

A Pleistocene Bog Deposit and Its Fossil Fauna

Elmer S. Riggs

Field Museum of Natural History, Chicago, Illinois

A fossil deposit near Minooka, Illinois, affords an example of animal-trap and bog preservation of remains combined in a way that presents features of unusual interest. The number and variety of mammals preserved in a small area is greater than has been observed elsewhere by this writer in bog deposits.

History.—In February, 1902, reports came to the Field Museum that bones of Mastodon had been found on a farm then owned by John Bamford, some three and one-half miles north of Minooka, in Kendall County, Illinois. The writer visited the place and found men working in a muddy pit eight by ten feet in size and at a depth of seven feet below the surface. Bones of bison, deer, and Mastodon had been encountered and much interest had been awakened in the neighborhood. The work was being done by the farmer with volunteer help from his neighbors. The pit was located in a slight natural depression of the ground including a small area of boggy land. Snow from the surface was melting and water flowing into the pit. A huge bucket, made from a half-barrel and attached to a rope and windlass, was being used to bail out the water. A young farmer, George Bedford, in hip boots appeared to be the natural leader of operations in the pit. This man, later known as Judge Bedford, of Morris, Illinois, became closely associated with development of this bone deposit.

The locality had, since the earliest settlement of the region, been the site of a spring which issued from the middle of this small area of boggy land. A wooden curbing had served to keep back the peat and formed a reservoir to hold and supply water as a stock-well. Planking laid over the boggy land offered a safe approach for men; fencing kept animals from entering upon the treacherous ground.

The farmer had, at a period of leisure in winter time, set about digging his stock well wider and deeper in order to have a reliable supply of water during the dry months of late summer and fall. At a depth of five feet the diggers had encountered a mass of smaller bones such as those of deer and bison. After passing through such a layer of some twenty inches in thickness, the workmen had encountered bones of Mastodon. This discovery had awakened interest which spread to the neighboring towns and attracted the press. A wide pit had been opened and many bones had been taken out. At this stage the Field Museum was notified and this writer visited the place.

Little attention had been paid to remains of the smaller animals. The bones, mostly of bison but some of deer, were scattered throughout the dump-heaps. The larger bones were being saved as carefully as unskilled men were able to do. A tusk had been uncovered to a length of some feet, a rope attached and men on the bank above eagerly hauling upon it had broken it at the middle. Not deterred by this needless destruction they had uncovered the remaining stump, again attached the rope and pulling sidewise had torn it from its socket in the skull. A fine specimen of adult Mastodon was thus broken up.

A careful count made by this writer, upon his arrival at the pit, disclosed teeth and jaws of six individuals of Mastodon. These animals ranged in size from young individuals with first dentition to adult males and females. Mr. Bamford was so impressed with the value of his discovery that no deal could be made with him to secure the specimens. He was willing to receive instructions as to how best to preserve the remains salvaged. The writer remained over night at the farm and left instructions that the tusks and jaws should be stowed in the farm cellar where they would dry out slowly.

For a period of years the larger bones, jaws and tusks were exhibited about the country and at County Fairs. When interest in them died out they were left in a barn—some of them fell to pieces in the farmyard. At this stage Mr. George Langford of Joliet, Illinois, a gentleman who had a taste for collecting natural history objects and a decided interest in fossils, salvaged the remains of the Bamford collection and conveyed it to his home. There he assembled some parts and repaired others so as to make sure of their further preservation. In the spring of 1918, Mr. Langford made known to the Field Museum that he was ready to part with the collection. Accordingly the writer went to the Langford home and packed up the entire lot. So after sixteen years the Bamford collection came to Field Museum and the best of it was placed on exhibition. Meanwhile the Bamford farm had passed to a new owner who looked with disfavor upon further excavation. The bog had been drained, the stock well done away with and the little basin converted into meadowland.

Through all the intervening years Judge George Bedford had retained his interest in the Bamford bone deposit and awaited opportunity to explore it further. He had become a staunch friend of Field Museum and had been a member of two field expeditions directed toward collecting fossil vertebrates. Accordingly, in the summer of 1929, Judge Bedford undertook to further explore the old bog-deposit and find out what remained of the specimens so hastily exploited twenty-seven years before. When this was accomplished, the residue was brought to Field Museum.

The bog proved to be of more limited extent than had been anticipated. In fact it was merely a product of the spring which, fed by ground-water from a gravel bed had broken through an overlying bed of boulder clay and had formed in it a basin of limited extent. Decayed

vegetation and wash from the surface, saturated with water from below had formed the mire. Masked by rank vegetation in summer and lightly frozen over in winter, this bog, with its tempting spring at center, had formed a trap which tempted animals to come into it to drink, and from time to time had ensnared numbers of them. Common humus acids developed by decaying vegetation had preserved the bones while the flesh was carried away in the usual processes of decay.

A cross-section of the spring had been constructed from data furnished by Judge Bedford.

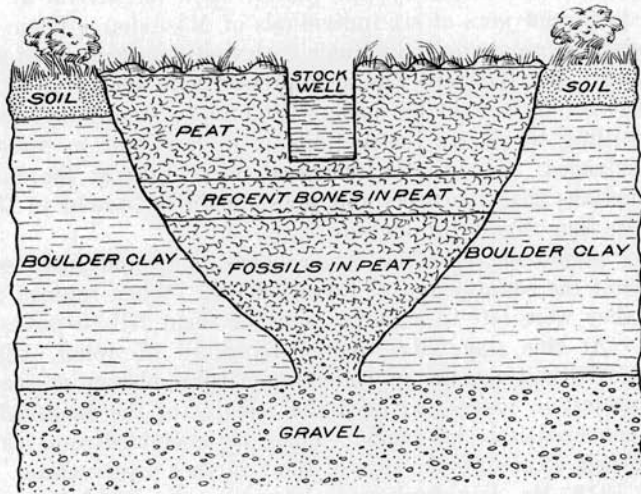


Fig. 1.—SECTION THROUGH PEAT BOG ON THE BAMFORD FARM NEAR MINOOKA, ILLINOIS, as explored in 1902 and in 1929, showing basin eroded by spring in boulder clay, and filled with peaty matter; stratum of water-bearing gravel and layers of recent and fossil bones. Width of basin at surface 20 feet; depth from surface to gravel stratum, 14 feet; width of opening into basin below, 3 feet; layer of recent bones, 20 inches; of fossil bones, 7 feet.

This section shows a depth of black soil some twenty inches, about twelve feet of firm impervious clay, apparently boulder clay, and below this water-bearing gravel of unknown thickness. The spring occupied a basin twenty feet in diameter and fourteen feet in depth, penetrating the soil and clay stratum as far as the gravel bed below. The lower opening was about three feet in diameter.

The source of the spring is at once evident. The stratum of glacial gravel carried water, confined by the impervious stratum of clay, and under pressure from some higher source it had broken through the clay stratum and found outlet at the surface. Gradually the outlet had been enlarged forming the basin above described. Surface wash, combined with plant and animal humus and saturated with water of the spring formed a peat-bog upon which wet-land plants grew abundantly. Ani-

mals venturing upon this treacherous surface to reach the tempting spring-water had broken through and, unable to extricate themselves, had perished in the bog. Hence the accumulation of bones preserved by the usual bog action—exclusion from air and antiseptic action of humus acids. The entire history of the spring and its accumulation of trapped animals is post-glacial, animals such as bison and deer are of species now living.

LIST OF ANIMALS DETERMINED

MASTODON AMERICANUM

Parts of nine individuals. One skull, two pairs lower jaws and various bones of two mature adults.

Two pairs humeri and femora of young adults, mandibles and maxillaries of five young individuals.

ELEPHAS COLUMBI

One mandible, tusk and other bones, apparently a female.

CELVALCES SPECIES

One craneum with half beams of antlers.

One entire beam of antler with part of palm.

One metacarpal bone.

ALCES SP.

One broken antler.

CERVUS SP.

One broken antler.

BISON BISON

Miscellaneous bones of many individuals.

From lack of care in preserving the smaller bones taken from the bog it is not known what number of bison and deer may have been found but not preserved.

The predominance of *Mastodon* in the lower levels of the bog, indicates that it was by far the more common large animal to visit this spring—at least the one most frequently trapped. The lone specimen of *Elephas columbi*, in relation to the number of *Mastodons*, indicate a rarity consistent with the known occurrence of this species in post-glacial time. The presence of *Cervalces* represented by three adult individuals, as compared with the single specimen of a young *Alces*, would seem to indicate that the former species was the more common moose in this locality in post-glacial time. The great mass of bones of *Bison bison*, reported by Bedford and seen by the writer scattered about the dump heap in 1902, indicates that this species was most commonly trapped at the Bamford spring. The fact that bones of this animal lay higher than those enumerated and within a few feet of the surface, would indicate that this species frequented the spring at a later period. The number of *Cervus sp.* which may have been intermingled with the bison bones, and with them destroyed, cannot be estimated. From the nature of the trap, animals smaller than the deer would not often be caught, no matter how numerous they may have been in this region.