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*TREMARCTOTHERIUM* FROM THE PLEISTOCENE  
OF MEADE COUNTY, KANSAS

BY  
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OF MEADE COUNTY, KANSAS**

By **GEORGE C. RINKER**

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INTRODUCTION

**T**HE occurrence of short-faced bears in the Pleistocene of the High Plains region has long been established (Frick, 1930; Matthew, 1918, 1920). Although intensive work had been done on the Pleistocene deposits of Meade County, Kansas, during the past ten years, no remains of these bears were discovered until the summer of 1947. At that time Claude W. Hibbard, in charge of a field party from the University of Michigan Museum of Paleontology, collected a part of the skull of a large bear. The specimen, No. 24380 in the collection of the University of Michigan Museum of Paleontology, consists of the basal part of the cranium, and has been identified as *Tremarctotherium simum* (Cope). The rostrum and maxillary parts of the skull as well as the zygomatic arches are missing. The posterior part of the cranium is essentially complete. No teeth were found.

COMPARISON WITH OTHER SPECIMENS

There are certain differences in size and proportions between the Kansas specimen and other specimens of *T. simum* for which data are available. When the amount of difference in these respects is compared with that in individuals of species of living bears, it appears to fall well within the limits of individual and secondary sexual variation. Since actual specimens have not been available to me, the following

comparisons have been based on published photographs, figures, and descriptions of specimens of *Tremarctotherium* (Cope, 1891, Figs. 1, 2, and 3; Merriam and Stock, 1925, Pls. 2, 3, and 4; and Lambe, 1911, Pls. I, II, and III). For photographs of the Kansas specimen, see Plate I, Figures 1 and 2.

The Kansas specimen represents an individual of slightly larger size than either that figured for *T. simum* by Cope or for *T. californicum* by Merriam. The only outstanding difference between the skulls of these and that of No. 24380 is in the width across the postorbital processes. This is given by Merriam and Stock (1925, p. 19) as approximately 150 mm. for *T. simum* and 154 mm. for *T. californicum*. In the specimen at hand, this width is approximately 172 mm. As far as I am able to judge, the general configuration of the skull corresponds well with that of *T. simum*, and only slightly less well with that of *T. californicum*. A few other differences might be pointed out. The brain case of the Kansas specimen seems to be more inflated than that of either of these two specimens. The parietal foramina are much smaller, especially the ones nearest the parietal-squamosal suture. The superior parietal foramina are placed about midway along the lambdoidal crest. The mastoid processes are shorter than those of *T. californicum*, resembling very closely those of *T. simum*. The mastoid processes and paraoccipital processes have much less individuality than those of *T. californicum*, not being separated by such a strongly developed cleft. The lambdoidal crest, viewed from the posterior, makes a relatively higher and narrower arch than in *T. californicum*.

The variations just mentioned are of so minor a nature that I believe, if allowances are made for individual and secondary sexual variation, that the present specimen cannot be shown to differ specifically from either *T. simum* or *T. californicum*. I wish to emphasize, however, that I have not been able to make direct comparisons. The Kansas specimen has been referred to *Tremarctotherium simum* (Cope), because its resemblance to that form seems to be slightly greater.

Merriam and Stock (1925, p. 9) suggested that these two forms may be conspecific. They stated: "It appears evident, from the pres-

ent study, that the disparity in size between the arctotheres of northern and southern California may not be greater than that falling within the limits of sexual variation in some living bears." The Kansas specimen, which is very near *T. californicum* in size but resembles *T. simum* more closely in other characters, adds at least some support to this suggestion.

## ASSOCIATED FORMS

A skull and part of the skeleton of a Columbian elephant, *Mammothus columbi* (Falconer), an ungual of an edentate, *Paramylodon*, and numerous invertebrates were associated with the bear skull. The elephant, although an old individual, as shown by extensive wear on  $M^3$ , is unique in that it possesses very small tusks. The left tusk, measured at the alveolus, is  $2\frac{7}{8}$  inches in diameter, and projects 4 inches beyond the edge of the bone. This does not represent the total length, for a small part of the tip has been broken off. The right tusk, however, is complete, with the tip smoothly rounded and polished. It is  $2\frac{3}{16}$  inches in diameter at the base and  $4\frac{1}{2}$  inches long. From the disparity known to exist in the size of tusks between males and females in living elephants, this skull is believed to be that of a female Columbian elephant.

The beds in which the bear, the Columbian elephant, and the invertebrates occurred lie unconformably upon the beds of the Rexroad formation; they are channeled into them and represent the approximate horizon of the Cragin Quarry, which is probably the equivalent of the Lower Kingsdown formation. From this horizon, the following mammalian forms have been recorded (Hibbard, 1949):

## Carnivora

- Aenocyon dirus* (Leidy)
- Smilodon* sp.
- Panthera atrox* (Leidy)
- Felis* cf. *oregonensis* Rafinesque

## Rodentia

- Geomys* sp.

## Lagomorpha

- Lepus* sp.

## Proboscidea

*Mammuthus columbi* (Falconer)

## Edentata

*Paramylodon harlani* (Owen)

## Perissodactyla

*Equus francisci* Hay*Equus niobrarensis* Hay

## Artiodactyla

*Camelops kansanus* Leidy*Tanupolama* sp.*Breameryx minimus* (Meade)

The pelecypods and gastropods associated with the bear are of interest because of their affinities with Recent invertebrates of the region. They have been identified by Henry van der Schalie as follows:

## Pelecypoda

*Musculium partineium* Say*Musculium transversum* Say*Pisidium noveboracense* Sterki*Pisidium abditum* Haldeman

## Gastropoda

*Lymnaea parva* Lea*Lymnaea humulus rustica* Lea*Lymnaea caperata* Say*Lymnaea* sp.*Helisoma lentum* Say*Helisoma anceps* Menke*Menetus exacuus* (Say)*Gyraulus parvus* (Say)*Physa hawni* Lea*Physa arboreus* Say*Physa anatina* Lea*Hawaita miniscula* (Binney)*Helicodiscus parallelus* (Say)*Gastrocopta armifera abbreviata* (Sterki)*Gastrocopta tappaniana* C. B. Adams*Gastrocopta cristata* (Pilsbry and Vanatta)*Vertigo ovata* Say*Pupoides marginatus* (Say)*Vallonia gracilicosta* Rheinhardt*Succinia concordalis* Gould*Succinia haydeni* Binney

Of these twenty-five forms, living representatives of fourteen are to be found within the immediate vicinity and living representatives of the remaining eleven within the United States.

## DISCUSSION

The presence of the Columbian elephant, known in Meade County, Kansas, only from the Cragin Quarry and beds of equivalent or later age, and of the invertebrates, which present a Recent aspect distinct from the invertebrates of the Cudahy fauna (Hibbard, 1944; Frye, Leonard, and Hibbard, 1943), indicates that this deposit must not be older than the Cragin Quarry deposit. The horizon seems to correspond to the Lower Kingsdown equivalent in Meade County. The resemblance of the mammalian fauna to that of the Rancho La Brea is so strong as to suggest that this is the High Plains equivalent of part of that fauna. This opinion would be consistent with the dating of the Rancho La Brea by Eaton (1941, Fig. 86).

There are several points of resemblance between the Cragin Quarry fauna and its equivalents and the fauna of the Hay Springs Quarries, Sheridan County, Nebraska, which is the only other locality in the central High Plains where the short-faced bear *Tremarctotherium simum* (Cope) has been found. Since the present evidence seems to point to a late Pleistocene age for this bear and its associated fauna, the present dating of the Hay Springs fauna as Middle Pleistocene (Condra, Reed, and Gordon, 1947) should probably be carefully restudied.

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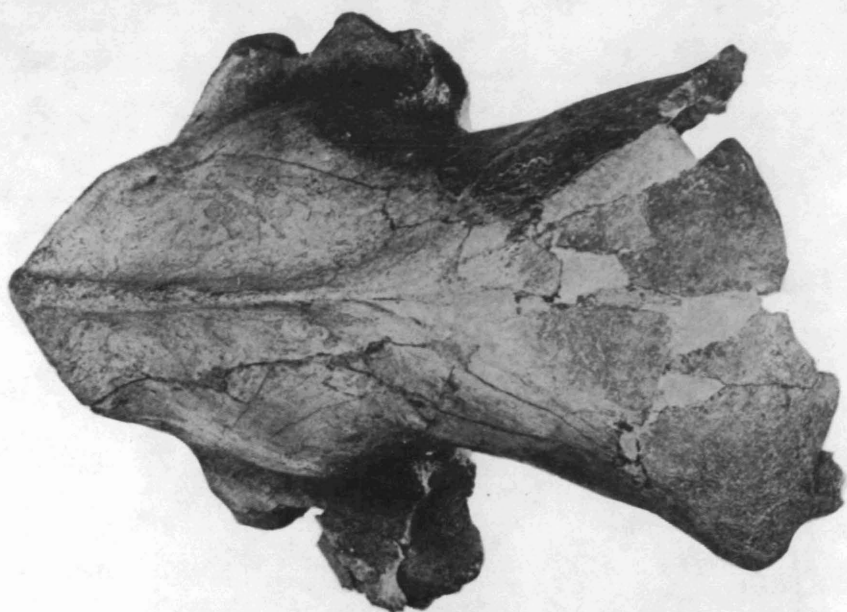
## EXPLANATION OF PLATE I

FIG. 1. Dorsal view of *Tremarctotherium sinum* (Cope), No. 24380, University of Michigan, Museum of Paleontology.

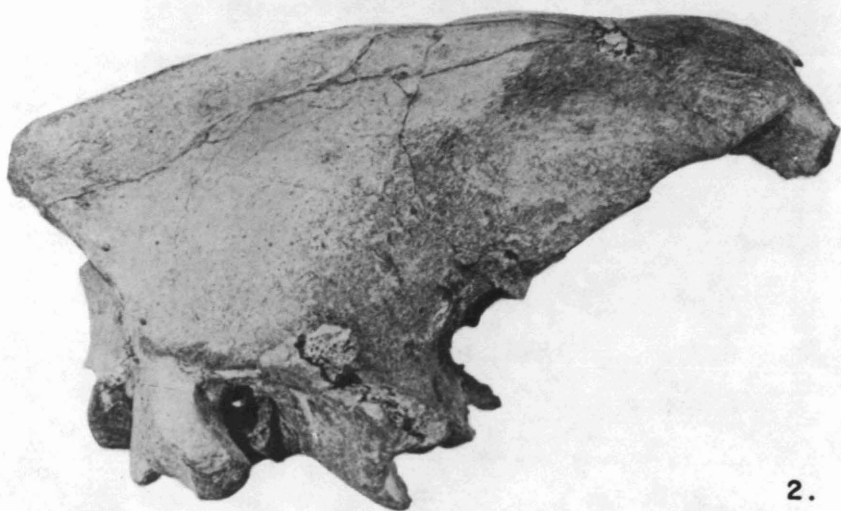
FIG. 2. Lateral view of the same specimen. About  $\times 0.4$ .



PLATE I



1.



2.



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