

ence along the southern border of the deepening Ontario Valley. This southern border, partly shown in the Niagara escarpment, must be regarded as the inface of a revived cuesta, of which the Ontario Valley is the inner lowland. Examples of obsequent streams flowing down the inface of the cuesta, and cutting backward from it, are found in the old Saint David's gorge, which had cut back as far as the present Whirlpool; in Irondequoit Bay, often regarded as the former path of the Genesee, but clearly deepened beyond any depth reached by the Genesee or Canaseraga; and probably Sodus Bay. Eastward the Ontario Valley becomes narrower though the flooded portion is wide. The Ontario River headed eastward, probably passing through Oneida Lake from Little Falls, where the divide between the eastward-flowing Mohawk and the westward-flowing Ontario River was situated. At the Thousand Islands occurred another divide, between the northeastward-flowing preglacial St. Lawrence and a southwestward-flowing tributary of the Ontario River. Spencer's Laurentian River, which carried the drainage of all the Great Lake valleys (except Superior) out across the Thousand Island divide, never existed. There is no good evidence for, and abundant evidence against, its existence.

To sum up: The evidence seems to be all in favor of southward drainage in Tertiary time of the streams which cut the Finger Lakes and the other parallel valleys of New York. Many of these were subsequently deepened by ice erosion. Part of this drainage went out by the Susquehanna to the Atlantic, and that of the more western valleys probably to the Ohio and Mississippi embayment. The drainage of the valleys of the Great Lakes also went out in that direction, and the system developed as a normal sequential drainage system on a peneplain surface of nearly horizontal strata. Capture of the headwaters of the New York streams left their beheaded portions in the old valleys which they had not the power to further deepen or widen. The Ontario Valley, however, was deepened without reference to the Finger Lake Valleys. All this occurred while the land in

the north stood higher than now, and the Mississippi embayment and the Atlantic coast south of New York, lower, as shown by marine sediments of Tertiary age.

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NOTES ON A SMALL COLLECTION OF SHELLS FROM TEXAS

DURING part of the month of August, 1906, Mr. A. B. Wolcott, a Chicago entomologist, collected extensively about the region of Brownsville and Corpus Christi, Texas, and incidentally secured an interesting collection of land and fresh-water mollusks. Mr. Wolcott found the river very high and hence was able to do nothing in the way of collecting the Unionidæ. A few fresh-water shells were secured from the river drift. The land mollusks were notably abundant, particularly the Polygyras and the Bulimulæ, as were also the Helicinas and the Euglandinas. No novelties were obtained, but the material seems to be of enough interest to be placed on record. The collection has been presented by Mr. Wolcott to the Chicago Academy of Sciences.

In working up this list constant reference has been made to the excellent paper by Pilsbry and Ferriss, on the "Mollusca of the Southwestern States," II., published in 1906 in the *Proceedings* of the Academy of Natural Sciences of Philadelphia, page 134.

HELICINIDÆ

Helicina orbiculata tropica "Jan" Pfr.

Corpus Christi; tropical forests, Esperanza ranch, Brownsville, on shrubbery; river drift, Brownsville; on beach, Port Isabel.

In a lot of 25 specimens, 5 are partly red and blue and the balance are blue. A common species in this locality.

HELICIDÆ

Praticolella griseola (Pfr.).

Chaparral near Brownsville; old Fort Brown and in river drift, Brownsville; Port Isabel, on beach.

The specimens collected show a wide range of variation in the number and position of the

bands. Specimens from Brownsville are strongly banded, the lower band being very wide or split up into from two to six bands. In one specimen there are two wide, dark, brownish-black bands; in the rest of the specimens the bands are light brown in color.

Praticolella berlandieriana (Moricand).

Sinton, under railroad tie; river drift in Brownsville; Corpus Christi.

Several of the specimens are unicolored and translucent. Apparently a rare species in this locality.

Polygyra texasiana (Moricand).

River drift, Brownsville; under mesquite in house-yard, Brownsville; on beach, Port Isabel; Corpus Christi.

The specimens of *texasiana* collected by Mr. Wolcott show a large amount of variation both in size (7.50 to 13.50 millimeters in diameter) and in the height of the spire, the latter varying from flat to strongly elevated. Several specimens have the aperture modified, a characteristic due to immaturity or disease. Three specimens are without a parietal tooth and one specimen has a single very small parietal tooth and two small tubercles in place of the peristome teeth. The sculpture of the lot of eighty specimens is interesting. Forty-six are typical *texasiana*, 22 are transition forms between this and the next variety and 11 are typical *hyperolia*.

Polygyra texasiana hyperolia Pilsbry.

River drift, Brownsville.

Apparently not common.

BULIMULIDÆ

Bulimulus dealbatus liquabilis Reeve.

Corpus Christi.

Two specimens apparently referable to this race of *dealbatus* were found in a lot of *B. alternatus mariae*. They are rather corpulent, unicolored and resemble fig. 7, pl. 6, of Pilsbry and Ferriss's paper.¹

Bulimulus alternatus mariae Albers.

Sinton, on mesquite; Point Isabel, on beach; Brownsville; Corpus Christi.

The Brownsville specimens show a wide range of variation in color. Eleven are pure white, 29 have the upper whorls streaked, 19 are irregularly striped all over and 2 are plain chocolate colored. Two specimens with streaked spires have a well-developed columellar tooth and several specimens show a thickening in this region. Of the Corpus Christi specimens six

¹ *Proc. Phil. Acad.*, 1906, p. 134.

have a columellar tooth while seven are without it or have only slight indications of it.

OLEOCINIDÆ

Euglandina singleyana (W. G. Binney).

Tropical forests, La Esperanza Ranch, Brownsville.

Apparently a common species. The two dozen specimens secured show little or no variation.

PUPILLIDÆ

Pupoides marginatus (Say).

Old Fort Brown, Brownsville.

Typical, but apparently not common.

Bifidaria pellucida hordeacella Pilsbry.

Old Fort Brown, Brownsville.

Very common, associated with the two following species.

Bifidaria procera (Gould).

Old Fort Brown, Brownsville. This is the most common pupa in the Brownsville region. It varies somewhat in corpulency.

Bifidaria contracta Say.

Old Fort Brown, Brownsville. Not particularly abundant.

ZONITIDÆ

It is singular that Mr. Wolcott secured no representatives of this family, as the various species are common throughout Texas.

SUCCINEIDÆ

Succinea luteola Gould.

On mesquite near Brownsville. Very common and typical. Specimens of all sizes were obtained, varying from the young, about 2 millimeters long, to old specimens 16 millimeters in length.

PLANORBIDÆ

Planorbis glabratus Say.

River drift, Brownsville. Several specimens, the majority of which are half-grown, seem referable to this species, which would seem to be distinct from *trivolvus*, the whorls being narrower and the shell generally more polished.

Planorbis cultratus Orbigny.

A single specimen of this acutely keeled *Planorbis* was found in river drift at Brownsville. It measures 3 millimeters in diameter.

Planorbis liebmanni Dkr.

River drift, Brownsville.

Segmentina obstructa (Morel).

In river drift, Brownsville. Numerous and apparently typical.

FRANK COLLINS BAKER