

4-1945

## Some Pleistocene Mammalian Inhabitants of Minnesota

Clinton R. Stauffer  
*University of Minnesota*

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### Recommended Citation

Stauffer, C. R. (1945). Some Pleistocene Mammalian Inhabitants of Minnesota. *Journal of the Minnesota Academy of Science*, Vol. 13 No.1, 20-43.

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maintained at 25.5° C. (78° F.) and 40 per cent humidity (within a range of  $\pm 1^\circ$  C. and  $\pm 3$  per cent relative humidity). The various investigations of Sheard, Williams, Roth and other associates at the Mayo Foundation and Mayo Clinic have established fundamental relationships between basal metabolism, ingestion of food, changes of environmental temperature and humidity, on the one hand, and the temperatures of the extremities, on the other. Increased flow of blood to the extremities, which are in a state of vasomotor regulation, is evidenced by increases of temperature of the fingers or the toes or both and is dependent upon the metabolic state of the subject and the temperature and humidity of the environment. The fingers and toes are selected as the sites of measurement of temperatures for the reason that the distal portions of the digits exhibit most sensitively the presence of the vasomotor regulation which takes place over the whole integument of the body in the interest of maintaining equilibrium between production and loss of heat. In other words, changes in the temperatures of the fingers and toes are the most sensitive indicators of changes in vasomotor regulation and, therefore, of changes in peripheral blood flow.

The investigations with positive pressure breathing (either 7.5 or 15 mm. mercury pressure or 4 or 8 inches of water) indicate that: (1) during the first few minutes (five to ten minutes) there is frequently a decrease in temperature of the fingers and toes, thereby indicating reduction in blood flow and (2) there is a subsequent rise of temperatures of the extremities to the original level prior to the application of increased intrapulmonary pressure and, in many instances, a further increase of from 1° to 3° C. Such a result indicates a maintenance of, or increase of, blood supply to the extremities. These facts show that the initial decrease of peripheral blood flow is succeeded by a restoration of flow of blood to the extremities, possibly as a result of increased cardiac work and increased metabolism.

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## SOME PLEISTOCENE MAMMALIAN INHABITANTS OF MINNESOTA

CLINTON R. STAUFFER  
*University of Minnesota*

### INTRODUCTION

The intricate series of glacial deposits widely distributed over Minnesota and the central northwest is very thick in a large part of the state. The complexity of these beds is more apparent in the Wisconsin stage although it is also to be observed in the Kansan. As a consequence it has not always been possible to determine the

exact division from which the Pleistocene fossils that come to the University have been derived. This is particularly true because so many are picked up by unskilled collectors who pay little or no attention to the materials in which these relics are found and are unfamiliar with the Pleistocene classification.

Among the fossils thus collected, vegetation is well represented. In some regions there are forest beds with logs, branches, twigs, leaves, mosses, etc., from the interglacial beds of even the oldest Pleistocene and some may antedate the Nebraskan. Well drillers report some of these to be very thick. Wood, identified as yellow spruce and partly mineralized, occurs at the very base of the drift and may be Pliocene. Other accumulations of wood and plant material of various kinds are distinctly within the drift. Such beds of vegetable material may be little changed but others are veritable buried peat bogs and some of them yield puffs of marsh gas when encountered by the driller's bit. In among this vegetable matter, in the old lake beds, in the gravel pits, or even within the drift itself, the antlers, bones, teeth and tusks, belonging to various animals, are picked up as part of the fauna of nearly every division of the Pleistocene. Those more commonly found, however, seem to be more especially associated with the later stages. These are the remnants of both large and small mammals, some of which are quite different from those forming the fauna now inhabiting Minnesota and adjacent territory.

#### GENERAL CHARACTER OF FAUNA

The remains of a long list of small mammals, such as the beaver, the badger, the skunk, the rabbit, etc., have been found in the drift of Minnesota, but usually the bones that have been picked up more commonly belong to the larger forms. It is probable that the workmen are seldom attracted to small bones but the larger ones, belonging to animals no longer a part of our fauna, are striking enough to arouse curiosity. Among the large ones thus coming to our attention are the American elk (*Cervis canadensis*), several species of bison (*Bison occidentalis* and *Bison bison*), the horse, (*Equus caballus?*), the moose (*Alces americanus*), the reindeer (*Rangifer tarandus*), the musk ox (*Symbos cavifrons*), the giant beaver (*Casteroides ohioensis*), and especially the Mastodon (*Mastodon americanus*) and the various mammoths (*Mammontens primigenius*, *Parelephas jeffersoni* and *Archidiskodon imperator*) collectively referred to as the elephants (see Plate I).

American elk skulls and antler are common in the drift, likewise in the peat bogs and old lake beds on top of the drift. They are widely distributed over the state. The reindeer is also common but not quite so abundant as the elk. When the skeletons are not accompanied by the antlers these two are not easily distinguishable, especially when the remains are fragmentary. The bison is exceed-

ingly common in the late Pleistocene and post-Pleistocene deposits of Minnesota—both *Bison bison* and *Bison occidentalis* occur, probably in beds of the same age or division of glacial time. These skulls, and often much of the skeletons, are so numerous that they are seldom recorded when found. In some localities, even under thick accumulations of peat, they constitute veritable bone beds and associated with them have been found pot shards and various implements pertaining to early man. In fact it is quite probable that pre-historic man had much to do with these bone accumulations. Some of the larger bone pile finds are those of the peat bog at the Sagamore Iron Mine, Riverton, Minnesota<sup>1</sup>, and that more recently uncovered in Itasca State Park and from which a large collection was made for the University of Minnesota.

The remains of the horse (*Equus caballus* ?) are occasionally found in the Pleistocene of Minnesota. In October, 1939, the McCarthy Well Drilling Company of St. Paul found a tarsal bone of what appears to be the modern horse in the drift 31 feet below the surface while drilling the new city well at Marshall, Lyon County, Minnesota. There seems to be no doubt of the identity of this as a Pleistocene specimen, but few other well authenticated finds are known and it is suspected that many of the teeth and other remnants of the horse occurring in association with the drift of Minnesota are contemporaneous with the advent of the white man.

The musk ox and the giant beaver may have been common but their remains now are comparatively rare. However, they are sufficiently unique to attract attention and if abundant should have been more frequently recorded. The various specimens of musk ox found in Minnesota are quite similar and all have been referred to the same species.

= Record of Musk ox (*Symbos cavifrons*) finds in Minnesota =

1. 1903 *Symbos cavifrons* (Leidy)

Thielman, Wabasha County, Minnesota—

A skull, found by J. W. Franzens, on the McCracken farm in interglacial or late glacial terrace gravel 10 feet below the surface at Thielman. The specimen was formerly in the museum at the Public Library, Minneapolis, but is now in the Department of Geology at the University of Minnesota.

2. 1912 *Symbos cavifrons* (Leidy)

Russell, Lyons County, Minnesota—

A skull found by E. C. Jones in the glacial gravel 30 feet below the surface not far from town. The specimen is in the Geological Museum, University of Minnesota.

3. 1930 *Symbos cavifrons* (Leidy)

Mankato, Blue Earth County, Minnesota—

A skull found in glacial gravel 10 to 12 feet below the surface

<sup>1</sup> O. P. Hay, Proc. U. S. National Mus., 63: 1-8, 2 pls., 1923.

at Mankato. The specimen is in the anthropological collection at the University of Minnesota.

4. 1931 *Symbos cavifrons* (Leidy)

Preston, Fillmore County, Minnesota —

A nearly complete skull found in the W. E. Neuman gravel pit along the Root River one-half mile southwest of Preston. Specimen retained by Mr. W. E. Neuman at Preston.

5. 1933 *Symbos cavifrons* (Leidy)

Underwood, Tordenskjold Township, Ottertail County, Minnesota —

A skull, showing base of horn cores, brain case and parts of orbits, found 30 feet below the surface in a glacial gravel pit 4 miles southeast of Underwood. Specimen owned and retained by Dr. H. J. Larson.

6. 1936 *Symbos cavifrons* (Leidy)

Whalen, Fillmore County, Minnesota —

A fairly complete skull with brain case and horn cores, found in a gravel pit along Root River near Whalen. Specimen found and reported by David Whalen.

7. 1937 *Symbos cavifrons* (Leidy)

Wegdale, Chippewa County, Minnesota —

A skull, consisting of frontal bones, brain case and parts of the horn cores, found near Wegdale in gravel 30 feet below the surface. Specimen found by L. F. Conner on March 20th, 1937.

= Record of Giant Beaver (*Casteroides ohioensis*) finds in Minnesota =

1. 1879 *Casteroides ohioensis* Foster

Minneapolis, Hennepin County, Minnesota.

A left lower jaw with incisor and four perfectly preserved molars. Specimen found by workmen excavating for a cistern at the corner of Washington Avenue and 15th Avenue North, Minneapolis, Hennepin County, Minnesota. It was in drift 8 feet below the surface and about 20 feet above the river level. Specimen No. 3728 in the Geological Museum, University of Minnesota; now on loan to the Science Museum, St. Paul.

2. 1938 *Casteroides ohioensis* Foster

St. Paul, Ramsey County, Minnesota.

Lower incisors together with fragments of the lower jaw and a large part of the remainder of the skeleton. Specimen found by workmen July 20th, 1938, in a collapsed cave at Hidden Falls. The roof of the cave had fallen on the skeleton and was probably responsible for the broken condition of the bones. The specimen was lying on the Glenwood beds and the caved Platteville limestone blocks were partly cemented by travertine. The specimen is in The Science Museum, St. Paul, Minnesota.

## THE ELEPHANTS

Undoubtedly the most interesting and striking of all the relatively recent inhabitants, other than man, in this Upper Mississippi Valley, are the Proboscidiens, or elephants. The remains of these giant forms are mingled with the latest drift deposits, the terrace gravels, the old lake beds on top of the drift, and some are even reported as occurring in the peat bogs of post-glacial origin. Among the oldest human relics found in this northwest territory are artifacts made of elephant ivory.<sup>2</sup> It might be suspected that these were made from ivory already fossil, but, unless frozen, such ivory could hardly have been in suitable condition for man's use as implements. A few years ago, in the Melbourne bone-beds at Vero Beach, Florida, the author found elephant bones bearing the unmistakable marks of flint knives as they were used to cut the flesh from the bone. Moreover, these bones were bruised and broken in the manner characteristic of green bones under the impact of stone axes or hammers wielded by primitive man in the recovery of the marrow. This seems to indicate that man ate the flesh and therefore was contemporaneous with the elephant in this hemisphere. In fact, it is entirely possible that he was partly responsible for the eventual extinction of the Proboscidiens in America. Of that, however, conclusive proof is lacking although it is well known that in other parts of the world ancient man hunted the elephant<sup>3</sup>, probably for its flesh as well as for its ivory tusks. Dr. Absolon, during the years 1924-1929, discovered great slaughter pits in which primitive man trapped and killed large numbers of the woolly mammoth. These men were the Aurignacian hunters and the kills were made in Moravia<sup>4</sup>.

The absence of teeth from many of the elephant finds makes it almost impossible to identify specifically the fragmentary skeletons with any degree of certainty. It appears, however, that the Mastodon was comparatively rare in Minnesota, its range being chiefly to the south and east of this state. As an evidence of the former abundance of Mastodon individuals in some of those regions farther to the south it is reported that a four horse wagon load of their teeth was hauled away from Big Bone Lick<sup>5</sup>, Kentucky, in 1804. During the later stages of the glacial period the woolly Mammoth, or the more northerly ranging of the Proboscidiens, was abundant in Alaska where its teeth, tusks and bones are commonly dredged

<sup>2</sup> A. E. Jenks, *Minnesota History*, 1935, pp. 11-14, and pl. opp. p. 7.

<sup>3</sup> H. F. Osborn, *The Romance of the Woolly Mammoth*, *Natural History Magazine*, vol. XXX, 1930, pp. 230-237.

<sup>4</sup> Dr. Karl Absolon, *Illustrated London News*, vol. 85, pp. 892-894, Nov. 23rd, 1929; or in Dr. H. F. Osborn's paper, *Natural History Magazine*, vol. XXX, 1930, pp. 239-241.

<sup>5</sup> W. D. Funkhouser and W. S. Webb, *Kentucky Geological Survey*, Ser. VI, vol. 34, 1928, p. 46.

from the frozen gold bearing gravels. Frequently the flesh, tendons and scraps of skin still cling to these bones<sup>6</sup> thrown out by the dredge, and in Siberia whole carcasses have been found in perfect refrigeration— a condition in which they are believed to have existed for upwards of twenty thousand years. So abundant in Siberia are tusks of the “Woolly Elephant” that for generations they have been the source of a lucrative trade in fossil ivory which is even now important. Literally tons of it have found their way into commerce.

There are three, possibly four, species of the Mammoth but only one of the Mastodon found or recognized in the Minnesota Pleistocene and early post-Pleistocene deposits. Of these remains the Woolly Mammoth (*Mammonteus primigenius*) is apparently the most abundant, with the Jeffersonian elephant (*Parelephas jeffersoni*) a close second, or possibly as abundant. The variations allowed in both species make it difficult to determine definitely border line specimens and hence the inevitable possibility of error in identification. Quite probably such errors have been made in the list herewith.

= Record of the Elephants found in Minnesota =

The following Elephant species are given in the apparent order of abundance in Minnesota:

1. *Mammonteus primigenius* (Blumenbach)

This is regarded by Dr. Osborn as a “collective” species or one with numerous variations showing progressive evolution throughout its long existence from early to latest Pleistocene and its wide range over the whole northern part of the northern hemisphere. He therefore gives the ridge formula as M2  $\frac{19}{19}$  and M3  $\frac{23-24}{23-24}$  for the last

two molars. The average number of ridge-plates is 10 to 100 mm. of length with an observed minimum of 8 to 100 mm. and an observed maximum of 13 to 100 mm. The count should be taken midway between the summit and the base and should be made on both the inner and the outer sides. There is a difference of one to three plates in the count of the two sides with the greater number being on the concave outer side.

2. *Parelephas jeffersoni* Osborn

This is the species which often has been called *Elephas columbi* or the Columbian Mammoth but which differs from the type of that species in its ridge formula. *P. jeffersoni* was described by Dr. Osborn in 1922, who used as type the fine skeleton which had been found near Jonesboro, Indiana, in 1904, and later purchased by the American Museum. The paratype is a set of four molars from Zanesville, Ohio, also in the American Museum, New York. The

<sup>6</sup> Frank C. Hibben, Harper's Magazine, 189: 144-145, (July) 1944.

ridge plate formula for this elephant is  $M3 \frac{20}{24-26}$ . The tooth has 7 to 8, rarely 9, ridge plates to 100 mm.

The Jeffersonian mammoth was a typical American species with its range over all the United States and parts of Canada. Specimens seem even to be found in Alaska and whether the species spread back into Asia is not known. It is probably descended from the more primitive *Mammonteus primigenius*, some of the molars of which are similar.

### 3. *Archidiskodon imperator* (Leidy)

This is probably a somewhat larger species than the others that spread over parts of North America during the glacial period. The type is a worn and battered eight-plate fragmentary right upper molar, found in northeastern Nebraska, and in which five plates occur to 100 mm. This specimen is now in the United States National Museum. The neotype is a nearly complete molar from the same anatomical position and found near Guadalajara, Mexico. This one is now in the American Museum. The ridge formula is  $M3 \frac{17-18}{18-19}$  but Osborn believed that some individuals may show as many as 20 plates in the upper molar.

The elephant often referred to as the Columbian Mammoth was believed by Osborn to be a dwarf form of the Imperial Mammoth. The type of *A. columbi* (Falconer) is a fragmentary right lower third molar now in the British Museum. The neotype is the set of upper and lower molars from Charleston, South Carolina, now in the American Museum. The ridge-plate formula of this latter specimen (*Archidiskodon columbi*) is  $M3 \frac{17-18}{16-17}$  and the number of plates does not exceed 6 to 100 mm. This places it very close to *A. imperator* if not within the limits of variation of that species. Dr. Osborn, quite rightly, questioned whether the name *Archidiskodon imperator* should not be dropped and *A. columbi* used in its stead, if the two are identical. However, he continued the name of the Imperial Mammoth and the same is done here.

### 4. *Mastodon americanus* (Kerr)

The Mastodon lived in America contemporaneously with the Mammoths, and more primitive species in the Tertiary had preceded this rather familiar one on this continent. To the southeast the American Mastodon is reported more commonly than the Mammoths but specimens of the Mastodon are relatively rare in Minnesota. The skeletons known in this state are slightly smaller and less massive than those of the Mammoth and they probably represent a somewhat smaller animal.

The teeth of the Mastodon are quite different from those of the

Mammoth. The enamel plates are fewer, much thicker, and are surmounted by sharp crests. Each jaw may have as many as three molars at one time and the total number of teeth possessed during the life span of an individual may be as many as twenty-two to twenty-four. The teeth of the first set were shed or discarded as in other mammals and the adult set had to last through old age. The tusks were probably less curved than in the true elephants but tusks alone cannot be safely identified as belonging to the Mastodon and the molar teeth alone remain the clear and easy means of identification. The Mastodons are believed to have been browsers and their food probably included the needles and branches of the conifers that were wide spread in the cooler regions of their range. Certain of them (*Tetrabelodon*) ranging the North American continent prior to the glacial period had a single broad tusk in the lower jaw. This they appear to have used shovel-like and doubtless they enjoyed roots and tubers as part of their diet. The American Mastodon was the last of a long line of immigrants to North America, the first of which probably arrived from Eurasia in late Miocene. The abundance of its teeth associated with late Pleistocene or early recent deposits suggests its existence in great numbers during the very recent past. It may have been the last of the American Proboscidea to become extinct, but in that it vies with the woolly elephant.

= Elephant finds in Minnesota =

Not all of the separate finds of elephant bones, teeth and tusks within the state have been recorded. Many others are lacking date, and still others are records only, with neither date nor specimen available. Where there is no assurance whatever as to the identity of the particular elephant represented by the find, the old generic term *Elephas* is used, while some of the more doubtful identifications are followed by a question mark. The list starts with the undated finds and these are followed in order by those of known date since 1856.

1. *Elephas* sp.  
Brainerd, Crow Wing County, Minnesota.  
A large fragment of bone from the drift near Brainerd.
2. *Elephas* sp.  
Kenyon, Goodhue County, Minnesota.  
Several large fragments of vertebra found in gravels of a local pit.
3. *Elephas* sp.  
Minneapolis, Hennepin County, Minnesota.  
A molar tooth found in the drift of the city.
4. *Elephas* sp.  
Minnesota City, Winona County, Minnesota.  
A tusk found in the terrace gravels of Wisconsin drift at Minnesota City.

5. *Elephas* sp.  
Red Wing, Goodhue County, Minnesota.  
Part of a very large pelvis from river gravels 8 feet below the surface near the city.
6. *Elephas* sp.  
Stillwater, Washington County, Minnesota.  
A tusk found in terrace gravels of Wisconsin age, in the edge of Stillwater.
7. *Elephas* sp.  
Wabasha, Wabasha County, Minnesota.  
A molar tooth found in a terrace of late glacial gravels near Wabasha.
8. *Elephas* sp.  
Winona, Winona County, Minnesota.  
A 3 foot femur taken from the gravel 40 feet below the Mississippi River level in the Breittow sand and gravel pit four miles west of Winona.
9. *Mastodon americanus* Kerr  
Albert Lea, Freeborn County, Minnesota.  
A jaw found in a local gravel pit and brought in to St. Paul by William Morin. Specimen destroyed in Capitol fire, St. Paul, 1881.
10. *Mammonteus primigenius* (Blumenbach)  
Faribault, Rice County, Minnesota.  
A molar tooth from the local glacial gravels, reported by C. W. Werdenkoff. The specimen is in the Museum at the Minneapolis Public Library.
11. *Parelephas jeffersoni* Osborn  
Hastings, Dakota County, Minnesota.  
A molar tooth found in glacial gravel deposits near Hastings.
12. *Parelephas jeffersoni* Osborn  
Mankato, Blue Earth County, Minnesota.  
A molar tooth from the superficial deposits in the city. Specimen in the high school collection at Mankato.
13. *Parelephas jeffersoni* Osborn  
Minneapolis, Hennepin County, Minnesota.  
A molar tooth found in glacial gravel beds within the city. Specimen now in Peabody Museum, Yale University.
14. *Parelephas jeffersoni* Osborn  
Red Wing, Goodhue County, Minnesota.  
A molar tooth found in the river gravels at Red Wing. Specimen in the Science Museum, St. Paul Institute.
15. *Archidiskodon imperator* (Leidy)  
St. Louis Park, Hennepin County, Minnesota.

A molar tooth, probably a second molar, apparently found in a local gravel pit. Specimen at the University of Minnesota.

16. *Mammonteus primigenius* (Blumenbach)

Nobles County, Minnesota.

A large molar tooth (identified by O. P. Hay) found 27 feet below the surface in a local gravel pit. Reported by T. B. Walker. Specimen in the Museum at the Minneapolis Public Library.

17. 1856 *Elephas* sp.

Stillwater, Washington County, Minnesota.

Several tusks, one of which was 8 feet long, found in sand 37 feet below the surface in a local excavation. Specimens given to the Academy at St. Paul.

18. 1865 *Archidiskodon imperator* (Leidy)

Stockton, Winona County, Minnesota.

A tusk and fragments of a molar tooth found in the loess and referred to the Early Wisconsin drift at Stockton. Reported by Professor John Holzinger and Dr. Cole of Winona. The tooth is in the collections of the State Teachers College, Winona. The tusk is in the State Historical Society Collection, St. Paul.

19. 1865 *Mammonteus primigenius* (Blumenbach)

Luverne, Rock County, Minnesota.

A large molar tooth found at Luverne. The specimen is No. 6682 R in the University of Minnesota geological collection.

20. 1878 *Parelephas jeffersoni*? Osborn

Fridley, Anoka County, Minnesota.

A tooth and tusk found in terrace gravels on the east bank of the Mississippi River along Coon Creek at Fridley.

21. 1879 *Mastodon americanus* ? Kerr

Northfield, Rice County, Minnesota.

An 8½ foot tusk, 22 inches in circumference at the base, found within the city limits in the drift 10 feet below the surface and reported by Professor L. B. Sperry. Specimen is in the collections of Carleton College.

22. 1884 *Parelephas jeffersoni* Osborn

Mazeppa, Wabasha County, Minnesota.

A lower right molar tooth found by N. J. Majerus in old terrace gravels 8 to 10 feet below the surface at Mazeppa. This specimen is in the School of Mines Collection, University of Minnesota.

23. 1884 *Parelephas jeffersoni* Osborn

Wabasha, Wabasha County, Minnesota.

A right upper molar found in the terrace gravels 20 feet below surface at Wabasha. The tooth weighs 6½ pounds, and is 9½ inches long. The specimen is in the School of Mines Collection, University of Minnesota.

24. 1884 *Mastodon americanus* Kerr  
 Minnesota City, Winona County, Minnesota.  
 Remains not specified. Identified and reported by N. H. Winchell.
25. 1885 *Elephas* sp.  
 Stockton, Winona County, Minnesota.  
 Several molar teeth and part of tusk found in Iowan loess at Stockton. Reported by N. H. Winchell.
26. 1887 *Parelephas jeffersoni* Osborn  
 Jasper, Pipestone County, Minnesota.  
 A well preserved molar tooth weighing 11 pounds, 13½ ounces. Greatest length 11½ inches, greatest thickness 4½ inches. Found by A. C. Reynolds in the surface deposits on the N. W. ¼, Sec. 2, T. 103 N., R. 47 W., October 1st, 1887.
27. 1889 *Elephas* sp.  
 Worthington, Nobles County, Minnesota.  
 A molar tooth found by Frank W. Gibson near the surface of the drift at Worthington.
28. 1891 *Mastodon americanus* Kerr  
 Mankato, Blue Earth County, Minnesota.  
 A molar tooth and fragment of lower jaw found by workmen digging a trench in the city streets. Specimen given to Professor A. F. Bechdolt of Mankato.
29. 1892 *Archidiskodon imperator* (Leidy)  
 Minneapolis, Hennepin County, Minnesota.  
 A molar tooth, a large 9 foot tusk (8 to 9 inches in diameter) and some large bones, originally perhaps the greater part of the skeleton, dug up at the site of the Minneapolis and St. Louis Railway car shops at Cedar Lake. A femur (Museum No. 1351) from this find was given to the University of Minnesota in 1908 by Mrs. Harriet C. Amberson and is now in the Geological Museum.
30. 1900 *Elephas* sp.  
 Fairhaven, Stearns County, Minnesota.  
 A molar tooth and a large bone fragment found in a local peat bog. Reported by E. E. Woodworth.
31. 1900 *Elephas* sp.  
 Owatonna, Steele County, Minnesota.  
 A thoracic vertebra found in a coarse gravel 8 feet below the surface in a local pit. This specimen is No. 1139 in the University of Minnesota Geological Museum.
32. 1907 *Parelephas jeffersoni* Osborn  
 Wabasha, Wabasha County, Minnesota.  
 A water worn fragment of a molar tooth found in terrace gravels along the Mississippi River near town and said to be of Wisconsin

age. It was found by George P. Stritch and now belongs to Mr. O. O. Whited, Minneapolis.

33. 1908 *Elephas* sp.

Huntington Point, Lake Minnetonka, Hennepin County, Minnesota.

A pelvis, femur, and eight vertebra dredged from the bottom of Lake Minnetonka in 30 feet of water, 100 feet off Huntington Point. Reported by Mr. Jones of the Minneapolis Journal, Minneapolis, Minnesota.

34. 1910 *Elephas* sp.

Farmington, Dakota County, Minnesota.

A tusk fragment, 4 feet long and about 4 inches in diameter at the tip end, found 30 feet below the surface in the Chicago, Milwaukee, and St. Paul Railway gravel pit. Reported by William M. Dodge.

35. 1911 *Mammonteus primigenius* (Blumenbach)

Faribault, Rice County, Minnesota.

Two molar teeth found in the drift near Faribault by C. W. Wendenhoff. These are specimens No. 2351 and No. 2352 in the Museum at the Minneapolis Public Library.

36. 1915 *Elephas* sp.

Wabasha, Wabasha County, Minnesota.

A tusk and parts of the skull taken from a deposit of glacial clay at Wabasha. This find was reported by Theodore G. Budde.

37. 1920 *Elephas* sp.

Owatonna, Steele County, Minnesota.

The upper part of a well preserved femur, parts of humerus, tibia, and fragments of other bones found May 21st, 1920, in gravel 30 feet below the surface at the city gravel pit near the Rock Island depot.

38. 1920 *Mammonteus primigenius* (Blumenbach)

Austin, Mower County, Minnesota.

A molar tooth with 9 plates to  $5\frac{1}{2}$  inches found by Joseph Claypool in a gravel pit along the river near Austin.

39. 1921 *Archidiskodon cf. imperator* (Leidy)

Dumfries Station (Hope Coolie), Wabasha County, Minnesota.

Three or four molar teeth and much of the skeleton, including about 3 feet of a tusk 6 to 7 inches in diameter, parts of skull, lower jaw, vertebra, ribs, pelvis, scapula, etc. Skeleton said to have been found in drift clay ten feet below the surface in Hope Coolie. This may have been 20 feet below the original surface. A tooth and some skeletal fragments are at Macalester College. Arnold Kennebeck of Wabasha has several of the teeth and 14 inches of one of the tusks. One of these molar teeth has 5 plates to 6 inches of grinding

surface and weighs 3 pounds. This tooth does not fit into the dental formula of the usual Minnesota elephants.

40. 1921 *Parelephas jeffersoni* ? Osborn

Frost, Faribault County, Minnesota.

Three or four vertebra, a half dozen ribs, a radius, the head of a humerus and of a femur, three tarsal bones and various fragments of other bones, found 7 to 10 feet below the surface in post glacial lake beds, chiefly clay, 4 miles west of Frost. This specimen was removed and brought to the University of Minnesota by Dr. George A. Thiel. However, the tusks which were also reported as found, had been carried away by some one else before he arrived on the scene and never did reach the University.

41. 1921 *Elephas* sp.

Ball Club, Itasca County, Minnesota.

Three or four large bones said to be between three and four feet long and about five inches in diameter, probably femurs and tibias, from excavation for the east piers of Highway No. 2 bridge over the Mississippi River west of town. Find reported by G. E. Russell of the State Highway Department.

42. 1923 *Archidiskodon imperator* ? (Leidy)

Big Bend City, Chippewa County, Minnesota.

A large molar tooth found in nearby gravels. Specimen in the possession of John Torgenson, Milan, Minnesota.

43. 1923 *Elephas* sp.

Hastings, Dakota County, Minnesota.

Upper end or head of a femur found in terrace gravels of Mississippi River at Hastings. Specimen obtained and reported by Judge Crosby who placed it in the Historical Society Museum, St. Paul.

44. 1923 *Mammonteus primigenius* (Blumenbach)

Hollandale, Freeborn County, Minnesota.

Both upper and lower jaws with 4 complete molar teeth, together with nearly half of the balance of skeleton. Specimen found 15 feet below the surface in post-glacial lake deposits on the P. D. McMillan farm, 1½ miles southeast of town of Hollandale. The specimen is No. 3740 in the geological collection. It was reported and given to the University of Minnesota by P. D. McMillan.

45. 1924 *Mammonteus primigenius* (Blumenbach)

St. Paul, Ramsey County, Minnesota.

A fragmentary molar tooth dredged from the Mississippi River at St. Paul. Specimen collected by Mr. Skarolid. It is No. 3257 in the geological collection of the University of Minnesota.

46. 1925 *Parelephas jeffersoni* Osborn

Beardsley, Big Stone County, Minnesota.

A fragmentary molar tooth found in the surface deposits 6 miles south of Beardsley. Clause Knudson was the finder.

47. 1925 *Elephas* sp.

Faribault, Rice County, Minnesota.

A tusk 30 inches long and 4 inches in diameter, found 10 feet below surface in drainage ditch, southeast corner of Ruskin township. Mr. Mollison, druggist at Faribault, has the specimen.

48. 1925 *Parelephas jeffersoni* Osborn

Zumbrota, Goodhue County, Minnesota.

A 7½ pound tooth found by Herman Dahl 10 feet below the surface in a gravel pit one mile west of town.

49. 1925 *Parelephas jeffersoni* Osborn

Lake City, Wabasha County, Minnesota.

A tooth found in gravel pit near town. Reported by R. F. McConnell.

50. 1926 *Mastodon americanus* Kerr

Round Lake, Nobles County, Minnesota.

Four or five teeth and a large part of the skeleton found in blue clay on top of drift at Round Lake. This is one of the best finds in the state but it was carried away and scattered over three or four states by workmen on a drainage ditch. Reported by J. A. Treganza and A. F. Diehn.

A tooth and a few parts of this skeleton were presented to the University of Minnesota and are No. 3390 in the Geological Museum.

51. 1926 *Parelephas jeffersoni* Osborn

Belle Plaine, Scott County, Minnesota.

A water worn tooth found in fine gravel 10 feet below surface of Main Street.

Brought in by Mr. Frank Strunk, who owns it.

52. 1926 *Archidiskodon imperator* (Leidy)

Red Wing, Goodhue County, Minnesota.

A tooth found in a clay bed at the bottom of a gravel pit 20 feet below the surface, on Professor Anderson's farm along Cannon River, 6 miles northwest of town. The tooth weighs 6.6 pounds and retains 16 plates in 11 inches. About 3 plates are broken off.

Specimen belongs to Professor Anderson.

53. 1926 *Elephas* sp.

Winona, Winona County, Minnesota.

A large bone, probably femur, from the Breitlow gravel pit four miles west of town where it was found 40 feet below the level of the Mississippi River.

54. 1927 *Mammonteus primigenius* (Blumenbach)

Austin, Mower County, Minnesota.

A large lower right molar tooth from a sand pit 3 miles west of

town. Found by Martin Bustad. Specimen No. 3325 in the University of Minnesota Museum.

55. 1927 *Mammonteus primigenius* (Blumenbach)

Winona, Winona County, Minnesota.

A much water worn tooth from the gravel of the Biesanz pit 35 feet below the surface. Another tooth from this same pit at an earlier date was destroyed by fire when the Winona State Teachers College was burned. Found by Tom Morgan. The specimen is No. 3326 in the University of Minnesota Museum.

56. 1927 *Parelephas jeffersoni* Osborn

Winona, Winona County, Minnesota.

A tooth found in the gravels of a local pit and sent to the University. Reported by John M. Holzinger.

57. 1928 *Elephas* sp.

Zumbrota, Goodhue County, Minnesota.

A molar tooth weighing  $6\frac{1}{2}$  pounds found by a workman one mile west of Zumbrota in the Nelson gravel pit about 12 feet below the surface. Specimen given to Mr. Lowell E. Stary who displayed it in the window of his pool hall and from which it was taken by a transient customer.

58. 1928 *Parelephas jeffersoni* Osborn

Herman, Grant County, Minnesota.

Two large molar teeth and fragments of the skeleton found 10 to 12 feet below the surface in a gravel pit in the Herman beach gravels of Lake Agassiz (Sec. 15, Logan Township, Grant County). The best preserved tooth is 12 inches long,  $4\frac{1}{2}$  inches wide and 7 inches deep (from root to grinding surface). Each tooth weighs 10 pounds. Dr. F. S. James of Sleepy Eye has one of the teeth in his dental office. The find was made by Mr. Mathew Youngman of Wheaton, who kept the more perfect of the two teeth.

59. 1929 *Parelephas jeffersoni* Osborn

New Ulm, Brown County, Minnesota.

A molar tooth weighing  $9\frac{1}{2}$  pounds found 14 feet below the surface in the filling of the old river channel west of town. It was obtained by A. Hummel who sent it to the University of Minnesota where it is No. 3991 in the Geological Museum.

60. 1929 *Archidiskodon imperator* (Leidy)

Ellendale, Steele County, Minnesota.

A fragmentary molar tooth from a nearby gravel pit. The specimen weighs 4.6 pounds. It was sent in to the University of Minnesota by Miss Irene Harpel. It is now No. 4006 in the Geological Museum.

61. 1929 *Elephas* sp.

Wabasha, Wabasha County, Minnesota.

A tusk fragment from the Milwaukee Railroad gravel pit. The find was reported by Mr. Julius Dodge.

62. 1929 *Parelephas jeffersoni* Osborn

Wabasha, Wabasha County, Minnesota.

A milk molar tooth and parts of the skeleton found in the Burkhardt gravel pit in Wabasha and 20 feet below the surface. Specimen sent to the University of Minnesota by Alfred A. Burkhardt, where it is No. 3990 in the Geological Museum.

63. 1930 *Parelephas jeffersoni* ? Osborn

Grand Meadows, Mower County, Minnesota.

A small milk molar tooth, together with scattered fragments of the skeleton, found 10 to 12 feet below the surface in the Stier gravel pit  $2\frac{1}{2}$  miles west of Grand Meadows. Specimen found by Frank Stier who gave it to the University of Minnesota, where it is now No. 4015 in the Geological Museum.

64. 1931 *Archidiskodon imperator* (Leidy)

Lakeland, Washington County, Minnesota.

A fragmentary molar tooth found 40 feet below the surface in a gravel pit (Center E.  $\frac{1}{2}$  Sec. 11, T. 28 N., R. 20 W.) two miles below the Hudson bridge. The fragment weighs  $2\frac{1}{3}$  pounds and has 6 plates preserved. The tooth was found by William Morrissey who still owns it.

65. 1931 *Mastodon americanus* ? Kerr

Deer River, Itasca County, Minnesota.

A lumbar vertebra found on a sand bar in the Mississippi River 5 miles below the town of Deer River. This vertebra is a little small for that of the usual Mammoth and checks very well with that of the Mastodon, hence the tentative identification as such. It was found and reported by John Dorman in June, 1931.

66. 1931 *Elephas* sp.

Inver Grove, Dakota County, Minnesota.

A large scapula found 15 feet below the surface in the highway gravel pit at Rich Valley Corners just south of Inver Grove. Lester Anderson was the finder and gave it to the University of Minnesota. It is No. 4050 in the Geological Museum.

67. 1931 *Mammonteus primigenius* (Blumenbach)

Luverne, Rock County, Minnesota.

A molar tooth with 7 plates in 4 inches and weighing  $3\frac{3}{4}$  pounds. It was found by Mr. M. J. Finberg 16 to 25 feet below the surface in a gravel pit (N.W.  $\frac{1}{4}$ , Sec. 13, T. 102 N., R. 45 W.) near Luverne. It is specimen No. 4151 in the Geological Museum at the University of Minnesota.

68. 1931 *Mastodon americanus* Kerr

Preston, Fillmore County, Minnesota.

Several molar teeth and parts of the skeleton found 8 to 10 feet below the surface in the W. E. Neuman gravel pit along the Root River at the southwest edge of Preston. The teeth were sent to the University of Iowa where they remain.

69. 1932 *Elephas* sp.

Owatonna, Steele County, Minnesota.

A dorsal vertebra found 20 feet below the surface in a nearby gravel pit. It was found by Edward J. Austin, July 26th, 1932, and is specimen No. 4137 in the Geological Museum at the University of Minnesota.

70. 1933 *Parelephas jeffersoni* ? Osborn

Mazeppa, Wabasha County, Minnesota.

A small milk molar tooth found eight feet below the surface in a local gravel pit. The tooth weighs 15 7/16 ounces. Found by Max Sibley. Specimen No. 4153 in the Geological Museum, University of Minnesota.

71. 1933 *Elephas* sp.

Bingham Lake, Cottonwood County, Minnesota.

A 2-foot fragment of a 5-inch tusk found in a gravel pit about two miles west of Bingham Lake. Reported by H. Wickland. It is specimen No. 4150 in the Geological Museum, University of Minnesota.

72. 1934 *Elephas* sp.

Rochester, Olmsted County, Minnesota.

A large vertebra from the drift in a highway cut near the city. Found by Arthur F. Paulson.

73. 1934 *Parelephas jeffersoni* ? Osborn

Albert Lea, Freeborn County, Minnesota.

A 7-foot tusk fragment found from 8 to 15 feet below the surface in a gravel pit one mile northwest of town. Reported by Mr. Flannigan, Superintendent of City Streets. A portion of this specimen was sent to the University of Minnesota but was not numbered. Its specific identification is provisional.

74. 1935 *Parelephas jeffersoni* Osborn

Melrose, Stearns County, Minnesota.

A large molar tooth 15 inches long found 22 feet below surface in the glacial gravels of the highway cut three-quarters of a mile south of the Catholic church. Specimen found and reported by Ignaceus Lemm.

75. 1935 *Parelephas jeffersoni* Osborn

Mankato, Blue Earth County, Minnesota.

A fragmentary molar tooth with four plates, found in drift near the city. Specimen found and reported by G. H. Trafton.

76. 1935 *Elephas* sp.

Robbinsdale, Hennepin County, Minnesota.

A large part of the skeleton 3 or 4 feet below a city street intersection. The specimen was found and reported by the city engineer but no attempt was made to remove it and paving continued over it.

77. 1936 *Parelephas jeffersoni* Osborn

Good Thunder, Blue Earth County, Minnesota.

A molar tooth found in a local gravel pit by Julius Schuneman.

78. 1937 *Parelephas jeffersoni* Osborn

Fergus Falls, Ottertail County, Minnesota.

A fragment of a large molar tooth found in a local gravel pit by H. L. Sandin, Highway Engineer. Specimen No. 3301 in the Geological Museum, University of Minnesota.

79. 1937 *Parelephas jeffersoni* ? Osborn

Red Wing, Goodhue County, Minnesota.

A large molar tooth found by the C.C.C. boys while doing erosion control work on the Kolshorn farm 4 miles south of Red Wing. Reported and described by Mr. K. V. Gronvall.

80. 1938 *Mastodon americanus* Kerr

Witoka, Winona County, Minnesota.

A typical molar tooth washed out of the drift by floods along a local gully. This find was reported by Dr. N. A. Roettiger who gave the tooth to Dr. Samuel Eddy of the Department of Zoology, University of Minnesota.

81. 1938 *Parelephas jeffersoni* ? Osborn

Red Wing, Goodhue County, Minnesota.

A large molar tooth plowed up by a farmer 5 miles south of Red Wing. Find reported and specimen described by K. V. Gronvall.

82. 1939 *Parelephas jeffersoni* ? Osborn

St. Albans Bay, Lake Minnetonka, Hennepin County, Minnesota.

A medium sized molar tooth from the beach sands 2 feet below surface. The specimen was unearthed by the uprooting of a tree which was blown down by a storm. Found and described by Mr. E. A. Blaneffeld.

83. 1939 *Parelephas jeffersoni* ? Osborn

Kenyon, Goodhue County, Minnesota.

A six-foot fragment of a tusk, 6 to 7 inches in diameter, found 15 feet below the surface in a sand pit along a branch of the Zumbro River at Kenyon. Specimen reported and described by Mr. O. C. Cole.

84. 1939 *Parelephas jeffersoni* ? Osborn

Racine, Mower County, Minnesota.

A portion of the pelvis and the upper end of the femur found in a

gravel pit (E.  $\frac{1}{2}$ , N. W.  $\frac{1}{4}$ , Sec. 11, Frankford Township, Mower County), at District School No. 35, two miles south of Racine. Find reported and specimens given to the University by Mr. O. R. Steffens. It is No. 5722 in the Geological Museum.

85. 1939 *Parelephas jeffersoni* ? Osborn

Luverne, Rock County, Minnesota.

A molar tooth and other parts of the skeleton found in the gravels 6 feet below the surface while digging a test pit and planting poplar trees along Highway No. 16 at the southwest edge of Luverne. Found and described by Mr. Carl Kahler.

86. 1940 *Parelephas jeffersoni* ? Osborn

Chisholm, St. Louis County, Minnesota.

A large molar tooth found in a local gravel pit. Find reported and the specimen described by Mr. Alan Humphreys.

87. 1940 *Archidiskodon imperator* (Leidy)

Rosemont, Dakota County, Minnesota.

A molar tooth found 16 feet below the surface in a gravel pit on Mathew Fisher's farm. The find was reported and given to the University by Mr. J. Swan, Highway Engineer. The specimen is No. 5890 in the Geological Museum, University of Minnesota.

88. 1940 *Elephas* sp.

Waterville, Lesueur County, Minnesota.

Part of pelvis from 10 feet below the surface in a gravel pit on the shore of Lake Tetonka. Specimen reported and described by Mr. J. G. Perry.

89. 1941 *Parelephas jeffersoni* ? Osborn

Lake Wilson, Murray County, Minnesota.

A large molar tooth 14 inches long, 7 inches high, 4 inches wide, and weighing 10 pounds. The tooth was washed out of the drift along the local creek near Lake Wilson. It was found and described by Mr. Charles Munsinger.

90. 1941 *Mammonteus primigenius* (Blumenbach)

Stewartville, Olmsted County, Minnesota.

A large molar tooth weighing 10 pounds and a four-foot tusk fragment from the gravel pit on the James Beach farm, two miles down the Zumbro River from Stewartville. This find was made by the gravel pit workmen and reported to the University of Minnesota by Dr. Wilson of the Mayo Clinic. The specimens are in the Museum of the Olmsted County Historical Society, Rochester, Minnesota.

91. 1941 *Parelephas jeffersoni* ? Osborn

Stewartville, Olmsted County, Minnesota.

A small milk molar tooth from the James Beach gravel pit on the south bank of Zumbro River two miles down from Stewartville. The find was made by gravel pit workmen, now keenly alert for such

specimens, and reported by Mrs. B. T. Wilson, director and custodian of the Museum of the Olmsted County Historical Society, Rochester, Minnesota, where the specimen now belongs.

92. 1941 *Parelephas jeffersoni* Osborn  
Grand Rapids, Itasca County, Minnesota.

Two molar teeth and other parts of the skeleton found 8 feet below the surface in one of the excavations for an abutment for the bridge over Prairie River (Sec. 34, T. 36 N., R. 25 W.). The find was reported by Mr. S. S. Lanham of the Chippewa Trading Post, Grand Rapids, and the specimen identified by Dr. L. A. Wilford.

93. 1941 *Archidiskodon imperator* (Leidy)  
Edgerton, Pipestone County, Minnesota.

A large tusk fragment 7 feet long and 8 inches in diameter at the larger end. It tapers only a fraction of an inch in the full 7 feet. Weight was about 125 pounds before drying out. The tusk was found partly embedded in the Nebraskan till at the bottom of terrace gravels along Rock River one mile west of Edgerton. Much of the ivory is still in a good state of preservation but the outer three-quarter inch shelled off exposing crystals of bobierite that had formed between. The find was made by Mr. Cornelius Salie and the specimen brought to the University of Minnesota by Mr. Lloyd Meyer. It is specimen No. 5932 in the Geological Museum.

94. 1942 *Parelephas jeffersoni* Osborn  
New Brighton, Ramsey County, Minnesota.

A four-pound fragmentary molar tooth found in the gravels of the morainic hills on the grounds of the Twin Cities Ordnance Plant where it was buried fully fifty feet. The find was made by Mr. A. R. Meyers who brought it to the University. The specimen remains the property of the Construction Office at the plant.

96. 1942 *Parelephas jeffersoni* ? Osborn  
Nerstrand, Rice County, Minnesota.

A fragmentary tusk 7 inches in diameter found in the bottom of a local gravel pit 18 feet below the surface. Specimen reported and described by Mr. Manford Isaacson.

97. 1942 *Parelephas jeffersoni* ? Osborn  
Empire City, Dakota County, Minnesota.

The tip of a curving ventrally flattened right tusk. The fragment is two feet long and weighs 12½ pounds. Another piece of unknown length was recently broken from it and probably went through the crusher. It was found by Herbert G. Byholt about 18 feet below the surface in a terrace gravel pit along Vermillion River (N.E. cor., Sec. 23, T. 114 N., R. 19 W.) 2½ miles northwest of Empire City. The specimen is No. 5936 in the Geological Museum, University of Minnesota.

98. 1942 *Parelephas jeffersoni* ? Osborn

Empire City, Dakota County, Minnesota.

A very perfect but small milk molar found by Mr. William Leimkuhl several weeks later in the same gravel pit (N.E. cor., Sec. 23, T. 114 N., R. 19 W.) as specimen above. It is at the office of the Seeley Sand and Gravel Company, temporarily at the southwest corner of Rosemont Ordnance Plant.

99. 1942 *Mammonteus primigenius* (Blumenbach)

Minneapolis, Hennepin County, Minnesota.

A fragmentary molar tooth found in glacial gravel near Greenwood Park during the construction of the Floyd B. Olson Highway.

100. 1943 *Mammonteus primigenius* (Blumenbach)

Albert Lea, Faribault County, Minnesota.

A fragment of a molar tooth found by Joseph E. Styne, during the summer of 1943, deep in glacial gravel near Albert Lea. The tooth is about 5 inches deep,  $3\frac{1}{2}$  inches wide, and the fragment is about 4 inches long. It weighs  $2\frac{1}{2}$  pounds.

101. 1946 *Mammonteus primigenius* (Blumenbach)

Racine, Mower County, Minnesota.

Two medium sized right and left lower molars, apparently from the same jaw. Each molar measured 4 by 9 inches on the grinding surface and it is 6 inches from this surface to the broken ends of the roots preserved. They each weigh approximately 5 pounds. The teeth are well worn from use but not water worn and still have most of the roots. These specimens were found by Melvin J. Ringen about 30 feet below the surface in a sand pit two miles south of Racine and to the east of Highway No. 63 along Bear Creek. In 1947 the teeth were sold to Clinton R. Stauffer, Pasadena, California.

102. 1948 *Mammonteus primigenius* (Blumenbach)

Brownsdale, Mower County, Minnesota.

A small molar with crown 3 inches wide by about 6 inches long, and with the main root 7 inches long. The tooth weighs 3 pounds 6 ounces. At the same spot there were found portions of a tusk 14 inches in circumference, 59 inches long and weighing 41 pounds; also a 12-inch piece, probably of the same tusk, with an 11-inch circumference and about 3 inches perhaps from the tip of the tusk. With these were fragments of five or more large bones probably from the Mammoth skeleton.

The tooth is very small in proportion to the size of the tusk, hence it seems the skeletal parts may belong to several individuals differing somewhat in age. The tooth, tusk and bones were found during 1947-48 by Messrs. Wayne Fuller and Archie Irmiter in the Walter Schwartz gravel pit along U. S. Highway No. 16 about 3 miles east of Brownsdale, Minnesota, and last known to be in the possession of Wayne Fuller at Waltham, Minnesota.

103. 1948 *Archidiskodon imperator* (Leidy)

Luverne, Rock County, Minnesota.

Four molar teeth and many large bone fragments were found by Harry Jansson in the Clem Hatting gravel pit on the west side of U. S. Highway 75, 1/2 mile south of Luverne. The remains were found at a depth of 20 feet below the surface in fine gravel and sand deposited by the glacial Rock River. The gravel is overlain by 5 feet of loess.

The teeth were presented by Mr. Jansson to the St. Paul Science Museum.

104. 1948 *Parelephas jeffersoni* Osborn

Edgerton, Pipestone County, Minnesota.

A portion of a skull was found by Herman Walhof in his gravel pit 2 miles south of Edgerton on the east bluff of the Rock River valley. The skull occurred at a depth of 15 feet below the surface in gravel and sand deposited by the glacial Rock River.

The skull is in the possession of the Department of Geology, University of Minnesota.

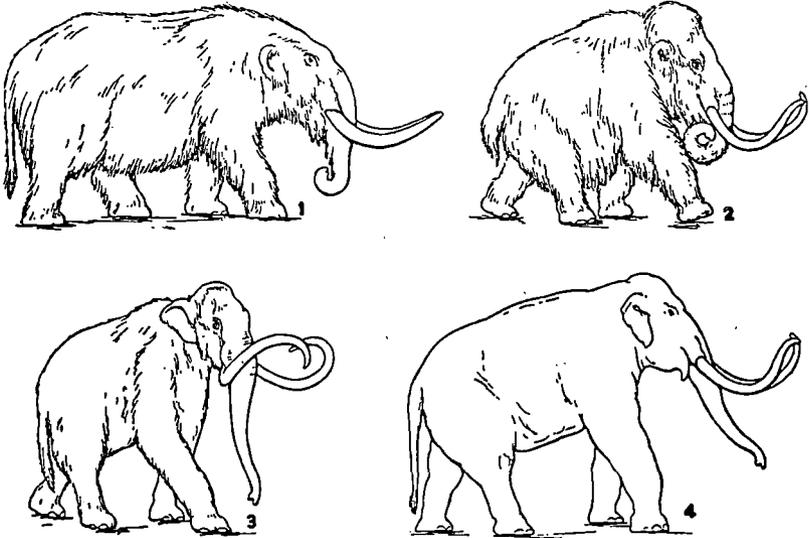
## CONCLUSION

From the records it is suspected that the Musk ox and the Giant Beaver never were important inhabitants of the Minnesota region. Their remains are not abundant in any part of the United States as far as known at the present time. With the Elephants it is quite different. Their remains are relatively abundant and the list of Minnesota Elephant relics grows longer yearly. Some few are plowed up in the fields, but the increase in the number of specimens known is dependent on the number of cuts made in the drift and the amount of material removed from active gravel pits. There has been no effective method proposed for gaining new information about such finds, nor has it been possible to obtain records of all finds that have been made to date. From such information as is available it would appear that the total number is not less than double that reported herewith (see Plate II).

On the accompanying map it is noticeable that the abundance of finds recorded is somewhat related to the density of population, and therefore to the cultural activities taking place in the state. It is likewise related to the region over which the author has worked more continuously in the field and in which a greater number of contacts have been maintained. So it seems probable that every other part of the state may eventually yield as many proportionally as are now known from the southern part. Only the remains of a very small number of the land forms of any period are ever preserved for a great length of time, and especially is that true of a highly intelligent animal, like the Elephant, that would avoid entrapment of any sort in bogs or other places where preservation would be most likely. Hence, it seems safe to assume from the

number known that the Elephant in Minnesota was a common animal of its time. Indeed the samples we have would seem to indicate that Elephants were once abundant over the Upper Mississippi Valley and that the several species were among the major immigrant inhabitants of North America during the late Tertiary and early Quaternary. Certain of the species were apparently well suited to a cool climate and perhaps even to glacial conditions. This was particularly true of the more typical Elephant, as the Mastodon preferred the warmer southern climate.

## PLATE I



Restorations of the Pleistocene Elephants found in Minnesota—after Osborn—

- FIG. 1—*Mastodon americanus* (Kerr)  
 FIG. 2—*Mammonteus primigenius* (Blumenbach)  
 FIG. 3—*Parelephas jeffersoni* (Osborn)  
 FIG. 4—*Archidiskodon imperator* (Leidy)

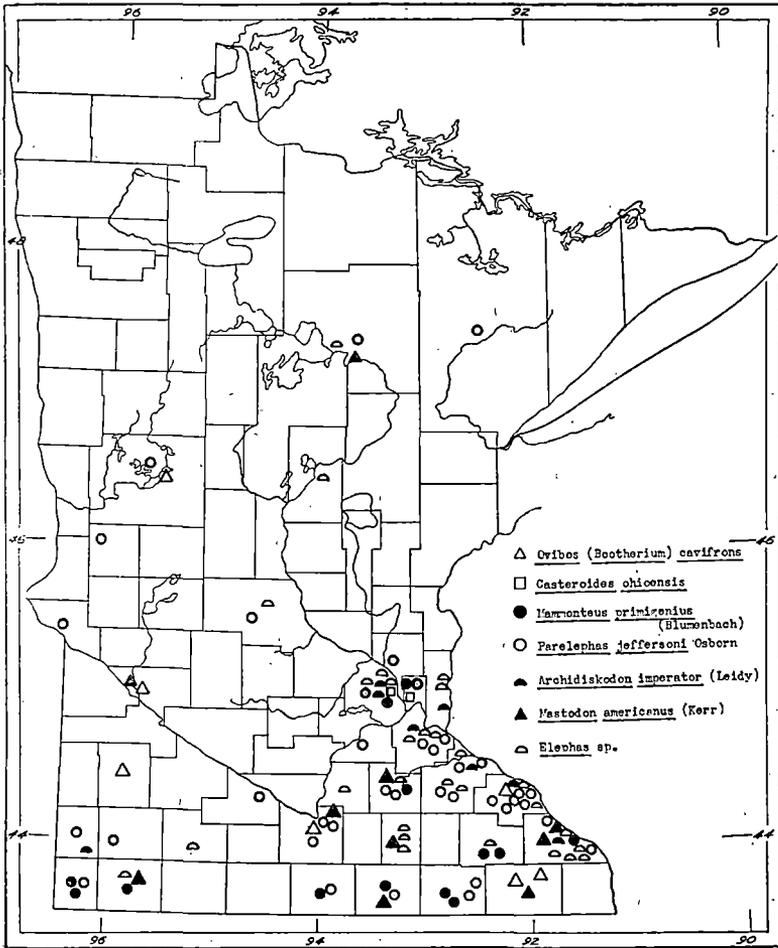


PLATE II

Map showing the localities in which various large Pleistocene mammals have been collected in Minnesota