A NOTE ON THE KING ISLAND EMU.

By H. H. Scott,

Curator of the Launceston Museum.

(Read 8th October, 1923.)

The present note is to be regarded as being strictly additional to the published data of Spencer and Kershaw (1910). To recapitulate, it may be said that the authors quoted describe *Dromæus minor* in the following terms:— "Size varying considerably, but always smaller than that of "*D. novæ-hollandiæ;* not exceeding that of *D. peroni*, but of "more robust build. Tibio-tarsus rarely exceeding 330 mm., "most usually from 270-320 mm., in greatest length. Tarso-"metatarsus rarely exceeding 280 mm., most usually from "220-280 mm. in greatest length. Frontal region of skull "dome-shaped. Length of skull from frontal suture to "occiput not, or only slightly, exceeding 60 mm. Greatest "width of the skull not, or only slightly, exceeding 55 mm. "Habitat: King Island, Bass Strait. Now extinct." The range of measurements here given is wide, and it must be noticed that the exact ratio between the tibio-tarsus and tarso-metatarsus of any single bird is not stated. As a matter of fact, I happen to know that the material Spencer and Kershaw worked upon did not contain any three leg-bones that were beyond all question associates—neither did they hold any two that they could be certain were parts of a single bird. In these circumstances the notes I am here putting upon record should be welcome ones, as they detail the osteology of various bones, found buried in actual position, and beyond all doubt parts of a single individual Emu.

FEMUR.

The total length of the femur is 189 mm., the right being here taken, as it is a shade longer than the left. Both bones are in good order, and could not have exceeded 190 mm. at any time. The proximal width is 48 mm., and the distal 55 mm. It is of interest to note that Spencer and Kershaw place their maximum femur at a total length of 186 mm. We are, therefore, in possession of a maximum test bone upon their scale—a most fortunate circumstance, as it enables us, by a process of comparative ratios, to get a fair idea of the total height of a fully adult and apparently well-developed King Island Emu.

THE TIBIO-TARSUS.

The tibio-tarsus of our bird is only 285 mm. long, with a proximal width of 58 mm., and a distal width of 34 mm. Now, this agrees with number 25 of Spencer and Kershaw's list, whereas the femur practically agreed with no one! Obviously, therefore, either a maximum femur of this King Island Emu has not yet been found, or the ratio of the tibio-tarsus to femur was not constant, and that suggests sub-races, since the actual variation between specimens one and twenty-five is 109 mm.—far too much for sex variation. The actual maximum specimen of the published list is the property of the Launceston Museum (it was lent for descriptive purposes), and is therefore available to me at the present time. This tibio-tarsus has a proximal width of 73 mm., and therefore must have carried a heavier femur, since this is 15 mm. wider than our associate of the femur detailed above. It is not fair to claim the whole of this 15 mm., since the hamular process of the larger specimen is very robust; but at least 10 mm. of articular increase may be fairly assumed to have existed.

TARSO-METATARSI.

Both tarso-metatarsi are present, and, as obtains in the case of the other associates, they are in beautiful order. The greatest length is 237 mm. This falls into Spencer and Kershaw's list at about folio No. 25, and therefore agrees exactly with the tibio-tarsal position. The proximal width is 39 mm., and the distal width, 42 mm.

From these comparisons we are led to infer that our lists of tibio-tarsi and tarso-metatarsi of King Island Emus are more complete than that of the femora, but that, upon the whole, our conceptions of the actual size of the birds are fairly accurate. Spencer and Kershaw's remarks, quoted above, respecting variation in size, are accentuated by these notes; indeed, it is rather hard to account for all the variations among adult specimens by individual and sex-variation alone; and, unless we call in insular environment as a potent factor, we are without a solution of the problem.

THE EXTINCT TASMANIAN EMU.

Of the extinct Tasmanian Emu I have to record the finding of a tibio-tarsus, which was recovered from the Pleistocene swamp at Irish Town, N.W. Tasmania, during some draining operations carried out in 1920. Our

Museum is indebted to Mr. Willes, of this city, and to the finder of the bone—Mr. E. H. Fenton—for this interesting specimen, which, from its long immersion in the swamp, must be, beyond all doubt, the leg-bone of a Tasmanian Emu. Unfortunately, the bone is broken at its proximal end, the shaft terminating 44 mm. below the femoral articular platform. If the amount named be allowed for, it exactly agrees with a second similar-sized bone to be dealt with presently. If allowance is made for the cnemial crest, 75 mm., instead of 40 mm., should be added to the present length. Put into tabular form, we get:—

Total length of the imperfect bone	371 mm.
For restoration to articular platform allow 40 mm., or to the top of the cnemial crest, allow another 35 mm.—total	75 mm.
Total for the greatest length of the bone	446 mm.

This tibial length (446 mm.) gives the Tasmanian Emu exactly the maximum mainland tibial length (as cited by Spencer and Kershaw upon page 21 of their brochure), but, as I shall show presently, the variation incidental to the insular species was more tarso-metatarsal than tibio-tarsal. The point to be noted here is that the bone is beyond all question of Tasmanian origin, since its inclusion into the peaty matrix of the swamp was certainly at a much earlier date than that at which any mainland Emus were imported into Tasmania, and therefore it stands as the earliest known specimen of a Tasmanian tibio-tarsal shaft.

I have next to mention the finding of the leg of a Tasmanian Emu, recorded by Ronald Gunn (1852, p. 170), who says:—"A leg of a Tasmanian Emu is now in my possession, "and as far as I can judge from it, as a very imperfect "specimen, there are differences in the arrangement and "size of the scutes, which may justify the separation of the "Tasmanian Emu from that of New Holland." A footnote supplied by the secretary of the Royal Society—Mr. J. Milligan—says:—"Captain Hepburn, of St. Paul's Plains, "possesses a breed of Tasmanian Emus, which he succeeded "in rearing from eggs found many years ago upon the "high, heathy land in his vicinity. Mr. J. Hepburn informs "me that the booming noise is not peculiar to the female, and "that the male bird does, though not frequently, make the

"same sound. The Tasmanian Emus share the toils of "incubation between the sexes, but upon the mother devolves "the care of bringing up the young brood, to which the "male parent, for the most part, displays an unnatural and "most bitter antipathy." After resting in the cellar of Newstead House for some 70 years, this Emu's leg has now come to light again, and is upon the table before me as I write. Gunn's statement that the scutes make a departure from those of the mainland Emu's leg is quite correct, when comparison is made between the dried skin of his specimen and that of a mounted Australian Emu shown in our case. It will be noted, however, that Gunn makes the reservation, "so "far as I can judge from a very imperfect specimen," meaning, obviously, as the specimen still shows, that the outer cuticle has peeled off the scutes, and, in this condition, they appear far less developed than obtains with the Australian Emu. That the scutes should vary upon the tarso-metatarsus, during the creation of a species, and, indeed, that the bone itself should vary more than the other bones of the leg, is not unexpected, since the tarso-metatarsus is a later evolution than either the femur or tibia, and is therefore more plastic, and accordingly responsive to external conditions. Just how much the scutes varied, cannot be accurately stated to-day, any more than it could by an examination of the specimen 70 years ago, so we are restricted to Gunn's statement in his own terms, which personally I am inclined to accept; and I conclude that the cuticle and its under layers may very well, during life, have manifested differences that added to the several specific characters of size and colour. As this leg is beyond all question that of a Tasmanian bird, it supplies us with the following comparison:—

Tibio-tarsus	446 mm.
Tarso-metatarsus	377 mm.

The femur is not present, and may never have been in Gunn's possession, but the central and external toes and part of the internal toe, are still in the skin—the bones being those of a right leg.

When the tibio-tarsus from Newstead House is placed upon the measuring plate, side by side with the sub-fossil bone recovered from the Irish Town swamp—the one being a right, and the other a left—the two bones so exactly agree in every respect that, except for locality and age, they might be selected as associates.

There are thus available to students two tibio-tarsi, one tarso-metatarsus, and a nearly complete foot of a Tasmanian Emu, which are beyond all question correctly named, and which cannot be derived from Australian Emus introduced into Tasmania.

Whatever the variations in colour, plumage, and dermal scuting may have been, it would appear that the tarso-metatarsus was relatively shorter in the Tasmanian, than in the mainland, form. In a specimen of *Dromæus novæ-hollandiæ*, with a tibial length of 446 mm., we should look for a tarso-metatarsus of 411 mm., instead of one of 377 mm., as in Gunn's specimen.

Much historical data have been published by G. M. Mathews in regard to both the Tasmanian and the King Island Emus; and as this work is commonly available, it need not be even quoted here.

LITERATURE CITED.

1852. R. Gunn—Papers, Royal Society of Tasmania, 1852, Vol. II., p. 170.

1910. G. Mathews—Birds of Australia, Vol. I.

1910. Spencer and Kershaw—Memoirs National Museum (Melbourne), No. 3.