VI. *On the Molar Teeth, Lower Jaw, of* Macrauchenia patachonica, *Ow.*

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The dentition of a Mammal so rare and interesting as the *Macrauchenia* deserves better illustrations than the single reduced view of the lower molars given in 1845*, and the still more reduced figures of both upper and lower teeth lithographed by Bravard†.

The intention to communicate to the Royal Society a description with figures of the natural size of the specimen of mandible and teeth, still unique, in the British Museum, has been deferred in the hope of acquiring from South America other fossil remains, especially the upper jaw and teeth of *Macrauchenia patachonica*; but such fossils have not yet come under my observation. The recently obtained knowledge, however, of the former existence of another large quadruped in America, with cameline characteristics of the cervical vertebræ like those in *Macrauchenia*, coupled with true cameline affinities, as exemplified by the dentition of the lower jaw in *Palauchenia*, induces me no longer to delay the adequate record of the characters which so strikingly distinguish the perissodactyle from the artiodactyle forms of hoofed quadrupeds with the intraneural course of the vertebral arteries in the region of the neck.

The specimen here described formed part of a series of fossils from Buenos Ayres, purchased for the British Museum in 1845. I was requested by Mr. König, the then Keeper of the Department of Mineralogy, to examine and report on that Collection, which chiefly consisted of Megatherian remains‡, and I was led by the conclusions which I had formed of the pachydermal affinities of the genus *Macrauchenia*, based on bones of the trunk and limbs described in the 'Fossil Mammalia of the Voyage of the Beagle'§, to recognize the mandibular specimen with teeth as belonging to that genus, and I accordingly figured it as such in the concluding part of my 'Odontography.'

The specimen (Plate VIII. figs. 1–3) consists of the part of the left ramus of the lower jaw of a full-grown individual, with six consecutive grinders, anterior to which the jaw is broken away, as is also the hind end of the ramus about 3 or 4 inches behind the last grinder. The first tooth in place answers to the second premolar (Plate. VIII. figs. 1–3, *p* 2) of the typical series. It is implanted by two fangs, supporting a lamelliform

* Owen's 'Odontography,' pl. 135. fig. 7, p. 602.

† Published by Burmeister, in the 'Anales del Museo Público de Buenos Aires,' Entrega Primera, 4to, 1864, pl. 1.

‡ See Owen's 'Memoir on the Megatherium,' 4to, 1860, p. 11.

§ 4to, 1840, pp. 35–56, pls. vi.–xv.

crown, the compression being from side to side, or from within outwards, and the extension of the crown from before backwards. In this direction the crown expands as it rises to an antero-posterior breadth of 30 millims. (=1 inch 2 lines), whence it contracts, rising to a submedian obtuse apical summit. The outer side of the crown is convex from its fore margin to two-thirds of the way back, then becomes concave to a vertical ridge, *b*, marking off a short posterior tract of the crown which inclines inward and is almost flat. From this tract the continuation of enamel bends abruptly inward and forward (fig. 2, *c*), rapidly sinking to a mere basal ridge, continued along the inner side of the crown into the similarly bent anterior border of the crown, *e*. The concavity bounded by those inwardly inflected borders of the crown is divided into two by the prominence of the thickened mid parts (*d*) of the crown forming its apex, *a*. The abraded surface of this tooth forms a sinuous tract of dentine, thickest at the middle, thinnest behind (fig. 3, *p* 2).

The next tooth (*p* 3) resembles *p* 2, with increase of thickness, but none of fore-and-aft extent. The facet of the crown behind the outer ridge (fig. 3, *b*) passes more directly inward, so as to form the posterior part of the crown. The inner wall (*c*) is more abruptly continued from it, subsiding to the ridge crossing the base of the mid inner convexity (*d*), to which the anterior inflected fold of enamel (*e*) is continued. The convexity (*d*) is broader and rather flattened between the better defined hollows of that surface of the crown. This tooth is implanted by two fangs.

The third tooth (*p* 4) adds increase of fore-and-aft extent to that of thickness of the crown, and also resembles the succeeding true molars in being divided into two lobes by a vertical indent of the outer surface (fig. 1, *p* 4) entering the inner mid convexity, fig. 3, *d*. This gives to the grinding-surface (*p* 4, fig. 3) the form of two consecutive crescents, of which the hinder one is the largest; such being the type of lower grinder common to *Rhinoceros* and *Palæotherium* with this singular South-American Perissodactyle.

The first of the true molars (*m* 1) exemplifies its earlier development and longer usage by having the crown worn down below the convexity and concavities on the inner surface; a broad bilobed tract of dentine shows the outer mid indent, with a remnant of the postinternal cavity (fig. 3, *m* 1): the enamel is now reduced to a very thin line along the anterior and inner sides of the crown.

In the penultimate molar (*m* 2) the sinuous configuration of the inner surface of the crown is preserved, the enamel of the mid convexity rising to form the most prominent part of the grinding-surface (figs. 1 & 2, *d*). The tooth is increased in all dimensions.

The last molar (*m* 3), with a fore-and-aft extent of crown of 48 millims. (=1″ 10‴), preserves the same bilobed type as in *Rhinoceros*, without any trace of a third posterior lobe or 'talon,' as in *Palæotherium*. The lobes have been worn by mastication to a breadth of two or three lines, and as the inner enamel-wall is continued by the inflected and subsiding fore and hind borders to the inner basal ridge, the crescents of the masticating surface have an enamel border only on their outer or convex sides.

Thus *Macrauchenia* differs from *Rhinoceros* and *Palæotherium* in the limitation of

assumption by the premolars of the molar type of grinding-surface to the last of the premolar series, the antecedent premolars retaining the single-lobed crown; from *Palæotherium* it further differs, as before observed, in the retention by the last molar of the two-lobed structure. In Artiodactyles, and especially the ruminant section, all the premolars have a simpler structure with the smaller size of crown.

From the figures by BRAVARD* we learn that *Macrauchenia*, like many other tertiary mammals, retained the type dentition, viz. $i\frac{3-3}{3-3}$, $c\frac{1-1}{1-1}$, $p\frac{4-4}{4-4}$, $m\frac{3-3}{3-3}=44$, and that, as in *Anoplotherium* and *Dichodon*, the series was unbroken by any notable interval, not any of the teeth having a crown much higher or longer than the rest.

DESCRIPTION OF THE PLATE.

PLATE VIII.

Fig. 1. Portion of left mandibular ramus with the *p* 2–*m* 3 grinders: outside view.

Fig. 2. do. do. do. : inside view.

Fig. 3. Grinding-surface of the teeth. These figures are of the natural size.

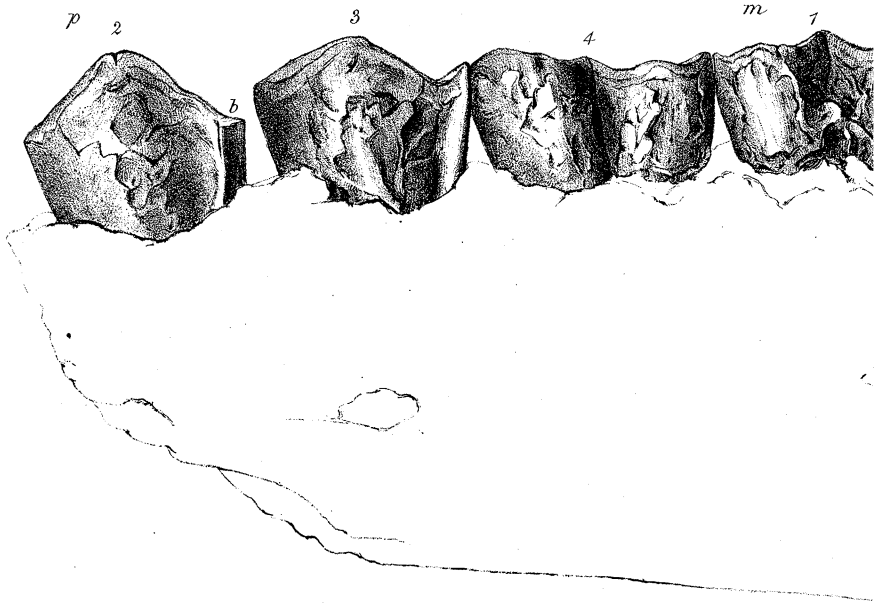
Fig. 4. Entire mandible with the *p* 3–*m* 3 grinders, and a restoration of the missing teeth: outside view, reduced view: from BRAVARD, *op. cit.*

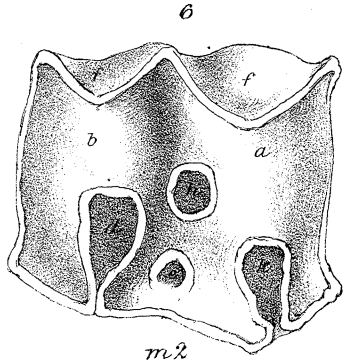
Fig. 5. *p* 3–*m* 3, inside view; similarly reduced: from BRAVARD, *op. cit.*

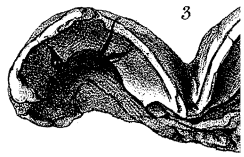
Fig. 6. Grinding-surface of second upper molar (*m* 2), right side, restored to the natural size: from BRAVARD'S plate. [The upper molars (*m* 1, *m* 2) of *Macrauchenia*, as of *Nesodon*, are penetrated by three folds of enamel on their inner side, which, deepening as they extend, are soon interrupted by wear, and the ends converted into islands. In *m* 2 (Plate VIII. fig. 6) the mid fold is of unequal depth and becomes reduced to two islands of enamel (*e*, *h*). In *m* 1 the island (*h*) of BRAVARD'S specimen is not shown, but this may be because the tooth is more worn. In *m* 3 the insular end of the fold (*k*) remains beyond the fold, which continues as in *m* 2: the mid fold is represented by a single island, and the third fold (*d*) is short. The outer lobe (*f'*, *b*) is turned, as usual, in *m* 3, so that the surface (*f'*) looks outward and backward, with concomitant contraction of the hind part of that molar.

The last premolar (*p* 4) is like a small molar, but shows only two enamel-islands on its inner half: *p* 3 has a mid indent on the outer side and indications of two shallow folds on the inner side; it has lost breadth, but retains fore-and-aft extent; *p* 2 is still more narrowed transversely, has an even outer surface, and a single fold of enamel on the inner one which runs forward. This fold is represented by a notch in *p* 1. The premolars decrease in breadth, and in a minor degree from before backward, as they approach the canine. —R. O., March 1870.]

* *Op. cit.*


p
2
3
4
m
1
b


6
f
f
b
a
m2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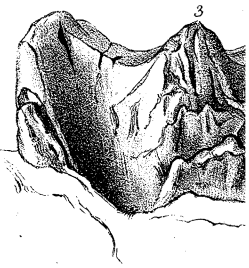
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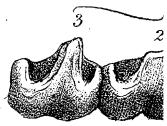
3
2


1
2
d
3
1
4
p
m
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1
2
3
i
c
1
2
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m
p
2
1
4
b
3
b
2
a
d
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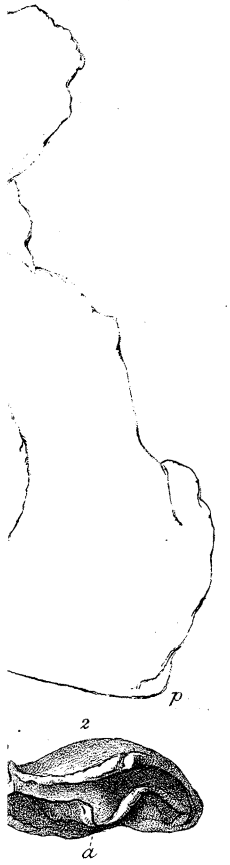
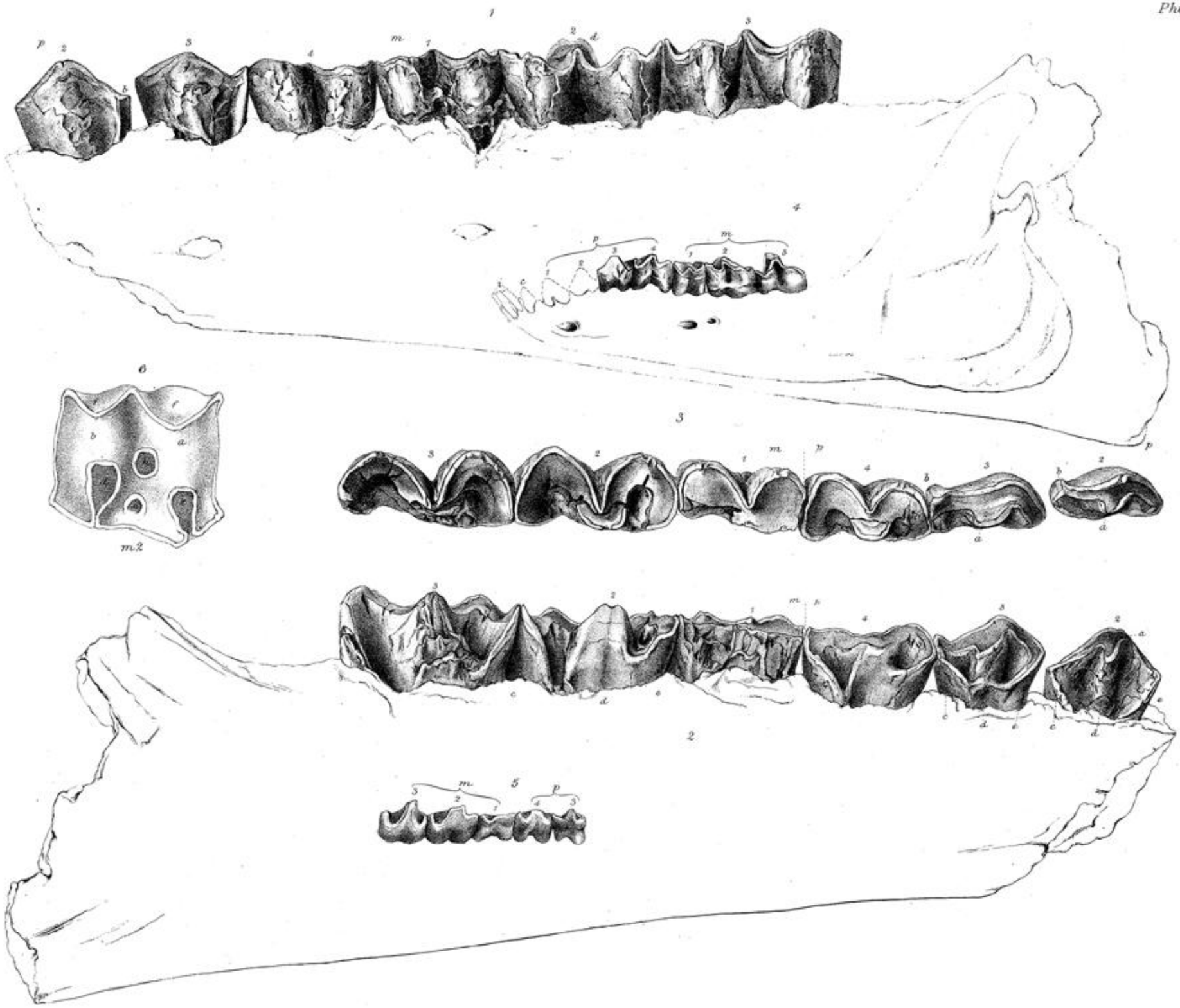

p
z
d
z
a
e
d

W. H. Wesley lith.

W.West imp.


1
2
3
4
5
6
m.2