GASTROPODS FROM THE TERTIARY DEPOSITS OF NORTHEASTERN COLORADO

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ABSTRACT. — Oligocene Polygyridae, Zonitidae, Endodontidae, Succineidae, Pupillidae, and Miocene Succineidae are reported from northeastern Colorado.

In twenty years of collecting vertebrate fossils in the Tertiary deposits in Logan and Weld Counties, Colorado, I have found several kinds of fossil gastropods. These comments are made in order to record my finds and stimulate interest in these northeastern Colorado fossils.

My search for fossils has been carried on by "prospecting" for larger specimens and "screening and washing" for small items such as teeth. Large specimens such as no. 1700 and 1704 are internal molds found while prospecting. These molds can be recognized only by their shape; therefore the few I found may be the result of properly contrasted light and shadow rather than rarity. On the other hand, many of the minute gastropods have been preserved by crystalline replacement. Consequently in screening and washing about 3800 of these small gastropods (all but fifty are pupillids) have been found.

I have used Pilsbry (1948) as a guide for the family names. Assignment of some of the specimens implies a degree of accuracy not warranted by the condition of the specimens. However, it seems to be the best way to convey an opinion gained from examining the material.

OLIGOCENE TERRESTRAL GASTROPODS

Polygyridae — No. 1705 (Fig. 1E) was found in the lower part of the middle Oligocene beds along with no. 1703 and a few pupillids.

Zonitidae — No. 1703 (Fig. 1C) is one of six similar specimens from the middle Oligocene; the umbilicus is cone-shaped.

Endodontidae — Figure 1A illustrates what I think is an endodontid. Only incomplete internal molds have been found in the massive, fine silt of the lower and middle Oligocene deposits. The dozen found range in size from 10 to 19 mm in greatest diameter.

Succineidae — Oligocene succineids have been found in the Pawnee Buttes area of Weld County. No. 1702 from the middle Oligocene beds is five mm long and three mm in diameter; others (18) are smaller.

Pupillidae — Here, because of preservation, Pupillidae means any small pupillid-like shell. While pupillids are found at all levels in the Colorado Oligocene, the middle part of the middle Oligocene deposits yield the greatest numbers. Nos. 1706-10, 1712-13 (Figs. 1F-1J, 1L-1M) are a few examples of the kinds collected. In these pupillids crystalline replacement is neither confined to the original shape nor necessarily complete and generally fills the body cavity. The area around the aperture seems to be the poorest preserved part of the shell and I fear that cleaning away silt and crystal growth has often created a better lip than was present. In other specimens the crystal growth seems to be excessive. I think the two little "teeth" seen on Figure 1G are calcite growths. I have examined a great number of these specimens seeking teeth such as one seen on some of the

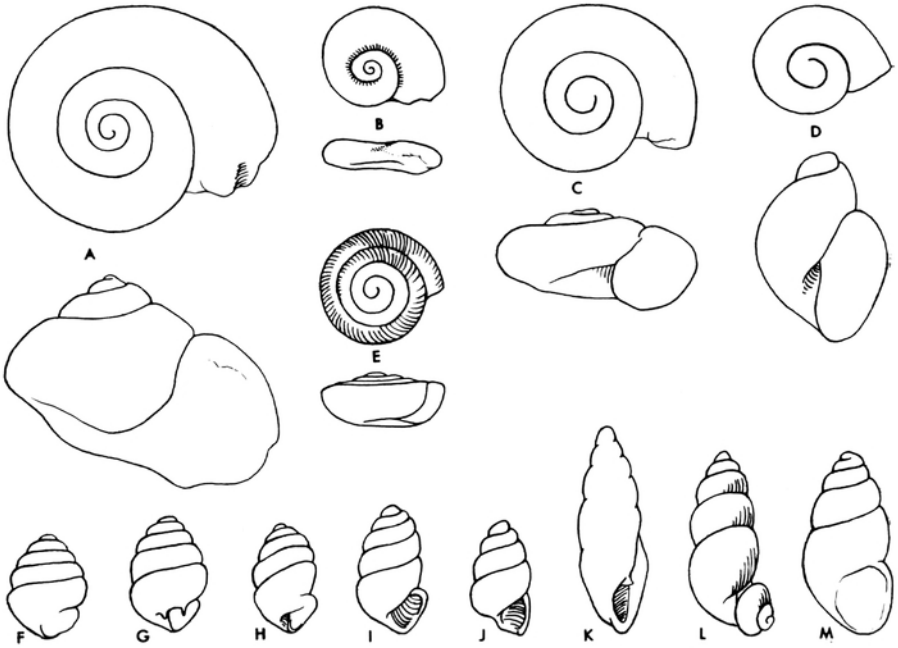

FIGURE 1. — Gastropod Shells from the Tertiary Deposits in Northeastern Colorado. The dimensions recorded with each specimen conform to the orientation seen in the illustrations. Figures A and D are approximately x1.2 and all others are x5.6. All specimens are in the University Museum, Southern Illinois University. A: No. 1700, internal mold, 30.5 x 24.5 mm; center Sec. 30, T. 11 N., R. 53 W., Logan Co.; late Chadronian (lower Oligocene). B: No. 1701, external mold, 2.6 x .8 mm; SE¼ Sec. 36, T. 10 N., R. 59 W., Weld Co.; lower Oligocene. C: No. 1703, external mold, 4.5 x 2.2 mm; NW¼ Sec 10, T. 11 N., R. 54 W., Logan Co.; early Orellan (Middle Oligocene). D: No. 1704, internal mold, 21.0 x 14.4 mm; W½ Sec. 28, T. 12 N., R. 55 W., Logan Co.; upper Miocene. E: No. 1705, external mold, 2.8 x 1.2 mm; data same as "C". F: No. 1706, external mold, 2.3 x 1.8 mm; SW¼ Sec. 12, T. 11 N., R. 54 W., Logan Co.; middle Oligocene G: No. 1707, external mold, 2.7 x 1.8 mm; NE¼ Sec. 17, T. 10 N., R. 59 W., Weld Co.; middle Oligocene. H-K: Nos. 1708-11, external molds (H, 2.5 x 1.6 mm; I, 2.9 x 1.5 mm; J, 2.6 x 1.4 mm; K, 4.7 x 1.5 mm); data same as "F". L-M: Nos. 1712-13, external molds, 4.0 x 1.5 and 4.1 x 1.9 mm; midpoint of west line of Sec. 2, T. 10 N., R. 59 W., Weld Co.; middle Oligocene.

present day specimens. No such structures have been observed, but it is questionable whether or not the teeth would be preserved.

Other Oligocene specimens — No. 1701 (Fig. 1B) is a battered internal cast from the lower Oligocene. Probably the umbilicus was broad and shallow and all the inner whorls are slightly depressed on the opposite side.

No. 1711 (Fig. 1K) and associated material reminds one of a miniature *Euglandia rosea* (Oleacinidae) without striations. The aperture appears to be elongate and flaring. Never-the-less, neither by hand cleaning nor ultrasonic cleaning have I been able to ascertain the true nature of the opening.

Fragments of specimens too incomplete to consider have been found. Tiny cochlear spirals from the skulls of small vertebrates frequently found in the deposits can be most misleading and need careful inspection.

MIOCENE TERRESTRAL GASTROPOD

Succineidae — No. 1704 (Fig. 1D) is an average-sized internal mold found

with nine less perfectly preserved specimens in an area about one meter square in beds containing the Vim-Peetz local fauna (Galbreath, 1953) that I consider to be very late Miocene in age. The matrix consists of nodular limy silt, a relic of an old soil horizon — hence terrestral. With only an internal mold I shall call my specimen a succineid because it is terrestral, thus emulating Russell (1938) who thought the aquatic habitat to be a strong argument for deciding that *Pseudosuccinea venusta* from the Oligocene of Park County, Colorado was a lymnaeid.

LITERATURE CITED

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Manuscript received July 11, 1968.