primigenia* Weyrauch, 1960
- T. (T.) pilsbryi shutcoensis* Weyrauch, 1960*
- T. (T.) pusilla* (Polinski, 1921)
- T. (T.) zilchi* Weyrauch, 1963

- T. (Neniactra) adusta adusta* (O. Boettger, 1880)
- T. (N.) adusta callistoglypta* (Pilsbry, 1949)
- T. (N.) adusta cuencaensis* Weyrauch, 1964*
- T. (N.) adusta dextroversa* (Pilsbry, 1949)
- T. (N.) adusta olsoni* (Pilsbry, 1949)
- T. (N.) adusta tumens* (Haas, 1955)
- T. (N.) andecola* (Morelet, 1863) [Revised by Weyrauch (1964: 154)]
- T. (N.) angrandi angrandi* (Morelet, 1863) [According to Weyrauch (1964: 149) = *Nenia angrandi urubambensis* Pilsbry, 1945]
- T. (N.) angrandi pampasensis* (Pilsbry, 1910)
- T. (N.) angrandi weyrauchi* (Pilsbry, 1945)
- T. (N.) belahubbardi* (Pilsbry, 1922)

Bequaertinia bequaerti (Weyrauch, 1957)

Andinia taczanowski (Lubomirski, 1879)

- Steeriana (S.) cajamarcana* Weyrauch & Zilch, 1954*
- S. (S.) celendinensis celendinensis* Weyrauch & Zilch, 1954
- S. (S.) celendinensis isidroensis* Weyrauch & Zilch, 1954
- S. (S.) celendinensis minor* Weyrauch, 1958
- S. (S.) malleolata* (Philippi, 1867) [According to Zilch (1954: 71) = *Clausilia steeriana* Sykes, 1893]*
- S. (Cylindronenia) canescens* (Polinski, 1921)*
- S. (C.) huarangoensis* Zilch, 1949*
- S. (C.) maranhonensis maranhonensis* (Albers, 1854)*
- S. (C.) maranhonensis terrestris* Weyrauch, 1964

Hemicena polinskiana polinskiana Pilsbry, 1949*

- H. polinskiana cerrateae* Weyrauch, 1958*
- H. polinskiana colcabambensis* Zilch, 1959*
- H. polinskiana damianensis* Zilch, 1959

Columbinia adamsiana (Pfeiffer, 1860)

- C. atracta* Pilsbry, 1949
- C. bartletti* (H. Adams, 1866) [According to Weyrauch (1956: 114) = *Nenia (Columbinia) obesa* Haas, 1949]
- C. binkiae* Pilsbry, 1949
- C. bryantwalkeri* (Pilsbry, 1922)*
- C. callangana* (Ehrmann, 1905)

C. gracilis Pilsbry, 1949
C. huancabambensis (Rolle, 1904)
C. juninensis (Smith, 1943)
C. marshalli (Pilsbry, 1926)*
C. sublutea (O. Boettger, 1909)

Steatonenia cooki (Pilsbry, 1919)

Incania chacaensis (Lubomirski, 1879) [According to O. Boettger (1910: 74) = *Clausilia* (*Nenia*) *chanchamayoensis* Preston, 1907]
I. florezi Weyrauch, 1964
I. jelskii Polinski, 1921*
I. mariae Zilch, 1954
I. pilsbryi (Sykes, 1901) [According to Ehrmann (1905: 65) = *Nenia macrotis* Ehrmann, 1905]
I. trigonostoma (O. Boettger, 1880)*
I. warszewiczii Polinski, 1924

Weyrauchiella huanucensis (Pilsbry, 1949)*

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