

A FURTHER AND DETAILED DESCRIPTION OF THE TYPE OF *ELEPHAS ROOSEVELTI* HAY AND DESCRIPTIONS OF THREE REFERRED SPECIMENS

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1. DESCRIPTION OF THE TYPE SPECIMENS

In 1922¹ the writer characterized briefly a species of elephant to which he applied the name *Elephas roosevelti*. As the type of this species were taken the right upper and lower hindmost molars of an elephant found in 1901 at Ashland, Cass County, Illinois, and now in the United States National Museum. The catalogue number is 2195. In 1923² these teeth were mentioned under the name *Elephas primigenius*, for the reason that Publication 322 was already in press when the name *E. roosevelti* was proposed.

The teeth are well preserved, but not without deficiencies. They had not been long in use, being worn back to about the twelfth ridge-plate, but not to the base in front. The upper tooth (pl. 1) lacks probably two or three of the hindmost plates. The lower tooth (pls. 2, 3) has lost apparently two or three front plates and one or two hinder ones. Both teeth are yet mostly covered with a layer of cement. The roots consisted of only a thin layer of dentine over the large pulp and were destroyed in exhumation of the specimen. The front roots of the upper tooth appear to have supported 3 ridge-plates. In the lower tooth one plate remains of those supported by the front root.

The extreme diagonal length of the upper tooth in its present state is 305 mm.; the length along the base on the outer face is 275 mm.; originally it was not far from 290 mm. The height between the first and second thirds of the length, taken at right angles with the base, is 172 mm. The thickness at the same place is 90 mm. The inner face of the tooth is convex in the front half, concave in the hinder half. The outer face is convex. There are present 23

¹ Proc. Biol. Soc. Washington, vol. 35, p. 100.

² Pub. 322, Carnegie Inst. Wash., p. 141.

ridgeplates; originally there were probably 25. Measured on the outer convex face the tooth presents 8 plates in a 100 mm. line; on the inner, concave, face there are 9. The enamel, as shown on the abraded surface, is thin, delicate, and little folded. Its thickness rarely exceeds one millimeter. The thickness of the cement plates and that of the dentine plates enclosed by the enamel are, on an average, equal.

A part of the upper right second molar (pl. 3, fig. 4) was yet in use. During or after exhumation most of the outer half was lost. It had been worn so that in front there remained only dentine and behind this the bases of six or seven enamel plates. The part preserved is 98 mm. long and 78 mm. wide. The plates are divided at the midline into an inner and an outer series of loops of enamel and these loops are directed obliquely backward from the midline. Wear had reached the level where the enamel of each ridgeplate turns toward that of the adjacent plate and joins it. The loops therefore enclose, not dentine, but cement. On the left side (right side in the figure) there is a continuous band of enamel from the first plate to the last one. The rear of this second molar fits quite accurately against the front of the third molar. The two teeth together had 18 ridgeplates in action.

The lower right third molar (pl. 2; pl. 3, fig. 1) presents 23 ridgeplates; there were originally 25, perhaps one or two more. The occlusal border of the tooth is concave from the rear forward. Where the ridgeplates are worn down, there was doubtless originally a rounded boss. The base of the tooth is convex, but would have been less so when the rear plates had reached their full length. On the outer concave face are 8 ridgeplates in a 100 mm. line; on the convex face only 7. The hindmost plates are a little thicker than those in front. The length of this tooth in its present condition, measured from the middle of the summit of the ridgeplate in front to the middle of the base of the hindmost, is 295 mm. The greatest length was originally near 325 mm. The height at the hindmost worn plate is 152 mm. The thickness is 90 mm.

A fragment of the lower second molar appears to belong on the right side and has a surface for contact with the next molar behind; but this third molar has lost the front plate and therefore the contact surface. The loops of enamel of the second molar are divided into two rows, as in the upper second molar, and the loops enclose the cement. Only 4 ridgeplates are represented in this fragment.

The symphysis of the lower jaw is present and about 200 mm. of the right ramus. The beak is moderately prominent. A little to one side of the symphysis the height of the jaw is 120 mm. There is present a fragment of the tusk about 400 mm. long and about 150 mm. in diameter.

The remains above described appear to have been buried in the loess which covers the Illinoian drift around Ashland. Apparently the animal lived during the late Iowan stage or the early Peorian.

2. A PALATE OF *ELEPHAS ROOSEVELTI* FOUND IN WISCONSIN

On plate 4 are presented two views of a palate of an elephant which was found in Milwaukee and is preserved in the public museum of that city. Figure 1 was originally published and the specimen described by the writer in 1914.³ The specimen was there referred to *Elephas primigenius*, but it is now regarded as belonging to *E. roosevelti*. The specimen presents the second and third upper molars of both sides and a part of each maxillary bone that runs upward and forward from the second molar.

Through the director, Dr. S. A. Barrett, and Prof. Ira Edwards, curator of geology in the public museum, the writer has received a photograph showing the palate as seen at right angles with the grinding surfaces of the second molars (pl. 4, fig. 1). Of these molars there remain only the hinder half of the crown and the great hinder root. The length of the grinding surface is 175 mm. In front the teeth are worn down to the common base of dentine. In one tooth there remain 12, in the other 13 ridgeplates. The front 2 or 3 loops of enamel inclose cement instead of dentine. It will be noted (pl. 4, fig. 2) that the grinding surfaces of these teeth make little more than a right angle with the lower border of the hinder tooth; also only slightly more than a right angle with the sheath of the tusks. These features appear to indicate a shortened skull. The hindmost molar was just coming into use and no roots had yet been developed; probably about 4 plates were lost from the hinder end in exhuming the specimen. Originally the greatest diagonal measurement must have been close to 375 mm. There are 8 enamel plates in a 100 mm. line. This elephant died after the last ice sheet had withdrawn beyond Milwaukee, but it is probably to be credited to the Wisconsin glacial stage.

3. A MOLAR OF *ELEPHAS ROOSEVELTI* FOUND IN OHIO

In the U. S. National Museum is an upper left hindmost molar (catalogue number 4761) found in Ohio and referred to *Elephas roosevelti*. The locality is in the northeast corner of Wayne Township, Darke County. The tooth is apparently the one mentioned by A. C. Lindemuth in 1878.⁴ It had been found in a creek just north of Versailles. A record of it as *Elephas primigenius* is in the writer's Pleistocene of North America east of the Mississippi, etc. (1923, p.

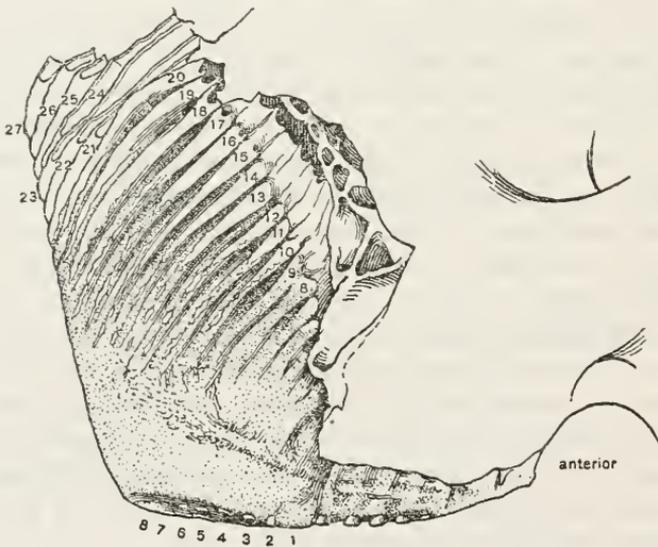
³ Iowa Geol. Surv., vol. 23, p. 409, pl. 59.

⁴ Geol. Surv. Ohio, vol. 3, pt. 1, p. 509.

136). Darke County is covered with Wisconsin drift. The animal lived, therefore, after the last ice sheet had withdrawn from the locality. The tooth lacks little of being as complete as it was at the death of the animal. Apparently one ridge-plate, possibly two, are missing in front, and one or two are gone from the rear. Twenty-one and a half are present. Nine are crossed by a 100 mm. line. The enamel is thin. The pulp cavity was large and the transverse ridges formed by the meeting of the enamel of two contiguous ridge-plates are in view. The original length of the base was close to 260 mm. The height near the front and perpendicular to the base is 154 mm. The greatest thickness is 103 mm.

4. TEETH OF *ELEPHAS ROOSEVELTI* FOUND IN INDIANA

Prof. H. F. Osborn⁵ described and figured teeth of an elephant found in Indiana which he referred to *Elephas primigenius*. His figure is here reproduced. Calculated from the figure, the length of the



TOOTH AND PART OF THE SKULL REFERRED BY OSBORN TO *ELEPHAS PRIMIGENIUS*. X.25

hindmost molar from the base in front to the middle of the hinder plate is about 255 mm.; the height at the middle of the length close to 120 mm.; the width of the grinding surface only about 65 mm. It is thus very narrow, but doubtless on further wear it would increase in width. Osborn states that 13 ridge-plates are compressed into 100 mm. space. There is an error somewhere. The writer estimates that there are only 10 plates in 100 mm. Indeed, on an average, there appear to be only 9 in this distance. In this Indiana specimen, after it was worn on 8 plates, the unworn grinding border

⁵ Amer. Mus. Novitates, No. 41, p. 8, fig. 8,

is still at right angles with the grinding surface of the second molar.

After this paper was put into type Prof. H. F. Osborn redescribed his specimen under the name *Mammonteus primigenius compressus* (Amer. Mus. Novitates, No. 152, December 20, 1924). The present writer believes that the remains belong to *Elephas roosevelti*. The rear of the tooth has the appearance of being restored by the artist.

Elephas roosevelti is most closely related to *Elephas boreus*, as is shown by the number of plates in the hinder molars, their thickness, and the thinness and simplicity of the enamel. The species appears to differ from *E. boreus* in the approximate parallelism of the upper and lower borders of the hinder upper molars and their perpendicular position as they begin to function. This position is quite different from that of the hinder molars of the Indian and the African elephants at the same stage. It is to be hoped that the early discovery of a complete skull of *Elephas roosevelti* will add to our knowledge of the species.

EXPLANATION OF PLATES

PLATE 1

Elephas roosevelti Hay. Right upper third molar seen from right side. Type. $\times .465$.

PLATE 2

Elephas roosevelti. Right lower third molar seen from right side. Type. $\times .487$.

PLATE 3

Elephas roosevelti.

FIG. 1. Lower right third molar. Type. $\times .487$.

2. Three ridgeplates of right upper third molar. $\times .1$.

3. Four ridgeplates of right upper molar. Slightly farther back than those of fig. 2. $\times 1$.

4. Upper right second molar. Much worn. $\times .51$.

PLATE 4

Elephas roosevelti. Upper teeth and palate of specimen in Public Museum, Milwaukee, Wis.

FIG. 1. Palate and upper second molars seen from below. Front end of teeth directed downward. $\times .2$.

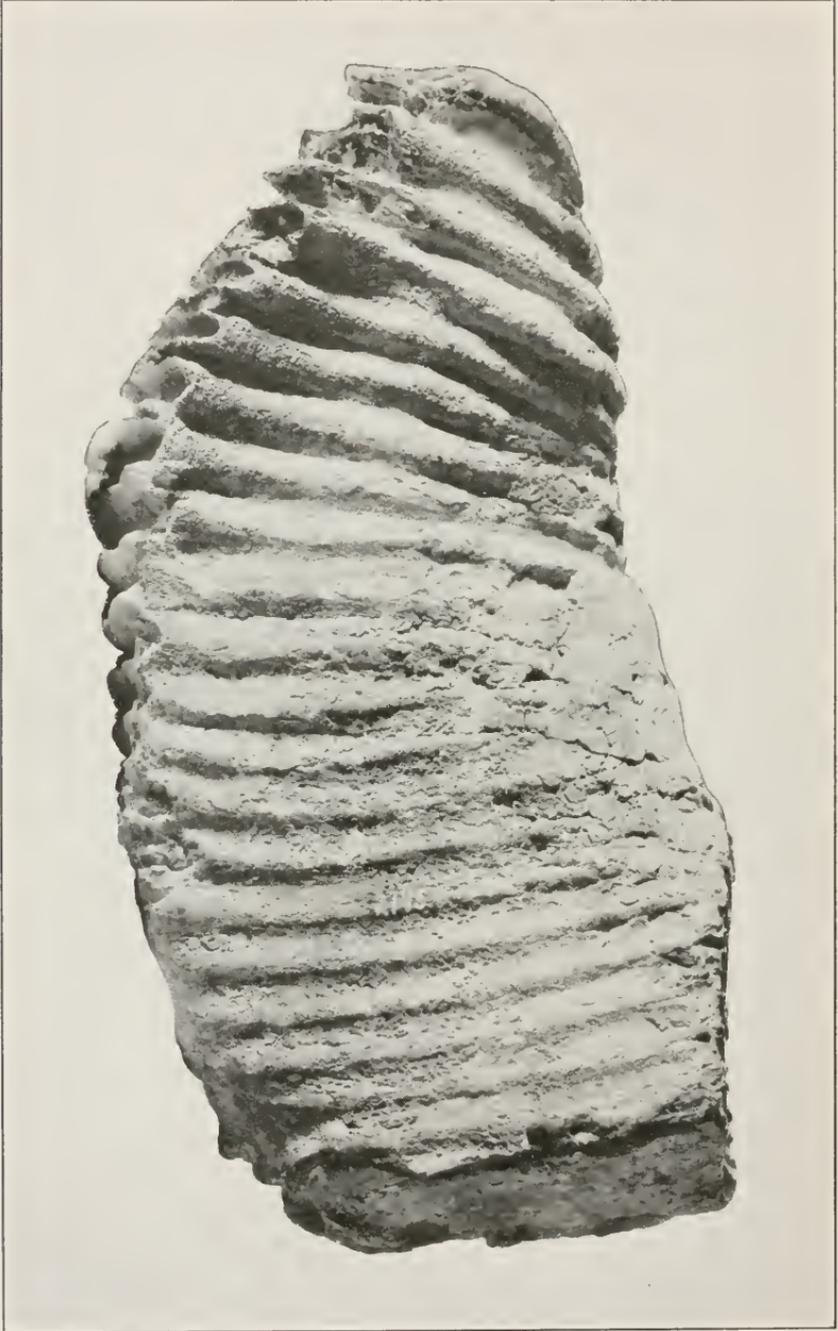
2. Same specimen as that of fig. 1. Viewed from right side and showing second and third upper molars. On the right side is a part of the sheath of the tusk. $\times .36$.





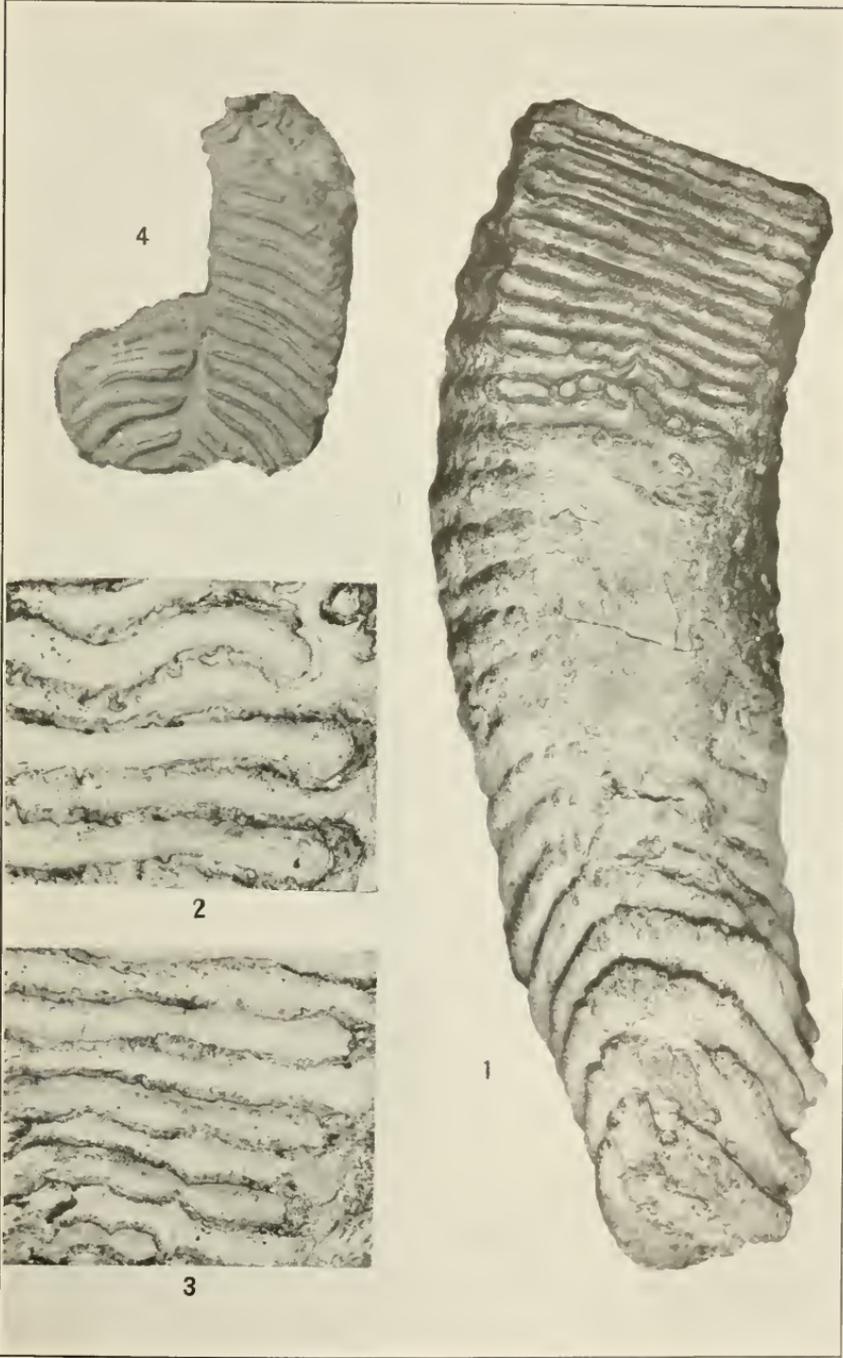
RIGHT UPPER THIRD MOLAR OF *ELEPHAS ROOSEVELTI*

FOR EXPLANATION OF PLATE SEE PAGE 6



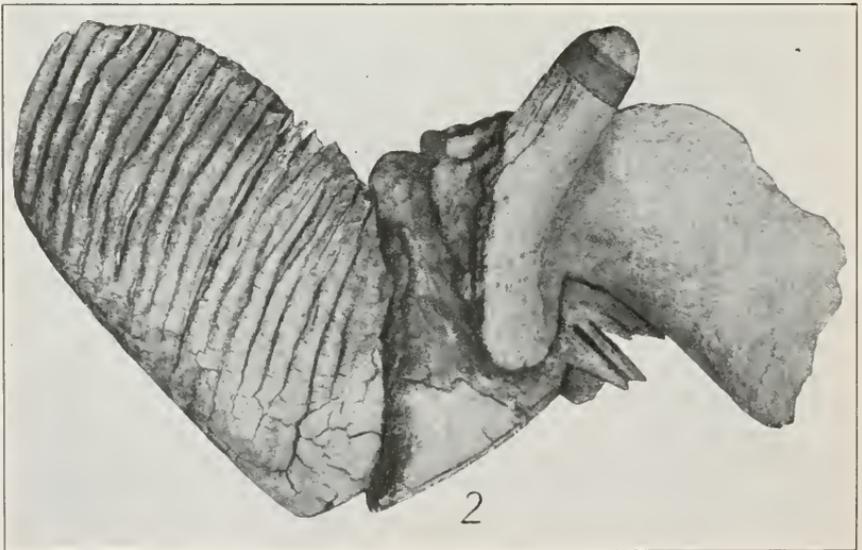
RIGHT LOWER THIRD MOLAR OF ELEPHAS ROOSEVELTI

FOR EXPLANATION OF PLATE SEE PAGE 6



MOLARS OF *ELEPHAS ROOSEVELTI*

FOR EXPLANATION OF PLATE SEE PAGE 6



UPPER TEETH AND PALATE OF ELEPHAS ROOSEVELTI

FOR EXPLANATION OF PLATE SEE PAGE 6