

CHAUTAUQUA PALEONTOLOGY

MASTODON AND MAMMOTH

By W. W. Henderson

At the threshold of local history, among the important and interesting facts relating to the natural history of Chautauqua County which have contributed to its fame, are those revealed in its archaeological remains. It is notable that within the last half century there have been exhumed from its soil four distinct specimens of the Mastodon (*mastodon gigantus*) and one specimen of the Mammoth (*elephas Americanus*), members of the order of Pachydermata (dense skinned animals), and of the family proboscidea (having probosis and tusks).

The initial discovery of the kind within the county was made August 25, 1871, on the farm of Joel I. Hoyt near the northern border of Jamestown, among a group of low hills—the terminal glacial moraines of the locality, which mark the southern extension of the ice sheet in this longitude, and here overlook the picturesque valley of the Chadakoin.

Regarding the event of discovery, we here introduce the descriptive portion of the excellent detailed report of the late Professor Samuel G. Love, of the Jamestown Collegiate Institute, published by the Jamestown Journal at the time, which forcibly illustrates the difficulties in the way of securing a perfect collection of such parts of a skeleton as might, with care and skill, be preserved, when the discovery is not accidental, and, as is usually the case, made by laborers wholly unacquainted with the importance and necessities of the occasion. These facts will inspire caution and care in unearthing and preserving future discoveries of the kind.

The Hoyt farm is on North Main street. The sink or peaty slough in which the remains were found is about five hundred feet from the east line of that street, covering an area of about an acre and varying from two to eight feet in depth—originally fed by several springs.

Mr. Hoyt caused the sink to be drained, leaving the muck to dry, but later began an excavation there for the double purpose of enriching his land with the muck and making a trout pond. The work of excavating had continued about a week when the workmen began to find, as they supposed, a peculiar kind of wood and roots imbedded some six feet beneath the surface. For several days they

continued to carry the smaller pieces into an adjoining field with the muck and to pile the larger ones with pine roots and stumps to be burned. But Mr. Hoyt being present on August 25, discovered unmistakable evidences of the remains of some huge animal which at some previous age of the world had been deposited there.

It was difficult to determine the precise position of the remains, as they were much disturbed, and some removed before any special notice was taken of them. From the best information obtainable, it was concluded that the body lay with its head to the east, from four to six feet below the surface. Many of the bones, however, were out of place. The lower jaw was about five feet from the head, and lay on the side, crushed together, so that the two rows of teeth were very near each other. The tusks extended eastwardly in nearly a natural position, and, judging from the statements of Mr. Hoyt and the workmen, they must have been ten or more feet in length.

After digging into the gravel and clay about ten inches, traces of a rib were found, decayed, but distinctly marked, over five feet in length. Where the body must have lain were found large quantities of vegetable matter, evidently the contents of the stomach, mostly decayed, in which were innumerable sections of small twigs from one-half inch to two inches in length, which, under the microscope, proved to have the cellular structure of the hemlock spruce. The remains were all in a forward state of decay, and it was found impossible to do but little more than had been done to preserve them. Many of them were picked up in the field whither they had been drawn with the muck, and from piles of roots and stumps. The parts of the skeleton secured are as follows:

Tip of one of the tusks; length, three feet, seven and one-half inches; diameter, six and one-half inches.

Middle section of the other tusk; length, two feet, five inches; diameter, seven and one-half inches.

Six teeth; length of the longer ones on the crown, seven and one-half inches; weight, five and one-half pounds; length of shorter ones, four and one-half inches; weight, two and one-half pounds.

Left side of under jaw, containing two teeth in situ; length preserved, two feet one inch; depth from the crown of the teeth, ten and one-half inches; thickness, six inches.

Pieces of scapula (shoulder blade) from ten to thirteen inches long, and four to seven inches wide.

Sections of ribs, twelve to eighteen inches long.

Head of the femur (thigh bone).

Portions of the vertebrae of the neck.

Fragments of the cranium (skull).

Various other pieces not identified.

This collection was presented by Mr. Hoyt to the Jamestown Collegiate Institute, and under the supervision of Professor Love, encased in glass was deposited in the museum of that institution, where it may now be inspected.

To facilitate a better understanding of the form and structure of the mastodon, we illustrate the subject by a reprint of the celebrated Cohoes specimen of the skeleton of the animal, as mounted in the New York State Museum of Natural History at Albany. The plate of the molar, as seen in this connection, is from a tooth of the Hoyt farm collection and exhibits the conical or mastoid tuberosities forming the grinding surface of the molar of the Mastodon as distinguished from the molar of the Mammoth, and giving name to the former as applied by Cuvier.

Several years later, (in July, 1888) at Bemus Point, on Chautauqua Lake, Frank Arnold, who resided near its shore, and habitually, in his boat, fished from its waters, had frequently observed, a rod or two from shore, at a depth of two or three feet, an object on the bottom which appeared to be a curiously shaped log or section of the knotty limb of a tree; on removing it for examination he found it to be a massive bone, which, on reference to accepted authority, was decided to be the tibia (or shin-bone) of the mastodon, and is probably part of the skeleton of that animal of large dimensions still remaining imbedded in the soil at the bottom of the lake near the place of this discovery. It doubtless became detached, was thrown up, and slowly washed in shore by the agitation of the waters of the lake during violent storms and by the landing of steamers many times daily at this place. Other portions of the same skeleton are likely to be thus recovered in the future. The tibia here illustrated is described as follows:

Length, twenty-eight inches; diameter at knee joint, ten and one-half inches; diameter at ankle joint, eight inches; weight, twenty-one and one-half pounds.

A comparison of the dimensions of this specimen with reported measurements of the tibia in the Cohoes skeleton exhumed in September 1866, (twenty-six inches in length) and of the Warren mastodon skeleton of Warren Museum in Boston, exhumed at Newbury, 1845, (twenty-eight inches in length), establishes its size to be uniform with that of the latter. When clothed in flesh, they were therefore respectively about nine and a half and ten and a half feet in height at the shoulders, the Chautauqua Lake specimen belonging to an animal of the latter dimensions.

Next in order of discovery is the Sheridan skeleton. We are indebted to George E. McLaury, Esq., of that town, for the following brief particulars kindly furnished by him:

"The skeleton referred to was found on the farm of George Dahlman, a few rods south of Main or Erie Road, on lot seven, midway between Silver Creek and Sheridan Center. It was discovered about 1895 while digging or deepening a ditch through a springy place about two rods wide. It was not more than two feet below the surface. The portions of the skeleton found were the skull, portion of tusk about twenty inches long and from three to five inches in diameter; four or five teeth about five by six inches and six inches long; shoulder blade and several pieces of ribs. The bones were inclosed in a sort of paste when found, and began to crumble on exposure to the air. This specimen was sold to the principal of the Dunkirk schools and is supposed to be at the present time in Rochester."

On June 16th, 1902, just previous to the Centennial of County Settlement, workmen employed in excavating the muck and peaty soil from a slough on the premises of Mrs. Alice M. Peacock in Westfield, for the purpose of forming an artificial pond, came upon the ribs and other bones of a large animal which, on the finding of a tusk, were pronounced those of a Mastodon. The tusk was much decayed and broken into sections and these, when placed in union as nearly as possible, measured seven feet six inches in length and sixteen inches in largest circumference. The first rib measured twenty-five inches, and the longest (probably the ninth) measured nearly six feet, and was three inches in thickness.

Several vertebrae, the largest dorsal, including body and spinous process, twelve inches. Two scapule (shoulder blade), two petallae (knee pan) globular in form, three and a half inches in diameter; several pieces of ribs and other bones. These were much separated, some found quite remote from the others. The bottom of the slough, which was from six to eight feet in depth, was quite thickly covered with small granite boulders mingled with blue clay. In the absence of molars, the distinguishing test of the species is wanting. All parts of the skeleton were deeply stained by the black muck of the sink and gave evidence of long exposure to decay.

Some time in June, 1900, William Myers, whose farm lies along the Conewango, near its junction with the Chadakoin, between the City of Jamestown and Frewsburg, was digging a ditch near his residence to drain a small tract of land previously more or less flooded by the stream, and at a depth of two and a half feet came upon a huge fossil tooth which, on exhibition, awakened much interest and curiosity. It was brought to Jamestown and shown to several gentlemen for the purpose of ascertaining its true character and importance. The writer having been referred to, with request to examine the specimen with this object in view, pronounced it the molar or grinding tooth of the *Elephas Americanus*. The American

elephant, like its Siberian congener, the *Elephas Primigenius* or Mammoth, is distinguished from the Mastodon by its peculiar dental structure and clothing of hair and wooly fur evidenced by specimens found intact in the Arctic ice fields of both continents. The molar herewith illustrated weighs four and three-fourths pounds, is eight inches in length at its crown, three and a half inches in width, and five and a half inches from crown to point of fracture in the root; a small portion of the crown and base is absent, also the extremity of the root.

The Mastodon has eight tuberculated or mastoid molars, and two upper and two lower incisors or tusks, though the latter are usually absent in the mature animal. The molar of the Mammoth, of which there are six on each side above and below, presents a flattened or corrugated grinding surface in transverse ridges of cementine and dentine, the number and arrangement of which in classification determines the species.

The Mammoth has no inferior incisors. In the adult males the upper incisors or tusks often attain a length of nine or ten feet, with tendency to spiral form. Different specimens, however, present great variations in curve from nearly straight to almost complete circle. The external characteristics for which the Mammoth was distinguished was its dense clothing, not only of long, coarse outer hair, but also a close under wooly hair of a reddish brown color, adapting the life of the animal to a colder climate. Its average size was about that of the largest existing elephants. The Mammoth belongs to the post tertiary or phistocene epoch, and it was undoubtedly contemporaneous with primeval man.

The space here allotted our subject permits only of a cursory local treatment, the bearings of which on the general theme are most interesting and important. Its relations to the Glacial period have received the able exposition of distinguished scientists on both continents, whose learned conclusions are accessible to every student of paleology.

The subject is actively engaging the attention of the great schools, and resulting in many startling discoveries affecting the progress of life on the globe.

Dr. Warren, in his work on the *Mastodon giganteus* of North America, describes about thirty species. The evidence is conclusive that long ago these huge animals and their congener, the elephant, pervaded this continent in great numbers.

The Western continent has come to be regarded by historians and archaeologists as a fertile field for research and study of pre-historic man and his environments in the distant past. In later years the progressive exploration and settlement of the country has brought to light a vast region in the west which abounds in well

preserved remains of various extinct animals—some of prodigious size and proportions, representing the animal life of remote ages. Many of these have been exhumed and placed in form with scientific skill and now enrich the collections of our principal museums. These discoveries reveal facts, and suggest truths which have greatly advanced the scientific wisdom of the age. Their frequent occurrence throughout the land has led to the adoption of more critical methods in dealing with the evidences adduced, and aside from dim tradition, it is now asserted, from the remains of Mastodons unquestionably more recent, that primitive man and these huge proboscideans were contemporary. This is one of the problems of the human race which has found its solution here. The contemplation of this fact awakens the most sublime reflections, and we close this brief sketch by quoting the eloquent thoughts of John D. Godman, of Philadelphia, a celebrated physician and naturalist of the last century:

“The emotions experienced when, for the first time, we behold the giant remains of this great animal, are those of unmingled awe. We cannot avoid reflecting on the time when this huge frame was clothed with its peculiar integuments and moved by appropriate muscles—when the mighty heart dashed forth its torrents of blood through vessels of enormous caliber, and the Mastodon strode along in supreme dominion over every other tenant of the wilderness. However we examine what is left to us, we cannot help feeling that this animal must have been endowed with a strength exceeding that of other quadrupeds as much as it exceeded them in size, and looking at its ponderous jaws, armed with teeth peculiarly formed for most effectually crushing the firmest substances, we are assured that its life could only be supported by the destruction of vast quantities of food.

“Enormous as were these creatures during life, and endowed with faculties proportioned to the bulk of their frames, the whole race has been extinct for ages. No human record of their existence has been saved, and but for the accidental preservation of its bones, we never should have dreamed that a creature of such vast size and strength once existed, nor could we have believed that such a race had been extinguished forever. Such, however, is the fact—ages after ages have rolled away, empires and nations have arisen, flourished and sunk into oblivion while the bones of the Mastodon, which perished long before the period of their origin, have been discovered scarcely changed in color and exhibiting all the marks of durability.

“That a race of animals so large, and consisting of so many species, should become entirely, and so universally extinct, is a circumstance of high interest, for it is not with the Mastodon as with

the elephant, which still continues to be a living genus although many of its species have become extinct. The entire race of the Mastodon has been utterly destroyed, leaving nothing but the 'mighty wreck' of their skeletons to testify that they were once living occupants of the land."

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