Organic Remains, Mastodon Americanus

READ BEFORE THE CHAUTAUQUA SOCIETY OF HISTORY AND NATURAL SCIENCE, JULY 16TH, 1885

By S.G. Love

Friday Evening, August 25th, 1871, Mr. Joel I Hoyt came tome, in a somewhat hurried excited manner, as I was walking on Main St., in Jamestown, and said: "I have been looking for you; have been to your house; your people said I would find you on the street: I want to show you something in my buggy, just across the street here." To my utter amazement, I there saw several immense molar teeth, the tip of a tusk of some huge animal, and one or two pieces of bone unusually large. After a few brief exclamations, explanations, and more or less pertinent remarks, Mr. H said, "will you take charge of them; of course they will be given to the school, and you had better go up to the farm in the morning, and see what you can find there." The specimens were immediately taken to my house and placed upon tables in the kitchen. My family were taking our meals out at the time.

It was a new experience to me; one that I had not anticipated. I had read of the finding of gigantic remains and had heard lecturers speak on them on several occasions; but to have some of them in my possession, with the glorious prospect of finding more on the morrow was a realization entirely unlooked for, quite beyond the reach of my anticipations.

As it may naturally be supposed, I spent the greater part of the night in my library, looking up matters pertinent to the subject in Geologies, Cyclopedias, and other works on Natural History, and when at length I did retire, and fell asleep, I was ushered into the presence of Elephant, Mastodons, Mylodons, Glyptodons, Dinosaurs, and other enormous beasts of the ancient world, while I feebly and fitfully essayed to locate and classify them. As I saw them in my dreams, they illy compared with those I had read about in books. Still struggling with a more or less unreal, indefinite, confused pictures on my mind, morning came and I awoke. A heavy rain had fallen during the night; and it was still raining when, with Profs. Albro and Burns, and my son Bert, a lad of 14 years, I repaired to the farm.

At the request of the editor of the Daily Journal, I prepared an article which was published in the issue of the following Monday, giving a somewhat extended account of the finding of the remains. Perhaps I can not do better than to insert herein the greater part of that article, substantially as it appeared at that time, and possibly add a few comments afterwards:

Editor of the journal: agreeably to promise I proceed to furnish you with further details of the organic remains lately found in this vicinity.

THE LOCATION

On the east side of the Fredonia road, about one mile north of the village of Jamestown, is the farm formerly known as the Reynolds place, now the property of Joel I. Hoyt, Esq., of this village. About five hundred years from the road is a sink or slough, covering about an acre, possibly more in extent, and varying from two to eight feet in depth, and fed by several living springs. Cattle have been mired and lost there since the farm was first occupied. After coming into possession of the farm Mr. H. drained the sink and left the muck to dry. Some two weeks ago, Mr. H. commenced 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 a little more than 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. H. being present on Friday, the 25th inst., he discovered unmistakable evidences of the remains of some huge animal, which had at some

previous age of the world been deposited there. At once there was a change in the procedure, in order to secure specimens and to determine their character.

THE REMAINS

It was difficult to determine the precise position of the remains, as they were much disturbed and partially removed before any special notice was taken of them. From the best information I could get, I conclude that the body lay with the head to the east, from four to six feet beneath the surface, and in a partially natural position. Many of the bones were, however, 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 from ten to twelve feet in length.

After digging into the gravel and clay about ten inches, I found traces of a rib, 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 small twigs, varying from one half inch to two inches in length. The remains were all in a very forward state of decay; and when I reached the ground Saturday morning the 26th, I found it impossible to do but little more than had already 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.

SPECIMENS SECURED

1. Tip of one of the tusks; length, three feet, seven and one-half inches; diameter, six and one-half inches.
2. Middle section of the other tusk; length, two feet, five inches; diameter, seven and one-half inches.
3. Six teeth; length of 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.
4. 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.
5. Pieces of scapula, (shoulder blade) from ten to thirteen inches long and four to seven wide.
6. Sections of ribs; twelve to eighteen inches long.
7. Head of the femur (thigh bone.)
8. Portions of the vertebrae of the neck.
9. Fragments of the cranium (skull.)
10. Various other pieces not yet identified.

THE ANIMAL

The animal was undoubtedly the American Mastodon, (*Mastodon Maximus,* or *Mastodon Americanus* of some authors.) "A single tooth is sufficient to distinguish it from the elephant. The grinding surface of a mastodon's tooth is covered with conical projections,--whence the name of the animal,--while that of the elephant is flat."

The size of the living animal must have been, in height, from ten to fifteen feet, and in length to the base of the tail, from fifteen to twenty feet. (I ought perhaps to say just here, that although I am quite satisfied with the above estimate of size, I have been told by very good authority that it is an under estimate.)

In comparison with the age of the earth, the mastodon must have lived at a very recent date; though there seems to be great doubt as to the exact period of its existence. Some authors think it not improbable, that it has lived here since the continent was inhabited by man. The fact that its remains are generally found embedded in drift, or in beds of marl or muck swamps, will go far to prove, that it has lived since any great geological

changes have taken place, such as the submergence of the land, etc., and that it may have existed simultaneously with some of the earlier races of man. This is the view taken by Prof. James Hall, in the Natural History of the State of N.Y. the number of years that have transpired since, must be determined, if at all, by the future investigations of geologists.

The specimens secured, have been very generously presented by Mr. Hoyt to the Board of Education for the Cabinet of the J.U.S & C.I. They can be seen at my house for a few days, when they will be removed to the office at the Institute building."

The foregoing is the account of the discovery and rescue of the remains as given at the time. Although accurate in all respects, it may not be out of place to add a few words. When we arrived at the farm on Saturday morning, we found that the rain of the previous night had filled the excavated portion of the sink with water to the depth of two or three feet. At the limit of the digging on the eastern side stood a bank or wall of the muck about four and one-half feet high. After re-opening the ditch and draining off a part of the water, we commenced an examination of this bank, in which the lower jaw was soon found. It was nearly three feet from the surface; and the sides were crusted together, as before stated, the right side of the jaw being uppermost. It was removed with great care in a blanket, but the upper (right) half crumbled into small pieces as soon as it was exposed to the air for a few minutes, by reason I suppose, of the greater exposure.

I am of the opinion that the animal died in his tracks, from some natural cause. He may have been drowned, or mired, but if so, the sink must have been at the time much deeper than at present, and judging from the make of the land around the sink, I should say it may have been deeper by man feet. The slight dislocation or disturbance of the remains, I have no doubt were due to causes which would naturally operate in a slough, into which large trees would be liable to fall and finally sink to the bottom. In any event the remains must have been buried much deeper in the muck and water for many, many years in order to escape complete destruction, and the fact that the bones of those animals were permeated with large proportions of fatty matter would help greatly to preserve them, especially if they were buried deeply in water.

The twigs found in such large quantities where the stomach would naturally be were found, upon a microscopical examination and comparison to be of the same kind (genera and species) as the cone-bearing trees, (pine and spruce) of the present day. Mingled with the twigs was a mass of yellowish fetid matte, probably the remains of some kind of vegetation which did not possess the staying qualities of the balsamic cone-bearers.

It may be worth while to mention the protracted struggle to keep the remains from crumbling into dust. We succeeded in saving most of the pieces, by repeated bathings, (soaking I might almost say) in preparations of warm glue, cold glue, thin glue and thick glue, according to the condition of the piece, for nearly a month.

"When did the mastodon live in North America?" The question is pertinent and is frequently asked of geological periods and times, but have not given it any special attention. While it is promptly conceded by the best geologists that nothing approaching exact dates can as yet be given, it certainly is not without the pale of scientific inquiry, to make ass possible efforts for an approximate solution. Before closing this paper I am tempted to add a few words, which may be of some interest to the general reader, if not to the scientist.

We must bear in mind that Geologic time is long, very long. Some geologists claim that thousands of millions of years have transpired since life began; while some others estimate it at one hundred millions of years as a maximum. LeConte says: "The domain of Geology is nothing less that (to us) inconceivable or infinite time." Future discoveries may enable the geologist to determine with accuracy the lengths of the different periods into which the history of the earth is divided, but to-day these periods, in numbers and duration, are practically sealed books. It may be said, however, of the later geological periods and epochs, that we may, by a careful examination of the records made by our best geologists, form something of an idea of their comparative length or duration.

For our purpose we may begin with the Quaternary age of American geologists. As its name would indicate, it immediately succeeds the Tertiary age; which is called the age of Mammals. The Quaternary age is also called the age of Man. This age is divided into three periods:

1. The Glacial, or Drift period; 2. The Champlain or period of depression; 3. The Recent of Terrace period.

These periods are each characterized by two features, viz: The movement of the crust of the earth, in high-latitudes and a change of climate. During the glacial period there was an upward movement of the earth's crust in high-latitudes, in some regions two thousand feet and more, above the heights of the continents in those regions at the present time. Those high-latitude regions were covered with large masses of ice; and the climate was cold, its severity equaling that of arctic countries at the present day. Throughout those high-latitude countries both North and South the Storm King held high carnival continuously. The rays of the sun were completely shut out; and this arctic rigor of climate extended southward and northward almost to the tropics.

At length the Glacial period had reached the fullness of its time. The upward movement of the earth's crust, was slow, and the change of climate was gradual. But they came, and passed away, and were followed by the period of depression, or the Champlain period, so called from the evidences, on the shores of the lake Champlain. This period was attended by a downward movement of the earth's crust in those same high-latitude regions, a melting of the great glaciers, and of the vast sheets of ice, the occurrence of immense floods in all the valleys, the forming of great and rivers, and a receeding of the arctic cold to the regions of high latitudes. That something like the phenomena of these two periods had occurred during the formation of the earth's crust, successively and repeatedly we may well believe. How nearly the events of the former periods coincided with those of the latter, it would not, probably be the part of wisdom to undertake to state. But we are assured that these and similar events transpired during the formation and development of the crust of the earth, and the vast periods of time were occupied in the grand transformation. And I think we may be assured that they will never transpire again in the fullness, extent and severity of the past. There may be elevations and subsidences, but they will be local and slight in extent. The crust of the earth has become thick and firm. The earth itself has reached its maturity, and development of the races of man will continue in the main uninterruptedly through the coming ages.

It may be said, however, that we are now in the midst of a glacial period. The climate is growing colder in most of the higher latitude regions, and if it should continue at the rate it has maintained the last twenty-five years, for twenty thousand years, we should have indeed an arctic rigor of climate in this country that would utterly destroy all vegetable and animal life. But there are not causes adequate to produce such a catastrophe, and long before the time named above, the climate will have changed once more, and a temperate climate will have climbed still farther to the north and south.

With the termination of the period of subsidence (Champlain period) the Recent of Terrace period, characterized by a movement in the opposite direction. The regions affected by the period of subsidence began slowly to rise, and this they continued to do, until brought to their present condition. We also note that their height is far less than during the Glacial period. Large areas of water, disappeared, by draining through river channels into the sea. By the drainage of these large bodies of water great lakes were reduced in size, and the smaller ones became rivers. During the period of subsidence the waters of lake Erie extended below Buffalo, along the Niagara river and were spread out over where are now the great Falls and on to the whirlpool. In proof of this we are assured by Lyell, Dana and others that on both sides of the gorge near the whirlpool, also on Goat Island are found beds of recent shells, the same that now live in the lower end of Lake Erie, and in the still waters of the Niagara river. These beds were at the bottom of Lake Erie during the period of subsidence. In these same beds of recent shells the tooth of a Mastodon has been found. And in order to drain the Lake to its present condition six miles at least of the gorge of Niagara river as been worn away. The Mastodon must have lived before the excavation of the gorge commenced.

And now if we can determine the time approximately, that has taken for the Falls to recede, the six miles to its present position, we may form something of an idea of the time that has elapsed since Mastodons in greater or less numbers lived in this country. The wearing away of the rocks beneath the Falls has been estimated by geologists at from one inch to one foot a year. If we place it at one inch we have 380,000 years, if at one foot 31,000. Suppose we make it at six inches a year, we then have 63,000 years at least since the beginning of the Recent period.

With the commencement of this period the temperature changed. If at that time the climate ws tropical, as the evidence would show, and it has been growing colder since as there is also evidence to show, we shall have a climate sufficiently warm to maintain the Mastodon for at least 30,000 years. So we must content ourselves that it is about 30,000 years more or less since the animal whose remains we have been discussing was living among the hills and valleys of Chautauqua.

There is much more that might be said, which would perhaps greatly change our estimate of the time, since the mastodon lived, but I have already extended this paper quite beyond the limits I had at first anticipated, and I fear trespassed upon your patience. So I leave the discussion with many thanks for your kind, considerate attention.