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ON SOME SMALL COLLECTIONS OF INLAND SHELLS FROM SOUTH AMERICA

FRITZ HAAS

CURATOR, DIVISION OF LOWER INVERTEBRATES

LAND AND FRESH-WATER MOLLUSKS FROM PERU

Chicago Natural History Museum has again received from Dr. Wolfgang Weyrauch, of Lima, Peru, shipments of non-marine shells, which proved, like his earlier collections, to be of considerable interest. The material dealt with in this paper forms part of his private collection or belongs to Museo de Historia Natural "Javier Prado" de la Universidad Nacional Mayor de San Marcos in Lima.

Helicina (Helicina) laus ucayalensis A. J. Wagner

Pucalpa, on the Río Ucayali; altitude 200 meters; collected by J. M. Schunke.

Helicina (Helicina) pucayaënsis Preston

Three specimens, apparently not quite adult, are here tentatively related to this species, which has never been figured.

Pucalpa, on the Río Ucayali; altitude 200 meters; collected by J. M. Schunke.

Aperostoma (Aperostoma) depressum DaCosta

Cerro Azul near Contamaná, on the Ucayali; collected by J. M. Schunke.

Aperostoma (Aperostoma) schunkei sp. nov. Figure 70.

Type.—Chicago Natural History Museum no. 47080, from the Chanchamayo Valley; altitude 1,200 meters; collected by J. M. Schunke.

Diagnosis.—A species of *Aperostoma* of the typical subgenus, characterized by its solid shell and contracted shape.



FIG. 70. *Aperostoma* (*Aperostoma*) *schunkei* sp. nov. CNHM no. 47080, type. Views from side, above, and below; all $\times 1$.

Comparisons.—No Peruvian shell hitherto known has any close relationship with this novelty. It is very similar to the Ecuadorian *A. (Aperostoma) manabense* Bartsch and Morrison, which is somewhat larger, a trifle flatter, and somewhat less widely umbilicate. *A. (Aperostoma) filoliratum* Sowerby from Bolivia is very similar in shape and in the coarse structure of the surface, but it is said to be slightly carinate, whereas there is no trace of a keel to be found in *schunkei*.

Description of type.—Shell depressed-helicoid, medium-sized, solid, with $4\frac{1}{2}$ whorls separated by a deep suture. The whorls are moderately convex and they increase regularly, with the exception of the last one, which enlarges somewhat out of proportion, especially toward the aperture, where it descends slightly. The surface of the shell is covered with hair-like riblets, which become more irregularly spaced and thicker toward the aperture. The conchinc layer is of a russet-brown color down to the periphery, where it is met by a straight, solid, darker belt, which in its turn fades into russet-brown on the under side; there are indications of several very narrow lighter spiral bands within the subperipheral dark zone. The aperture is subcircular, somewhat pointed above,

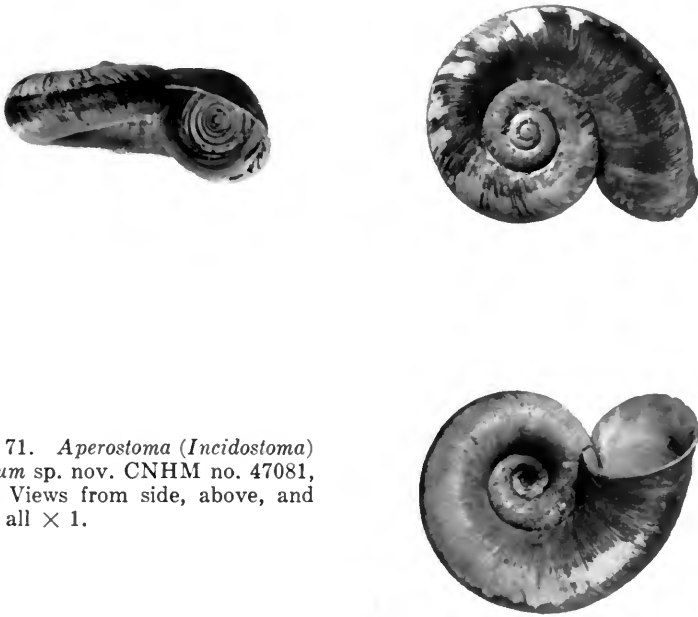


FIG. 71. *Aperostoma (Incidostoma) dilatatum* sp. nov. CNHM no. 47081, type. Views from side, above, and below; all $\times 1$.

with a minute auricle; the lips are blunt, unreflected. The umbilicus is funnel-shaped, its width about one-third of that of the shell.

Dimensions of type.—Height 16.4 mm., diameter 31.0 mm., height of aperture 13.4 mm., width of aperture 14.5 mm., width of umbilicus 8.9 mm.

***Aperostoma (Incidostoma) dilatatum* sp. nov.** Figure 71.

Type.—Chicago Natural History Museum no. 47081, from Con-tamaná, Río Ucayali, Peru; collected by J. M. Schunke.

Diagnosis.—A species of the subgenus *Incidostoma* of *Aperostoma*, characterized by its flat spire, by the wide, trumpet-like aperture, and by the deep notch.

Comparisons.—Of all its consubgenera, *malleatum* Bartsch and Morrison resembles this novelty most, at least as far as the shape of the shell is concerned; *dilatatum*, however, is not malleate at all and has a deeper notch and a much more widened aperture than any of the other known species of *Incidostoma*.

Description of type.—Shell depressed, almost flat, the apex protruding but a little, very widely umbilicate; moderately solid, densely hair-striate. Whorls $4\frac{3}{4}$, rather convex, separated by a deep suture, of regular growth with the exception of the last, which widens quite suddenly, especially near the aperture, which is almost trumpet-like. Last whorl more convex below. Conchinc layer reddish brown down to the rounded periphery, where it meets, in a sharp border line, a darker zone, which gradually grows lighter below, and which, on the under side, has the same color as the upper side above the periphery. Aperture circular, with widely protracted upper and outer lips, the upper and the columellar ones separated by a long (3 mm.), narrow notch with parallel sides. Lips blunt, the outer one very slightly expanded. Umbilicus funnel-shaped, its diameter about one-third of that of the shell.

Dimensions of type.—Height 17.5 mm., diameter 39.2 mm., height of aperture 16.6 mm., width of aperture 16.2 mm., width of umbilicus 13.6 mm.

Aperostoma (Incidostoma) superstructum sp. nov. Figure 72.

Type.—Chicago Natural History Museum no. 47082, from between San José de Sisa and Cuñumbuque, Province of Lamas, Department of San Martín, Peru; altitude 1,000–1,200 meters; collected by R. Ferreyra, July 25, 1950.

Diagnosis.—A species of *Aperostoma*, subgenus *Incidostoma*, characterized by a very conspicuous siphonal auricle behind the aperture and by the long, wrinkled and twisted columellar reflexion.

Comparisons.—*A. (Incidostoma) kobelti* Bartsch and Morrison from Cundinamarca, on Lake Tedropalo, Bolivia, is a very close relative of this new species, which has, however, a higher spire, a greater siphonal auricle, and, above all, the remarkable columellar reflexion that is entirely missing in the Bolivian species.

Description of type.—Shell large, depressed-helicoid, rather solid, densely and rather regularly hair-striate, the umbilicus open and funnel-like. Whorls 5 of regular growth, separated by a well-marked suture; last whorl flattened at the suture, very bluntly, almost imperceptibly carinate, the keel vanishing toward the aperture. About $1\frac{1}{2}$ cm. behind the aperture, there rises, on the upper surface, a scale-like, slightly convex siphonal auricle, which extends over three-fourths of the height of the penultimate whorl; the interior opening of this auricle is narrowly ovate. The aperture is almost circular, the lips simple, not reflected, with the exception

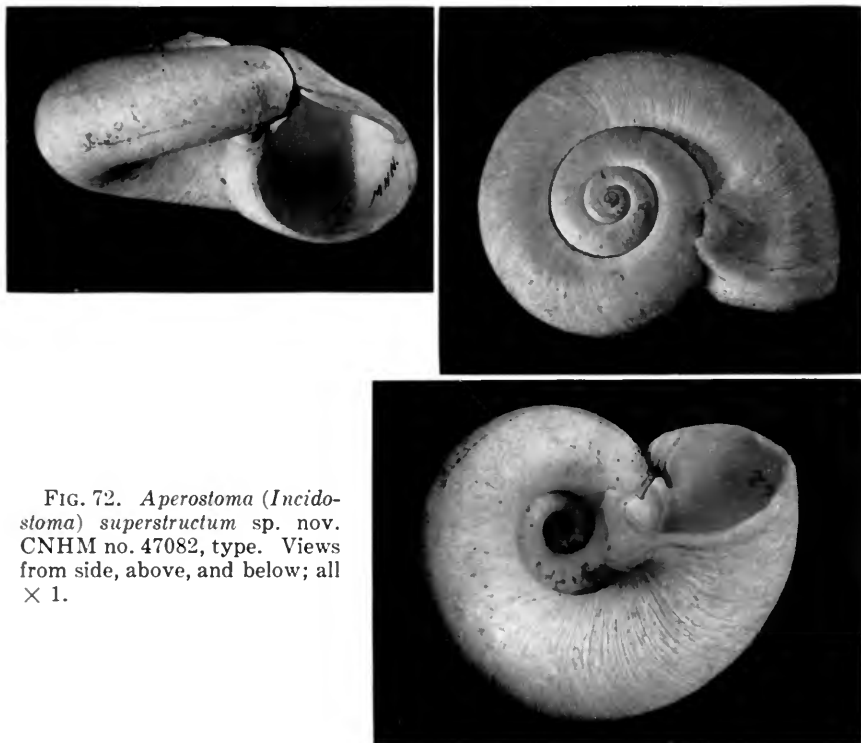


FIG. 72. *Aperostoma (Incidostoma) superstructum* sp. nov. CNHM no. 47082, type. Views from side, above, and below; all $\times 1$.

of the columellar lip, which is widely and in a twisted way reflected into the umbilicus. The color of the conchinc layer, which the type lacks, seems to be a light brown, as indicated by a few tiny conchinc spots; there are indications of two or three narrow spiral bands.

Dimensions of type.—Height 30.6 mm., diameter 53.0 mm., height of aperture 22.0 mm., width of aperture 20.0 mm., width of umbilicus 13.1 mm.

Remarks on paratype.—Museo de Historia Natural “Javier Prado,” Lima, Peru, with the same data and collector as the type, has the following dimensions: height 31.0 mm., diameter 52.1 mm., height of aperture 23.9 mm., width of aperture 21.8 mm., width of umbilicus 12.4 mm. It is somewhat more solid than the type, but otherwise identical with it.

***Galba (Pectinidens?) diaphana diaphana* King**

Tarma, Peru; altitude 3,050 meters; collected by W. Weyrauch in a creek.

Tropicorbis (Tropicorbis) chilensis Clessin

Laguna de Villa, near Lima-Chorillos, Peru; collected by W. Weyrauch.

Tralia (Siona) frumentum Petit

In tidal zone at Lima-Barranco, Peru; collected by W. Weyrauch.

Gastrocopta (Gastrocopta) wolfii Miller

Huanta, Peru; altitude 2,600 meters; collected by W. Weyrauch.

Gastrocopta (Immersidens) iheringi Suter

Huanta, Peru, altitude 2,600 meters; Surco on Río Rimac, east of Lima, Peru, altitude 2,000 meters. Both collected by W. Weyrauch. First record for Peru.

Bulimulus (Protoglyptus) vestalis Albers

Bellavista near Jaën, on Río Marañon, Peru; altitude 400 meters; collected by W. Weyrauch. First record of this species since its original description in 1854.

Plecocheilus (Eurytus) ortizianus sp. nov. Figure 73.

Type.—Chicago Natural History Museum no. 47083, from near Chancay, between La Colmena and La Esperanza, Peru; altitude 1,200–1,900 meters; collected by Javier Ortiz de la Puente, the young and promising biologist who died prematurely, in honor of whom this novelty is named.

Diagnosis.—A species of the subgenus *Eurytus* of the bulimulid genus *Plecocheilus*, characterized by the gloss of its shell, which is without any trace of bands or spots.

Comparisons.—This new species belongs to the group of *floccosus* Spix and seems to be closest to the species *onca* Orbigny and its race *tenebrosus* Pilsbry. However, its shell is more obese and shorter, its surface smoother and not dull, but rather glossy.

Description of type.—Shell elongate-ovate, rather heavy, though transparent, smooth to the unarmed eye, glossy. Whorls $4\frac{1}{2}$, little convex but the last one, separated by a suture that is shallow and smooth between the earlier whorls and that gradually grows deeper and subcrenulate between the later ones. Apex blunt, slightly sunk; the two earliest whorls are reddish, at first very finely, wavy striate; then spiral lines appear without decussating the surface; the first



FIG. 73. *Plecocheilus (Eurytus) ortizianus* sp. nov. CNHM no. 47083, type. Views from front and back; both $\times 1$.

postembryonic whorls turn gradually into a dull Olive Buff which from then on constitutes the basic color of the shell. The surface, though shining, is roughened by darker incremental Vernon Brown striae that crenulate the suture; otherwise the surface of the postembryonic shell is smooth and glossy. The aperture is higher than the spire, oval, pointed above, widely rounded below; lip simple, not expanded, bordered inside by a dark Vinaceous Brown that colors also the columella and the very thin parietal callus.

Dimensions of type.—Height 60.0 mm., width 28.7 mm., height of aperture 35.4 mm., width of aperture 18.4 mm.

Notes on paratype.—CNHM no. 47084, with the same data and collector as the type, is somewhat smaller (height 56.6 mm., width 26 mm.), but otherwise identical with the type; since it was collected dead, its colors are slightly faded.

Systrophia (Systrophia) moellendorffi Rolle

Chanchamayo Valley, Peru; altitude 1,400 meters; collected by W. Weyrauch; apparently the first rediscovery of this species since its description.

Systrophia (Systrophiella) peruviana Preston

Atocongo near Lima, Peru; altitude 200 meters; collected by W. Weyrauch.

Guestieria branickii Lubomirski

In a cave on Río Tulumayo near Tingo Maria, Peru; altitude 700 meters; collected by W. Weyrauch.

Austroselenites weyrauchi Haas

Huailahuichán, on left bank of Río Tarma, between Tarma and Palca, Peru; altitude 2,900 meters; collected by W. Weyrauch.

Pleurodonte (Labyrinthus) manuelis Higgins

On Río Ucayali near Pucalpa, Peru; altitude 200 meters, collected by J. M. Schunke. First record from Peru.

Solaropsis (Psadara) rugifera Dohrn. Figure 74.

As far as known to me, no figure of this species was ever published and its description is incomplete, in consequence of the immaturity of the type shell. No further records of *rugifera* are known to me.

The two adult specimens of this species received from Dr. W. Weyrauch (CNHM no. 47100) were collected by C. O. Schunke in the Chanchamayo Valley, Peru; altitude 1,200 meters. They are very well preserved and consequently provide the welcome occasion for a complete specific description and an accompanying figure.

Description.—Shell almost flat with a slightly raised apex, broadly umbilicate, thin, rugose-plicate above to the periphery, smooth below, brownish-corneous with reddish zigzag streaks on the upper half and an interrupted band of the same color at the periphery. Whorls $4\frac{3}{4}$, moderately convex, separated by a well-marked suture, the apical ones smooth, the last rounded, not descending in front. Umbilicus funnel-shaped, equaling about one-fourth the diameter. Aperture a little oblique, rounded-lunar, peristome narrowly reflected all around. Dimensions of the larger specimen: height 14.1 mm., diameter 30.6 mm., height of aperture 13.1 mm., width of aperture 14.9 mm., width of umbilicus 7.5 mm.

Castalia lateriquadrata Sowerby

Río Samiria, northern tributary of Amazon River, Peru; altitude 140 meters; collected by Javier Ortiz de la Puente.

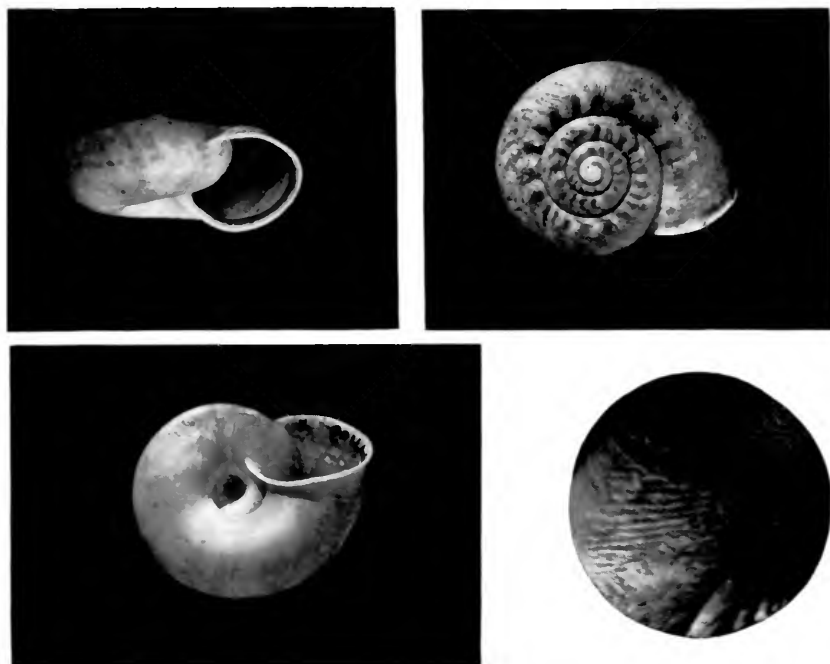


FIG. 74. *Solaropsis (Psadara) rugifera* Dohrn, CNHM no. 47100. Views from side, above, and below; all $\times 1$. Lower right, sculpture of surface; about $\times 16$.

Paxyodon obliquus Schumacher

Río Samiria, northern tributary of Amazon River, Peru; altitude 140 meters; collected by Javier Ortiz de la Puente. Apparently the first record of this species from Peru.

Anodontites (Anodontites) trigonus trigonus Spix

Laguna Yarinacocha near Pucalpa, Peru; altitude 200 meters; collected by J. M. Schunke.

Mycetopoda siliquosa staudingeri Ihering

Tocache near Juanjui, Río Huallaga, Peru; altitude 400 meters; collected by Javier Ortiz de la Puente during the UNESCO-Huallaga Expedition in 1948.

Bartlettia stefanensis Moricand

Tocache near Juanjui, Río Huallaga, Peru; altitude 400 meters; collected by Javier Ortiz de la Puente during the UNESCO-Huallaga

Expedition in 1948. Apparently the first record of the genus *Bartlettia* from Peru.

SOME NEW OR INTERESTING SHELLS FROM BOLIVIA

A new collection of non-marine shells was recently received from Mr. Rudolf Zischka, of Cochabamba, Bolivia, to whom the Museum is obliged for many important collections of inland shells. These are identified as follows:

Bulimulus (Scutalus) pentlandi Reeve

Alto Plano; altitude 3,800 meters; collected September, 1951.

Succinea aequinoctialis Orbigny

Cochabamba; altitude 2,600 meters.

Tropicorbis (Lateorbis) canonicus Cousin

Obrajes near Oruro; altitude 3,800 meters; apparently the first report from Bolivia.

Tropicorbis (Tropicorbis) philippianus Dunker

Tiraque, Department of Cochabamba; altitude 3,400 meters; collected January 10, 1953.

Pisidium forbesii Philippi

Same data as the preceding.

Solaropsis (Psadara) angulifera sp. nov. Figure 75.

Type.—Chicago Natural History Museum no. 50730, from the region of Chapare, tropical Bolivia; altitude 400 meters; collected by Rudolf Zischka on May 5, 1951.

Diagnosis.—A species of the subgenus *Psadara* of *Solaropsis*, characterized by a depressed but not quite planorboid shell with the last whorl weakly but distinctly angulated.

Comparisons.—This novelty is in almost every detail identical with *Solaropsis (Psadara) selenostoma* Pfeiffer from Ecuador, differing from it only by the marked angulation of the last whorl. It is quite conceivable that this new species from Bolivia is nothing but a southern local race or the vicariant of the Ecuadorian *selenostoma*.

Description of type.—Shell depressed, thin, translucent, umbilicate, with high whorls, with the typical color pattern of the

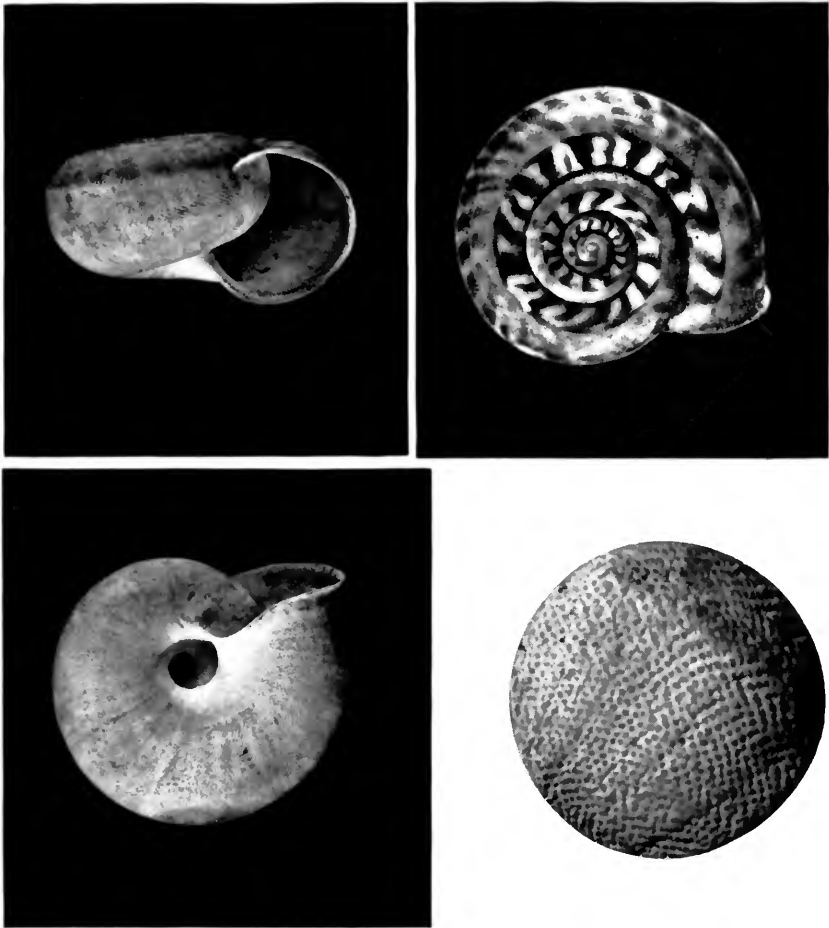


FIG. 75. *Solaropsis (Psadara) angulifera* sp. nov. CNHM no. 50730, type. Views from side, above, and below; all $\times 2$. Lower right, sculpture of surface; about $\times 16$.

genus, densely granulated, the granules arranged in irregular zigzag rows; umbilical region with smaller granules. Spire plane with slightly sunken apex, whorls $4\frac{1}{2}$, slowly growing in width except for the last, which widens rapidly; suture deep, clearly cut; the last whorl convex above and showing a distinct, though not sharp angulation above the periphery; from this angulation downward, the outline drops almost perpendicularly until it reaches a weak, sub-peripheral band, whence it passes into the convex under side in a regular curve. Umbilicus almost perforate, not funnel-shaped, but

showing all the whorls. Aperture lunar, slightly oblique; peristome thin, white, narrowly expanded all around.

Measurements of type.—Height 11.5 mm., width 22.1 mm., width of aperture 10.6 mm., height of aperture 10.5 mm., diameter of umbilicus 3.2 mm.

Notes on paratype.—CNHM no. 50731, with the same data as the type, is a half-grown specimen still covered with short hairs, of which no trace is left in the type except for their basal granules.

***Bulimulus (Scutalus) haenkei* sp. nov.** Figure 76.

Type.—Chicago Natural History Museum no. 50732, from the Alto Plano, Bolivia; altitude 3,800 meters; collected by Rudolf Zischka, September, 1950, and named in honor of the Austrian explorer Thaddaeus Haenke, who, in the first half of the past century, contributed much to the scientific exploration of South America.

Diagnosis.—A species of the *culmineus* group of *Bulimulus*, characterized by the slender shape of the heavy shell, by its highly developed granular decussation, and by the presence of four dark bands.

Comparisons.—While closely related to *Bulimulus (Scutalus) subjussieui* Pilsbry from Cuzco, Peru, this new species is decidedly more slender and at the same time heavier. Its general appearance is that of *Bulimulus (Scutalus) revinctus* Hupé, but it is much smaller and more elongated. *Bulimulus (Scutalus) pentlandi* Reeve, though without bands and less heavily granulated, belongs also in the relationship of our novelty.

Description of type.—Shell ovate-conic, heavy, minutely and rather regularly decussate-granular, from striae cut by finer spirals, subconic; whitish gray with four dark brown bands wider than the intervals between them, the bands broken in streaks on the last whorl. Spire subconic, slightly inflated; whorls $5\frac{1}{2}$, moderately convex, the last about as long as the spire; suture well marked, slightly crenulated. Aperture ovate, peristome simple, acute; columella dilated over the umbilical chink.

Measurements of type.—Height 23.6 mm., width 12.2 mm., height of aperture 12.0 mm., width of aperture 8.7 mm.

Notes on paratype.—CNHM no. 50733, with the same data as the type. It is in a better state of preservation than the type, which is somewhat bleached and worn. The measurements of the paratype are: height 23.3 mm., width 11.9 mm., height of aperture 12.1 mm., width of aperture 9.1 mm. It is somewhat more slender than the

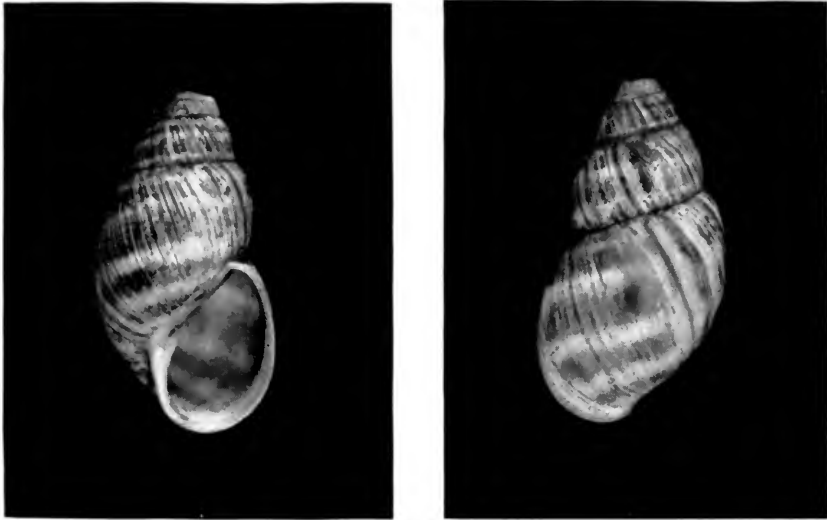


FIG. 76. *Bulimulus (Scutalus) haenkei* sp. nov. CNHM no. 50732, type. Views from front and back; both $\times 2$.

type. From its height (23.3 mm.), it is inferred that the first whorl has been lost. The columellar reflexion over the narrow umbilicus, broken in the type, shows well in the paratype.

ON A FEW INLAND SHELLS FROM SÃO PAULO, BRAZIL

The collection listed below comes from a single locality, the Fazenda Ipanema, Varnhagen District. It was collected and presented to Chicago Natural History Museum by Lewis E. Long, of the United States Department of Agriculture. The specimens were collected during the months from August, 1951, to July, 1953.

Bradybaena similaris Férussac

A new locality of this rapidly spreading, introduced oriental species; collected February 29, 1952.

Odontostomus (Bahiensis) fusiformis Menke

Collected November 9, 1952.

Drymaeus (Drymaeus) acervatus Pfeiffer

Collected January 17, 1953.

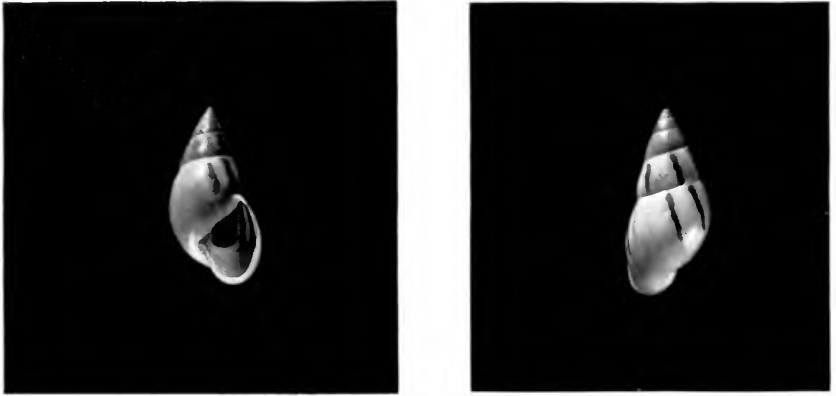


FIG. 77. *Drymaeus (Drymaeus) semistriatus* sp. nov. CNHM no. 49784, type. Views from front and back; both $\times 1$.

***Drymaeus (Drymaeus) semistriatus* sp. nov.** Figure 77.

Type.—Chicago Natural History Museum no. 49784, from the Fazenda Ipanema, Varnhagen District, São Paulo, Brazil; collected by Lewis E. Long, November 8, 1952.

Diagnosis.—A species of the typical subgenus of the bulimulid genus *Drymaeus*, characterized by its conical shape and by the pattern of striation, which consists of distant, blackish striae reaching only from the suture to the periphery on the last whorl.

Comparisons.—This novelty belongs to the group of *Drymaeus (Drymaeus) interpunctus* Martens; it is, however, easily distinguished from this species and from the other members of the group, such as *limicolarioides* Haas and *prosopidis* Holmberg, by its more conical shape and by the shortness of the striation.

Description of type.—Shell conic-oblong, perforate, rather thin, with delicate, crowded spiral wrinkles, widest at about the periphery of the last whorl. Whorls $6\frac{1}{4}$; flat at first, more convex below; suture shallow but clear-cut, with a narrow white border. Apex with the typical *Drymaeus*-sculpture. First three whorls of a yellowish red, the following ones pale yellow, with distant, almost straight striae, which, on the last whorl, reach only the periphery; these striae are brownish on the earlier whorls and of a deep blackish brown on the last (and half) whorl. Last whorl widening below, giving a bag-like appearance to the shell. Aperture broadly ovate, with a thin outer lip which is a trifle expanded, below only; columellar margin short, slightly reflexed.

Dimensions of type.—Height 24.5 mm., width 10.5 mm., height of aperture 11.7 mm., width of aperture 6.8 mm.

Paratypes.—Two specimens, CNHM no. 49785a, b, with the same data as the type. One of them is a young broken shell, the other, no. 49785a, corresponds in every respect with the type. Its measurements are: height 24.9 mm., width 10.8 mm., height of aperture 11.5 mm., width of aperture 6.8 mm.

Ampullarius (Ampullarius) sordidus Swainson

Collected November 7, 1931.

LAND SHELLS FROM SOME TABLE MOUNTAINS OF THE GUIANA HIGHLAND

The material described below was collected by the Chicago Natural History Museum Botanical Expedition to Venezuela in 1953, and by the Joint Botanical Expedition to Venezuela of Chicago Natural History Museum and the New York Botanical Gardens in 1954–55; it contains the shells gathered on the hitherto malacologically unexplored Chimantá-massif in the State of Bolívar. Through the courtesy of the American Museum of Natural History in New York, the shells collected by its expeditions of 1927–28 to Mount Roraima and of 1928–29 to Mount Duida were also placed at my disposal.

Shells from Chimantá-massif

Six species or subspecies were found, all of them new to science.

Plecocheilus (Eurytus) juliani sp. nov. Figure 78.

Type.—Chicago Natural History Museum no. 49737, from the summit of Apacará-tepui, northwest part of Chimantá-massif, State of Bolívar, Venezuela; altitude about 2,100 meters; collected by Julian Steyermark between June 20 and 22, 1953.

Diagnosis.—A species of the subgenus *Eurytus* of the bulimulid genus *Plecocheilus*, characterized by the slender, ovate shape of the shell and by its color pattern of obliquely descending black or dark brown zigzag stripes on a brown background.

Comparisons.—This new species certainly belongs to the group of *Plecocheilus (Eurytus) floccosus* Spix. It differs, however, from all the known species of this group by the elongate ovate shape of its shell, which is pointed and narrow at the top and obese in the last whorl, and by its peculiar color pattern mentioned above; it is, thus,

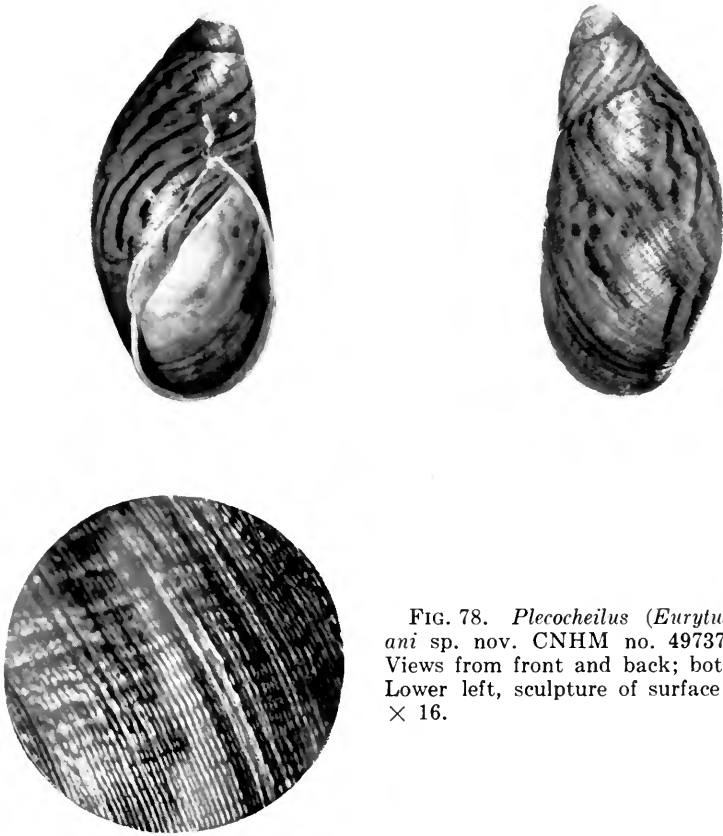


FIG. 78. *Plecocheilus (Eurytus) juliani* sp. nov. CNHM no. 49737, type. Views from front and back; both $\times 1$. Lower left, sculpture of surface; about $\times 16$.

closer to the new species *tatei* from Mount Duida to be described below.

Description of type.—Shell elongate-ovate, imperforate, narrow above, obese below, transparent, with $4\frac{1}{4}$ whorls, which are rather flat above and much more convex in the last whorl. Suture shallow, somewhat appressed beginning with the third whorl, becoming rather oblique there. Apex rounded, sunken, with the characteristic sculpture of the subgenus. Surface of shell rather smooth down to the third whorl; from there on it becomes densely granulate. Apex reddish, following whorl light brown, last whorl darker brown, with descending narrow zigzag stripes, very oblique on the third whorl and gradually becoming less so on the remaining $1\frac{1}{2}$ whorls. Aper-

ture higher than the spire, elongate ovate, with a narrowly expanded and thickened flesh-colored peristome. Columella with a narrow entering fold, continuous with the basal margin of the peristome; margins of peristome united by a thin, transparent lamella on the parietal wall.

Dimensions of type.—Height 54.2 mm., width 27.1 mm., height of aperture 32.6 mm., width of aperture 17.3 mm.

Remarks on the paratypes.—Two specimens, CNHM no. 49738a and b, with the same data as the type, offer the general characters of the type specimen, although one of them is decidedly narrower and smaller. Its dimensions are: height 50.2 mm., width 22.7 mm., height of aperture 28.3 mm., width of aperture 15.2 mm. The color of its peristome is a reddish brown. Another specimen, CNHM no. 49739, from the northwest part of the summit of Apacará-tepui, drainage of Río Abácapa, Chimantá-massif, altitude about 2,000 meters, State of Bolívar, Venezuela, was collected by Dr. Steyermark on April 13, 1953. It is very thin-shelled, with the last $1\frac{1}{4}$ whorls as light brown as the third, and with a rose-colored peristome. Its dimensions are: height 46.2 mm., width 19.0 mm., height of aperture 25.7 mm., width of aperture 13.7 mm.

General remarks.—This new species, dedicated to its discoverer, my friend Dr. Julian A. Steyermark, is the first representative of the subgenus *Eurytus* found out of the Andean system; all other known species live in the Andes from Bolivia to Colombia. Dr. Steyermark tells me that the new species is rather common in the localities where it lives. Specimens 49737 and 49738 were taken alive, and their soft parts are preserved in alcohol.

***Plecocheilus (Eurytus) steyermarki* sp. nov.** Figure 79.

Type.—Chicago Natural History Museum no. 49735, from a plateau below the summit of Apacará-tepui, northwest part of Chimantá-massif, State of Bolívar, Venezuela; altitude 1,800 meters; collected by Julian A. Steyermark on June 1, 1953, and named after him.

Diagnosis.—An extremely small *Eurytus*, very elongate and with a thin, translucent shell.

Comparisons.—Though recalling, in a general way, the features of the *flocosus* group, this new species is much smaller than any other known pertinent form.

Description of type.—Shell elongate, imperforate, rather thin and translucent, with the aperture somewhat higher than the spire.



FIG. 79. *Plecocheilus (Eurytus) steyermarki* sp. nov. CNHM no. 49735, type. Views from front and back; both $\times 1$.

Whorls $5\frac{1}{2}$, rather regularly increasing, flat at first, more convex later, separated by a simple, linear suture; apex pointed, yellowish, rest of conchic layer drab, growing darker brownish near the aperture and showing there darker streaks along the growth lines. Surface of shell with distant rib-like growth marks on whorls three and four; smoother, only slightly wrinkled, on last whorl. Aperture elliptical, pointed above, with the peristome hardly reflexed above, but more so below, white outside with a rosy border; columella with a roseate, thread-like, entering fold; ends of peristome united by a very thin callus.

Measurements of type.—Height 27.3 mm., width 12.7 mm., height of aperture 15.1 mm., width of aperture 7.3 mm.

Remarks.—As mentioned under *Plecocheilus (Eurytus) juliani*, no representative of the subgenus *Eurytus* had been known formerly outside the Andean region. The type specimen was collected alive and its soft parts are preserved in alcohol for anatomical study.

***Plecocheilus (Eurytus) mundi-perditi* sp. nov. Figure 80.**

Type.—Chicago Natural History Museum no. 52436, from Chimantá-massif near Río Tirica; altitude 2,100 meters; collected by Julian A. Steyermark on February 4, 1955.

Diagnosis.—A species of *Eurytus*, characterized by a subsolid, smooth, microscopically spiral-wrinkled shell, by a narrow, but conspicuous, entering fold on the columella, divided from it, on the base, by a short, shallow furrow, and by the dark brown color of

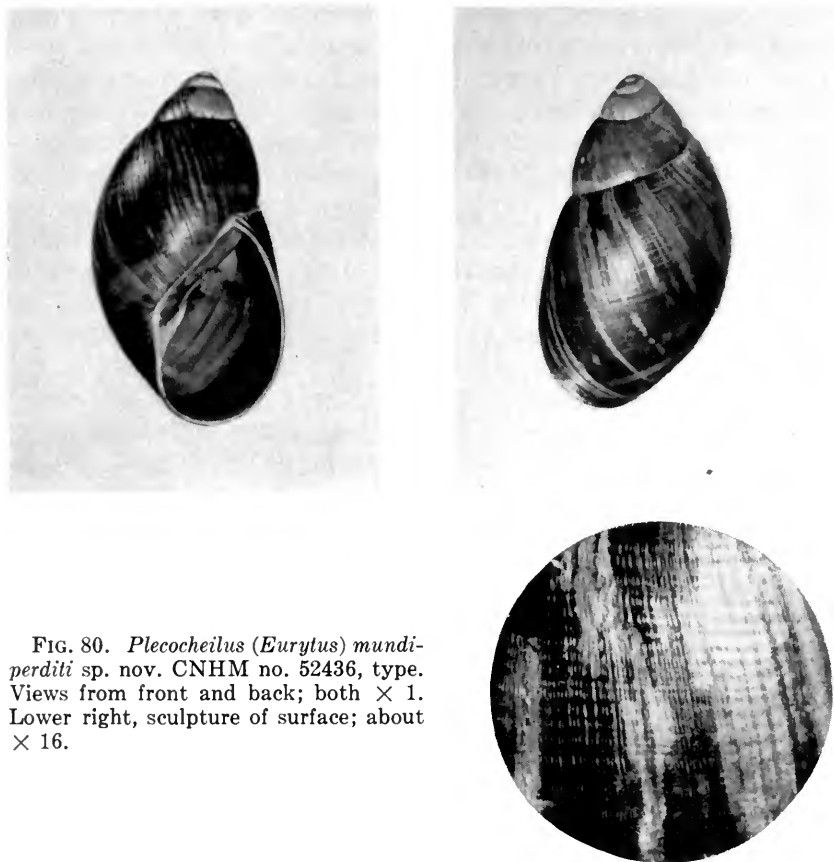


FIG. 80. *Plecocheilus (Eurytus) mundi-perditi* sp. nov. CNHM no. 52436, type. Views from front and back; both $\times 1$. Lower right, sculpture of surface; about $\times 16$.

the conchinc layer, on which golden streaks of variable length and width are visible.

Comparisons.—Closest to small specimens of *Plecocheilus (Eurytus) tatei* Haas from Mount Duida, described below, but more ovate, with a thinner shell, and not granulate, but most finely plicate-wrinkled on the surface.

Description of type.—Shell elongate ovate, imperforate, sub-transparent, showing the color pattern of indistinctly marked basal bands on a bluish-purplish background on the inside of the aperture; whorls almost five, the first almost planorboid, the following ones growing rather rapidly, all of them moderately convex, the last somewhat saccate at the base; suture moderately deep, somewhat channelled, in the last whorls rather oblique; surface of shell smooth,

shining, the three first whorls, which have lost their cover, reddish purple, the remaining ones coated with a silky conchinc layer which is lighter brown on the fourth, blackish brown on the last whorl; the dark background broken up by streaks of a yellowish golden hue, variable in length and width; shell encircled by two imperfect bands of a light brown color, on the lower half of the under side of the last whorl. Traces of dense, standing hair-striae are visible on the third whorl, while on the fourth these grow higher and are more irregular, tapering out toward the base; on the fifth whorl, the hair-striae have become growth-lines. The conchinc layer shows a pattern of fine, festoon-shaped wrinkles in many spiral lines.

Aperture pear-shaped, rather pointed above, measuring about four-sevenths of the entire height; peristome slightly thickened and hardly reflexed, pinkish red, as is the columellar fold; the columella is somewhat thicker and reflexed over the closed umbilical chink, and a thin callus stretches over the parietal wall; there is a short but definite furrow between the base of the columellar fold and the columella itself, and the columella shows a rather shallow impression on its base.

Dimensions of type.—Height 48.2 mm., width 26.0 mm., height of aperture 28.6 mm., width of aperture 16.7 mm.

Remarks on type.—The soft parts, as well as those of paratype no. 52437, are preserved in alcohol.

Paratypes.—CNHM no. 52437, one specimen from the same locality as the type, differing from it only in being less obviously streaked. CNHM no. 52438, one specimen from forest at base of bluffs of Aparaman-tepui, Chimantá-massif, above Río Tirica; altitude 2,120 meters; collected by Julian A. Steyermark and John J. Wurdack on February 26, 1955. CNHM no. 52439, one specimen that is shorter and of a greenish color on the last whorl, from the summit of Torono-tepui, Chimantá-massif, bordering valley of Caño Mojado; altitude 2,250 meters; collected by Julian A. Steyermark on February 21, 1955. CNHM no. 52440, one subadult specimen from the summit of the central part of the Chimantá-massif; altitude 2,450 meters; collected by Julian A. Steyermark and John J. Wurdack on March 27, 1955. CNHM no. 52441, one subadult and non-streaked specimen from forest below the summit of Chimantá-massif, along trail of Río Tirica and summit camp; altitude 1,800 meters; collected by Julian A. Steyermark and John J. Wurdack on January 26, 1955.



FIG. 81. *Plecocheilus (Plecocheilus) fulminans alticola* subsp. nov. CNHM no. 52442, type. Views from front and back; both $\times 1$.

***Plecocheilus (Plecocheilus) fulminans alticola* subsp. nov.**
Figure 81.

Type.—Chicago Natural History Museum no. 52442, from Torono-tepui, Chimantá-massif, on the slopes bordering Caño Mojado; altitude 2,250 meters; collected by Julian A. Steyermark on February 21, 1955.

Diagnosis.—A subspecies of *Plecocheilus (Plecocheilus) fulminans* Nyst, characterized by smaller size, more pointed-ovate shape, less rough rugosity, and darker color.

Comparisons.—Undoubtedly closely related to typical *fulminans*, but differing from it by the features listed above. Subspecies *alticola* seems to be a dwarfed mountain race that has its analogous form in the subspecies *linterae* Sowerby from Mount Roraima, another summit of the Guiana Highlands. Subspecies *linterae* is, however, more elongate, less ovate, and has a different color pattern.

Description of type.—Subsolid, elongate-ovate, dark brown, with $4\frac{1}{2}$ whorls, which are closely and not very heavily ribbed, except the ultimate, which is finely and obliquely zigzag-rugate; peristome dark flesh-color, rather thin and narrow; columellar fold moderately wide; all other features as in *Plecocheilus (Plecocheilus) fulminans fulminans* Nyst.

Dimensions of type.—Height 44.3 mm., width 24.9 mm., height of aperture 26.6 mm., width of aperture 12.7 mm.

Paratype.—One paratype, CNHM no. 52443, same locality and same date as type, was found in copulation with it; both are almost identical, but the paratype is somewhat darker and smaller, the dimensions being: height 38.8 mm., width 22.6 mm.

***Bulimulus (Lissoacme) extraneus* sp. nov.** Figure 82.

Type.—Chicago Natural History Museum no. 49736, from the summit of Apacará-tepui, northwest part of Chimantá-massif, State of Bolívar, Venezuela; altitude about 2,100 meters; collected by Julian A. Steyermark between June 20 and 22, 1953.

Diagnosis.—A species of the subgenus *Lissoacme* of the genus *Bulimulus*, characterized by the elongate-ovate shape, by the relative height of the last whorl, and, hence, the high aperture, and by the uniformly yellow color of the conchinc layer.

Comparisons.—All the consubgenera of this new species are more conic in shape, with a broadly rounded base and a lower aperture, so that it cannot well be compared with any of the known forms; in a general way it looks somewhat similar to the specimen of "*Bulimus virgultorum*" figured by Morelet (Sér. Conch., pt. 3, pl. 10, fig. 1, sixth from left) and copied by Pilsbry (Man. Conch., (2), 10, pl. 49, fig. 17).

Description of type.—Shell elongate-ovate, pointed above, with a narrow umbilical chink, rather solid, translucent. Whorls $6\frac{1}{4}$ of regular growth, flat at the top, becoming moderately convex in the later whorls, the last whorl by far the highest; suture shallow, simple. Apex yellow, as is the rest of the shell, pointed, without any trace of sculpture. Surface of shell smoothish, with low, distant growth-wrinkles, and with faint, close, encircling lirae. Aperture about half as high as the spire, elliptical, slightly pointed above, faintly effuse below; margins sharp above, slightly reflexed and very little thickened below, with a flat, triangular plate on the columella; margins united by a thin parietal callus.

Dimensions of type.—Height 32.1 mm., width 13.9 mm., height of aperture 16.2 mm., width of aperture 12.3 mm.

Remarks on paratype.—One immature specimen, CNHM no. 52444, from forest below summit of Chimantá-massif, along trail of Río Tirica and summit camp, altitude about 1,800 meters; collected on January 26, 1955, by Julian A. Steyermark and John J. Wurdack.

Remarks.—Since all the known representatives of the subgenus *Lissoacme* live in the Andean regions, from Chile to Ecuador, and

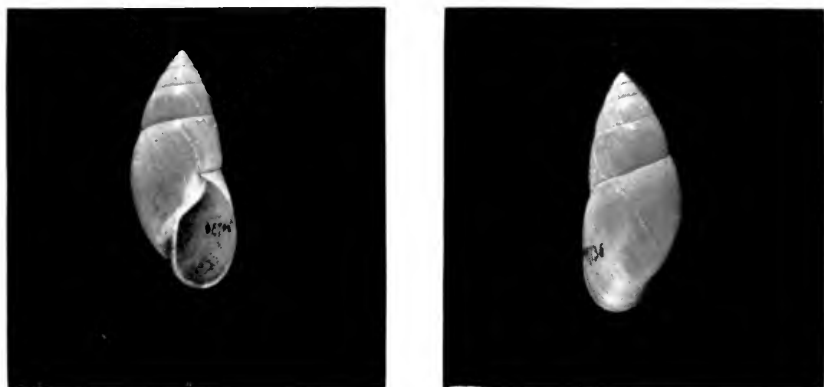


FIG. 82. *Bulimulus (Lissoacme) extraneus* sp. nov. CNHM no. 49736, type. Views from front and back; both $\times 1$.

range across Argentina, the finding of an apparently typical *Lissoacme* on the isolated mountains of inner Venezuela is quite unexpected. The anatomy of the preserved soft parts of the type specimen may throw light upon the place in the system where our supposed *Lissoacme* really belongs.

Drymaeus (Drymaeus) griffini sp. nov. Figure 83.

Type.—Chicago Natural History Museum no. 49734, from the western side of Abacapa-tepui, drainage of Río Abacapa, Chimantá-massif, in the State of Bolívar, Venezuela; altitude about 1,300 meters; collected by Julian A. Steyermark and Charles Griffin, on April 13, 1953.

Diagnosis.—A species of the typical subgenus of *Drymaeus*, characterized by a thin shell of elongate-ovate shape, with a black apex and a pattern of four dark brown, narrow bands on a buffy gray and white background.

Comparisons.—This new species seems to belong to the group of *Drymaeus nigrofasciatus* Pfeiffer and resembles especially the var. *elongatulus* Pilsbry. It is easily separated from the latter by its more swollen whorls, black apex, and different arrangement of bands.

Description of type.—Shell imperforate, elongate-ovate, very thin. Whorls 6, swollen from the beginning, of regular growth, separated by a clear-cut, simple suture bordered with white; apex black, greatest obesity of shell at upper end of aperture, tapering downward. Surface of shell smooth, with hardly visible growth-striae,



FIG. 83. *Drymaeus (Drymaeus) griffini* sp. nov. CNHM no. 49734, type. Views from front and back; both $\times 1$.

shining, covered with a grayish conchinc layer adorned by narrow blackish bands, which appear on the first post-nepionic whorl; there are three bands on the earlier whorls and four on the last, the lowest of them being much lighter in color; on the last whorl, the space between the two highest bands has gradually become milk white, and there are two more such white, narrow zones, bordering the third and fourth bands respectively, below. Aperture elongate, pointed above, rounded below; peristome simple, columella roseate, subvertical.

Measurements of type.—Height 20.9 mm., width 10.4 mm., height of aperture 10.7 mm., width of aperture 5.9 mm.

Remarks.—It is very possible that the type specimen was not quite adult and that a reflexed and/or thickened peristome may be present in fully adult specimens. This species is a member of a group of forms widely distributed over the Guiana shield; it is dedicated to the junior collector of the Chicago Natural History Museum Expedition to Venezuela.

Happia (Happiella) sp.

One inadult specimen of a systrophiid snail that does not permit specific classification was found in the forest below the summit of Chimantá-massif, along the trail of Río Tirica and the summit camp, on January 26, 1955, by Julian A. Steyermark and John J. Wurdack.

Shells from Mount Duida

During the course of the Tyler Duida Expedition (1928–29) of the American Museum of Natural History, the leader of the expedition, Dr. G. H. H. Tate, collected some eleven specimens

of land shells, which were preserved, with their soft parts, first in formalin, and later in alcohol. As a consequence, the conchinc layer of the shells has begun to peel off. I have covered the dried shells with a thin coat of lacquer. After this treatment, the conchinc layer not only stopped detaching from the calcareous shell, but regained some of the lost transparency, and the hidden color pattern has again become visible.

All the specimens belong to a single species apparently new to science, which will be named for its distinguished collector.

Plecocheilus (Eurytus) tatei sp. nov. Figure 84.

Type.—American Museum of Natural History no. 73455, "Ledge 23B," Mount Duida, Territory of the Amazon, Venezuela; collected by G. H. H. Tate.

Diagnosis.—A species of *Eurytus*, a subgenus of the bulimulid genus *Plecocheilus*, characterized by a smooth, only slightly granulated, rather thick shell, by the presence of a conspicuous, well-raised, deeply entering, columellar fold, and by a color pattern of slightly zigzag dark brown narrow striae descending very obliquely on the last whorl.

Comparisons.—Closest, in shape, to *Plecocheilus (Eurytus) coloratus* Nyst from Colombia, but less conspicuously granulated on the surface and with a very different color pattern.

Description of type.—Shell pointedly ovate, rather solid, with a closed umbilical chink; sub-transparent, showing the color pattern of interrupted, slightly zigzag, narrow striae on a buff background on the inside of the aperture. Whorls $4\frac{1}{2}$, but slightly convex, the last becoming suddenly wide below; suture deep, somewhat channeled in the later whorls, decidedly descending in front; surface of shell smooth to the naked eye, but densely and minutely granular on the last whorl when examined under a lens, with inconspicuous spiral striae near the suture in the last whorl. Aperture ovate, tapering to a rounded point above, somewhat saccate below; peristome slightly thickened and shortly reflexed, flesh-colored, as is the columellar fold and the transparent parietal callus; columella triangularly flattened at base.

Dimensions of type.—Height 62.1 mm., width 32.7 mm., height of aperture 39.0 mm., width of aperture 25.3 mm.

Remarks on paratypes.—Of the ten paratypes at hand, AMNH no. 73456 and CNHM no. 50346, all from the same locality and the same collector, some are too poorly preserved for measurement,

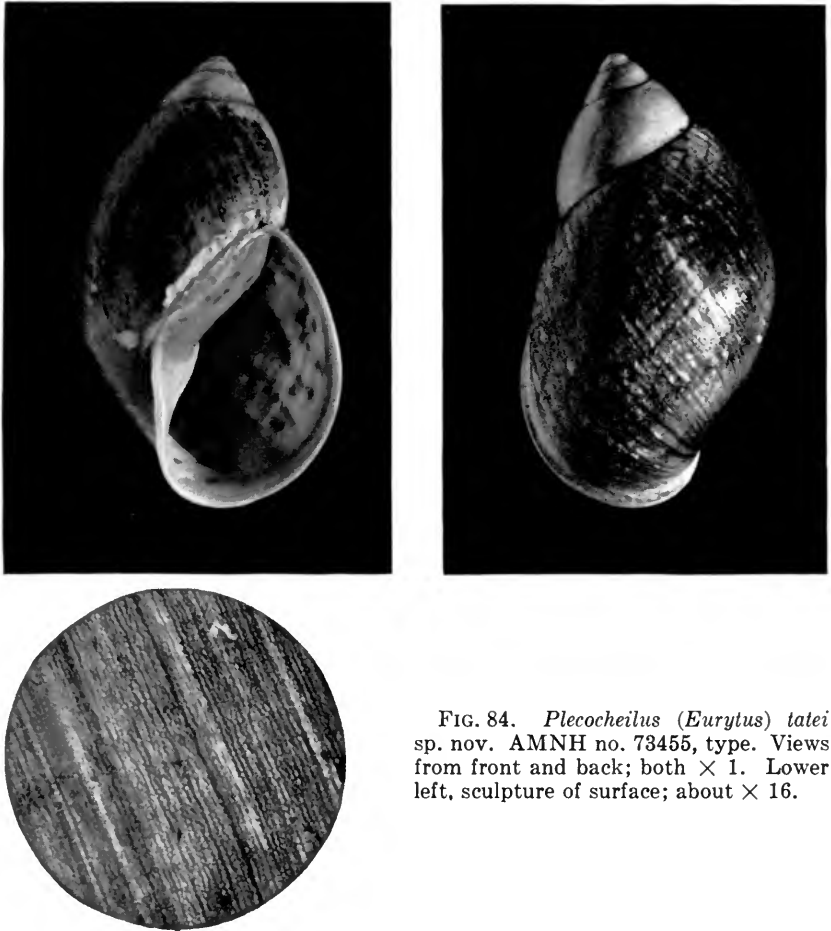


FIG. 84. *Plecocheilus (Eurytus) tatei* sp. nov. AMNH no. 73455, type. Views from front and back; both $\times 1$. Lower left, sculpture of surface; about $\times 16$.

though some general observations can still be made. There is a marked degree of variability in the thickness of the shell, as well as in the general measurements. One specimen, for instance, seems to be mature, with $4\frac{1}{2}$ whorls and a thickened and reflexed peristome, though measuring only: height 49.0 mm., width 27.3 mm., height of aperture 30.5 mm., width of aperture 19.7 mm. In some specimens of almost equal height, the height/width ratio also differs slightly.

Shells from Mount Roraima

From the Day Mount Roraima Expedition of the American Museum of Natural History (1928-29) Dr. G. H. H. Tate brought

home one fresh-water snail, whose shell apparently was kept long in formalin before its final transfer into alcohol, and is almost entirely dissolved. It was collected in a waterfall spring among rocks, on a ledge, altitude about 700 meters, on November 22, 1927. The remaining shell fragment is evidently an unclassifiable representative of the genus *Ampullarius*.

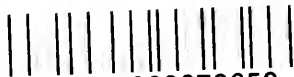
In an apparently overlooked source in the literature (Sowerby, Proc. Zool. Soc. London, 1889, p. 582, pl. 56, fig. 12) we learn that another species of shell is known from Mount Roraima. It might have been collected during Everard ImThurn's Roraima Expedition of 1884 and turned over to the British Museum in London, from which Sowerby received it for classification. The shell referred to is a bulimulid land snail of the typical subgenus of *Plecocheilus*, treated by Sowerby as a local "variety" of *Plecocheilus fulminans* Nyst, to which he gave the name *lintera*. I have not seen specimens of this form, and if he is correct in his view this subspecies would be the representative of the typical subgenus *Plecocheilus*, otherwise restricted to the Andean system, from Mount Roraima, while the subspecies *alticola* described above from Chimantá-massif would be its local variant from that mountain. Since the nominate form, *Plecocheilus fulminans fulminans* Nyst, has a wide distribution throughout Venezuela and northeastern Colombia, the record of local races of it from isolated summits of the Guiana Highland lies within the range of probability.

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