

nizable by their great length, their thinness, and the small size of the pedicel.

I am told that these peculiar horns are well known as articles of trade at Zanzibar, where they are brought by the caravans from the interior. I do not propose to found a new species on them, because it is possible that they may be abnormal horns of the female Black Rhinoceros, which we know is found all through Eastern Africa up to the White Nile and plains of Upper Nubia¹. But it is highly probable that they belong to a different animal, of which we may hope some day to receive perfect specimens. In the meantime they may be provisionally named Holmwood's Rhinoceros, *Rhinoceros bicornis holmwoodi*.

3. On some Bird-bones from the Miocene of Grive-St.-Alban, Department of Isère, France. By R. LYDEKKER.

[Received May 17, 1893.]

(Plate XLI.)

For the second time I am indebted to my friend Dr. C. J. Forsyth Major for the opportunity of adding something to our knowledge of the fossil birds of Europe—the small collection which he has on this occasion confided to my care having been obtained from the Miocene beds of Grive-St.-Alban, in the Isère. Those beds belong to the middle division of the Miocene period, and probably correspond approximately in age to those of Sansan in the Gers. So far as I am aware, the only bird-remains hitherto recorded from the Grive-St.-Alban deposits are a few described by Dr. C. Depéret². These remains, which are but few in number, were regarded as indicating the existence of an undetermined Accipitrine of the size of the Common Buzzard; of a peculiar species of Woodpecker (*Picus gaudryi*); of a Pheasant, identified with a species (*Phasianus altus*) described by M. A. Milne-Edwards from the Sansan deposits; of a smaller representative of the same genus; of a Gallinaceous bird referred to the Lower Miocene genus *Palæortyx*, under the name of *P. edwardsi*; of a Crane, provisionally identified with *Grus pentelici* of the Pikermi beds; and of an undetermined Anserine. The collection of specimens obtained by Dr. Forsyth Major is far more numerous, and contains several bones in a perfect state. Others, however, are very fragmentary and difficult of identification; and I have accordingly thought it well to refer in most cases only to such specimens as I have been able to identify with a fair amount of certainty. As I have had occasion to mention previously, our collections of Avian osteology are at present in such an unsatisfactory condition that the determination of complete (not to say

¹ See Baker, 'Nile-Tributaries,' p. 246 (1872).

² Arch. Mus. Lyon, vol. iv. pp. 282-288 (1887).

of imperfect) bones is frequently a matter of extreme difficulty, if not of actual impossibility.

STRIX SANCTI-ALBANI, n. sp. (Plate XLI. figs. 1-4.)

In the British Museum Catalogue of Fossil Birds I took the family *Strigidae* to include all the members of the nocturnal birds of prey, but I have since seen reason to adopt the subdivision of the group into the families *Strigidae* and *Bubonidae*. And I am the more confirmed in this latter view from the circumstance that the specimens under consideration show an osteological distinction between the members of those two families which I have not observed recorded in the works with which I am familiar.

Of all the birds represented in the collection the one of which the remains are most numerous is a species of Owl belonging to the genus *Strix*—no less than eleven more or less imperfect bones being referable to this form. From these specimens I have selected four for illustration (see Plate XLI.)—those represented in figures 1 and 2 being the distal portions of the right tibia, while those in figures 3 and 4 are respectively the proximal and distal halves of the left tarso-metatarsus. The Strigine affinities of these specimens are amply demonstrated by the form of the lower end of the tibia, in which the condyles are remarkably prominent, while there is no bridge over the extensor groove on the anterior aspect; and likewise by the highly convex arch formed by the distal trochleæ of the tarso-metatarsus, and the general form and prominence of the crest on the hinder part of the hypotarsus. Although I am not aware that any sharply defined distinction can be drawn between the tibia of the *Bubonidae* and *Strigidae*, I find that *Strix* differs from all the members of the former that I have been able to examine in the absence of the bony bridge over the extensor depression of the upper part of the anterior face of the tarso-metatarsus. As this bridge is wanting in the specimens before us (fig. 3), and as they agree otherwise in general form and size with the corresponding bones of the Barn-Owl, I opine that they must be referred to the genus *Strix*. Agreeing in size with the corresponding elements in *S. flammea*, they are distinguished by the grooves between the distal condyles of the tibia being somewhat less deep; while the tarso-metatarsus has a deeper posterior groove and a smaller crest to the hypotarsus. The only fossil representative of the genus which, so far as I am aware, has received a distinct name is *S. melitensis*¹, founded on a femur from the Pleistocene of Malta, which differs from that of *S. flammea* in its more slender proportions. As there are no indications of a similar slenderness in the bones under consideration, I think I shall be justified in assigning them to a new species, under the name of *S. sancti-albani*. The specimens do not, however, admit of defining the species more exactly than by the above-mentioned features in which it differs from *S. flammea*.

¹ Lydekker, Cat. Foss. Birds Brit. Mus. p. 13 (1891).

PHASIANUS ALTUS, Milne-Edwards. (Plate XLI. figs. 5-8.)

As already mentioned, Dr. Depéret has referred to this species certain remains from St. Alban, and four specimens in the present collection seem to fully justify this determination. The bones on which this species was originally founded were but very imperfect, and our knowledge of its osteology was advanced by those described by Dr. Depéret, which included the lower end of the tibia, the upper extremity of the tarso-metatarsus, a part of the upper end of the femur, and some fragments of the metacarpus. The specimens in the present collection comprise the proximal part of the left tarso-metatarsus (Plate XLI. figs. 5, 5a), the distal end of the left humerus (fig. 6), the entire left ulna (fig. 7), and the complete left metacarpus (fig. 8). From their all pertaining to the left side it seems not improbable that all the four are portions of a single bird.

These bones agree with those previously described in indicating a bird of considerably larger size than the Common Pheasant, being in fact intermediate in size between that species and the Peacock. They also decisively confirm the reference of the species to the genus to which it is assigned¹. For instance the intermetacarpal bar of the metacarpus (which of itself sufficiently indicates the gallinaceous nature of that bone) is far smaller than in *Pavo*, and comes nearest in this respect to *Phasianus*; while the proximal part of the tarso-metatarsus has the same narrow shape as in the latter, with a deeper groove and one more ridge on its posterior surface than in *Pavo*. Other characteristic features of *Phasianus* are the single and prominent tubercle for the insertion of the tibialis anticus, the opening of the two superior perforations on the same horizontal line, the large size of the tibial cups and the comparatively small tubercle between them, and also the single tube and two shallow grooves in the hypotarsus. The diameter of the proximal extremity of this specimen is 0,017 mm., against 0,016 mm. in the one described by Dr. Depéret; while both in his and the present specimen of the metacarpus the diameter of the proximal extremity is 0,015. Beyond stating that the length of the ulna is 0,094 mm., while the transverse diameter of the distal end of the humerus is 0,0205 mm., the other specimens do not call for further mention.

PALÆORTYX EDWARDSI, Depéret. (Plate XLI. figs. 9, 10.)

The Gallinaceous birds from the Upper Eocene of Paris and the Lower Miocene of the Allier described by M. Milne-Edwards under the name of *Palæortyx* are easily recognized, among other characteristics, by the large size of the tricipital fossa of the humerus, which extends for a considerable distance under the head. In this feature these birds resemble to a certain extent the living

¹ I may mention that, as is frequently my custom, I determined the genus of these bones before referring to the description of the birds previously recorded from the formation whence they were obtained.

Ammoperdix, *Ortyx*, and *Coturnix*, while they are totally different from *Caccabis*, *Perdix*, *Phasianus*, and most other members of the group. Probably the extinct *Palæoperdix*, of the Sansan beds, had a similar type of humerus, but the tarso-metatarsus is of a less flattened type. To the genus *Palæortyx*, Dr. Depéret has referred two imperfect humeri from Grive-St.-Alban, with which a complete specimen in the present collection agrees; and as the associated specimens of the tarso-metatarsus appear to present the characters distinctive of that genus, I am disposed to accept his determination.

The right humerus (represented in figs. 9, 9*a* of Plate XLI.) agrees precisely with the distal half of the corresponding bone figured by Dr. Depéret in pl. xiii. fig. 51 of vol. iv. of the Arch. Mus. Lyon, as one of the types of *Palæortyx edwardsi*; while its proximal portion appears to correspond with that portion of another right humerus depicted in fig. 52 of the above-cited plate. In total length the humerus here figured measures 0,055 mm., or somewhat more than the corresponding bone of *P. blanchardi*, Milne-Edwards, from the Allier Miocene, in which the length is 0,047. According to Dr. Depéret the humerus of *P. edwardsi* differs from that of the last-named species not only in its superior size, but likewise in the absence of a distinct prominence on the outer side of the head. Compared with the corresponding bones of *Ammoperdix* and *Ortyx*, the present specimen, although much larger, is generally very similar, although there are certain differences which are evidently of generic value. The large size of the tricipital fossa differentiates the specimen from the existing Oriental *Cryptonyx*, and the extinct *Palæocryptonyx* from the Pliocene of Roussillon¹.

The right tarso-metatarsus (represented in fig. 10), of which the proximal extremity is imperfect, is evidently that of a partridge-like gallinaceous bird, and as it agrees approximately in relative size with the humerus, it may be tentatively assigned to the same distinctive species. Since it appears to present all the characters of *Palæortyx* rather than of *Palæoperdix*², it confirms Dr. Depéret's reference of the species under consideration to the former rather than to the latter genus.

PALÆORTYX MAXIMA, n. sp. (Plate XLI. fig. 11.)

The slightly imperfect right coracoid of a gallinaceous bird (represented in fig. 11), being of too large dimensions to have belonged to the same species as the humerus above mentioned³, while it agrees in all essential characters with the corresponding bone of *Palæortyx*, *Ammoperdix*, and *Ortyx*, may be taken to indicate a second species of the first-named genus, distinguished from all the others by its superior size. The length of this coracoid

¹ Depéret, Comptes Rendus, vol. cxiv. p. 691 (1892).

² See Cat. Foss. Birds Brit. Mus. p. 137.

³ In *P. gallica*, of which the humerus measures 0,042, or 0,005 less than the corresponding bone of *P. blanchardi*, the length of the assigned coracoid is only 0,025.

is upwards of 0,050 mm.; and this must for the present serve as the distinctive feature of this species.

PALÆORTYX GRIVENSIS, n. sp. (Plate XLI. fig. 12.)

The right humerus (represented in fig. 12) indicates a species of the size of the Common Quail, and somewhat inferior in this respect to *P. brevipes*, which is the smallest of the Allier representatives of the genus. Thus, whereas in the present specimen the length is 0,0337 mm., in the corresponding bone of *P. brevipes* it is 0,0357 mm. On account of this inferiority of size, coupled with its much higher geological horizon, I am disposed to regard the present specimen as indicating a distinct species, which I assign to *Palæortyx*, with the name of *P. grivensis*. Compared with the nearly equal-sized humerus of *Coturnix*, this specimen exhibits very clearly the distinctive features between the two genera. Thus whereas in the Quail the subtrochanteric fossa is much larger than the shallow tricipital fossa, and extends beneath it, in *Palæortyx* the latter is much the larger of the two, and is of such a depth as to prevent the former from extending beneath it towards the outer side of the bone.

PALÆORTYX, sp. inc. (Plate XLI. fig. 13.)

Seeing that in the Common Quail the humerus is of almost exactly the same length as the corresponding bone of *P. grivensis*, while the tarso-metatarsus measures only 0,027 mm. in length, it would seem impossible that the tarso-metatarsus now exhibited (see fig. 13), of which the length is 0,032 mm., can belong to the species last named. I accordingly regard it as probably indicating yet another species of the genus from La Grive, nearly of the same size as *P. brevipes* of Allier, but to which I do not consider it advisable to assign a distinct name. In its comparative flatness, as well as in the straightness of the hypotarsus and the depth of the external posterior groove, this bone exhibits all the features characteristic of *Palæortyx* as distinct from *Palæoperdix*.

TOTANUS MAJORI, n. sp. (Plate XLI. fig. 14.)

From the presence of a distinct triangular ectepicondylar process, the small left humerus (represented in fig. 14) is clearly referable to the *Gavia*, *Limicola*, or *Tubinares*. From the corresponding bone of the more typical *Laridæ* it is readily distinguished by the smaller size of the tricipital fossa; while it differs from that of *Sterna* in the larger size of the ectepicondylar process. Compared with a skeleton of the Yellow-footed Sandpiper (*Totanus flavipes*), it is found to agree so closely with the humerus that there can be little hesitation in referring it to a member of the same genus. The total length is 0,037 mm., or about one-fourth less than that of the corresponding bone of the species above-named. A small species of *Totanus* from the Allier Miocene has been named *T. lartetianus* by Milne-Edwards; but as the higher geological

horizon of the present specimen may be taken as an almost certain indication of its distinctness from that form, I propose to regard it as representing a new species, under the name of *T. majori*. In the absence of a specimen of the humerus of *T. lartetianus* available for comparison, I am, however, unable to point out the distinctive differences of the present bone.

UNDETERMINED SPECIMENS.

Among the undetermined specimens there are several complete bones undoubtedly referable to small Passerines, although the materials available to me do not admit of any satisfactory attempts at their generic discrimination. In figure 15 of Plate XLI. I have, however, figured a left humerus which may be Picarian, in the hope that some one better acquainted with the osteology of these groups of birds may be able to determine its affinities.

EXPLANATION OF PLATE XLI.

- Fig. 1. *Strix sancti-albani*. Back view of distal half of the right tibia.
 2. *Strix sancti-albani*. Front view of the distal portion of the right tibia.
 3, 3a. *Strix sancti-albani*. Front and back views of proximal half of the left tarso-metatarsus.
 4, 4a. *Strix sancti-albani*. Front and lower views of the distal portion of the left tarso-metatarsus.
 5, 5a. *Phasianus altus*. Anterior and inner aspects of proximal portion of the left tarso-metatarsus.
 6. *Phasianus altus*. Palmar aspect of distal extremity of the left humerus.
 7. *Phasianus altus*. The left ulna.
 8. *Phasianus altus*. The left metacarpus.
 9, 9a. *Palæortyx edwardsi*. Palmar and posterior aspects of right humerus. x, tricipital fossa.
 10. *Palæortyx edwardsi*. Anterior aspect of the imperfect right tarso-metatarsus.
 11. *Palæortyx maxima*. Anterior aspect of the slightly imperfect right coracoid.
 12. *Palæortyx grivensis*. Posterior aspect of the right humerus.
 13. *Palæortyx*, sp. inc. Front view of the left tarso-metatarsus.
 14. *Totanus majori*. Posterior aspect of the left humerus. x, tricipital fossa.
 15. Posterior aspect of the left humerus of an undetermined (? Picarian) bird.

All the specimens were obtained from the Middle Miocene of Grive-St.-Alban, and are drawn of the natural size.

4. Descriptions of new Reptiles and Batrachians obtained in Borneo by Mr. A. Everett and Mr. C. Hose. By G. A. BOULENGER.

[Received June 2, 1893.]

(Plates XLII.-XLIV.)

DRACO MAXIMUS. (Plate XLII. fig. 1.)

Head small; snout as long as the diameter of the orbit; nostril directed upwards, perfectly vertical; tympanum covered with



1893. "On some Bird-bones from the Miocene of Grive-St.-Alban, Department of Isere, France." *Proceedings of the Zoological Society of London* 1893, 517–522.

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