40. DESCRIPTION of *Part of the FEMUR of NOTOTHERIUM MITCHELLI.*

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[PLATE XVI.]

IN my work on the Extinct Mammals of Australia* the osteology of the existing species is described and figured in the degree requisite for the comparisons with the fossil bones.

In the Kangaroos the femur, amongst other characteristics, shows "the rough depression (plate lxxiii. figs. 2, 3, *y*, op. cit.) above the outer condyle (ib. *v*)" and "the great transverse extent of the articular surface of that condyle by the production of its outer part, changing, there, the convexity into a concavity transversely (ib. fig. 2, *w*)"†. With these may be noted the narrowness and depth of the postcondylar or popliteal fossa (fig. 2, *u*).

The corresponding part of the femur in the Wombats (ib. pl. ciii. figs. 1–4) differs in the absence of "the rough depression, *y*;" in the relatively less transverse extent of the articular surface of the outer condyle, especially at its back part; in the continuous transverse convexity of that part of the condyle, and in the minor relative depth and greater relative width of the postcondylar fossa.

In the comparison of the fossil femur of the *Diprotodon* (op. cit. pp. 231–234) the rough longitudinal depression above the outer condyle (pl. xxxiv. fig. 1, *o*)‡, the concavo-convex hinder part of the articular surface of the outer condyle (ib. *v*), the length, depth, and relative narrowness of the postcondylar fossa (ib. *u*), with other characters of the bone, showed its closer resemblance to the femur of the Kangaroo than to that of the Wombat or other of the larger existing kinds of Marsupialia.

In the lower or distal portion (probably one half) of a large fossil femur (Pl. XVI.) transmitted from Australia by my friend Dr. George Bennett, F.L.S., the following differences present themselves:—There is no depression above the outer condyle; but there is a rough longitudinal rising (ib. fig. 1, *o*) in the corresponding place, for the attachment of the same or homologous muscle. The hind surface of the outer condyle (ib. fig. 4) is transversely convex: in *Diprotodon* the transversely concave tract of that condyle is relatively greater than in the largest existing Kangaroo; but I may remark that in some of the still larger extinct Macropodidæ that concavity comes nearer in relative extent to the proportions shown in *Diprotodon*§. The same remark applies to the proportional breadth of the postcondylar fossa, which, though small in *Macropus rufus*, is still less in *Macropus titan*, where it repeats the character of this part in *Diprotodon*.

* 4to, 1877.

† Ib. p. 390.

‡ Ib. p. 231.

§ Op. cit. pl. xxxiv. fig. 1, *v*.

In the fossil femur under description the relative breadth of the postcondylar fossa (ib. fig. 4, *u*) resembles that in *Phascolumys* *; the more equal prominence of the lateral boundaries of the rotular surface is also a character in which the fossil resembles the Wombat more than it does the Kangaroo or the *Diprotodon*, in which the greater prominence of the inner boundary is extreme †, and the antero-posterior extent of the inner condyle, including that boundary, is relatively much greater than in the present fossil.

This femur, however, presents the following differences from that of the Wombats. The rotular surface (ib. fig. 3, *q*) is relatively narrower ‡, and the outer boundary (ib. ib. *r*) is sharper; the popliteal depression, above the intercondylar fossa, *u*, which is deep and extensive in *Phascolumys*, is hardly, if at all, defined in the fossil. Moreover the size of this fossil is greater than that of the femur in the largest known extinct Wombat, in the degree in which the mandible and teeth of *Nototherium Mitchelli* § surpass those of *Phascolumys gigas* ||.

Upon the foregoing comparisons I therefore formed the conclusion that the distal portion of femur here described belongs to a species of *Nototherium*, as large, if it be not the same, as *Nototherium Mitchelli*.

The following are its dimensions, with which I add, for comparison, those of the corresponding part of the femur of a mature *Diprotodon australis*:—

	<i>Nototherium.</i>		<i>Diprotodon.</i>	
	in.	lin.	in.	lin.
Length	8	6	13	6
Breadth across condyles	5	9	7	6
„ , transverse, of broken end of shaft	3	1	4	5
„ , antero-posterior, of ditto	2	3	2	8
Circumference of ditto	8	4	12	0
„ above the condyles	12	2	15	3
Breadth of rotular joint	2	3	2	4
„ of intercondylar fossa	1	5	1	7

The present portion of femur is of a mature and seemingly aged individual.

The fractured surface of the femoral shaft (Pl. XVI. fig. 2) exposes the lower end of the medullary cavity, with the compact wall from 4 to 6 lines in thickness, and part of the spongy portion of the wall, the extent of which is indeterminate through abrasion. No femur referrible to the genus *Nototherium* has previously come under my ken.

This fossil is from a locality in Darling Downs, Queensland, Australia. At the time of “going to press” with the work on

* Ib. pl. ciii. fig. 2.

† Compare with fig. 4, pl. ciii., op. cit.

|| Ib. pl. lxxv.

† Ib. pl. xxxiii., s.

§ Op. cit. pl. xlv.

Australian fossils no recognizable parts of the skeleton of the hind limbs of *Nototherium* had reached me.

The characters of the present specimen, like the proportions of the skull of *Nototherium* *, show a resemblance to the Wombats which at least tends to lessen the difference between the existing forms of *Phascalomys* and *Macropus*.

EXPLANATION OF PLATE XVI.

NOTOTHERIUM MITCHELLI, Owen.

(All the figures one half the natural size, and drawn without reversing.)

Fig. 1. Outer side view of the distal portion of the right femur.

2. Fractured end of the shaft of the same.

3. Front view of the distal end of the same.

4. Back view of the same.

* Ib. pls. xxxvi., xxxvii.

Mary Suft lith.

Hanhart imp.

NOTOTHERIUM MITCHELLI.