

AUSTRALIAN ANCESTRY OF THE CROWNED PIGEON OF NEW GUINEA.

BY C. W. DE Vries M.A.

THE welcome which the writer would extend to any new insight into the relations existing between the immediate past and the present of Australian life, touching either its distribution in space, its consanguinity or its degree of prolificacy in the two periods, persuades him to bring under the notice of others anything bearing directly on the subject. From one point of view its several localisations appear the most instructive, and these are certainly at present the most rarely illustrated by fossils. A seeming opportunity of transmitting a ray of light, however slender, upon them is therefore thankfully accepted.

The Gouras or Crowned Pigeons, the giants of their tribe, nurtured solely under subequatorial conditions in New Guinea and its satellites to the north-east are one of the characteristic forms of vertebrate life adapted to the dense, hot, and dripping jungles of those regions. To find progenitors of them in south central Queensland is to recognise the former prevalence of similar conditions where moderate temperature and aridity mitigated only by fitful rains form the staple of the existing climate. Withstanding all temptation to the contrary we must leave it to the combined effort of the astronomer, physical geographer and geologist to account for so great a meteorological revolution. We for our part are kept to the matter in hand by a second inference more germane to biology to be drawn from the fossils which have suggested the former. Until now it has remained doubtful—to the writer at least—whether the tree-kangaroos of the Papua-like scrubs fringing our north-eastern coasts were or were not colonists from New Guinea which have migrated southward and been isolated by interception in the rear. If we have evidence before us that their companions in Papuan scrub life, the Gouras, have pre-existed in mid Australia, the debate is closed and the noes seem to have it. Still more important is the testimony such

birds would bear to the fact that portions of this posttertiary fauna were by inimical life conditions driven to or imprisoned in the north as well as in the south and south-east of its extreme limits. What association more significant of this could we have than that of the Crowned Pigeons of New Guinea, the marsupial carnivores of Tasmania, and the Moas of New Zealand mingling with each other on the banks of the Condamine. Each of these groups has been disassociated from the others and from the parent fauna by literal insulation, a fact charging our colleagues in research with the solution of a difficult but most interesting problem. For ourselves we may naturally suspect that the Gouras are not the only New Guinea type which had forbears beyond the present tropic of Capricorn, and if on the one hand we may look forward with confidence to the discovery of other living representatives of archaic forms as the interior and highlands of that country are explored, reciprocally, we may almost promise that palæontology will reveal other roots of Papuan life beneath our Australian surface. With such extrinsic claims upon our notice the fossils under view will in the course of examination prove to have structural relations conducive to further interest.

They consist of four portions of metatarsals, two proximal of the left side, and two distal of the right; of the latter the larger comprises about half of the bone but wants the trochlea for the fourth toe. This is fortunately supplied by the companion example which consists only of the distal expansion.

Leading characters—the mesial trochlea extends well distal of the others, excluding the perchers, raptorial birds and (in conjunction with general form and proportions of the shaft) the parrots; the scar for the articulation of the first metatarsal is conspicuous excluding the cursorial and struthious birds; it is also high upon the metatarsus, excluding again the perching and grasping birds; the shaft is non-elongate, broad and compressed, excluding the waders; the lateral trochleas are on the same level of descent, excluding the swimmers and less absolutely the poultry. From these latter we are in brief led by the exhaustive process to the pigeons and among them we find in *Goura* the essential reactions for which we have been testing.

It will now be only necessary to point out how and in what direction the fossils differ from the corresponding bone in the crowned pigeon, *Goura coronata*: but to extract from the former all the information possible it will be well to add another term of comparison derived from the rasorial order: taking as its representative the common fowl, *Gallus*.

Determinative characters:—Proximal articular surface. In the general proportions of this surface and in the relative depth of its ecto—and endocondylar cups the three bones collated differ but little—but the intercondylar eminence forming the rotular tongue is in *Goura* broader and more symmetrically convex than in *Gallus*, and in this feature the fossil is distinctly rasorial. In *Gallus* the inner edge of the endocondylar cavity is rounded off posteriorly, in *Goura* it is angularly produced—here on the other hand the fossil shows as distinctly its affinity with the pigeon. The calcaneal process of the fowl is elongate and consists of two parallel ridges, the outer one the lower but well developed—in *Goura* the process is short and has but one ridge, an outer one being hardly perceptible—the fossil has also a short process but diverges towards *Gallus* in having an outer ridge in an intermediate grade of size. The proximal end of the principal ridge of the process in the fowl is rounded off—in *Goura* it becomes pointed and somewhat unciform by upward extension—such is its form but less pronounced in the extinct bird. The whole process is much more exerted from the shaft in the pigeon than in the fowl, and in this respect again the fossil presents an intermediate condition, but a contra-indication is given by the intracalcaneal canal, relatively much larger than in *Goura* in which again it is larger than in *Gallus*. In *Gallus* the edge of the shaft as it ascends from the rim of the endocondylar articulating surface diminishes very gradually in thickness and the space between it and the short calcaneal process is consequently much less concave than in *Goura* in which the edge of the bone thins off suddenly and allows greater depth and width for the concavity between it and the longer process—in this it is quite conformable with the fossil. On the palmar side of the shaft the calcaneal process of the common fowl subsides gradually, in strong contrast with its sudden subsidence in *Goura*, but in rather

close agreement with the fossil. In section this end of the shaft is in *Gallus* an oval flattened posteriorly—in *Goura* and the fossil triangular and very similar, the chief difference being that in the extinct bird the outer edge of the bone on this aspect is like the inner one compressed and sharp instead of being obtusely rounded as it appears in the recent pigeon ; further this sharp edge is continued proximal to the outer edge of the ectocondylar articulating surface and by its lateral dilatation produces with the calcaneal process a concavity corresponding to but shallower than that of the inner side of the bone, in this feature it departs from *Goura* and approaches *Gallus*.

The distal expansion is more rapidly formed and, relative to the breadth of the shaft, is much greater in the pigeon than in the fowl, in both these respects there is an exact parallelism between *Goura* and the fossil bones. The articulating surface for the first metatarsal is placed much higher on the metatarsus in *Goura* than in *Gallus*, and on the inner edge of the shaft : not as in the raptorial on the palmar aspect of the bone external to that edge ; in the elevated position of the scar and in its extent, which causes a distinct projection upon the outline of the bone on its inner edge, the extinct bird agrees with *Goura*, but inasmuch as the scar is on the hinder surface of the shaft, indicating a more directly backward direction of the hind toe, it shows in this an approximation to the poultry birds. The inner trochlea is distinctly higher than the outer in *Gallus*, slightly higher in the fossil and on the same level with it in *Goura* : the outer trochlea is lower in the fossil than in *Goura*, showing by so much a greater departure from *Gallus* in this respect. In the form of this pulley all three birds fairly agree, its rotular surface in the fossil is distinctly grooved as it is in *Gallus* but not in *Goura*, the same may be said of the inner trochlea. The shaft of the fossil is at this end compressed and thus resembles *Gallus* rather than *Goura*.

On the whole, affinity with *Goura*, indicated by the shortness of the calcaneal process, sudden attenuation of the inner edge of the bone at its proximal end, elevation of the hind toe, rapid expansion of the distal end and subequal descent of the lateral trochleas, is strongly predominant, but it is qualified by the many less important

but still distinct rasorial features which have been noted. The external characters of some of the Gouridæ long ago suggested that these birds are passage forms between the poultry and pigeons: but no comparative observations on the bones of this family of pigeons having been met with by the writer, he can only suppose it possible that other genera than Goura may yield stronger indications of relationship both with Rasores and that extinct form which appears to have had a place in the phylogeny of the two orders.

The fossils are throughout twice the size of the metatarsus of Goura—they therefore represent a bird of noble proportions, between thirty and forty pounds in weight, and as we may suppose not less notable in plumage than its descendants. In the collection which they enrich they are labelled *Progura gallinacea*.

ERRATA CONTAINED IN "A LIST OF THE LAND SHELLS RECORDED FROM QUEENSLAND*."

BY HENRY TRYON.

Page 47. *Diplomphalus omicron*, Pfr.

Under (1), the plate referred to should be 10 not 13.

Page 47. *Rhytida Sheridani*, Brazier.

To habitat add Geraldton (Dr. T. Bancroft) H. T. (31) 1886, p. 6, to references add (3) Vol. I, p. 124, pl. 22, figs. 14, 15,

Page 48. *R. Strangei*, 1 fr.

Under (20) the year 1846 should read 1848.* And under (1) add pl. 5, fig. 9, and make the following important additional reference:—Mousson, (25) Ser. 3, Vol. IX, p. 36.

Page 48. *R. capillacea*, Fer.

To habitats add Toowong, (A. J. Norton), H. T. (31) 1885, p. 6; Rockhampton, (W. McIlwraith) H. T. (31) 1886, p. 5; Daintree River, (R. W. Stewart) H. T. (31) 1886, p. 5.

* List of Land Shells recorded from Queensland, by C. Hedley, Esq., Proc. Roy. Soc. Qd. Vol. V. Pt. 2. Brisb. 1888.



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