

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

FURTHER OBSERVATIONS ON SOME EXTINCT
ELEPHANTS.

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Professor Henry F. Osborn has recently (Amer. Mus. Novitates, No. 41, July 8, 1922) issued a paper in which he deals with the Pleistocene elephants of North America. I venture to discuss his important conclusions.

Professor Osborn takes up first *Elephas columbi* and announces that the real *E. columbi* is not the animal that we have been describing under this name. Inasmuch as the elephant which has hitherto borne this honorable title is one well known and widely distributed, it is imperative that the name shall not be disturbed except on evidence that can not reasonably be disputed. I believe that such evidence has not been presented.

In the American Museum is a lower hindermost molar (No. 13707) found at Charleston, South Carolina, which Professor Osborn has made the "neotype" of *E. columbi* (his fig. 3 B). This tooth is said to have in its unworn condition 16 plates, of which only 8 had come into use. With this tooth a plaster cast of Falconer's imperfect type of the species is compared and identified as belonging to the same species. A drawing (Osborn's fig. 1) purports to represent the type tooth restored. Professor Osborn therefore restricts the name *E. columbi* to a form whose lower hindermost molars have only 16 or 17 plates and not more than 6 plates in 100 mm. He further concludes that this species is closely related to or identical with *Elephas imperator*.

Now, the fact is that the "neotype" is a much-worn tooth and does not represent the original number of plates; some are cer-

tainly missing from the front. If the reader will examine A. Leith Adams's monograph on British fossil elephants, plate III, figure 1; plate IV, figure 1; and plate XI, figure 1; or my paper on the "Mammals of the Pleistocene of Iowa" (Iowa Geol. Surv., vol. XXIII), plate LVII, figures 9, 10; plate LV, figure 2; plate LVII, figure 3; and especially plate LXII, figure 4, he will find that a complete lower molar of an elephant possesses a strong anterior root which is distinctly separated from the more or less coalesced hinder roots. This root supports three, four, or possibly five plates. When the tooth is worn down so that this root is gone, one can no longer be certain just how many front plates are missing. That is the condition of Professor Osborn's "neotype." I examined this tooth before Professor Osborn published his paper; and, without knowing what use he intended to make of it, I noted that it lacked this root and some front plates. The tooth quite certainly belongs to *E. columbi*, as we have been describing the species. It will be noticed that in Professor Osborn's restoration of the type tooth (his fig. 1) he has not supplied the front root.

Having, as he supposed, restricted the name *Elephas columbi* to a little-known form, Professor Osborn turned his attention to the great body of elephants which he supposed was now left without a specific title, and on these he bestowed the name *Elephas jeffersonii*. As its type he chose the beautifully preserved and nearly complete skeleton found in Indiana and now mounted in the American Museum. To the same species he referred a large skull (No. 10261) found at Cincinnati and now in the U. S. National Museum. Unfortunately, however, for this tribute to our illustrious statesman and naturalist, this Cincinnati skull had previously been described by myself as *Elephas boreus*. This was done in a paper entitled "Observations on some extinct elephants," privately issued and widely distributed on June 12, 1922. Professor Osborn's name becomes therefore a synonym.

It was evidently Professor Osborn's intention to include under *E. jeffersonii* not only his type, his paratypes (his fig. 11), and the Cincinnati skull, but the elephants abundantly represented by teeth which have about 7 plates in a 100 mm. line and thick festooned enamel. In doing this it seems to me that he has ignored almost every character except size of teeth and thickness

of plates. I grant that Osborn's type, his paratypes (his figs. 11, 12), and various other specimens have only 7 or 8 plates in 100 mm. and that they are co-specific with his *E. jeffersonii*, my *E. boreus*. Inasmuch as teeth of the forms that I have been referring to *E. columbi* and *E. primigenius* have typically 24 plates in 100 mm. it follows that if teeth of both forms have the same length there will be the same number of plates in 100 mm. The teeth of *E. columbi* are usually the larger, but sometimes those of *E. boreus* (hitherto referred to *E. primigenius*) attain equal size, as in the case of Osborn's paratypes from Zanesville, Ohio. Nevertheless, there are usually differences in the thickness and the complications of the enamel, in the shape of the plates, often strongly bent in *E. columbi*, and in the outlines of the tooth.

Under his *Elephas jeffersonii* Osborn (his p. 15) has included, besides the type skull and the Cincinnati skull, two others in the American Museum. These are a skull from Whitman County, Washington, and another from Dallas, Texas. He states that the cranial characters of the Cincinnati skull are wholly similar to those of the three skulls in the American Museum, and he calls attention to the differences existing between these "relatively long, broad, and shallow crania and the relatively short, narrow, and deep crania of *E. primigenius*."

In my paper of June 12 I have from careful measurements constructed diagrams of a skull from Siberia (figs. 1, 2), of the Dallas skull (figs. 3, 4), of the Cincinnati skull (figs. 5, 6), and of the Whitman County skull (figs. 9, 10). I believe that these diagrams give correct views of the architecture of these crania. The skull taken as type of *E. jeffersonii* (diagram not published) is essentially the same as that of *E. boreus*. The differences between these and *E. primigenius* (= *E. mammon-teus*) noted by Osborn are in general correctly stated; and these characters taken in connection with the swollen occiput of *E. boreus* justify the separation of the American form. On the other hand, the skull of *E. boreus* is wholly different from the Whitman County skull. Measured by the unit I have used for the length, this cranium is much wider and much higher than either *E. mammon-teus* or *E. boreus*. In the latter the height is hardly one percent greater than the length; in *E. mammon-teus* the height is 12 percent greater; in the Whitman County skull, 28 percent greater.

The occiput of the last mentioned skull is more inflated than in the others and the vertex lies in front of the foramen magnum. I believe that this skull belongs to *E. columbi*, as that species has been recognized.

The skull from Dallas, Texas, presents another and very different type of architecture. It is very narrow and very low, the height being only 84 percent of the unit of length, and the occiput is flat. This skull appears to me to be referable to *E. imperator*. The three fine skulls in the American Museum belong to three distinct species.

That the elephants which now bear the name *Elephas boreus* are specifically different from those which have been called *E. columbi* is indicated likewise by the geographical distribution of the two forms. *Elephas boreus* is abundant in the glaciated region of our northern States and Canada and around the glacial border, but extremely rare in the southern States. *E. columbi* is abundant southward and especially on the western plains; but it is not so often found in the glaciated region as is *E. boreus*.

Professor Osborn in his paper of July 8 has published an interesting figure of upper teeth of an elephant (his fig. 8) found in Indiana. On plate LIX of the twenty-third volume of the Iowa Geological Survey, I published a figure of very similar teeth found at Milwaukee, Wisconsin, and preserved in the Public Museum of that city. The hindermost molar had just begun to suffer wear. In the U. S. National Museum are right and left hindermost molars (No. 2195) of similar form, found at Ashland, Cass County, Illinois; also an upper left hindermost molar (No. 4761) hardly different, discovered in Wayne Township, Darke County, Ohio. The peculiarity of all these teeth is the low elongated form and the approximate parallelism of the upper and the lower borders. Inasmuch as the molar descends at a nearly right angle with the grinding face of the tooth in front it seems probable that the skull was short. Professor Osborn has referred his specimen to *Elephas primigenius*; but I find no teeth from Alaska or the Old World which present similar characters. I believe that a hitherto unrecognized species is indicated. This I propose to call *Elephas roosevelti* in honor of another statesman and naturalist, one whose multifarious interest led him to pursue living elephants in their African wilds.

Elephas roosevelti, new species.

Type specimen. Upper and lower hindermost molars, No. 2195, U. S. National Museum.

Type locality. Ashland, Cass County, Illinois.

Type formation. Pleistocene.

Diagnosis. Hindermost molars long and low, the base and the summit approximately parallel, consisting apparently of 25 plates; of these 8 in a 100 mm. line; enamel thin, delicate, and little folded.

The Ashland teeth are chosen because with them came the nearly complete lower right hindermost molar. The length of the molars is close to 300 mm, the height 170 mm, the width of the upper teeth 90 mm., of the lower 85 mm.

It appears to the writer that one may justly object to the nomenclature applied by Professor Osborn to some of his subfamilies. It is generally recognized that the name of the family and that of the subfamily are to be based on a type genus. Examples of Professor Osborn's deviation from this wholesome rule are found in his paper of 1921 (Amer. Mus. Novitates No. 1). Rhynchorostrinae is used instead of Rhynchotheriinae, Longirostrinae instead of Gomphotheriinae, Brevirostrinae instead of Anancinae, and Mastodontinae instead of Mammulinae; while the Mammontinae appear to include no genus except *Elephas*. It is a singular fact that Professor Osborn on the same page arranges the genus *Elephas* under two subfamilies. In case the mammoths are worthy of subfamily rank, to be called Mammontinae, there ought to be a corresponding genus, but so far as the writer knows no such genus has yet been proposed.