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THE STATUS OF THE EAST AFRICAN ELEPHANT "*ARCHIDISKODON EXOPTATUS*" DIETRICH 1942

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ABSTRACT. The syntype collection of "*Archidiskodon exoptatus*" Dietrich 1942 from Laetolil, east Africa, is reexamined in the light of more recent material from other African localities. The collection is found to be composed of two distinct taxa — one referable to *Elephas recki* Dietrich 1916 and the other to a primitive species of *Loxodonta*. In the interest of nomenclatorial stability, an *E. recki* specimen is chosen as the lectotype of "*A. exoptatus*," thus reducing that name to the junior synonymy of *E. recki*. It is concluded that two faunal horizons are represented in the Laetolil area as suggested by earlier workers, one correlating with both Kanapoi and Yellow Sands at the base of the Omo sequence, and the other correlating with the later Omo beds, possibly antedating Bed I Olduvai by a short time interval.

INTRODUCTION

Since its description by Dietrich in 1942, the name "*Archidiskodon exoptatus*" has been applied to several different taxa by different workers. As a result, the original concept of the species is often misunderstood. Recent concepts have varied from a rather primitive, low-crowned form conspecific with the Upper Siwalik *A. planifrons* (Arambourg, 1947) to a considerably more progressive, higher-crowned form either ancestral to *E. recki* (Cooke, 1960) or synonymous with it as an early stage (Leakey, 1965). Because of the growing significance of the Elephantidae for purposes of correlation, especially in the Plio-Pleistocene of Africa, it is important to establish firmly the status of this taxon in order to avoid further confusion.

The syntype collection of "*Archidiskodon exoptatus*" was collected by Kohl-Larsen during his 1938-1939 expedition to the southern Serengeti in what was then Tanganyika Territory. The fossil localities cover an extensive area south of Olduvai Gorge in the Vogel River area of the Serengeti Plain, just north of Lake

Eyasi. The fossil-bearing Laetolil beds are exposed in the drainage valleys of five river systems — Vogelfluss, Gadjingero, Deturi, Oldogom, and Marambu. The yellow-grey Laetolil tuffs are locally interrupted by a basalt (Kent, 1941), which may represent a fair interval of time. Based on Hopwood's (1936) analysis of the Laetolil fauna, Kent suggested two distinct faunal horizons — one more or less contemporary with Beds I-II at Olduvai, and the other somewhat earlier in the Lower Pleistocene.

Many of the fossils are yellowish white in color and chalky in preservation. Other specimens are brown to black in color and are more highly mineralized. Dietrich considered this difference in preservation, along with morphological differences, as evidence indicating two faunal zones — the "old fauna" and "younger fauna" — thus supporting Kent's earlier view. The yellowish white specimens are the older, the black the younger. He considered the older fossils as products of redeposition, being mixed with material of a considerably later age. Despite this, however, Dietrich believed the entire collection of Proboscidea to be uniform and to represent a single, variable species. Whereas Hopwood (1936) and Kent (1941) recognized two elephantid species in this material — *Palaeoloxodon recki* and *Elephas* aff. *planifrons* — Dietrich considered the Laetolil collection to be a single new species related to the *"E. planifrons-E. meridionalis"* group, but representing a distinct African branch. As I will show below, this view of a single species derived from *E. planifrons* cannot be supported on present evidence. Hopwood's original analysis was essentially correct.

The syntype collection on which Dietrich founded his species consists of 108 molar fragments, nearly all of which are fragmentary or severely worn. Most of these are too incomplete for meaningful diagnosis. Among the 108 specimens the following were identified by Dietrich: $12M^1$, $9M_1$, $5M^2$, $12M_2$ $4M^3$, $24M_3$. The remainder of the collection consisted of milk molars. A reexamination of this collection in the light of the now abundant comparative material from other east African localities shows that a large number of these determinations were incorrect. The mixing of two distinct taxa as well as the misidentification of individual specimens as to their serial position in the tooth row resulted in a specific diagnosis which had little objective relationship to any real taxon. The reasons for this confusion lie not in Dietrich's analysis of the collection, which generally was excellent, but primarily in the fragmentary nature of the material and the lack of

adequate comparative collections at the time he wrote.

The type collection, housed in the Institute for Paleontology, Humboldt University, and six specimens in the British Museum (Natural History) collected several years earlier by Dr. L.S.B. Leakey, have been examined. The material conclusively shows the presence of two taxa, which may be distinguished on morphological grounds and which differ in preservation. These two forms

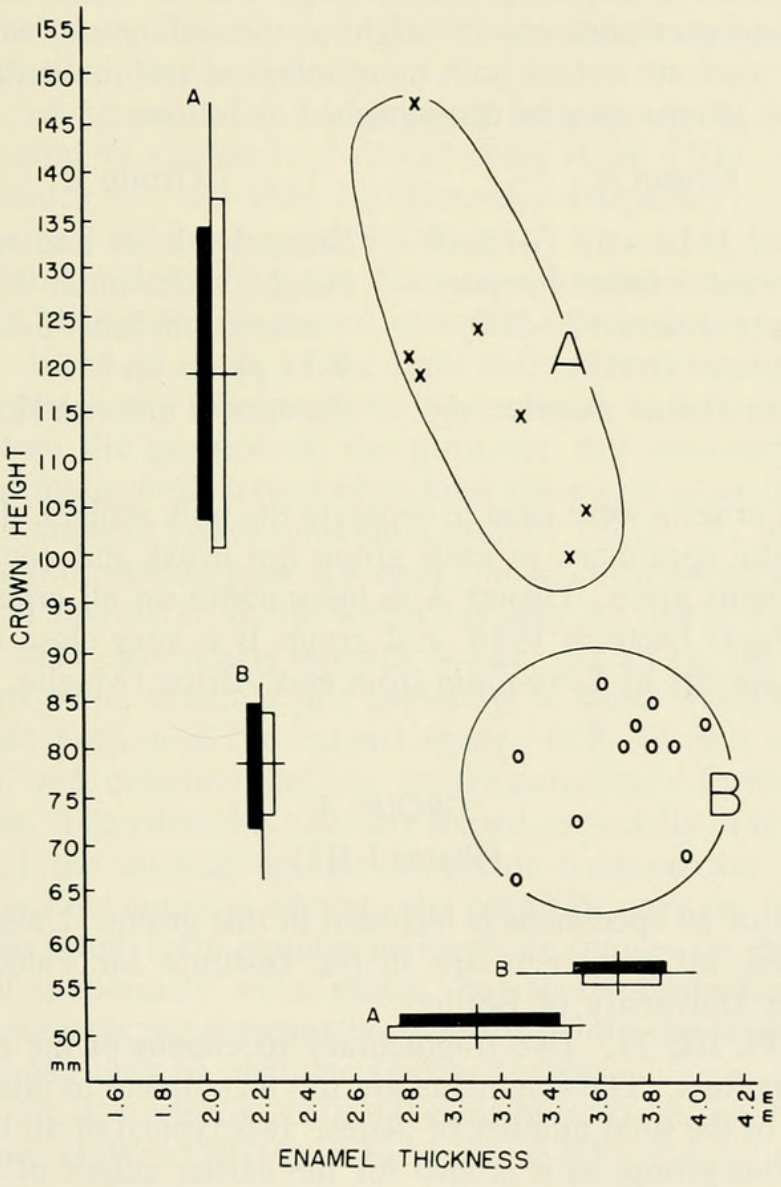

Figure 1. Distribution of first, second, and third permanent molars in the syntype collection of *"Archidiskodon exoptatus"* with respect to enamel thickness and crown height. Group A and B as discussed in text. For each: thin line, observed range; short crossbar, mean; solid rectangle, ± one standard deviation from the mean; open rectangle, 98% confidence interval of the mean.

support the contention that two faunal horizons are present. These can be tentatively correlated with other east African deposits for which acceptable radiometric age determinations are now available (Maglio, in press, a).

The following analysis is based on 37 of the better specimens in the Kohl-Larsen collection and the six British Museum specimens. In Fig. 1 the first, second, and third permanent molars are plotted on a scatter diagram, with average enamel thickness as the abscissa and maximum crown height as the ordinate. Two groups, A and B, separate out on both morphological and metrical criteria. These two groups may be distinguished as follows:

Group A	Group B
Enamel thin and folded	Enamel thicker and smooth
Height/width index for permanent molars 120-200	Height/width index for permanent molars 85-110
11-13 plates on M3	9-11 plates on M3
Weak to absent anterior sinus	Prominent anterior sinus

Similar criteria were used to separate the milk molars. In Tables 1 and 2 the specimens in each group are listed and comparative measurements given. Group A is inseparable on all criteria from *Elephas recki* Dietrich 1916, and group B is very close to a new primitive species of *Loxodonta* from east Africa (Maglio, in press, b).

GROUP A

(Plates I-III)

A total of 19 specimens is included in this group. Unless otherwise stated, all specimens are in the Institute for Paleontology, Humboldt University of Berlin.

M^3. (Pl. III, 7). Two fragmentary specimens of the right side from Vogelfluss. The fragments are too incomplete to allow determination of the total number of plates. It is typical of all the specimens in this group, as it is also for the earlier stages of *E. recki*, that the enamel is only very weakly folded near the apex of the crown but is much more strongly folded toward the base. One specimen (Vo. 11-13/1.39) is in an early stage of wear; the worn plates show rather large, complexly folded posterior loops with smooth to weakly folded enamel on the remainder of the enamel

figure. The lamellar frequency[1] is rather low (3.8), but this fragment is the anterior portion of an M^3; this value is probably lower than the average value for the entire molar. The second specimen (Vo. 330 K.L. 18/9–10. 38) is broken across the basal portion of the crown, revealing a low cross-section of the plates. The median folds are reduced to a slight central widening of the plates, indicating fusion of the anterior and posterior columns into the plate faces. The enamel is strongly folded around the entire surface of the plate. Based on these two incomplete specimens, M^3 may be characterized as follows:

P (no. of plates)=?; L (maximum length)=?; W (width)= 77-94 mm; H (height)=119-121 mm; H/W (100 × height/ width index)= 128-155; LF (lamellar frequency)= 3.8-4.3; ET (enamel thickness)= 2.3-3.4 mm.

M_3. (Pl. I, 1-2; Pl. II, 4-6). Six incomplete molars from Vogelfluss and Gadjingero. The most complete specimens are Z. 94.96 and K.L.-10-13.39, both of the right side. The former bears the last nine plates with the posterior root system underlying the last eight. From the position of the posterior and intermediate root bases, this molar must have had at least three and more likely four additional anterior plates, making a total of 12-13. As in M^3, the enamel is little folded near the apex but is much more so toward the base. Thus, no. Z. 94.96, which has only the first five preserved plates in wear, has nearly smooth enamel except on the first and most worn plate, which is just beginning to show weak folding in the median portion of the enamel figure. G.K.-18 is a well worn specimen with columns that are nearly completely fused into the plate faces. The enamel is coarsely folded, especially in the median portion of the enamel figures. Anterior columns are generally small or lacking entirely, whereas the posterior ones are free at the apex. The latter form prominent loops or sinuses on the enamel figures of moderately worn plates, but these disappear in later stages of wear as the columns become fused into the plates toward the base. M_3 may be characterized as follows:

P=12-13; L=approx. 250-300 mm; W=70-88 mm; H=100-147 mm; H/W=122-198; LF=4.3-5.4; ET=2.6-3.9 mm.

[1] The average number of plates in a distance of 10 cm measured parallel to the crown base.

M^2. One incomplete left molar from Garussi, a tributary of Vogelfluss (no number). Although lacking its lingual half, this specimen is complete as to length and has nine plates plus a strong posterior heel. The enamel is moderately folded and there is a small but prominent posterior sinus. It is too worn for determination of the crown height.

P=9; L=176 mm; W=?; H=?; H/W=?; LF=6.0; ET=3.1-3.8 mm.

M_2. A single specimen (G.K. 1/39) from Garussi. Only the anterior three plates are preserved. From what remains, this molar appears to have been similar to M^2.

P=?; L=?; W=77 mm; H=?; H/W=?; LF=5.2; ET=2.4-2.8 mm.

M^1. One incomplete specimen (Vo. Aa) with the first five plates preserved. The crown is too worn for a determination of its height.

P=?; L=?; W=62.1 mm; H=?; H/W=?; LF=5.3; ET=2.7-2.9 mm.

M_1. (Pl. I, 3). One partial specimen (Vo. A) from Vogelfluss. The last five plates and a strong posterior heel are preserved. The wear figures form a narrow loxodont pattern, without strong median sinuses but with angular median expansions. The enamel is strongly folded. The specimen is too worn for a determination of the crown height.

P=?; L=?; W=66 mm; H=?; H/W=?; LF=5.1; ET=2.1-3.0 mm.

dM^4. One incomplete specimen (BM L. 171 QS). Six plates are preserved and it is probable that this represents the total number for this tooth. The crown is short and broad with thin, coarsely folded enamel and only slight median expansions; there are no true sinuses.

P=6; L=106 mm; W=82 mm; H=?; H/W=?; LF=5.7; ET=1.6-2.2 mm.

dM_4. Two incomplete teeth (G.K. 2/39 and Vo. 313 2b(7.73)) from Vogelfluss and Garussi. These specimens are too fragmentary to allow a determination of the crown height or the number of plates. From what remains, we may characterize this molar type as follows:

P=?; L=?; W=56-59 mm; H=?; H/W=?; LF=5.9-7.3; ET=1.7-2.4 mm.

dM_3. (Pl. III, 8-9). One complete specimen (BM M-14942) from Vogelfluss. There are six plates and a very strong heel. The apices of the plates are divided into numerous small digitations

with remnants of a slightly deeper median cleft showing in very early stages of wear. Weak median sinuses are seen on moderately worn plates and the enamel is thin and strongly folded. A strong anterior root supports the first two plates; a small internal intermediate root supports portions of both the third and fourth plates, and the posterior root supports plates 4-6 and the heel.

P=6; L=73.5 mm; W=37 mm; H=31 mm; H/W=85; LF=8.1; ET=1.3-1.7 mm.

dM^2. (Pl. III, 10-11). Two complete specimens (Z.60 and Z.68) from Vogelfluss and Garussi. Z.68 is unworn and bears three plates as well as a strong two-cusped anterior ridge. A posterior heel consists of seven small columns closely appressed to the last true plate. The tooth is narrow anteriorly but broadens considerably at the second plate and is widest at the third. A stout root supports the last two plates and the heel; a second root supports the anterior ridge and first true plate.

P=3; L=25-27 mm; W=22 mm; H=13-18 mm; H/W=58-80; ET=1.1 mm.

dM_2. (Pl. III, 12-13). One complete specimen (Z.62) from Garussi. There are four plates plus a strong posterior heel. As in dM^2, the tooth broadens posteriorly but not nearly as much. The first two plates have only three digitations, the third has five, and the fourth, eight. Two roots are present as in dM^2.

P=4; L=26.5 mm; W=18 mm; H=14 mm; H/W=77; ET=?.

This assemblage of molars as a whole compares well with material from other east African localities, such as Olduvai Beds I-II, and the upper part of the Omo sequence, which are referable to different stages of *Elephas recki*. As discussed elsewhere (Maglio, in press, a, and Cooke and Coryndon, in press), the most primitive stage (stage 1 of Maglio) attributable to *E. recki* occurs at Kikagati, Uganda (Hopwood, 1939), a deposit which appears to be equivalent to the upper Kaiso beds (H.B.S. Cooke, pers. comm.). This form, originally referred to "*Archidiskodon griqua*" by Hopwood, has approximately 13 plates on the M_3, a lamellar frequency of 4-5, and a height/width index of about 120-135. The enamel is relatively thick (2.8-3.3 mm) and smooth, lacking the characteristic folding of later stages of this species. Large anterior and posterior sinuses are formed with wear due to the presence of median columns fused for the most part to the surfaces of the plates. The posterior columns may be free at their apices, and are generally lower in height than the associated plates. As a result, the sinuses do not appear in the enamel figure until intermediate stages of wear.

Successively more progressive stages of *E. recki* are found in the later Omo beds, Beds I-II Olduvai, and in Bed IV Olduvai. The later Omo stage (stage 2 of Maglio, *op. cit.*) has, on the average, slightly thicker enamel than does the Laetolil material, and is proportionately slightly lower crowned. The lamellar frequency is greater (5-6) and the number of plates appears to have been slightly higher. The worn enamel figures show little or no development of an anterior sinus, but a persistent fused posterior column is present as in the Laetolil material. The enamel is only weakly folded in the median portion of the plates.

The Olduvai Bed I-II form (stage 3) is somewhat more progressive than the Omo and Laetolil form, having generally thinner, more highly folded enamel and reduced, irregular sinuses.

The Laetolil assemblage as a whole would apear to be closest to the later Omo population of *Elephas recki.* Based on the elephants, at least part of the Laetolil fossiliferous beds may be correlated with this part of the east African sequence.

GROUP B

(Plates IV-VI)

Twenty-four specimens are included here as follows:

M^3. (Pl. IV, 14-15). Three incomplete specimens (BM M-15416, G.K. V, and Vo. 70) from Vogelfluss and Garussi. The most complete specimen (BM M-15416) bears the last seven plates and probably had no more than nine or ten when complete. Only the last plate permits a measure of the crown height (68.0 mm), but the maximum height must have been 15-20 mm greater. The enamel is thick and not folded. Anterior and posterior sinuses are present on the plates in intermediate stages of wear. The plates are well spaced — there are only 3.5 in 10 cm. G.K. V is unworn but has been sectioned at about the middle of its height. Except for slight coarse folding of the enamel in the median part of the wear figure, the enamel is smooth as in the previous specimen.

P=?9-10; L=?; W=76-85 mm; H=68-83 mm; H/W=96-109; LF=3.5-4.3; ET=3.3-4.3 mm.

M_3. Two incomplete specimens (BM LS 9VI35 and Vo. 9-10.3B). The height/width index of the one unworn specimen (BM LS 9VI35) is very low, and it is likely that the average height for this molar type was somewhat greater. Other characters are as in M^3.

P=?; L=?; W=87-94 mm; H=79 mm; H/W=85; LF=3.4-4.0; ET=3.0-3.7 mm.

M^2. One specimen (G.K. 2.39II) from Garussi. The last six plates are preserved and the last three are unworn. The enamel is thick and unfolded.

P=?; L=?; W=80 mm; H=72 mm; H/W=91; LF=4.9; ET=3.4-3.6 mm.

M_2. (Pl. IV, 16; Pl. V, 18-21). Five incomplete specimens from Vogelfluss and Garussi. The most complete specimen (Vo. 9/10.38) bears the last seven plates with the posterior root system supporting the last five. A strong anterior root underlies the first one and one-half plates suggesting that the tooth is essentially complete except for a probable anterior ridge and perhaps one additional plate. The plates are thin toward their apices but broaden rapidly toward the base. The wear figures are widest in the midline and have rounded anterior and posterior sinuses. The enamel is thick and not folded. In another specimen (Vo. N), the sinuses are larger and the enamel is somewhat wavy, although not folded as in *E. recki*. The posterior columns may be free for part of their height, as in no. 5882, becoming fused with the plate face toward the base. The transverse valleys between the plates are broadly open and U-shaped. As in other molars in this group, the crown height is roughly equivalent to its width. This molar type is characterized as follows:

P=7-8; L=approx. 200 mm; W=81-88 mm; H=80-87 mm; H/W=91-106; LF=4.2-5.0; ET=3.1-4.5 mm.

M_1. (Pl. VI, 22-23). Five specimens from Vogelfluss and Garussi. Two specimens (5828 and 5824) are complete but well worn, and probably represent the left and right tooth of the same individual. Both have the anterior plates worn down to the root, but from the position of the anterior root, it is clear that the total number of plates was seven. The last plate is only slightly worn and offers a means of estimating the maximum crown height (about 80 mm). The enamel is thick and smooth. Prominent sinuses are present on several of the worn plates. The enamel figure indicates the presence of a weak median cleft on the upper half of the anterior four or five plates. A strongly backward-curving anterior root supports the first one and one-half plates; an equally strong and curved intermediate root underlies the lingual half of plates 3 and 4. The posterior root system supports the last three plates.

P=7; L=155-165 mm; W=69-88 mm; H=67-80 mm; H/W=96-99; LF=4.6-5.1; ET=2.5-4.0 mm.

dM_4. (Pl. IV, 17). Two nearly complete specimens (Vo. 330 (7.78) and 5827) from Vogelfluss. Both specimens have five

plates as well as a small posterior heel. Prominent anterior and posterior columns are fused into the plates for their entire height and with wear form sharp sinuses. Though slightly wavy, the enamel is essentially smooth and rather thick.

P=5; L=126 mm; W=51-58 mm; H=?; H/W=?; LF=5.0-5.9; ET=2.0-3.2 mm.

dM^3. Two specimens from Vogelfluss and Garussi. No. 5818 is complete, with five plates, an anterior ridge, and a posterior heel. The enamel is weakly folded around the entire surface of the plates. There are weak median loops on the enamel figure in early stages of wear, but these become more prominent with increased wear. The second specimen (5830) has larger sinuses and a deep median cleft on the first two plates.

P=5; L=71 mm; W=39-41 mm; H=32-42 mm; H/W=78-92; LF=8.1-8.3; ET=1.2-2.0 mm.

dM_3. (Pl. VI, 24-25). Two specimens (5883 and 5886) from Vogelfluss and Garussi. Six plates are preceded by a small anterior ridge. The enamel is weakly but very coarsely folded and the wear figure is very irregular. Small median swellings on the anterior and posterior faces of the plates mark the position of the fused columns. The tooth is proportionately wider than the corresponding tooth of *E. recki* and has one less plate. An anterior root supports the first one and one-half plates, and the posterior root system supports the last four.

P=6; L=54-71 mm; W=35-37 mm; H=31 mm; H/W=84; LF=9.3-9.5; ET=1.5-2.0 mm.

dM_2. (Pl. VI, 26-27). Two complete specimens (5837M and 5837G) from Marambu and Garussi. This is smaller and proportionately less elongated than the corresponding tooth of *E. recki*. There are only three plates present with a small anterior ridge and a posterior heel. The plates have only three to four digitations in contrast to the 7-8 of *E. recki*. Unlike the condition in the latter species, there is only a single root, constricted vertically into an anterior and posterior portion.

P=3; L=19-22 mm; W=15-16 mm; H=14-16 mm; H/W=86-102; ET=1.2 mm.

The twenty-four specimens in the present group B certainly represent a form considerably more primitive than that of group A in every trait that can be used to characterize the evolution of molars in elephants. In Table 3, ranges of measurements are summarized for the six molars of each group. The available measurements and the morphology of specimens in group B are close to

Kanapoi species "C" of Maglio (in press, a) and to those of *Mammuthus africanavus*. The major differences between these latter two species lie in the skull. A poorly preserved skull from north Africa (Arambourg, in press) has been referred to *M. africanavus* and demonstrates the *Mammuthus* affinities of this species. However, a skull and skeleton of Kanapoi species "C" (Maglio, in press, b) demonstrates its ancestral relationship to *Loxodonta africana*. Though very similar in dentition, these two fossil species can be distinguished on teeth alone when a suitable sample is available; there are 1-2 fewer plates in the Kanapoi species, the plates do not taper toward the apex as markedly as in *M. africanavus,* and the median sinuses are generally larger. Molars from lower Kaiso, Yellow Sands (Omo), the Chemeron beds, and Kanam are also referable to Kanapoi species "C." The Laetolil elephant here referred to group B appears also to belong here.

DISCUSSION

As for the status of *"Archidiskodon exoptatus,"* it is clear that the name encompasses two distinct taxa, one (*E. recki* Dietrich 1916) with priority. It is my opinion that the name *"A. exoptatus"* should be suppressed for the following reasons: 1) The concept of the species as originally intended has been confused in the literature to the point where recent workers cannot be certain of the proper diagnosis. Even if adequately limited to one good taxon, the name would still invoke confusion in the minds of some workers who must deal with the past literature. 2) With the availability of the excellent and abundant new material from Kanapoi and other localities, it is unwise to maintain the fragmentary material from Laetolil as the type collection of any species. Though part of this collection is probably conspecific with the Kanapoi species of *Loxodonta,* identity with this taxon (or any other) can not be certain on present evidence. Where possible, fossil species should be founded on the most adequate material available.

Since Dietrich did not select a type specimen, I, as first revisor, select as the lectotype of *"A. exoptatus"* IPUB no. Z. 94-96, a right M_3 of group A. Thus, *Archidiskodon exoptatus* Dietrich 1942 becomes a junior synonym of *Elephas recki* Dietrich 1916. The present group B is then referred to *Loxodonta* sp., pending description of the new species from Kanapoi.

CONCLUSIONS

The occurrence of two species at Laetolil tends to confirm earlier suggestions that the Laetolil fauna represents two distinct horizons. One, containing a stage 2 *E. recki,* correlates best with the later Omo beds, and may antedate Bed I Olduvai, but only by a relatively short interval of time. The second and earlier fauna with a primitive species of *Loxodonta* seems to correlate best with Kanapoi, Yellow Sands, Chemeron, and Kanam. Both species occur at the Vogelfluss and Garussi exposures, but only *E. recki* has been recorded from the Gadjingero exposures. The significance of this is uncertain. The drainage of the Gadjingero lies to the north of both Vogelfluss and Garussi and generally at a higher altitude. It is possible that it includes only the upper levels of the Laetolil beds. Whether several distinct levels are involved as proposed by Kent (1941), or whether we are dealing with redeposition and mixing of two faunas at a single horizon as suggested by Dietrich (1942) is not certain on present evidence.

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ABBREVIATIONS

BM — British Museum (Natural History).
IPUB — Institut für Paläontologie u. Museum, der Humboldt Universität zu Berlin.

TABLE 1

Measurements of the nineteen specimens of "group A" from Laetolil.

Abbreviations: P, no. of plates; L, length; W, width; H, height; H/W, 100 × height/width; LF, lamellar frequency; ET, enamel thickness. Superscripts indicate the number of the plate from the front on which the measurement was taken; superscript "e" indicates an estimated value.

Museum Number		P	L (mm)	W (mm)	H (mm)	H/W	LF	ET (mm)
IPUB Vo. 11-13/1.39	r.M^3	$+\frac{1}{2}2\frac{1}{2}+$	81.2+	94.1^1	120.8^4	128	3.8	2.5-3.1
IPUB Vo. 330 (K.L.18/9-10.38)	r.M^3	+3	79.5+	77.0^2	119.0^2	155	4.3	2.3-3.4
IPUB Z. 94.96	r.M_3	+9	208.8+	86.8^3	115.0^e	140	5.1	3.0-3.5
IPUB G.K.-18	l.M_3	+7	156.4+	85.4^1	—	—	4.6	3.2-3.9
IPUB K.L.-10-13.3.39	r.M_3	+8+	207.5+	88.0^2	147.2^e	172	4.6	2.6-3.0
IPUB Vo. 11/13.1.39	l.M_3	+4+	82.4+	67.9^2	124.0^1	198	4.9	2.7-3.5
IPUB Vo. 11/13.1.39A	l.M_3	+4+	74.6+	70.5^2	100.0^2	142	4.3	3.0-3.9
IPUB G. 2/39	l.M_3	+5+	93.4+	85.7^2	105.3^3	122	5.4	3.5-3.6
IPUB G.K. ?	l.M^2	9+	175.6+	—	—	—	6.0	3.1-3.8
IPUB G.K. 1/39	l.M_2	3+	71.0+	76.7^3	—	—	5.2	2.4-2.8
IPUB Vo. Aa	M^1	5+	93.1+	62.1^3	—	—	5.3	2.7-2.9
IPUB Vo. A	M_1	+5	109.0+	65.9^3	—	—	5.1	2.1-3.0
BM L. 171 QS	l.dM^4	?6	105.9+	82.1^2	—	—	5.7	1.6-2.2
IPUB G.K. 2/39	l.dM_4	+4	81.3+	58.5^3	—	—	5.9	1.7-2.4
IPUB Vo. 313 2b(7.73)	dM_4	+3	46.2+	56.1^2	—	—	7.3	1.9-2.4
BM M-14942	l.dM_3	6	73.5	36.7^5	36.0^6	85	8.1	1.3-1.7
IPUB Z. 68	l.dM^2	3	25.4	21.9^3	17.5^1	80	—	—
IPUB Z. 60	l.dM^2	3	27.2	21.9^2	12.8^e	58	—	1.1
IPUB Z. 62	l.dM_2	4	26.5	18.2^3	14.0^1	77	—	—

TABLE 2

Measurements of the twenty-four specimens of "group B" from Laetolil.
See Table 1 for abbreviations.

Museum Number		P	L (mm)	W (mm)	H (mm)	H/W	LF	ET (mm)
IPUB G. K. V	r.M^3	+½4	125.9+	82.7[1]	80.0[1]	96	4.3	3.3-4.1
BM M-15416	r.M^3	+7+	194.1	85.0[5]	68.0[7]	96[e]	3.5	3.6-4.3
IPUB Vo. 70	r.M^3	+4	105.3+	76.0[2]	82.5[e]	109	4.3	3.8-4.2
BM LS 9VI35	l.M_3	+4+	132.2+	94.4[2]	79.1[2]	85	3.4	3.0-3.5
IPUB Vo. 9-10.3B	l.M_3	3½+	107.2+	86.9[3]	—	—	4.0	3.0-3.7
IPUB G. K. 2.39II	r.M^2	+6	101.0+	79.5[1]	72.1[3]	91	4.9	3.4-3.6
IPUB Vo. 9/10.38	r.M_2	+7	191.1	83.6[4]	—	—	5.0	—
IPUB 5823	l.M_2	+4	91.2+	81.8[2]	87.0[e]	106[e]	4.2	3.3-3.9
IPUB Vo. C	M_2	+2+	—	81.2	85.0	105	4.6	3.1-4.5
IPUB 5882	l.M_2	+5	140.8+	87.8[2]	80.0[e]	91[e]	4.3	3.4-4.4
IPUB Vo. N	r.M_2	+6	178.1+	86.2[3]	82.3[4]	97	4.6	3.4-4.1
IPUB 5828	l.M_1	7	155.0	87.5[5]	—	—	4.8	3.5-3.9
IPUB 5824	r.M_1	7	165.0	82.6[5]	80.0[e]	99[e]	4.6	3.6-4.0
IPUB Vo. 330	M_1	3+2	—	69.3[4]	66.5[5]	96	5.1	2.8-3.7
BM S 12VI35	M_1	+3+	64.1+	—	—	—	4.9	2.5-3.0
BM S 12VI35	M_1	4+	72.1+	—	—	—	4.3	3.3-3.5
IPUB Vo. 330 (7.78)	l.dM_4	5	90.8+	51.5+	—	—	5.9	2.0-3.2
IPUB 5827	r.dM_4	5	126.4	57.8[4]	—	—	5.0	2.5-3.0
IPUB 5818	l.dM^3	5	71.0	41.0[3]	32.0[5]	78[e]	8.3	1.2-2.0
IPUB 5830	l.dM^3	4+	61.0+	39.0[4]	42.5[4]	92	8.1	1.9-2.0
IPUB 5883	l.dM_3	6	71.2	37.0[4]	31.1[5]	84	9.5	1.6-1.8
IPUB 5886	l.dM_3	6	54.0	35.1[3]	—	—	9.3	1.5-2.0
IPUB 5837M	r.dM_2	3	21.5	15.3[3]	15.6[1]	102	—	1.2
IPUB 5837G	l.dM_2	3	19.2	16.0[2]	13.7[2]	86	—	—

TABLE 3

Comparative measurements of *Elephas recki* and *Loxodonta* sp. from Laetolil.

M^3	No. of plates	H/W	LF	ET (mm)	N
Elephas recki	?	128-155	3.8-4.3	2.3-3.4	2
Loxodonta sp.	9-10	96-109	3.5-4.3	3.3-4.3	3
M_3					
Elephas recki	12-13	122-198	4.3-5.4	2.6-3.9	6
Loxodonta sp.	?	84	3.4-4.0	3.0-3.7	2
M^2					
Elephas recki	9	—	6.0	3.1-3.8	1
Loxodonta sp.	?	91	4.9	3.4-3.6	1
M_2					
Elephas recki	—	—	5.2	2.4-2.8	1
Loxodonta sp.	7-8	91-106	4.2-5.0	3.1-4.5	5
M^1					
Elephas recki	—	—	5.3	2.7-2.9	1
Loxodonta sp.	—	—	—	—	0
M_1					
Elephas recki	—	—	5.1	2.1-3.0	1
Loxodonta sp.	7	96-99	4.6-5.1	2.5-4.0	5
dM^4					
Elephas recki	6	—	5.7	1.6-2.2	1
Loxodonta sp.	—	—	—	—	0
dM_4					
Elephas recki	—	—	5.9-7.3	1.7-2.4	2
Loxodonta sp.	5	—	5.0-5.9	2.0-3.2	2
dM^3					
Elephas recki	—	—	—	—	0
Loxodonta sp.	5	78-92	8.1-8.3	1.2-2.0	2
dM_3					
Elephas recki	6	85	8.1	1.3-1.7	1
Loxodonta sp.	6	84	9.3-9.5	1.5-2.0	2
dM^2					
Elephas recki	3	58-80	—	1.1	2
Loxodonta sp.	—	—	—	—	0
dM_2					
Elephas recki	4	77	—	—	1
Loxodonta sp.	3	86-102	—	1.2	2

PLATES

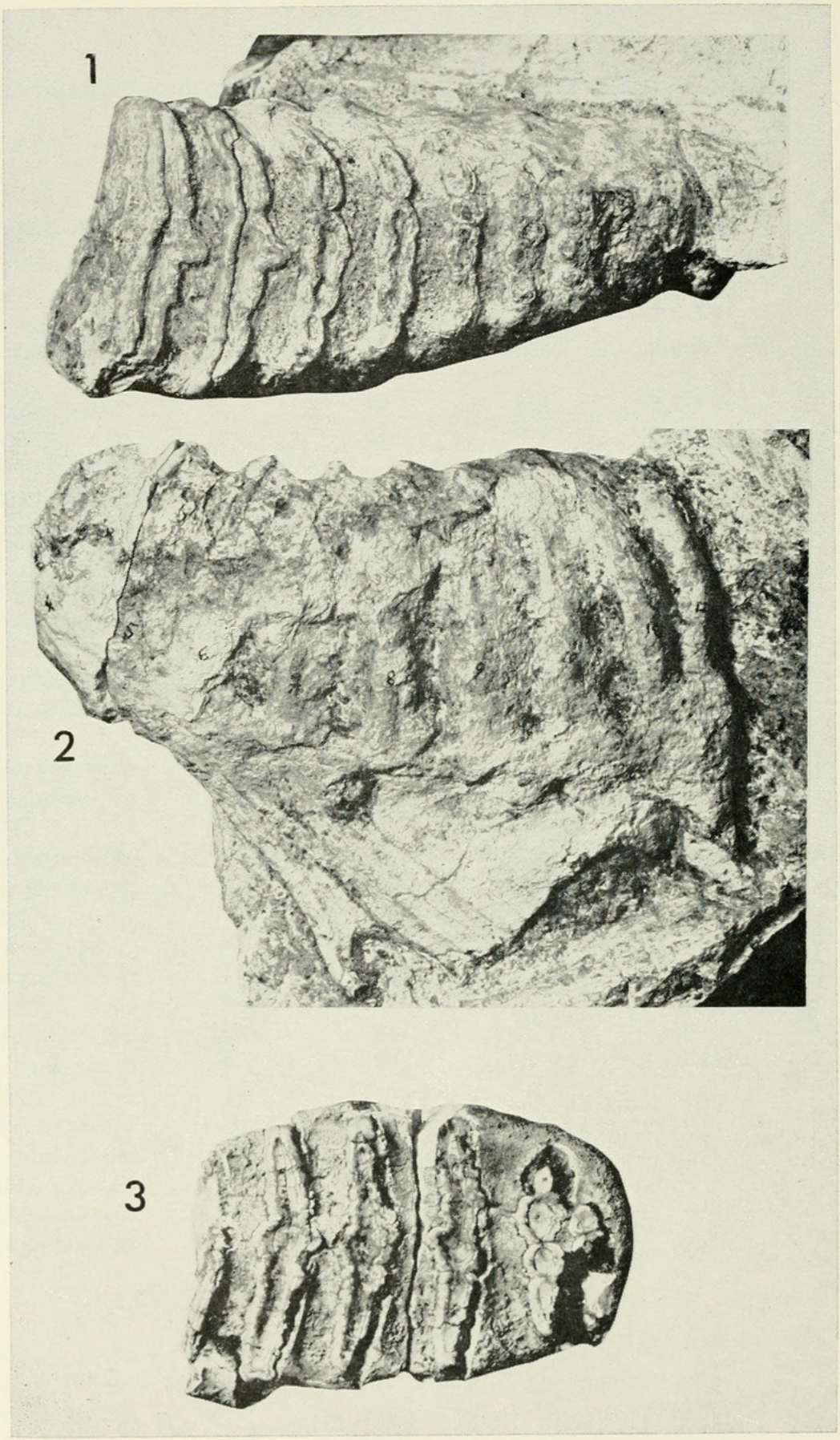

Plate I

1. *Elephas recki*, IPUB Z. 94.96, r.M_3; occlusal view. × 2/5.
2. *Elephas recki*, IPUB Z. 94.96, r.M_3; lingual view. × 2/5.
3. *Elephas recki*, IPUB Vo. A, r.M_1; occlusal view. × 1/2.

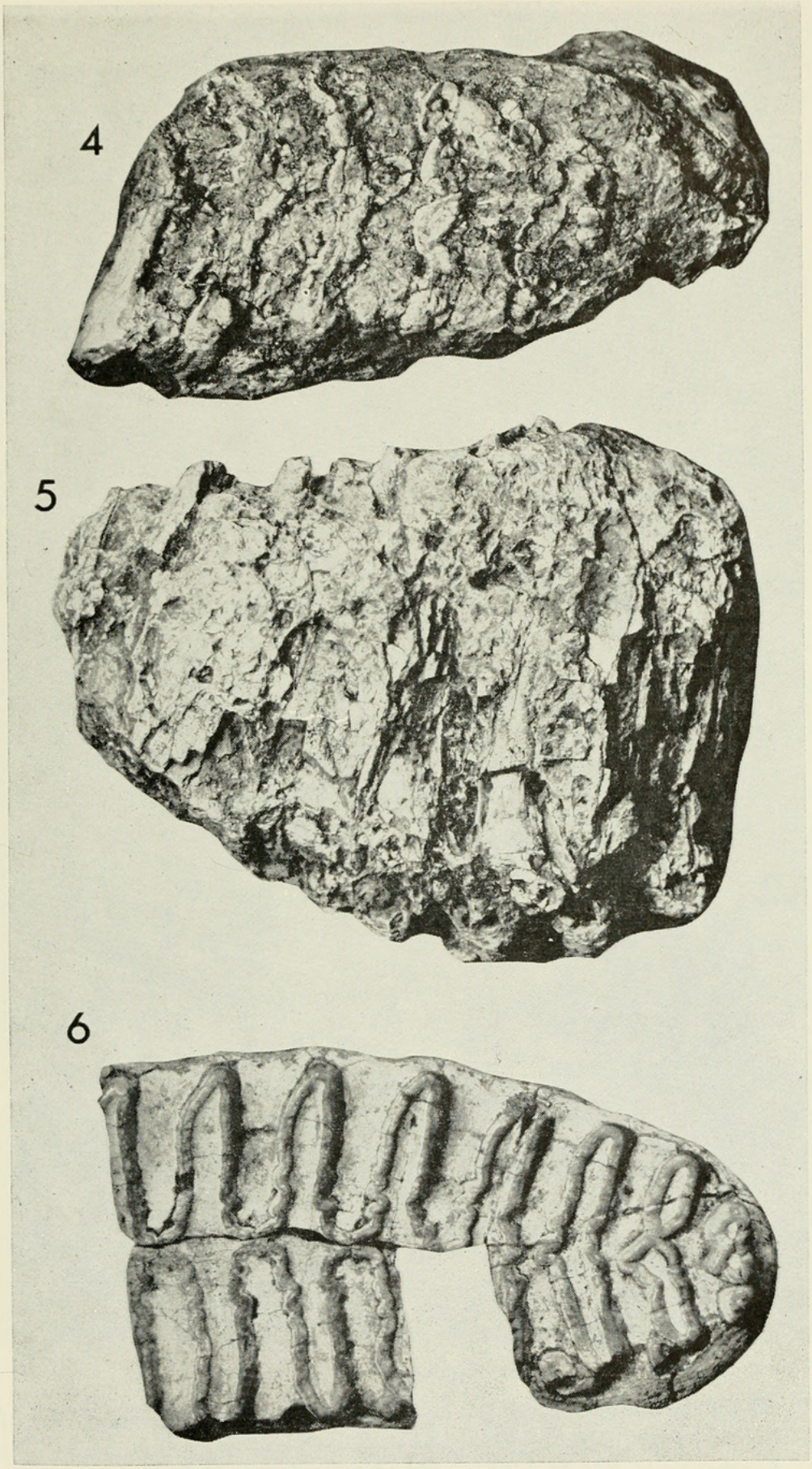

Plate II

4. *Elephas recki,* IPUB K. L. 10-13.3.39, r.M_3; occlusal view. × 2/5.
5. *Elephas recki,* IPUB K. L. 10-13.3.39, r.M_3; lingual view × 2/5.
6. *Elephas recki,* IPUB G. K.-18, l.M_3; occlusal view. × 1/2.

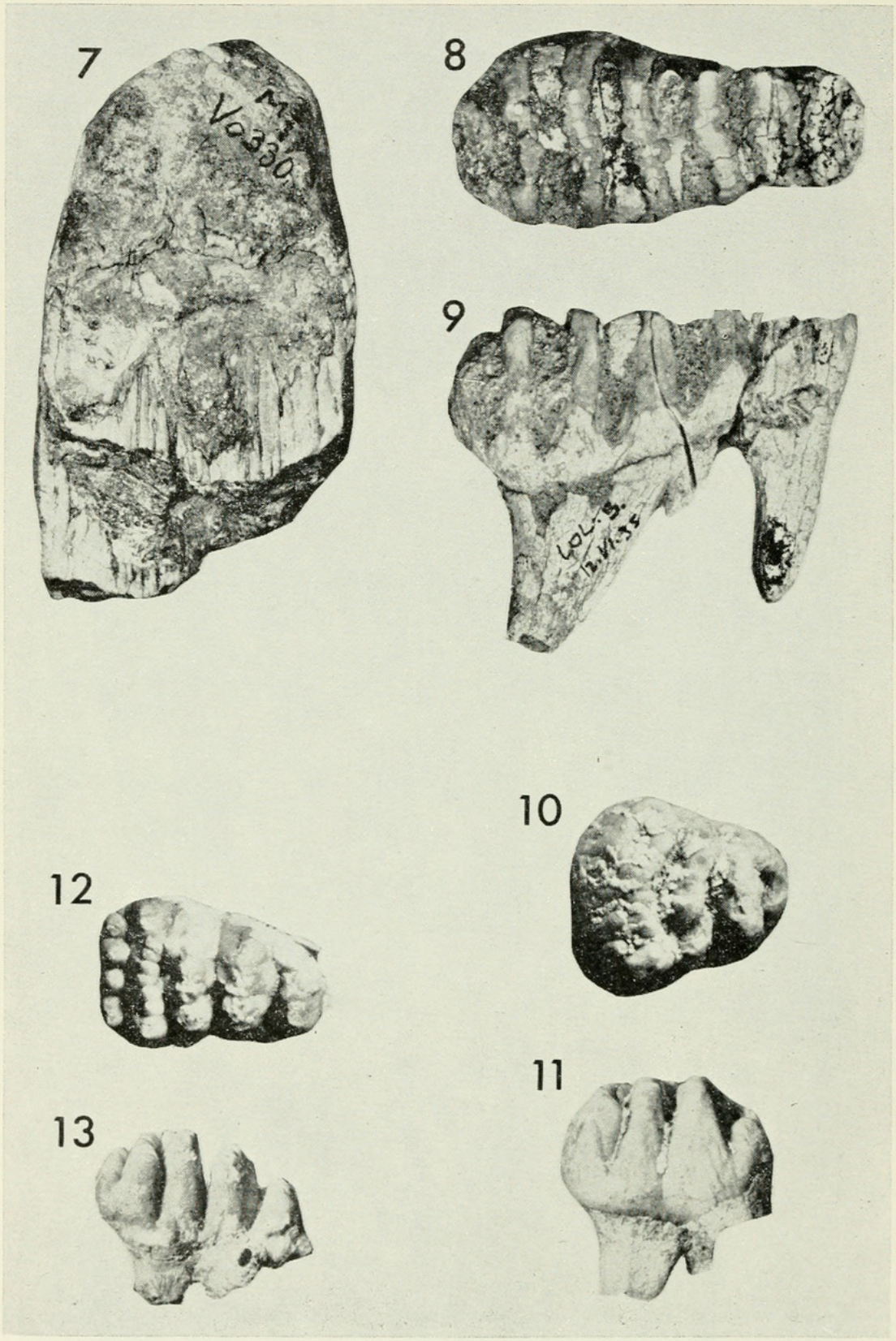

Plate III

7. *Elephas recki,* IPUB 330 (K. L. 18/9-10.38), r.M^3; anterior view. × 1/2.
8. *Elephas recki,* BM M-14942, l.dM_3; occlusal view. × 2/3.
9. *Elephas recki,* BM M-14941, l.dM_3; lingual view. × 2/3.
10. *Elephas recki,* IPUB Vo. Z.68, l.dM^2; occlusal view. × 1.
11. *Elephas recki,* IPUB Vo. Z.68, l.dM^2; lingual view. × 1.
12. *Elephas recki,* IPUB Z. 62, r.dM_2; occlusal view. × 1.
13. *Elephas recki,* IPUB Z. 62, r.dM_2; buccal view. × 1.

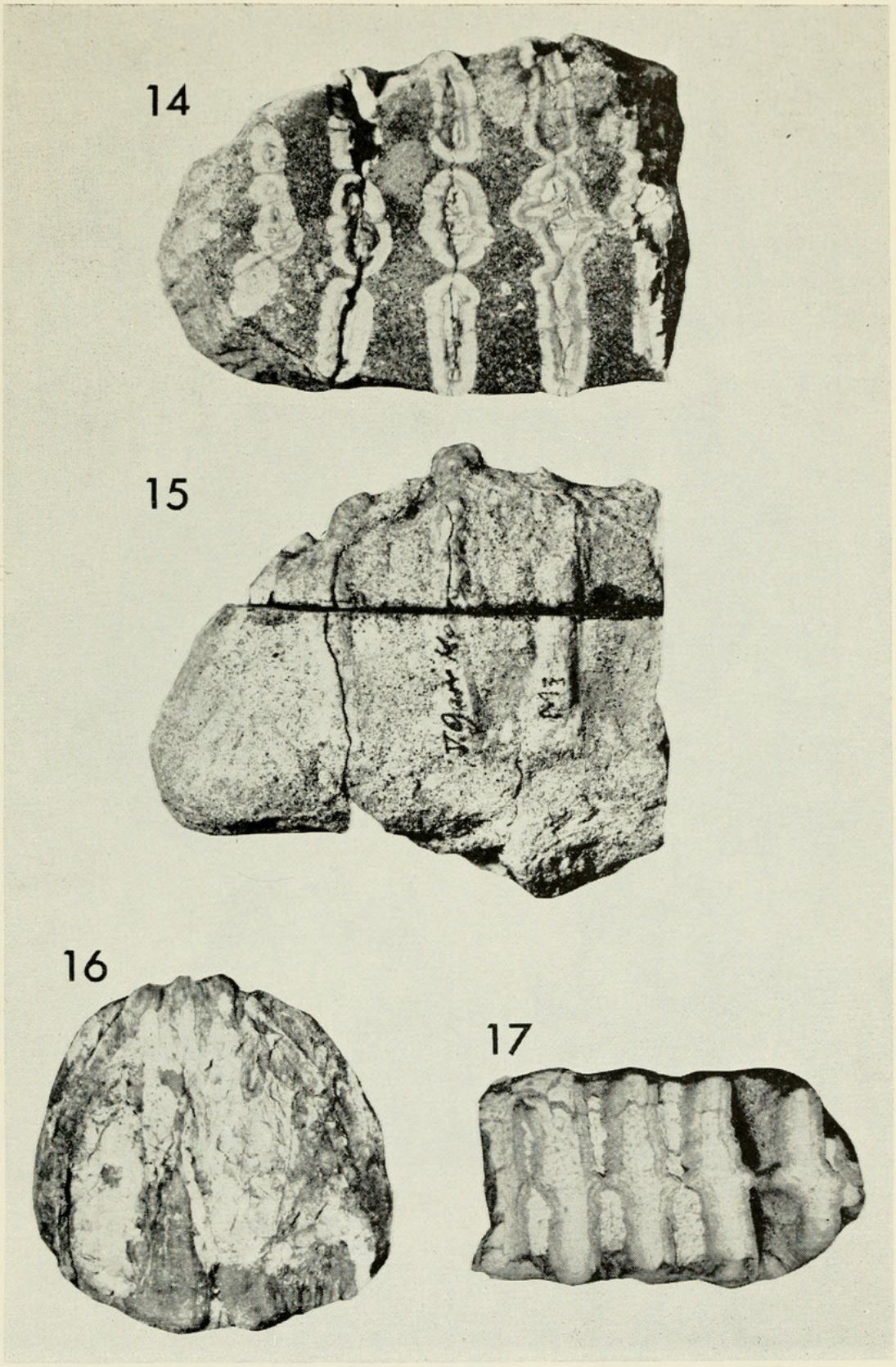

Plate IV

14. *Loxodonta* sp., IPUB G.K. V, r.M^3; sectioned surface. × 1/2.
15. *Loxodonta* sp., IPUB G.K. V, r.M^3; lingual view. × 1/2.
16. *Loxodonta* sp., IPUB Vo. C, M_2. × 1/2.
17. *Loxodonta* sp., IPUB Vo. 330 (7.78), r.dM_4; occlusal view. × 1/2.

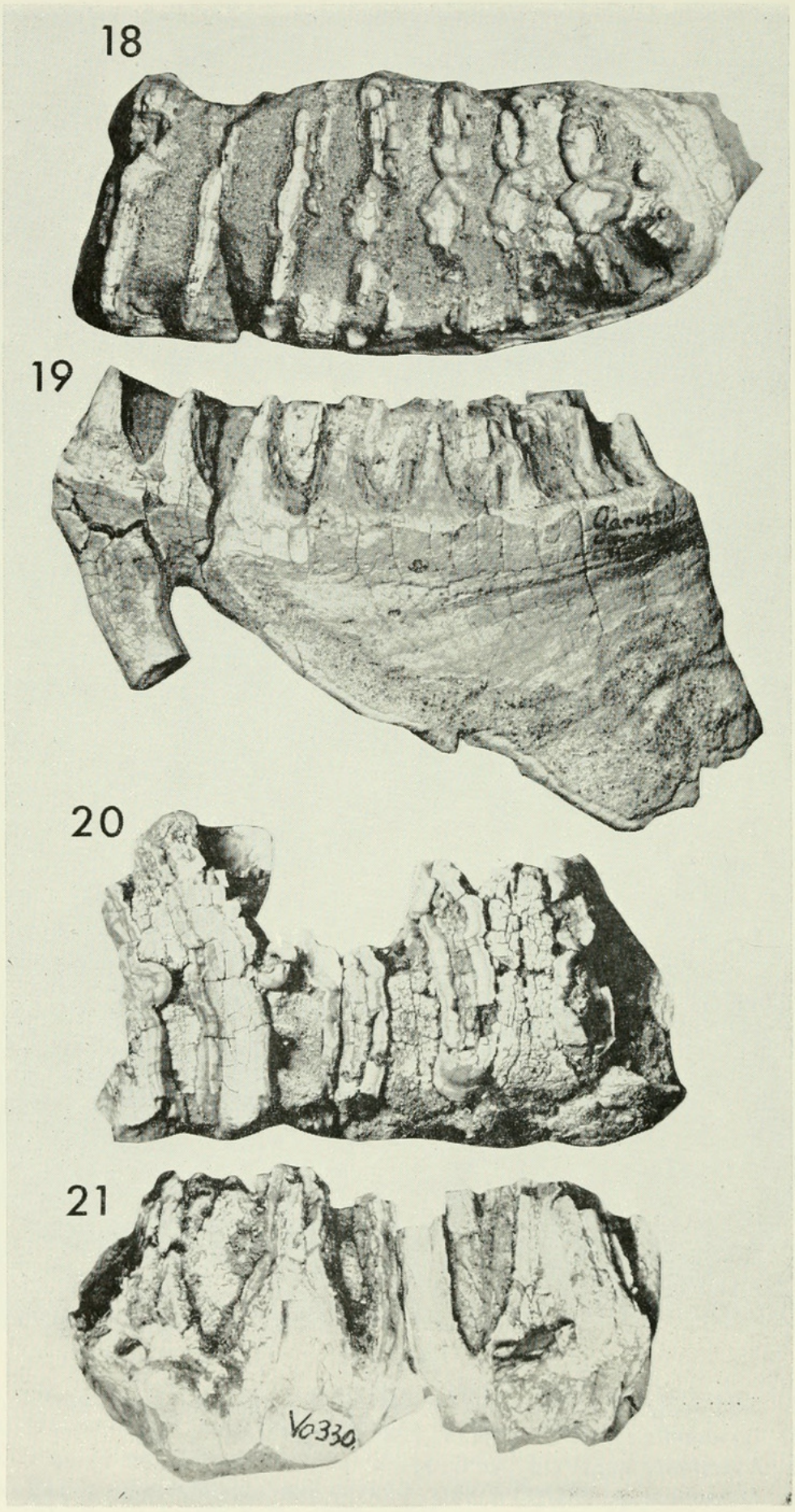
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Plate V.

18. *Loxodonta* sp., IPUB 9/10-38, r.M_2; occlusal view. × 2/5.
19. *Loxodonta* sp., IPUB 9/10-38; r.M_2; lingual view. × 2/5.
20. *Loxodonta* sp., IPUB 5882, l.M_2; occlusal view. × 1/2.
21. *Loxodonta* sp., IPUB 5882, l.M_2; lingual view. × 1/2.

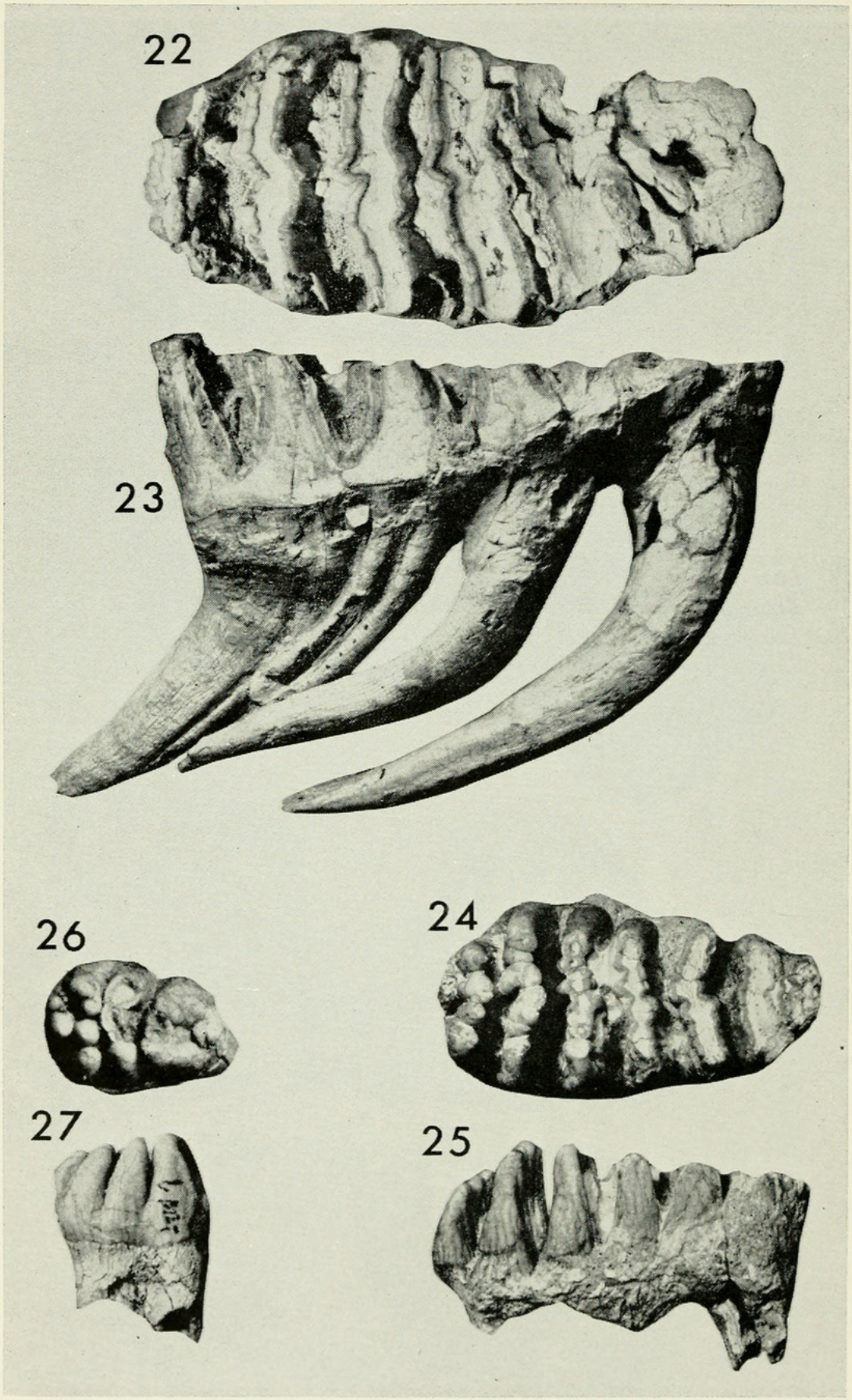
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Plate VI

22. *Loxodonta* sp., IPUB 5828, 1.M_1; occlusal view. × 1/2.
23. *Loxodonta* sp., IPUB 5828, 1.M_1; lingual view. × 1/2.
24. *Loxodonta* sp., IPUB 5883, 1.dM_3; occlusal view. × 2/3.
25. *Loxodonta* sp., IPUB 5883, 1.dM_3; lingual view. × 2/3.
26. *Loxodonta* sp., IPUB 5837M, r.dM_2; occlusal view. × 1.
27. *Loxodonta* sp., IPUB 5837M, r.dM_2; buccal view. × 1.