

A THIRD SPECIMEN OF A LOWER CRETACEOUS FEATHER FROM VICTORIA, AUSTRALIA

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Talent et al. (*Emu* 66(2):81, 1966) described the first two feathers to be discovered in Australian Mesozoic strata. These were found in a band of laminated siltstone-claystone near the hamlet of Koonwarra in South Gippsland. This bed is believed to represent the shallow arm of a freshwater lake and contains a biota of insects, crustaceans, a limulid, five genera of fish, and a varied flora. During field work in 1966 a third feather was discovered in the same stratum as the two previously described specimens, by a member of the Monash University, Department of Zoology party.

The specimen (National Museum of Victoria P.26059AB; fig. 1) is a complete, small, lanceolate contour feather. It is 15 mm in length and reaches a maximum breadth of 6 mm at a point 7 mm from the base of the calamus. The calamus measures 0.5 mm across the base and is broader than the shaft, which narrows above the calamus and tapers steadily toward the distal extremity. The vanes, which taper to a point distally, consist of tapering barbs, those of the outer vane being shorter than those of the inner. The feather is, therefore, asymmetric. The barbs are much finer than the main shaft, except at the distal extremity of the feather where they are of comparable width.

The proximal barbs are set on the shaft at an angle of 45° which gradually decreases to about 15° in the distal region of the feather. The vanules consist of long, delicate barbules set at about 15–20° to the barbs. The gently tapering distal barbules are well preserved and may in places be observed to interlock



FIGURE 1. A feather from the Lower Cretaceous Korumburra Group, S. Gippsland, Victoria ($\times 5.3$), National Museum of Victoria specimen P.26059A.

with smaller proximal barbules at an angle of about 30°.

Talent et al. (op. cit.) noted that comparison of the Koonwarra feathers with modern plumage is of little use, as the microscopic barbule structure is not preserved in the former. From the general morphology of the feather described, it seems most likely to be of covert form, but this is by no means certain.

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BREEDING OF FREE-LIVING TRUMPETER SWANS IN NORTHEASTERN WASHINGTON

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In 1935 an integrated program was initiated with the purpose of averting the extinction of the Trumpeter Swan (*Olor buccinator*). As part of this program surplus birds from a breeding colony on Red Rock Lakes National Wildlife Refuge, Montana, have been distributed to other potential breeding areas in Canada and the United States (Banko, *N. Amer. Fauna* no. 63:146, 1960).

Although the state of Washington has probably never been in the natural breeding range of the Trumpeter Swan (Jewett et al., *Birds of Washington State*. Univ. Washington Press, Seattle. 1953. p. 101), in 1963 six pinioned birds were shipped from Red Rock Lakes to Turnbull National Wildlife Refuge in northeastern Washington. In 1964, 11 additional free-flying birds were shipped, and 20 in 1966.

After four years, in 1967 a pair of swans from the initial pinioned stock successfully nested on the Turnbull captive pond (Winslow pool), raising four

cygnets to maturity. (The first successful breeding of captive trumpeters in North America occurred in 1955 at the Delta Waterfowl Research Station in Manitoba, Canada, also as a result of transplants from the Red Rock Lakes Refuge—Banko and Mackay, *Our native swans*. p. 163. In Linduska [ed.] *Waterfowl tomorrow*. U. S. Gov. Pr. Off., Washington, D. C. 1964.) Additional young were raised in 1968 and 1969, apparently by these same birds, although it cannot be positively stated that these were the same parents since they were not color banded for individual identification until fall of 1968 (pers. comm., Jon M. Malcolm, Refuge Manager, Turnbull Refuge). Although close watch has been kept for possible nesting by the free-flying birds of the colony on other ponds and lakes of the Turnbull Refuge and surrounding area, until 1969 no success could be reported.

In late June of 1969 Mr. P. O. Potter, reported a pair of swans nesting on his property 2 mi. E of the Turnbull Refuge. Investigation proved the report to be true and on 2 July 1969 photographs were taken of two adults accompanied by one four-week-old cygnet. The abandoned nest was located and found to contain no additional unhatched eggs, although in all probability these would have been removed by magpies (*Pica pica*) which abound in the area. It is of special interest that Potter also reported that the same pair of trumpeters had first built this nest during April of 1968 and that they then successfully reared four cygnets during that summer and fall. This nest-