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ON THE RIO GRANDE

BY JAMES H. FERRISS

In the last days of February, this year, snow-balling led all Texan sports in the Pecos-Rio Grande region. To the native-born it was their first snow — thus a warm game and full teams. Occasionally the banks were too deep for the Fords. At Alpine, however, by the time our car had been refreshed and tried out, the roads were open, and for the next two months the weather-man was kind and genial, from the Big Bend to the northeastern corner of Texas.

This was an expedition of only one. Mollusks, cacti and ferns were the real purpose; pleasure, health, and a few other things merely incidental. Eleven rattlesnakes were included in these incidental features, and some good things botanical for a public park collection. The journey from Alpine to Terlingua, in the depths of the Big Bend of the Rio Grande, was over the route scratched by Dr. Pilsbry and the present writer in a former (1922) expedition, an account of which we have in preparation. No investigations were made this time until new ground was invaded southwest of Terlingua. Here the bones of *Bulimulus alternatus hesperius* were very plentiful in the sands of a low plain frequently and recently flooded; in its nakedness quite another Death Valley.

In the north slope of a mountain which to the south forms

the north wall of the Grand Canyon of the Rio Grande, dwells one of the larger *Holospiras*. Sad to relate, that particular catch was lost in the mail, thus not identified. Again *Bulimulus a. hesperius* was collected in the brush of the south wall of the river at Langtry, and upon the higher plains of the Pecos.

Eastward from Marathon (on the Southern Pacific R. R.) the El Paso-San Antonio highway, for sixty or seventy miles, is confined to an ancient valley or channel between ranges of low mountains, and thus one of the most pleasing prospects. It was only twenty to forty minutes from car to mountain-top. Twenty live *Lysinoes* in one gulch, the very one the collectors have been searching for for some forty years, because a "bone" had been found near a prairie-dog hole at Alpine. *Holospira*, *Bulimulus*, and ferns were plentiful.

At Sanderson, in this valley, *Polygyra* and *Helicina* broke in, and continued the remainder of the journey. At the mouth of the Pecos *Euglandina* was abundant (and dead). Only two living ones were found in three half-days of especial digging. While gathering other shells, the dwelling place of this member of a wet-land fauna was accidentally discovered in the highest and driest hills. Where the upper layer of limestone is separated from the main floor one or two feet, the space filled with broken stone, soil and rubbish, will be found the home of *Euglandina singleyana*. No bones or fragments of this species were scattered about the surface with the remains of other species, and the shells in their home were unbroken. Thus evidently the animal is not toothsome for mice or the rock cat. Death comes in the natural way. The live shells, agate-yellow in color, polished, transparent, with faultless lines of molluscan architecture, a full-grown specimen lightens the heart, bestirs the energy, of the collector.

Both Pilsbry and I had a profitable experience here at the Pecos' mouth in 1903. The limestone bluffs, around five hundred feet above the river bed, present an excellent elevation for rarities in conchology and botany. Here also a close acquaintance with our largest rattlesnake was enjoyed. *Notholæna schaffneri*, one of the rarest American ferns, thrives

here under the upper, overhanging sheets of limestone. A delicate plant, it prospers best in the fine dust accumulating upon the floor of its cave-like home. Posing upon a common level with his victims, the collector upon hands and knees crawls about in the cacti and prickly brush with becoming humility and caution. Thus came about this introduction to a rattler of seven inches girth. Happily, although the rattler was coiled for emergencies and, nose and nose, we were less than two feet apart, his snakeship was exceedingly fat, thus good-natured and patient. However, to get him permanently into an army knapsack required the better part of an hour's diplomacy. It was worth it. With this, my collection contains all of the American poisonous snakes except three.

A warm shower in the middle of April was a grand spring opening for the *Bulimulus* tribe. Then *B. alternatus hesperius* climbed the fence-posts of the Pecos, the cacti and the brush. Some of the shrubbery looked like stands of the white snow-berry in fruit. A few days later *B. dealbatus pecosensis* appeared at the High Bridge, and during the remainder of the journey *Bulimulus* bushes were in full fruit, all species of the region being represented. While the highway from the Pecos River is fairly level for southern Texas, on into Waco, and one brushy tract like another, each collecting ground contained a *Bulimulus* species, variety or color unlike its predecessor.

A mile perhaps below the Laguna post-office the hills upon the south bank of the Nueces, high and well timbered, with precipices and slides, seemed to warrant a little wading. *Cheilanthes leucopoda*, another of the rarest ferns, had been found within a hundred miles or so of that beautiful scenery. In fact, since returning home, the original discovery of the species was found to be Uvalde Canyon, a familiar name in that part of Texas. Not only this fern thrives in that particular Nueces bluff, but also *Anemia mexicana*, another Texas rarity in ferns; also the recently described *Holospira goldfussi anacachensis* Bartsch; and three species of cacti heretofore unknown to me.

Possibly in the headwaters of the Neuces and the low range of mountains from New Braunfels, Fredericksburg and Keer-

ville, with a western terminus somewhere near the Pecos drainage, both botany and conchology may contain something of great interest. The Great Bend of the Rio Grande also seems tempting. Our two raids there scratched the west side of the Chisos mountains, and a sight-seeing trip to the Grand Canyon only. The region is as accessible as any, considering desert conditions. From Marfa, Alpine and Marathon via Terlingua to the river is about seventy miles. From the Pecos to Marfa a little over two hundred miles. From Marfa to El Paso another two hundred. Here are mountains 9000 feet in altitude, and desert conditions quite unlike other better known deserts. Limestone almost everywhere, the soil fertile, well covered with vegetation; population American stock-men and Mexican gardeners; a few villages and quicksilver mines. With a Ford or pack train is not this about the best of our unexplored regions?

In the following list only the species taken in the Big Bend and along the highroad (which roughly parallels the Southern Pacific Railway) as far east as the Nueces River are recorded. The few lots taken in central Texas are from well-known places.

LIST OF SPECIES, BY H. A. PILSBRY AND J. H. FERRISS.

Polygyra texasiana texasensis (Pils.). Alpine, Langtry, mouth of the Pecos, Devil's River, east of Brackettville and on the Nueces River. In the western counties this form, which is smoothish on the upper surface as well as the base, replaces the typical *P. texasiana*, which is ribbed above. It was first described as *P. texasensis* Pilsbry, Nautilus XVI, p. 31; later we found a smaller and even smoother form in the Devil's River region, which we described as *P. texasiana hyperolia*, Proc. A. N. S. Phila., 1906, p. 128. The large series taken this year shows intergrades in size, sculpture and size of umbilicus between these forms, which cause us to unite them.

Thysanophora hornii (Gabb). Devil's River and Nueces River; scarce in the drift.

Bulimulus alternatus hesperius, n. subsp. (*Bulimulus alter-*

natus mariæ, Western Form, Pilsbry and Ferriss, Proc. A. N. S. Phila., 1906, p. 140, pl. 7, figs. 1-12; p. 132, fig. 5A.)

The shell averages larger than *B. a. mariæ*; spire more strictly conic; white or pale brown, uniform or with brown streaks which are never ragged; aperture very dark; columella not toothed. Length 30 to 44 mm.

In working over our collection of the expedition of 1903 the characters of this race were noted, but we did not then name it as separate from *mariæ*. A considerable amount of additional material from localities mentioned below, and larger series of the true *mariæ* from the lower Rio Grande valley, collected by one of us, serve to emphasize the constant differences between the form of the high western country and *mariæ* of the lower valley. We take as type of *hesperius* a specimen from the east side of the Pecos at the High Bridge, measuring 34 mm. long, 17.4 mm. diameter. Additional localities of 1924 are: a valley just north of the canyon of the Rio Grande, W. of S. from Terlingua; Langtry; west of and at the highway bridge over the Pecos, near its mouth.

Bulimulus dealbatus pecosensis P. & F. Quite abundant, and variable in shape and color. Mouth of the Pecos in several places, and about halfway between there and Del Rio; near, west of, the Nueces River below junction of two dry branches, and in the river drift.

Bulimulus dealbatus ragsdalei Pils. Alpine, Housetop Mt., Sanderson, small hills west of St. John ranch, Langtry, Devil's River, and about 3 miles east of Del Rio.

Locally variable in shape and degree of striation; in some cases approaching *B. d. pecosensis*. Sometimes very small, down to 16 mm. long.

Bulimulus, n. sp. A peculiar rather long *Bulimulus*, very smooth and glossy, brown with many whitish streaks, was taken at Sanderson, but the single example is broken, and just what its characters are remains uncertain. It must be looked for again.

Holospira goldfussi anacachensis Bartsch. Nueces River.

Occurs both larger and smaller than the measurements given in the original account; from 10.7 x 3.5 mm. to 15 x 3.9 mm.

Holospira roemerii (Pfr.). Alpine and Housetop Mt., slender specimens; mouth of the Pecos; Devil's River; Nueces River. Specimens from the mouth of the Pecos measure:

Length 14, diam. 4.3 mm. Length 17.7, diam. 3 mm.

And from the Nueces River:

Length 12.5, diam 5 mm. Length 14, diam. 4 mm.

Length 12.7, diam. 4.9 mm. Length 18, diam. 4.3 mm.

Length 13, diam. 4.6 mm.

The longest of these is strictly cylindric; the shortest is widest in the middle, while the others are widest in the upper part.

Euglandina singleyana (W. G. B.). Found on both sides of the Pecos, near the highway (see above). One broken specimen measures 20.3 mm. in diameter, and a fragment indicates a still larger size, thus surpassing the central Texas specimens.

Helicodiscus eigenmanni Pils. Drift of the Pecos, Devil's and Nueces Rivers.

Punctum pygmaeum (Drap.). Nueces River.

Polita indentata umbilicata Ckl. Pecos, Devil's and Nueces.

Polita dalliana roemerii (Pils. & Ferr.). Nueces drift.

Pseudohyalina minuscula (Binn.), *P. singleyana* (Pils.) and *P. nummus* (Van.). Devil's and Nueces drift.

Euconulus chersinus trochulus (Reinh.). Devil's and Nueces river drift.

Succinea luteola Gld. Alpine, Langtry, mouth of the Pecos and Devil's Rivers.

Succinea avara Say. Devil's and Nueces Rivers.

Gastrocopta contracta (Say). Devil's and Nueces Rivers.

G. pentodon (Say). Nueces River.

G. pellucida hordeacella (Pils.) and *G. cristata* (P. & V.). Pecos, Devil's and Nueces drift.

Pupoides marginata (Say). Same localities.

Vertigo ovata (Say). Nueces drift, one specimen.

- Vallonia perspectiva* Sterki. Pecos, Devil's and Nueces drift.
Lymnaea (Galba) parva Lea. Devil's and Nueces Rivers.
Planorbis trivolvus Say and *P. antrosus* Con. Nueces River.
Planorbis dilatatus Gld. Nueces drift.
Planorbis carus Pils. & Ferr. Devil's and Nueces drift.
Planorbis liebmanni Dkr. Pecos, Devil's and Nueces drift.
Planorbula obstructa (Morel.). Same localities.
Physa sp. Pecos and Nueces Rivers; small specimens only.
Paludestrina protea (Gld.) and *P. seemanni* (Ffld.). Nueces drift.
Cochliopa riograndensis Pils. & Ferr. Pecos and Nueces Rivers.
Helicina orbiculata tropica Pfr. Pecos, Devil's and Nueces drift; also east of Brackettville.

SOME OLD PLEUROCERIDS AND A NEW ONE

BY CALVIN GOODRICH

In the summer of 1923 Mr. W. J. Clench and Mr. L. E. Wehmeyer made a collecting trip by automobile that began at Ann Arbor, Mich., and took in parts of Indiana, Illinois, Missouri, Arkansas, Tennessee, Mississippi, Alabama and Florida. The Pleuroceridæ taken on the journey — described by the travelers as the Voyage of the Asthma — were placed in my hands for identification.

GONIOBASIS LIVESCENS (Menke). Wabash River, Ind., two miles west of Huntington, also two miles west of Peru; Pipe Creek, seven miles west of Peru.

This is a stout, bulbous form, varying little in the upper Wabash drainage. I have it from the Wabash, Logansport; Little Wabash, Huntington; Salamanie, Montpelier; Eel, North Manchester; Tippecanoe, Warsaw; Deer Creek, near Delphi; Coal Creek, Veedersburg. This is on a line running southwest across Indiana. The form is the common one of the Maumee River system of Lake Erie and occurs in the Raisin, Huron and Clinton rivers of eastern Michigan; also in



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