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OSTEOLOGIA AVIUM;

OR,

A SKETCH OF THE OSTEOLOGY OF BIRDS.

BY

T. C. EYTON, ESQ., F.G.S., F.L.S.,

And Corresponding Member of Institute of Philadelphia.

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PREFACE.

THE Author of the following work does not by any means intend to present it to the public as a perfect work on the Osteology of Birds, but as a mere sketch on which other works or descriptions of birds may be founded. The information contained in it is much more extensive than has been published in any work on the subject before; and it is the Author's intention to supply deficiencies, when he obtains any varieties to describe, and to figure any new species or better specimens, in the form of an Appendix. Until a larger collection of the skeletons of birds is got together, it is almost impossible to comprehend the characters of each Order, Family or Sub-Family, or genus. The characters derived from the head, sternum, pelvis, and leg-bones, are most reliable. A character of great value may also be derived from the numbering of the vertebræ and ribs; but although I have taken great pains to get the numbers as correct as possible, I am convinced myself that some mistakes will be found,—chiefly in the sacral vertebræ, which cannot be counted accurately without a section of the pelvis. The anterior short ribs are all counted as *false;* all those, whether they are articulated to the pelvis or no, so that they are connected with the sternum, are called *true.* It has been stated that birds do not differ so much in the skeletons as to make osteological characters of any use; this, although in many instances I agree with the arrangements made from external character, is certainly not the case. Birds differ quite as much as mammalia or reptiles in their osteological characters; but those characters are much more difficult to detect, in consequence of such general similarity of form.

Measurements also give valuable characters. In this work the breadth of the sternum is taken at its widest part anterior to the ribs, and behind them; the length of the pelvis is taken from the anterior edge to the end of the os pubis, and the breadth at the widest part.

The Plates illustrating this work have been executed in zincograph by Mr. Erxleben; and I beg here to thank him for the trouble he has taken over them. They have been printed by Messrs. Day & Co. (now, I believe, made a limited company), and, except some mistakes in the numbering, have been carefully executed.

As to making a natural system, or, I may say, a continuous system, in which one group shall run, as it were, into another, even at the present day, and including the fossil animals and birds, I believe to be impossible; but that at some future time links may be discovered, either fossil or recent, which may more nearly connect them than they are connected at present.

THOS. C. EYTON.

EYTON,

January, 1867.

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OSTEOLOGIA AVIUM.

LIST OF PLATES.

No. of Plate.

5 K. Psophia viridis
6 K. Threskiornis melanocephala
7 K. Harpiprion Hagedach
8 K. Totanus glottis
9 K. Scolopax rusticola
10 K. Limosa rufa
11 K. Hæmatopus capensis
12 K. Helias phalænoides
13 K. Glareola pratincola
14 K. Aramus scolopaceus
15 K. Œdicnemus longirostris
1 L. Colymbus septentrionalis
2 L. Podiceps cristatus
3 L. Uria troile
4 L. Eudyptes
5 L. Graculus cristatus
6 L. Sula bassana
7 L. Onocrotalus
8 L. Procellaria gigantea
9 L. Diomedea exulans
10 L. Thalassidroma pelagica
11 L. Croicocephalus ridibundus
12 L. Rhynchops nigra

Details.

Pl. 1, fig. 1. *Sternum of* Aquila chrysaetos
2. ——— Cathartes aura
3. ——— Neophron percnopterus
4. ——— Sarcoramphus gryphus
5. ——— Gyps fulvus
6. ——— Vultur cinereus
7. ——— Serpentarius reptilivorus
8. ——— Cathartes niger
9. ——— Polyborus tharus
10. ——— Gypactos barbatus
Pl. 2, fig. 1. *Metatarsi of* Pandion leucocephalus
2. ——— Aquila cinereus
3. ——— Falco peregrinus
4. ——— Circus cyaneus

No. of Plate.

Pl. 2, fig. 5. *Metatarsi of* Spizaetos cristatus
6. ——— Sarcoramphus papa
7. ——— Nyctea nivea
8. ——— Noctua Tengmalmi
9. ——— Serpentarius reptilivorus
10. ——— Strix delicatulus
Pl. 3, fig. 1. *Sternum of* Falco gyrfalco
2. ——— Pandion leucocephalus
3. ——— Hieracidea berigora
4. ——— Circus cyaneus
5. ——— Ibycter ater
6. ——— Accipiter nisus
7. ——— Milvus migrans
8. ——— Cymindis unicinctus
9. ——— Hierax Bengalensis
10. ——— Pandion haliætus
11. ——— Circaetus brachydactylus
12. ——— Spizaetos cirrhatus
13. ——— Heliastur Ponticerianus
14. ——— Aquila nævia
Pl. 4, fig. 1. ——— Strix delicatulus
2. ——— Nyctea nivea
3. ——— Ketupa javanensis
4. ——— Ephialtes grammicus
5. ——— Strix praticola
6. ——— Nyctale Tengmalmi
7. ——— Asio brachyotus
8. ——— Noctua (from Jamaica)
9. ——— Bubo Bengalensis
10. ——— Strix flammea
Pl. 5, fig. 1. *Pelvis of* Sarcoramphus gryphus
2. ——— Aquila cinereus
3. ——— Nyctea nivea
4. ——— Falco peregrinus
5. ——— Pandion haliætus

OSTEOLOGIA AVIUM.

INTRODUCTION.

CHAPTER I.

Birds, or the class Aves, observes Professor Owen*, "form the best characterized, most distinct and natural class in the whole animal kingdom—perhaps even in organic nature. They present a constancy in their mode of generation and in their tegumentary covering which is not met with in any other of the vertebrate classes. No species of bird ever deviates like the cetacea among mammals, and the serpents among reptiles, and the eels among fishes, from the tetrapodous type of formation which so peculiarly characterizes the vertebrate division of animals."

This constancy to a type renders the distinctive differences between the members of the class less dissimilar than those constituting the other classes of vertebrate animals; probably, also, it is from this cause that the osteology of birds has been so much neglected. This apparent similarity, however, is not so great as might be supposed by the casual observer of a collection of skeletons; and the deeper the study of them is proceeded with, the more distinct will appear the characters which distinguish the different groups.

It is not my intention in the following pages to advocate any particular system of arrangement, let it be binary, tertiary, quinary, or called by any other name with which the fancy of its author may invest it. Not that I disbelieve that a system exists in

* Cyclopædia of Anatomy and Physiology, edited by Dr. Todd, p. 265.

nature, and that a representative one to a certain extent, if not altogether—or, in other words, that animals of one country have certain resemblances to those of another, and take a similar situation in the animal œconomy of their different habitats, but modified to suit the peculiar circumstances under which they exist. I think, also, that a representative system may be carried still further than this—viz. that the groups of one class will to a certain extent represent those of another.

Our present knowledge, however, is far too meagre for us to say with certainty this or that is the arrangement that will suit the whole creation, or, in other words, is the plan of the great Creator.

I do not intend, therefore, to interfere with theoretical arrangements—they have done much good in tempting naturalists to search out affinities and analogies,—but merely to group those birds together which have a similarity of osteological organization. Affinity and analogy are two words which have had given to them very many extraordinary interpretations; but it is not my object to disturb them: whenever either word is used in this work, it will be under the definition given to them by Professor Owen in his Address to the British Association at Leeds*.

It has long been a question whether animals found in a fossil state ought or ought not to be admitted into an arrangement with existing ones. My own impression is, that all animals are portions of one vast scheme of creation, and ought to be classed together; for, as we can seldom say with absolute certainty where a group ends and where it begins—let it be called class, family, subfamily, genus, or species, so nearly do they in many particulars resemble each other,—so also with the connexion between fossil and recent animals; we cannot say precisely where those which have been contemporary with the present existing animals end and where they begin, or, in other words, where any break existed between the two. For that break to be distinctly marked, there must have been a period in the world's history, since the creation, in which no animal existed, and strata formed during it.

In order to render this work intelligible to persons not previously acquainted with the subject, it will be necessary to point out the names given by anatomists to the different bones constituting the skeleton of Birds; these names refer to the representatives of those bones in Mammalia from which their names are taken. The following references to Plates I., II. and III. will show their position and names.

The most difficult portion of the skeleton to understand is the head—the bones composing it becoming anchylosed together in a very early stage of the animal's existence; the remaining bones can be made out with comparative ease.

On account of this early anchylosis of the bones of the head, it is necessary, in order to trace their boundaries, to employ that of a young bird; the drawings relating to the head, therefore, in Plates II. and III., are taken from that of a young Ostrich in my possession: the head of the Ostrich has been before employed in most anatomical works for the same purpose, on account of its size.

* Professor Owen's Address to the British Association at Leeds, p. 18.

The numbers in Plate II. figs. 1, 2, 3, and in Plate III. figs. 1, 2, designate the same bone in each. In Plate I., which is that of an old Osprey, *Haliaëtus leucocephalus*, in consequence of anchylosis having taken place, the separate bones cannot be distinguished so distinctly as in the other Plates; the numbers, therefore, are only placed upon those bones which are pretty well defined and which are useful in description, with the exception of the palatine and other bones forming the roof of the mouth, which are not visible.

Plate IV. represents the head of the Emeu, the Peregrine Falcon, and a Podargus, showing variations in the disposition of the cranial bones and the development of the interarticular bones.

Bones of the Head.

Plate II. figs. 1, 2, 3. Plate III. figs. 1, 2.

1. Frontal bones.
2. Parietal bones.
3. Nasal bones.
4. Temporal bones.
5. Os quadratum.
6. Intermaxillary bones.
7. Ethmoid bone.
8. Fig. 1. Plate I. Palatine bones.
9. Malar or zygomatic bones.
10. Foramen magnum.
11. Atlar tubercle.
12. Supraoccipital
13. Basilar
14. Condyloid

} portions of the occipital bone.

15. Sphenoid bone.
16. Eustachian tubes.
17. Vomer.
18. Omoid bones on pterygoid portion of the sphenoid bone.
19. Fig. 3. Plate I. Palatine bones.
20. Superior maxillary bones.
21. Opercular portion of the inferior maxillary bone.
22. Condyloid portion of the inferior maxillary bone.
23. Rami of the maxillary bone.

Bones of the Trunk and Extremities.

Plate I.

1. Humerus.
2. Ulna.
3. Radius.
4. Carpus.
5. Metacarpus.
6. 1st phalanx.
7. 2nd, or terminal phalanx.
8. Thumb.
9. Coracoid bones.
10. The two rami of the furculum.
11. Scapula.
12. Glenoid cavity.
13. Femur.
14. Tibiæ.
15. Fibulæ.
16. Metatarsus.

17. Phalanges of the anterior toes.
18. Trochlea of the three bones of which the metatarsus is formed, to which the anterior phalanges are articulated.
19. Splint by which the hallux is articulated with the metatarsus.
20. Phalanges of the hallux or hind toe.
21. Tarsal bones anchylosed to the proximal extremity of the metatarsus.
22. Sternum.
23. Keel of the sternum.
24. True ribs with their posterior styliform processes.
25. False ribs not joining the sternum.
26. Sternal ribs uniting the true ribs with the sternum.
27. Ilium,
28. Ischium, } together forming the pelvis.
29. Os pubis,
30. Ischiadic foramen.
31. Obturator foramen.
32. Cervical vertebræ.
33. Dorsal ditto.
34. Sacral ditto.
35. Caudal ditto.

Bones of the Head.

Plate I.

1. Orbital septa.
2. Bony case of the brain, formed by the parietal, frontal, and occipital bones anchylosed together.
3. Os quadratum.
4. Lacrymal bones.
5. Malar or zygomatic bone.
6. Nasal bones.
7. Upper maxillary bones.
8. Lower maxillary bones.

In Plate IV. the numbers on the Crania show the same Bones in each.

1. 1. Palatine bones.
2. 2. Ossa quadrata.
3. 3. Interarticular bones.
4. 4. Lateral portions of the palatine bones.
5. 5. Intermaxillary bones.
6. Sphenoid bone.

The head of Birds, as among Mammalia, forms the bony case for the brain, with an anterior portion forming the face and jaws. The chief characters which can be derived from the head are the shape of the vertex or top, whether it is convex or flattened, and with or without a longitudinal depression in the centre: the shape of the maxillaries, which give form to the bill: the portion of the ethmoid forming the septa between the orbits, whether it is entire or not; this character, however, varies with age, the form of the lacrymal bones, and the direction in which their extremities point: the form of the occiput, if with a large crest, a modified one, or none at all, and if indented with a channel or not for the reception of the masseter muscles: the shape of the foramen magnum: the shape of the palatine bones, and the interarticular uniting them with the os quadratum, and whether any branch goes from them to the sphenoid, or what portion of the roof of the mouth is cased with the intermaxillary bones.

In the bones of the trunk the greatest modifications occur, particularly in the sternum;

some of these, however, are not to be absolutely relied upon, namely the characters derivable from the fissures and foramina at the posterior margin. I have many skeletons in which the two sides do not correspond. The order Raptores seems particularly liable to this variation; and I have also an *Alcedo* which has a foramen on one side and a fissure on the opposite one. The form of the keel, and whether it is produced anteriorly or not, forms a valuable character.

The characters found in the bones of the pelvis are very well marked; they depend chiefly upon the proportion between the breadth and length, the size and shape of the obturator and ischiadic foramina, the relative position of the ilium and ischium, and whether the former is expanded anteriorly or not.

The ribs vary much in their form, breadth, and strength, and in the length of the posterior styliform process.

The bones of the anterior extremity are composed of the scapula, coracoid, furculum, and wing bones; they vary much: the former is much flattened or rounded, straight or much deflexed; the coracoids are long or short, strong, weak, or are pierced with an axillary foramen; the furculum is sometimes found much arched forwards, at others nearly straight—sometimes reaching as far as the point of the keel and anchylosed to it, in other birds not reaching it, and in some altogether wanting.

The wing bones are very remarkable in some of the water birds (*Spheniscus*), forming a sort of fin, and furnish good characters in the proportionate length of one to the other.

The bones of the posterior extremity vary very much in their strength, length, and relative proportions one to the other. Very valuable characters are also derivable from the metatarsus: whether the component parts of it, named by Professor Owen the ectometatarsal, mesometatarsal, and entometatarsal, are perfectly anchylosed together, or for what portion of their length they are so; and also in the position of the trochlea for the articulation of the phalanges forming the feet. In the phalanges themselves no very distinct character is observable, except in the terminal ones, the character of which can be equally well observed externally in their horny covering or claw.

The vertebral column, although substantially following the same type, is subject to considerable variation, besides that which is derived from the numbers of the vertebræ of the different regions; and in one instance (*Spheniscus*) some of them have a ball and socket articulation.

CHAPTER II.

The following arrangement of Birds was proposed by me, with some modifications, at the Leeds Meeting of the British Association for the Advancement of Science; it is founded almost entirely on osteological characters, which it is the object of this work to illustrate, without any bias towards any preconceived theory; and should I at any time, in the acquisition of new materials, see reason for its alteration, I shall make the necessary changes with the greatest pleasure. I have endeavoured to divide the Class into Orders in such a manner that distinct osteological characters shall be observable between them, which it would be useless to mention here, as they will be treated of in detail hereafter; it will be instructive, however, to examine how far the general habit of each Order agrees with the following arrangement:—

CLASS II. AVES.

Order I. RAPTORES.

Fam. 1. Vulturidæ. Fam. 2. Falconidæ.
Fam. 3. Strigidæ.

Order II. VOLITORES.

Fam. 1. Trochilidæ. Fam. 2. Cypselidæ.

Order III. OMNIVORES.

Fam. 1. Caprimulgidæ. Fam. 3. Alcedinidæ.
Fam. 2. Trogonidæ. Fam. 4. Buceridæ.

Order IV. PREHENSORES.

Fam. 1. Psittacidæ. Fam. 2. Rhamphastidæ.

Order V. SCANSORES.

Fam. 1. Picidæ.

Order VI. ERUCIVORES.

Fam. 1. Cuculidæ. Fam. 2. Musophagidæ.

Order VII. INSESSORES.

Fam. 1. Menuridæ.
Fam. 2. Certhiadæ.
Fam. 3. Melliphagidæ.
Fam. 4. Paridæ.
Fam. 5. Alaudidæ.
Fam. 6. Motacillidæ.
Fam. 7. Sylviadæ.
Fam. 8. Muscicapidæ.
Fam. 9. Ampelidæ.
Fam. 10. Laniidæ.
Fam. 11. Turdidæ.
Fam. 12. Oreolidæ.
Fam. 13. Sternidæ.
Fam. 14. Fringillidæ.
Fam. 15. Tanagridæ.
Fam. 16. Corvidæ.

Order VIII. BIPOSITORES.

Fam. 1. Columbidæ.
Fam. 2. Dididæ.

Order IX. RASORES.

Fam. 1. Tetraonidæ.
Fam. 2. Phasianidæ.

Order X. CURSORES.

Fam. 1. Struthionidæ.

Order XI. LITTORES.

Fam. 1. Otidæ.
Fam. 2. Charadriidæ.
Fam. 3. Scolopacidæ.
Fam. 4. Tringidæ.

Order XII. GRALLATORES.

Fam. 1. Ardeidæ.
Fam. 2. Rallidæ.

Order XIII. NATATORES.

Fam. 1. Anatidæ.
Fam. 2. Colymbidæ.
Fam. 3. Alcidæ.
Fam. 4. Pelecanidæ.
Fam. 5. Laridæ.

The principal modes in which birds obtain their food are the following:—

By the power of flight in direct chase;
By the power of approaching their food unobserved;
By the power of climbing;
By the power of scratching and running;
By the power of wading; and
By the power of swimming and diving.

If divisions of birds are made strictly according to the above qualities, we shall find many that do not come up to the greatest perfection of development of each particular power, but are endowed with a modification of it, or with an admixture of two or more of them, and some cases in which the divisions above mentioned are scarcely recognizable in consequence of this admixture. It is in these cases that anatomy comes to our assistance, and helps us to group and point out the orders and families that are allied.

The first three orders belong eminently to the first group, or those which are endowed with great power of flight, with a modification among the Owls and Goat-suckers, the softness of the feathers enabling them to approach their prey unawares. The Owls also and the whole of Omnivores have the sense of hearing highly developed in addition, as it is the habit of many of them to sit perched upon some tree or stone until prey approaches, when they give chase; their acute sense of hearing, therefore, assists them materially in detecting its approach.

The second order, Volitores, has quickness of flight in the greatest degree of development known among birds, and consequently has a corresponding arrangement of wing differing from other birds. The food of the Humming-bird is insects, obtained in two ways—by the insertion of the tongue into flowers, and also by direct chase.

The orders Prehensores, Scansores, and Erucivores have their feet adapted chiefly for climbing. The first, or Parrots, are an exceedingly curious group, and use the bill for climbing equally with the feet; the latter are also used for the purpose of holding their food while in the act of devouring it.

The highest powers of true climbing, where the feet only are used, we find among the Scansores or Woodpeckers, which are able to run along the perpendicular and horizontal boughs of trees with the greatest facility.

Many of the Erucivores have the toes placed in pairs, two before and two behind; but, except in this structure, they do not agree in any particular with the other climbers. One group among them, the Turacoes, are without this structure. Many of them feed much on the ground, and have an elongated hind toe. The power of climbing is doubtless useful to them in searching for their food, which consists principally of caterpillars and insects.

The Insessores or Perchers appear to have been hitherto a sort of refuge for the destitute, as almost all birds were placed in it for which no convenient place could be found; as constituted, however, in the present arrangement, the only deviation that I am aware of from the general type of skeleton is in one family, the Menuridæ, in which case I have followed the example of my predecessors and placed it in Insessores, because I do not know where else to put it. The next three families, Certhiadæ, Melliphagidæ, and Paridæ, have a decided scansorial tendency, but very much modified, the toes being placed three in front and one behind; but although their powers in this particular are quite equal to that of the Woodpeckers, there is nothing in the skeleton which differs from the Insessorial type.

All the other families of Insessores are more or less perching birds, which may be defined as a power of climbing very slightly developed. Two groups, the Motacillidæ and Anthidæ, have the lengthened hind claw common in many groups of ground-feeding birds; we find in them, therefore, a power of scratching and running joined to that of climbing; and amongst the Hirundinidæ or Swallows, a considerable power of flight joined to that of perching.

The eighth order, Bipositores, are a group well defined, having a large crop, of which all the families previously mentioned are destitute. In them we find a great power of wing, a certain degree of migratory habit, and feet in general much better adapted for perching than for scratching; thus the farmer often says that he does not mind the Pigeons on his new-sown wheat, as they do not scratch, merely taking that which is on the surface. There are, however, a few exceptions, as the Crowned Pigeons, which have feet fitted for running and perching, the metatarsi being much lengthened. Dr. Melville has discovered a peculiar structure in this part, which distinguishes the Pigeons from other orders, and unites the extinct family of Dodos with them. Generally the Pigeons only lay two eggs, whence the name I have given to them.

The Rasores I have divided into two groups, the Tetraonidæ and Phasianidæ, although there is no very distinct line of demarcation between them. The typical species present a very great difference in external form, even if it is merely in the development of the tail—for instance, between the Partridge and Peacock. Both are gifted with great running and scratching powers, but without any great powers of flight; consequently none of them, that I am aware of, are migratory. The typical species of the former roost on the ground, seldom perching in trees, while the latter almost invariably do so. They both have a moderate-sized crop; but it is not nearly so highly developed as among the Pigeons.

The Cursores are adapted solely for terrestrial life, and have no power of flight; consequently we find the greatest development in that of running, the rudimentary wings being employed as a sort of oars to assist in their progression; they may be considered as the types of running structure among birds.

The eleventh order, Littores, have great power of running, but not nearly so much as in Cursores, which might be expected when the power of flight is largely developed also; for, throughout the animal kingdom, one power is never found largely developed except at the expense of another. Their legs also are fitted for wading in shallow water, the tibiæ not being feathered down to the metatarsus.

The twelfth order, Grallatores or Waders, have a very great length of leg, the tibiæ much denuded, and a formation of the joint between the tibia and metatarsus so contrived that they can stand for hours together without muscular action (Ardeidæ); and in the following family (Rallidæ) we find the fitness for wading diminished, and a development of a power of swimming.

The powers of the next order are at once well defined by the name Natatores, or swimming birds; and the whole of the members of it have either webbed or lobated

feet; some few birds, however, are found, in the first family, Anatidæ, which feed upon land, chiefly on the seeds of grasses, having the webs not extending much more than half the length of the toes, or with the anterior edge much scolloped out.

The Colymbidæ and Alcidæ may be considered as possessing the greatest powers of swimming and diving. In one genus (*Spheniscus*), the wings, instead of being useful for flight, are converted into a sort of fin, the bones composing the wing being much flattened; the hinder extremities are very muscular; and the legs are placed far backwards. In some of the Pelecanidæ and Laridæ we find great power of wing developed at the expense of the diving powers, which are limited and governed by that of the wing. Their mode of taking prey is by soaring high into the air, closing the wings, and making a hawk-like swoop upon fish near the surface.

Order I. RAPTORES.

Fam. 1. FALCONIDÆ.

Subfam. 1. FALCONINÆ.

FALCO, *Linn.*

Peregrinus, *Linn.*

Type of Raptores, Falconidæ, Falconinæ.

Cranium of moderate size; the bones composing it strong, depressed, and flattened from the base of the nasal bones to the vertex, and with a slight longitudinal channel; occipital ridge well defined; occipital protuberance very large; a transverse, somewhat arcuated depression extending across the base of the nasal bones. Lacrymals largely developed, long, bounding nearly the whole of the upper edge of the orbits. Orbital septa nearly perfect in old specimens. Foramen magnum large, nearly circular, and placed almost horizontally; nasal orifices round, with their margin entire. Upper maxillaries hooked at the point, and with a distinct notch, covering only a small portion of the roof of the mouth. Palatine bones extending far backwards, anteriorly for two-thirds of their length consisting of a long, horizontally flattened strip of bone, articulated together for their posterior third; a large, strongly deflected flap in the centre arising near their middle in length, laterally much expanded, and rounded on their posterior lateral termination. Interarticular bones flattened, and slightly twisted on their axis. Atlar tubercle small, slightly transversely oval; condyloid processes of the occipital bone very slightly developed.

Sternum very convex, broadest posteriorly; ridges to which the small pectoral muscles are attached strongly marked; posterior margin perforated with two foramina. Manubrial process well developed, turned upwards perpendicularly, flattened at the tip. Keel extending to the posterior edge of the sternum; its inferior edge slightly rounded; point prominent, produced as far as the manubrial process; anterior edge only slightly curved inwards.

Pelvis very strong; the outline of the sacral vertebræ not traceable on its upper surface except by some small foramina placed irregularly; a very slight cavity on its dorsal aspect between the two sides of the ilium; more than double the width of its anterior diameter posteriorly. Ilium extending far over the ischium and os pubis laterally; the posterior points of the ischium diverging. Os pubis not extending forwards beyond the centre of the cotyloid cavity. Ischiadic foramen very large; obturator small.

Ribs narrow, thick; styliform process long, the point directed very much upwards.

Furculum very strong, much arched forwards, the rami flattened laterally and broad, with only a very slight tubercle at its ligamentous junction with the sternum.

Coracoids of moderate length, very strong, much expanded at their articulation with the sternum, much hollowed out on the inside below their junction with the scapula, and with a strong osseous strap confining the pectoral tendons.

Scapula strong, very slightly deflected, rounded on its outward side for its anterior half, becoming flattened and expanded towards the tip, which is sloped to a point from each margin.

Wing strong; posterior metacarpal bone flattened, broadest at its proximal extremity, not arched, but with a large space between it and the anterior metacarpal.

Femur not much shorter than the tibia; trochanters not very largely developed.

Tibia rounded, with a slight ridge on its internal surface, and becoming slightly triangular at its upper extremity.

Metatarsus very strong and short, the division between the three bones forming it marked by two intermediate foramina at their proximal extremity; calcaneal process highly developed, from which a strong keel is carried downwards on the back of the mesometatarsal bone, gradually becoming obliterated at its distal extremity; anterior side much flattened and slightly excavated at its proximal end; a well-marked knob on the inner side, where the sheath confining the extensor muscles of the toes has its origin; central trochlea very prominent, the lateral ones bent backwards.

Vertebral column very strong; the lateral processes of the penultimate and next four cervical vertebræ strongly developed; the dorsal spine of the atlas long, and with a transverse keel extending on each side from it to the lateral margins; the second vertebra also with a slight dorsal spine; from the third to the ninth without any dorsal spine; the tenth and eleventh with a flattened dorsal spine pointing forwards. Terminal caudal vertebræ very large, and highly developed perpendicularly.

Measurements.

	Tenths.		Tenths.
Length of humerus	28	Breadth of posterior margin of sternum	20
Ulna	32	Breadth of anterior margin of sternum	15
Metacarpus	19	Length of pelvis	27
Femur	24	Greatest breadth	13
Tibia	30	Length of head	24
Metatarsus	20	Greatest breadth	13
Length of sternum	25		

Illustrations.

Skeleton of *Falco peregrinus*, Plate III. A.
Metatarsus, Plate II. A. fig. 3.
Palatine bones, Plate VI. A. fig. 5.
Pelvis, Plate V. A. fig. 4.
Coracoids, scapula, and furculum, Plate VII. A. fig. 2.
Base of the cranium, Plate IV. fig. 3.

FALCO, *Linn.*

Gyrfalco, *Linn.*

I have only the sternum of this bird, which does not differ from that of *Falco peregrinus* except in size, and in the keel being deeper in proportion to the breadth of the sternum.

Since the above was written, I have obtained, from a skin, the head, wing, and leg bones of this bird, and find them also not distinguishable from those of *F. peregrinus* except in size and proportions.

Measurements.

	Tenths.		Tenths.
Length of humerus	44	Breadth of posterior margin of sternum	22
Length of ulna	50	Breadth of anterior margin of sternum	17
Length of metacarpus	28	Depth of keel	11
Length of femur		Length of head	30
Length of tibia	44	Breadth of head	21
Length of metatarsus	26	Length of pelvis	
Length of sternum	35	Breadth of pelvis	

FALCO, *Linn.*

Aurantius, *Lath.*

The skeleton of this bird does not differ, except in measurements, from *F. peregrinus*; the sternum is somewhat longer in proportion to its width.

Measurements.

	Tenths.		Tenths.
Length of humerus	16½	Breadth of posterior margin of sternum	9
Length of ulna	19	Breadth of anterior margin of sternum	7
Length of metacarpus	11	Depth of keel	4
Length of femur	15	Length of head	18
Length of tibia	22	Breadth of head	10
Length of metatarsus	14	Length of pelvis	17
Length of sternum	14½	Breadth of pelvis	9

HERPETOTHERES, *Vieill.*

Cachinnans, *Linn.*

The cranium agrees with *Falco peregrinus* in its great breadth in proportion to its length, in the shape of the palatine bones, and in the septum being perforated by one central foramen; the nasal orifices are also round and small, with the upper margin slightly projecting; the lacrymal bones are similar, but rather broader. The tarsi agree with *Falco*.

Measurements.

	Tenths.		Tenths.
Length of humerus	31	Breadth of posterior margin of sternum	
Length of ulna	33	Breadth of anterior margin of sternum	
Length of radius	32	Depth of keel	
Length of metacarpus	17	Length of head	26
Length of femur		Breadth of head	18
Length of tibia	35	Length of pelvis	
Length of metatarsus	23	Breadth of pelvis	
Length of sternum			

TINNUNCULUS, *Vieill.*

Alaudarius, *Linn.*

In every respect resembling *Falco*, except in measurements and proportions.

Measurements.

	Tenths.		Tenths.
Length of humerus	21	Breadth of posterior margin of sternum	12
Length of ulna	24	Breadth of anterior margin of sternum	10
Length of radius	22	Depth of keel	$5\frac{1}{2}$
Length of metacarpus	$23\frac{1}{2}$	Length of head	20
Length of femur	19	Breadth of head	$11\frac{1}{2}$
Length of tibia	26	Length of pelvis	20
Length of metatarsus	16	Breadth of pelvis	$10\frac{1}{2}$
Length of sternum	$18\frac{1}{2}$		

TINNUNCULUS, *Vieill.*

Sparverius, *Linn.*

The bones I have of this bird were obtained from a skin, and do not differ from those of *Tinnunculus alaudarius* except in size.

TINNUNCULUS, *Vieill.*

Chickera, *Shaw.*

Also typical.

IERACIDEA, Gould.

Berigora, *Vig. & Horsf.*

Very similar to *Tinnunculus*, but larger and more powerful, the palatine bones covering

nearly the whole of the roof of the mouth, and the metatarsi longer in proportion to the tibiæ.

Sternum with a double foramen on the right side and a single one on the left.

Measurements.

	Tenths.		Tenths.
Length of humerus	30	Breadth of posterior margin of sternum	12
Length of ulna	32	Breadth of anterior margin of sternum	10
Length of radius	30	Depth of keel	5
Length of metacarpus	18	Length of head	24
Length of femur	24	Breadth of head	16
Length of tibia	33	Length of pelvis	24
Length of metatarsus	25	Breadth of pelvis	11
Length of sternum	20		

Illustrations.

Sternum, Plate III. fig. 3. | Palatine bones, Plate VI. fig. 9.

IERAX, *Vig.*

Bengalensis, *Briss.*

The only fragment of this bird that I have seen is one in the British Museum, sent home by Mr. Hodgson. The sternum has, as represented in Plate III. fig. 9, two fissures on each side of the keel, in that respect much resembling the sternum of some Owls.

Illustration.

Sternum, Plate III. A. fig. 9.

Subfam. 2. CIRCINÆ.

ACCIPITER, *Briss.*

Nisus, *Linn.*

The head of *Accipiter* is very similar to that of *Falco*, but has the lacrymals projecting more outwards from the skull, and the upper maxillaries without the notch on their edge.

The sternum is narrower, with the foramina on the posterior margin not so large, the manubrial process longer, and the horizontal plane more convex. The metatarsal bones are longer in proportion to the tibiæ, and are nearly without a calcaneal process, and with a deep channel down them posteriorly; anteriorly they do not differ much from *Falco*, but are not so strongly marked. The bones composing the pelvis are longer and narrower than in *Falco*.

Measurements.

	Tenths.		Tenths.
Length of humerus	23	Breadth of posterior margin of sternum	11
Length of ulna	28	Breadth of anterior margin of sternum	9
Length of radius	25½	Depth of keel	7
Length of metacarpus	13	Length of head	19
Length of femur	21	Breadth of head	11
Length of tibia	29	Length of pelvis	21
Length of metatarsus	24	Breadth of pelvis	11
Length of sternum	23		

ACCIPITER, *Briss.*

Badius, *Gm.*

Has been made into a genus under the name of *Micronisus*. The bones of the body are in the British Museum.

It appears to be similar to *Accipiter nisus*, but with the sternum slightly longer in proportion to its width.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	10
Length of ulna		Breadth of anterior margin of sternum	8
Length of radius		Depth of keel	5
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	18
Length of metatarsus		Breadth of pelvis	9
Length of sternum	17		

ASTUR, *Lacép.*

Magnirostris, *Gm.*

The whole osteology very similar to *Circus*, but with the sternum not quite so convex.

Measurements.

	Tenths.		Tenths.
Length of humerus	29	Breadth of posterior margin of sternum	12½
Length of ulna	31	Breadth of anterior margin of sternum	9
Length of metacarpus	15	Depth of keel	4
Length of femur	24	Length of head	26
Length of tibia	34	Breadth of head	4½
Length of metatarsus	27	Length of pelvis	21
Length of sternum	17	Breadth of pelvis	10

CIRCUS, *Lacép.*

Cyaneus, *Linn.*

Type of Circinæ.

Cranium similar to *Falco peregrinus*, but with the frontal bones not so broad between the orbits. Lacrymals large, extending more outwards than in *Falco*, and further lengthened by a small epilacrymal process articulated to their extremities. The orbital septum perforated with a central foramen. Nasal orifices triangular. Palatine bones with the hinder angles nearly square, and the dependent keel on their internal edges narrow.

Sternum small, very slightly convex, narrow anteriorly; keel not so deep as in *Falco*; inferior edge arched, not produced to the posterior margin of the sternum, receding anteriorly. Posterior margin of the sternum perforated by two small foramina.

Pelvis with the iliac bones much overhanging the bones of the ischium.

Metatarsus with the calcaneal process well developed, but with no ridge carried downwards from it; the ento- and exo-metatarsal elements very much flattened, and folding backwards, while the edge of the mesometatarsal projects forwards, forming an anterior ridge.

The remainder of the skeleton is very similar to *Falco*.

Measurements.

	Tenths.		Tenths.
Length of humerus	41	Breadth of posterior margin of sternum	17
Length of ulna	48	Breadth of anterior margin of sternum	14
Length of radius	47	Depth of keel	$5\frac{1}{2}$
Length of metacarpus	24	Length of head	30
Length of femur	$28\frac{1}{2}$	Breadth of head	17
Length of tibia	40	Length of pelvis	30
Length of metatarsus	30	Breadth of pelvis	15
Length of sternum	26		

Illustrations.

Sternum, Plate III. fig. 4. | Metatarsus, Plate II. fig. 4.

CIRCUS, *Lacép.*

Æruginosus, *Linn.*

I have the sternum only of this bird, which does not differ in form from that of *Circus cyaneus*, except in being destitute of foramina on its posterior margin.

Subfam. 3. MILVINÆ.

MILVUS, *Cuv.*

Regalis, *Linn.*

Type of Milvinæ.

Cranium similar to that of *Falco peregrinus*, but not so strong, and longer in pro-

portion to its width; the space between the upper margins of the orbits much less. Lacrymals wanting. One large orbital foramen in the centre of the septum, and two smaller ones posterior to it.

Foramen magnum rounded above, but with the lower side nearly straight. Atlar tubercle oval. Palatine bones of similar shape to those in *Falco*, but rather broader. Nasal orifices triangular, with the angles rounded.

Sternum convex, with two small foramina on the posterior margin; small pectoral muscle impression very distinct; keel more arched on its inferior edge than in *Falco*, receding anteriorly, and not prolonged to the posterior margin of the sternum.

Pelvis much broader anteriorly in proportion to its posterior diameter than in *Falco*.

Ribs similar to *Falco*, but not so strong.

Metatarsus with the calcaneal process well developed, but without any elevated rib proceeding downwards from it. The entometatarsal flattened, broad, forming a keel on its inner edge.

Remaining bones very similar in form to *Falco*, except in proportional measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	48	Breadth of posterior margin of sternum	17
Length of ulna	57	Breadth of anterior margin of sternum	16
Length of radius	53	Depth of keel	5½
Length of metacarpus	27	Length of head	31½
Length of femur	27	Breadth of head	17
Length of tibia	34	Length of pelvis	35
Length of metatarsus	20	Breadth of pelvis	16
Length of sternum	30		

Illustration.

Sternum, Plate III. fig. 7.

ELANUS, *Sav.*

Melanopterus, *Daud.*

Some fragments obtained from a skin and a body in the British Museum are all I have seen of the bones of this bird.

The cranium is similar in shape to *Milvus*, but with the palatine bones broader and the exterior hinder angles more rounded. Metatarsus similar in shape. The sternum short; the keel not reaching to the posterior margin, which is perforated by two small foramina, and slightly excavated in the centre; the inferior edge of the keel but slightly arched.

Furculum much arched for its anterior third, then nearly straight to the sternum.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	12
Length of ulna		Breadth of anterior margin of sternum	11
Length of radius		Depth of keel	5
Length of metacarpus		Length of head	22
Length of femur		Breadth of head	14
Length of tibia		Length of pelvis	17
Length of metatarsus		Breadth of pelvis	10
Length of sternum	16		

Subfam. 4. BUTEONINÆ.

BUTEO, *Cuv.*

Vulgaris, *Bechst.*

Type of Buteoninæ.

Sternum as described in *Archibuteo*, except in size. Metatarsi very similar to *Circus*, but with the calcaneal process and the keel proceeding downwards from it highly developed, and the fibula extending downwards for two-thirds the length of the tibia. Palatine bones very similar to *Circaëtos*, but more rounded on their outer posterior margins.

Measurements.

	Tenths.		Tenths.
Length of humerus	30	Breadth of posterior margin of sternum	17
Length of ulna	34	Breadth of anterior margin of sternum	12
Length of metacarpus	20	Depth of keel	8
Length of femur	25	Length of head	27
Length of tibia	33	Length of pelvis	28
Length of metatarsus	18	Breadth of pelvis	14
Length of sternum	29		

ARCHIBUTEO, *Brehm.*

Aquilinus, *Hodgs.*

A body of this bird is in the British Museum, sent home by Mr. Hodgson. The sternum is broad in proportion to its length, has two foramina on its posterior margin, and is slightly hollowed out in the centre; the keel is not continued to within an inch of the posterior margin.

Measurements.

	Tenths.		Tenths.
Length of humerus		Length of radius	
Length of ulna		Length of metacarpus	

Measurements (continued).

	Tenths.		Tenths.
Length of femur		Depth of keel	7
Length of tibia		Length of head	
Length of metatarsus		Breadth of head	
Length of sternum	35	Length of pelvis	35
Breadth of posterior margin of sternum	20	Breadth of pelvis	17
Breadth of anterior margin of sternum	18		

ARCHIBUTEO, *Brehm.*

Lagopus, *Brünn.*

I have only the sternum, coracoids, scapula, and furculum of this bird, which do not differ in shape from those of *A. aquilinus* in the British Museum, but slightly in their proportions, the sternum being shorter in proportion to its breadth, and the keel deeper.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	20
Length of ulna		Breadth of anterior margin of sternum	16
Length of radius		Depth of keel	8
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	
Length of metatarsus		Breadth of pelvis	
Length of sternum	32		

POLIORNIS, *Kaup.*

Teesa, *Frankl.*

The body only of this bird is in the British Museum, sent there by Mr. Hodgson; the sternum has two foramina on its hinder margin, and all the bones are very similar to *Buteo.*

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	14
Length of ulna		Breadth of anterior margin of sternum	11
Length of radius		Depth of keel	5
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	14
Length of metatarsus		Breadth of pelvis	11
Length of sternum	20		

10

PERNIS, *Cuv.*

Cristata, *Cuv.*

The body of this bird is in the British Museum, sent there by Mr. Hodgson. Sternum short, without any fissure or foramen on its hinder margin; the inferior edge of the keel rounded. Furculum very much arched. Pelvis of moderate length, and very much expanded on its anterior extremity.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	16
Length of ulna		Breadth of anterior margin of sternum	15
Length of radius		Depth of keel	8
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	30
Length of metatarsus		Breadth of pelvis	15
Length of sternum	28		

Subfam. 5. AQUILINÆ.

AQUILA, *Mœhr.*

Chrysaëtos, *Linn.*

Type of Aquilinæ.

Cranium more elongated in proportion to its width than in *Falco*; orbits flattened above, much rounded posteriorly; large orbital process of the frontal bone much lengthened. Septum of the orbits with one anterior foramen. Foramen magnum of moderate size, placed nearly horizontally. Upper surface of the skull depressed, with a slight longitudinal impression on the vertex, and a strongly marked transverse one at the junction of the nasal bones; occipital ridge and protuberance slight. Nasal orifices posteriorly narrow and gradually expanding forwards, somewhat triangular. Upper maxillaries very much hooked at their extremities, the lateral line slightly waved. Palatine bones similar in general character to *Falco*, but more truncate posteriorly and broader anteriorly in proportion to their hinder expansion; interarticular bones very similar to those of *Falco*, but more expanded; condyles of the occipital bones more developed than in *Falco*.

Sternum more convex than in *Falco*; keel not extending to the posterior margin; anterior edge receding considerably; ridge for the attachment of small pectoral muscles very small; that of the great pectoral well defined; posterior margin nearly straight; no foramen or fissure. Manubrial process strong, short, slightly compressed laterally.

Pelvis similar to *Falco*, but with the posterior lateral ridge of the ilium more developed, and with a deeper impression above the cotyloid cavities.

Ribs similar to *Falco*, but with the posterior end of the styliform process carried much further downwards.

Coracoids and *scapula* very similar to *Falco*, but with the latter more expanded, and the coracoids perforated with a large axillary foramen.

Furculum with a slight process at its junction with the sternum.

The metatarsal bones are without the mesometatarsal ridge extending from the calcaneal process. The remainder of the skeleton is very similar to *Falco*, except in measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	75	Breadth of posterior margin of sternum	25
Length of ulna	86	Breadth of anterior margin of sternum	24½
Length of radius	82	Depth of keel	12
Length of metacarpus	41	Length of head	48
Length of femur	44	Breadth of head	25
Length of tibia	65	Length of pelvis	55
Length of metatarsus	40	Breadth of pelvis	28
Length of sternum	50		

Illustrations.

Palatine bones, Plate VI. fig. 6. | Sternum, Plate I. fig. 1.

AQUILA, *Mœhr.*

Nævia, *Gm.*

Lacrymal bones very broad and long, extending half-way over the orbits, rounded at their extremities. Palatine bones damaged.

Sternum with a small foramen on each side; in other respects similar to *Aquila chrysaëtos.*

Illustration.

Sternum, Plate III. fig. 14.

AQUILA, *Mœhr.*

Imperialis, *Bechst.*

The body of this bird is in the British Museum; it does not appear to differ from *A. chrysaëtos.*

Measurements.

	Tenths.		Tenths.
Length of humerus		Length of femur	
Length of ulna		Length of tibia	
Length of radius		Length of metatarsus	
Length of metacarpus		Length of sternum	48

Measurements (continued).

	Tenths.		Tenths.
Breadth of posterior margin of sternum	25	Breadth of head	
Breadth of anterior margin of sternum	24	Length of pelvis	45
Depth of keel	10	Breadth of pelvis	11
Length of head			

AQUILA, *Mœhr.*

Bonelli, *Temm.*

A fragment only of this bird is in the British Museum. The sternum has two foramina on the posterior margin, which is slightly excavated in the centre; the keel does not reach the hinder margin of the sternum.

AQUILA, *Mœhr.*

Audax, *Lath.*

The head and leg bones were obtained from a skin, and are precisely similar to those of the Golden Eagle, but smaller, and not so powerful.

PANDION, *Sav.*

Haliaëtus, *Linn.*

Cranium broader in proportion to its length than in *Aquila*. Lacrymal bones large and broad, tapering towards their points, which are rounded. Palatine bones wanting.

Sternum similar to *Aquila*, except in dimensions and in having the keel receding more, with the point somewhat bifid anteriorly.

The *coracoids* similar to *Aquila*, but with the axillary foramen very small. Furculum without any process at the junction of the rami. Scapula similar, but not so much expanded. The whole skeleton weaker.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	21½
Length of ulna	75	Breadth of anterior margin of sternum	21
Length of radius	74	Depth of keel	8
Length of metacarpus	31½	Length of head	42
Length of femur	31	Breadth of head	25½
Length of tibia	46	Length of pelvis	39
Length of metatarsus	35½	Breadth of pelvis	19
Length of sternum	36		

Illustrations.

Pelvis, Plate V. fig. 5. | Sternum, Plate III. fig. 9.

HALIAËTUS, *Sav.*

Albicilla, *Linn.*

Cranium scarcely distinguishable from that of *Aquila*; the whole head, however, is larger and stronger, and the foramen magnum more square. The sternum is much longer in proportion to its width than in *Aquila*, but in other respects similar. Pelvis precisely similar, except in size, the present one being the largest.

In the remaining bones I cannot perceive any difference in structure between *Haliaëtus albicilla* and *Pandion Haliaëtus*, except in the proportional measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	85	Breadth of posterior margin of sternum	25
Length of ulna	97	Breadth of anterior margin of sternum	27
Length of metacarpus	43	Depth of keel	8
Length of femur	49	Length of head	47
Length of tibia	65	Breadth of head	25
Length of metatarsus	40	Length of pelvis	52
Length of sternum	57	Breadth of pelvis	22

Illustration.

Pelvis, Plate II. fig. 2.

HALIAËTUS, *Sav.*

Leucocephalus, *Linn.*

Not differing in structure from the last.

Measurements.

	Tenths.		Tenths.
Length of humerus	83	Length of sternum	62
Length of ulna	97	Breadth of posterior margin of sternum	29
Length of radius	91	Breadth of anterior margin of sternum	28
Length of metacarpus	41	Length of head	55
Length of femur	45	Breadth of head	27
Length of tibia	57	Length of pelvis	60
Length of metatarsus	34	Breadth of pelvis	24

Illustrations.

Metatarsus, Plate II. fig. 1. | Skeleton in Plate I.

HALIAËTUS, *Sav.*

Leucogaster, *Gm.*

The bones were obtained from a skin: the whole of the top of the head very much flattened, more so than in *albicilla*; the other bones are precisely similar in form, but weaker.

HALIAËTUS, *Sav.*

Macei, *Temm.*

Similar to *Haliaëtus leucocephalus*, but with a foramen on each side of the posterior margin of the sternum. In the British Museum.

HALIASTUR, *Selby.*

Indus, *Bodd.*

Similar to the other Sea Eagles, except in measurements, and in having two foramina on the posterior margin of the sternum. In the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	42	Breadth of posterior margin of sternum	14
Length of ulna	49	Breadth of anterior margin of sternum	13
Length of radius	48	Depth of keel	6
Length of metacarpus	22	Length of head	28
Length of femur	25	Breadth of head	15
Length of tibia	32	Length of pelvis	25
Length of metatarsus	20	Breadth of pelvis	12
Length of sternum	22		

Illustration.

Sternum, Plate III. fig. 13.

CUNCUMA, *G. R. Gray.*

Leucogaster, *Gm.*

Similar to *Haliaëtus*, but without any foramina on the posterior margin of the sternum. In the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	73	Breadth of posterior margin of sternum	23
Length of ulna	89	Breadth of anterior margin of sternum	22½
Length of metacarpus	40	Depth of keel	11
Length of femur	42	Length of head	44
Length of tibia	59	Breadth of head	21
Length of metatarsus	38	Length of pelvis	47
Length of sternum	51	Breadth of pelvis	22½

ICHTHYAËTUS, *Lafres.*

Bicolor, *G. R. Gray.*

Similar to the other Fishing Eagles, but with the sternum very long and narrow;

the posterior margin indented by two small foramina. The bones of the body are in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	17
Length of ulna		Breadth of anterior margin of sternum	18
Length of radius		Depth of keel	8
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	40
Length of metatarsus		Breadth of pelvis	18
Length of sternum	38		

GERANOAËTUS, *Kaup.*

Melanoleucos, *Vieill.*

Similar to the other Fishing Eagles; the sternum has a foramen on each side of the posterior margin. The skeleton is in the British Museum, under the name of *Haliaëtus aguia.*

Measurements.

	Tenths.		Tenths.
Length of humerus	60	Breadth of posterior margin of sternum	25
Length of ulna	72	Breadth of anterior margin of sternum	21
Length of metacarpus	34	Depth of keel	11
Length of femur	42	Length of head	44
Length of tibia	59	Breadth of head	25
Length of metatarsus	42	Length of pelvis	42
Length of sternum	39	Breadth of pelvis	21

HELOTARSUS, *Smith.*

Ecaudatus, *Daud.*

Similar to *Haliaëtus*, but with the sternum and pelvis longer; a foramen on each side of the posterior margin of the former. The specimen is in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	60	Breadth of posterior margin of sternum	24
Length of ulna	77	Breadth of anterior margin of sternum	22
Length of metacarpus	30	Depth of keel	10
Length of femur	33	Length of head	41
Length of tibia	49	Breadth of head	23
Length of metatarsus	29	Length of pelvis	46
Length of sternum	44	Breadth of pelvis	18

SPIZAËTUS, *Vieill.*

Cirrhatus, *Kaup.*

Cranium broader in proportion to its length than in *Aquila*. Lacrymals very long, terminating in an epilacrymal process. Palatine bones similar in shape to *Aquila*, but much narrower as they approach the hinder portion of the head; orbital septum with one large central foramen.

Sternum similar in shape to *Aquila*. My specimen, which is that of rather a young bird, has two small foramina on the right side of the posterior margin of the sternum, and only one on the other. In other respects the skeleton resembles *Aquila*; but some of the measurements approach *Circus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	45	Breadth of posterior margin of sternum	17
Length of ulna	52	Breadth of anterior margin of sternum	16
Length of radius	51	Depth of keel	6
Length of metacarpus	24	Length of head	36
Length of femur	34	Breadth of head	20
Length of tibia	49	Length of pelvis	34
Length of metatarsus	38	Breadth of pelvis	16
Length of sternum	31		

Illustrations.

Sternum, Plate III. fig. 12.
Metatarsus, Plate II. fig. 5.
Palatine bones, Plate VI. fig. 8.

Fam. 2. VULTURIDÆ.

Subfam. 1. VULTURINÆ.

SARCORAMPHUS, *Dum.*

Gryphus, *Linn.*

Type of Vulturidæ and Vulturinæ.

The whole skeleton, as in *Falconidæ*, very strong.

Cranium longer in proportion to its width than among the *Falconidæ*. The process of the frontal bones bounding the posterior portion of the upper part of the orbits triangular and lengthened; the orbital septum with a large anterior perforation occupying nearly one-half of the septal plate, and a smaller one posteriorly. Foramen magnum large, rounded, placed nearly perpendicularly. Upper surface of the cranium slightly flattened on the vertex; no central longitudinal depression. Occipital ridge not very much developed; occipital protuberance large. The whole of the bones forming the anterior part of the head strongly anchylosed together; the nasal orifices are of an

elongated oval shape; a deep transverse impression at the junction of the nasal with the frontal bones. Upper maxillaries hooked at the point, and with the margins slightly waved. Palatine bones extending far backwards to their articulation with the interarticular bone, broad for their whole length, but most dilated posteriorly; the outer margin of the posterior portion bent downwards; the central plates placed nearly perpendicularly, triangular, with the apex pointing backwards. Interarticular bones with an expanded head at their articulation with the ossa quadrata, anterior to which they are contracted into a small rounded neck, from which they become gradually more expanded to their junction with the palatine bones. Condyloid portions of the occipital bones very highly developed. *Vertebræ* very strong and powerful, very broad; the four next to the atlas with the dorsal process strongly developed.

Sternum convex; inferior edge of the keel very much rounded, and deepest in the centre; anterior edge receding considerably behind the manubrial process, which consists of a strong, thick, quadrate tubercle; the pectoral muscular ridges prominent. Posterior margin in a young bird with two indentations, which are nearly obliterated in the old one.

Pelvinal bones very strong; the anchylosis between the sacral vertebræ and the ilium marked with small punctures on the posterior portion of the pelvis; the ilium does not project far over the ischium, and the latter is placed nearly perpendicularly to the former. Ischiadic foramen oval and large; obturator foramen consisting of a narrow slit extending from the extremity of the ischium to within an inch of the cotyloid cavity, where it becomes suddenly enlarged and oval.

Furculum very strong; the rami broad, and laterally compressed for their upper halves, then becoming narrower and more rounded, with a slight pointed process extending nearly to the anterior edge of the keel of the sternum.

Coracoids much expanded at both extremities and at their articulation with the sternum, extending beyond its lateral margin.

Scapula of moderate strength, falciform, with a slight depression on its external surface.

Humerus of great power, and very much expanded at its proxmal extremity; muscular ridges very distinct.

Ulna slightly triangular, at proximal extremity much enlarged.

Radius slightly flattened on its upper surface.

A large space between the metacarpal bones; the hinder one flattened horizontally at its distal, and perpendicularly at its proximal extremity.

Femur with the trochanter highly developed; the distal extremity much enlarged.

Fibula anchylosed to the tibia for its whole length.

Metatarsus very much excavated in front at its proximal end, with two small foramina marking the divisions between the metatarsal bones; calcaneal process of moderate size, with a slight ridge continued from it down the back of the metatarsal bone for about one-third of its length.

Measurements.

	Tenths.		Tenths.
Length of humerus	110	Breadth of posterior margin of sternum	37
Length of ulna	130	Breadth of anterior margin of sternum	34
Length of radius	125	Depth of keel	16
Length of metacarpus	55	Length of head	62
Length of femur	60	Breadth of head	22
Length of tibia	94	Length of pelvis	73
Length of metatarsus	50	Breadth of pelvis	38
Length of sternum	67		

Illustrations.

Palatine bones, Plate VI. fig. 1. | Sternum, Plate I. fig. 4. | Skeleton, Plate I. A.

SARCORAMPHUS, *Dum.*

Papa, *Linn.*

Cranium similar to *S. gryphus* in shape, but with the foramina perforating the orbital septum much smaller; the occipital ridge very slightly developed in the centre, more so than on the sides; the protuberance also slight; the external edges of the palatine plates bent more downwards than in *S. gryphus*. Interarticular bones wanting.

Sternum similar, but with the posterior margin indented with two large open fissures.

Pelvis and the remainder of the skeleton also similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	66	Breadth of posterior margin of sternum	24
Length of ulna	83	Breadth of anterior margin of sternum	21
Length of metacarpus	35	Depth of keel	10
Length of femur	36	Length of head	
Length of tibia	65	Breadth of head	
Length of metatarsus	36	Length of pelvis	55
Length of sternum	42	Breadth of pelvis	22

Illustrations.

Metatarsus, Plate II. fig. 6.
Pelvis, Plate V. fig. 1.
Scapula, coracoid, and furculum, Plate VII. fig. 1.

CATHARTES, *Ill.*

Aura, *Linn.*

Cranium very similar to *Sarcoramphus gryphus*, but with the anterior angles of the frontal bones projecting further; the nasal orifices more open in proportion to their length, and with the orbital septum nearly perfect.

Sternum in general shape similar to *Sarcoramphus*, but with two large fissures on the

posterior margin next the keel, and two fissures exterior to them; the remaining portions of the skeleton are very similar except in the measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	61	Breadth of posterior margin of sternum	22
Length of ulna	69	Breadth of anterior margin of sternum	18
Length of radius	68	Depth of keel	8
Length of metacarpus	34	Length of head	39
Length of femur	29	Breadth of head	15
Length of tibia	48	Length of pelvis	32
Length of metatarsus	25½	Breadth of pelvis	13½
Length of sternum	31		

Illustration.

Sternum, Plate I. fig. 2.

CATHARTES, *Ill.*

Fœtens, *Ill.*

The posterior margin of the sternum differs from that of *aura* in having only one large foramen on each side of the keel; the centre is slightly produced and pointed; the whole sternum is also more convex. The sternum is all I possess of this bird.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	24
Length of ulna		Breadth of anterior margin of sternum	22
Length of radius		Depth of keel	9
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	
Length of metatarsus		Breadth of pelvis	
Length of sternum	40		

Illustration.

Sternum, Plate I. fig. 8.

NEOPHRON, *Sav.*

Percnopterus, *Linn.*

The shape of the bones forming the cranium is very similar to those of the type of the family, but the maxillaries are more slender. The palatine bones taper much more anteriorly, are not so much deflexed on their interior edges, and have their hinder extremities more angular; the foramen magnum is not placed so perpendicularly.

Sternum also similar to that of the type, but with two small foramina on its posterior margin, the right one of which, in my specimen, is the largest.

Scapula broader near its extremity, but in general form the same.

The coracoids have a small axillary foramen near their junction with the scapula, which is not present in *Sarcoramphus*, and in which this bird resembles the Eagles. The fibulæ also are more lengthened than in the type.

Measurements.

	Tenths.		Tenths.
Length of humerus	59	Breadth of posterior margin of sternum	22
Length of ulna	66	Breadth of anterior margin of sternum	21
Length of radius	65	Depth of keel	8
Length of metacarpus	30	Length of head	40
Length of femur	33	Breadth of head	17
Length of tibia	45	Length of pelvis	46
Length of metatarsus	29	Breadth of pelvis	20
Length of sternum	39		

Illustrations.

Palatine bones, Plate VI. fig. 3. | Sternum, Plate I. fig. 3.

NEOPHRON, *Sav.*

Monachus, *Burch.*

Sternum broad anteriorly, much narrowed posteriorly; the hinder margin much scolloped out in the centre; keel not extending to the hinder margin.

Pelvis short, very broad, much more so than in any Vultures I have examined.

Furculum very much arched.

The above fragments are in the British Museum, sent by Mr. Hodgson.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	35
Length of ulna		Breadth of anterior margin of sternum	50
Length of radius		Depth of keel	10
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	75
Length of metatarsus		Breadth of pelvis	30
Length of sternum	70		

VULTUR, *Linn.*

Cinereus, *Gm.*

Sternum with a large foramen on each side; the hinder angles much expanded; keel reaching to the posterior margin.

Illustration.

Sternum, Plate I. fig. 6.

GYPS, *Sav.*

Fulvus, *Gm.*

Sternum similar to *Vultur cinereus*, but smaller; keel not extending quite to the posterior margin of the sternum. The divisions of the metatarsal bones are not so well defined as in *Sarcoramphus*; in other respects very similar. A skeleton is in the Museum of the College of Surgeons.

GYPAËTOS, *Storr.*

Barbatus, *Linn.*

Cranium much broader in proportion to its width than in *Sarcoramphus*. Lacrymal bones short and broad, placed very far forwards. Orbits large, and superiorly much arched; a very narrow space between their upper edges; septum perfect, with the exception of a small posterior foramen for the optic nerves; foramen magnum large, oval, slanting upwards. Atlar tubercle of moderate size, oval. Vertex much arched and very broad, much flattened from the vertex to the insertion of the nasal bones, where there is a deep indentation, from which a longitudinal depression extends to the vertex. Superior axillaries hooked, and only very slightly waved on their edges. Palatine bones extending far backwards, in shape similar to *Sarcoramphus*, but with the dependent portion on their internal edges not so highly developed, and gradually diminishing in breadth forwards. Interarticular bones long, straight, slightly compressed, not articulated with the alæ of the sphenoid. Condyloid portions of the occipital bone moderately developed.

Sternum convex; lower edge of the keel very much rounded, deepest in the centre; anterior edge receding very much from the manubrial process—much more so than in *Sarcoramphus*. Manubrial process triangular; the lateral margins of the sternum nearly parallel; the posterior margin produced in the centre, and gradually receding in a curved line to two large and externally straight projections; each side of the keel perforated by two large foramina.

Furculum, *coracoids*, and *scapula* similar in shape to *Sarcoramphus*.

The cranium above described was obtained from a skin; the remaining bones are from a bird that died in confinement in this country, and was afterwards stuffed. A perfect skeleton has just been placed in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	83	Breadth of posterior margin of sternum	30
Length of ulna	94	Breadth of anterior margin of sternum	34
Length of metacarpus	44	Depth of keel	7
Length of femur	43	Length of head	57
Length of tibia	60	Breadth of head	30
Length of metatarsus	33	Length of pelvis	61
Length of sternum		Breadth of pelvis	27

Illustration.

Sternum, Plate I. fig. 10.

Subfam. 2. POLYBORINÆ.

POLYBORUS, *Vieill.*

Tharus, *Mol.*

Type of Polyborinæ.

Cranium not so long or so much flattened in proportion to its width as in *Vulturinæ*; a central depression continued only to the vertex. Lacrymal bones triangular, and only continued about halfway over the orbital process of the frontal bone, similar to those of *Sarcoramphus*. Orbital septum with a large irregular posterior perforation. Occipital ridge well marked; protuberance well defined. Foramen magnum round, not quite horizontal. Atlar tubercle small, rounded. Nasal orifices oval, much inclined downwards. Palatine bones very broad posteriorly and much narrowed anteriorly, with a nearly central elevated and dependent ridge. Interarticular bones short, and similar in form to *Sarcoramphus*.

Vertebræ somewhat lengthened; processes short.

Sternum convex, very slightly narrowed anteriorly; lower edge of the keel much rounded; anterior part very slightly receding, the edge curved inwards considerably to the manubrial process, which is long and flattened perpendicularly; muscular ridge for the attachment of the pectoralis minor well defined; posterior margin of the sternum with a slight indentation on each side of the keel not well defined.

Bones of the *pelvis* weak in comparison with those of *Vulturinæ*; the ilium projecting far over the ischium; the foramina as in *Sarcoramphus*.

Coracoids long; axillary foramen and channel well marked.

Furculum strong, flattened, indented at the junction of the rami instead of prolonged into a process, as in *Sarcoramphus*.

Scapula and *wing-bones* similar to those of *Sarcoramphus*, but of less power.

Femur with the trochanter slightly developed; the distal extremity much enlarged.

Tibia similar to *Sarcoramphus*.

Fibula two-thirds the length of the tibia, and anchylosed for its proximal third to the tibia, and again so at its tip.

Measurements.

	Tenths.		Tenths.
Length of humerus	43	Breadth of posterior margin of sternum	20
Length of ulna	44½	Breadth of anterior margin of sternum	16
Length of radius	43½	Depth of keel	8
Length of metacarpus	25	Length of head	32
Length of femur	31	Breadth of head	17
Length of tibia	46	Length of pelvis	38
Length of metatarsus	42	Breadth of pelvis	17½
Length of sternum	33		

Illustration.

Sternum, Plate I. fig. 9.

CIRCAËTUS, *Vieill.*

Gallicus, *Gm.*

Cranium as in *Polyborus*, but rather broader in proportion to its length; lacrymals rounded at their extremities.

Sternum with the posterior margin scolloped out for its whole width, more convex than in *Polyborus*; the keel not extending to within an inch of the posterior margin, the anterior point receding slightly; manubrial process small, but well marked.

Measurements.

	Tenths.		Tenths.
Length of humerus	65	Breadth of posterior margin of sternum	18
Length of ulna	76	Breadth of anterior margin of sternum	19
Length of radius	75	Depth of keel	7
Length of metacarpus	33	Length of head	39
Length of femur	33	Breadth of head	25
Length of tibia	54	Length of pelvis	31
Length of metatarsus	38	Breadth of pelvis	16
Length of sternum	35		

SPILORNIS, *Gray.*

Bacha, *Daud.*

I have the bones of the wings, legs, and head of this bird, taken from a skin; they are precisely similar in shape to those of *Circaëtus gallicus*.

Subfam. 3. SERPENTARINÆ.

SERPENTARIUS, *Cuv.*

Reptilivorus, *Daud.*

Type of Serpentarinæ.

Cranium broad in proportion to its length. Lacrymal bones broad, and not extending far backwards over the orbits, which are very large. Orbital septum with a moderate-sized rounded anterior perforation; foramen magnum placed nearly perpendicularly, with the sides nearly straight, giving it a square appearance. Atlar tubercle large, kidney-shaped. Upper surface of the cranium with a deep hollow between the orbits, and a slightly-marked channel over the vertex to the occiput. Occipital ridge well marked, with a deep impression below it on each side; upper maxillaries hooked at their points, the edges very slightly waved. Palatine bones very broad posteriorly, suddenly narrowed anteriorly; inner edge bending slightly downwards from the posterior angles, from which also arises a ridge slightly divaricating from the line of the inner edge, and continued to the point at which the bones become narrowed. Interarticular

bones short, flattened, articulated in the centre, with the alæ of the sphenoid vomer wanting. Condyloid portions of the occipital bones not very strongly developed.

Vertebræ strong and broad, as among the Vultures generally.

Sternum very convex, inferior edge of the keel very much arched; the anterior point not receding; the edge much scolloped out; the sternum narrower posteriorly than anteriorly; the hinder margin produced into a point in the centre, from which it recedes in a slight curve to the lateral edges. Manubrial process with the point triangular.

Pelvinal bones similar to *Sarcoramphus*, but with the ischiadic foramina larger and more oval.

Furculum with the rami slightly rounded; the process at their junction well developed.

Coracoids very wide at their articulation with the sternum, and extending nearly to its full width; axillary foramen situated low down.

Scapula long and strong, without any central depression, transversely expanded at its junction with the coracoid.

Humerus moderately expanded at its proximal extremity, with the ridge to which the pectorals are attached much bent outwards. Ulna much flattened, slightly triangular.

Femur with the trochanters highly developed, very short in proportion to the tibia and metatarsus.

Tibia very long, with the head very large.

Fibula extending for two-thirds its length, and anchylosed to the tibia for its upper third, and again at its inferior extremity.

Metatarsus similar in form to *Sarcoramphus Papa*, but much lengthened and more slender.

Measurements.

	Tenths.		Tenths.
Length of humerus	78	Breadth of posterior margin of sternum	20
Length of ulna	75	Breadth of anterior margin of sternum	25
Length of radius	74	Depth of keel	13
Length of metacarpus	36	Length of head	46
Length of femur	45	Breadth of head	24
Length of tibia	105	Length of pelvis	47
Length of metatarsus	111	Breadth of pelvis	25
Length of sternum	51		

Illustrations.

Skeleton, Plate II. A.
Metatarsi, Plate II. fig. 9.
Palatine bones, Plate VI. fig. 2.
Sternum, Plate I. fig. 7.

Fam. 3. STRIGIDÆ.

Subfam. 1. STRIGINÆ.

NYCTEA, *Steph.*

Nivea, *Thunb.* type of Strigidæ and Striginæ.

Cranium very broad in proportion to its length. Lacrymals wanting; upper surface much flattened, with a central depression extending from the nasal bones to the occiput. Occipital protuberance very slight; muscular impressions also slight. Orbits very large, septa without perforations; the process of the frontal bones bounding the orbits posteriorly much prolonged, and curved inwards at its extremity. *Frontal* bone at its junction with the nasal gibbous, and with a deep transverse impression at the junction. Upper maxillaries hooked, with the edges slightly waved; foramen magnum horizontal, rounded. Atlar tubercle rounded, broad. Palatine bones for their anterior third consisting merely of a narrow strip of bone, then expanded and bent outwards, and again gradually contracted and bending inwards to their posterior extremities. Interarticulars with a strong central process extending backwards, and meeting a similar process extending forwards from the posterior or basal portion of the sphenoid. Nasal orifices oval, wider anteriorly than posteriorly. Condyloid portions of the occipital bone strongly developed. Vertebræ well developed and moderately strong.

Sternum not convex longitudinally; edge of the keel slightly rounded, the point slightly receding, from which to the manubrial process the anterior edge is very slightly curved; manubrial process very small, consisting merely of a slight projecting edge; posterior edge of the sternum indented on each side of the keel with two fissures, the external one the largest.

Pelvinal bones very strong, but with a few small foramina, showing the position of the sacral vertebræ. Ilium projecting very much over the ischium, the latter placed perpendicularly to the upper plane of the former; ischiadic and obturator foramina very similar to those of *Sarcoramphus*; anterior part of the ilium very wide, nearly as broad as the hinder portion; the points of the os pubis curved much inwards.

Ribs narrow, very little broader at their junction with the vertebræ than for their whole length; styliform process very long.

Furculum weak in proportion to the size of the bird; the rami flattened and becoming much thinner and narrower as they approach the sternum, and without any process at their junction.

Coracoids strong, central portion somewhat triangular; axillary foramen large, the channel well marked.

Scapula long, of moderate strength, with a central depression for one-third of its posterior length, expanded slightly near its extremity, and sloped off diagonally downwards.

Humerus long, not very powerful, the superior ridge projecting much outwards.

Ulna and radius also weak. Metacarpals widely divided; the posterior or smaller one broad at its proximal extremity, and much flattened for its whole length.

Femur with the trochanters moderately developed; distal extremity much enlarged; shaft nearly round; tibia triangular at its upper extremity, and rounded downwards.

Metatarsus much hollowed out posteriorly; calcaneal process highly developed, blunt at the extremity, and continued in the form of an edged keel a short distance down the entometatarsal bone; anteriorly very deeply hollowed out on the inside of its proximal extremity between the ento- and mesometatarsal bones, the former of which is provided with a strong curved bony sheath, extending across the cavity through the extensor tendons of the foot pass.

Measurements.

	Tenths.		Tenths.
Length of humerus	61	Breadth of posterior margin of sternum	22
Length of ulna	71	Breadth of anterior margin of sternum	20
Length of radius	67	Depth of keel	10
Length of metacarpus	33	Length of head	35
Length of femur	37	Breadth of head	26
Length of tibia	48	Length of pelvis	43
Length of metatarsus	22	Breadth of pelvis	20
Length of sternum	49		

Illustrations.

Metatarsi, Plate II. fig. 7.
Palatine bones, Plate VI. fig. 10.
Coracoid, scapula, and furculum, Plate VII. fig. 3.
Posterior margin of sternum, Plate IV. fig. 2.

STRIX, *Linn.*

Flammea, *Linn.*

Cranium similar to *Nyctea nivea*; interarticular bones bent backwards in the centre where articulated with the sphenoid.

Sternum with a rounded indentation on each side of the keel, very short, slightly convex; keel very shallow. No manubrial process.

Metatarsi similar to *Nyctea*, but longer in proportion to the tibia.

Hinder metacarpal bone not arched, except at its proximal extremity.

Measurements.

	Tenths.		Tenths.
Length of humerus	32	Length of femur	19
Length of ulna	37	Length of tibia	35
Length of radius	35½	Length of metatarsus	25
Length of metacarpus	15	Length of sternum	15

Measurements (continued).

	Tenths.		Tenths.
Breadth of posterior margin of sternum	12	Breadth of head	15
Breadth of anterior margin of sternum	12	Length of pelvis	23
Depth of keel	3	Breadth of pelvis	$10\frac{1}{2}$
Length of head	17		

Illustration.

Sternum, Plate IV. fig. 10.

STRIX, *Linn.*

Pratincola, *Bon.*

I have only the sternum, coracoids, and furculum of this bird; the former is in shape similar to *S. flammea*, but larger, and coracoids and furculum longer.

STRIX, *Linn.*

Delicatulus, *Gould.*

Similar to *S. flammea*, except in size, but bears the same proportions.

Illustrations.

Sternum, Plate IV. fig. 1.
Metatarsus, Plate II. fig. 10.

Palatine bones, Plate VI. fig. 11.

STRIX, *Linn.*

Capensis, *A. Smith.*

Similar to *S. flammea*, but the tarsus has not the annular process to confine the tendons of the extensor muscles of the feet at its proximal extremity.

SYRNIUM, *Sav.*

Sinense, *Lath.*

All the bones I possess of this bird are the head and metatarsus taken from a skin; the cranium is of similar shape to that of *Nyctea*; the metatarsus is without the annular process, though in other respects similar.

ATHENE, *Boie.*

Marmorata, *Gould.*

The whole skeleton similar to *Strix*, but with the palatine bones terminating more abruptly at their hinder extremities; the sternum has a very small manubrial process; its posterior margin has two large fissures on each side, the outer one larger, the interior one small; the metatarsi are very short, the head similar to *Nyctea*.

Measurements.

	Tenths.		Tenths.
Length of humerus	31	Breadth of posterior margin of sternum	11
Length of ulna	33	Breadth of anterior margin of sternum	10½
Length of radius	32	Depth of keel	3½
Length of metacarpus	16	Length of head	23
Length of femur	22	Breadth of head	16
Length of tibia	32	Length of pelvis	23
Length of metatarsus	15	Breadth of pelvis	10
Length of sternum	16		

Illustration.

Sternum, Plate IV. fig. 11.

ATHENE.

Hypudea, *Bon.*

Differs very slightly from *A. marmorata*, except in measurements. The central channel over the vertex is not so well defined, and the back of cranium not so much flattened; the depressed posterior edge of the upper part of the orbits is not apparent; the channel for the masseter muscle is well marked; the sternum is rather longer in proportion to its width, and the bones of the pelvis rather broader in proportion to their length.

The bird ought to form a different genus from *Athene.*

Measurements.

	Tenths.		Tenths.
Length of humerus	20	Breadth of posterior margin of sternum	8
Length of ulna	22	Breadth of anterior margin of sternum	8
Length of metacarpus	11	Depth of keel	4½
Length of femur	15	Length of head	20
Length of tibia	22	Breadth of head	12
Length of metatarsus	15	Length of pelvis	18
Length of sternum	12	Breadth of pelvis	8

NYCTALE, *Brehm.*

Tenymalmi, *Gm.*

Skeleton very similar to *Athene*, but with the sternum narrower in proportion to its width; the posterior fissures deeper, and the anterior edge of the keel more receding. No manubrial process; the coracoids proportionately longer.

Measurements.

	Tenths.		Tenths.
Length of humerus	19	Breadth of posterior margin of sternum	8
Length of ulna	21	Breadth of anterior margin of sternum	$7\frac{1}{2}$
Length of radius	20	Depth of keel	3
Length of metacarpus	$9\frac{1}{2}$	Length of head	19
Length of femur	14	Breadth of head	15
Length of tibia	19	Length of pelvis	16
Length of metatarsus	$9\frac{1}{2}$	Breadth of pelvis	8
Length of sternum	11		

Illustrations.

Sternum, Plate IV. fig. 6. | Metatarsus, Plate II. fig. 8.

Subfam. 2. BUBONINÆ.

OTUS, *Cuv.*

Brachyotus, *Gm.*, type of *Buboninæ*.

The skeleton much more powerful than among the *Striginæ*; sides of the cranium much flattened; the palatine bones broader at their hinder extremities. Interarticular bones very small, and not articulated to the basal portion of the sphenoid. Nasal orifices oval. Sternum with the manubrial process rudimentary. Posterior metacarpal bone not arched, except very slightly at its proximal extremity, where it is also flattened. Metatarsus without any annular process. Head of the tibia with the anterior processes much developed.

Measurements.

	Tenths.		Tenths.
Length of humerus	32	Breadth of posterior margin of sternum	10
Length of ulna	35	Breadth of anterior margin of sternum	$10\frac{1}{4}$
Length of radius	34	Depth of keel	$3\frac{1}{2}$
Length of metacarpus	17	Length of head	22
Length of femur	21	Breadth of head	16
Length of tibia	33	Length of pelvis	22
Length of metatarsus	15	Breadth of pelvis	$10\frac{1}{2}$
Length of sternum	16		

Illustrations.

Palatine bones, Plate VI. fig. 12. | Sternum, Plate IV. fig. 7.

OTUS, *Cuv.*

Maculosus, *Vieill.*

Very similar to *Nyctea nivea*; the sides of the head above the orbits not flattened as

in *Otus*; brachyotus, and the palatine bones rather more curved; interarticular bone articulated with the sphenoid hinder metacarpal bone much arched.

BUBO, *Sibb.*

Maximus, *Sibb.*

Similar to *Bubo Bengalensis*, except in measurements. The skeleton is in the College of Surgeons.

Measurements.

	Tenths.		Tenths.
Length of humerus	59	Breadth of posterior margin of sternum	18
Length of ulna	66	Breadth of anterior margin of sternum	17
Length of metacarpus	31	Depth of keel	9
Length of femur	44	Length of head	39
Length of tibia	55	Breadth of head	29
Length of metatarsus	31	Length of pelvis	41
Length of sternum	34	Breadth of pelvis	20

BUBO, *Sibb.*

Bengalensis, *Frank.*

Nasal orifices slightly oval; the remainder of the cranium much damaged.

Sternum with a large manubrial process pointing upwards; the anterior edge of the keel receding, not scolloped out.

Pelvis with the iliac bones as broad anteriorly as posteriorly.

Posterior metacarpal bone much arched, flattened at its proximal extremity, and widely separated from the anterior one.

Measurements.

	Tenths.		Tenths.
Length of humerus	45	Breadth of posterior margin of sternum	18
Length of ulna	52	Breadth of anterior margin of sternum	15½
Length of radius	49	Depth of keel	5½
Length of metacarpus	22	Length of head	33½
Length of femur	30	Breadth of head	24
Length of tibia	45	Length of pelvis	34
Length of metatarsus	25	Breadth of pelvis	15
Length of sternum	27		

Illustration.

Sternum, Plate IV. fig. 9.

BUBO, *Sibb.*

Coromandus, *Lath.*

The bones of the body of this bird are in the British Museum; they are similar to those of *Bubo bengalensis.*

KETUPA, *Less.*

Javensis, *Less.*

Cranium like that of *Nyctea nivea*; orbital septa with a large perpendicular foramen. Palatine bones with the hinder exterior angles produced to a point. Interarticular bones with a central process, which does not quite reach the sphenoid.

Sternum narrower posteriorly than anteriorly, indented on each side of the keel, with two fissures, the exterior one larger; manubrial process well developed. The anterior edge of the keel receding. Pelvis as broad anteriorly as posteriorly. Coracoids long; hinder metacarpal bone much arched and flattened for its whole length. Calcaneal process large, narrow, a ridge continued from it down the whole length of the entometacarpal bone.

Measurements.

	Tenths.		Tenths.
Length of humerus	48	Breadth of posterior margin of sternum	17½
Length of ulna	52	Breadth of anterior margin of sternum	16
Length of radius	50	Depth of keel	5
Length of metacarpus	20	Length of head	34
Length of femur	30	Breadth of head	24
Length of tibia	49	Length of pelvis	33
Length of metatarsus	28	Breadth of pelvis	14
Length of sternum	27		

Illustrations.

Sternum, Plate IV. fig. 3. | Skeleton, Plate IV. A.

EPHIALTES, *Keys & Bl.*

Lempiji, *Horsf.*

All the bones I have of this bird were taken from a skin.

Crown of the head very much arched down to the nasal bones, and laterally flattened immediately above them. Orbital septum entire; interarticular bones long, articulated in their centre by a projecting process to the sphenoid. Palatine bones produced into a bony spine at their posterior angle. Metatarsi similar to those of *Nyctea nivea.*

EPHIALTES, *Keys & Bl.*

Grammicus, *Gosse.*

I have only the sternum of this bird, which is very broad in proportion to its length,

indented with two fissures on each side of the keel; the outer one largest, and the inner one placed rather obliquely; anterior edge of the keel receding very much; manubrial process rudimentary.

Measurements.

	Tenths.		Tenths.
Length of sternum	15	Breadth of anterior margin of sternum	12
Breadth of posterior margin of sternum	12		

Number of Vertebræ and Ribs in RAPTORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Falconidæ.						
Accipiter nisus	11	9	13	7	5	3
Falco peregrinus	11	10	10	8	5	3
Milvus migrans	11	10	10	7	6	3
Ibycter ater	11	8	12	7	6	3
Aquila nævia	11	9	10	8	7	3
Haliastur ponticerianus	11	10	11	8	7	3
Cymindis uncinatus	13	10	10	8	6	3
Ieracidea berigora	10	12	12	7	6	3
Pandion haliaëtus	12	8	12	8	6	3
Circaëtus brachydactylus	12	8	12	7	6	3
Accipiter torquatus	11	9	10	8	6	3
Falco æsalon	12	8	11	8	6	3
Falco subbuteo	13	9	12	9	5	3
Tinnunculus alaudarius	12	10	11	8	6	3
Haliaëtus aguia	13	8	11	9	6	2
Helotarsus ecaudatus	12	9	12	9	6	3
Falco aurantius	12	8	11	8	6	2
Asturina magnirostris	11	10	12	7	7	2
Astur palumbarius	12	9	10	8	6	3
Buteo vulgaris	12	9	12	8	6	3
Vulturidæ.						
Sarcoramphus Gryphus	13	9	10	7	5	4
Sarcoramphus Papa	13	9	10	7	6	3
Cathartes aura	13	7	12	6	5	3
Serpentarius reptilivorus	13	8	12	6	6	2
Neophron percnopterus	12	8	12	8	6	2
Polyborus tharus	10	8	12	9	6	2
Gyps fulvus	16	8	14	7	5	3
Gypaëtos barbatus	15	7	12	8	6	1
Strigidæ.						
Ketupa javanensis	12	9	13	7	5	3
Nyctea nivea	12	9	13	8	5	3
Otus brachyotus	10	8	11	8	5	3
Bubo bengalensis	11	9	12	8	5	3
Athene marmorata	12	8	13	8	5	3
Strix flammea	9	8	14	7	5	3
Nyctale Tengmalmi	12	7	12	8	5	3
Strix delicatulus	12	7	13	7	4	3
Athene hypudea	13	7	10	8	5	2
Bubo maximus	12	7	12	wanting	5	2

Remarks on the ORDER RAPTORES.

The Order Raptores is well distinguished from other Orders by its external structure, being that adapted for preying on other animals; as, however, it is my object in this work merely to point out osteological characters, I shall not go into those which may be made out by external examination, such as the bill and claws. The cranium of Raptorial Birds is remarkable for its breadth in proportion to its length, and the hooked form of the upper maxillaries; the lacrymal bones are always long, and extend backwards over the orbits; the orbital septum is in old birds quite, or nearly, perfect; there is always an indentation more or less apparent at the base of the nasal bones; the upper maxillaries cover a very small portion of the roof of the mouth; the palatine bones have invariably a downward fold on their interior edges, and do not approach to one another except at their posterior internal angles; they are always articulated to interarticular bones intervening between them and the ossa quadrata; there is always a well-marked muscular impression above the aural orifices, in many instances amounting to a channel for the reception of the masseter muscles; the nasal orifices are generally small, particularly in the typical species of Falcons. The skeleton generally is very strong and powerful; the sternum is very slightly narrower on its anterior, than on its posterior margin, and either approaches the form of a parallelogram,—the breadth of the posterior margin being equal to two-thirds the whole length, as among the Falcons,—or that of a square, as among some of the Owls; it is always more or less convex longitudinally and transversely; the keel is deep, and its inferior edge is more or less arched. The pelvis is large and broad, and the ilium from the cotyloid cavity backwards always overhangs the edge of the ischium, which is placed nearly perpendicularly to the superior plane of the former. The ischiadic foramen is large and rounded, the obturator foramen is composed of a slight fissure between the os pubis and the ischium, ending anteriorly in a rounded opening just behind the cotyloid cavity. The rami of the furculum are either broad and laterally flattened for their whole length, as among the Falcons; or else narrowed as they approach the sternum, as among the Owls and Vultures. In the latter family, the furculum, instead of being united to the sternum by a ligament near the point of keel, is united to that bone very near the manubrial process. The coracoids are very strong and short, nearly triangular in the middle, and very much expanded at their articulation with the sternum, which is always by means of a shallow transverse groove in the latter bone; the scapula is much expanded at its distal extremity, and obliquely sloped on its upper edge to a point at the tip; the proximal half is narrower than the distal, not so much expanded; it is very slightly bent downwards for its whole length; there is a depression on the outer surface near the tip extending for about one-third of its length. The humerus is very strong; the ridge for the attachment of the pectoral muscles very highly developed; the ulna is somewhat triangular; the posterior metacarpal bones are nearly straight among the Falcons, and more or less arched among the Owls and Vultures; throughout the whole

Order they are always transversely flattened. The proportional length of the humerus to the ulna is, with very slight variation, as $13\frac{1}{2}$ to $15\frac{1}{2}$ among the Falcons, and as 10 to $13\frac{1}{2}$ among the Owls and Vultures. The femur is of moderate length; it varies considerably in its proportion to the tibia in different families of Raptorial Birds, among the Falcons being about $12\frac{1}{2}$ to 15, among the Owls and most of the Vultures as $15\frac{1}{2}$ to 23, and in *Serpentarius* as 10 to 25; the fibula is in no instance that I am aware of united to the tibia for its whole length, but generally at its distal extremity, and at about one-third of its length.

The metatarsus is always more or less excavated in front, and among some of the Owls has a bony band near the upper extremity of the cavity, for the purpose of confining the exterior longus communis digitorum muscle, a little below which is a small tubercle to which the tibialis anticus is attached.

The hallux, or hind toe, has always an intervening split between it and the metatarsus. The calcaneal process is well developed among the Falconidæ and Vulturidæ, and among some of the Strigidæ; while in others it is rudimentary.

The vertebral column is strong throughout the Order, but most so among the Vultures, many of which family, as *Sarcoramphus*, have the vertebræ nearly as broad as long; the three or four upper cervical vertebræ have the posterior processes more highly developed than is the case with the remainder of them. The terminal caudal one is much flattened laterally, and somewhat triangular.

Order II. VOLITORES.

Fam. 1. TROCHILIDÆ.

Subfam. 1. MELLISUGINÆ.

PATAGONA, G. R. Gray.

Gigas, Vieill.

Type of Volitores.

Cranium of moderate size; a deep and broad depression between the orbits, which is carried backwards to the occipital protuberance, where it divides and is carried downwards on each side to the base of the skull. Orbits large, slightly oval; the edges entire; the margins slightly reflexed; orbital septum entire. Palatine bones consisting merely of two elongated and narrow plates, pointed posteriorly at their junction with the interarticular bones, with the edges slightly bent downwards, united for their anterior half, and then divaricating. Interarticular bone slightly bent backwards in the centre; occipital protuberance very large. Foramen magnum round, placed obliquely.

Sternum long, of moderate width posteriorly, very narrow anteriorly, very slightly longitudinally convex; a spinous process behind the junction of the coracoids. Keel very deep; inferior edge arched, and carried to the extremity of the sternum; anterior edge much excavated, not receding; articulation with the coracoids effected by means of a ball and socket joint, the ball of which is upon the sternum. Posterior margin entire, rounded.

Pelvis very broad and short, but narrow; the ilium not overhanging the ischium, which inclines outwards and downwards from the ilium to the os pubis; obturator and ischiadic foramina of moderate size; ribs long, placed very obliquely, and carried far backwards.

Humerus very short and strong; muscular processes very highly developed; ulna short, nearly straight; radius slightly bent. Metacarpus very long; division between the two bones composing it very slight; the posterior one anchylosed to the anterior for the anterior third of its length; first phalanx narrow at proximal extremity, and expanded at its distal by reason of the divarication of the two bones composing it; a bony plate unites them together; terminal phalanx long; furculum very small, not approaching the sternum, slightly flattened; coracoids straight, slightly flattened, expanded at their lower extremity, and furnished with a socket, which corresponds with the ball on the sternum. Scapula very long, flat, expanded and bent downwards at the extremity. *Leg bones* weak; femur very straight; radius extending for about one-third

the length of the tibia. Vertebral column of moderate strength; the cervical vertebræ rather flattened horizontally; terminal caudal vertebra triangular, with a slight crest pointing backwards.

Measurements.

	Tenths.		Tenths.
Length of humerus	4	Breadth of posterior margin of sternum	$5\frac{1}{2}$
Length of ulna	4	Breadth of anterior margin of sternum	$2\frac{1}{2}$
Length of metacarpus	6	Depth of keel	5
Length of femur	6	Length of head	22
Length of tibia	$8\frac{1}{2}$	Breadth of head	5
Length of metatarsus	3	Length of pelvis	9
Length of sternum	12	Breadth of pelvis	$5\frac{1}{2}$

Illustrations.

Skeleton of *Patagona gigas*, Plate I. *bis*, fig. 1.
Palatine bones, Plate I. *bis*, fig. 2.
Pelvis, Plate I. *bis*, fig. 3.
Metatarsus, Plate I. *bis*, fig. 4.
Sternal apparatus of *Petasphora jolata*, Plate I. *bis*, fig. 5.

Subfam. 2. TROCHILINÆ.

THAUMASTURA, *Bon.*

Vesper, *Less.*

The whole family of *Trochilidæ* differ so little, except in measurements, that the description of one will serve for that of all. I have in my collection the following skeletons: *Cephalepis Lalandii*, *Gouldia Langsdorfii*, *Clytolæma rubinea*, *Florisuga ater*, *Thaumatias cyaneus*, *Thalurania glaucopis*, *Hylocharis Wiedii*, *Lophornis magnificus*, *Aphantochroa cirrochloris*, *Glaucis hirsutus*, *Thaumatias albicollis*, *Thaumastura Linnæi*, and *Petasphora jolata*.

Measurements.

	Tenths.		Tenths.
Length of humerus	$2\frac{1}{2}$	Breadth of posterior margin of sternum	$3\frac{1}{2}$
Length of ulna	$2\frac{1}{2}$	Breadth of anterior margin of sternum	2
Length of metacarpus	$2\frac{1}{4}$	Depth of keel	4
Length of femur	3	Length of head	$10\frac{1}{2}$
Length of tibia	6	Breadth of head	3
Length of metatarsus	$2\frac{1}{2}$	Length of pelvis	$4\frac{1}{2}$
Length of sternum	7	Breadth of pelvis	3

Fam. 2. CYPSELIDÆ.

Subfam. CYPSELINÆ.

CYPSELUS, *Ill.*

Apus, *Linn.*

Type of Cypselidæ.

Cranium with a large occipital protuberance; mouth wide; a deep excavation between the orbits, as among the *Trochilidæ*, but it is not carried backwards farther than the vertex; the orbits large; septum with a posterior foramen; there is, however, every indication that ossification was still going on. Palatine bones expanded anteriorly, then contracted, and having a lateral spine on their external edges near their junction with the interarticular bones, united for their whole length. Interarticular bones straight. Foramen magnum large, rounded.

Sternum very similar to that of the *Trochilidæ*, but with the hinder margin nearly straight, instead of rounded; the anterior furnished with grooves for the articulation with the coracoids.

Pelvis as among the *Trochilidæ*, but broader anteriorly. Ribs projecting far backwards, but not placed so obliquely as among the *Trochilidæ*.

Furculum small, but much larger than among the *Trochilidæ*, and united to the anterior edge of the keel near the tip by a ligament; coracoids of moderate size, not much expanded at their junction with the sternum. Scapula long, slightly deflected near the point. *Wing bones* similar to those of the *Trochilidæ*. *Leg bones* also similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	5	Breadth of posterior margin of sternum	$6\frac{1}{2}$
Length of ulna	7	Breadth of anterior margin of sternum	$3\frac{1}{2}$
Length of metacarpus	8	Depth of keel	$5\frac{1}{2}$
Length of femur	7	Length of head	12
Length of tibia	11	Breadth of head	6
Length of metatarsus	4	Length of pelvis	$11\frac{1}{2}$
Length of sternum	$11\frac{1}{2}$	Breadth of pelvis	9

Illustrations.

Skeleton, sternum, pelvis, and metatarsi, Plate I. *bis*.

CYPSELUS, *Ill.*

Melba, *Linn.*

Similar to *C. apus*, only larger. In the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	5	Breadth of posterior margin of sternum	8
Length of ulna	8	Breadth of anterior margin of sternum	5
Length of metacarpus	9	Depth of keel	5½
Length of femur	8	Length of head	12½
Length of tibia	10	Breadth of head	7½
Length of metatarsus	5½	Length of pelvis	12
Length of sternum	12	Breadth of pelvis	7

ACANTHYLIS, *Boie.*

Nudipes, *Hodgs.*

The body is in the British Museum: similar to *Cypselus.*

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	10
Length of ulna		Breadth of anterior margin of sternum	7
Length of radius		Depth of keel	6½
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	15
Length of metatarsus		Breadth of pelvis	9
Length of sternum	17		

Numbering of the Vertebræ and Ribs of VOLITORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Patagona gigas	12	9	9	6	7	2
Thaumastura vesper	12	9	8	6	7	2
Cypselus apus	12	9	9	6	7	2

General Remarks on VOLITORES.

The whole structure of this Order is very remarkable. Throughout the *Trochilidæ* a remarkable similarity prevails in the skeletons, so as to render the description of more than one unnecessary, the only differences being those of measurement. I had some doubts at first whether or not to place the *Cypselidæ* in this Order; but this family differs so much from the members of any other Order, and agrees in so many particulars with the *Trochilidæ*, that I have little doubt that they properly belong to this. The structure of the wing, the great depth of the keel of the sternum and its being so very much narrowed in front, the broad pelvis, and the position of the ischium and os pubis, will at once distinguish the birds forming this Order from those of any other.

Order III. OMNIVORES.

Fam. 1. CAPRIMULGIDÆ.

Subfam. 1. STEATORNINÆ.

PODARGUS, *Cuv.*

Humeralis, *Vig. & Horsf.*

Type of Omnivores and Caprimulgidæ.

Cranium large, much depressed, very broad in proportion to its length. Malar bones arched outwards; a deep impression at the base of the nasal bones, from which proceeds a central impression over the vertex nearly to the occipital ridge, which is prominent and well defined on each side, above which are two broad channels or deep muscular impressions for the masseter muscles, arising on the occiput, where they are shallowest, and proceeding to a little above the auricular cavity, where they are narrower and deeper; between them, at their origin, is a slight ridge, which is carried downwards to the foramen magnum. Orbits large; the superior margins slightly reflexed; septum not quite filling up the whole of the space between the orbits anteriorly. Lacrymals small, pointed; an elevated ridge arises on the end of the central portion of the bill, which is hooked, and is carried backwards over the nostrils to the base of the nasal bones. Nostrils elongated, somewhat triangular, with the apex of the triangle placed backwards; superior maxillaries very broad, extending backwards to the palatine bones, and covering the whole of the upper surface of the mouth to that point; laterally they are pointed, and anchylosed to the malar bones. Palatine bones broad, short, united for their posterior half, and produced to a point at their articulation with the interarticular bones, and with a strong lateral process pointing backwards on their exterior margins. The transverse or basal portion of the sphenoid bone is wanting. Interarticular bones triangular, with a pointed process extending over and articulated with the palatine bones; at their articulation with the ossa quadrata flattened perpendicularly. Foramen magnum nearly square, with the angles slightly rounded, slightly starting upwards. Atlar tubercle rounded.

Sternum nearly as broad as long, the horizontal portion slightly longitudinally and horizontally convex, with two fissures on each side of the keel generally*, the outer one very large, the inner small. The lateral margins much constricted just behind the junction of the ribs, and again expanding backwards; keel deep, slightly arched on its inferior edge, not receding on its anterior margin. No manubrial process.

* I have two specimens of the skeletons of *Podargus humeralis*, and have also seen another; one of them has two fissures on one side and one on the other.

Pelvis broad in proportion to its length; ilium not expanded anteriorly, or projecting beyond the edge of the ischium, which starts outwards to the os pubis; the posterior margin with a rounded spine just below the junction of the ilium and ischium. Obturator foramen consisting of merely a slit, slightly enlarged anteriorly. Ischiadic foramen large oval. A strong and lengthened spinous process projects posteriorly from the ischium at the junction of its upper edge with the ilium *.

Ribs weak, with the styliform processes short, scarcely reaching to the adjoining rib.

Furculum with the rami widely divaricating, flattened, without any process at their junction, which reaches as far as the point of their ligamentous junction with the keel of the sternum.

Coracoids rather long, slightly flattened.

Scapula narrow, very slightly compressed at its proximal extremity, more so at its distal, where it is cut off obliquely downwards to a point.

Wing bones of moderate strength, the muscular ridges distinct; the posterior metacarpal bone much arched.

Femur very slightly bent downwards at its distal extremity. Trochanters small. Fibula extending for about half the length of the tibia, and anchylosed to it at both extremities.

Metatarsus short, triangular, slightly excavated in front, at its proximal extremity; calcaneal process well developed; a slight ridge extends from it to the articulation of the hallux.

Vertebral column strong, broad; the three penultimate cervical vertebræ with the dorsal spine well developed.

Measurements.

	Tenths.		Tenths.
Length of humerus	29	Breadth of posterior margin of sternum	10
Length of ulna	35	Breadth of anterior margin of sternum	10½
Length of radius	31½	Depth of keel	4½
Length of metacarpus	11½	Length of head	30
Length of femur	14	Breadth of head	18
Length of tibia	25	Length of pelvis	20
Length of metatarsus	11½	Breadth of pelvis	12
Length of sternum	15		

Illustrations.

Skeleton, Plate I. B.
Cranium, Plate IV.
Pelvis, metatarsus, furculum, coracoid, and scapula, Plate IX. fig. 1.
Palatine bones, Plate XII. fig. 1.
Sternum, Plate VIII. fig. 1.

* Probably this spine is partly composed of portions of the ischium and ilium.

Subfam. 2. CAPRIMULGINÆ.

ÆGOTHELES, *Vig. & Horsf.*

Cristatus, *Lath.*

Type of Caprimulginæ.

Cranium not so much depressed as in *Podargus*; space between the orbits on the upper surface of the cranium very narrow. Maxillaries curved downwards. Palatine bones similar in shape to *Podargus*; intermaxillaries not expanded. Tarsi longer in proportion to the tibia than in *Podargus*. *Sternum* much damaged, but with two fissures on each side of the keel. Remaining bones as in *Podargus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	
Length of ulna	14	Breadth of anterior margin of sternum	5
Length of radius	13	Depth of keel	2
Length of metacarpus	7	Length of head	14
Length of femur	8	Breadth of head	9
Length of tibia	14	Length of pelvis	10
Length of metatarsus	$10\frac{1}{2}$	Breadth of pelvis	8
Length of sternum	7		

CHORDEILES, *Sw.*

Virginianus, *Briss.*

Cranium much depressed, and in shape similar to *Podargus*, but without the temporal impressions for the masseter muscles. Maxillaries not expanded over the roof of the mouth, which is merely defended by a narrow strip of the palatine bones carried forwards posteriorly; the palatine bones are more expanded laterally than in *Podargus*, and with the angles rounded; interarticular bones long. *Sternum* with a single wide and open fissure on each side of the keel. Coracoids, furculum, and scapula similar to *Podargus*.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	$7\frac{1}{2}$
Length of ulna		Breadth of anterior margin of sternum	$6\frac{1}{2}$
Length of radius		Depth of keel	5
Length of metacarpus		Length of head	16
Length of femur		Breadth of head	11
Length of tibia		Length of pelvis	
Length of metatarsus		Breadth of pelvis	
Length of sternum	10		

42

NYCTEBIUS, *Vieill.*

Jamaicensis, *Gm.*

Sternum as in *Chordeiles*, with two broad shallow fissures on each side. *Coracoids* long. Furculum also long, very much arched transversely. Scapula similar to *Podargus*. I have only a fragment of this bird.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	10
Length of ulna		Breadth of anterior margin of sternum	10
Length of radius		Depth of keel	5
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	
Length of metatarsus		Breadth of pelvis	
Length of sternum	12		

CAPRIMULGUS, *Linn.*

Europæus, *Linn.*

Cranium and *sternum* similar to *Chordeiles*, but the latter narrower anteriorly.

Pelvis much broader than in *Podargus* in proportion to its length; in other respects similar; a spine on the posterior margin.

Measurements.

	Tenths.		Tenths.
Length of humerus	14½	Breadth of posterior margin of sternum	9
Length of ulna	18	Breadth of anterior margin of sternum	6½
Length of radius	17	Depth of keel	5½
Length of metacarpus	9	Length of head	14
Length of femur	9	Breadth of head	11
Length of tibia	12½	Length of pelvis	12
Length of metatarsus	6½	Breadth of pelvis	8½
Length of sternum	11		

Fam. 2. TROGONIDÆ.

Subfam. 1. TROGONINÆ.

HARPACTES, *Sw.*

Reinwardtii, *Temm.*

Type of Trogonidæ and Trogoninæ.

Cranium slightly depressed, but not nearly so much as in *Podargus*, and the malar

bones not so much arched; the space between the orbits above narrower; upper edges of the orbits much reflexed; a depression from the base of the nasal bones over the vertex well defined; occipital ridge scarcely perceptible; the masseter impression deep, but not extending backwards to the occiput, as in *Podargus*. Orbital septum as in *Podargus*. Upper maxillaries covering the roof of the mouth for one-fourth of their length. Palatine bones narrow anteriorly, slightly expanded at their junction with the maxillaries, posteriorly with the interior edges much deflexed, not united, except at their articulation with the interarticular bones, which have a process in the middle uniting with the base of the sphenoid, which is extremely rudimentary, and does not expand as far as the os quadratum. A deep, transverse, and horizontally arcuated depression at the base of the nasal bones; nostrils very slightly oval, placed nearly horizontally, with a ridge between them. Lacrymal bones wanting.

Sternum with the posterior margin considerably broader than the anterior, indented on each side with two deep fissures, the strip of bone bounding the external fissure on each expanded at the tip, thus partially enclosing the fissure; the lateral margins of the sternum much constricted in the centre behind the ribs, convex longitudinally and transversely; keel with its lower edge slightly arched; the anterior edge much excavated, not receding. Manubrial process laterally flattened, widest at its extremity.

Pelvis very wide and short; a knob on the posterior margin where the ischium and ilium unite; the ilium does not overhang the ischium, which starts outward from the plane of the former bone.

Coracoids rather long, very broad at their articulation with the sternum.

Rami of the furculum long, slightly arched.

Ribs weak, expanded for their upper halves; styliform process long, narrow.

Pelvis very broad and short, the ischium starting very much obliquely outwards to the os pubis. Ischiadic foramen very large; obturator small; fibula extending downwards only one-fourth the length of the tibia, and anchylosed to it at both ends.

The remaining bones similar to those of *Podargus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	13½	Breadth of posterior margin of sternum	11½
Length of ulna	14½	Breadth of anterior margin of sternum	8
Length of radius	14	Depth of keel	4
Length of metacarpus	6½	Length of head	18
Length of femur	9½	Breadth of head	10
Length of tibia	12	Length of pelvis	14
Length of metatarsus	6½	Breadth of pelvis	11
Length of sternum	12		

Illustrations.

Sternum, Plate VIII. fig. 2.

Palatine bones, Plate XII. fig. 2.

TROGON, *Mœhr.*

Melanocephalus, *Gould.*

In every respect with the bones of a similar shape to those of *Harpactes Reinwardtii.* Lacrymal bones triangular, with the points not turned quite so much backwards as in *Podargus.* I have also in my collection *Trogon viridis* and *Trogon aurantius.*

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	10½
Length of ulna	14	Breadth of anterior margin of sternum	7
Length of radius	13	Depth of keel	4½
Length of metacarpus	6	Length of head	16
Length of femur	8	Breadth of head	9½
Length of tibia	11½	Length of pelvis	14
Length of metatarsus	8	Breadth of pelvis	11
Length of sternum	11		

Illustration.

Skeleton, Plate IV. B.

CALURUS, *Sow.*

Fulgidus, *Gould.*

Similar to *Harpactes*; in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	16	Breadth of posterior margin of sternum	13
Length of ulna	20	Breadth of anterior margin of sternum	10
Length of metacarpus	10	Depth of keel	5
Length of femur	12	Length of head	20
Length of tibia	14	Breadth of head	10
Length of metatarsus	7	Length of pelvis	16
Length of sternum	16	Breadth of pelvis	11

Subfam. 2. CAPITONINÆ.

MEGALAIMA, *G. R. Gray.*

Corvina, *Temm.*

Cranium more flattened than among the *Picidæ*, with which it has been classed; no foramen in the orbital septum, except that through which the optic nerve passes; channel for the masseter muscles large, extending to the occiput; occipital ridge well marked.

Sternum broad; fissures on the posterior margin very deep, extending for more than half the length of the sternum; the anterior edge, behind the junction of the coracoids, very much prolonged; lateral edges constricted behind the articulation of the ribs, which is very far forwards; keel very shallow; inferior edge quite straight; anterior edge also straight, produced nearly to the end of the manubrial process. *Pelvis* with the ischium slanting very much outwards, the line of demarcation along the junction of the ilium with it nearly obliterated; two spines are apparent on its posterior margin, one on its inner edge, the other near the centre; obturator foramen similar to the *Picidæ*, but narrower; ischiadic foramen also smaller.

Ribs narrow; styliform process very broad; coracoids longer than among the *Picidæ*; furculum weak, the rami merely united by a ligament. *Wing-* and *leg-bones* similar to the *Picidæ*.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Breadth of posterior margin of sternum	10
Length of ulna	18	Breadth of anterior margin of sternum	8½
Length of metacarpus	7	Depth of keel	3
Length of femur	13½	Length of head	30
Length of tibia	22	Breadth of head	12
Length of metatarsus	12	Length of pelvis	18
Length of sternum	14	Breadth of pelvis	10

Illustrations.

Sternum, Plate VIII. fig. 3. | Palatine bones of *M. virens*, Plate XII. fig. 3.

MEGALAIMA, *G. R. Gray.*

Calva, *Lafr.*

This bird has been made into a genus under the name of *Gymnobucco*; its structure, as also that of *Bucconodon formosus*, is precisely similar to that of *Megalaima*.

PSILOPOGON, *Müll.*

Pyrolophus, *Müll.*

Similar to *Megalaima corvina* except in measurements; the ulna much longer in proportion to the humerus than in that bird; the anterior portion of the obturator foramen nearly obliterated.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Length of femur	13
Length of ulna	16	Length of tibia	21
Length of metacarpus	5	Length of metatarsus	11

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	10	Length of head	22
Breadth of posterior margin of sternum	8	Breadth of head	10
Breadth of anterior margin of sternum	8	Length of pelvis	17
Depth of keel	$2\frac{1}{2}$	Breadth of pelvis	10

CAPITO, *Vieill.*

Purpurata, *Ver.*

Similar to *Megalaima*, but with the obturator and ischiadic foramina larger and more open, and the impression of the masseter muscles not so large.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	9
Length of ulna	$12\frac{1}{2}$	Breadth of anterior margin of sternum	7
Length of metacarpus	5	Depth of keel	$2\frac{1}{4}$
Length of femur	12	Length of head	18
Length of tibia	18	Breadth of head	9
Length of metatarsus	11	Length of pelvis	14
Length of sternum	11	Breadth of pelvis	$9\frac{1}{2}$

CAPITO, *Vieill.*

Swainsonii, *Bon.*

Very similar to *C. purpuratus*, but with the hinder angles of the palatine bones truncate, the sternum broader, the fissures more open, the pelvis broader in proportion to its length, and the channel for the masseter muscles more strongly marked.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	10
Length of ulna	$14\frac{1}{2}$	Breadth of anterior margin of sternum	$6\frac{1}{2}$
Length of metacarpus	6	Depth of keel	$2\frac{1}{2}$
Length of femur	$8\frac{1}{2}$	Length of head	26
Length of tibia	13	Breadth of head	11
Length of metatarsus	$6\frac{1}{2}$	Length of pelvis	12
Length of sternum	10	Breadth of pelvis	10

Illustration.

Skeleton, Plate VII. B.

MONASA, *Vieill.*

Torquata, *Hahn.*

Very similar to *Capito*, but with the upper edge of the orbits approaching nearer to one another, and with a slight channel between them. Sternum broader, and the fissures more open.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8
Length of ulna	13	Breadth of anterior margin of sternum	5
Length of metacarpus	5	Depth of keel	2
Length of femur	8	Length of head	20
Length of tibia	12	Breadth of head	$8\frac{1}{2}$
Length of metatarsus	9	Length of pelvis	10
Length of sternum	9	Breadth of pelvis	$8\frac{1}{2}$

CHELONIDERA, *Gould.*

Tenebrosa, *Pall.*

Similar to *Capito*, but with the tarsi much shorter; the inferior edge of the sternal keel arched; the anterior edge scolloped out, and not extending over the manubrial process; the upper edge of the orbits approaching nearer to each other, and with a distinct channel between them.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	7
Length of ulna	15	Breadth of anterior margin of sternum	6
Length of metacarpus	5	Depth of keel	2
Length of femur	7	Length of head	11
Length of tibia	$10\frac{1}{2}$	Breadth of head	7
Length of metatarsus	5	Length of pelvis	11
Length of sternum	$9\frac{1}{2}$	Breadth of pelvis	8

Illustrations.

Sternum, Plate VIII. fig. 4.

Palatine bones, Plate XII. fig. 4.

Subfam. 3. EURYLAIMÆ.

EURYLAIMUS, *Horsf.*

Sumatranus, *Raff.*

Type of Eurylaimæ.

Cranium similar to *Trogon*, but with a slight ridge in the centre of the depression between the upper edges of the orbits, the depression extending to the vertex; the muscular impression of the masseters very deep and broad, but not continued so far backwards or so deep as in *Podargus*. Maxillary bones covering the roof of the mouth for one-third of the length of the head. Palatine bones consisting for their anterior two-thirds of a narrow strip, at which point a rounded process projects from the external edge, and another narrow strip is thrown off from the internal edge, uniting with a dependent lamina, which is carried backwards and articulated with the interarticular bone and the vomer. Interarticular bones straight, rounded, very slightly expanded at their junction with the palatine. Sphenoid as in *Podargus*. Orbital septum with a foramen on the upper edge. A very strong arcuated depression at the base of the nasal bones, from which extends a strongly defined ridge over the culmen of the bill. Nasal orifices large, somewhat triangular, with the base of the triangle placed backwards. Orbits slightly reflexed.

Sternum longer in proportion to its breadth than in *Trogon* or *Podargus*, posteriorly with a lateral foramen on each side, narrowest anteriorly, and constricted behind the junction of the ribs; keel of moderate depth, inferior edge very slightly arched, anterior much excavated; manubrial process very long and horizontally flattened. Ribs weak; styliform process long.

Pelvis with the bones of the ilium not so broad as in *Trogon*, but more resembling *Podargus*. A spinous process extends far backwards on each side of the sacral vertebræ. Ischiadic and obturator foramina very large. Furculum arched; a perpendicularly flattened process at the junction of the rami. The remaining bones similar to *Trogon*.

Measurements.

	Tenths.		Tenths.
Length of humerus	13½	Breadth of posterior margin of sternum	10
Length of ulna	18	Breadth of anterior margin of sternum	8
Length of radius	17	Depth of keel	4
Length of metacarpus	7½	Length of head	22
Length of femur	17	Breadth of head	11
Length of tibia	18	Length of pelvis	16
Length of metatarsus	10	Breadth of pelvis	10
Length of sternum	13½		

Illustrations.

Skeleton, Plate VIII. B.
Sternum, Plate VIII. fig. 5.
Palatine bones, Plate XII. fig. 5.

PSARISOMUS, *Sw.*

Dalhousiæ, *Jam.*

Sternum very similar to *Alcedo*, with two foramina on each side; the edge of the keel nearly straight; coracoid and furculum long. Some fragments are in the British Museum.

Measurements.

	Tenths.
Length of humerus	
Length of ulna	
Length of radius	
Length of metacarpus	
Length of femur	
Length of tibia	
Length of metatarsus	
Length of sternum	9
Breadth of posterior margin of sternum	$7\frac{1}{2}$
Breadth of anterior margin of sternum	5
Depth of keel	3
Length of head	
Breadth of head	
Length of pelvis	12
Breadth of pelvis	8

EURYSTOMUS, *Vieill.*

Orientalis, *Linn.*

Cranium very similar in shape to *Trogon*, but the space between the upper margins of the orbits wider. Orbital septum entire. Maxillaries covering the roof of the mouth for nearly one-half the length of the cranium, with the exception of a slight slit between them. Palatine bones very broad, short at their junction with the maxillaries, truncate on their hinder margin, with a narrow dependent flap on their internal margins. Sphenoid as in *Eurylaimus*. A deep channel for the masseter muscles, as in *Podargus*; a deep depression at the base of the nasal bones, but not so deep as in *Eurylaimus*.

Sternum and *pelvis* similar to those of *Trogon*, but the latter has the posterior spine strongly marked.

Measurements.

	Tenths.
Length of humerus	20
Length of radius	25
Length of metacarpus	11
Length of femur	$10\frac{1}{2}$
Length of tibia	15
Length of metatarsus	8
Length of sternum	15
Breadth of posterior margin of sternum	$11\frac{1}{2}$
Breadth of anterior margin of sternum	8
Depth of keel	$4\frac{1}{2}$
Length of head	24
Breadth of head	23
Length of pelvis	$26\frac{1}{2}$
Breadth of pelvis	11

Illustrations.

Skeleton, Plate III. B. | Sternum, Plate VIII. fig. 6.

Fam. 3. ALCEDINIDÆ.

Subfam. 1. ALCEDINÆ.

ALCEDO, *Linn.*

Ispida, *Linn.*

Type of Alcedinidæ and Alcedinæ.

Cranium much longer in proportion to the width than in *Trogonidæ* or *Caprimulgidæ*, flattened on the vertex; impression for the masseter muscles well defined, and continued backwards to the occiput; orbits with the superior edges sharp and well defined, but not reflected. A large foramen on the hinder part of the orbital septum. Maxillaries covering the roof of the mouth for nearly one-half the length of the head. Palatine bones similar to *Harpactes*, but with a long thin spine pointing backwards on the exterior angles. Interarticular bones very long, slightly bent inwards in their centre. Sphenoid as in *Trogon*. Lacrymals small, broad; a depression between the orbits; nasal orifices of an elongated oval shape; occipital ridge well defined, the protuberance small.

Sternum similar to *Trogon*, but not so broad in proportion to its width, and with the inferior edge of the keel less arched.

Pelvis similar to *Trogon*, but with the posterior spine more strongly marked. *Furculum* without any process at the junction of the rami, which are laterally flattened, and much expanded at their articulation with the coracoids, which are similar to *Trogon*. Scapula flattened, deflexed at the tip, not cut off so abruptly as in *Trogon*.

Ribs weak; styliform process long.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	8
Length of ulna	13	Breadth of anterior margin of sternum	6
Length of metacarpus	5	Depth of keel	$3\frac{1}{2}$
Length of femur	6	Length of head	22
Length of tibia	10	Breadth of head	7
Length of metatarsus	4	Length of pelvis	9
Length of sternum	10	Breadth of pelvis	8

Illustrations.

Skeleton, Plate V. B. fig. 2. | Sternum, Plate VIII. fig. 7.

ALCYONE, *Sw.*

Azurea, *Lath.*

Similar to *Alcedo ispida*, but with the impression for the masseter muscles more strongly marked, and with the anterior edge of the sternal keel more excavated.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	7
Length of ulna	11½	Breadth of anterior margin of sternum	5½
Length of metacarpus	5	Depth of keel	3
Length of femur	7	Length of head	27
Length of tibia	10	Breadth of head	7
Length of metatarsus	4½	Length of pelvis	8½
Length of sternum	10	Breadth of pelvis	8

CERYLE, *Boie.*

Alcyon, *Linn.*

Similar to *Alcedo ispida*, but with the anterior edge of the keel sloping much forwards towards the point, and not excavated, and having the scapulæ not so much deflected at the points.

Measurements.

	Tenths.		Tenths.
Length of humerus		Breadth of posterior margin of sternum	10
Length of ulna		Breadth of anterior margin of sternum	8
Length of radius		Depth of keel	
Length of metacarpus		Length of head	
Length of femur		Breadth of head	
Length of tibia		Length of pelvis	
Length of metatarsus		Breadth of pelvis	
Length of sternum	18		

CERYLE, *Boie.*

Rudis, *Linn.*

Similar to *Alcedo*, but with the sternum rather longer in proportion to its width. Some fragments are in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus		Length of femur	
Length of ulna		Length of tibia	
Length of radius		Length of metatarsus	
Length of metacarpus		Length of sternum	15½

Measurements (continued).

	Tenths.		Tenths.
Breadth of posterior margin of sternum	8	Breadth of head	
Breadth of anterior margin of sternum	6	Length of pelvis	13
Depth of keel	3½	Breadth of pelvis	10
Length of head			

CERYLE, *Boie.*

Americana, *Gm.*

Similar to *Alcedo.*

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	6
Length of ulna	13	Breadth of anterior margin of sternum	4
Length of metacarpus	5	Depth of keel	2
Length of femur	6	Length of head	26
Length of tibia	10	Breadth of head	7
Length of metatarsus	4	Length of pelvis	9
Length of sternum	10	Breadth of pelvis	7½

Subfam. 2. HALCYONINÆ.

HALCYON, *Sw.*

Capensis, *Linn.*

Type of Halcyoninæ.

Cranium similar to *Alcedo*; indentation for the reception of the masseter muscles very deep, extending over the occiput; occipital ridge very prominent. Lacrymal bones longer than in *Alcedo*, and pointed; nasal orifices oval. Interarticular bones with a keel projecting on the middle of their upper side. Scapulæ suddenly expanded near their extremities and sloped off very abruptly at their tips.

Sternum with the edge of the keel nearly straight. In other respects the whole skeleton resembles *Alcedo.*

Measurements.

	Tenths.		Tenths.
Length of humerus	20	Breadth of posterior margin of sternum	12
Length of ulna	25	Breadth of anterior margin of sternum	9
Length of metacarpus	10	Depth of keel	5
Length of femur	12	Length of head	46
Length of tibia	18	Breadth of head	17
Length of metatarsus	7	Length of pelvis	16½
Length of sternum	16	Breadth of pelvis	14

HALCYON, *Sw.*

Senegalensis, *Linn.*

Very similar to *H. capensis*, but with the head more convex than in *H. capensis*, and the points of the lacrymals rounded instead of being sharp; the masseter channels over the occiput do not quite meet.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	8
Length of ulna	16	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	2½
Length of femur	8	Length of head	28
Length of tibia	13	Breadth of head	8½
Length of metatarsus	6	Length of pelvis	9½
Length of sternum	9	Breadth of pelvis	9

HALCYON, *Sw.*

Macleayii, *Jard. & Selby.*

Precisely similar to *H. capensis*, but with the sternum shorter in proportion to its width, and the metatarsus longer in proportion to the tibia.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	8
Length of ulna	15½	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	3
Length of femur	8	Length of head	23
Length of tibia	12	Breadth of head	8
Length of metatarsus	6	Length of pelvis	10
Length of sternum	10	Breadth of pelvis	8

DACELO, *Leach.*

Leachii, *Lath.*

Cranium similar to *H. capensis*, but more convex on its upper surface, rising more at the base of the nasal bones, and with a much deeper impression between the upper edges of the orbits; the impressions for the masseter muscles with a slight ridge between them posteriorly; inferior edge of the keel very slightly arched; the remainder of the skeleton similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	24	Length of femur	15
Length of ulna	31	Length of tibia	22
Length of metacarpus	11	Length of metatarsus	10

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	18	Length of head	44
Breadth of posterior margin of sternum	12	Breadth of head	17
Breadth of anterior margin of sternum	11	Length of pelvis	19
Depth of keel	5	Breadth of pelvis	13

Illustrations.

Pelvis, coracoids, furculum, and metatarsi, Plate IX. fig. 2.

Palatine bones of *Dacelo gigantea*, Plate XII.

Subfam. 3. GALBULINÆ.

GALBULA, *Mœhr.*

——— ?

I have only one skeleton of *Galbula*; the feathers were all rubbed off when it arrived, so that I am unable to make out the species.

The *cranium* very convex on the vertex; orbital septum entire. Palatine bones broader than in *Alcedo*, without any spine projecting from their external posterior angles.

Sternum much shorter in proportion to its width than in *Alcedo*, with two large fissures on each side extending nearly to the articulation of the ribs. The metatarsi are longer in proportion to the tibia than in *Alcedo*. The remaining bones are similar to *Alcedo*.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Breadth of posterior margin of sternum	$5\frac{1}{2}$
Length of ulna	12	Breadth of anterior margin of sternum	$5\frac{1}{2}$
Length of metacarpus	4	Depth of keel	$2\frac{1}{2}$
Length of femur	6	Length of head	30
Length of tibia	8	Breadth of head	7
Length of metatarsus	$5\frac{1}{2}$	Length of pelvis	8
Length of sternum	$7\frac{1}{2}$	Breadth of pelvis	6

Subfam. 4. MEROPINÆ.

MEROPS, *Linn.*

Ornatus, *Lath.*

Cranium more convex than among the *Alcedinæ*, and maxillaries bent downwards, and not extending for above one-half of the length of the cranium over the roof of the mouth. Palatine bones longer and narrower, and without the spine on their posterior lateral angle; a much deeper impression at the base of the nasal bones. Impression for the masseter muscles much fainter, and not united at the occiput; occipital protuberance

large. *Sternum* longer in proportion to its width; anterior edge of the keel excavated, inferior edge slightly arched; tarsi longer in proportion to the tibia. *Pelvis* similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	8
Length of ulna	16	Breadth of anterior margin of sternum	6
Length of metacarpus	7	Depth of keel	4
Length of femur	7	Length of head	22
Length of tibia	10	Breadth of head	8
Length of metatarsus	5	Length of pelvis	11
Length of sternum	13	Breadth of pelvis	8

Illustrations.

Sternum of *Merops bicolor*, Plate VIII. fig. 8.

Palatine bones of *Merops bicolor*, Plate XII. fig. 7.

MEROPS, *Linn.*

Albicollis, *Vieill.*

Similar in every respect to *M. ornatus*, except in measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	7
Length of ulna	12	Breadth of anterior margin of sternum	$4\frac{1}{2}$
Length of metacarpus	5	Depth of keel	3
Length of femur	6	Length of head	17
Length of tibia	8	Breadth of head	$6\frac{1}{2}$
Length of metatarsus	4	Length of pelvis	$8\frac{1}{2}$
Length of sternum	9	Breadth of pelvis	$6\frac{1}{2}$

NYCTIORNIS, *Sw.*

Athertoni, *Jard. & Selb.*

Some fragments, consisting of a sternum and pelvis, are in the British Museum. They are similar to *Merops*, but larger.

Measurements.

	Tenths.		Tenths.
Length of humerus		Length of radius	
Length of ulna		Length of metacarpus	

Measurements (continued).

	Tenths.		Tenths.
Length of femur		Depth of keel	4½
Length of tibia		Length of head	
Length of metatarsus		Breadth of head	
Length of sternum	16	Length of pelvis	20
Breadth of posterior margin of sternum	11	Breadth of pelvis	11
Breadth of anterior margin of sternum	8		

Subfam. 5. TODINÆ.

TODAS, *Linn.*

Viridis, *Linn.*

Cranium similar in shape to *Merops*; the maxillaries much flattened, covering the roof of the mouth for nearly one-half the length of the cranium; impression for the masseter muscles very slight; a deep impression at the base of the nasal bones, from which a ridge proceeds over the top of the bill. Palatine bones similar in shape to *Merops*. Interarticular bones long, bent backwards in the middle.

Sternum, *pelvis*, and other bones also similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	6	Breadth of posterior margin of sternum	4½
Length of ulna	8	Breadth of anterior margin of sternum	4
Length of metacarpus	2½	Depth of keel	1¾
Length of femur	4	Length of head	14
Length of tibia	7	Breadth of head	5
Length of metatarsus	6	Length of pelvis	5
Length of sternum	5	Breadth of pelvis	4

Illustrations.

Skeleton, Plate V. B. fig. 1.
Sternum, Plate VIII. fig. 9.
Palatine bones, Plate XII. fig. 8.

Subfam. 6. CORACINÆ.

CORACIAS, *Linn.*

Garrula, *Linn.*

Cranium not quite so much depressed as in *Trogon*, more lengthened in proportion to its breadth; masseter channel very distinct, and continued nearly to the occiput.

Occipital ridge distinct; the space between the orbits, which are reflected, is of moderate width, with a depression between them; an arcuated depression at the base of the nasal bones. Maxillaries covering the roof of the mouth for one-third the length of the cranium. Palatine bones consisting for a little more than their anterior half of a narrow strip, then suddenly widened and truncated posteriorly, with a slight central dependent lamina. Interarticular bones straight, slightly twisted on their axis. Sphenoid similar to that of *Trogon*. Orbital septum nearly entire. Nasal orifices oval.

Sternum of moderate length, broadest on its posterior margin, indented with two fissures on each side; lateral margins constricted in the middle; keel slightly arched, the anterior edge excavated. Sternum not convex longitudinally; manubrial process moderately developed. Coracoids and furculum as in *Trogon*. *Pelvis* precisely as in *Trogon*, but not quite so broad in proportion to its length, and with the posterior spine strongly marked.

Measurements.

	Tenths.		Tenths.
Length of humerus	21	Breadth of posterior margin of sternum	10
Length of ulna	26	Breadth of anterior margin of sternum	8
Length of radius	25	Depth of keel	5
Length of metacarpus	12	Length of head	25
Length of femur	13	Breadth of head	11
Length of tibia	18	Length of pelvis	19
Length of metatarsus	10	Breadth of pelvis	10
Length of sternum	15		

Illustrations.

Skeleton of *Coracias indica*, Plate II. B.
Sternum of *Coracias indica*, Plate VIII. fig. 10.
Palatine bones of *Coracias indica*, Plate XII. fig. 9.

CORACIAS, *Vieill.*

Afra, *Lath.*

This bird has been placed with *Eurystomus*; but it is a true *Coracias*, although the bill is rather shorter than in *Garrula*; the whole skeleton is precisely similar to that bird, with the exception of the measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	18	Length of tibia	$13\frac{1}{2}$
Length of ulna	22	Length of metatarsus	$7\frac{1}{2}$
Length of metacarpus	10	Length of sternum	14
Length of femur	$11\frac{1}{2}$	Breadth of posterior margin of sternum	10

Measurements (continued).

	Tenths.		Tenths.
Breadth of anterior margin of sternum	8	Breadth of head	11
Depth of keel	4	Length of pelvis	16½
Length of head	20	Breadth of pelvis	10½

Fam. BUCERIDÆ.

Subfam. 1. MOMOTINÆ.

MOMOTUS, *Briss.*

Brasiliensis, *Lath.*

Head very similar to *Coracias Garrula*, but with the impression at the base of the nasal bones straight; the space between the orbits nearly flat. Palatine bones similar, but rounded at their exterior posterior angles, and broader anteriorly, where they join the maxillaries, which cover the roof of the mouth for rather more than one-half of the length of the cranium. Interarticular bones slender; nasal orifices long, oval; orbital septum perfect; impression for the masseters well defined, but not deep, and not extending to the occiput. The bones I possess of this bird were taken from a skin.

Measurements.

	Tenths.		Tenths.
Length of humerus	16	Breadth of posterior margin of sternum	
Length of ulna	17	Breadth of anterior margin of sternum	
Length of metacarpus	7	Depth of keel	
Length of femur		Length of head	28
Length of tibia	18	Breadth of head	12
Length of metatarsus	12	Length of pelvis	
Length of sternum		Breadth of pelvis	

Illustration.

Palatine bones, Plate XII. fig. 12.

Subfam. 2. UPUPINÆ.

UPUPA, *Linn.*

Epops, *Linn.*

Cranium with the vertex convex, broad between the orbits, and with a deep indentation continued to the vertex; impression of the masseter muscles very slight; nasal orifices rounded. Orbits rather oval; septum with a foramen on its upper posterior edge. Maxillaries covering the roof of the mouth to about half the length of the

cranium. Palatine bones long, narrow, their posterior points turned inwards. Interarticular bones flattened horizontally; sphenoid as in *Alcedo*.

Sternum constricted just behind the junction of the ribs, with the posterior edge indented by one very wide fissure on each side of the keel, and with a slight indentation on the margin of the central portion not occupied by the fissures; keel very deep, rounded on its inferior edge. Manubrial process large, broad, flattened perpendicularly, the inferior edge sloping slightly upwards. Furculum very light and narrow; the rami flattened laterally for their upper two-thirds, and in the opposite direction for their lower third; they meet each other with a very wide curve, giving a rounded appearance to the lower portion of the furculum. Coracoids of moderate size and length, having a process on their internal edges, just above their junction with the sternum, for the attachment of a ligament, the opposite extremity of which is attached to the lower portion of the manubrial process. [The ligament is possessed by all birds, but I am at present unable to find out any name for it; its action is to hold the coracoid bones in their places.]

Pelvis very similar to that of *Alcedo*, but with the obturator foramina very large.

Metatarsus with a deep channel down the centre anteriorly; the calcaneal process very large; the ulna very long in proportion to the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	9
Length of ulna	18	Breadth of anterior margin of sternum	7
Length of metacarpus	8	Depth of keel	$5\frac{1}{2}$
Length of femur	9	Length of head	25
Length of tibia	14	Breadth of head	7
Length of metatarsus	8	Length of pelvis	12
Length of sternum	14	Breadth of pelvis	8

Illustration.

Sternum, Plate VIII. fig. 11.

Subfam. 3. BUCERINÆ.

BUCEROS, *Linn.*

Plicatus, *Lath.*

Type of Buceridæ and Bucerinæ.

The anterior portions of the cranium as far as the nostrils among the *Bucerinæ* take a great variety of forms, which constitute some of the principal characters by which the different species are distinguished. The curious excrescences on the bills are filled up with cellular bony matter. The vertex of the cranium is on nearly the same plane with

the nasal bones, and has a transverse depression between, as among the *Alcedinidæ*. The impressions for the reception of the masseter muscles are deep and well marked, but do not meet, having the strongly marked and very much arched occipital ridge rising up between them. Orbits somewhat rounded; septum between the orbits entirely wanting. Palatine bones very broad anteriorly at their junction with the maxillaries and pointed posteriorly, forming an elongated triangle, with the sides slightly bending inwards. Sphenoid bone entirely wanting, except in so far as it is represented by the interarticular, thus agreeing with the whole of the Order Omnivores, throughout which it is never more than rudimentary. Interarticular bones strong, somewhat triangular. Maxillaries covering the roof of the mouth for two-thirds the length of the skull. Foramen magnum large, somewhat square, with the angles rounded. Atlar tubercle much flattened on the side next the foramen magnum.

Sternum very slightly convex longitudinally, more so transversely, of moderate length, the lateral margins very much constricted at the junction of the ribs. Posterior margin with a shallow but broad fissure on each side; the inferior edge of the keel very slightly rounded, and rather produced in front; the anterior edge not excavated. Manubrial process small.

Pelvis broad; the bones of the ischium inclined obliquely outwards from the plane of the ilium to the os pubis. Obturator and ischiadic foramina very large. No posterior spine.

Ribs of moderate strength.

Coracoids of moderate length and strength.

Furculum of precisely the same shape as in *Upupa*, and no stronger in proportion to the size of the bird. Scapula strong; a depression near the point, which is slightly deflected. Ulna long in proportion to the humerus; metacarpus with the posterior bone flattened horizontally, anchylosed for the proximal third of its length to the anterior one, which has a deep groove arising on the upper part of the anterior edge, and terminating on the upper surface of its distal extremity.

Femur straight. Fibula one-third the length of the tibia, anchylosed to it at both extremities. Metatarsus broad, strong, deeply channeled in front, the divisions between the bones forming it well marked near its proximal extremity by two intermediate foramina; calcaneal process large, from which a keel proceeds down the mesometatarsal bone for two-thirds of its length.

Vertebral column very strong; the vertebræ very broad; the dorsal processes well marked on all; terminal caudal one very large, posterior, triangular.

Measurements.

	Tenths.		Tenths.
Length of humerus	48	Length of tibia	45
Length of ulna	70	Length of metatarsus	21
Length of metacarpus	25	Length of sternum	37
Length of femur	35	Breadth of posterior margin of sternum	22

Measurements (continued).

	Tenths.		Tenths.
Breadth of anterior margin of sternum	17	Breadth of head	20
Depth of keel	8	Length of pelvis	47
Length of head	80	Breadth of pelvis	25

BUCEROS, *Linn.*

Pica, *Scop.*

Precisely similar to *B. plicatus*, except in the form of the excrescence on the bill, and in having the scapula straighter, and the dorsal processes on the cervical vertebræ not so well marked.

Measurements.

	Tenths.		Tenths.
Length of humerus	32	Breadth of posterior margin of sternum	19
Length of ulna	50	Breadth of anterior margin of sternum	15
Length of metacarpus	18	Depth of keel	7
Length of femur	28	Length of head	70
Length of tibia	35	Breadth of head	18
Length of metatarsus	21	Length of pelvis	30
Length of sternum	29	Breadth of pelvis	18

BUCEROS, *Linn.*

Fasciatus, *Sh.*

This species has been made into a new genus by the Prince Bonaparte, under the name of *Grammicus*; it is one of the smaller and weaker species of Hornbill, but presents the same characters as the larger ones, from which it differs only in the following respects:—the pelvis approaches nearer to the form of that of the Kingfishers, the ridge at the junction between the ilium and ischium being nearly obliterated; and in having a spine projecting backwards on the posterior margin of the pelvis at the point of their junction. Only the three penultimate of the cervical vertebræ have the dorsal spine developed.

Measurements.

	Tenths.		Tenths.
Length of humerus	24	Breadth of posterior margin of sternum	12
Length of ulna	30	Breadth of anterior margin of sternum	8
Length of metacarpus	12	Depth of keel	$4\frac{1}{2}$
Length of femur	16	Length of head	41
Length of tibia	23	Breadth of head	$12\frac{1}{2}$
Length of metatarsus	$12\frac{1}{2}$	Length of pelvis	16
Length of sternum	19	Breadth of pelvis	$11\frac{1}{2}$

Buceros, *Linn.*

Panini, *Bodd.*

I have the head-, wing-, leg-, and palatine bones of this bird; they take precisely the same form as the larger species.

Illustration.

Palatine bones, Plate XII. fig. 11.

Buceros, *Linn.*

Elatus, *Temm.*

This bird has been made into a new genus by the Prince Bonaparte, under the name of *Ceratogymna*; it is, however, of precisely the same form as the other large species.

Bucorvus, *Less.*

Abyssinicus, *Gm.*

General form of the skeleton very similar to *Buceros plicatus* and the larger species of that genus, but has the keel of the sternum more arched, the metatarsi with only a very slight channel in front, which does not extend for above half their length, and the vertebræ of enormous size and strength;—I believe nearly, if not quite, the strongest among birds, particularly in the cervical region, some of them being more than an inch and a half in diameter, and only three-quarters long; the dorsal processes are not highly developed, except in the three upper ones.

Measurements.

	Tenths.		Tenths.
Length of humerus	55	Breadth of posterior margin of sternum	16
Length of ulna	76	Breadth of anterior margin of sternum	23
Length of metacarpus	27	Depth of keel	11
Length of femur	40	Length of head	75
Length of tibia	68	Breadth of head	25
Length of metatarsus	50	Length of pelvis	48
Length of sternum	45	Breadth of pelvis	25

Illustrations.

Skeleton, Plate VI. B.

Sternum, Plate VIII. fig. 12.

Numbering of the Vertebræ and Ribs in OMNIVORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Harpactes Reinwardtii	12	8	10	5	5	3
Podargus humeralis	10	8	11	7	5	3
Coracias Garrula	11	8	9	8	5	3
Eurylaimus Corydon	10	9	12	7	6	3
Trogon melanocephalus	11	8	10	6	5	3
Ægotheles cristatus	10	8	10	6	5	3
Caprimulgus europæus	10	8	10	6	5	3
Halcyon capensis	10	8	10	7	4	4
Alcyone azurea	12	8	10	8	4	4
Merops ornatus	12	7	11	7	4	3
Buceros plicatus	12	8	10	6	5	3
Buceros Pica	12	8	10	7	5	3
Upupa Epops	12	8	9	6	5	3
Alcedo ispida	11	8	10	6	5	3
Buceros fasciatus	11	8	10	6	5	3
Bucorvus abyssinicus	11	8	13	6	5	3
Merops bicolor	12	8	13	7	5	3
Merops Sonnini	12	7	12	7	4	3
Merops albicollis	12	7	12	7	4	3
Trogon aurantius	11	7	9	7	4	3
Trogon viridis	11	7	10	7	4	3
Ceryle americana	11	8	10	wanting.	5	3
Chelonidera tenebrosa	11	7	11	7	4	3
Monasa torquata	10	7	11	7	4	3
Capito Swainsonii	11	7	13	8	4	3

General Remarks on OMNIVORES.

The following, from an examination of the skeletons described, appear to be the distinctive marks of Omnivores:—The maxillary bones covering half or more of the roof of the mouth. The sphenoid rudimentary, in some instances no part of it being apparent except the interarticular portion. The sternum always constricted in the middle, or nearly so, of its lateral edges. The keel very slightly arched. The ischium always extending obliquely outwards and downwards from the plane of the ilium, and there being no distinct ridge to mark their junction, but in general a spine, more or less apparent, projecting backwards; the ilium in no case projecting over it; ischium as among Raptores. The pelvis broad and short, and generally with two fissures on its posterior angles. The metatarsus with a furrow down the front, more or less deep for its whole length. The rami of the furculum never meet at an acute angle.

The *Trogonidæ* have the sternum very short and broad, with generally two fissures on the posterior margin, except in one species of *Eurylaimus*, which has only one; the sternal fissures are both very broad, the central fissure pointing outwards; the keel has its anterior edge excavated. The pelvis is extremely short, and very broad. The furculum has a slight process at the junction of its rami, and is, like the coracoids, rather long.

The *Alcedinidæ* have the sternum rather longer than in *Trogonidæ*, and the fissures on each side pointing directly forwards; the pelvis is similar to *Trogonidæ*.

The *Buceridæ* resemble the Kingfishers in the form of the pelvis, particularly among

the weaker species, such as *Buceros fasciatus*, the skeleton of which bird would be scarcely distinguishable from that of a Kingfisher if the head were removed, were it not that it has only two broad but shallow fissures on the posterior margin of the sternum. In the larger species considerable differences exist: *Buceros plicatus*, for instance, has the ridge well marked where the ischium joins the ilium, and no spine on the posterior margin at that point; *Buceros abyssinicus* has a very slight ridge, and has the metatarsus without the deep channel extending down the front, so distinctly marked in the former species; the keel of the sternum also is more arched.

Order IV. PREHENSORES.

Fam. 1. PSITTACIDÆ.

Subfam. 1. PSITTACINÆ.

PSITTACUS, *Linn.*

Erythacus, *Linn.*

Type of Prehensores, Psittacidæ and Psittacinæ.

Cranium gradually arched from the base of the nasal bones to the occiput, without any central longitudinal depression; occipital ridge and protuberance slightly marked. Orbits well defined; the antorbital processes bounding them anteriorly with the points curved backwards. Septum perfect, except where perforated by the optic nerves. Nasal orifices of moderate size, rounded; a moderate transverse depression at the base of the bill. Palatine bones placed vertically, except at their anterior extremities, which are horizontally flattened, and expanding gradually for their anterior half; the hinder exterior angles projecting backwards, and armed near their extremities with a strong spine, from which the posterior margin slopes gradually upwards and forwards to the junction of the interarticular bones. Interior margins united by a ligament posteriorly, anteriorly diverging and terminating with a blunt spine; a blunt, but somewhat lengthened spine, pointing backwards, arises on their inferior surface just below the junction of the interarticular bones; zygomatic bones very long, articulated with the ossa quadrata and the maxillaries, which, with the nasal bones, are not anchylosed to the frontal bone, but have an elastic ligament between them, thus allowing a considerable upward motion to the upper jaw. Sphenoid without any transverse or basilar portion. Foramen magnum large, its inferior margin straight, the lateral margins gradually arched upwards, placed somewhat obliquely. Inferior maxillaries very broad and strong, broadest at about one-third of their anterior length; posteriorly with the superior edges rising much above their articulations with the ossa quadrata; posterior end sloped from the articulation downwards and backwards to a point.

Sternum of nearly the same breadth posteriorly as anteriorly, the lateral edges constricted just behind the junction of the ribs; posterior margin rounded, and having a somewhat oval foramen on each side; keel very broad, continued to the posterior margin of the sternum, the inferior edge very slightly arched, the anterior point very much rounded; the anterior edge slightly excavated below the manubrial process, which is bifid at its extremity.

Furculum small, short, not reaching to the sternum, flattened obliquely, with a slight process at the junction of the rami.

Coracoids rather long, with a strong process projecting from the exterior edges just above their junction with the sternum, and with a rounded knob projecting forwards at their junction with the furculum.

Pelvis rather broad; the ischium placed nearly perpendicularly to the upper plane of the ilium, the anterior half of the latter scolloped out on the sides; ischiadic foramen large, oval; obturator very wide for its whole length; at the junction of the os pubis with the ischium a small blunt spine projects from the latter.

Ribs projecting far backwards, of moderate strength; the styliform processes short and broad.

Wing-bones short and weak; metacarpal bones anchylosed together at both extremities, posterior one much arched; scapula bent downwards to a point and flattened at its extremity.

Femur with the trochanters small; tibiæ above twice the length of the metatarsus; fibulæ half the length of the tibiæ, not anchylosed to the latter for the first half of their length. Entometatarsal bone elevated into a ridge in front; the two other bones forming the metatarsus projecting backwards behind it, and having a channel between them; calcaneal process extending over the whole width of the metatarsus, and slightly excavated in the centre. Vertebral column of moderate strength; the penultimate and three next vertebræ with the dorsal spines well developed.

Measurements.

	Tenths.		Tenths.
Length of humerus	21	Breadth of posterior margin of sternum	14
Length of ulna	26	Breadth of anterior margin of sternum	12
Length of metacarpus	15½	Depth of keel	9
Length of femur	19	Length of head	29
Length of tibia	25	Breadth of head	12½
Length of metatarsus	9	Length of pelvis	26
Length of sternum	25	Breadth of pelvis	13

Illustrations.

Base and section of cranium, Plate XI. fig. 1.

Sternum, coracoid, scapula, furculum, pelvis, and metatarsus, Plate X. fig. 1.

PSITTACUS, *Linn.*

Melanocephalus, *Linn.*

Cranium with the antorbital process extended backwards, so as to meet the cranial portion of the sphenoid, to which it is anchylosed, thus completing the bony ring round the orbits; in other respects the cranium is similar to that of *P. erythacus*.

Sternum longer in proportion to its width than in *P. erythacus*; the remaining bones similar except in measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	8½
Length of ulna	16	Breadth of anterior margin of sternum	8
Length of metacarpus	10	Depth of keel	7
Length of femur	12½	Length of head	22
Length of tibia	18	Breadth of head	11½
Length of metatarsus	6½	Length of pelvis	20
Length of sternum	20	Breadth of pelvis	9

PSITTACUS, *Linn.*

Albifrons, *Sparm.*

PSITTACUS, *Linn.*

Leucocephalus, *Linn.*

I have the sterna, coracoids, furcula, and scapulæ of the above two birds; they resemble in every respect those of the two last-mentioned species.

PSITTACUS, *Linn.*

Guildingii, *Vig.*

Foramina on the posterior margin of the sternum nearly obliterated; in other respects similar to *P. erythacus*, in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	27½	Breadth of posterior margin of sternum	16
Length of ulna	31	Breadth of anterior margin of sternum	12
Length of metacarpus	18	Depth of keel	7
Length of femur	21	Length of head	27½
Length of tibia	38½	Breadth of head	25
Length of metatarsus	9	Length of pelvis	33
Length of sternum	27	Breadth of pelvis	15

CHRYSOTIS, *Sw.*

Ochrocephalus, *Gm.*

Very similar to *Psittacus*, but with the pelvis narrower; the bony ring round the orbits not quite perfect; the sternum not so much rounded on its posterior margin, and the lateral margins not so much constricted behind the junction of the ribs.

Measurements.

	Tenths.		Tenths.
Length of humerus	19	Breadth of posterior margin of sternum	12
Length of ulna	23	Breadth of anterior margin of sternum	10
Length of metacarpus	11½	Depth of keel	7
Length of femur	16	Length of head	20
Length of tibia	21	Breadth of head	10
Length of metatarsus	7½	Length of pelvis	22
Length of sternum	20	Breadth of pelvis	10½

CHRYSOTIS, *Sw.*

Amazonicus, *Gm.*

Similar to *ochrocephalus*, in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	22	Breadth of posterior margin of sternum	16
Length of ulna	28	Breadth of anterior margin of sternum	12
Length of metacarpus	13	Depth of keel	8
Length of femur	19	Length of head	26
Length of tibia	26	Breadth of head	15
Length of metatarsus	8	Length of pelvis	27
Length of sternum	25	Breadth of pelvis	13

CHRYSOTIS, *Sw.*

Brasiliensis, *Linn.*

Similar to *ochrocephalus*, but with the bony ring round the orbits complete.

Measurements.

	Tenths.		Tenths.
Length of humerus	22	Breadth of posterior margin of sternum	14
Length of ulna	27	Breadth of anterior margin of sternum	10
Length of metacarpus	14	Depth of keel	7
Length of femur	17	Length of head	25
Length of tibia	24	Breadth of head	12½
Length of metatarsus	7	Length of pelvis	24
Length of sternum	24	Breadth of pelvis	14

Illustration.

Skeleton, Plate I. C.

PALÆORNIS, *Vig.*

Columboides, *Vig.*

Very similar to *Psittacus*, but with the keel of the sternum deeper in proportion to its width, which is the same posteriorly as anteriorly, and the pelvis narrower in proportion to its width; the bony ring round the orbits not quite complete. *Palæornis ponticerianus* is similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	12½	Breadth of posterior margin of sternum	7
Length of ulna	15	Breadth of anterior margin of sternum	7
Length of metacarpus	9	Depth of keel	6½
Length of femur	13	Length of head	19
Length of tibia	19	Breadth of head	10
Length of metatarsus	6	Length of pelvis	19½
Length of sternum	16	Breadth of pelvis	7

Subfam. 2. CACATUINÆ.

CACATUA, *Briss.*

Galerita, *Lath.*

Type of Cacatuinæ.

Cranium stronger than in *Psittacus*; the vertex very flat nearly to the base of the nasal bones, where there is a deep transverse impression; orbits round; the anteorbital process united to the cranial portion of the sphenoid; posterior ends of the inferior maxillaries sloped downwards and backwards to a point.

Sternum entire, without any foramen or fissure on its posterior margin, similar in shape to *Psittacus*, but with the keel more arched and the manubrial process broader. Coracoids strong, projecting far forwards beyond the glenoid cavity. Furculum similar to *Psittacus*, but much stronger. Scapula short, much more bent downwards at the extremity than in *Psittacus*. *Pelvis* similar to *Psittacus*, but with the obturator foramen not above half the width. The remaining portion of the skeleton also similar, but much stronger.

Measurements.

	Tenths.		Tenths.
Length of humerus	35	Breadth of posterior margin of sternum	15
Length of ulna	43	Breadth of anterior margin of sternum	14
Length of metacarpus	23	Depth of keel	10
Length of femur	25	Length of head	30
Length of tibia	23	Breadth of head	17
Length of metatarsus	12	Length of pelvis	35
Length of sternum	31	Breadth of pelvis	14

CACATUA, *Briss.*

Moluccensis, *Gm.*

Sternum rather shorter in proportion than in *galerita*, and the manubrial process rather longer; anterior edge of the keel not extending to the end of it. *Cacatua sulphurea* and *citrinocristata* are similar to the above. All are in the British Museum.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	15
Length of ulna	39	Breadth of anterior margin of sternum	14
Length of metacarpus	20	Depth of keel	8
Length of femur	24½	Length of head	35
Length of tibia	34	Breadth of head	19
Length of metatarsus	11	Length of pelvis	35½
Length of sternum	17½	Breadth of pelvis	17

CACATUA, *Briss.*

Eos, *Kuhl.*

Similar to the preceding.

Measurements.

	Tenths.		Tenths.
Length of humerus	19	Breadth of posterior margin of sternum	11
Length of ulna	22	Breadth of anterior margin of sternum	10
Length of metacarpus	13	Depth of keel	6½
Length of femur	16	Length of head	21
Length of tibia	23	Breadth of head	11½
Length of metatarsus	7	Length of pelvis	24
Length of sternum	19	Breadth of pelvis	11½

CALYPTORHYNCHUS, *Vig. & Horsf.*

Baudinii, *Temm.*

Cranium of enormous size and strength; the vertex not quite so flat as in *Cacatua*; the nasal bones much elevated above the frontal, forming a transverse ridge, highest in the middle, the bill bending very abruptly downwards; orbits entirely surrounded by bone, as in *Cacatua*; impression of the masseter muscles large; hinder margin of the inferior maxillaries truncate. Skeleton very strong. Remaining bones similar to *Cacatua*.

Measurements.

	Tenths.		Tenths.
Length of humerus	30	Breadth of posterior margin of sternum	12
Length of ulna	37	Breadth of anterior margin of sternum	11½
Length of metacarpus	22	Depth of keel	10
Length of femur	21	Length of head	38
Length of tibia	31	Breadth of head	19
Length of metatarsus	10	Length of pelvis	30
Length of sternum	27	Breadth of pelvis	15

Illustrations.

Sternum, coracoid, scapula, furculum, pelvis, and metatarsus, Plate X. fig. 2.

NESTOR, *Wagl.*

Australis, *Sh.*

Very similar to *Cacatua*, but having two fissures on the posterior margin of the sternum, the anterior edge slightly receding, and the tarsi rather longer.

Measurements.

	Tenths.		Tenths.
Length of humerus	22	Breadth of posterior margin of sternum	11
Length of ulna	25	Breadth of anterior margin of sternum	10
Length of metacarpus	18	Depth of keel	7
Length of femur	20	Length of head	30½
Length of tibia	31	Breadth of head	15
Length of metatarsus	14½	Length of pelvis	27
Length of sternum	23	Breadth of pelvis	12

Subfam. 3. STRIGOPSINÆ.

STRIGOPS, *G. R. Gray.*

Habroptilus, *G. R. Gray.*

Cranium regularly arched from the occiput to the tip of the bill; transverse impression at the base of the nasal bones very slight; nasal orifices large, slightly oval; the remaining bones of the head similar to the other *Psittacidæ*.

Sternum broadest posteriorly, and gradually narrowed anteriorly; the hinder margin very much curved from the centre to the lateral margins; the keel consists of a very slight rib, which does not quite reach the posterior margin, which has a small foramen on each side; anterior edge of the sternum bifid, but without any manubrial process. Coracoids short and strong. Furculum rudimentary, the rami not meeting.

Metatarsi with the divisions of the bones forming it distinct; the entometatarsal one the smallest; the ectometatarsal trochlea much shorter than the mesometatarsal one.

The skeleton from which the above description has been taken is in the British Museum, and is very much diseased, having probably died in confinement of mollities ossium.

Measurements.

	Tenths.		Tenths.
Length of humerus	21	Breadth of posterior margin of sternum	20
Length of ulna	25	Breadth of anterior margin of sternum	15
Length of metacarpus	14	Depth of keel	
Length of femur	30	Length of head	34
Length of tibia	38	Breadth of head	19
Length of metatarsus	15	Length of pelvis	38
Length of sternum	25	Breadth of pelvis	21½

Subfam. 4. ARINÆ.

ARA, *Briss.*

Macao, *Linn.*

Two specimens of this bird are in the British Museum: one has the foramina near the posterior margin of the sternum perfect; the other, evidently a younger bird, has them open, forming fissures. The form of the bones is very similar to *Cacatuinæ*; but the sternum is more constricted behind the junction of the ribs; keel of the sternum carried forwards to the end of the manubrial process, which is bifurcate and bent upwards.

Measurements.

	Tenths.		Tenths.
Length of humerus	35	Breadth of posterior margin of sternum	18
Length of ulna	43	Breadth of anterior margin of sternum	16
Length of metacarpus	28	Depth of keel	11½
Length of femur	26½	Length of head	47
Length of tibia	35	Breadth of head	22
Length of metatarsus	14	Length of pelvis	40½
Length of sternum	37	Breadth of pelvis	19

ARA, *Briss.*

Hyacinthina, *Lath.*

Similar to the last, but with the manubrial process more bent downwards, and not so deeply bifurcate.

Measurements.

	Tenths.		Tenths.
Length of humerus	35	Length of femur	28
Length of ulna	47	Length of tibia	38
Length of metacarpus	27	Length of metatarsus	14

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	42	Length of head	50
Breadth of posterior margin of sternum	19	Breadth of head	28
Breadth of anterior margin of sternum	19	Length of pelvis	46½
Depth of keel	11	Breadth of pelvis	20½

ENICOGNATHUS, *G. R. Gray.*

Leptorhynchus, *King.*

Very similar to *Ara*, but much smaller and weaker.

Measurements.

	Tenths.		Tenths.
Length of humerus	18	Breadth of posterior margin of sternum	12
Length of ulna	20	Breadth of anterior margin of sternum	9
Length of metacarpus	14	Depth of keel	8
Length of femur		Length of head	13
Length of tibia	22	Breadth of head	12
Length of metatarsus	7	Length of pelvis	24
Length of sternum	22	Breadth of pelvis	12½

CONURUS, *Kuhl.*

Tiriacula, *Bodd.*

Similar to *Ara*, but with the bony circle round the orbits not complete; the sternum longer in proportion to its width, and the anterior edge of the keel carried forward to the end of the manubrial process, the point not so much rounded; furculum very small, but perfect.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	7
Length of ulna	12	Breadth of anterior margin of sternum	5
Length of metacarpus	8	Depth of keel	5
Length of femur	10	Length of head	15
Length of tibia	14	Breadth of head	8
Length of metatarsus	4	Length of pelvis	15
Length of sternum	15	Breadth of pelvis	8

CONURUS, *Kuhl.*

Virginianus ?, *Mus. Brit.*

A skeleton marked as above is in the British Museum, and is similar in form to *Ara*. I have also the sternum of *Conurus flavicollis*, which is also similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	9
Length of ulna	16	Breadth of anterior margin of sternum	7
Length of metacarpus	10½	Depth of keel	6
Length of femur	10	Length of head	18
Length of tibia	11	Breadth of head	9½
Length of metatarsus	5½	Length of pelvis	16
Length of sternum	17½	Breadth of pelvis	8

Subfam. 5. LORINÆ.

ECLECTUS, *Wagl.*

Ceylonensis, *Bodd.*

Sternum with the anterior edge of the keel carried forward to the end of the manubrial process, with a very slight excavation below it, and very little constricted behind the junction of the ribs.

Measurements.

	Tenths.		Tenths.
Length of humerus	23	Breadth of posterior margin of sternum	12
Length of ulna	30	Breadth of anterior margin of sternum	11½
Length of metacarpus	17½	Depth of keel	7½
Length of femur	18	Length of head	24
Length of tibia	23	Breadth of head	13
Length of metatarsus	9	Length of pelvis	30
Length of sternum	23½	Breadth of pelvis	15

Subfam. 6. PEZOPORINÆ.

TRICHOGLOSSUS, *Vig. & Horsf.*

Versicolor, *Vig.*

Type of Pezoporinæ.

Cranium similar to *Psittacus*, but slightly more arched over the vertex, with a very slight depression above the nasal bones; anteorbital process not uniting with the sphenoid.

Sternum much attenuated anteriorly; keel very deep in proportion to the breadth of

the horizontal plane; two large foramina on the posterior margin, which is much wider than the anterior; anterior edge of the keel carried forward as far as the extremity of the manubrial process, which is very small and slight. Coracoids as in *Psittacus*. Furculum represented by a narrow and thin strip of bone, and extending downwards on the inside of the coracoids for about half their length.

Pelvis similar to *Psittacus*, but proportionately longer and narrower; obturator foramen consisting merely of a narrow slit between the os pubis and the ischium.

Tarsi longer in proportion to the tibiæ than in *Psittacus*; remaining bones similar in form.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Breadth of posterior margin of sternum	8
Length of ulna	16	Breadth of anterior margin of sternum	6
Length of metacarpus	10	Depth of keel	7
Length of femur	13	Length of head	19
Length of tibia	18	Breadth of head	8
Length of metatarsus	8½	Length of pelvis	17
Length of sternum	17	Breadth of pelvis	8

TRICHOGLOSSUS, *Vig. & Horsf.*

Hæmatodus, *Linn.*

In general form similar to the foregoing, but with only a very rudimentary furculum, and the keel of the sternum not so deep; the tarsi shorter in proportion to the tibiæ.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	9
Length of ulna	12	Breadth of anterior margin of sternum	6
Length of metacarpus	7½	Depth of keel	5
Length of femur	11	Length of head	17
Length of tibia	16	Breadth of head	9
Length of metatarsus	6	Length of pelvis	16
Length of sternum	17	Breadth of pelvis	9

PLATYCERCUS, *Vig.*

Zonarius, *Sh.*

Cranium with the inferior maxillaries much stronger and broader than in *Trichoglossus versicolor*; manubrial process bifurcate; no furculum; the remaining portions of the skeleton similar in form, but larger.

Measurements.

	Tenths.		Tenths.
Length of humerus	15	Breadth of posterior margin of sternum	9½
Length of ulna	19	Breadth of anterior margin of sternum	7
Length of metacarpus	11½	Depth of keel	7
Length of femur	14	Length of head	19
Length of tibia	21	Breadth of head	10½
Length of metatarsus	10	Length of pelvis	20
Length of sternum	20½	Breadth of pelvis	10

PLATYCERCUS, *Vig.*

Icterotis, *Temm.*

Similar in form to *Platycercus zonarius*, as are also *Platycercus Barnardii* and *Brownii*; all agree in being destitute of clavicles. *Platycercus erythropterus* and *scapulatus*, although in other respects agreeing, have weak, but perfect clavicles.

Measurements.

	Tenths.		Tenths.
Length of humerus	10½	Breadth of posterior margin of sternum	7
Length of ulna	14	Breadth of anterior margin of sternum	5
Length of metacarpus	9	Depth of keel	6
Length of femur	10½	Length of head	14
Length of tibia	16	Breadth of head	7
Length of metatarsus	4	Length of pelvis	14½
Length of sternum	14	Breadth of pelvis	6½

PSITTACULA, *Briss.*

Pileata, *Scop.*

Similar to *Trichoglossus*; the bony ring round the orbits not complete. Furculum perfect, but very small and weak.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Breadth of posterior margin of sternum	10
Length of ulna	16	Breadth of anterior margin of sternum	6½
Length of metacarpus	10	Depth of keel	6
Length of femur	13	Length of head	17
Length of tibia	20	Breadth of head	8
Length of metatarsus	7	Length of pelvis	18
Length of sternum	18	Breadth of pelvis	9

PSITTACULA, *Briss.*

Passerina, *Linn.*

Cranium with the anteorbital process joined to the sphenoid; without clavicles; the keel of the sternum not quite so deep as in *Euphema*, but in other respects similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	7	Breadth of posterior margin of sternum	6
Length of ulna	9½	Breadth of anterior margin of sternum	4½
Length of metacarpus	5½	Depth of keel	3½
Length of femur	7	Length of head	11
Length of tibia	10½	Breadth of head	6
Length of metatarsus	6	Length of pelvis	10½
Length of sternum	11	Breadth of pelvis	5½

PSITTACULA, *Briss.*

Pullaria, *Linn.*

This bird has been placed in a different genus under the name of *Agapornis*, but does not differ in its osteology from *Psittacula passerina*. *Psittacula galgula* and *rubricollis* are also similar, except that the former has a very slight, but still a perfect furculum.

EUPHEMA, *Wagl.*

Elegans, *Gould.*

Cranium broader in proportion to its length than in *Trichoglossus*, without a furculum; and in other respects similar to *Trichoglossus versicolor*, except in measurements. *Euphema chrysostoma* is also similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	6½
Length of ulna	11	Breadth of anterior margin of sternum	5
Length of metacarpus	8	Depth of keel	5½
Length of femur	9	Length of head	11
Length of tibia	12	Breadth of head	6
Length of metatarsus	5½	Length of pelvis	12
Length of sternum	13½	Breadth of pelvis	6

PEZOPORUS, *Ill.*

Formosus, *Lath.*

Cranium similar to *Psittacula*. *Sternum* with the keel deeper. *Metatarsus* much longer in proportion to the tibia; the remaining bones similar; ulna and humerus of the same length.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8
Length of ulna	11	Breadth of anterior margin of sternum	5
Length of metacarpus	$8\frac{1}{2}$	Depth of keel	5
Length of femur	11	Length of head	$13\frac{1}{2}$
Length of tibia	16	Breadth of head	7
Length of metatarsus	9	Length of pelvis	13
Length of sternum	14	Breadth of pelvis	6

Illustrations.

Sternum, coracoid, scapula, pelvis, and metatarsus, Plate X. fig. 3.

Numbering of the Vertebræ and Ribs in PREHENSORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Psittacus Guildingii	11	9	12	wanting.	6	3
Nestor novæ zealandiæ	12	8	11	6	5	3
Conurus virginianus	11	8	10	6	4	4
Ara macao	11	9	11	7	5	4
Eclectis grandis	12	9	12	wanting.	5	3
Cacatua sulphurea	12	8	12	7	5	3
—— citrinocristata.....	12	8	13	6	5	3
Psittacula pullaria	12	8	12	6	5	3
—— passerina	11	8	12	6	5	3
Pezoporus formosus	damaged.	8	11	6	6	3
Psittacus erythacus.....	11	9	11	6	6	3
Calyptorhynchus Baudinii	11	9	10	6	6	3
Plyctolophus galeritus	11	9	11	6	6	3
Trichoglossus versicolor	10	9	10	7	6	3
Palæornis columboides	11	9	12	6	6	3
Euphema chrysostoma	10	9	10	6	6	3
Platycercus Brownii	11	9	10	5	6	3
Euphema elegans.....	11	9	10	6	6	3
Trichoglossus hæmatodes	11	9	11	7	6	3
Platycercus zonarius	11	10	12	6	7	3
—— icterotis	11	9	11	6	7	3
—— Barnardi	11	9	11	6	7	3
Strigops habroptilus	14	9	13	7	7	2

General Remarks on PREHENSORES.

The Order Prehensores is one of the best-marked groups among Birds. They are easily distinguished, independently of external characters, there being no group that

resembles them in the form of the palatine bones, except one among Insessores, and from that they are easily distinguished by the other parts of the skeleton. The great motion of the upper mandible is peculiar. The form of the sternum, in general having great depth of keel in proportion to the breadth of the horizontal portion of it, has nothing like it, except among Volitores. The furculum is either, although perfectly formed, very weak, rudimentary, or entirely wanting; the ribs are continued very far backwards over the sides of the abdomen. The branches of the os pubis are generally very much turned inwards at their points, and the posterior margin of the ischium is gradually rounded towards them, from its junction with the ilium. The wing-bones are short, as are also the metatarsal and other leg bones.

Order V. SCANSORES.

Fam. 1. PICIDÆ.

Subfam. 1. GECININÆ.

GECINUS, *Boie.*

Viridis, *Linn.*

Type of Picidæ and Gecininæ.

Cranium of moderate size; vertex very convex; occipital ridge moderately defined; orbits slightly reflexed, nearly round; septum perforated with a single small foramen; anteorbital process bent much backwards, but not united with the sphenoid. Palatine bones long, much attenuated posteriorly for about one-fourth of their length, and united at their articulation with the interarticular bones, carried forwards in the form of a gradually narrowing strip to the maxillaries, which are perforated on their inner edge at about half their length by an elongated oval foramen; the internal edge of the posterior third slightly deflexed. Interarticular bones flattened, with their edges slightly deflexed, broadest in their centres; channel for the masseter muscles small. Foramen magnum large, placed nearly horizontally. Nasal orifices oval; a deep indentation at the base of the nasal bones, from which proceeds a ridge, very apparent in front, and gradually losing itself in the vertex, on each side of which is a channel for the reception of the hyoids.

Sternum transversely convex, much constricted behind the junctions of the ribs; anterior margin narrower than the posterior one; manubrial process long, bifid at the extremity; posterior margin indented with two large fissures on each side of the keel, the inner one largest; the central portion of the sternum between the two inner fissures not projecting so far backwards as the strip of bone separating the two foramina. Keel shallow, with the inferior edge nearly straight; anterior edge also straight, and carried forwards as far as the end of the manubrial process, to which it is united.

Pelvis of moderate length and breadth; the ilium projecting angularly over the cotyloid cavities, from which point backwards the edges are nearly parallel; the two sides of the ilium anteriorly divaricate, and are not united for one-third of their length; ischium inclined much outwards; from the edge of the ilium a process projects backwards at the junction of the ilium with the ischium. Obturator foramen divided, the posterior portion large and oval, the anterior portion small and rounded; ischiadic foramen large, oval. Coracoids very long. Furculum weak, without any process at the

junction of the rami, arched transversely. Scapulæ flattened, blunt, and much deflected at their extremities.

Ribs projecting far backwards; sternal ones long.

Wings short, the radius much flattened.

Leg-bones of moderate strength; fibula half as long as the tibia, which has a keel projecting on its internal upper half. Metatarsus with the divisions of the bones composing it not traceable; a slight excavation anteriorly on the inner side, posteriorly flattened.

Vertebral column with the penultimate and three next vertebræ having dorsal spines; terminal caudal vertebra pointed and somewhat elongated.

Measurements.

	Tenths.		Tenths.
Length of humerus	16	Breadth of posterior margin of sternum	11
Length of ulna	20	Breadth of anterior margin of sternum	8
Length of metacarpus	8	Depth of keel	4
Length of femur	14	Length of head	27
Length of tibia	17	Breadth of head	9
Length of metatarsus	12	Length of pelvis	22
Length of sternum	16	Breadth of pelvis	12

Illustrations.

Coracoid, scapula, furculum, palatine bones, sternum, and pelvis, Plate XI. fig. 2.

GECINUS, *Boie.*

Dimidiatus, *Temm.*

Similar to *G. viridis*, but with the hinder exterior angles of the palatine bones produced into a blunt spine, and the keel of the sternum not so deep.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Breadth of posterior margin of sternum	8
Length of ulna	16	Breadth of anterior margin of sternum	7
Length of metacarpus	8	Depth of keel	3
Length of femur	12	Length of head	26
Length of tibia	18	Breadth of head	9
Length of metatarsus	10	Length of pelvis	17
Length of sternum	13	Breadth of pelvis	10

Illustration.

Skeleton, Plate I. D.

HEMILOPHUS, *Sw.*

Validus, *Reinw.*

Cranium with the orbits more rounded than in *Gecinus*. Palatine bones similar in shape to those of *Gecinus dimidiatus*, but narrower.

Sternum broader in proportion to its length, and much curved outwards posteriorly to the junction of the ribs; fissures not so large, and differing very slightly in size. Inferior edge of the keel very slightly arched; anterior one with the point produced, and with a slight excavation between it and the manubrial process. In other respects the skeleton is similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	15	Breadth of posterior margin of sternum	10
Length of ulna	17	Breadth of anterior margin of sternum	8½
Length of metacarpus	9	Depth of keel	3
Length of femur	13	Length of head	31
Length of tibia	17	Breadth of head	10½
Length of metatarsus	12	Length of pelvis	21
Length of sternum	17	Breadth of pelvis	11

CAMPETHERA, *G. R. Gray.*

Brachyrhynchus, *Sw.*

Cranium similar to *Gecinus*. Palatine bones with a slight notch on their posterior external angles.

Pelvis very large and broad. Remainder of the skeleton very similar to *Gecinus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	7
Length of ulna	11½	Breadth of anterior margin of sternum	5
Length of metacarpus	5	Depth of keel	3
Length of femur	9	Length of head	13
Length of tibia	12	Breadth of head	6
Length of metatarsus	6½	Length of pelvis	14
Length of sternum	9	Breadth of pelvis	9

Subfam. 2. MELANERPINÆ.

CHLORONERPES, *Sw.*

Aurulentus, *Licht.*

Type of Melanerpinæ.

Cranium with a distinct central channel between the upper margins of the orbits. Palatine bones similar to *Melanerpes*, but narrower. *Sternum* very short.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	8
Length of ulna	15	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	3
Length of femur	9	Length of head	20
Length of tibia	13	Breadth of head	7
Length of metatarsus	8	Length of pelvis	14
Length of sternum	10	Breadth of pelvis	9

CHLORONERPES, *Sw.*

Chlorocephalus, *Gm.*

Similar to the preceding, but smaller.

Measurements.

	Tenths.		Tenths.
Length of humerus	$9\frac{1}{2}$	Breadth of posterior margin of sternum	5
Length of ulna	11	Breadth of anterior margin of sternum	4
Length of metacarpus	4	Depth of keel	3
Length of femur	7	Length of head	17
Length of tibia	11	Breadth of head	7
Length of metatarsus	6	Length of pelvis	$10\frac{1}{2}$
Length of sternum	9	Breadth of pelvis	7

MELANERPES, *Sw.*

Flavifrons, *Vieill.*

Palatine bones with the external edges on their posterior portion much bent downwards; this flap is carried forwards down the inner margin of the central portion of the bone, giving it the appearance of being twisted on its axis; central portion with the external angles square, without any spine. Occipital protuberance well defined. The remainder of the skeleton similar to *Gecinus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	8
Length of ulna	14	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	3
Length of femur	9	Length of head	20
Length of tibia	13	Breadth of head	8
Length of metatarsus	$8\frac{1}{2}$	Length of pelvis	13
Length of sternum	11	Breadth of pelvis	10

MELANERPES, *Sw.*

Formicivorus, *Sw.*

I have only the head, wing, and leg bones, taken from a skin, which are similar to the preceding.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	
Length of ulna	16	Breadth of anterior margin of sternum	
Length of metacarpus	8	Depth of keel	
Length of femur		Length of head	18
Length of tibia	14	Breadth of head	8
Length of metatarsus	8	Length of pelvis	
Length of sternum		Breadth of pelvis	

CENTURUS, *Sw.*

Subelegans, *Bon.*

The bones also taken from a skin. The palatine bones not quite so angular as in *Gecinus* on the external posterior angles. Head more flattened.

CENTURUS, *Sw.*

Radiolatus, *Wagl.*

I have the sternum only of this bird; it is much broader in proportion to its length than in *Gecinus*, and has the fissures deeper, narrower, and more oval.

Measurements.

	Tenths.		Tenths.
Length of sternum	12	Breadth of anterior margin of sternum	7
Breadth of posterior margin of sternum	9		

Subfam. 3. PICINÆ.

PICUS, *Linn.*

Major, *Linn.*

My skeleton of this bird is much damaged. Sternum with the fissures next the keel much larger than the outer ones; the margins very much curved outwards behind the ribs; keel deeper in proportion to its length than in *Gecinus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	8½
Length of ulna	16	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	4
Length of femur	9	Length of head	
Length of tibia	14	Breadth of head	
Length of metatarsus	8	Length of pelvis	16
Length of sternum	13	Breadth of pelvis	8

Subfam. 4. PICUMNINÆ.

PICUMNUS, *Temm.*

Temminckii, *Lafr.*

Differs from the preceding Subfamily in having the inner fissure on the posterior margin of the sternum the largest, and in the anterior edge of the keel being square, and not receding; furculum very weak.

Measurements.

	Tenths.		Tenths.
Length of humerus	6	Breadth of posterior margin of sternum	4
Length of ulna	7	Breadth of anterior margin of sternum	3
Length of metacarpus	3	Depth of keel	2
Length of femur	6	Length of head	11
Length of tibia	8	Breadth of head	6
Length of metatarsus	6	Length of pelvis	6
Length of sternum	7	Breadth of pelvis	6

PICUMNUS, *Temm.*

Exilis, *Licht.*

Cranium with the hinder exterior angles of the palatine bones narrow, and pointed posteriorly.

Sternum with two fissures on each side of the keel, the outer one much the larger; the anterior part of the keel receding. Remaining bones similar to the other *Picidæ*.

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Breadth of posterior margin of sternum	5
Length of ulna	9	Breadth of anterior margin of sternum	4
Length of metacarpus	4	Depth of keel	2½
Length of femur	5½	Length of head	11
Length of tibia	9	Breadth of head	6
Length of metatarsus	5	Length of pelvis	9
Length of sternum	6	Breadth of pelvis	6

General Remarks on SCANSORES.

The only group of birds that this Order comes at all near are some of the members of the Order Omnivores, namely the *Capitoninæ*. At first I placed this group in Scansores; but the great length of the fissures in the sternum, the exceeding shortness and squareness of the sternum, and the form of the pelvinal bones agreeing precisely with *Trogonidæ*, at once point them out as belonging to the same Order.

Order VI. ERUCIVORES.

Fam. 1. CUCULIDÆ.

Subfam. 1. CENTROPINÆ.

CENTROPUS, *Ill.*

Phasianus, *Lath.*

Type of Cuculidæ and Centropinæ.

Cranium slightly hollowed out between the orbits, which are very large; the septum with a very large central foramen; channel for the masseter muscles deep, and carried backwards to the occiput, which has a well-marked ridge. Palatine bones united at their internal posterior angles, slightly sloped to their external angle, where they are broadest, and from which point they gradually taper anteriorly, the central and lateral edges turned downwards. Interarticular bones slightly flattened. Inferior maxillary bones hollowed out on their external side for a little more than one-half their length, near the centre of which is a foramen of an elongated oval form, being an unossified space left at the place of union of the symphysial with the angular, supra-angular, and splenial elements *. Nostrils large, oval. Lacrymals small, rounded.

Sternum with the lateral margins curving from the junction of the ribs gradually outwards; posterior margin with a moderate-sized fissure on each side of the keel; the central portion between the fissures projecting further backwards than the lateral ones. Keel of moderate size, very slightly arched on its inferior edge, and continued to the posterior margin of the sternum; the anterior edge scolloped out from the junction of the furculum to the manubrial process, which is small, consisting merely of a projecting blunt spine; above the coracoids a lengthened plate projects from their articulation, to which the ribs are articulated. Coracoids of moderate length. Furculum with the rami rounded, slightly arched anteriorly when viewed laterally, when from the front appearing nearly straight to within a short distance of their junction, where they curve inwards, a thin plate at their articulation with the sternum extending downwards and backwards.

Pelvis of moderate size, with an elevated central keel extending down the whole length of the ilium; the anterior edge of the ilium curved upwards, from which point to the cotyloid cavity it is gradually curved inwards; a transverse ridge a little behind the cotyloid cavity, extending about halfway over each division of the ilium. The upper plane of the ilium projecting very far over the ischium, the edges rounded gradually inwards

* See Owen, Encyclopædia of Comparative Anatomy, *Aves*, p. 277.

from the cotyloid cavity to the caudal vertebræ, where it projects on each side of the first, and is slightly turned upwards; ischium broad, consisting of a triangular plate on each side; the posterior margin nearly straight, projecting slightly backwards at its inferior angle. Os pubis posteriorly to the cotyloid cavity consisting of a narrow strip of bone projecting very slightly beyond the posterior angle of the ischium, to which it is anchylosed for nearly its whole length, the obturator foramen being represented merely by a small oval foramen near its extremity, and a small rounded one behind the cotyloid cavity. The anterior extremity of the os pubis is prolonged beyond the cotyloid cavity in the form of a flattened blunt spine projecting forwards and downwards.

Ribs of moderate size, narrow at their sternal extremities, and gradually widened to their junction with the vertebræ; styliform appendage rather long.

Wing-bones short; the posterior metacarpal bone much arched and perpendicularly flattened.

Leg-bones rather long; the femur rounded, bent downwards, long in proportion to the tibia; metatarsus and femur nearly equal in length. Metatarsus flattened in front, with a shallow excavation at its distal extremity; two indentations just above the trochlea mark the divisions of the three bones composing it; posteriorly rounded at its distal extremity, flattened at its proximal, with a slight central keel extending downwards for about half its length from the calcaneal process, which is rather prominent and blunt at its extremity.

Vertebral column strong; the penultimate vertebra and the two next with a dorsal process.

Measurements.

	Tenths.		Tenths.
Length of humerus	26	Breadth of posterior margin of sternum	14
Length of ulna	22	Breadth of anterior margin of sternum	11
Length of metacarpus	12	Depth of keel	$5\frac{1}{2}$
Length of femur	24	Length of head	30
Length of tibia	34	Breadth of head	11
Length of metatarsus	22	Length of pelvis	20
Length of sternum	18	Breadth of pelvis	15

Illustrations.

Skeleton, Plate I. E.

Palatine bones, sternum, pelvis, and metatarsi, Plate XIII. fig. 1.

CROTOPHAGA, *Linn.*

Ani, *Linn.*

Cranium similar to *Centropus*, but rather flatter on the vertex.

Sternum rather shorter in proportion to its width. Remaining bones similar. The anterior end of the os pubis slightly projecting.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Breadth of posterior margin of sternum	7
Length of ulna	11	Breadth of anterior margin of sternum	$5\frac{1}{2}$
Length of metacarpus	$6\frac{1}{2}$	Depth of keel	3
Length of femur	$12\frac{1}{2}$	Length of head	20
Length of tibia	20	Breadth of head	8
Length of metatarsus	14	Length of pelvis	12
Length of sternum	10	Breadth of pelvis	$6\frac{1}{2}$

Subfam. 2. COCCYZINÆ.

PIAYA, *Less.*

Circe, *Bp.*

Type of Coccyzinæ.

Cranium similar to *Centropus*, but not nearly so strongly marked, and the foramen in the orbital septum smaller; the lacrymals larger, rounded.

Sternum very short, with two fissures on the posterior margin; inferior edge of the keel straight.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	9
Length of ulna	$12\frac{1}{2}$	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	$2\frac{1}{2}$
Length of femur	16	Length of head	21
Length of tibia	$22\frac{1}{2}$	Breadth of head	$8\frac{1}{2}$
Length of metatarsus	15	Length of pelvis	13
Length of sternum	10	Breadth of pelvis	9

PIAYA, *Less.*

Mehleri, *Bp.*

I possess the sternum, coracoids, scapula, and furculum of this bird; they are precisely similar in form to the foregoing.

PHŒNICOPHAUS, *Vieill.*

Curvirostris, *Sh.*

In every respect similar to *Piaya Circe*, but larger, and the bones stronger.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Length of femur	17
Length of ulna	13	Length of tibia	25
Length of metacarpus	6	Length of metatarsus	$15\frac{1}{2}$

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	10	Length of head	26
Breadth of posterior margin of sternum	10	Breadth of head	10
Breadth of anterior margin of sternum	8	Length of pelvis	15
Depth of keel	3	Breadth of pelvis	10

Subfam. 3. SAUROTHERINÆ.

GEOCOCCYX, *Wagl.*

Mexicanus, *Gm.*

Type of Saurotherinæ.

Cranium nearly similar to *Centropus*; the masseter-muscle impression not extending to the occiput, and the occipital ridge not so prominent.

Sternum very small in proportion to the size of the bird; the central portion of the posterior margin produced far backwards beyond the lateral ones, with the fissures on each side the interior ones very large, the exterior ones small, the strip of bone dividing the two fissures shorter than the exterior or bounding strip of the outer ones; the inferior edge of the keel slightly arched, the anterior one very much scolloped out.

Pelvis with the ilium projecting more over the ischium than in *Centropus*; the posterior margin of the former turned more upwards; central keel not so prominent. Os pubis as in *Centropus.*

Wings very short. Remaining bones similar to *Centropus.*

Measurements.

	Tenths.		Tenths.
Length of humerus	17½	Breadth of posterior margin of sternum	10
Length of ulna	15	Breadth of anterior margin of sternum	10
Length of metacarpus	9	Depth of keel	3
Length of femur	21	Length of head	35
Length of tibia	34	Breadth of head	9½
Length of metatarsus	25	Length of pelvis	22
Length of sternum	15	Breadth of pelvis	16

Illustration.

Skeleton, Plate V. E.

Subfam. 4. CUCULINÆ.

CUCULUS, *Linn.*

Cinereus, *Vieill.*

Type of Cuculinæ.

Cranium with the orbital septum nearly entire; in other respects similar to *Centropus.*

Sternum larger in proportion to the size of the bird than in *Centropus*; the posterior margin with two fissures on each side of the keel, the outer ones largest; the keel much deeper than in *Saurotherinæ*, and the anterior point produced far forwards. Pelvis broader in proportion to its length than in *Centropus*, the ilium not projecting nearly so far over the ischium, and the latter not placed so perpendicularly; os pubis projecting farther posteriorly, terminating in a small tubercle anteriorly.

Measurements.

	Tenths.		Tenths.
Length of humerus	14½	Breadth of posterior margin of sternum	10
Length of ulna	14	Breadth of anterior margin of sternum	7
Length of metacarpus	6½	Depth of keel	4½
Length of femur	11	Length of head	19
Length of tibia	15½	Breadth of head	7½
Length of metatarsus	9	Length of pelvis	14
Length of sternum	11	Breadth of pelvis	8

OXYLOPHUS, *Sw.*

Glandarius, *Linn.*

Cranium with the orbital septum nearly entire.

Sternum with two fissures on each side of the keel on the posterior margin, the inner one larger; anterior margin of the keel much scolloped out, and the point much produced; remaining bones similar to *Cuculus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	18½	Breadth of posterior margin of sternum	11
Length of ulna	18	Breadth of anterior margin of sternum	8
Length of metacarpus	9	Depth of keel	5
Length of femur	15	Length of head	23
Length of tibia	22	Breadth of head	9
Length of metatarsus	13	Length of pelvis	18
Length of sternum	14	Breadth of pelvis	9

Illustration.

Skeleton, Plate IV. E.

CHALCITES, *Less.*

Æneus, *Vieill.*

Similar to *Cuculus*.

Fam. 2. RHAMPHASTIDÆ.

Subfam. RHAMPHASTINÆ.

RHAMPHASTOS, *Linn.*

Erythrorhynchus, *Gm.*

Type of Rhamphastidæ.

Cranium with the orbital septum entire; impression of the masseter muscle not so distinct, or carried so far backwards, as in *Centropus*; inferior mandible not perforated by a foramen; nostrils very small. Palatine bones similar in shape, but with the posterior portion more elongated.

Sternum rather small; the posterior margin with two fissures on each side, the outer one larger; the inferior edge of the keel nearly straight; anterior edge produced to the end of the manubrial process, very slightly scolloped out; lateral margins much produced anteriorly. Furculum with the rami not united, consisting merely of a tapering strip of bone. Coracoids long. Scapula rather broad, curved downwards.

Pelvis with the ilium not projecting over the ischium at their hinder extremities, but projecting over it for the anterior half of the space between the cotyloid cavity and its hinder margin, without any dorsal ridge. Ischiadic foramen large, oval; obturator foramen more open than among the *Cuculidæ*; the os pubis not being united to the ischium except at its extremities, and projecting in front in the shape of a small knob. Remaining bones similar to the *Cuculidæ*.

Measurements.

	Tenths.		Tenths.
Length of humerus	22	Breadth of posterior margin of sternum	12
Length of ulna	34	Breadth of anterior margin of sternum	12
Length of metacarpus	11½	Depth of keel	4
Length of femur	22	Length of head	57
Length of tibia	34	Breadth of head	16
Length of metatarsus	20	Length of pelvis	29
Length of sternum	20	Breadth of pelvis	13

RHAMPHASTOS, *Linn.*

Tucanus, *Linn.*

In structure precisely similar to the foregoing.

PTEROGLOSSUS, *Ill.*

Bailloni, *Vieill.*

The only distinction between this genus and the foregoing appears to be in the position of the nostrils, and in having the furculum perfect, although small.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Breadth of posterior margin of sternum	9
Length of ulna	19	Breadth of anterior margin of sternum	8
Length of metacarpus	6½	Depth of keel	3½
Length of femur	13½	Length of head	38
Length of tibia	22	Breadth of head	12
Length of metatarsus	13	Length of pelvis	17
Length of sternum	12	Breadth of pelvis	11

Illustrations.

Skeleton, Plate III. E.

Palatine bones, sternum, pelvis, and metatarsus, Plate XIII. fig. 3.

SELENIDERA, *Gould.*

Maculirostris, *Licht.*

In form precisely similar to *Rhamphastos erythrorhynchus*, except that the fissures next the keel of the sternum are larger than the outer ones, and that the furculum has the rami longer, but not united.

Fam. 3. MUSOPHAGIDÆ.

Subfam. MUSOPHAGINÆ.

TURACUS, *Cuv.*

Gigas, *Steph.*

Type of Musophagidæ.

Cranium with the orbital septum nearly entire. Palatine bones consisting merely of a strip of bone, broadest anteriorly, tapering gradually to their articulation with the interarticular bones, and having their internal edges slightly bent downwards. Interarticular bones flattened, slightly twisted on their axis, short; lacrymal bones small, rounded at their edges; in other respects similar to *Centropus*.

Sternum very similar to the smaller Cuckoos; the posterior margin with two fissures on each side: keel shallow; the inferior edge straight, the anterior straight, and produced to the end of the manubrial process. Furculum with the rami merely united by a ligament; coracoids flattened, of moderate length.

Pelvis similar to *Centropus*, but with the central ridge not so prominent, and the obturator foramen larger.

Ribs similar to *Centropus*.

Wing-bones short, strong.

Leg-bones similar to *Centropus*, but stronger. Fibula three-fourths the length of the tibia. Calcaneal process similar in form, but not so prominent as in *Centropus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	30	Breadth of posterior margin of sternum	15
Length of ulna	27	Breadth of anterior margin of sternum	15
Length of metacarpus	12	Depth of keel	4
Length of femur	31	Length of head	28
Length of tibia	45	Breadth of head	13
Length of metatarsus	21	Length of pelvis	40
Length of sternum	23	Breadth of pelvis	20

Illustrations.

Skeleton, Plate II. E.

Sternum, pelvis, palatine bones, and meta tarsus, Plate XIII. fig. 2.

CORYTHAIX, *Ill.*

Verreauxii, *Bp.*

Cranium with a moderate-sized foramen in the orbital septum. Palatine bones similar to *Turacus*, but bent outwards from one another from their anterior points to their junction with the interarticular bones, leaving a space between them in the middle. Furculum perfect. Remaining bones similar to *Turacus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	$15\frac{1}{2}$	Breadth of posterior margin of sternum	7
Length of ulna	15	Breadth of anterior margin of sternum	8
Length of metacarpus	7	Depth of keel	3
Length of femur	19	Length of head	20
Length of tibia	26	Breadth of head	$8\frac{1}{2}$
Length of metatarsus	15	Length of pelvis	21
Length of sternum	12	Breadth of pelvis	10

CORYTHAIX, *Ill.*

Persa, *Linn.*

Similar to the preceding.

Numbering of the Vertebræ and Ribs in ERUCIVORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Cuculus canorus	12	7	11	6	4	3
—— tenuirostris	12	7	12	6	4	6
Centropus phasianus	10	8	12	6	5	3
Phœnicophaus tricolor	9	7	12	5	4	3
Crotophaga ani	9	8	12	5	5	3
Piaya Circe	10	7	12	6	4	3
Geococcyx mexicanus	12	6	10	6	4	2
Cuculus glandarius	10	7	12	7	5	2
Chalcites æneus	10	8	10	6	5	3
Rhamphastos tucanus	12	9	13	7	6	3
—— erythrorhynchus	12	8	11	8	5	3
Selenidera maculirostris	12	8	10	8	5	3
Pteroglossus Bailloni	10	9	11	8	6	3
Turacus gigas	12	8	13	6	5	3
Corythaix Verreauxii	12	8	13	7	5	3
—— Buffonii	12	7	13	7	4	3

General Remarks on ERUCIVORES.

The birds belonging to the Order Erucivores are easily distinguished from those of most other Orders by the elongation of the os pubis, forming either a large spine, or else merely a small tubercle or knob, by the length of the coracoids, the smallness or rudimentary state of the furculum, the shortness of the sternum, the shallowness of the keel, and the shortness of the wings. I have not seen a skeleton of *Opisthocomus*, which is supposed to belong to this Order.

Order VII. INSESSORES.

Fam. 1. MENURIDÆ.

Subfam. 1. MENURINÆ.

MENURA, *Dav.*

Superba, *Dav.*

Type

Cranium rather small in proportion to the size of the bird; much rounded at the occiput, and flattened between the orbits; a slight transverse depression at the base of the nasal bones; occipital crest not very prominent. Nostrils oval. Lacrymal bones wanting. Orbits very large, their edges recurved. Orbital septum perforated by a large, somewhat oval, foramen. Malar bones nearly straight. Palatine bones long, consisting of a strip of bone gradually widening externally to about two-thirds of their length, then suddenly narrowed, forming, as it were, two lateral projecting phalanges, the posterior portions much narrowed, and united at their extremities to the inter-articular bones, which are also very small and straight.

Sternum elongated, much constricted near the centre; the anterior part of the horizontal plane concave for a little more than its anterior half, the hinder portion convex; a prominent ridge of bone, to the edge of which the pectoralis minor is attached, extends along each side of the sternum from the base of the coracoids to the anterior edge of the convex portion of the sternum; posterior margin projecting, much rounded, and having two large open and shallow fissures on each side. Manubrial process very large, triangular, and expanded anteriorly; keel, with its lower edge slightly arched, continued to the posterior margin of the sternum, anterior point curved backwards; the anterior processes behind coracoids much lengthened.

Pelvis of moderate size; iliac bones anteriorly to the femora much curved outwards, and not united along the dorsal line; a ridge extends from this point, a strongly marked ridge diverges outwards along the outer edge of the upper plane of the pelvis, forms a strongly marked projection just behind the acetabula, and is continued backwards, projecting over the ischium, and forming two elongated spinous projections on each side of the caudal vertebræ. Ischium nearly perpendicular to the horizontal plane of the ilium, which projects very far over it. Ischiadic foramen very large, slightly oval. Os pubis gradually curved upwards towards the point, and forming with the ischium a divided obturator foramen, the anterior portion rounded, the posterior oval.

Ribs broad at their upper extremities, and gradually becoming smaller towards their lower; styliform process broad at its attachment to the ribs, narrowed to the point which projects over the rib behind it.

Furculum arched anteriorly, slightly flattened, the rami widely divaricating without any process at the junction of the rami, united to point of the sternum by a ligament.

Coracoids of moderate length and size, somewhat triangular in the centre.

Scapula short, falciform, slightly expanding near their extremities, which point downwards.

Wing-bones short, strong, the humerus very slightly longer than the scapula; metacarpus long in proportion to the humerus, radus, and ulna, the two bones forming it only united at their extremities.

Femur very straight; trochanters small, not projecting much upwards. Tibia slightly bent downwards in the centre, an elongated projection on the inside near the upper extremity, from which a small angular ridge proceeds downwards for about two-thirds of the tibia. Metatarsus with the hinder part strongly edged on its external and posterior margin, and also channelled posteriorly.

Vertebral column of moderate strength, the penultimate and two following cervical vertebræ with dorsal processes; the terminal caudal vertebræ very large, triangular.

Measurements.

	Tenths.		Tenths.
Length of humerus	23	Breadth of posterior margin of sternum	14
Length of ulna	24	Breadth of anterior margin of sternum	11
Length of metacarpus	14	Depth of keel	5½
Length of femur	26	Length of head	32
Length of tibia	50	Breadth of head	13
Length of metatarsus	41	Length of pelvis	28
Length of sternum	30	Breadth of pelvis	17

Illustrations.

Skeleton, Plate III. I.

Sternum, pelvis, palatine bones, and metatarsi, Plate XIV. fig. 1.

PTEROPTOCHOS, *Kittl.*

Tarnii, *King.*

I have only portions of the skeletons of this and the following species.

Cranium very similar to that of *Menura*, but not so wide between the eyes; occipital ridge not so large; occipital protuberance (which was broken in my skeleton of *Menura)* large, from which, to the hollow at the base of the nasal bones, there is a slight channel; foramen magnum rounded. Palatine bones similar to *Menura*, as are also the interarticular ones.

Sternum anteriorly similar to *Menura*, but not so concave on its lower horizontal plane; posteriorly it differs very much, being not so convex, broader, and with two very deep fissures on each side; the central portion of the margin is also straight; keel similar.

The pelvinal bones were completely destroyed.

Ribs and metatarsi similar to *Menura*.

Furculum similar to *Menura*, but with a very slight notch at its junction with the sternum.

Coracoids, *scapula*, *wing-bones*, and *leg-bones* also similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Length of sternum	12½
Length of ulna	12½	Breadth of posterior margin of sternum	8
Length of metacarpus	6	Breadth of anterior margin of sternum	6
Length of femur (damaged)		Depth of keel	2¼
Length of tibia	25	Length of head	17
Length of metatarsus	18	Breadth of head	8

PTEROPTOCHOS, *Kittl.*

Albicollis, *Kittl.*

All the bones I possess are similar to the last. I have, however, the pelvis of this species, which is precisely that of *Menura* in miniature.

Measurements.

	Tenths.		Tenths.
Length of sternum	8	Depth of keel	1½
Breadth of posterior margin of sternum	5½	Length of pelvis	11
Breadth of anterior margin of sternum	5	Breadth of pelvis	5½

Illustrations.

Pelvis, sternum, and metatarsi, Plate XIV. fig. 2.

TROGLODYTES, *Vieill.*

Europæus, *Cuv.*

Cranium much rounded; occiput with a moderate ridge and protuberance; space between upper part of the orbits small; margin not reflected; orbital septa with two large foramina; nasal depression moderate; nostrils oval. Palatine bones consisting of two elongated strips expanding to about two-thirds of their length, when they are abruptly truncated, and have a spine on the external points of each truncation; the

inner margin of each is continued back to the interarticular bones, which are very slender, but rather elongated.

Sternum very slightly convex, broad posteriorly, the margin nearly straight, with two fissures, one on each side; the end of the external strips of bone expanded posteriorly; the lateral margin slightly contracted at the sides at about one-third of its length; devoid of any manubrial process. Keel with the inferior margin slightly curved, not reaching to the posterior margin of the sternum.

Pelvis broad in proportion to its length, the acetabula placed rather forward; upper plane slightly convex; ilium overhanging the ischium slightly at the sides. Os pubis and ischium elongated very much beyond the iliac bones. Obturator foramen of moderate size; ischiadic foramen very large.

Ribs weak, styliform process broader at its junction with them than at its tip, which projects beyond the next rib.

Furculum with the rami very slight; a very slight tubercle at its junction with the sternum.

Coracoids long in proportion to the length of the sternum, and not much expanded.

Scapula long, narrow, longer than the humerus, reflected at their points.

Wing-bones very short; humerus not so long as the ulna; metacarpal bones long, united.

Femur slightly bent; tibia without any process on their inner side; fibula very short, not extending for above one-fourth of the length of the tibia.

Vertebral column of moderate size; the penultimate and three following vertebræ with dorsal processes; the terminal caudal one triangular.

Measurements.

	Tenths.		Tenths.
Length of humerus	5	Breadth of posterior margin of sternum	4
Length of ulna	$5\frac{1}{2}$	Breadth of anterior margin of sternum	3
Length of metacarpus	3	Depth of keel	$1\frac{1}{2}$
Length of femur	$5\frac{1}{2}$	Length of head	$11\frac{1}{2}$
Length of tibia	10	Breadth of head	5
Length of metatarsus	$8\frac{1}{2}$	Length of pelvis	7
Length of sternum	5	Breadth of pelvis	5

Illustrations.

Sternum, pelvis, metatarsi, Plate XV. fig. 2.

DENDROCOLAPTES, *Herm.*

Platyrostris, *Spix.*

Cranium much rounded from the vertex to the occiput; occipital ridge very apparent; channel for the masseter muscles very distinct; occipital protuberance also well marked, from which a slight channel proceeds over the vertex to the transverse channel between the nasal bones, which is deep. Space between the orbits moderate; orbits large, margin not reflected; septum entire. Palatine bones and interarticular as in *Troglodytes.*

Sternum similar to *Troglodytes* with the exception of having a very well-defined manubrial process, and the plane of the sternum nearly flat, and near its hinder margin concave; keel with the inferior margin nearly straight.

Pelvis similar to *Troglodytes*, but with the anterior portion of the iliac bones rather more divided.

Ribs similar to *Troglodytes.*

Furculum arched, the branches flattened laterally, a slight process turning backwards at their junction with the sternum.

Coracoids similar to *Troglodytes.*

Scapula not so long in proportion to the humerus, they being of nearly equal length, and curving so much downwards.

Wing-bones of moderate strength, the bones forming the metacarpus not united.

Femur nearly straight; fibula more than half the length of the tibia.

Vertebral column of moderate strength, the penultimate and three next vertebræ with dorsal processes, the terminal caudal one large, triangular.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8
Length of ulna	14	Breadth of anterior margin of sternum	$6\frac{1}{2}$
Length of metacarpus	7	Depth of keel	3
Length of femur	$10\frac{1}{2}$	Length of head	25
Length of tibia	15	Breadth of head	8
Length of metatarsus	11	Length of pelvis	15
Length of sternum	11	Breadth of pelvis	10

PICOLAPTES, *Less.*

Tenuirostris, *Licht.*

Precisely similar to the preceding, except in measurements, and in having the scapula rather longer in proportion to the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Breadth of posterior margin of sternum	5
Length of ulna	10	Breadth of anterior margin of sternum	4
Length of metacarpus	5	Depth of keel	1½
Length of femur	6¼	Length of head	19
Length of tibia	10½	Breadth of head	6
Length of metatarsus	8½	Length of pelvis	9
Length of sternum	7	Breadth of pelvis	6

XIPHORHYNCHUS, *Sw.*

Trochilirostris, *Licht.*

Distinguishable from the two former only by the elongated bill and measurements.

Illustration.

Plate I. F.

ANABATES, *Temm.*

Leucopthalmus, *Max.*

There is no distinctive mark between the skeletons of *Dendrocolaptes* and *Anabates* that I have been able to discover, except in the lateral processes of the palatine bones being longer, the shape of the bill, in the nostrils of the former being oval, while in the other they are rounded, and in the ulna being very slightly longer in proportion to the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Breadth of posterior margin of sternum	5¼
Length of ulna	10	Breadth of anterior margin of sternum	4
Length of metacarpus	4¼	Depth of keel	2
Length of femur	7½	Length of head	17
Length of tibia	12	Breadth of head	7
Length of metatarsus	8½	Length of pelvis	10
Length of sternum	8	Breadth of pelvis	7

SITTA, *Linn.*

Velata, *Temm.*

Cranium with the occipital portion much rounded; channel for the masseter muscles scarcely perceptible; occipital ridge and protuberance distinct, from which proceed a channel open from the occiput to the base of the nasal bones; space between the orbits

of moderate size; orbits with their upper edges reflected; septum with one very small foramen; nostrils oval. Palatine and interarticular bones wanting.

Sternum of moderate size, indented posteriorly, with two wide fissures transversely convex; the lower edge of the keel slightly rounded, moderately deep, with a slight manubrial process.

Pelvis similar to *Dendrocolaptes*, but with the obturator foramen much larger.

Ribs rather weak.

Furculum long, without any process where it is united to the sternum; very little rounded anteriorly.

Coracoids rather long, rounded in the middle.

Scapula long, the tip much deflexed; nearly as long as the humerus.

Bones of the wing of moderate strength, the humerus bent, the ulna much shorter than the humerus.

Femur straight.

Measurements.

	Tenths.		Tenths.
Length of humerus	7	Breadth of posterior margin of sternum	4¼
Length of ulna	9	Breadth of anterior margin of sternum	4
Length of metacarpus	4½	Depth of keel	2
Length of femur	6½	Length of head	13½
Length of tibia	9	Breadth of head	5
Length of metatarsus	7	Length of pelvis	8
Length of sternum	7	Breadth of pelvis	6

SITTELLA, *Sw.*

Chrysoptera, *Lath.*

In every respect similar to *Sitta*.

FURNARIUS, *Vieill.*

Cunicularius (?)

Very similar to the other *Certhiadæ*, but with the keel of the sternum much deeper; the process at the junction of the furcular branches larger and the pelvis broader in proportion to its length.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Length of tibia	11
Length of ulna	12½	Length of metatarsus	10
Length of metacarpus	8	Length of sternum	10
Length of femur	7	Breadth of posterior margin of sternum	6

Measurements (continued.)

	Tenths.		Tenths.
Breadth of anterior margin of sternum	$4\frac{3}{4}$	Breadth of head	6
Depth of keel	3	Length of pelvis	10
Length of head	16	Breadth of pelvis	9

ANTHOCHÆRA, *Vig. & Horsf.*

Carunculata, *Lath.*

Cranium rounded above occiptal ridge; protuberance prominent; space between the orbits moderate, much depressed in the middle; orbits of moderate size, the upper edges reflexed; septum pierced by two foramina, which are merely divided by a narrow strip of bone. Palatine bones broad, covering the roof of the mouth for two-thirds of their length, where they are truncated, and terminate in two narrow strips of bone to the interarticular, both edges deflexed; interarticular bones short, a little bent, rounded. Lacrymal bones pointing backwards.

Sternum of moderate size, constricted in middle, a little rounded on the posterior margin, with a fissure on each side; the strip of bone forming the outer edge of each fissure much expanded at the end, so as nearly to convert the fissures into foramina; keel very broad, the lower edge rounded, the point receding; manubrial process of moderate size, and turned upwards; bifid at its extremity.

Pelvis small, narrow; anterior edges of the iliac bones not united, leaving a channel between them as far as the acetabula, when the upper edges expand and leave a broad open space to the first caudal vertebræ, being only anchylored to the lateral processes. Ischium very slightly inclined outwards, and much overhung by the pubis, which is carried backwards to a point opposite the third caudal vertebræ, the ischium being united to it as far as that point. Ischiadic and obturator foramina large, the former round, the latter oval; points of the os pubis pointing inwards.

Ribs of moderate strength; styliform process much turned upwards.

Furculum with upper points of the rami not much expanded, and running in an almost parallel direction to near their junction, where they curve inwards to meet each other; process uniting them to the sternum very large, and turned upwards; the rami flattened, and slightly arched anteriorly.

Coracoids rather long, rounded in the middle.

Scapula nearly as long as the humerus, very slightly deflexed.

Wing-bones of moderate length, the ulna longer than the humerus.

Femur very slightly bent; fibula about one-third the length of the tibia. Metatarsus with a very deep keel arising on the calear protuberance, and continued, gradually narrowing to the lower extremity of the metatarsus.

Vertebral column of moderate strength, the penultimate and three next vertebræ with blunt dorsal processes; the terminal caudal vertebræ triangular and large.

Measurements.

	Tenths.		Tenths.
Length of humerus	15	Breadth of posterior margin of sternum	9
Length of ulna	18	Breadth of anterior margin of sternum	7
Length of metacarpus	9	Depth of keel	5
Length of femur	13	Length of head	25
Length of tibia	25	Breadth of head	9
Length of metatarsus	17	Length of pelvis	18
Length of sternum	16	Breadth of pelvis	9

ANTHOCHÆRA, *Vig. & Horsf.*

Lunulata, *Gould.*

Precisely similar, except in measurements, to the preceding.

ANTHOCHÆRA, *Vig. & Horsf.*

Lewinii, *Vig. & Horsf.*

Similar to the preceding.

Illustration.

Skeleton, Plate II. F.

TROPIDORHYNCHUS, *Vig. & Horsf.*

Corniculatus, *Lath.*

Also similar to *Arthochæna Carunculata*, with the exception of the horn on the upper mandible, and the sternum being slightly shorter, broader in proportion to its length, and having the hinder part of the fissures closed becoming foramina.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	10
Length of ulna	17	Breadth of anterior margin of sternum	7
Length of metacarpus	9	Depth of keel	5
Length of femur	13	Length of head	27
Length of tibia	21	Breadth of head	8
Length of metatarsus	13	Length of pelvis	16
Length of sternum	14	Breadth of pelvis	8½

TROPIDORHYNCHUS, *Vig. & Horsf.*

Argenticeps, *Gould.*

Similar to the preceding.

Illustrations.

Sternum, pelvis, palatine bones, and metatarsi, Plate XV.

MANORHIA, *Vieill.*

Garrula, *Lath.*

This group is very similar in its osteology to the *Meliphaginæ*, but differs in the greater breadth of the pelvis and sternum in proportion to their lengths, and in having the ischium and pubis more laterally expanded; or, in other words, not being so perpendicular to the plane of the ilium.

Measurements.

	Tenths.		Tenths.
Length of humerus	6	Breadth of posterior margin of sternum	6½
Length of ulna	14	Breadth of anterior margin of sternum	5
Length of metacarpus	6½	Depth of keel	3
Length of femur	10	Length of head	17
Length of tibia	17	Breadth of head	8
Length of metatarsus	13	Length of pelvis	12
Length of sternum	10	Breadth of pelvis	9

SPHECOTHERES, *Vieill.*

Viridis, *Vig. & Horsf.*

Very similar to the preceding. This bird has generally been placed among the *Oreolidæ*, but the only specimen I have dissected has a brush tongue. The metatarsi are shorter in proportion to the tibia in this bird than in most of the *Meliphagidæ*,

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	8
Length of ulna	16½	Breadth of anterior margin of sternum	7
Length of metacarpus	8	Depth of keel	4½
Length of femur	11	Length of head	23
Length of tibia	17	Breadth of head	8
Length of metatarsus	9½	Length of pelvis	15
Length of sternum	13½	Breadth of pelvis	10

PSOPHODES, *Vig. & Horsf.*

Crepitans, *Lath.*

This bird may be easily distinguished from the other *Melithreptinæ* by the extreme shortness of the ulna in proportion to the humerus, only just equalling it in length; the metacarpus is also short; the obturator foramen is not so large in proportion to the size of the bird, and the keel of the sternum very shallow.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	6
Length of ulna	9	Breadth of anterior margin of sternum	5
Length of metacarpus	4	Depth of keel	2½
Length of femur	11½	Length of head	18
Length of tibia	18	Breadth of head	8
Length of metatarsus	14	Length of pelvis	14
Length of sternum	10	Breadth of pelvis	8

MYZOMELA, *Vig. & Horsf.*

Nigra, *Gould.*

Similar to the *Melithroptinæ*, but of smaller size, and having the ulna much longer than the humerus, the scapula not so abruptly cut off at its posterior end. In this group ought to be included *Acan*, *Thornhychus*, *Gould;* *Acanthisa*, *Gould;* and *Hœmatops*, *Gould;*—all of which have brush tongues, and of all of which I have specimens.

Measurements.

	Tenths.		Tenths.
Length of humerus	5½	Breadth of posterior margin of sternum	3
Length of ulna	7	Breadth of anterior margin of sternum	2½
Length of metacarpus	2½	Depth of keel	2
Length of femur	5	Length of head	12
Length of tibia	8	Breadth of head	3
Length of metatarsus	6	Length of pelvis	7
Length of sternum	6	Breadth of pelvis	4½

MELIPHAGA, *Lewin.*

Chrysotis, *Lath.*

Similar, only smaller, to *Anthochæra carunculata*, but the pelvis is slightly broader in proportion to its length.

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Breadth of posterior margin of sternum	4½
Length of ulna	9	Breadth of anterior margin of sternum	4
Length of metacarpus	3	Depth of keel	2
Length of femur	6	Length of head	14
Length of tibia	7	Breadth of head	5½
Length of metatarsus	9	Length of pelvis	6
Length of sternum	8	Breadth of pelvis	4½

NECTARINIA, *Ill.*

Javanica, *Horsf.*

The skeleton of this family is scarcely distinguishable from that of the other *Meliphagidæ*, were it not for the structure of the palatine and interarticular bones; the former of which, instead of being truncated previously to their being suddenly narrowed before their articulation with the interarticular bones, have a long lateral spur pointing backwards, and the exterior edge bent downwards. The interarticular bones, instead of being straight, are bent. The depth of the keel also is slightly greater.

Measurements.

	Tenths.		Tenths.
Length of humerus	6	Breadth of posterior margin of sternum	4
Length of ulna	7½	Breadth of anterior margin of sternum	3
Length of metacarpus	4	Depth of keel	2
Length of femur	6	Length of head	13
Length of tibia	9	Breadth of head	5
Length of metatarsus	6	Length of pelvis	7
Length of sternum	6	Breadth of pelvis	4

Illustration.

Plate XV. fig. 5.

ARACNOTHERA, *Temm.*

Longirostris, *Lath.*

This genus may be distinguished from the foregoing by larger orbital foramen, the greater depth of the keel, of the sternum, and the great length to which that bone is prolonged at its anterior angles, the longer coracoids, and furculum.

Measurements.

	Tenths.		Tenths.
Length of humerus	7	Breadth of posterior margin of sternum	5
Length of ulna	10	Breadth of anterior margin of sternum	7
Length of metacarpus	4½	Depth of keel	3
Length of femur	7	Length of head	22
Length of tibia.	10	Breadth of head	5
Length of metatarsus	5½	Length of pelvis	9
Length of sternum	7½	Breadth of pelvis	5

PARUS, *Linn.*

Cæruleus, *Linn.*

Cranium very round; occipital impression and protuberance very small; space between the orbits narrow, slightly hollowed out; orbital septum nearly entire. Palatine bones truncate previously to the narrow portion going off for articulation with the interarticular, the outer angles armed with a sharp spine, the outer edges bending abruptly downwards.

Sternum of moderate length, much narrowed anteriorly, much constricted in the middle, with two posterior fissures very much rounded at the upper part; keel deep, inferior edge rounded, anterior edge scolloped out; manubrial process long.

Pelvis very short; the anterior points of the ilium very far apart, approaching rather nearer at about half the length of the pelvis; posterior edge of the ilium, at the junction of the caudal vertebræ, with two spines on the outer edges, which are very straight, and are united to the upper edge of the ischium, which, with the os pubis, points outwards; ischiadic and obturator foramina of moderate size.

Furculum slightly arched, the curve increasing towards the lower junction of the rami, the branches nearly parallel to near their junction, where the inward curve is abrupt; process at the junction large, flattened, and turned backwards.

Coracoids rather long.

Wing-bones with the humerus not as long as the scapula; ulna much longer than the humerus.

Vertebral column having the penultimate and two next vertebræ with dorsal processes.

Measurements.

	Tenths.		Tenths.
Length of humerus	5½	Breadth of posterior margin of sternum	5
Length of ulna	8	Breadth of anterior margin of sternum	3
Length of metacarpus	4	Depth of keel	3
Length of femur	5	Length of head	9
Length of tibia	10	Breadth of head	5
Length of metatarsus	6	Length of pelvis	6
Length of sternum	8	Breadth of pelvis	5

Illustrations.

Palatine bones, sternum, pelvis, and metatarsa, Plate XVII. fig. 4.

ALAUDA, *Linn.*

Arvensis, *Linn.*

Cranium narrow between the orbits, and deeply channelled, channel only extended backwards as far as the vertex; transverse groove at the base of the nasals very deep;

arcuated nostrils wide, oval; orbital septa, imperforate, but slightly broken into on its posterior edge by the foramen admitting the optic nerves. Palatine bones, with their outer edges only, bend downwards, truncate at two-thirds of their length, or at that point from which a narrow strip of bone from their internal edges proceeds to the inter-articular bones; a double spine on the external edge of the outer angle, pointing backwards. Interarticular bones slender, straight.

Foramen magnum transversely oval; occipital ridge and protuberance very slightly marked.

Sternum as broad anteriorly as posteriorly, very slightly constricted in the middle, posterior to the junction with the ribs; anterior edge scolloped out, point retreating; the hinder margin with a very large fissure on each side, which extends upwards to nearly one-half the length of the sternum; a bony rib bounds them externally, abruptly expanded at the end, and is carried on forwards to the junction of the coracoids; the internal edges are also thickened and expanded towards the mouth of the fissures in the same form as the external one, inclining very much inwards, thus causing the central part of the sternum to be very narrow. Keel very deep anteriorly, straight; manubrial process long, bifid, turned upwards, triangular.

Ribs weak; styliform process long and narrow, extending over the rib behind it.

Furculum with the rami nearly parallel to a little above their junction, where they curve suddenly inwards, rounded at their junction with the sternum; a flattened process, pointed backwards, to the lower edge of which the ligament is attached which unites the furculum and sternum.

Coracoids of moderate length, somewhat triangular in the centre.

Scapula very long, narrow, straight; the tip deflected, and sloped off to a point from above very obliquely.

Wing-bones of moderate strength; humerus not longer than the scapula; ulna only slightly longer than the humerus, very straight; metacarpal bones with very little interval between them.

Femur very slightly bent; metatarsus with a very large calcar process.

Pelvis broad between the acetabula, the points of the pubic bones projecting very slightly beyond them; ischiadic foramen short, oval; obturator long; a swelling, bulbous appearance on the lateral portions of the iliac bones posterior to the acetabula.

Vertebral column with the penultimate and four following vertebræ furnished with dorsal processes; terminal caudal vertebræ, triangular.

Measurements.

	Tenths.		Tenths.
Length of humerus	8½	Length of femur	8
Length of ulna	11	Length of tibia	13
Length of metacarpus	5	Length of metatarsus	9
110			

Measurements (continued.)

	Tenths.		Tenths.
Length of sternum	9	Length of head	14
Breadth of posterior margin of sternum	6	Breadth of head	6
Breadth of anterior margin of sternum	4	Length of pelvis	11
Depth of keel	$2\frac{3}{4}$	Breadth of pelvis	6

ALAUDA, *Linn.*

Arborea, *Linn.*

There is no distinctive osteological character that I can discover between this bird and *Arvensis*, except measurement.

Measurements.

	Tenths.		Tenths.
Length of humerus	$9\frac{1}{2}$	Breadth of posterior margin of sternum	6
Length of ulna	12	Breadth of anterior margin of sternum	$4\frac{1}{2}$
Length of metacarpus	6	Depth of keel	$3\frac{1}{2}$
Length of femur	$8\frac{1}{2}$	Length of head	$13\frac{1}{2}$
Length of tibia	13	Breadth of head	6
Length of metatarsus	10	Length of pelvis	11
Length of sternum	10	Breadth of pelvis	7

OTOCORIS, *Bon.*

Alpestris, *Linn.*

In general similar to *Alauda*, but differs in the external edges of the fissures on the posterior margin of the sternum being broader, and gradually tapering forwards, consequently making the fissures rather narrower; and in there being a distinct impression on the upper plane of the iliac bones over the sacral vertebræ to the first caudal one, with a ridge on each side; and also in having the bulbous appearance on each side of the ilium; posterior to the acetabula more distinct, the obturator foramen narrower, and the scapula more massive and more expanded towards its tip.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	$7\frac{1}{2}$
Length of ulna	$12\frac{1}{2}$	Breadth of anterior margin of sternum	5
Length of metacarpus	7	Depth of keel	3
Length of femur	9	Length of head	$13\frac{1}{4}$
Length of tibia	13	Breadth of head	6
Length of metatarsus	$10\frac{1}{2}$	Length of pelvis	$12\frac{1}{2}$
Length of sternum	10	Breadth of pelvis	8

Illustrations.

Palatine bones, sternum, pelvis, metatarsa, Plate XVII. fig. 1.

MELANOCORYPHA, *Boie.*

Tartarica, *Pall.*

Cranium with orbital septum entire.

Sternum similar to *Otocoris*, but with the manubrial process much longer; the anterior lateral edge of the sternum to which the ribs are articulated, very much produced. Remainder of the skeleton similar to *Alauda*.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8½
Length of ulna	15	Breadth of anterior margin of sternum	5½
Length of metacarpus	7	Depth of keel	4
Length of femur	9½	Length of head	16½
Length of tibia	14½	Breadth of head	7½
Length of metatarsus	11	Length of pelvis	13½
Length of sternum	12	Breadth of pelvis	8

MOTACILLA, *Linn.*

Alba, *Linn.*

Cranium rounded, a slight channel proceeding from the nasal channel to the vertex; occipital ridge and protuberance not very distinct; orbits, and space between them, of moderate size; septum with two fissures. Palatine bones truncate where they join the sphenoid, to which they are anchylored, the outer edges slightly deflexed; interarticular bones slightly bent.

Sternum large, the central portion broad, with two posterior (not very deep) fissures, the bony rib bounding them triangular at the tip; keel very deep in proportion to the length of the sternum, the point carried as far forward as the end of the manubrial process, scolloped out in front, rounded below; manubrial process long, turned slightly upwards.

Pelvis similar to *Alauda*, but much broader in proportion to the size of the bird; the anterior portion of the iliac bones in particular; ischiadic foramen small; obturator of moderate size.

Ribs of moderate strength; styliform process of nearly equal size throughout.

Furculum very much arched in front; the upper extremities of the rami long, divaricating more than in *Alauda*, the process at their junction flattened and large, turned backwards.

Coracoids rather long, bent a little outwards at their upper extremities.

Scapula longer than the humerus, slightly widened at the point from which it is sloped off to the tip.

Wing-bones. Humerus short; ulna longer than the humerus.

Vertebral column having the penultimate and two next vertebræ with dorsal processes.

Measurements.

	Tenths.		Tenths.
Length of humerus	7	Breadth of posterior margin of sternum	6
Length of ulna	10	Breadth of anterior margin of sternum	4
Length of metacarpus	5	Depth of keel	$3\frac{1}{4}$
Length of femur	7	Length of head	13
Length of tibia	13	Breadth of head	$5\frac{1}{4}$
Length of metatarsus	10	Length of pelvis	$9\frac{1}{2}$
Length of sternum	9	Breadth of pelvis	7

MOTACILLA, *Linn.*

Flava, *Linn.*

Similar to *Alba*, but smaller.

ENICURUS, *Temm.*

Velatus, *Temm.*

There is no perceptible difference between this bird and *Motacilla*, with the exception that the leg-bones are rather longer; and the same may be said of *Enicurus maculatus*.

GRALLINA, *Vieill.*

Melanoleuca, *Vieill.*

The cranium differs from *Motacilla* in having only one interorbital foramen, the sternum in having very small, comparatively speaking, foramina on its posterior margin, the manubrial process shorter, the humerus in being longer than the scapula, and the pelvis in being narrower.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	7
Length of ulna	16	Breadth of anterior margin of sternum	$6\frac{1}{2}$
Length of metacarpus	9	Depth of keel	4
Length of femur	10	Length of head	19
Length of tibia	21	Breadth of head	8
Length of metatarsus	16	Length of pelvis	13
Length of sternum	14	Breadth of pelvis	$9\frac{1}{2}$

ANTHUS, *Bechst.*

Obscurus, *Gm.*

Similar to *Motacilla*, but with the metatarsi shorter in proportion to the tibiæ. *Anthus Australis* and *Pratensis* are also similar.

SYLVIA, *Lath*

Hippolais, *Linn.*

The *Sylviadæ* present very few tangible characters to distinguish them from the *Motacillidæ*, and one description, independent of measurements, will almost serve for the whole of the family; they may, however, be distinguished from the latter family by the greater proportionable breadth of the pelvis and sternum, and the very small amount of devarication between the branches of the furculum. Between the members of the family the form of the skeletons run still nearer; there are, however, a few that may be pointed out. It would be useless to go through a series of measurements and take up a large space, I shall, therefore, merely give a list of the species belonging to the family which I possess, and mention where any characters occur differing from the bird above-named.

Illustration.

Skeleton, Plate V. F.

LUCINIA, *Linn.*

Philomela, *Bon.*

Illustrations.

Palatine bones, sternum, pelvis, and metatarsi, Plate XVII.

SALICARIA, *Selby.*

Locustella, *Penn.*

SALICARIA, *Selb.*

Phragmitis, *Linn.*

RUTICILLA, *Brehm.*

Phœnicurus, *Linn.*

The pelvis is rather broader in proportion to the size of the bird.

RUTICILLA, *Brehm.*

Tythys, *Scop.*

REGULUS, *Linn.*

Auricapillus, *Linn.*

SYLVIA.

Trochilus.

SAXICOLA.

Œnanthe.

PARULA, *Bon.*

Braziliana.

Illustration.

Skeleton, Plate V. F.

Pelvis rather broader than the type.

Illustration.

Plate V. F. fig. 2.

TRICHAS, *Sw.*

Velatus, *Vieill.*

Both sternum and pelvis rather broader than the type.

ACCENTOR, *Temm.*

Modularis, *Linn.*

The pelvis is much larger in proportion to the sternum than is usual in the family.

MALURUS, *Vieill.*

Cyaneus, *Gm.*

The group in which the three following genera have been placed is rather an anomolous one. I have doubts whether they ought not to be classified with the *Motacillidæ*, judging from the greater proportionate width of the sternum and pelvis in comparison with the true *Sylviadæ*. One genus, which has been usually classed with it, *(Megalurus,)* differs materially from both in having a narrow sternum, less depth of keel, and also a much narrower pelvis. I have, however, classed it with *Malurus*, although confident that it is not its true place. None of the three genera that I have before me—*Malurus*, *Stipiturus*, and *Megalurus*—have that bulbous appearance on each side of the ilium, posterior to the acetabulum, common to the *Motacellidæ* and true *Sylriadæ*.

Illustrations.

Sternum, pelvis, palatine bones, metatarsi, Plate XVII.

MUSCICAPA, *Linn.*

Grisola, *Linn.*

Cranium rounded from the vertex to the occiput; occipital ridge and protuberance

distinct; space between the orbits rather broad; a channel proceeds from the nasal depression, which is very deep, to the vertex. Palatine bones consisting anteriorly of a narrow strip of bone on each, equidistant between the sphenoid and the maxillary, and not united for their whole length; a little before their posterior termination a styliform process goes off from the inner side of this strip towards the sphenoid, when it is expanded forwards and backwards, the latter portion being united with the interarticular, and the former extending an equal distance with the latter along the side of the sphenoid; interarticular bones straight; nasal orifices very large.

Sternum similar in general shape to the *Sylviadæ*, but broader; the manubrial process very large, and with a very wide bifurcation at its extremity. Point of the sternum receding; two large fissures on the posterior margin; lower edge of keel slightly arched.

Ribs of moderate strength; the styliform process long, and very narrow.

Pelvis very similar to the *Sylviadæ*, but with two parallel depressions along its whole length on each side of the sacral vertebræ, the lateral processes of which are distinctly seen. Ischiadic foramen rather large; obturator of moderate size; ischium slanting much outwards.

Furculum much and regularly arched anteriorly; upper extremities of the rami divaricating to a moderate extent, not compressed towards one another in the middle.

Coracoids of moderate length and strength.

Scapula longer than the humerus, the point slightly deflexed, of nearly equal width throughout.

Except in the measurements there is nothing remarkable about the wing and leg-bones.

Vertebral column. The penultimate and three next vertebræ with dorsal spines.

Measurements.

	Tenths.		Tenths.
Length of humerus	5	Breadth of posterior margin of sternum	$5\frac{1}{2}$
Length of ulna	9	Breadth of anterior margin of sternum	4
Length of metacarpus	$3\frac{1}{2}$	Depth of keel	$2\frac{1}{4}$
Length of femur	$5\frac{1}{2}$	Length of head	13
Length of tibia.	8	Breadth of head	5
Length of metatarsus	6	Length of pelvis	8
Length of sternum	7	Breadth of pelvis	7

RHIPHIDURA, *Vig. & Horsf.*

Flabelifera, *Gm.*

Cranium similar to *Muscicapa*, but more rounded on the vertex.

Sternum longer, and with the fissures deeper and narrower than in *Muscicapa;* lower edges of the keel much rounded.

Furculum with the rami compressed towards one another near their centre. Remainder of the skeleton as in *Muscicapa.*

Metatarsi nearly as long as the tibiæ.

Motaciloides is similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	6	Breadth of posterior margin of sternum	4
Length of ulna	8½	Breadth of anterior margin of sternum	3
Length of metacarpus	3	Depth of keel	2½
Length of femur	5	Length of head	7
Length of tibia	8	Breadth of head	4½
Length of metatarsus	7	Length of pelvis	7
Length of sternum	7	Breadth of pelvis	5

PLATYRHYNCHUS, *Desm.*

Cancromus, *Temm.*

Cranium very much flattened on the vertex.

Furculum very slightly arched in front.

Sternum broad; posterior margin slightly indented in the centre; fissures very small; lower edge of keel very much arched.

Metatarsi nearly as long as the tibiæ.

Pelvis with the upper side of the ilium very much rounded transversely; ischiadic and obturator foramina very large. Ischium and pubis placed nearly perpendicularly to the plane of the ilium.

Vertebral column with the penultimate and two next cervical vertebræ with dorsal spines.

Measurements.

	Tenths.		Tenths.
Length of humerus	5½	Breadth of posterior margin of sternum	4
Length of ulna	7	Breadth of anterior margin of sternum	3
Length of metacarpus	3	Depth of keel	2
Length of femur	5	Length of head	11
Length of tibia	9	Breadth of head	5
Length of metatarsus	7	Length of pelvis	5
Length of sternum	6	Breadth of pelvis	4

Illustration.

Skeleton, Plate VIII. F.

MONARCHA, *Vig. & Horsf.*

Carinata, *Sw.*

Similar to *Muscicapa*, but with the tarsi longer and the orbital foramina very small.

TCHCTREA, *Less.*

Melanopyga, *Ver.*

Similar to *Muscicapa*, but with the ischium placed more perpendicularly to the plane of the ilium, the latter of which is broader in proportion to its length.

Illustrations.

Palatine bones, sternum, pelvis, and metatarsi, Plate XVI.

MYIAGRA, *Vig. & Horsf.*

From W. Australia.

Similar to *Muscicapa*, but with the humerus rather longer in proportion to the scapula.

TYRANNUS, *Cuv.*

Melancholicus, *Vieill.*

Differs very slightly from *Muscicapa*, except in size. The sternal fissures, however, are not quite so wide in proportion, the manubrial process not so long, and the ischium is placed more perpendicularly to the plane of the ilium, and the humerus is longer than the scapula, which is expanded slightly near the tip.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	7
Length of ulna	15	Breadth of anterior margin of sternum	6
Length of metacarpus	12	Depth of keel	4
Length of femur	8	Length of head	19
Length of tibia	12	Breadth of head	7
Length of metatarsus	7	Length of pelvis	12
Length of sternum	11	Breadth of pelvis	$7\frac{1}{2}$

TYRANNUS, *Cuv.*

Verticalis, *Say.*

Similar to the preceding; as is also *Candifasciatus*, *D'Orb.*

MYIOBIUS, *G. R. Gray.*

Superciliosa, *Bon.*

Similar to the foregoing.

HIRUNDO, *Linn.*

Riparia, *Linn.*

Cranium shorter and more rounded than in *Muscicapa ;* palatine bones of nearly the same form, but sloped more on the inner sides towards the interarticular ones, which are very short.

Sternum similar to *Muscicapa*, but rather longer in proportion to its width.

Pelvis similar.

Scapula very long and thin, very slightly expanded towards the tip, not much deflexed.

Wing-bones with the humerus much shorter than the scapula, not being above three-fourths of its length; ulna nearly twice as long as the humerus.

I have also portions of the skeletons *Progne purpurea*, *Hirundo pœciloma*, and *Domestica*, all of which agree in form with the foregoing.

Measurements.

	Tenths.		Tenths.
Length of humerus	4½	Breadth of posterior margin of sternum	5
Length of ulna	8	Breadth of anterior margin of sternum	3½
Length of metacarpus	4	Depth of keel	2½
Length of femur	5	Length of head	9
Length of tibia	7	Breadth of head	5
Length of metatarsus	3½	Length of pelvis	8
Length of sternum	7	Breadth of pelvis	7

Illustrations.

Skeleton, Plate VIII. F.

Palatine bones, sternum, pelvis, and metatarsus, Plate XV.

TITYRA, *Vieill.*

Cayana, *Linn.*

Cranium with the palatine bones similar to *Muscicapinæ*, but more massive, and with their inner edges slightly deflected; intertarcular bones expanding slightly at their distal extremity; masseter impression strongly marked.

Sternum with the marginal fissures small, nearly closed; manubrial process of moderate length, with the distal extremity widely branched.

Pelvis similar to *Tyrannus.*

Furculum much arched anteriorly; rami divaricating considerably from their junction, afterwards nearly parallel.

Scapula as long as humerus, expanded towards the tip, gradually deflexed.

Vertebral column with the penultimate and three next vertebræ with dorsal processes.

I have also a specimen of *Tityra inquisitor*, which does not differ in form from the foregoing.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of anterior margin of sternum	7
Length of ulna	17	Depth of keel	4
Length of femur	10	Length of head	21
Length of tibia	16½	Breadth of head	8
Length of metatarsus	12	Length of pelvis	13
Length of sternum	12	Breadth of pelvis	9
Breadth of posterior margin of sternum	9		

AMPELIS, *Linn.*

Cedorum, *Vieill.*

Type.

Cranium very broad in proportion to its length, much more so than among the *Muscicapidæ*, which in many respects it resembles; interarticular bones of moderate length. Palatine bones consisting of a narrow strip on their outer edges; at about half their length there is a strong, flattened, and blunt styliform process, pointing inwards and backwards, from about two-thirds of their length the points are bent suddenly inwards towards the interarticular bones, and are expanded at their junction with them.

Sternum and *Pelvis* similar to the *Muscicapidæ*.

Coracoids shorter than in *Muscicapa*.

Furculum at the junction of the rami with a long, somewhat triangular, process, pointing backward.

Wing-bones short; ulna longer than the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	8½	Breadth of posterior margin of sternum	9
Length of ulna	11	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	4
Length of femur	9	Length of head	14
Length of tibia	13	Breadth of head	6½
Length of metatarsus	8	Length of pelvis	10
Length of sternum	12	Breadth of pelvis	9

CARPORNIS, *G. R. Gray.*

Rubrocristata, *D'Orb. & Lafr.*

Cranium similar to the last, but with the nostrils smaller, and the bones composing the skeleton more massive; the edges of the orbits much recurved.

Sternum broader in proportion to its length, and the posterior fissures not so large; the keel not so deep.

Pelvis broader and stronger, particularly the anterior portion of it. In other respects very similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	9
Length of ulna	13½	Breadth of anterior margin of sternum	6½
Length of metacarpus	8	Depth of keel	4
Length of femur	10½	Length of head	15
Length of tibia	15	Breadth of head	8
Length of metatarsus	9	Length of pelvis	12
Length of sternum	11	Breadth of pelvis	7½

CARPORNIS, *G. R. Gray.*

Melanocephala, *Pr. Max.*

Does not differ in form from *Rubrocristata*, except that the pelvis is smaller in proportion to the size of the bird.

Measurements.

	Tenths.		Tenths.
Length of humerus	10½	Breadth of posterior margin of sternum	9
Length of ulna	15	Breadth of anterior margin of sternum	8
Length of metacarpus	7	Depth of keel	4
Length of femur	10	Length of head	7½
Length of tibia	15	Breadth of head	18
Length of metatarsus	8½	Length of pelvis	15
Length of sternum	12	Breadth of pelvis	6

TERSA, *Vieill.*

Ventralis, *Ill.*

Cranium much broader in proportion to its length than in the foregoing; in other respects very similar. Palatine bones with the lateral shafts much bowed outward in

their centres, and having a triangular spine projecting inwards at their anterior extremities; space between the orbits much broader.

Sternum much narrower in proportion to its width.

Pelvis similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Breadth of posterior margin of sternum	6
Length of ulna	10½	Breadth of anterior margin of sternum	5
Length of metacarpus	4	Depth of keel	3
Length of femur	7½	Length of head	7½
Length of tibia	10	Breadth of head	5½
Length of metatarsus	6	Length of pelvis	10
Length of sternum	10	Breadth of pelvis	7½

LIPANGUS, *Boie.*

Plumbeus, *Licht.*

Similar to the foregoing, but with the ulna rather longer in proportion to the humerus.

PHIBALURA, *Vieill.*

Flavirostris, *Vieill.*

Cranium similar to *Ampelis*, but with the hinder extremity of the palatine bones very much expanded.

Sternum very broad in proportion to its width.

Pelvis narrower in proportion than in *Ampelis;* ischiadic and obturator foramina very large.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	8
Length of ulna	12	Breadth of anterior margin of sternum	6½
Length of metacarpus	8½	Depth of keel	4
Length of femur	8½	Length of head	13
Length of tibia	8	Breadth of head	7
Length of metatarsus	7	Length of pelvis	10
Length of sternum	10	Breadth of pelvis	8

IRENA, *Horsf.*

PUELLA, *Lath.*

Cranium long; interorbital foramen much smaller in proportion than in *Ampelis.* Palatine bones very much elongated on their lateral posterior margin.

Sternum broad in proportion to its length; lateral fissures nearly closed; keel deep.
Pelvis very broad in proportion to its length.
In other respects, as in *Ampelis*.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	9½
Length of ulna	13	Breadth of anterior margin of sternum	6½
Length of metacarpus	8	Depth of keel	4
Length of femur	9½	Length of head	18½
Length of tibia	12½	Breadth of head	7
Length of metatarsus	6	Length of pelvis	12
Length of sternum	12	Breadth of pelvis	12½

ARTAMUS, *Vieill.*

Leucogaster, *Valenc.*

Cranium much more convex than in *Ampelis* and *Irena;* orbital foramina very large. Palatine bones damaged.

Sternum not nearly so strong as in *Irena*, but with the posterior fissures nearly closed; keel deep.

Pelvis of moderate depth, the obturator foramen very large; humerus short.

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Breadth of posterior margin of sternum	6½
Length of ulna	12	Breadth of anterior margin of sternum	5
Length of metacarpus	6½	Depth of keel	3½
Length of femur	6½	Length of head	16
Length of tibia	11	Breadth of head	7
Length of metatarsus	7½	Length of pelvis	9½
Length of sternum	9	Breadth of pelvis	9½

DICRURUS, *Vieill.*

Densus, *Temm.*

There is scarcely any distinction between this genus and *Artamus;* the above species, however, differs in having two foramina on the posterior portion of the sternum, instead of fissures. The other that I possess *(Coracinus Verr)* has fissures on the margin, as in *Artamus;* the hinder margin of the sternum is also much wider than in *Artamus*, in proportion to the breadth of anterior edge; the pelvis is also as long as wide. *D. Ballicarnassius* is similar to *Densus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	10
Length of ulna	14½	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	3
Length of femur	10	Length of head	23
Length of tibia	16½	Breadth of head	8½
Length of metatarsus	9	Length of pelvis	13½
Length of sternum	12½	Breadth of pelvis	9

PACHYCEPHALA, *Sw.*

Gutturalis, *Linn.*

Cranium slightly flattened from the vertex to the nostrils; orbital septum nearly obliterated. Palatine bones with a spine on the outward edge, near their posterior extremities, projecting backwards.

Sternum very broad; fissures on the posterior margin very large.

Pelvis broader than long; foramina of moderate size; ulna longer than humerus.

Metatarsi long, with a keel on their posterior edge.

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Breadth of posterior margin of sternum	7
Length of ulna	10	Breadth of anterior margin of sternum	5
Length of metacarpus	4½	Depth of keel	2¼
Length of femur	7	Length of head	13½
Length of tibia	12½	Breadth of head	6½
Length of metatarsus	9	Length of pelvis	7
Length of sternum	8	Breadth of pelvis	7½

COPURUS, *Strick.*

Filicauda, *Spix.*

Cranium convex; palatine bones very short, with a spine projecting backwards on their outer posterior edges; orbital septum with a moderate-sized foramen.

Sternum of moderate size, not so broad as in *Pachycephala.*

Pelvis very broad; both obturator and ischiadic foramina very large; vertebræ distinguishable on the upper surface. In other respects similar to *Pachycephala.*

Metacarpus long.

Measurements.

	Tenths.		Tenths.
Length of humerus	7	Breadth of posterior margin of sternum	5
Length of ulna	10	Breadth of anterior margin of sternum	4
Length of metacarpus	5	Depth of keel	2
Length of femur	6	Length of head	10½
Length of tibia	10	Breadth of head	5
Length of metatarsus	6½	Length of pelvis	7
Length of sternum	6½	Breadth of pelvis	6½

PIPRA, *Linn.*

Caudata, *Shaw.*

Similar to the foregoing, but with *pelvis* broader, and the *sternum* with a deeper keel. *P. Manacus* is also similar.

RUPICOLA, *Briss.*

Crocea, *Bon.*

Cranium flattened from the vertex to the nostrils, where there is a strong transverse groove; orbital septum with a small foramen. Palatine bones very broad for their whole length, their lateral posterior edge with a blunt process slightly pointing outwards.

Sternum of moderate size, the process to which the ribs are attached very broad.

Pelvis of moderate size, longer than broad; obturator foramen large; the ischiadic narrow.

Ulna much larger than humerus; metacarpus long.

Metatarsi and legs generally rather short, the former with a very slight keel on the hinder edge.

Measurements.

	Tenths.		Tenths.
Length of humerus	19	Breadth of posterior margin of sternum	11
Length of ulna	24	Breadth of anterior margin of sternum	9½
Length of metacarpus	11	Depth of keel	5
Length of femur	14	Length of head	21
Length of tibia	21	Breadth of head	9
Length of metatarsus	14½	Length of pelvis	21
Length of sternum	16	Breadth of pelvis	11

Illustrations.

Sternum, metatarsi, and pelvis, Plate XVI. fig. 2.

LANIUS, *Linn.*

Collurio, *Linn.*

Cranium with a very slight depression across the nasal bones, and sloping very gradually from the vertex to the nostrils; central channel small; orbital septa with a small foramen. Palatine bones not divaricated at their hinder extremities, but merely spatulate and rounded.

Sternum nearly as wide anteriorly as posteriorly; the posterior marginal fissures of moderate size, and the edge of the sternum nearly straight.

Os furcatum very much curved in front and bent much inwards at its junction with the sternum.

Pelvis longer than broad; ischiadic foramen large and oval, about half as wide as long in some; obturator foramen of moderate size; genera much narrower in proportion to its length than in others.

Metatarsi rather long, with a projecting rib down the hinder margin.

Ulna short in proportion to the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	$5\frac{1}{2}$	Breadth of posterior margin of sternum	6
Length of ulna	7	Breadth of anterior margin of sternum	$4\frac{1}{2}$
Length of metacarpus	5	Depth of keel	$2\frac{1}{2}$
Length of femur	$7\frac{1}{2}$	Length of head	$14\frac{1}{2}$
Length of tibia	11	Breadth of head	$5\frac{3}{4}$
Length of metatarsus	$9\frac{1}{2}$	Length of pelvis	10
Length of sternum	$8\frac{1}{2}$	Breadth of pelvis	7

Illustration.

Skeleton, Plate XI. F.

CYCLORHIS, *Sw.*

Guianensis, *Gm.*

Cranium concave on its vertex; orbital septum with a large foramen. Palatine bones broader at their hinder extremity.

Sternum broader in proportion to its length than in the last.

Pelvis similar.

Metatarsi longer in proportion to the tibia.

Measurements.

	Tenths.		Tenths.
Length of humerus	$8\frac{1}{4}$	Breadth of posterior margin of sternum	6
Length of ulna	$9\frac{1}{2}$	Breadth of anterior margin of sternum	$4\frac{1}{2}$
Length of metacarpus	4	Depth of keel	$1\frac{3}{4}$
Length of femur	8	Length of head	15
Length of tibia	12	Breadth of head	7
Length of metatarsus	10	Length of pelvis	10
Length of sternum	8	Breadth of pelvis	8

Illustrations.

Sternum, pelvis, and tarsi, Plate XVIII. fig. 2

PYCNONOTUS, *Kuhl.*

Ashanteus, *Stric.*

Cranium very convex; orbital septum with a moderate-sized foramen; humerus as long as ulna.

Remainder of the skeleton similar to *Lanius*.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	$6\frac{1}{2}$
Length of ulna	10	Breadth of anterior margin of sternum	5
Length of metacarpus	$4\frac{1}{2}$	Depth of keel	3
Length of femur	9	Length of head	15
Length of tibia	12	Breadth of head	6
Length of metatarsus	9	Length of pelvis	11
Length of sternum	10	Breadth of pelvis	7

CRINIGER, *Temm.*

Nivosus, *Temm.*

Similar to *Lanius*, but with the ulna rather longer in proportion to the humerus.

THAMNOPHILUS, *Vieill.*

Undulatus, *Mik.*

Cranium similar to *Lanius*, but with orbital septum nearly obliterated; indentation for the massiter muscle very deep; vertex convex.

Pelvis much narrower, especially anteriorly, than in *Lanius*, and much longer in proportion to its greatest width; the two sides of the ischium not united, so that the

whole of the vertebræ to which they are anchylored can be seen from the upper surface; ischiadic foramen very large, oval.

Sternum nearly as broad anteriorly as posteriorly; posterior fissures larger than in *Lanius*, and the keel not so deep.

Metatarsi long.

Ulna shorter than the humerus. Metacarpus more than half the length of the ulna. The upper five vertebræ next to the *Atlas* with the dorsal spines apparent.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	7½
Length of ulna	12½	Breadth of anterior margin of sternum	7
Length of metacarpus	7¼	Depth of keel	3
Length of femur	16½	Length of head	27
Length of tibia	26	Breadth of head	10
Length of metatarsus	19	Length of pelvis	17
Length of sternum	12½	Breadth of pelvis	9

THAMNOPHILUS, *Vieill.*

Severus, *Licht.*

I have a specimen of the above, and also *Meleagris* and *Doliatus*, *Licht*, neither of which differ, except in size, from *Undulatus*.

VANGA, *Vieill.*

Nigrogularis, *Gould.*

Cranium rather flattened on the vertex; palatine bones bifurcate at their hinder extremities; impression for the massiter muscle not so large as in *Thamnophilus*; orbital septum perforated with a large foramen, but not so rudimental as in *Thamnophilus*.

Sternum broader posteriorly than anteriorly; keel shallow; posterior fissures of moderate size.

Pelvis nearly as broad as long; vertebræ scarcely traceable on the upper surface; obturator foramen very large; ischiadic foramen oval, very wide.

Ulna much longer than humerus; metacarpus long.

Metatarsus not so long in proportion as in *Thamnophilus*.

VANGA, *Vieill.*

Torquatus, *Lath.*

Similar to the foregoing, but smaller.

LANARIUS, *Vieill.*

Peli, *Bp.*

Cranium with the vertex very convex; orbital septum very nearly obliterated, consisting merely of a slight strip of bone. Palatine bones with their external edges bent much downwards, and having a spine near their hinder extremities, pointing backwards; masseter impression small.

Sternum much narrowed behind the coracoids; process for the attachment of the ribs very long.

Pelvis as broad as long; vertebra on the anterior half visible; obturator and ischiadic foramina both very large.

Ulna slightly longer than the humerus; metacarpus short.

Metatarsi long.

Os furcatum and coracoids long, the former much laterally compressed; process at its junction with the sternum very large, flattened, and pointing backwards.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	$6\frac{1}{2}$
Length of ulna	11	Breadth of anterior margin of sternum	5
Length of metacarpus	$4\frac{1}{4}$	Depth of keel	3
Length of femur	$10\frac{1}{2}$	Length of head	$16\frac{1}{2}$
Length of tibia	$15\frac{1}{2}$	Breadth of head	8
Length of metatarsus	11	Length of pelvis	$9\frac{1}{2}$
Length of sternum	$10\frac{1}{2}$	Breadth of pelvis	$9\frac{1}{2}$

LANIARIUS, *Vieill.*

Leucorhynchus, *Hartl.*

Similar to the foregoing.

TURDUS, *Linn.*

Musicus, *Linn.*

Type.

Cranium very convex, with a slight channel running from the base of the bill, where there is a deep transverse channel to the occiput; orbital septum with a moderate-sized

foramen; masseter impression very slight. The palatine bones consist of a slight strip of bone expanded near their hinder extremities, and slightly bent downwards.

Pelvis very broad; obturator and ischiadic foramina large.

Sternum with the posterior margin very much rounded, with two large fissures, one on each side; the strips of bone bounding the outer edges of the fissures do not project so far back as the edge of the central portion of the sternum.

Wing-bones very short; the ulna longer than the radius.

Metatarsi of moderate length, with a slight keel down their posterior edge. Altogether the skeleton of *Turdus* very much resembles that of *Lanius*.

Measurements.

	Tenths.		Tenths.
Length of humerus	9½	Breadth of posterior margin of sternum	8½
Length of ulna	11½	Breadth of anterior margin of sternum	6
Length of metacarpus	6½	Depth of keel	4
Length of femur	10	Length of head	17½
Length of tibia	17	Breadth of head	7
Length of metatarsus	13	Length of pelvis	14
Length of sternum	14	Breadth of pelvis	8½

Illustrations.

Turdus, Chochi, Plate VII. F.

TURDUS, *Linn.*

Torquatus, *Linn.*

Turdus, Chochi, Pilaris, and *Carbonarius* are all similar to the foregoing, except in measurements.

COLLURIOCINCLA, *Vig. & Horsf.*

Selbii, *Gould.*

Cranium slightly more flattened from the vertex to the bill than in *Turdus*. In other respects similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8
Length of ulna	12	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	4
Length of femur	11	Length of head	22½
Length of tibia	18	Breadth of head	8½
Length of metatarsus	13	Length of pelvis	12
Length of sternum	11½	Breadth of pelvis	10½

DONACOBIUS, *Sw.*

Atracapillus, *Linn.*

Cranium with a large foramen in the orbital septa.

Pelvis and *sternum* smaller; *metatarsus* longer.

Wings very short; humerus as long as ulna. In other respects similar to *Turdus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Breadth of posterior margin of sternum	5½
Length of ulna	9	Breadth of anterior margin of sternum	4½
Length of metacarpus	4½	Depth of keel	2
Length of femur	9½	Length of head	20
Length of tibia	16	Breadth of head	7
Length of metatarsus	12½	Length of pelvis	10
Length of sternum	8½	Breadth of pelvis	6

HYDROBATA, *Vieill.*

Cinclus, *Linn.*

This bird does not differ from *Turdus*, except in having the posterior margin of the sternum nearly straight, and in the fissures being smaller.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Breadth of posterior margin of sternum	9
Length of ulna	10	Breadth of anterior margin of sternum	6
Length of metacarpus	6½	Depth of keel	3
Length of femur	8½	Length of head	16
Length of tibia	15	Breadth of head	6
Length of metatarsus	12	Length of pelvis	14
Length of sternum	10	Breadth of pelvis	8½

GARRULAX, *Less.*

Rufifrons, *Less.*

Cranium with a very large foramen in the orbital septum. Palatine bones very similar to *Turdus*, but not extending so far backwards. Masseter impression very slight.

Sternum with a very narrow keel, and with the fissures on the posterior margin very slight; as wide anteriorly as posteriorly.

Pelvis broad; ischiadic and obturator foramina very large. In other respects similar to *Turdus*.

Ulna longer than humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	6
Length of ulna	14	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	2
Length of femur	13	Length of head	20
Length of tibia	18	Breadth of head	9
Length of metatarsus	13	Length of pelvis	13
Length of sternum	11	Breadth of pelvis	9½

MYOPHONUS, *Temm.*

Cyaneus, *Horsf.*

Cranium with the vertex moderately convex; orbital septum nearly obliterated. Palatine bones similar to *Turdus*; upper edges of the orbits recurved.

Pelvis rather narrow, much more so in proportion than in *Turdus*; obturator foramen large; ischiadic foramen almost obliterated.

Sternum with the hinder margin nearly straight; a large fissure on each side on the posterior margin; keel shallow.

Ulna much longer than the humerus.

Metatarsi long.

Measurements.

	Tenths.		Tenths.
Length of humerus	9½	Breadth of posterior margin of sternum	8½
Length of ulna	14½	Breadth of anterior margin of sternum	7
Length of metacarpus	6	Depth of keel	2
Length of femur	11½	Length of head	21
Length of tibia	20	Breadth of head	8
Length of metatarsus	18	Length of pelvis	15
Length of sternum	11	Breadth of pelvis	10

GRALLINA, *Vieill.*

Imperator, *Natt.*

Very similar to *Myophonus*, but differs in having very large fissures on the posterior margin of sternum, which is very slightly rounded; the process at the junction of the branches of the furculum is broad, flattened, and points downwards, while in *Turdus* it points backwards. The leg-bones are very long, the wings short, the ulna only being slightly longer than the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	13½	Breadth of posterior margin of sternum	8
Length of ulna	16	Breadth of anterior margin of sternum	7
Length of metacarpus	7	Depth of keel	4
Length of femur	13	Length of head	22
Length of tibia	26	Breadth of head	9
Length of metatarsus	21	Length of pelvis	13½
Length of sternum	12½	Breadth of pelvis	10

GRALLARIA, *Vieill.*

Marginata, *Pr. Max.*

The only difference in form between this bird and the foregoing is that the pelvis is broader; it still, however, has the same linear form of ischiadic foramen, and the process at the junction of the rami of the os furcatum points backwards.

CINCLORAMPHUS, *Gould.*

Cruralis, *Vig. & Horsf.*

This bird has been classed with *Malurus*, but the skeleton is precisely that of *Grallaria*, with the exception of the ischiadic foramen being rather more open.

Measurements.

	Tenths.		Tenths.
Length of humerus	11½	Breadth of posterior margin of sternum	8
Length of ulna	13½	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	2½
Length of femur	11	Length of head	16
Length of tibia	20	Breadth of head	7
Length of metatarsus	16	Length of pelvis	13
Length of sternum	12	Breadth of pelvis	6½

FORMICIVORA, *Sw.*

Grisea, *Strick.*

Cranium with the vertex very convex, orbital septum nearly obliterated. Palatine bones with the lateral spines pointing backwards, and very long.

Sternum very broad in proportion to its length.

Pelvis broad, the ischiadic foramen very large.

Humerus as long as ulna.

Leg-bones long.

I have great doubts as to whether or not this is the right family for this bird.

Measurements.

	Tenths.		Tenths.
Length of humerus	5½	Breadth of posterior margin of sternum	5
Length of ulna	5½	Breadth of anterior margin of sternum	4
Length of metacarpus	3	Depth of keel	1
Length of femur	6	Length of head	12
Length of tibia	10	Breadth of head	5
Length of metatarsus	8	Length of pelvis	6½
Length of sternum	5	Breadth of pelvis	5½

Illustration.

Drymophila (Formicivora) loricata, Plate XI. F.

ORIOLUS, *Linn.*

Intermedius, *Temm.*

Type.

Cranium much depressed anteriorly to the vertex, and slightly hollowed out between the orbits; edges of the orbits not reflected; septa with a moderate-sized foramen. Palatine bones rather strong, expanding at their posterior extremities abruptly; the outer margins elongated backwards in the form of a blunt spine; interarticular bones rather short; nostrils rounded.

Sternum broad on its posterior margin, which is nearly straight; anterior margin two-thirds the width of the posterior; the fissures on the posterior margin of moderate size, and much contracted posteriorly; keel of moderate depth, slightly arched.

Pelvis of moderate size, nearly as broad as long; channel very deep between the ischium and the anterior sacral vertebræ, leaving their dorsal spine apparent; ischiadic foramen broad, oval, divided into two portions by a small strip of bone, the anterior portion very small; obturator foramen large.

Furculum with the rami much compressed laterally at their junction; furnished with a flattened process pointing backwards.

Coracoids rather long.

Metatarsi slightly channeled down the front, without any posterior keel.

Wing-bones with the ulna longer than the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8
Length of ulna	13	Breadth of anterior margin of sternum	6
Length of metacarpus	7½	Depth of keel	2½
Length of femur	10	Length of head	18
Length of tibia	14	Breadth of head	8
Length of metatarsus	9	Length of pelvis	11½
Length of sternum	10	Breadth of pelvis	9

ORIOLUS, *Linn.*

Nigripennis, *Verr.*

Similar to the foregoing in all respects but in being rather smaller.

STERNUS, *Linn.*

Vulgaris, *Linn.*

Type.

Very similar to *Oriolus*, but differs in having the sternum longer in proportion to its width, and the keel deeper, the ischium more perpendicular to the plane of the ilium, and in the tibia being longer in proportion to the femur.

Measurements.

	Tenths.		Tenths.
Length of humerus	10½	Breadth of posterior margin of sternum	8½
Length of ulna	12	Breadth of anterior margin of sternum	6
Length of metacarpus	7	Depth of keel	4
Length of femur	10½	Length of head	18
Length of tibia	16½	Breadth of head	6½
Length of metatarsus	11½	Length of pelvis	13
Length of sternum	12	Breadth of pelvis	7½

LAMPROTORNIS, *Temm.*

Cantor, *Gm.*

Similar to *Sturnus*, but has the palatine bones broader, and the manubrial process of the sternum shorter.

LAMPROCOLIUS, *Lund.*

Purpuriceps, *Verr.*

Similar to the foregoing, but with the sternum rather longer in proportion to its width, and the pelvis broader.

PASTOR, *Temm.*

W. Australia.

Very similar to *Sternus*, but has the manubrial process much shorter, the inferior edge of the keel more arched, and in the ischium not being placed quite so perpendicularly to plane of the pubis.

Measurements.

	Tenths.		Tenths.
Length of humerus	14	Breadth of posterior margin of sternum	9
Length of ulna	18	Breadth of anterior margin of sternum	7
Length of metacarpus	10	Depth of keel	4½
Length of femur	12	Length of head	21
Length of tibia	20	Breadth of head	8
Length of metatarsus	17½	Length of pelvis	16
Length of sternum	15	Breadth of pelvis	9

STERNOPASTOR, *Hodgs.*

Jalla, *Horsf.*

The bird may at once be distinguished from the preceding by the shortness of the sternum in proportion to its width.

STERNELLA, *Vieill.*

Ludoviciana, *Linn.*

Distinguished from all the other *Sterninæ* by the enormous fissures on the posterior margin of the sternum, the greater proportionate depth of the keel, and the great breadth of pelvis in proportion to its width.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8
Length of ulna	14	Breadth of anterior margin of sternum	7
Length of metacarpus	8	Depth of keel	5½
Length of femur	14	Length of head	22
Length of tibia	22	Breadth of head	7
Length of metatarsus	17	Length of pelvis	14
Length of sternum	14	Breadth of pelvis	11

CASSICUS, *Cuv.*

Bifasciatus, *Spix.*

Cranium with the vertex very flat, with a protuberance behind the nostrils; occiput with a very distinct occipital ridge; upper edge of the orbits slightly recurved; orbital septa with a large foramen.

Pelvis similar to *Sternus*.

Sternum with the posterior foramen rather small; manubrial process much shorter than in *Sternus*, but shallow.

Coracoids rather long.

Femur longer in proportion to the tibia than in *Sturnus*. Metatarsus with a slight keel.

Measurements.

	Tenths.		Tenths.
Length of humerus	18	Breadth of posterior margin of sternum	11
Length of ulna	25	Breadth of anterior margin of sternum	9
Length of metacarpus	11	Depth of keel	4
Length of femur	16	Length of head	35
Length of tibia	28	Breadth of head	11
Length of metatarsus	17	Length of pelvis	18½
Length of sternum	17	Breadth of pelvis	11½

Illustration.

Plate X. F.

CASSICUS, *Cuv.*

Cristatus, *Gm.*

The only difference I can detect between this bird and the foregoing is that the fissures on the posterior margin of the sternum are smaller, and the pelvis rather shorter.

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	7½
Length of ulna	13	Breadth of anterior margin of sternum	5½
Length of metacarpus	7	Depth of keel	4
Length of femur	10	Length of head	18
Length of tibia	15	Breadth of head	8
Length of metatarsus	13	Length of pelvis	12
Length of sternum	13	Breadth of pelvis	7½

ICTERUS, *Briss.*

Melanocephalus, *Wagl.*

Very similar to *Cassicus*, but with the posterior marginal fissures of the sternum smaller and nearly closed, the sternum of the same width both before and behind, and having the ulna and humerus very nearly the same length.

Measurements.

	Tenths.		Tenths.
Length of humerus	10	Breadth of posterior margin of sternum	6
Length of ulna	11	Breadth of anterior margin of sternum	6
Length of metacarpus	5	Depth of keel	3
Length of femur	9	Length of head	17
Length of tibia	15	Breadth of head	$7\frac{1}{2}$
Length of metatarsus	$10\frac{1}{2}$	Length of pelvis	$10\frac{1}{2}$
Length of sternum	$10\frac{1}{2}$	Breadth of pelvis	$7\frac{1}{2}$

QUISCALUS, *Vieill.*

Major, *Vieill.*

The form of the skeleton of both the above bird and *Quiscalus crassirostris* are not distinguishable except in size from *Cassicus.*

Illustrations.

Sternum, pelvis, and metatarsus, Plate XVIII.

AGELAIUS, *Vieill.*

Chopi, *Bp.*

Very similar to *Icterus*, but has the posterior sternal fissures more open, the manubrial process longer, and the keel deeper; the hinder part of the sternum also wider than the anterior, and the metatarsi longer in proportion to the tibia.

PLOCEUS, *Cuv.*

Erythrops, *Harl.*

Cranium rounded, with a depression at the base of the lower mandible; deep nasal septa, with two small foramina. Palatine bones similar in form to the *Sternidæ*, but shorter, and with the lateral processes more developed. Occipital ridge well marked.

Sternum similar in form to the *Sturnidæ*, but with the apex of the keel receding, and the plain of it being broader in proportion to the length.

Ribs similar to *Sternidæ.*

Furculum similar to the *Sternidæ*, but with the process at the junction of the rami turned more abruptly upwards, not touching the sternum.

Coracoids long, nearly as long as the sternum.

Scapula longer than the humerus, slightly expanded towards the tip.

Wing-bones with the ulna longer than the humerus.

Vertebral column well developed.

Pelvis of moderate size, with the ischiadic and obturator foramina rather large.

Leg-bones not differing in form from other insessorial birds.

Measurements.

	Tenths.		Tenths.
Length of humerus	5½	Breadth of posterior margin of sternum	6
Length of ulna	7	Breadth of anterior margin of sternum	4
Length of metacarpus	3½	Depth of keel	2
Length of femur	6½	Length of head	11
Length of tibia	11	Breadth of head	6
Length of metatarsus	7	Length of pelvis	6½
Length of sternum	8	Breadth of pelvis	6

COCCOTHRAUSTES, *Briss.*

Cayanensis, *Briss.*

Cranium orbital septa with only one small perforation; upper edge of the orbits recurved; occipital ridge well marked; indentation at the posterior margin of the upper mandible well marked.

Sternum with the foramina on the posterior margin not so large as in *Ploceus*. The whole skeleton in other respects similar to *Ploceus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Breadth of posterior margin of sternum	7
Length of ulna	12	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	3
Length of femur	9	Length of head	15
Length of tibia	12½	Breadth of head	7
Length of metatarsus	9½	Length of pelvis	10
Length of sternum	10	Breadth of pelvis	8

FRINGILLA, *Linn.*

Cœlebs, *Linn.*

Cranium rounded, a slight channel extending from the slight depression at base of the bill to the occiput; orbital septum with the foramina. Palatine bones with the exterior edges slightly deflexed; occipital not well marked.

Sternum and other bones similar to *Coccothraustinæ*

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Length of femur	6
Length of ulna	9	Length of tibia	11
Length of metacarpus	5	Length of metatarsus	7

Measurements (continued.)

	Tenths.		Tenths.
Length of sternum	8	Length of head	11½
Breadth of posterior margin of sternum	5½	Breadth of head	5½
Breadth of anterior margin of sternum	3	Length of pelvis	9
Depth of keel	3	Breadth of pelvis	5

FRINGILLA, *Linn.*

Montifringilla, *Linn.*

Cranium with the occipital crest, not much more marked than in *Cœlebs;* one fissure in the orbital septa, a very slight channel only proceeding backwards from the base of the upper mandible.

Sternum longer in proportion than in the foregoing, and not so wide; in other respects similar, except in measurements

Measurements.

	Tenths.		Tenths.
Length of humerus	6½	Breadth of posterior margin of sternum	5
Length of ulna	8½	Breadth of anterior margin of sternum	4
Length of metacarpus	5	Depth of keel	3
Length of femur	6½	Length of head	10
Length of tibia	10	Breadth of head	5
Length of metatarsus	7	Length of pelvis	8
Length of sternum	9	Breadth of pelvis	6

LINARIA, *Selby.*

Borealis, *Vieill.*

Does not appear to differ from *Fringilla* in any respect except in size.

CARDUELIS, *Briss.*

Elegans, *Steph.*

Similar to the last.

CHRYSOMITRIS, *Boie.*

Magellanica, *Vieill.*

There is a very slight difference in form between this genus and *Carduelis;* the intermaxillary bones are smaller in the former than in the latter. The os furcatum is longer in *Fringilla*, in proportion to size, than in *Chrysomitris.*

EMBERIZA, *Linn.*

Citrinella, *Linn.*

The same general form exists in this family as in the last. I have also a skeleton of *Plectrophanes nivalis.*

PYRRHULA, *Mœhr.*

Vulgaris, *Temm.*

Cranium robust, with a deep impression, broader in proportion to its length behind the nostrils than in *Fringilla*; occiput with a small protuberance and a deep impression on each side upper margin of the orbits, slightly recurved; orbital septum with only one foramen; channel for masseter muscles moderately developed. Palatine bones broad at their hinder margins, and strong.

Sternum with the foramina on the posterior margin wider than in *Fringilla*, and the sternum broader in proportion to its length.

Ribs stronger than in *Fringilla.*

Pelvis similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	7	Breadth of posterior margin of sternum	6
Length of ulna	8	Breadth of anterior margin of sternum	4
Length of metacarpus	4	Depth of keel	3
Length of femur	7	Length of head	11
Length of tibia	1in.	Breadth of head	6
Length of metatarsus	8	Length of pelvis	$9\frac{1}{4}$
Length of sternum	$8\frac{1}{2}$	Breadth of pelvis	6

LOXIA, *Linn.*

Curvirostra, *Linn.*

I have two specimens of this bird in my collection; one I shot myself in Shropshire, the other was killed in Yorkshire. The form of the skeleton of each is the same, therefore the description of one will be sufficient; but I shall call them "1," alluding to the Shropshire specimen, and "2" to the Yorkshire one. The differences in size may probably be sexual, but I have no means of determining that point at present.

Cranium robust, very powerful, agreeing with *Pyrrhula* in the formation of the occiput, and in having the depression behind the nares; the impression for the masseter muscles very highly developed, much more so than in any Insessorial bird with which I am acquainted. Palatine bones strong, broad, depressed at their lateral

edges, and with a long deflexed process, blunt at the tip, arising from the anterior portion of them. Inter maxillaries also strong.

Sternum more massive than in *Fringilla;* the lateral foramina not so deep in proportion to its size as those found in the last mentioned genus.

Pelvis similar to *Loxia.*

Furculum with a very large flattened process extending backwards and upwards at the junction of the rami.

Measurements.—(Specimen 1.)

	Tenths.		Tenths.
Length of humerus	7	Breadth of posterior margin of sternum	6
Length of ulna	10	Breadth of anterior margin of sternum	5
Length of metacarpus	5	Depth of keel	4
Length of femur	6½	Length of head	9
Length of tibia	12	Breadth of head	7
Length of metatarsus	6½	Length of pelvis	10
Length of sternum	10½	Breadth of pelvis	6½

Measurements.—(Specimen 2.)

	Tenths.		Tenths.
Length of humerus	6	Breadth of posterior margin of sternum	6
Length of ulna	8½	Breadth of anterior margin of sternum	4½
Length of metacarpus	5	Depth of keel	2
Length of femur	6½	Length of head	14
Length of tibia	12	Breadth of head	6
Length of metatarsus	8½	Length of pelvis	9
Length of sternum	9	Breadth of pelvis	7

From the above measurements there is but one conclusion to be come to—that No. 2 specimen is made up: the head and body belong to *Loxia curirostra;* the legs are those of the common chaffinch.

STROBILOPHAGA, *Vieill.*

Enucleator, *Linn.*

Except in the external character of the bill, very similar to the preceding.

Cranium broad and strong; nostrils very large; orbits larger than in the preceding.

Sternum similar in form.

Pelvis with the foramina large.

Ribs, furculum, coracoids, scapula, wing and *leg bones* similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	9½	Breadth of posterior margin of sternum	8
Length of ulna	11	Breadth of anterior margin of sternum	6
Length of metacarpus	6	Depth of keel	3½
Length of femur	10	Length of head	13½
Length of tibia	14	Breadth of head	7
Length of metatarsus	10	Length of pelvis	12
Length of sternum	11	Breadth of pelvis	10

TACHYPHONUS, *Vieill.*

Quadricolor, *Vieill.*

Cranium with a slight channel from behind the nostrils to the occiput; nostrils large, oblong; orbital septum with a large foramen below, and a very much smaller one above it; occipital protuberance well marked. Palatine bones consisting of a single thin strip of bone on each side, elongated into a sharp spine at about one-fourth their length from the hinder extremity of the lateral strips; a styliform process extends from them to the spheroid bone twice as broad at its junction with that bone as at the opposite extremity.

Sternum similar to the *Fringillidæ*.

Pelvis with three distinct foramina: the ischiadic, which is slightly oval; the obturator, which is also an elongated oval, anterior to which there is a small rounded foramen immediately under the head of the femur, and divided from the obturator foramen by a small strip of bone.

Ribs slender styliform process, pointed.

Furculum and *coracoids* similar to that of the *Fringillidæ*.

Scapula with the hinder extremity turning more downwards than among the *Fringillidæ*.

Remaining bones similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	8	Breadth of posterior margin of sternum	6
Length of ulna	9	Breadth of anterior margin of sternum	5
Length of metacarpus	4	Depth of keel	3
Length of femur	7	Length of head	14
Length of tibia	12	Breadth of head	6
Length of metatarsus	8½	Length of pelvis	8½
Length of sternum	11	Breadth of pelvis	8

TACHYPHONUS, *Vieill.*

Coryphæns, *Licht.*

This species has been divided from *Tachyphonus* by Bonaparte, in his Conspectus, under the name of *Pyrrhota*, but the osteology is not distinguishable.

TANAGRA, *Linn.*

Ornata, *Sparr.*

Cranium with the upper foramen in the orbital septum largest.

Sternum with the fissures on the posterior margin deeper than in the preceding. In other respects similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Breadth of posterior margin of sternum	6
Length of ulna	8½	Breadth of anterior margin of sternum	5
Length of metacarpus	5½	Depth of keel	3
Length of femur	8	Length of head	14½
Length of tibia	12	Breadth of head	5½
Length of metatarsus	8	Length of pelvis	10
Length of sternum	10	Breadth of pelvis	7

LAMPROTES, *Sw.*

Viridis, *Spix.*

Differs slightly from *Tachyphonus* in having the branches of the furculum more compressed, and the process at their juncture not so long.

NEMOSIA, *Vieill.*

Flavicollis, *Vieill.*

Differs from the other *Tanagrinæ* by the greater proportionate length of the metatarsi, and in the orbital septa being divided by a very narrow strip of bone.

Nemosia ruficapillus, *Vieill*, is similar to the above, but rather smaller.

Measurements.

	Tenths.		Tenths.
Length of humerus	6	Breadth of posterior margin of sternum	5
Length of ulna	7	Breadth of anterior margin of sternum	4½
Length of metacarpus	3½	Depth of keel	2
Length of femur	6	Length of head	11
Length of tibia	11	Breadth of head	5½
Length of metatarsus	9	Length of pelvis	7
Length of sternum	6½	Breadth of pelvis	6

CALLISTE, *Boie.*

Tricolor, *Gm.*

Besides the above, I possess two other species of this genus,—namely, *Festiva*, *Sh.*, and *Thoracica*, *Temm.*, none of which differ in any respect that I can discover from *Nemosia.*

EUPHONIA, *Desm.*

Pectoralis, *Lath.*

I have also a specimen of *Aureata*, *Vieill;* neither of them differ from *Calliste*, except in not having the spine on the hinder portion of the palatine bones so much elongated.

SALTATOR, *Vieill.*

Magnus, *Gm.*

The *Saltatorinæ* do not appear to differ from the *Tanagrinæ* in the form of the skeleton, but may be distinguished by their large and robust bills. I have the following species besides that named above:—*Cyanopterus*, *Vieill;* *Cærulescens*, *Vieill;* *Pytylus Gnatho;* *Pytylus torridus;* *Pytylus*, from Honduras; *Arremon semitorquatus;* and *Diucopis capistratus*, *Bp.*

Measurements.

	Tenths.		Tenths.
Length of humerus	11	Breadth of posterior margin of sternum	8
Length of ulna	12	Breadth of anterior margin of sternum	5
Length of metacarpus	5	Depth of keel	3
Length of femur	9½	Length of head	16
Length of tibia	15	Breadth of head	7½
Length of metatarsus	10	Length of pelvis	12
Length of sternum	10	Breadth of pelvis	8

Illustrations.

Skeleton Pl. 12 F, fig. 1. | Details Pl. 19, fig. 1.

CORVUS, *Linn.*

Corax, *Linn.*

Cranium and whole skeleton very strong and powerful, two small foramina perforating the orbital septum; occipital ridge well marked. Palatine bones very strong, the lateral splints rounded and blunt at their hinder extremities, not extending far back-

wards, processes uniting them with the sphenoid very broad, broadest at their junction with the lateral splints; orbits large, upper edges slightly recurved; deep transverse indentation behind the nostrils.

Sternum rather short in proportion to its length, and altogether very much resembling that of a Raptorial bird, slightly rounded on its posterior margin, broader posteriorly than anteriorly; hinder margin indented with a shallow fissure on each side, rounded anteriorly, and only very slightly contracted posteriorly; keel deep in proportion to the breadth of the sternum. Manubrial process much shorter and more robust than among Insessores generally.

Pelvis, as in many other of the Insessores, with three foramina,—the ischiadic, the obturator, and one situated below the femoral joint, and which is divided from the obturator foramen by a much proportionately stronger septum than in the other families of Insessores.

Ribs with the styliform processes pointed rather abruptly upwards, bluntly rounded at their extremities, very clearly expanded between the styliform process and their upper extremity.

Furculum much rounded at the junction of the rami, the process extending backwards from their junction towards the sternum very slight.

Coracoids strong, deeply articulated into the sternum.

Scapulæ only slightly recurved at their hinder extremities.

Wing-bones strong; metacarpus long in proportion to the ulna, and the latter long in proportion to the humerus.

Vertebral column, the first four or vertebræ next the atlas with strong and somewhat lengthened dorsal processes, the fifth with a much slighter one, the sixth rudimental.

Leg-bones, tibia long in proportion to the femur, the fibula continued for its whole length.

Measurements.

	Tenths.		Tenths.
Length of humerus	33	Breadth of posterior margin of sternum	20
Length of ulna	46	Breadth of anterior margin of sternum	13
Length of metacarpus	23	Depth of keel	9
Length of femur	28	Length of head	50
Length of tibia	43	Breadth of head	19
Length of metatarsus	25	Length of pelvis	40
Length of sternum	32	Breadth of pelvis	19

CORVUS, *Linn.*

Corone, *Linn.*

In every respect similar to the foregoing.

CORVUS, *Linn.*

Frugilegus, *Linn.*

Very similar to *Corone*, but has the dorsal processes of the vertebræ less marked; only one foramen in the orbital septum, and the foramina on the posterior margin of the sternum nearly closed at their hinder extremities by the expansion of the lateral splints.

CORVUS, *Linn.*

Monedula, *Linn.*

Skeleton altogether much slighter than in the other species of the genus *Corvus* mentioned.

Cranium. The orbital septum with two foramina.

Sternum with the posterior foramina very open, the lateral splints not reaching the posterior margin.

PICA, *Briss.*

Candata, *Ray.*

Very similar to *Corvus*, but with the four vertebræ next the atlas only having dorsal spines; lateral splints on the posterior margin of the sternum expanded at their extremities, partly closing the fissures, which are deeper than in *Corvus*, and not so rounded at their anterior end.

Pelvis without the third foramen anterior to the obturator, which, as well as the obturator, is large. Manubrial process very small; scapula more recurved than in *Corvus*.

Measurements.

	Tenths.		Tenths.
Length of humerus	19	Breadth of posterior margin of sternum	11½
Length of ulna	18	Breadth of anterior margin of sternum	9
Length of metacarpus	11	Depth of keel	5
Length of femur	16	Length of head	27
Length of tibia	29	Breadth of head	12
Length of metatarsus	21	Length of pelvis	18
Length of sternum	17	Breadth of pelvis	13

NUCIFRAGA, *Briss.*

Caryocatactes, *Linn.*

Cranium with the mandibles rather straighter than in *Corvus*, the upper one extending forwards in a nearly straight line beyond the lower, and only very slightly bent downwards at the tip; orbital septum with two small foramina.

Sternum more elongated than in *Corvus;* the fissures on the posterior margin narrowed anteriorly to a point, the splints bounding them exteriorly, slightly expanded at the tips; manubrial process widely bifurcate at the extremity; remaining bones similar to *Corvus*, but not so powerful.

Measurements.

	Tenths.		Tenths.
Length of humerus	15	Breadth of posterior margin of sternum	10
Length of ulna	18	Breadth of anterior margin of sternum	9
Length of metacarpus	10	Depth of keel	4
Length of femur	15	Length of head	32
Length of tibia	23	Breadth of head	13
Length of metatarsus	16	Length of pelvis	16
Length of sternum	14	Breadth of pelvis	11

CEPHALOPTERUS, *Geoff.*

Penduliger, *Selater.*

I have only fragments of this bird, taken from a skin sent home by Mr. Fraser.

Sternum very wide on its hinder margin; foramina small, rounded lateral splints very broad, very slightly expanded at their tips; keel deep; manubrial process short, widely bifurcate, hinder margin indented in the centre.

Pelvis with the ischiadic foramen very large; obturator foramen very small; os pubis very much elongated backwards.

Ribs with the styliform processes long, rounded at their extremities.

Furculum in shape similar to *Corvus*, and with the coracoids very long.

Measurements.

	Tenths.		Tenths.
Length of femur	22	Depth of keel	7
Length of sternum	22	Length of pelvis	25
Breadth of posterior margin of sternum	18	Breadth of pelvis	16
Breadth of anterior margin of sternum	14		

Illustrations.

Sternum and pelvis, Plate XVIII., fig. 3.

CISSA, *Boie.*

Sinensis, *Bodd.*

Very similar to *Corvus*, but with the whole of the skeleton much lighter, and not so strongly formed; the sternum has the splints bounding the outer margin of the posterior foramina slightly curved inwards; the obturator foramen large; os pubis not much elongated.

CISSA, *Boie.*

Thalassina, *Temm.*

Does not differ from the preceding except in size.

LOPHOCITTA, *G. R. Gray.*

Galariculata, *Cuv.*

Differs very slightly from *Garrulus*, but has the foramina at the hinder extremity of the sternum much more contracted, and the outer strip expanded at the point.

GARRULUS, *Briss.*

Rufulus.

Very similar to *Cissa.*

CORACIAS, *Briss.*

Garrula, *Linn.*

Very similar to the other *Corvidæ.*

Sternum very slightly indented on the posterior margin opposite the end of the keel; foramina contracted at their hinder margin; manubrial process very wide, bifurcate, with the branches pointing upwards. Pelvis with a small foramen anterior to the obturator, and divided from it by a strong strip of bone; obturator wide. Palatine bones nearly truncate at their hinder ends; a blunt, broad, but very short spine, only projecting at their outward edge.

PARADISEA, *Linn.*

Rubra, *Vieill.*

I have only the sternum, furculum, and coracoids of this species, brought home by Mr. Wallace. The sternum is much longer, in proportion to its width, than among the *Corvidæ* generally; the lateral splints exterior to the foramina on the posterior margin are very much expanded at their extremities; manubrial process of moderate length, and widely bifurcate.

GYMNORHINA, *G. R. Gray.*

Tibicen, *Lath.*

Cranium, orbital septum with two foramina, the anterior one much the largest. The process uniting the palatine bones with the interarticular not so strong as in *Corvus*.

Sternum with the posterior foramina rather deep.

Pelvis with three foramina, the one immediately below the acetabulum only divided from the obturator foramen by a very narrow strip of bone; ischiadic foramen very large, slightly oblong.

Ribs having the styliform processes much the widest at their junction with the ribs, and gradually tapering towards their extremity, which is rounded.

NEOMORPHA, *Gould.*

Gouldii, *Gray.*

Cranium, orbital septum with two foramina, the hinder one much the smallest; nostrils very large; occipital ridge well defined, protuberance large, hollowed out in the centre.

Sternum with the posterior foramina closed; keel very shallow.

Pelvis rather short; foramina as in the *Corvidæ* generally; ilium with two foramina, one above the other, on the hinder margin, the lower one largest.

Furculum with the rami very wide apart; process at their junction very small.

Measurements.

	Tenths.		Tenths.
Length of humerus	18	Breadth of posterior margin of sternum	10
Length of ulna	19½	Breadth of anterior margin of sternum	9½
Length of metacarpus	9½	Depth of keel	3
Length of femur	20	Length of head	34
Length of tibia	39½	Breadth of head	12
Length of metatarsus	31	Length of pelvis	19
Length of sternum	16	Breadth of pelvis	15

Illustration.

Skeleton, Pl. IX. F.

Numbering of the Vertebræ and Ribs in INSESSORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Chlorophanes atricapilla	10	6	8	6	6	6
Oxyramphus flamiceps	12	7	8	7	6	1
Sitta velata	10	7	—	—	—	—
Dendrocops platyrostris	11	6	9	9	6	1
Picolaptes longirostris	11	6	10	6	6	1
Xiphorhynchus trochilirostris	11	6	9	6	6	1
Furnarius rufus	11	6	9	6	6	1
Anabates leucopthalmus	12	6	8	6	6	1
Troglodytes europæus	11	6	—	—	—	—
Tropidorhynchus argenticeps	12	7	9	6	6	1
Tropidorhynchus corniculatus	12	7	9	6	6	1
Anthochæra carunculata	13	6	10	6	6	1
Anthochæra lunulata	12	6	9	6	6	1
Anthochæra Lewinii	12	6	10	6	6	1
Aracnothera longirostris	12	6	10	6	6	1
Dacnis cyanocephala	12	6	11	6	—	—
Myzomela nigra	11	6	—	6	6	1
Ptilotis chrysotis	11	6	—	6	6	1
Acanthorhynchus superciliorus	12	7	—	—	6	1
Acanthiza diemensis	11	6	—	—	6	1
Hæmatops atricilla	11	7	—	6	6	1
Myzantha garrula	11	7	—	6	6	1
Nectarinia javanica	11	—	—	—	6	1
Menura lyra	13	7	12	8	6	1
Alauda arvensis	11	7	17	6	6	1
Melanocorypha tartarica	12	6	11	6	6	1
Alauda arborea	11	6	9	6	6	1
Motacilla flaveola	11	6	10	6	6	1
Motacilla alba	13	6	8	5	5	2
Enicurus velatus	13	6	10	6	5	2
Grallina melanoleuca	14	6	—	6	6	1
Phænicura tithys	12	7	10	6	6	1
Sylvia Hippolais	11	6	10	6	6	1
Philomela lucinia	12	6	12	6	6	1
Salicaria locustella	11	8	—	6	6	1
Parula Braziliana	11	7	13	6	6	1
Megalurus palustris	12	5	12	6	6	1
Regulus atricapillus	11	7	12	7	6	1
Saxicola œnanthe	11	7	—	6	6	1
Muscicapa grisola	12	7	10	5	6	1
Rhiphadura flabilifera	11	7	—	6	—	—
Myiagra W. Aust.	12	7	—	6	6	1
Tchitrea melanopyga	12	7	10	6	6	1
Conopophaga lineata	11	7	10	6	5	1
Platyrhynchus cancromus	12	6	—	6	6	1
Tyrannus melancholicus	11	6	10	8	6	1
Tyrannula supereiliosa	12	7	—	7	6	1
Tytyra inquisitor	11	7	10	6	6	1
Hirundo riparia	11	6	—	6	6	1
Ampelis cedorum	9	8	12	6	6	1
Ampelis rubrocristatus	11	7	—	6	6	1
Carpornis melanocephalus	12	7	10	7	6	1
Procnias ventralis	13	7	10	6	6	1
Phibulura flavirostris	13	7	11	6	6	2
Lipangus plumbeus	13	8	11	7	6	1
Campephaga griseus	13	7	—	6	6	1

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Campephaga larvatus	11	7	10	6	6	1
Dicrurus Hallicassius	14	8	12	6	6	1
Irena puella	—	6	10	6	6	1
Artamus leucogaster	12	6	10	1	6	1
Pachycephala gutturalis	11	7	—	6	6	1
Ptilochloris virescens	11	7	7	6	6	1
Copurus filicaudus	11	7	9	6	6	1
Manacus guttatus	12	6	9	6	6	1
Rupicola aurantia	11	7	12	6	6	1
Parus cæruleus	11	7	10	6	6	1
Lanius collurio	10	7	10	6	6	1
Thamnophilus undulatus	11	7	12	6	6	1
Thamnophilus meleagris	12	6	11	6	6	1
Vanga destructor	13	7	10	6	6	1
Vanga nigrogularis	11	7	10	6	6	1
Laniarius peli	12	6	10	6	6	1
Laniarius leucorhynchus	12	6	10	6	6	1
Pycnonotus ashanteus	12	6	9	6	6	1
Pycnonotus nivosus	12	7	9	6	6	1
Turdus choki	12	7	11	7	6	1
Turdus musicus	12	7	12	6	6	1
Turdus torquatus	11	6	11	6	6	1
Cinclus aquaticus	12	6	12	6	6	1
Grallaria imperator	10	6	11	6	6	1
Chamæza marginata	12	6	13	6	6	1
Garrulax rufifrons	12	6	11	7	6	1
Myophonus glaucinus	12	6	12	7	6	1
Donacobius atricapillus	12	6	6	6	6	1
Drymophila loricata	12	6	8	6	6	1
Formicivora grisea	12	6	10	6	6	1
Sternus vulgaris	11	7	9	9	6	1
Lampostornis cantor	12	6	11	6	5	1
Sternella Ludoviciana	11	7	11	6	5	1
Pastor — Australia	12	6	9	6	6	1
Sternopastor jalla	12	7	1	6	7	1
Agelaius chopi	10	6	11	6	6	1
Oriolus intermedius	12	6	—	6	6	1
Cassicus bifasciatus	12	6	11	6	6	1
Cassicus cristatus	12	6	11	6	6	1
Icterus melanocephalus	12	6	—	6	6	1
Molothrus sericeus	12	6	10	6	6	1
Hyphantornis brachypterus	12	6	9	6	4	2
Ploceus erythrops	12	6	9	6	4	2
Textor melanocephala	13	6	10	6	6	1
Fringilla montifringilla	11	6	9	6	4	1
Fringilla spinus	12	5	8	7	4	1
Peospisa thoracica	12	6	10	6	4	2
Plectrophanes nivalis	11	6	9	6	5	2
Zonotrichia matutina	12	6	—	6	6	1
Amadina nitens	12	6	—	6	4	1
Chrysomitris magellanicus	12	6	10	6	5	1
Spermestes poensis	11	6	—	6	—	—
Caryothraustes cayanensis	11	6	11	6	6	1
Strobilophaga enucleator	12	6	11	6	6	1
Cocothraustes hæmatina	10	6	11	6	6	1
Emberiza milaria	10	6	9	—	6	1
Emberiza citrinella	11	6	9	6	6	1
Loxia curvirostris	11	6	9	6	6	1

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Aremmon semitorquatus . .	11	7	9	6	6	1
Pytylus gnatho . . .	12	6	9	6	6	1
Saltator cærulescens . .	11	6	9	6	6	1
Stephanophorus cæruleus .	11	6	9	—	6	1
Diucopis capistratus . .	12	6	10	6	6	1
Lamprotes viridis . . .	12	7	10	6	6	1
Tanagra ornata . . .	11	6	9	6	6	1
Tachyphonus quadricolor .	12	6	9	6	6	1
Nemosia flavicollis . . .	11	6	9	6	6	1
Calliste tricolor . . .	11	6	9	6	6	1
Euphonia aureata . . .	12	6	9	6	6	2
Corvus corax . . .	12	7	10	8	6	2
Corvus corone . . .	12	6	9	8	6	1
Corvus frugilegus . . .	11	6	9	7	6	1
Corvus monedula . . .	12	6	10	7	6	1
Pica caudata	12	6	7	6	6	1
Coracias gracula . . .	12	6	10	6	6	1
Nucifraga caryocatactes . .	11	7	9	6	6	1
Cissa thalasina . . .	12	6	9	6	6	1
Crypsirina leucoptera . .	12	7	10	8	6	1
Lophocitta galericulata . .	12	7	11	—	6	1
Gymnorhina tibicen . .	12	6	9	7	6	1
Neomorpha Gouldii . .	13	6	11	7	6	1

Remarks on the Order Insessores.

There is less difference between the skeletons of the different families constituting this order than in any other; so much so, that it is almost impossible to point out any well marked characteristics of each, except measurements.

The *Menuridæ* are distinguished more distinctly perhaps than any others by the claws, the sternum, and the arrangement of the pelvinal bones.

The genus *Pteroplochos* has the same form of claw as *Menura*, but has two foramina on each side of the sternum.

The *Certhiadæ* may be distinguished from the *Menuridæ* by the form of the sternum, the palatine bones, and the pelvis, and in not having the edge of the orbits recurved.

The *Dendrocolaptinæ* have the orbital septum nearly entire.

The *Sittinæ* differ from the *Certhinæ* in having the sternal keel deeper, and the *Furnarinæ* from all the foregoing by the greater breadth of the pelvis in conjunction with the greater depth of keel.

The *Meliphagidæ* may be distinguished from the *Certhiadæ* by the narrowness of the pelvis, the deep indentation down the centre, and the manner in which the ilium overhangs the ischium, the rami of the furculum being much compressed towards one another, and for a great portion of their length being nearly parallel one to the other; the manubrial process turned upwards, and the palatine bones with the edges turned downwards.

The *Paridæ* may be distinguished by the form of the head of the furculum, by the very short pelvis, and by the humerus being shorter than the scapula.

Alaudidæ have two foramina in the orbital septum.

The *Motacillidæ* may be distinguished from the *Sylviadæ* by the larger sternum, and pelvis, the more arched furculum, and longer manubrial process.

The *Sylviadæ* are so closely allied in form to the *Motacillidæ* as scarcely to be distinguishable from them, except by the structure of the hind toe.

The *Muscicapidæ* have a very large and strongly bifurcate manubrial process, a very great depression at the base of the nasal bones, very short leg bones, and the occipital ridge and protuberance very distinct.

The cranium in the *Ampelidæ* differs from the *Muscicapidæ* in having the branches of the palatine bones further from one another, and being armed with a blunt spine on their hinder extremities.

The form of the palatine bones in most of the species at once distinguishes the *Laniidæ* from the typical *Ampelidæ*; the sternum also is smaller, and not so broad on the posterior margin in proportion to the anterior; and the ischiadic foramen instead of being a mere slit, as among the *Ampelidæ*, is oval.

The *Oriolidæ* have the sternum in the typical species with the edge of the posterior margin very slightly rounded; the palatine bones also differ in form from any of the preceding; the ischiadic foramen is divided by a long splint, forming a third small foramen in the pelvis, near the acetabulum.

The *Fringillidæ* have the sternum longer in proportion to its width than it generally is among the *Oreolidæ* and *Sternidæ*; the cranium is shorter in proportion to its width; the nares are larger, and the coracoids shorter.

The *Tanagridæ* are very closely allied to the finches; but the form of the palatine bones appears to form a distinctive mark, and to draw a distinction between the two families.

The *Corvidæ* differ considerably among themselves, and also from the other Insessores. Taking the typical species *Corvus coraæ*, or our English raven, the carnivorous crows approach towards the Raptores; but another division, which feed chiefly on fruits, and also molusca on the sea shore, have a weaker skeleton, and generally a quicker flight. In no instance that I am aware has any member of this family more than one foramen on each side of the posterior margin of the sternum; the cranium has invariably an indentation posterior to the nares. The palatine bones are always strong, but vary slightly in form, and the posterior spine is always blunt.

Order VIII. BIPOSITORES.

FAM. 1. COLUMBIDÆ.

Subfam. GOURINÆ.

GOURA, *Flem.*

Coronata, *Lath.*

Cranium with the vertex very convex; occiput from the vertex flattened; occipital ridge and protuberance well marked, but rounded, the outline not being sharp; orbits large; septum with one rounded foramen. Palatine bones consisting of a narrow strip of bone expanded at the hinder part into two broad and oval plates, the margins bent downwards, the inner edge terminated anteriorly by a strong spine. Intermaxillary bones divided, except at their anterior extremities, not anchylosed to the zygomatic bones, but having a large elongated slit between them. Zygomatic bone bifurcate near its middle, throwing off a branch backwards, which is anchylosed to the anterior end of the frontal bones, thus much strengthening the upper mandible. Lower mandible curved downwards, with a well-marked groove extending backward from the tip for about half its length, and much elongated behind the capsule, articulating it with the os quadratum.

Sternum with the keel very deep, the lower edge much rounded from the front backwards. Central portion much narrowed towards the hinder extremity, near which there are two small fissures; the external strips of bone forming them are weak and narrow, do not extend quite even with the posterior margin, and are expanded at their extremities; anterior to these two posterior fissures are two other very large and patent ones, formed by projecting strips of bone arising from the body of the sternum at two-thirds of its length from the hinder extremity, their outer extremities much expanded, the anterior extending forwards as far as the second rib, and the posterior point elongated to opposite one-third the length of the sternum from its hinder extremity; manubrial process very small, consisting merely of a small knob; anterior edge of the keel excavated.

Pelvis large and broad, very broad anteriorly in proportion to the portion behind the acetabulum. Ischiadic foramen oval; large obturator consisting of a long slit. Os pubis of equal breadth throughout, projecting only very slightly beyond the ilium, which has a broad open fissure on its hinder extremity.

Ribs very strong, five furnished with a strong and broad styliform process, blunt, and rounded at the extremities.

Furculum weak, without any process at the junction of the rami, not united to or touching the sternum, flattened transversely for its lower half, and triangular near its junction with the coracoids.

Coracoids strong, with a slight keel running down the middle of their lower half; a strong spine projects from their outer edge just above their articulation with the sternum.

Scapula much expanded towards the hinder extremity, which is rounded and slightly deflexed.

Wing-bones short and strong. Proximal extremity of the humerus with a large process projecting outwards and horizontally at its upper and outer angle.

Leg-bones of moderate length; femur rather short, with the condyles at the distal extremity very distinctly developed. Fibula extending for half the length of the tibia.

Metatarsus is of moderate length, slightly flattened, and for two-thirds of its length in front indented by a channel, deepest at the upper extremity, slightly twisted inwards as it proceeds downwards, and becomes gradually obliterated; calcineal ridge well marked at its upper extremity, but gradually becoming obliterated as it proceeds downward; adjoining it, on the inner side, is a channel, down which the flexor muscles of the toes pass to the accessory metatarsal bone by the side, which they pass down a channel formed by that bone being twisted on its axis so as partly to enclose them.

Vertebral column, the four penultimate vertebræ with dorsal spines.

Measurements.

	Tenths.		Tenths.
Length of humerus	39	Breadth of anterior margin of sternum	17
Length of ulna	47	Depth of keel	19
Length of metacarpus	24	Length of head	39
Length of femur	31	Breadth of head	12
Length of tibia	50	Length of pelvis	50
Length of metatarsus	35	Breadth of pelvis posteriorly	27
Length of sternum	49	Breadth of pelvis anteriorly	$16\frac{1}{2}$
Breadth of posterior margin of sternum, including lateral strips	9		

Illustrations.

Skeleton, Plate I. G.

Sternum, pelvis, and palatine bones, Plate XX. fig. 1.

PERISTERA, *Sw.*

Jamaicensis, *Linn.*

Cranium similar in shape to that of *Goura*. Orbital septum perforated in the centre by one large round foramen, and above and posterior to it another one somewhat

elongated, so as nearly to obliterate the septum, a small bony ring and a small strip of bone dividing the foramina only being left. Palatine bones similar to *Goura coronata*. Near the centre of the inner edge of the interarticular bone a rounded protuberance projects, and is articulated with a similar protuberance projecting from the sphenoid. In *Goura* the interarticular bones are somewhat expanded for their anterior half, but have no similar projection. Remaining bones of the head similar to *Goura*.

Sternum with the strips bounding the posterior fissure expanded at their tips; the strips bounding the large anterior fissure, instead of being expanded at their tips, as in *Goura*, are more elongated and pointed, with the terminal portion bent inwards. Manubrial process small, but longer than in *Goura*.

Pelvis short, very broad in proportion to its length, particularly in that portion before the acetabulum; in shape similar to *Goura*, as is also the remaining part of the skeleton.

Measurements.

	Tenths.		Tenths.
Length of humerus	15	Breadth of anterior margin of sternum	8
Length of ulna	17½	Depth of keel	9
Length of metacarpus	10	Length of head	19
Length of femur	15	Breadth of head	6
Length of tibia	22	Length of pelvis	22
Length of metatarsus	12	Breadth of pelvis anteriorly	10
Length of sternum	25	Breadth of pelvis posteriorly	11½
Breadth of posterior margin of sternum, including lateral strips	15		

CHAMPELIA, *Sw.*

Passerina, *Linn.*

Does not differ in structure in any respect from the preceding genus, but is much smaller in size.

COLUMBA, *Linn.*

Palumbus, *Linn.*

Cranium similar in shape to *Goura*, but with a slightly more protruding occiput. Orbital septum with three foramina,—one rounded, situated at lower part, one at the top over it, and another smaller one anterior to both; occipital protuberance and ridge both more prominent than in *Goura*. Interarticular bones with a process on their internal edges, but not reaching quite to the sphenoid bone.

Sternum with the hinder splints bounding the fissures expanded at their tips; anterior splints also expanded at their tips posteriorly.

Pelvis with the obturator foramen very narrow. Ischiadic foramen oval, much smaller than in *Peristera* and *Goura*, but quite as broad.

Ribs with the styliform process broad, the former broadest where the process joins them, the latter rounded at their extremities.

Furculum and remainder of the skeleton as in *Goura*.

Measurements.

	Tenths.		Tenths.
Length of humerus	18	Breadth of anterior margin of sternum	10
Length of ulna	23	Depth of keel	10
Length of metacarpus	12	Length of head	26
Length of femur	18	Breadth of head	9
Length of tibia	22½	Length of pelvis	26
Length of metatarsus	13	Breadth of pelvis anteriorly	12
Length of sternum	26	Breadth of pelvis posteriorly	16
Breadth of posterior margin of sternum	11		

COLUMBA, *Linn*,

Magnifica, *Selby*.

Cranium similar to that of *Palumbus*, but with the anterior foramen through the orbital septum as large as the one posterior to it; the intermaxillaries articulated to the sphenoid; lower mandible curved downwards.

Sternum with the keel not so deep as in *Palumbus*, but of similar form.

Measurements.

	Tenths.		Tenths.
Length of humerus	25	Breadth of anterior margin of sternum	10½
Length of ulna	29	Depth of keel	7½
Length of metacarpus	15½	Length of head	26
Length of femur	21	Breadth of head	9
Length of tibia	27	Length of pelvis	33
Length of metatarsus	14	Breadth of pelvis anteriorly	13
Length of sternum	25	Breadth of pelvis posteriorly	17½
Breadth of posterior margin of sternum	11½		

Illustrations.

Sternum, pelvis, palatine bones, and metatarsi, Plate XX. fig. 2.

Besides those already mentioned, I have specimens of *C. Liviæ*, *C. Capistrata*, and *C. Alba*, none of which differ materially in form from the preceding.

TURTUR, *Selby.*

Auritus, *Ray.*

I have the following species of this genus, all of which are similar to *Columba*, except in size:—*T. Erythrophrys* and *Tamboinensis.*

TRERON, *Vieill.*

Aromatica, *Gm.*

Cranium similar in shape to the foregoing pigeons; the orbital septum perforated by three small foramina; interarticular very small and weak, with a process on their internal edge, which does not reach as far as the sphenoid bone.

Sternum either with foramina on its hinder edge, or with the fissures nearly closed by the expansion at the tip of the strips on their hinder ends; anterior strip bounding the large lateral foramen much expanded at its tip, most so in a downward and backward direction.

Remainder of the skeleton similar to *Columba.*

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of anterior margin of sternum	7
Length of ulna	17	Depth of keel	7
Length of metacarpus	10	Length of head	18
Length of femur	13	Breadth of head	7
Length of tibia	19	Length of pelvis	21
Length of metatarsus	9	Breadth of pelvis anteriorly	10
Length of sternum	19½	Breadth of pelvis posteriorly	11
Breadth of posterior margin of sternum	8½		

PTILONOPUS, *Sw.*

Cinctus, *Temm.*

Does not differ from *Treron*, except that the keel is slightly narrower. *Ptilonopus melanocephalus* is also similar.

Illustrations.

Palatine bones, metatarsus, pelvis, and sternum, Plate XXI. fig. 2.

PHALACROTRERON, *Bp.*

Nudirostris, *Sw.*

Not differing in any way from *Treron.*

Illustrations:

Palatine bones, sternum, metatarsi, and pelvis, Plate XXI. fig. 1.

Numbering of the Vertebræ and Ribs in BIPOSITORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Goura coronata . . .	13	6	13	6	4	2
Champelia passerina . .	12	6	—	—	4	2
Columba palumbus . . .	13	6	12	7	5	1
——— magnifica . . .	12	6	13	6	4	3
——— capistrata . . .	12	6	12	6	4	3
Ptilonopus melanocephala .	12	6	12	6	4	2
Treron aromatica . . .	11	5	12	—	5	1

Remarks on BIPOSITORES.

The great breadth of the pelvis, the depth of the sternal keel, the process on the interarticular bone, and the absence of any process at the junction of the rami of the furculum, will at once distinguish this order from others. The *Francolinæ* perhaps approach nearest to it. Not having any bones of the *Dodo*, I am unable to say how nearly they coincide in structure with the pigeons; but the form of the accessory metatarsal, although general among pigeons, is not by any means peculiar to them.

Order IX. RASORES.

FAM. 1. TETRAONIDÆ.

Subfam. PTEROCLINÆ.

PTEROCLES, *Temm.*

Arenarius, *Pall.*

Cranium. Vertex, and occiput rounded regularly, and not projecting, as in the pigeons; occipital ridge and protuberance not large, but distinct. Palatine bones consisting of a narrow strip forwards, and slightly expanded posteriorly near their junction with the interarticular bones; interarticular bones joining the sphenoid, as in the pigeons.

Sternum large in young birds, with two large fissures on the hinder margin, which are obliterated in old birds. I have an old specimen with only a very small foramen on one side; keel very deep, anterior edge much scolloped out, and channelled for the upper half; the strip of bone bounding the anterior fissure expanded at its tip in a downward direction.

Pelvis broad behind the acetabulum; the divisions of the vertebræ well marked on the upper surface, a large foramen on each side caused by the transverse vertebral processes not being prolonged so as to anchylose with the ilium; this foramen is in both young and old specimens, and is also to be seen in *P. alchata*. Ischium with a projection near the posterior edge, and above the ischiadic foramen.

Ribs of moderate strength, the styliform process very broad for its proximal half, turning upwards and pointed at its extremity.

Furculum very small and very short, not reaching to above one-third of the distance from the coracoids to the point of the sternum, with a very slight process at the junction of the rami transversely flattened for its lower half, then twisted on its axis and flattened longitudinally, and slightly expanded at its junction with the coracoids.

Coracoids very short, extending slightly beyond the edge of the sternum, with a slight spinous process on the inner edge a little above their articulation with the sternum.

Scapula regularly and much arched for two-thirds of its distal extremity, and rounded at the tip.

Wing-bones short; humerus much shorter than the ulna, with a process similar to that in the *Columbidæ* on its upper proximal margin.

Leg-bones. The tibia very long; metatarsus very short; calcineal ridge very deep at the upper end, and gradually tapering off to a short spur at the junction of the accessory metatarsal bone, which is not twisted over the flexor tendons as among the pigeons.

Measurements.

	Tenths.		Tenths.
Length of humerus	20½	Breadth of posterior margin of sternum	10
Length of ulna	24	Breadth of anterior margin of sternum	10
Length of metacarpus	12	Depth of keel	12½
Length of femur	13	Length of head	20
Length of tibia	23	Breadth of head	9½
Length of metatarsus	9½	Length of pelvis	30
Length of sternum	31	Breadth of pelvis	15

PTEROCLES, *Temm.*

Quadricinctus, *Temm.*

My specimen of this bird is a young one, but is without the foramina in the pelvis between the ilium and sacral vertebræ; has the spur on the metatarsus articulated to a calcineal bone, situated about the same height up the metatarsus as the spur is in *P. arenarius;* and the posterior margin of the sternum is without foramina.

PTEROCLES, *Temm.*

Alchata, *Linn.*

Similar to the foregoing, but with the foramina on the upper surface of the pelvis, as in *P. arenarius.* Metatarsal spur articulated to a very small flat calcineal bone. Sternum with two foramina on its hinder margin.

SYRRHAPTES, *Ill.*

Paradoxus, *Ill.*

Similar to the foregoing, but without the metatarsal spur.

TETRAO, *Linn.*

Urogallus, *Linn.*

Cranium. My specimen is that of a female. Cranium much elongated behind the orbits; occipital crest and protuberance well marked, the latter with a deep indentation on each side; a deep indentation extending over the vertex. Palatine bones consist of narrow strips of bone flattened perpendicularly, and very slightly wider towards their hinder ends. Orbital septum with two small foramina, the upper one somewhat elongated, the lower one rounded; the ethmoid bone appears in the shape of

an elongated strip between the nasal ones. Lower maxillaries with a very large foramen, and much elongated by a spine projecting from the lower part of its hinder edge.

Sternum. The body or central part very narrow, with two very large foramina on each side, the first or innermost bounded by a long strip of bone extending almost as far backwards as the hinder margin of the sternum, expanded at the tips both upwards and downwards, and continued forward nearly to the junction of the ribs, until it joins another strip of bones forming the boundary of the outer foramen, which is also expanded at the tips, and pointed upwards. Manubrial process very large and broad, not bifurcate, truncated at the anterior extremity; keel very deep, slightly rounded on its lower edge, and curved inwards on its anterior edge, which for one-half of its length has a channel proceeding from the manubrial process.

Pelvis broad; obturator foramina very narrow, with another small rounded one at its terminus under the cotyloid cavity, and divided from it by a slight strip of bone; the ilium projects considerably over the ischium, particularly behind the acetabulum; there is a very deep indentation on the upper surface at about one-third of its length between the ilium and the sacral vertebræ, in the same situation that a foramen exists in some species of *Pterocles.*

Ribs of moderate strength; styliform process rounded at the extremity.

Furculum of moderate strength, with a very large triangular process at the junction of the rami, truncate at the lower extremity, and with the sides compressed.

Coracoids of moderate length, with a rounded process on the outside at their proximal extremities, beyond the articulation with the sternum.

Scapula strong, slightly arched; expanded at the hinder extremity, which is blunt, and slightly rounded.

Leg-bones of moderate size.

Metatarsus with a large calcineal bone extending to the accessory metatarsal bone, which is slightly twisted on its axis, but not so much as among the pigeons. *Tetrao saliceti*, *T. sioticus*, *T. tetrix*, *T. cupido*, and *Islandorum* are all very similar in structure.

Measurements.

	Tenths.		Tenths.
Length of humerus	38	Breadth of posterior margin of sternum	22
Length of ulna	37	Breadth of anterior margin of sternum	18
Length of metacarpus	18	Depth of keel	16
Length of femur	32	Length of head	32
Length of tibia	40	Breadth of head	14
Length of metatarsus	22	Length of pelvis	51
Length of sternum	49	Breadth of pelvis	27

Illustration.

Plate I. H. Skeleton.

BONASA, *Steph.*

Sylvestris, *Brehm.*

Cranium similar to *Tetrao* in general shape, but having the palatine bones more arched outwards.

Leg-bones. Accessory metatarsal extending upwards, but very slightly twisted; calcineal ridge very small.

ODONTOPHORUS, *Vieill.*

Nigricollis, *Gould.*

I have only the sternum and pelvis of this bird, both of which agree in shape with the other *Tetraonidæ*, except that the two fissures next the body of the sternum are very large and deep; and there is scarcely a trace of the outer fissures, the splint bounding them being very short.

PERDIX, *Briss.*

Cinerea, *Linn.*

Cranium rounded; occipital ridge very large. Palatine bones flattened perpendicularly, expanded at their junction with the interarticular bones, and almost touching one another. Orbital septum with three foramina; nostrils large, rounded.

Pelvis much narrower in proportion to its length than in *Tetrao*; the central depression at the junction of the ilium, with the vertebræ very deep. Ischiadic foramen rounded; no obturator foramen is apparent.

Sternum with the internal fissures very large, and a slight notch near their anterior extremities; the central portion of the sternum very narrow; splints bounding the outer cavity short, and expanded at their extremities; anterior edge of the keel very much excavated. The remainder of the bones similar to *Tetrao*.

Measurements.

	Tenths.		Tenths.
Length of humerus	20	Breadth of posterior margin of sternum	10
Length of ulna	19	Breadth of anterior margin of sternum	8
Length of metacarpus	10	Depth of keel	$6\frac{1}{2}$
Length of femur	22	Length of head	19
Length of tibia	32	Breadth of head	10
Length of metatarsus	21	Length of pelvis	24
Length of sternum	$3\frac{1}{2}$	Breadth of pelvis	10

FRANCOLINUS, *Steph.*

Capensis, *Gm.*

Cranium similar to *Perdix*, but with the nostrils more oval. Palatine bones similar, but much flattened laterally.

Sternum similar, but with the splints enclosing the outer fissure on each side longer, and much more expanded at their tips.

Pelvis with the central channel at junction of the ilium with the vertebræ not nearly so deep as in *Perdix*.

Metatarsi with the calcineal ridge very prominent, armed with a spur; the supplementary metatarsal bone similar to the *Columbidæ*.

Remaining bones as in *Perdix*.

Measurements.

	Tenths.		Tenths.
Length of humerus	26	Breadth of posterior margin of sternum	11
Length of ulna	24	Breadth of anterior margin of sternum	10
Length of metacarpus	12	Depth of keel	9
Length of femur	29	Length of head	16
Length of tibia	39	Breadth of head	11
Length of metatarsus	25	Length of pelvis	37
Length of sternum	30	Breadth of pelvis	15

FRANCOLINUS, *Steph.*

Ponticerianus, *Gm.*

The bones are precisely similar to the foregoing, but smaller.

Measurements.

	Tenths.		Tenths.
Length of humerus	16	Breadth of posterior margin of sternum	10
Length of ulna	16	Breadth of anterior margin of sternum	6
Length of metacarpus	9	Depth of keel	8
Length of femur	15½	Length of head	19
Length of tibia	27	Breadth of head	8
Length of metatarsus	17	Length of pelvis	24
Length of sternum	24	Breadth of pelvis	10

CALLIPEPLA, *Wagl.*

Californica, *Lath.*

Pelvis similar to *Francolinus;* in other respects it does not differ from *Perdix*, except measurements.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	6½
Length of ulna	12	Breadth of anterior margin of sternum	6
Length of metacarpus	5	Depth of keel	6½
Length of femur	15	Length of head	14
Length of tibia	22	Breadth of head	7
Length of metatarsus	12	Length of pelvis	18
Length of sternum	20	Breadth of pelvis	8

Illustrations.

Palatine bones, sternum, and pelvis, Plate XXII. fig. 1.

PAVO, *Linn.*

Muticus, *Linn.*

Cranium small in proportion to the size of the rest of the skeleton. Palatine bones laterally flattened; interarticular bones small in the middle, and expanded at the two extremities. Orbital septum with one foramen; nostrils oval.

Sternum with a very deep keel, much excavated in front; manubrial process very large, and perpendicularly flattened; sternal posterior fissures of about a proportional size in comparison with other gallinaceous birds; the extremities of the splints bordering the fissures very much expanded.

Pelvis precisely similar to *Perdix;* ischiadic foramen very large and oval; obturator anteriorly oval, with a slight slit proceeding backwards, between the ischium and os pubis. Pelvis much shorter, in proportion to its width, than in *Perdix*; the divisions on the vertebræ on the upper surface very distinct; a strong spine projects from the end of the ilium forwards before the acetabulum.

Ribs very strong; styliform process broader in the two anterior true ribs than in the others.

Furculum very short, flattened for two-thirds of its length, and gradually becoming more rounded to the junction of the branches; process at the junction triangular, the broadest end pointing towards the keel and turned backwards, as among the *Perdicinæ.*

Coracoids very strong, somewhat triangular

Leg-bones. Metatarsus with a strong calcineal process, armed with a spur and anchylosed to it to nearly its junction with the tibia, where there is an elongated fissure between the two bones; supplemental metatarsus twisted on its axis, like that of many other gallinaceous birds.

Measurements.

	Tenths.		Tenths.
Length of humerus	56½	Breadth of posterior margin of sternum	20
Length of ulna	53	Breadth of anterior margin of sternum	19
Length of metacarpus	22	Depth of keel	25
Length of femur	48	Length of head	33
Length of tibia	85	Breadth of head	15
Length of metatarsus	66	Length of pelvis	64
Length of sternum	73	Breadth of pelvis	32

PHASIANUS, *Linn.*

Colchicus, *Linn.*

Cranium. Orbital septum with two foramina—one situated at the top of septum, the other below it and on the hinder portion. Palatine bones flattened, with the upper edges not placed so perpendicularly as in *Perdix*, but inclining inwards; nostrils large, oval. The foramen lacerum posterius very large.

Sternum similar to most of the foregoing gallinaceous birds.

Pelvis similar to *Pavo*, but having the process projecting before the acetabulum much longer.

Scapula expanded in the centre, and blunt at the ends.

Ribs of moderate strength, the styliform processes turned much upward, and having a projection on their lower edges.

Os furcatum with the rami rounded at their junction, a large triangular process turned slightly towards the sternum.

Measurements.

	Tenths.		Tenths.
Length of humerus	28	Breadth of posterior margin of sternum	15
Length of ulna	25	Breadth of anterior margin of sternum	10
Length of metacarpus	6	Depth of keel	14
Length of femur	33	Length of head	26
Length of tibia	42	Breadth of head	12
Length of metatarsus	25	Length of pelvis	40
Length of sternum	46	Breadth of pelvis	15

PHASIANUS, *Linn.*

Nycthemerus, *Linn.*

Similar to the foregoing.

Illustrations.

Skeleton, Plate III. H.

THAUMELIA, *Wagl.*

Picta, *Linn.*

Also similar to *Colchicus*, except in size.

ARGUS, *Temm.*

Giganteus, *Temm.*

Cranium with the occipital ridge well marked; orbital septum with the foramina very small. Palatine bones similar in shape to *Phasianus*.

Sternum with a very deep keel, the end of splint bounding the outer fissure very broad, the inner one with the tip turned inwards.

Pelvis similar to *Phasianus*, but with the notch anterior to the acetabulum very strong.

Furculum with the process at the junction of the rami triangular, but not so large in proportion as in *Phasianus*; the other parts of the skeleton also similar to *Phasianus*. Metatarsus without a spur.

Measurements.

	Tenths.		Tenths.
Length of humerus	39	Breadth of posterior margin of sternum	12
Length of ulna	41	Breadth of anterior margin of sternum	15
Length of metacarpus	14	Depth of keel	15
Length of femur	42	Length of head	33
Length of tibia	68	Breadth of head	13
Length of metatarsus	42	Length of pelvis	41
Length of sternum	52	Breadth of pelvis	26

ARGUS, *Temm.*

Pavoninus, *Vieill.*

Similar to the foregoing, but with process at the junction of the rami of the furculum turned much more inwards; the depression on the centre of the pelvis deeper. Metatarsus armed with a double spur.

GALLUS, *Linn.*

Bankiva, *Temm*

So exactly like *Phasianus* in character I am unable to distinguish the jungle fowls from it. I have also specimens of *Gallus furiatus*, *Gallus sonneratii*, and *Gallus furcatus*.

NUMIDA, *Linn.*

Gallopavo, *Linn.*

Similar to the other *Phasianidæ*, but is devoid of spurs.

MEGAPODIUS, *Quoy & Gaim.*

Differs from the *Phasianidæ* in having a much shorter sternum, and the fissures not nearly so deep; the outer splint of the sternum is very much expanded, and the keel very deep and not so much excavated, and receding in front; it is also destitute of spurs; the manubrial process is small; the pelvis has a very large ischiadic foramen; the rami of the os furcatum are flattened, and the process at their junction is small in proportion to other gallinaceous birds.

Measurements.

	Tenths.		Tenths.
Length of humerus	36	Breadth of posterior margin of sternum	9
Length of ulna	35	Breadth of anterior margin of sternum	13
Length of metacarpus	17	Depth of keel	13
Length of femur	30	Length of head	24
Length of tibia	43	Breadth of head	10
Length of metatarsus	35	Length of pelvis	38
Length of sternum	30	Breadth of pelvis	19

LEIPOA, *Gould.*

Ocellata, *Gould.*

I have only a portion of the sternum of this bird, given to me by Mr. Gould; it seems to take the same form as *Megapodius*.

ORTALIDA, *Merr.*

Montagui, *Bp.*

Cranium. The occiptal ridge prominent, the upper surface of the skull with two rounded protuberances over each orbit. Orbits large; septum with a very large elongated foramen at the top, and two smaller ones below. Palatine bones very broad at about one-third their length, and gradually tapering backwards to the interarticular, and tapering more gradually forwards; interarticular bones thin in the middle, but gradually thickening at their ends. The foramen lacerum posterius very well marked.

Sternum formed much like other gallinaceous birds, but with the exterior splints very broad, and expanded at their extremities.

Pelvis with the divisions of the vertebræ very apparent on its upper surface; ischiadic foramen of moderate size, oval; obturator narrow, but slightly expanded posteriorly; notch in front of the acetabulum small, but well marked.

Leg-bones. Metatarsus without any spur; calcineal process very small. Supplementary metatarsus as in the pigeons.

Ribs of moderate strength; styliform process small.

Furculum slightly rounded; process at the junction of the rami very small, and triangular.

Measurements.

	Tenths.		Tenths
Length of humerus	24	Breadth of posterior margin of sternum	10
Length of ulna	26	Breadth of anterior margin of sternum	11
Length of metacarpus	11	Depth of keel	8
Length of femur	20½	Length of head	30½
Length of tibia	43	Breadth of head	10½
Length of metatarsus	23	Length of pelvis	38
Length of sternum	30	Breadth of pelvis	19

ORTALIDA, *Merr.*

Poliocephala, *Wagl.*

Similar to the foregoing, but smaller. I have also the skeleton of *Ortalida katraca*, which is also similar.

OREOPHASIS, *G. R. Gray.*

Derbyanus, *G. R. Gray.*

I have only the sternum. In general form, it comes intermediate between *Crax* and *Ortalida*, but is much more powerful than the latter, and has the fissures on the posterior margin of the sternum of the same shape as both. It agrees again with *Ortalida* in having the manubrial process short and thick, and the same foramen through it, as in *Crax* and *Ortalida*, only much smaller. The furculum is strong, slightly flattened; the process at the junction of the rami of the same shape as in *Ortalida*, but more elongated, and narrower; the scapula is very broad at its distal extremity, and bluntly pointed at the end.

Illustrations.

Plate IV. H. (Taken from a specimen brought home by Mr. Salvin.)

CRAX, *Linn.*

Globicera, *Linn.*

Cranium rounded; occipital ridge marked; a lump at base of the bill caused by the intermaxillary bones being much arched. Palatine bones very much expanded towards their hinder extremities, and rather abruptly diminishing at their junction with the interarticulars, which are also much expanded at the two ends.

Sternum large; keel deep, the lower edge nearly straight; fissures of moderate size, the splint bordering the outer one expanded at the extremity, the inner bifid throwing a small branch off at about one-third of its length from the hinder extremity;

manubrial process thin, much flattened, perforated at its base horizontally, with a foramen, which is also continued downwards.

Pelvis with the process before the acetabulum small; the os pubis expanded at about half its length, forming a perpendicularly flattened notch; obturator foramen large, oval; ischiadic consisting of a small oval foramen under the acetabulum, and small slit between the os pubis and ischium; the vertebræ on the hinder half of the pelvis well defined.

Ribs strong, the styliform process short, and turned upwards.

Furculum strong, with an elongated process at the junction of the rami, the sides of which are parallel, blunt, and rather rounded at the extremity. Scapula much expanded for its posterior half, blunt at end, but narrowed from the centre.

Leg-bones. Metatarsus with well-marked calcineal process, which diminishes as it descends, destitute of a spur; supplementary metatarsal much elongated, and twisted on its axis.

Measurements.

	Tenths.		Tenths.
Length of humerus	43	Breadth of posterior margin of sternum	15
Length of ulna	45	Breadth of anterior margin of sternum	17
Length of metacarpus	22	Depth of keel	17
Length of femur	45	Length of head	38
Length of tibia	65	Breadth of head	15
Length of metatarsus	40	Length of pelvis	49
Length of sternum	53	Breadth of pelvis	29

Illustrations.

Skeleton, Plate II. H. | Sternum and pelvis, Plate XXVIII.

PAUXI, *Temm.*

Mitu, *Linn.*

I have only the sternal portion of this bird. The sternum is similar to the last, but without the bifid extremities to the inner splints; the ribs are without any styliform process. The scapula and furculum are also similar.

MELAGRIS, *Linn.*

Gallopavo, *Linn.*

Cranium with the nostrils large, oval; orbital septum with two foramina, one—an elongated one—situated at the top, and the other posteriorly. Palatine bones similar to *Crax*, but not widened so much; occipital ridge strongly marked.

Sternum similar to *Crax*, but without the foramen in the manubrial process, which is much stronger than in *Crax*, and much broader at the base.

Furculum lying almost flat against the coracoids; very thin and light process at the junction of the rami transverse, and closely attached to the sternum.

Pelvis with a large oval ischiadic foramen; obturator foramen very well defined, with a small rounded one anterior to it. Vertebræ of the hinder portion of the pelvis not so distinctly marked on the upper surface as in *Crax*; process before the acetabulum well developed.

Leg-bones. Metatarsus with a strong calcineal process, armed with a spur; supplemental metatarsus not nearly so much twisted on its axis as among other gallinaceous birds.

Ribs flattened; styliform process broad. Scapula very broad for its whole length, and blunt at the hinder extremity.

The above observations were taken from a domesticated specimen, so that probably no measurements would be correct for a wild one.

Numbering of the Vertebræ and Ribs in RASORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Pterocles arenarius . . .	13	6	12	6	5	1
Pterocles quadricinctus . .	13	7	13	6	6	2
Tetrao urogallus . . .	14	7	18	6	6	2
Tetrao scoticus. . . .	14	6	13	6	6	2
—— saliceti	14	6	13	6	5	2
—— tetrix	13	6	16	6	5	2
—— islandorum . . .	12	6	15	6	6	2
Bonasa sylvestris . . .	14	6	14	6	5	2
Perdix cinereus . . .	12	6	13	6	5	2
Francolinus capensis . .	15	7	14	6	5	2
Callipepla Californica . .	12	6	13	6	6	2
Pavo muticus	13	6	13	5	5	3
Phasianus colchicus. . .	12	6	13	6	6	1
Phasianus Nycthemerus . .	14	5	13	5	5	3
Thaumelia picta . . .	13	7	15	5	5	3
Megapodius	13	8	14	5	6	2
Ortalida Montagui . . .	14	7	14	6	4	2
Argus giganteus . . .	12	8	12	5	5	2
Crax globicera. . . .	15	7	17	5	5	2

Remarks.

The *Phasianidæ*, and, indeed, most of the order, have a process projecting from the ilium in front of the acetabulum, which I am not aware to have been previously observed; many of the cuckoos have a similar process. The *Perdicinæ* have this process very small; and in very young birds I suspect it is not anchylosed to the ilium. The *Tetraonidæ* may be distinguished from the *Phasianidæ* by having a much broader pelvis; the *Phasianidæ* have the fissures at the hinder margin of the sternum much deeper than among the *Cracidæ*; and the latter may be distinguished from the *Melagridæ* by the position of the furculum.

Order X. CURSORES.

The birds constituting this order have been so amply treated of in the first four volumes of the transactions of the Zoological Society that there is nothing more to be recorded.

Measurements.

	Inch.		Inch.
Length of humerus	13	Breadth of posterior margin of sternum	5
Length of ulna	3½	Breadth of anterior margin of sternum	9
Length of metacarpus	23	Depth of keel	None
Length of femur	11	Length of head	6¾
Length of tibia	10	Breadth of head	2½
Length of metatarsus	17¼	Length of pelvis	23½
Length of sternum	8¼	Breadth of pelvis	8

Illustrations.

Struthio camelus, Plate II. Details, Plate XXIII. | *Casuarius Emu.* Details, Plate XXIV.

APTERYX, *Shaw.*

Australis, *Shaw.*

Also fully treated of in the first four volumes of the Zoological transactions.

Illustrations.

Details, Plate XXV.

Numbering of the Vertebræ and Ribs in CURSORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Struthio camelus . . .	16	7	18	6	5	3
Dromarias Emu . . .	20	8	15	6	6	5
Casuarius Emu . . .	15	9	—	6	6	3
Apteryx Australis . . .	18	6	15	7	6	3

Remarks.

The cursorial birds may be at once distinguished from the other orders by the absence of any keel to the sternum, the shortness of the wings, and the peculiar form of the pelvis.

Order XI. LITTORES.

Fam. 1. OTIDÆ.

Subfam. OTINÆ.

OTIS, *Linn.*

Houbara, *Gm.*

Cranium with a depression down the centre to the occiput; occipital ridge prominent; foramen magnum very large. Palatine bones, for their anterior two-thirds, consisting of merely a somewhat flattened strip of bone, the remaining third very much expanded, divided longitudinally by a sharp ridge, which extends from the junction with the interarticular bones to the outer margin of the expanded portion; interarticular bones flattened and twisted on their axis near the centre, the inner half being horizontally flattened, and outer perpendicularly. Orbits very large; septum with one foramen on its hinder portion. The lateral processes of the parietal bones very long.

Sternum broad, with two shallow but wide fissures on the posterior margin, the outer splint much wider than the inner one; keel very deep, scolloped out on its anterior edge and on its lower edge. No vestige of a manubrial process.

Pelvis broad, the lateral processes of the sacral vertebræ easily traced when held up to the light; very long, as also are the caudal ones; ischiadic foramen large, oval; obturator an elongated slit, slightly widened in the middle; os pubis extending far beyond the posterior edge of the ischium.

Ribs strong, narrowed towards their distal extremities, but blunt.

Furculum with the rami much laterally flattened; no process at their junction, which is very near the sternum, although not quite touching it. Scapula long, not much arched, gradually widening towards the tip, which is somewhat rounded, and blunt.

Wing-bones long; ulna much longer than the humerus.

Leg-bones long, the calcineal process only extending about half the length of the metatarsus from its articulation with the tibia. I have also the body portion of *O. tetrax*, which is precisely similar, except in size, to the foregoing.

Measurements.

	Tenths.		Tenths.
Length of humerus	47	Length of femur	28
Length of ulna	54	Length of tibia	53
Length of metacarpus	26	Length of metatarsus	38

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	39	Length of head	39
Breadth of posterior margin of sternum	23	Breadth of head	15
Breadth of anterior margin of sternum	20	Length of pelvis	50
Depth of keel	$10\frac{1}{2}$	Breadth of pelvis	30

Illustrations.

Skeleton, Plate I. J.

Palatine bones, sternum, pelvis, and metatarsus, Plate XXVI. fig. 1.

TINAMUS, *Lath.*

Major, *Linn.*

Differs very much in the form of the skeleton from *Otis*. I have not, however, all the bones.

Cranium with the parietal bones somewhat abruptly elevated above the occipital. Palatine bones similar to those of *Otis*, but with anterior portion broader in proportion. Interarticular bones long, flattened perpendicularly. Orbital septum with two foramina—one large one at base, another elongated one at the upper part.

Sternum very long; two very large foramina extend almost for the whole length of the sternum, bounded exteriorly by two long, narrow splints, which are much curved inwards to their tips, and nearly meet; central portion of the sternum very narrow; keel not scolloped out on its anterior edge. Manubrial process triangular, broadest at its junction with the sternum, pointed at its extremity, a slight ridge along the upper surface; lower edge of the keel slightly arched, rather shallow.

Pelvis broad, of a very peculiar form, the divisions of the vertebræ distinct when held up to the light; upper surface rounded, broad. Ischium divided from the ilium by a broad and deep fissure extending almost to the acetabulum; ischiadic foramen bounded below by the ischium, which is represented by a narrow strip of bone, gradually expanding towards the tip; os pubis consisting of a long thin strip, broader at anterior part than at its posterior, and extends beyond the ischium; a large blunt spine anterior to the acetabulum.

Ribs. The few I possess have the styliform process broad and short, and are rather weak.

Furculum flattened perpendicularly at upper extremities, and gradually rounded to the junction of the rami; they approach one another with a very wide semicircular sweep; there is no vestige of a process at their junction.

Scapula long, arched slightly, expanded in the centre, and blunt at the extremity.

Wing-bones short; ulna much bent, which gives a large space between it and the radius.

Leg-bones. Femur rather long in proportion to the tibia; metatarsus with a very rudimentary hind toe.

Measurements.

	Tenths.		Tenths.
Length of humerus	19	Breadth of posterior margin of sternum	3
Length of ulna	22	Breadth of anterior margin of sternum	$10\frac{1}{2}$
Length of metacarpus	12	Depth of keel	$7\frac{1}{2}$
Length of femur	20	Length of head	25
Length of tibia	31	Breadth of head	7
Length of metatarsus	21	Length of pelvis	31
Length of sternum	40	Breadth of pelvis	17

Illustrations.

Palatine bones, sternum, and pelvis, Plate XXVI. fig. 2.

CHIONIS, *Forst.*

Alba, *Forst.*

Cranium with a very small cavity for the brain; occipital ridge very prominent; at the base of the bill two tuberosities, with large foramina behind them, communicating with the orbits; a sharp ridge between these foramina. The proper name of these foramina, or their use, I do not know; I have never seen a recent specimen. Palatine bones very broad for their hinder halves, turned somewhat downwards on their inner edges; hinder edges rounded on the exterior margin; ridges for the attachment of the masseter muscles strongly-marked; nostrils large, oval; orbital septum with one large nearly central foramen.

Sternum rather long; posterior fissures small, the outer one largest; keel very deep, scolloped out in front, arched on its interior edge. Manubrial process small, and short, bifurcate at its upper extremity.

Pelvis with the processes of the central vertebræ not covered by the ilium, rather narrow; ischiadic foramen very large, oval. Obturator large in the centre, diminishing into a mere slit behind; a slight indentation on the posterior margin of the ischium. Os pubis extending beyond the ischium.

Ribs slender; styliform processes long.

Furculum very similar to that of *Tinamus*, but quite circular at the junction of the rami, without any process, and not approaching very near the sternum, and rather more flattened.

Coracoids very short.

Scapula of moderate length, very slightly expanded near the centre, the tips rounded.

Wing-bones of moderate length; the ulna slightly longer than the humerus; metacarpal bones long.

Leg-bones. Metatarsus with a small hind toe; calcineal process quite rudimentary.

Measurements.

	Tenths.		Tenths.
Length of humerus	31	Breadth of posterior margin of sternum	12½
Length of ulna	35	Breadth of anterior margin of sternum	14
Length of metacarpus	21	Depth of keel	9
Length of femur	24	Length of head	26
Length of tibia	23	Breadth of head	10
Length of metatarsus	19	Length of pelvis	24
Length of sternum	27	Breadth of pelvis	15

ATTAGIS, *Less.*

Gayii, *Less.*

Cranium rounded, a slight channel between the orbits; nostrils oval; occipital crest and protuberance very well marked. Palatine bones not expanded for so long a distance as in *Chionis*, but only for a short distance beyond their junction with the inter-articular bones. Orbital septum with two foramina, a large one below, rounded, and narrow one immediately above it.

Sternum broad, with a single, rather broad but not deep, fissure on each side of the keel; strip of bone bounding them slightly expanded at the tip; keel deep, scolloped out, particularly near the point, lower edge rounded; manubrial process similar to that in *Chionis*.

Pelvis also similar to *Chionis*, but much broader.

Ribs weak, with styliform or pleural processes pointing upwards.

Furculum similar to *Chionis*, but with a very slight process at the junction of the rami.

Coracoids very short.

Scapula slightly expanded towards the tip, which is rounded, and blunt.

Leg-bones. Metatarsus with a hind toe; calcineal ridge scarcely perceptible.

Measurements.

	Tenths.		Tenths.
Length of humerus	21	Breadth of posterior margin of sternum	14
Length of ulna	24	Breadth of anterior margin of sternum	11
Length of metacarpus	13	Depth of keel	8
Length of femur	12	Length of head	19
Length of tibia	22	Breadth of head	9½
Length of metatarsus	11	Length of pelvis	21
Length of sternum	26	Breadth of pelvis	16

Illustrations.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXI. fig. 3.

TINOCHORUS. *Esch.*

Escholtzii, *Less.*

The anatomy of this bird was formerly described by me in the voyage of the Beagle. The bones of the specimen are much damaged.

Cranium similar to *Attagis*. The palatine bones destroyed.

Sternum, which is perfect, also similar to *Attagis* in all particulars, except size.

Furculum similar to *Attagis ;* as are also all the other bones.

Measurements.

	Tenths.		Tenths.
Length of humerus	12	Breadth of posterior margin of sternum	9
Length of ulna	14	Breadth of anterior margin of sternum	6
Length of metacarpus	8	Depth of keel	5
Length of femur	8	Length of head	12
Length of tibia	13	Breadth of head	6
Length of metatarsus	7	Length of pelvis	11
Length of sternum	17	Breadth of pelvis	$8\frac{1}{2}$

ŒDICNEMUS, *Vieill.*

Longirostris, *Vieill.*

Cranium rounded; a deep channel arising at the vertex is carried forward between the orbits to the base of the nasal bones; occiput narrow, ridge and muscular impressions very distinct; channel for the reception of the masseter muscles deep. Orbital septum with three foramina. Palatine bones very broad, for two-thirds of their length placed at an angle to the plane of the skull, the outer edges being lowest, the hinder margin rounded; interarticular bones slightly twisted on their axis.

Sternum of moderate size, with two small fissures on each side of the keel, on the posterior margin; keel deep, scolloped out on the anterior edge. Manubrial process perpendicularly triangular at the base, tapering to an edge in front.

Pelvis of moderate size, not differing from *Chionis* in form.

Ribs of moderate size, styliform processes broad.

Furculum with the rami flattened, much arched, and with very rudimentary process at their junction.

Coracoids short.

Scapula of moderate breadth, pointed at its extremity.

Wing-bones with the ulna much longer than the humerus.

Leg-bones. Femur very short; tibiæ and metatarsi very long; calyx rudimentary, without any hind toe or spur.

Measurements.

	Tenths.		Tenths.
Length of humerus	25	Breadth of posterior margin of sternum	11
Length of ulna	41	Breadth of anterior margin of sternum	12
Length of metacarpus	16	Depth of keel	9
Length of femur	22	Length of head	41
Length of tibia	50	Breadth of head	13
Length of metatarsus	52	Length of pelvis	36
Length of sternum	31	Breadth of pelvis	14

Illustration.

Skeleton, Plate XV. K.

HÆMATOPUS, *Linn*

Ostralegus, *Linn.*

Cranium rounded, a depression on each side over the orbits, and a ridge between them; interarticular bones expanded at their hinder extremities, and, as in *Œdicnemus*, sloped downwards, but not extending so far forwards; occipital ridge prominent.

Sternum, *pelvis*, *furculum*, and *scapula* similar to *Œdicnemus*, but stronger.

Wing-bones with the ulna not so long in proportion to the humerus.

Leg-bones. Metatarsus with the calyx rudimentary, without any hind toe.

Ribs with a long, thin styliform process.

Measurements.

	Tenths.		Tenths.
Length of humerus	29½	Breadth of posterior margin of sternum	13
Length of ulna	34	Breadth of anterior margin of sternum	11
Length of metacarpus	15	Depth of keel	9
Length of femur	19	Length of head	43
Length of tibia	32	Breadth of head	10
Length of metatarsus	22	Length of pelvis	32
Length of sternum	17	Breadth of pelvis	17

HÆMATOPUS, *Linn.*

Capensis, *Licht.*

Similar to the foregoing in form.

Illustration.

Skeleton, Plate XI. H.

CURSORIUS, *Lath.*

Gallicus, *Gmel.*

I have only fragments of this bird.

Cranium rounded; occipital ridge prominent. Palatine bones broad and truncated at the hinder extremity, and gradually tapering forwards. Orbital septum with one large foramen.

Sternum of moderate size, with two foramina on its hinder edge; on each side of the keel the strip of bone bounding the outer ones not extending so far back as those bounding the inner ones; keel very deep, scolloped out in front, but not regularly curved, the lower portion being projected beyond the upper, which is nearly straight, but receding, the lower edge much curved. Manubrial process small, bifid.

Pelvis similar to other *Charadridæ*.

GLARCOLA, *Briss.*

Pratincola, *Linn.*

Cranium. Occipital ridge well marked. Orbital septum with three foramina. Palatine bones similar to *Cursorius*.

Leg-bones. Metatarsal bone with a hind toe; calyx rudimentary.

Wing-bones. Ulna long in proportion to the humerus. Other bones similar to *Cursorius*.

Measurements.

	Tenths.		Tenths.
Length of humerus	17	Breadth of posterior margin of sternum	8
Length of ulna	20½	Breadth of anterior margin of sternum	5½
Length of metacarpus	10	Depth of keel	5½
Length of femur	10	Length of head	17
Length of tibia	17	Breadth of head	7
Length of metatarsus	12	Length of pelvis	15
Length of sternum	15	Breadth of pelvis	8

Illustrations.

Skeleton, Plate XIII. K.

Sternum, palatine bones, pelvis, and metatarsi, Plate XXXV. fig. 2.

VANELLUS, *Linn.*

Cristatus, *Meyer.*

Cranium. A deep channel between the upper edges of the orbits. Orbital septum merely consisting of a narrow strip of bone, dividing it into two foramina. Palatine bones as in the foregoing.

Sternum and *pelvis* similar to those in *Cursorius*.

Metatarsi with a small hind toe.

CHARADRIUS, *Linn.*

Pluralis, *Linn.*

Similar to the foregoing, but devoid of the hind toe. I have also specimens of *Charadrius praticula*, *Vociferus*, *Melodus*, *and Rufipes*, all of which are also similar.

SQUATAROLA, *Cuv.*

Helvetica, *Linn.*

Generally similar to *Vanellus*, but with the furculum not so much arched at the junction of the rami, and the palatine bones not nearly so wide.

HOPLOPTERUS, *Bon.*

Spinosus, *Linn.*

Similar to *Charadrius*, but having longer legs, and a large spur on point of the wing.

CINCLUS, *Mœhr.*

Interpres, *Linn.*

Cranium. Occipital ridges well marked. Orbital septum with one large foramen. Palatine bones damaged, but apparently similar to *Charadrius;* no channel between the orbits.

Sternum rather large for the size of the bird, with two fissures on each side of the keel, on the posterior margin, the outer one largest, the inner one very small, almost rudimentary, the strip of bone bounding the outer fissure extending nearly as far as the hinder margin of the sternum; keel deep, anterior edge scolloped out. Manubrial process small, bifid.

Pelvis similar to *Charadrius.*

Furculum similar to *Charadrius*, but the rami not so much expanded at their junction.

Coracoids short.

Scapula not much arched, sharply pointed at its extremity.

Leg-bones. Metatarsus with a hind toe; calx rudimentary.

Measurements.

	Tenths.		Tenths.
Length of humerus	15	Breadth of posterior margin of sternum	8½
Length of ulna	17	Breadth of anterior margin of sternum	7
Length of metacarpus	5	Depth of keel	5½
Length of femur	12	Length of head	19
Length of tibia	19	Breadth of head	6½
Length of metatarsus	10	Length of pelvis	17
Length of sternum	16	Breadth of pelvis	10

TRINGA, *Linn.*

Canutus, *Linn.*

Cranium. A slight channel between the orbits. Orbital septum with two foramina; occipital ridges well marked. Palatine bones similar to those of the *Charadriidæ*.

Sternum similar in form to *Strepsilas*, but with the posterior fissures deeper.

Pelvis similar to *Strepsilas*.

Leg-bones. Metatarsus with a hind claw.

I have also specimens of *Tringa cinclus*, and *Alpina*, which are similar.

PHILOMACHUS, *Mœhr.*

Pugnax, *Linn.*

Cranium. A slight channel between the orbits. Palatine bones as in *T. canutus;* interorbital septum with two foramina; occipital ridge not very distinctly marked.

Sternum with only one fissure on each side of the keel, which is larger than in *Tringa*.

Pelvis with the hinder portion to the junction of the caudal vertebræ excavated longitudinally, and with the hinder half bent downwards. Other bones similar to *Tringa*.

Measurements.

	Tenths.		Tenths.
Length of humerus	19	Breadth of posterior margin of sternum	9½
Length of ulna	24	Breadth of anterior margin of sternum	9
Length of metacarpus	13	Depth of keel	9
Length of femur	15	Length of head	29
Length of tibia	29	Breadth of head	7
Length of metatarsus	20	Length of pelvis	18
Length of sternum	20	Breadth of pelvis	8

Numbering of the Vertebræ and Ribs in LITTORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Otis houbara	12	8	13	6	5	3
Tinamus major	—	—	14	—	—	—
Chionis alba	12	7	15	6	6	1
Attagis Gayii	13	7	13	6	6	1
Tinochorus Escholtzii	12	—	13	6	—	—
Hæmapodius ostralegus	13	6	18	7	7	1
Œdicnemus longirostris	13	6	12	6	6	—
Glarcola pratincola	12	6	11	8	6	1
Vanellus cristatus	11	8	12	6	7	1
Squatarola cinerea	12	7	13	8	6	1
Hoplopterus spinosus	14	6	12	6	6	1
Charadrius puvialis	14	6	13	8	6	2
Cinclus interpres	10	6	12	7	6	1
Tringa canutus	13	6	12	7	6	1
Philomachus pugnax	14	8	12	8	7	2

Remarks.

The Order Littores is rather an heterogeneous one, and it is difficult to say where to place the different families and sub-families. It may be objected to the present arrangement that the *Otidæ* are placed in it, not having a hind toe, but in the *Tinaminæ* we find the rudiments of one; thus, as far as this character is concerned, they constitute a transition group from Cursores to Littores. The *Chionidæ*—particularly *Chionis*—is peculiar in the formation of the cranium; the sternum is not much dissimilar to *O. tetrax*, but the pelvis of *O. tetrax* comes nearer to that of *Attagis*, while the pelvinal form approaches that of the *Charadriidæ*. *Tinochorus* is closely related to *Attagis*. In all the *Charadriidæ* there is a great similarity of structure; the sternum is always furnished with two foramina; the manubrial process is small and bifid; the splint bounding the outer foramen does not extend so far backwards as the inner one; the furculum is always much arched at the junction of the rami, and has generally a rudimentary process at that point.

Order XII. GRALLATORES.

Fam. SCOLOPACIDÆ.

Subfam. SCOLOPACINÆ.

TOTANUS, *Bechst.*

Glottis, *Linn.*

Cranium with a slight depression proceeding from the occiput between the orbits; occipital ridge slightly marked. Orbital septum with one small foramen. Palatine bones thin and narrow, accuminated at the hinder extremity; inferior mandible much prolonged behind the condyles, forming a blunt process extending downwards and backwards.

Pelvis very similar to the *Tringidæ*.

Ribs slight, with very long styliform processes.

Furculum not much arched at the junction of the rami, and with a slight process.

Coracoids short.

Scapula slightly arched, pointed at the extremity.

Sternum with two fissures on its hinder margin on each side of the keel, the outer ones largest; keel deep, scolloped out on its anterior edge. Manubrial process small and thin.

Leg-bones. Calx rudimental; metatarsus with a hind toe.

Besides the above, I have the sterna of *T. flavipes* and *Hypoleucus;* the latter has only one fissure on each side, the former two.

Measurements.

	Tenths.		Tenths.
Length of humerus	16	Breadth of posterior margin of sternum	18
Length of ulna	20	Breadth of anterior margin of sternum	6½
Length of metacarpus	9	Depth of keel	6
Length of femur	12	Length of head	43
Length of tibia	25	Breadth of head	8½
Length of metatarsus	18	Length of pelvis	20
Length of sternum	20	Breadth of pelvis	9

Illustrations.

Skeleton, Plate 8. K.

Sternum, metatarsus, and pelvis, Plate XXXIV. fig. 1.

PHALAROPUS, *Briss.*

Fulicarius, *Linn.*

Cranium similar to *Tringa*. Palatine bones much narrower than in *Tringa*, but of a similar shape.

Sternum with only one fissure on each side, the strip bounding the fissure not reaching as far as the hinder margin of the sternum; keel very deep, scolloped out in front. Manubrial process compressed perpendicularly, not bifid.

Pelvis similar to *Tringa*.

Ribs small, and light; styliform process just reaching as far as the next rib.

Furculum. Rami meeting rather acutely; process at their junction very small.

Scapula pointed at the extremities.

Wing-bones. The ulna only very slightly longer than the humerus.

Leg-bones. Calx rudimentary; metatarsus with a hind toe.

Measurements.

	Tenths.		Tenths.
Length of humerus	13	Breadth of posterior margin of sternum	6
Length of ulna	14	Breadth of anterior margin of sternum	5
Length of metacarpus	8	Depth of keel	4
Length of femur	8	Length of head	18
Length of tibia	16	Breadth of head	4
Length of metatarsus	9	Length of pelvis	12
Length of sternum	13½	Breadth of pelvis	6

LIMOSA, *Briss.*

Rufa, *Bechst.*

Cranium. A rather deep channel between the orbits; occipital ridge only slightly marked; orbital septum with one large foramen. Palatine bones narrow, with both the inner and outer edges turned downwards, pointed at their hinder extremities; inferior maxillary with a process pointing downwards and slightly backwards from below the condyles.

Sternum of moderate size; keel deep; posterior margin with a large fissure on each side, interior to which there are two very small ones nearly closed on the margin; anterior edge scolloped out. Manubrial process triangular at the base, compressed forwards, and ending above in a bifid process.

Pelvis similar to *Totanus*.

Furculum much arched longitudinally for its whole length; at the junction of the rami not much arched transversely; furnished with a small process.

Leg-bones. Calx rudimental; metatarsi furnished with a hind toe.

Measurements.

	Tenths.		Tenths.
Length of humerus	16	Breadth of posterior margin of sternum	10
Length of ulna	30	Breadth of anterior margin of sternum	11½
Length of metacarpus	14	Depth of keel	9½
Length of femur	17½	Length of head	29½
Length of tibia	41	Breadth of head	6
Length of metatarsus	32	Length of pelvis	26
Length of sternum	25	Breadth of pelvis	12

Illustrations.

Skeleton, Plate X. K.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXXV. bis. fig. 1.

SCOLOPAX, *Linn.*

Rusticola, *Linn.*

Cranium rounded, a depression between the orbits; occipital ridge slightly marked; orbital septum with one foramen. Palatine bones similar to *Limosa;* processes behind the condyloid part of the lower mandible very long.

Sternum large, with the keel very deep; anterior edge scolloped out; hinder margin rounded, with one fissure on each side, the splint bounding it not extending so far as the hinder margin of the sternum. Manubrial process very small.

Pelvis rather narrow, but similar in shape to *Limosa.*

Furculum much arched in front, with a small tubercle at the junction of the rami.

Scapula not much arched, pointed at the hinder extremities.

Wing-bones. The ulna only slightly longer than the humerus.

Leg-bones. Metatarsus very short, furnished with a hind toe; calx rudimentary.

Measurements.

	Tenths.		Tenths.
Length of humerus	20	Breadth of posterior margin of sternum	12
Length of ulna	24	Breadth of anterior margin of sternum	9
Length of metacarpus	14	Depth of keel	10
Length of femur	17	Length of head	43
Length of tibia	23	Breadth of head	9
Length of metatarsus	12½	Length of pelvis	26
Length of sternum	25	Breadth of pelvis	12

Illustrations.

Skeleton, Plate IX. K.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXXV. fig. 1.

SCOLOPAX, *Linn.*

Gallinago, *Linn.*

Similar to the foregoing, except in size.

RHYNCHÆA, *Cuv.*

Semicollaris, *Vieill.*

I have not a perfect skeleton of this bird. It is similar to *Scolopax*, but has the sternum narrower, and a larger process at the junction of the rami of the furculum; the palatine bones have been destroyed.

NUMENIUS, *Linn.*

Arquatus, *Linn.*

Cranium. A raised ridge on the upper part between the orbits; orbital septum with two foramina. Palatine bones broad at the hinder extremity, and with the edges bent downwards, tapering towards the interarticular bones; the expanded portion does not extend for more than five-tenths, after which they become a mere strip of flattened bone. Occipital ridge well marked, but not very prominent.

Sternum with two fissures on each side of the keel, on the posterior margin, the strip of bone bounding the outer ones not extending so far backwards as the inner one, and neither extending as far as the hindermost edge of the sternum; keel very deep, scolloped out on its anterior edge, and much arched on its lower edge. Manubrial process rather large, laterally compressed, thin, truncate at its upper and lower extremities, and slightly arched in front.

Pelvis rather narrow for its length; obturator and ischiadic foramina very large, the hinder margin of the iliac bones curved from the sacral vertebra outwards, and projecting backwards as far as the third caudal vertebra; ilium very small and narrow, the lower edge projecting in the form of a tapering spine nearly as far as the end of the os pubis, which is prolonged to opposite the last caudal vertebra; a projecting ridge down the upper surface of the pelvis.

Ribs with very long styliform processes projecting much beyond the following rib.

Furculum laterally flattened; process at the junction of the rami small, triangular.

Scapula slightly expanded near the tip, and tapering slightly towards the end, which is blunt.

Leg-bones. Calcineal process rudimentary; metatarsus furnished with a hind toe.

Measurements.

	Tenths.		Tenths.
Length of humerus	32	Length of femur	21
Length of ulna	43	Length of tibia	41
Length of metacarpus	21	Length of metatarsus	30

	Tenths.		Tenths.
Length of sternum	35	Length of head	51
Breadth of posterior margin of sternum	13	Breadth of head	10
Breadth of anterior margin of sternum	13	Length of pelvis	36
Depth of keel	13	Breadth of pelvis	16

IBIS, *Mœhr.*

Falcinellus, *Linn.*

Very similar to *Numenius*, but may be distinguished from that genus by the very small size of foramina in the orbital septum, there being no depression or ridge down the centre of the forehead between the orbits; the manubrial process on the sternum and the fissures on the posterior margin being much smaller, the ischiadic foramen amounting to a mere slit, the obturator much smaller, and the furculum stronger in proportion to the size of the bird.

Measurements.

	Tenths.		Tenths.
Length of humerus	33	Breadth of posterior margin of sternum	14
Length of ulna	39	Breadth of anterior margin of sternum	12
Length of metacarpus	19	Depth of keel	9
Length of femur	20	Length of head	55
Length of tibia	46	Breadth of head	9
Length of metatarsus	33	Length of pelvis	32
Length of sternum	25	Breadth of pelvis	13

HARPIPRION, *Wagl.*

Hagedash, *Sparm.*

Cranium with occipital crest well marked, but the space of the occipital bone narrow. Orbital septum with one large foramen; a slight depression on the upper surface of the cranium between the orbits. Palatine bones of moderate breadth, the edges of the hinder portion bent downwards, and gradually sloped to their junction with the interarticular bones, gradually narrowed anteriorly to a thin strip of bone. Interarticular bones broad at their junction with the palatine bones, and much flattened horizontally, gradually narrowed backwards; hinder portion of the inferior maxillary bone prolonged far backwards beyond the condyle, blunt and rounded at the end; a deep cavity at the end on the inside of this, into which the processes projecting on each side at the lower part of the occipital ridge fit when the jaws are open, and from which a small muscle extends to the inner edge of the cavity in the lower maxillary bone.

Sternum similar to that of *Ibis*.

Pelvis with the foramina very large, and also in shape similar to *Numenius*.

Leg-bones. Supplementary metatarsal bone twisted on its axis; calcineal process very short.

Measurements.

	Tenths.		Tenths.
Length of humerus	45	Breadth of posterior margin of sternum	16
Length of ulna	50	Breadth of anterior margin of sternum	25
Length of metacarpus	25	Depth of keel	12
Length of femur	27	Length of head	66
Length of tibia	45	Breadth of head	12
Length of metatarsus	29	Length of pelvis	43
Length of sternum	32	Breadth of pelvis	19

Illustrations.

Skeleton, Plate VII. K.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXXIV. fig. 2.

THRESKIORNIS, *G. R. Gray.*

Melanocephalus, *Lath.*

Cranium similar to *Harpiprion Hagedash*, but with the inferior maxillary not so much prolonged backwards; in other respects similar. Rami of the furculum much arched, and uniting at a very blunt curve, with no vestige of a process at their junction.

Pelvis similar to *Hagedash*, but with the foramina not so large.

TANTALUS, *Linn.*

Ibis, *Linn.*

I have only the cranium of this bird. The occipital ridge is very prominent, the impression for the masseter muscles very deep. Palatine bones with the lateral edges very much turned downward, very strong, only widened for about an inch of their length from the interarticular bones, afterwards becoming a straight, flattened strip of bone. Interarticular bones slightly twisted on their axis; nostrils very small. Inferior maxillary bone truncate, and triangular on its proximal end, not prolonged beyond the condyle; processes on each side of the foramen magnum similar to those in *Hagedash*.

PSOPHIA, *Linn.*

Viridis, *Spix.*

Cranium. Occipital ridge small, but well defined; orbital septum with two

foramina. Palatine bones broad, the outer edges turned downward at an angle, the inner edges slightly turned down; hinder margin rounded from the outer margin to the interarticular bones, gradually diminishing in width forwards; hinder margin of the inferior mandible, and process at the termination of the occipital crest, as in *Tantalus*.

Sternum very long in proportion to its width, much narrower behind than anteriorly; hinder margin rounded, lateral edges much compressed laterally behind the junction of the ribs; keel shallow, much scolloped out in front, lower edge very slightly rounded. Manubrial process rudimentary.

Pelvis similar to the *Tantalinæ*, but the os pubis is not so much elongated beyond the ischium.

Wing-bones rather short; humerus longer than the ulna.

Leg-bones. Calx rudimentary; metatarsus with a hind toe.

Coracoids of moderate length, longer than among the *Scolopacidæ*.

Scapula much arched, particularly towards the top, which is pointed.

Measurements.

	Tenths.		Tenths.
Length of humerus	30	Breadth of posterior margin of sternum	$10\frac{1}{2}$
Length of ulna	29	Breadth of anterior margin of sternum	13
Length of metacarpus	15	Depth of keel	5
Length of femur	30	Length of head	30
Length of tibia	55	Breadth of head	13
Length of metatarsus	45	Length of pelvis	$32\frac{1}{2}$
Length of sternum	40	Breadth of pelvis	16

Illustrations.

Skeleton, Plate V. K.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXXIX. fig. 1, on the left-hand side of the plate.

CARIAMA, *Briss*, *Linn.*

Cristata, *Linn.*

Cranium. A slight depression between the orbits; orbital septum with two foramina. Palatine bones and interarticular bones similar to *Psophia*, but broader and stronger.

Sternum short; posterior margin very narrow, rounded at its end, expanding gradually forwards for about an inch and a half to two short splints about half an inch long, which bound a shallow fissure. Manubrial process small, but distinctly marked; keel deep, anterior edge scolloped out, arched on its lower edge.

Pelvis broad; very similar to *Prophia*, but with the points of the os pubis, which is much longer than in *Prophia*, turned much inwards.

Ribs similar to the last.

Furculum thin and light; the rami nearly straight, very slightly arched at their junction, without any process.

Coracoids as in *Psophia.*

Scapula very strong, regularly bent, blunt, and rounded at the point.

Wing-bones. Humerus rather longer than the ulna.

Leg-bones. Metatarsus nearly as long as the tibia; calx rudimental, a groove running for nearly the whole length of the metatarsus, both in front and behind.

Measurements.

	Tenths.		Tenths.
Length of humerus	40	Breadth of posterior margin of sternum (including splints)	13
Length of ulna	35	Breadth of anterior margin of sternum	15
Length of metacarpus	17	Depth of keel	9
Length of femur	32	Length of head	42
Length of tibia	80	Breadth of head	17
Length of metatarsus	75	Length of pelvis	43
Length of sternum	40	Breadth of pelvis	19

Illustrations.

Skeleton, Plate III. K.

Sternum, palatine bones, pelvis, and metatarsi, Plate XXVIII. bis. fig. 1.

SCOPS, *Mœhr.*

Virgo, *Linn.*

Cranium. Occipital ridge not sharp, but well marked; protuberance very large; orbital septum with three foramina. Palatine bones with hinder portion for one and a half inches widened, with both edges turned downwards for the distance of half an inch, then horizontally flattened and becoming a thin strip at their anterior ends; hinder ends with the central portion truncate, the outer portion gradually sloped to join the interarticular bones; hinder extremity of the lower maxillary bone truncate, with a slight projection at its lower side, pointing downwards and slightly backwards.

Sternum long and narrow, much compressed behind the last rib; the hinder margin nearly square, with outer portions rounded; keel very deep, penetrated by the trachea to the depth of seven inches, the anterior edge of the sternum filling up the whole of the space to the furculum, lower edge slightly arched.

Pelvis long; os pubis prolonged in a curve beyond the ischium; ischiadic foramen of moderate size, opening into the foramen beneath the acetabulum; obturator open behind.

Remaining portion similar to the other *Ardeidæ.*

Measurements.

	Tenths.		Tenths.
Length of humerus	90	Breadth of posterior margin of sternum	17
Length of ulna	96	Breadth of anterior margin of sternum	26
Length of metacarpus	47	Depth of keel	21
Length of femur	45	Length of head	54
Length of tibia	115	Breadth of head	15
Length of metatarsus	100	Length of pelvis	73
Length of sternum	75	Breadth of pelvis	28

Illustrations.

Skeleton, Plate II. K.

Pelvis, sternum, palatine bones, and metatarsi, Plate XXXI. fig. 1.

BALEARICA, *Briss.*

Pavonina, *Linn.*

Cranium similar to *Scops*, but with a large protuberance on the forehead.

Sternum narrow; keel very deep, lower edge arched, anterior edge slightly scolloped out. Manubrial process small, bifid; the lateral edges of the sternum not contracted behind the ribs; posterior margin without fissures, and nearly square, with the hinder edges on each side rounded.

Pelvis large, wider in proportion to its length than in *Scops*; ischiadic foramina large; obturator a mere slit, opened at its hinder terminus, divided from the foramina below the acetabulum by a narrow strip of bone; the os pubis continued backwards beyond the ischium.

Ribs of moderate strength; styliform process broad.

Furculum very strong, broad horizontally at the junction of the rami, and the inner edges twisted inwards at their junction with the sternum.

Scapula very strong, gradually tapering to its hinder extremity.

Leg-bones. Calx rudimentary, the articular eminence for the inner toe placed very far backwards, consequently causing the front of the lower end of the metatarsus to be very convex in front; a strong keel down the front of the metatarsus.

Wing-bones. Ulna slightly longer than the humerus.

Measurements.

	Tenths.		Tenths.
Length of humerus	83	Breadth of posterior margin of sternum	20
Length of ulna	89	Breadth of anterior margin of sternum	18
Length of metacarpus	38	Depth of keel	14
Length of femur	43	Length of head	48
Length of tibia	107	Breadth of head	19
Length of metatarsus	79	Length of pelvis	50
Length of sternum	50	Breadth of pelvis	30

Illustrations.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXIX. fig. 2.

CICONIA, *Linn.*

Alba, *Briss.*

Cranium. Occipital ridge sharp and prominent; impression for the reception of the masseter muscles very well marked; orbital septum with one foramen. Palatine bones broad, posterior part for the length of one inch with both edges turned downwards; posterior edges curved abruptly to the interarticular bones, the anterior portion flattened horizontally, and gradually tapering; the ethmoid bones plainly visible through the orbits; nostrils small; inferior maxillary bone truncate, and triangular at the hinder extremity, and not prolonged beyond the condyle.

Sternum much broader and shorter than among the *Gruinæ*, with a large, open, shallow fissure on the posterior margin; keel deep, arched below, the anterior point projecting very much forward to the junction with the furculum; anterior edge slightly scolloped out. Manubrial process wanting.

Pelvis similar to that of *Balearica*, but with the anterior portion much broader; obturator and ischiadic foramina large, without the rounded foramen below the acetabulum; os pubis continued beyond the ischium.

Ribs of moderate strength; styliform processes nearly horizontal, blunt at the ends.

Furculum strong, very much arched; a process at the junction of the rami, which appears to be anchylosed to the sternum, flattened perpendicularly.

Scapula slightly arched, tapering towards the hinder extremity, which is blunt.

Wing-bones long, the ulna much longer than the humerus; metacarpus also very long.

Leg-bones similar to those of *Balearica*.

Measurements.

	Tenths.		Tenths.
Length of humerus	79	Breadth of posterior margin of sternum	21
Length of ulna	97	Breadth of anterior margin of sternum	22
Length of metacarpus	43	Depth of keel	19
Length of femur	37	Length of head	105
Length of tibia	96	Breadth of head	17½
Length of metatarsus	90	Length of pelvis	52
Length of sternum	47	Breadth of pelvis	29

Illustrations.

Metatarsi, palatine bones, sternum, and pelvis, Plate XXXI. fig. 2, 3.

LEPTOPHILUS, *Less.*

Argala, *Lath.*

Cranium similar to *Ciconia* in every respect except the much larger sternum.
Pelvis and other bones also similar.
I have also the head of *Leptophilus nudifrous*, which is similar to the above.

Measurements.

	Inch.		Inch.
Length of humerus	12	Breadth of posterior margin of sternum	3
Length of ulna	17	Breadth of anterior margin of sternum	$4\frac{1}{2}$
Length of metacarpus	$6\frac{1}{2}$	Depth of keel	$1\frac{1}{2}$
Length of femur	$5\frac{1}{4}$	Length of head	16
Length of tibia	$15\frac{3}{4}$	Breadth of head	$3\frac{3}{4}$
Length of metatarsus	$11\frac{3}{4}$	Length of pelvis	$6\frac{3}{4}$
Length of sternum	$5\frac{3}{4}$	Breadth of pelvis	$3\frac{1}{2}$

Illustrations.

Skeleton, Plate I. K.

Palatine bones, sternum, pelvis, and metatarsi, Plate XXX. fig. 1.

MYCTERIA, *Linn.*

Senegalensis, *Shaw.*

I have only the cranium of this bird, which has the indentation at the base of the nasal bones much shallower than in the foregoing.

EURYPYGA, *Illiger.*

Helias, *Pall.*

Cranium with a slight depression above, between the orbits, rather elongated, independent of the bill; orbital septum nearly obliterated. Palatine bones truncate at the hinder extremities, broad, a very small portion of the inner edge turned downwards, and the whole of the outer expanded part rather long, ending in a narrow strip of bone; occipital crest and protuberance well defined; the impression of the masseter also well marked; inferior maxillary bone truncate at the hinder extremity, the end of the ethmoid bone just visible through the orbits.

Sternum long, slightly narrowed just behind the ribs; a deep fissure on each side of the keel, and another very small one inside of it, nearer the keel, the splint bounding the external one reaching as far as the posterior margin of the sternum, which is nearly square. Manubrial process small, and pointed; keel not deep, slightly arched below, and scolloped out on the anterior edge.

Pelvis similar to *Rhynchæa*.

Leg-bones. Metatarsus with a rudimentary calx, and furnished with a hind toe.

Ribs with a long, thin styliform process.

Scapula slightly expanded at about two-thirds its length from the tip, then tapering to a point.

Measurements.

	Tenths.		Tenths.
Length of humerus	20	Breadth of posterior margin of sternum	7
Length of ulna	22	Breadth of anterior margin of sternum	8
Length of metacarpus	11	Depth of keel	5
Length of femur	15	Length of head	37
Length of tibia	30½	Breadth of head	8
Length of metatarsus	19	Length of pelvis	20
Length of sternum	17½	Breadth of pelvis	10

Illustrations.

Skeleton, Plate XII. K.

Palatine bones, sternum, pelvis, and metatarsal bones, Plate XXXV. bis. fig. 2.

ARDEA, *Linn.*

Cinerea, *Linn.*

Cranium with a depression between the orbits; orbital septum nearly obliterated; occipital crest large, protuberance scarcely marked; masseter impressions very large; ethmoid bones just visible. Palatine bones truncate at their hinder extremities, with both edges turned downwards, and gradually narrowed from the hinder extremity forwards; inferior maxillary bone projecting backwards beyond the condyle, flattened on the hinder edge perpendicularly, and bent slightly inwards.

Sternum rather small, of moderate breadth, with two rather broad shallow fissures, one on each side of the keel, on the posterior margin, the splints bounding the outer sides of the fissures carried as far backwards as the point of the sternum; keel deep, the lower edge much arched, anterior deeply scolloped out. Manubrial process of moderate size, rounded on the anterior edge, and flattened perpendicularly.

Pelvis similar in shape to most of the larger waders; obturator and ischiadic foramina large; os pubis continued beyond the ischium.

Ribs thin, styliform process of moderate length.

Furculum long, the rami flattened, anchylosed to the sternum, a transversely flattened process turned inwards between them.

Scapula long, thin, sloped off at the hinder end to a blunt point.

Leg-bones with the calcineal process well marked, but not continued down the metatarsus; furnished with a hind toe.

Measurements.

	Tenths.		Tenths.
Length of humerus	70	Breadth of posterior margin of sternum	12
Length of ulna	82	Breadth of anterior margin of sternum	17
Length of metacarpus	35	Depth of keel	10
Length of femur	38	Length of head	70
Length of tibia	80	Breadth of head	13½
Length of metatarsus	61	Length of pelvis	46
Length of sternum	35	Breadth of pelvis	16

ARDEA.

Exilis.

Besides the above I have specimens of *A. visrescens*, *Nivea*, *Candidissima*, *Cærulea*, *Rubicollis*, and *Purpurea*, all of which are similar.

BOTAURUS, *Steph.*

Stellaris, *Linn.*

The principal distinction between this genus and *Ardea* is the comparative lengths of the metatarsus and tibia.

NYCTYCEORAX, *Steph.*

Griseus, *Linn.*

Also similar to *Ardea*.

CANCROMA, *Linn.*

COCHLEARIA, *Linn.*

I have only an imperfect cranium of this bird: it has a channel on the vertex, and an elevated ridge over the top of the bill; nostrils small; orbits large, and elongated. Palatine bones broad, placed horizontally, the hinder portion missing; inferior maxillary very slightly elongated beyond the condyles, the edge curved much downwards.

PLATALÆA, *Linn.*

Leucorodia, *Linn.*

Cranium with a very slightly marked depression between the orbits, without any depression at the base of the nasal bones; occipital ridge slightly marked; orbital septum with two small foramina. Palatine bones with their edges for the first half

inch slightly deflexed, broad, and flattened forward; interarticular bones broad at their junction with the palatine bones, gradually narrowed backwards; posterior portion of the inferior maxillary bone much bent downwards, truncate, but with a slight hollow in the middle behind the condyles; anterior portion flattened.

Sternum similar in shape to *Ardea*, but with two shallow fissures on each side of the keel, the inner ones largest; manubrial process wanting; anterior edge of the keel slightly scolloped out, inferior edge much arched.

Furculum widely expanded, the rami meeting in a wide curve, and having no process at their junction.

Scapula slightly arched, sloped off towards the hinder end.

Wing-bones long, ulna much longer than the humerus.

Leg-bones with metatarsus long; calx small.

Pelvis similar to *Ardea*.

Measurements.

	Tenths.		Tenths.
Length of humerus	58	Breadth of posterior margin of sternum	18
Length of ulna	68	Breadth of anterior margin of sternum	20
Length of metacarpus	30	Depth of keel	12
Length of femur	32	Length of head	96
Length of tibia	75	Breadth of head	13
Length of metatarsus	55	Length of pelvis	52
Length of sternum	35	Breadth of pelvis	21

Illustrations.

Pelvis, palatine bones, sternum, and metatarsus, Plate XXX. fig. 2.

PHÆNICOPTERUS, *Linn.*

Ruber, *Linn.*

Cranium. Occipital ridge slightly marked, protuberance very large; foramen magnum very large; space above, between the orbits, very narrow, a ridge down the centre, which is bifurcate at the base of the nasal bones; ethmoid bones visible through the orbits; orbital septum with a large anterior foramen, and two small ones behind; nostrils large; upper maxillaries thin, much curved downwards; a ridge extends along the roof of the mouth from the palatine bones to the tip of the bill. Palatine bones with the edges deflexed, a small spine on the point of the outer angles, the inner deflexed edge carried backwards to the interarticular bones, and truncate at the ends; interarticular bones broad at their junction with the palatine bones, and narrowed backwards; inferior maxillary bone much prolonged backward beyond the condyles, curved upwards, very broad, and turned downwards towards the anterior end, the upper edges turned much inwards, very vascular.

Pelvis similar to the *Ardeinæ*.

Furculum similar to *Platylœa*, but with a small notch at the junction of the rami.

Sternum with one rather large fissure on the posterior margin on each side of the keel, in shape similar to the herons; keel of moderate depth, slightly bifid, strong; a small manubrial process.

Scapula arched, tapering gradually to the hinder extremity.

Wing-bones having the ulna longer than the humerus.

Leg-bones with a groove extending for the whole length both in front and behind; calx small; hind toe very small.

Measurements.

	Tenths.		Tenths.
Length of humerus	72	Breadth of posterior margin of sternum	20
Length of ulna	77	Breadth of anterior margin of sternum	26
Length of metacarpus	32	Depth of keel	12
Length of femur	32	Length of head	71
Length of tibia	125	Breadth of head	14
Length of metatarsus	115	Length of pelvis	65
Length of sternum	47	Breadth of pelvis	28

Illustrations.

Skeleton, Plate IV. K.

Palatine bones, sternum, pelvis, and metatarsus, Plate XXVIII. bis. fig. 2.

PARRA, *Linn.*

Cordifera, *Less.*

Cranium. A slight channel above, between the orbits, and a transverse one immediately behind them; orbital ridge well marked, the protuberance slightly so; orbital septum represented by a slight strip of bone intersecting it horizontally. Palatine bones of moderate width, the margins deflected, rounded at their junction with the interarticulars, and gradually narrowed forwards.

Sternum rather long, narrow for about half its length, then suddenly expanded to the hinder margin, which has two fissures, one on each side of the keel, the end of the splint bounding the fissures expanded; keel deep, slightly scolloped out on the anterior edge, with a small manubrial process.

Pelvis small, narrow; ischiadic and obturator foramina large, os pubis projecting only very slightly beyond the ischium.

Furculum having the rami, which are flattened, compressed towards one another, with a very small process at their junction.

Scapula slightly expanded near the distal end, and then sloped off to a point.

Wing-bones. Humerus nearly as long as the ulna.

Leg-bones. Tibia very long; calx small; a channel down the upper half of the hind part of the leg; supplementary metatarsal slightly twisted on its axis.

Measurements.

	Tenths.		Tenths.
Length of humerus	17	Breadth of posterior margin of sternum	8
Length of ulna	19	Breadth of anterior margin of sternum	6
Length of metacarpus	10	Depth of keel	6
Length of femur	13	Length of head	22
Length of tibia	32	Breadth of head	7
Length of metatarsus	21	Length of pelvis	16
Length of sternum	17	Breadth of pelvis	8

PARRA, *Linn.*

Melanochloris, *Vieill.*

I have only some fragments of this bird taken from a skin, but they appear to be similar to the foregoing.

RALLUS, *Linn.*

Aquaticus, *Linn.*

Cranium with the occipital crest very slightly marked; a triangular indentation at the base of the nasal bones; orbital septum very slight; inferior maxillary bone with a process pointing downwards below the condyles.

Sternum long and narrow, with a narrow and deep fissure on each side of the keel, the strip of bone bounding it projecting beyond the end of the keel.

Pelvis similar to *Parra*.

Furculum rather long, but very small and weak.

Scapula narrow, pointed at the hinder extremity.

Wing-bones. Ulna not so long as the humerus.

Leg-bones. Metatarsus with a channel down the front; calx small.

Measurements.

	Tenths.		Tenths.
Length of humerus	16	Breadth of posterior margin of sternum	5
Length of ulna	12	Breadth of anterior margin of sternum	4
Length of metacarpus	8	Depth of keel	5
Length of femur	16	Length of head	28
Length of tibia	27	Breadth of head	6
Length of metatarsus	18	Length of pelvis	16
Length of sternum	19	Breadth of pelvis	6

RALLUS, *Linn.*

Longirostris, *Bodd.*

Very similar to the foregoing, but has the clavicle and coracoids much longer.

I have also the sternum of *R. concolor*, which is also similar.

OSTYGOMETRA, *Linn.*

Lateralis, *Licht.*

So like *Rallus* as not to be distinguishable.

I have also specimens of *O. crex* and *Pulchra*, which are also similar.

ARAMUS, *Vieill.*

Scolopaccus, *Gm.*

Cranium with occipital crest very indistinct; a depression at the base of the nasal bones; orbital septum with one large foramen; condyloid portion of the inferior maxillary bent downwards, truncate at the end, and with a process pointing downwards immediately below the condyle. Palatine bones consist of a flattened strip, broader at the hind portion, where both edges are turned downwards, and sloped off to the interarticular bones.

Sternum long, narrow, without any fissures on the hinder margin, which is slightly indented opposite the end of the keel, which is arched on the lower edge, and also scolloped out in front. Manubrial process very small.

Pelvis similar to the rails.

Furculum of moderate strength, without any process at the junction of the rami, which are widened on their inner edge at their lower extremities, thus filling a small portion of the space left between the lower part of the furculum.

Scapula of moderate size, pointed at the end.

Wing-bones with the ulna longer than the humerus.

Leg-bones. Metatarsus with a groove down the front, and a slight one at the back; calx continued for a short distance down it.

Measurements.

	Tenths.		Tenths.
Length of humerus	42½	Breadth of posterior margin of sternum	11½
Length of ulna	45	Breadth of anterior margin of sternum	14
Length of metacarpus	19	Depth of keel	9
Length of femur	31	Length of head	68
Length of tibia	53	Breadth of head	10
Length of metatarsus	50	Length of pelvis	39
Length of sternum	33	Breadth of pelvis	14

Illustrations.

Skeleton, Plate XIV. K. | Palatine bones, Plate XXVII. 3.

GALLINULA, *Briss.*

Chloropus, *Linn.*

Cranium. Occipital crest and protuberance well marked; orbital septum with one large foramen. Palatine bones broadest at their hinder extremities, and gradually sloped to their junction with the interarticular, gradually narrowed forward, both edges bent downward for more than half their length; interarticular bones broadest at their junction with the palatine, and narrowed backward; lower maxillary bone truncate at the hinder end, with a slight tubercle below the condyles.

Sternum narrow, with a very deep fissure extending nearly to the ribs on each side of the keel, slightly constricted opposite to the last rib; keel arched below, rather shallow, scolloped out in front, with a small manubrial process.

Furculum weak, a small process on the inside, opposite the junction of the rami.

Scapula long, narrow, pointed at the hinder extremity.

Pelvis similar to *Rallus.*

Wing-bones with the humerus longer than the ulna.

Leg-bones. Metatarsus without any groove down the front or back; calx small.

Ribs with a very long styliform process.

Measurements.

	Tenths.		Tenths.
Length of humerus	20	Breadth of posterior margin of sternum	8
Length of ulna	18	Breadth of anterior margin of sternum	9
Length of metacarpus	4	Depth of keel	6
Length of femur	20	Length of head	22
Length of tibia	32	Breadth of head	7
Length of metatarsus	19	Length of pelvis	$22\frac{1}{2}$
Length of sternum	21	Breadth of pelvis	$8\frac{1}{2}$

PORPHYRIO, *Briss.*

Veterum, *Gmel.*

The whole skeleton very similar to *Gallinula*, but larger, the fissures at hinder edge of the sternum not so deep, the point of the keel receding very much, the manubrial process longer.

Ribs like *Gallinula*, with the styliform processes very long.

I have also the skeleton of *P. Madagascariensis*, which is similar.

FULICA, *Linn.*

Atra, *Linn*,

Very similar to *Porphyrio*, but the fissures on the sternum are much deeper; in that respect resembling *Gallinula.*

Numbering of the Vertebræ among GRALLATORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Limosa rufa	12	7	15	6	7	1
Totanus glottis	14	8	13	7	7	1
Scolopax rusticola	44	6	13	6	7	1
Numenius arquatus	14	6	14	6	7	1
Ibis falcinellus	15	6	15	6	6	1
Harpiprion Hagedash	15	6	15	6	6	1
Threskiornis melanocephalus	16	7	15	6	6	1
Psophia viridis	16	8	14	6	7	2
Cariama cristata	13	6	15	6	6	2
Ciconia alba	17	6	13	7	8	1
Leptophilus argala	15	6	14	6	5	1
Platalæa Leucorodia	16	6	14	6	6	1
Phænicopterus ruber	16	6	13	7	6	1
Parra cordifera	15	7	12	7	6	1
Rallus aquaticus	15	8	—	6	7	1
Aramus scolopaccus	15	7	—	7	7	1
Gallinula chloropus	14	9	14	7	8	1
Fulica atra	14	8	15	6	7	1

Remarks.

The *Totaninæ* are nearly allied to the *Tringinæ*, but have longer leg-bones, thus being able to wade in deeper water; the process on the under side, at condyloid end, of the lower mandible is also more developed, but most so in the *Scolopacinæ*. The *Limosinæ* is distinguished from *Totaninæ* by the small size of the inner fissure of the sternum. The *Phalaropinæ* are very similar to the *Totaninæ*. The *Scolopacinæ* have only one fissure on each side of keel of the sternum. The *Tantalinæ* have, besides the development of the bill to distinguish them, no process at the condyloid end of the inferior maxillary bone bent downwards, but in many instances it is prolonged backwards in the same line as the rest of the bone, although not in all. The *Psophinæ* have the hinder end of lower maxillary terminated abruptly, as it is in *Threskiornis;* the expanded portion of the palatine bones is very long; the humerus as long, or longer, than the ulna; the hinder margin of the sternum entire. The *Cariarminæ* may at once be distinguished from *Psophinæ* by the shape of the sternum. The *Gruinæ* have the toes much shorter than in *Ardea*, the sternum without fissures on its posterior margin, and the sternum very long in proportion to its width; on the contrary, *Ardeinæ* have invariably, as far as my specimens go, not less than two fissures on the sternum, and sometimes four; the sternum is also much shorter in proportion to its width. The *Ciconinæ* have the keel of the sternum much deeper than in *Ardea*, and the palatine bones much broader and more highly developed. I had some hesitation in placing the *Phœnicopterinæ* among the herons, but it presents many similarities to them. The *Platalœinæ* are a well-marked group, as are also the *Phœnicopterinæ*. The sternums in the *Rallidæ*, with the exception of *Aramus*, have all a very deep fissure on each side the keel.

Order XIII. NATATORES.

Fam. 1. ANATIDÆ.

Subfam. PLECTROPTERINÆ.

PLECTROPTERUS, *Leach.*

Gambensis, *Linn.**

Cranium large, an oval knob on the forehead; occipital crest and protuberance very prominent. Palatine bones rather small for the size of the head, the outer edge much inclined downwards, bifid at the hinder and lower extremity, narrowed and twisted on their axis near the centre in an horizontal direction, expanded at their anterior ends; nostrils large; inferior maxillaries much prolonged backwards; behind the condyles a large flat process, with a spine at its base, which arises anterior to them, and to which the maxillary muscles are attached.

Sternum long, much broader at the anterior extremity; keel of moderate depth; posterior margin with two large fissures nearly closed at their hinder extremity, the hinder edge of central portion curved inwardly at the centre, lateral strips of bone bounding the fissures not projecting beyond the central portion of the sternum; anterior edge of the keel straight, the point rather advanced, lower edge slightly arched. Manubrial process wanting.

Pelvis long, depressed in the centre for the posterior half; ischiadic foramen very large; obturator widest posteriorly, and gradually tapering forwards; os pubis projecting beyond the ischium, and much curved inwards at the points.

Ribs of moderate strength; styliform processes long, and blunt at the extremities.

Furculum flattened, the rami meeting each other in a wide arch, a very slight tubercle at their junction.

Scapula strong, narrowed at the end to a blunt point.

Wing-bones long; humerus longer than ulna, armed with a long spur.

Leg-bones very strong.

Measurements.

	Tenths.		Tenths.
Length of humerus	69	Length of femur	38
Length of ulna	60	Length of tibia	67
Length of metacarpus	34	Length of metatarsus	35

* Having figured many of the skeletons of the *Anatidæ* before in my work on the *Anatidæ*, I have not thought it necessary to re-figure them in this work.

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	56	Length of head	55
Breadth of posterior margin of sternum	23	Breadth of head	17½
Breadth of anterior margin of sternum	29	Length of pelvis	65
Depth of keel	11	Breadth of pelvis	27

CHENALOPEX, *Steph.*

Ægyptiacus, *Linn.*

Similar to *Plectropterus.*

CEREOPSIS, *Lath.*

Novæ Hollandiæ, *Lath.*

Cranium. Nostrils very large; a deep impression on the edge of each orbit, and a ridge between them; orbital septum with three foramina. Palatine bones very broad near their posterior extremity, bifid on their hinder edge, suddenly narrowed at about half of their length, and again expanded anteriorly; a ridge extends down the centre of the hinder part of each. Inferior maxillary bone prolonged much backwards behind the condyle, the hinder points turned upwards; a flat process, as in *Plectropterus*, anterior to the condyles.

Sternum with the anterior point of the keel projecting more forwards than in *Plectropterus*, the anterior edge scolloped out, and the lower edge more arched; but, as in *Plectropterus*, devoid of a manubrial process.

Pelvis similar to the foregoing.

Furculum and remaining bones also similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	70	Breadth of posterior margin of sternum	26
Length of ulna	73	Breadth of anterior margin of sternum	27
Length of metacarpus	40	Depth of keel	15
Length of femur	36	Length of head	41
Length of tibia	64	Breadth of head	14
Length of metatarsus	42	Length of pelvis	68
Length of sternum	55	Breadth of pelvis	26

BERNICLA, *Steph.*

Brenta, *Poll.*

Cranium similar to *Plectropterus gambensis*, but smaller; interarticular bones very

broad at their junction with the palatines. Lower mandible and other bones also similar.

Sternum with a manubrial process.

BERNICLA, *Steph.*

Magellanica, *Gmel.*

Similar to *Brenta*, but with the fissures at the posterior margin of the sternum generally closed by a thin strip of bone, thus converting them into foramina; anterior edge without a manubrial process.

ANSER, *Barm.*

Cygnoides, *Linn.*

Similar to the foregoing except in size, and having a knob at the base of the bill; the sternum with a distinct manubrial process.

I have also a specimen of *A. segetum*, which is similar to *Cygnoides*, but without the knob at the base of the bill.

CYGNUS, *Linn.*

Coscoroba, *Moll.*

Cranium with a deep depression at the base of the nasal bones; orbital septum with two foramina; occipital crest and protuberance well marked; foramen magnum very large. Palatine bones similar to *Plectropterus*, but much broader and stronger; inferior maxillary much prolonged beyond the condyles; a slight channel from the vertex to the nasal depression.

Sternum large, broad, similar in shape to *Plectropterus*, but the lower edge of the keel very slightly arched, with a short, thick manubrial process, pierced perpendicularly with a foramen.

Pelvis not differing from the geese.

Furculum also similar to the *Anserinæ*, but much stronger.

Scapula very long.

Wing-bones with the ulna shorter than the humerus. Terminal joint of the caudal vertebræ very long.

Measurements.

	Tenths.		Tenths.
Length of humerus	80	Length of femur	32
Length of ulna	70	Length of tibia	64
Length of metacarpus	38	Length of metatarsus	36

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	66	Length of head	51
Breadth of posterior margin of sternum	29	Breadth of head	16
Breadth of anterior margin of sternum	35	Length of pelvis	82
Depth of keel	10	Breadth of pelvis	33

CYGNUS, *Lath.*

Atratus, *Lath.*

Similar to the foregoing; as are also *Minor*, *Pall*, and *Ferus*, *Ray*, except that the two latter have the sternum perforated by the trachea.

TADORNA, *Leach.*

Vulpanser, *Flenn.*

Cranium similar to *Anserinæ*; orbital septum with two foramina; lower maxillary only slightly expanded for the attachment of the masseter muscles, and with a slight spine or protuberance between it and the condyle; hinder end, beyond the condyles, turned inward, and broader than in *Plectropterus* and other geese.

Sternum similar to the *Anserinæ*, with a slight manubrial process.

Pelvis similar in form to *Anserinæ*, but not so long in proportion to the size of the bird.

Wing-bones with a knob in place of a spur on the point of the carpal joint.

Leg-bones. Metacarpus with a groove in front.

Measurements.

	Tenths.		Tenths.
Length of humerus	42	Breadth of posterior margin of sternum	21
Length of ulna	41	Breadth of anterior margin of sternum	20
Length of metacarpus	25	Depth of keel	8
Length of femur	21	Length of head	38
Length of tibia	38	Breadth of head	11
Length of metatarsus	28	Length of pelvis	44
Length of sternum	43	Breadth of pelvis	21

CASARKA, *Bon.*

Rutila, *Pall.*

Very similar to *Tadorna*, but with the fissures on the hinder margin of the sternum larger. *C. Radjah* is also similar.

DENDROCYGNA, *Sw.*

Arcuata, *Cuv.*

Cranium. The space between the upper edges of the orbits much wider than in *Tadorna ;* orbits very small.

Pelvis. Ischiadic foramen small; obturator very large, oval.

Sternum similar in shape to *Tadorna*, but narrower in proportion to its length.

Wing-bones much longer in proportion to the size of the bird.

Furculum very broad and strong.

Measurements.

	Tenths.		Tenths.
Length of humerus	38	Breadth of posterior margin of sternum	14
Length of ulna	41	Breadth of anterior margin of sternum	14
Length of metacarpus	18	Depth of keel	6
Length of femur	23	Length of head	34
Length of tibia	35	Breadth of head	10
Length of metatarsus	22	Length of pelvis	33
Length of sternum	33	Breadth of pelvis	$12\frac{1}{2}$

DENDROCYGNA, *Sw.*

Autumnalis, *Linn.*

Very similar to the foregoing; the palatine bones are, however, much narrower, the sternum much broader on the posterior margin than on the anterior one, and the obturator foramen is also much narrower.

I have also the sternum of *D. arborea*, which is similar to the above.

ANAS, *Linn.*

Boschas, *Linn.*

Cranium. The space between the upper edge of the orbits of moderate breadth; orbits with two foramina, one placed over the other, at the hinder margin. Palatine bones widened anteriorly; interarticular bones very broad at their junction with the palatine, and gradually tapering backwards.

Sternum broader on its posterior margin than on the anterior; marginal fissures; large manubrial process; small triangular keel, deeper in proportion to the length of the sternum than in *Tadorna*, the anterior point projecting far forwards, the anterior edge slightly scolloped out.

Pelvis similar in shape to *Tadorna ;* foramina of moderate size.

Furculum of moderate strength, with a very slight process at the junction of the rami.

Coracoids long.

Wing-bones of moderate length, but not nearly so long in proportion to the size of the bird as in *Dendrocygna*.

Leg-bones. Metatarsus with the calcineal ridge not carried down the back.

Measurements.

	Tenths.		Tenths.
Length of humerus	38	Breadth of posterior margin of sternum	20
Length of ulna	34	Breadth of anterior margin of sternum	19
Length of metacarpus	21	Depth of keel	9
Length of femur	20½	Length of head	45
Length of tibia	32	Breadth of head	12
Length of metatarsus	17	Length of pelvis	42
Length of sternum	41½	Breadth of pelvis	18

DAFILLA, *Leach.*

Acuta, *Linn*,

Similar in every respect, except in size, to *Anas*.

MALACORHYNCHUS, *Sw.*

Membrinaccus, *Lath.*

I have only some fragments of this genus taken from a skin. The bones of the cranium are very light and thin, in comparison with *Anas ;* in shape, however, they are very similar.

I have also fragments of *Querquedula*, *Creeca*, and *Erythorhyncha*, all of which are similar in form to *Anas*.

AIX, *Boie.*

Galericulata.

Cranium broad between the upper edges of the orbits; orbital septum perforated by three foramina. Palatine bones broad posteriorly, and inclining outwards and downwards on their exterior margins; a short central ridge united with the interarticular bones, the anterior portion abruptly pointed on the inner edge; foramen lacerum posterius very large.

Sternum with the anterior edge of the keel projecting much forwards, straight, and not scolloped out. In other respects, except in size, similar to *Anas*.

CHAULELASMUS, *G. R. Gray.*

Strepera, *Linn.*

Cranium narrow between the upper edges of the orbits; orbital septum with two foramina. Palatine bones similar in form and position to the last, but contracted in the middle.

Sternum as in the last.

Pelvis with the ischiadic foramen very large, oval; immediately behind it another foramen, divided from it by a strip of bone, rounded; obturator foramen large, broadest at the hinder extremity; hind toe very long.

Other bones similar to *Anas.*

SPATULA, *Boie.*

Clypeata, *Linn.*

Sternum very short, but in form similar to the preceding.

Pelvis similar, and has the same three foramina.

PETROCYANEA, *Bon.*

Cærulata, *Licht.*

I have only the sternum of this bird, which is not so broad as in *Spatula* in propor tion to its length, and has a long triangular manubrial process, blunt at the extremity In other respects similar.

OIDEMIA, *Flem.*

Nigra, *Linn.*

Cranium. Space between upper edges of the orbits; narrow orbital septum with one foramen. Palatine bones narrow for the hinder half, then becoming gradually broader, and bent outwards; interarticular bones broadest at their junction with the palatines, and gradually narrowed backward.

Sternum broad and long, with a xiphisternal piece projecting between the two fissures, which are broad, but not very deep, the strip of bone bounding them externally bent inwards at the tips, and edge very slightly scolloped out; lower edge of the keel arched anteriorly.

Pelvis long; ischiadic foramen large, oval; obturator of moderate size; os pubis long, expanded at the tips, and bent much inwards.

Wing-bones. Humerus longer than the ulna.

Leg-bones. Fibula extending for nearly the whole length of the tibia; calcineal process small; toes long; metatarsi short.

Measurements.

	Tenths.		Tenths.
Length of humerus	34	Breadth of posterior margin of sternum	22
Length of ulna	32½	Breadth of anterior margin of sternum	18
Length of metacarpus	22	Depth of keel	6
Length of femur	20	Length of head	36
Length of tibia	33	Breadth of head	11½
Length of metatarsus	16	Length of pelvis	40
Length of sternum	35	Breadth of pelvis	17

FULIGULA, *Steph.*

Marilla, *Linn.*

Similar in form to the foregoing, but with the sternum broader on its posterior margin in proportion to the anterior, and without any xiphisternal process.

NYROCA, *Flem.*

Leucopthalmus, *Bechst.*

Also similar to *Oidemia*, but with the pelvis broader in proportion to its length, and both the ischiadic and obturator foramina larger; hinder margin of the sternum without any xiphisternal process.

CLANGULA, *Flem.*

Glaucion, *Linn.*

Cranium very deep in proportion to its length; orbital septum with one foramen. Palatine bones placed horizontally, broadest at the extremities.

Sternum of moderate size; instead of fissures on the posterior edge, it has two large foramina; xiphisternal process large, point of the keel projecting very much forwards; without any manubrial process.

Pelvis of moderate size; ischiadic foramen large; obturator narrow.

Metatarsus with the calcineal process very small.

Measurements.

	Tenths.		Tenths.
Length of humerus	31	Breadth of posterior margin of sternum	25
Length of ulna	26	Breadth of anterior margin of sternum	17
Length of metacarpus	18	Depth of keel	7
Length of femur	19	Length of head	25
Length of tibia	27	Breadth of head	7
Length of metatarsus	13	Length of pelvis	27
Length of sternum	40	Breadth of pelvis	19

SOMATERIA, *Leach.*

Mollissima, *Linn.*

Cranium very strong. Palatine bones very similar to *Nyroca*, the hinder and outer angle bent downwards, placed far apart, and slightly bent inwards in the centre. Nasal bones are terminated by a sharp spine projecting upwards and backwards, and another projecting downwards in the place where the lacrymal bones usually are; but I can trace no vestige of anchylosis between this process and the nasal bones. The skeleton I have, however, is that of a very old bird.

Pelvis broad, similar to *Clangula*.

Sternum very large and strong; anterior edge of the keel scolloped out, the point not projecting far forwards before the rest of the sternum, the strips of bone bounding the foramina on the outer sides very broad.

Measurements.

	Tenths.		Tenths.
Length of humerus	40	Breadth of posterior margin of sternum	30
Length of ulna	36	Breadth of anterior margin of sternum	25
Length of metacarpus	23	Depth of keel	8
Length of femur	25	Length of head	47
Length of tibia	38	Breadth of head	12
Length of metatarsus	21½	Length of pelvis	50
Length of sternum	43	Breadth of pelvis	24

ERISMATURA, *Bon.*

Leucocephala, *Scop.*

Cranium strong. Palatine bones broad at their anterior extremities, and gradually narrowed to their junction with the interarticular bones, where they nearly touch; interarticular bones broad at their junction with the palatine bones, and narrowed rather suddenly backwards.

Sternum with the keel very narrow; hinder margin with two foramina, rather small; posterior margin much broader than the anterior; anterior edge of keel scolloped out.

Pelvis with the ischiadic and obturator foramina very large, the os pubis not turned inwards.

Leg-bones. Metatarsal bones flattened, a rather deep groove in front.

Measurements.

	Tenths.		Tenths.
Length of humerus	25	Length of femur	15
Length of ulna	23	Length of tibia	25
Length of metacarpus	12½	Length of metatarsus	13

Measurements (continued).

	Tenths.		Tenths.
Length of sternum	22	Length of head	31
Breadth of posterior margin of sternum	15	Breadth of head	10
Breadth of anterior margin of sternum	13	Length of pelvis	29
Depth of keel	3	Breadth of pelvis	18

BIZIURA, *Leach.*

Lobata, *Sh.*

Cranium very strong. Palatine bones broadest anteriorly, contracted in the middle, and again widened at their junction with the interarticular, which are widest at their junction with the palatine bones.

Sternum similar to *Erismatura*, but with two wide, open fissures on the posterior margin.

Pelvis with the foramina very large.

Remaining bones as in *Erismatura*.

MERGUS, *Linn.*

ALBELLUS, *Linn.*

Cranium of moderate strength. Palatine bones slightly pointed at their anterior extremities, very short; interarticular bones very long, curved inwards.

Sternum with the keel narrow, the point projecting very much forwards; posterior margin with two foramina, and a well-marked xiphisternal piece between them.

Pelvis. Obturator and ischiadic foramina large, rather narrow.

Coracoids rather long; metatarsi rounded.

I have also fragments of *M. castor*, which are similar.

Measurements.

	Tenths.		Tenths.
Length of humerus	31½	Breadth of posterior margin of sternum	19
Length of ulna	26	Breadth of anterior margin of sternum	15
Length of metacarpus	19	Depth of keel	5
Length of femur	15	Length of head	38
Length of tibia	30	Breadth of head	10
Length of metatarsus	14	Length of pelvis	38
Length of sternum	36	Breadth of pelvis	15

COLYMBUS, *Linn.*

Glacialis, *Linn.*

I have only the sternum and pelvis of this bird.

Sternum large; keel slightly arched on its lower edge, point projecting slightly beyond the anterior edge of the sternum; hinder margin with two large fissures; xiphisternal portion very large, and projecting far backwards; hinder margin wider than the anterior margin.

Furculum very broad at its junction with the coracoids, and gradually narrowed to its junction with the point of the keel.

Coracoids short, very strong.

Pelvis narrow; ilium and ischium much bent downwards, and with a long spine proceeding from the former on each side of the ischiadic and caudal vertebræ; os pubis very broad at its extremity; obturator foramina very large.

COLYMBUS, *Linn.*

Septentrionalis, *Linn.*

Cranium. Palatine bones broadest a little anterior to the interarticulars, both turned downwards, gradually sloping off forwards; interorbital septum with two foramina; impressions of the masseter muscles very strong. Inferior maxillary bones slightly prolonged beyond the condyles, cup shaped, a deep groove on each side over the orbits.

Sternum, *pelvis*, and *furculum* as in *Colymbus glacialis.*

Ribs with very long styliform processes.

Wing-bones. Humerus much longer than the ulna.

Leg-bones. Tibia very much prolonged at its proximal extremity; femur very short, calcineal bones projecting far backwards at the upper part of the metatarsi, a foramen through them for the passage of the contractor muscles, and a channel both down the front and back of the metatarsus.

Measurements.

	Tenths.		Tenths.
Length of humerus	54	Breadth of posterior margin of sternum	23½
Length of ulna	44	Breadth of anterior margin of sternum	21
Length of metacarpus	28	Depth of keel	5½
Length of femur	13	Length of head	43
Length of tibia	60	Breadth of head	11
Length of metatarsus	27	Length of pelvis	53
Length of sternum	55	Breadth of pelvis	16

Illustrations.

Skeleton, Plate I. L.

Sternum, pelvis, palatine bones, and metatarsus, Plate XL. fig. 2.

PODICEPS, *Lath.*

Minor, *Linn.*

Cranium. Palatine bones broad at hinder ends, and bent downwards at their edges, gradually tapering forwards; interarticular bones slightly bent outwards.

Sternum very broad behind, with two very large and open fissures; keel narrow, not carried forward beyond the anterior edge of the horizontal portion of the sternum; without any manubrial process.

Pelvis similar to that of *Colymbus*, but with the ends of the os pubis not widened.

Leg-bones. Tibia long, anterior process elongated forwards and inwards to a point; calcineal bones short.

Furculum slight, without any process at the junction of the rami.

Coracoids short.

I have also the skeleton of *Podiceps cristatus*, which is similar to the foregoing.

Measurements.

	Tenths.		Tenths.
Length of humerus	20	Breadth of posterior margin of sternum	14
Length of ulna	19	Breadth of anterior margin of sternum	10
Length of metacarpus	9	Depth of keel	3
Length of femur	10½	Length of head	19
Length of tibia	28	Breadth of head	7
Length of metatarsus	14	Length of pelvis	23
Length of sternum	15	Breadth of pelvis	7

PODICEPS, *Lath.*

Cristatus, *Linn.*

Similar to the foregoing, except in size, and distinguished as in *Colymbus* by a long spine on each side of the caudal vertebræ.

Illustrations.

Skeleton Plate XXIV.
Sternum, pelvis, palatine bones, and metatarsi, Plate XL.

Skeleton, Plate XXI.
Sternum, palatine bones, metatarsi, and pelvis, Plate XL. fig. 1.

ALCA, *Linn.*

Impensis, *Linn.*

The skeleton of this bird has been lately fully described in the transactions of the Zoological Society. The paper was read June 14th, 1864, by Professor Owen.

ALCA, *Linn.*

Torda, *Linn.*

Cranium very similar in shape to that of the foregoing.

Sternum also similar, but furnished on each side with lateral fissures; post orbital process pointing downwards.

Pelvis also similar.

Wing-bones slightly flattened, but not so much so as in *A. impensis.* Metatarsal bones anchylosed together.

Remaining bones very similar.

FRATERCULA, *Briss.*

Arctica, *Linn.*

Cranium in some respects similar to the genus *Alca.* The space between the upper part of the orbits very narrow, the orbital septum almost entirely wanting; orbits very large, thus allowing a very small cavity for the brain; the post orbital process very long, and pointing upwards.

Sternum with a slight foramen on each side of the keel, near the hinder margin, the xiphisternal portion extending far backwards; keel deep, much excavated in front, and arched on its lower edge.

Pelvis very similar to *Alca torda.*

Wing-bones slightly flattened.

Leg-bones. Metatarsus with a slight groove down the front.

Measurements.

	Tenths.		Tenths.
Length of humerus	22	Breadth of posterior margin of sternum	14
Length of ulna	20	Breadth of anterior margin of sternum	9
Length of metacarpus	15	Depth of keel	9
Length of femur	12	Length of head	29
Length of tibia	23	Breadth of head	11
Length of metatarsus	10	Length of pelvis	30
Length of sternum	31	Breadth of pelvis	11
			215

SPHENISCUS, *Briss.*

Minor, *Forst.*

Cranium large, strong, with the upper edges of the orbits much depressed, and roughened space between the orbits rather narrow; orbital septum with one large foramen, the post orbital processes pointing downwards, blunt at the extremities; occipital bone with the ridges prolonged into a projecting keel; occipital protuberance very large. Palatine bones very broad, sloped at their posterior outer edges towards the interarticular bones, and gradually narrowed anteriorly; interarticular bones battledore shaped, with the broad end placed towards the palatine bones.

Sternum long, without any xiphisternal process, with a large elongated fissure on the posterior margin on each side of the keel, the strip of bone bounding them on their outward edges widened and turned inwards posteriorly, the central portion of the sternum between the fissures not so long as the strip; keel with the lower edge nearly straight, anterior edge slightly curved, the point projecting beyond the anterior edge of the horizontal portion of the sternum; manubrial process well marked.

Pelvis very similar in shape to *Alca torda*, but with os pubis not so much prolonged, and the spines projecting on each side of the ilium not so long.

Ribs with the styliform process long, broader at their hinder extremities than at their junction with the ribs.

Furculum broadest near its junction with the coracoids, and gradually narrowed to the junction of the rami, where there is a slight process projecting backwards.

Coracoids of moderate strength.

Scapula shaped very much like a shoulder of mutton, with the small end towards the coracoids, which is not above one-fourth the width of the hinder end, the edges much curved, the hinder edge truncate.

Wing-bones much flattened; very similar to *Alca impensis.*

Leg-bones with the metatarsus very short; fibula strong, extending down the side of the tibia for three-fourths of its length, the proximal end of the tibia not elongated, as among the *Colymbidæ;* metatarsal bones much flattened.

Measurements.

	Tenths.		Tenths.
Length of humerus	18	Breadth of posterior margin of sternum	15
Length of ulna	13	Breadth of anterior margin of sternum	16
Length of metacarpus	11	Depth of keel	8
Length of femur	18	Length of head	39
Length of tibia	29	Breadth of head	16
Length of metatarsus	12	Length of pelvis	35
Length of sternum	31	Breadth of pelvis	14

EUDYPTES, *Vieill.*

From Vandieman's Land.

Precisely similar in every respect to the foregoing, except in measurements.

Illustrations.

Skeleton, Plate IV. L.

Palatine bones, sternum, pelvis, and metatarsi, Plate XXXVIII. fig. 1.

URIA, *Mœhr.*

Grylle, *Linn.*

Cranium. Orbital septum nearly obliterated, the space between the upper edges of the orbits narrow, with a well-marked ridge down the centre. Palatine bones very similar to *Alca torda*, but not so strong; occipital ridge well marked and edged; masseter impression of moderate size; occipital protuberance large.

Sternum narrow, and very long, without any xiphisternal continuation, the outer edges thickened for the whole length; the posterior margin furnished with a narrow fissure on each side, central portion projecting beyond the strips of bone bounding the fissures slightly indented in the centre, opposite the end of the keel, which is deep in proportion to the width of the sternum, slightly arched below, and much scolloped out in front, point projecting beyond the plain of the sternum; manubrial process perpendicularly compressed, edged anteriorly.

Pelvis similar to *A. torda.*

Ribs light, with very long styliform processes.

Furculum very much arched, flattened laterally; a small process at the junction of the rami.

Scapula thin, narrow, pointed at the end.

Wing-bones much flattened; humerus much longer than the ulna.

Leg-bones. Metatarsus slightly flattened transversely; calx small.

Measurements.

	Tenths.		Tenths.
Length of humerus	32	Breadth of posterior margin of sternum	11½
Length of ulna	24	Breadth of anterior margin of sternum	14
Length of metacarpus	14	Depth of keel	10
Length of femur	18	Length of head	36
Length of tibia	32	Breadth of head	11½
Length of metatarsus	13	Length of pelvis	38
Length of sternum	48	Breadth of pelvis	9

Illustrations.

Skeleton, Plate III. L.

Sternum, pelvis, metatarsi, and palatine bones, Plate XXXIX. fig. 2.

PLOTUS, *Linn.*

Novæ Hollandiæ, *Gould.*

Cranium lengthened, without any orbital septum; space between the upper edges of the orbits rather narrow; post orbital processes small; occipital bone with a slight ridge, projecting most at the centre of the upper edge, and terminating below on each edge, with two strong but blunt spines projecting backwards; the foramen magnum very large; a large, but not very well defined, depression for the masseter muscles. Palatine bones truncate on their hinder angles, with a slight spine in the centre, and gradually tapering forwards; interarticular bones thin, and rounded.

Sternum short, broad, with a wide fissure on each side, on the posterior edge; keel not extending for above two-thirds of its length, anterior edge slightly scolloped out, the point projecting far forwards, lower edge very slightly arched; a very slight manubrial process; the lateral edges of the sternum much constricted in the middle.

Pelvis with the ilium very much expanded for its anterior half before the acetabulum, then much narrowed, the upper surface of the hinder portion having a central rib, and projecting as a ridge over the ischium, and terminated by a spine on each side, the boundaries of the vertebræ plainly visible; ischiadic foramen very large; ischium expanded outwards on its lower edge; os pubis with the ends projecting downwards.

Furculum broad, and very much arched backwards, and broad at its upper extremities, afterwards nearly straight, and anchylosed to the point of the sternum.

Coracoids very long.

Scapula long, of moderate width, blunt at the ends.

Wing-bones long; ulna and metacarpal bones nearly triangular.

Vertebral column having the upper cervical vertebræ very much elongated.

Metatarsus short, flattened.

Measurements.

	Tenths.		Tenths.
Length of humerus	54	Breadth of posterior margin of sternum	21
Length of ulna	50	Breadth of anterior margin of sternum	19½
Length of metacarpus	27	Depth of keel	9
Length of femur	23½	Length of head	46
Length of tibia	37	Breadth of head	9
Length of metatarsus	20	Length of pelvis	40
Length of sternum	25	Breadth of pelvis	15

GRACULUS, *Linn.*

Cristatus, *Fab.*

Cranium similar in shape to *Plotus*, but with the end of the maxillary bones bent downwards; the tubercle on the upper edge of the occipital bone has a pointed,

movable, triangular process attached to it, which, I suspect, has also been the case with my specimen of *Plotus*, but has been lost.

Sternum similar to *Plotus*, but with the posterior fissures not so deep, but wider.

Pelvis also similar, but with the foramina larger.

Remainder of the skeleton also similar.

Illustration.

Skeleton, Plate V. L.

PHAETON, *Linn.*

Rubricauda, *Bodd.*

I have only some fragments of this bird obtained from a skin.

Cranium. The occipital bone is without the processes on each side and at the top so prominent as *Plotus* and *Graculus*, but the post orbital processes are longer: the whole is much broader, the lachrymal bones point outwards and downwards, and are much more highly developed than in the above-mentioned genera. Only the anterior portion of the palatine bones remains, which is of the same shape as among the cormorants. The masseter impression is large, and the upper surface of the cranium between the orbits broad.

Wing-bones. The humerus is nearly as long as the ulna.

Leg-bones with the divisions into three bones distinctly visible anteriorly and posteriorly, all anchylosed together with a slight groove at the lower part.

PELICANUS, *Linn.*

New Holland.

Cranium. Orbital septum without any foramen; occipital bone similar to *Phaeton.* Palatine bones anchylosed together for their whole length, the hinder portions with a strong central keel between them for one inch and a quarter of their length, arcuated on its lower edge, and a quarter of an inch deep, lateral portions bending downwards, broad anteriorly, and gradually narrowed towards the interarticular bones, which are very strong, and broadest at their junction with the palatine bones.

Sternum similar to *Graculus.*

Pelvis very long; ilium continued forwards, and anchylosed to the third rib and all the ribs posterior to it; a deep fissure on each side of the dorsal process of the two anterior sacral vertebræ; hinder margin very similar to the cormorants, but with a blunt and broad projection instead of a spine on each side of the caudal vertebræ; foramina very large.

Furculum similar to the cormorants, anchylosed to the sternum.

Scapula straight, bluntly pointed at the end.

Wing-bones. Ulna much longer than the humerus.

Leg-bones. Metatarsus in the centre, nearly triangular; calx large, but not extending far down.

Measurements.

	Inches.		Inches.
Length of humerus	$11\frac{1}{4}$	Breadth of posterior margin of sternum	$3\frac{1}{2}$
Length of ulna	13	Breadth of anterior margin of sternum	$4\frac{3}{10}$
Length of metacarpus	$5\frac{1}{4}$	Depth of keel	$1\frac{2}{10}$
Length of femur	$3\frac{3}{4}$	Length of head	17
Length of tibia	$6\frac{3}{4}$	Breadth of head	$2\frac{1}{10}$
Length of metatarsus	$4\frac{1}{2}$	Length of pelvis	$9\frac{1}{2}$
Length of sternum	$5\frac{3}{4}$	Breadth of pelvis	$3\frac{8}{10}$

Illustrations.

Skeleton Plate VII. L.

Pelvis, sternum, metatarsi, and palatine bones, Plate XXXVIII. fig. 2.

PELICANUS, *Linn.*

Fuscus, *Linn.*

I have the sternum, coracoids, scapula, and furculum of this bird, which, except in size, are precisely similar to the foregoing.

SULA, *Briss.*

Bassana, *Linn.*

Cranium very strong; occipital bone with a strong ridge on its anterior edge, inclining forwards; occipital prominence very large, the hinder and lower edge terminating in a truncate projection; masseter impression strong; post orbital process bifid, pointing outwards and slightly downwards; orbital septum with one large foramen. Palatine bones broad, slightly recurved at their outer edges, anchylosed together, and with a slight ridge down the centre; hinder edge at their junction with the interarticular bones, somewhat truncate, with a slight spine on their external edges. Interarticular bones flattened, united to the ridge between the palatines.

Sternum much longer in proportion to its breadth than in *Pelicanus*, the keel extending only to one-half the length of the sternum, the point extending far forwards; manubrial process large; posterior edge of sternum with two shallow, broad, and open fissures, the outer edges extending beyond the central portion of the sternum.

Pelvis extending to the three hinder ribs, similar to *Pelicanus*, but not so broad, and with the obturator foramen much narrower.

Ribs with the styliform processes longer than in *Pelicanus.*

Furculum anchylosed to the point of the sternum on its anterior aspect, much arched, laterally flattened, the hinder portion widened.

Scapula strong, widened near the hinder extremity, and sloped to a point.

Wing-bones. Ulna much shorter than humerus; thumb half the length of the metacarpus.

Leg-bones. Metatarsus flattened; a deep groove at the back.

Measurements.

	Inches.		Inches.
Length of humerus	$8\frac{1}{2}$	Breadth of posterior margin of sternum	$2\frac{1}{10}$
Length of ulna	$7\frac{1}{2}$	Breadth of anterior margin of sternum	$2\frac{4}{10}$
Length of metacarpus	$3\frac{4}{10}$	Depth of keel	$1\frac{1}{10}$
Length of femur	3	Length of head	$7\frac{6}{10}$
Length of tibia	$3\frac{5}{10}$	Breadth of head	$2\frac{2}{10}$
Length of metatarsus	$2\frac{2}{10}$	Length of pelvis	6
Length of sternum	$5\frac{6}{10}$	Breadth of pelvis	$1\frac{9}{10}$

Illustration.

Skeleton, Plate VI. L.

PROCELLARIA, *Linn.*

Gigantea, *Gm.*

Cranium very strong, two deep indentations extending over each orbit; masseter impression also strong; orbital septum with one rounded foramen; post orbital processes of moderate size. Palatine bones broadest about a quarter of an inch from the interarticular, to which bones they are gradually sloped off on their outer edges, the interior edge of each palatine bone much bent perpendicularly downwards, and narrowed gradually forwards.

Sternum similar in general form to *Pelicanus*, but differs in having the anterior edge of the keel scolloped out, and point not much advanced beyond the horizontal portion of the sternum, which is also more convex; on the anterior edge of the keel is a flattened but large and triangular manubrial process.

Pelvis truncated on anterior extremity, and not extending beyond last rib.

Wing-bones with the ulna not so long as the humerus; thumb three-parts as long as the metacarpus.

Leg-bones. Extension of the tibial crests reaching even with the femur, and very broad; the metatarsus rather long for a water bird, in proportion to the tibia; a spur on the hinder edge; calx very small, a channel both before and behind.

Ribs with very long styliform processes.

Measurements.

	Inches.		Inches.
Length of humerus	$9\frac{7}{10}$	Breadth of posterior margin of sternum	$3\frac{1}{10}$
Length of ulna	$9\frac{1}{10}$	Breadth of anterior margin of sternum	$3\frac{3}{10}$
Length of metacarpus	$3\frac{6}{10}$	Depth of keel	$1\frac{5}{10}$
Length of femur	$3\frac{3}{10}$	Length of head	$6\frac{8}{10}$
Length of tibia	$6\frac{7}{10}$	Breadth of head	$2\frac{4}{10}$
Length of metatarsus	$4\frac{3}{10}$	Length of pelvis	$6\frac{5}{10}$
Length of sternum	5	Breadth of pelvis	$2\frac{6}{10}$

Illustrations.

Skeleton, Plate VIII. L.

Sternum, palatine bones, pelvis, and metatarsi, Plate XXXVII. fig. 2.

PUFFINUS, *Briss.*

Vandieman's Land.

Cranium very similar to the foregoing. When the horny covering of the bill is cleared away (which it is in this specimen), the nares are found to penetrate under the tube directly backwards, with a distinct septum between them, the upper part bony, and the rest cartilage. The nares are terminated by an orifice, turned upward, which is of soft cartilage, and which, I suspect, the bird has the power of expanding or contracting, and the whole is covered by a hollow horny tube. The palatine bones are similar in shape, but with the outer edge of the hinder portion turned more downwards; the post orbital processes are very broad at their extremities, whereas they are pointed in the foregoing.

Sternum short, broad, with broad and shallow fissures on each side of the keel externally, to which are two small oval foramina. Remainder of the sternum similar to the foregoing.

Pelvis with a keel between the anterior half of the ilium, and not anchylosed to it. Remainder similar to the foregoing.

Wing-bones. Ulna longer than the humerus; thumb very long, reaching to more than half the length of the metacarpus.

Leg-bones. The extension of the proximal end of the tibial crests reaching beyond the end of the femur, and very broad.

Remaining bones as in the preceding.

Measurements.

	Inches.		Inches.
Length of humerus	5	Length of femur	$1\frac{8}{10}$
Length of ulna	$5\frac{2}{10}$	Length of tibia	$4\frac{2}{10}$
Length of metacarpus	$2\frac{4}{10}$	Length of metatarsus	$2\frac{1}{10}$

Measurements (continued).

	Inches.		Inches.
Length of sternum	$2\frac{1}{10}$	Length of head	$4\frac{2}{10}$
Breadth of posterior margin of sternum	$2\frac{1}{10}$	Breadth of head	$1\frac{5}{10}$
Breadth of anterior margin of sternum	2	Length of pelvis	$3\frac{5}{10}$
Depth of keel	$1\frac{1}{10}$	Breadth of pelvis	$1\frac{3}{10}$

PUFFINUS, *Briss.*

Major, *Fab.*

Cranium similar to the foregoing.

Sternum also similar, with the exception of having two broad shallow fissures on each side of the keel, on the posterior margin.

Scapula expanded at the tips.

I have also a specimen of *P. capensis*, *P. griseus*, and two other unnamed species from the South Seas, all of which are similar.

THALASSIDROMA, *Vig.*

Oceanica, *Kuhl.*

Cranium very much the same in shape as in *Procellaria*. Palatine bones also similar, but the edges not deflected. Post orbital processes small, projecting slightly upwards.

Sternum with the posterior margin entire, projecting slightly at the terminus of the keel, in the centre, lateral margins bending much outwards; a slight manubrial process.

Pelvis and other bones similar to *Procellaria*.

Furculum not anchylosed with the sternum; tibia very long; humerus as long as ulna; os pubis turned much outwards.

Measurements.

	Tenths.		Tenths.
Length of humerus	9	Breadth of posterior margin of sternum	7
Length of ulna	9	Breadth of anterior margin of sternum	6
Length of metacarpus	7	Depth of keel	$3\frac{1}{2}$
Length of femur	6	Length of head	12
Length of tibia	19	Breadth of head	$5\frac{1}{2}$
Length of metatarsus	15	Length of pelvis	11
Length of sternum	8	Breadth of pelvis	8

Illustrations.

Skeleton, Plate X. L.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXXIX. fig. 1.

DIOMEDIA, *Linn.*

Exulans, *Linn.*

Cranium with two very deep channels above the orbits, but not continued to the outer edge, as in *Procellaria*, terminating with two large foramina behind the lacrymal bones; masseter impression strong; post orbital processes turned slightly downwards, and broad in front. Palatine bones similar to *Procellaria gigantea;* lacrymal bones curved backwards, thus forming one side of the foramen terminating the muscular impression above the orbits; nares placed on each side not having a joint sheath as in *Procellaria*, but each having a separate one.

Sternum very broad and short; keel rudimentary as it approaches the central portion of the posterior margin; lateral portions projecting furthest on the posterior margin, and sloped gradually towards the indentation in the centre, perforated by a small foramen in the centre; manubrial process very small; keel arched below, and not anchylosed to the sternum.

Pelvis similar to that of *Procellaria gigantea.*

Furculum of moderate strength, regularly arched on its anterior aspect from its junction with the coracoids, slightly flattened at junction of the rami.

Coracoids very broad at their articulation with the sternum, very short, and strong.

Scapula long, of nearly equal breadth until near the extremity, when they are gradually widened, rounded at their points.

Wing-bones very long; ulna longer than humerus; thumb reaching for two-thirds the length of the metacarpus.

Leg-bones. Fibula reaching for two-thirds the length of the tibia, end of which is prolonged beyond its junction with the femur, and forming a broad horizontal plate downwards.

Metatarsus with a channel extending for its whole length down the front, and for about half its length down the back from the calx, which is very small.

Measurements.

	Inches.		Inches.
Length of humerus	16	Breadth of posterior margin of sternum	$4\frac{7}{10}$
Length of ulna	16	Breadth of anterior margin of sternum	5
Length of metacarpus	$5\frac{5}{10}$	Depth of keel	$1\frac{5}{10}$
Length of femur	$3\frac{9}{10}$	Length of head	$10\frac{5}{10}$
Length of tibia	$8\frac{5}{10}$	Breadth of head	$3\frac{5}{10}$
Length of metatarsus	$4\frac{5}{10}$	Length of pelvis	7
Length of sternum	7	Breadth of pelvis	$3\frac{2}{10}$

Illustrations.

Skeleton, Plate IX. L.

Pelvis, sternum, palatine bones, and metatarsi, Plate XXXVII. fig. 1.

DIOMEDIA, *Linn.*

Fuliginosa, *Gm.*

I have a sternum of this bird, sternal apparatus, and pelvis. The distinction is in the form of the posterior margin of the sternum, which is scolloped out for its whole width. I have also the skeleton of *D. melanophrys*, which is similar.

LARUS, *Linn.*

Ridibundus, *Linn.*

Cranium with a deep indentation upon each orbit, and a narrow ridge between them; masseter impression very distinct; occipital bone slightly projecting on each side in the form of a blunt spine, pointing forwards; post orbital processes narrow, pointing downwards and backwards. Palatine bones narrow, the outer edges recurved for about half of their length, sloped backwards from the broadest part to the inter-articular bones, which are rounded, and have a slight keel on their upper edge, broadest anteriorly; orbital septum with one foramen.

Sternum of moderate length and breadth, with two fissures on each side of the keel, the inner one largest; keel rather broad, arched on its inferior edge, anterior edge scolloped out, with the point projecting. Manubrial process flattened perpendicularly, upper portion thicker than the lower.

Pelvis similar to the *Procellarinæ*, but with the os pubis projecting further backward.

Ribs slender, with very long styliform or pleural processes.

Furculum much arched on its anterior aspect, transversely flattened; a small flattened process, pointing backwards, at the junction of the rami.

Coracoids of moderate size and length.

Scapula light, and of the same breadth until very near the hinder extremity, where it is slightly widened, and afterwards sloped off to a blunt point.

Wing-bones with the ulna longer than the humerus; thumb one-third the length of the metatarsus.

Leg-bones. Metatarsus with a groove down the front; calx small, a slight splint proceeds from it a short distance down the back of the metatarsus.

Measurements.

	Tenths.		Tenths.
Length of humerus	36	Breadth of posterior margin of sternum	12
Length of ulna	41	Breadth of anterior margin of sternum	12
Length of metacarpus	22	Depth of keel	7
Length of femur	17	Length of head	35
Length of tibia	33	Breadth of head	14
Length of metatarsus	19	Length of pelvis	28
Length of sternum	24	Breadth of pelvis	14

Illustrations.

Skeleton, Plate XI. L.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXXVI. fig. 2.

LARUS, *Linn.*

Marinus, *Linn.*

Precisely similar to the preceding, but there is a variety in the outer fissure on the right side being closed and converted into a foramen, and not on both sides.

I have also specimens of *Larus cinerea* and *Argentatus*, which are also similar.

STERNA, *Linn.*

Macroura, *Naum.*

Cranium similar to *Larus*. Palatine bones not so much sloped on their hinder margins towards the interarticulars.

Sternum similar to *Larus*, but shorter in proportion to its length, and the keel deeper.

Pelvis similar, but broader in proportion to its length.

Furculum and *Coracoids* similar to *Larus*.

Wing-bones. Ulna much longer than the humerus; thumb reaching for about one-third the length of the metacarpus.

Leg-bones. Tibia not elongated beyond the femur, but flattened and bent downwards.

Measurements.

	Tenths.		Tenths.
Length of humerus	18	Breadth of posterior margin of sternum	7½
Length of ulna	22	Breadth of anterior margin of sternum	6½
Length of metacarpus	11	Depth of keel	5½
Length of femur	8	Length of head	24
Length of tibia	13½	Breadth of head	7
Length of metatarsus	6	Length of pelvis	16
Length of sternum	14	Breadth of pelvis	9

STERNA, *Linn.*

Melanocephala.

This bird does not differ from the preceding. I have also a specimen from Australia, which I believe to be *Anous stolida*, which differs from the other Terns in having on each side of the hinder margin of the sternum one outer moderate-sized fissure, and a very small foramen between it and the keel.

RHYNCOPS, *Linn.*

Nigra, *Linn.*

Cranium. A slight groove above the orbits, and a slight channel over the centre of the head to the vertex, and very deep transverse channel at the base of the nasal bones; occipital ridge prominent, and terminated by a spine on each side pointing downwards and forwards; post orbital processes perpendicularly flattened, pointing outwards, and slightly bent downwards at the points; masseter impression large, down the centre of it a slight ridge; orbital septum with one small foramen. Palatine bones very broad, and sloping gradually downwards, the hinder edge sloped gradually to the interarticular bones, anterior portion gradually diminishing in breadth; lacrymal bones anchylosed to the frontal, with a foramen through them; inferior maxillary at the attachment of the masseter muscles much widened.

Sternum similar to the *Sterninæ*.

Pelvis also similar, but longer in proportion to the size of the bird.

Wing-bones very long; ulna much longer than the humerus; thumb one-third the length of the metacarpus.

Leg-bones. Metatarsus with a groove down the front; tibia not prolonged, but having a slight projection in front.

Measurements.

	Tenths.		Tenths.
Length of humerus	35	Breadth of posterior margin of sternum	11½
Length of ulna	44	Breadth of anterior margin of sternum	12
Length of metacarpus	21½	Depth of keel	8
Length of femur	15	Length of head	53
Length of tibia	25	Breadth of head	14
Length of metatarsus	14½	Length of pelvis	29
Length of sternum	21	Breadth of pelvis	11½

Illustrations.

Skeleton, Plate XII. L.

Sternum, pelvis, palatine bones, and metatarsi, Plate XXXVI. fig. 1.

Numbering of the Vertebræ and Ribs in NATATORES.

	Cervical.	Dorsal.	Sacral.	Caudal.	True ribs.	False ribs.
Plectropterus Gambensis . .	15	7	16	6	7	2
Cereopsis Novæ Hollandiæ .	17	8	17	6	5	1
Bernicla Brenta . . .	17	7	18	6	9	2
Anser cygnoides . . .	17	6	19	6	9	2
Cygnus coscoroba . . .	20	7	19	8	9	2
—— atratus . . .	21	8	19	8	9	2
—— ferus	23	6	21	7	8	2
Tadorna vulpanser . . .	16	6	15	7	8	2
Casarka rutila	16	6	17	7	7	2
Dafilla caudacuta . . .	16	7	16	6	8	2
Anas boschas	15	6	16	6	7	2
Dendrocygna arcuata . .	15	6	18	6	7	2
Chaulelasmus strepera . .	14	7	16	6	7	2
Oidemia nigra	14	6	16	6	8	1
Fuligula marilla . . .	15	6	16	6	8	1
Clangula Glaucion . . .	15	6	16	6	8	1
Erismatura Leucocephala .	13	6	13	7	6	2
Biziura lobata	14	6	15	6	9	1
Mergus albellus . . .	15	6	15	6	7	2
Colymbus septentrionalis . .	11	7	16	6	8	1
Podiceps minor . . .	16	5	13	6	6	1
Podiceps cristatus . . .	19	7	17	6	7	1
Alca torda	13	7	17	7	8	1
Fratercula arctica . . .	14	7	12	7	7	1
Spheniscus minor . . .	13	7	14	7	7	1
Eudyptes Van Diemen's Land .	12	7	15	6	7	2
Uria troile	13	6	12	7	8	1
Plotus Novæ Hollandiæ . .	17	5	10	—	—	—
Pelicanus N. H. . . .	19	5	14	7	5	1
Procellaria gigantea . . .	12	8	14	7	7	1
Puffinus fuligenosus . .	12	7	12	6	7	1
Thalassidroma Wilsonii . .	11	6	12	6	6	1
Diomedia exulans . . .	13	8	13	7	7	1
Larus ridibundus . . .	14	7	12	7	7	1
Sterna arctica	13	6	12	6	7	1
Rhyncops nigra . . .	13	6	12	8	7	1

Remarks.

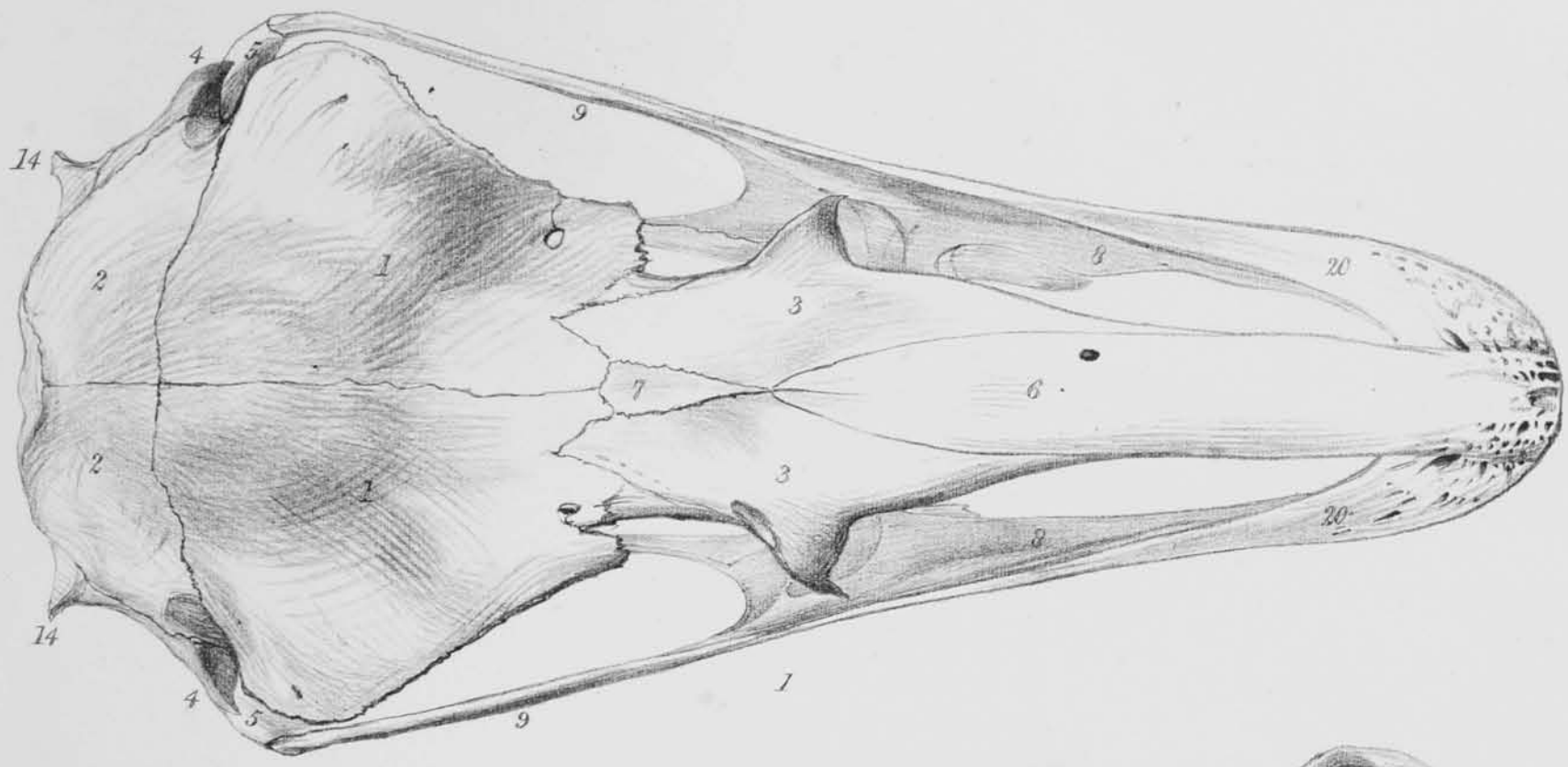
There is a great similarity among all the *Anserinæ* in their osteological characters. They may be distinguished, however, from the *Cygninæ* by the much greater proportionate length of the pelvis in the latter. The *Colymbidæ* have the lengthened metatarsus, and the xiphisternal process, besides the very much lengthened sternum and narrow pelvis, to distinguish them from the *Anatidæ*. The *Alcidæ* have the ribs projecting very far backwards, the keel of the sternum broad, and the hinder margin much rounded and with very small fissures; the pelvis is narrow for its posterior half, and the palatine bones broad, and a strong spine projecting from the ilium on each side of the caudal vertebræ. The *Pelicanidæ* have generally the sternum very short, and in many instances the furculum is anchylosed to it; the keel also is seldom continued to

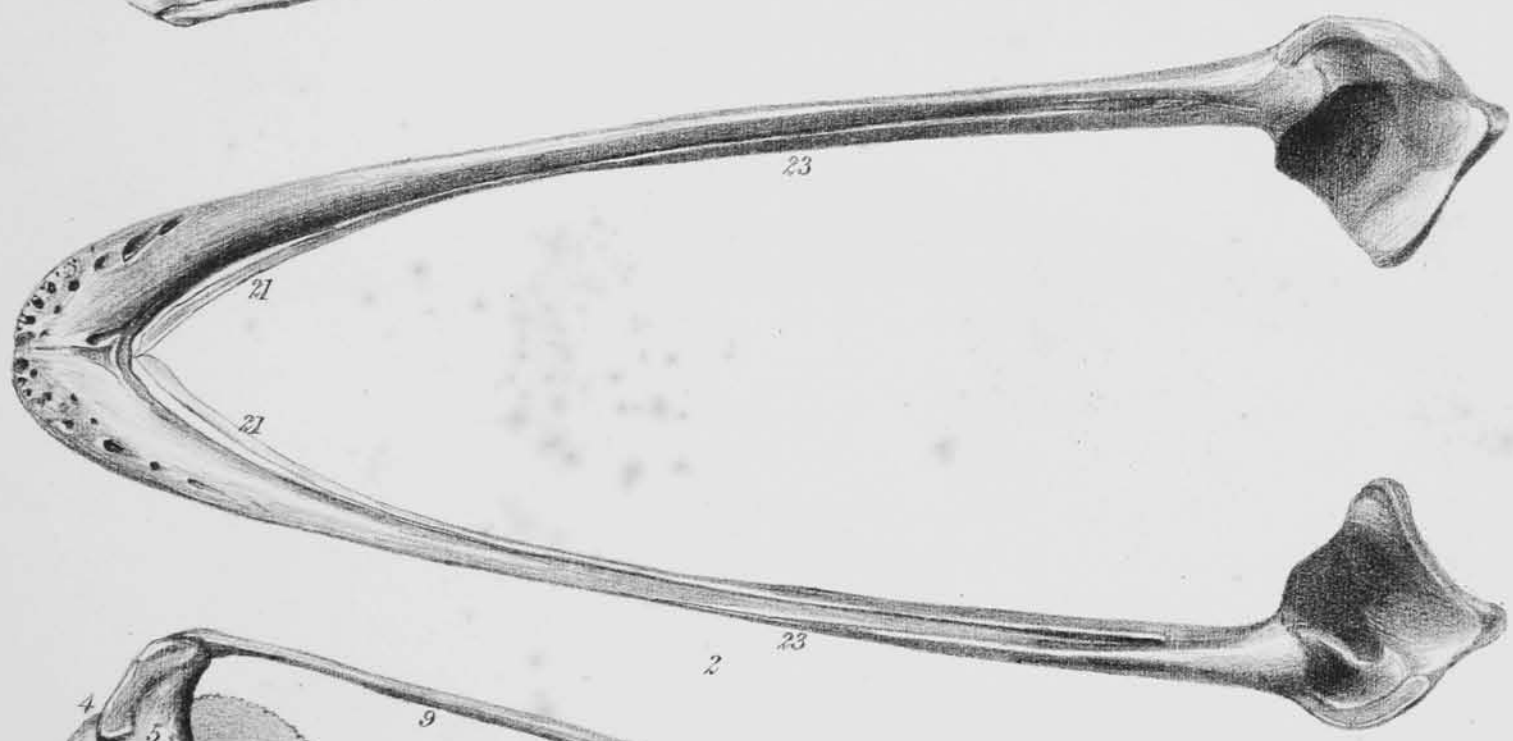
the posterior margin, the pelvis is generally long, and the os pubis is not continued far backwards beyond the ischium. The *Laridæ* has the sternum long, the keel deep, and the hinder margin indented by two fissures; the pelvis is short, but the os pubis is much elongated, as well as the hinder end of the ischium.

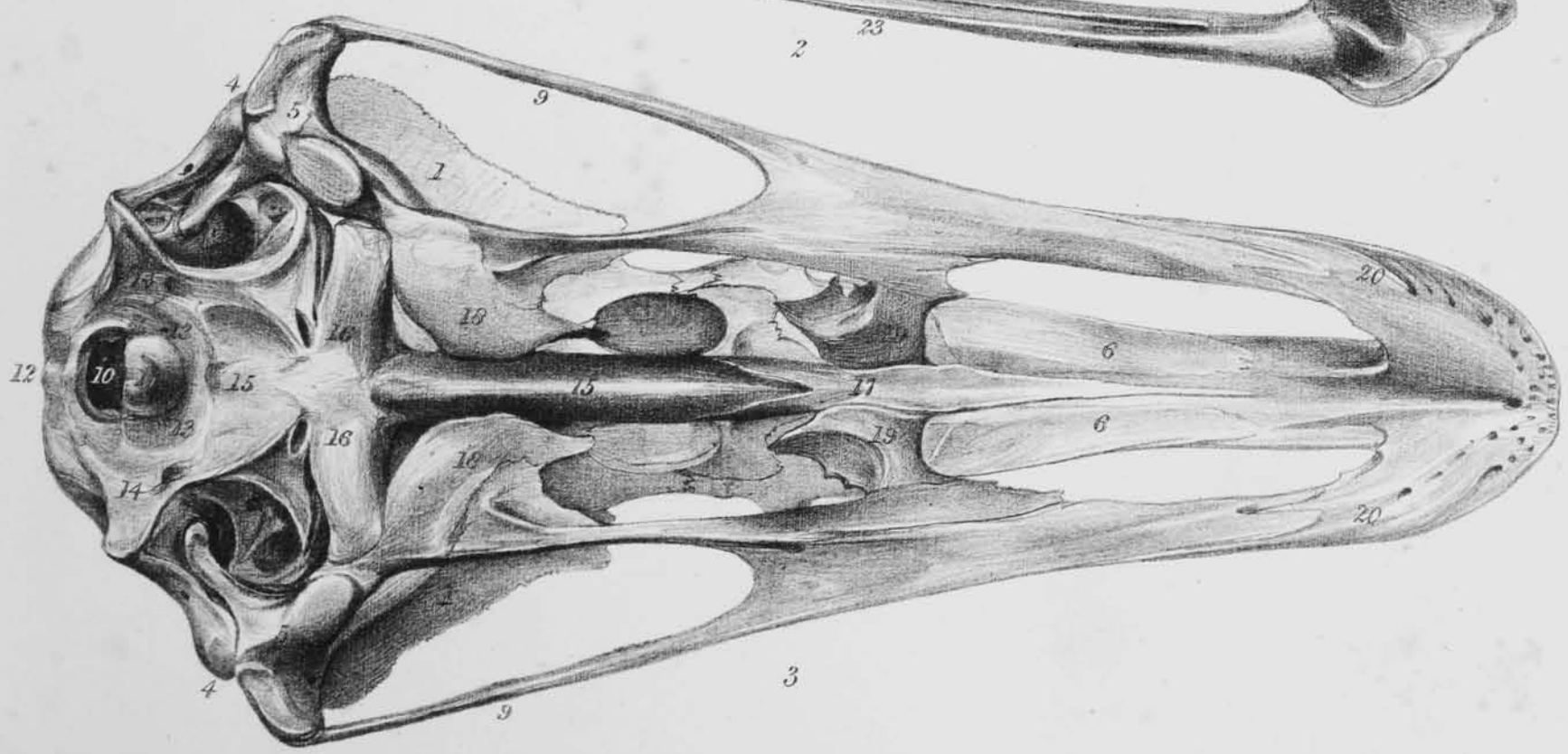
FINIS.

INDEX.

PANDION LEUCOCEPHALUS.







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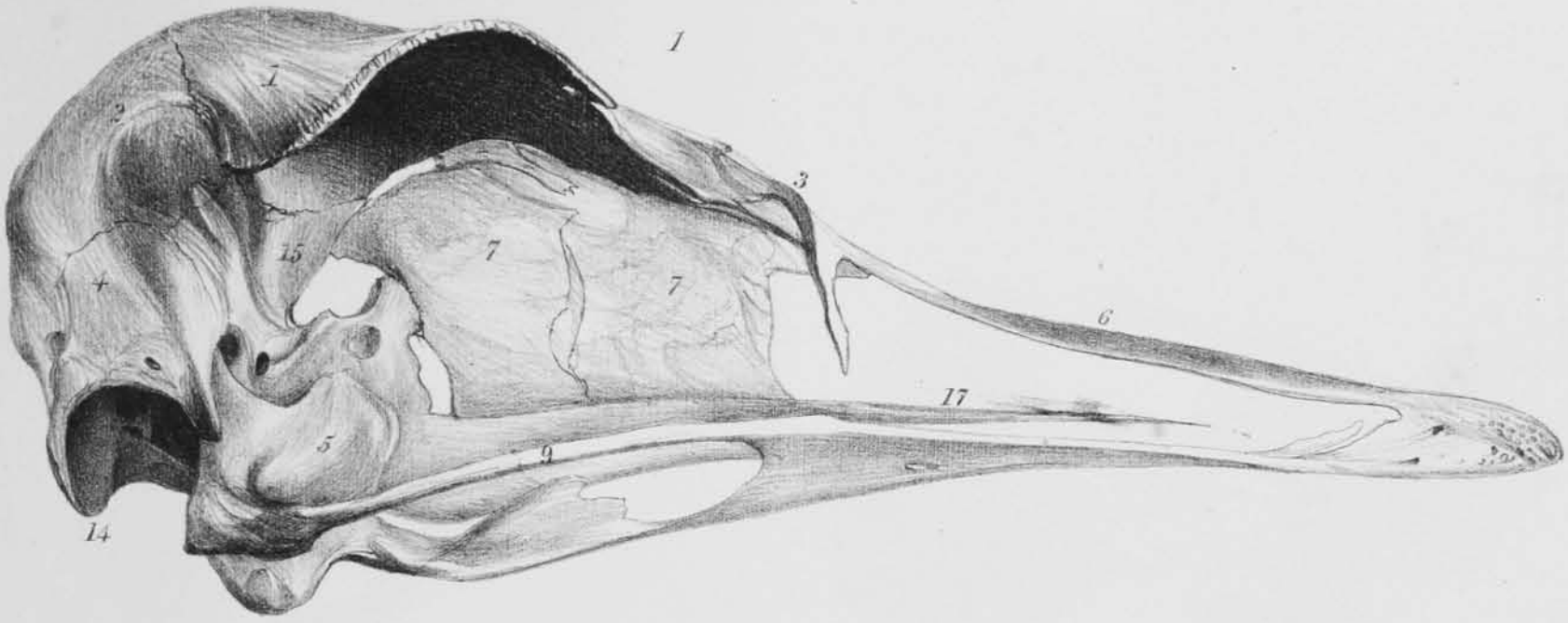
STRUTHIO CAMELUS.

Day & Son, Lith.rs to the Queen

Fig. 1. Upper part of Cranium.
„ 2. Lower Maxillary bone.
„ 3. Basal view of Cranium.

1



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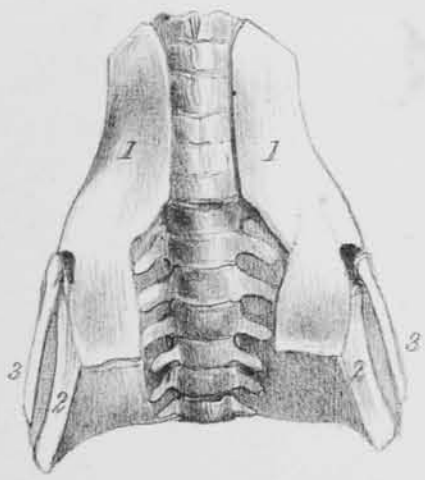

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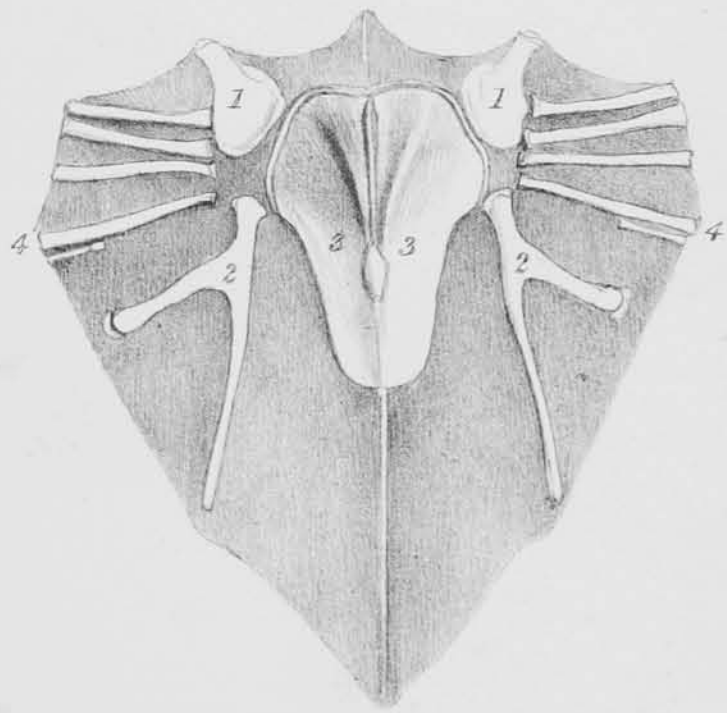

Twice Nat. size.

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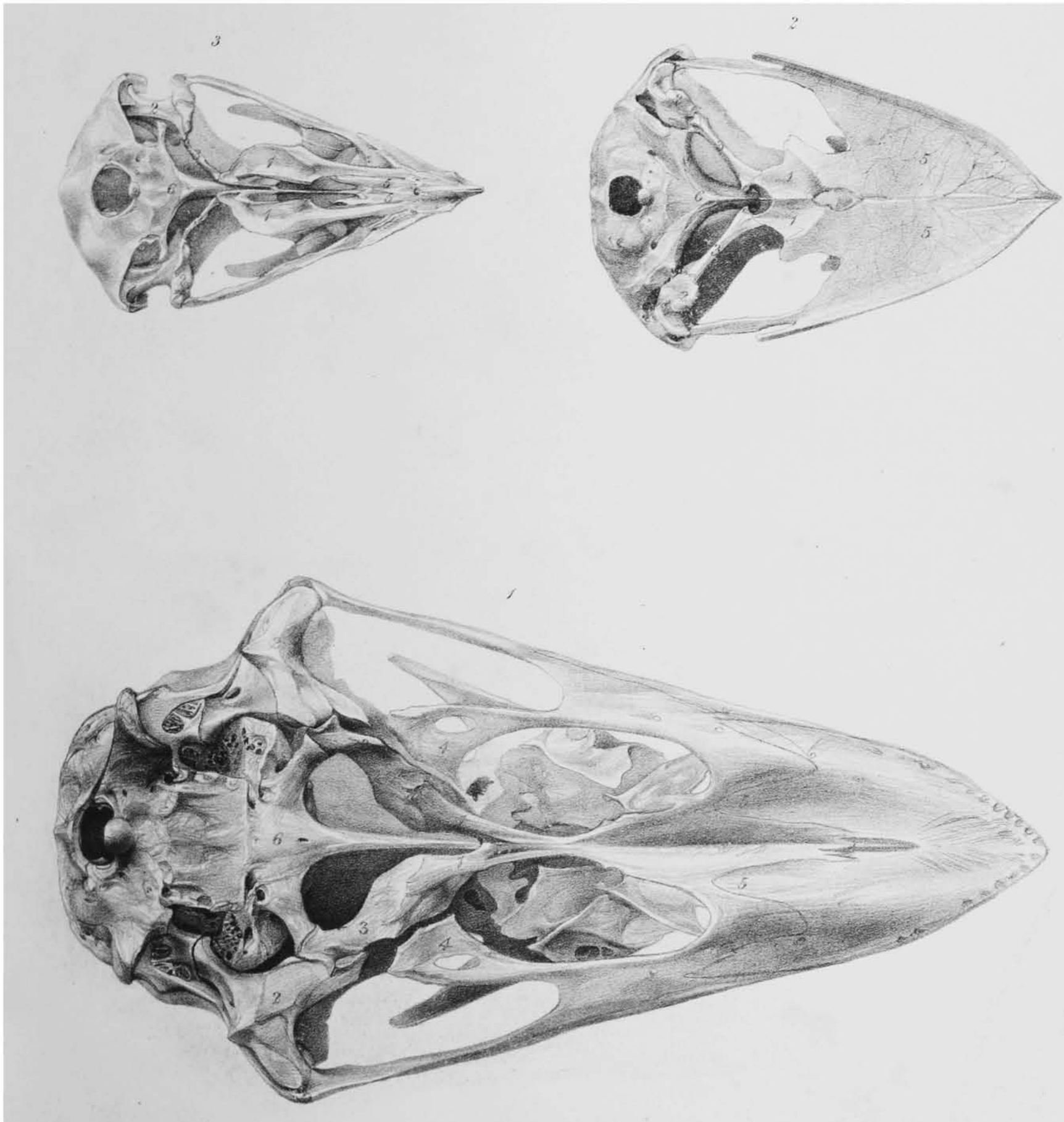
Fig. 1. *Struthio Camelus*, side view of Cranium.
" 2. " side view of Lower Maxillary Bone.
" 3. Sternum of young Guinea Fowl (*Numida Cristata*)
" 4. *Turdus Musicus*, Pelvis (young)
" 5. " " Sternum "



1. *Casuarius Emeu.*
2. *Podargus Humeralis.*
3. *Falco Peregrinus.*

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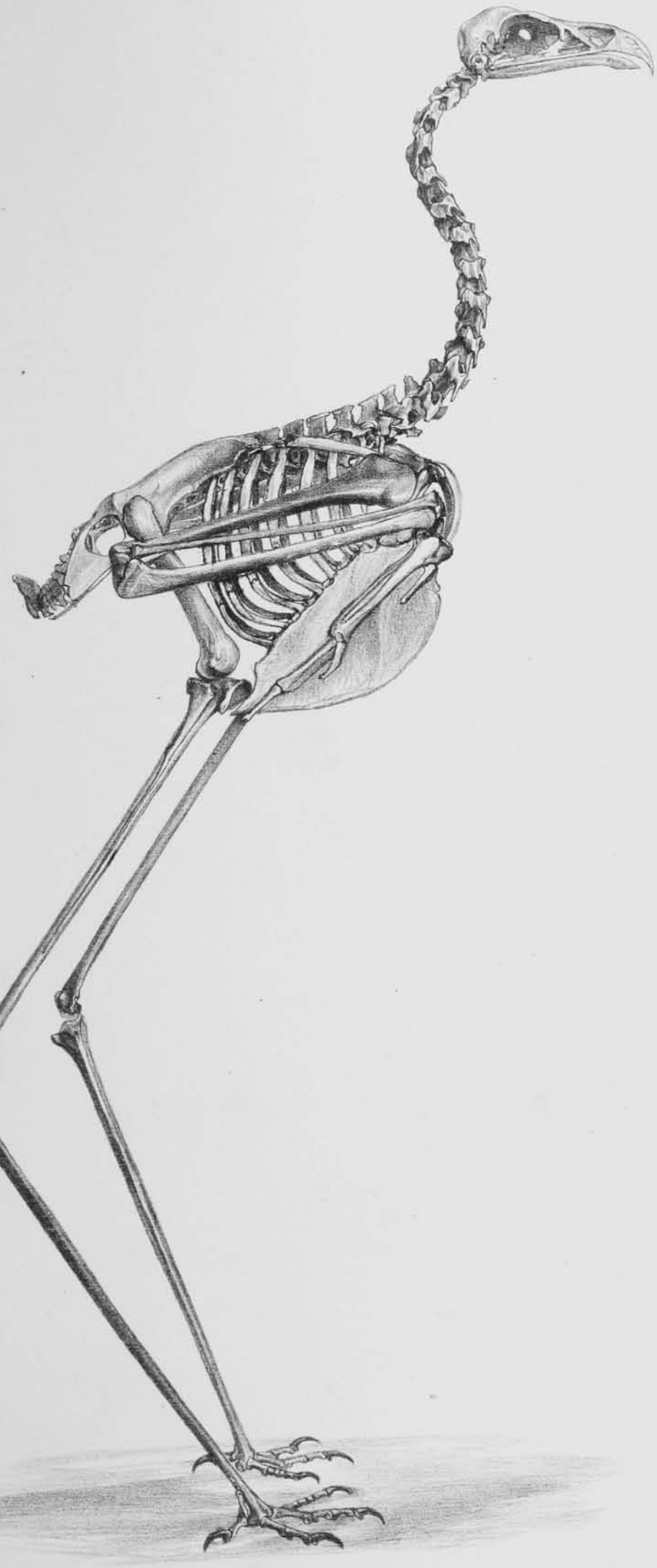
SARCORAMPHUS GRYPHUS.



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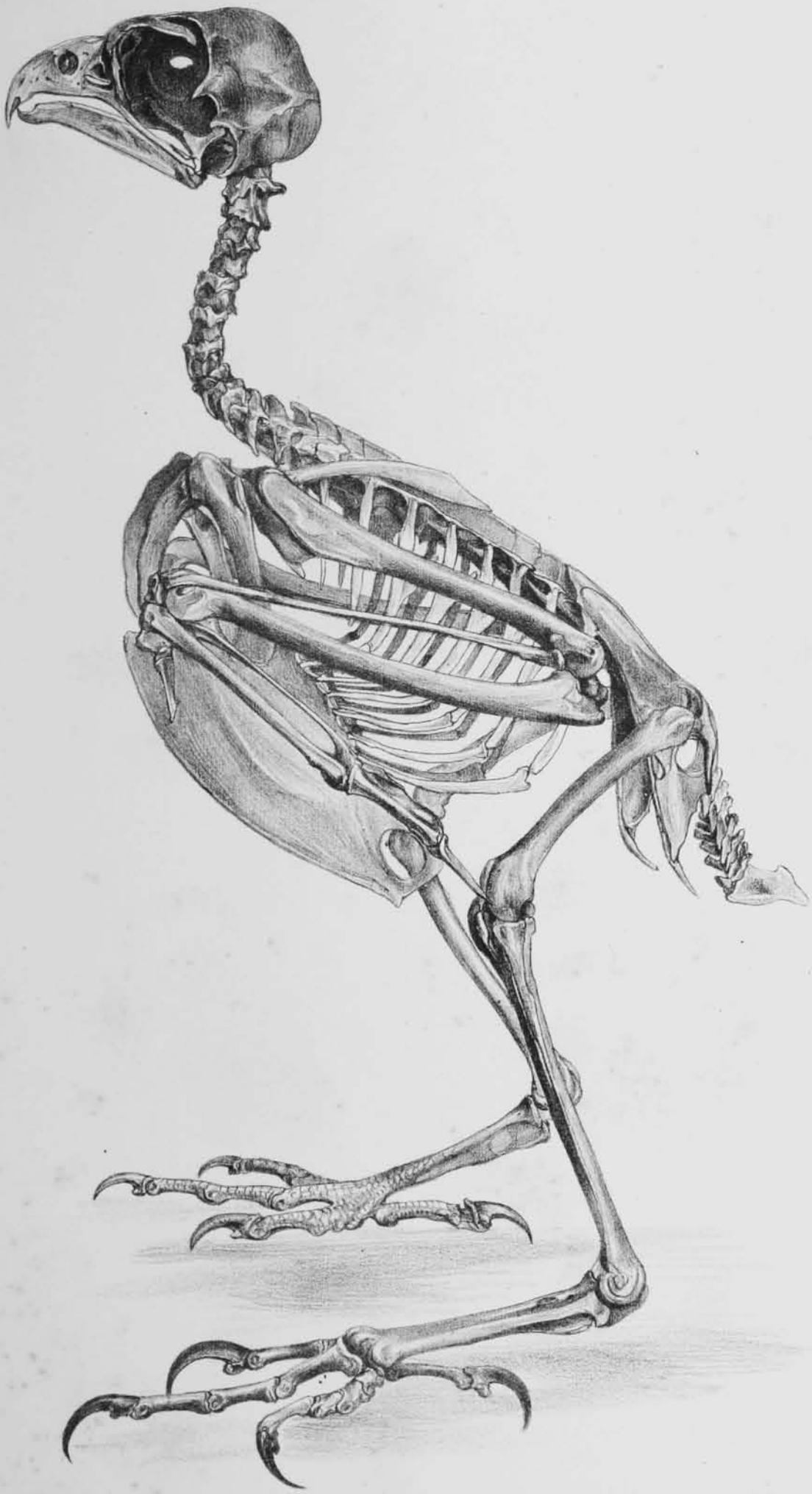
SERPENTARIUS REPTILIVORUS.



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FALCO PEREGRINUS.

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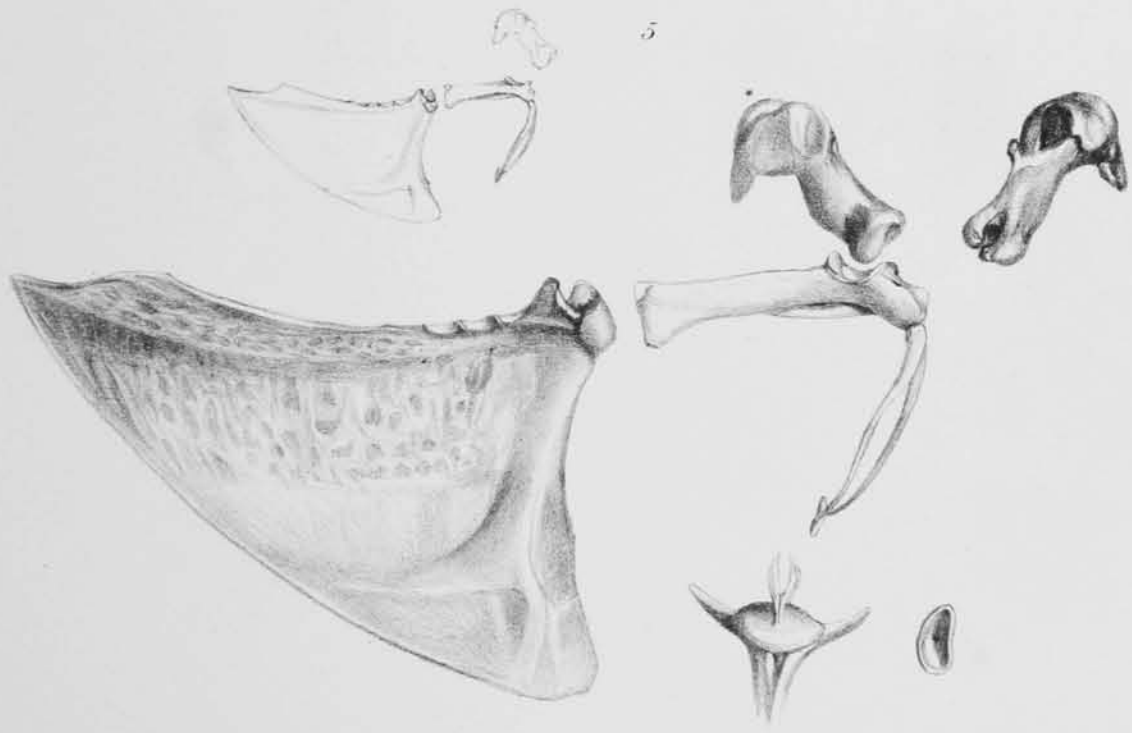
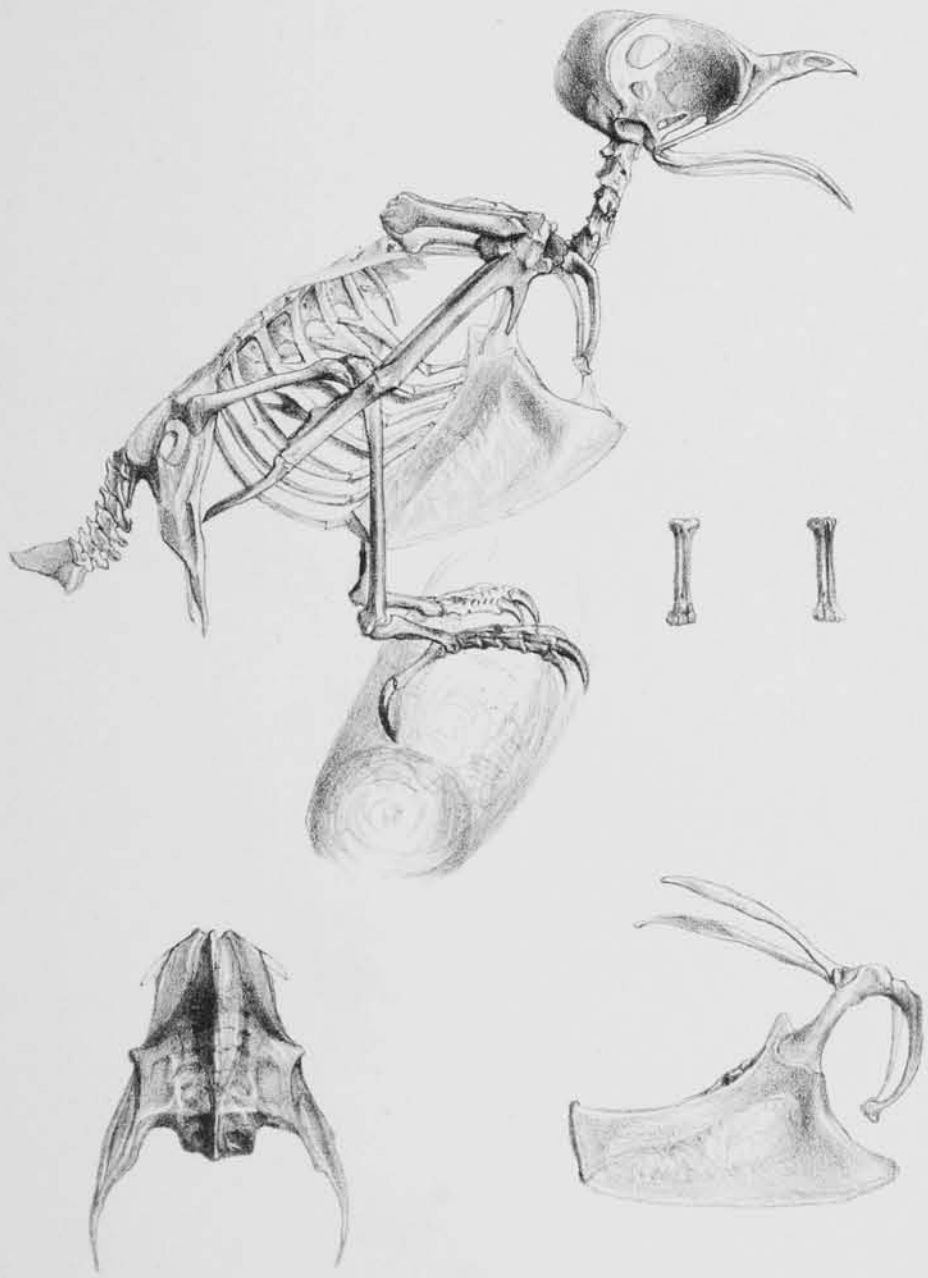
KETUPA JAVANENSIS.



Figs. 1. 2. 3. 4. *Trochilus Gigas.* — Fig. 5. *Petasphora Jolata.*



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CYPSELUS APUS.

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PODARGUS HUMERALIS.

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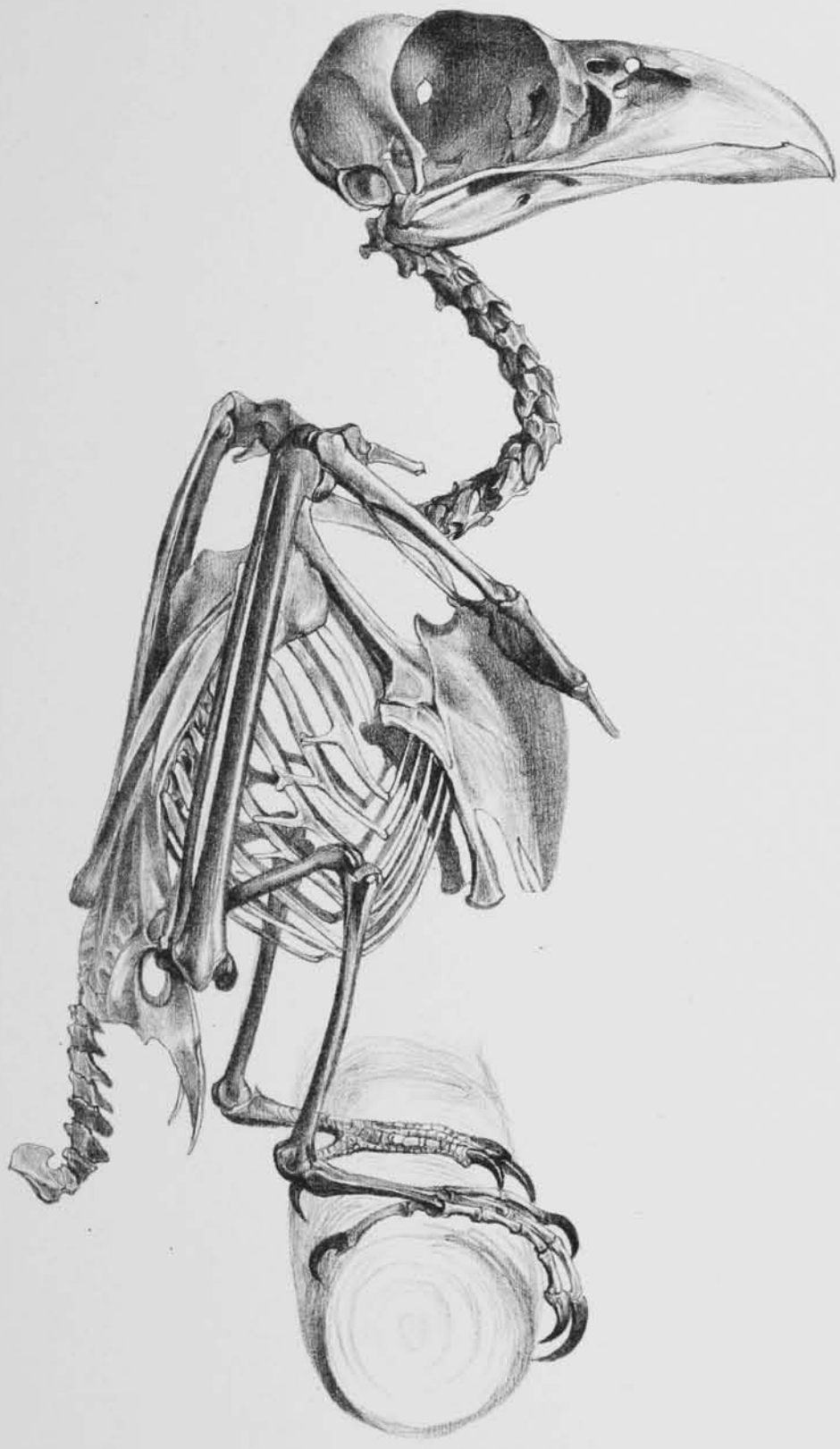
CORACIAS INDICA.



EURYSTOMUS ORIENTALIS.

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TROGON MELANOCEPHALUS.

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1

2

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Fig. 1 Todus Viridis. — Fig. 2. Alcedo Ispida.

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BUCEROS ABYSSINICUS.

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CAPITO SWAINSONII.

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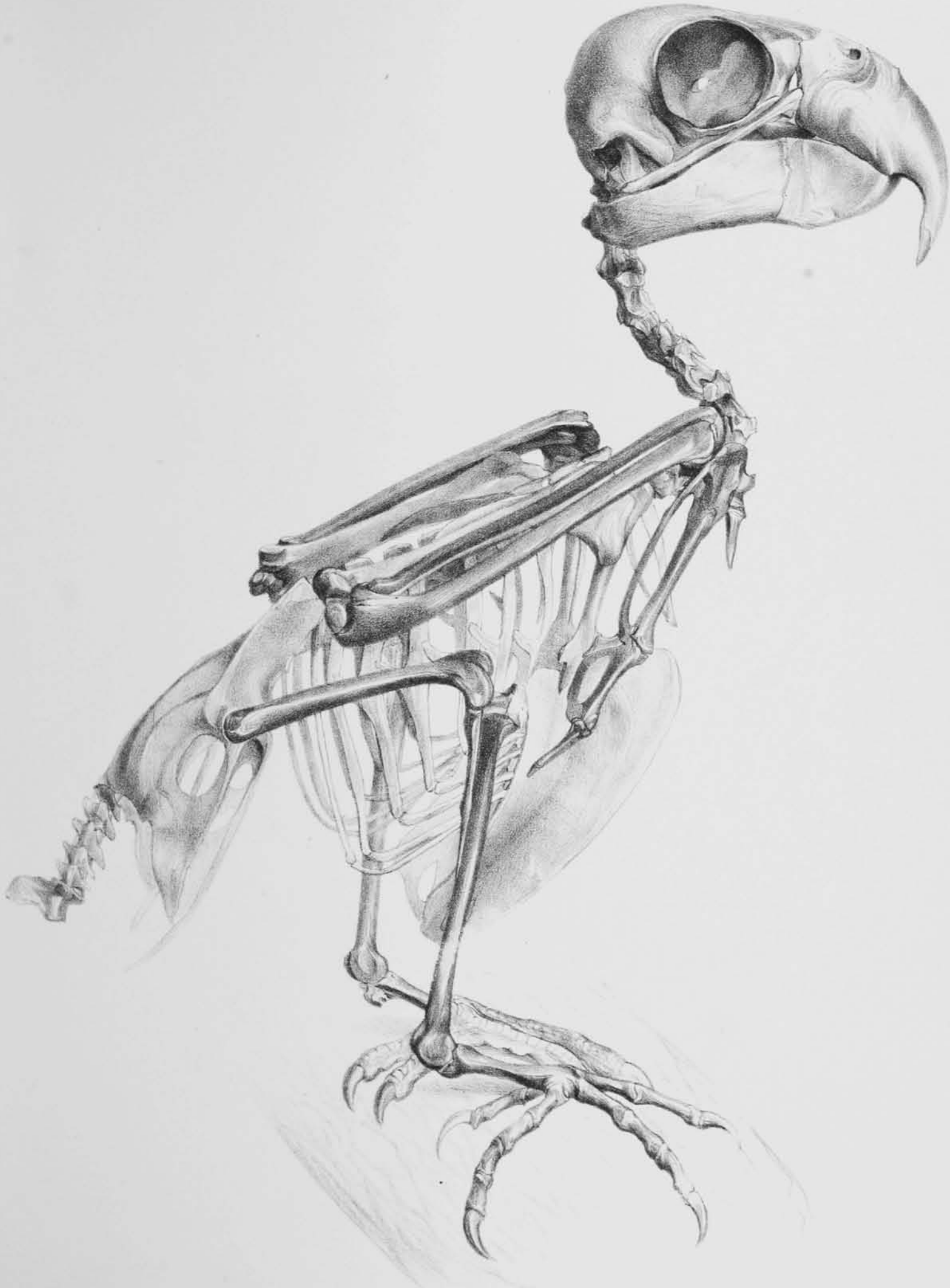
EURYLAIMUS SUMATRANUS.



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CHRYSOTIS BRAZILIENSIS.

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GECINUS DIMIDIATUS.

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CENTROPUS PHASIANUS.

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TURACUS GIGAS.

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PTEROGLOSSUS BAILLONII.

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CUCULUS GLANDARIUS.

Pl. 5 E.

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GEOCOCCYX MEXICANUS.

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ZIPHORHYNCHUS TROCHILIROSTRIS.

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AMTHOCHÆRA LEWINII.

from Nature on Stone by J. Ericksen.

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MENURA LYRA.

1

2

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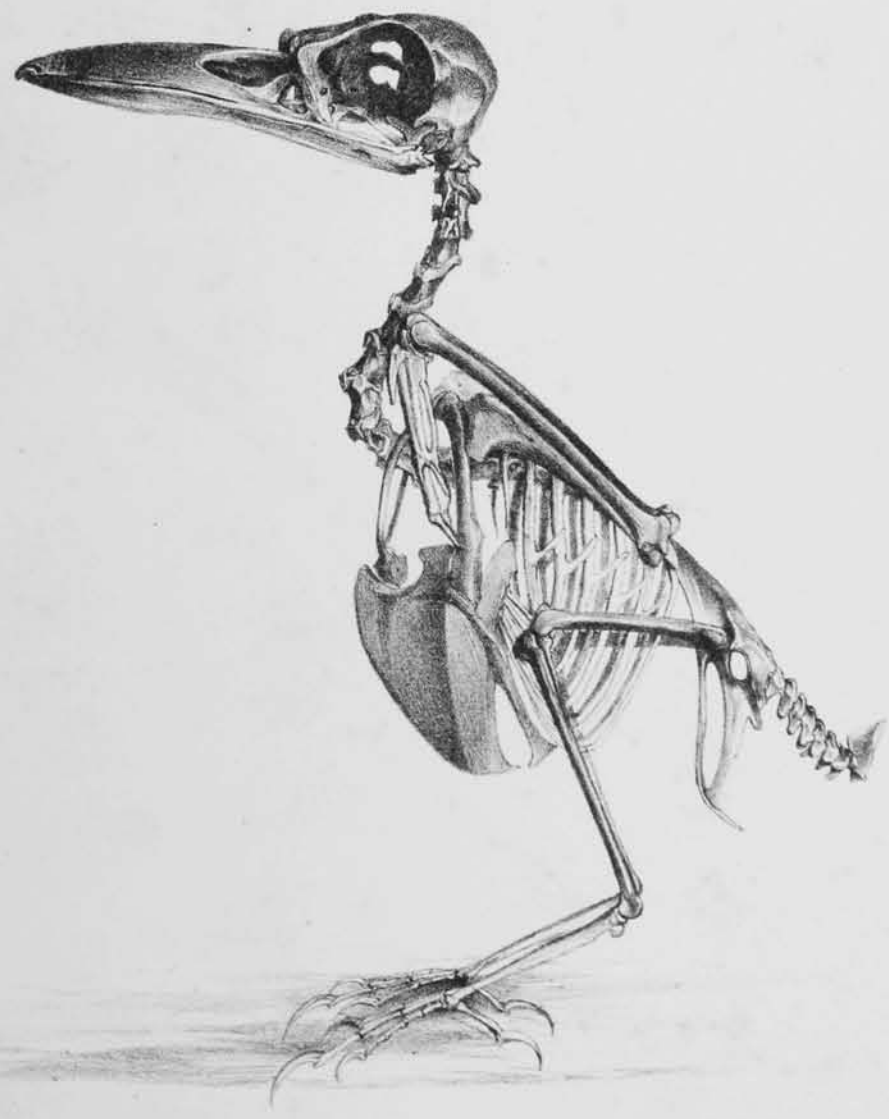
1. SYLVIA HIPPOLAIS. 2. PARULA BRAZILIANA.

1

2



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Day & Son Lith.rs to the Queen

1. TCHITREA MELANOPYGA.— 2. TYTYRA INQUISITOR

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Day & Son, Lith.rs to The Queen.

TURDUS CHOKI.

From Nature & on Zinc by J. Erxleben.

Day & Son, Lith.rs to The Queen.

1. PLATYRHYNCHUS CANCROMUS. — 2. HIRUNDO RIPARIA.

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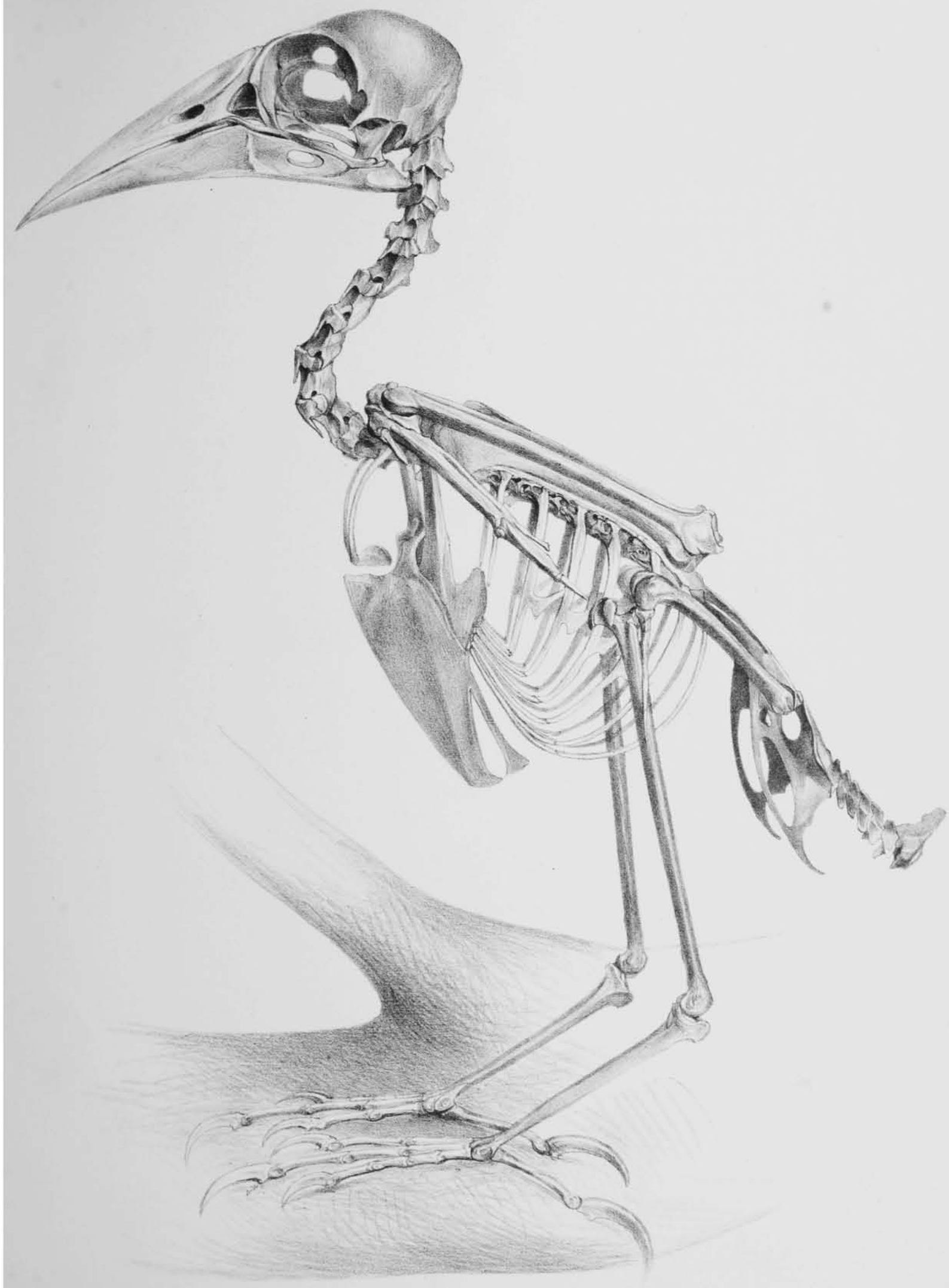
Day & Son. Lith^rs to The Queen.

NEOMORPHA GOULDII.



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Day & Son Lith.rs to T.he Queen.

CASSICUS BIFASCIATUS.

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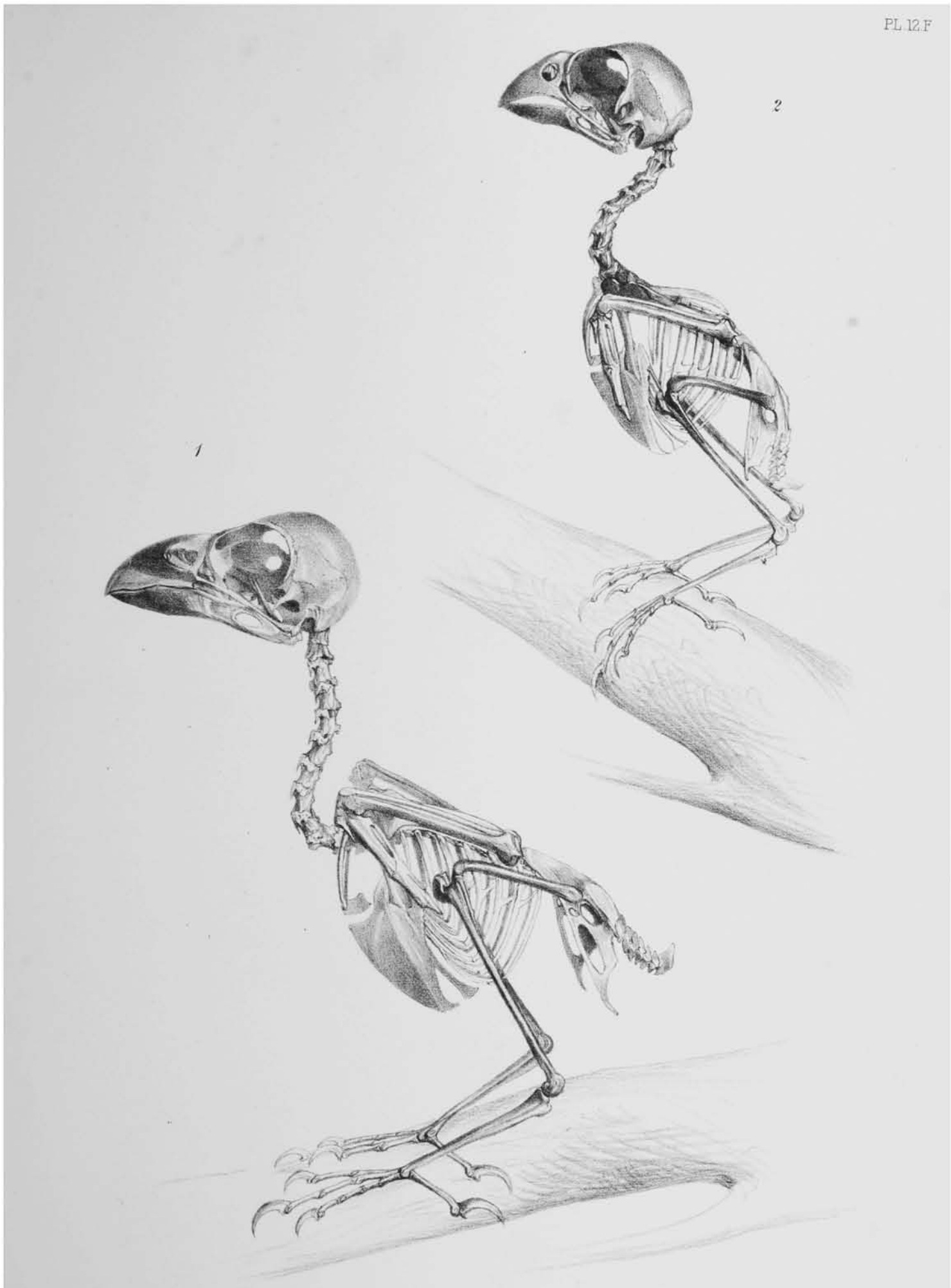
Dow & Son, Lithrs to the Queen

1. DRYMOPHILA LORICATA. 2. LANIUS COLLURIO. (?) Bill very long in plate



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Day & Son. Lith.rs to the Queen

1. SALTATOR MAGNUS._2. SPERMOPHAGA HŒMATINA.

PL13.F.

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Day & Son Lith^rs to the Queen

CYPSIRHINA LEUCOPTERA.

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Day & Son, Lith.rs to the Queen

GOURA CORONATA.

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TETRAO UROGALLUS.

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CRAX GLOBICERA.

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Day & Son, Lith.rs to the Queen.

PHASIANUS NYCTHEMERUS.

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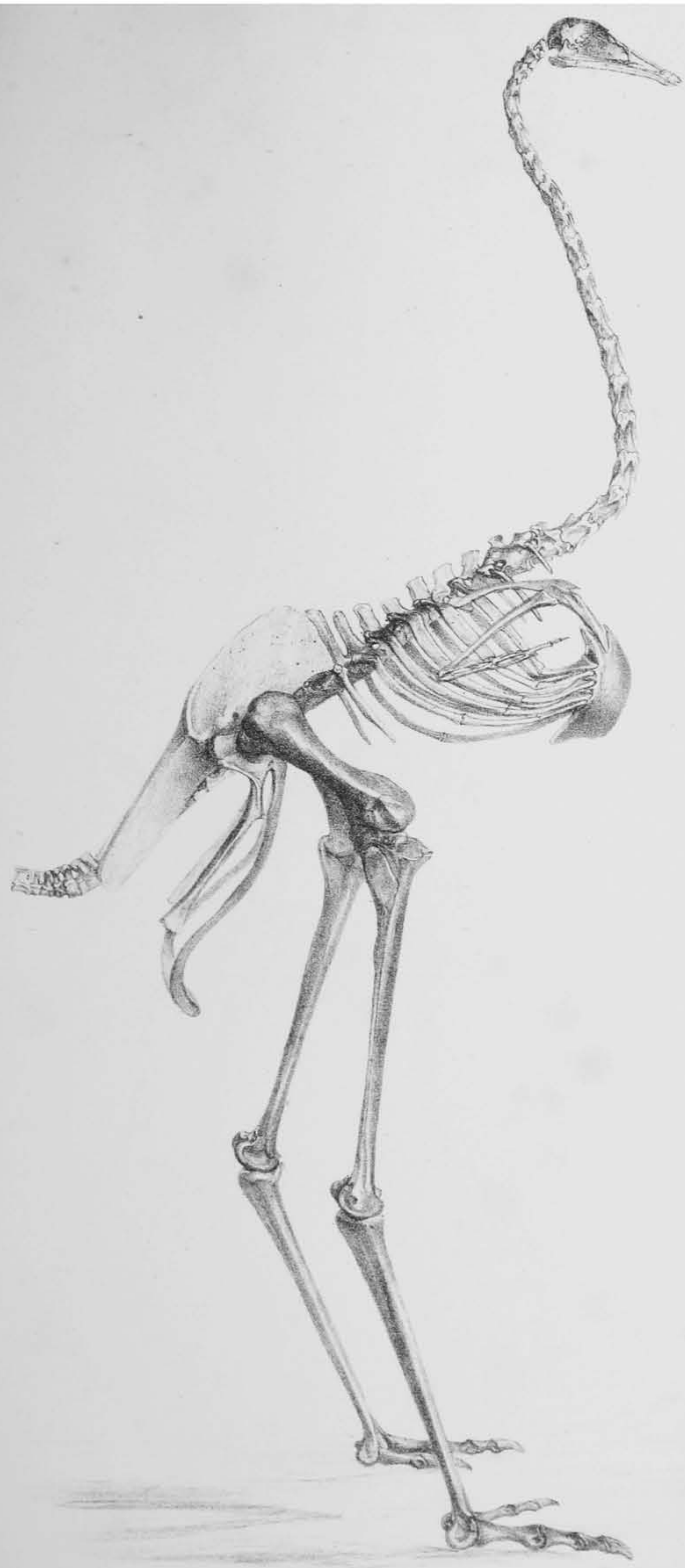
Day & Son Lith.rs to the Queen

OREOPHASIS DERBYANUS.

Pl. I.



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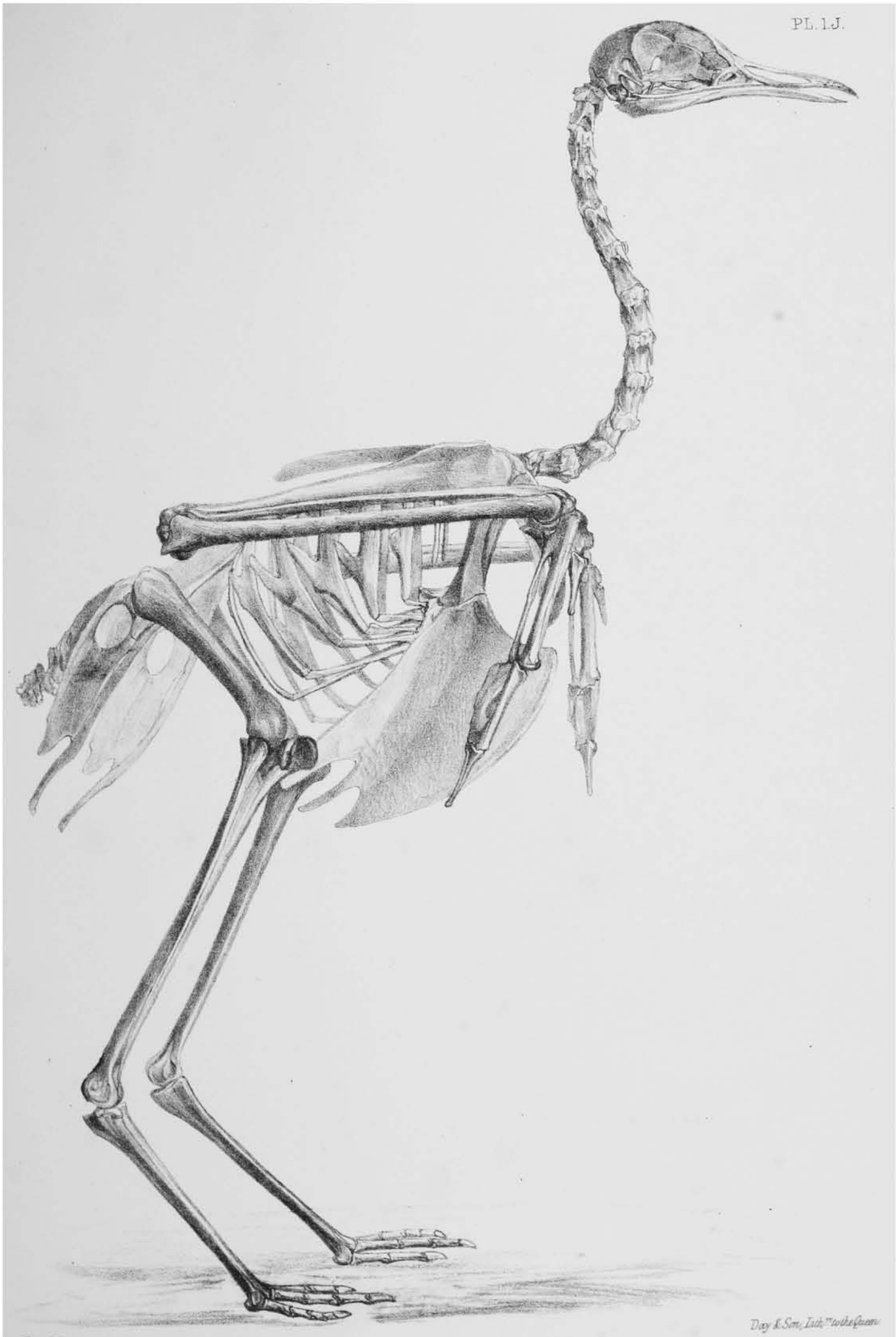
Day & Son Lith[rs] to the Queen

STRUTHIO CAMELUS

PL. 1.J.



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Day & Son, Lith.rs to the Queen.

OTIS HOUBARA.

PL. 1. K.

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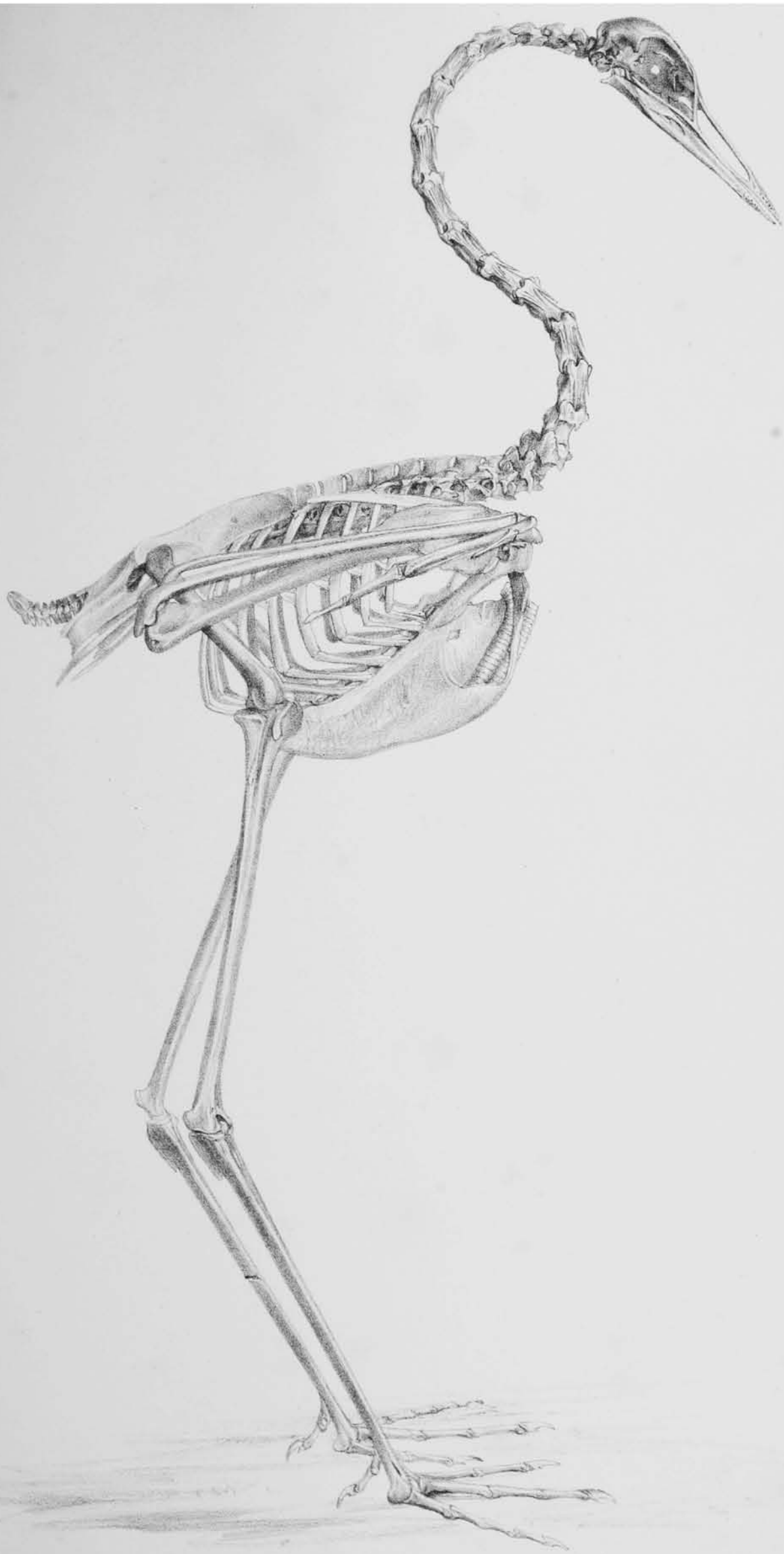
Day & Son, Lith.rs to the Queen

LEPTOPHILUS ARGALA.

PL.2 K.



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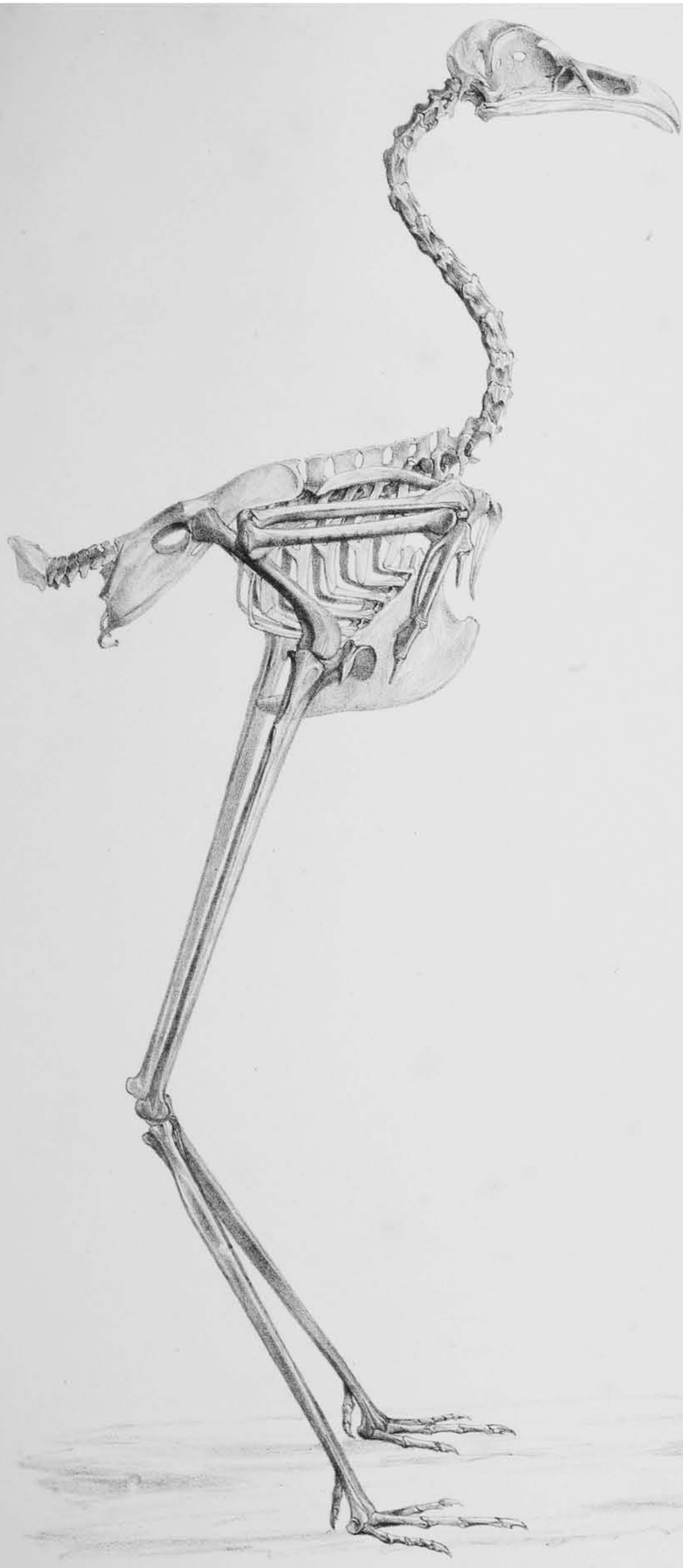
Day & Son, Lith^rs to the Queen

SCOPS VIRGO.

PL 3. K



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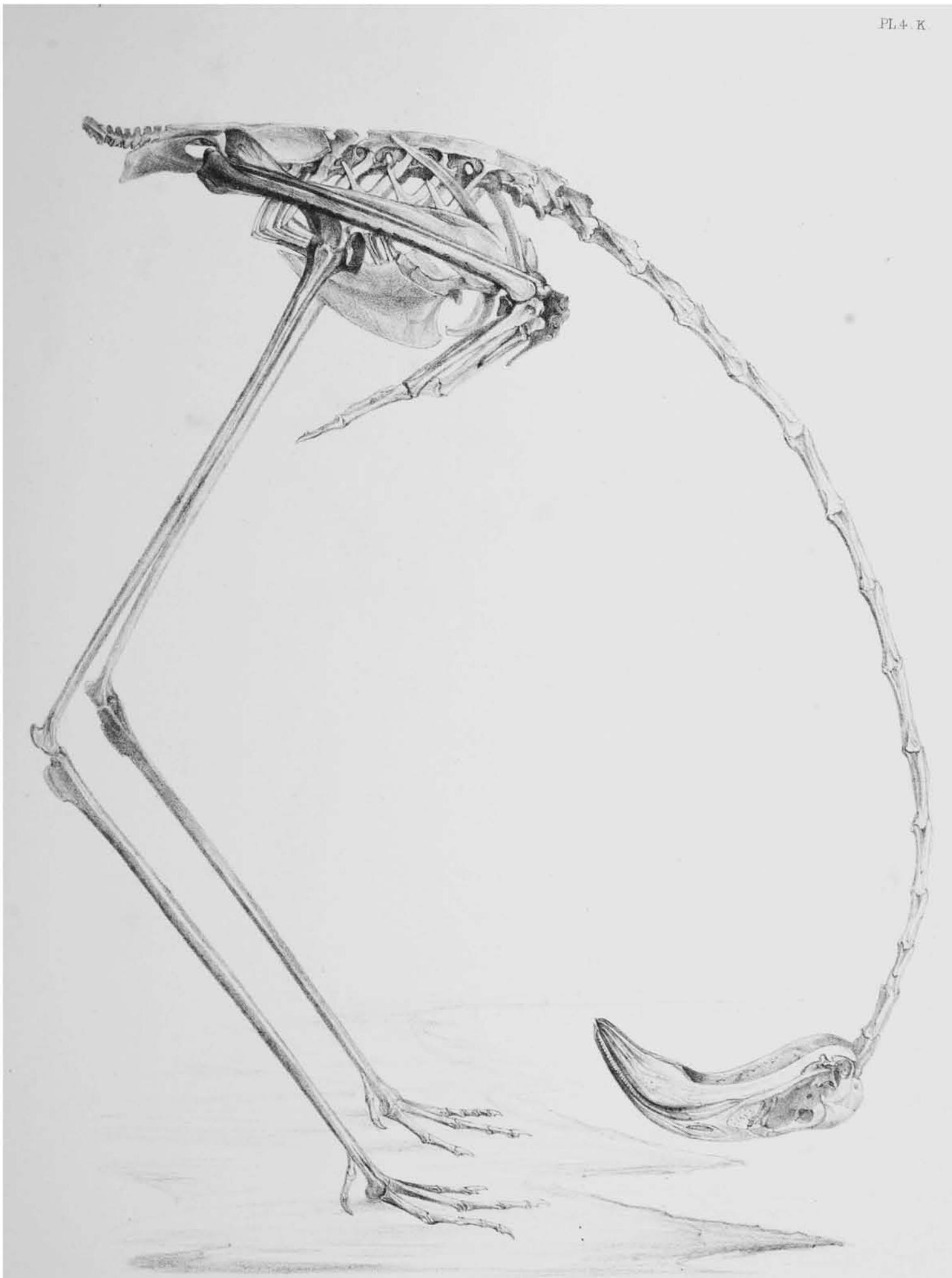
Day & Son, Lith^rs to the Queen.

CARIAMA CRISTATA



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Day & Son. Lith.rs to the Queen.

PHOENICOPTERUS RUBER.

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Day & Son, Lith.rs to the Queen.

PSOPHIA VIRIDIS.

From Nature on Zinc by J.Erxleben.

Day & Son Lith.rs to the Queen.

THRESKIORNIS MELANOCEPHALUS.

From Nature on Stone by J. Erxleben.

Day & Son, Lith.rs to the Queen.

HARPIPRION HAGEDACCH.

From Nature on Zinc by J. Erxleben.

Day & Son, Lith^rs to the Queen.

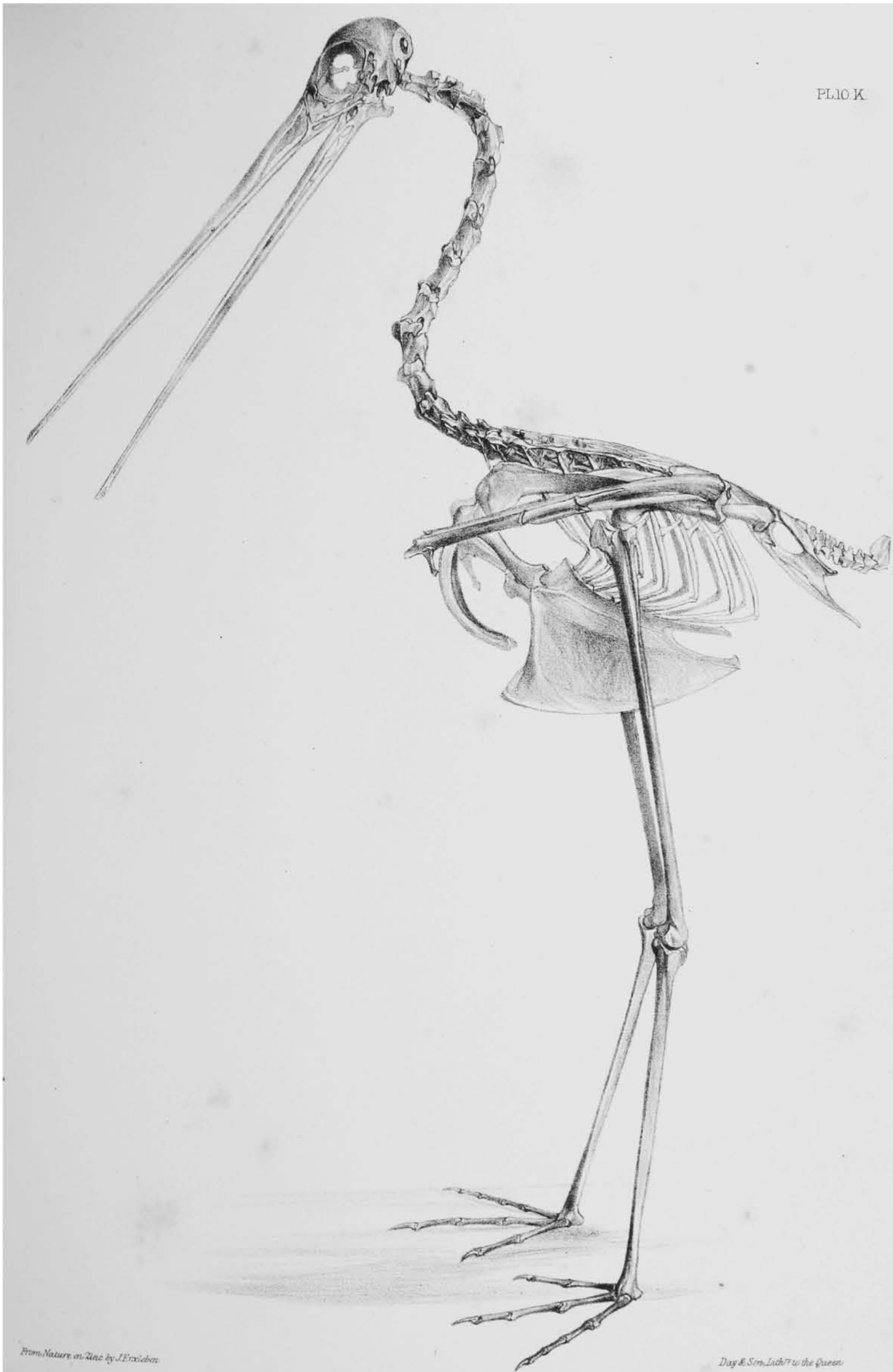
TOTANUS GLOTTIS.

From Nature on Zinc by J. Erxleben.

Day & Son, Lith.rs to the Queen.

SCOLOPAX RUSTICOLA.

PL.10.K



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Day & Son Lith.rs to the Queen.

LIMOSA RUFA.

From Nature on Zinc by J. Erxleben

Day & Son, Lith.rs to the Queen

HAMATOPUS CAPENSIS.

PL. 12. K

From Nature on Stone by J. Erxleben.

Day & Son, Lith^rs to the Queen.

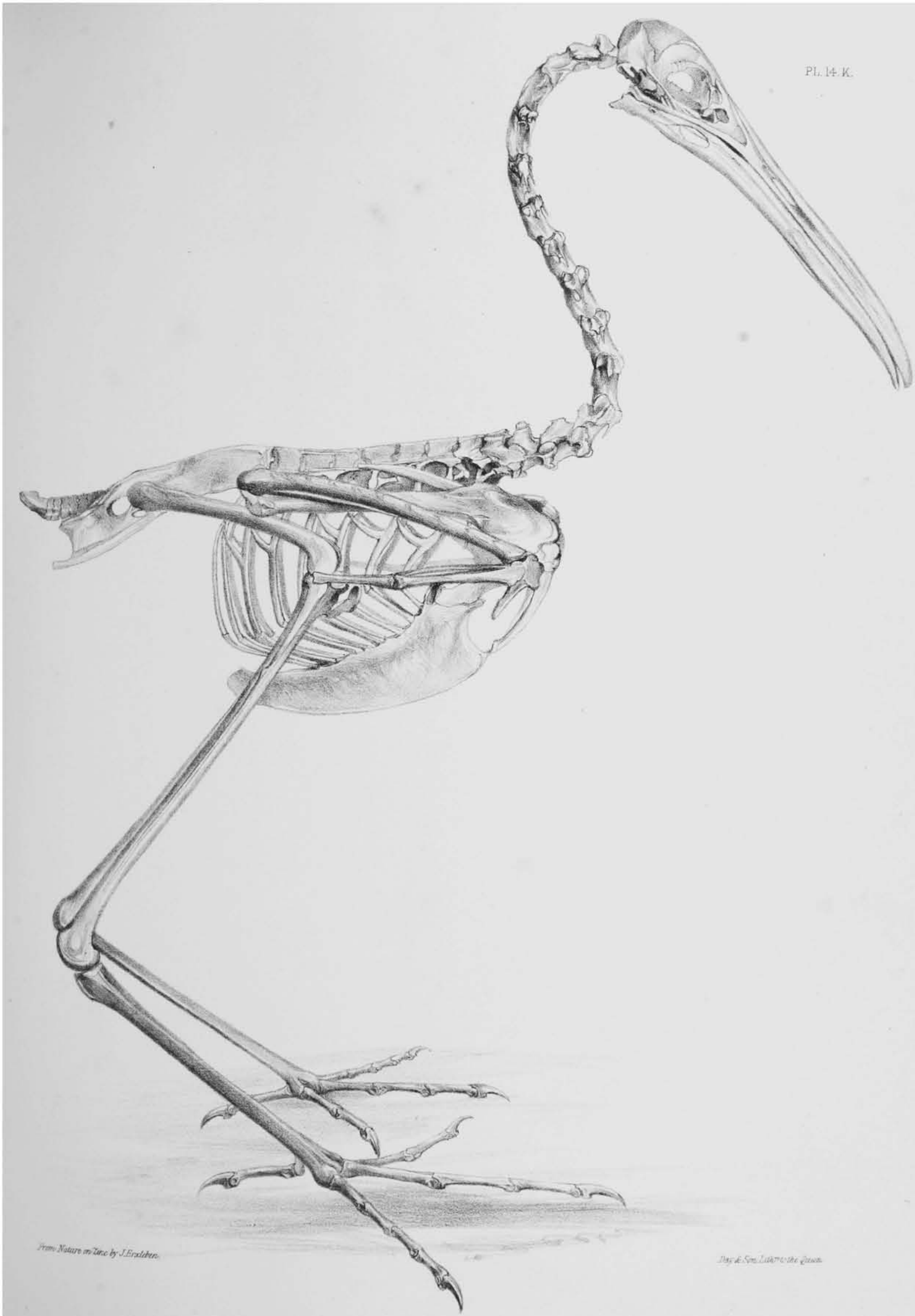
HELIAS PHALENOIDES.

From Nature on Stone by J. Erxleben.

Day & Son Lith.rs to the Queen.

GLAREOLA PRATINCOLA.

Pl. 14. K.



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ARAMUS SCOLOPACEUS.

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ŒDICNEMUS LONGIROSTRIS.

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COLYMBUS SEPTENTRIONALIS.

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PODICEPS CRISTATUS.

From Nature on Zinc by J. Erxleben.

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URIA TROILE.

From Nature on Zinc by J. Erxleben.

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EUDYPTES.

From Nature on Zinc by J. Erxleben

Day & Son, Lith.rs to the Queen

GRACULUS CRISTATUS.

From Nature on Stone by J. Erxleben

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SOLA BASANA.

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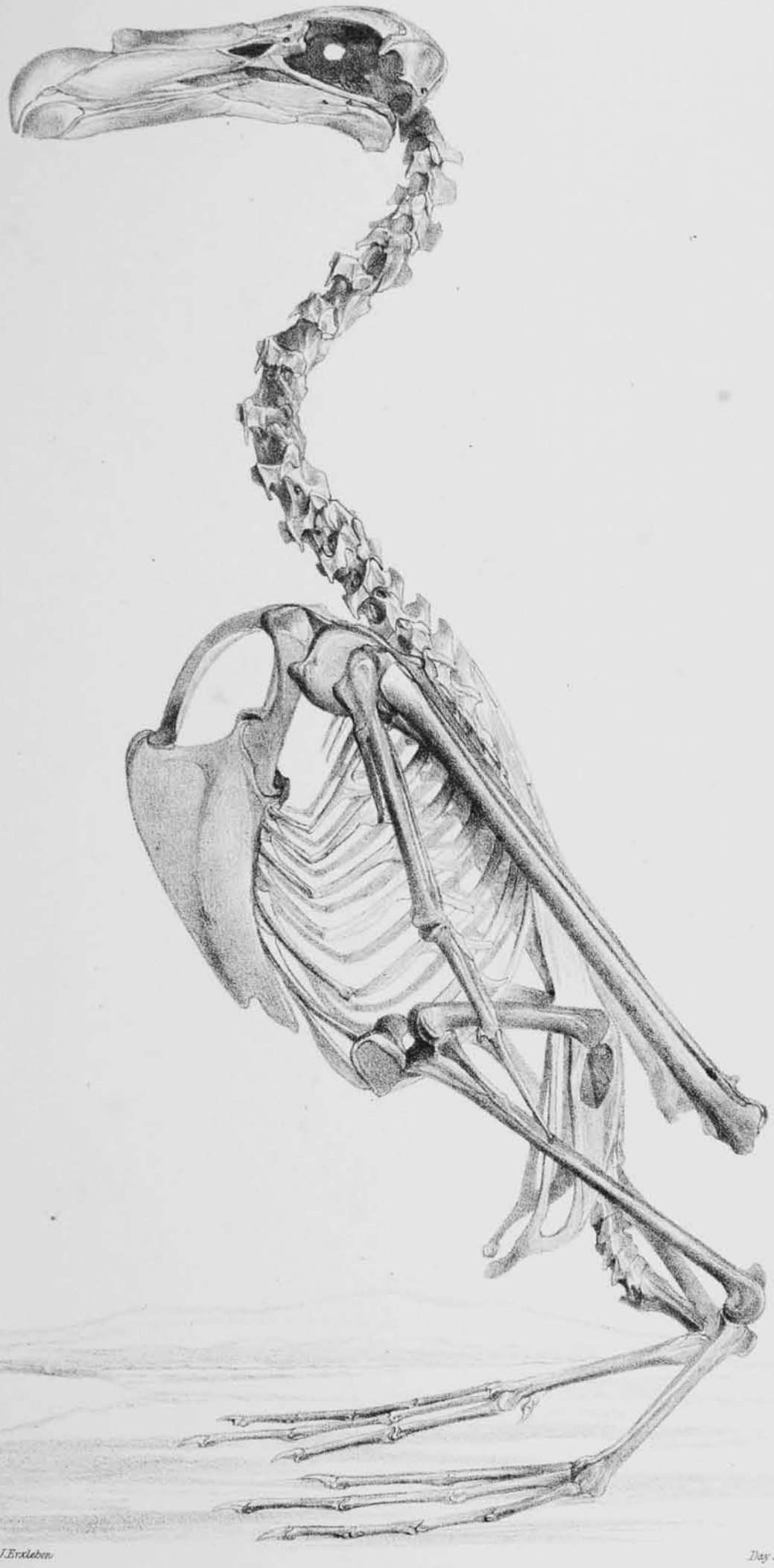
ONOCROTALUS.



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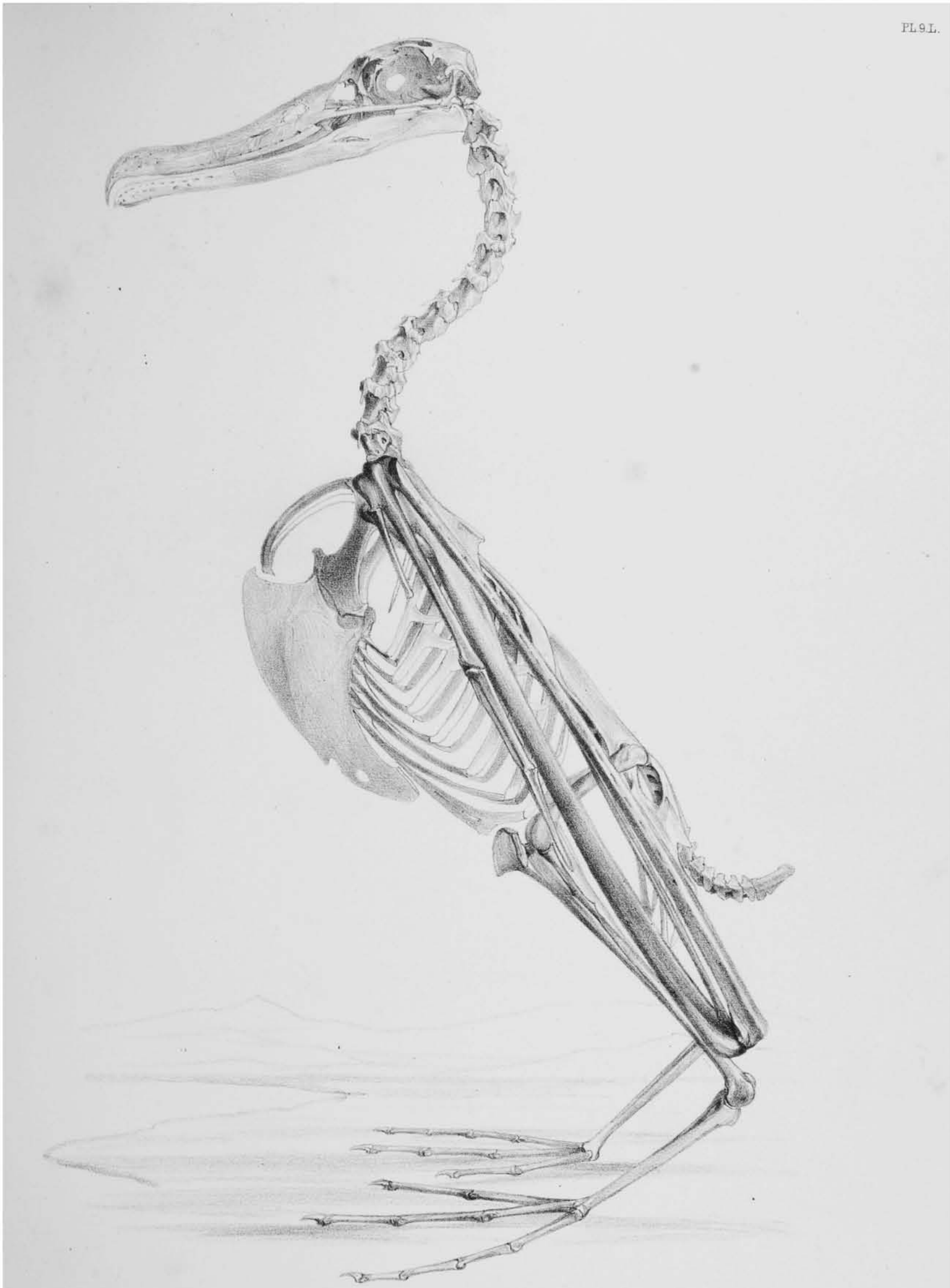
PROCELLARIA GIGANTIA.



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DIOMEDEA EXULANS.

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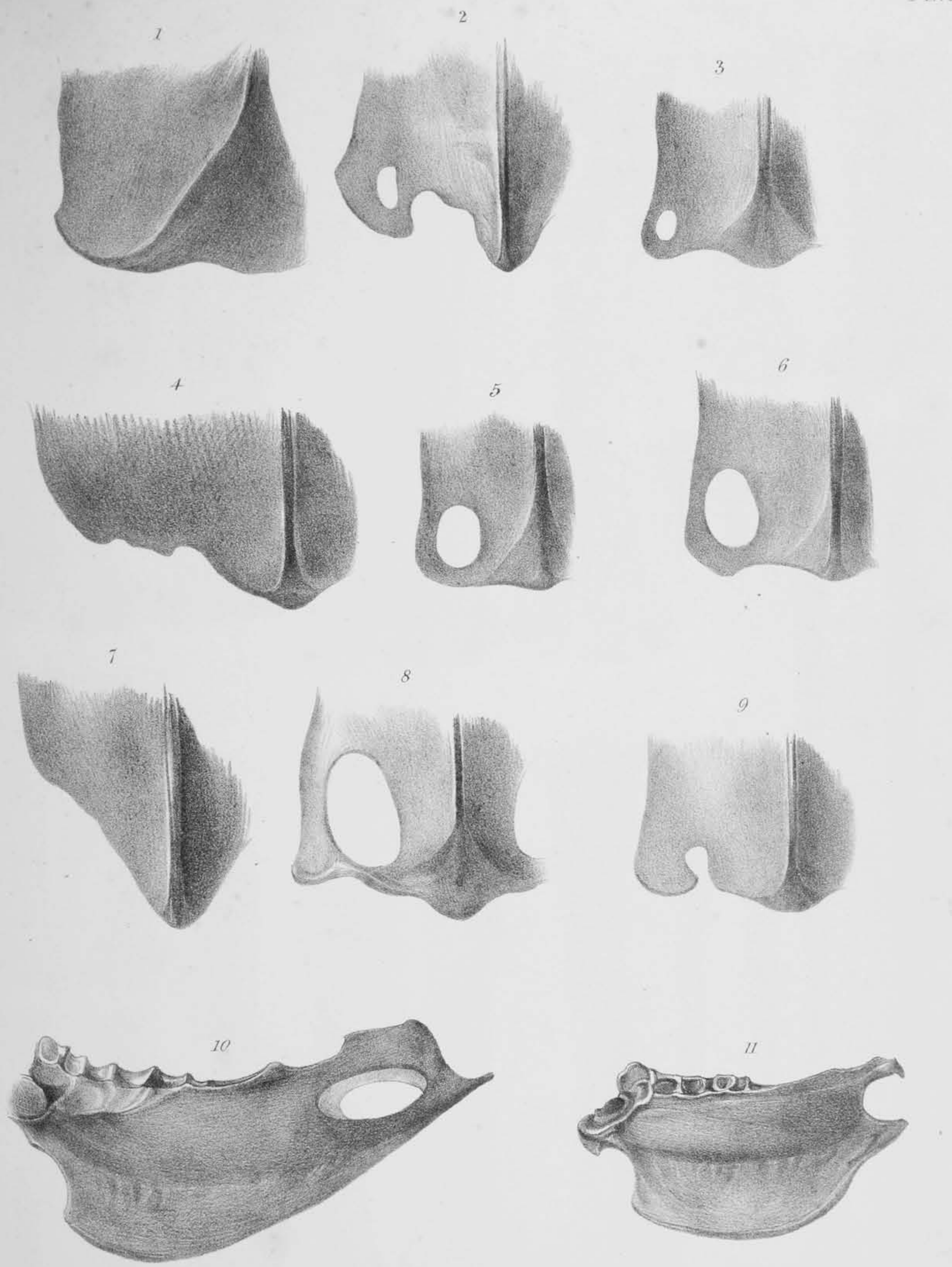
Day & Son Lith.rs to the Queen.

THALASSIDROMA PELAGICA.



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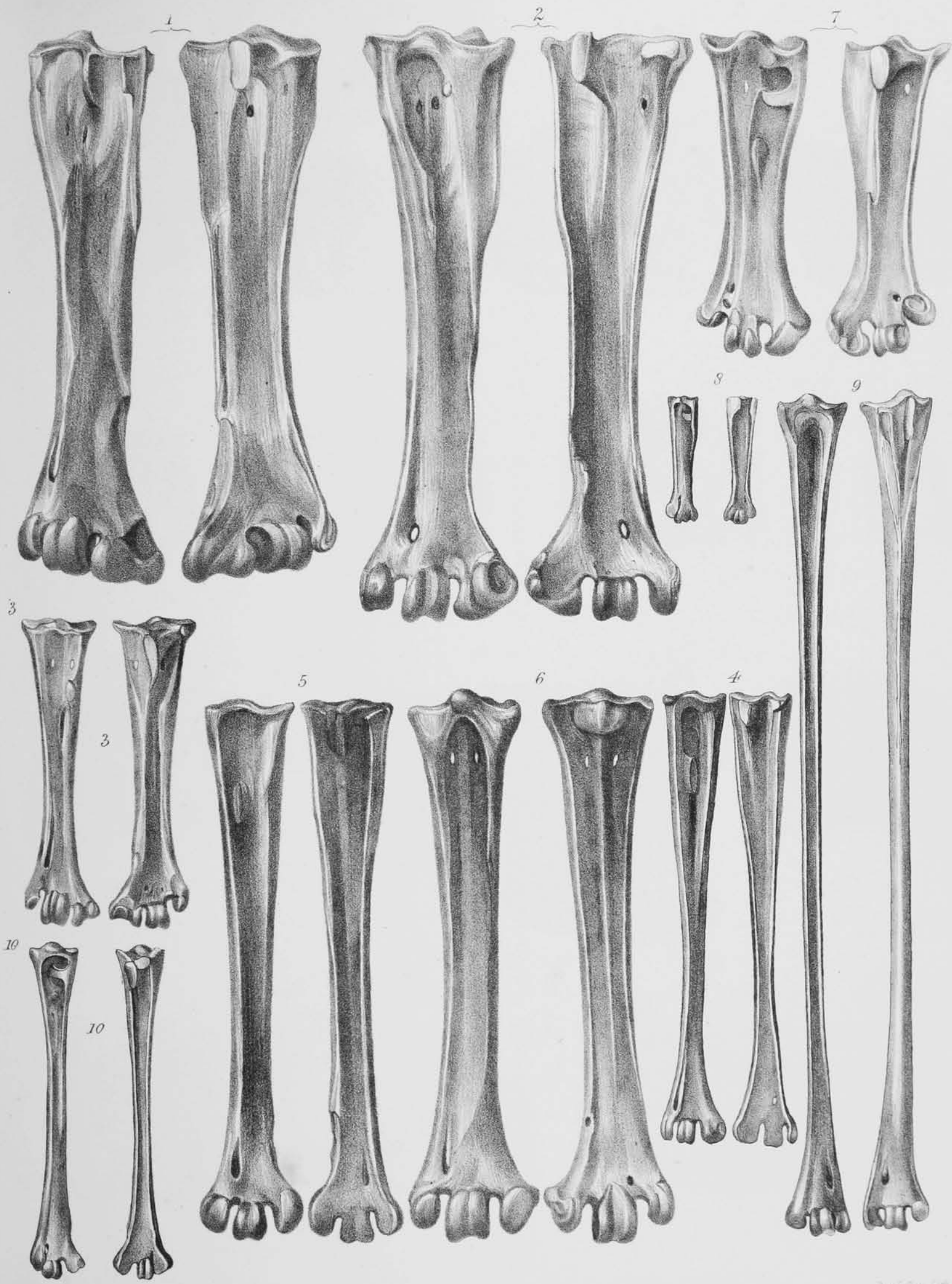
Day & Son Lith.rs to The Queen

Fig 1. Aquila crysaetos.
" 2. Cathartes aura.
" 3. Neophron percnopterus.
" 4. Sarcoramphus gryphus.
" 5. Gyps Fulvus.

Fig 6. Vultur cinereus
" 7. Serpentarius reptilivorus.
" 8. Cathartes [illegible].
" 9. Polyborus tharus.
" 10. Gypaetos barbatus.

Sarcoramphus papa



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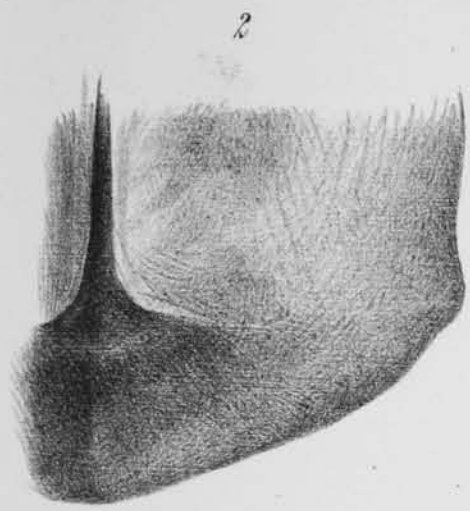
Day & Son Lith. to The Queen

Fig 1. Pandion Leucocephalus
" 2. Aquila cinereus
" 3. Falco peregrinus
" 4. Circus cyaneus
" 5. Spizaetus ornatus
Fig 6. Sarcoramphus papa
" 7. Nyctea nivea
" 8. Noctua tengmalmi
" 9. Serpentarius reptilivorus
" 10. Strix delicatulus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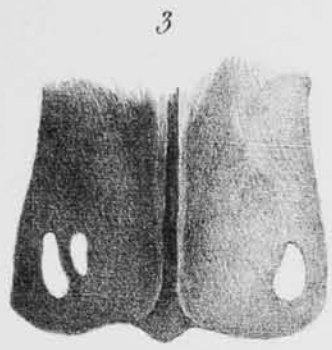
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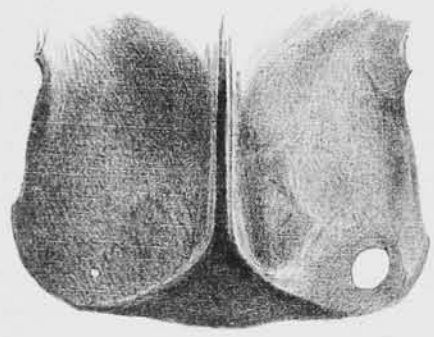
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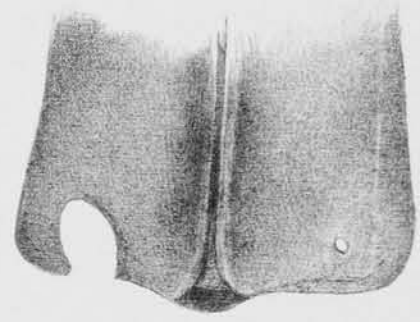
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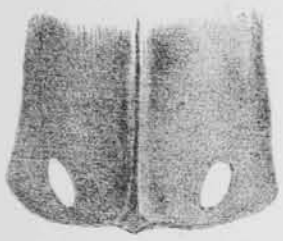
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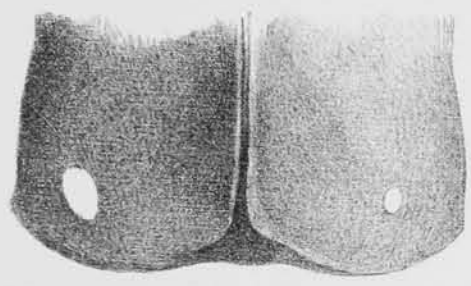
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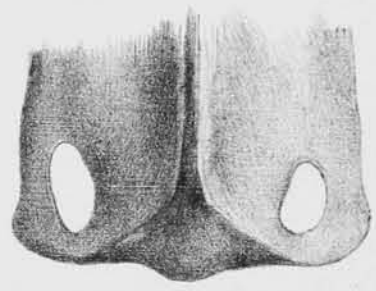
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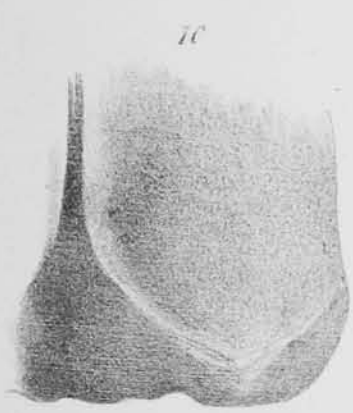
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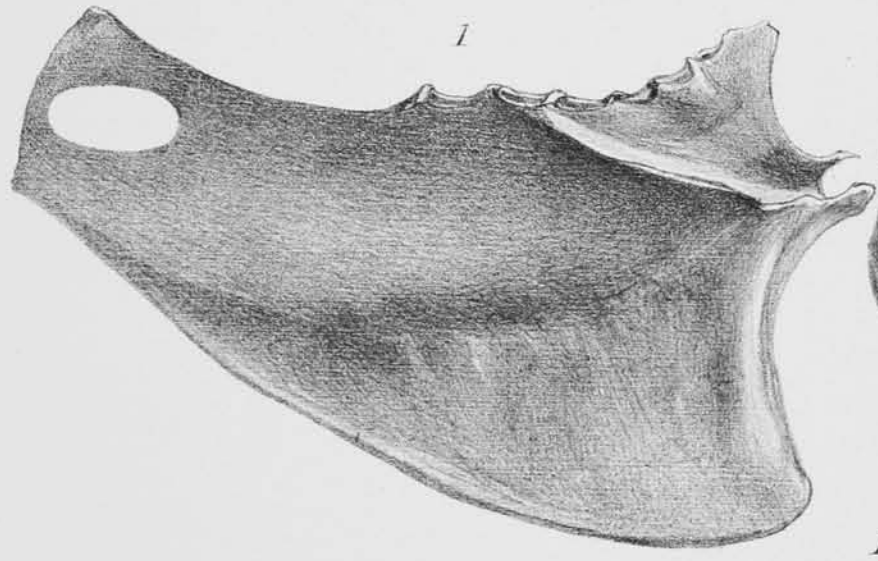
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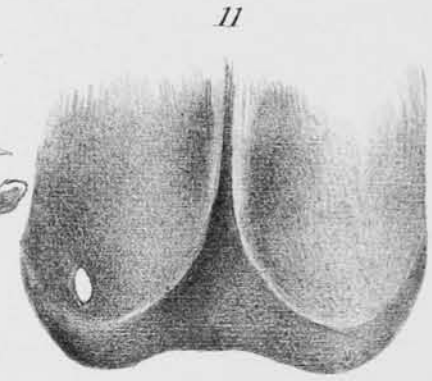
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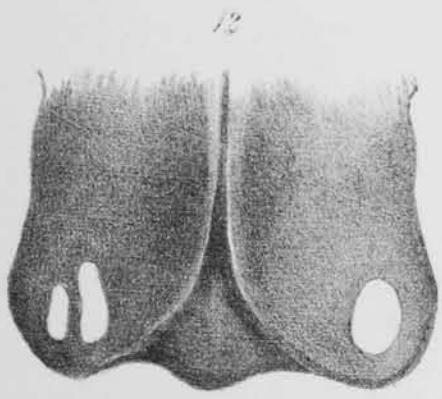
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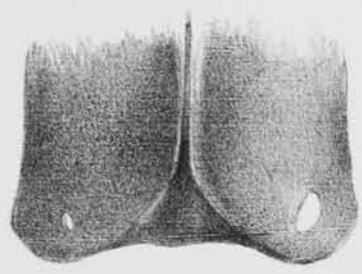
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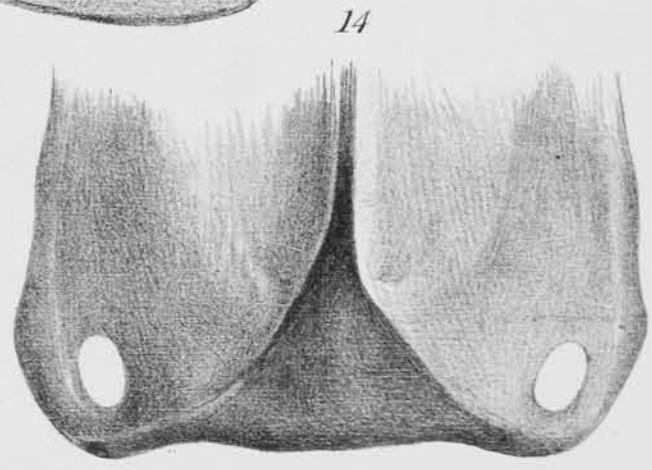
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Fig. 1. Falco Gyrfalco.
,, 2. Pandion Leucocephalus.
,, 3. Hieracidea Berigora.
,, 4. Circus Cyaneus.
,, 5. Ibycter Ater.
,, 6. Accipiter Nisus.
,, 7. Milvus Migrans.

Fig. 8. Cymindis Uncinctus.
,, 9. Hierax Bengalensis.
,, 10. Pandion Haliætus.
,, 11. Circaëtus Brachydactylus.
,, 12. Spizaëtos Cirrhatus.
,, 13. Heliaster Ponticerianus.
,, 14. Aquila Nævia.

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Day & Son, Lith.rs to the Queen.


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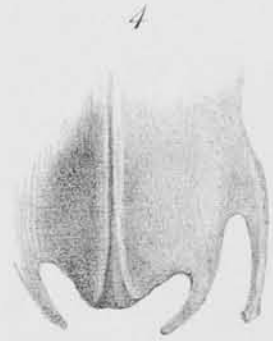
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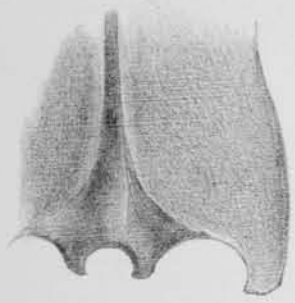
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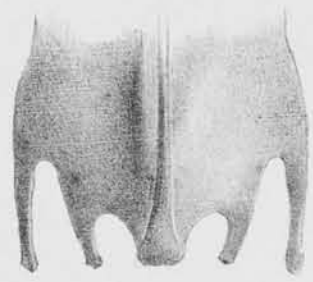
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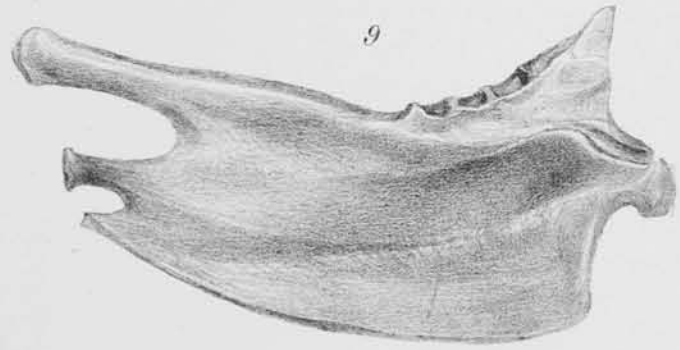
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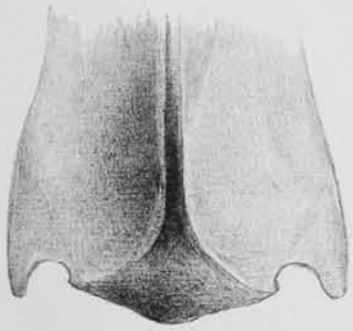
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Fig. 1. Strix Delicatulus.
" 2. Nyctea Nivea.
" 3. Ketupu Javanensis.
" 4. Ephialtes Grammicus.
" 5. Strix Praticola.
Fig. 6. Nyctale Tengmalmi.
" 7. Asio Brachyotus.
" 8. Noctua (Jamaica)
" 9. Bubo Bengalensis.
" 10. Strix Flammea.
Fig. 11. Athene Marmorata.

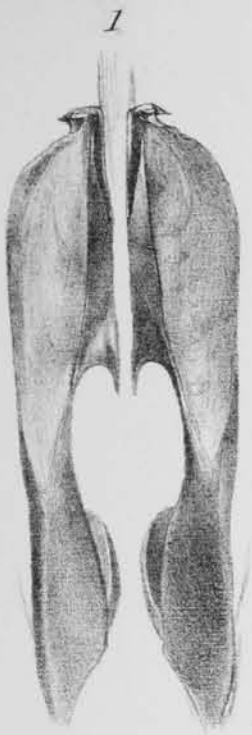
From Nature on Zinc by J. Erxleben

Day & Son, Lith.rs to the Queen.

From Nature on Zinc by J. Erxleben.

Fig 1. *Sarcoramphus Papa.*
,, 2. *Aquila Cinereus.*
,, 3. *Nyctea Nivea.*
,, 4 *Falco Peregrinus.*
,, 5. *Pandion Haliaetus.*

Day & Son, Lithrs to the Queen.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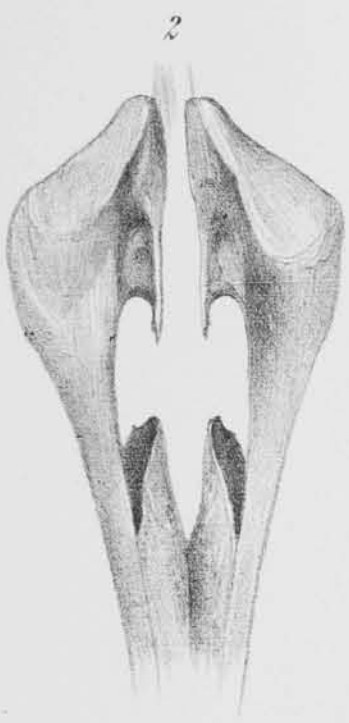
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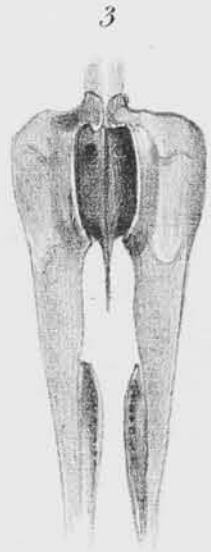
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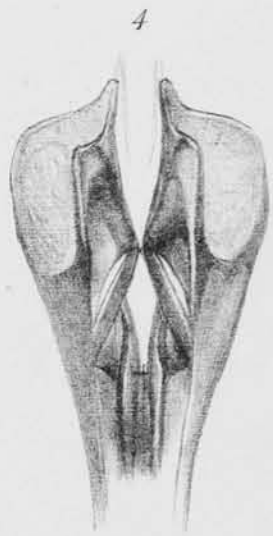
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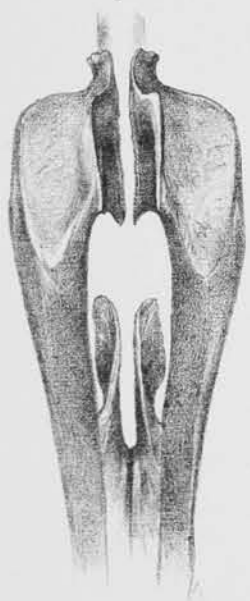
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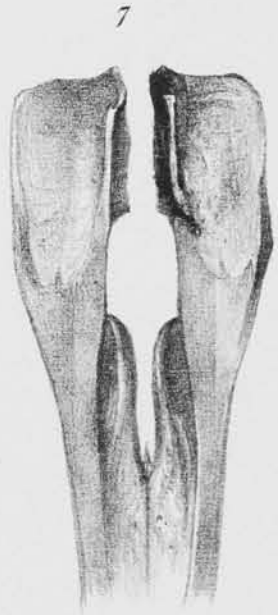
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Fig 1. Sarcoramphus Gryphus.
" 2. Serpentarius Reptilivorus.
" 3. Neophron Percnopterus.
" 4. Polyborus Tharus.
" 5. Falco Peregranus.
" 6. Aquila Chrysaëtos.

Fig. 7. Circaëtus Brachydactylus.
" 8. Spizaëtos Cirrhatus.
" 9. Hieracidea Berigora.
" 10. Nyctea Nivea.
" 11. Strix Delicatulus.
" 12. Asio Brachyotus.

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From Nature on Stone by J. Bradshaw.

From Nature on Zinc by J. Erxleben.

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Fig. 1. Sarcoramphus Papa.
„ 2. Falco Peregrinus.
„ 3. Nyctea Nivea.


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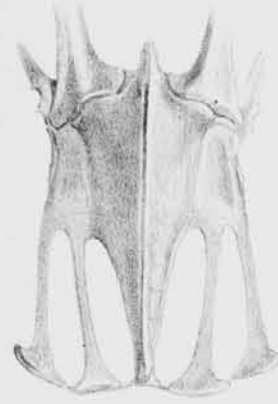
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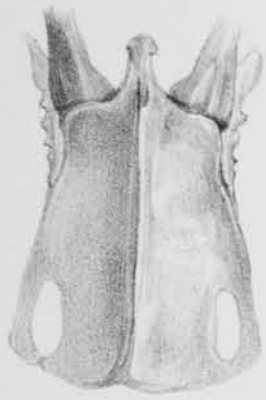
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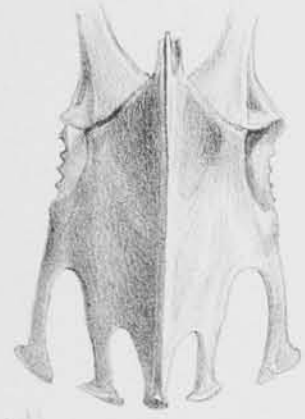
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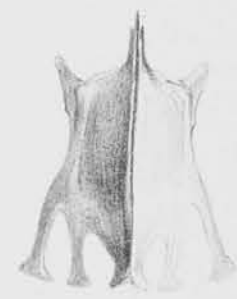
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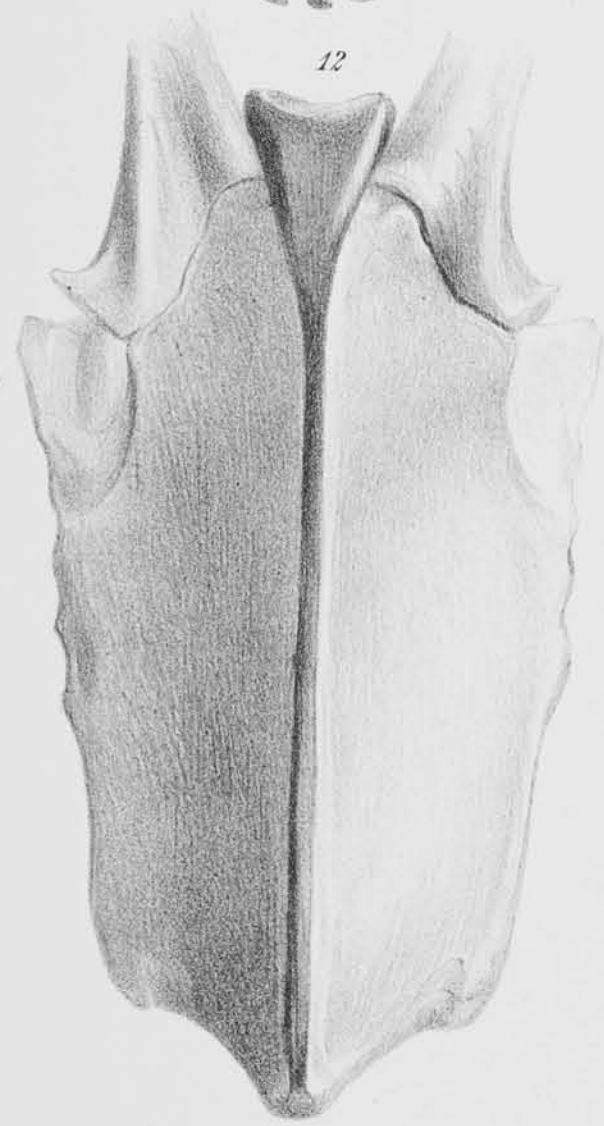
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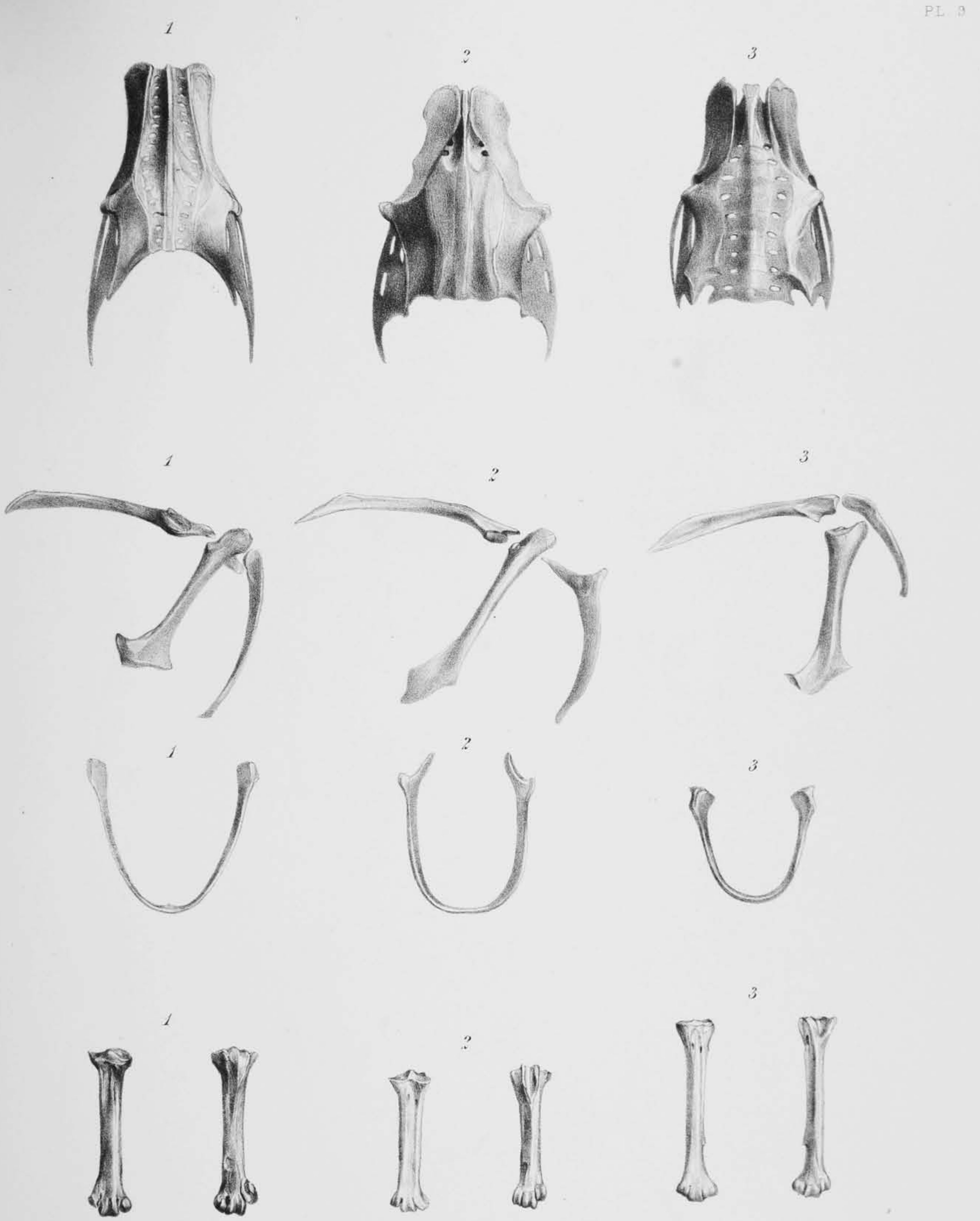
Day & Son, Lith^rs to the Queen.

Fig. 1. *Podargus Humeralis.*
,, 2. *Harpactes Reinwartii.*
,, 3. *Megalaima Corvina.*
,, 4. *Chelonidera Tenebrosa.*
,, 5. *Eurylaimus Sumatranus.*
,, 6. *Eurystomus Orientalis.*

Fig. 7. *Alcedo Ispida.*
,, 8. *Merops Bicolor.*
,, 9. *Todus Viridis.*
,, 10. *Coracias Garrula.*
,, 11. *Upupa Epops.*
,, 12. *Buceros Abyssinicus.*



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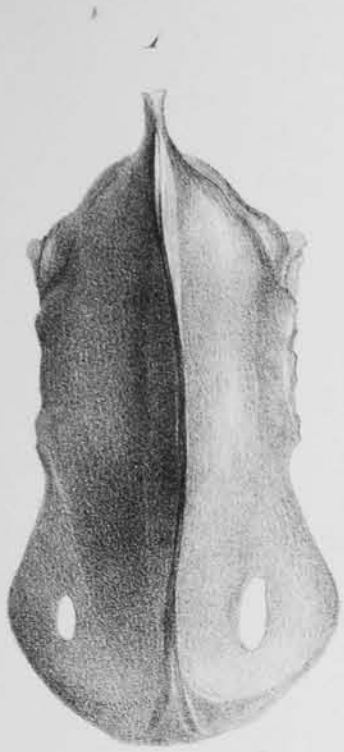
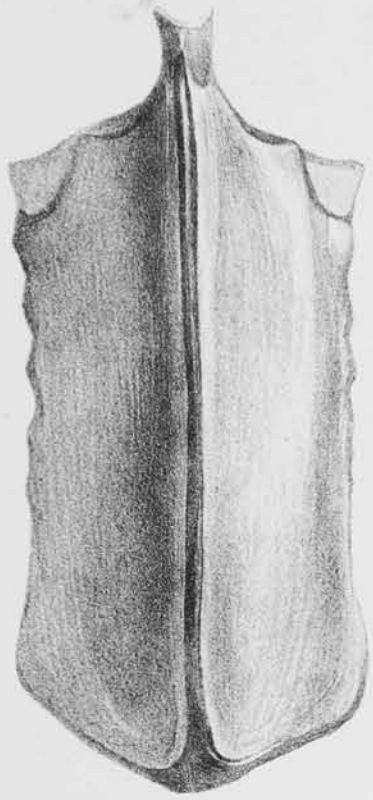
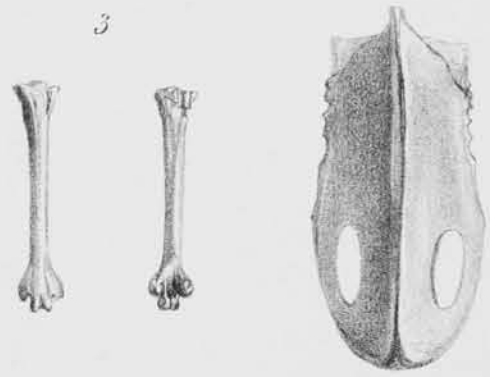
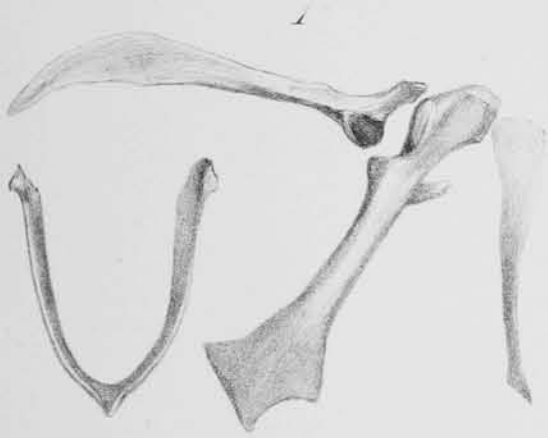
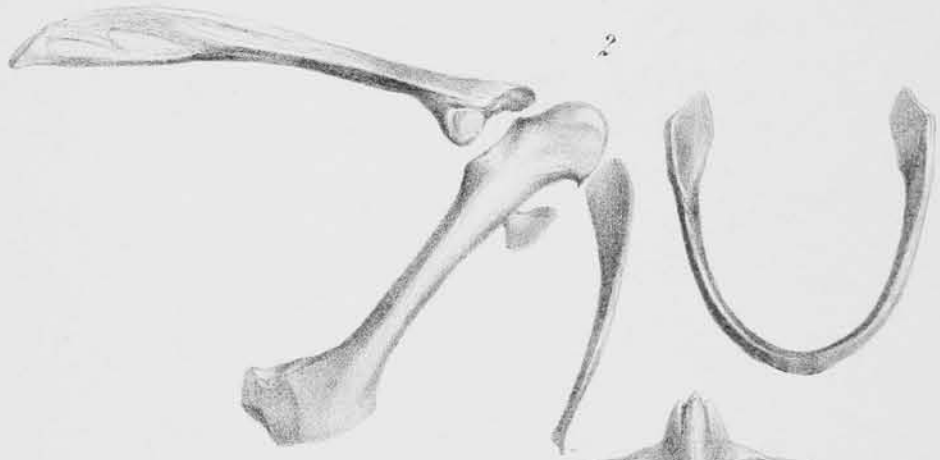
Day & Son. Lith^rs to the Queen.

Figs. 1. Podargas Humeralis.
„ 2. Dacelo Leachii.
„ 3. Pezoporus Formosus.

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Figs. 1. Psittacus Erythacus.
,, 2. Calyptorhynchus Baudinii.
,, 3. Pezoporus Formosus.

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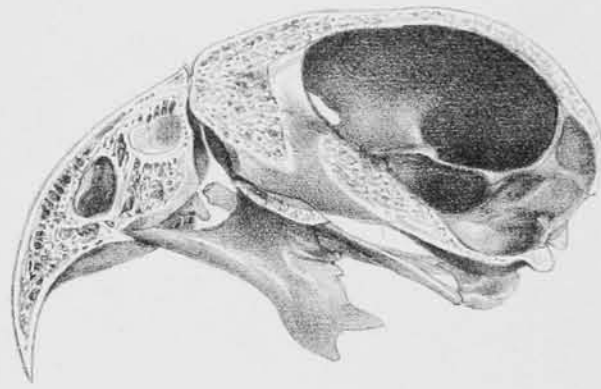

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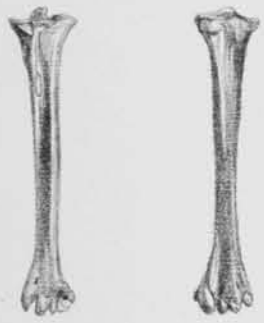

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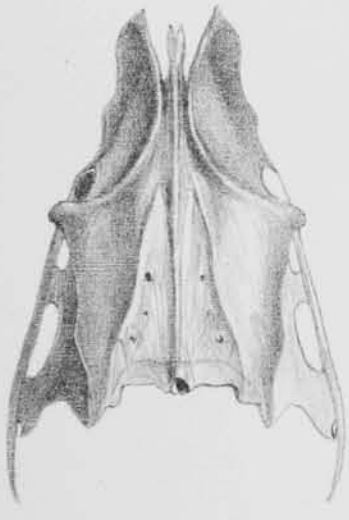

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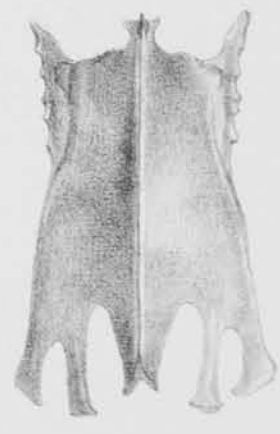

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Day & Son, Lith.rs to the Queen.

Figs. 1. Psittacus Erythacus. — Figs. 2. Cecinus Viridis.


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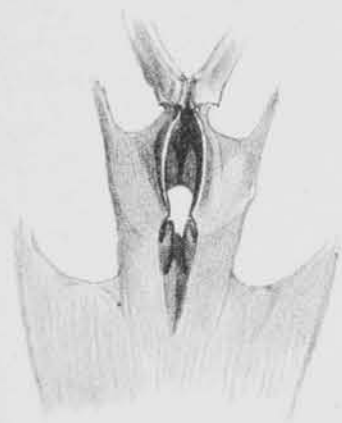
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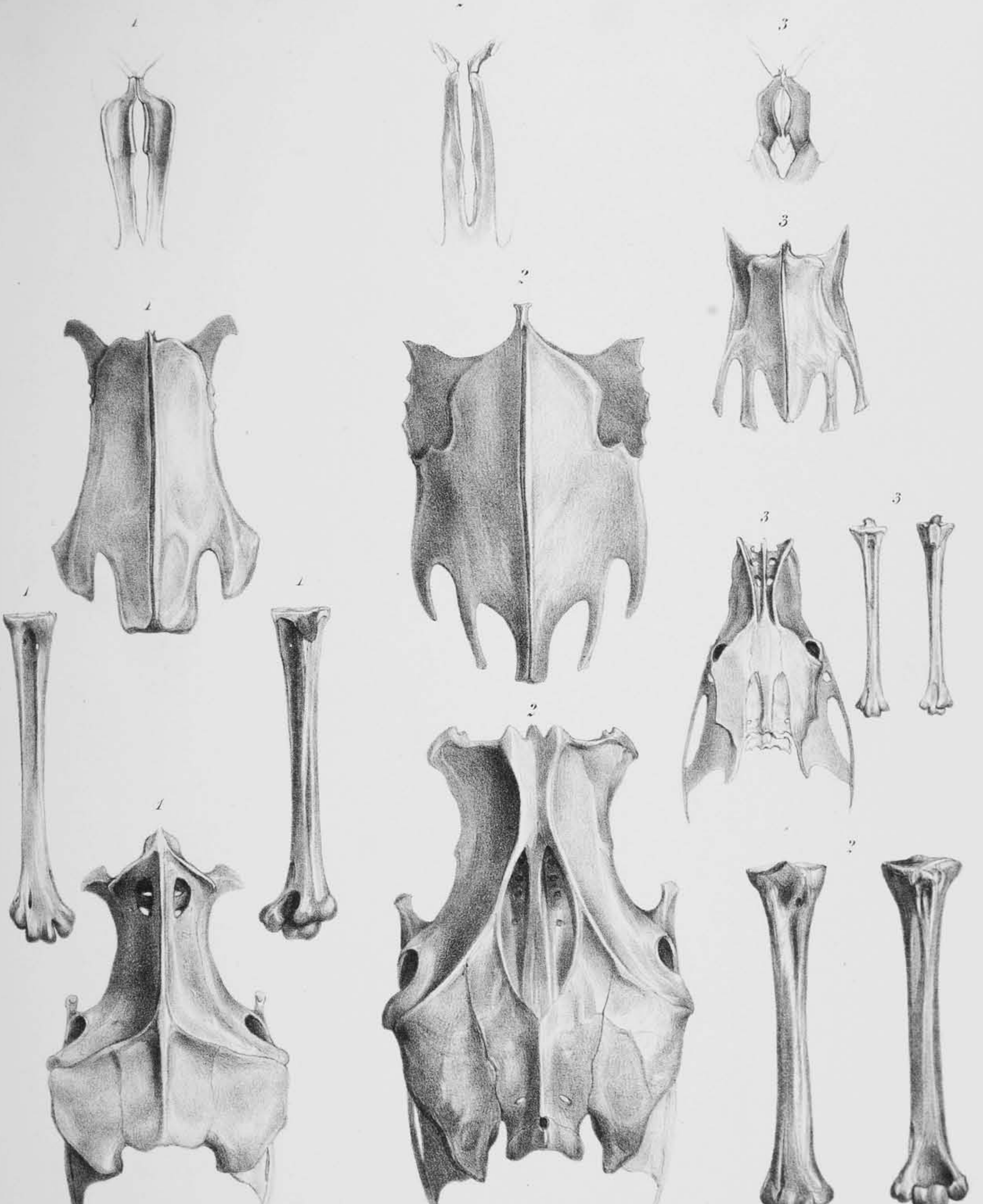
From Nature on Zinc by J. Erxleben.

Day & Son, Lith.rs to the Queen.

Fig. 1. *Podargus Humeralis.*
,, 2. *Harpactes Reinwartii.*
,, 3. *Megalaima Virens.*
,, 4. *Chelonidera Tenebrosa.*
,, 5. *Eurylaimus Sumatranus.*
,, 6. *Dacelo Gigantea.*

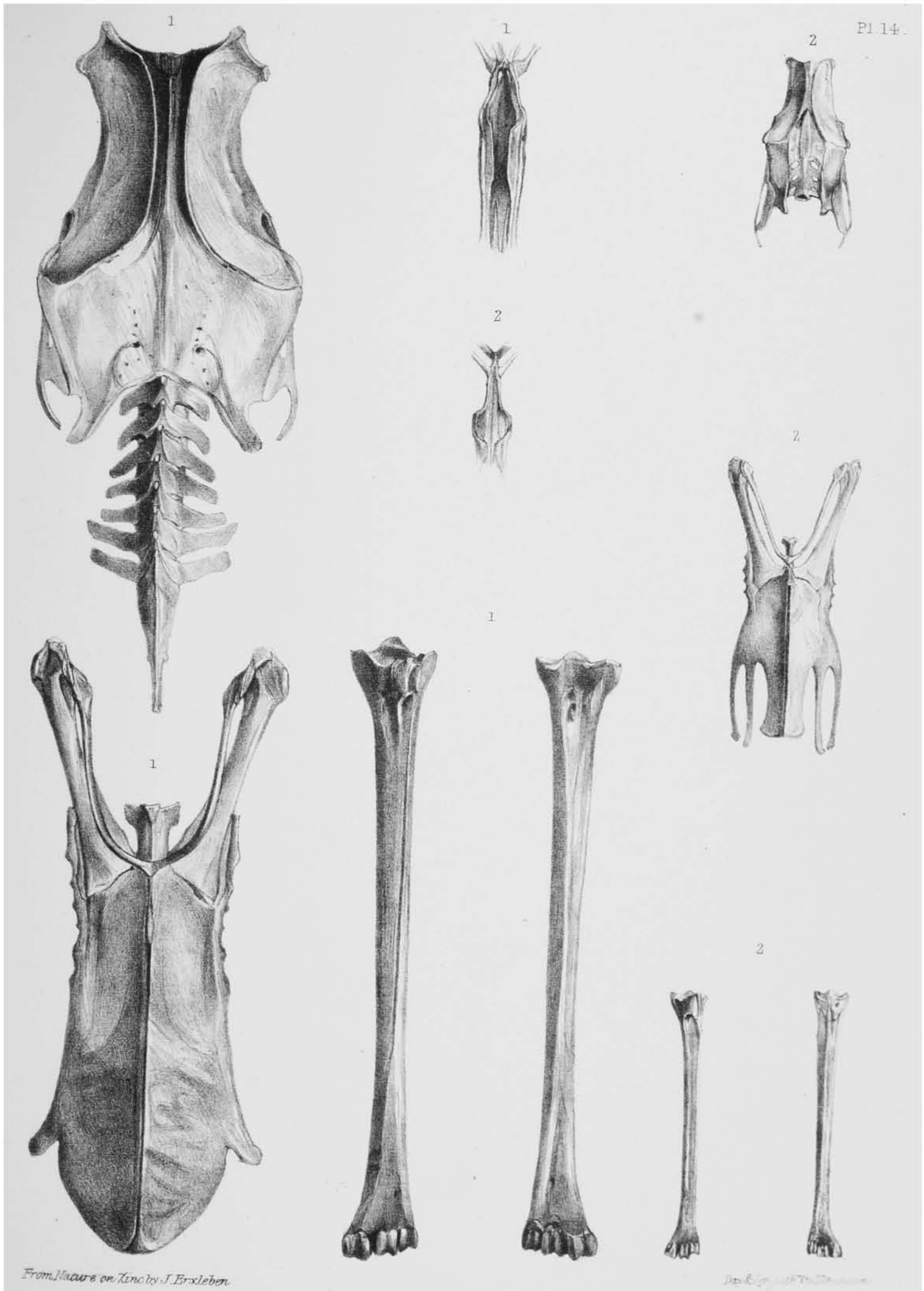
Fig. 7. *Merops Bicolor.*
,, 8. *Todus Viridis.*
,, 9. *Coracias Garrula.*
,, 10. *Upupa Epops.*
,, 11. *Buceros Panini.*
,, 12. *Momotus Braziliensis.*



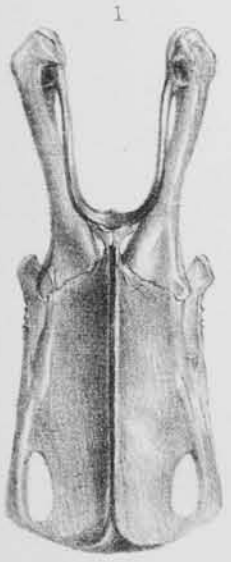
From Nature on Zinc by J. Erxleben

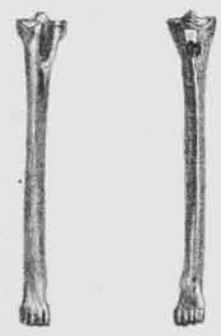
Day & Son, Lithrs to the Queen.

Figs. 1. Centropus Phasianus.
,, 2. Turacus Gigas.
,, 3. Pteroglossus Baillonii



1. MENURA SUPERBA. — 2. PTEROPTOCHOS ALBICOLLIS.





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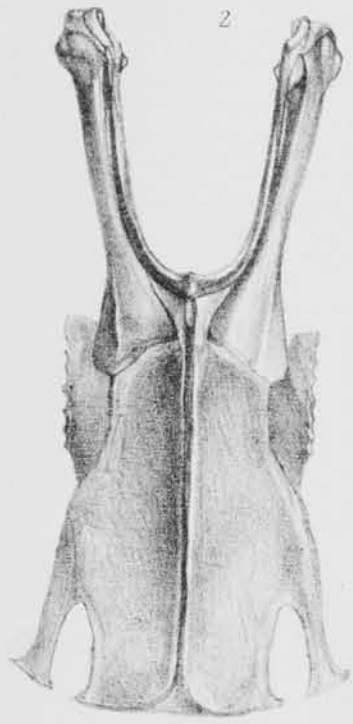
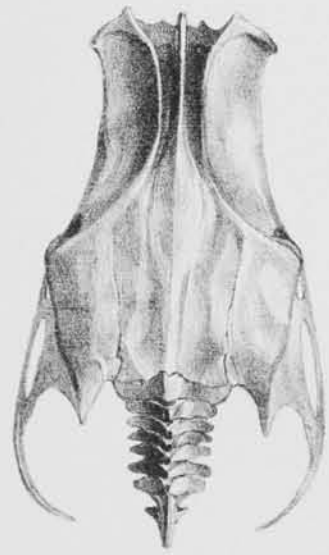
Day & Son, Lith^rs to the Queen.

1. TROPIDORHYNCHUS ARGENTICEPS._2. TROGLODYTES FURVA.
3. TROGLODYTES VULGARIS._4. HIRUNDO RIPARIA.
5. NECTARINIA JAVANICA.

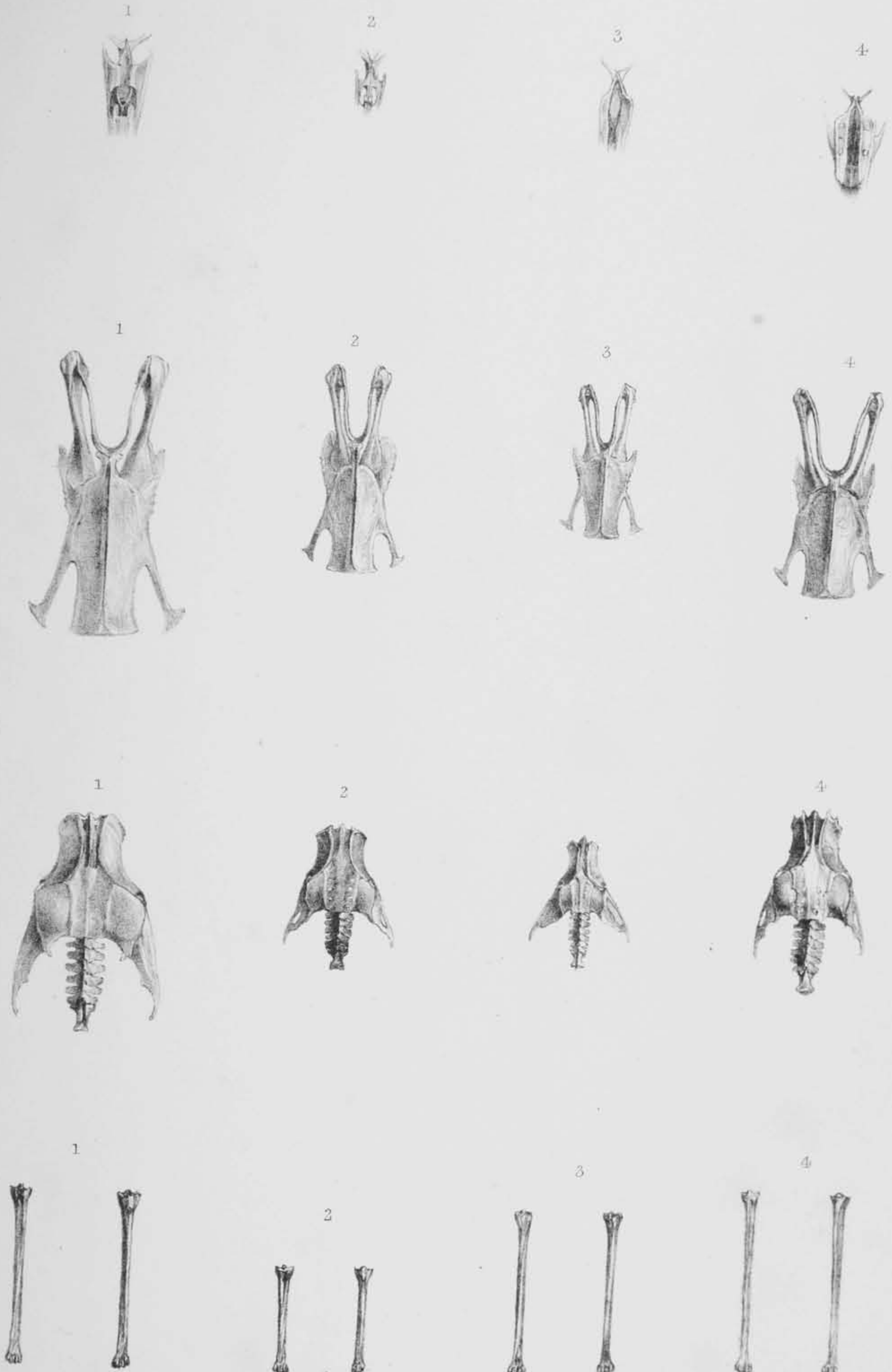




From Nature on Zinc by J. Erichsen.

Day & Son Lith.rs to the Queen.

1. TYTYRA INQUISITOR.—2. PETRICOLA AURANTIA.
3. TCHITREA MELANOPYGA.

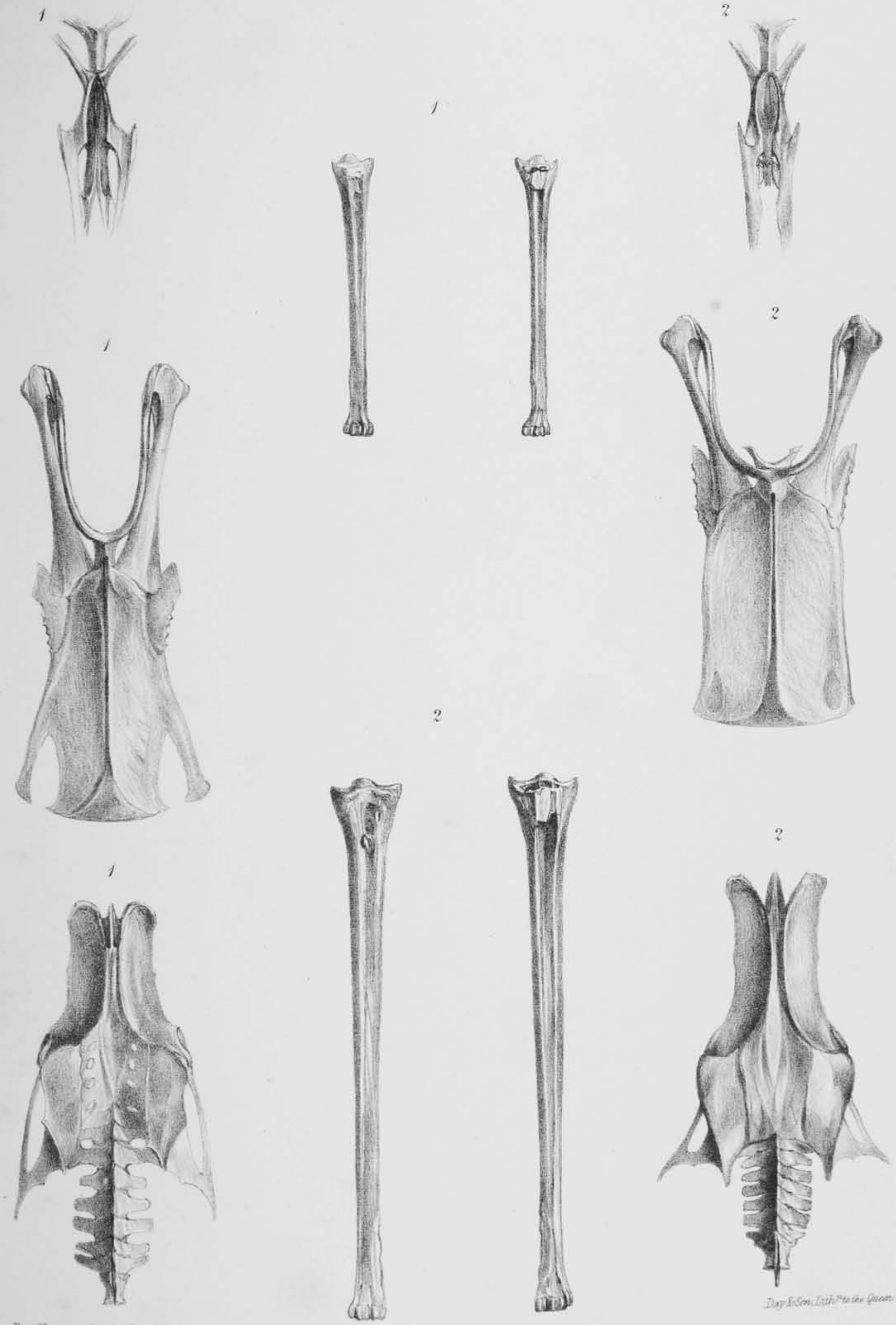


From Nature on Zinc by J. Erxleben

Day & Son Lithrs to The Queen

1. ALAUDA ALPESTRIS. _ 2. PARUS CŒRELEUS
3. MALURUS CYANEUS _ 4. PHILOMELA VULGARIS.

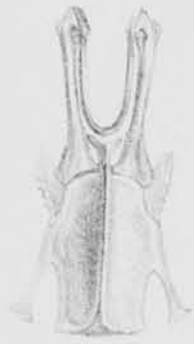
Pl. 17

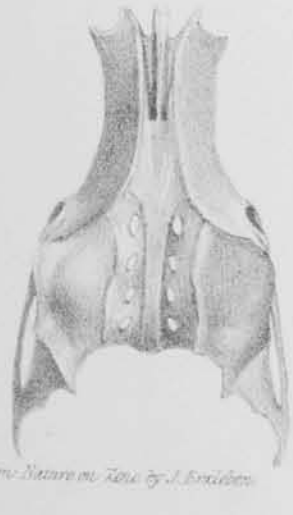


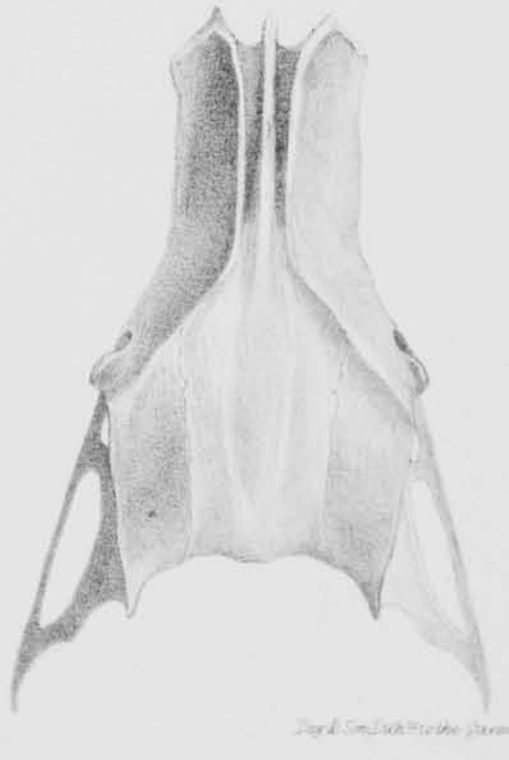
From Nature on Zinc by J. Erxleben

Day & Son, Lith^rs to the Queen

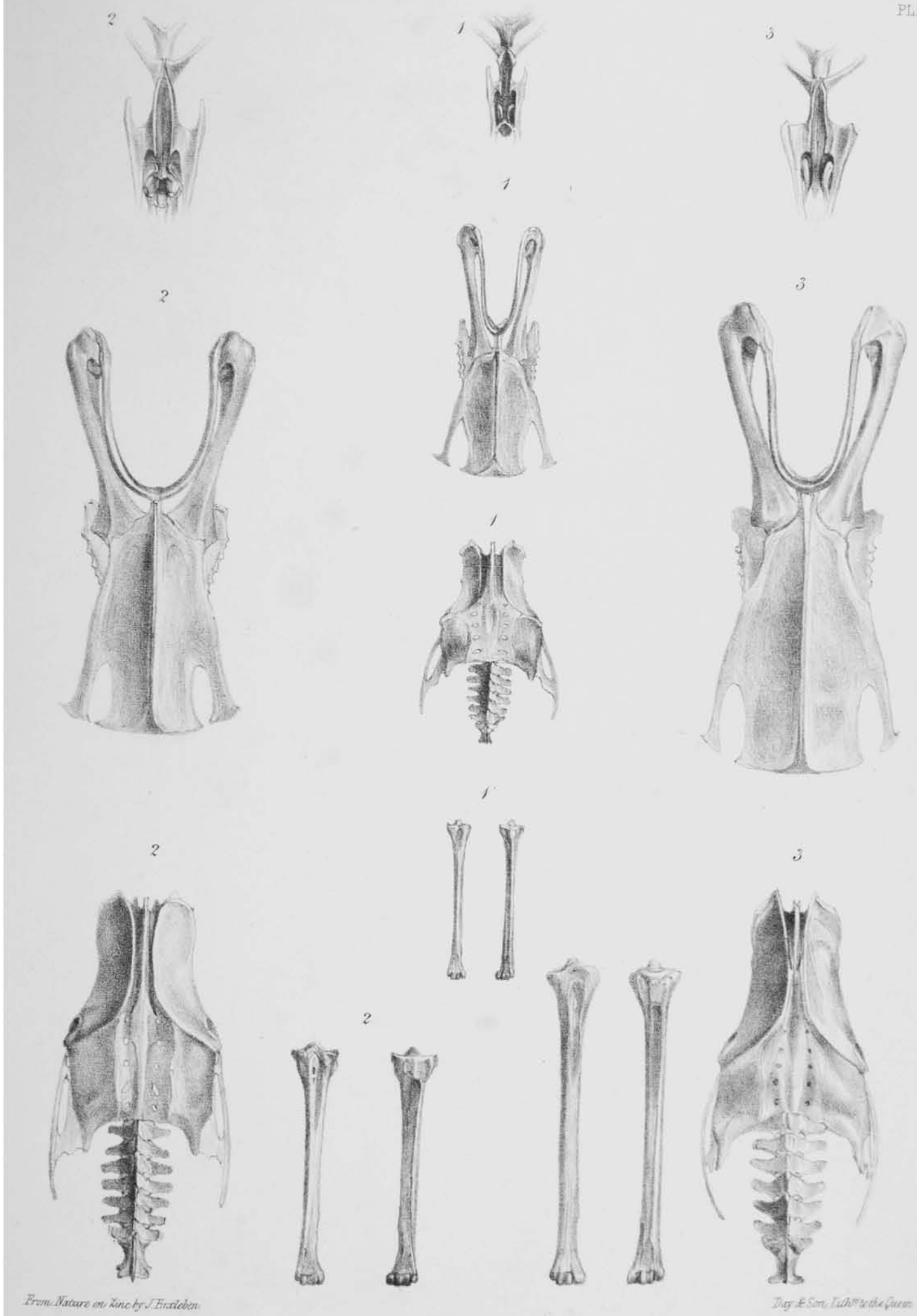
1. *Cassicus bifasciatus.*
2. *Neomorpha Gouldii.*







1. *Scolephagus major.*
2. *Cyclarius quanensis.*
3. *Cephalopterus penciliger.*



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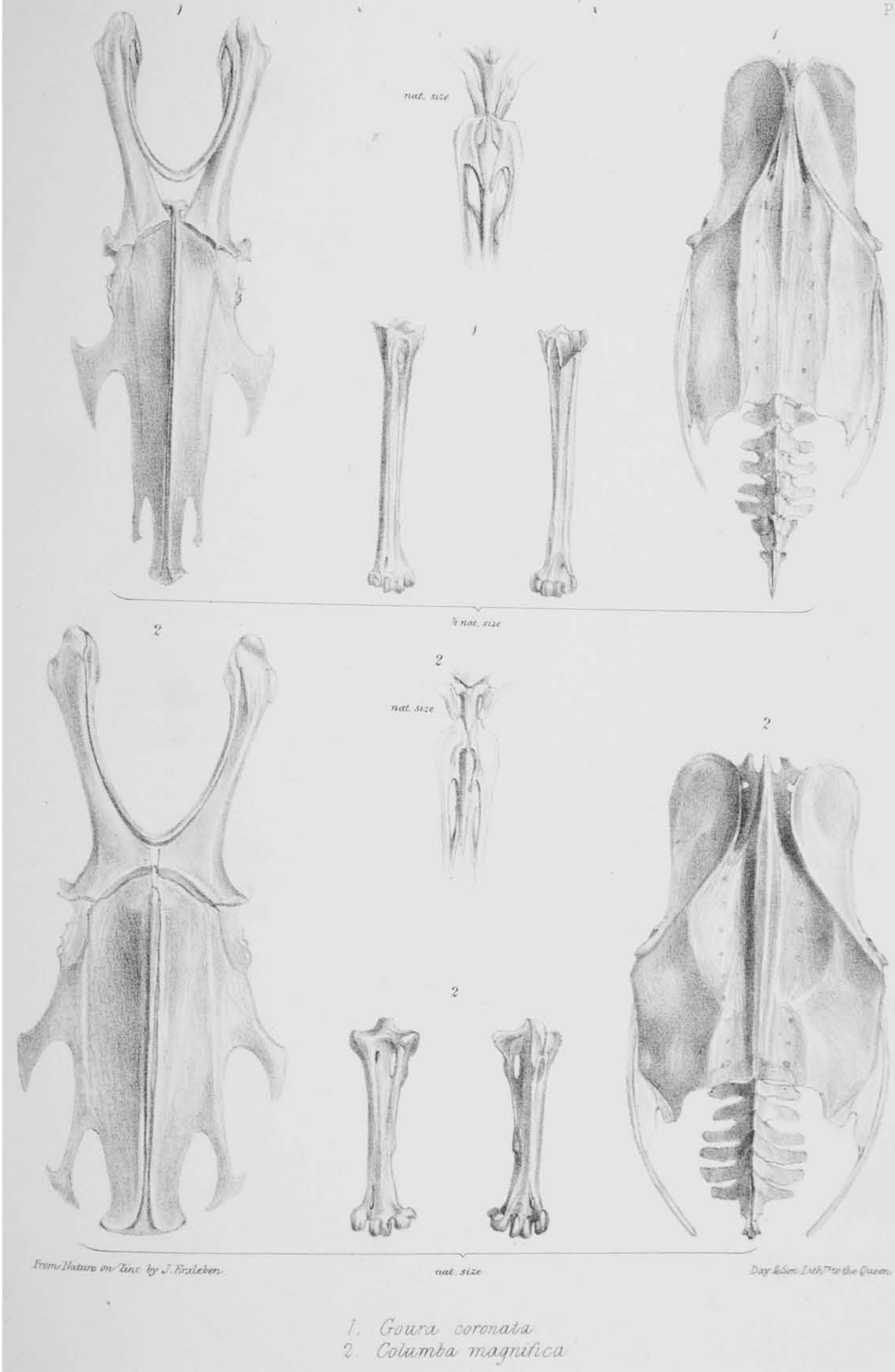
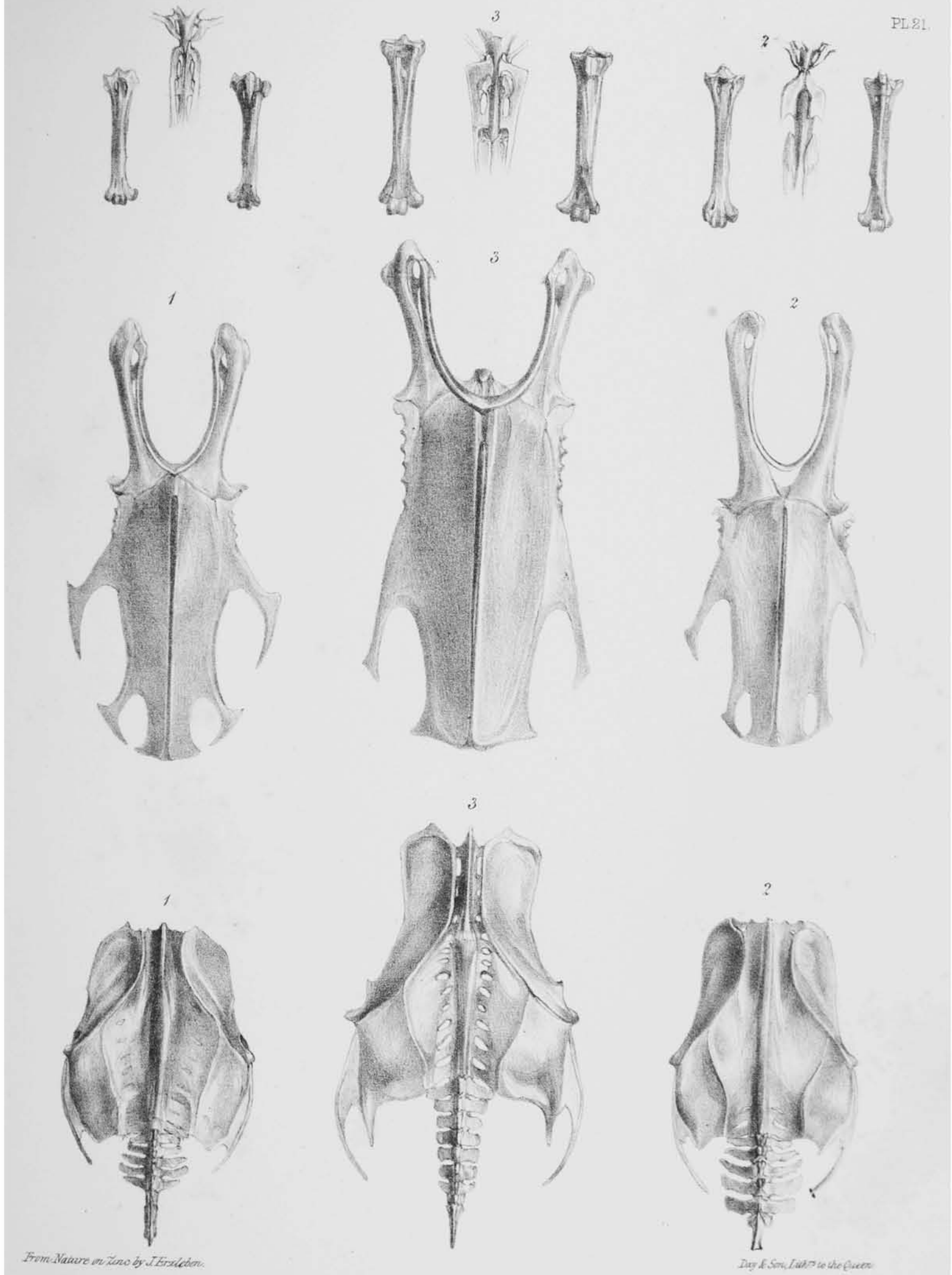
Day & Son, Lith.rs to the Queen.

1. *Saltator magnus.*
2. *Cypsirhina leucoptera.*
3. *Fregilus graculus.*



1. *Goura coronata*
2. *Columba magnifica*



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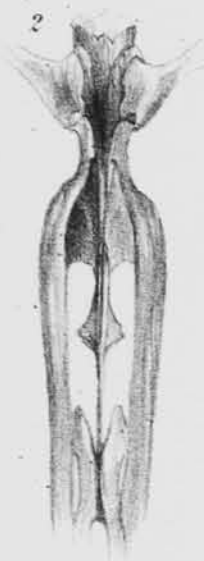
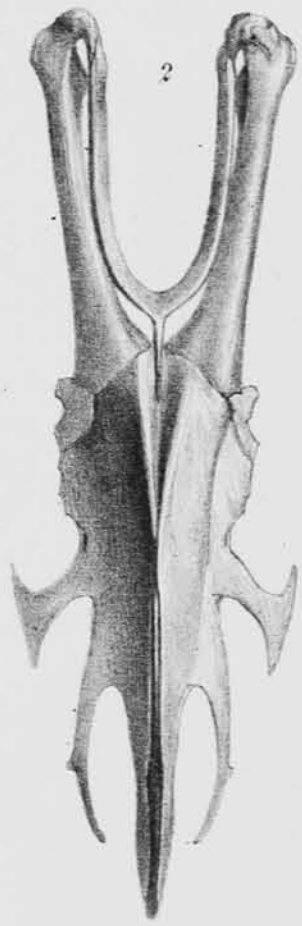
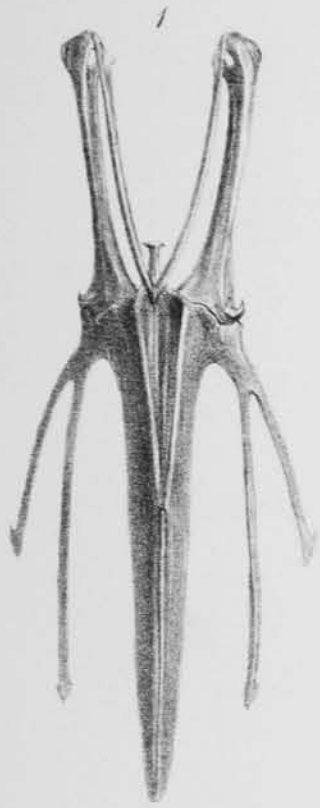
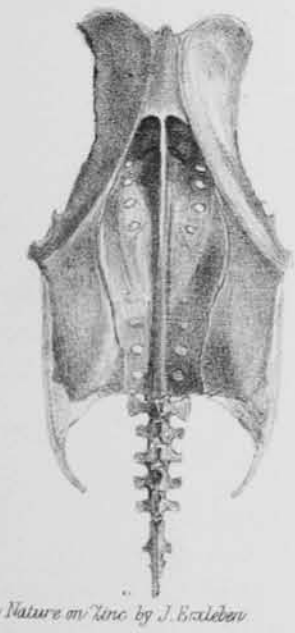
Day & Son, Lith.rs to the Queen.

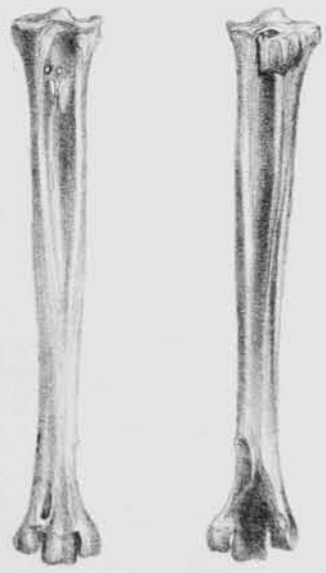
1. *Phalacrotreron nudirostris*
2. *Ptilinopus cinctus*
3. *Attagis Gayi*











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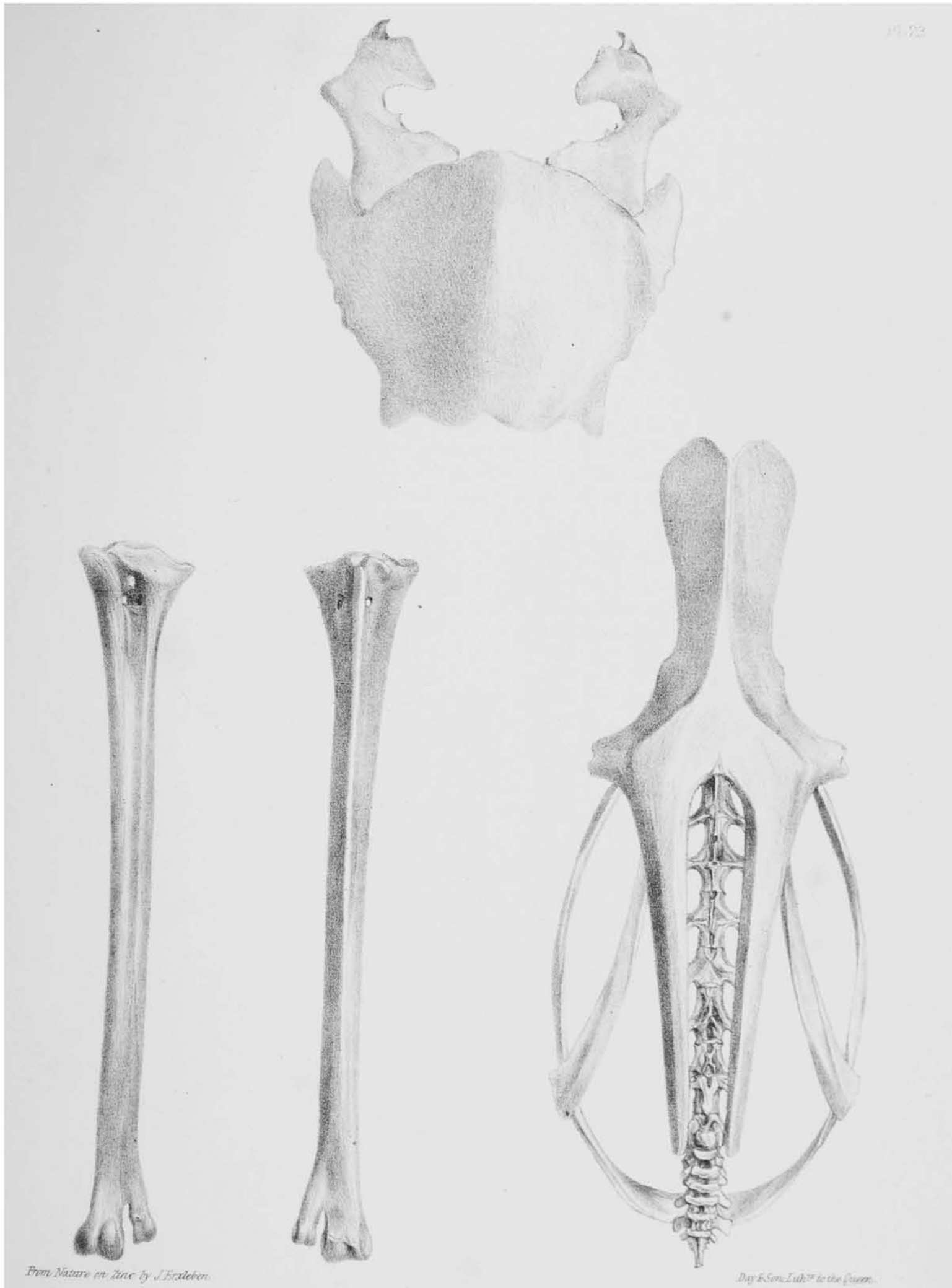
Day & Son, Lith.rs to the Queen.

1. *Lophortyx californicus.*
2. *Crax globicera.*



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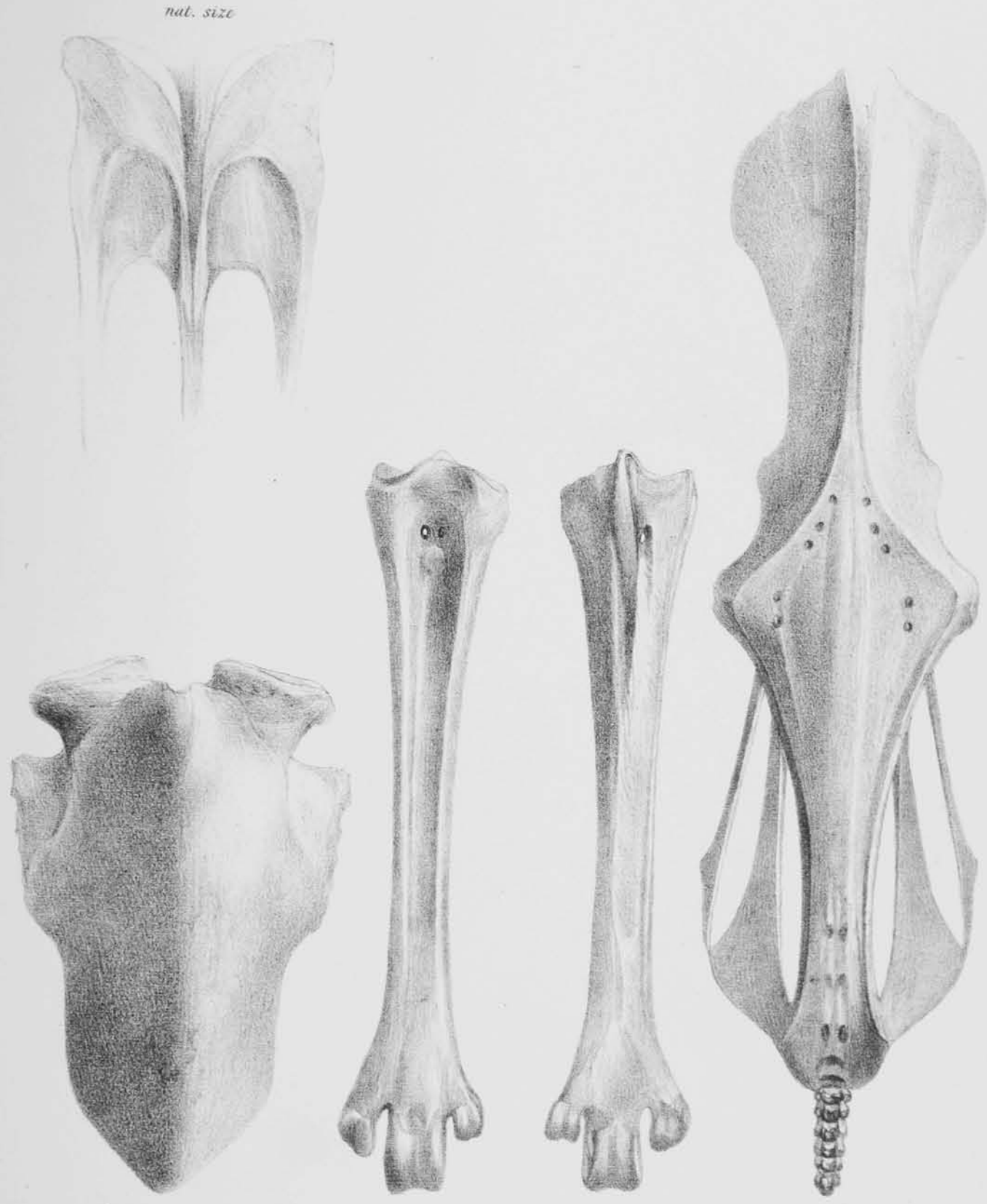
Day & Son, Lith.rs to the Queen.

Struthio Camelus.



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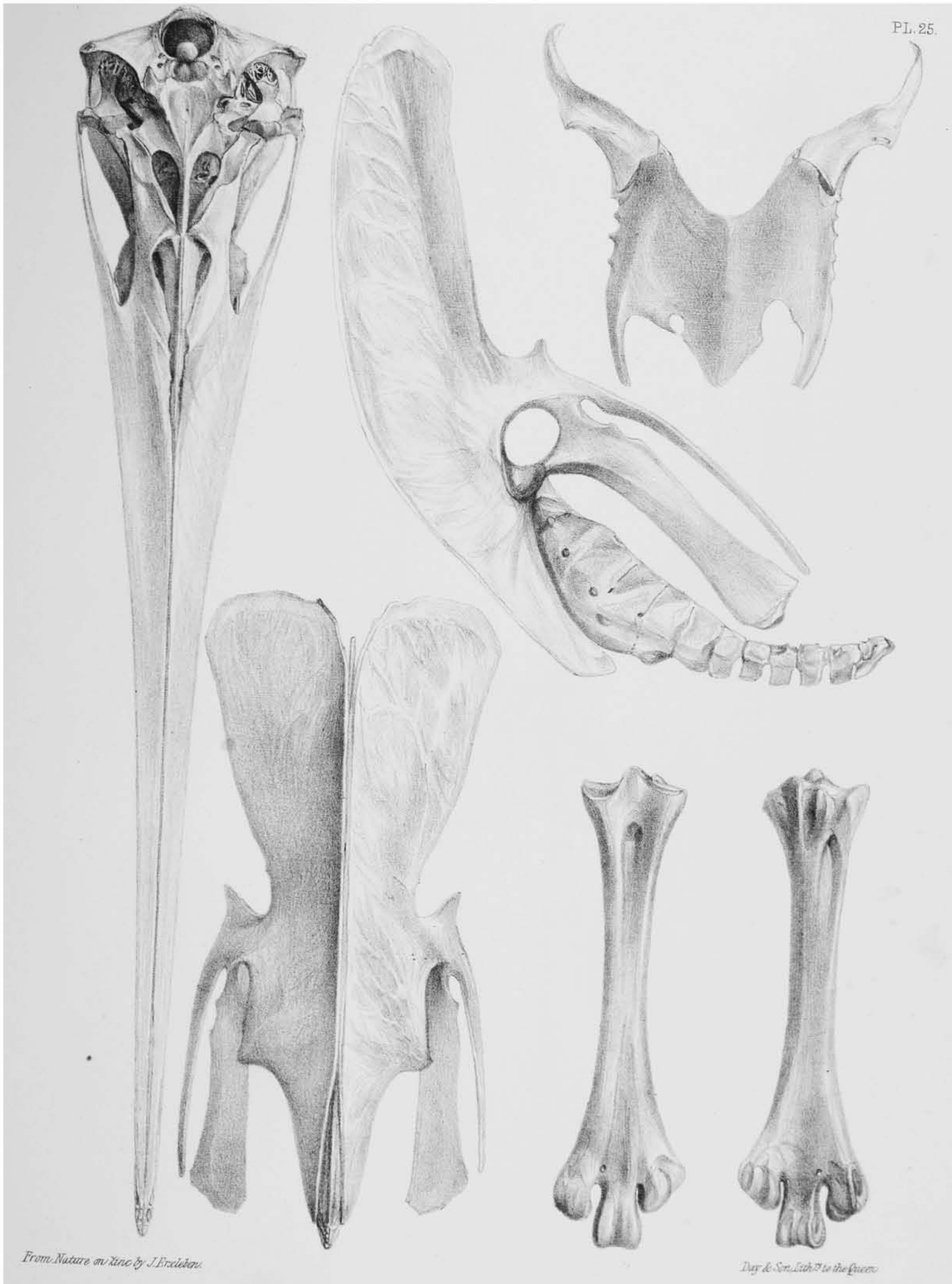
Day & Son, Lith.rs to the Queen.

Casuarius emu.



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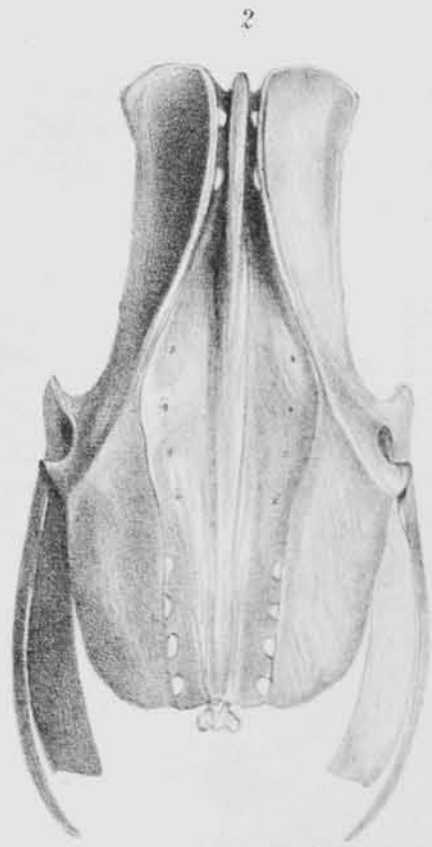
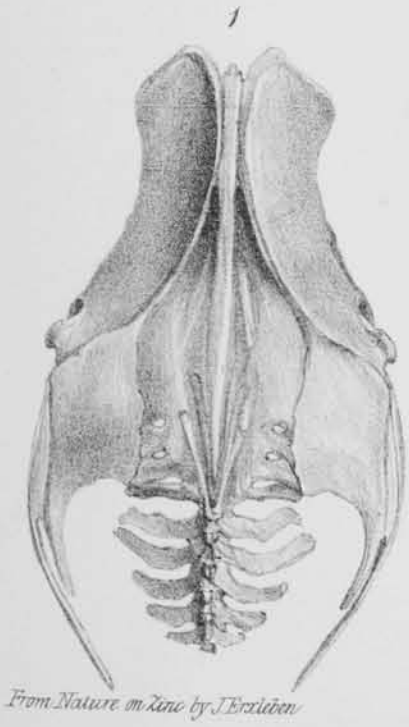
Day & Son Lith.rs to the Queen

Apteryx Australis.





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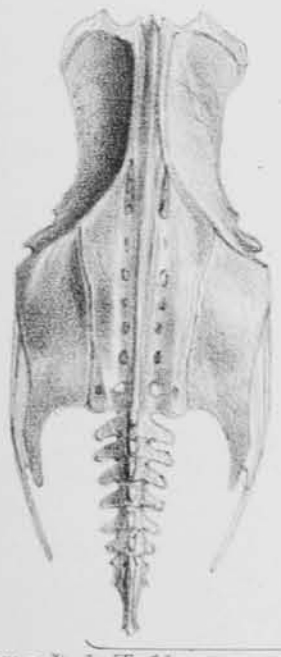
Day & Son, Lith.rs to the Queen

1. *Otis Houbara.*
2. *Tinamus Braziliensis*

½ nat. size

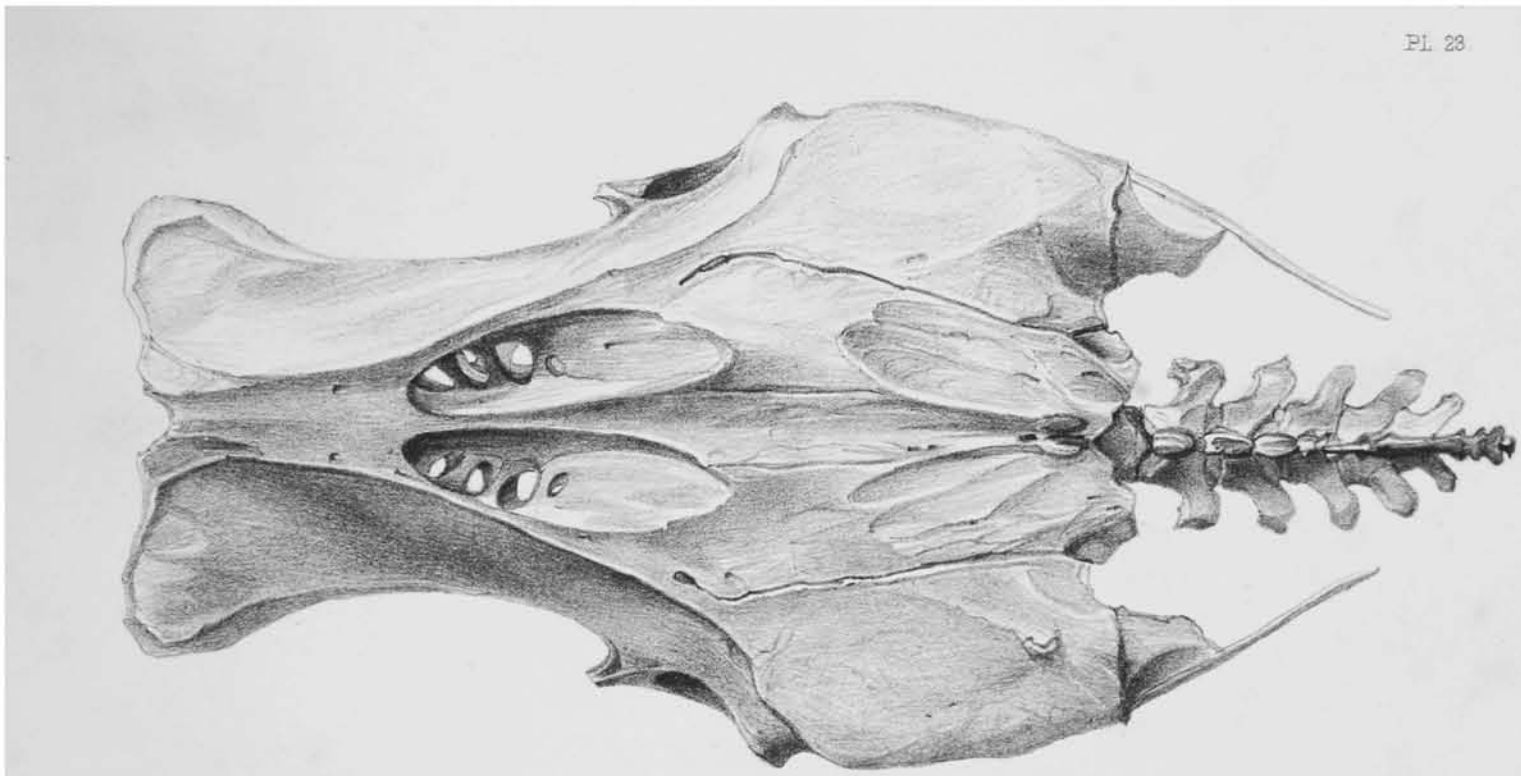


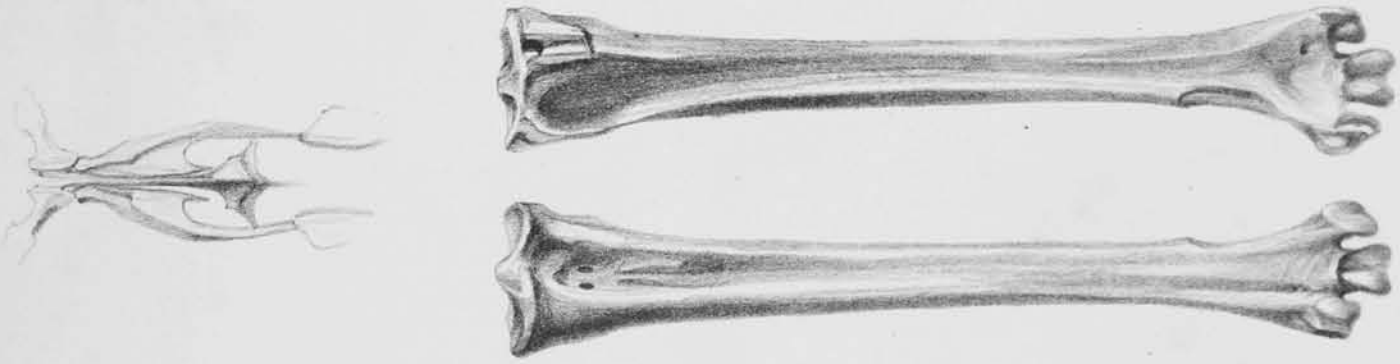
From Nature on Zinc by J. Erxleben

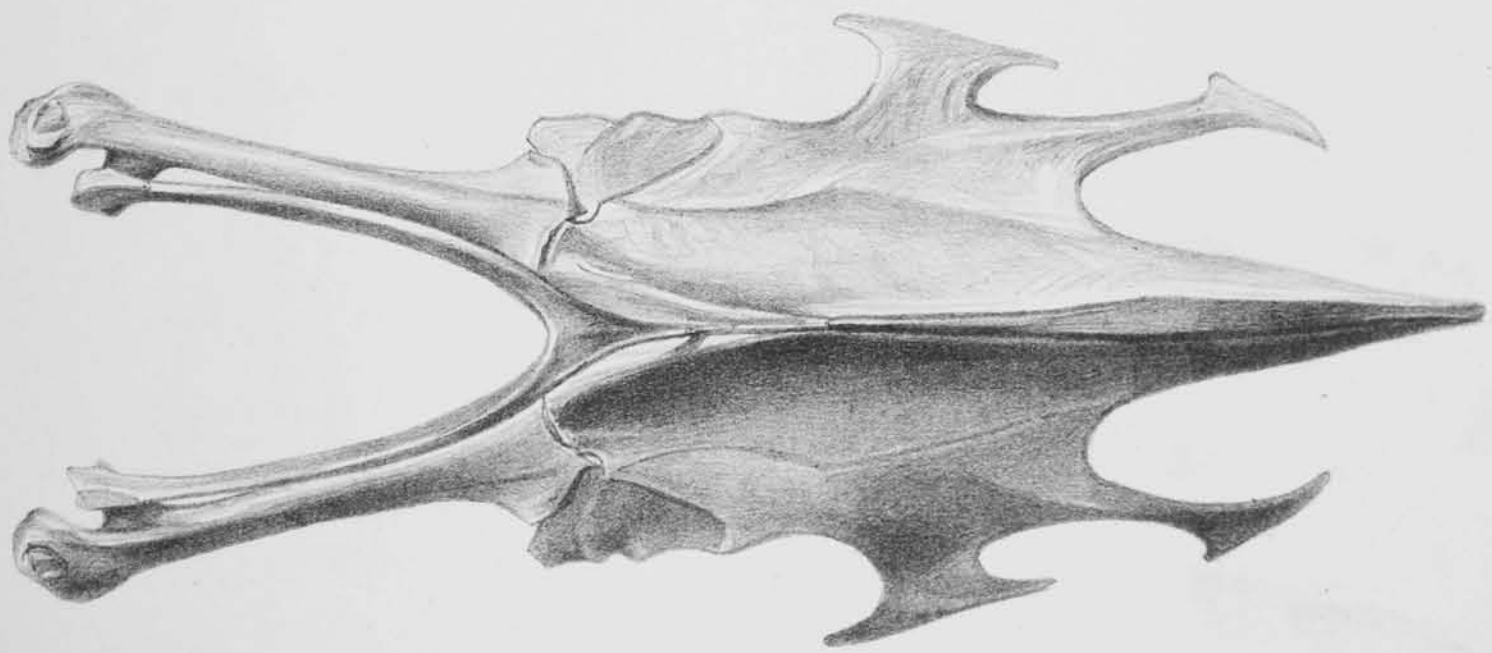
½ nat. size

Day & Son, Lith. to the Queen

1. *Threskiornis melanocephalus.*
2. *Tantalus ibis*
3. *Aramus scolopaceus*







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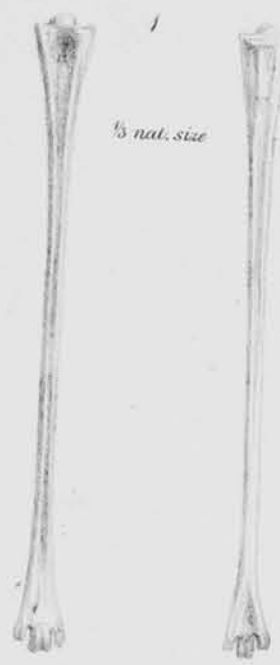
Day & Son, Lith.rs to the Queen

OREOPHASIS DERBYANUS.

1

nat. size

1



⅓ nat. size

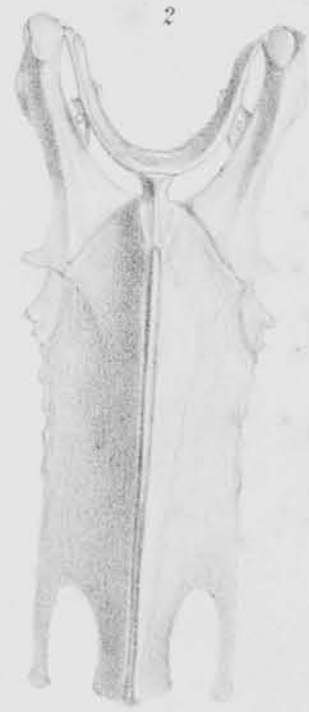
2

nat. size

1

½ nat. size

2



½ nat. size

2

⅓ nat. size

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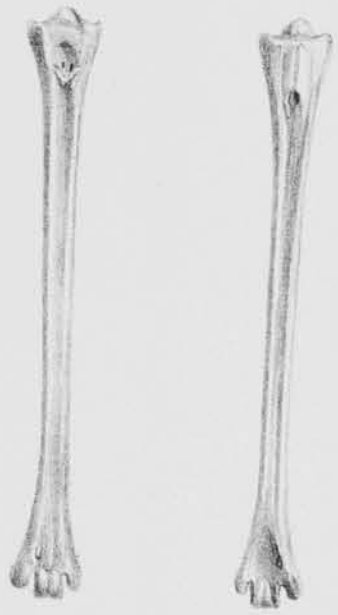
Day & Son, Lith.rs to the Queen

1. *Cariama cristata.*
2. *Phœnicopterus ruber.*

nat. size



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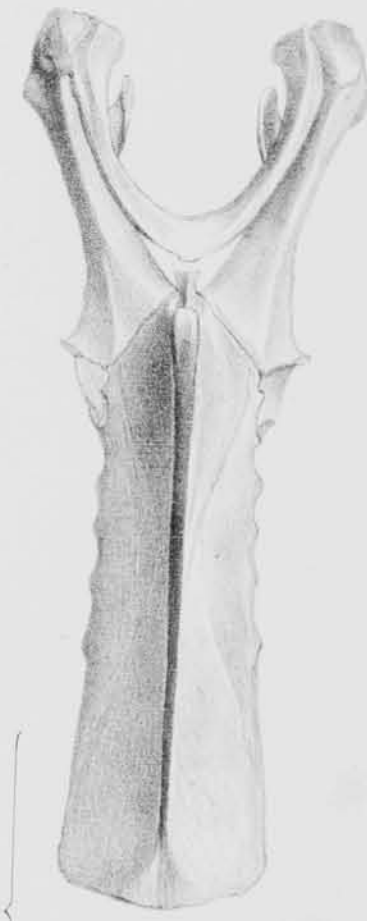
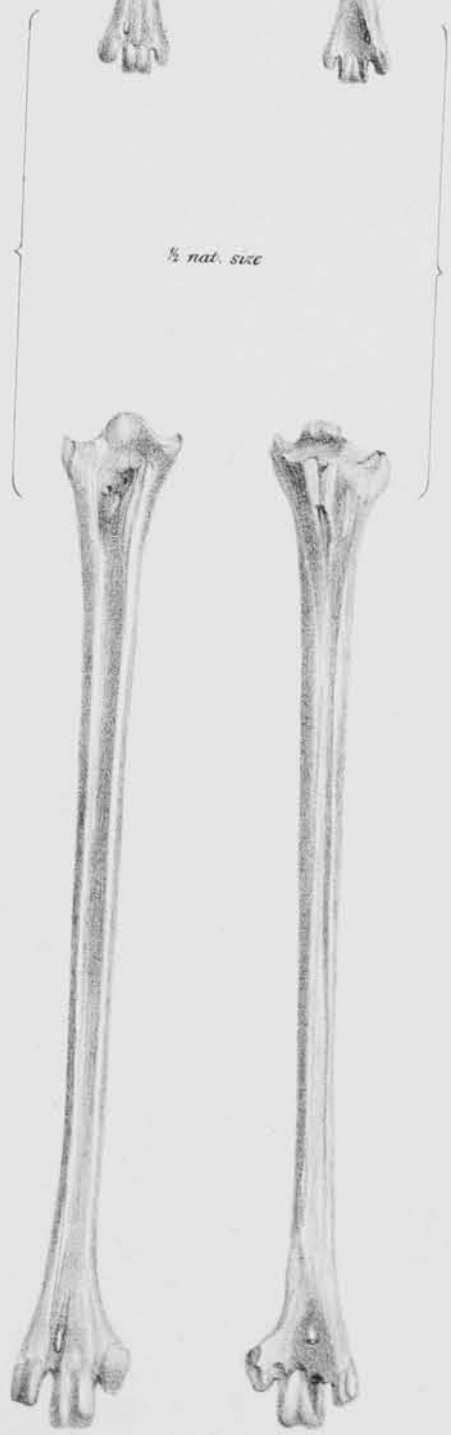


½ nat. size



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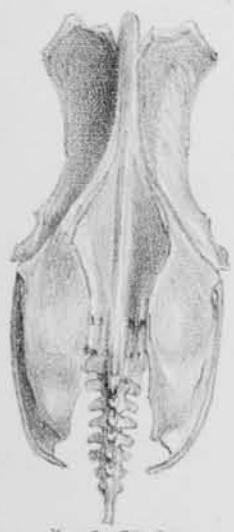
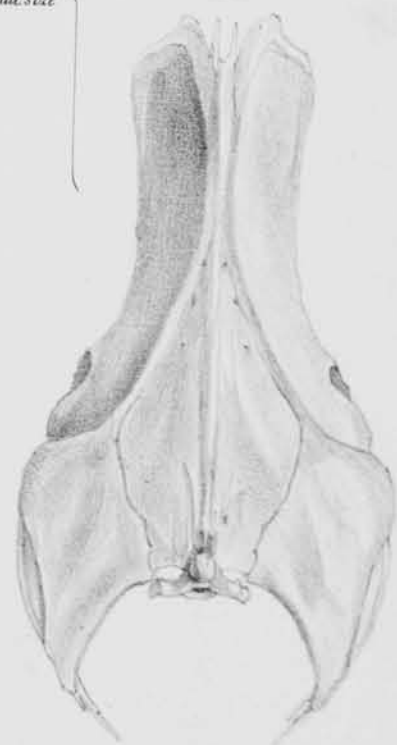


nat. size



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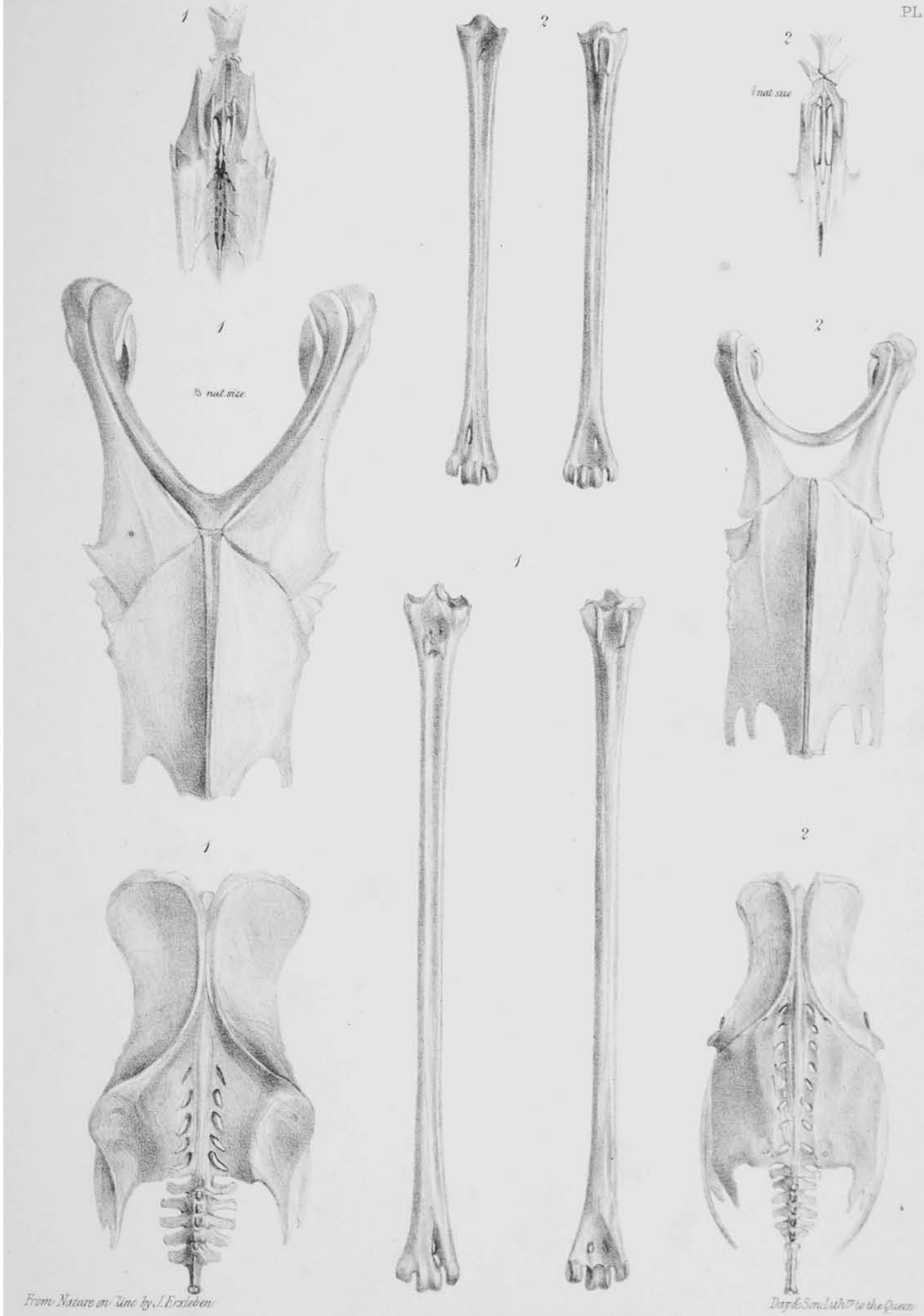
Day & Son, Lith.rs to the Queen

1. *Psophia viridis*
2. *Scops Balearica*



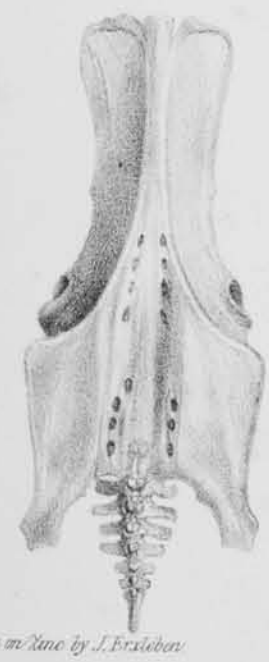
1. *Leptophilus argala.*
2. *Platylea leucorodia*

1

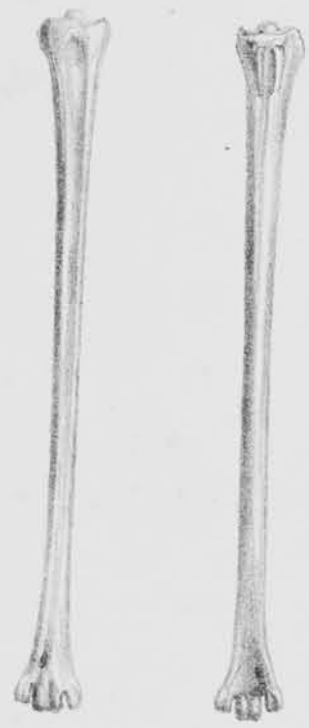
nat. size

1

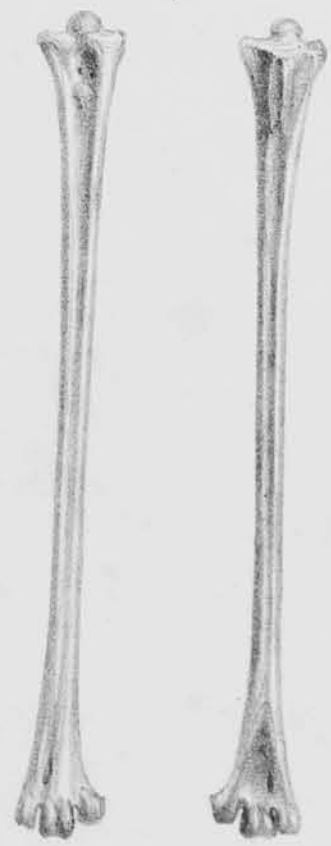
1



2



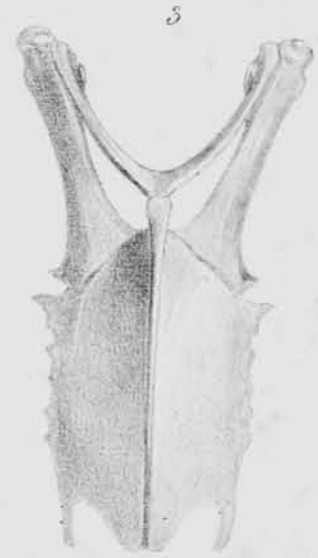
1



3

nat. size

3



3

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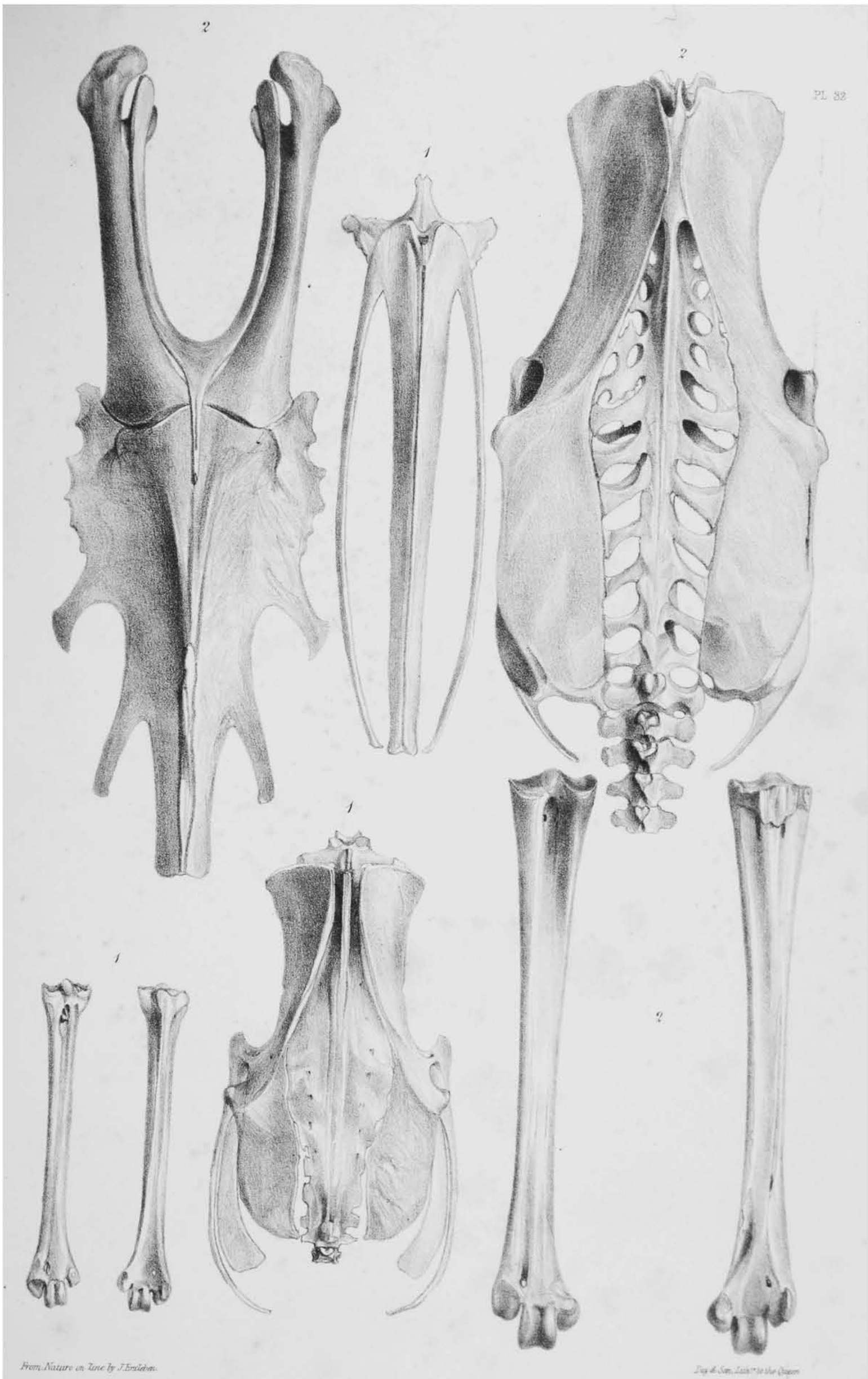
Day & Son's Lith.rs to the Queen.

1. Scops Virgo.
2. Ciconia alba.



1. TINAMUS BRASILIENSIS. 2. CRAX MITU.

1

½ nat. size

2

½ nat. size

1

2

2

2

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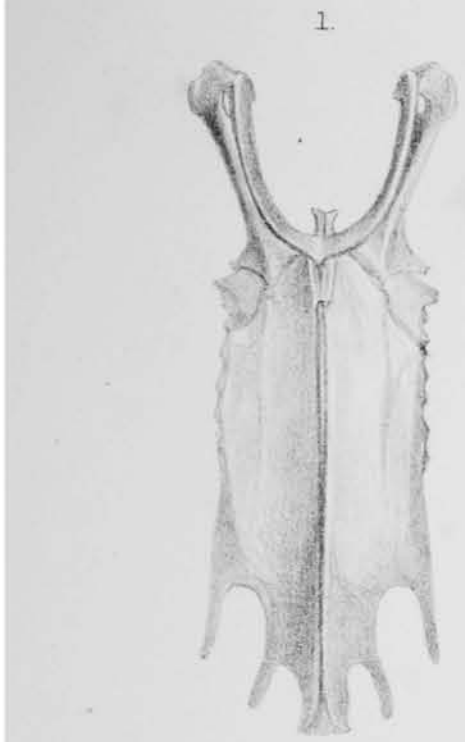
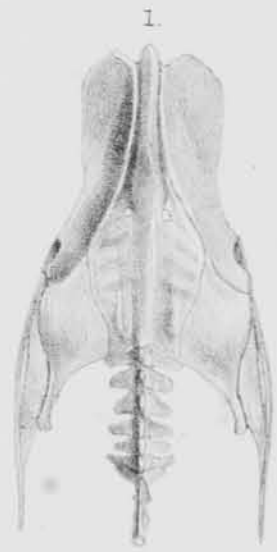
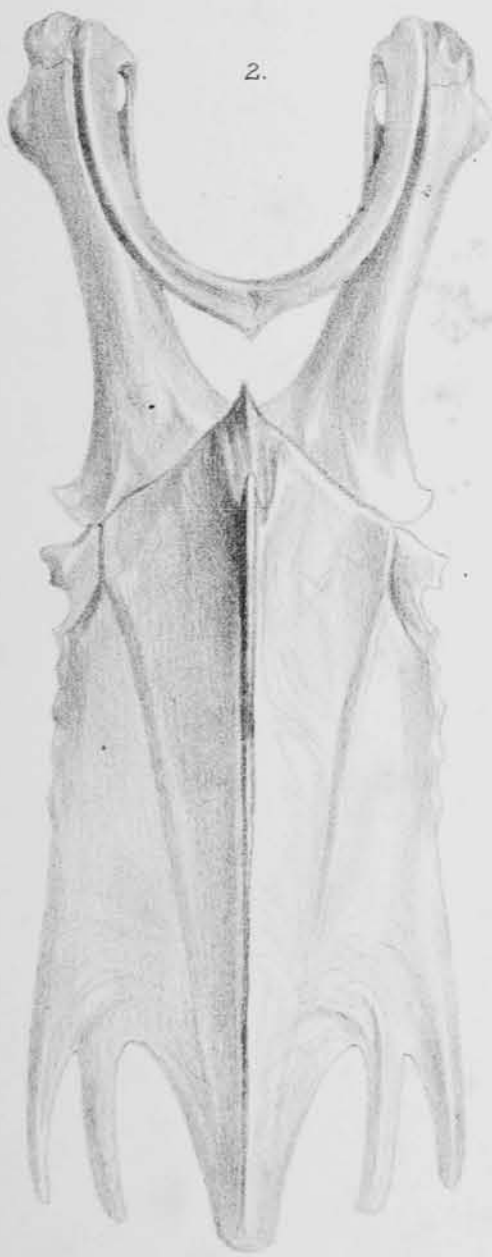
Day & Son, Lith.rs to the Queen

1. TANTALUS IBIS. 2. THRESKIONIS MELANOCEPHALA.







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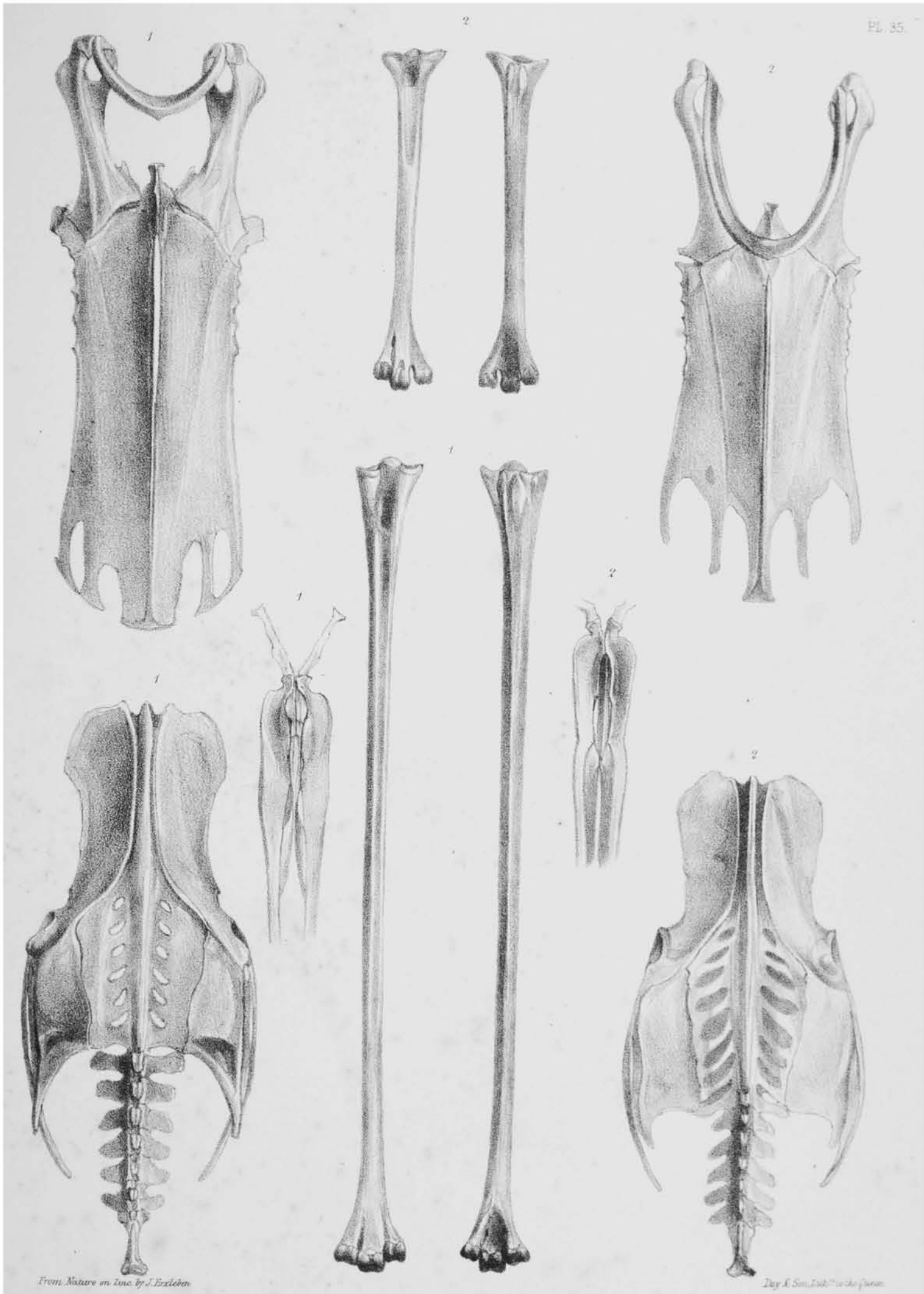
Day & Son, Lith.rs to the Queen.

1. TOTANUS. GLOTTIS. 2. HARPIPRION HAGABACH.



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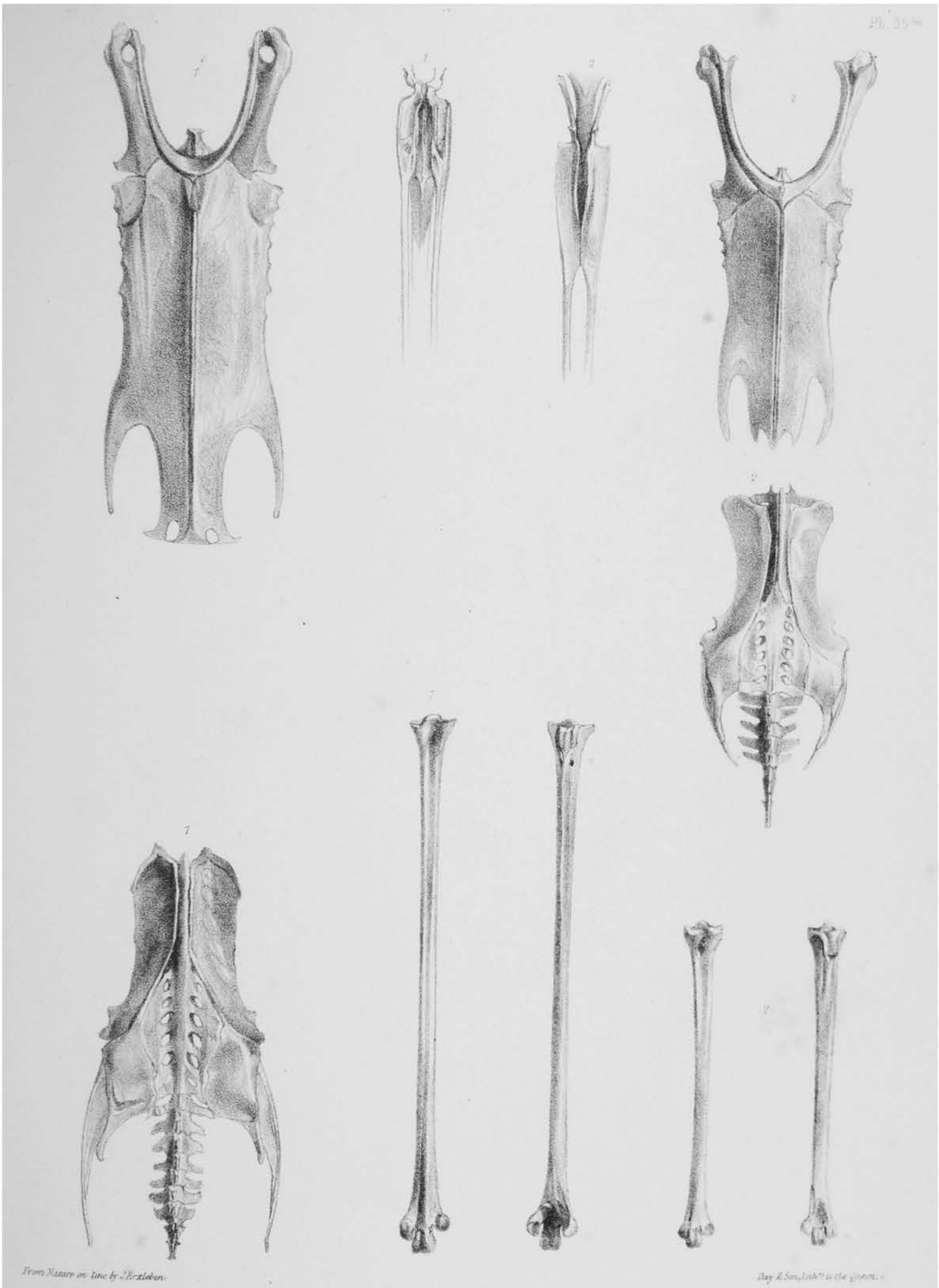
Day & Son, Lith.rs to the Queen.

1. ŒDICNEMUS LONGIROSTRIS. 2. SCOLOPAX RUSTICOLA.



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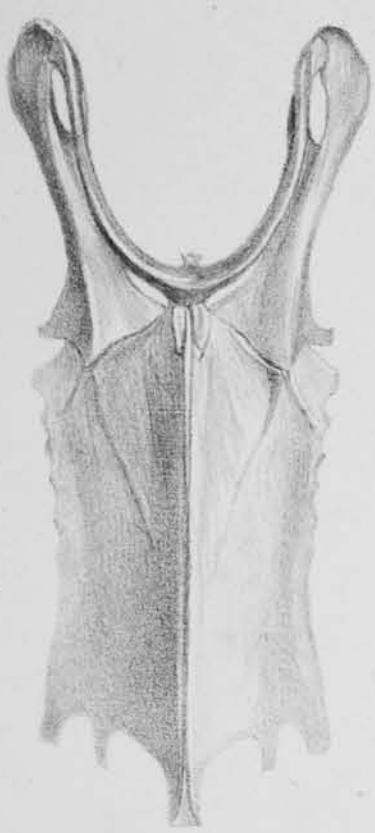
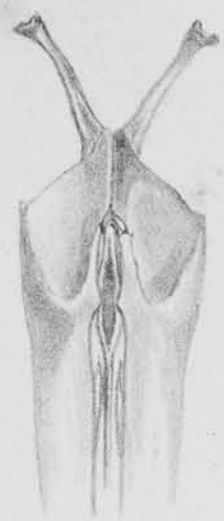
Day & Son, Lith.rs to the Queen.

1. LIMOSA RUFA. 2. HELIAS PHALENOIDES.

1.

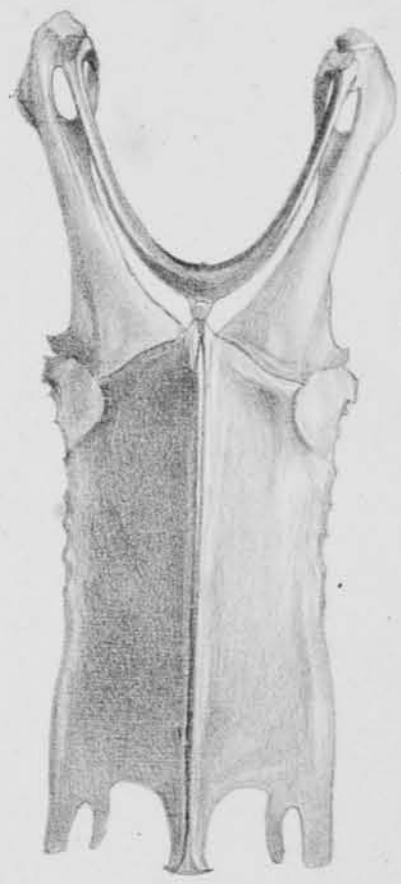


1.



2.

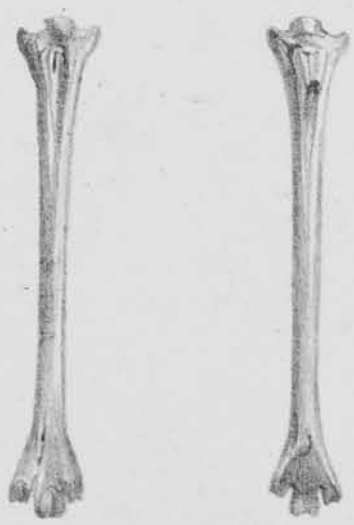
2.



1.

1.

2.



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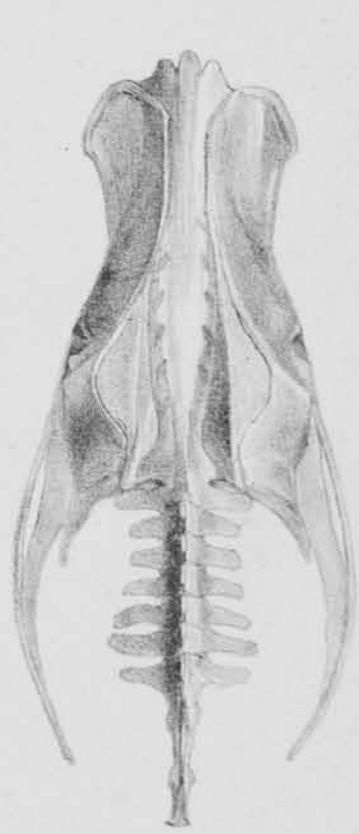


From Nature on Zinc by J. Braleben.

Day & Son, Lith.rs to the Queen.

1. RHYNCOPS NIGRA. 2. CHROICOCEPHALUS RIDIBUNDUS.

½ Natural Size

PL 37

1.

1

2.

2.

1.

1.

2.

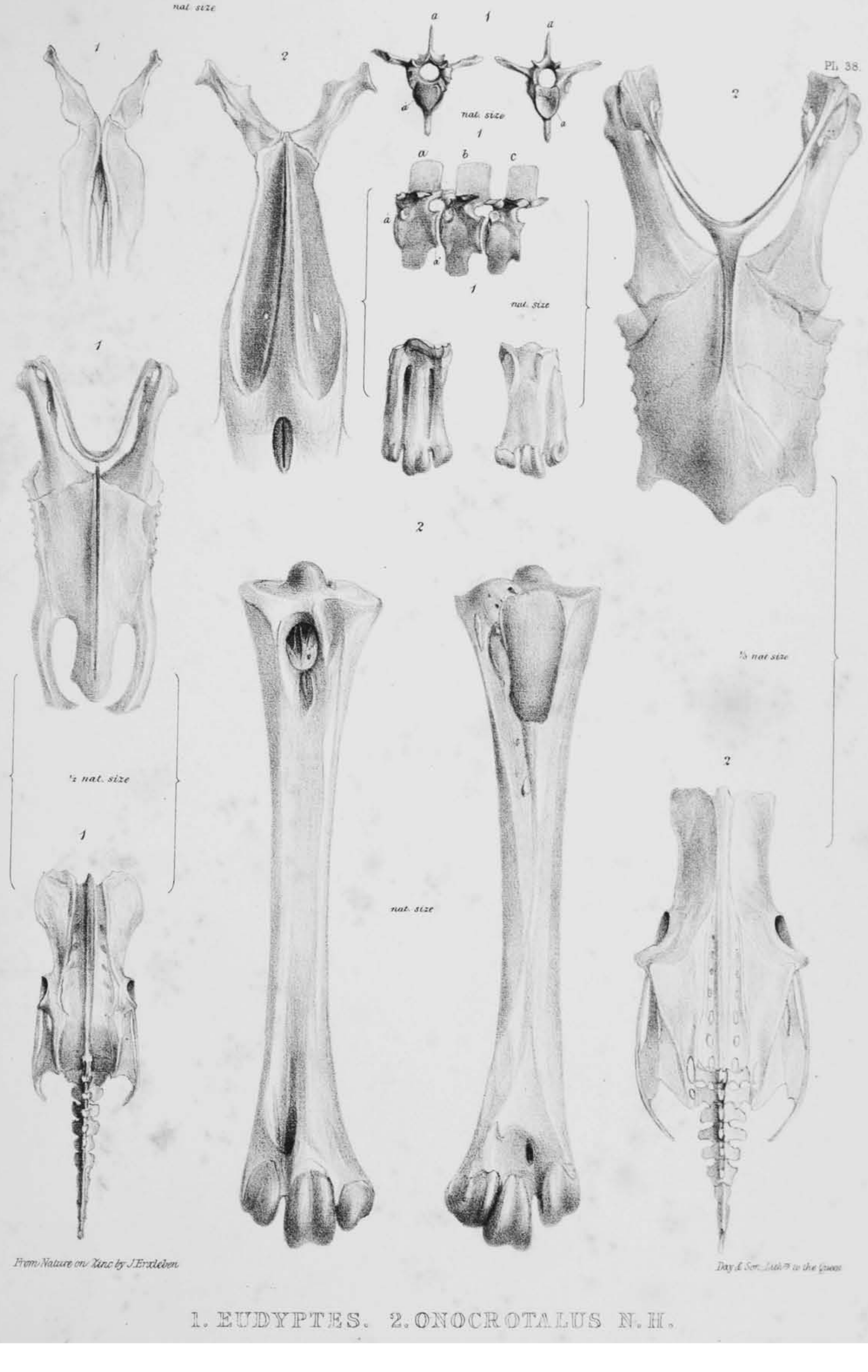
2.

2.

From Nature on Zinc by J. Erxleben.

Day & Son. Lith^rs to the Queen.

1. DIOMEDEA EXULANS. 2. PROCELLARIA GIGANTEA.



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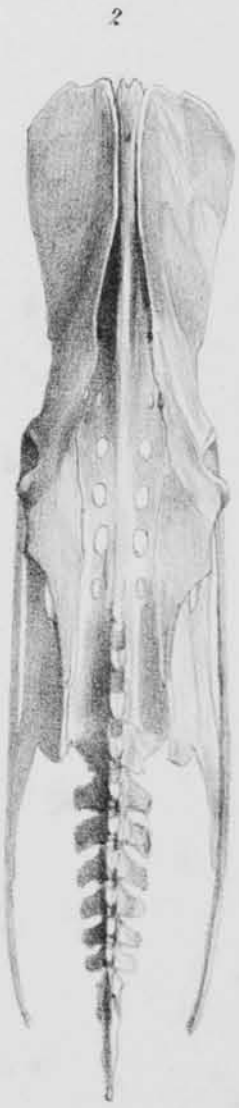
1. EUDYPTES. 2. ONOCROTALUS N. H.



nat. size

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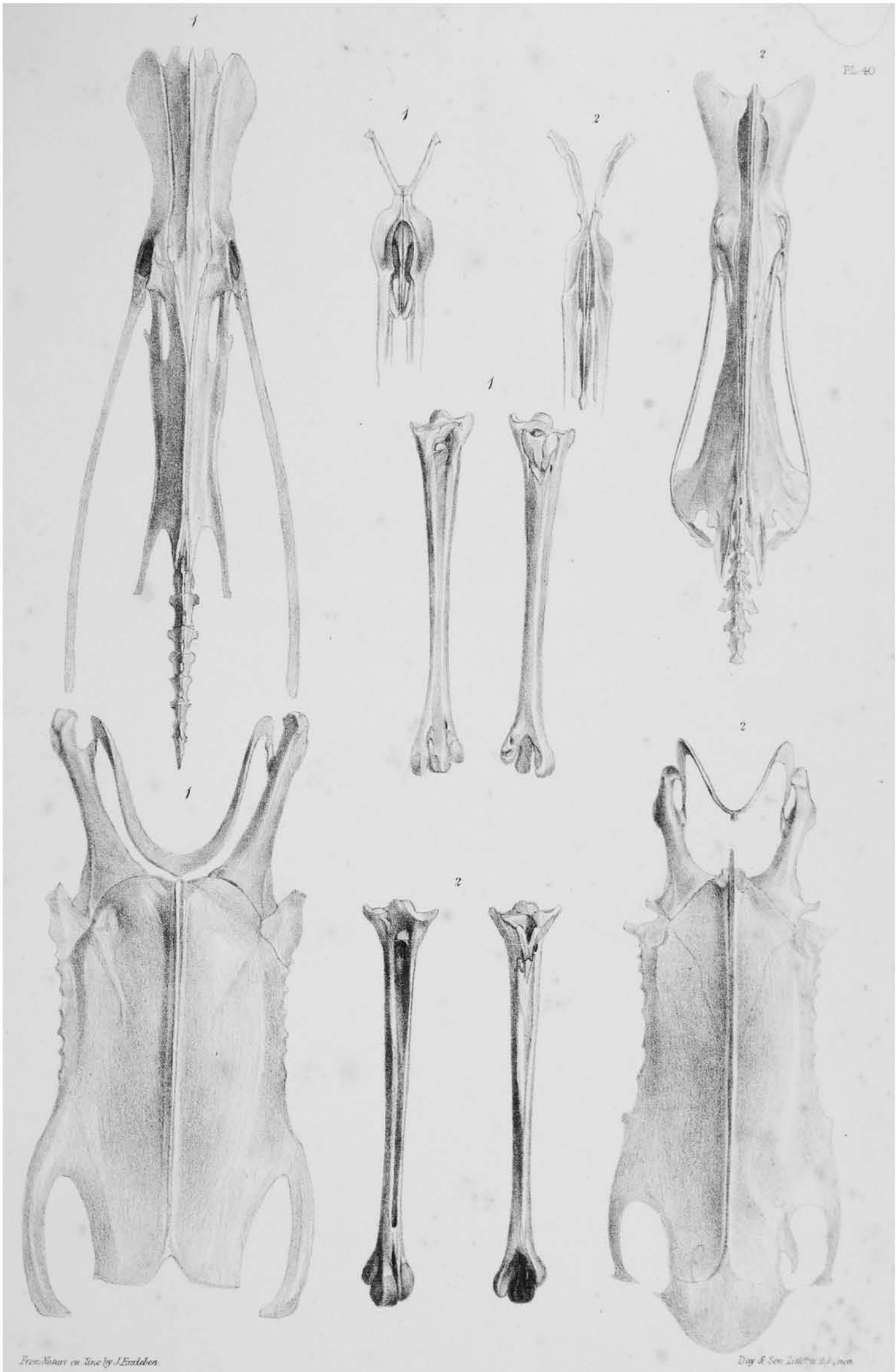
Day & Son, Lith.rs to the Queen.

1. THALSSIDROMA. 2. URIA TROILE.



1. PODICEPS CRISTATUS. 2. COLYMBUS SEPTENTRIONALIS.