

## NOTE ON THE GENERA ZYGOMATURUS AND NOTOTHERIUM.

BY C. W. DE VIS, M.A.

To page 161, Pt. 5, of the British Museum Catalogue of Fossil-Mammalia recently issued, is the following foot-note—"De Vis (Proc. Linn. Soc. N.S.W., Vol. VIII., p. 404) has provisionally referred another type of humerus to Nototherium. That bone probably, however, belonged to a small Diprotodon, and there is every reason for regarding Owen's determination as correct, since there is no dental evidence of the existence of any other animal to which the bone referred by Owen to the present genus could have belonged. The great difference between the skulls of Diprotodon and Nototherium would of itself indicate that an equally well-marked difference should occur in the limb bones of the two genera." On this, the writer would observe that when discussing the humerus in question, he proposed to refer it to Nototherium, not only because—having then no evidence to the contrary—he accepted Sir R. Owen's opinion that there was no small species of Diprotodon such as that founded on the teeth described by Prof. Huxley as *D. minor*, but because he seemed to see, and attempted to describe, differences between the humerus noticed and that of *D. australis*, which are more than specific. He regrets that his description, unaided by a figure, failed to convince, for assuredly any one examining the two bones, side by side, would feel justified in doubting their generic much more their specific identity.

Notwithstanding then that a 'small Diprotodon,' namely, *D. minor*, has since re-asserted itself by fresh testimony, the writer is still unable to believe that the humerus in dispute belonged to a Diprotodon—its size is in itself a caution against its ascription to *D. minor*, since that species was but a fourth smaller than *D. australis*, while the humerus came from an animal fully one-third less in all its dimensions, and if, probably, it did not belong to the smaller then, more certainly, not to the larger species. But, apart



from this, the reasons urged against the identification with *Nototherium* are both invalid. The first that no other animal is known by dental evidence to which the humerus figured by Sir R. Owen could be ascribed, would indeed be a weighty one, were all, or nearly all, the marsupials of the period made known by their teeth or otherwise. That this is very far from being the case is clear from the new forms which have offered, and are still offering, themselves for discrimination. It may be added that the question with the writer was not whether a genus can be found to fit the bone, but whether the bone is found to fit *Nototherium*. Moreover he is not at all affected by the demand made for dental evidence other than that already in the hands of his critic as will appear from the fact on which his reply to the second objection is founded. That reply, in brief, is, that so far from there being any 'great difference' between the skulls of *Diprotodon* and *Nototherium*, the truth is they are much alike. The great difference objected in intention is grounded on the assumption that *Nototherium* is identical with *Zygomaturus*.

Until lately no reasons against an identification in favour of which none have been given, could have been adduced by the writer, but to him *Nototherium* and *Zygomaturus* are now entirely different animals. Therefore the humerus referred to the latter under the name of the former by Sir R. Owen may possibly prove to belong to it; but however that may be, the humerus noticed by the writer is certainly *nototheroid*, and most probably *Nototherium*. To substantiate an opinion so pertinaciously contradictory, some observations penned before the above criticism came to hand, are now offered.

The genus *Nototherium* was founded on a portion of a mandible, clearly indicating the former existence of a mammal for which a name was requisite, but in itself incapable of yielding the data necessary for discriminative purposes when genera or species are in question. More especially the tooth which, from experience, we have learned to be the only safe guide to identifications in the group to which the mammal belongs was wanting, and what other examples of *Nototherium mitchelli* were in our hands would always



have remained a matter of mere conjecture had not the founder of the species subsequently recognised it in a young jaw which retained the tooth so much to be desired, the premolar. This jaw, figured on Pl. 40 of the Foss. Mam. of Aus., then became for all practical purposes the type of the genus and species.

The *Nototheriums* were amongst the commonest of the heavier mammals of the period, as witnessed by the abundance of their remains in the post-tertiary drifts. These have afforded to the Queensland collection fourteen premolars of the lower jaw, including one in a young mandible of the same age as the type specimen, and differing from it only in specific characters. The identity of these with the generic type is indubitable.

Wherever this tooth is present, the recognition of the lower jaw of *Nototherium* is easy and certain, but as yet the upper jaw has not been identified with the lower on the only evidence which would be altogether conclusive, association in the matrix. It has not, however, remained undetermined. On the discovery of *Zygomaturus trilobus*, MacI., it was decided by Sir R. Owen that this was identical with his *N. mitchelli*, and under that name he figured it. At a later period the same author also assigned to *Nototherium* the maxillæ referred by Professor Huxley to *Diprotodon*. That the later determinations are not tenable has already been pointed out. That *Zygomaturus* should also be distinguished from *Nototherium* the same writer now finds himself compelled to suggest on the following grounds :—

The fortunate discovery of the complete skull of the nototheroid, for which the name *Owenia grata* has been proposed, discloses the form of both premolars in that genus, and defines within narrow limits the difference between the two teeth in cognate genera. Both are in general terms simple, unilobate, teeth ; the upper one, sub-triangular in section, has its sub-central conical cusp longitudinally constricted towards the apex : the constriction being still seen in the half-worn tooth in a contraction of the dentinal band as it traverses obliquely the longitudinal axis of the tooth. The lower premolar in this genus is structurally the same as in *Nototherium* as identified by Owen, therefore the upper one of



Nototherium should not differ widely from that of Owenia. But the tooth in Zygomaturus does differ widely, it is indeed of a distinctly different type—a type reminding one of the Protemnodont type more than anything else. Its posterior two-thirds are occupied by a longitudinal ridge on the outer side, and two tubercles on the inner, the outer ridge and anterior tubercle being joined by a low link over which passes the longitudinal sulcus dividing the ridge from the tubercles. The anterior third supports a single large tubercle or rudimentary lobe. Such a tooth has but scant affinity with that of Owenia, and therefore is most unlikely to have paired with the Nototherium lower premolar, cast as we have seen in the same generic mould as the corresponding Owenia tooth. Were every other upper premolar which could be rationally ascribed to Nototherium absent, we should still be justified in deferring acceptance of the identification asserted until positive proof that the apparent anomaly is a fact were forthcoming.

But, happily, the contingency does not exist. Teeth in strict accord with the anticipation shaped by Owenia are by no means infrequent, and in their very number we may see a further reason for rehabilitating Zygomaturus.

In a large series of such fossils, from one and the same locality, it is reasonable to suppose that related parts of the skeleton, notably those of the head, will occur in fairly corresponding frequency. This is certainly exemplified in the case of Diprotodon, the larger Kangaroos, Wombats, and Thylacoleo. It would, therefore be an unaccountable condition of things, or rather one to be accounted for by an objector, if the numerous lower premolars of Nototherium were derived from the same generic entity as the Zygomaturus teeth, three in number, which are all that represent the dentition of that genus in the Queensland collection—these teeth moreover being the only recognisable Zygomaturus fossils in the series ; whereas the Nototherium premolars, loose and in place, are accompanied as might be supposed by still more numerous mandibular remains deprived of them.

On the other hand, as we said, upper premolars referrible to



Nototherium on the safe ground of structural correspondence with the lower (the correspondence being the same in kind as in *Owenia*) are by no means rare—are, in fact, more abundant than the mandibular. We have twenty-two examples of them, varying according to age and species (a somewhat similar disparity in the number of *Diprotodon* jaws may be noted in passing), and with them almost as many fairly identifiable maxillæ and other cranial relics. Several entire crania have been found, but so decomposed as to defy all attempt at reconstruction. They show, however, clearly enough that the physiognomy of the animal was not greatly different to that of *Diprotodon*, and thus quite unlike that of *Zygomaturus* with its substructure of massive expanded nasals and zygomatic arches, beetling frontals and retracted jaw bones.

It may be well, though unnecessary, to add that the best preserved series of these maxillary teeth correspond closely in length and in relative breadth with the most complete of the mandibular sets.

In view of such correspondence, structural and numerical, it would be taking an unnecessarily low ground of argument to ask in turn to what other animal all these upper jaws are to be referred.

The *Nototherium* upper premolar is essentially similar to, but as usual broader and more regularly triangular than, the lower. It has one large sub-central and sub-conical cusp longitudinally constricted in the middle towards the culmen, and wears down to an obliquely transverse curved tract of dentine more or less contracted mesially. It has a narrow posterior talon which is on the inner side continuous or nearly so, with an anterior talon continued on that side to the front angle of the tooth, but not around it, or if around it, not on the outer side.

Enough has perhaps been said to warrant the following conclusions:—1st. That the upper premolar of *Nototherium* shows a departure not more than generic from that of *Diprotodon*, and consequently that both genera belong to one family, the *Nototheridæ* which also includes *Owenia*, and, perhaps, *Sthenomerus*. 2nd. That *Zygomaturus* is a good genus, and that its affinity with the *Nototheridæ* is, to say the least, doubtful.



The mandibular structure and dentition of *Zygomaturus* are as yet unknown; it was evidently one of the rarer mammals of its day, the paucity of its remains contrasting strongly with the abundance of *Nototherium* relics.

Figures—

Owenia grata—upper premolar.

“ “ lower “

## Nototherium

dunense —upper ,

“ “ lower “

Zygomaturus

trilobus —upper

## NOTES ON SOME QUEENSLAND MOSSES.

By C. J. WILD, ESQ.

THE following notes point out various *errata* concerning recently recorded Mosses which have been published in the Syn. Queensland Flora, and its first and second supplements; they have been compiled from a desire to clear up certain obscure points, and perhaps may help to simplify matters for a future list. When a third supplement is formed, the *errata* can be corrected, and explanations given.

## 1. REPETITIONS—

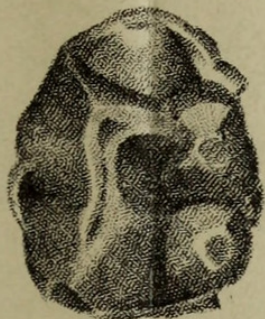
Two of these occur, namely,—

*Dicranella Baileyana*, C.M.

[illegible]

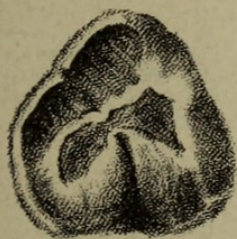


ZYGOMATURUS TRILOBUS *MacL.*



*Upper premolar*

NOTOTHERIUM DUNENSE



*Upper premolar*



*Lower premolar*

OWENIA GRATA



*Upper premolar*



*Lower premolar*



De Vis, Charles Walter. 1888. "Note oh the Genera Zygomaturus and Nototherium." *The Proceedings of the Royal Society of Queensland* 5(3), 111–116.  
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