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STIPID GRASS "SEEDS" FROM THE OLIGOCENE AND MIOCENE DEPOSITS OF NORTHEASTERN COLORADO

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ABSTRACT.--Grass "seeds" from Middle Oligocene and Miocene deposits are reported.

The Tertiary flora of the High Plains of North America has been of interest to me because of the part it plays as a food source for the many small, herbivorous mammals found in the Oligocene and Miocene deposits in northeastern Colorado. Consequently, the two "seeds", that is to say caryopsis or grain with palea and lemma, reported here add to the fund of knowledge concerning this floral-faunal relationship.

Description of Specimens

One silicified "seed" (No. SIU PC664, Paleobotanical Collection, Botany Department, Southern Illinois University) was collected from a reddish sandstone channel deposit of Middle Oligocene age in the Cedar Creek member of the White River formation near the midpoint of the west border of sec. 2, T. 11 N., R. 59 W., Weld County, Colorado (14 miles east of Grover). This specimen (Fig. 1A-B) has the following dimensions (in mm): length of preserved part, 3.53; width at summit, 0.41; greatest diameter, 1.14; and diameter at broken base, 0.60. The summit shows no feature of descriptive value not seen in the figure. The lemma is smooth except for a longitudinal keel on the backside. The keel is strongest in the area of the summit and shoulder and terminates at the beginning of a cleft in the base of the lemma. The Palea exhibits a pebbly-like surface that is too weak to be described as tuberculate.

The second specimen (No. SIU PC665, Paleobotanical Collection, Botany Department, Southern Illinois University), also silicified, was collected from "Quarry A", a vertebrate fossil locality of earliest Middle Miocene age in the Pawnee Creek formation (Galbreath, 1953) in Martin Canyon, NE 1/4 sec. 27, T. 11 N., R. 53 W., Logan County, Colorado (nine miles west and five miles south of Peetz). This "seed" (Fig. 1C) has the following dimensions (in mm): length of preserved part, 3.39; width at summit, 0.40; greatest diameter, 0.86; and diameter of broken end of callus, 0.26. At the summit the diaphragm is well-preserved and shows the canal for the central nerve. The lemma is slightly

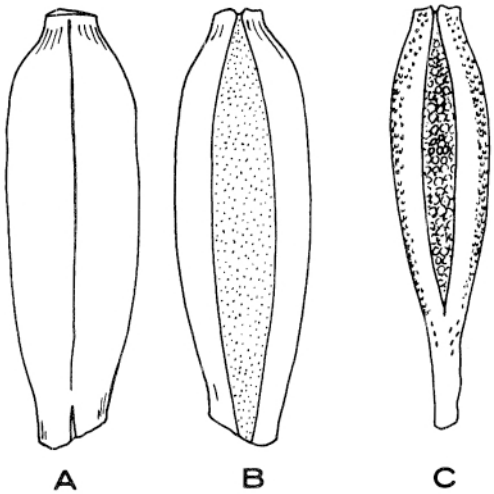

Figure 1.-- (A-B) stipid sp., No. SIU PC664, and (C) Stipideum nr schereri, No. SIU PC665, Paleobotanical Collection, Botany Department, Southern Illinois University.

weathered; tubercles certainly are more evident in some areas than in others but the distribution is irregular. I think the lemma must be described as tuberculate except for the narrow strip bordering each edge of the exposed palea. I presume that the non-tuberculated margins of the lemma correspond to the hyaline flaps noted by Elias (p. 42, 1942) on some fossil stipids and to be associated with two small lobes on the front of the summit. Elias (pl. 5, fig. 4, 1942) shows an excellent side-view of these lobes. The palea is tuberculate. Traces of stumps of hairs are visible on the upper part of the callus.

Discussion

It is deplorable to have but a single "seed" from each of the two levels despite continued searching since discovery of the specimens more than a decade ago. Consequently, the specimen from the Middle Oligocene deposit does little more than indicate the presence of a stipid-like plant with a hull essentially devoid of the ornamentation seen in geologically younger stipids.

The specimen from Quarry A appears to belong to the Parastipideum section of the genus Stipideum and possibly to Stipideum schereri Elias although the assignment is unsatisfactory with this sample of one.

Elias's work (1942) on the Miocene-Pliocene grasses of the High Plains include remarks about stipids found in the Late Tertiary deposits in northeastern Colorado. In Logan County specimens are found, together with Celtis willistoni (Cockerell) Berry, in deposits of the Pawnee Creek formation containing the Kennesaw and Vim-Peetz local faunas of Late Miocene age. While specimens of Stipideum are numerous, most are damaged. None-the-less, the combination of features gleaned from examining collections show

Stipideum coloradense Elias to be the most common kind present.

It is not unusual to find closely packed concentrations of Stipideum or Celtis, or both, that suggest that these specimens had been gathered and stored -- possibly in burrows. On two occasions such concentrations were associated with skeletons of geomyoid rodents.

Acknowledgements

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