VI. *On a newly discovered Extinct Ungulate Mammal from Patagonia*, Homalodontotherium Cunninghami.

By William Henry Flower, *F.R.S.*

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The tertiary deposits of the east coast of Patagonia, which yielded to the researches of Mr. Darwin and Admiral Sulivan such interesting and aberrant mammals as *Macrauchenia*, *Nesodon*, and *Toxodon*, have again disclosed a new and remarkable form of extinct animal life. The evidence upon which the existence of this new genus rests consists of a nearly complete set of teeth and some fragments of bone, discovered on the bank of the River Gallegos, by Dr. Robert O. Cunningham*, Naturalist to H.M.S. 'Nassau,' during the voyage undertaken for the purpose of surveying in the Strait of Magellan and the west coast of Patagonia in the years 1866, 1867, 1868, and 1869. The spot was visited in conformity with instructions received before leaving England, "to institute a search for a deposit of fossil bones discovered by Admiral Sulivan and the present Hydrographer of the Navy, Rear-Admiral G. H. Richards, about twenty years previously, and which Mr. Darwin, Professor Huxley, and other distinguished naturalists were anxious should be carefully examined"†.

The conditions under which the specimens were found will be best understood from the following additional extract from Dr. Cunningham's narrative. "Accordingly, joined by the steamer, which again took us in tow, we proceeded onwards till we arrived opposite the first deposit of fallen blocks at the foot of the cliffs. The cutter was then anchored in the stream, while we pulled in towards the shore in the galley till she grounded, when we landed, armed with picks and geological hammers for our work. After examining the first accumulation of blocks, and finding in the soft yellow sandstone of which certain of them were composed some small fragments of bone, we proceeded to walk along the beach, carefully examining the surface of the cliffs and the piles of fragments which occurred here and there at their base. The height of the cliffs varied considerably, and the highest portions, averaging about 200 feet, extended for a distance of about ten miles, and were evidently undergoing a rapid process of disintegration, a perpetual shower of small pieces descending in many places, and numerous large masses being in process of detaching themselves from the parent bed. They were principally composed of strata of hard clay (sometimes almost homogeneous in its texture, and at others containing numerous rounded boulders); soft yellow sandstone; sandstone abounding in hard concretions; and, lastly, a kind of conglomerate, resembling

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† Notes on the Natural History of the Strait of Magellan and West Coast of Patagonia, 8vo, 1871, p. 279.

solidified, rather fine gravel. The lowermost strata, as a rule, were formed of the sandstone with concretions; the middle, of the soft yellow sandstone, which alone appeared to contain organic remains; and the upper, of the gravelly conglomerate and hard clay. Nearly the whole of the lower portion of the cliffs, as well as all the principal deposits of fallen blocks, were examined by us in the course of the walk, and we met with numerous small fragments of bone; but very few specimens of any size or value occurred, and the generality of these were in such a state of decay as to crumble to pieces when we attempted, although with the utmost amount of care that we could bestow, to remove them from the surrounding mass. To add to this, the matrix in which they were imbedded was so exceedingly soft as not to permit of being split in any given direction. The first fossil of any size observed by us was a long bone, partially protruding from a mass, and dissolved into fragments in the course of my attempts to remove it. At some distance from this a portion of what appeared to be the scapula of a small quadruped, with some vertebræ, occurred; and further on one of the party (Mr. VEREKER) directed my attention to a black piece of bone projecting from one side of a large block near its centre. This, which was carefully removed at the expense of a large amount of labour, with a considerable amount of the matrix surrounding it, by three of the officers, to whose zeal in rendering me most valuable assistance in my work I shall ever feel deeply indebted, afterwards proved to be a most valuable specimen; for on carefully removing more of the matrix when we returned to the ship, I found that it was the cranium of a quadruped of considerable size, with the dentition of both upper and lower jaws nearly complete. As no other specimens of importance were discovered, we reembarked towards the close of the afternoon."

The grey, soft, arenaceous matrix in which the specimens are embedded is very similar to that surrounding the remains of *Nesodon*, found in the same locality by Admirals SULIVAN and RICHARDS about twenty years previously, but is less indurated and of a paler colour. The exact geological age in both cases appears to be a matter of uncertainty; but they are probably of earlier date than the superficial deposits in which *Macrauchenia* and *Toxodon* have been found.

The specimens were placed by Dr. CUNNINGHAM for identification and description into the hands of Professor HUXLEY, who, having unfortunately been preoccupied by other engagements, has kindly deputed to me the duty of presenting an account of them to the Society. A brief mention was made of their existence in the Professor's Presidential Address to the Geological Society for 1870*, where they are alluded to under the very appropriate generic designation of *Homalodotherium*, which, with a slight modification, I gladly adopt.

However perfect the skull of the animal might have appeared when first discovered on the banks of the Gallegos, nothing of it remained when the specimens came into my hands, except fragments of alveoli around the roots of the teeth and a considerable portion of the rami of the lower jaw. The other specimens of bone received were in such a

* Quarterly Journal of the Geological Society, vol. xxvi. p. lvii.

very fragmentary condition, owing to the friable nature both of the bone itself and the matrix, that they afford no satisfactory evidence of the structure or affinities of the animal; on the other hand, the teeth are in a remarkably good state of preservation, and consist of the almost entire permanent series of an individual just arrived at maturity, and therefore in the best condition for affording such information as to the general characters of the animal as may be obtained from the dental structures of a single specimen. The teeth that are missing are certain of the inferior incisors and the posterior upper true molars. As nearly all the bone of the cranium had perished, and it has been necessary to adjust and cement the teeth artificially in place*, the exact number that were present cannot be ascertained with absolute certainty; but I have scarcely any doubt but that the animal possessed the complete typical number, forty-four, and that therefore four incisors are wanting from the lower jaw. In the upper series there were certainly eleven on each side. As in the specimens of *Nesodon* from the same locality, they have acquired a very dark, almost black colour.

All the teeth have crowns distinctly separated from the long and tapering roots, and with a well-marked cingulum around their base; but as compared with most Ungulates having distinct crowns to the teeth, they are decidedly "hypsodont," or long-crowned, contrasting especially in this respect with the early "brachyodont" forms, as *Palæotherium*, *Anoplotherium*, *Dichodon*, *Hyopotamus*, &c.

They are arranged in both jaws in a perfectly unbroken series, being, in fact, in some places (especially at the antero-lateral region of the mouth, where gaps are so frequent in recent Ungulata) so crowded as to be pressed out of the straight line and to overlap one another, as in the lower jaw of *Nesodon imbricatus*. The adaptation of the form of the teeth on both sides to this position, and the accurate adjustment of their contiguous surfaces, shows that it is a natural conformation. They are, moreover, of very nearly even height throughout the series, and in their configuration present a remarkable and gradual transition from the first incisor to the last molar, easily traced in both jaws, and more even and regular than in any other known heterodont mammal. Indeed it is only by the analogy of other forms that they can be separated into the groups, convenient for descriptive purposes, designated as incisors, canines, premolars, and molars. They are therefore most instructive in throwing light upon the homology of the component parts of the different teeth throughout the series.

The enamelled surface, especially of the molars, is not smooth and polished, but covered with fine intersecting reticulations, surrounding shallow pits or depressions. There is no distinct layer of coronal cement.

As the teeth are drawn in the accompanying figures of the exact natural size, I have not thought it necessary to give any detailed measurements of them.

Description of the upper teeth (Plate XVI. figs. 1 & 4).—The incisors increase slightly in size from the first to the third. Each has a single, long, tapering and slightly curved root, and at the base of the crown a well-marked cingulum, developing both on the outer and

* This was done by Mr. E. T. Newton, Assistant to Professor Huxley, at the Royal School of Mines.

the inner surface into a thick crescentic ridge, slightly notched on the free projecting border. The form of the crown of the first tooth (i 1) cannot be accurately described, as it is altogether lost in the left side, and its anterior* half has been broken off on the right. In the second tooth (i 2) the outer surface of the crown presents an irregular shape, as it consists of a vertical median convex ridge and a pair of lateral lamellar expansions of unequal extent, the posterior border of the tooth being much shorter than the anterior. The distal free margin of the tooth is compressed and the apex rounded. The base of the crown is nearly as thick from without inwards as from side to side. The inner surface is hollowed near the cutting-margin, and has a considerable rounded tubercle at the base, so that the crown of the tooth may be described as consisting of an outer, trenchant, or principal ($a\,e\,c$), and an inner, blunt, or accessory cusp ($a\,i\,c$), separated by a groove.

The third incisor (i 3) resembles the second in form, but the lateral lamellar expansions of the crown are somewhat more developed.

The canine tooth (c) only differs from the posterior incisor in being somewhat larger, and in trifling details of configuration. The apex is rather more pointed and conical, being supported by a median vertical ridge, not only on the outer, but also on the concave inner surface of the crown: the inner tubercle is relatively smaller to the principal cusp; the cingulum is much notched; the postero-internal margin of the crown is flattened, as if by the pressure of the succeeding tooth, a character also seen, though to a less degree, in the incisors.

The first premolar (p 1) has only one root on the outer side of the tooth, and apparently a second one on the inner side. It is displaced somewhat within the line of the teeth before and behind it. The crown is shorter, broader, and less pointed than that of the canine, but its inner cusp or lobe is considerably more developed.

The second premolar (p 2) assumes more the form of a true molar. It has two outer roots (anterior and posterior), and apparently a distinct root on the inner side. The external wall of the crown is oblong, nearly twice as high as it is broad from before backward, with a strongly marked crescentic cingulum, delicately ridged and tuberculated. Though the surface is in a general sense rounded or convex from before backwards, indications are seen upon it of two vertical ridges, with a concavity between them; the anterior ridge is the most conspicuous, and evidently corresponds with the single ridge developed in the preceding teeth. As in the incisors, canine, and first premolar, there is an inner lobe, but it is developed to a greater degree, and its sloping free surface shows two strong ridges or columns, which converge as they approach the grinding-surface of the tooth. These columns are separated from each other by a triangular depression, the base of which is crossed by the cingulum. The anterior and posterior surfaces of the crown are flattened, and the cingulum is continued all round

* To avoid confusion, in describing the incisors I apply the terms anterior and posterior to the parts corresponding to those occupying these positions in the molar series. "Outer" and "inner" always mean the labial and the lingual surfaces of the teeth respectively.

them, though developed to a much less extent than on the outer and inner faces of the crown. The grinding-surface of the tooth is a rather irregular four-sided area, broader externally than within; it is composed of a smoothly worn surface of dentine with a thin enamel margin, and is deeply excavated longitudinally, the outer and inner margins standing out prominently, especially the former. Near the middle of this area, but rather towards the anterior and inner angle, is a very deep oval fossa, formed by an inflection of the enamel-covered outer surface of the tooth, extending in depth almost to the base of the crown, placed obliquely, the long axis of the oval directed from before backwards and inwards. The enamel of the outer margin of this fossa is plicated.

The third and fourth premolars (*p* 3 and *p* 4) are formed on exactly the same principle as the one just described. They present respectively a slight increase in size, and the inner lobe of the crown becomes gradually rather broader, and its two pillars rather more widely separated from each other. The fourth, in addition to the principal oval fossa, has a second smaller one behind and to the outer side of it. All these teeth are wider from within outwards than from before backwards.

In the first true molar (*m* 1) a considerable increase of the size of the crown takes place, especially in the antero-posterior extent. It is, however, formed upon precisely the same pattern as the hinder premolars, but merely expanded in the direction just indicated.

Unfortunately only one of the upper true molars (the first of the left side) is preserved in a complete state, and that, as might be expected, is considerably worn. There is also a broken first molar of the right side, and fragments of the second and third of the left. The most perfect tooth has a subquadrate crown, with a broad, flattened, or slightly convex outer wall (*l*), presenting several shallow vertical elevations and depressions. The most marked ridge (*a e c*) is very near the anterior edge of the tooth, and corresponds with the anterior external ridge of the premolars, and with the principal cusp of the canine and incisor teeth. The second and more posterior elevation (*p e c*) is broader and far less salient. The inner wall has its two columns or ridges (*a i c* and *p i c*) as in the premolars, and still somewhat converging as they approach the grinding-surface; but they are wider apart and have a broad depression between them, which in the fragment of a nearly unworn more posterior tooth is seen to communicate with the central fossa. This fossa in the first molar is reduced to a very narrow but deep chink (*m s*), and there is no trace of the small second or posterior fossa of the last premolar. The outer wall of the crown is connected with the internal pillars by anterior and posterior transverse ridges (*a r* and *p r*), which pass one before and the other behind the median fossa or sinus.

The lower teeth (figs. 2 & 3).—Of the lower incisors but one pair are present; and as the symphysial portion of the jaw has completely perished, it is impossible to say what may have been the original number; but analogy would lead to the inference that there were three, as in the upper series. The crown (*i* 3) is of an elongated oval form, with sharp cutting-edges, a strongly developed cingulum, and on the inner surface, instead of a tubercle separated by a groove from the outer cusp, there is a vertical ridge

running from base to apex of the crown, rather nearer the anterior than the posterior edge of the tooth. The canine (*c*) is of similar form to the incisor, but of larger size. The first premolar (*p* 1) is also formed on the same plan, *i. e.* with a smooth and rounded external surface, and the internal surface with an anterior and posterior depression, separated by a vertical ridge, and bounded below by the cingulum. The second premolar (*p* 2) is wider from before backwards, the hinder part being more developed; its external surface has a deep groove passing from near the posterior part of the base upwards and forwards, with a gentle sigmoid curve to the apex, dividing the surface into an anterior and posterior area, of which the anterior is the larger. An indication of this groove exists in the first premolar of the right side. The inner surface has the vertical ridge increased in thickness, and a smaller ridge behind which isolates the posterior concavity. The cingulum is well developed and notched; on the outer side it sends up a row of small prominences from its border.

The transition from the second premolar (*p* 2) to the first true molar (*m* 1), through the third and fourth (*p* 3 and *p* 4) premolars, is very gradual, being effected, as in the upper teeth, chiefly by the lengthening out of the posterior part of the crown. The first and second true molars are almost exactly alike, but the second is slightly the larger; the difference in the appearance of their grinding-surface is simply the result of difference of wear. They are elongated from before backwards and much compressed. Their base is surrounded by a well-marked cingulum. The outer surface is, generally speaking, flat, but divided by a shallow vertical groove into an anterior and posterior area, each convex from before backwards, the anterior being about half the width of the posterior. The inner side is divided by a much deeper vertical groove (*m s*), running obliquely forwards as it penetrates the tooth so as nearly to meet the base of the external groove, and cutting the tooth into two lobes, each of which is further divided on the inner side by a much less marked depression (*a s* and *p s*). In other words, the inner side of the tooth may be described as consisting of two columns (*a i c* and *p i c*), each of which doubtless terminated in conical cusps in the unworn tooth, separated by a deep oblique indent (*m s*), and bounded before and behind by shallower indents (*a s* and *p s*), marking off anterior and posterior accessory columns (*a t* and *p t*) at each extremity of the tooth.

The posterior tooth is unfortunately injured; but the whole of the outer wall remains intact, with enough of the inner side to show that it is formed on precisely the same plan as the others; but its hinder part is slightly more elongated and compressed, though without any additional lobe as in many Ungulates.

Comparison of the teeth and taxonomic inferences.—There can be no doubt that the dental characters of *Homalodontotherium* warrant our placing it within the order Ungulata. Whether Perissodactyle or Artiodactyle may be at first sight less obvious. The evenness of height and unbroken continuity of the teeth is no test, as it is shared by the Artiodactyle *Anoplotherium* with the Perissodactyle *Macrauchenia*. A better criterion is the character of the premolars as compared with the molars. In every known Artio-

dactyle all the premolars, even the last, are structurely reduced, as compared with the true molars, so that a more or less obvious break in the continuity of the appearance of the teeth is seen between the last premolar and the first true molar. On the other hand, in many Perissodactyles, including all the existing representatives of the group, several of the posterior premolars are very close repetitions of the true molars in structure and even size; though it must be noted that this was not the case with the earliest known forms of the group, the Coryphodons, Lophiodons, and Hyracotheriums, and to a less extent the Palæotheriums, which so far approximate to the Artiodactyles, or perhaps rather to a more generalized Ungulate type, of which no representatives have as yet been discovered.

The similarity of the structure of the premolars and true molars of *Homalodontotherium* removes it from the vicinity of all known Artiodactyles. The special characters of the crowns of the molars of both jaws are yet more decisive; they fall into neither the Bunodont nor the Selenodont division of that group, and, except remotely to the somewhat aberrant *Anoplotherium*, present no resemblance to any known type of Artiodactyle.

On the other hand, as will be shown, they approach the Perissodactyle genus *Rhinoceros* more closely than to any other known mammal. In order to understand the nature and taxonomic value of this resemblance, a few preliminary remarks may be necessary.

As regards the upper molars, the essential character of the crown of Perissodactyle Ungulates, as is perhaps best exemplified in *Lophiodon*, is the presence of four principal cusps, arranged in pairs anterior (see fig. 4, *a i c*, *a e c*) and posterior (*p i c* and *p e c*), connected more or less by transverse ridges, also anterior and posterior (*a r* and *p r*). The outer cusps are joined together by an antero-posterior ridge, constituting the external wall or lamina (*l*), but there is no corresponding inner wall connecting the inner cusps. Between the two transverse ridges is a median sinus (*m s*), bounded externally by the outer wall, but open on the inner side. Behind the posterior transverse ridge is a smaller posterior sinus (*p s*), opening on the posterior surface of the tooth, or only enclosed by the cingulum, and in front of the anterior transverse ridge is a similar but less important anterior sinus (*a s*).

Furthermore, the transverse ridges are usually placed obliquely, their outer ends inclining forwards and running quite to the front edge of their respective external cusps, so that their posterior surface is more or less concave.

From this type there are three important deviations:—I. That in which the outer wall is undeveloped, and the transverse ridges become the prominent features of the crown of the tooth, as in the Tapirs. II. That in which the free edge of the outer wall acquires a strongly zigzag or bicrescentic character, being deviated inwards opposite each of the principal outer cusps, and outwards at the anterior and posterior angles of the tooth and in the middle between the cusps, as in *Palæotherium*, the Horses, and apparently (judging from BRAVARD'S figure of the worn molars*) in *Macrauchenia*.

* Published in BURMEISTER'S 'Anales del Museo Publico de Buenos Aires,' vol. i. pl. 1.

III. That in which the outer wall is greatly developed, and in the main flat or smoothly convex, though with slight elevations and depressions, corresponding with those so regular and well marked in the last section. To this group *Rhinoceros* (including its various modifications) and *Homalodontotherium* belong. If a single upper molar of the last-mentioned form had only been discovered, it might almost have been referred to the genus *Rhinoceros*, using the term in a wide sense. It would, however, have been found to differ from the most typical forms of that type in the more smooth and regular convexity of the outer wall, the fuller development of the cingulum, the more complete union of the two inner columns, which intercepts the floor of the inlet to the median sinus, the less oblique direction of the posterior transverse ridge and consequent smaller size of the posterior sinus, and the absence of the ridge projecting into the median sinus called "combing-plate."

The crowns of the lower molars of Perissodactyle Ungulates may, as is well known, be also derived from the same type as the upper teeth, *i. e.* two principal transverse ridges connecting two pairs of cusps; but there are only two fundamental modifications. I. That in which this primitive form is retained, the ridges remaining transverse and unconnected with each other, as in the Lophiodons and Tapirs. II. That in which the ridges assume a crescentic form, their outer extremities curving forwards, so that the hinder ridge abuts against the external surface of the ridge in front of it. This is the case in all the remaining animals of the group. An unworn lower molar of a Rhinoceros has thus externally two convex areas separated by a vertical groove, and internally two principal sinuses (see fig. 3, *a s* and *m s*) corresponding to the projections externally. The entrances to these sinuses are bordered by three conical pillars—the first (*a t*) of comparatively little importance, representing the anterior talon of the Tapir's tooth, the second (*a i c*) the largest, representing the antero-internal principal cusp, and the third (*p i c*) the postero-internal principal cusp. It is the large size and complex character of the last two, in addition to the excessive vertical lengthening of the crown, which distinguishes the Horse's lower molar from that of the *Palæotherium* and *Rhinoceros*.

On comparing a lower molar of *Homalodontotherium* with an equally worn tooth of *Rhinoceros*, it will be seen that they are formed on precisely the same type. The only important differences are that the outer surface of the former is rather more flattened, the posterior convex area is relatively more elongated, being produced backwards into a sort of heel (*p t*) separated by a groove (*p s*) on the inner side from the postero-internal column (*p i c*), and, as in the upper teeth, the cingulum is more completely developed. It differs from the regularly bicrescentic tooth of *Palæotherium* still more than from that of *Rhinoceros* or *Macrauchenia*; while in the lateral compression and flattening, and the complexity of the posterior column, it shows a slight approximation towards *Equus*.

The molar and premolar teeth of both upper and lower jaws thus without question show strongly marked Rhinocerotic characters; but on passing to the examination of the canines and incisors the resemblance completely fails, at least to the true Rhino-

ceroses, as all the latter have these teeth either quite rudimentary and deciduous, or, when functionally developed, greatly reduced in number and separated from the molars by a wide diastema. There is, however, an American genus from the Lower Miocene of Dakota, to which LEIDY has given the name of *Hyracodon*, which, as proved by the sockets in the alveolar border, possessed the full complement of incisors and canines as in *Homalodontotherium**. Unfortunately the characters of these teeth are at present imperfectly known; but they appear to have been more differentiated than those of *Homalodontotherium*, and in fact to occupy an intermediate position between that genus and true *Rhinoceros*; so that, judging by the teeth alone, we may place *Homalodontotherium*, *Hyracodon*, and *Rhinoceros* as three terms of one series of modifications; and it is quite possible that as *Hyracodon* is of greater geological antiquity than *Rhinoceros*, so *Homalodontotherium* may be a still more primæval type†.

The discovery of this new form throws some light upon the affinities of the very enigmatical *Nesodon* and *Toxodon*. If, as observed by the first describer of those genera, "the interval between *Toxodon* and *Macrauchenia* is evidently partly filled by *Nesodon*"‡, *Homalodontotherium* is another link in the same chain connecting *Nesodon* with the true Perissodactyles. The modifications required to convert the molar teeth of *Homalodontotherium* into those of *Nesodon*, especially the lengthening of the crowns, if carried to a further degree would result in the rootless persistent-pulped teeth of *Toxodon*; and in the characters of the incisors and the canines *Nesodon* is obviously intermediate between the other two genera.

We have thus a new form of mammal, which, as far as the evidence of dental characters (by no means sufficient for deciding affinity, as the case of *Hyrax* shows) allows us to judge, is an extremely generalized type, related on the one hand to *Rhinoceros* through *Hyracodon*, also, though more remotely, to *Macrauchenia*, and apparently connecting these true perissodactyle forms with the more aberrant *Nesodon* and *Toxodon*.

To the fragments of bone sent with the teeth comparatively little importance can be attached, as it is quite uncertain whether they belonged to *Homalodontotherium* or to some other animal. The most characteristic among them are:—

1. The greater part of the right innominate bone of an animal about the size of the common American Tapir, and more resembling that species than any other with which it is comparable, though differing notably in many details, especially the form of the acetabulum.

2. A mutilated dorsal vertebra, which from its size and age (the epiphyses of the centrum being detached, as is that of the crest of the ilium in the last-mentioned specimen) probably belonged to the same individual. It is, however, far more equine or

* Extinct Mammalia of Dakota and Nebraska (1869), p. 232. Ancient Fauna of Nebraska (1853), p. 81, pls. xiv., xv.

† A more detailed comparison with the teeth of *Macrauchenia* would be desirable, but unfortunately the materials are not as yet forthcoming; judging from an unpublished drawing kindly lent me by Professor GERVAIS, the incisors and premolars of that genus have quite a different shape.

‡ OWEN, British-Association Reports (1846), vol. xvi. p. 66.

rhinocerotic than tapiroid in character. These evidently belong to some hitherto unknown form; if *Homalodontotherium*, they are of smaller dimensions than would be inferred from the teeth, unless the animal had a disproportionately large and heavy head.

3. A fragment, apparently the inner half of the lower articular extremity of a tibia of an animal of much larger proportions, nearly equalling the Indian Rhinoceros. If I am right in its determination it is rather anomalous in its characters, somewhat resembling in general shape the corresponding part of the Tapir, but having a deep roughened depression notching the inner margin of the smooth articular surface, similar to that seen in the Hippopotamus alone among recent Ungulates.

4. A fragment of the shaft of a long bone, 10 inches in length, apparently the hinder border of an ulna of an animal as large as that to which the last-mentioned piece belonged.

These specimens will be deposited with the teeth in the British Museum, and will become of greater interest when compared with others that we may hope to obtain by future explorations in the same locality. It is possible that they may belong to one or other of the species of *Nesodon*, of which one, *N. magnus*, only known from a fragment of a molar tooth, equals the largest Rhinoceros in size*.

Description of the Plate.

PLATE XVI.

Fig. 1. Side view of the upper teeth of *Homalodontotherium Cunninghami*.
Fig. 2. Side view of the lower teeth.
Fig. 3. Grinding-surface of the left lower teeth.
Fig. 4. Grinding-surface of the left upper teeth.

All of the natural size.

a e c. Anterior external cusp.
a i c. Anterior internal cusp of the molar teeth; the corresponding parts of the incisors are marked with the same letters.
p e c. Posterior external cusp.
p i c. Posterior internal cusp.
a r. Anterior transverse ridge.
p r. Posterior transverse ridge.
a s. Anterior sinus.
m s. Median sinus.
p s. Posterior sinus.
a t. Anterior talon or accessory cusp.
p t. Posterior talon or accessory cusp.
l. External wall or lamina.

* See "Description of some species of the extinct genus *Nesodon* &c.," by Professor Owen, F.R.S., Phil. Trans. vol. cxliii. (1853) p. 291.

W. H. Wesley, ad. nat. lith.

Fig. 1.

Fig. 2.

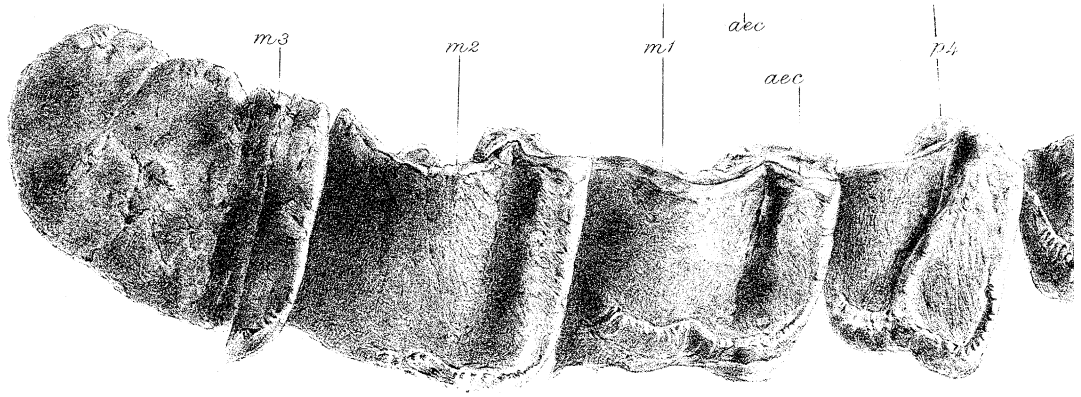


Fig. 3.

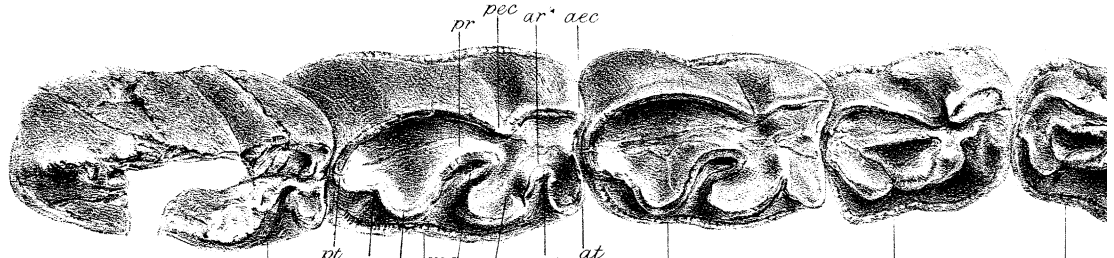
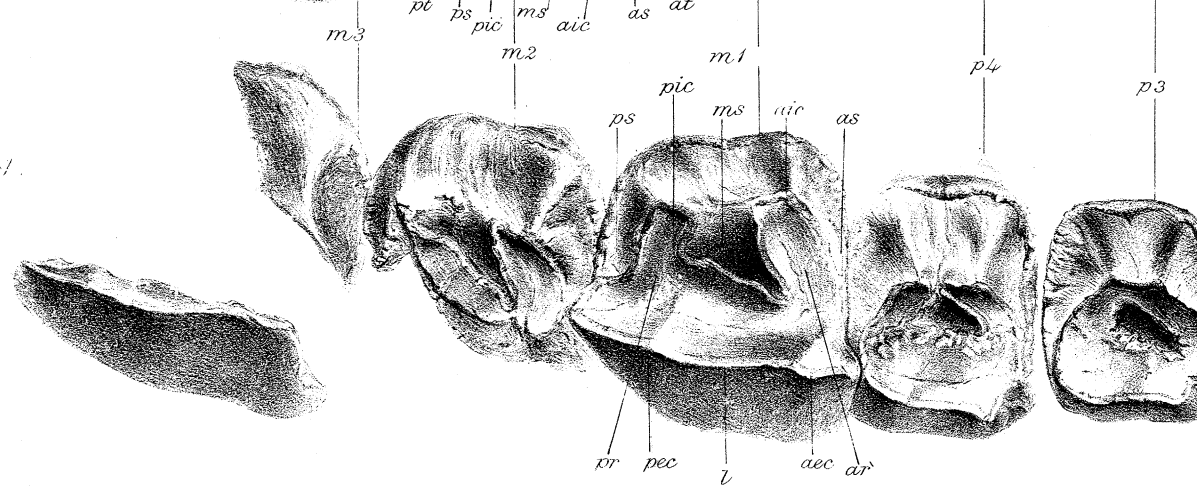
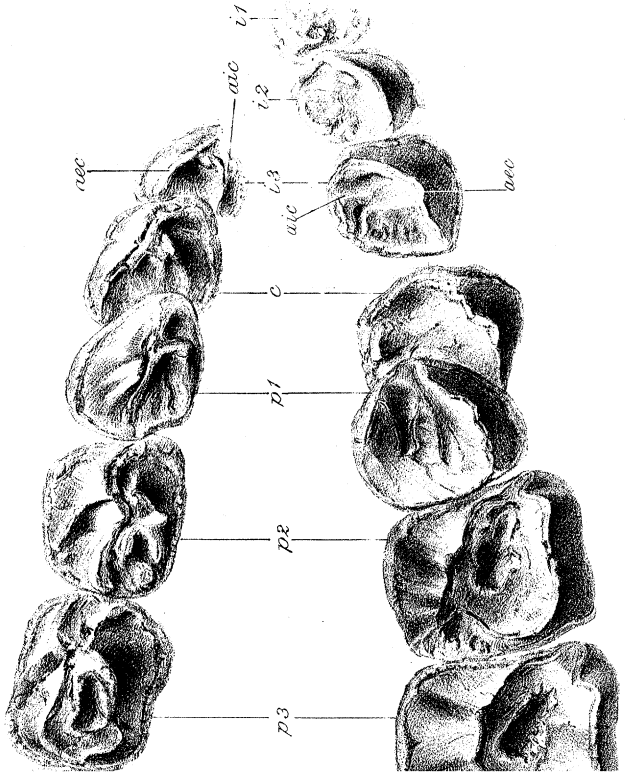


Fig. 4.



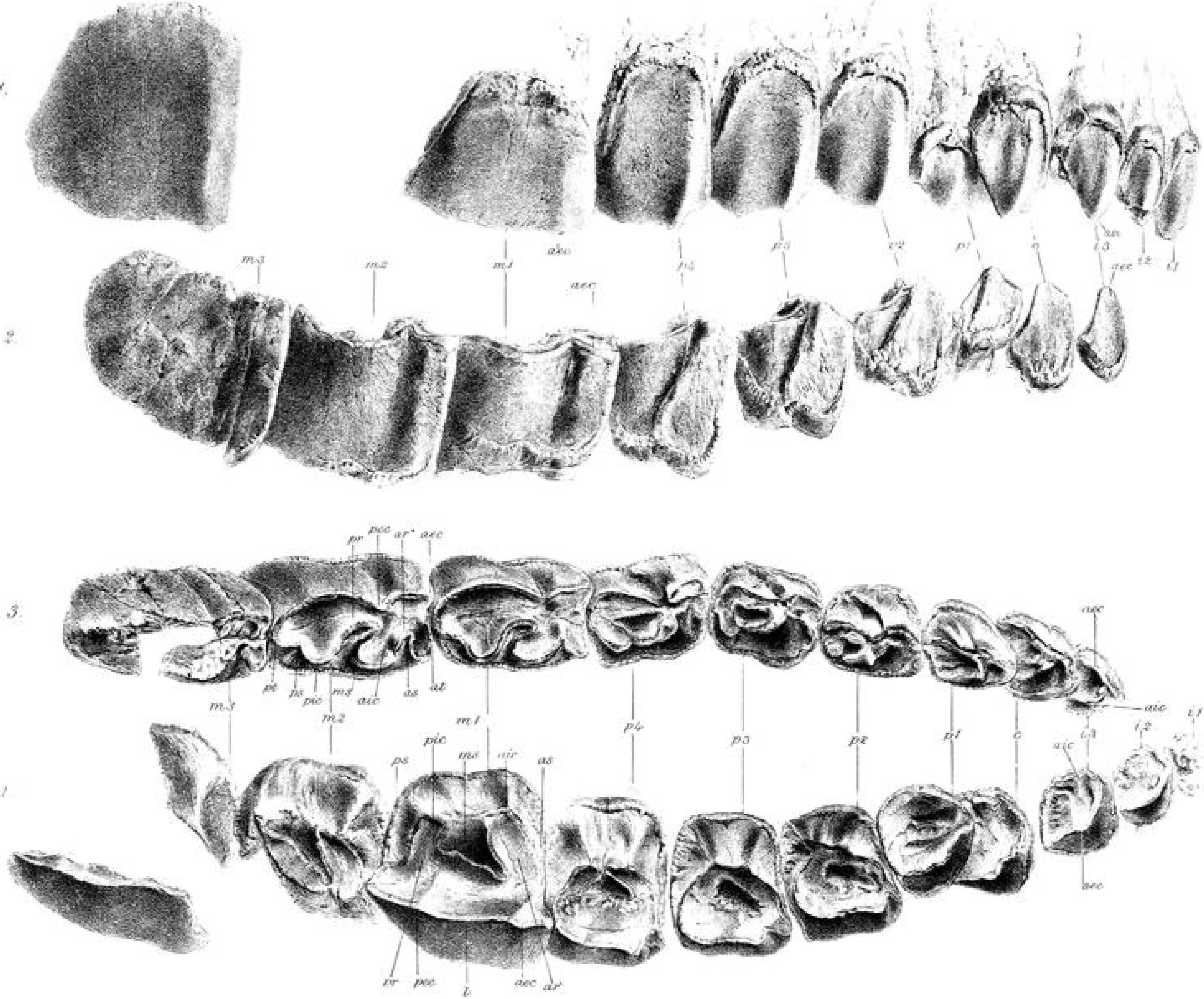
HOMALODONTOTHERUM CUNNINGHAMI

Macfarlane & Macdonald, Lith. London.



NGHAM.

T.H. Wesley del. et lith.



HOMALODONTOTHERIUM CUNNINGHAMI.

Phil. Trans. MDCCCLXXIV Plate XVI.