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THREE NEW SPECIES OF PLEUROCERIDAE

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Pleurocera hinkleyi, new species

Description: Shell smooth, elevated, acute. Color light olive green, with two dark bands above the periphery and one below. Apex of the type eroded. Remaining upper whorls are carinated at the base, finely wrinkled perpendicularly, differing in sculpture from the maturing whorls. The last three whorls are constricted in the middle and are more shining than the upper whorls. The body whorl has five strongly marked revolving lines below the periphery, the uppermost of which constitutes the carinae of the earlier whorls. Total number of whorls of type, eight. Sutures indented, showing at some whorls parts of the second of the five raised lines. Base of shell not as broadly angulated as in the average specimen of *P. acuta* Raf. Aperture rather narrow and elongate, ending in the broadly channeled spout common to the genus. Columella is scarcely more than a wash of white over the epidermis. Peristome is sharp-edged, very sinuous.

Operculum thin, light reddish brown, the left margin nearly straight, the right margin curved, the basal margin broadly and

regularly rounded. The apex not very acute. The growth lines are fine, numerous, interrupted by several rest scars which give the operculum the appearance of an opening fan. The nucleus is sunken and in the lowermost third of the operculum, being a little closer to the left margin than to the right. Two widely coiled whorls of the spiral development are easily traceable, the whole number of whorls being three. The area of attachment takes up about half of the anterior side.

Measurement of the type: Altitude, 23 mm.; diameter, $8\frac{1}{2}$ mm.; height of aperture, 8 mm.

Type locality: Little Muddy Creek, Dubois, Washington Co., Ill. Mr. A. A. Hinkley, collector.

Type: No. 10587, Museum of Zoology, University of Michigan.

Remarks: Mr. Hinkley has distributed these shells under the name *Pleurocera neglectum* Anth. upon the identification of Tryon. In a letter to me in 1915 Mr. Hinkley says he has long questioned this determination. *P. hinkleyi* is apparently an offshoot of *P. acuta* Raf., the *Melania subularis* of Lea. It differs from that species in its uniform thinness and delicacy, the generally constricted appearance of the whorls and, if such a characteristic has right to a standing, in the bright smoothness of the surface. I think it is a good local race and is entitled to specific distinction.

***Goniobasis vanhyningiana*, new species**

Description: Shell small, narrow, attenuate. Apex eroded, six whorls remaining; a perfect adult specimen would probably have eight or nine whorls. The whorls are slightly flattened, angulated at the base save in the case of the last whorl, which is rounded. Shell folded to base of last whorl. Where the folds intersect carinae at the base of each whorl slight nodules are formed, giving a beaded effect. Two fine, raised, revolving lines appear on the body whorl below the periphery. Suture deeply impressed. Color dark, rusty brown. Peristome sinuous, a little produced

at the bottom. Columella not much more than a chalky wash of shell material on the epidermis.

Operculum very thin, transparent, light yellow, nearly round, with the acute apex as a sort of triangular appendage. On the anterior side, this appendage is, in life, alone free of the animal's foot. Margins firm, but not thickened. Lines of growth few and fine. The nucleus is sunken and is just below the center of the operculum, slightly nearer the left margin than the right. Two whorls, regularly and widely coiled, show within the operculum. In shape and in form of whorls this operculum resembles that of *G. comalensis* Pilsbry, illustrated in *Proceedings of the Academy of Natural Sciences* (Philadelphia, March, 1906), p. 168.

Measurements: Altitude, 13 mm.; diameter, $4\frac{3}{4}$ mm. Aperture altitude, $4\frac{1}{4}$ mm.; diameter, $2\frac{1}{4}$ mm. (Type.)

Measurements of four paratypes:

Altitude	Diameter
$14\frac{1}{4}$ mm.	$5\frac{1}{2}$ mm.
14	$5\frac{1}{2}$
$12\frac{1}{2}$	$5\frac{1}{2}$
9	4

Type locality: Creek below Seminole Springs, Lake County, Florida. T. Van Hyning, collector, May 11, 1918.

Type: No. 45938, collection of Dr. Bryant Walker. Paratypes in the Museum of Zoology, University of Michigan (No. 10586), and in my own collection.

Remarks: In some of the specimens of this species, the folds or plicae are sometimes obscure, sometimes very strongly marked and sinuous. In two specimens the columella is reflexed just below the center. No bands are present in any of the material, but a slight difference in color occurs where the dark folds cross the lighter epidermis of the body whorl. *G. vanhynningiana* is a small local race of the group, the leading representative of which is the well-known *G. catenaria* Say. Not only is the new species connected

with the older species in shell characters, but also in the matter of the operculum.

Goniobasis microlineata, new species

Description: Shell elongate, acuminate, color uniformly greenish brown, shining, smooth, without bands or other color markings except the usual light line at the sutures, more or less common to the genus. Sutures not deeply impressed, but appearing somewhat V-shaped or angulated under the glass. Apex of type eroded. Whorls only slightly convex, the two uppermost being more nearly flat than the others. Lines of growth fine, regular except at the rest periods. Many spiral lines occur upon the immature whorls, but are absent on the body whorl. Where these lines and the lines of growth cross a light, reticulated appearance is given to the shell under the glass. Aperture ovate, less than one-half the total height of the shell, pearl white within. Columella white, rather heavy for so small a shell. Peristome somewhat sinuous, edged with black.

Operculum ovate, thin, translucent, reddish brown. Apex acute. Growth lines very fine, regularly spaced. Left margin slightly thickened, right margin thin, torn. The nucleus is sunken, and is located close to the base, nearer to the left margin than to the right. The spiral lines are rather obscure, but the operculum apparently consists of three whorls. The area of attachment is elliptical, and is bordered with thick, reddish callus.

Measurements: Altitude, $14\frac{1}{2}$ mm.; diameter, $6\frac{1}{2}$ mm. Aperture altitude, 6 mm.

Type locality: Rough Creek, Falls of the Rough, Grayson County, Kentucky. Collected July 24, 1917.

Type: No. 10584, Museum of Zoology, University of Michigan.

Remarks: An uneroded shell has apical whorls carinated at the base. Shells the epidermis of which has been removed are of a dull flesh color, a few of them bluish. There are no color mark-

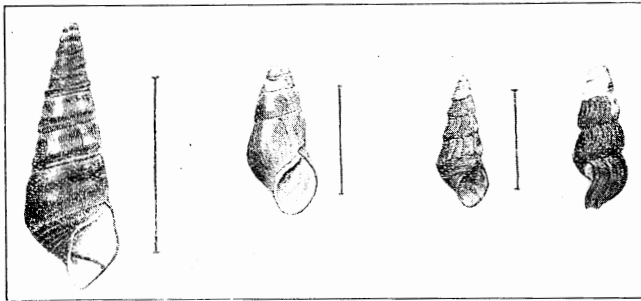
ings in the substance of the shell. Of fifty specimens examined, forty-six showed the nearly microscopic revolving lines, and in some of the young these lines are particularly well marked and beautiful. Two or three juvenile individuals have a narrow dark band above the periphery, not well defined.

The illustration of *G. informis*, p. 283 of Tryon's monograph of the Strepomatidae, is a fairly good representation of *G. microlineata*, though in *G. informis* the whorls are constricted. In general appearance the species would seem to group with *G. livescens* Mke. and *G. semicarenata* Say. The relationship is uncertain, for the revolving lines of this mollusk are also the most striking characteristic of *G. laticostans* Anth., of the Green River, a branch of which is Rough Creek. As the Gonibases of streams in the Ohio River drainage north of Tennessee tend in each stream to run together it is not unlikely that farther down Rough Creek material will be found which establishes an unmistakable connection between *G. laticostans* and *G. microlineata*. This would be in line with a frequent experience of the collector of Pleuroceridae.

The shells were taken from the undersides of slabs of water-logged timber, the waste of a mill at the Falls. The habitat was slimy and ill-smelling, an unusual choice of living place for members of the genus, which ordinarily are clean living.

PLATE I

- FIG. 1.—*Pleurocera hinkleyi* Goodrich. Type.
FIG. 1a.—*Pleurocera hinkleyi* Goodrich. Type. Operculum.
FIG. 2.—*Goniobasis vanhyingiana* Goodrich. Type.
FIG. 2a.—*Goniobasis vanhyingiana* Goodrich. Type. Operculum.
FIG. 3.—*Goniobasis vanhyingiana* Goodrich. Paratype.
FIG. 4.—*Goniobasis microlineata* Goodrich. Type.
FIG. 4a.—*Goniobasis microlineata* Goodrich. Type. Operculum.



1

4

2

3



2a



1a



4a

