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ERWIN H. BARBOUR, *Director*

THE SKULL AND MANDIBLE OF MASTODON MOODIEI

BY ERWIN HINCKLEY BARBOUR

The mandible of the Milford mastodon, *Mastodon moodiei*, was figured and described in Bulletin 24, December, 1931. In the meantime, the fragments of both skull and mandible have been properly cleaned, put together, and mounted for exhibition. No essential parts of the skull or mandible are wanting or are seriously damaged.

The atlas and axis were found in perfect condition, and indicate a creature of quite moderate size.

The skull is possessed of two grinding teeth on the right side and one on the left. The second left molar is wanting. The incisive sheaths, viewed from the under side are undamaged, while the upper surface is almost, but not quite, as well preserved. The tips of the incisive sheaths are thickened on the upper side more than ordinarily. The dominating feature of the skull is the degree to which it is fore-shortened, or pugged.

It should be noted that, in proboscidean skulls, the bone covering much of the crown has about the thinness and fragility of an egg shell. Accordingly, it is easily broken through, thus exposing to view the ragged and characteristic coarse chambered structure of the diploic layer beneath. This coarsely honey-combed layer combines lightness with strength, whereas, solid bone would have been over-ponderous. No wonder that the skulls of mastodons and mammoths exposed to the elements often have this thin wall damaged or destroyed. Inspection often discloses like conditions in modern proboscidean skulls even though skillfully prepared in a protected laboratory. The immediate surface of the crown of this skull is largely restored.

The occipital region, when compared with that of other observed examples, seems to be flatter and smoother. It appears to be singularly free from ridges and roughnesses for insertions. The nuchal region, though broad, is but feebly impressed, and seems to be inadequately roughened.

The mandible of the animal under discussion is unique among mastodons. It is massive and strong, and is notice-

ably wide across the condyles. The two stubby tusks and the recurved rostrum lends added interest. Ordinary examples of *Mastodon americanus* are without mandibular tusks, but scattered examples called the tetracaulodont type, show tusks in the lower jaw as well as the upper. The occasional recurrence of lower tusks suggests origin from a four-tusked ancestry.

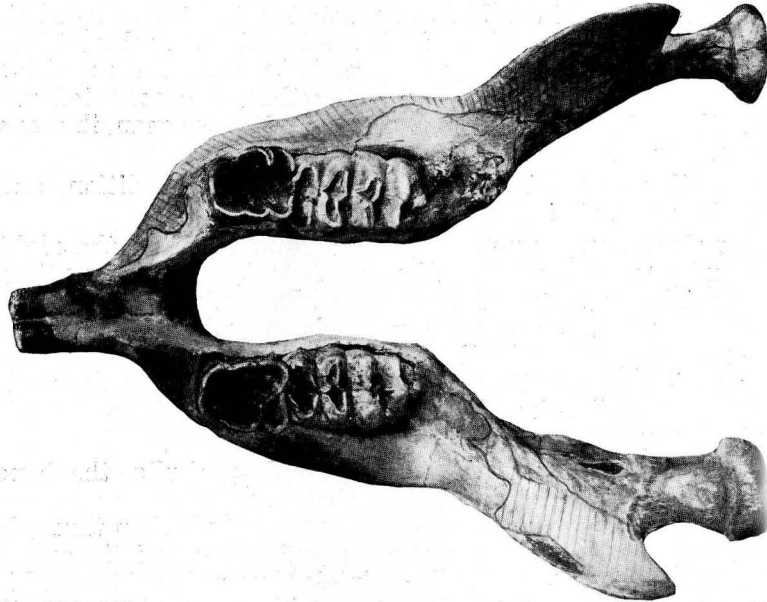


Fig. 154.—*Mastodon moodiei*, crown view of the mandible. No. 21-3-31. Showing recurved rostrum and short, blunt tusks. Restored portions are indicated. About 1/10 natural size.

The left ramus of the mandible is essentially complete, as may be seen in the figure of the skull and jaw, but the right ramus is less so.

In the mandible, the second left molar is missing but both molars are present on the right side. These grinding teeth, and likewise the two mandibular tusks, are perfect. The third molars show but moderate wear, but the second molars are considerably worn and flattened, and the islands of dentine are confluent. A little cement is to be noted in the valley between the third and fourth grinding ridges.

The two mandibular tusks are dense, strong, and unscratched. About $6\frac{1}{2}$ inches (165 mm.) of each tusk is

embedded in the alveolus, leaving about $2\frac{1}{2}$ inches (64 mm.) projecting. The tusks are worn off rather squarely by the rough, dangling trunk. This is an interesting variation of the type known as the American mastodon which flourished from the beginning to the close of Pleistocene time, and ranged all of the United States, probably all of British Columbia, and the Yukon territory.

Citizens interested in such matters will find on display in the State Museum three skulls of *Mastodon americanus*, parts of a fourth which has been but partly dug out, seven jaws,



Fig. 155.—*Mastodon moodiei*, the Milford mastodon, skull and jaw. Male. Specimen No. 21-3-31, Morrill Palaeontological Collections of the Nebraska State Museum. About $1/10$ natural size. The mandible shows a recurved rostrum with two blunt tusks not broken but worn off squarely. Restored parts indicated.

numerous teeth, and stray skeletal parts. They are urged to notify the University promptly of all such finds in their respective communities, and are invited to visit the museum whenever convenient, in order to acquaint themselves with the rare and instructive fossil mammals of their region, and to learn personally the plans and purposes of their State Museum.

MEASUREMENTS

Skull

Condyles to tip of incisive sheath, $40\frac{3}{8}$ inches (1026 mm.)
 Across zygomata at widest point, 27 inches (685 mm.)
 Across incisive sheaths, near the tip, 18 inches (457 mm.)
 Width at infraorbitals, $15\frac{1}{4}$ inches (385 mm.)
 Length of incisive sheath from molar to tip, 13 inches (330 mm.)
 Malar process from border of infraorbital foramen, $19\frac{3}{4}$ inches (501 mm.)
 Orbit, vertical, 6 inches (152 mm.)
 Across supraorbital processes, 28 inches (711mm.)

Upper tusk

Diameter, 4 inches (102 mm.)

Mandible

Condyle to tip of tusk, 32.5 inches (951 mm.)
 Transverse diameter of condyle, 5 inches (127 mm.)
 Depth in front of M_2 , $7\frac{1}{8}$ inches (180 mm.)
 Depth just back of M_2 , $6\frac{3}{4}$ inches (172 mm.)
 Greatest thickness, 7 inches (182 mm.)

Lower Molars

M_2 , Length, $4\frac{1}{8}$ inches (115 mm.)
 Width, $3\frac{3}{8}$ inches (85 mm.)
 M_3 , Length, $6\frac{7}{8}$ inches (175 mm.)
 Width, $3\frac{3}{4}$ inches (96 mm.)

Upper Molars

M_2 , Length, $4\frac{1}{8}$ inches (115 mm.)
 Width, $3\frac{3}{4}$ inches (95 mm.)
 M_3 , Length, $6\frac{1}{2}$ inches (165 mm.)
 Width, $4\frac{1}{8}$ inches (106 mm.)
 Width between last molars, $4\frac{1}{4}$ inches (108 mm.)

Mandibular tusk

Length, $9\frac{1}{4}$ inches (235 mm.)
 Diameter, 2 inches (51 mm.)

The University of Nebraska
 Lincoln,
 April, 1932.