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TWO NEW LAND SNAILS FROM ARIZONA

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The following two new species of land snails were taken on a collecting trip in Arizona during October 1949 by M. L. Walton and the author. They belong to the families Camaenidae and Polygyridae, respectively.

Oreophelix anchana, new species

Plate 14, upper figures

Shell rather large, depressed, flatly conic with a rounded periphery, a broadly rounded base and a wide umbilicus which is permeable to the apex; whorls 5¾, gradually increasing to the body whorl which is slightly expanded; the last 1/6 of the body whorl descends slightly. Upper surface of the whorls moderately rounded; at the beginning of the body whorl there is a distinct angulation at the periphery which has entirely disappeared at the beginning of the second quarter of the body whorl, the remainder of the periphery being evenly rounded. All whorls are visible in the umbilicus which is contained 4.2 times in the greater diameter of the shell. Aperture ovoid, oblique, the plane of the aperture forming an angle of 45 degrees with the axis of the shell; peristome neither expanded, reflected or thickened, except at the junction with the parietal wall where the outer lip is slightly contracted and the inner lip is very slightly expanded. The extremities of the peristome are connected by a distinct callus which is more pronounced in senile specimens.

The embryonic shell consists of three full whorls and is 6 mm. in greater diameter. Sculpture of the embryonic portion of the shell (slightly worn in the type specimen) consists of radial lines and slightly wavy incised spiral lines. The radial lines appear as radial wrinkles on the first half whorl, the spiral lines beginning on the second half of the first whorl. In addition, there is a distinct cord at the periphery of the whorls which first appears at the beginning of the second whorl. This cord, appearing conspicuously above the suture, continues to a point just behind the aperture, where it disappears. The spiral sculpture is continued on the neanic portion of the shell though faint except along the corded periphery and on the body whorl only traces of spirals may be seen with high magnification, otherwise the upper surface of the body whorl is smooth except for radial growth lines.

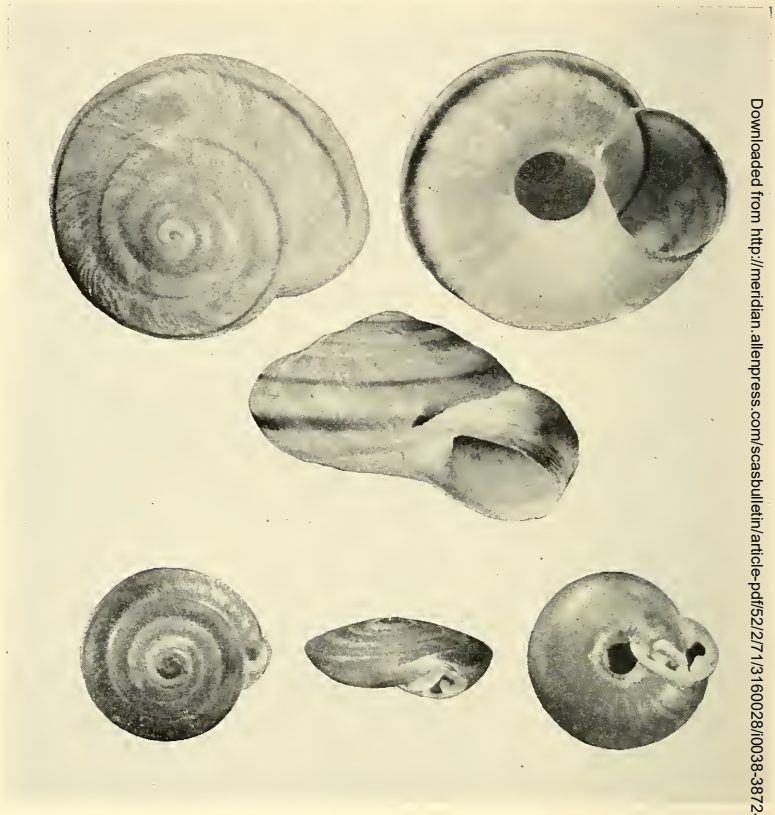

PLATE 14

Upper figs., *Oreohelix anchana* Gregg; lower figs., *Ashmunella lenticula* Gregg.

All figures about twice actual size.

(Photos courtesy Los Angeles County Museum)

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Under high magnification the slightly worn under surface of the shell has a pitted appearance. To the unaided eye, the entire shell has a smooth waxy appearance, marked only with radial lines and the delicate peripheral cord.

Color light Sayal Brown[1] above, the last two whorls marked

[1]Capitalization indicates colors matched with those of Ridgway, Color Standards and Color Nomenclature.

by fine radial whitish lines; under surface whitish. Above the periphery is a Chestnut-Brown band, about .6 mm. in width on the body whorl, and visible above the suture on the penultimate and antepenultimate whorls. A second chestnut band, somewhat wider, is seen on the body whorl below the periphery.

Maximum diameter 23.5 mm., minimum diameter 20.4 mm., altitude 13.3 mm., umbilicus 5.6 mm.

The penis is moderately swollen at its middle portion, length 15.9 mm., length of internally plicate part 9.3 mm., of epiphallus 6.2 mm., of vagina 9.3 mm.

Type locality: Slide of limestone rocks, northeast slope of Center Mountain below the cave, above road to Lucky Strike Mine on the Pueblo Mine property and about three miles north of Reynolds Creek, Sierra Ancha, Gila Co., Arizona. Altitude about 7,200 feet. (M. L. Walton and W. O. Gregg, Oct. 10, 1949.) This locality is about five miles from the Reynolds Creek Ranger Station.

Holotype No. 6142, author's collection. Paratypes in collections of Los Angeles County Museum (No. 1090), S. S. Berry (No. 19,906), M. L. Walton (No. 5,911), and the author (No. 5246).

The character of the penis, lower internally plicate portion more than half the entire length and decidedly swollen, definitely allies this species with the *Oreohelix yavapai* Group. The shell characters ally it to the relatively smooth forms of that group, *O. concentrata* (Dall) and *O. hougi* Marshall. It is much larger than any of the smooth noncarinate forms of *O. concentrata* that I have seen and has a wider body whorl. The radial ribs of the embryonic whorl of *O. concentrata* are prominent while in *O. anchana* there are only delicate radial striæ. *O. hougi* is smaller with whorls somewhat more rounded above and the umbilicus relatively smaller. The embryonic shell of *hougi* is similar to that of *anchana* but smaller.

Oreohelix is ovoviviparous. On Nov. 15, 1949, ten adult specimens of *O. anchana* were placed in a terrarium where they might move about freely. From Dec. 15 to Jan. 19, seven newborn specimens appeared, the largest of these measuring 6.7 mm. in greater diameter and having three full whorls. In my terrarium these young snails have grown very slowly. At the present time, nearly three years later, there are 20 young specimens. All have remained alive. The largest measures 10.0 mm. in greater diameter with 3¾ whorls. On some of the specimens, a fringe of hair-like periostracal prolongations is seen on the periphery of the early portion of the first neanic whorl. No traces of this persists in any of the adult specimens.

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In the rockslide where the type material of *O. anchana* was taken, we also found specimens of *Sonorella anchana* Berry, *Sonorella strongiana* Berry, and four specimens of a somewhat different race of *Oreohelix*. These specimens of *Oreohelix* are either fossil or at least long dead. They are smaller and somewhat more elevated than typical *anchana*. Though badly worn, the cord above the suture is clearly shown and persists to a short distance behind the aperture. A specimen of 5 1/3 whorls measures 17.6 by 11.5 mm.

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Ashmunella lenticula, new species

Plate 14, lower figures

Shell lenticular, slightly convex above, moderately convex below, periphery acutely angular, color Saccardo's Umber. Whorls 5⅞, gradually increasing, the first three slightly convex, the remaining almost entirely flat above. First whorl smooth and glossy, second and third whorls granulose with superimposed growth striæ. On unworn specimens, particularly very young, there are minute hyphen-shaped papillae arranged in rows parallel to the lines of growth on the second and third whorls. On young shells of two and three whorls, these papillae may be seen about and within the umbilicus. On the second or third whorl minute spiral striæ appear and continue on the remaining whorls, the latter whorls marked only with microscopic striæ and delicate growth lines. Under surface of body whorl evenly rounded, smooth save for microscopic granulation and delicate growth striæ. Umbilicus contained 6 times in the greater diameter of the shell. Within the umbilicus, on the earlier whorls of the holotype, can be seen the hyphen-shaped papillæ referred to above. The body whorl is abruptly constricted just behind the peristome. The suture of the last third of the body whorl lies just below the keel of the preceding whorl. On the remainder of the shell the suture unites at the periphery of the preceding whorls at the angle, giving the upper aspect of the shell a decidedly flattened appearance. Peristome lunate, whitish, moderately reflected and guttered behind the outer and basal margins. Aperture oblique, placed at an angle of 60 degrees with the axis of the shell, obstructed by four white teeth: two compressed teeth on the basal margin, a wide tooth just below the peripheral angle, and an oblique parietal lamella which is slightly curved towards the columella at its inner end. The space between the two basal teeth is wider than that between the outer basal tooth and the outer lip tooth.

Maximum diameter 13.3 mm., minimum diameter 12.4 mm., altitude 5.0 mm., umbilicus 2.2 mm.

Upper portion of the penis about half the diameter of the swollen basal portion and somewhat wider than the epiphallus.

The junction of the penis and the epiphallus is marked by a slight constriction. Length of penis 4.0 mm., swollen basal portion 1.5 mm., length of epiphallus 32.0 mm., flagellum 1.5 mm., spermatheca 26.5 mm., vagina 3.5 mm., free oviduct 2.4 mm., atrium 1.3 mm. The retractor muscle is very short. The lung is unicolored.

Type locality: Rock slide at mouth of north fork of Horseshoe Canyon, Chiricahua Mts., Cochise Co., Arizona. Altitude 4,800 feet. (M. L. Walton and W. O. Gregg, Oct. 13, 1949.) This location is about one and three fourths mile above the mouth of Horshoe Canyon and is probably the type locality of *Sonorella binneyi* Pilsbry & Ferris. We found *S. binneyi* there, moderately plentiful, also a few specimens of *Thysanophora horni* (Gabb).

Holotype No. 6143, author's collection. Paratypes in collections of Los Angeles County Museum (No. 1091), S. S. Berry (No. 19,907), M. L. Walton (No. 5918), and the author (No. 5504).

Anatomical characters clearly ally this species with the Chiricahuan group of *Ashmunella*. It is most closely related to *A. ferrissi* Pils. The flattened upper surface readily separates *A. lenticula* from *A. ferrissi* which has an elevated spire with a narrow keel extending outward and upward above the suture of the succeeding whorl. In *A. ferrissi* the three lip teeth are equidistant while in *A. lenticula* the distance between the two basal teeth is greater than that between the outer basal tooth and the outer lip tooth.

Approximately sixty specimens were taken with the type lot, most of them in poor condition and all except one were dead. Some time after collecting the type lot on October 13, 1949, the single live specimen was placed in a terrarium. This specimen laid a number of eggs, apparently in early July 1950. Though the eggs were not observed, the first newly hatched *Ashmunella* were noted on July 17, 1950. There were 16 young snails in this brood. These grew rapidly. On June 1, 1952, seven of them had fully matured shells. A few months later (I am unable to find the exact date), the entire brood had fully matured shells. A second brood of newly hatched snails was noted on August 14, 1951, this time only six.

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