The Parrish and Glasford Mastodons[1]

WILTON N. MELHORN, Purdue University

Introduction

Remains of the American mastodon, *Mammut americanum,* are relatively common in Indiana, ranging from finds of a single tooth or bone to nearly complete specimens. This latter group was excavated mostly prior to 1910 and no significant discoveries have been reported in recent years. A catalogue of all known Indiana occurrences of the mastodon and the true elephants was compiled in 1912 by Hay (1). During the last 40 years other remains have come to light and have been reported in the proceedings of this academy or merely as news items in local newspapers.

Two newly-discovered mastodons were examined during May 1959. These examinations aroused the writer's interest and led him to investigate the literature concerning the past discovery and disposal of our mastodon remains. It was interesting but also greatly disappointing to find that although Indiana has exported complete or nearly complete specimens to most major museums in the United States, only one mounted specimen has been kept for permanent display within the state (3).

Parrish Mastodon

Ditching operations for a watershed management program exposed a skeleton near the northern margin of a 20-acre peat bog on the Richard Parrish and Glen Slater farms in the NW¼ SW¼ section 32, T. 29N., R. 1E., Fulton County. The location is on gently rolling ground moraine containing sphagnum- and peat-filled depressions that probably were occupied originally by shallow lakes. The Maxinkuckee moraine is about 2 miles east of this bog.

The bones were excellently preserved, although the pelvis had been broken by the dragline. The sacrum and rear leg bones had been removed from the ditch and exposed to air for more than a week, but treatment with white shellac and alcohol prevented any excessive crumbling or cracking. Excavation proceeded headwards from the pelvic bones which still protruded from the bank of the ditch. Much of the posterior two-thirds of the skeleton was recovered, including 23 ribs and their attendant dorsal vertebrae, the lumbar vertebrae, the sacrum, rear legs, and toe bones. The patellae and 18 caudal bones were recovered also. The cervical vertebrae, skull, tusks, and the greater part of the sternum have not been located.

The skeleton was canted downward at a sharp angle into the bog. The bones were buried in an olive-green, macerated peat underlain by a few inches of gray clay. Fine-grained sand underlies the clay at a depth of 5 to 7 feet. The skeleton was disarranged considerably, but no teeth marks of carnivores were visible nor were any artifacts recovered. Similar disarrangement and disarticulation of other skeletons has been reported

[1] Robert C. Parks, Geologic Technician at Purdue University, assisted in excavation, preservation, and assembly of the Parrish mastodon. Dr. Robert Krebs, Virginia Polytechnic Institute, X-rayed soil samples from this site.

previously (2, 4, 5). Position of the pelvis, the first part excavated, suggested that the animal was lying on its side; however, the lumbar and dorsal vertebrae and ribs were in an inverted or "bottoms-up" position. It is believed that the missing portions of the skeleton either are a greater distance away than would be expected normally or have sunk to a greater depth in the bog.

The bones were measured for comparison with other well-known mastodons. Table 1 matches these measurements against similar data available for specimens preserved at the U. S. National Museum.

TABLE 1. Measurements of mastodon bones in mm.

Bone measurement	U. S. National Museum	Parrish
Length of longest rib	1063	1341
Length of femur	930–970*	1073
Average length of dorsals	56–70*	97
Length of sacrum	400	487
Length of 3rd dorsal spine	381	442
Average width of dorsals	125	167

* More than one specimen.

Measurements of the Parrish mastodon average about 20 percent greater than the U. S. National Museum specimens. The largest rib of the Parrish mastodon compares favorably in length with the Warren mastodon (1390 mm), and the femur is about the same size as reported for the Orleton Farms mastodon (1067 mm) and Denver mastodon (1070 mm).

Fusion of the ilium, ischium, and pubis is nearly complete, indicating that the Parrish mastodon was an adult animal, perhaps of somewhat greater than average size.

Glasford Mastodon

Another mastodon was exposed on the Willis Glasford farm in the SE¼ SW¼ section 29, T. 29N., R. 4E., Miami County, where Weasau Creek transects the Packerton moraine. Spring floods caused caving of the creek bank and exposed the anterior part of the skeleton. A lower jawbone containing 4 teeth and an individual upper molar were recovered from the creek bottom. Preliminary excavation uncovered the cervical vertebrae and a portion of the sternum, but the bones were highly decomposed and fragmented quickly when exposed to air. Initial permission for further excavation was later revoked by Mr. Glasford. It is doubtful, however, that this skeleton is worth salvaging even if complete.

The bones lie immediately beneath 4 to 5 feet of fine-grained, pebbly sand and are embedded in what appears to be a reworked glacial till into which the bones perhaps sank after being covered by the sand. The Packerton moraine in this area has a great number of moderate-sized, peat-filled depressions or kettles which may contain better preserved specimens. The Glasford mastodon may be located in the same general area as the Cover mastodon reported by Kintner (2).

Conditions of Preservation

The Parrish mastodon owes its fine preservation to burial beneath 4 to 7 feet of peat in an extensive bog where the water table is only 1 to 2

feet below ground surface. Conversely, the Glasford mastodon lies beneath well-drained sand and is above the level of adjacent Weasau Creek, so that the local water table is below the remains. The bones are within the zone of aeration and are in an advanced stage of decomposition.

Chances of mastodon preservation are enhanced wherever the water table has remained near the surface. Undrained or poorly drained peat bogs or kettle fillings in moraines offer the best prospects for finding well-preserved, complete specimens. Many skeletal fragments have been reported previously from beneath till or in outwash sands, but are commonly in poor condition. In such cases, the water table normally lies below the level of the remains and decomposition has destroyed the bones except for the most resistant parts such as the teeth and skull.

Stratigraphy

A layer of whitish, silt-like material several centimeters thick immediately overlaid the bones of the Parrish mastodon, but was not present a few yards distant from the remains. It was found subsequently that a lens of similar material was present above the Glasford mastodon. X-ray analysis showed that it consists of a mixture of clay minerals and some form of fatty organic residue. Although chemical analysis is lacking, it is tentatively suggested that the residue may be some stable product of decomposition of mastodon tissue.

The underclay at the Parrish site consists of 14Å clay minerals, probably a hydrous (expanded) mica such as vermiculite, and an appreciable amount of 10Å illite and some kaolinite. The silt lens contains mostly illite and kaolinite. This is surprising as some montmorillonite should be present under the reducing environment present in the bog.

The stratigraphy, mineralogy, and palynology of mastodon sites have not been studied adequately, nor was time available to do so in either case herein described. Future discoveries should be examined carefully to determine if the same combination of organic residue and clay minerals is present.

Future Discoveries

Fossil elephant remains are common in Indiana and others will be found in the future as new watershed and land management programs are initiated. Shallow tiles will be replaced by deep ditches to obtain better drainage of bogs and other depressions. A plea is entered for Indiana geologists to inform county agricultural agents and workers in the soil conservation, soils mapping, and watershed management programs that further discoveries may be anticipated. These people have close contact with land owners and are most likely to learn of new finds. If discoveries are quickly brought to a geologist's attention, sites can be examined to determine if recovery is feasible or warranted. The hairy mammoth is represented from Indiana only by the famous Grant County specimen and fragmentary collections of teeth or bones, and *Elephas columbi* is known only in fragmentary form. It is possible that good specimens of both forms will be recovered eventually if good contacts are maintained with local conservationists and soils workers at the county or district level.

Literature Cited

1. HAY, O. P. 1912. The Pleistocene period and its vertebrata (1911). Indiana Dept. Geol. and Nat. Res., 36th Ann. Rept. :539-784.
2. KINTNER, E. 1930. Notes on unearthing parts of a mastodon skeleton (1929). Indiana Acad. Sci. Proc. **39** :237-239.
3. LYON, M. W., JR. 1939. Indiana mastodons (1938). Indiana Acad. Sci. Proc. **48** :246-247.
4. SIMPSON, P. F. 1934. The Garrett mastodon (1933). Indiana Acad. Sci. Proc. **43** :154-155.
5. THOMAS, E. S. 1952. The Orleton Farms mastodon. Ohio Div. of Geol. Survey Reprint Ser. 4 :1-5.