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THE HISTORY AND SIGNIFICANCE OF THE FOSSIL *CASUARIUS LYDEKKERI*

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(Fig. 1) Manuscript Received 14.5.61

In 1891 Lydekker (pp. 353-354) made known the existence of a fossil cassowary of the Pleistocene of New South Wales, Australia. His report was based on a cast presented to the British Museum by the Trustees of the Australian Museum, Sydney, New South Wales. The original specimen, which according to him was preserved in the " Museum at Sydney " we now know later appeared, unnumbered, among material in the Mining Museum at Sydney. About 20 years ago it was transferred to the Australian Museum and given the number MF 1268.

The significance and identity of the specimen had been lost sight of over the years, and, in 1954, it was placed in the hands of Mr. Leslie F. Marcus, a representative of the Museum of Paleontology of the University of California, U.S.A., with the suggestion that it be studied. In 1960 I began checking the characteristics of this fossil, which consists of the distal end of the tibiotarsus. It seemed clearly to show the configuration of a cassowary rather than that of an emu, which latter has a less tapered proximal extension of the lateral condylar mass on the anterior surface. The question then arose of the distinctness of the specimen from the cassowary reported by Lydekker, the only fossil cassowary on record (Lambrecht, 1933:111). In November of 1960 an opportunity was presented of taking this " unknown " fossil to London, where it was compared with the cast, A 158, now with the additional number B 10394. To my considerable surprise it proved to be the original of the cast. All minor imperfections of the original and details of blood-vessel channels corresponded perfectly; a section of the shaft, about 3 centimetres long on the anterior aspect, had apparently broken out and been lost since the time the cast was made.

In 1911 Rothschild (p. 151), in recording all known ratite birds, fossil and Recent, listed " *Casuarius lydekkeri* Rothsch." from the Queensland Pleistocene. In his key on page 162 he characterizes *C. lydekkeri* as having the " extensor groove [of the distal part of the tibiotarsus] enormously deep " in contradistinction to that of *Casuarius bennetti*. Earlier in the key he had separated the cassowaries with broad tibiae, such as *Casuarius casuarius*, from the more slender types of the *bennetti* group. All the characters used in the key are adapted quite obviously from Lydekker's description of specimen No. 158 and his comparison of it with *Casuarius picticollis* (= *C. bennetti* of current taxonomy). Whether or not Rothschild personally examined No. 158 we do not know, but inasmuch as he used Lydekker's characterizations in contrasting the tibiae, named the form thus diagnosed for Lydekker, and made extensive use of various other ratite material at the British Museum, it is clear that he was basing his name on No. 158 and intended to describe it as a new species. His new name evidently dates from this publication, as I can find no other reference to it earlier in his works. For nomenclatural purposes this publication affords sufficient description to make the name identifiable and available in accord with the rules of that period. No. MF 1268 should be regarded as the holotype in that it was the only specimen known at the time of the original description and No. 158, the cast, was an obvious replica of it.

The source of the specimen has caused concern on two scores. Rothschild's mention of " Queensland Pleistocene " is unexplained and must be presumed to be a lapsus. The Australian Museum has been carrying MF 1268 on its records in recent years as from the diatomaceous deposits at Cooma because a loose label bearing that locality was in an open tray in which the specimen, then unnumbered, was received from the Mining Museum. Other fossils received at the same time in the trays from that museum were chiefly from Bingara and the Wellington Caves. A search for diatoms in the matrix of the shaft of the type showed none. There is therefore no firm basis for the purported derivation from Cooma, and the absence of diatoms throws real doubt on such a source. The locality given by Lydekker, that is, " cavern-deposits of the Wellington Valley ", may therefore be regarded as the correct one although there is no later direct evidence to support the conclusion. This is the view of H. O. Fletcher, of the Australian Museum, who has kindly supplied me with the foregoing data concerning the circumstances of receipt and cataloguing of the specimen at his institution. The British Museum's record of information on the cast repeats the statement of source as the Pleistocene cave deposits of the Wellington Valley.

The type has been compared anew with modern skeletons of cassowaries and emus, including several of the skeletons in the British Museum available to Lydekker in 1891. I can agree with Lydekker's characterizations on all points except for the claimed lack in the fossil of a semilunar pit on the lateral surface of the ectepicondyle. This pit is not well replicated in the cast which Lydekker was using, but it is indeed present in the type. The extensor tendinal groove of the anterior surface of the fossil is deep as he stressed. He did not claim it was actually deeper than in *Casuarius bennetti*, although Rothschild did. My own evaluation of the osteologic characters are that the semilunar pit is not a valid point of difference. Among the three modern skeletons of *bennetti* compared at the British Museum, one has a shallower pit and one a deeper pit than in the fossil and the other is essentially identical. The tendinal groove of the fossil is deeper, with sharper interior border, and the groove is broader than in the Recent examples and the curvature of the outer border is more sigmoid (see fig. 1).

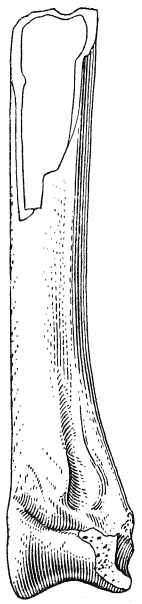

Fig. 1: Type of *Casuarius lydekkeri* Rothschild. Anterior view of distal end of right tibiotarsus, X 1/2.—Drawing by Owen Poe.

The dimensions in millimetres of the fossil and three representatives of *Casuarius bennetti* of the British Museum are as follows:—

	C. lydekkeri	*C. bennetti*		
	Type	No. 1877.1.27.2	No. 1909.12.11.1	No. 1864.7.2.2
Anteroposterior diameter of lateral condyle	34·0	35·8	34·7	35·3
Minimum mediolateral diameter of shaft	20·2	24·9	21·8	24·6
Minimum anteroposterior diameter of shaft	16·5	17·5	15·1	15·5

As may be seen, the size of the Recent and Pleistocene material is similar as Lydekker indicated. Possibly the shaft width is significantly smaller, but it is doubted that this would prove to be statistically valid even with a larger sample of modern skeletons for comparison.

The only characters that would support species separation are the depth and, especially, the shape of the tendinal groove. No other cassowary skeletons examined (*C. bennetti*, 3; *C. casuarius*, 3; and *C. unappendiculatus*, 1) have precisely the same configuration of this area as *lydekkeri*. Still the distinction is slight and I would have no great confidence that further specimens of the modern species would not bridge this small difference. Since Rothschild gave the fossil a species name, it may be retained as a useful designation, but it should be construed as indicating at best a weakly differentiated species.

The significance of the fossil lies in other directions, namely, the paleogeography of the modern small cassowary species which, in the broad sense, it represents. The modern forms of cassowaries are now grouped in three species (see Mayr, 1941:1-3), two of which are large with broad, massive tibiae and rather poorly defined, relatively shallow tendinal grooves on this bone. The third is the small, slender-legged *Casuarius bennetti* with which the fossil has very close affinity, as Lydekker originally made clear. The large *Casuarius unappendiculatus* is confined to New Guinea. *Casuarius casuarius* occurs on New Guinea and the nearby islands of Aru and Ceram and is the only representative of the group today on the continent of Australia, where there is a race in northern Queensland. *Casuarius bennetti* occurs in New Guinea, including Japen Island, and New Britain.

Thus the fossil *Casuarius lydekkeri* shows that the distinctive small *bennetti* group of cassowaries existed in Australia in the Pleistocene and extended far south of the present range of *Casuarius casuarius* to the Wellington Valley of New South Wales.

Acknowledgments

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