

A NEW GENUS AND SEVERAL NEW SPECIES OF LAND-SHELLS COLLECTED IN CENTRAL MEXICO BY  
DOCTOR EDWARD PALMER

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Doctor Edward Palmer of the U. S. Department of Agriculture has for a good many years been engaged in Mexico, where his travels have been extensive, collecting plants for the National and other herbaria. In the course of his researches he has from time to time collected landshells, which have been added to the National collection. In a recent expedition to the State of San Luis Potosi, at a height of 7,200 feet above the sea, on the range locally known as the Alvarez Mountains, he obtained a small collection which proved to contain a very remarkable new genus allied to *Holospira*, and several new species of known genera, which form the subject of this paper.

Family UROCOPTIDÆ

**HENDERSONIA**<sup>1</sup> new genus

Shell discoid, with a single internal parietal lamina, the aperture and part of the last whorl free from the disk and recurved so that the holostomatous aperture lies above the disk and with the plane of its margin nearly or quite parallel with the plane of the shell-coil. Soft parts resembling those of *Holospira*.

This genus is dedicated to Mr. John B. Henderson, Jr., known in connection with his studies of the Antillean landshells. It is an animal of the Urocoptid group which has taken upon itself a discoid form, something hitherto unknown in that assembly and therefore of unusual interest.

**HENDERSONIA PALMERI** n. sp.

(PLATE XLIII, FIGURES 1-4)

Shell thin, depressed, nearly flat above, with the periphery compressed and keeled; the umbilicus wide, shallow, saucerlike, its margin subangular; the suture distinct, rather deep, not channelled but with the whorls between distinctly rounded; nuclear whorl polished, rather prominent, the eight subsequent whorls subequal, closely coiled; the termination of the last whorl divergent, wholly

<sup>1</sup> See note at page 239, *postea*.

free from the body, curved upward with the aperture nearly or quite in the plane of the surface of the spire, dilated and cup-like toward the aperture, the peristome continuous, expanded, and slightly reflected, with an obscure wave on the proximal side; surface striated with feeble lines of growth, color about that of *Polygyra microdonta* Deshayes, a pale horn-color or ashy brown, whitish on the peristome; lumen of the whorls subrectangular before becoming solute; about one fourth of the last whorl contains a single prominent, somewhat oblique elevated lamina on the body side, which diminishes gradually toward each end, the distal end becoming obsolete about the point where the last whorl leaves the coil and begins to grow independently; the wave in the free portion seems to be a reminiscence of the infold in ordinary *Holospiras* but is almost evanescent; diameter, major, 11.5; minor, 9.0; height, 2.0; length of free portion of whorl varying from 1.0 to 3.0 mm. Diameter of aperture, long, 3.0; short, 2.0 mm.

*Habitat*.—Alvarez Mts., San Luis Potosi, at 7,200 feet elevation; Dr. Edward Palmer, of the U. S. Agricultural Dept. Type No. 110,385, U. S. Nat. Museum.

The remarkable feature of this animal, apart from its discoid form, is the manner in which the termination of the last whorl is freed from the rest and turned upward, as in *Anostoma* or *Hypselostoma*, so that, in crawling, the shell must be dragged on what would ordinarily be the upper surface; a fact which is confirmed by the worn condition in each case of this part of the shell. The aperture strongly recalls that of *Urocoptis*, suggesting at first glance that we have to do with a discoid member that family. However, the internal lamina and the general aspect of the shell, except the umbilical region, are not very unlike the discoid *Polygyras*.

One of the two specimens containing the animal was submitted to Dr. Pilsbry as the most competent expert in the anatomy of the Pulmonata who reports as follows:

“The specimen was preserved in alcohol and had retreated somewhat more than one whorl within the aperture. It was opened by dissolving the upper surface of the shell with acid until the body could be lifted out unbroken. The foot projected shortly from the rather thick collar of the mantle. It is short and proportioned about as in *Holospira*. The narrow lung extends somewhat more than half a whorl. Its surface is plain, without perceptible venation, except for the long pulmonary vein (*p. v.*). The kidney (*K*) is wedge-shaped and but slightly longer than the pericardium, exactly as in *Holospira* as figured in the Manual of Conchology, *Urocoptidae*,

pl. 27, fig. 37. It is bright pink and three millimeters long. There is apparently no secondary ureter, nor is there any groove along the intestine (*G* 4). The intestine is of the usual four-folded type, and penetrates only a short distance behind the heart and kidney.

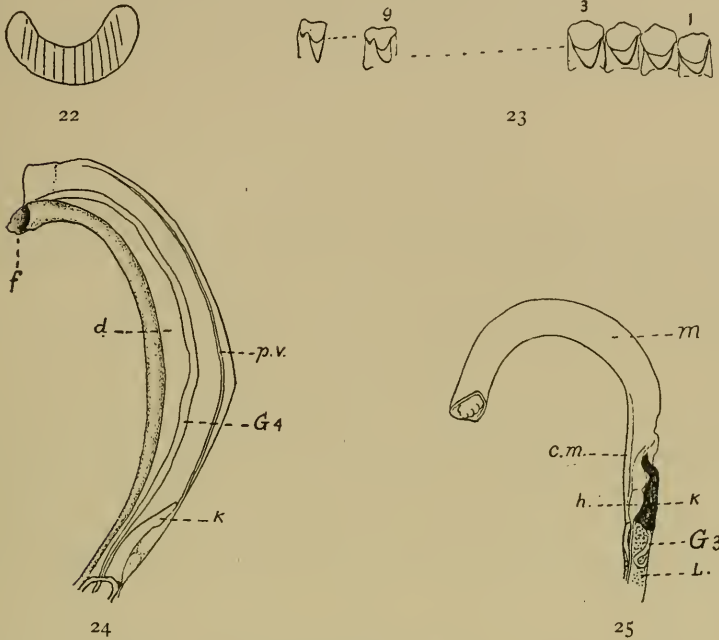


FIG. 22.—Sketch of jaw of *Hendersonia palmeri*.

FIG. 23.—Teeth of radula, showing (1) rhachidian, first three laterals, ninth lateral and outer lateral.

FIG. 24.—Anatomical details; *k*, kidney; *G*. 4, intestine; *p. v.*, pulmonary vein; *d*, lung.

FIG. 25.—*m*, mantle; *c. m.*, contractor muscle; *h*, heart; *k*, kidney; *G*. 3, undeveloped genitalia; *L*, liver. All magnified; taken from drawings by Dr. H. A. Pilsbry.

The very long liver and the ovotestis occupy the whole of the earlier whorls.

“The genitalia were undeveloped and threadlike. There is a rather long atrium and an excessively long vagina. The penis was represented by a minute budlike tubercle only, and was evidently not yet developed. Its retractor was not seen if present.

“The jaw is very thin, arcuate with faint, well-spaced vertical striæ, as in *Holospira*. The radula has teeth of the *Holospira* type. The rhachidian and six laterals are unicuspid, the cusps obtuse and as

long as the basal plates. The marginal teeth have a small ectocone and the mesocone becomes longer."

In a letter Dr. Pilsbry adds: "This is the most interesting thing which has turned up in Mexico since *Metostracon*, . . . Your surmise that it was a Urocoptid turns out to be correct. The very short kidney, scarcely longer than the pericardium, alone settles it. These organs as well as the jaw and teeth are exactly as in *Holospira*, next to which it evidently belongs."

**XANTHONYX POTOSIANA** n. sp.

(PLATE XLIV, FIGURES 1, 2, 7)

Shell thin, inflated, white, covered with a conspicuous straw-colored translucent periostracum; whorls three, the first with minute radial riblets broken up into wavy segments or even radially disposed granules, with faint traces of microscopic spiral striation; subsequent whorls faintly spirally striate and with the lines of growth irregularly moderately prominent; last whorl much the largest; suture deep, spire somewhat dome-shaped; aperture with the margin thin and sharp except on the pillar where there is a thin layer of milky white callus; plane of the aperture oblique, the basal margin passing imperceptibly into the arcuate pillar gyrate about a pervious axis; interior of aperture white. Max. diameter of shell 18, min. do. 12, height 14, the aperture 14.5 wide by 13.3 mm. high.

*Habitat*.—State of San Luis Potosi, on the Alvarez Mountains, at a height of 7,200 feet.

This is the largest and most turbiniform species of *Xanthonyx* known. None of the specimens contained the animal, though ten of the shells, of various ages, were obtained.

The type is No. 110,396 U. S. Nat. Museum. With this species were found *Epiphragmophora pressula* Morelet, *Microceramus mexicanus* von Martens, a *Holospira* which appears to be the true *H. pilocerei* Pfeiffer, *Glandina bellula* Crosse and Fischer, and another form which is perhaps a variety of it, beside young specimens of a *Glandina* too immature to be positively identified.

**STREPTOSTYLA POTOSIANA** n. sp.

(PLATE XLIV, FIGURE 4)

Shell moderately large and solid, opaque white with a brilliantly polished translucent yellowish-olive periostracum, with occasional darker zones axially arranged; the periostracum after the death of the animal rapidly peels off, leaving the surface white and smooth;

whorls in the adult about seven, smooth, not wrinkled axially in front of the very distinct suture; spire rather blunt, the whorls between the sutures convex; sides of the last whorl somewhat parallel, apex and base of the shell about equally tapering; outer lip sharp, slightly sinuous; the aperture narrow behind and rather wide in front, the axis and pillar twisted as usual in the genus. Length of shell 40, of aperture 28, of last whorl 34 mm.; max. diameter 15.5 mm.

*Habitat*.—Alvarez Mountains, State of San Luis Potosi, at a height of 7,200 feet.

Type, No. 110,395 U. S. Nat. Museum.

This species has a straighter columella than any of its size, and in a general way appears nearest allied to *S. sallci* and *S. edwardsiana* Crosse and Fischer, from which it is sufficiently distinct. It appears, from the number collected, to be quite common, though few of the specimens were adult or in perfect condition.

#### STREPTOSTYLA PALMERI n. sp.

Shell small, slender, subtranslucent, with a pale thin straw-colored periostracum axially zonate with lighter and darker streaks following the lines of growth; whorls six, the last much the largest, spire rather blunt, the suture evident but not deep, appressed, and without axial wrinkles in front of it; pillar white, slightly thickened and twisted about a pervious axis; length of shell 24.5, of aperture 20, of last whorl 22.25 mm., max. diameter 9.5 mm.

*Habitat*.—With the preceding species.

Type, No. 110,394 U. S. Nat. Museum.

This approaches *S. sallci* Crosse and Fischer but is more slender, has a shorter spire and is of a lighter make and color. From *S. potosiana* of the same size it is distinguished by its more slender build, more produced spire, and pervious axis, as well as by the differences in color. It has a shorter spire than, and different color from, *S. shuttleworthi* Pfeiffer.

#### SCHAZICHEILA PALMERI n. sp.

(PLATE XLIV, FIGURES 3, 5)

Shell compact, elevated, with a rather pointed spire, well marked suture and about five whorls; color varying from white, through straw color to pale olive, yellow, or various shades of salmon color, surface polished but not smooth, being rather rudely marked at intervals by prominent incremental lines and faint spiral or irregular striulæ seldom visible without a glass; aperture gibbous, the



outer lip patulous behind and then receding to the suture, forming a shallow sulcus, more or less reflexed below, the margin continuous across the body with a groove behind it and a rather rude thin layer of callus covering the umbilical region; the inner part of the lip is white and somewhat thickened, in colored individuals the color appears in the throat and with emphasis; the base is full and rounded, the periphery destitute of any keel; there is more or less variation in size, extremes measuring:

Height	Max. diam.	Min. diam.	Aperture
10.0	12.5	9.5	6.0 mm.
8.5	11.0	8.0	5.0 mm.

The outer surface of the operculum is rudely striated, the inner polished, the color varies with that of the shell. It is solidly calcareous.

*Habitat.*—In the Alvarez Mountains with the preceding species and at San Dieguito, San Luis Potosi.

Type, No. 110,397 U. S. Nat. Museum.

The species approaches *S. pannucea* Morelet, and *S. alata* Menke, is more elevated than the former and less so than the latter. The sutures are less deeply impressed than in *alata* which seems its nearest relative. The superior sinus seems less deep than in either of the species with which it is above compared, but this feature varies with age. Many of the specimens had been opened by mice who extract the animal through a neat little hole in the side of the shell as they would take a kernel from a nut.

#### HELICINA ZEPHIRINA Duclos

*Habitat.*—Alvarez Mountains, San Luis Potosi, with the preceding.

#### HELICINA ELATIOR von Martens

*Habitat.*—With the preceding and also at San Dieguito.

According to Dr. Pilsbry this is *Helicina zephirina* Duclos, var *elator*. von Martens, the *H. turbinata* Pfeiffer as of Wiegmann, but not the *H. turbinata* of Sowerby. A large series having been obtained, it is quite evident that it is entirely distinct from *H. zephirina*, and therefore von Martens' varietal name may be raised to specific rank.

#### PLANORBULA OBSTRUCTA Morelet

Quite a number of specimens were obtained from a small pool in the same vicinity as the preceding species and that which follows.

**SPHÆRIUM MEXICANUM** n. sp.

(PLATE XLIV, FIGURE 6)

Shell small, shape subrhomboidal, the ends nearly equally rounded, the beak nearer the anterior end; protoconch smooth, ovate, not prominent; umbonal region with about ten concentric waves (sharp at the crest, the interspaces wider) outside of which the sculpture suddenly becomes much less prominent, in fact hardly more than concentric striation; the surface is covered with a pale olive periostracum; right valve with a single rather obscure cardinal, and a pair each of disproportionately strong anterior and posterior laminae, the inner faces of which show distinct fine granular rugosity; pallial line obscure, adductor scars distinct. Length 5.5, height 4.25, diameter 3.0 mm. Type, 110,405 U. S. Nat. Mus.

*Habitat.*—Alvarez Mountains with the preceding.

This is very distinct from any other North American species, and with the exception of *S. costaricensis* Prime, is the most southern of them all. Unfortunately only a single valve was obtained, though this is in perfect condition.

## SPECIES OBTAINED ON OTHER OCCASIONS

The following species are recorded as obtained by Dr. Palmer on other occasions at the localities mentioned.

*Physa berendti* Dunker. Twenty-five miles southeast of Saltillo, and at Santa Maria del Rio.

*Physa mexicana* Philippi. Nombre de Dios, Durango, and at the town of Durango.

*Physa boucardi* Crosse and Fischer. Nombre de Dios, Durango.

*Planorbis tenuis* Philippi. Nombre de Dios.

*Planorbis liebmanni* Dunker. Topolobampo, Sinaloa.

*Planorbis tumidus* Pfeiffer. Nombre de Dios.

*Othalicus undatus* Bruguière. Manzanilla, Colima.

*Praticola berlandieriana* Moricand. "Mexico."

*Praticola griseola* Pfeiffer. "Mexico."

*Polygyra carpenteriana* Bland. "Mexico."

*Bulimulus schiedeannus* Pfeiffer. "Mexico."

The four immediately preceding species were probably obtained at some point on the low coastal plain of northeast Mexico.

*Anodonta exilior* Lea. Durango City.

Doctor Palmer has collected a considerable number of other interesting mollusks, at various times, which have been put in the National collection without retaining a list, and which therefore cannot be enumerated here.

## EXPLANATION OF PLATES

## PLATE XLIII

FIGS. 1-4. *Hendersonia palmeri* Dall, n. g. et sp. Fig. 1, view from below; 2, profile; 3, specimen with the whorl broken away to show internal spiral lamina; 4, view from above; all figures magnified two and one-third diameters. See page 187.

## PLATE XLIV

FIG. 1. *Xanthyx potosiana* Dall, n. sp., from above, magnified. See page 190.

FIG. 2. The same in profile.

FIG. 3. *Schazicheila palmeri* Dall, n. sp., magnified. See page 191.

FIG. 4. *Streptostyla potosiana* Dall, n. sp., nat. size. See page 190.

FIG. 5. *Schazicheila palmeri* Dall, from above, magnified. This specimen has the sinus at the aperture less developed than usual in adults. See page 191.

FIG. 6. *Sphærium mexicanum* Dall, n. sp., magnified about  $5\frac{1}{2}$  diameters. See page 193.

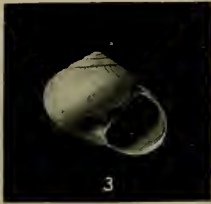
FIG. 7. *Xanthyx potosiana* Dall, n. sp., from below, magnified. See page 190.





CENTRAL MEXICAN LAND SHELLS





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