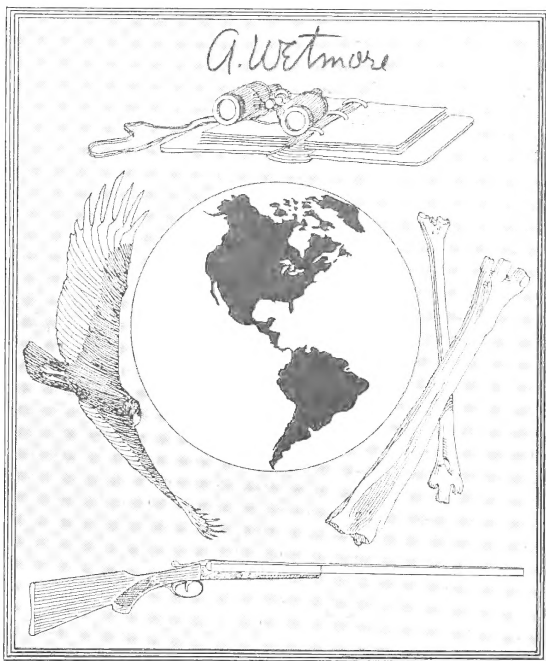
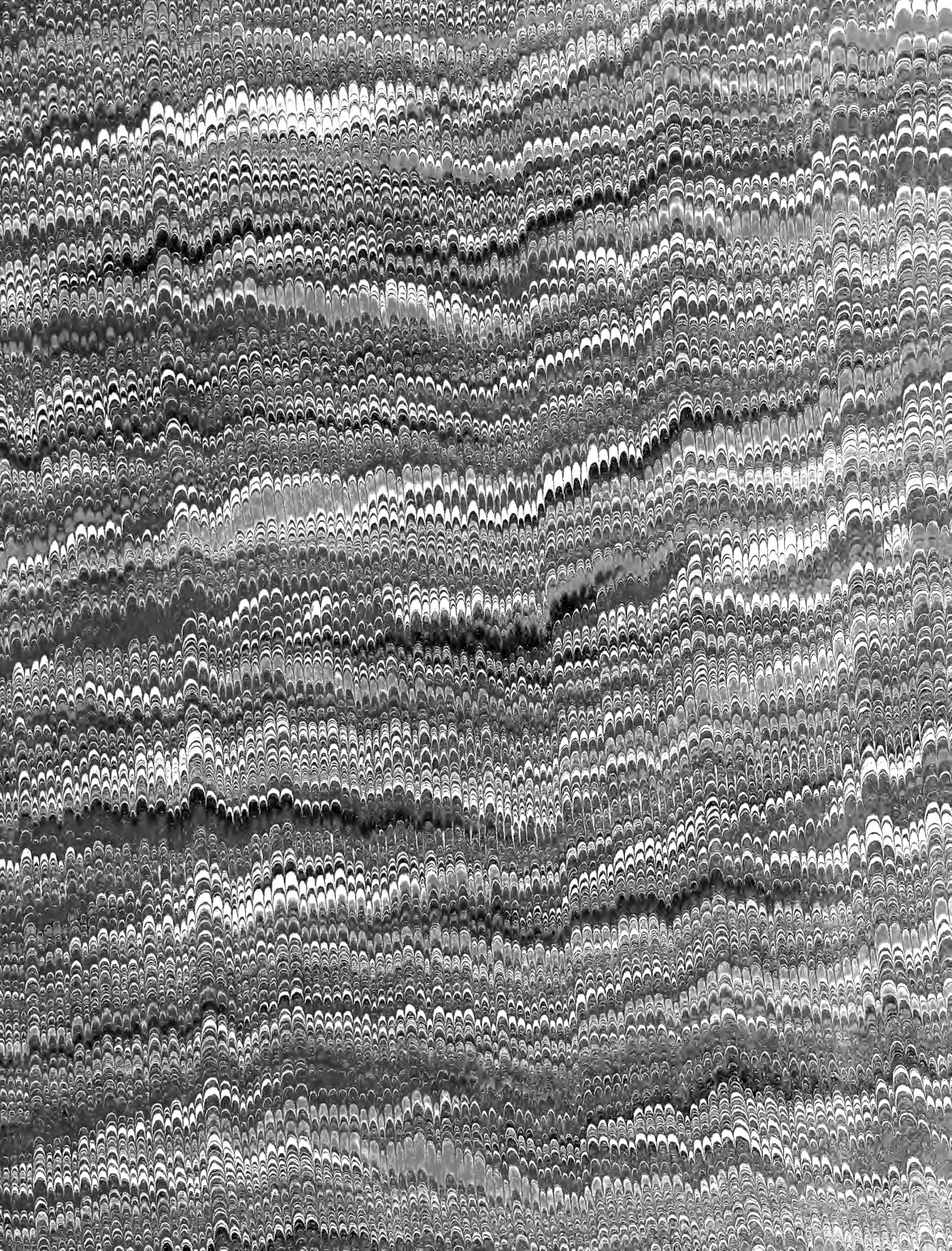


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M. E. Eytors

RB case  
(3-7)









SUPPLEMENT TO  
**OSTEOLOGIA AVIUM;**

OR,

**A SKETCH OF THE OSTEOLOGY  
OF BIRDS.**

BY

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

*And Corresponding Member of Institute of Philadelphia.*



TO BE HAD OF MR. PRINCE, AT MR. GOULD'S, CHARLOTTE STREET,  
BEDFORD SQUARE, LONDON.

PUBLISHED BY R. HOBSON, WELLINGTON, SALOP.

1869.

## PREFACE.

—o—

It having been represented to me that Illustrations of the Osteology of the Anatidæ are required, and having a few copies of those executed for my work on the Anatidæ in hand, and also five others executed on stone by the same artist, viz., Mr. G. Scharf, I have published them in the form of an Appendix to "Osteologia Avium." There are eighteen Plates in all, five of which have not previously been published.

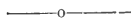
EYTON,

Feb. 1, 1869.

THOS C. EYTON.

QL  
697  
598  
1167

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————— *Podiceps cristatus.*  
————— *Clangula vulgaris.*  
————— *Fuligula cristata.*  
————— *Mergus albellus.*  
————— *Rhynchaspis clypeata.*  
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————— *Cyanopterus circa.*  
————— *Micropterus patachonicus.*  
————— *Bernicla Antaretica.*

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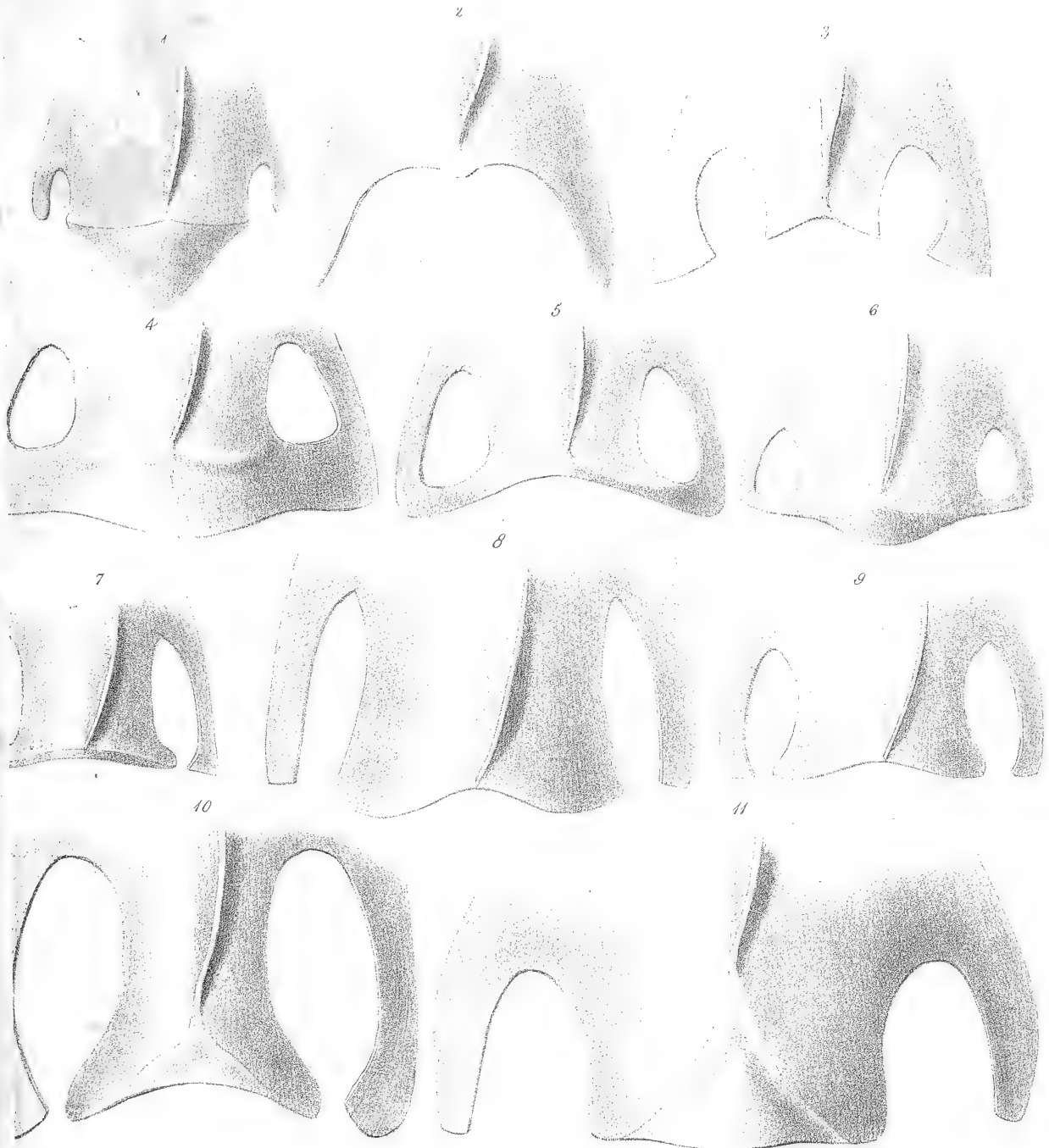
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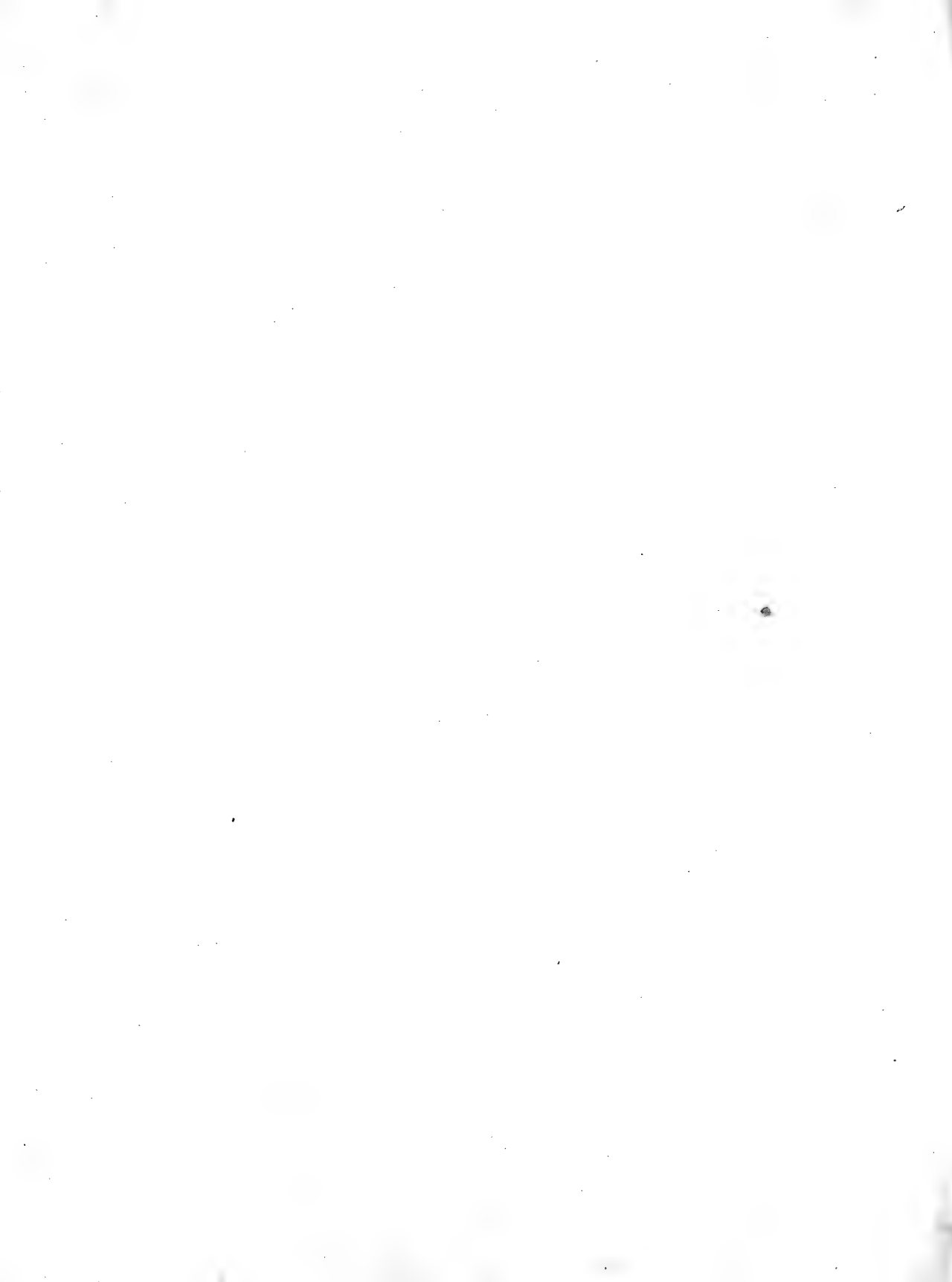
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T. Egidio del.

- |   |                                     |
|---|-------------------------------------|
| 1. Posterior margin of the Sternum of <i>Alca Torda</i> . | 6. .... <i>Mergus albellus</i>      |
| 2. .... <i>Phalacrocorax cristatus</i>                    | 7. .... <i>Rhynchaspis clypeata</i> |
| 3. .... <i>Podiceps cristatus</i>                         | 8. .... <i>Carina Moschata</i>      |
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| 5. .... <i>Faligula cristata</i>                          | 10. .... <i>Anser ferus</i>         |
|   | 11. .... <i>Cyanus olor</i>         |





From the collection of the British Museum.

Drawn by J. G. Rees.

*Cereopsis Noxae Hollandica.*  
9/8 of an Inch to an Inch.







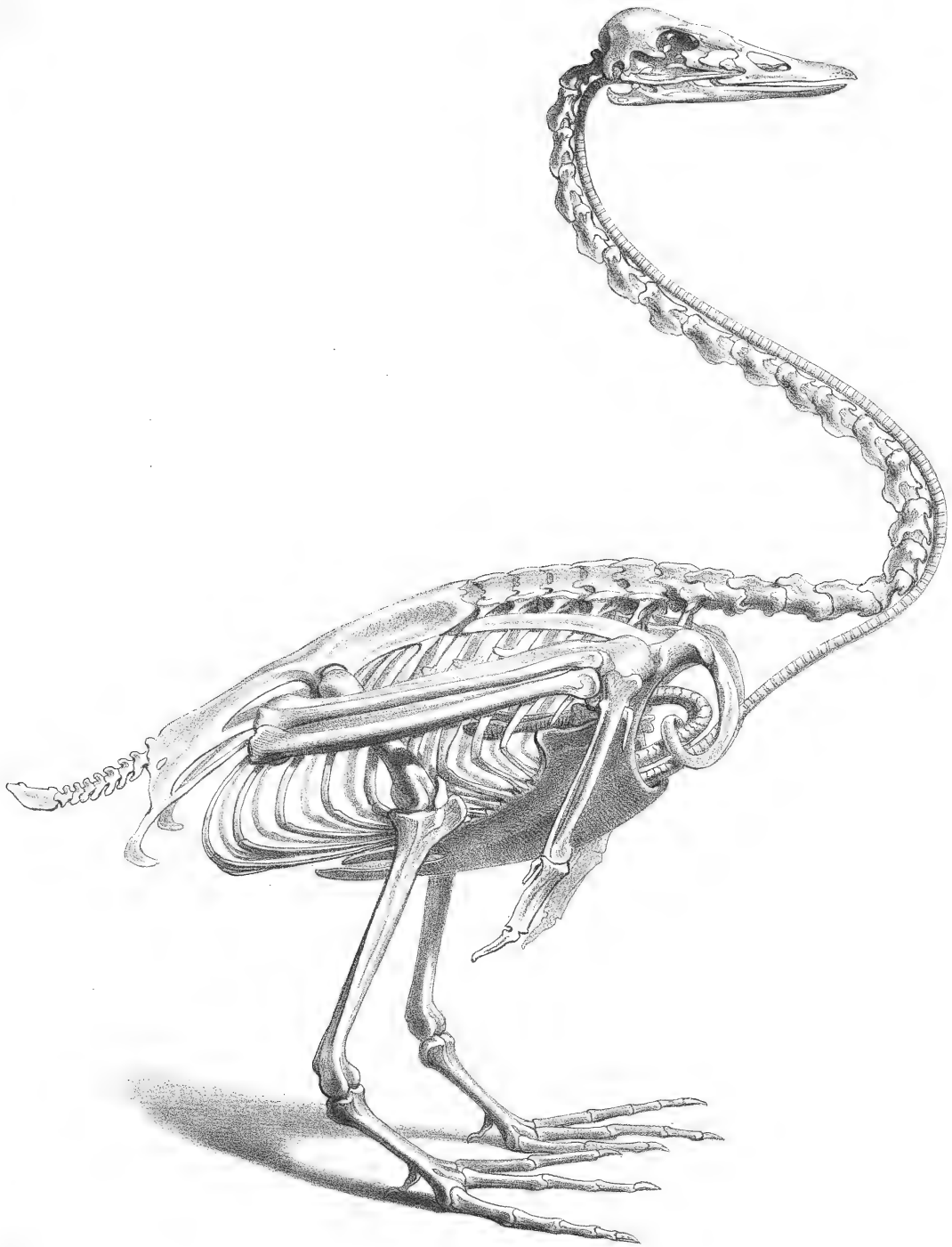
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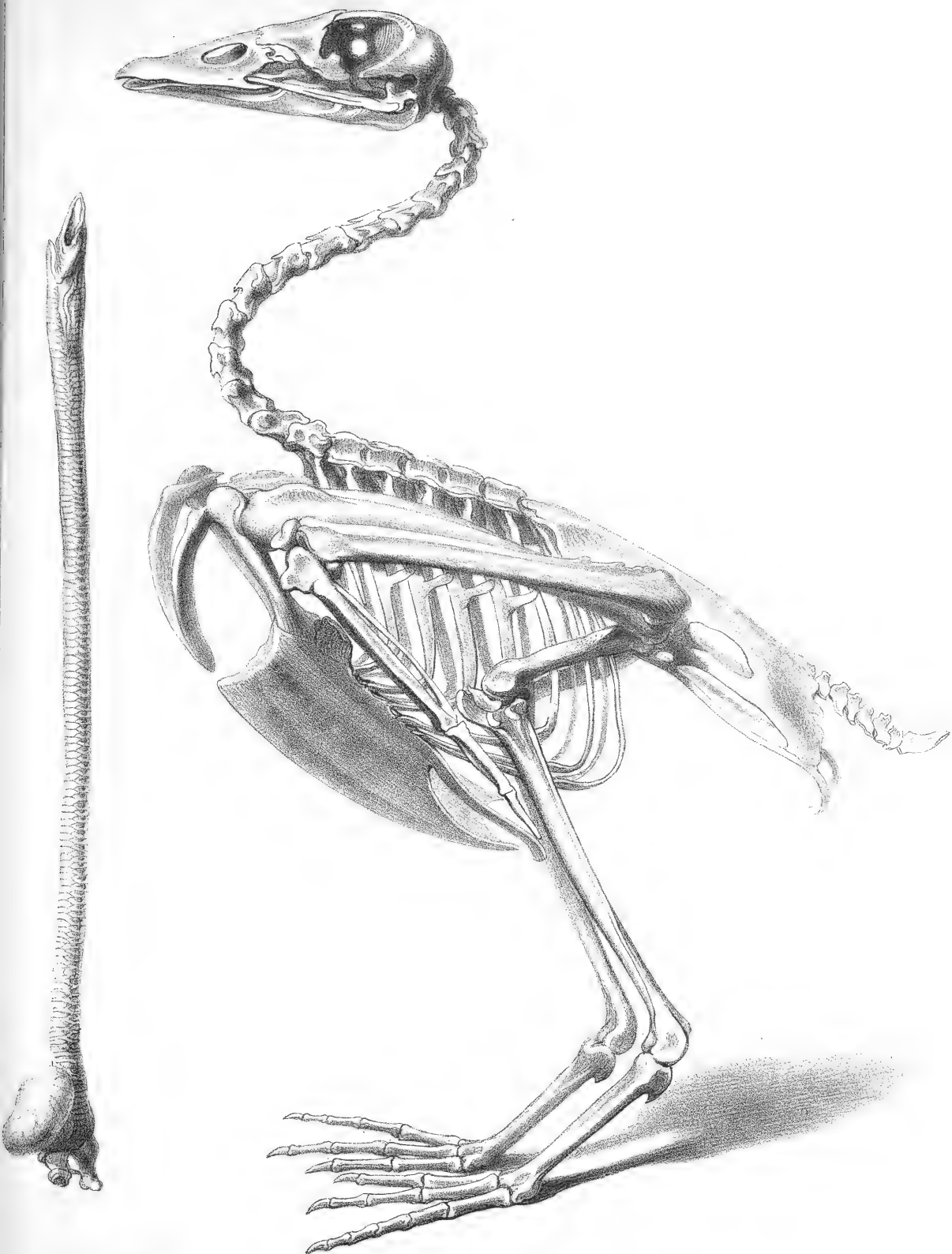


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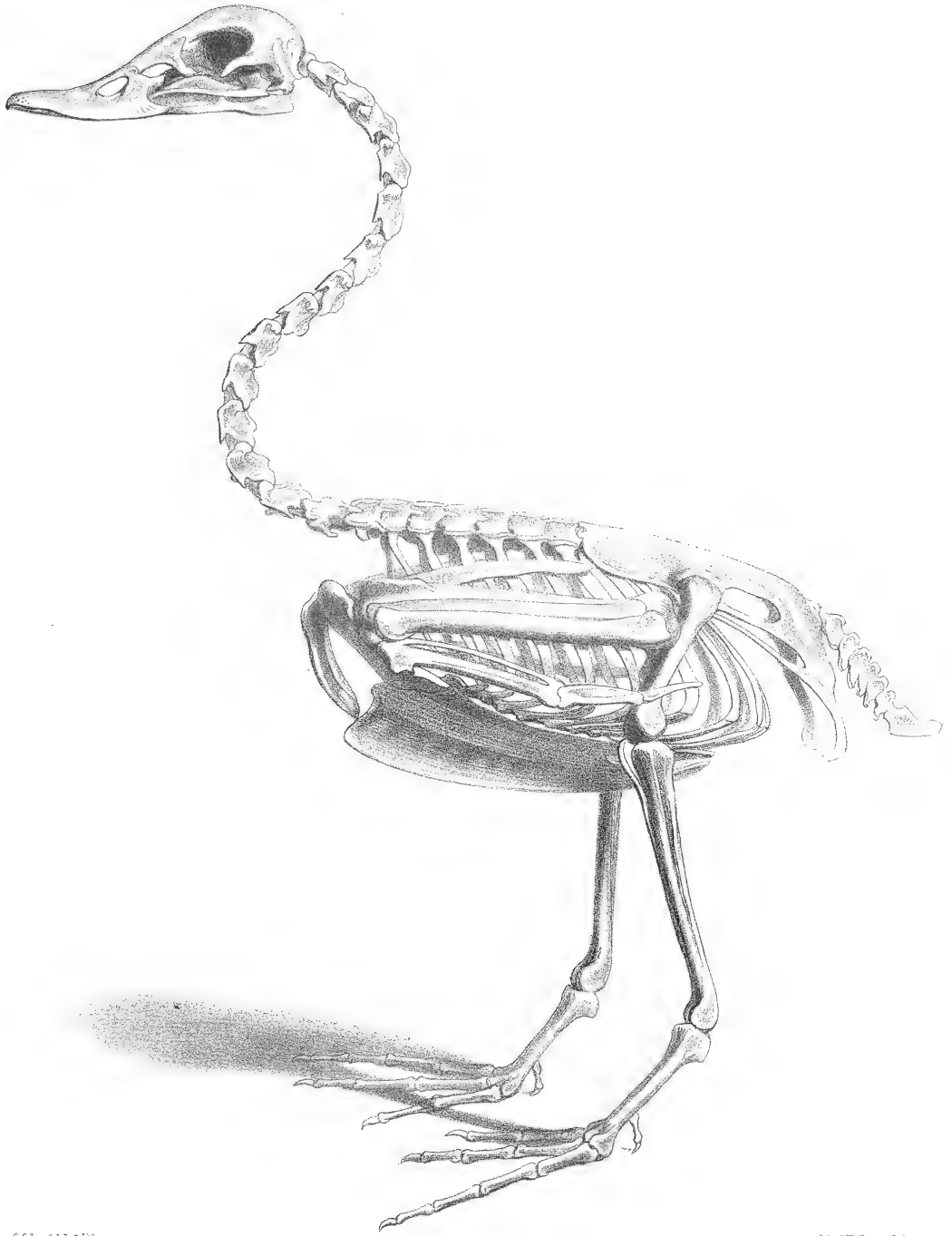
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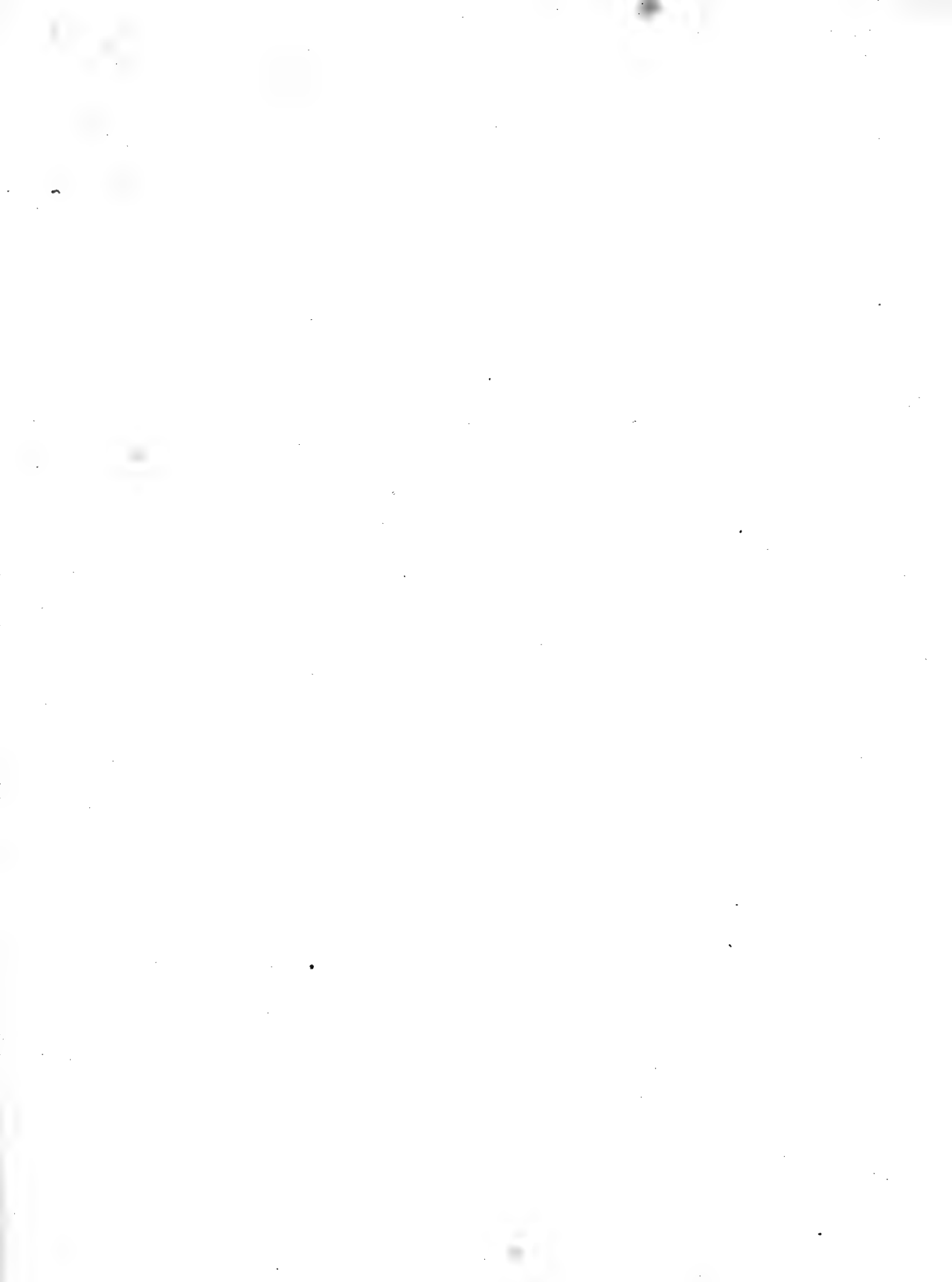




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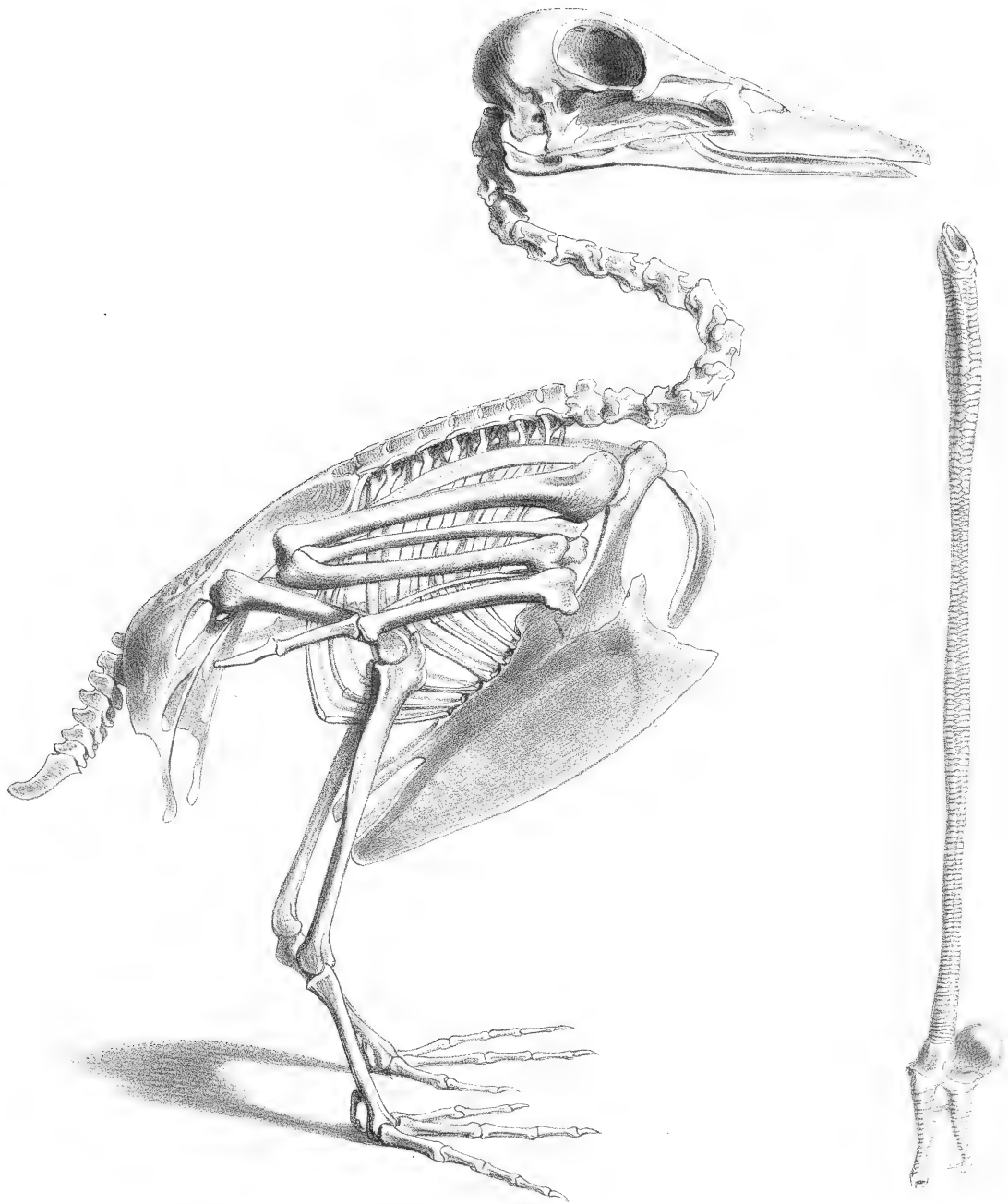


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*Dendrocygna arcuata*. Sm. & G.  
74. Nat. Hist.



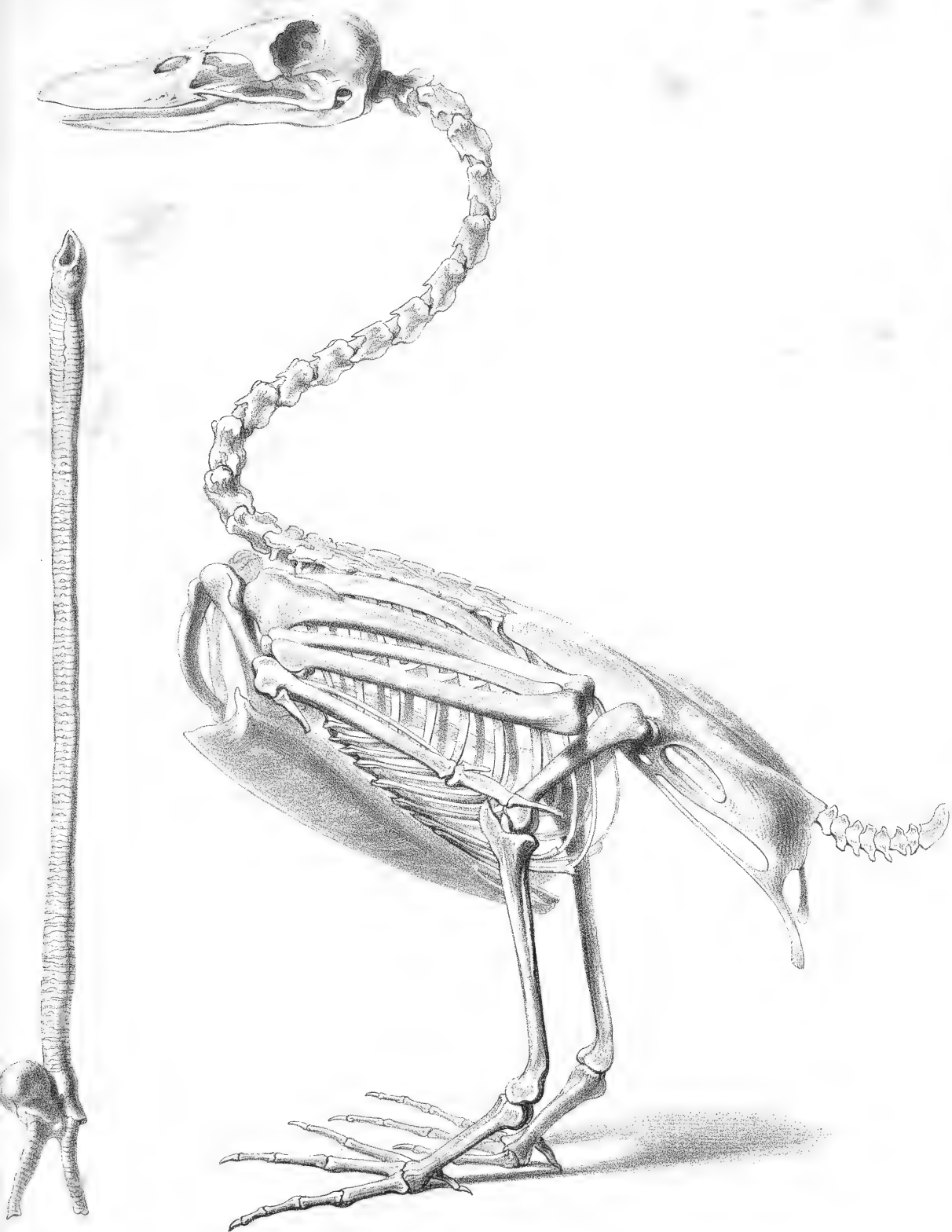


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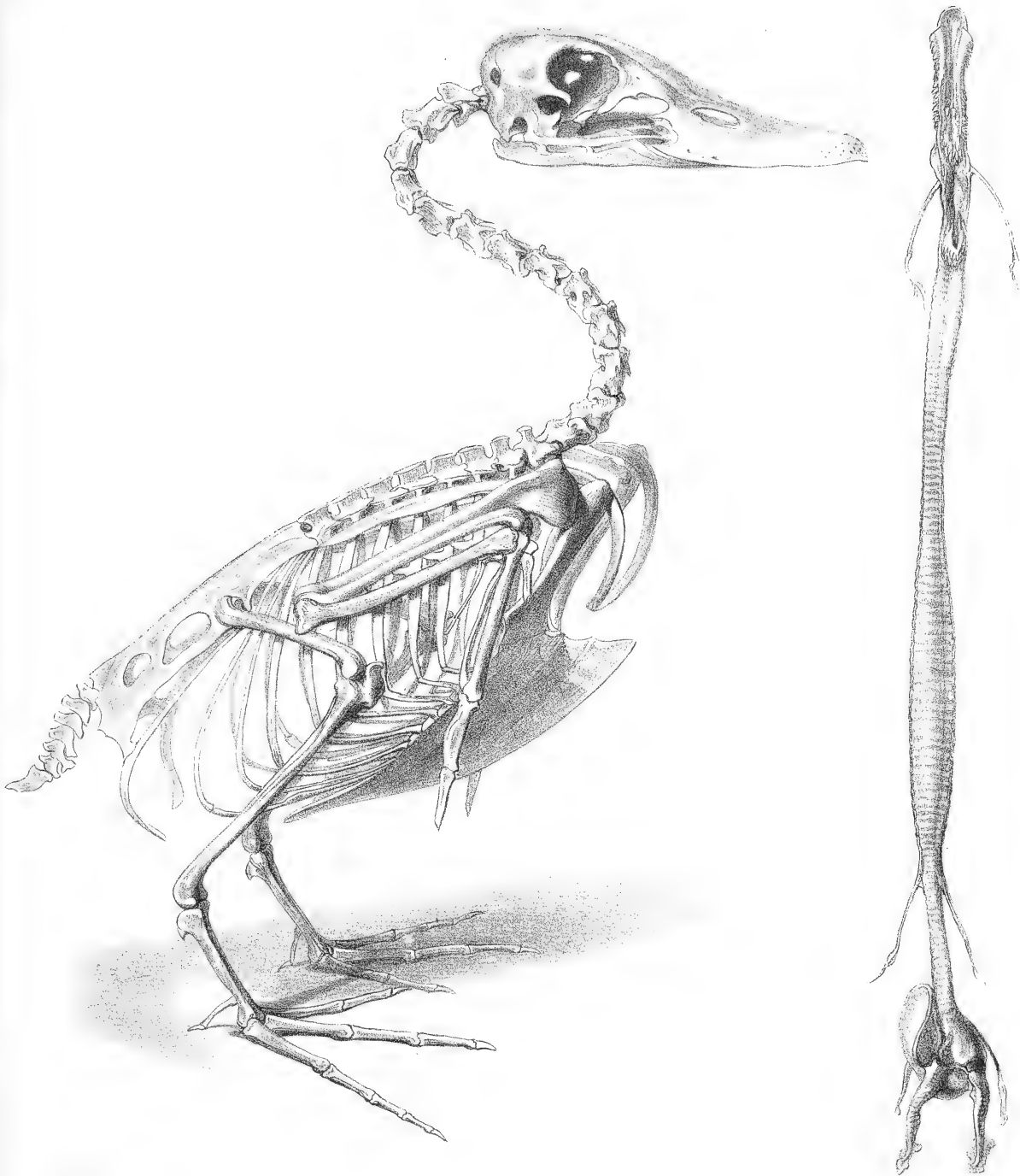
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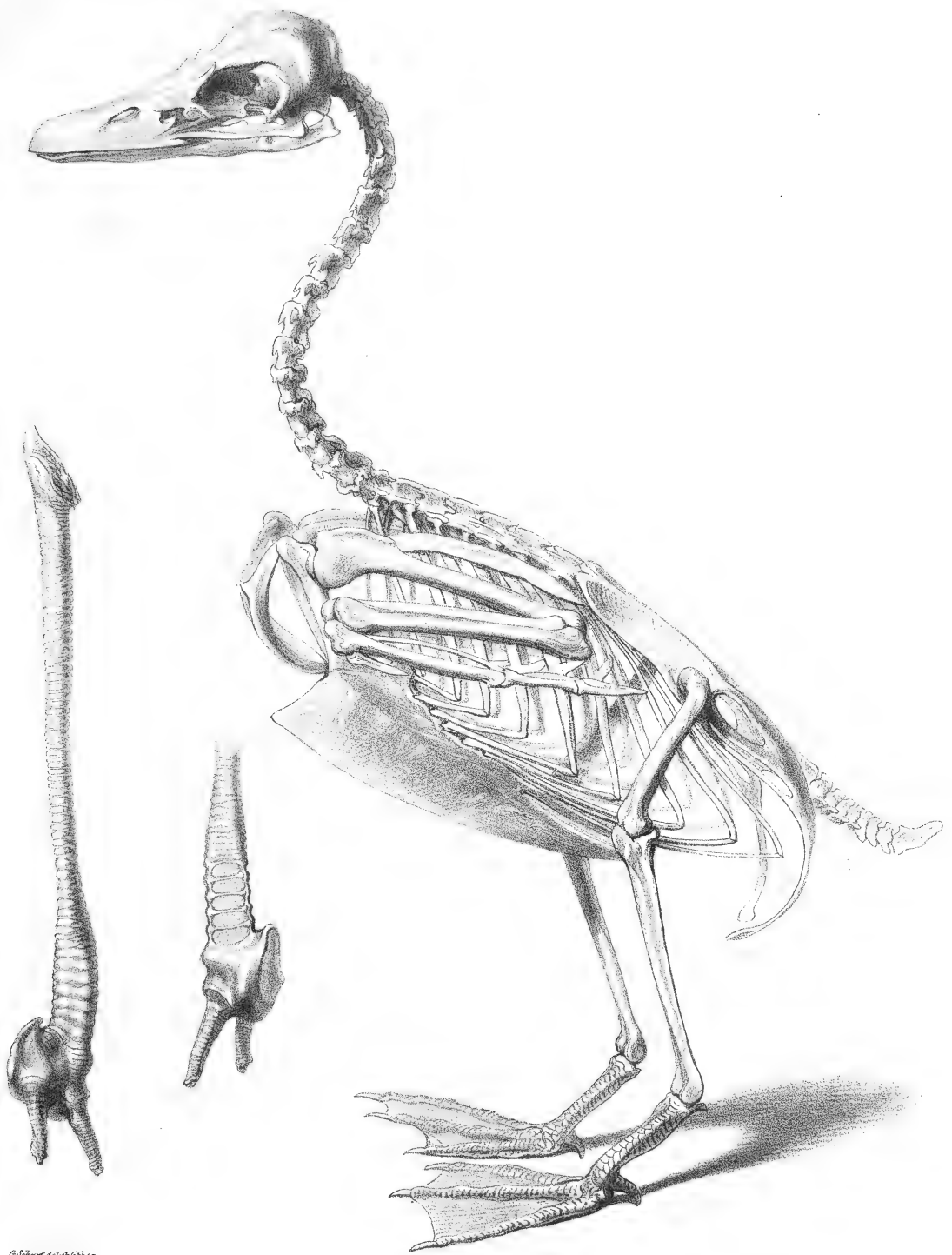
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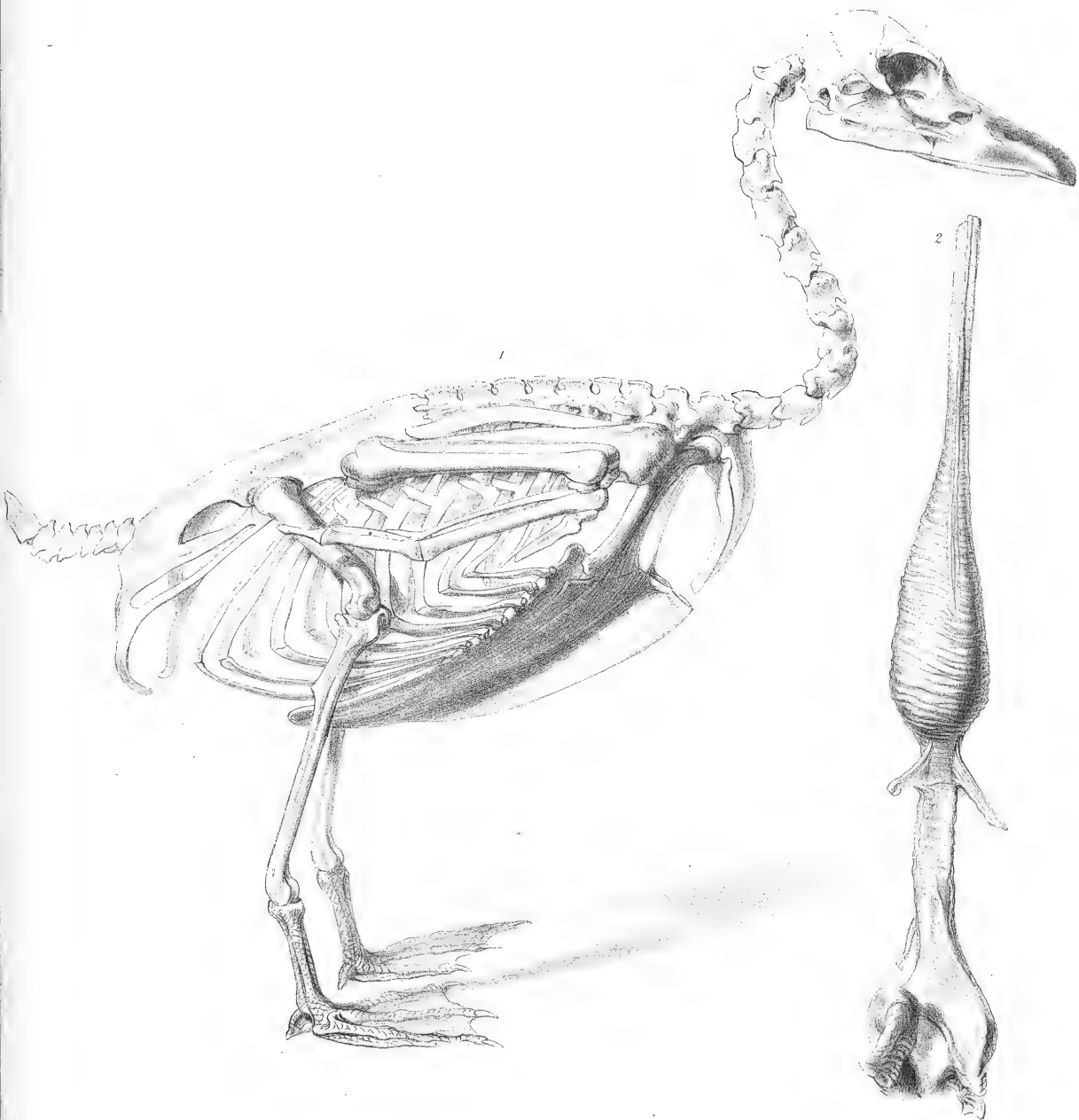


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*2 Thirds the Nat. Size.*





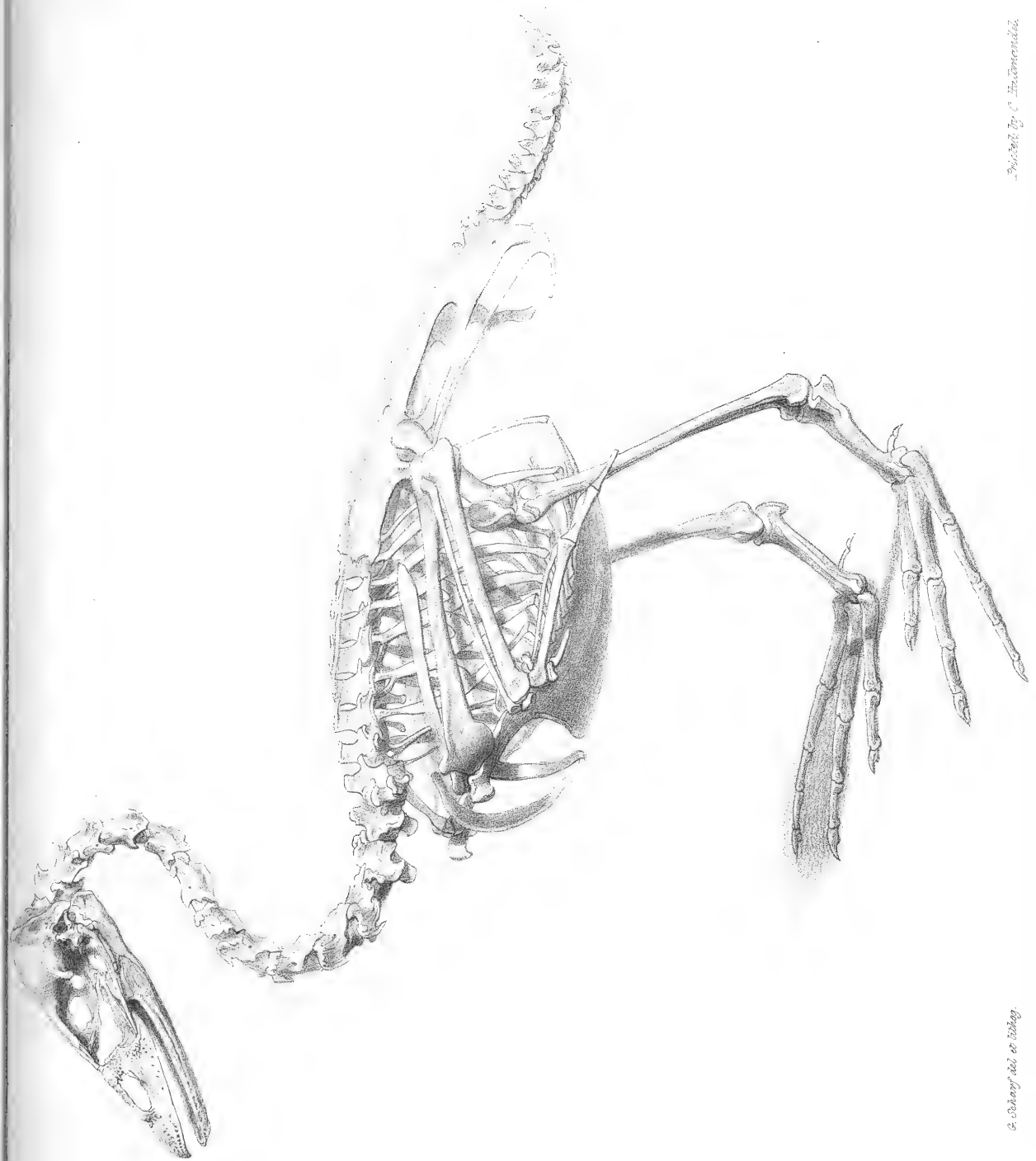
1. SKELETON OF CLANGULA HISTRIONICA.  
 2. TRACHEA OF ..... VULGARIS.

*Two thirds the Nat. Size.*

*Scharf del. col. lithog.*

*Printed by C. F. Milnes, del.*



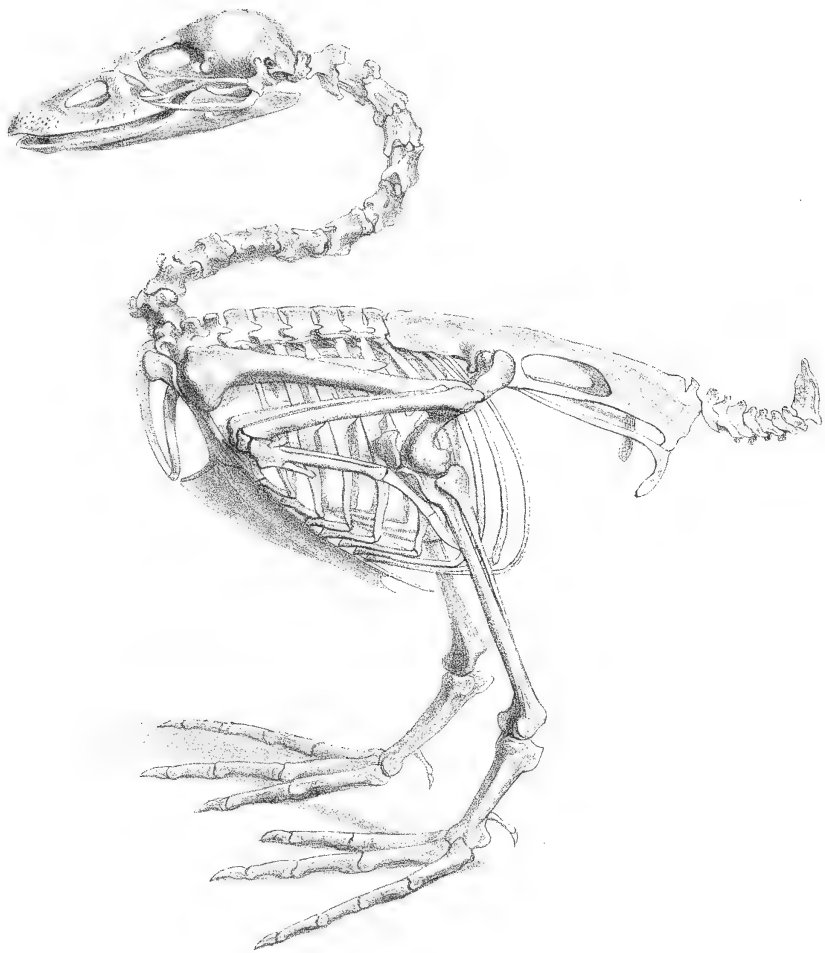


G. Cuvier del. et lithog.

*Bixim* / *Hydrobates lobatus*. Temm. & Macs.  
Scale Half.

Planchon, *op. cit.* *Hydrobates*.





*G. S. Gray del et lithog.*

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*Hydrobates lobatus. Fem. Imm.*  
*Scale One Half.*







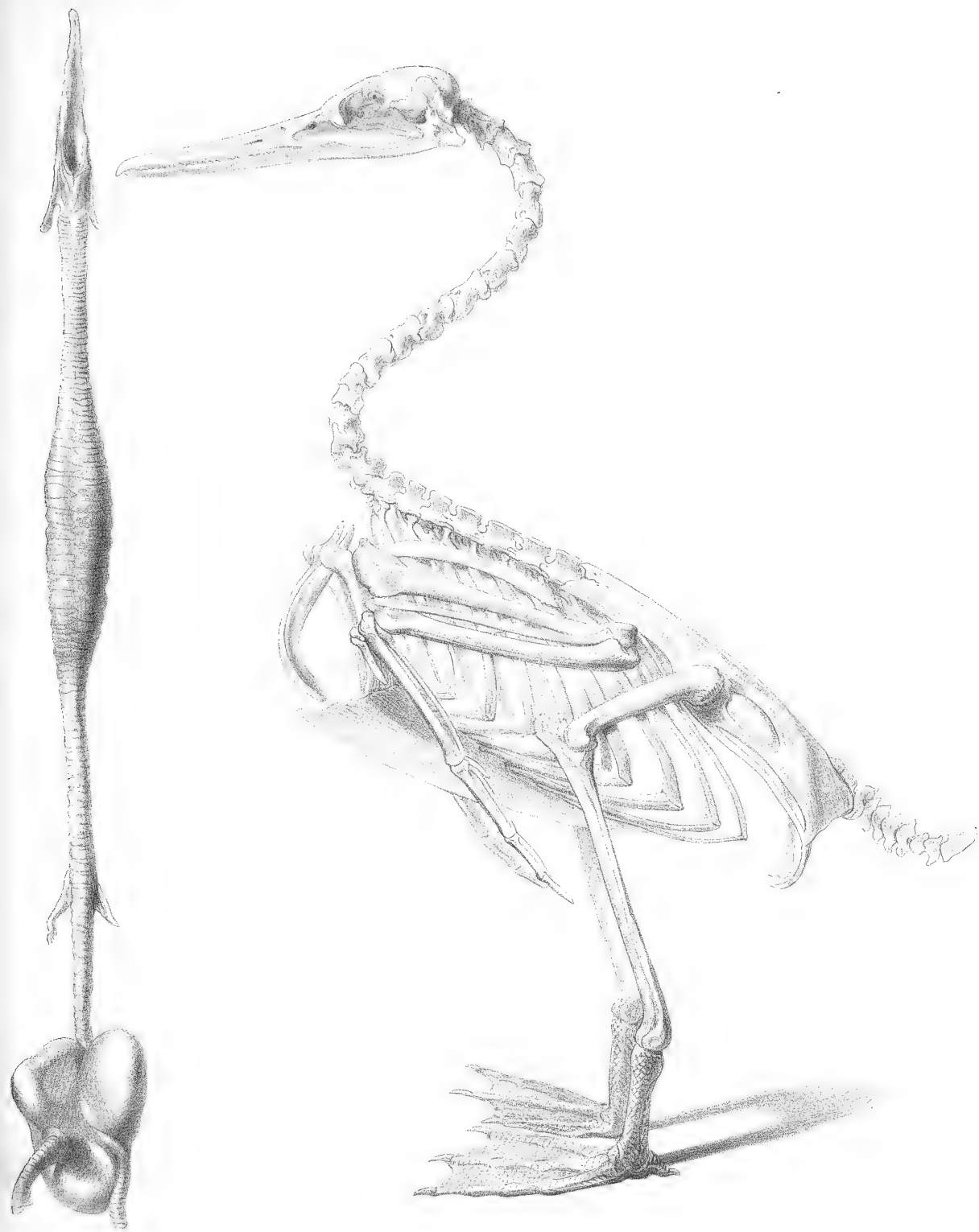
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*Oxyura (Erismatura) Australis. Fm.*

Scale  $\frac{1}{4}$  Inch to an Inch.



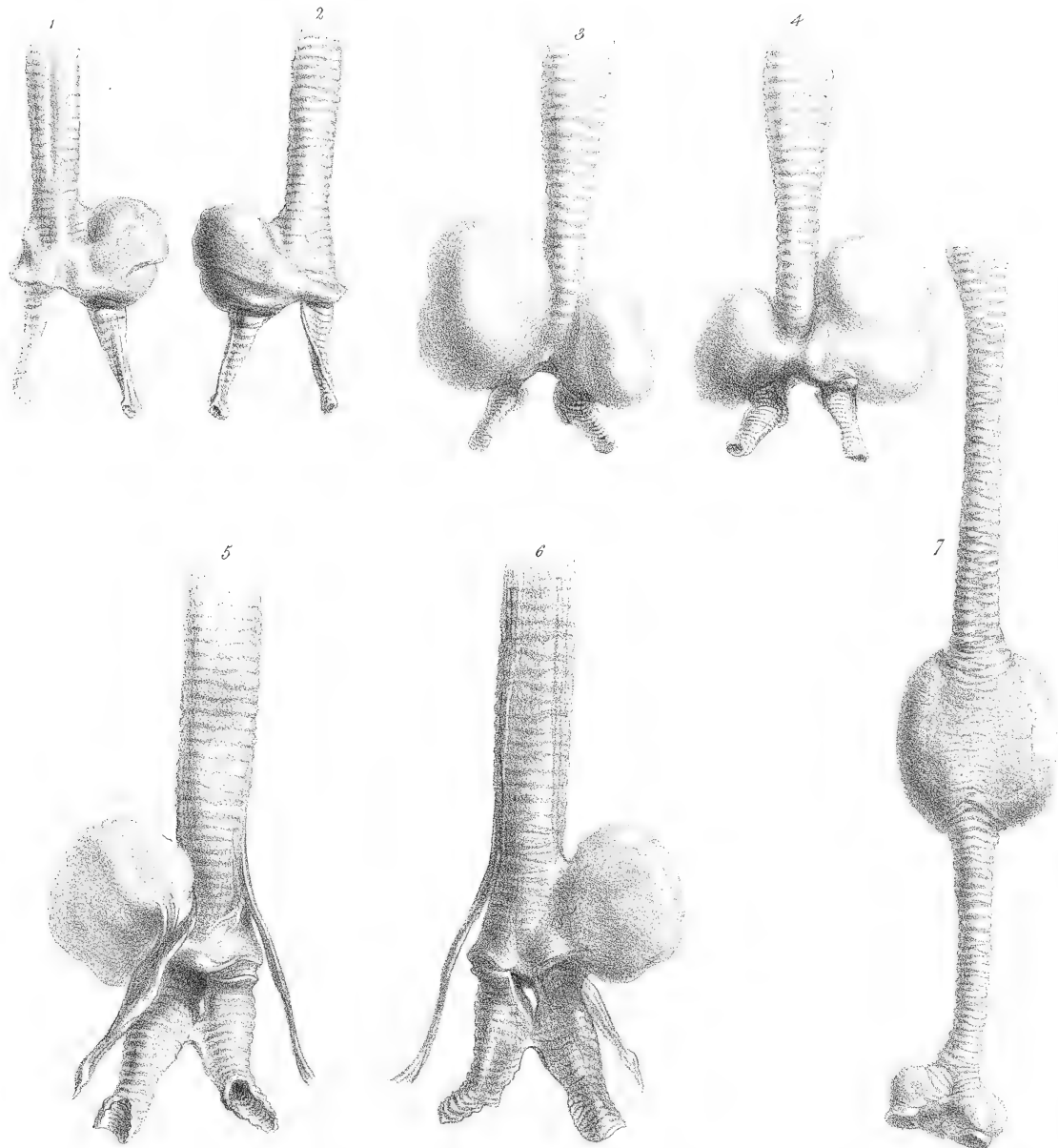


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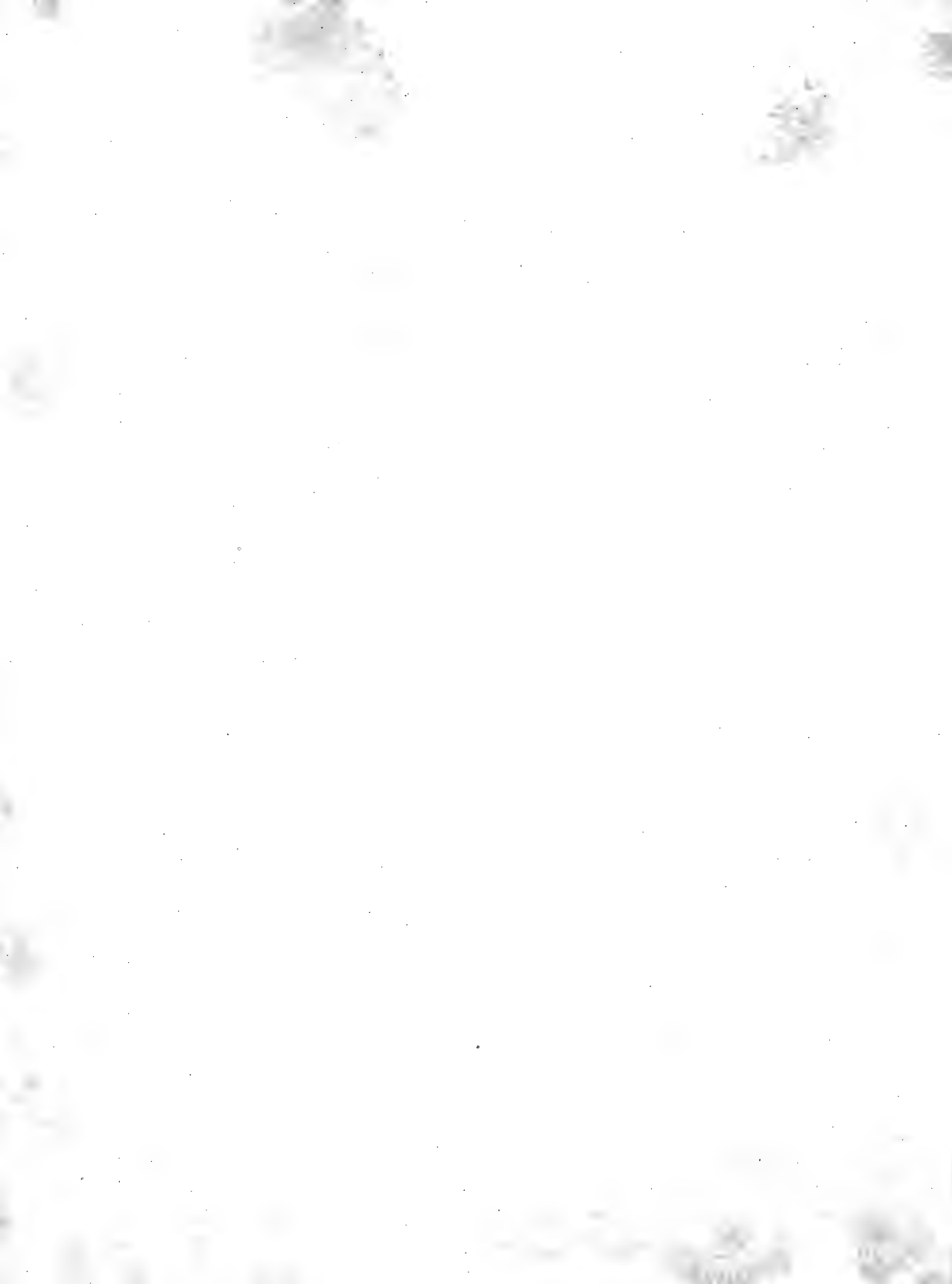
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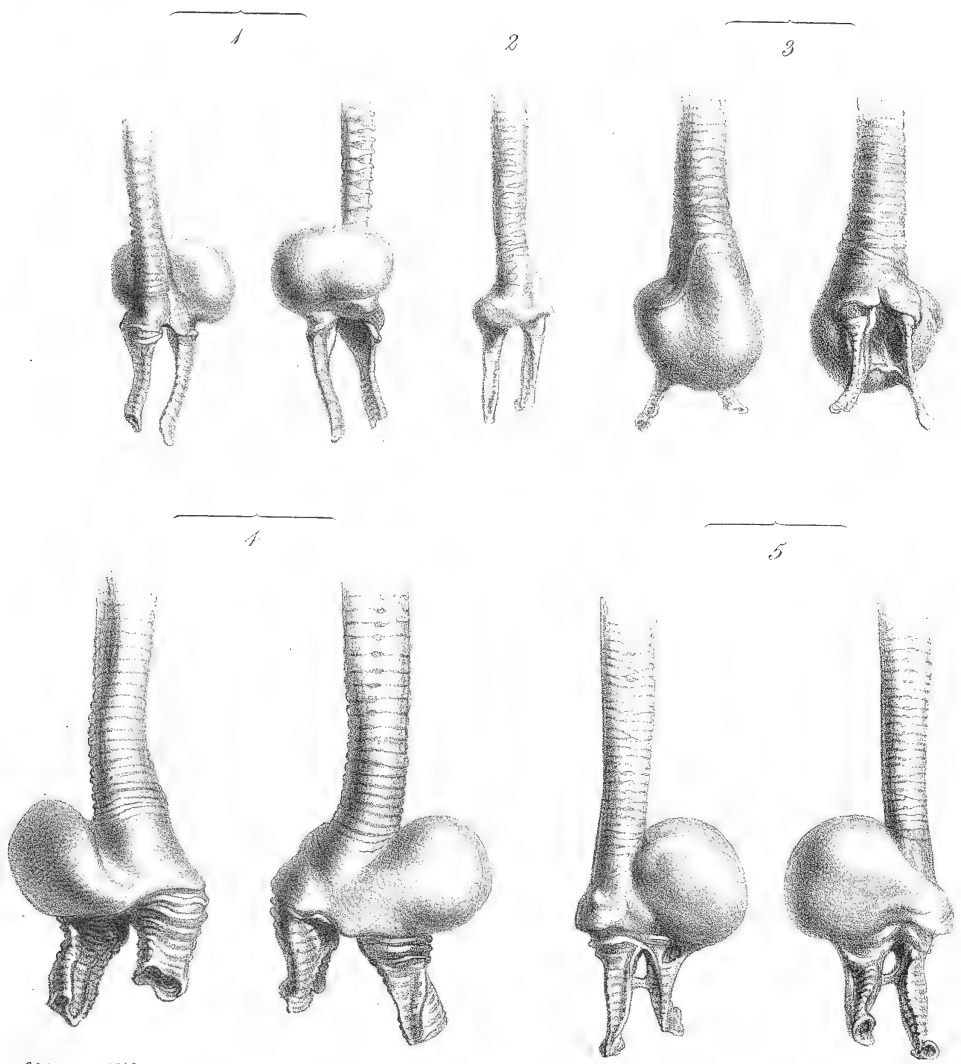
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*Trachea of*

1. 2. *Chloephaga Magellanica*. 3. 4. *Tadoma Bellonii*.

5. 6. *Carina Moschata*. 7. *Melanitta fusca*.





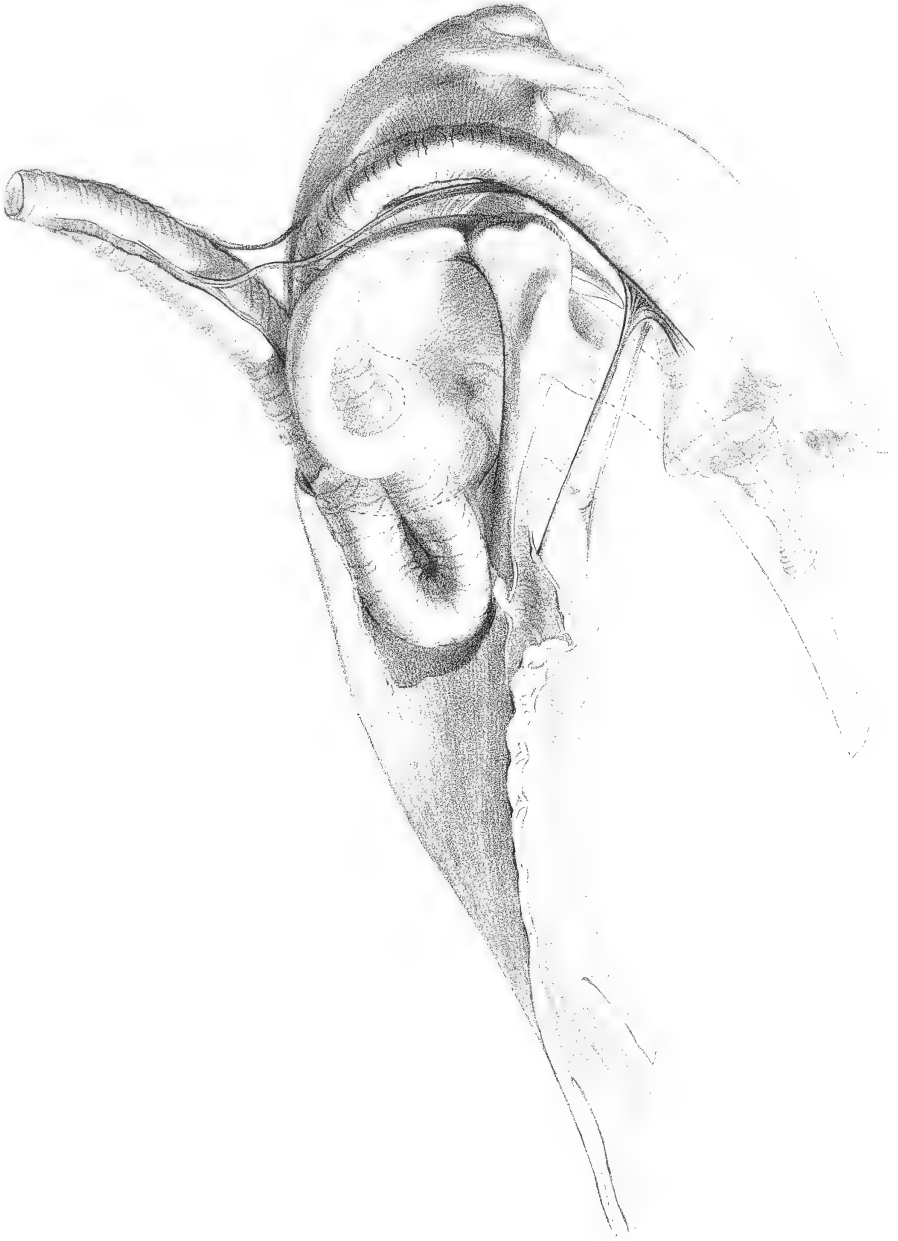
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Trachea of  
 Fig. 1. *Aia sponsa*. 3. *Cyanopterus circia*.  
 2. *Quercedula formosa*. 4. *Micropterus tatachonicus*.  
 5. *Bernicla antarctica*.  
 All males.







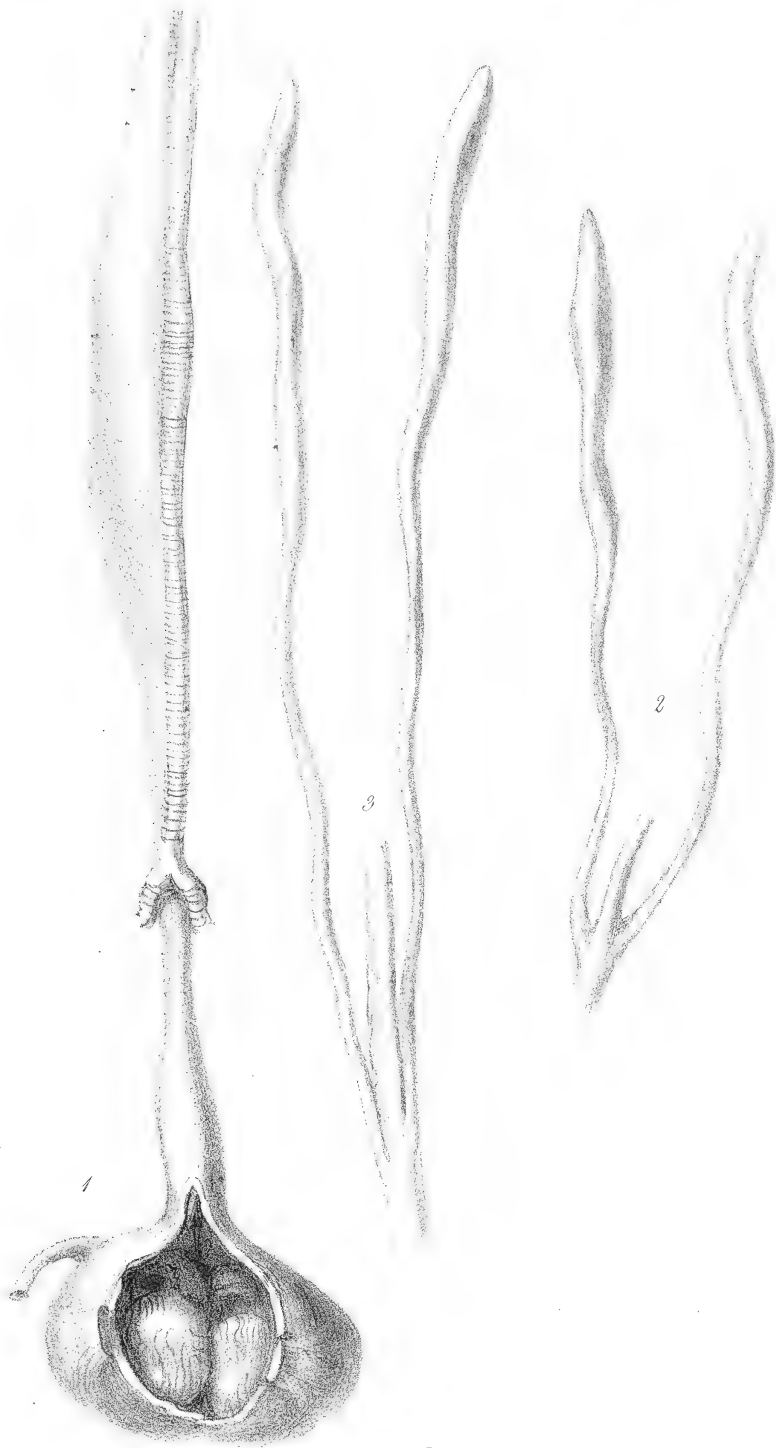
*Cynus berrickii*

MUSCLES OF VOICE OF *CYNUS BERRICKII*.

*The chords de la voix.*

*Drawn by G. B. S. P. 1850.*



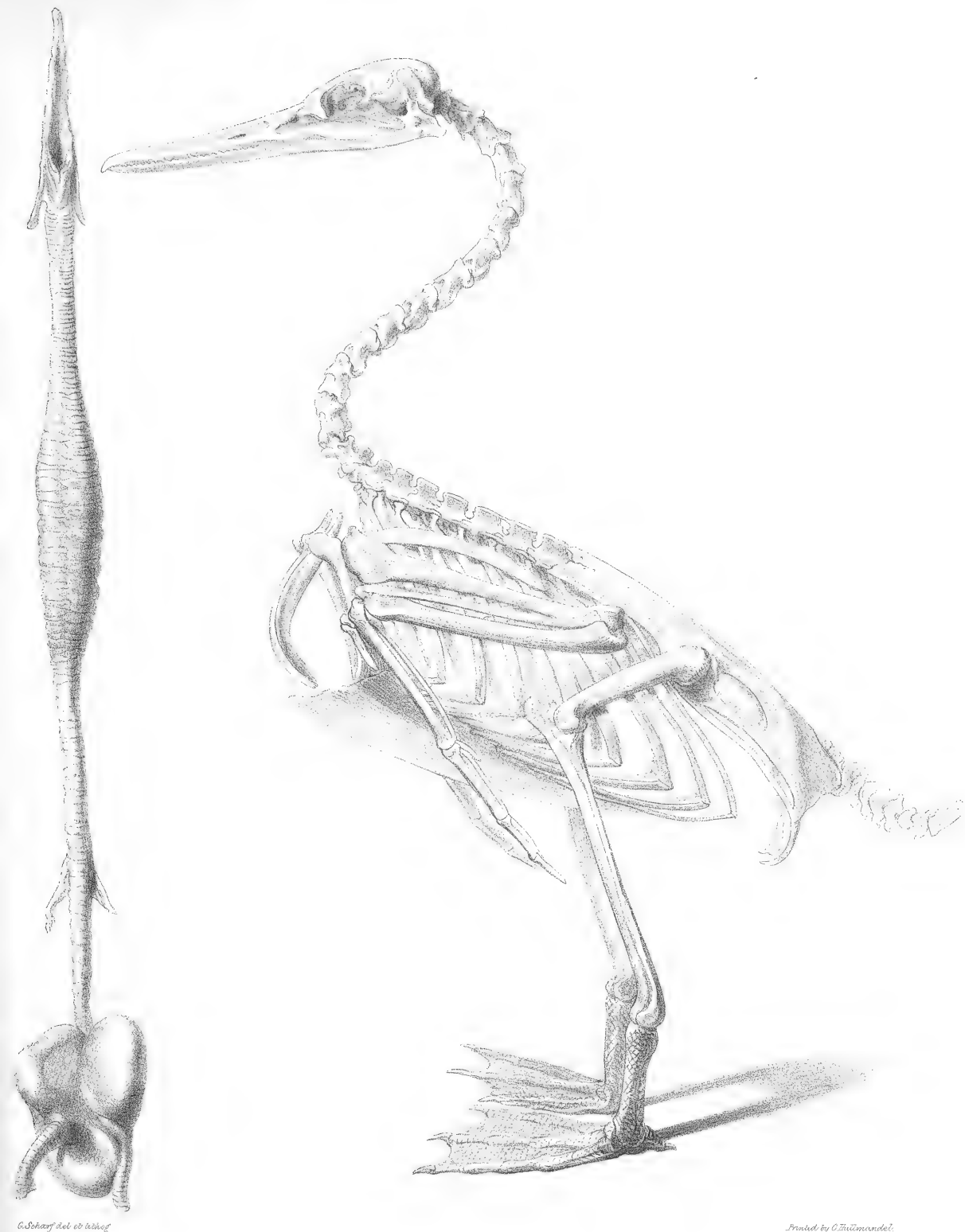


L. E. del.

2/3 Nat. Size.

1. *Æsophagus proventriculus* and *Stomach* of *Querquedula crecca*. *Fem.*  
 2. *Cæca* of *D.* 3. *Cæca* of *Tadorna Bellonii*. *Male.*



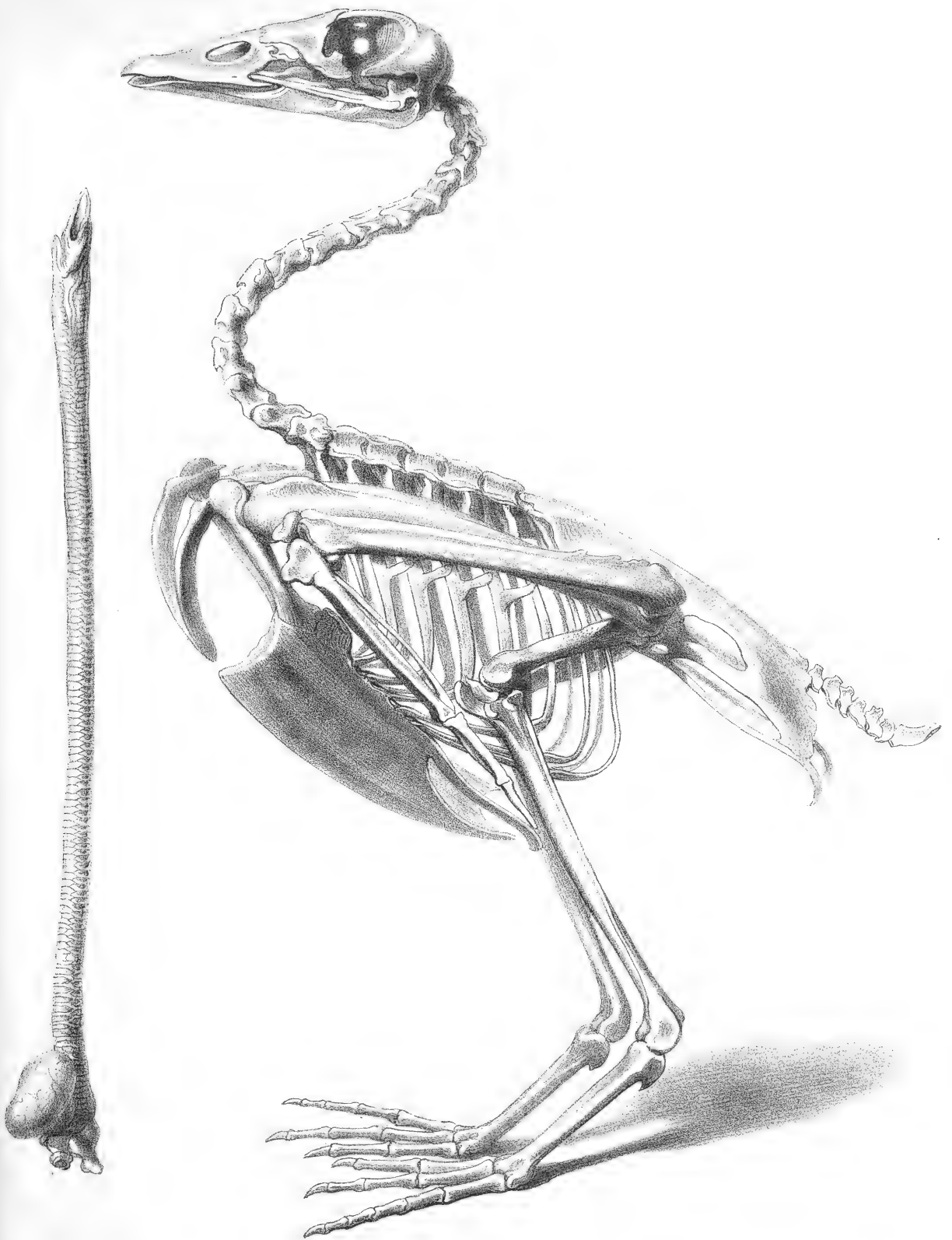


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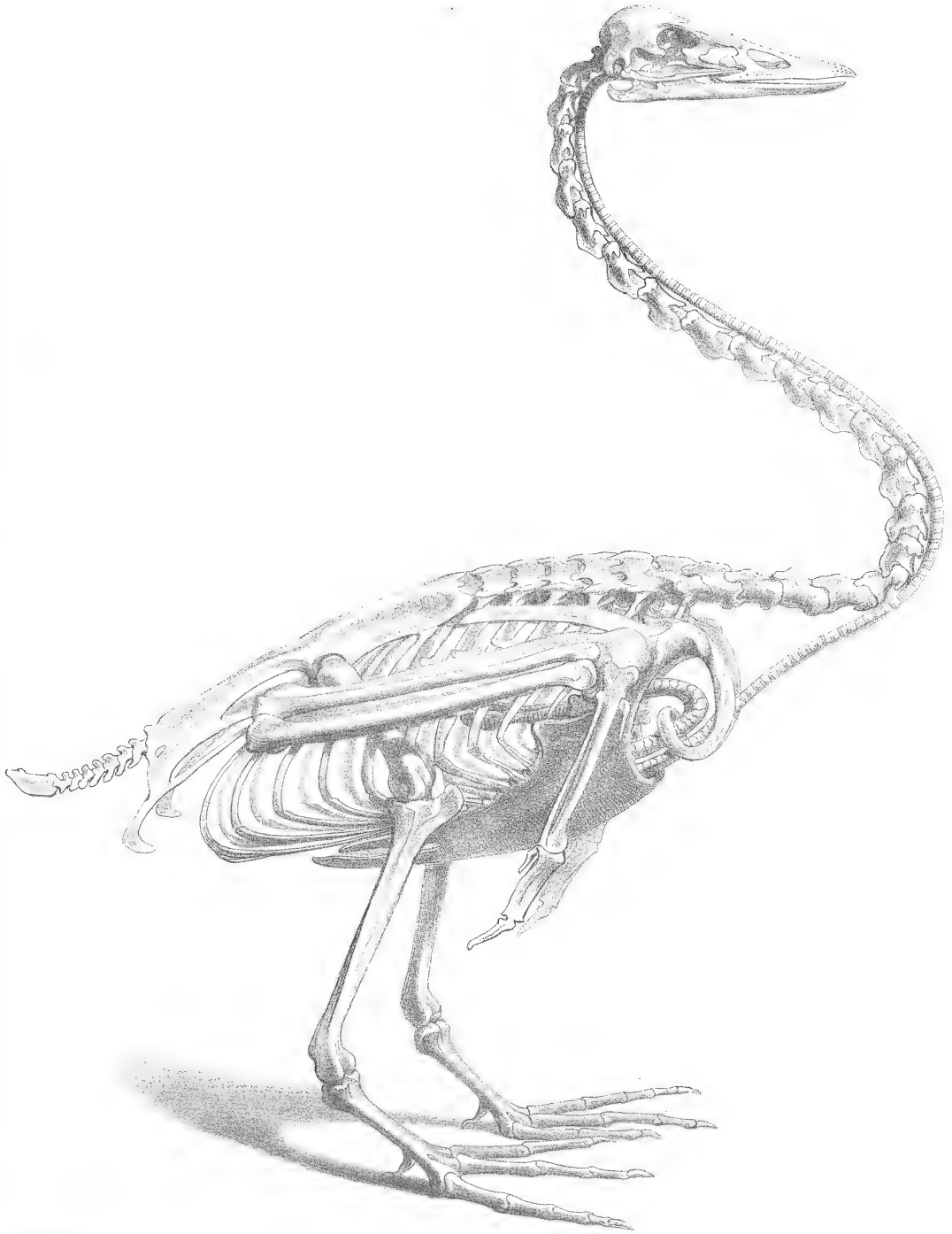
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Three fifths the Nat. size.





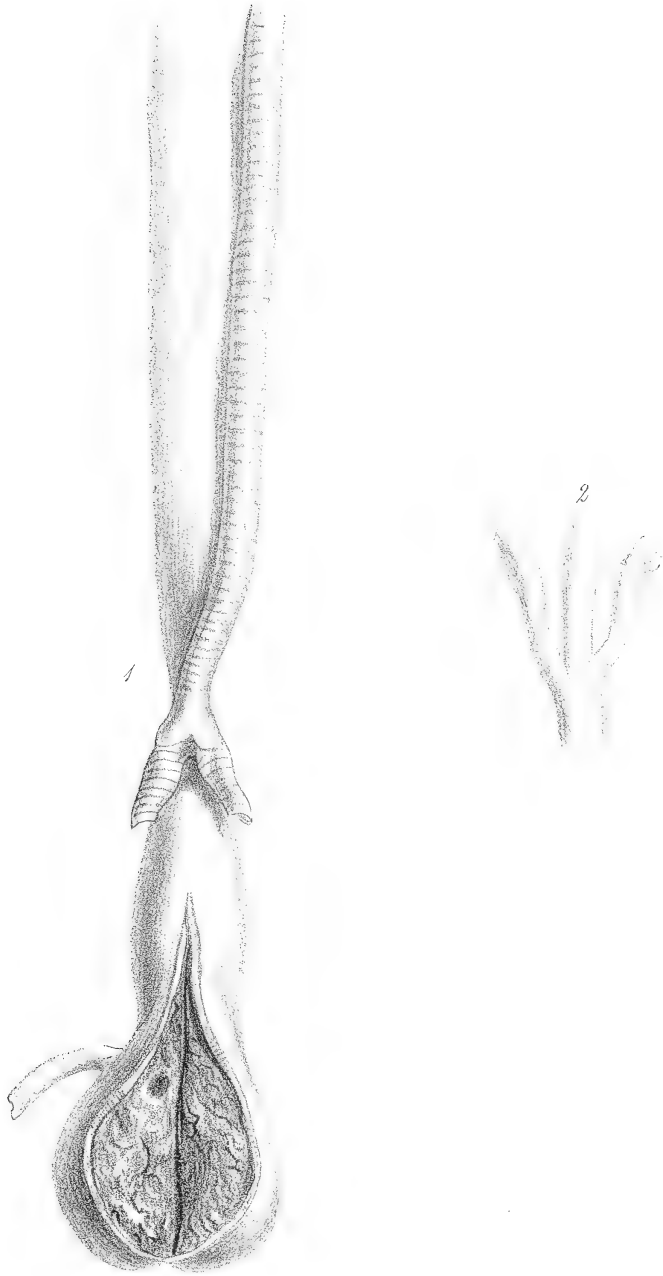


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CYGNUS FERUS.  
*1/4 the Nat. Size.*



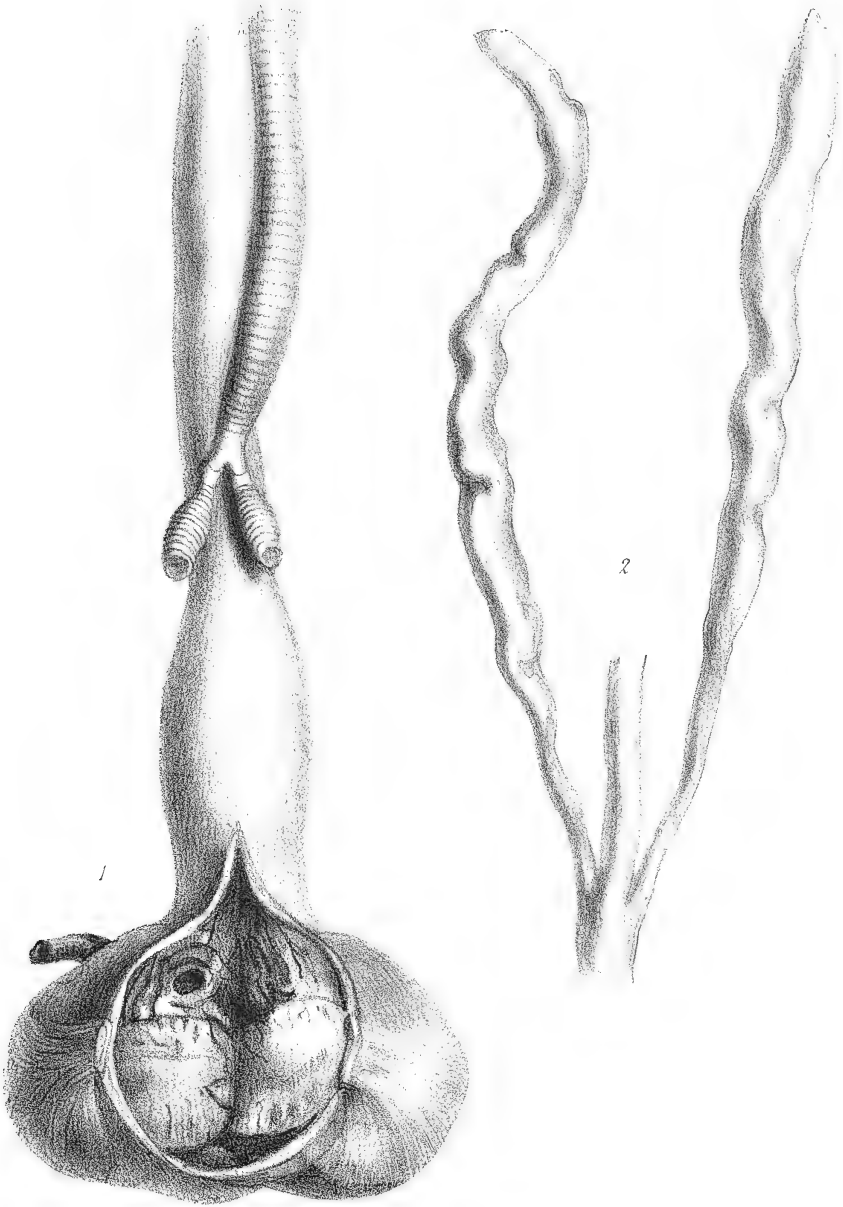


2/3 Nat. Size.

T. E. del.

1. *Æsophagus proventriculus* and *Stomach* of *Mergus Serrator*. *Fem.*  
2. *Cæca* of *D.*<sub>1</sub>

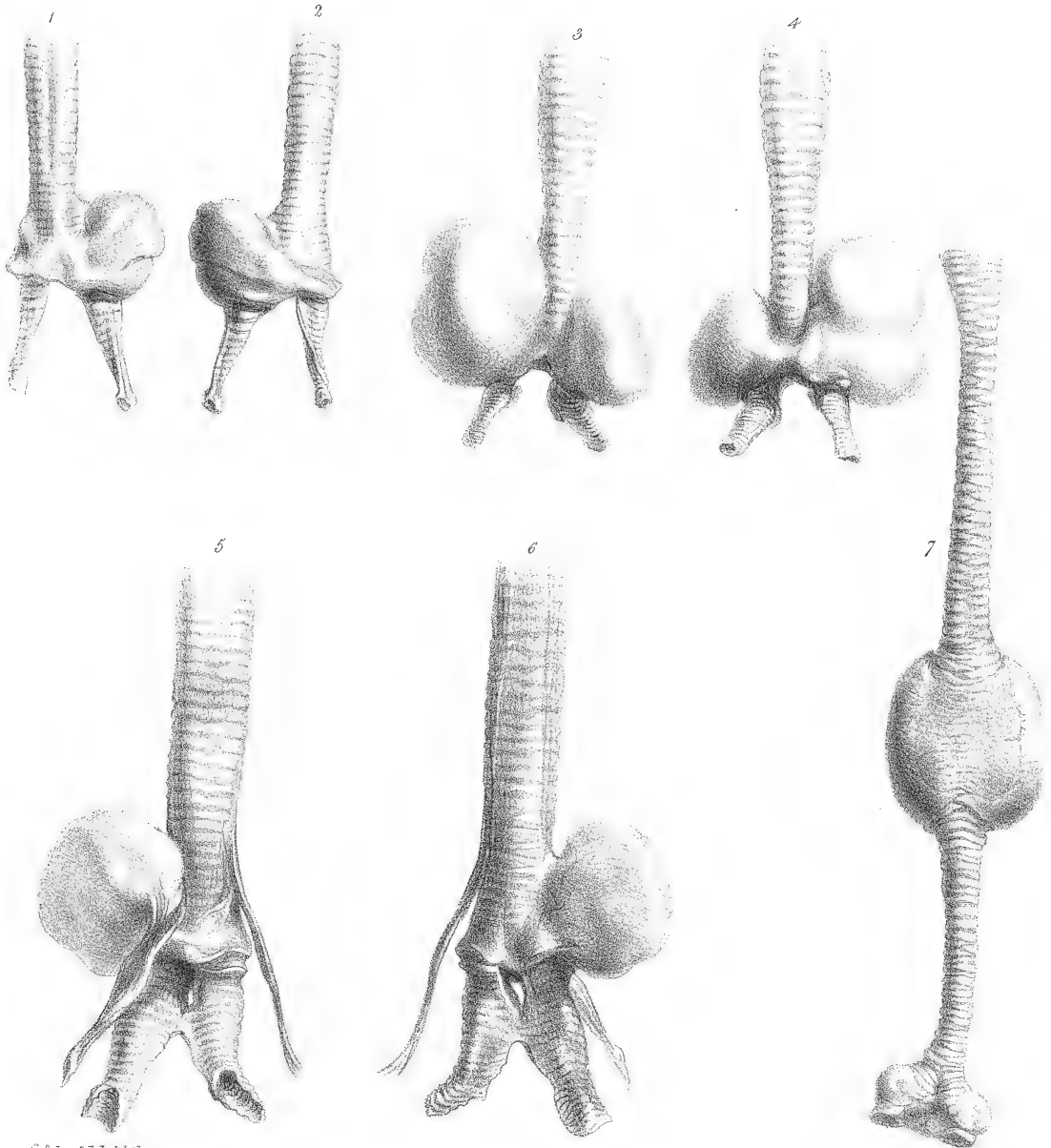




27 C. E. del.

1. *Esophagus Proventriculus & stomach of Anser segetum Fem.*  
2. *Ceca of Ditto.*





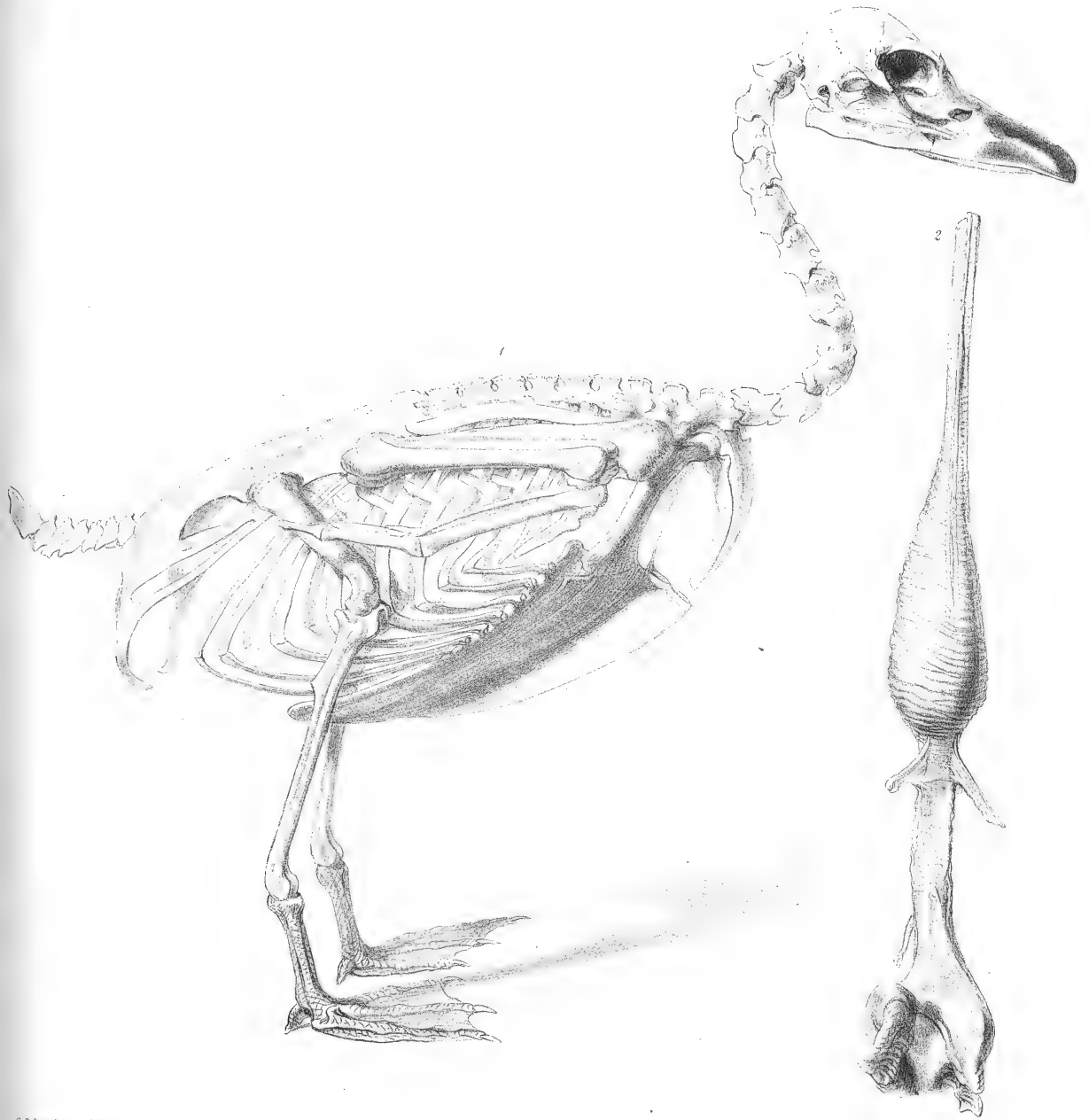
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Enriched by O. Falgout

Trachea of  
 1. 2. *Chloephaga Magellanica*. 3. 4. *Tadorna Bellonii*.  
 5. 6. *Carina Moschata*. 7. *Melanitta fusca*.





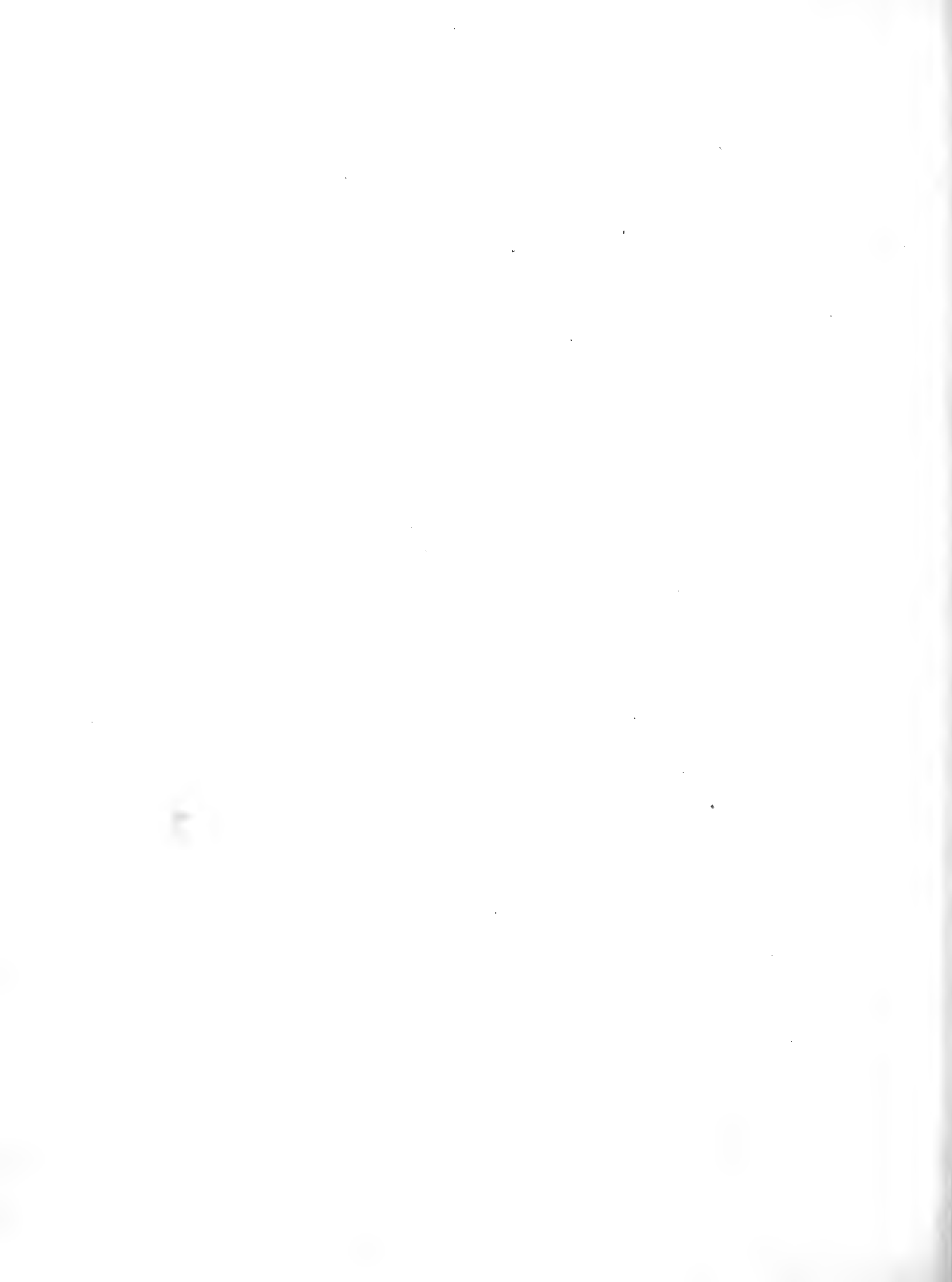


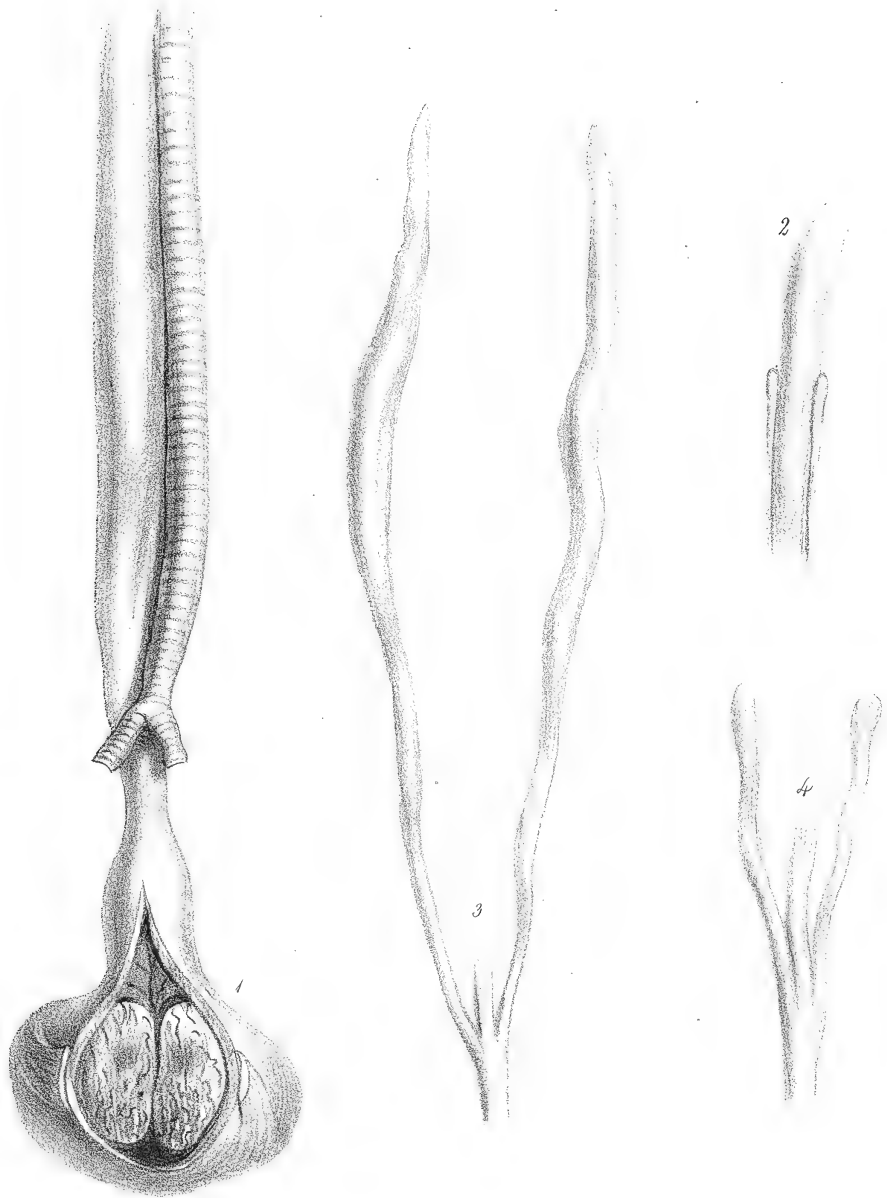
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1. SKELETON OF CLANGULA HISTRIONICA.  
 2. TRACHEA OF ..... VULGARIS.

*Two thirds the Nat Size.*



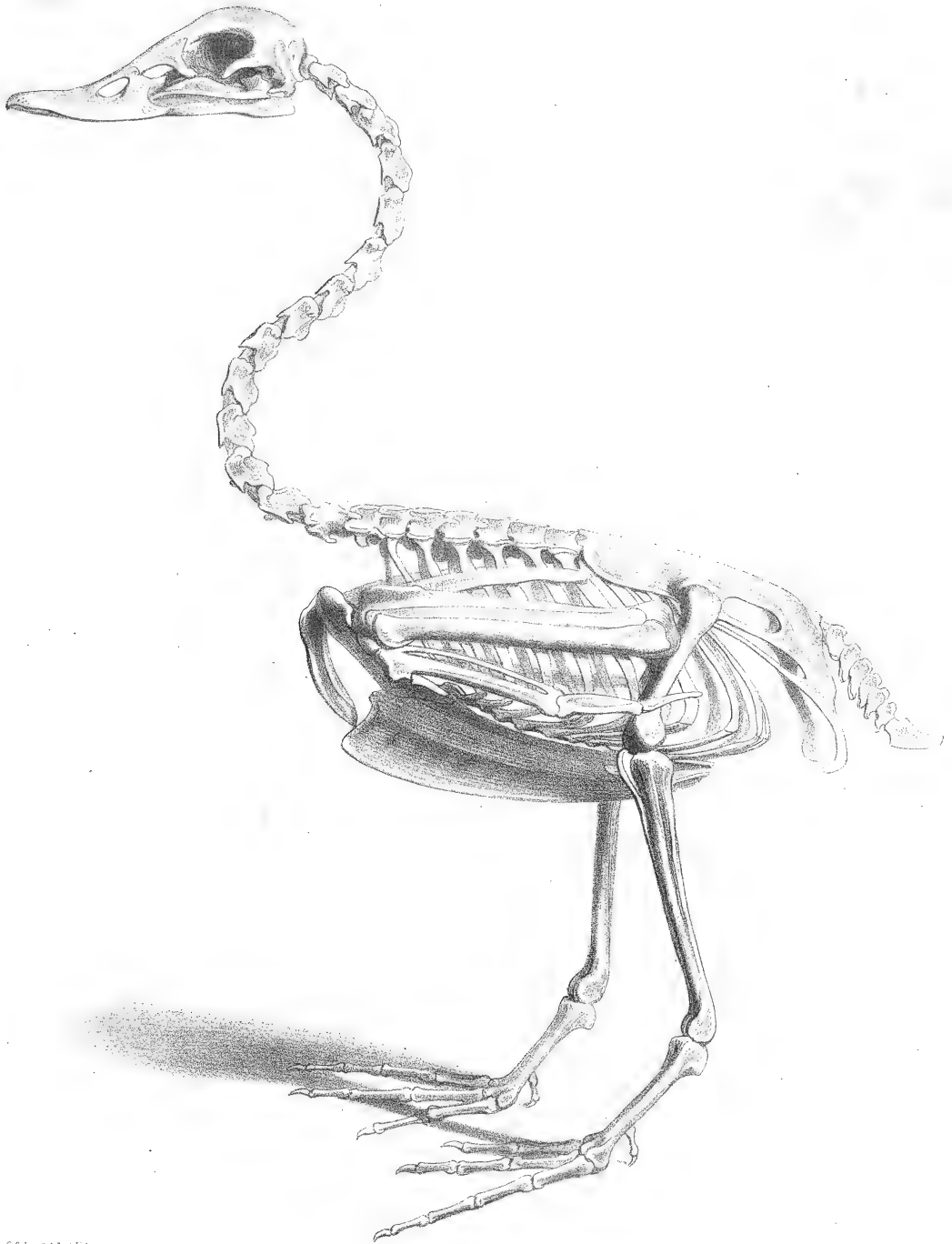


T.C.E. del.

$\frac{2}{3}$  Nat. Size.

1. Esophagus Proventriculus and Stomach of *Melanitta nigra*. Fem.  
 2. Caeca of *D<sup>o</sup>*, 3. Caeca of *Fuligula ferina*. Male. 4. Caeca of *Clangula vulgaris*. Fem.

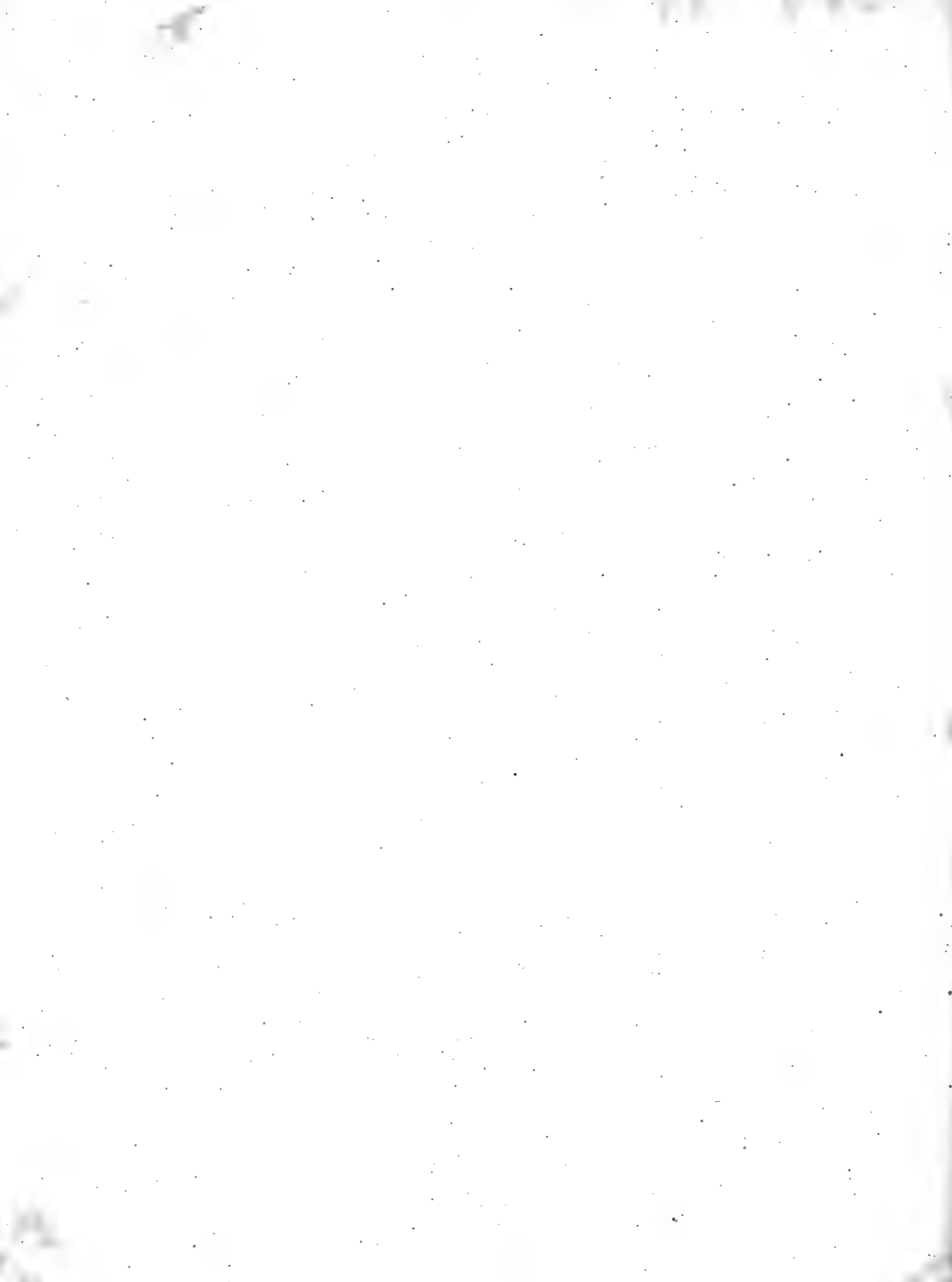


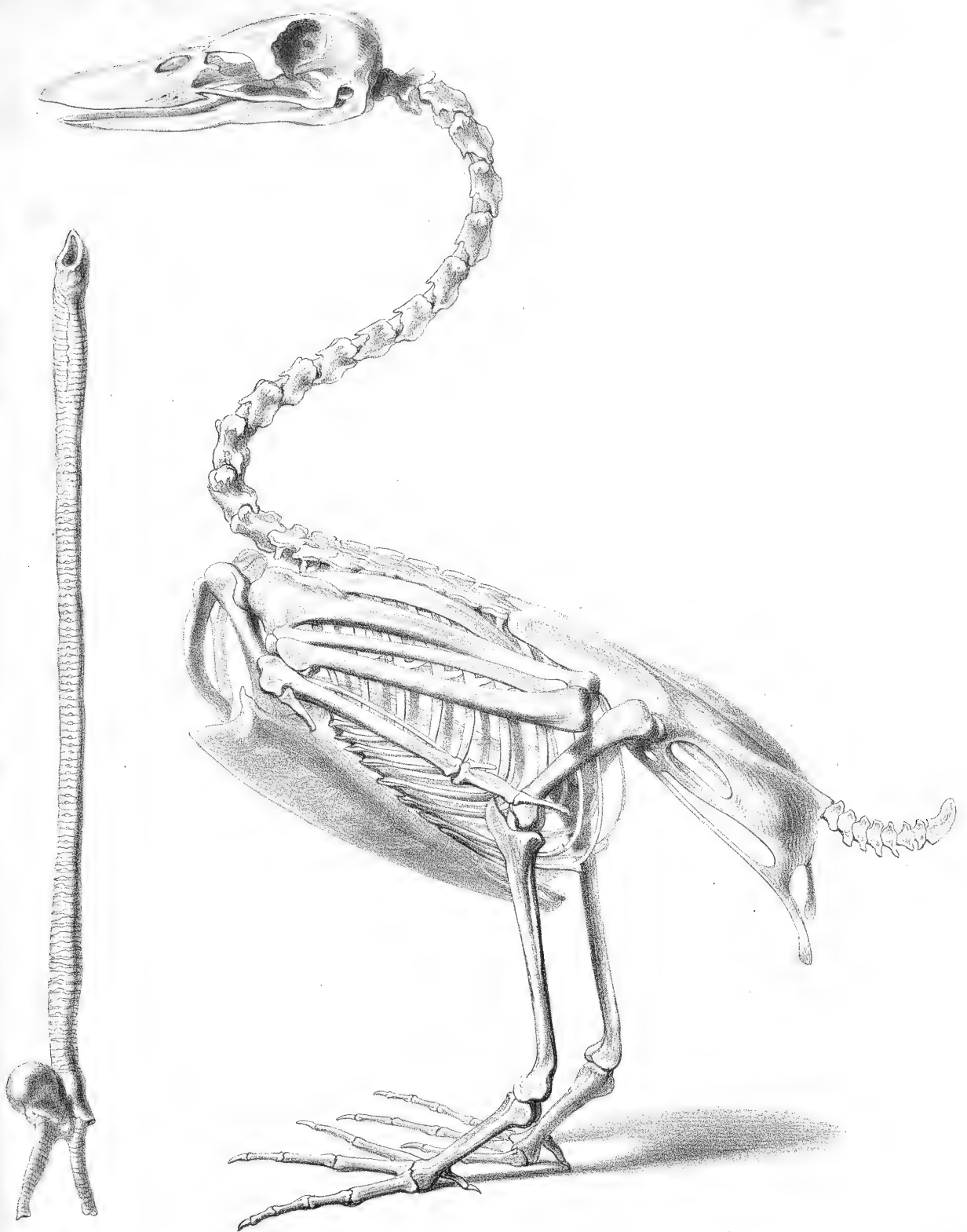


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*Half the Nat. Size.*





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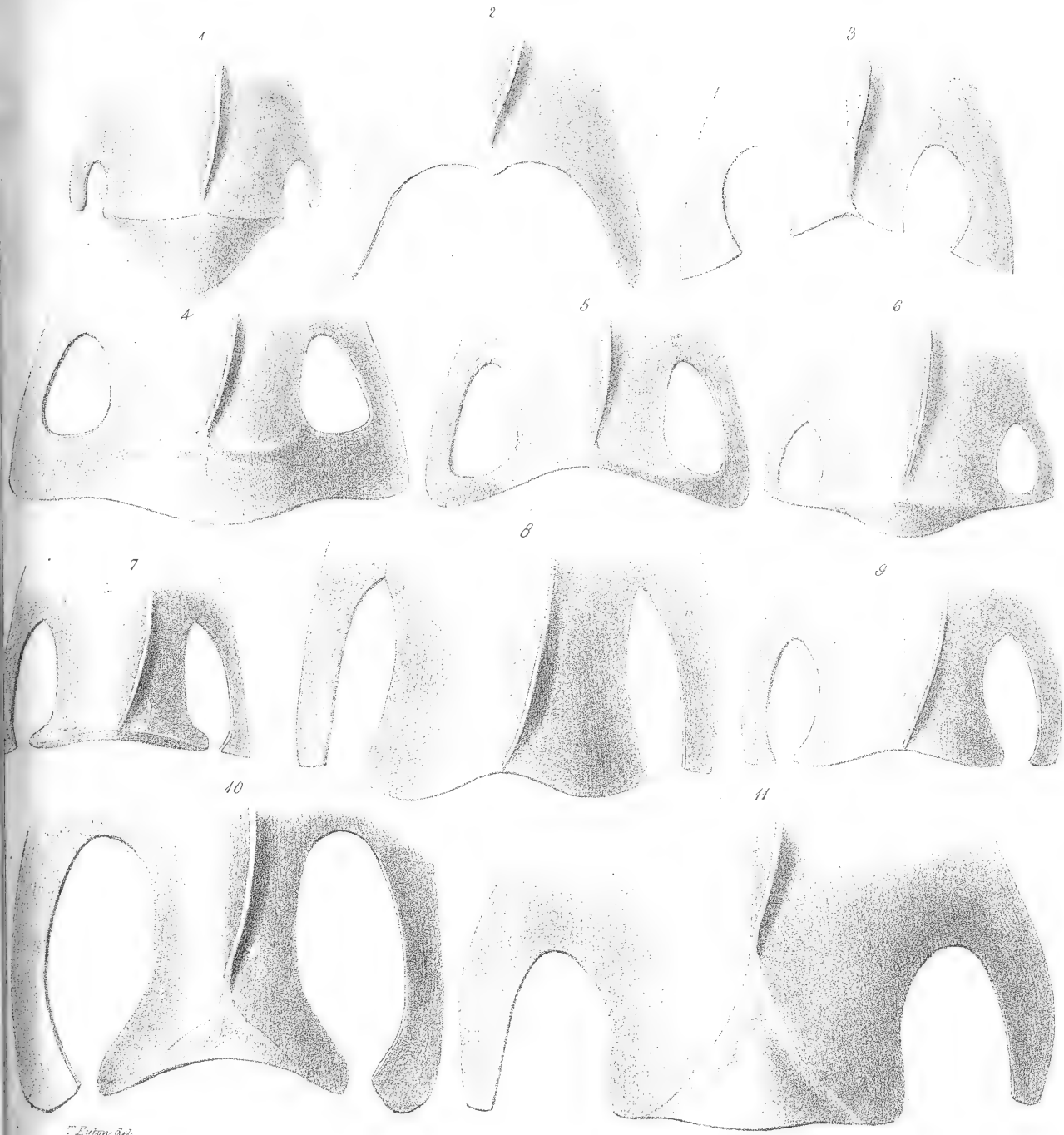
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**ANAS BOSCHAS & TRACHEA.**

*2 thirds the Nat. Size.*



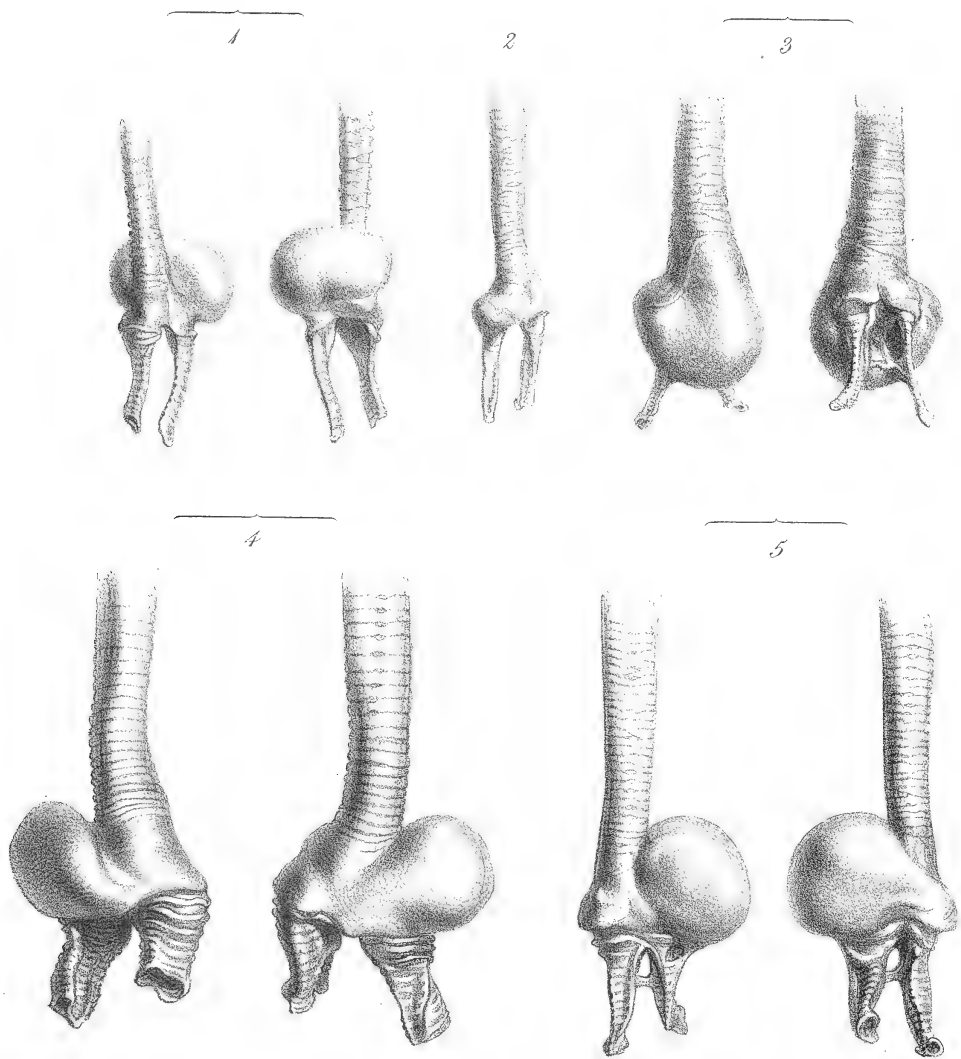




T. Lyster del.

- |   |                                    |
|---|------------------------------------|
| 1. Posterior margin of the Sternum of <i>Alca Torda</i> | 6. ----- <i>Mergus albellus</i>    |
| 2. ----- <i>Phalacrocorax cristatus</i>                 | 7. ----- <i>Rhynchopus dypeata</i> |
| 3. ----- <i>Podiceps cristatus</i>                      | 8. ----- <i>Carina Moschata</i>    |
| 4. ----- <i>Clangula vulgaris</i>                       | 9. ----- <i>Tadorna bellonii</i>   |
| 5. ----- <i>Fuligula cristata</i>                       | 10. ----- <i>Anser ferus</i>       |
|   | 11. ----- <i>Cygnus olor</i>       |





G. Schoof del. et lith.

Printed by C. Hallmandel.

Trachea of

Fig. 1. *Aia Sponsa*.

2. *Querquedula Formosa*.

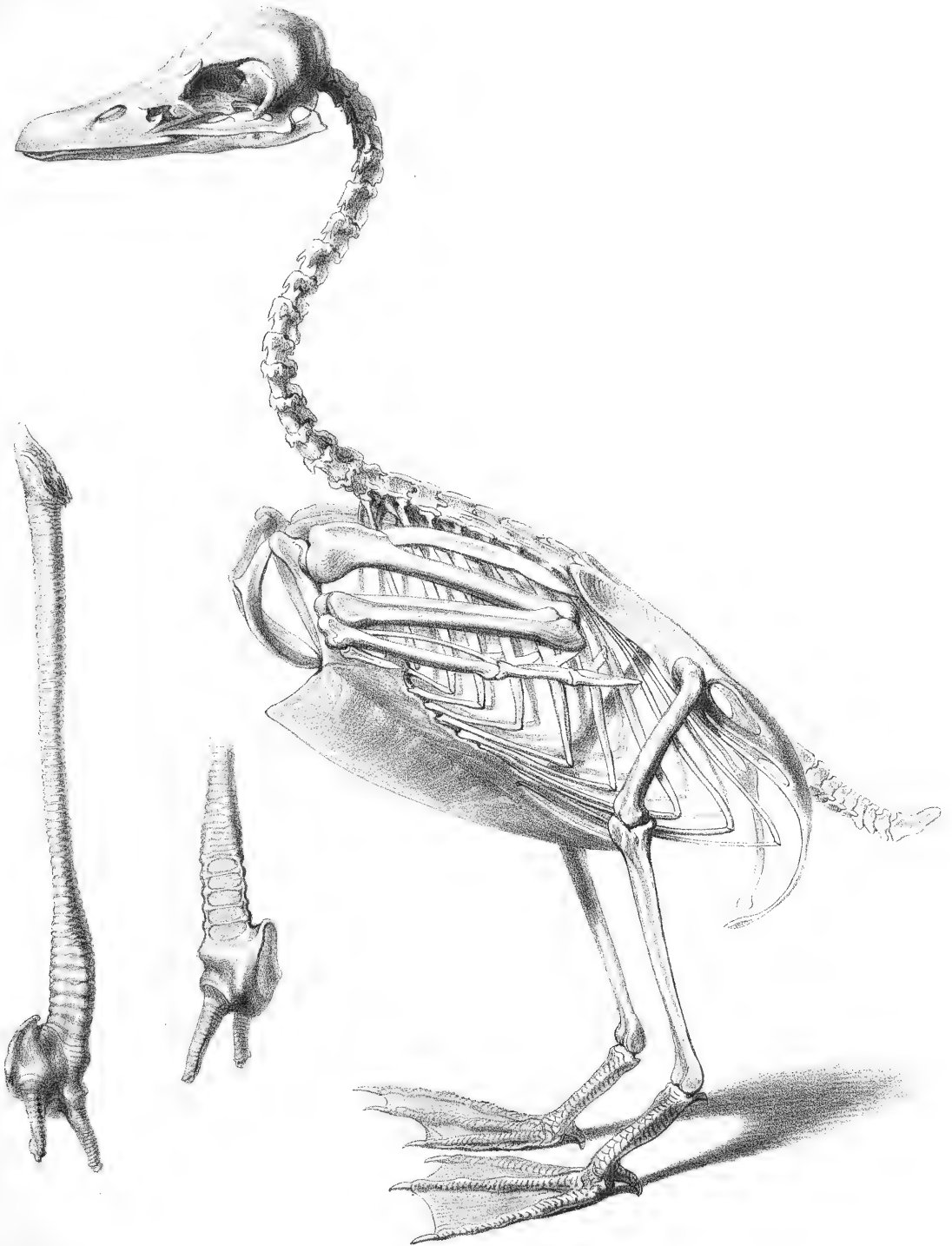
3. *Cyanopterus Circia*.

4. *Micropterus Patachonicus*.

5. *Bernicla Antarctica*.

All males.



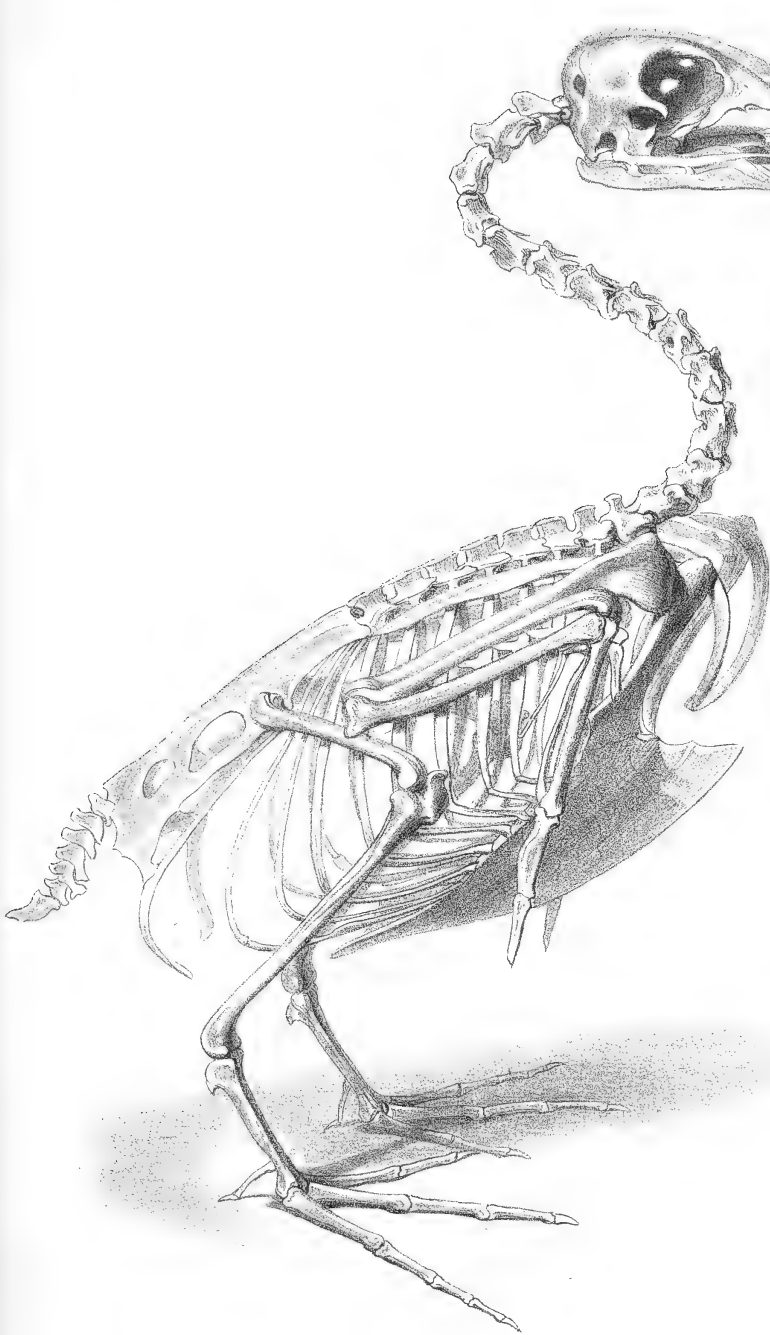


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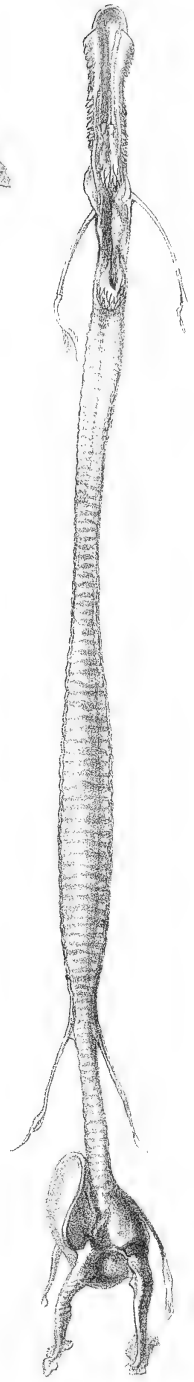
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HARELDA GLACIALIS & TRACHEA.  
*2/3rds the Nat. Size.*





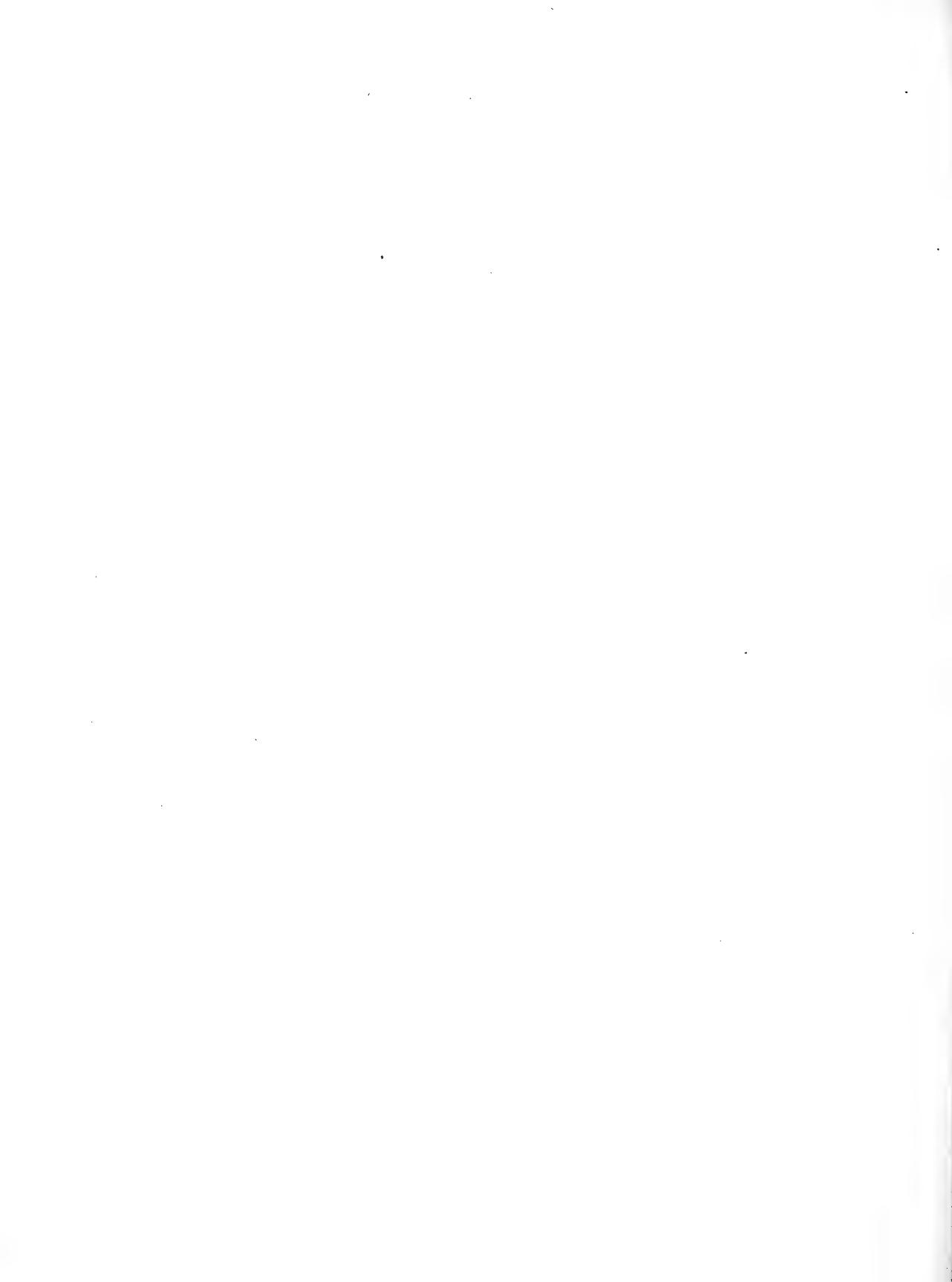
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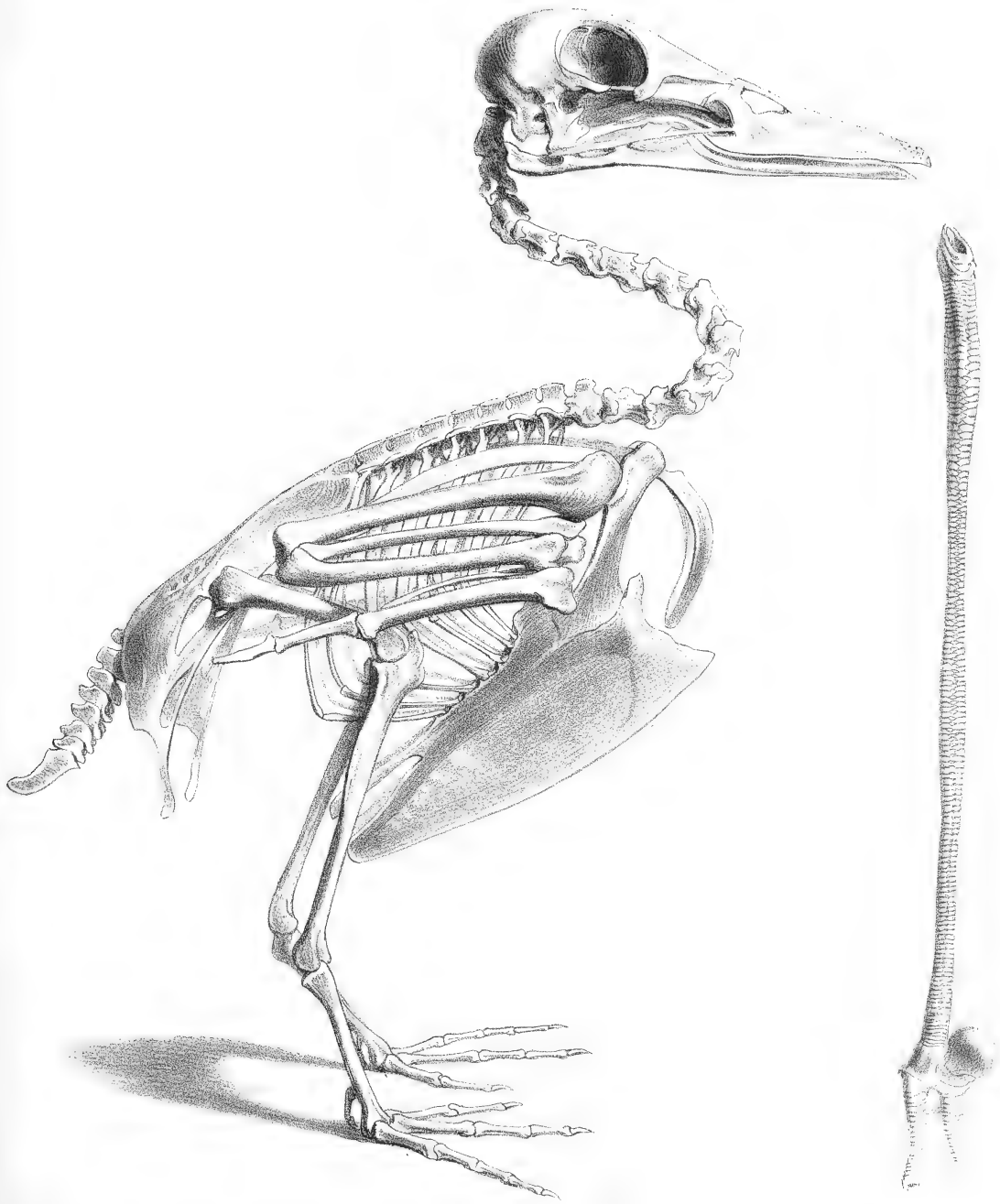
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NYROCA LEUCOPHTHALMUS & TRACHEA.

*3/4 the Nat. Size.*



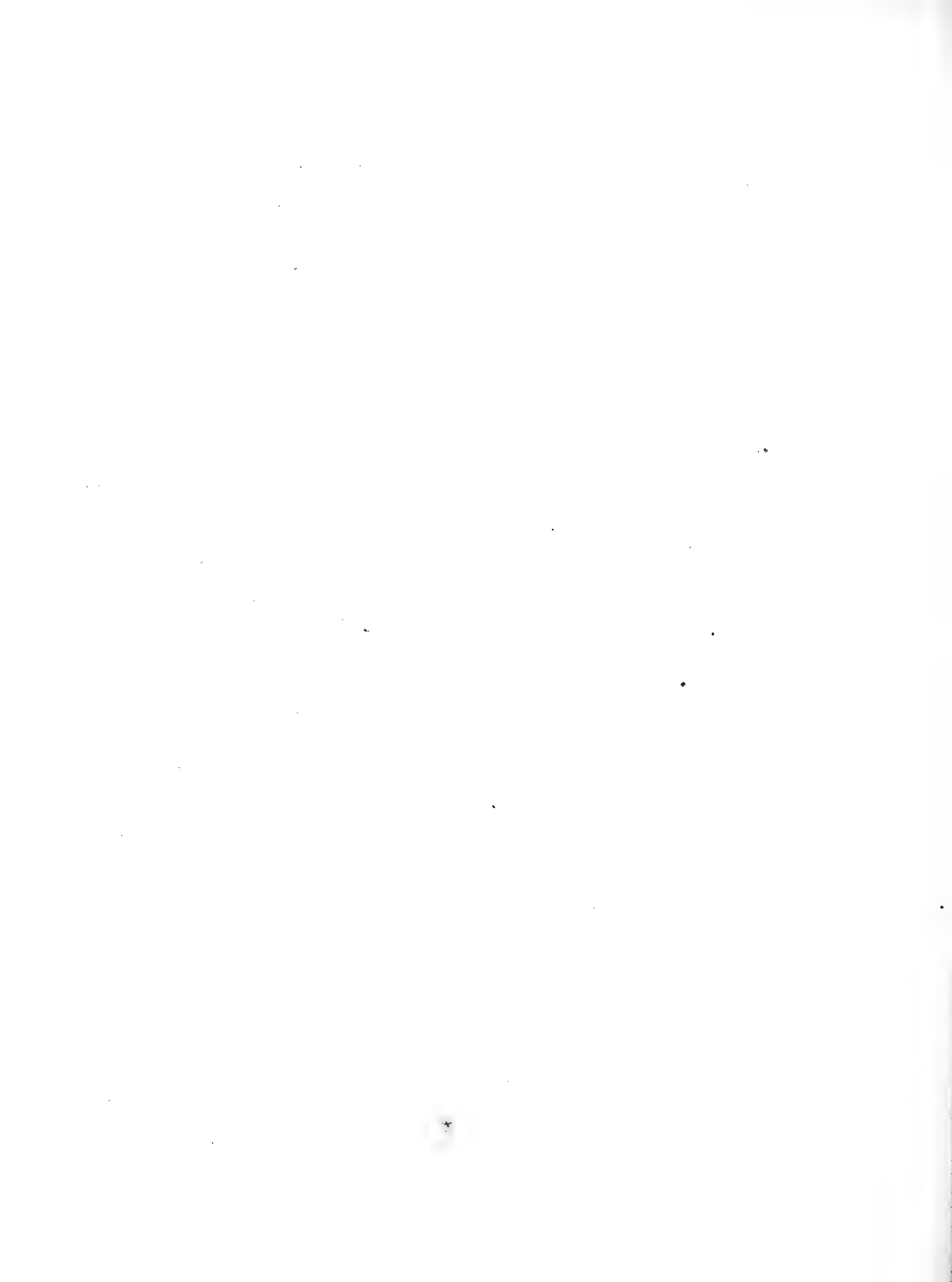




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QUERQUEDULA CRECCA & TRACHEA.  
*Nat. Sixe.*





*G. Schlegel del. et lithog.*

*Printed by C. Hoffmann.*

CYGNUS FERUS.  
*1/2 the Nat. Size.*



# OSTEOLOGIA AVIUM;

OR,

## A SKETCH OF THE OSTEOLOGY OF BIRDS.

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SUPPLEMENT II.

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BY

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

*And Corresponding Member of the Institute of Philadelphia.*

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COVENT GARDEN, LONDON,

AND

R. HOBSON, WELLINGTON, SALOP.

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1875.



## PREFACE.

I have now figured, I believe, all the principal forms of the Skeletons of Birds, and in conclusion beg to thank those who have assisted me. I am much obliged to Mr. Gerrard, senior, of the British Museum, and Mr. Flowers, of the College of Surgeons, who have always assisted me in finding anything I wanted in the respective collections in their care ; to Mr. Bartlett, senior, also, I am much obliged for information regarding the habits of some birds, among which I may mention *Chauna Chavaria*, and *Rhynchotus Jubatus* ; and to Professor Owen I am much obliged by his always giving me access to him, although so much employed, when I wished to ask him a question ; to Dr. Gray also I am obliged for allowing me access to the collection under his care.

I have added to this Supplement a list of plates of Skeletons of Birds for reference.

T. C. EYTON,

Eyton-on-the-Wealdmoors,

Wellington, Shropshire.

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### ERRATA.

Page 22.—For *Spisc* read *Spix* ; for *Kettl.* read *Kittl.*      Page 26.—For *Rhynochotus* read *Rhynochetus.*



# OSTEOLOGIA AVIUM.

## SECOND SUPPLEMENT.

### EURYCEROS PREVOSTII, *Less.*

This bird was described by Lesson in his "Centurie Zoologique" in 1830. The following is a part of his description:—

"L'oiseau type, du genre nouveau que nous représentons dans la planche 74 est une des singularités les plus neuves et les plus remarquables de l'ornithologie.

"C'est un passage transitoire entre les toucans, les calaos et les enrylaimes; c'est un type caractérisé à placer comme lieu intermédiaire entre l'erotta.—(Traite d'Ornithologie, p. 260) et les buceros.

"Les enrycères appartiennent à nos passereaux hétérodactyles et à notre famille des enrylaimes, le genre sera ainsi caractérisé."

Bonaparte, in his "Conspectus Genera Avium," classes it near the *Rhamphastidæ* after *Buceridæ*, which immediately precedes it. G. R. Gray classes it among the *Sternidæ*, to which it has no affinity whatever.

*Cranium* rounded, without any channel over the vertex to the bill. Occiput very round, with a slight depression on each side above the foramen magnum; orbital septum, perforated with two foramina, orbits large; the superior margin slightly reflexed. Bill, with the upper mandible, large; very much raised above, composed of cellular bone, deep; lower mandible deep, with a foramen near its hinder extremity; both mandibles pointed.

*Sternum* of moderate length, with a deep and wide fissure on each hinder margin.

*Pelvis* broad, short.

*Palatine* bones prolonged on the exterior and hinder margin into an elongated spine, from the base of which they slope gradually, until they unite in the centre, where they are slightly deflected, broad.

*Furculum* much arched anteriorly; the process at the junction of the rami, which are rounded, arched, flattened, and the rami long.

*Coracoids* long, broad at their junction with the sternum, rounded in the middle.

*Scapulæ* long, much deflected.

*Ribs* weak, expanded at their dorsal extremities.

*Wing bones* long.

*Tarsi* long.

*Toes* long, the two outer anterior ones united; vertebræ short.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	11	Breadth of posterior margin . . . . .	10
Length of ulna . . . . .	16	Breadth of anterior . . . . .	
Length of radius . . . . .	12½	margin of ditto . . . . .	6
Length of metacarpus . . . . .	9	Depth of keel . . . . .	3
Length of femur . . . . .	11	Length of head . . . . .	24
Length of tibia . . . . .	15	Breadth of head . . . . .	9
Length of metatarsus . . . . .	11	Length of pelvis . . . . .	14
Length of sternum . . . . .	13	Breadth of pelvis . . . . .	9

From the above description it will be perceived that this bird presents no affinity whatever to *Rhamphastidæ* or *Sternidæ*. From the first family it differs in the shape of the sternum, and from the last in almost every part, particularly in the structure of the sternum and the palatine bones. In all these particulars it agrees with *Buceros*, and also in the form of the pelvis and furculum.

*Illustration.*

Sup. 2, pl. A. Details, pl. 1.

## OPISTHOCOMUS.

## Cristatus.

*Cranium*, a channel of moderate depth, has its origin at the base of the bill, and proceeds backwards on the top of the head to the occiput. Occipital ridge slight, and with a small occipital protuberance; orbits of moderate size; the septum with one foramen on its hinder and lower edge; a transverse indentation at the base of the bill; nostrils situated at about half its length, nearly round. Palatine bones much bent downwards; broad for their posterior two-thirds, and united for that distance down their centres, then divaricating, and both edges turned downwards, forming a channel on their lower edges; hinder end pointed backwards, and gradually narrowed to their junction with the interarticular bones, which are broad for their anterior half and narrowed backwards, the outer edges slightly deflected. Vomer thin. Foramen lacerum posterius very small. Lower maxillary bone curved downwards; broad, with a foramen near the hinder extremity of each branch.

*Sternum* of moderate length; posterior margin rounded, with one fissure on each side of the keel, and with a large triangular foramen on each side externally to it; hinder margin considerably broader than the anterior edge. Keel very short, extending from the hinder margin to little more than one-half of the length of the sternum; hinder edge sloped off from the point to the hinder margin. The anterior edge sloped very much backwards to the point from the junction of the furculum; the anterior portion being a mere rudimentary ridge.

*Furculum* having the rami very short and straight, and uniting at an acute angle, flattened at their junction with the coracoids, and becoming more rounded towards the terminal process, which is very long and narrow; triangular ankylosed to the rudimentary portion of the keel.

*Coracoids* short and strong, broad at their junction with the sternum, and having a slightly raised rib down the front.

*Pelvis* with the divisions of the vertebræ on the hinder half apparent when held up to the light; ischiadic foramen of moderate size, oval; obturator also of medium size, without any notch in front of the acetabulum; ilium projecting much over the bones of the ischium; a ridge proceeds from the junction of the caudal vertebræ up the centre of the pelvis, becoming more rounded and obscure on the anterior portion.

*Ribs* broad and strong; the styliiform process attached for a considerable length to the hinder edge of the ribs, and not projecting so far as next rib.

*Scapula* strong, slightly deflected, slightly expanded upwards at about half its length, rounded at its distal extremity.

*Wing bones* strong, short; ulna and radius as long as the humerus, anterior metacarpal bone straight, posterior one much bent, having a large space between it and the inner edge of the anterior one.

*Leg Bones* rather slender; tibia long in proportion to the femur. Metatarsus

triangular at its upper extremity, with a channel down the front, flattened towards its lower extremity; os calcis projecting considerably, with a very slight ridge proceeding downwards from it. A supplemental metatarsal bone projecting much backwards, not twisted on its axis, tapering and flattened upwards; tubercles for the articulation of the feet broad; toes long.

This curious bird appears to be nearly allied to the guans, but differs from in the form of the palatine bones, the hinder margin of the sternum, and furculum. There is no Gallinaceous bird that I am acquainted with that has the hinder margin of the sternum of a similar form, the nearest approach that I am aware of to the form of the furculum is among the cracidæ in *C. Globocera*, the process at the junction of the rami is very much elongated, but is not nearly so much so as in the opisthocomus. The rami also are curved, while in the latter bird they are straight, and the furculum, instead of being anchylosed, or united by a ligament to the point of the keel of the sternum, is anchylosed to its medial portion.

*Measurements.*

	Tenths.		Tenths
Length of humerus . . . . .	17 $\frac{3}{4}$	Breadth of anterior . . . . .	
Length of ulna . . . . .	19	margin of ditto . . . . .	11 $\frac{1}{2}$
Length of metacarpus . . . . .	12	Depth of keel . . . . .	6
Length of femur . . . . .	16	Length of head . . . . .	14
Length of tibia . . . . .	15	Breadth of head . . . . .	9 $\frac{1}{2}$
Length of metatarsus . . . . .	11	Length of pelvis . . . . .	16
Length of sternum . . . . .	16	Breadth of pelvis . . . . .	12
Breadth of posterior margin . . . . .	15 $\frac{1}{2}$		

*Illustration.*

Sup. 2, pl. 2, B. Details, pl. 2.

RHINOCHETUS.

JUBATUS, Verr.

*Cranium* much arched above, with an indentation from the base of the bill to vertex, a large and prominent occipital ridge, with two deep channels anterior to it. Orbital septum with very large foramen. Palatine bones truncated behind, gradually tapering to point anteriorly; posterior margin entire.

*Sternum* narrow, long; keel very narrow, with the edge nearly straight.

*Pelvis* anteriorly much arched and gradually sloping backwards, with two deep hollows, one on each side of the sacral vertebræ. Ischiadic foramen long. Obturator foramen large and rounded anteriorly, short posteriorly. Pelvis very short.

*Ribs* narrow and thin, styloform process turned much upwards.

*Furculum* weak, without any process at the junction of the rami.

*Coracoids* broad, at their sternal extremities light.

*Scapulæ* very much arched, short.

*Wing bones* short, ulna much bent.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	26	Breadth of anterior	
Length of ulna . . . . .	28	margin of ditto . . . . .	10
Length of metacarpus . . . . .	14	Depth of keel . . . . .	3
Length of femur . . . . .	26	Length of head . . . . .	17
Length of tibia . . . . .	50	Breadth of head . . . . .	13
Length of metatarsus . . . . .	45	Length of pelvis . . . . .	30
Length of sternum . . . . .	19	Breadth of pelvis . . . . .	13
Breadth of posterior margin . . . . .	7		

Mr. G. Gray, in his Hand-list, places this bird next Eurypyga, from which it differs in the shape of the sternum. In Eurypyga the keel is very deep, and continued to the posterior margin. In Rhynochetus it is obliterated, the former bird has a deep foramen on each side, the latter none at all; the pelvis in the former bird is quite straight on its dorsal aspect, the latter has it much arched; in all of which respects it agrees with Psophia.

*Illustration.*

Sup. 2, pl. 3. Details, pl. 3, C.

CENTROPUS, *Ill.*

Rufipennis, *Horsf.*

*Cranium* with a slight channel between the orbits. Occipital ridge large and prominent, the channel for the masseter muscle large. Orbital septum with a large central foramen and a smaller one above.

*Palatine bones* similar to those of centropus phasianus, (pl. 13, fig. 1).

*Sternum* with one foramen on each side of the keel placed near the margin, the plate of bone bordering it not being so wide as in centropus phasianus; lateral margin more curved outwards. Keel with its edge more curved than in centropus phasianus; remainder as in the foregoing, but not so strong.

*Measurements.*

Tenths.	Tenths.
Length of humerus . . . . . 12	Breadth of posterior margin . . . . . 13
Length of ulna . . . . . 18	Breadth of anterior . . . . .
Length of radius . . . . . 17	margin of ditto . . . . . 10
Length of metacarpus . . . . . 9	Depth of keel . . . . . 4
Length of femur . . . . . 22	Length of head . . . . . 28
Length of tibia . . . . . 34	Breadth of head . . . . . 11
Length of metatarsus . . . . . 23	Length of pelvis . . . . . 21
Length of sternum . . . . . 15	Breadth of pelvis . . . . . 11

*Illustration.*

Sup. 2, pl. 4. Details, pl. 4, D.

SCYTHROPS, *Lath.*

Novæ Hollandiæ, *Lath.*

I have only been able to obtain a small portion of the skeleton of this curious bird, although it appears to be by no means rare in its native country; namely, the sternum, furculum, coracoids, and scapulæ.

*Sternum* broad, short; hinder margin with an indentation on each side of the keel; anteriorly slightly convex. Keel deep, much arched on its inferior edge, and continued to the posterior margin; anteriorly much hollowed out. Lateral margin curved, the hinder margin broader than the anterior one.

*Furculum* arched; process at the junction of the rami small, slightly flattened.

*Coracoids* very broad at their articulation with the sternum

*Scapulæ* very broad near their extremities; arched, pointed.

*Measurements.*

Tenths.	Tenths.
Length of sternum . . . . . 23	Breadth of anterior margin of ditto 14
Breadth of posterior . . . . .	Depth of keel . . . . . 6
margin of ditto . . . . . 20	

*Illustration.*

Sup. 2, pl. 5, E.

## ZANCLOSTOMUS.

Javanicus, *Horsf.*

*Cranium* rounded, a slight channel over the vertex to the bill. Orbits large. Septum with one large foramen, a depression at the base of the bill, channel for the masseter muscles large, depression extending to the occiput.

*Sternum* with two fissures on the hinder margin, the inner one largest; hinder margin much broader than the anterior one; anterior edge receding.

*Pelvis* very broad, the sacral vertebræ forming a ridge for its whole length; ischiadic foramen large. Obturator foramen narrow, a large projection in front of the acetabulum pointing forwards.

*Furculum* very long, branches not much arched, process at their junction small.

*Scapulæ* broad.

*Wing bones* strong, the ulna nearly as long as the humerus.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	10 $\frac{1}{2}$	Breadth of posterior margin . . . . .	8
Length of ulna . . . . .	10	Breadth of anterior . . . . .	
Length of radius . . . . .	9 $\frac{1}{2}$	margin of ditto . . . . .	6
Length of metacarpus . . . . .	5	Depth of keel . . . . .	2 $\frac{1}{2}$
Length of femur . . . . .	14	Length of head . . . . .	22
Length of tibia . . . . .	20	Breadth of head . . . . .	8
Length of metatarsus . . . . .	10	Length of pelvis . . . . .	10
Length of sternum . . . . .	8	Breadth of pelvis . . . . .	8

*Illustration.*

Sup. 2, pl. 6, F.

## ZANCLOSTOMUS.

## Sumatranus.

Very similiar to the preceding.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	8	Breadth of anterior . . . . .	
Length of ulna . . . . .	11 $\frac{1}{2}$	margin of ditto . . . . .	6
Length of metacarpus . . . . .	6	Depth of keel . . . . .	3
Length of femur . . . . .	15	Length of head . . . . .	21
Length of tibia . . . . .	20	Breadth of head. . . . .	9
Length of metatarsus . . . . .	8 $\frac{1}{2}$	Length of pelvis . . . . .	12
Length of sternum . . . . .	8	Breadth of pelvis . . . . .	7
Breadth of posterior margin . . . . .	8		

*Illustration.*

Sup. 2, pl. 6.

Struthidea, *Gould*.

Cinerea, *Gould*.

*Cranium* very round over the vertex. Occipital crest very small, with a slight depression between the orbits, which are large, and with a large foramen through the septum. Nostrils large. Palatine bones very broad, posteriorly with a blunt spine on each side, the central edge deflected slightly for the posterior half, united at their articulation, with the interarticular bones gradually narrowed towards their anterior extremities.

*Sternum* long, indented, with two fissures on the posterior margin, much retiring from the manubrial process, which is large and prominent; bifurcate at the end. Keel of moderate depth, straight on its inferior edge.

*Pelvis* broad, divisions of the vertebræ apparent. Ischiadic foramen large; obturator foramen rounded, open, not a mere slit as in most birds.

*Ribs* of moderate size; styliform process turned much upwards.

*Furculum* much expanded; process at their junction of the rami small.

*Coracoids* long, of moderate size.

*Scapulæ* long, broad.

*Wing bones* of moderate size; ulna longer than than the humerus.

*Leg bones* metatarsus, very long.

#### Measurements.

	Tenths.		Tenths.
Length of humerus . . . . .	14	Breadth of anterior . . . . .	
Length of ulna . . . . .	16	margin of ditto . . . . .	7½
Length of metacarpus . . . . .	8	Depth of keel . . . . .	4
Length of femur . . . . .	8	Length of head . . . . .	19
Length of tibia . . . . .	23	Breadth of head . . . . .	9
Length of metatarsus . . . . .	17	Length of pelvis . . . . .	16
Length of sternum . . . . .	16	Breadth of pelvis . . . . .	9½
Breadth of posterior margin . . . . .	9		

#### Illustration.

Sup. 2, pl. 7. Details, pl. 7, F.

Struthidea presents a strong resemblance to kitta in the shape of the palatine bones and sternum, but pelvis is narrower.



PTILORHYNCHUS, *Cuv.*

*Smithii*, *Vig & Horsf.*

Differs very slightly in form from *Cassicus*.

*Measurements.*

	Tenths.			Tenths.
Length of humerus . . . . .	12		Breadth of anterior . . . . .	
Length of ulna . . . . .	21		margin of ditto . . . . .	9
Length of metacarpus . . . . .	10½		Depth of keel . . . . .	5
Length of femur . . . . .	16		Length of head . . . . .	25
Length of tibia . . . . .	20		Breadth of head . . . . .	10
Length of metatarsus . . . . .	21		Length of pelvis . . . . .	22
Length of sternum . . . . .	17		Breadth of pelvis . . . . .	12
Breadth of posterior margin . . . . .	11			

*Illustrations.*

Pl. 1. Details, pl. 8, H.

DENDROCITTA, *Gould.*

Vagabunda, *Lath.*

*Cranium* round on the vertex. Occipital ridge well defined, but not prominent. Orbits large. Septum with the foramina partly filled up. Palatine bones broad on their hinder margins, their lateral edges terminating with a blunt spine. Interarticular bones broad at their junction with the palatine bones, which, anteriorly, merely form a narrow strip on each side to their junction, with the superior maxillary bones.

*Sternum* rather long, with a deep fissure on each side inferior edge of the keel, arched; the front edge much scolloped out.

*Pelvis* broad. Obturator foramen long; ischiadic large.

*Ribs* with the styliform process very long.

*Furculum* narrow.

*Coracoids* small.

*Scapulum* slightly arched, expanded near the extremity, and finally pointed.

*Wing bones* of moderate size; the ulna much longer than the humerus.

*Leg bones* with the tibia and metatarsal bones nearly equal.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	9	Breadth of anterior . . . . .	
Length of ulna . . . . .	15	margin of ditto . . . . .	$6\frac{1}{2}$
Length of metacarpus . . . . .	8	Depth of keel . . . . .	$3\frac{1}{2}$
Length of femur . . . . .	$13\frac{1}{2}$	Length of head . . . . .	22
Length of tibia . . . . .	18	Breadth of head . . . . .	10
Length of metatarsus . . . . .	15	Length of pelvis . . . . .	16
Length of sternum . . . . .	13	Breadth of pelvis . . . . .	7
Breadth of posterior margin . . . . .	8		

*Illustrations.*

Sup. 2, pl. 9. Details, pl. 9, I.

STERCORARIUS, *Briss.*Pomarinus, *Temm.*

*Cranium* rather flattened. Orbits large; a moderate-sized foramen in the centre, and a smaller one above it; a deep depression over each orbit. Palatine bones narrow, bending downward at the lateral edges; wider than in *Chroicocephalus ridibundus*. Interarticular bones bending inwards at their hinder ends, flattened.

*Sternum* with a large and deep fissure on each side of the keel, which is very deep and much curved on its inferior edge; much scolloped out on its anterior edge. Manubrial process small, laterally compressed, pointed.

*Pelvis* long; the pubis and ischium very much prolonged backwards. Obturator foramen long, narrow. Ischiadic foramen small; the division of the sacral vertebræ apparent.

*Ribs* moderate; styliform processes long, pointing upwards.

*Furculum* flattened, no projection at the junction of the rami.

*Coracoids* very strong, flattened on the upper side.

*Scapula* thick, of nearly the same width throughout, pointed at their extremities.

*Wing bones* very long, especially the metacarpal.

*Leg bones* light.

*Measurements.*

	Tenths.		Tenths,
Length of humerus . . . . .	46	Breadth of anterior	
Length of ulna . . . . .	47	margin of ditto . . . . .	15
Length of metacarpus . . . . .	42	Depth of keel . . . . .	8
Length of femur . . . . .	18	Length of head . . . . .	36
Length of tibia . . . . .	26	Breadth of head . . . . .	8
Length of metatarsus . . . . .	22	Length of pelvis . . . . .	33
Length of sternum . . . . .	30	Breadth of pelvis . . . . .	19
Breadth of posterior margin . . . . .	13		

*Illustrations.*

Sup. 2, pl. 10. Details, pl. 10, I.

The genus *stercorarius* differ from the genus *larus*, in having only one fissure on the posterior margin of the sternum, in the more depressed form of the cranium.

ARDEA, *Linn.*

Herodias. *Linn.*

*Cranium* much the same as in *A. cinerea*, but with the muscular impressions more distinct. The occipital crest more prominent, and orbital septum with a large foramen. Palatine bones narrow.

*Sternum* longer and narrower, and more convex. Keel not so deep.

*Pelvis* also longer and narrower, and with the central channel more marked.

*Ribs* narrow.

*Furculum*, *Coracoids*, and *Scapulæ* smaller and longer.

*Wing* and *Leg bones* similar, but longer.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	80	Breadth of anterior	
Length of ulna . . . . .	96	margin of ditto . . . . .	24
Length of metacarpus . . . . .	40	Depth of keel . . . . .	10
Length of femur . . . . .	46	Length of head . . . . .	96
Length of tibia . . . . .	105	Breadth of head . . . . .	16
Length of metatarsus . . . . .	75	Length of pelvis . . . . .	50
Length of sternum . . . . .	44	Breadth of pelvis . . . . .	20
Breadth of posterior margin . . . . .	15		

*Illustrations.*

Sup. 2, pl. 11. Details, pl. 11, J.

OSTEOLOGIA AVIUM.

	Cervical.	Dorsal.	Sacral.	Caudal.
<i>Euryceros prevostii</i> - - - - -	10	7	8	7
<i>Opisthonus cristatus</i> - - - - -	10	0	10	5
<i>Rhynochetus jubatus</i> - - - - -	14	7	10	7
<i>Centropus rufipennis</i> - - - - -	12	6	10	5
<i>Scythrops, Novæ hollandiæ non ridi</i> - - - - -	—	—	—	—
<i>Zanclostomus javanicus</i> - - - - -	10	6	12	5
<i>Zanclostomus sumatranus</i> - - - - -	10	7	9	6
<i>Struthidea cinerea</i> - - - - -	12	8	10	7
<i>Ptilorhynchus smithii</i> - - - - -	12	8	10	7
<i>Dendrocitta vagabunda</i> - - - - -	12	8	9	6
<i>Stercorarius pomarinus</i> - - - - -	11	8	10	8
<i>Ardea herodias</i> - - - - -	16	8	12	7

NOTE.

RHYNOCHEtus.

Jubatus.

Provisionally I have classed this bird with the *Psophiadæ*, but there is another family with which it agrees in many respects, but without knowing anything of the habits of the Kagu, not much can be finally determined. The family alluded to is that of the *Rallidæ*, in which *Aramus scolopœceus* is placed by Mr. Gray; it has long feet, like *Rhynochetus*, and the same form of sternum. The eggs of the Kagu, of which I have two, are white, spotted with brown; while those of *Posphia*, Mr. Bartlett informs me are white. Nuttall says the eggs of *Aramus* are two in number; Audubon that they rarely exceed five or six, but neither of these Naturalists say of what colour they are, or shape; they are not like any heron that I know of, or those of *Eurypyga*, but more like those of a coot, or large rail.





Nat. size.

*From Nature on Zinc by J. Eschleben*

*Vincent Brooks Day & Sons, Imp.*

EURYCEROS PREVOSTII.







*From Nature en Zinc by J. Brinley.*

$\frac{3}{4}$  Nat. size.

*Forrest, Brooks, Day & Son, Imp.*

OPISTHOCOMUS CRISTATUS.





2/3 Nat. size.

*From Nature on Zinc by J. Eiselebor*

*Vincent Brooks Day & Son, Eng.*

RHYONCHETUS JUBATUS.





*From Nature on Zinc by J. Erxleben.*

*Vincent Brooks Day & Son, Imp.*

CENTROPUS RUFIPENIS.





Nat. size.







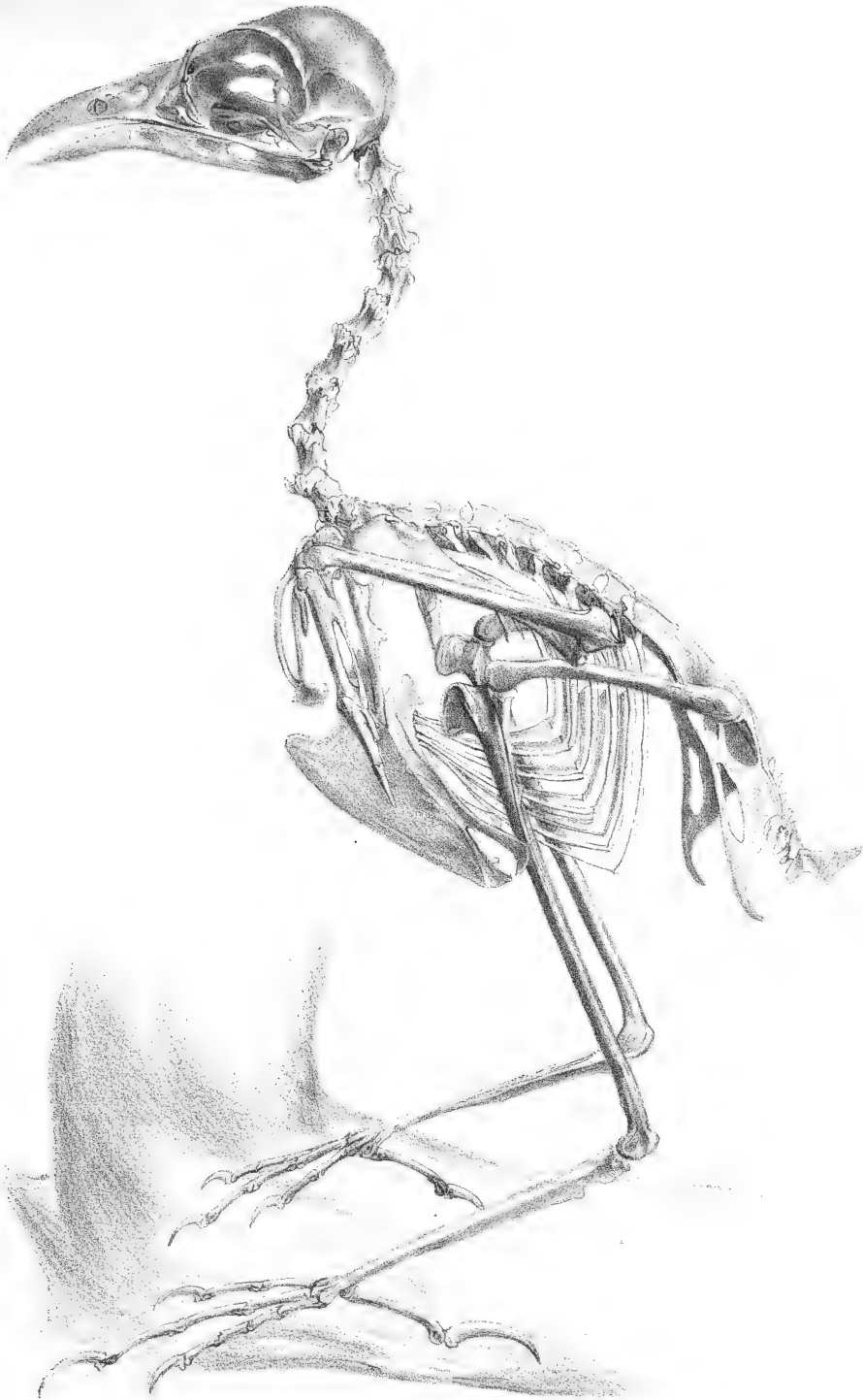
Nat. size

*From Nature on Zinc by J. Ericsson.*

*Vincent Brooks Day & Son, Imp.*

STRUTHIDEA CINEREA.





Nat. size.

*From Nature on Zinc by J. Eschschau.*

*Vincent Brooks Day & Son, Imp.*

PTILONORHYNCHUS SMITHII.



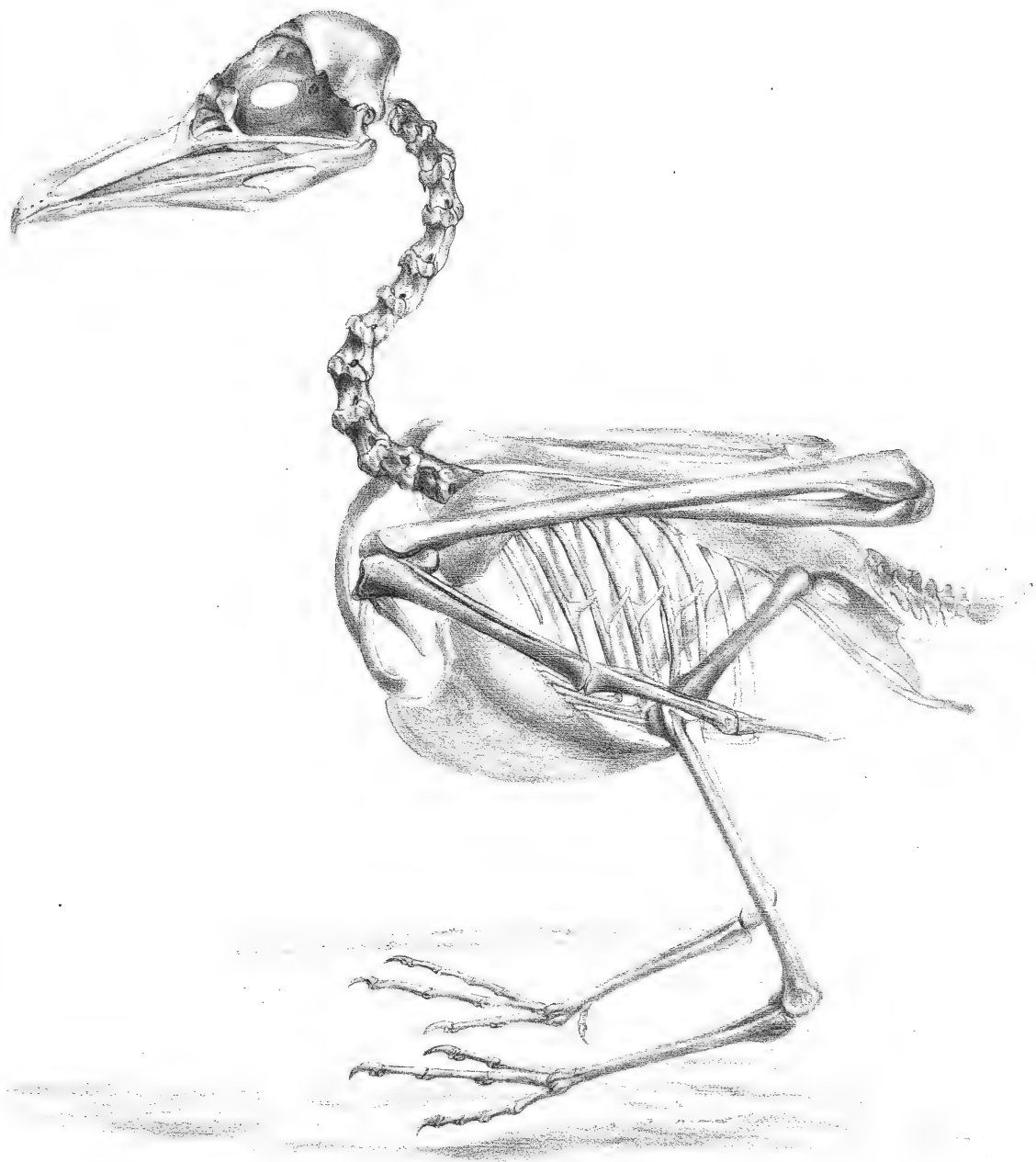


*From Nature on line by J. Erskine.*

*Vincent Brooks Day & Son, Imp.*

DENDROCITTA VAGABUNDA





$\frac{3}{4}$  Nat. size

*From Nature on Zinc by J. Erxleben*

*Vincent Brooks Day & Son. Imp.*

STERCORARIUS POMARINUS.







*From Nature on Zinc by J. Erxleben.*

*Vincent Brooks Day & Son, Imp.*

ARDEA HERODIAS.





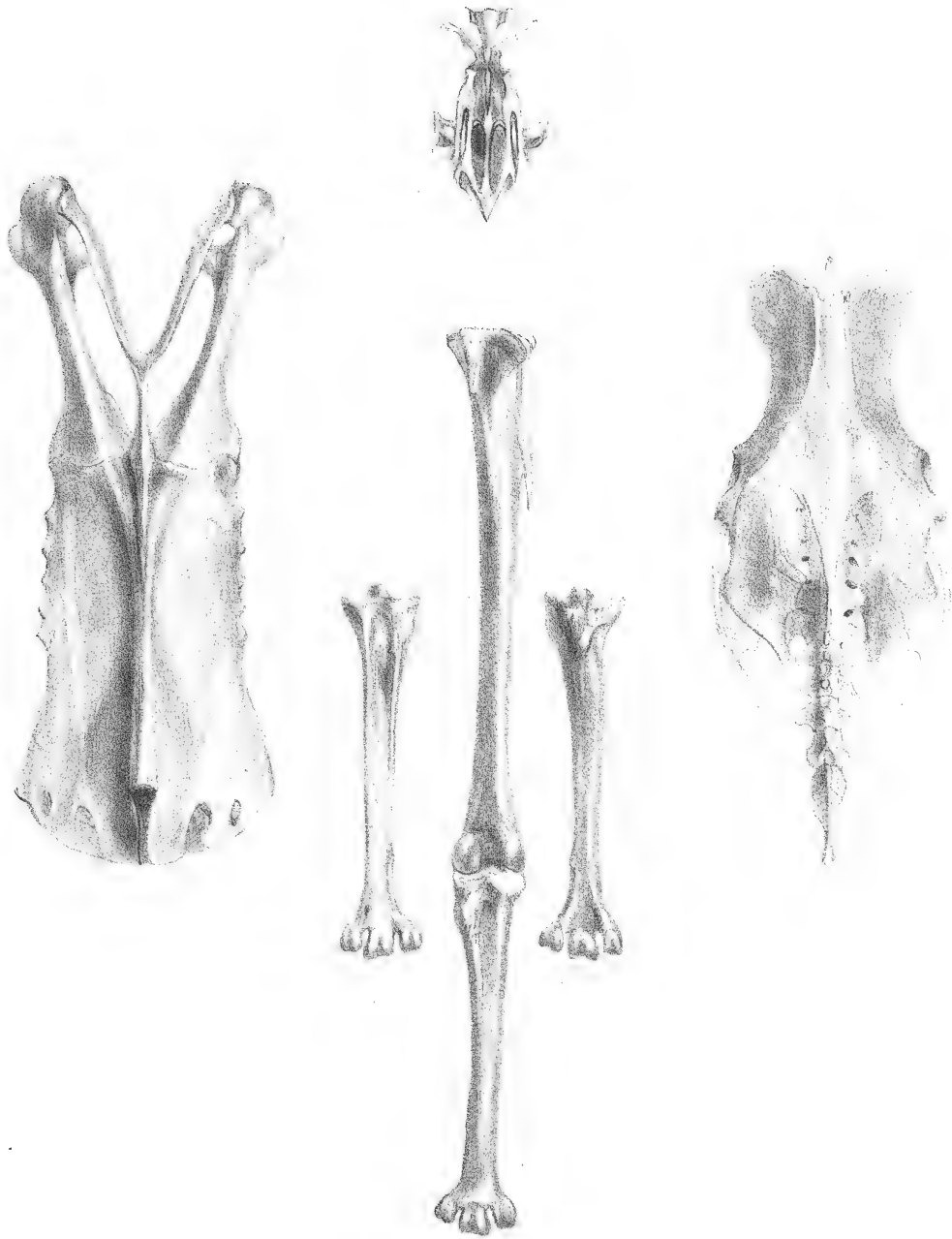
Nat. size.

*From Nature or Zinc by J. Erxleben.*

*Vincenz. Brocks Day & Sons Eng.*

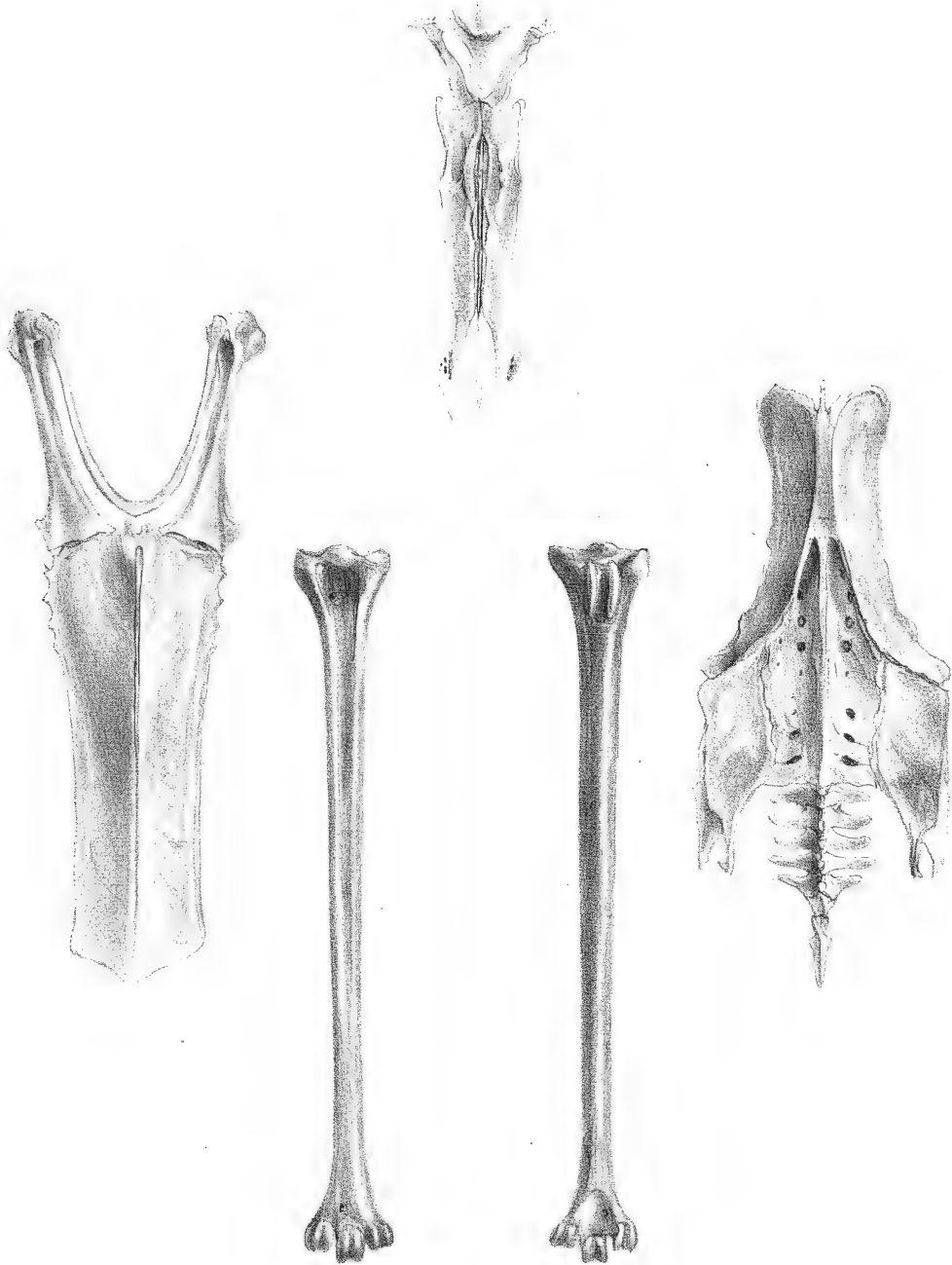
EURYCEROS PREVOSTII.





Nat size.





Nat. size.

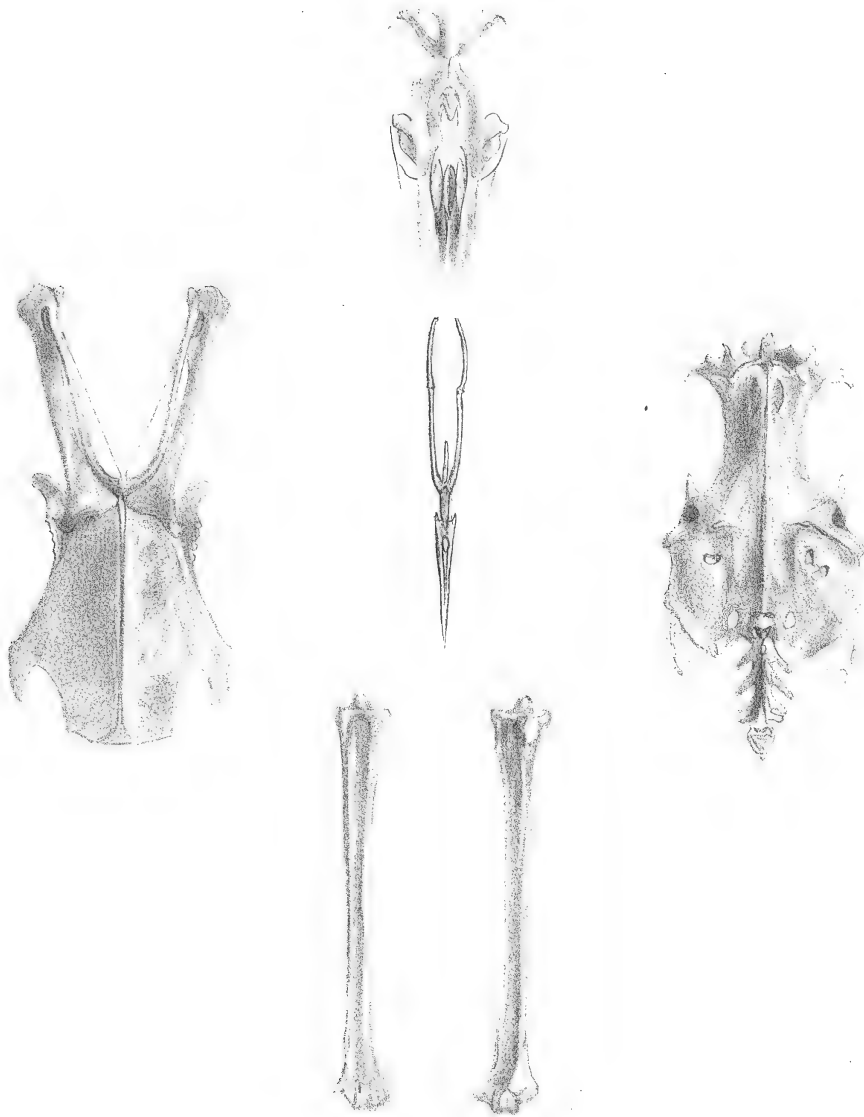
*From Nature on Zinc by J. Eccleston*

*Vincent Brooks Day & Son, Imp.*

RHYNCHOTUS JUBATUS.

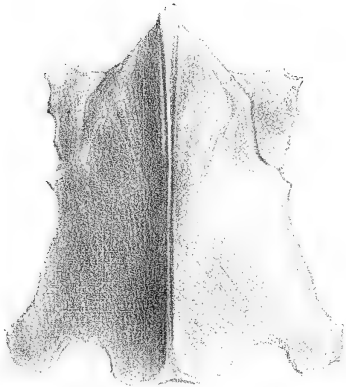
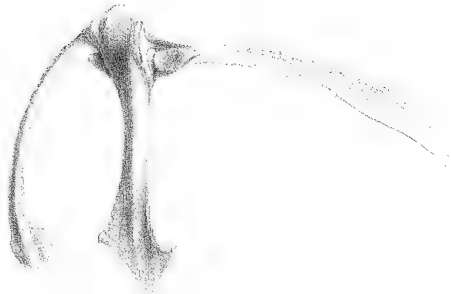






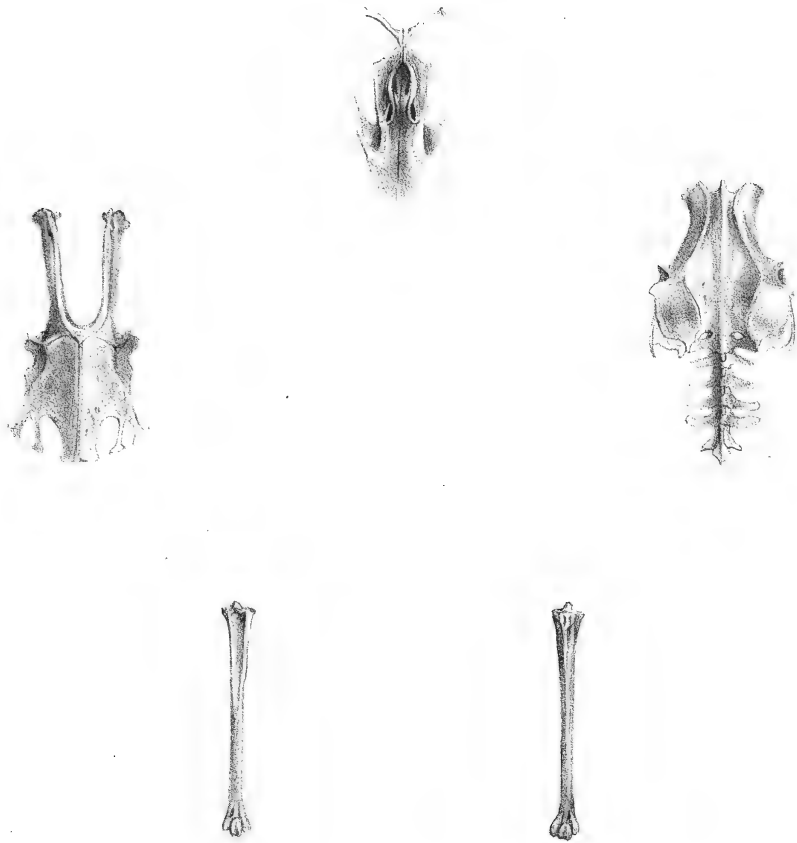
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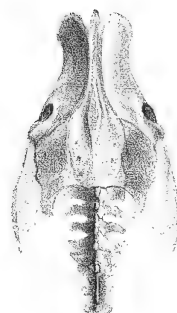
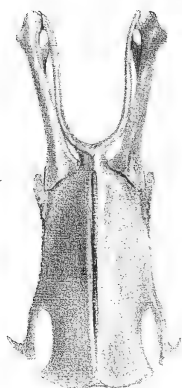
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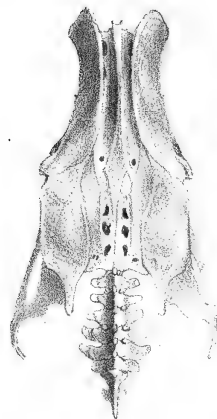
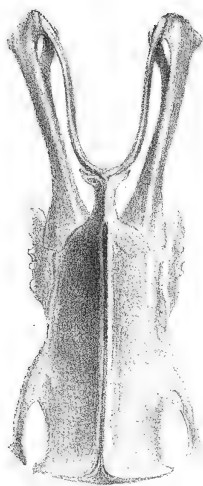
*From Nature on Zinc by J. Erxleben*

*Wm. Brookes Day & Son, Imp*

STRUTHIDEA CINEREA.







Nat. size.

*From Nature on Zinc by J. Ericsson.*

*Vincent Brooks Day & Son, Imp.*

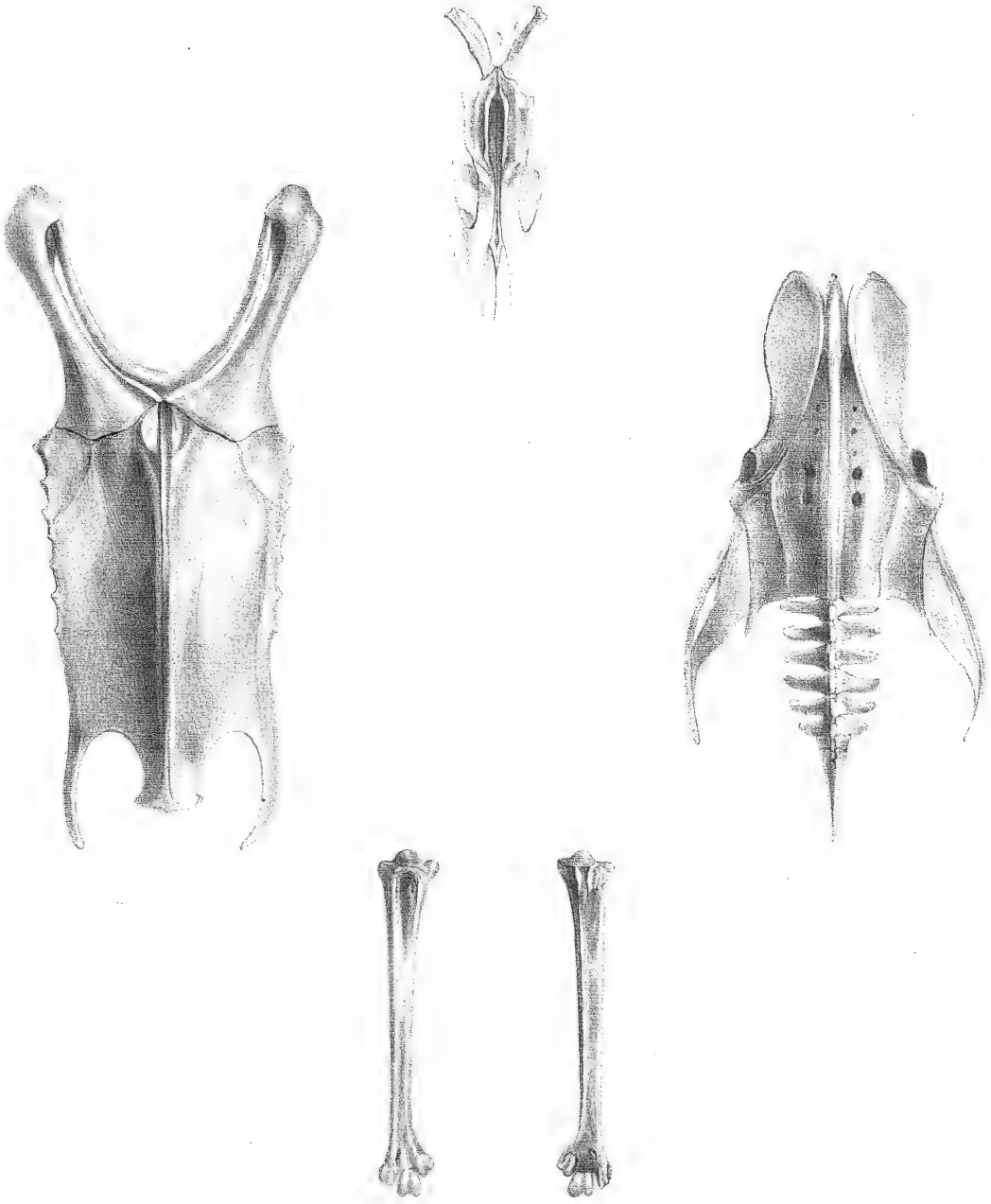
PTILONORHYNCHUS SMITHII.





Nat size





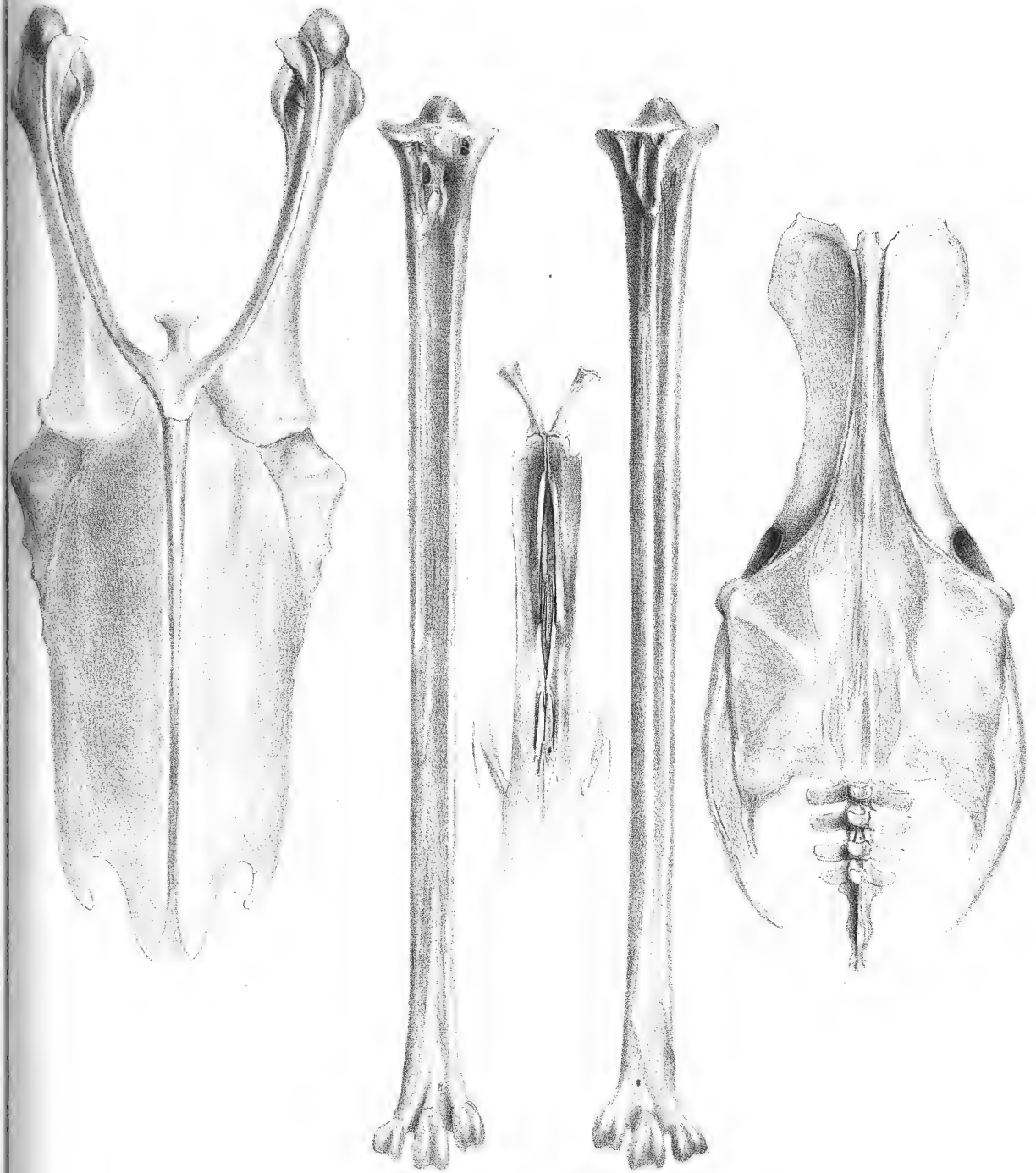
Nat. size.

*From Nature on Stone by J. Erschleben.*

*Engrav. by Geo. Day & Son, Eng.*

STERCORARIUS POMARINUS.





*From Nature on Zinc by J. Erxleben*

*Vincent Brooks Day & Son, Imp.*

ARDEA HERODIAS.





# OSTEOLOGIA AVIUM.

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## SECOND SUPPLEMENT.

### PART II.

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MOMOTUS, by *R. Gray.*

Æquinoctialis, *Gould.*

When the first part of this work was published I had some fragments of the skeleton of Momotus (pl. 12, fig. 13) taken from a skin. I have since obtained a perfect skeleton of Momotus Æquinoctialis, which I now figure.

*Cranium* rounded, with a rounded projection on side of the vertex. Orbital septum entire. Occipital ridge distinctly marked; impression of the masseter muscles distinct; nostrils large, oval. Palatine bones broad, united posteriorly, the central edge turned downwards, the exterior edge slightly so. The two plates united for about one-third of their length, then narrowed and divaricating and carried forward as two strips of bone.

*Sternum* broad, with two large fissures on each side of the posterior margin, the inner one smallest. Keel deep, arched on its inferior edge. Manubrial process broad at the base, of moderate length.

*Pelvis* very broad in proportion to its length. The ischiadic foramen large, oval. The obturator of moderate size.

*Ribs* broadest near their dorsal extremities, and gradually diminishing to their junction with the sternal ribs, which are flattened.

*Furculum* arched in front, the rami flattened, without any process at their junction. *Coracoids* long.

*Scapulæ* very slightly bent, pointed at the extremities.

*Wing bones* long; the ulna longer than the humerus.

*Leg bones* of moderate length.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	18	Breadth of anterior	
Length of ulna . . . . .	21	margin of ditto . . . . .	8
Length of metacarpus . . . . .	5	Depth of keel . . . . .	4
Length of femur . . . . .	11	Length of head . . . . .	29
Length of tibia . . . . .	20	Breadth of head . . . . .	12
Length of metatarsus . . . . .	13	Length of pelvis . . . . .	15
Length of sternum . . . . .	13	Breadth of pelvis . . . . .	12
Breadth of posterior margin . . . . .	11		

*Illustrations.*

Suppt. 2, pl. 12.      Details, pl. 12, A.

RHYNCHOTUS, *Spisc.*Perdicarius, *Kettl.*

Very similar to *Crypturus*, but the tarsi are shorter, and without back toe. The palatine bones also differ, and the wings are longer in proportion. A process projects from the end of the ilium anterior to acetabulum.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	24	Breadth of anterior	
Length of ulna . . . . .	$24\frac{1}{2}$	margin of ditto . . . . .	12
Length of metacarpus . . . . .	13	Depth of keel . . . . .	7
Length of femur . . . . .	20	Length of head . . . . .	25
Length of tibia . . . . .	30	Breadth of head . . . . .	9
Length of metatarsus . . . . .	19	Length of pelvis . . . . .	25
Length of sternum . . . . .	38	Breadth of pelvis . . . . .	16
Breadth of posterior margin . . . . .	9		

*Illustrations.*

Suppt. 2, pl. 13. Details, pl. 13, A.

CRYPTURUS, *Ill.*Megapodius, *Bp.*

Does not differ much from Tinamus, except in size. My specimen of Tinamus was much damaged, therefore would not do to figure in the first part of this work.

*Cranium* small, rounded. Occipital ridge small. The foramen in the orbital septum large. Palatine bones broad, narrowed behind to a point. Interarticular bones very long.

*Sternum* very long; the central and horizontal portion very narrow; a strip of bone forming each lateral edge makes between it and the central portion a large fissure on each side. Keel deep; the lower edge arched.

*Pelvis* broad; the vertebræ apparent from the upper surface; the os pubis curved. Obturator foramen large; ischiadic large; in fact both the above-named foramina are converted into fissures, not being closed at their hinder ends; a process at the end of the ilium before the acetabulum.

*Ribs* strong.

*Furculum* small, weak; without any process at the junction of the rami.

*Coracoids* strong.

*Scapulæ* strong, very slightly arched, blunt at the distal extremity.

*Wing bones* short.

*Leg bones* of moderate size.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	29	Breadth of anterior	
Length of ulna . . . . .	32	margin of ditto . . . . .	12
Length of metacarpus . . . . .	16	Depth of keel . . . . .	9
Length of femur . . . . .	27	Length of head . . . . .	23
Length of tibia . . . . .	40	Breadth of head . . . . .	9
Length of metatarsus . . . . .	27	Length of pelvis . . . . .	37
Length of sternum . . . . .	44	Breadth of pelvis . . . . .	18
Breadth of posterior margin . . . . .	13		

*Illustrations.*

Suppt. 2, pl. 14. Details, pl. 14, A.

## CERIORNIS,

Temminckii, Gray.

Does not differ very much in shape from the skeleton of the common pheasant, but considerably in measurements, particularly in that of the sternum.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	33	Breadth of anterior	
Length of radius . . . . .	33	margin of ditto . . . . .	15
Length of metacarpus . . . . .	16	Depth of keel . . . . .	13½
Length of femur . . . . .	40	Length of head . . . . .	29
Length of tibia . . . . .	59	Breadth of head . . . . .	11
Length of metatarsus . . . . .	34	Length of pelvis . . . . .	49
Length of sternum . . . . .	40	Breadth of pelvis . . . . .	20
Breadth of posterior margin . . . . .	20		

*Illustrations.*

Suppt. 2, pl. 15. Details, pl. 15, A.

ARAMIDES, *Puch.*

Cayanea, *Mull.*

*Cranium* similar in form to the other rallinæ; lacrymals long.

*Pelvis* also similar.

*Leg bones* of moderate length. Metatarsi not so short as in Ocydromus.

*Wings* short.

*Sternum* long, narrow; keel with deep fissures at the hinder margin converted into foramina; a very narrow strip of bone across the hind margin. Sternum much constricted in the middle; inferior edge of the keel arched.

*Measurements.*

	Tenths.			Tenths.
Length of humerus . . . . .	19		Breadth of anterior . . . . .	
Length of ulna . . . . .	17		margin of ditto . . . . .	8
Length of metacarpus . . . . .	12½		Depth of keel . . . . .	5
Length of femur . . . . .	22		Length of head . . . . .	28
Length of tibia . . . . .	31		Breadth of head . . . . .	8
Length of metatarsus . . . . .	21		Length of pelvis . . . . .	22
Length of sternum . . . . .	2½		Breadth of pelvis . . . . .	10
Breadth of posterior margin . . . . .	5½			

*Illustrations.*

Suppt. 2, pl. 16. Details, pl. 16, A.

OCYDROMUS, *Wag.*Sylvestris, *Sclat.*

*Cranium* of moderate length; a transverse indentation at the base of the bill. Nostrils long, oval. Lacrymal bone elongated over the orbits. Orbital septum with a large foramen. Occipital ridge prominent. Palatine bones rounded behind; edges curved downward, narrowed suddenly anteriorly to a mere strip of bone.

*Sternum* broadest anteriorly, narrowed in the middle again; slightly expanded at posterior margin, with a deep fissure on each side.

*Pelvis* anteriorly; deep and arched; posterior half, with a deep and broad channel down the centre; deep curved on each side of the caudal vertebræ; divisions of the sacral vertebræ apparent.

*Ribs* long, thin. Stylyform process very long, extending over two ribs.

*Furculum* without any process as the junction of the rami.

*Coracoids* of moderate size.

*Scapulæ* long, slightly arched, pointed at their ends.

*Wing bones* short.

*Leg bones* moderate; metatarsus short.

*Measurements.*

	Tenths.			Tenths.
Length of humerus . . . . .	20		Breadth of anterior	
Length of ulna . . . . .	16		margin of ditto . . . . .	19
Length of metacarpus . . . . .	12		Depth of keel . . . . .	3
Length of femur . . . . .	24½		Length of head . . . . .	34
Length of tibia . . . . .	34		Breadth of head . . . . .	9
Length of metatarsus . . . . .	18½		Length of pelvis . . . . .	22
Length of sternum . . . . .	19		Breadth of pelvis . . . . .	9
Breadth of posterior margin . . . . .	5½			

*Illustrations.*

Suppt. 2, pl. 17. Details, pl. 17, A.

When I described the skeleton of *Rhynchotus* I had not the skeleton of any large rail; since that I have obtained one, *Ocydromus sylvestris*, which I now figure. The sternum is similar, except that of *Ocydromus* has two foramina on the posterior margin, which *Rhynchotus* has not. The metatarsi of *Ocydromus* are much shorter than those of *Rhynchotus*. The cranium and pelvis are similar. The palatine bones are more truncate at hinder extremities in the latter than in the former.

ANTIGONE, *Reich, Bp.*

Torquata, *Viell.*

*Cranium* with a very slight depression across the base of the bill; no depression over the upper surface, except a very slight one near the occiput, much rounded above. Orbital septum strong, with two foramina, the central one large, the upper one small, elongated. Occipital ridge not very prominent; a large ridge from the centre of it to the foramen magnum. Lacrymal bones large, projecting far backwards. Inter-articular bone very massive and strong. Palatine bones long, the lateral edges curved downwards, pointed posteriorly, flat and narrowed anteriorly; bones forming the bill strong; the lower edge of the inferior maxillary projecting backwards.

*Sternum* elongated. Narrow keel, very thick on its inferior edge and curved anteriorly; hollow and perforated by the trachea, which makes a convolution in its interior extended to the posterior margin of the sternum, which projects much forward beyond the junction of the furculum. Posterior margin widened laterally, and rounded on the outer angles; edge nearly entire.

*Pelvis* similar to *Ardea* in shape; foramina long.

*Ribs* with the styliiform process long.

*Furculum* of moderate length. Rami flattened; strongly ankylosed to the sternum, and much flattened transversely.

*Coracoids* very broad at their junction with the sternum.

*Scapulæ* flattened, very long, pointed, slightly bending downward.

*Leg bones* the callineal process slight, continued nearly to the hind toe.

#### Measurements.

	Tenths.		Tenths.
Length of humerus . . . . .	106	Breadth of anterior	
Length of ulna . . . . .	130	margin of ditto . . . . .	23
Length of metacarpus . . . . .	50	Depth of keel . . . . .	25
Length of femur . . . . .	80	Length of head . . . . .	101
Length of tibia . . . . .	155	Breadth of head . . . . .	19½
Length of metatarsus . . . . .	135	Length of pelvis . . . . .	90
Length of sternum . . . . .	90	Breadth of pelvis . . . . .	35
Breadth of posterior margin . . . . .	24		

#### Illustrations.

Suppt. 2, pl. 18. Details, pl. 18, A.



EPHIPPIORHYNCHS, *Bp.*Senegalensis, *Shaw.*

Very similar, except in size, to *Antigone torquata*; the tracheæ penetrates the keel of the sternum in the same manner, namely, in one perpendicular loop.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	95	Breadth of anterior	
Length of radius . . . . .	125	margin of ditto . . . . .	25
Length of metacarpus . . . . .	45	Depth of keel . . . . .	22
Length of femur . . . . .	53	Length of head . . . . .	88
Length of tibia . . . . .	150	Breadth of head . . . . .	18
Length of metatarsus . . . . .	120	Length of pelvis . . . . .	68
Length of sternum . . . . .	75	Breadth of pelvis . . . . .	34
Breadth of posterior margin . . . . .	16		

*Illustrations.*

Suppt. 2, pl. 19.      Details, pl. 19, A.

*ATRICHIA*, Gould.

*Clamosa*, Gould.

I have only the sternum, coracoids, and scapulæ of this bird.

*Sternum* long, with a deep fissure on each side at the posterior, and much elongated on each side anteriorly. Keel shallow.

*Coracoids* long, very broad at their junction with the sternum.

*Scapulæ* long, slightly expanding near the tip, pointed at the extremity.

*Measurements.*

	Tenths.		Tenths.
Length of sternum . . . . .	7	Depth of keel . . . . .	1
Breadth of posterior margin . . . . .	4	Length of coracoids . . . . .	7
Breadth of anterior margin . . . . .	4½	Length of scapulæ . . . . .	6

*Illustration.*

Suppt. 2, pl. 20, fig. 1.

TANTALUS, *Linn.*

Ibis, *Linn.*

I have only the sternum and head of this bird, the latter is figured in pl. 33, fig. 1. *Sternum* short, of moderate breadth, with a broad fissure on each side of the keel on the posterior margin. Keel very deep, much arched on its inferior edge.

*Coracoids* rather long.

*Furculum*, with an appendage at the junction of the rami, broadest at their junction with the coracoids and arched.

*Scapulæ* slightly bent, blunt at the end; of nearly the same width throughout.

*Measurements.*

	Tenths.		Tenths:
Length of sternum . . . . .	43	Depth of keel . . . . .	20
Breadth of posterior margin . . . . .	20	Length of coracoids . . . . .	26
Breadth of anterior margin . . . . .	22	Length of scapulæ . . . . .	30

*Illustrations.*

Suppt. 2, pl. 20, fig. 2.

APTENODYTES, *Fossi.*

Penantii, *G. R. Gray.*

I have only the sternum of this bird, with the coracoid, scapulæ, and furculum attached.

*Sternum* short, scolloped out from the lateral margin to the end of the keel, which is shallow and much produced in front towards the furculum, to which it is united by a ligament.

*Coracoids* long, very strong.

*Furculum* much arched, broadest next the coracoids, gradually narrowed towards the sternum ; a small process at the junction of the rami.

*Scapulæ* very broad posteriorly, narrowed at their junction with the coracoids.

*Measurements.*

	Tenths.		Tenths.
Length of sternum . . . . .	47	Depth of keel . . . . .	8
Breadth of posterior margin . . . . .	33	Length of coracoids . . . . .	50
Breadth of anterior margin . . . . .	36	Length of scapulæ . . . . .	47

*Illustrations.*

Suppt. 2, pl. 21.

TALLEGALLA, *Less.*

Lathamî, *Jard.*

*Cranium* slightly flattened between the orbits, strong. Nostrils large, oval. Orbital septum nearly entire, with only a small foramen on its posterior edge. Palatine bones expanded on their posterior third, pointed behind, slightly bent upwards at their junction; fore part consisting of a narrow strip of bone expanded slightly forward, nearly resembling *Crax Globiura* (pl. 22, fig. 2).

*Sternum* very like that of *Crax*, but rather shorter, with a short, but perpendicular broad keel.

*Pelvis* broader than in *Crax*, but with the ischiadic and obturator foramina larger.

*Ribs* broad, flattened as in *Crax*.

*Furculum* with the rami long, a small process at their junction turning inwards slight.

*Coracoids* of moderate size.

*Scapulæ* broad, blunt at their tips.

*Wing bones* short; metacarpus long.

*Leg bones* tibiæ, short; not very strong.

*Measurements.*

	Tenths.			Tenths
Length of humerus . . . . .	34		Breadth of anterior . . . . .	
Length of ulna . . . . .	35½		margin of ditto . . . . .	12
Length of metacarpus . . . . .	18		Depth of keel . . . . .	13
Length of femur . . . . .	35		Length of head . . . . .	29
Length of tibia . . . . .	49		Breadth of head . . . . .	21
Length of metatarsus . . . . .	32		Length of pelvis . . . . .	47
Length of sternum . . . . .	36		Breadth of pelvis . . . . .	24
Breadth of posterior margin . . . . .	17			

*Illustrations.*

Suppt. 2, pl. 22. Details, pl. 22, A.

OSTEOLOGIA AVIUM.

NUMBERING OF VERTEBRÆ.

	Cervical.	Dorsal.	Sacral.	Caudal.
<i>Antigone torquata</i> - - - - -	18	6	18	7
<i>Ephippiorhynchus Senegalensis</i> - - - - -	17	6	14	8
<i>Aramides cayana</i> - - - - -	13	10	13	7
<i>Ocydromus sylvestris</i> - - - - -	12	10	14	8
<i>Satyra Temminckii</i> - - - - -	13	8	15	6
<i>Crypturus megapodius</i> - - - - -	15	8	19	7
<i>Rhynchotus perdicarius</i> - - - - -	15	8	14	5
<i>Momotus Œquinoctialis</i> - - - - -	12	8	13	8
<i>Tallegalla Lathamii</i> - - - - -	14	7	13	6

Since the former part of this work was published, I have obtained from America the skeletons of *fuligula valisneria* and *querquedula discors*, both agree with their representatives in this country; the former with the *fuligula ferina*, and the latter with *querquedula crucea*, so as not to be distinguishable from them by the skeleton.

END OF SUPPLEMENT II., PART 2.



Nat size.

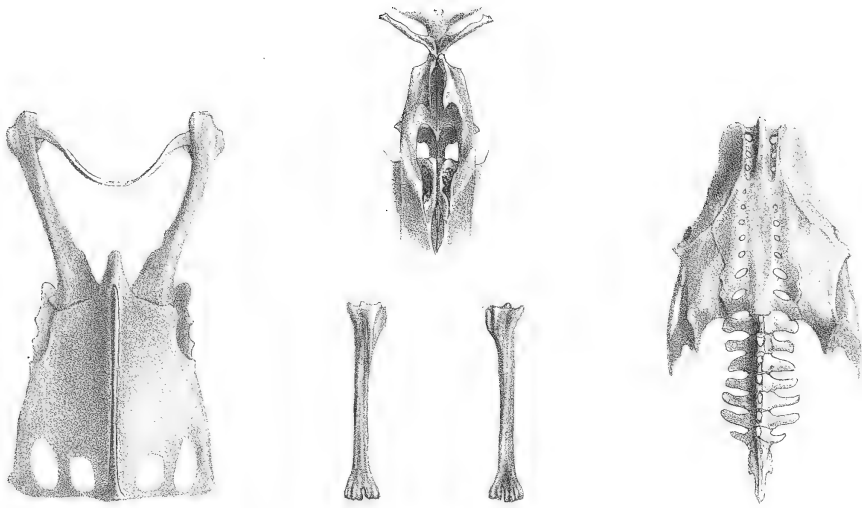
*From nat. on stone by J.E. Leche.*

MOMOTUS OERULATUS.

*H. & N. Harhart imp.*

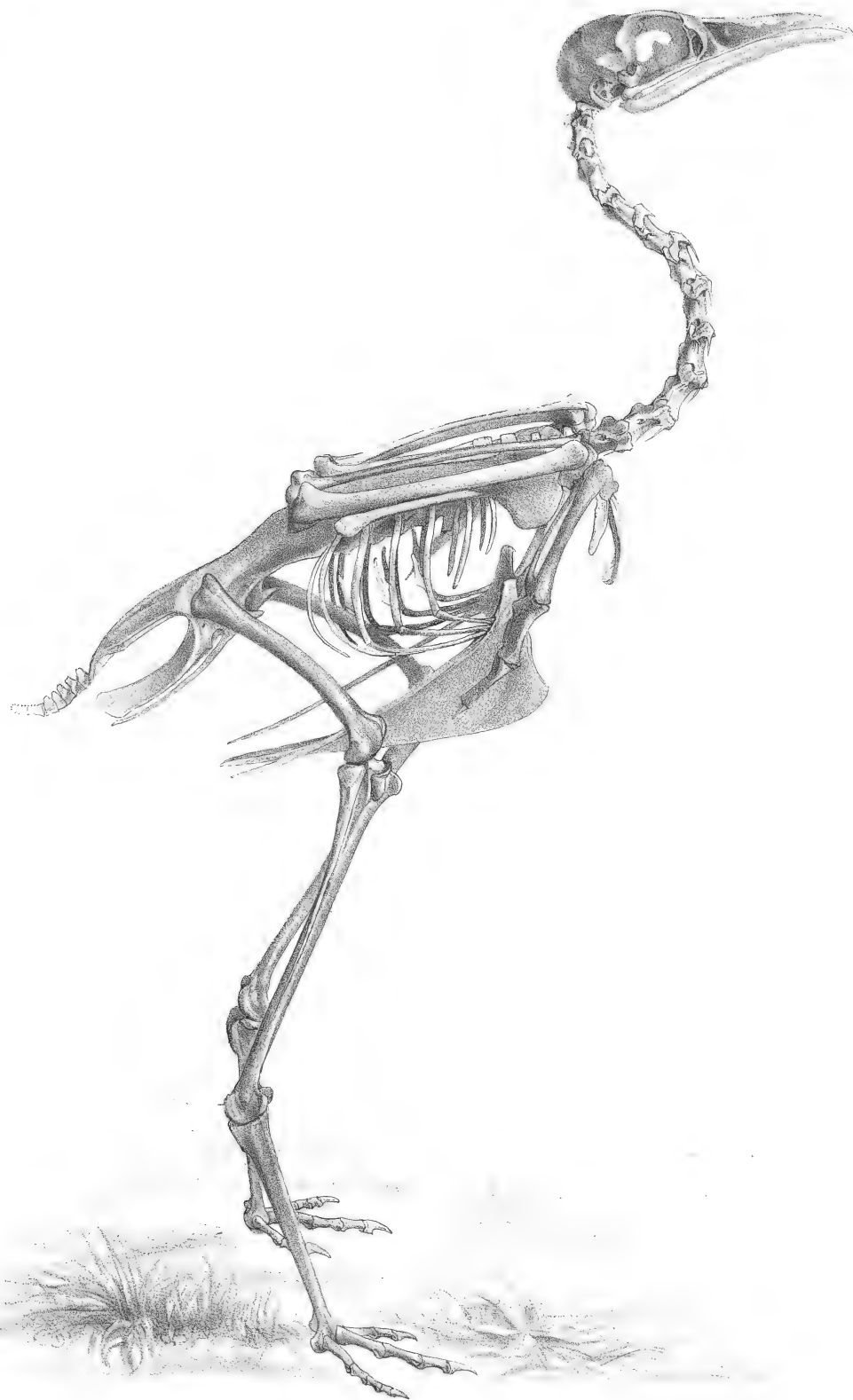






Nat. size.





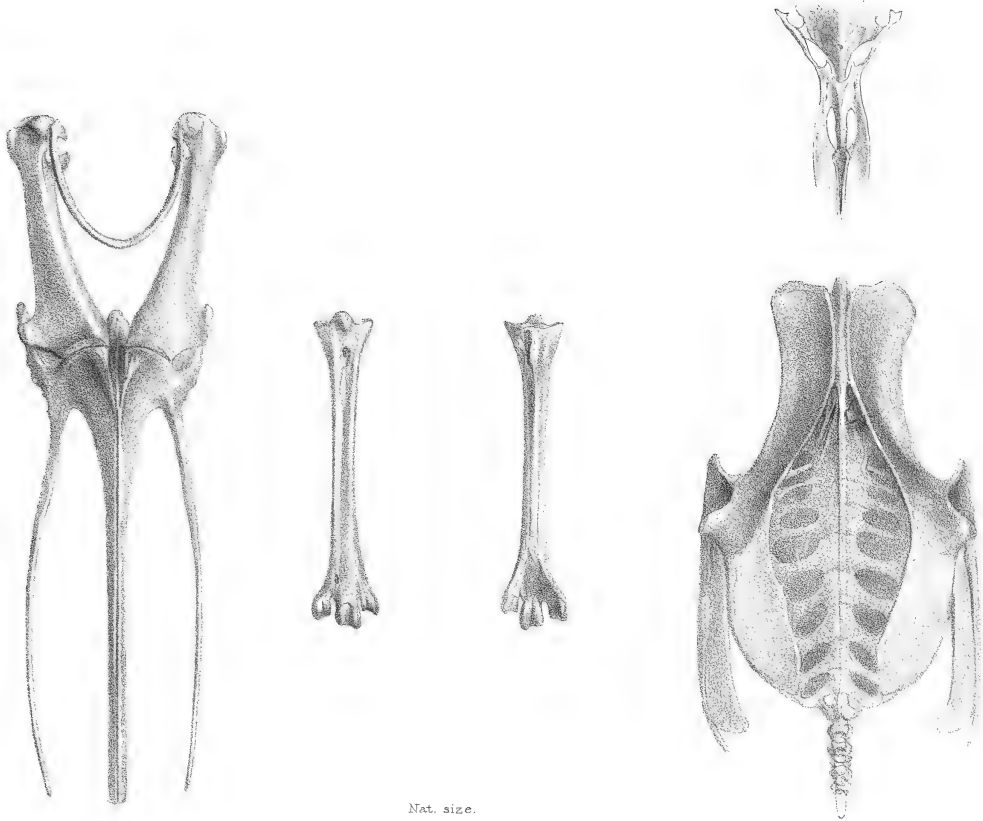
*From nat. on stone by J. Exxelben.*

$\frac{5}{8}$  Nat. size.

*M. & N. Hanhart imp.*

**RHYNCHOTUS PERDICARIUS.**





Nat. size.

*From nat. an. skins by J. Huxley.*

*M. & N. Hurlhart imp.*

RHYNCHOTUS PERDICARIUS.





$\frac{2}{3}$  Nat size.

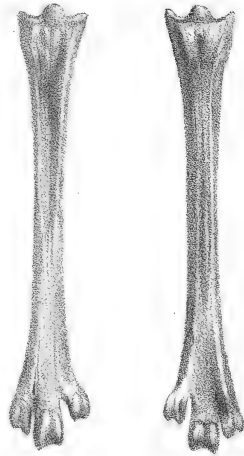
*From nat. on stone by J. E. Deussen*

*M. & N. Hanhart imp.*

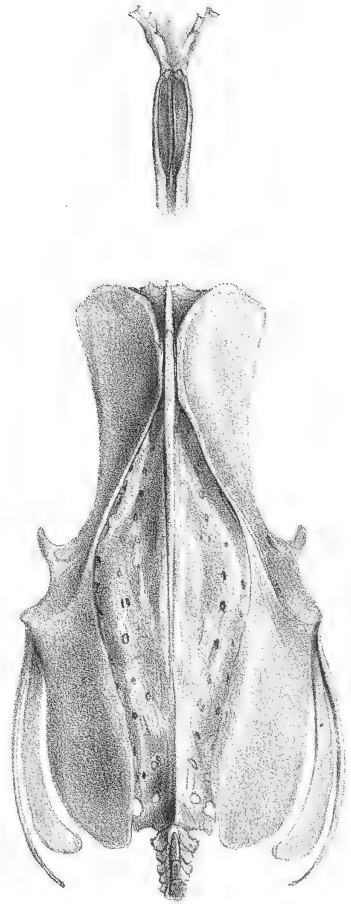
CRYPTURUS MEGAPODIUS.







Nat. size.



*From nat. on stone by J. Erleben.*

CRYPTURUS MEGAPODIUS.

*M & N. Handart imp.*





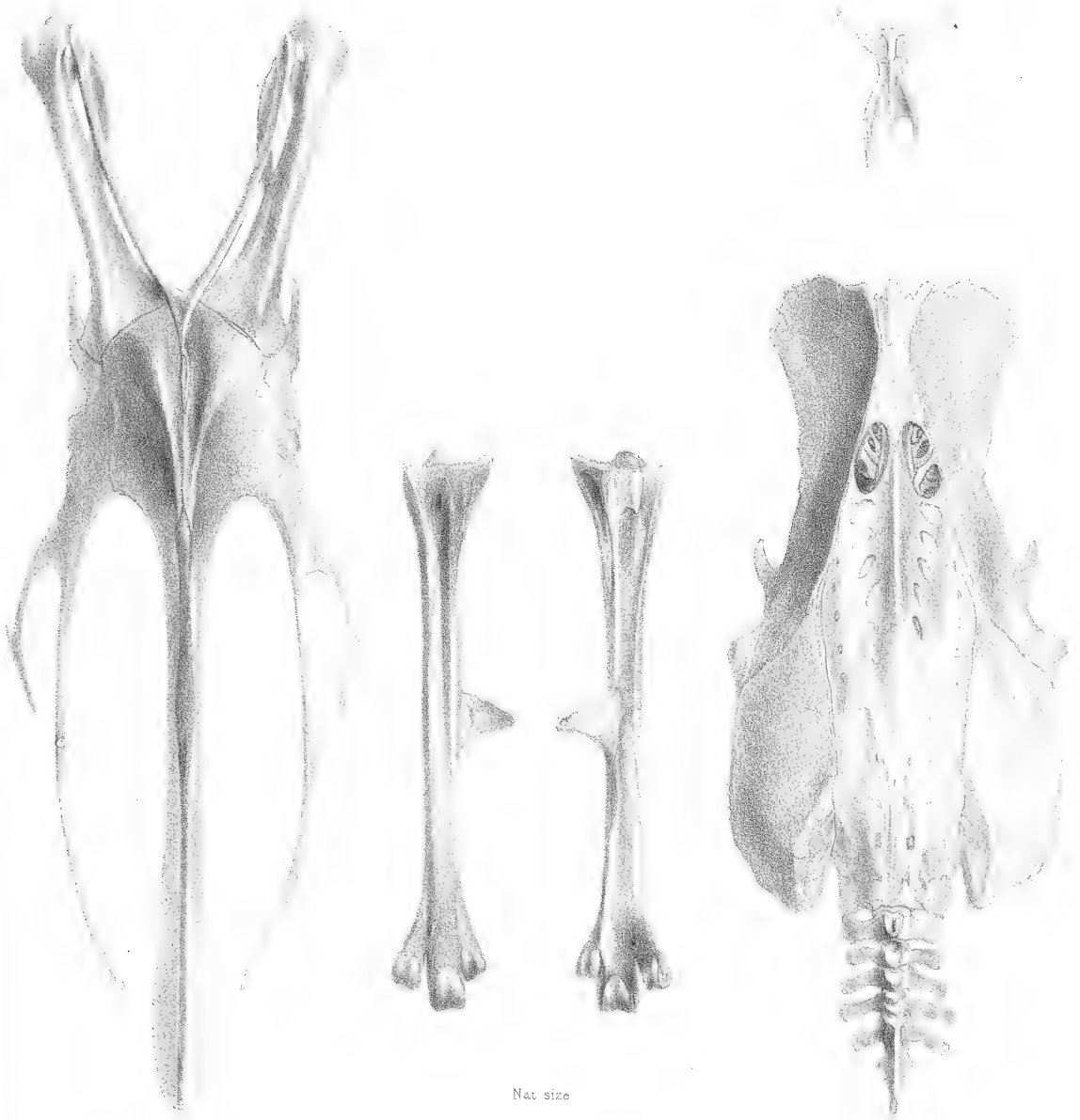
½ Nat. size.

*From nat. on stone by J. Exxel en.*

*M. & N. Hanhart imp.*

CERIORNIS TEMMINCKII.





*From nat. on stone by J. Eyteben.*

CERIORNIS TEMMINCKII.

*M. & N. Harhart sculp.*





$\frac{3}{4}$  Nat. size.

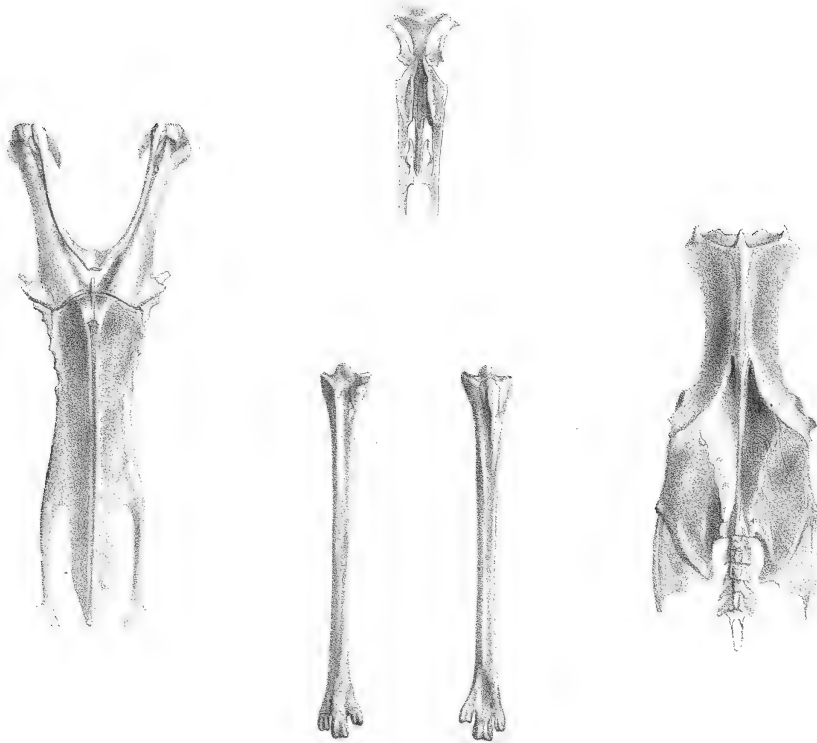
*From nat. on stone by J. Exleben.*

ARAMIDES CAYANEA.

*M. & N. Harcourt imp.*







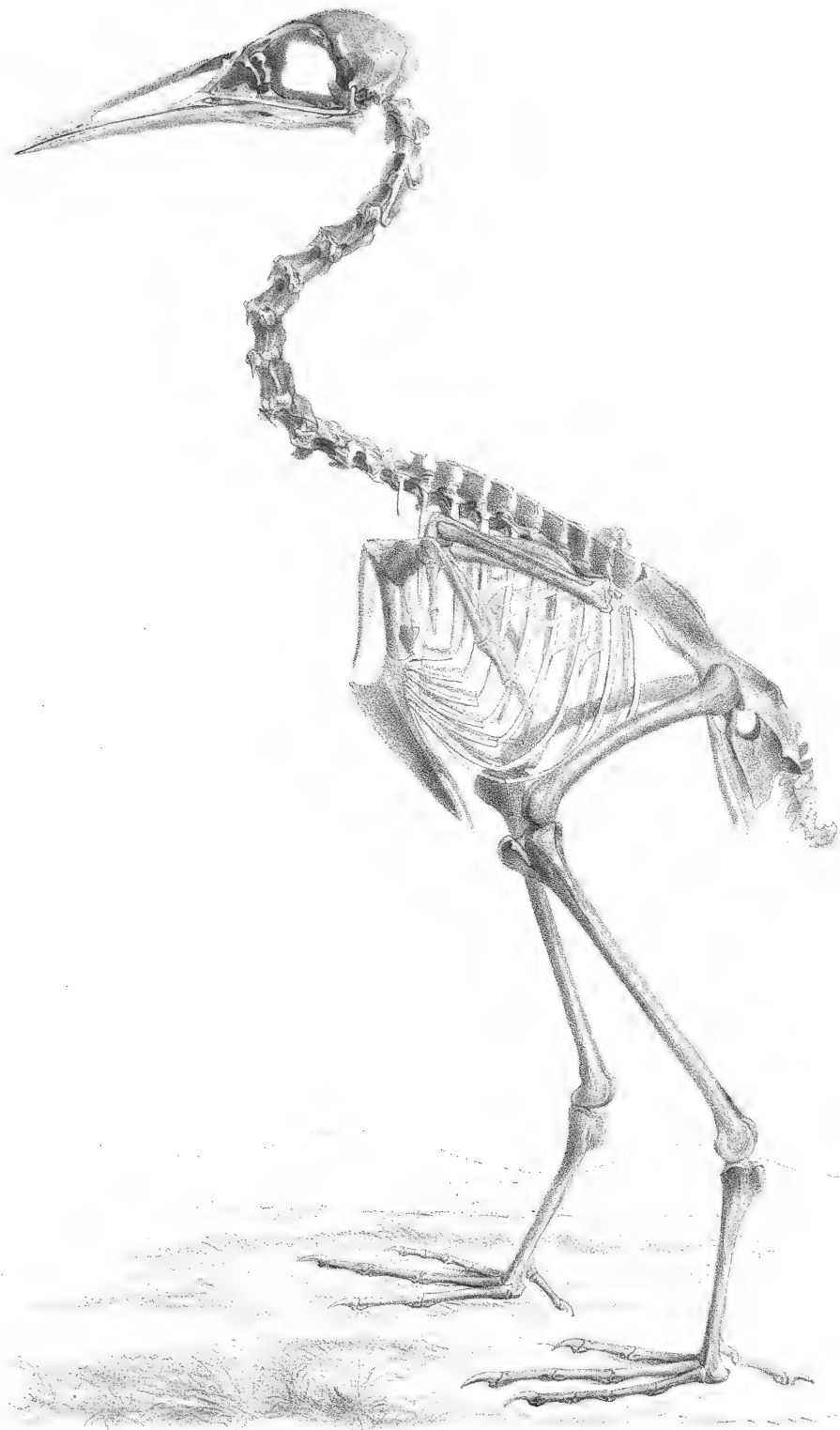
Nat. size.

*From nat. en stone by J. Eschsch.*

ARAMIDES CAYANEA.

*M. & N. Hancock imp.*





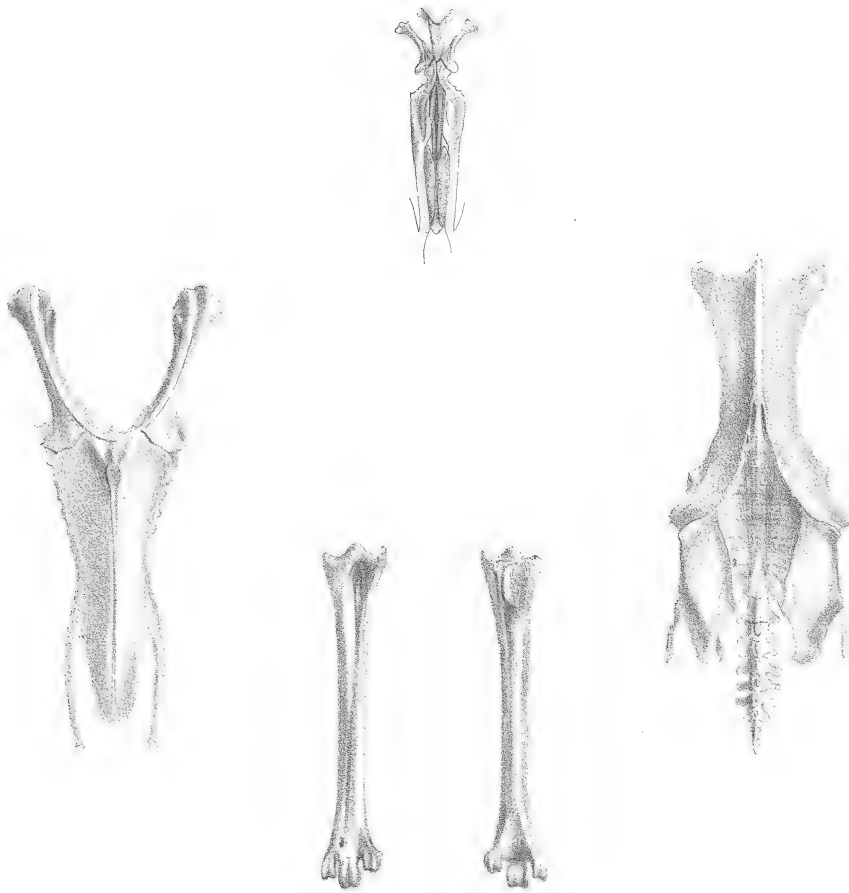
$\frac{3}{4}$  Nat. size.

*From nat. on stone by J. Exley.*

OCYDROMUS SYLVESTRIS.

*M. & N. Harbart. imp.*





Nat. size.

*From nat. size by J. Eschsch.*

OCYDROMUS SYLVESTRIS.

*M. H. H. Hart imp.*





1/2-Nat size.

*From nat. en stone by J. Exxel en.*

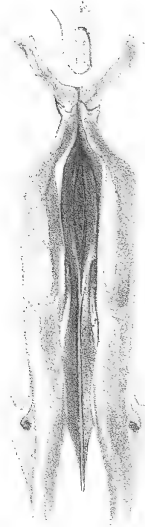
ANTIGONE TORQUATA.

*M. N. Hanhart. imp.*





Nat. size.



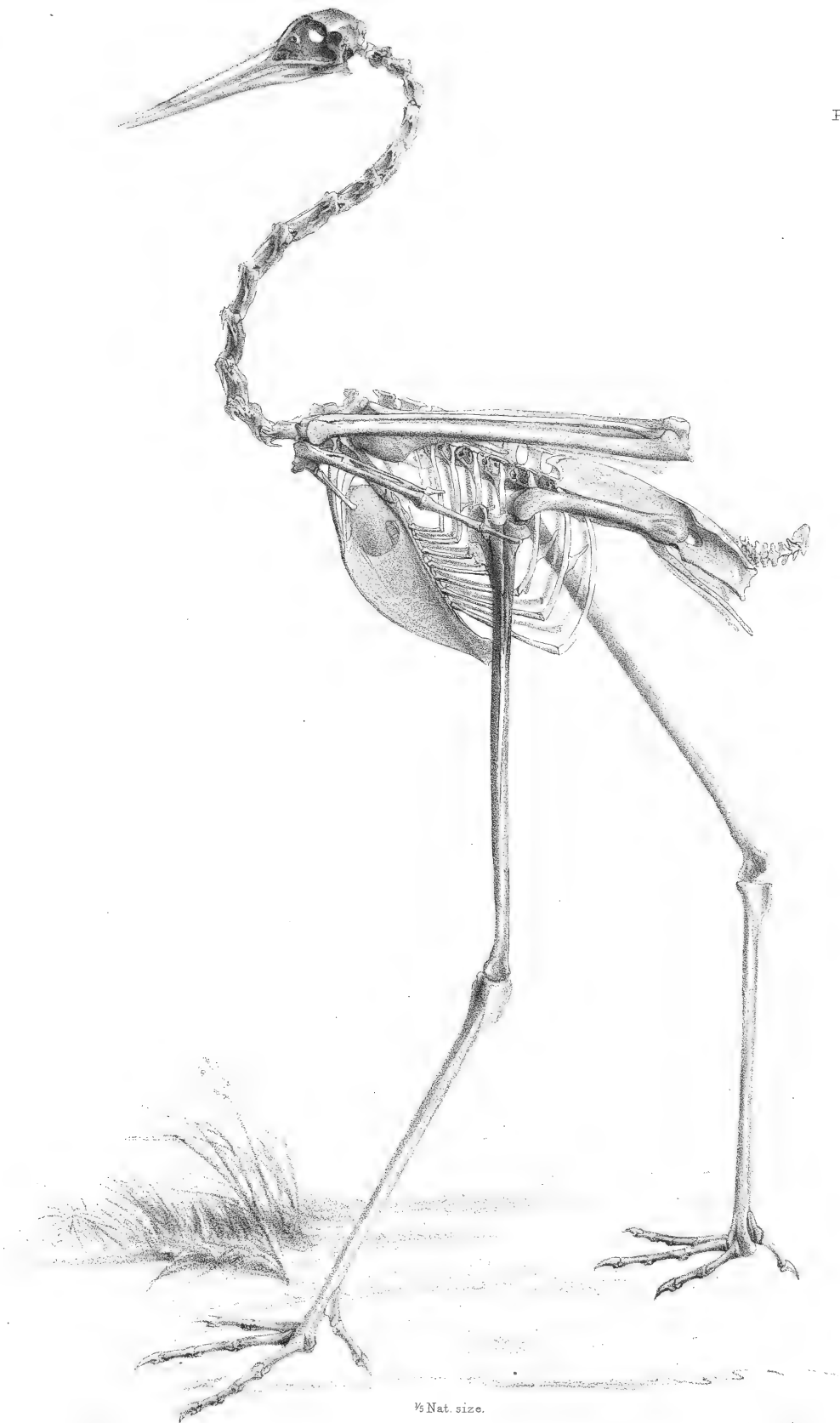
3/4 Nat. size.

*From nat. ex. stars by J. Endéber.*

*M. & N. Harbart imp.*

ANTIGONE TORQUATA.





½ Nat. size.

*From nat. an stone by J. Erxleben.*

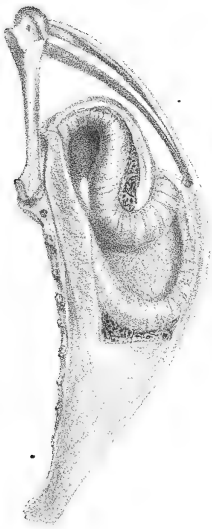
*M & N. Harhart imp.*

**EPHIPPIORHYNCHUS SENEGALENSIS.**





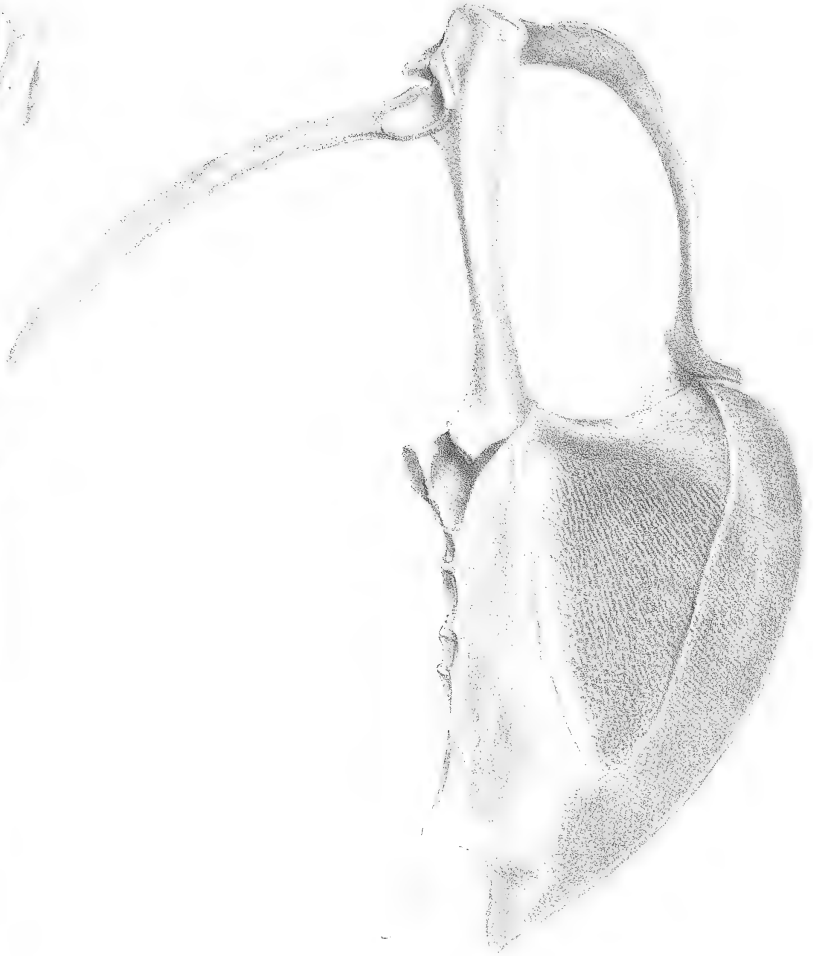
Nat. size.



1/2 Nat. size.







Nat. size.

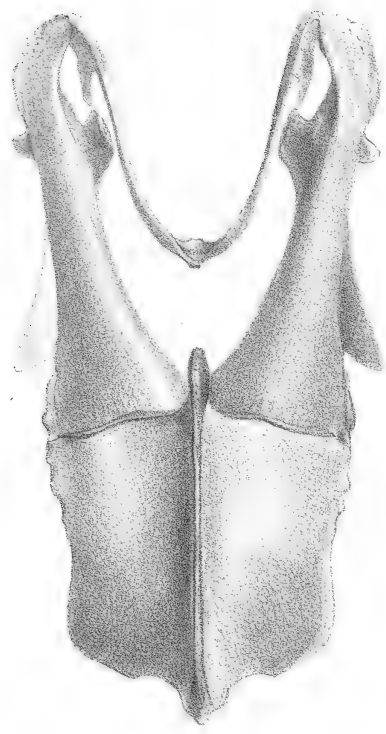
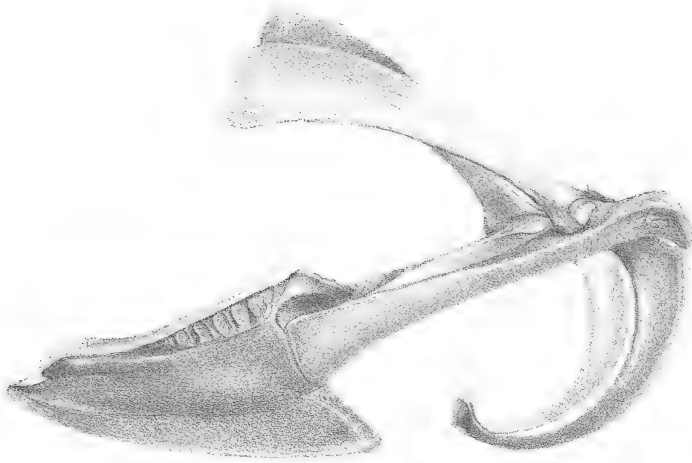
*From nat. en. stone by J. Exlieben.*

*M. & N. Harshart imp.*

1. ATRICHIA CLAMOSA STERNUM. 2. TANTALUS IBIS STERNUM.

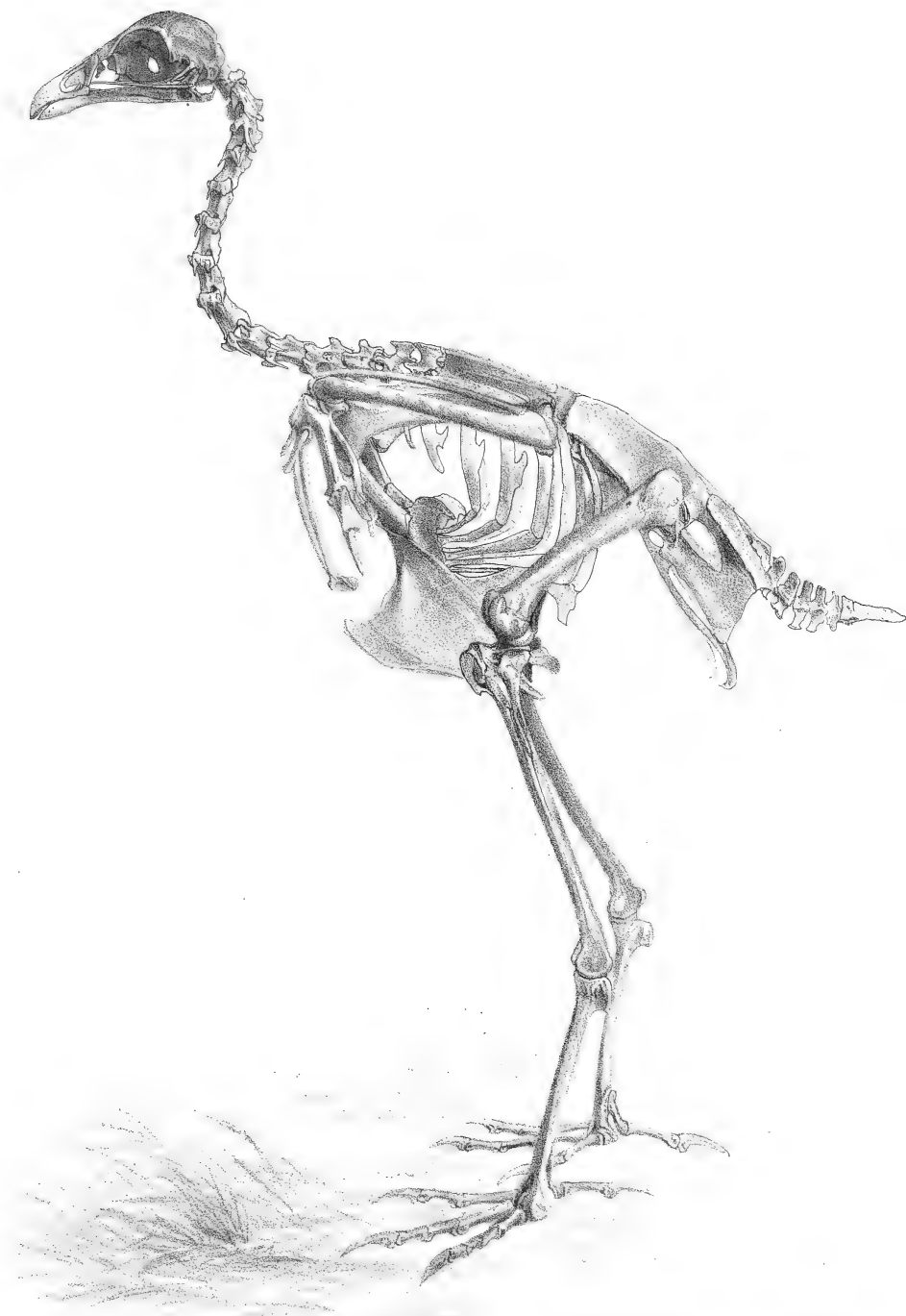






1/2 Nat size.





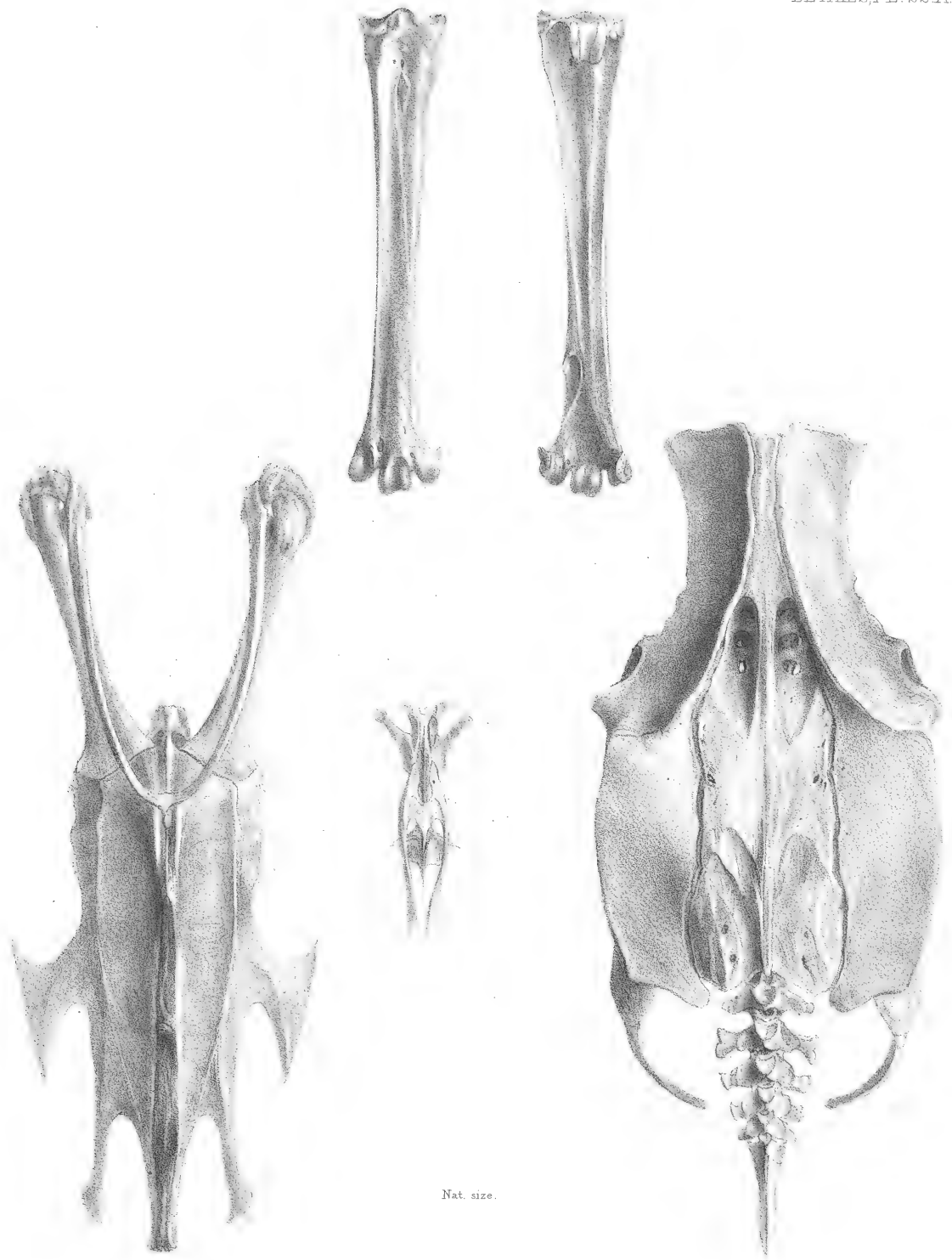
$\frac{5}{8}$  Nat. size.

*From nat. on stone by J. Estlin.*

*McC. N. Zimmérschütz imp.*

TALLEGALLA LATHAMI.





Nat. size.

*From nat. on stone by J. Exleben.*

*M. & N. Harbart sculp.*

TALLEGALLA LATHAMI.



# OSTEOLOGIA AVIUM.

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## SECOND SUPPLEMENT.

### PART III.

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DIDUNCULUS, *Peale.*

*Strigirostris, Jardine.*

*Cranium* much indented at the base of the bill. Nostrils lengthened. Ovate cranium; flattened on the vertex; rounded behind; foramen-magnum large. Bill much arched. Inferior maxillary bone much elongated backwards beyond its articulation with the os quadratum. Inter orbital foramen large.

*Sternum* indented with a very large fissure, which extends more than half the length of the sternum, and is bounded by a narrow strip of bone, expanded at its extremity, and terminating at about half the length of the fissure; the posterior margin rounded, and narrower than the anterior. In the young bird I suspect it is penetrated with a smaller foramen on each side, as my specimen has traces of them.

*Keel* very deep anteriorly; the lower edge rounded, the front edges curved.

*Pelvis* very broad, much like the ground pigeon's.

*Ribs* broad, flattened styliform process, much turned upwards.

*Furculum* rounded, but slightly flattened at its articulation with the coracoids.

*Coracoids* strong.

*Scapula* arched, expanded near the extremities and pointed at the extremities.

*Wingbones* of moderate length; the ulna much longer than the humerus.

*Legbones* with the metatarsi very short

*Vertebral column* strong

REMARKS.—This curious bird strongly resembles the ground pigeons in the form of the head, sternum, and pelvis. It is figured in Owen's Memoir on the Dodo.

*Measurements.*

	Tenths			Tenths.
Length of humerus . . . . .	17	Margin of posterior . . . . .		7
Length of ulna . . . . .	22	Breath of anterior . . . . .		
Length of metacarpus . . . . .	$12\frac{1}{2}$	margin of ditto . . . . .		8
Length of femur . . . . .	$12\frac{1}{2}$	Depth of keel . . . . .		9
Length of tibia . . . . .	24	Length of head . . . . .		19
Length of metatarsas . . . . .	15	Breadth of head . . . . .		8
Length of sternum . . . . .	22	Length of pelvis . . . . .		26
Breadth of posterior . . . . .		Breadth of pelvis . . . . .		15

NUMBER OF VERTEBRÆ.

Cer.	Dor.	Sac.	Caud.
4	7	13	7



The birds belonging to the genera that constitute this family are very curious, so much so that it is difficult to say where they ought to be classed. In many respects they resemble the vultures, as in the structure of the furculum, cranium, and palatine bones and pelvis, more particularly *Neophron*, while in the feet they resemble the *Rallidæ*, and in the form of the posterior margin of sternum are not like either, but the keel resembles the *Vulturidæ*. It is no wonder therefore that they have been classed differently by authors, a few of whose opinions I shall proceed to quote.

Mr. G. GRAY classes the genera *Palamedea* and *Chauna*, forming his family *Palamedeidae*, next to the *Parridæ*. He says they inhabit marshy places and inundated grounds, in the northern parts of America, especially those that are situated near the sea. It is generally found in pairs, and is very shy and timorous, but soon betrays itself by its loud calls. The seeds and leaves of aquatic plants constitute its principal food.

These birds are peculiar to the northern parts of South and Central America. They are observed in the marshes and occasionally on the borders of lakes and rivers, in pairs, or in troops of many individuals. Their manners are shy, but when not scared their gait is slow and stately. Their flight is easy and swift, and they are unable to run, except with the assistance of their wings. They resort to rest on the tops of high trees. The Brazilian species is kept by the natives amongst their poultry. It goes with them to feed during the day, and during this time proves very useful in defending the poultry against the attacks of the numerous birds of prey, by means of the spurs on the bend of its wings. If the wing of the bird is handled a crackling is felt, which is caused by the quantity of air which is lodged between the skin and muscles. Marshy and inundated places are preferred by these birds, as their food consists solely of the leaves of aquatic plants, grapes, and seeds. Their nest is spacious, and made of small branches of trees, and usually placed in a bush surrounded with water, but sometimes it is formed among reeds and rushes. The female lays two eggs.

*Castelnau*, in his "Animaux ou Rares de l' Amerique du sud," gives a plate (15) of *Palamedæ Cornuta* and the sternum of *Palamedæ Derbyana*, and (page 73) a description and account of the two birds, in which he says they are very different from the moor-hen, rails, or coots; and *Illiger* unites the genera *Glarieola*, *Cereopsis*, *Chauna*, *Palamedea*, and *Psophia*, under the name of *Alectorides*, from which they are very different. He also says, in speaking of the sternum, that it presents an analogy to the *Vulturidæ*.

"Beiträge zur Naturgeschichte von Brasilien von Maximilian Prinzen zu Weid":  
from which the following is a translation:—

"The *Aniuma*, from its great size and beauty, forms an ornament to the Brazilian forests. It is dispersed over a large portion of South America, for it has been seen in Guiana, where *Somnini*

found it; it does not however appear to be found at Paraguay, as Azara makes no mention of it. I myself never met with the bird in Brazil, until travelling from South to North I had reached the island Caxoeirinka (Kaschoerinnia) in the river Belmonte, that is to say the sixteenth degree of south latitude. I was told there that it had never been seen higher up the stream towards Minas. In the neighbourhood of the above-named island in the Belmonte it is very numerous. It only frequents lonely spots far removed from the habitations of man. I never met with it, as Sonnini describes, in open places, only in the depths of the primeval forest on the borders of the river, after I had made some days' journey up the stream of the Belmonte. There we frequently heard the loud, uncommon cry of this bird, which in its modulation has some resemblance to our own wood-pigeon, but it is much louder and more shrill and the throat note is pitched in another key.

"Sometimes we saw the Aniumas as they strutted on the sandbanks and in and out of the river. If we approached them, they took fright, and then, both in the size and broad expanse of their wings, and in their colour and manner of flapping them, they resembled the Urubus (Cathartes Aura et Urubu). They always perched in the summit of some thickly-leaved forest tree, where we constantly heard their voices, though we could seldom see the birds themselves. In the breeding season the Aniuma pairs, at other times four, five or six are seen together; they go to feed on the sandbanks or in the thickly wooded marshes, which are so frequent in these forests. The food of these birds appears to be entirely vegetable, at least in the five or six, whose stomachs I have examined. I found nothing but leaves of a kind of grass plant and of another broad-leaved grass plant.

"The nest of this bird is found on the ground in the wooded marshes near the river. The Botocudians state that it contains two large white eggs, and consists of only one layer. The young birds run at once on leaving the shell.

"The flesh of the Aniuma is not good eating; the Botocudians devour it all the more greedily, as the Portuguese do not eat it at all. The fine long pinion feathers are used for writing, the tail feathers are much valued by the savages for their arrows. There is a popular superstition that this bird always dips his frontal horn into the water when he wishes to drink."

*Marcgrave* calls the Aniuma a bird of prey, in other respects he describes him very correctly, and represents his voice tolerably correct by the word "Vihu, Vihu." He mentions the great attachment subsisting between the male and female when paired, but of this the Brazilian sportsmen made no mention to me. That the two sexes differ greatly in size, as *Marcgrave* represents, is incorrect. That the nest has the shape of an oven, must, if the statements of the Botocudians is to be believed, be a fable.

The following note was sent to me in reply to one of mine, by Mr. Bartlett, of the Zoological Gardens of London:—

"In reply to your note, I find the *Chauna* and *Palamideidæ* feed upon green food principally; they will also eat boiled rice, bread, and boiled Indian corn, but no flesh of any kind."—

"Yours faithfully, A. BARTLETT."

PALAMEDEA, *Lin.*Cornuta, *Lin.*

*Cranium* with a deep hollow at the base of the bill, anterior to the orbits; upper edge of the orbits projecting much over the orbit. Palatine bones broad at their posterior ends, laterally projecting downwards, tapering forwards to a thin strip of bone.

*Sternum* with the posterior and anterior edges nearly equal in breadth.

*Keel* with the inferior edges arched and continued nearly to the posterior margin, which is indented with a broad fissure extending nearly the whole breadth of the sternum, and bounded on each side with a broad strip of bone, in which there is a smaller rounded fissure in the direction of the lateral margin.

*Pelvis* very broad posteriorly; ischiadic and obturator foramina large, splints bounding the former long. End of the metacarpi furnished with long, sharp spines, pointing forwards.

*Furculum* very strong at the coracoid extremity; much flattened laterally; at the opposite one more rounded.

*Coracoids* very strong.

*Scapula* slightly arched, flattened and pointed at the extremities.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .		Margin of posterior . . . . .	
Length of ulna . . . . .		Breadth of anterior . . . . .	
Length of metacarpus . . . . .		margin of ditto . . . . .	
Length of femur . . . . .		Depth of keel . . . . .	
Length of tibia . . . . .		Length of head . . . . .	
Length of metatarsus. . . . .		Breadth of head . . . . .	
Length of sternum . . . . .		Length of pelvis . . . . .	
Breadth of posterior . . . . .		Breadth of pelvis . . . . .	

## VERTEBRÆ.

Cer.	Dor.	Sac.	Caud.
15	9	11	7

## CHAUNA,

Chavaria, *Lin.**Cranium* similar to Palamidea.*Sternum* also similar, but not so much scolloped out behind, but without the small lateral fissures.*Pelvis* similar to Palamidea; terminal joint of the caudal vertebræ very long and pointed.*Ribs* of moderate strength, without any styliiform process.*Furculum* very strong and broad, shorter than in Palamidea.*Coracoids* shorter and stronger than in Palamidea.*Scapula* similar.*Wingbones* long; the ulna much longer than the humerus; the metacarpus armed with a strong spine, pointing forwards at each extremity.*Legbones* of moderate length and strength; toes very long.*Vertebræ* of moderate strength; short.*Measurements.*

	Tenths	Tenths.
Length of humerus . . . . .	68	Margin of posterior . . . . . 26
Length of ulna . . . . .	76	Breadth of anterior } . . . . . 30
Length of metacarpus . . . . .	38	margin of ditto }
Length of femur . . . . .	37	Depth of keel . . . . . 14
Length of tibia . . . . .	69	Length of head . . . . . 32
Length of metatarsus . . . . .	48	Breadth of head . . . . . 15
Length of sternum . . . . .	59	Length of pelvis . . . . . 50
Breadth of posterior . . . . .		Breadth of pelvis . . . . . 25

## NUMBER OF VERTEBRÆ.

Cer.	Dor.	Sac.	Caud.
16	8	12	9

PHAETON, *Lin.*

Æthereus, *Lin.*

*Cranium* long and hollow between the edges of the orbits; orbital septum perforated with a large foramen; a deep tranverse indentation at base of the bill. Occiput perpendicular; occipital ridge well marked.

*Sternum* rather short in its horizontal position, with a moderate-sized fissure on each side of the keel, which is much elongated anteriorly, and deep.

*Pelvis* broad; the os pubis much elongated; ischiatic foramen large.

*Ribs* thin and light, styliform processes short.

*Furculum* flattened; broader at its junction with the keel, which is a little below the point.

*Coracoids* light; much expanded at their junction with the sternum.

*Scapula* very light; very slightly expanded near its hinder extremity; blunt at the end.

*Wingbones* long.

*Legbones* short, very weak; metatarsi with a deep groove down the front.

*Vertebræ* strong, broad.

The birds of this genus very much resemble the Sternidæ in the form of the sternum and pelvis.

*Measurements.*

	Tenths.		Tenths.
Length of humerus . . . . .	30	Margin of ditto . . . . .	11
Length of ulna . . . . .	33	Breadth of anterior . . . . .	
Length of metacarpus . . . . .	15	Margin of ditto . . . . .	14
Length of femur . . . . .	10	Depth of keel . . . . .	8
Length of tibia . . . . .	15	Length of head . . . . .	33
Length of metatarsus . . . . .	8	Breadth of head . . . . .	14
Length of sternum . . . . .	22	Length of pelvis . . . . .	19
Breadth of posterior . . . . .		Breadth of pelvis . . . . .	12

NUMBERING OF VERTEBRÆ.

Cer.	Dor.	Sac.	Cand.
13	8	9	8



ALCA, *Lin.*

Impennis, *Lin.*

I have received a skeleton of this bird, which differs so much from the figure in the "Zoological Transactions," that I should almost think there must be two species of Great Auk. Mr. Ed. Gerrard, from whom I received my skeleton, gives this account of it :

"You may perhaps like to know how I got these bones. They were got from a guano island off the North of Newfoundland. A vessel was sent there to see if the guano was worth anything for manure. It was found to be useless, owing to the island being so washed by the sea that all the nature was washed out of the guano. While digging about, one of the gentlemen came across a quantity of bones, which he took to Mr. Woodward, of the British Museum, and they turned out to be the bones of the Great Auk. I bought the whole, and after spending a great deal of time in sorting them over, I have been able to make out three tolerably perfect skeletons, the best of which I have given you the refusal of."

Pl. 27 ; details 27A.





# LIST OF PLATES OF SKELETONS OF BIRDS,

## THAT HAVE BEEN PUBLISHED.

CASTELNAU: Animaux, nouveaux ou rares L'Amérique, du sud, Anatomie Oiseaux.

- Pl. 14: *Opisthocomus Cristatus*.
- Pl. 15, fig. 1-5: *Palamedea Cornuta*.
- Pl. 15, fig. 6: *Palamedea Derbyana*.
- Pl. 16, fig. 1-5: *Dicholophus Cristatus*.
- Pl. 17, fig. (1-5): *Psophia Crepitans*.
- Do. (6-7): *Cymbops Cancrophaga*.

IBIS, 1873, pl. 5—Murie.

- Fragments of *Upupa Epops*.
- Ditto " " *Minor*.
- Ditto *Irisor* " *Erythrorhyncha*.
- " " " *Senegalensis*.

1862, pl. 10:

Do. " *Colius Leucotis*.

CONTRIBUTIONS to ORNITHOLOGY, by SIR. W. JARDINE, Bart., 1850.

- Pl. 53: *Ramphastos Erythrorhynchus*.
- Pl. 54: *Psilopogon Pyrolophus*.

RESEARCHES sur L'appareil sternal des Oiseaux, par Docteur F. J. Herminier, second Edit., 1828, with 3 plates of the sterna of 37 genera.

TRANSACTIONS of the ZOOLOGICAL SOCIETY, Vol 6.

Pl. 91 Skeleton and details of *Rhinocetus jubatus*.

Do. Vol. 5: Osteology of Gallinaceous birds and Tinamous, Pl. 34, 35, 36, 37, 38, 39, 40, 41, 42.

Description of the Skeleton of the great Auk, *Alca impennis*, Pl. 51, 52.

Do. Vol. 4: on the Osteology of a *Balaniceps Rex* Gould, by W. K. Parker.

Pl. 65, 66, 67.

Vol. 2: the Anatomy of the southern Apteryx, by R. Owen, Esq., pl. 47—55.

RESEARCHES ANATOMIQUES et PALÉONTOLOGIQUES pour servir à l'Histoire des Oiseaux Fossiles de la France, par Mons. Alphonse Milne Edwards, 1867, 1868.

- Pl. 11: *Biziura Lobata*, Skeleton of.
- Pl. 12: Fragments of *Cygnus Olor Chloephaga Magellanica*, *Anser Albifrons*, *Cereopsis Nova Hollandiæ*.
- Pl. 13: Fragments of *Anas Boschas*, *Peccilonitta Bahamensis*, *Oidemia Nigra*, *Melanitta Fusca*, *Erismatura Rubida*, *Somateria Mollissima*, *Mergus Merganser*, *Anser Albifrons*.
- Pl. 14: Fragments of *Fuligula Fusca*, *F. Nigra*, *F. Ferina*, *Cygnus Olor*.
- Pl. 15: Fragments of *Fuligula Fusca*, *Anas Boschas*, *Tadorna Belloni*, *Fuligula Ferina*, *Mergus Merganser*.
- Pl. 16: Fragments of *Anas Boschas*, *Cygnus Olor*, *Cygnus Atratus*, *Fuligula Fusca*, *Anas Boschas*.
- Pl. 17: Fragments of *Anas Boschas*, *Cygnus Fuscus*, *Cereopsis Novæ Hollandiæ*, *Fuligula Fusca*.
- Pl. 18: Fragments of *Anser Albifrons*, *Bernicla Leucopsis*, *Chenalopex Ægyptiaca*, *Anas*

RESEARCHES ANATOMIQUES, &c.

*Boschas*, *Anas Clypeata*.

- Pl. 19: Fragments of *Anas Crecca*, *Fuligula Fusca*, *Plectropterus Gambensis*, *Cygnus Olor*, *Fuligula Nigra*.
- Pl. 20: Fragments of *Fuligula Nigra*, *F. Fusca*, *Anas Boschas*, *Plectropterus Gambensis*, *Fuligula Ferina*.
- Pl. 30: Skeleton of *Plotus Melanogaster*.
- Pl. 31: Fragments of *Pelecanus Philippensis*, *Graculus Carbo*, *G. Africanus*, *Plotus Melanogaster*, *Tachypetes Aquila*.
- Pl. 32: Fragments of *Sula Bassana*, *Phæton Phænicurus*, *Podoa Senegalensis*, *Heliornis Surinamensis*, *Pelecanus Philippensis*, *Graculus Carbo*, *Plotus Melanogaster*.
- Pl. 33: Fragments of *Sula Bassana*, *Phæton Phænicurus*, *Graculus Carbo*, *Plotus Melanogaster*.
- Pl. 34: Fragments of *Sula Bassana*, *Graculus Carbo*.
- Pl. 35: Fragments of *Pelecanus Philippensis*, *Tachypetes Aquila*, *Graculus Carbo*, *Sula Bassana*.
- Pl. 36: Fragments of *Sula Bassana*, *Tachypetes Aquila*, *Graculus Carbo*.
- Pl. 34: Fragments of *Plotus Melanogaster*, *Graculus Carbo*, *Sula Bassana*, *Tachypetes Aquila*.
- Pl. 46: Fragments of *Colymbus Septentrionalis*, *Podiceps Cristatus*, *Alca Torda*.
- Pl. 47: Fragments of *Podiceps Minor*, *P. Cristatus*, *Colymbus Septentrionalis*, *Alca Torda*.
- Pl. 48: Fragments of *Colymbus Septentrionalis*, *Podiceps Cornutus*, *Cephus Minor*, *Podiceps Cristatus*, *Alca Torda*.
- Pl. 49: Fragments of *Colymbus Septentrionalis*, *Podiceps Cristatus*, *Puffinus Cinereus*.
- Pl. 50: Skeletons of *Prion Vittatus*, *Larus Hautlaubii*.
- Pl. 51: Fragments of *Larus Argentatus*, *Puffinus Cinereus*.
- Pl. 52: Do. " of *Larus Canus*, *Puffinus Cinereus*, *Larus Argentatus*.
- Pl. 53: Do. " *Larus Canus*, *Puffinus Cinereus*, *Larus Argentatus*.
- Pl. 59: Skeleton of *Lobivonellus Lobatus*.
- Pl. 60: Fragments of *Numenius Arquatus*, *Limosa Melanurus*, *Hæmatopus Ostralegus*, *Scolopax Rusticola*, *Totanus Glottis*.
- Pl. 61: Do. *Numenius Arquatus*, *Totanus Glottis*, *Tringa Subarquata*.
- Pl. 62: Do. *Hæmatopus Ostralegus*, *Dromas Ardeola*, *Machetes Pugnax*, *Charadrius Pluvialis*, *Numenius Phæopus*, *Ranellus Cayanensis*.
- Pl. 65: Skeleton of *Scopus Umbretta*.
- Pl. 66: Fragments of *Anastomus Lamelligerus*, *Ibis Rubra*, *Ciconia Alba*, *Platalea Leucorodia*

## RESERCHES ANATOMIQUES, &amp;c.

- Scopus Umbretta.  
 Pl. 67 : Do. Ibis Rubra.  
 Pl. 68 : Do. Anastomus Lamelligerus, Ibis Rubra.  
 Pl. 73 : Do. Grus Australasianus.  
 Pl. 74 : Do. Grus Antigone, Grus Australasianus, Balearica Pavonina.  
 Pl. 77 : Do. Phœnicopterus Roseus.  
 Pl. 78 : Do. Do.  
 Pl. 79 : Do. Do.  
 Pl. 91 : Skeleton of Cancroma Cochlearia.  
 Pl. 92 : Fragments of Ardea Purpurea, Ardea Nycticorax, Cancroma Cochlearia.  
 Pl. 93 : Do. Ardea Nycticorax, Cancroma Cochlearia, Ardea Purpurea.  
 Pl. 94 : Do. Ardea Purpurea, Cancroma Cochlearia.  
 Pl. 95 : Do. Ardea Purpurea, Cancroma Cochlearia, Ardea Candidissima.  
 Pl. 97 : Skeleton of Tribonyx Mortieri.  
 Pl. 98 : Fragments of Porphyrio Madagascariensis, Gallinula Chloropus, Rallus Crex, Metopidius Africanus.  
 Pl. 99 : Do. Fulica Atra, F. Cristata, F. Chilensis.  
 Pl. 100 : Do. Ocydromus Australis, Porphyrio Madagascariensis, Fulica Cristata, F. Atra, Gallinula Chloropus, Rallus Crex.  
 Pl. 101 : Do. Porphyrio Madagascariensis, Fulica Atra, Ocydromus Australis.  
 Pl. 102 : Fragments of Fulica, Atra Porphyrio Madagascariensis, Ocydromus Australis, Rallus Cayanensis.  
 Pl. 111 : Skeleton of Catherturus Novæ Hollandiæ.  
 Pl. 112 : Do. Ortalis Vetula.  
 Pl. 113 : Do. Pavo Spicivorus, Praelatus Phasianus, Gallus Sonneratii, Satyra Temminckii, Lophophorus Impeyanus.  
 Pl. 114 : Fragments of Polyplectron Germani, Francolinus Asiæ, Argus Giganteus Tetraogallus Himalayensis, Tetrao Urogallus.  
 Pl. 115 : Do. Meleagris Gallopavo, Numida Ptilorhyncha, Perdix Græca, P. Petrosa, Cryptonyx Cristatus, Ortyx Californica, Coturnix Communis, Crax Globicera, Penelope Marail, Ortalida mot mot.  
 Pl. 116 : Do. Francolinus Asiæ, Gallus Sonneratii, Perdix Græca, Tetraogallus Himalayensis, Tetrao Urogallus, Penelope Marail.  
 Pl. 117 : Fragments of Tetrao Saliceti, Gallus Sonneratii, Phasianus Praelatus.  
 Pl. 118 : Do. Francolinus Asiæ, Penelope Obscura.  
 Pl. 119 : Do. Gallus Sonneratii, Tetrao Scoticus, Meleagris Gallopavo, Penelope Obscura, Cryptonyx Cristatus, Satyra Temminckii.  
 Pl. 120 : Do. Perdix Cinerea, Ortyx Californicus, Penelope Obscura, Pavo Spicivorus, Tetrao Scoticus, Gallus Sonneratii.  
 Pl. 121 : Do. Gallus Sonneratii, Tetrao Scoticus, Phasianus Praelatus, Cryptonyx Cristatus, Perdix Græca, P. Petrosa, Ortyx

## RESERCHES ANATOMIQUES, &amp;c.

- Californica, Penelope Marail.  
 Pl. 122 : Do. Pavo Spicivorus, Lophorus Impeyanus, Penelope Marail, Tetrao Scoticus.  
 Pl. 123 : Do. Crax Globicera, Pavo Spiciferus.  
 Pl. 135 : Skeleton of Carpophaga Ænea.  
 Pl. 136 : Skeleton of Pterocles Arenarius.  
 Pl. 137 : Fragments of Goura Coronata, Galeatus, Columba Nicobarica, Pterocles Bicinctus, Syrrhaptus Paradoxus.  
 Pl. 138 : Fragments of Pterocles Bicinctus, Carpophaga Ænea, Goura Coronata, Syrrhaptus Paradoxus.  
 Pl. 139 : Do. Phœnorhina Goliath, Syrrhaptus Paradoxus, Carpophaga Ænea, Calœnas Nicobarica, Pterocles Arenarius.  
 Pl. 140 : Do. Goura Coronata, Carpophaga Ænea, Serresius Galeatus, Carpophaga Ænea, Calœnas Nicobarica, Syrrhaptus Paradoxus.  
 Pl. 142 : Skeleton of Corvus Jamaicensis.  
 Pl. 143 : Skeleton of Dendromis Eburneirostrum, Ramphocoris Clotbey.  
 Pl. 144 : Fragments of Lanius Rufus, Picolaptes Tenurostris, Xiphorhynchus Procurvus, Turdus Viscivorus, Corvus Corax, Pyrrhocorax Alpinus, Rupicola Peruviana, Loxia Coccothraustes, Sylvia Biceina.  
 Pl. 145 : Corvus Corax, Pyrrhocorax Alpinus, Turdus Gigas, Rupicola Peruviana, Loxia Coccothraustes, Alauda Cristata, Sylvia Luscinia, Cristatus, Parus Major.  
 Pl. 146 : Fragments of Corvus Corax, Loxia Coccothraustes, Turdus Viscivorus, Hirundo Rupestris, Sylvia Luscinia.  
 Pl. 147 : Do. Corvus Corax, Pyrrhocorax Alpinus, Loxia Coccothraustes, Alauda Cristata, Hirundo Rupestris, Motacilla Flava.  
 Pl. 148 : Do. Pyrrhocorax Alpinus, Corvus Glandarius, Corvus Carnivorus, Loxia Coccothraustes, Alauda Cristata, Turdus Viscivorus.  
 Pl. 149 : Do. Loxia Coccothraustes, Hirundo Urbica, Regulus Cristatus, Cinclus Aquaticus, Lanius Rufus, Turdus Cyaneus, Corvus Carnivorus.  
 Pl. 150 : Do. Corvus Carnivorus, Loxia Coccothraustes, Pyrrhocorax Alpinus, Cassicus Persicus, Alauda Calandra.  
 Pl. 163 : Skeleton of Picus Martius.  
 Pl. 164 : Do. Dacelo Gigantea.  
 Pl. 165 :  
 Pl. 166 : Skeleton of Turacus Persa.  
 Pl. 167 : Skeleton of Trogon Atricolis and Cypselus Longipennis.  
 Pl. 168 : Do. Centropus Philippensis.  
 Pl. 169 : Fragments of Upupa Epops, Cypselus Apus, Merops Egyptius, Dacelo Gigantea, Caprimulgus Europæus, Toxolus Erythrorhynchus, Trogon Curucei, Turacus Persa, Rhamphastos Cuvierii, Picus Viridis, Cuculus Canorus.  
 Pl. 170 : Do. Turacus Persa, Toxolus Erythrorhynchus, Dacelo Gigantea, Picus Viridis, Cuculus Canorus, Cypselus Apus.

RESERCHES ANATOMIQUES, &c.

- Pl. 171: Do. *Cypselus Apus*, *Picus Viridis*,  
*Eudynamys Orientalis*, *Dacelo Gigantea*,  
*Turacus Persa*, *Caprimulgus Europæus*,  
*Trogon Vividis*.
- Pl. 172: Do. *Cypselus Apus*, *Picus Viridis*,  
*Megalaima Armillaris*, *Caprimulgus Europæus*,  
*Upupa Epops*, *Turacus Persa*, *Dacelo Gigantea*,  
*Tochus Erythrorhynchus*, *Cuculus Canorus*,  
*Trogon Vividis*.
- Pl. 173: Do. *Tochus Erythrorhynchus*, *Dacelo*  
*Gigantea*, *Picus Viridis*, *Turacus Persa*,  
*Cuculus Canorus*, *Cypselus Apus*, *Upupa*  
*Epops*, *Trogon Vividis*.
- Pl. 174: Do. *Tochus Erythrorhynchus*, *Picus*  
*Viridis*, *Dacelo Gigantea*, *Alcedo Ispida*,  
*Trogon Vividis*.
- Pl. 179: Do. *Gypaetos Barbatus*, *Pandion*  
*Haliæetus*, *Falco Peregrinus*, *Pernis Apivorus*,  
*Sarcoramphus Papa*, *Serpentarius Reptilivorus*.
- Pl. 180: Do. *Sarcoramphus Papa*, *Falco Pere-*  
*grinus*.
- Pl. 181: Do. *Sarcoramphus Papa*, *Falco Pere-*  
*grinus*.
- Pl. 182: Do. Ditto.
- Pl. 189: Do. *Bubo Atheniensis*, *Nyctea Nivea*,  
*Athene Noctua*, *Brachyotus Palustris*, *Sumai*  
*Borealis*; *Strix Flammea*.
- Pl. 196: Do. *Bubo Atheniensis*.
- Pl. 191: Do. Ditto.
- Pl. 193: Skeleton *Strix*, *Nyctea Fossil*.
- Pl. 195: Skeleton *Macrocerus Ararauna*.
- Pl. 196: Fragments of *Cacatua Moluccensis*,  
*Macrocerus Ararauna*, *Coracopsis Rara*,  
*Psittacus Erythacus*, *Nymphicus Nova*  
*Hollandia*.

RESERCHES ANATOMIQUES, &c.

- Pl. 197: Fragments of *Macrocerus Ararauna*,  
*Cacatua Moluccensis*.
- Pl. 198: Do. *Cacatua Moluccensis*, *Macrocerus*  
*Ararauna*, *Psittacus Erythacus*.
- Pl. 199: Do. *Cacatua Moluccensis*, *Macrocerus*  
*Ararauna*.
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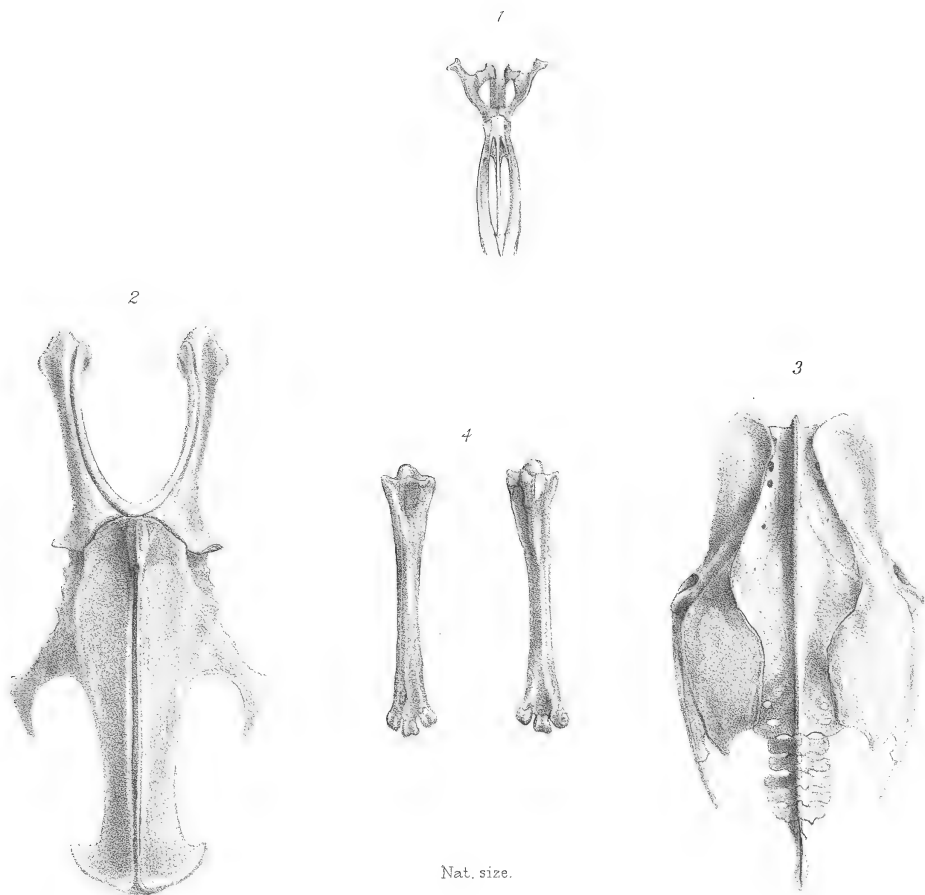


*From nat. on stone by J. Erxleben.*

*M & N. Lanhart imp.*

**DIDUNCULUS STRIGIROSTRIS.**





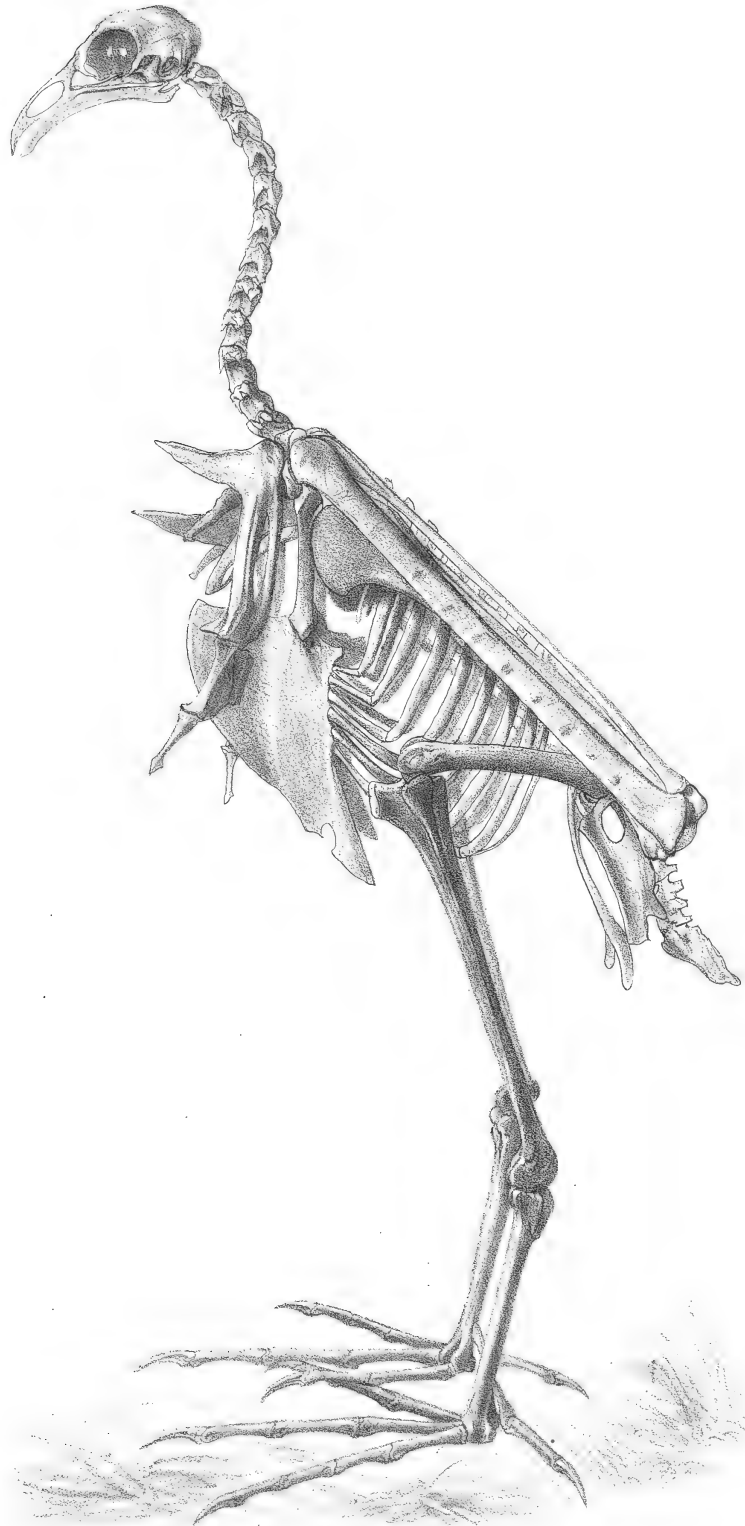
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**DIDUNCULUS STRIGIROSTRIS.**







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PALAMEDEA CORNUTA.

*M. & N. Hanhart imp.*

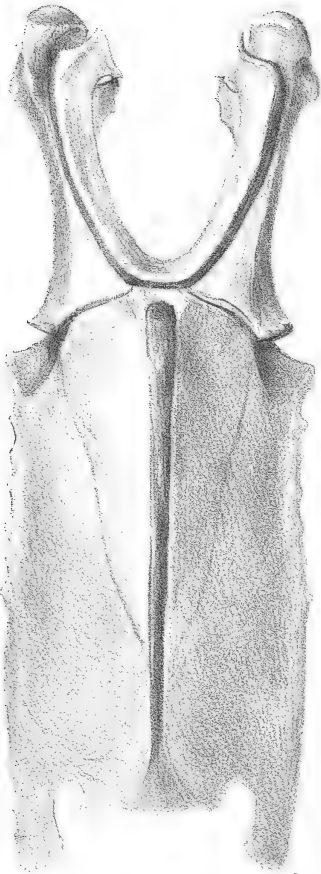


1



Nat. size.

2

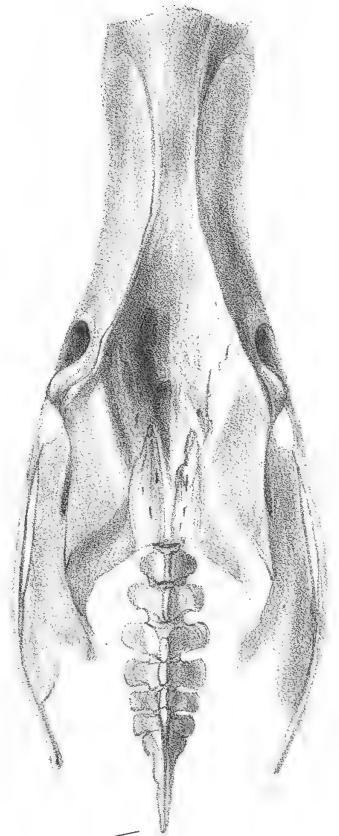


4



$\frac{2}{3}$  Nat. size.

3



*From nat. on stone by J. E. Leeb.*

*M. C. F. Vanhart imp.*

PALAMEDEA CORNUTA.





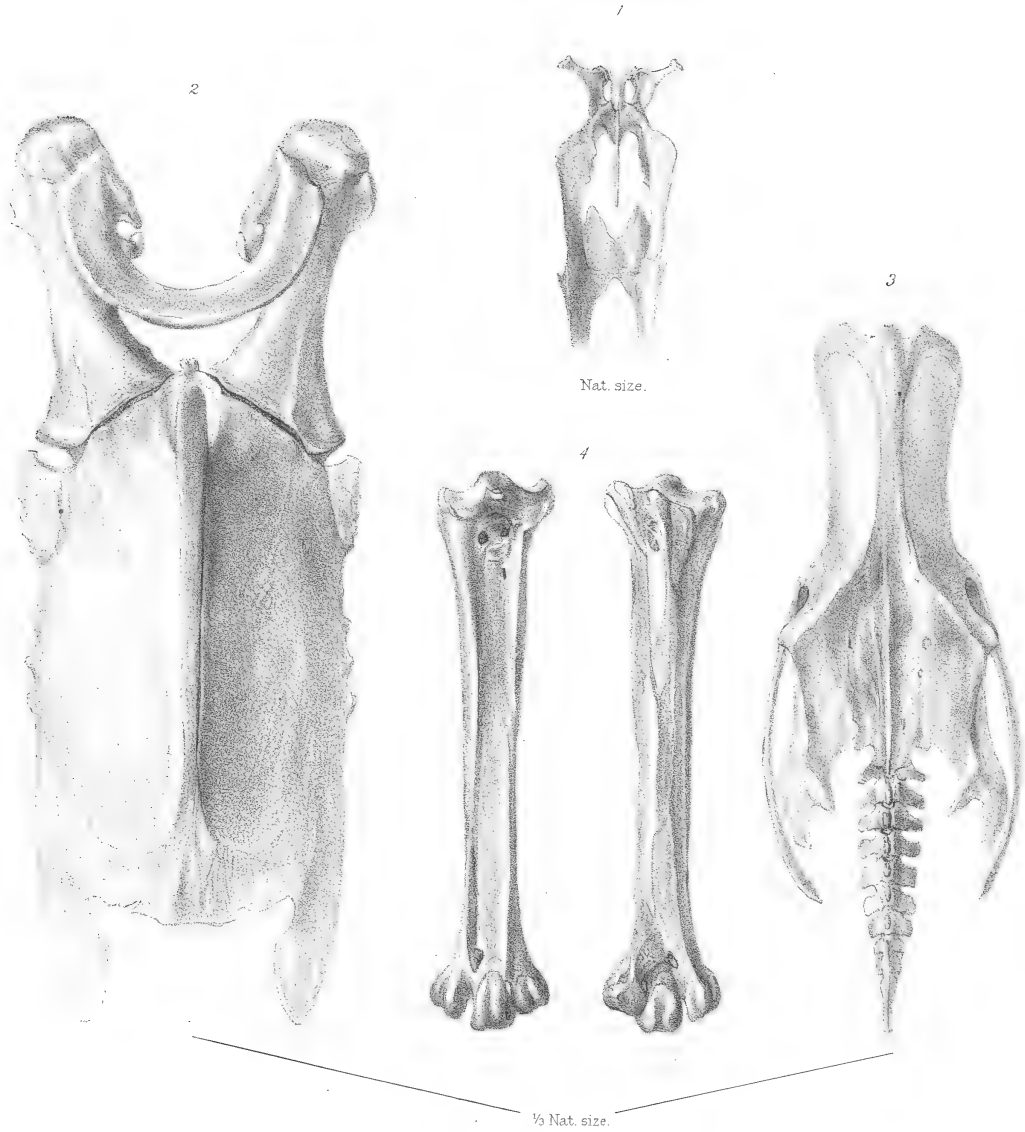
$\frac{1}{3}$  Nat. size.

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*M. & N. Hanhart imp.*

CHAUNA CHAVARIA.





*From nat. on stone by J. E. Reichen.*

*M. & M. H. Hart imp.*

CHAUNA CHAVARIA.







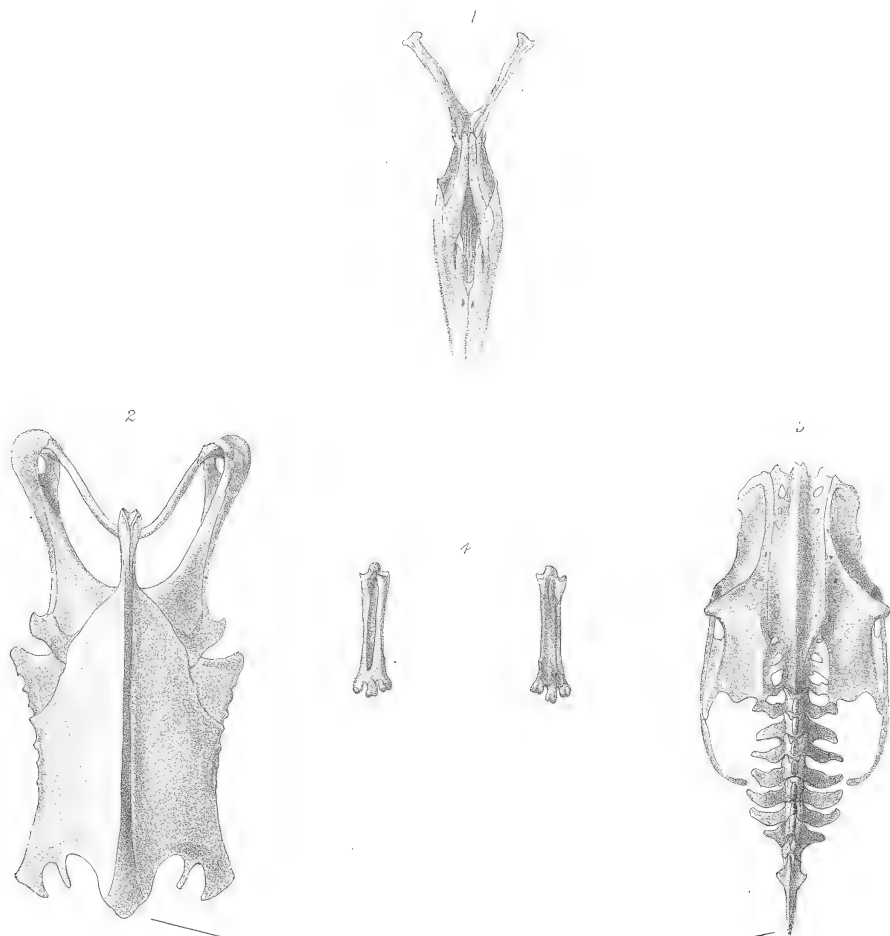
Nat. size

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PHAETON ÆTHERENS.

*M. & N. Harhart imp.*





Nat. size.

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*M. & N. Harhart imp.*

PHAETON ÆTHEREUS.





½ Nat. size.

*From nat. en stone by J. E. Deben.*

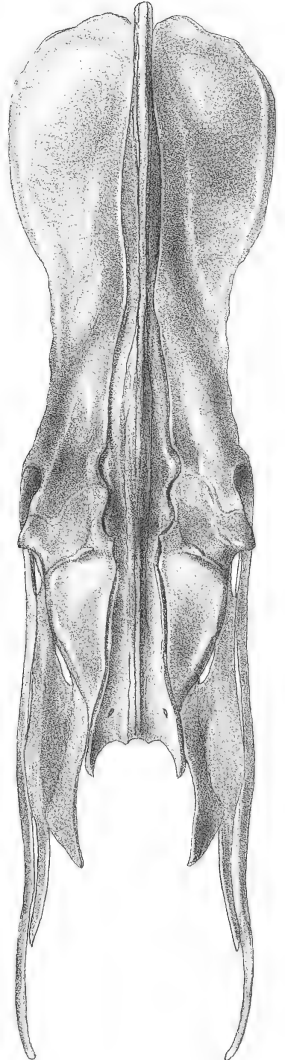
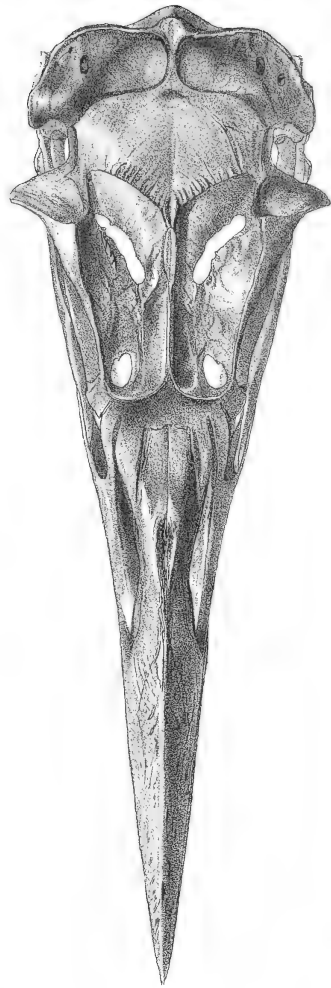
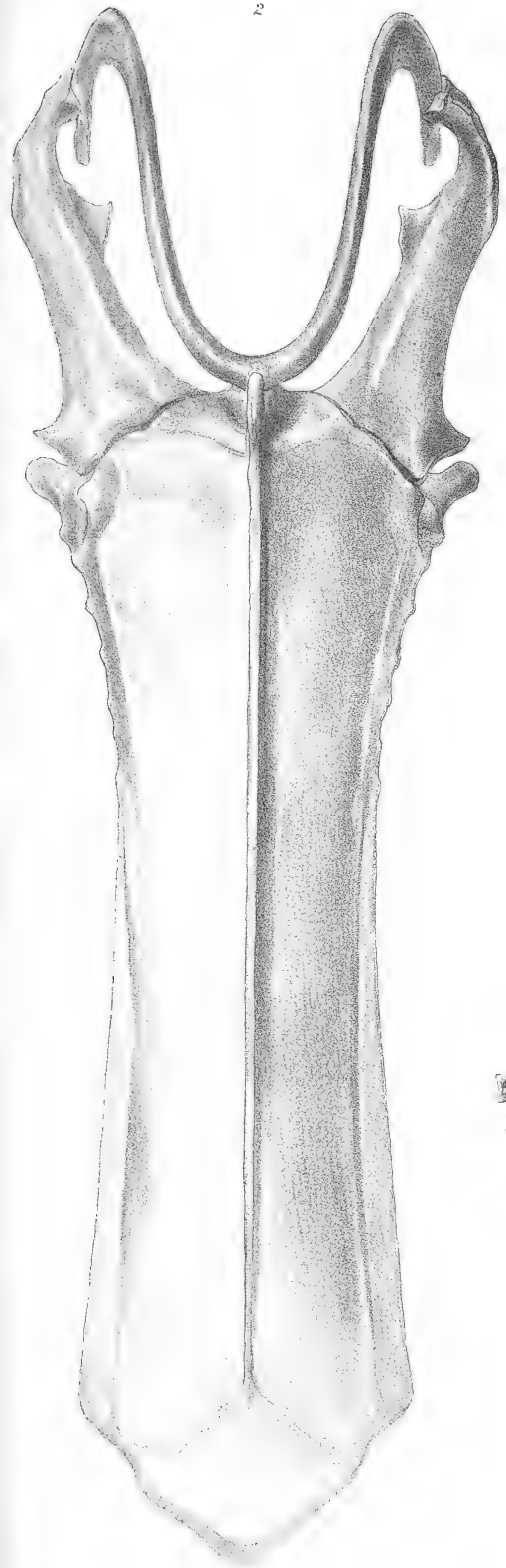
ALCA IMPENNIS.

*M. & N. Harhart imp.*



2

3



Nat. size.

From nat. on stone by J. Exleben.

M. & N. Harhart imp.

ALCA IMPENNIS.

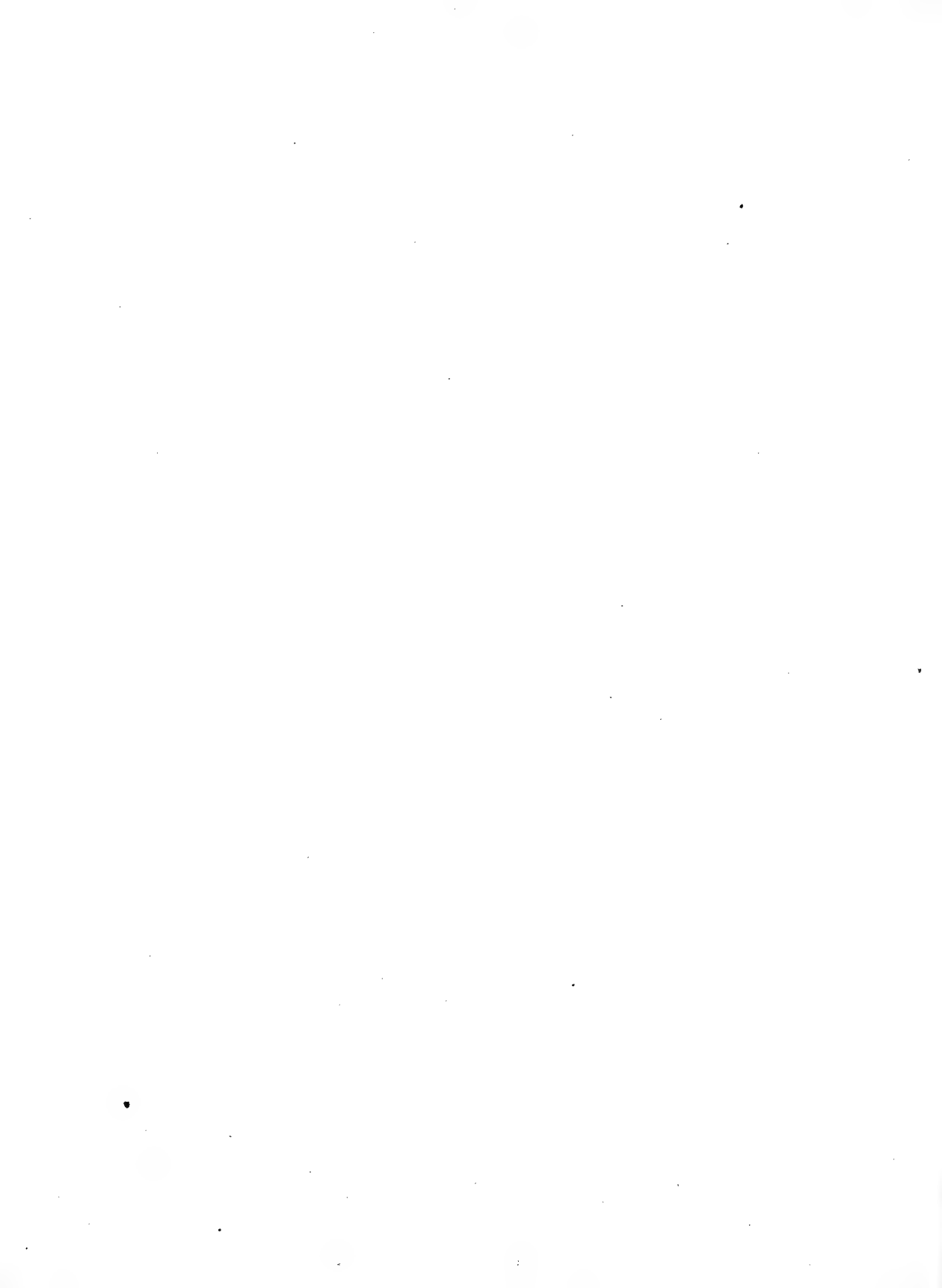




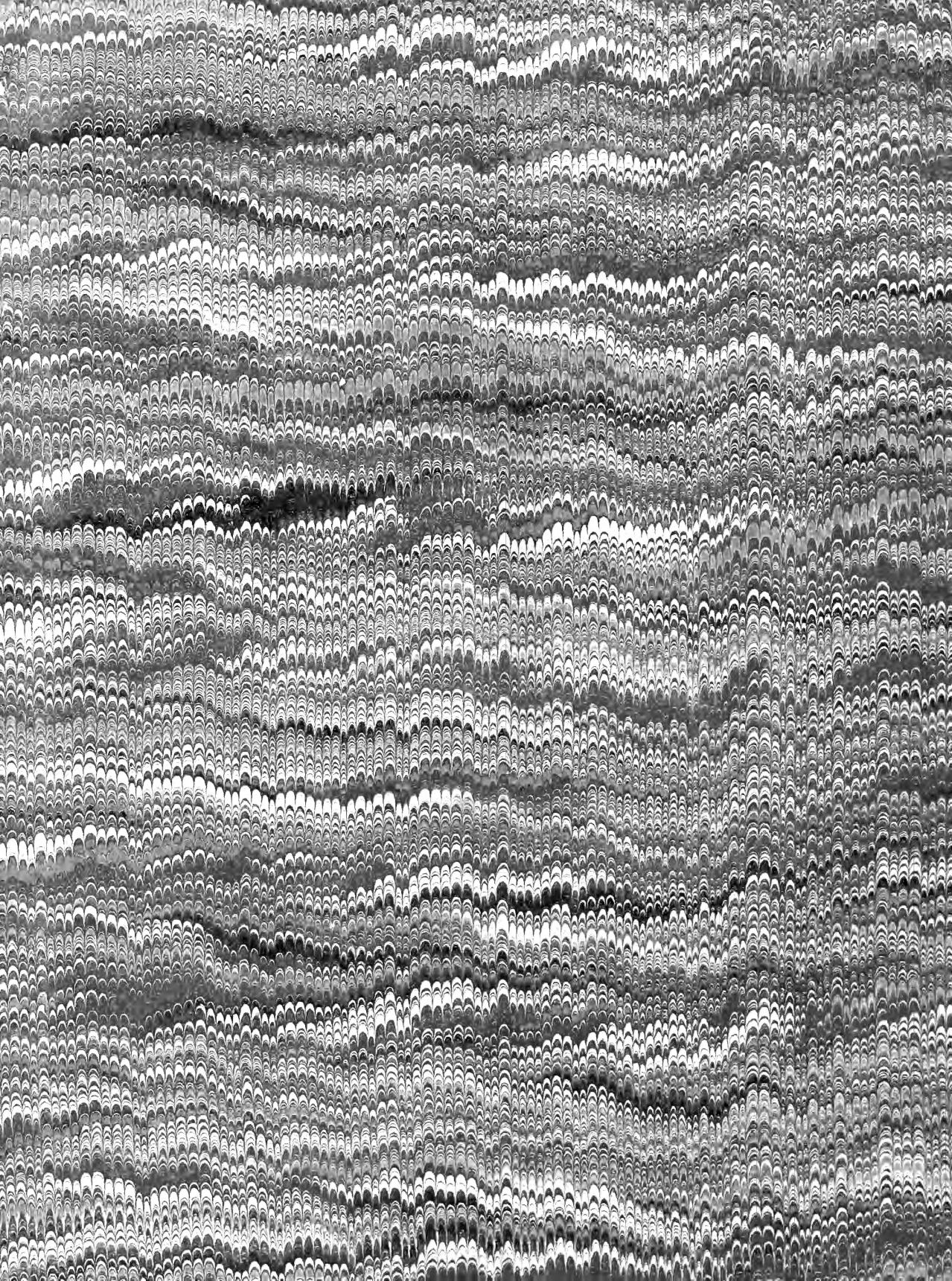


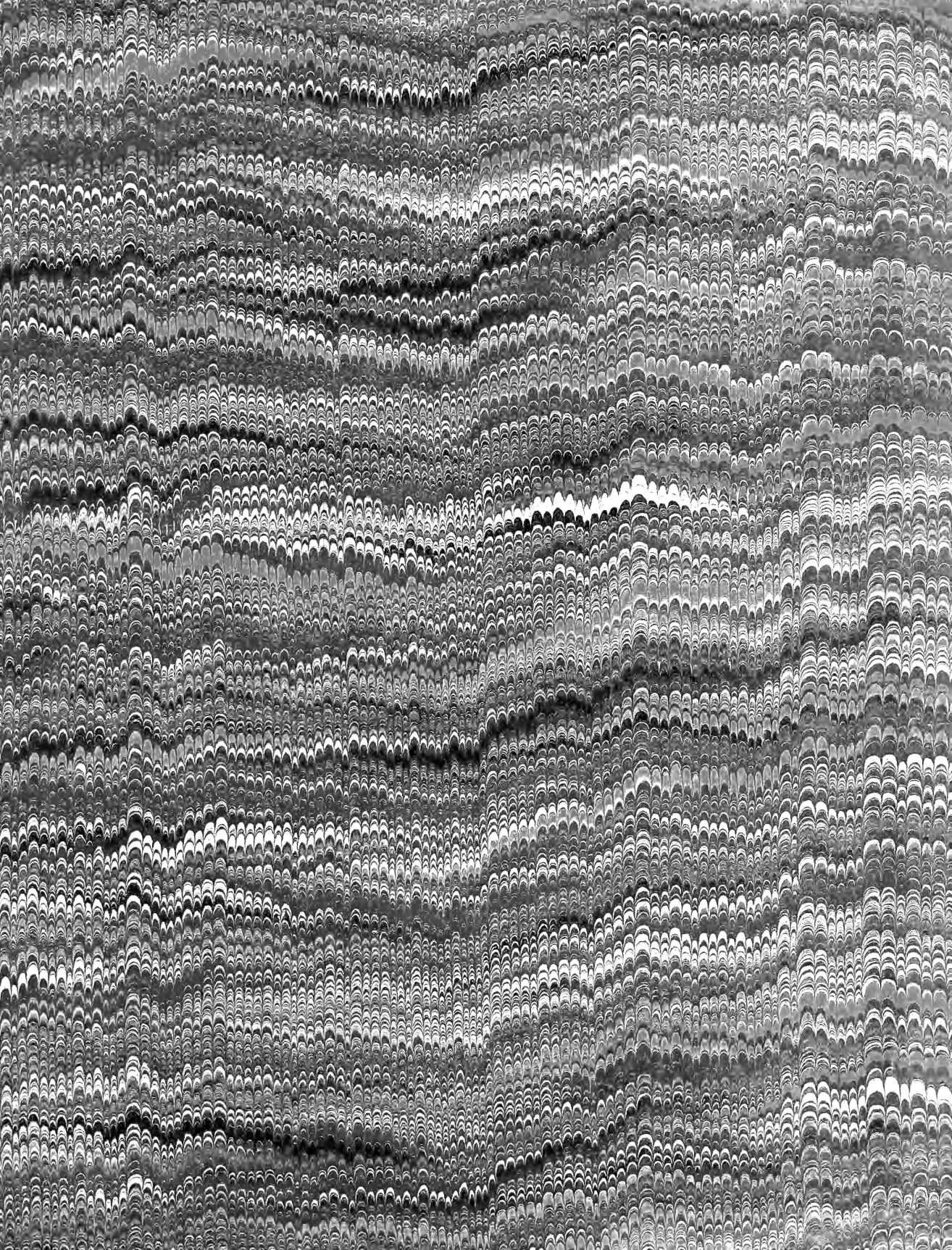












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