

assignment of this group of extinct Australian birds to the Ratites rests on the fact that the sternum has no carina or keel. The geological range is mid-Miocene to Pleistocene.

I had the opportunity in 1967 of examining the original material, both type and other bones, of *Genyornis newtoni* at the South Australian Museum and later a few other bones of then undescribed birds of the group, elsewhere, and since then Pat Rich has generously supplied me with slides of others, so I was not entirely unfamiliar with the Dromornithidae. Work on the group was begun by Dr Alden Miller and then Dr Ruben Stirton — I supplied the latter with comparative Moa material — but when first Miller and then Stirton died suddenly, Dr Rich took over the study of these intriguing birds and this monograph is the result. Pat Rich's approach is cladistic — in a simplified definition, this means that characters shared by all of a group or those regarded as immediate ancestors are regarded as primitive; those not shared, but peculiar to a particular genus or species are derived. The method has its difficulties but is in my opinion the best taxonomic tool yet devised.

After the usual introduction and acknowledgements, the book outlines the systematic approach used, the methodology and characters used, and then proceeds to discuss the Dromornithidae, first at family level, and then the various genera and species, of which several are new.

The list is:

- Barawertornis tedfordi*, a new genus and species;
- Bullockornis planei*, a new genus and species; and another probable species of this genus;
- Dromornis australis* Owen;
- Dromornis stirtoni*, a new species;
- Ilbandornis woodburni*, a new genus and species;
- ?*Ilbandornis lawsoni*, a new species; and
- Genyornis newtoni* Stirling and Ziutz.

A detailed account of the stratigraphy of the deposits from which the bones are derived is provided, footprints and the egg from dunes in South-western Australia are discussed, and a full bibliography and many pages of tables are included. Altogether, Pat Rich has written a very satisfactory account of the Dromornithidae, working with material that is far less plentiful and satisfactory than that which we have in New Zealand for the various Moa.

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The Hind Limb Musculature of the Brown Kiwi, Apteryx australis mantelli, by Christopher McGowan. *Journal of Morphology*. Vol. 160. No. 1. April 1979.

As an osteologist, I feel a little diffident in reviewing this very important contribution to myological literature. It is a preliminary to a cladistic analysis of Moa and their other struthious relatives on which

Dr McGowan, Dr Alan Baker and I were engaged in Toronto last year, and which is still continuing. The relationship between *Apteryx* and *Moa* has long been known to New Zealand osteologists and has been mentioned in the literature on several occasions, e.g. Haast (1886) who considered his new genus *Megalapteryx*, founded on leg bones, to be that of an enormous Kiwi, Archey (1941), Scarlett (1972), but Cracraft (1974) is here quoted as the authority for the assertion. This is a minor quibble with an excellent paper. The most extensive previous study of the musculature of the hind limb of the Kiwi was that of Owen in 1879. Perhaps because of paucity of material, Owen's study contained several errors. Some of these were corrected by later workers, but sufficient uncertainty in several areas remained to warrant McGowan's re-examination. The result is, for an osteologist, unfortunate as "although the limb and pelvic bones are marked by numerous features which suggest muscle attachments, relatively few can be positively identified with specific muscles. Only 23% of the muscle origins and insertions can be identified, and with three possible exceptions, no indication of relative size is given by the scars. The possibility of being able to reconstruct the musculature of the Kiwi from its skeletal anatomy, much that of its extinct relatives, is remote."

While this conclusion is disappointing, it does not detract from a splendid piece of work. The paper is illustrated by four photographs of stained skeletal muscles in transverse section, and 25 beautiful drawings by Julian Mulock. I have seen the original drawings, and they have reproduced extremely well.

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