IX. *Description of Teeth of a Large Extinct (Marsupial?) genus,* Sceparnodon, Ramsay.

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[Plate 11.]

The only known Mammals of Australia with rootless, ever-growing scalpriform incisors, in bodily size suitable for wielding those about to be described, are the *Diprotodon*, the *Nototherium*, and the *Phascolonus*, all of which have become extinct. But the incisors of the known species of the above genera differ in shape from each other and, in a still more marked degree, from those of *Sceparnodon;** nor do any such teeth from other and smaller Mammals match with the present Fossils.

My first cognizance of this form of tooth was derived from casts, which were kindly transmitted to me in October, 1881, by Edward P. Ramsay, Esq., Curator of the Museum of Natural History, Sydney, New South Wales.

In the letter advising me of their transmission, Mr. Ramsay writes :—

"The flat teeth are those for which I proposed the name *Sceparnodon*, but which name need not be retained by you, as no description has been published of them. The smaller of the flat teeth was obtained in the central part of South Australia; I believe near Lake Eyre. I found it among a collection which I was asked to determine at the Melbourne Exhibition, and I took casts of it. Those numbered A 3292, A 3295 came from Gelgoine Station, New South Wales, and were found in a deep hole in the creek which was being cleaned out for water; they are quite black, glossy, and seem to be impregnated with iron.

(Signed) "Ed. P. Ramsay."

Comparison of these casts of teeth, more or less mutilated, led me to the conclusion my valued correspondent had arrived at, and to the retention of the generic name proposed for the extinct animal to which they had belonged. But I deferred their description in the hope of receiving actual and better preserved specimens, affording also the means of adding characters of microscopic structures to those of size and shape.

A portion of such tooth (Plate 11, figs. 1, 2, 3) reached me this year, through the kindness of Mr. C. H. Harmann, of the Range Nursery, Toowoomba, Queensland. It was found by him in the neighbouring bed of King's Creek, from which

* Σκέπαρνον, adze; ὀδόνς, tooth.

formation the most instructive specimens of *Megalania* have been obtained. With this verification of the subjects of the casts, I no longer defer making known so singular an addition to the, most probably, Marsupial fossil Fauna of Australia.

The specimen from King's Creek, though mutilated at both ends, includes a portion of the tooth, 2 inches 9 lines (70 millims.) in length, with an uniform breadth of 1 inch 3 lines (32 millims.), and as uniform a thickness of 7 millims. gradually increasing to 8 millims. at both side-margins. The curvature of the tooth is uniform and moderate, and is shown in Plate 11, fig. 1.

Sufficient of the pulp-cavity was preserved at one end to indicate the tooth to have been one of uninterrupted growth; at the opposite end the cavity is reduced to a linear fissure, fig. 3 *a*. Here the body of the tooth is seen to be composed of hard dentine, with a coat of enamel on the convex side, bending for the extent of a millimetre upon each obtuse margin; the rest of the tooth having a thinner coat of cement. One margin, slightly broader and less rounded than the other, indicates that which was in contact with, or very close to, the fellow incisor of the scalpriform pair.

The enamelled surface of the tooth presents fine and close-set longitudinal striæ; its transverse convexity is less than the corresponding concavity of the opposite side. The concavity is traversed lengthwise by a pair of low, linear, risings or ridges, *r*, *r*, fig. 2, 5 millims. apart; one extending midway between the two borders, the other ridge being nearer the outer lateral border. Most of the surface of this fossil shows a deep rufous stain which extends some way into the tooth's substance, as shown by the sections for microscopical research next to be noted; the weight of the fossil indicates metallic infiltration.

Of the intimate structure of the teeth of *Marsupialia* I detected, in 1844,* but two which seemed to call for illustration: one, from the Wombat, showed a larger proportion of the cement exterior to the enamel than in the Rodents' incisors: this character, as it was exaggerated in the molars, was exemplified in a longitudinal section of one of those teeth (op. cit., plate 103, fig. 2). The other Marsupial modification was displayed by the teeth of the Kangaroo, and the illustration was afforded by a section of an incisor. The character in question is a continuation of the more wavy terminal portion of the dentinal tubes across the boundary-line into the enamel (op. cit., plate 102). In the subjoined drawing of a similar microscopic section of the fossil incisor of *Sceparnodon* the resemblance to the Wombat (ib., plate 103), in the dental character so exposed will be seen to be closer than to any other Marsupial or to any Australian genus of Rodent. The existing members of the *Rodentia*, native to Australia, are mostly of small size: the aquatic form, *Hydromys*, exemplifies the largest, but this hardly exceeds that of our Water-Rat (*Arvicola*), in which the upper incisors show a greater fore-and-aft than transverse diameter. The small relative degree of the former diameter, or thickness, of the tooth is peculiar to *Sceparnodon*.

* 'Odontography,' pp. 373–398; plates 98–103.

The dentinal tubes, as displayed under a magnifying power of 150 diameters (Plate 11, fig. 9, *d*,), show but a slight curvature in two-thirds of their course from the pulp-cavity, but become more curved in the distal third : the terminal bend, convex towards the cutting end of the tooth, is more strongly marked than in the incisors of *Phascolomys* or of *Macropus*. The diameter of the tube is $\frac{1}{3000}$ of an inch. The dichotomous divisions of the main tubes are sparing, until the greater curve is made, and the terminal branches of these open into minute cells along the line of the enamel, and occasionally into cells at some distance therefrom as shown at *d'*, fig. 9. The undulation of the fibres of the enamel, *e*, have a parallelism which renders a seeming course transverse to the section more conspicuous than the true direction toward the cement, *c*. This constituent repeats the microscopical characters of that of the Wombat's upper incisor.

The cast of one of the specimens of an incisor of *Sceparnodon Ramsayi* (Plate 11, figs. 4 and 5), from near Lake Eyre, includes the exposed or working end of the tooth, *a*; it is bevelled off to an edge from the logitudinally concave to the convex side, corresponding to the enamelled outer surface, and which forms, as in other scalpriform incisors, the trenchant margin. This edge slightly curves from the outer (lateral) to the inner (mesial) border of the tooth. Just above the worn surface of the tooth near this border the concave side shows a feeble depression, *b*, indicative, it may be, of pressure by a contiguous tooth. The transverse concavity of the back surface of the tooth is rather deeper than in Plate 11, fig. 1, and does not show the two longitudinal ridges. This character, if traceable in the actual tooth, might suggest a specific difference.

The fractured, probably implanted, end of the actual tooth may show the termination of the pulp-cavity, but the indication in the cast is obscure. The length of the specimen, in a straight line, is $4\frac{1}{2}$ inches (90 millims.); following the curve it gives 95 millims. The breadth of the biting end of the tooth is 27 millims.; that of the opposite or growing end is 30 millims. This increase indicates a relation to the growth of the animal's body, and suggests that the incisor may have come from a not fully-grown individual. There is a corresponding increase of thickness at the (broken) implanted end, which gives 13 millims.

The cast of the largest of these teeth which I have received, showing also the largest proportion of the tooth, figs. 6 and 7, repeats the character of the mid-ridge along the concave surface ; but a second ridge is more remote and less defined. The depression, *b*, above or root-ward of the abraded working surface is again indicated in this incisor. The longitudinal lineation of the convex side of the tooth (fig. 8) is of a coarser character than in the portion of tooth, fig. 3, from King's Creek. The length of the cast of the tooth from Lake Eyre, in a straight line, is 5 inches (130 millims.) : following the curve it gives 136 millims. : the breadth is $1\frac{1}{2}$ inches (35 millims.), and this dimension is the same at both ends of the tooth, indicative of its having come from a fully-grown individual.

It seems strange that the indications of an extinct species so conspicuous as must have been the living *Sceparnodon Ramsayi*, obtained from localities so remote from each other and showing a wide geographical range, should be restricted to a front incisor, seemingly of the upper jaw. Yet the first indication of the large Carnivore (*Thylacoleo*) was a solitary carnassial; * and that of the huge herbivorous *Diprotodon*, was but a fragment of a front lower incisor.† I am in hopes, therefore, of being favoured by analogous opportunities of communicating to the Royal Society a restoration, through successive contributions, of the skeleton and dentition of the present singular, most probably Marsupial, Rodent-like, extinct, Australian Mammal.

Description of the Plate.

PLATE 11.

Sceparnodon Ramsayi, Owen.

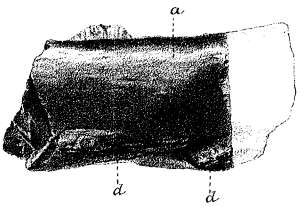
Fig. 1. Side or edge view of portion of an incisor tooth.
Fig. 2. Outer or convex side of the same.
Fig. 3. Inner, or concave, side of the same.
Fig. 3*a*. Cross-section of the same.
Fig. 4. Side or edge view of the cast of a larger portion of an incisor.
Fig. 5. Inner or concave side of the same cast; showing, *a*, the abraded surface; *b*, the indent above that surface.
Fig. 5*a*. Cross section of the same.
Fig. 6. Side or edge view of the cast of a still larger portion of an incisor.
Fig. 7. Inner, or concave, side of the same cast; showing, *a*, the abraded surface; *b*, the indent; *r*, median ridge.
Fig. 8. Portion of the outer surface, fig. 7′, showing the fine lineation of the cement-clad enamel.

(All the figures, save 9, are of the natural size.)

* Mitchell's 'Three Expeditions into the Interior of Eastern Australia, 8vo., 1838, vol. ii., Appendix, p. 359, plate 32, figs. 10, 11.

† Ib. ib., p. 362, plate 51, figs. 1 and 2.

Fig. 1



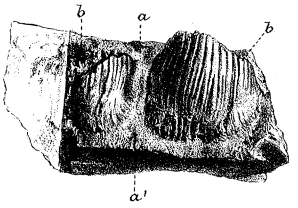


Fig. 2.

Fig. 3.

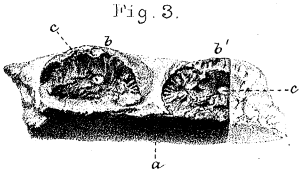


Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

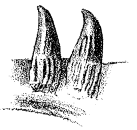


Fig. 9.