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A Symmetrodont from the Early Cretaceous of Northern Texas

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The discovery of fossil mammals in the Early Cretaceous (Albian) Trinity Sand of Montague County, Texas, in 1949 was announced some years ago (Zangerl and Denison, 1950), and a description of a new triconodont from this formation has been published (Patterson, 1951). Since that time a program of field and laboratory work has been carried out by this Museum in co-operation with the Texas Memorial Museum and the Bureau of Economic Geology of the University of Texas. To date some 300 very fragmentary mammalian specimens, mostly single teeth, have been recovered, together with a large amount of incomplete fish, amphibian, and reptilian remains. Among the mammals all known Jurassic orders except the Pantotheria and Docodonta are represented. In the place of these two groups are therians with tribosphenic molars.

The present brief article is an excerpt from a larger manuscript on the Trinity Mammalia that proved too lengthy for inclusion in this volume. In that contribution, which it is hoped will be published shortly, the therians with tribosphenic molars are described and the bearing of this and other evidence on theories of mammalian molar evolution and of the relationships of Mesozoic mammals is discussed.

Subclass **Theria**

Infraclass **Pantotheria**

Order **Symmetrodonta**

Family **Spalacotheriidae**

Spalacotheroides¹ gen. nov.

Type species.—*Spalacotheroides bridwelli* sp. nov.

Distribution.—Early Cretaceous, Albian, Texas.

Diagnosis.—Closest to *Spalacotherium* among previously known forms, differing as follows: lower molars shorter relative to width, paraconid and metaconid closer together at their bases, paraconid more internal in position relative to protoconid, basal cingulum not continuous around protoconid, anterior and posterior cingulum cusps larger, more projecting.

Spalacotheroides bridwelli sp. nov.

Type.—CNHM-PM 933, portion of left ramus with one molar complete save for the greater part of the paraconid, alveoli of one molar anterior to this one and of two molars posterior to it; an adult individual, molar slightly worn.

Hypodigm.—Type only.

Horizon.—Approximately 87 feet below the top of the Trinity Sand, Early Albian age.

Locality.—Greenwood Canyon exposures, 2½ miles southwest of Forestburg, Montague County, Texas.

Diagnosis.—As for genus; see measurements below.

MORPHOLOGY

Save for the loss of most of the paraconid, the molar is well preserved and permits immediate recognition of the specimen as a spalacotheriid symmetrodont. The tooth, which consists essentially of the trigonid, is considerably shorter antero-posteriorly than the molars of *Spalacotherium* (Simpson, 1928; Butler, 1939), itself outstanding in this respect among Jurassic symmetrodonts. The crown is much higher on the labial than on the lingual side. The protoconid is a large and high cusp, antero-posteriorly compressed and curving inwardly so that the apex is situated nearly in the center of the crown. The bases of the paraconid and metaconid are close together, notably more so than in *Spalacotherium*, a consequence of the general shortening of the tooth. The paraconid, also due to the shortening, is much more internal in position relative to the

¹In allusion to the close relationship of this form to *Spalacotherium*. The species name is in honor of the late Louis H. Bridwell, 1881–1951, through whose efforts the locality was made known.

protoconid than in the Purbeckian form. Between paraconid and protoconid there is a sharply defined notch, and it would therefore seem that the now missing apex of the paraconid stood free. The metaconid is about half as high as the protoconid, and occupies

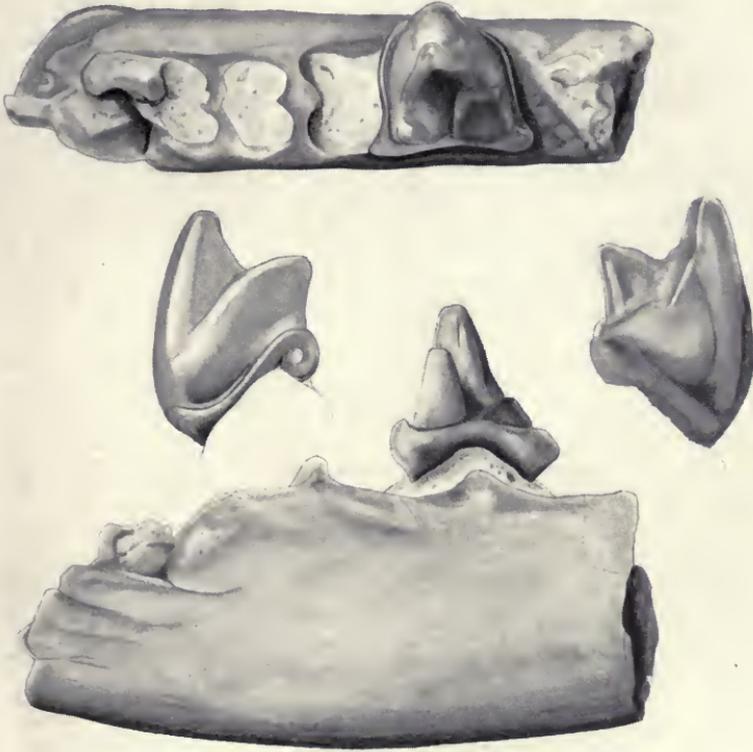


FIG. 145. *Spalacotheroides bridwelli* gen. and sp. nov. Fragment of left mandibular ramus with one molar; type, CNHM-PM 933. Dorsal and medial views of fragment, posterior and anterior views of molar; approximately $\times 25$. Drawn by Douglas E. Tibbitts, Staff Illustrator.

approximately the same position on the crown as does the corresponding cusp of *Spalacotherium*. A crest dips sharply down from its apex and then rises again to reach the apex of the protoconid. This crest and the tip of the metaconid are worn in a horizontal

plane; the tip of the protoconid shows a wear facet, facing upward, inward and backward, that is connected to the worn area on the crest. The posterior face of the trigonid bears no clearly defined wear facet but shows oblique scorings that were presumably brought about by shearing movements. The basal cingulum is very prominent on the anterior and posterior faces and surrounds the lingual face, where it is poorly developed near the center, but, in contrast to *Spalacotherium*, it is not continuous around the external face of the protoconid. The cingulum rises to small cusps at the antero-internal and postero-internal corners of the tooth, and these are strongly projecting. The anterior is the lower of the two; the posterior, the homologue of the pantotherian talonid cusp, is higher and somewhat sharper.

The roots and alveoli are wide. The last alveolus in the specimen has a small posterior portion suggesting that this may have been for the last molar. The ramus fragment, so far as preserved, shows no trace of an internal mandibular groove.

MEASUREMENTS

	MM.
Length of molar.....	0.86
Width of molar.....	0.84
Depth of ramus beneath molar.....	1.29

DISCUSSION

There can be no doubt that this Early Cretaceous form is more closely related to the Purbeckian *Spalacotherium* than to any other symmetrodont thus far described. The short, wide molar and the very acute angle formed by the trigonid cusps are specializations from an ancestral condition represented, at least structurally, by the Jurassic form. It is highly probable that *Spalacotheroides* possessed an equally high number of molars. *Spalacotherium* shows that an acute-angled trigonid accompanied a high number of molars; the amphidontids and *Tinodon* demonstrate, on the other hand, that a wide-angled trigonid and a low number of molars went together. *Spalacotheroides* is the first representative of what may be called the acute-angled spalacotheriids to be discovered in America. It is also the first symmetrodont to be positively recorded from the Cretaceous. The probability exists, however, as will be discussed elsewhere, that the amphidontid *Manchurodon* Yabe and Shikama (1938), from the Mesozoic of Manchuria, may be of Cretaceous rather than of Jurassic age.

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