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TASMANIAN GIANT MARSUPIALS

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In the years 1870 to 1884 Professor O. C. Marsh created a new Order for the reception of certain fossil mammalian remains, which he designated (Marsh, 1884) *Dinocerata*. This Order included the extinct creatures now called *Titanotherium robustum* and *Tinoceras ingens*, as well as others that need not here detain us. The sifting processes of modern taxonomy have necessitated the removal of the two creatures named, and their separation into distinct Sub-orders (of the Order *Ungulata*) namely:—

Sub-order *Titanotheriida*, of which *Titanotherium robustum* is typical, and Sub-order *Amblypoda*, which not only contains *Tinoceras ingens*, but also the European extinct ungulates known as *Coryphodon* and their American allies. Tentatively, *Arsinoitherium*, which is now removed to another Sub-order (*Embrithopoda*), also found a resting place here. Leaving out the last-named animal, it will be obvious that Marsh's Order of *Dinocerata* covered a wide area, and included within its circumference animals more or less Rhinoceros-like, and some, that while armed with fighting bosses, upon their skulls, did not closely simulate the make-up of a modern Rhinoceros. Strictly speaking, neither *Titanotherium*, which is the most Rhinoceros-like of the group, nor

*Tinoceras ingens*, which is nose armed with bony bosses, was a Rhinoceros in the modern sense of the term. Indeed, as far back as 1876 Professor R. Owen expressed (Owen, 1876) his doubts as to the nature of the nasal weapons with which the *Dinocerata* were armed, and suggested that the absence of vascular grooves from the bony bosses indicated that they did not simulate the horns of the Ruminants. Professor Marsh, in his Monograph upon the *Dinocerata* (Marsh, 1884, pp. 167-168), refers to this question, and suggests that hard pads of skin may have covered the bosses, or that even horns similar to those of the American Antelope may have been present, since in that animal (*Antilocapra*) the horn cores were smoother than those of the *Dinocerata*. This lengthy introduction is essential to a clear understanding of what we have said of the parallel evolution in Australia of Marsupials that were nasally armed. Such paralleled items chiefly relating to the modifications of the anterior part of the skeleton, as the Giant Marsupials evolved their fighting weapons. As these weapons, we think, were more like those of the modern perissodactylan Rhinoceroses than those of *Titanotherium* or *Tinoceras*, we used, as a vernacular name, for the nasally armed marsupials that of "Marsupial Rhinoceroses," a term that has apparently called out so much protest that it is worth while to review the actual evidence.

The first point to stress is that vascular grooves exist in the areas of the skulls of the giant marsupials, which are without any great elevations, such as obtain in either *Titanotherium* or *Tinoceras*.

Secondly, the areas covered by these fighting weapons in the *Nototheria* were of considerable size, suggesting some such weapon as that of a modern Rhinoceros, and one that was nourished from various parts of that basal area, and evolved out of the hairy dermal covering. That its base may have been transitional between true skin and agglutinated hair, and its upward extension directly derived from the hair, as in a modern Rhinoceros, seemed to us as likely as not; accordingly, we wrote in terms of that assumption. Upon the broad points of anatomy, a *Nototherium* was much nearer to *Tinoceras* than to *Titanotherium*, but all attempts at comparison between a giant marsupial and any of the *Dinocerata*, as Marsh called them, must end when we come to the feet, since the marsupial manus and pes stand unique.

Our publications on this subject have all been intended to show that any race of animals that begins to acquire

nasal armament will, more or less, follow the main lines set by the *Dinocerata* and the Rhinoceroses, since these practically cover the whole field of possibilities, and we have cited the several approaches and departures to and from the animals named as we noted them, regardless of man-made taxonomy. Further, the place which the *Nototheria* occupied in the faunal list of Australia was similar to that which the *Dinocerata* (to again use the widely covering term of Marsh) held in the American faunal list, and in habits they had as much in common as the Dasyures of Australia have with the Martens and Genets of other lands.

In the American Eocene Animals cited the acquisition of fighting weapons was gradual, as it was with the Australian Marsupial *Nototheres*, and we are busy trying to piece together the several sequences. As we stated (Scott and Lord, 1920, p. 76) in August, 1920, "A wonderful and most interesting group of marsupial animals has died out in our immediate zoological province, and as the remains available to us are superior in point of preservation to anything obtained in other parts of Australia, we are tempted to pay more attention to phyletic than to taxonomic data."

Recognising the need for considerable research with regard to this interesting group before many matters can be treated in detail, we have preferred to treat the subject in a general manner rather than to enter into details of classification, etc. To such criticism as the above course has brought forth we offer the following remarks:—

1. The *Nototheria* were arising out of a Teleocerine into a more perfectly armed state, and that arming was apparently being derived from skin and hair, rather than from true horn—itsself an epidermal derivative.

2. The anterior parts of their skeletons were being changed to meet these progressive alterations, and we are at work upon all such data as the fossil remains come to us from our ancient lake beds.

3. We assumed that a nasally armed marsupial was better understood by the public generally in terms of the Greek designation Rhino-keras—or its accepted rendition, Rhinoceros—than it would have been had we turned it into Latin and named a *Nototherium*—A Nasocornuted Marsupial.

Museum Curators who have to meet inquiry from the leisurely dilettante, the specialist, and the man of the street, are apt to use terms that are self-descriptive. In our

case we were brought face to face with a new setting of an old problem in regard to Australian Marsupials, which in essence was as follows:—The teaching had been strongly instilled into the public mind that our Marsupials were a race of non-combative creatures, and that even the extinct giants were perfectly harmless animals. The voice of the one old Prophet who had chanted to the opposite tune had been drowned by the opposition's clamour. When we found that the titanic marsupials that came our way were (to use our much abused term) starting a "fighting trend," and even manifesting stages of advancement thereon, we said so—and used such terms as we considered best illustrated the facts. The average man when told, as our Museum cards do tell, that these marsupials were more or less Rhinoceroses in the making—and when he sees for himself that the heavier the nasal weapon the more the skeleton is altered to meet the new conditions—is able to get some sort of a mental picture to work upon, and he is not likely to bother if the selected name be a marsupial-like Rhinoceros, or a nose-horned marsupial.

We would remind the critics of our vernacular designations that they have overlooked one salient fact, namely, that the pacific or aggressive nature of the larger marsupials was the item awaiting solution at the time we started, and not any one—or all—minor details of classification. The latter can be settled once and for all, when we know the animals by complete skeletons, and not by deductions made from skeletons slowly and painfully put together from scattered and quite unserial bones and teeth.

The small amount that we have been able to do has been enough to show us how great is the unknown, and so we assume that the sun has not yet risen upon the day of taxonomic minutiae, and we are acting accordingly.

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