

## Notes on Bulimulidae, 5<sup>1</sup>)

(Gastropoda: Euthyneura).

### On some collections from Colombia.

By

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Some months ago a number of Bulimulidae was sent to me for identification by Dr. A. ZILCH of the Senckenberg Natur-Museum, Frankfurt am Main (SMF). In this material, mainly collected by H. STURM in 1967/68, two new taxa were recognized among some well-known species.

Other Bulimulidae were collected by Drs. T. VAN DER HAMMEN and A. M. CLEEF and are kept in the collection of the Zoölogisch Museum, Amsterdam (ZMA).

In 1975 the author had the opportunity to make a short collecting trip in Colombia. This trip was made possible by a grant of the Foundation for the Advancement of Tropical Research (WOTRO). Among the Bulimulidae collected two new species of *Naesiotus* were found. The material collected during this trip has been deposited in the Rijksmuseum van Natuurlijke Historie, Leiden (RMNH).

A. Bulimulidae from the higher region  
of the Cordillera Oriental, Colombia.

#### ***Plekocheilus (Aeropictus) succinoides*** (PETIT, 1840).

This is a well-known species, which appears to be quite variable, especially in size and the presence of the "papery marks", which are characteristic for the subgenus *Aeropictus* (cf. part B). The distribution of this species is revised below and a new subspecies is described.

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<sup>1</sup>) Notes on Bulimulidae, 4: Zool. Meded. Leiden, 50: 107-115.

***Plekocheilus (Aeropictus) succinoides succinoides* (PETIT, 1840).**

Fig. 1, 15-18.

*Bulimus succinoides* PETIT, 1840: 75.

*Plekocheilus (Eurytus) succinoides*, — PILSBRY, 1895: 84, pl. 34 fig. 65-66.

Until now this species was recorded mainly from the region of Bogotá. However, the distribution is far more wider, as is illustrated by the following list of localities:

Colombia, Dept. Boyacá: Páramo de la Rusia, 3400-3600 m (A. M. CLEEF leg.; ZMA); Páramo Vado Hondo, 3600 m (A. M. CLEEF leg.; ZMA).

Dept. Cundinamarca: Páramo Laguna Verde, 3600 m (A. M. CLEEF leg.; ZMA); Finca Chueca near Facatativá, ca. 40 km W Bogotá, 2700 m (H. LÖSCHER leg.; SMF 242140); Páramo de Palacio, 3100-3200 m (H. STURM leg.; SMF 245384); Idem, Laguna de Stechas, 3750 m (A. M. CLEEF leg.; RMNH); Idem, Lagunas de Buitrago, 3600 m (A. M. CLEEF leg.; RMNH); Páramo de Monserrate, 3200 m (H. STURM leg.; SMF 245385); Páramo between Monserrate and La Calera, 3200 m (H. STURM leg.; SMF 245386); Bogotá (SMF 21611); Idem (SMF 242139); Mountain side W of Laguna Muña, SW of Bogotá, 2600-2700 m (T. VAN DER HAMMEN leg.; ZMA).

Dept. Cauca: Río Cauca valley (ex SCHLÜTER; SMF 45635).

Southern Colombia (SMF 90031).

Colombia [or: New Granada], without further indication (BMNH, RMNH, SMF: various lots).

Peru, Dept. Cajamarca: SW of Chachapoyas and Cajamarca (G. E. MASON leg.; SMF 21612).

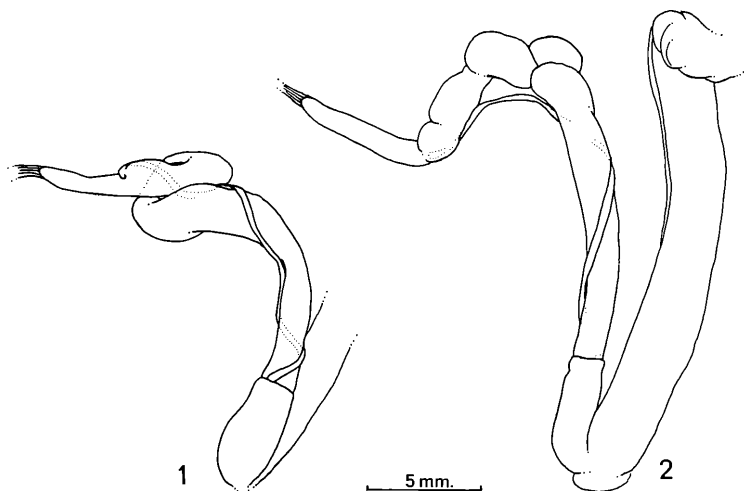


Fig. 1. *Plekocheilus (Aeropictus) s. succinoides*. — Genitalia, penial complex. — Colombia, Páramo de Palacio (SMF 245384).

Fig. 2. *Plekocheilus (Aeropictus) zilchi*. — Genitalia, penial complex. — Colombia, Comiojoque (SMF 245387).

Furthermore *Plekocheilus s. succinoides* has been observed by A. M. CLEEF at the following localities: Dept. Boyacá, Páramo de Pizba, road from Socha to La Punta, km 61, 6 km E of Los Pinos; km 78, 1 km NE of Laguna Colorada; Páramo de la Sarna, 5 km NE of Laguna de Tota. Dept. Cundinamarca, páramo between Cogua and San Cayitano, around Laguna Seca.

**Genitalia:** Penis slightly swollen at base under a short sheath, its distal part subcylindrical. No external differentiation between penis and epiphallus observed. Epiphallus also more or less subcylindrical, slightly swollen at the junction with the vas deferens. Flagellum about half as broad as epiphallus, approximately  $\frac{1}{6}$  the length of the total phallus. A convolution in the epiphallus. See Fig. 1.

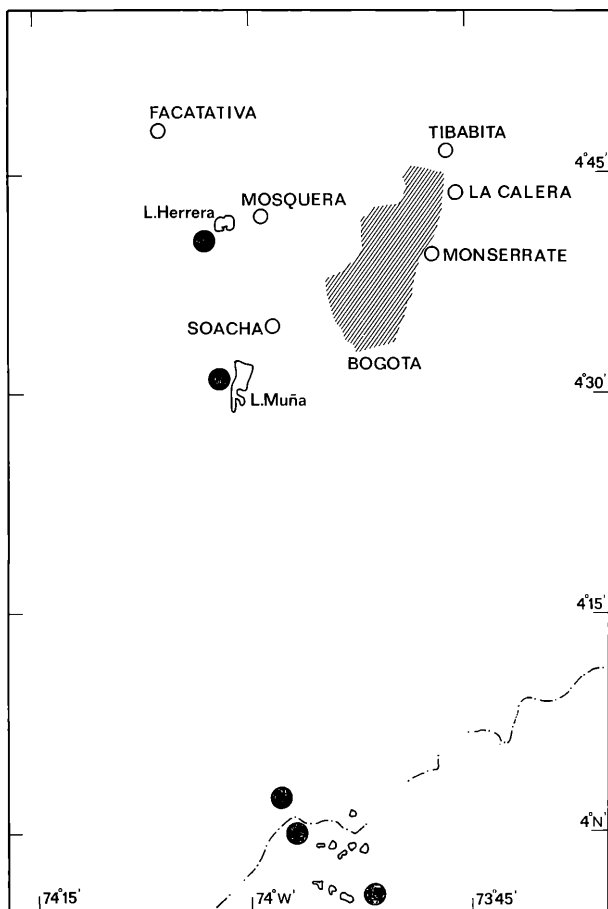


Fig. 3. Environs of Bogotá. Black circles refer to localities of CLEEF, VAN DER HAMMEN or BREURE mentioned in part A.

***Plekocheilus (Aeropictus) succinoides cleeforum* n. subsp.**

Fig. 19-20.

This subspecies differs from *Plekocheilus succinoides succinoides* by (1) its brown colour and (2) by the absence of subcuticular cavities filled with air [which are otherwise characteristic for *Aeropictus*]. Moreover the specimens are smaller on an average. Although these differences are slight, they are very constant in the material from three localities.

**Material:** Colombia, Dept. Cundinamarca, Páramo de Sumapaz, Cabeceras Río Bogotá, Alto de Torquita, ca. 3900 m (A. M. CLEEF leg.; ZMA, 2 sp., including holotype); Páramo de Sumapaz, Cuchilla Rabona near Andabobos, 4000 m (A. M. CLEEF leg.; RMNH, 1 sp.); Dept. Meta, Nevado de Sumapaz, 3800-3900 m (A. M. CLEEF leg.; ZMA, 7 sp.).

**Measurements (in mm):**

shell		aperture		number of	
height	diam.	height	width	whorls	
38.5	25.5	28.5	17.0	3.5	ZMA, Nevado de Sumapaz
34.0	23.0	25.0	14.7	3.3	idem
31.0	21.0	22.0	14.1	3.2	idem
33.0	23.0	23.0	15.0	3.4	idem
32.0	21.0	24.0	14.7	3.3	idem
37.5	23.5	27.0	16.0	3.6	idem, Alto de Torquita (holotype)
32.5	24.5	24.5	16.0	2.8	idem
—	23.0	—	15.0	3.1	RMNH, Cuchilla Rabona

**Etymology:** I have much pleasure in naming this subspecies after A. M. & M. CLEEF (Utrecht), who have contributed so much to our knowledge of Colombia in biological respect by their collecting work.

***Plekocheilus (Aeropictus) zilchi* n. sp.**

Fig. 2, 21-22.

**Description:** Shell rimate, with slightly convex sides; rather thin. Colour lightbrown to tawny, with an irregular pattern of yellowish marks formed by subcuticular cavities filled with air. A dark brownish band below the suture. Surface nearly lustreless, coarsely granulate. Whorls nearly flat; suture hardly impressed. Aperture broadly ovate/inversed ear-shaped; shining inside, with a pink-brownish bloom. Peristome reflexed and broadly expanded, whitish. Columellar margin hardly dilated and reflexed over the rimate umbilicus. Parietal region dark brown with a transparent callus.

**Genitalia:** Penis with a short sheath (about  $\frac{1}{7}$  of the total phallus length), subcylindrical. No external differentiation between penis and epiphallus observed. Epiphallus also more or less subcylindrical, with convolutions. Flagellum about half as broad as epiphallus, approximately  $\frac{1}{5}$  the length of the phallus. See Fig. 2.

**Comparisons** This species resembles *Plekocheilus succinoides* but differs by (1) the less globose whorls, (2) the less impressed suture, (3) the coarser granulate surface, (4) the broadly expanded peristome, especially at the basal margin, (5) the different form of the aperture, (6) the rimate shell, (7) the different relative length of parts of the phallus.

Material: Colombia, Dept. Boyacá, SW Labranza grande [5°33' N 72°35' W; 1140 m], Quebrada Comijoque (H. STURM leg.; SMF 245387; holotype); Colombia (ex MACANDREW colln. ex ROLLE; BMNH 1975496, 1 sp.).

Ecology: The holotype was found in "Primärwald" [subandine forest].

Measurements (in mm):

shell		aperture		number of	
height	diam.	height	width	whorls	
40.5	25.0	30.5	20.0	3.8	SMF
39.0	24.0	30.5	20.5	3.7	BMNH

Etymology: Named in honour of Dr. A. ZILCH (Frankfurt am Main).

***Plekocheilus (Aeropictus) calliostoma* (DOHRN, 1882).**

*Bulimus (Eurytus) calliostoma* DOHRN, 1882: 103, pl. 3 fig. 1-2.

*Plekocheilus (Eurytus) calliostoma*, — PILSBRY, 1895: 85, pl. 34 fig. 69-70.

Two specimens of this species were found at 10 km NE of Villa de Leiva, Dept. Boyacá (A. S. H. BREURE Sta. 121). It is the first exact locality for this species.

***Plekocheilus (Eurytus) elaeodes* (PFEIFFER, 1853).**

*Bulimus elaeodes* PFEIFFER, 1853: 256.

*Plekocheilus (Eurytus) elaeodes*, — PILSBRY, 1895: 86, pl. 35 fig. 71-72.

This species has been collected at the following localities:

Colombia, Dept. Boyacá, 10 km NE of Villa de Leiva (Sta. 121); Páramo de Toquillo near Vado Hondo, 2900-3100 m (SMF).

Dept. Cundinamarca: Tibabitá (SMF), above Calle 82 (SMF), slope above Calle 85 and 86 (SMF) and Bosque de Chicó (SMF) (all material H. STURM leg.; SMF 245388-398) [all localities immediately E of Bogotá].

***Drymaeus murrinus* (REEVE, 1848).**

*Bulimus murrinus* REEVE, 1848: pl. 43 fig. 273a-b.

*Drymaeus murrinus*, — PILSBRY, 1898: 214, pl. 40 fig. 10-11.

Material was examined from the following localities:

Tibabitá; 6 km N Usaquen; valley E of Calle 82; 18 km N Calle 79 (all H. STURM leg.; SMF 245399-404) [all localities near Bogotá].

***Drymaeus fallax chicoensis* n. subsp.**

Fig. 4.

This subspecies differs from *Drymaeus fallax fallax* (PFEIFFER) by (1) being more elongate, (2) having a stronger basal keel on the last whorl, (3) having the aperture less produced and less angular at the junction of palatal and basal margin.

Material: Colombia, Dept. Cundinamarca, Bosque de Chicó [NE Bogotá], 2700-2800 m (H. STURM leg.; SMF 245405, holotype).

Measurements Shell height 23.5 mm, diameter 13.5 mm, height of aperture 9.3 mm, width 7.1 mm. Number of whorls  $5\frac{3}{4}$ .

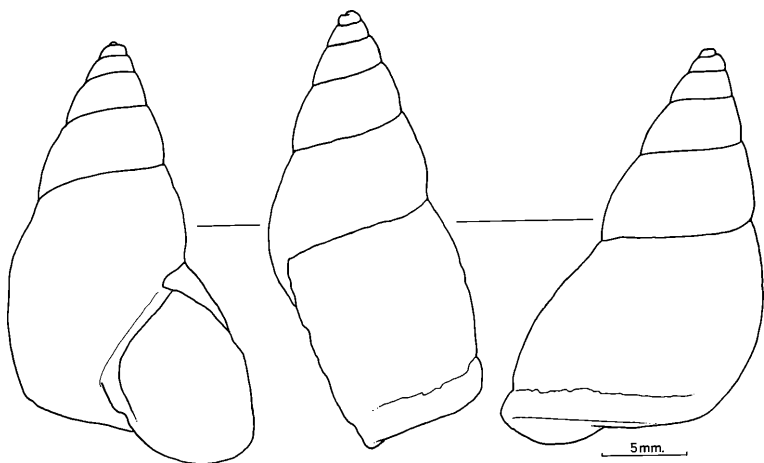


Fig. 4. *Drymaeus fallax chicoensis*. — Holotype (SMF 245405).

B. On the status of  
*Aeropictus* WEYRAUCH, 1967 and  
*Orcesiellus* WEYRAUCH, 1967

*Aeropictus* and *Orcesiellus* were both described by WEYRAUCH (1967: 465 and 468 respectively) as subgenera of *Plekocheilus*. *Orcesiellus* was said to differ from *Aeropictus* by (1) an imperforate shell, (2) whorls more rapidly increasing, (3) the absence of brown streaks, (4) a more diffuse pattern produced by subcuticular cavities filled with air, (5) a parietal callus which is darker as the shell and (6) a granulate protoconch. According to my observations this are characteristics which are either occurring in both "subgenera" or not sufficiently diagnostic. For instance, the pattern produced by the air-filled cavities may be streak-like or diffuse in specimens of the same population, etc. Preliminary anatomical research does not reveal important differences either.

*Orcesiellus* is now placed in the synonymy of *Aeropictus*, which includes the following taxa:

*Succinea bulimoides* PFEIFFER, 1842; *Bulimus* (*Eurytus*) *calliostoma* DOHRN, 1882; *Bulimus cathcartiae* REEVE, 1848; *Plekocheilus* (*Aeropictus*) *succinoides cleeforum* n. subsp.; *Plectostylus delicatus* PILSBRY, 1935; *Bulimus latilabris* PFEIFFER, 1855; *Plekocheilus manco* PILSBRY, 1930; *Bulimus quadricolor* PFEIFFER, 1848; *Bulimus rhodocheilus* REEVE, 1848; *Bulimus scytodes* PFEIFFER, 1853; *Bulimus succinoides* PETIT, 1840; *Plekocheilus* (*Orcesiellus*) *tenuissimus* WEYRAUCH, 1967; *Bulimus veranyi* PFEIFFER, 1848; *Plekocheilus* (*Aeropictus*) *zilchi* n. sp.

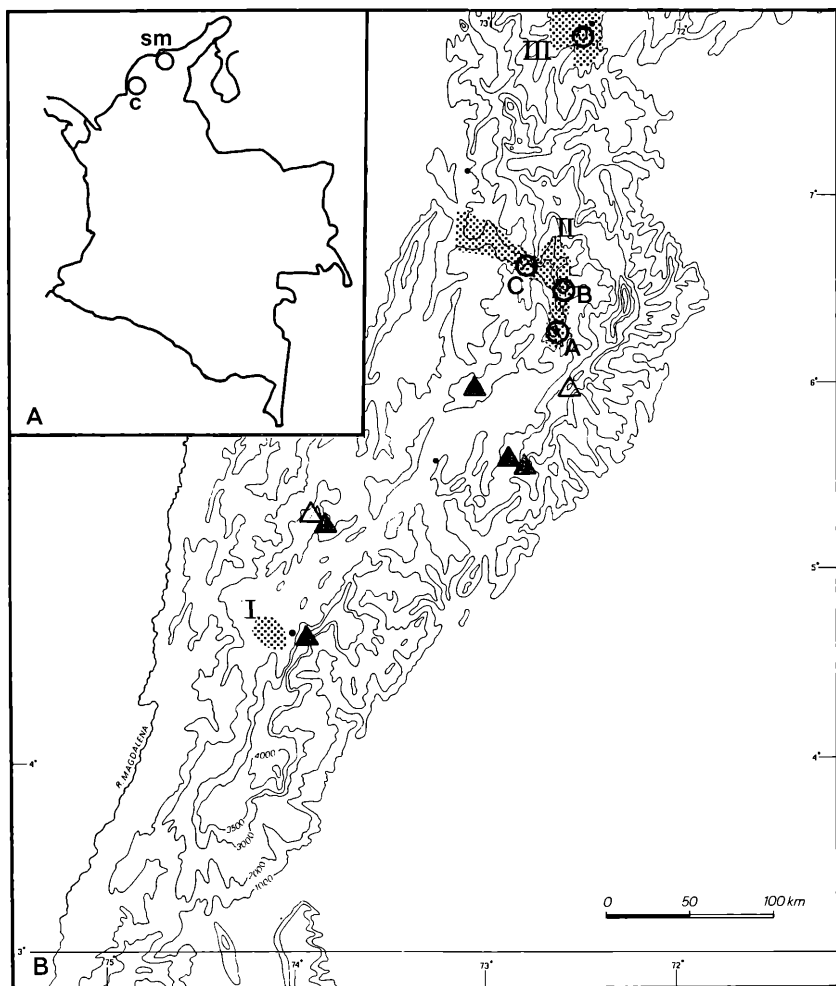


Fig. 5. A: Colombia. Abbreviations refer to Cartagena (C) and Santa (SM), localities mentioned in part D. — B: Eastern Cordillera. Black triangles refer to localities of *Plekocheilus s. succinoides*, open triangles to observations of *A. M. CLEEF*. I-III refer to the areas and circles to localities mentioned in part C.

### C. Bulimulidae from the arid regions of northeastern Colombia.

During my recent visit to northern South America I have been especially attracted by the malacofauna of the arid vegetations. The distribution of these vegetations in northeastern Colombia is shown in Fig. 5B. Although the collec-

tions are still incomplete the results seem worth to be published. The following species were collected or are known from literature (localities arranged from south to north):

I. Department Cundinamarca, arid area near Mosquera (ca. 20 km W of Bogotá): *Plekocheilus (Aeropictus) delicatus* (PILSBRY, 1935).

The type-locality of this species is Soacha, 10 km SW of Bogotá. *Plekocheilus delicatus* is probably confined to this small area around Soacha and Mosquera, where it is found on *Opuntia* sp. The genitalia (Fig. 6) can be described as follows: penis with a very short sheath. Penis and epiphallus not differentiated externally. Vas deferens free of phallus. Flagellum very short.

II. Department Boyacá, upper Río Chicamocha valley.

(A) Few km S of Soatá, 2100 m (Locality 185: BREURE, 1975; see also Fig. 5B):

*Naesiotus jullensorum* n. sp.

*Naesiotus gerenorum* n. sp.

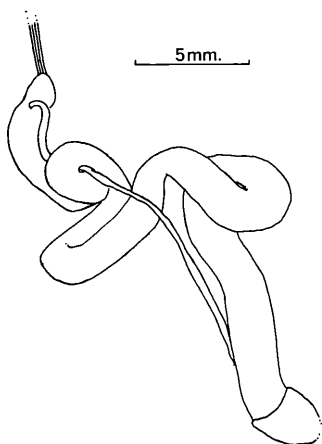


Fig. 6. *Plekocheilus (Aeropictus) delicatus*. — Genitalia, penial complex. — Colombia, ca. 30 km W of Bogotá (RMNH).

***Naesiotus gerenorum* n. sp.**

Fig. 7-9, 13.

**Description:** Shell up to 12.2 mm, 1.9 times as long as wide; (rather widely) perforate; with slightly convex sides; hardly elongate; thin. Colour brownish (in most specimens faded to whitish). Surface slightly shining, smooth. Protoconch sculptured with slightly curved axial riblets, the intervals 3-4 times as wide as the riblets. The intervals with excessively fine spiral striae. Whorls 6.1, rather convex; suture well impressed. Aperture subovate, about 1.5 times as long as wide. Peristome thin and simple. Columellar margin narrowly reflexed.



**C o m p a r i s o n s** This species differs from *Naesiotus pilosus*, which occurs on Trinidad and in Venezuela, by its slightly smaller size, its smooth surface, the sculpture of the protoconch and the shape of the aperture.

**Material** Colombia, Dept. Boyacá, Upper Río Chicamocha valley, few km S of Soatá, 2100 m (A. S. H. BREURE leg. (Sta. 185); RMNH 55115: holotype; RMNH 55116, 22 sp.; SMF 245410, 2 sp.; FMNH 178108, 2 sp.; two specimens to be deposited in the Instituto de Ciencias Naturales, Bogotá).

**M e a s u r e m e n t s** (in mm):

shell		aperture		last	number of	
height	diam.	height	width	whorl	whorls	
11.3	6.2	5.5	3.0	7.0	6.0	holotype
11.0	6.0	4.5	3.0	6.8	6.2	
10.5	5.3	4.0	2.7	6.3	5.0	
9.7	6.2	4.5	3.0	6.3	5.7	
10.5	5.5	4.3	2.8	6.5	5.9	
10.8	5.5	4.5	3.0	7.0	6.0	
11.5	6.0	4.8	3.2	—	6.1	
11.2	5.7	4.5	2.8	6.7	6.2	
12.2	6.0	4.8	3.2	7.5	6.2	
11.2	5.7	4.7	3.0	7.0	6.0	
11.2	5.3	4.3	3.2	6.5	6.3	

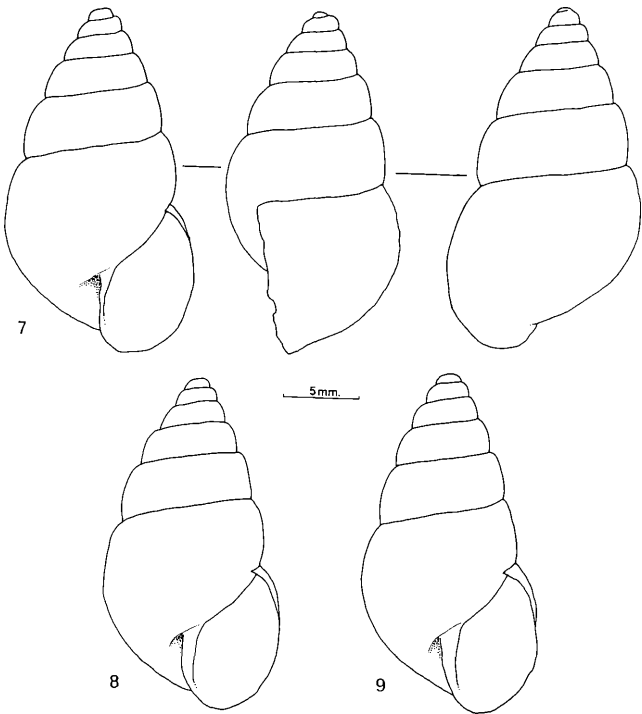


Fig. 7-9. *Naesiotus gerenorum*. — 7) holotype, 8-9) paratypes (RMNH).

**Etymology** This is the first species of *Naesiotus* reported from Colombia. For this reason I am pleased to name it after my Colombian friends FELIPE and AURAMARÍA GERENA (Bogotá).

***Naesiotus jullensorum* n. sp.**

Fig. 10-12, 14.

**Description** Shell up to 20.5 mm, 2.5 times as long as wide; narrowly perforate to rimate; with straight sides; more or less elongate; thin. Colour whitish with irregular longitudinal streaks of brown. Surface shining, with irregularly thickened growth-lines. Protoconch sculptured with axial riblets, the intervals  $1\frac{1}{2}$ -2 times as wide as the riblets, and rather coarse spiral striae. Whorls 6.2, flat; suture hardly impressed. Aperture elongate-ovate, about 1.8 times as long as wide. Peristome thin and simple. Columellar margin dilated above and nearly closing the umbilicus.

**Comparisons** This species does not resemble any of the other *Naesiotus* species but would rather be regarded as a *Drymaeus*. *Naesiotus jullensorum* is characterized by its rimate perforation, the elongate-ovate aperture, its colour and the sculpture of the protoconch.

**Material** Colombia, Dept. Boyacá, Upper Río Chicamocha valley, few km S of Soatá, 2100 m (A. S. H. BREURE leg. (Sta. 185); RMNH 55113: holotype; RMNH 55114, 21 sp.; SMF 245411, 2 sp.; FMNH 178104, 2 sp.; two specimens to be deposited in the Instituto de Ciencias Naturales, Bogotá).

**Measurements (in mm):**

shell		aperture		last	number of	
height	diam.	height	width	whorl	whorls	
18.8	8.9	7.9	4.6	12.4	6.0	
18.6	7.1	7.8	—	12.0	6.4	
17.9	7.5	7.7	4.0	12.2	5.8	
20.5	8.0	8.6	4.5	13.7	6.2	
17.3	7.0	7.5	4.0	11.5	6.0	
19.5	7.7	7.2	4.4	12.4	6.5	
19.5	7.3	7.6	4.1	12.6	6.4	holotype
18.8	7.3	8.0	4.3	12.8	6.1	
18.1	7.4	8.0	4.1	12.0	6.0	
19.6	8.2	8.3	4.7	12.5	6.1	

**Etymology** I have much pleasure in naming this species after Mr. and Mrs. JULLENS (Leiden).

(B) Approximately 15 km S of Málaga, Río Servitá valley, ca. 1800 m (Sta. 184: BREURE, 1975; see also Fig. 5B):

*Drymaeus fasciarum* PILSBRY, 1939.

Three specimens were found (RMNH). This is the first record after the original publication.

*Sultana (Melaniorthalicus) atramentarius* (PFEIFFER, 1855).

Eight shells and one living specimen were found and have been deposited in the RMNH-collection.

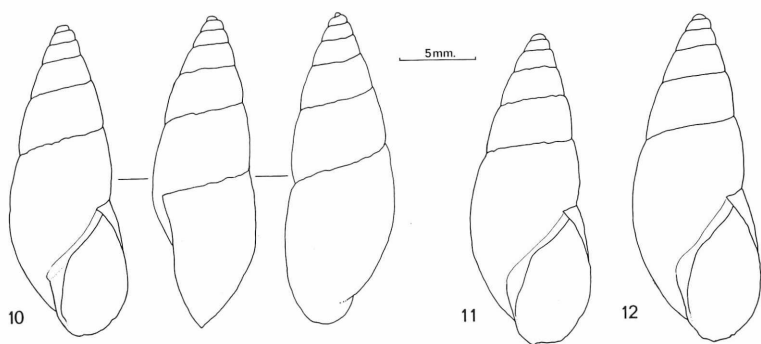


Fig. 10-12. *Naesiotus jullensorum*. — 10) holotype, 11-12) paratypes (RMNH).

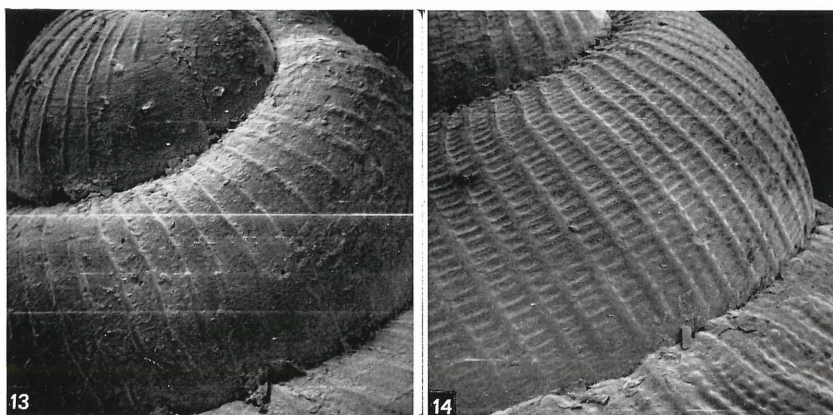


Fig. 13. *Naesiotus gerenorum*, protoconch ( $\times 62.5$ ).

Fig. 14. *Naesiotus jullensorum*, protoconch ( $\times 60$ ).

(C) Approximately 57 km NE of San Gil, Río Chicamocha valley, 1700 m (Sta. 181: BREURE, 1975; see Fig. 5B):

*Orthalicus* sp.

Only juvenile and bleached specimens were found, which are indeterminable. The preceding species may also be expected here.

III. Department Norte de Santander, 10 km S of Cúcuta, 375 m (Sta. 182: BREURE, 1975; Fig. 5B):

*Bulimulus* cf. *juvenilis* (PFEIFFER, 1855).

*Drymaeus* sp.

Only bleached specimens were collected. The sole specimen of the latter species can not be identified at the moment.

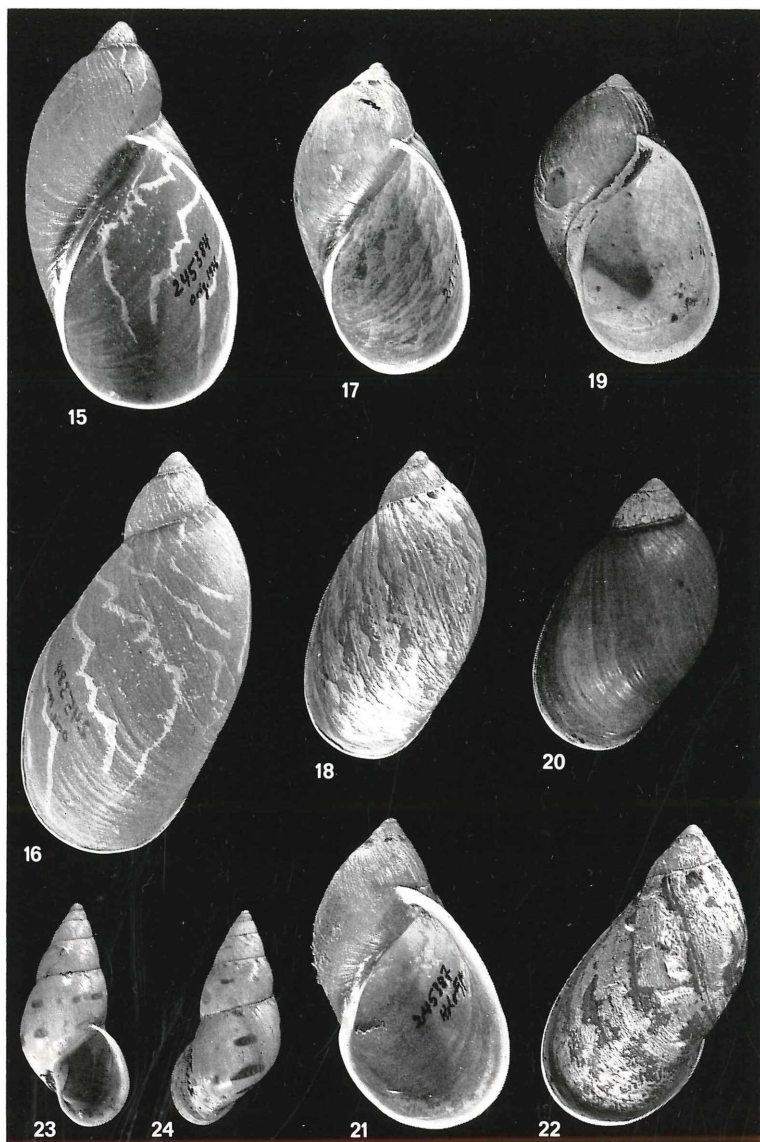


Fig. 15-18. *Plekocheilus (Aeropictus) s. succinoides*; — 15-16) Colombia, Páramo El Palácio (SMF 245384); 17-18) Peru, SW of Chachapoyas and Cajamarca (SMF 21612).

Fig. 19-20. *Plekocheilus (Aeropictus) succinoides cleeforum*; holotype (ZMA).

Fig. 21-22. *Plekocheilus (Aeropictus) zilchi*; holotype (SMF 245387).

Fig. 23-24. *Drymaeus villavicencioensis*; holotype (SMF 245417).



Fig. 25. Colombia, Dept. Meta, SW-slope of Nevado de Sumapaz, ca. 3700 m; stony *Calamagrostis effusa* — *Espeletia grandiflora* var. *subnivalis* — páramo. Locality of *Plekocheilus (Aeropictus) succinoides cleeforum*. Photo by courtesy of A. M. CLEEF.

#### D. Bulimulidae from other parts of Colombia.

##### *Bulimulus krebsianus* PILSBRY, 1897.

H. STURM collected this species at Convento de la Papa, near Cartagena, Dept. Bolívar. Specimens collected between Santa Marta and Rodadero, Dept. Magdalena, are tentatively referred to this species (SMF 245412/4 and 245413/2 respectively).

##### *Drymaeus multilineatus* (SAY, 1825).

This species appears to be fairly common along the coast of northern South America. It is here reported from Dept. Magdalena, between Santa Marta and Rodadero (SMF 245414/2) and between Santa Marta and Cienaga (SMF 245415/1).

##### *Naesiotus* sp.

One damaged and one juvenile specimen of an apparently undescribed species were taken at 33 km S of Cúcuta, Dept. Norte de Santander (A. S. H. BREURE leg., sta. 183; RMNH).

##### *Drymaeus villavicencioensis* n. sp.

Fig. 23-24.

**Description:** Shell narrow perforate; with slightly convex sides; elongate; rather thin. Colour withish with a black band around the umbilicus and two interrupted bands on the last whorl. The elongate spots of these interrupted

bands are black with faint whitish lines, especially on the spots near the aperture; one band at the periphery, the other at equal distances of the peripheral band and the suture; there are some traces of a third band shortly below the peripheral band. Surface shining, smooth. Whorls 6, hardly convex; the suture well impressed. Aperture ovate, somewhat reversed ear-shaped, purplish coloured inside. Peristome thin, expanded but not reflexed, white. Columellar margin reflexed and dilated over the narrow umbilicus, white. A purplish callus on the parietal region.

**Comparisons** This novelty does not closely resemble any of the *Drymaeus* species known to me, so I venture to describe it here, although I have but one specimen at hand. Comparisons may be made with *Drymaeus bellus*, which differs by (1) lack of spiral colour-bands; (2) having longitudinal streaks; (3) having the parietal callus and the inner side of the aperture behind the peristome brown instead of purplish. *Drymaeus orthostomus* differs by (1) shell and aperture being more elongate; (2) having spiral band and longitudinal streaks; (3) lacking a purplish colour inside the aperture; (4) having a brownish colour.

**Material** Colombia, Department Meta, Villavicencio; F. SCHREMMER leg. IV. 1970; SMF 245417: holotype.

**Measurements** Shell height 29 mm, diameter 13.6 mm, height of aperture 12.9 mm, width of aperture 8.9 mm.

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