

The Pterosaur Database

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Seeley H G; 1870, The Ornithosauria: an elementary study of the bones of pterodactyls, Proceedings of the Cambridge Philosophical Society, 2(1870) p.186

The Ornithosauria

An Elementary Study

Of

The Bones of Pterodactyles

The Plates.

These plates are extracted from Harry Seeley's Study of 1870. Lithographic plates were very expensive to produce and the process was time consuming. The plates shown here were produced from Harry Seeley's sketches of the bones of Ornithosaurs in the Woodwardian Museum. The numbers that appear in the index relate to the catalogue numbers of the original specimens and the page numbers refer to pages in his descriptive text.

Plate I.*

Sternum and Scapula

Fig. 1. Fore part of sternum showing the ovate synovial facet for the coracoid. *J. a. 1, p.28.*

2. Outside of the proximal end of the right scapula. Largest specimen. *J. a. 3, no. 2, p. 32.*
3. Outside of greater portion of a left scapula. *J. a. 3, no. 13.*
4. Inner side of a small right scapula. *J. a. 3, no. 12.*
5. Outside of proximal end of a right scapula. *J. a. 3, no. 3.*
6. Surface of *J. a. 3, no.3* articulating with humerus.
7. Outside of distal end of a scapula. *J. a. 4, no. 1.*
8. View of the distal termination of a scapula.
9. View of proximal end of left scapula looking from the distal toward the articular end. *J. a. 3, no. 17.*
10. Proximal end of right scapula where united with coracoid, looking at the scapula from the articulation. *J. c4. 18.6.*
11. Inner surface of same specimen showing the pneumatic foramen at the union of scapula and coracoid.
12. Outer view of the same specimen

* For the Lithographic details of plates 1 to 3, the author is not answerable. Accidents happened to these plates in the printing, and they were replaced without his knowledge by good copies; which however have sometimes deprived the bones of their characters.

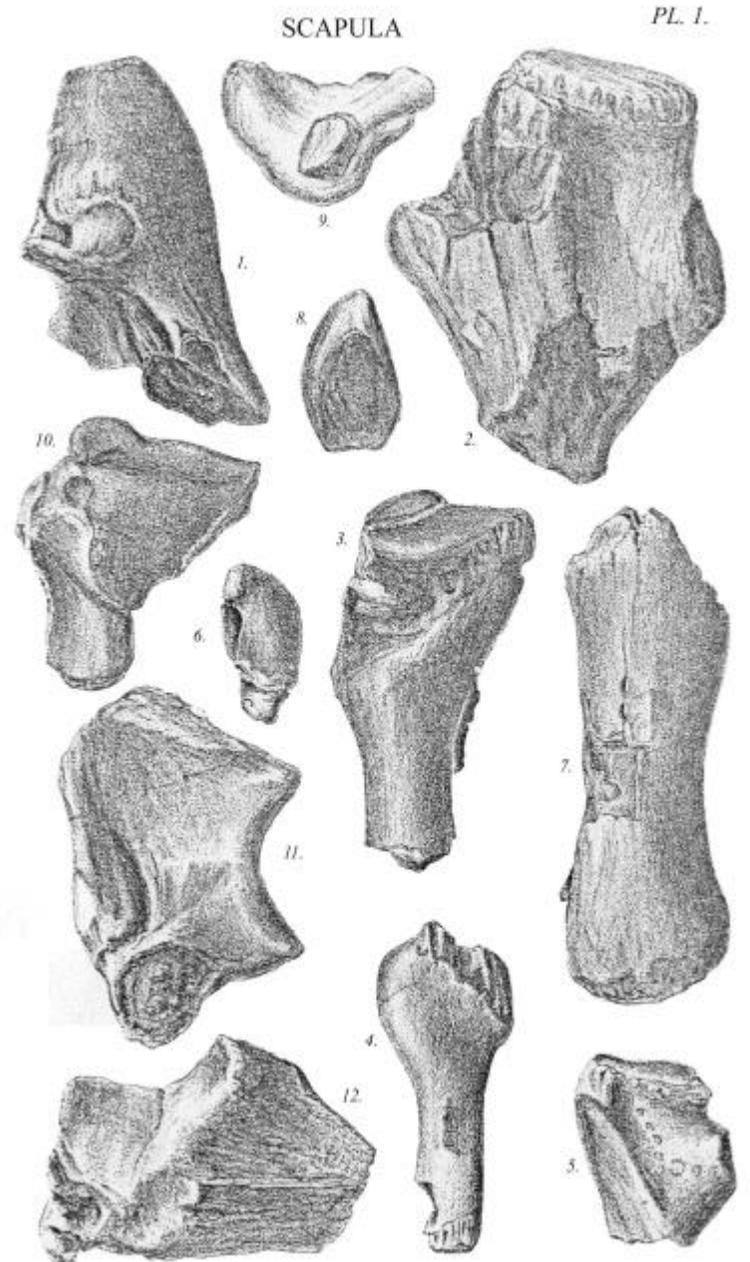


Plate II.

Coracoid and Radius

- Fig. 1. Outer side view of left coracoid. *J.* c3. 16. 5, p. 32.
2. Back view of the same specimen showing the surface which unites with the scapula.
3. Outer side view of perfect right coracoid. *J.* c4. 18. 5. Near the figure 3 is the pneumatic notch.
4. View of the proximal articular surface of a right coracoid. *J.* a. 2, no. 23.
5. Inner view of distal end of left coracoid. *J.* a. 2, no. 18.
6. The distal articulation of the same specimen.
-
7. Fragment of proximal end of radius $\frac{4}{5}$ nat. size. *J.* a. 11, no. 7. p. 46.
8. Proximal end of radius. *J.* a. 11, no. 1.
9. Proximal articular surface of radius from the same specimen.

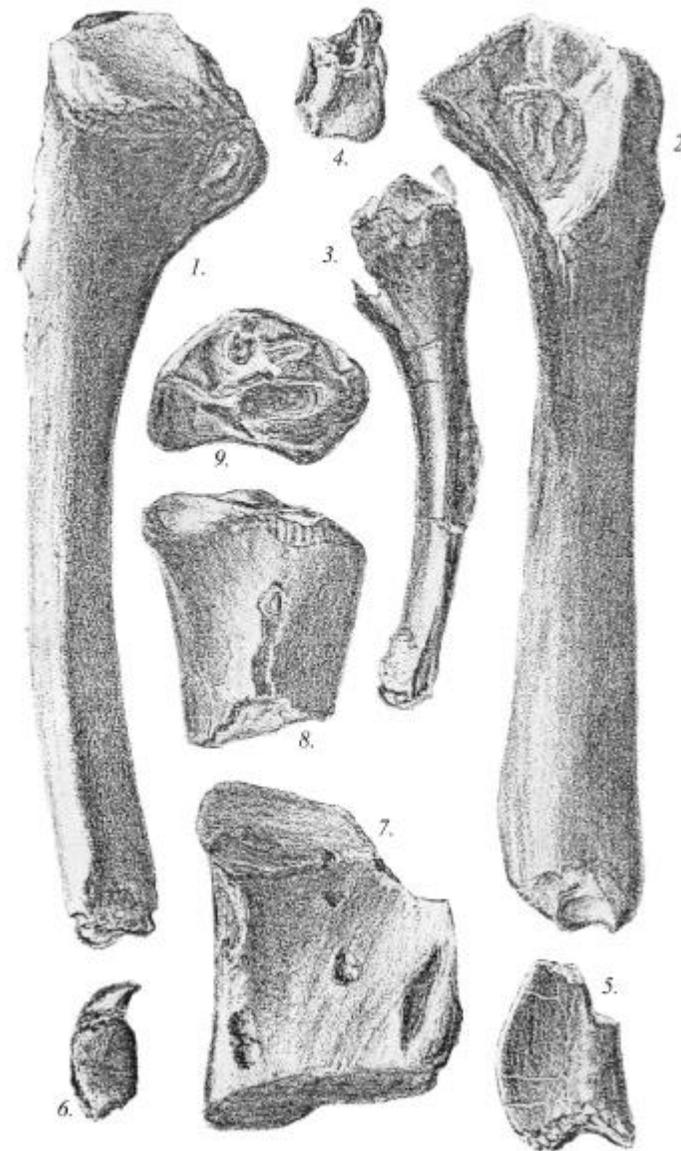


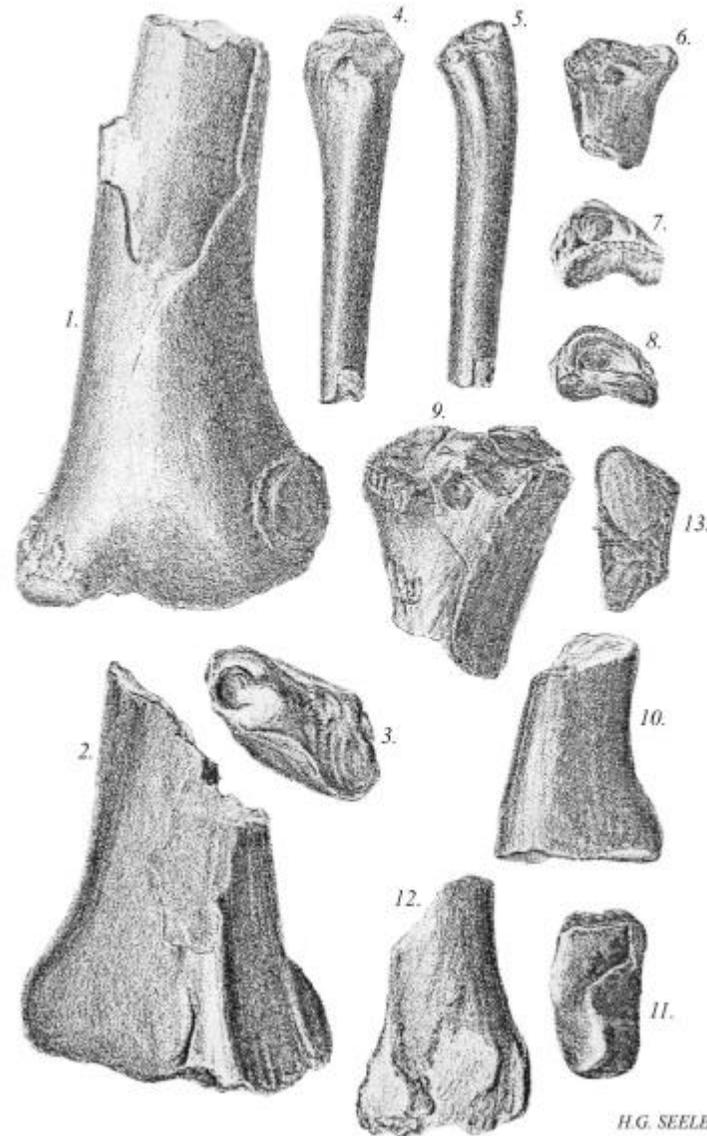
Plate III.

Radius and Ulna

- Fig. 1. Inner part of distal end of right radius. *J.* a. 10, no. 2, p. 44.
2. Outer view of distal end of right radius. *J.* a. 10, no. 3.
3. Distal articulation of right radius. *J.* a. 10, no. 6.
-
4. Inner view of proximal end of ulna with olecranon ankylosed, p. 45.
5. Side view of the same specimen. *J.* a. 9, no. 1.
6. Proximal end of ulna from which the olecranon has come away. *J.* a. 9, no. 5.
7. Proximal articular surface of same specimen
8. Proximal articular surface of ulna. *J.* a. 9, no. 4.
9. Proximal articular end of ulna from which the Olecranon has come away.
-
10. Distal end of right ulna. *J.* a. 13, no. 5, p. 43.
11. Distal articulation of the same specimen.
12. Distal end of left ulna. *J.* a. 12, no. 3.
13. Distal articulation of the same specimen.

RADIUS AND ULNA

PL. 3.



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Plate IV.

Humerus

- Fig. 1. A nearly perfect right humerus, from Ashwell. *J.* a. 6, no. 30, p. 38.
2. Same specimen seen from the proximal end, so as to display the distal end, twisted at right angles with the radial crest. The pneumatic foramen in on the anterior and radial side.
 3. Proximal end of left humerus showing the radial crest perfect. *J.* a. 6, 25.
 4. Articular surface of same specimen showing the termination of the radial crest.
 5. Posterior aspect of proximal end of right humerus. The pneumatic foramen is on the posterior and ulnar side.
 6. Proximal articular surface of left humerus. *J.* a. 6, no. 2.
 7. Distal end of right humerus. *J.* a. 6, no. 29.
 8. Distal articulation of left humerus. *J.* a. 6, no. 45.
 9. Distal end of same specimen.
 10. Distal end of left humerus. *J.* a. 6, 20.
 11. Distal end of right humerus. *J.* a. 6, 46.
 12. Distal end of left humerus. *J.* a. 6, 34.
 13. Distal end of left humerus from a specimen lent by J. B. Lee, Esq.
 14. Distal end of left humerus. *J.* a. 6, 35.

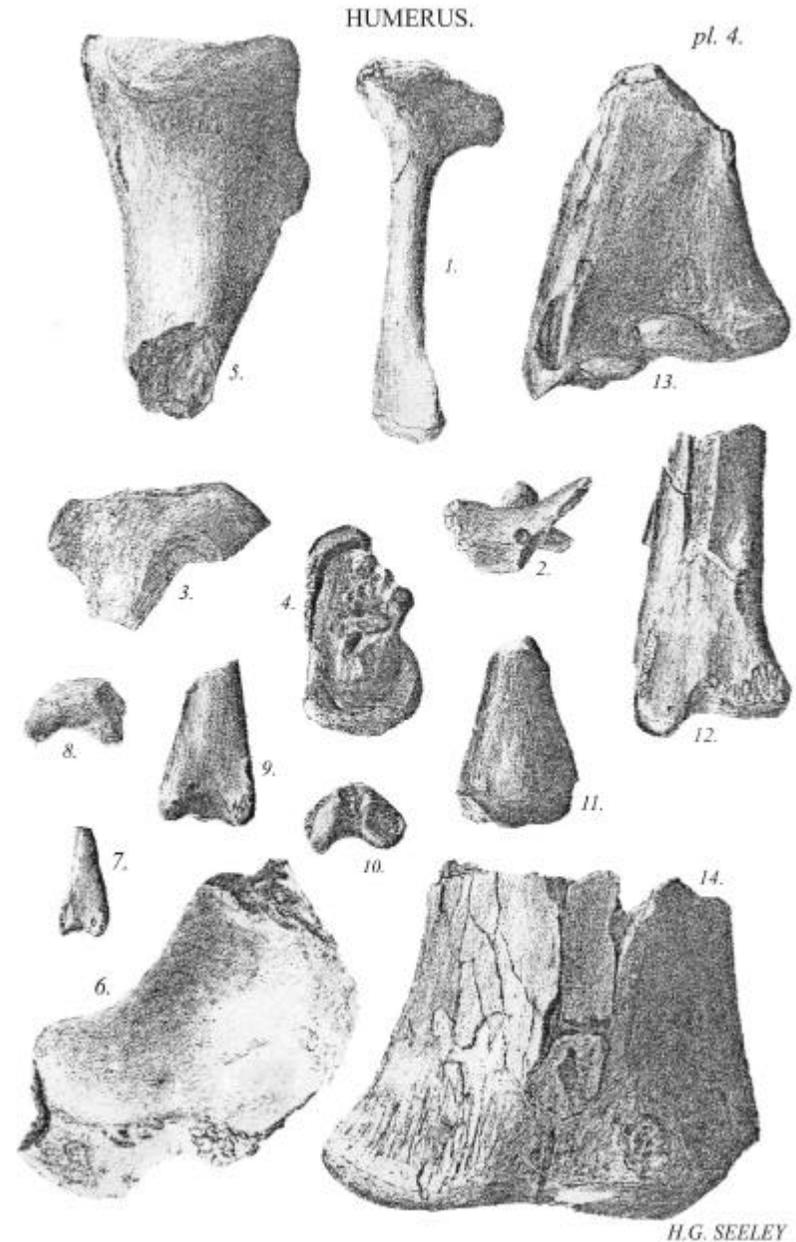


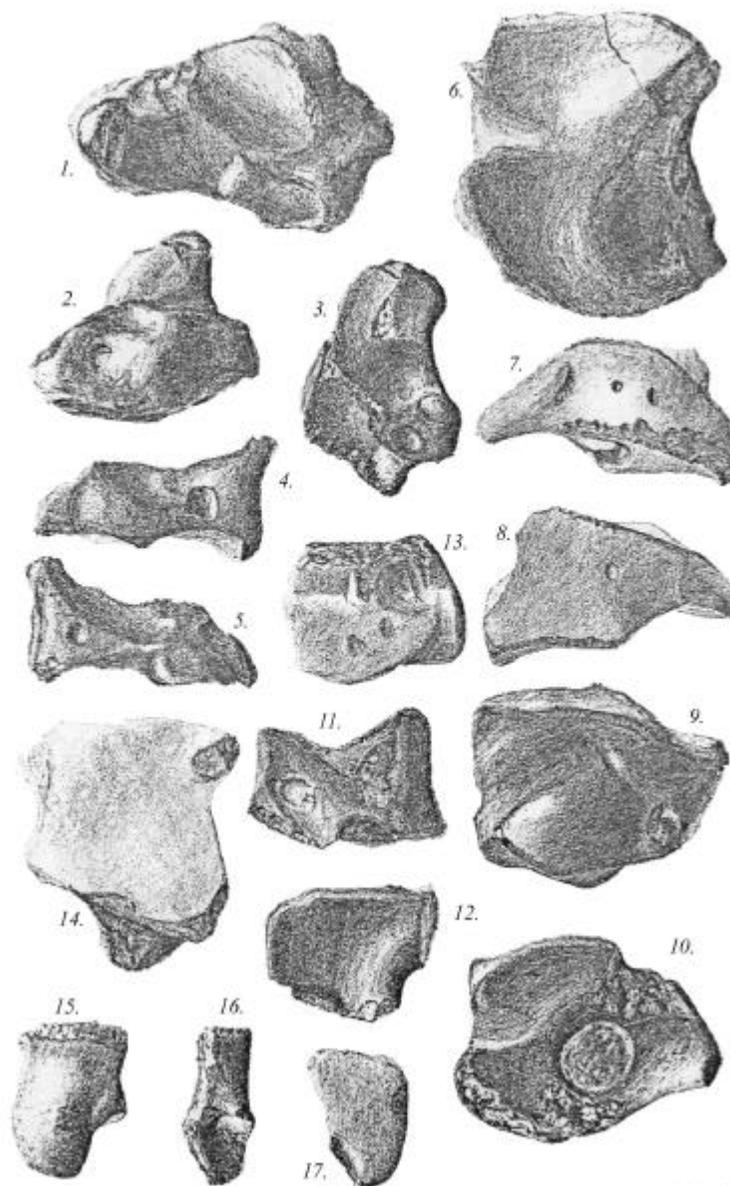
Plate V.

Carpal Bones

CARPAL BONES

PL. 5.

- Fig. 1. Distal surface of right proximal carpal bone, p. 48.
2. Same specimen seen from outer end, showing the large unarticular surface, above is a part of the distal articulation. *J. b. 1, no. 1.* (figure is upside down).
 3. Proximal articular surface of right proximal carpal bone. *J. b. 1, no. 7.* The right upper part is for the radius, the left lower part for the ulna.
 4. View of same specimen (upside down) from the ulna side.
 5. View of same specimen from the radial side.
-
6. Portion of the distal articular surface of a right distal carpal bone. *J. b. 3, no. 23, 4/5 nat. size, p. 50.*
 7. Front radial side of right distal carpal. *J. b. 3. 24.*
 8. Back ulnar side of the same specimen.
 9. Proximal articular surface of the same distal carpal.
 10. Distal articular surface of the same distal carpal.
 11. View of the proximal articular surface of the same distal carpal, seen from the inside.
 12. Perfect element of the left distal carpal showing the distal carpal bone to be composite.
 13. Distal surface of a right distal carpal of another genus. *J. b. 3, no. 20.*
-
14. Lateral carpal or pisiform bone, seen from the inside, the distal articular talon partly broken. *J. b. 4, no. 2.*
 15. Lateral carpal seen from the outside. *J. b. 4. 9.*
 16. Same bone showing the distal articulation, p. 51.
 17. Lateral carpal bone of a different genus, seen from the inside.



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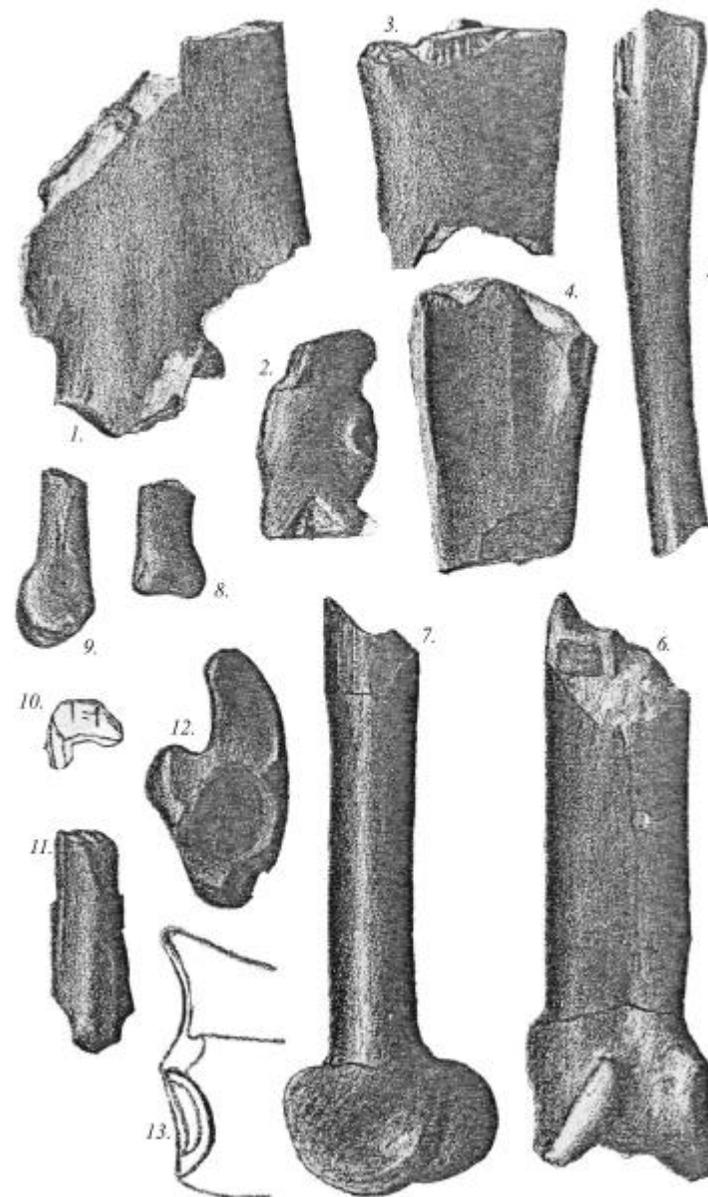
Plate VI.

Wing Metacarpal Bone, &c.

- Fig. 1. Fragment of the proximal end of a large wing metacarpal bone. *J. b. 5, no. 9.* It is figured upside down, a part of the surface articulating with the distal carpal bone being over the fig. 1, p. 53.
2. Aspect of the proximal articular surface of the wing metacarpal bone. *J. b. 5, no. 3.*
3. Exterior aspect of the same specimen.
4. Inner aspect of another proximal end. *J. b. 5, no. 4.*
5. The greater part of a small wing metacarpal bone. *J. b. 5, no. 1.* Imperfect at the distal end.
6. Distal end of a wing metacarpal bone. *J. b. 5, no. 31.*
7. Front aspect of the same specimen.
-
8. Distal end of metatarsal bone or of a metacarpal bone of a small finger. *J. b. 8, no. 1.*
9. Lateral aspect of a similar bone. *J. b. 8, no. 2.*
-
10. Outline of the imperfect distal termination of a bone regarded as left metatarsus of an Ornithosaurian. *J. b. 13, p. 63.*
11. Front aspect of the same specimen.
-
12. Articular aspect of proximal end of first phalange of the wing finger, from which the terminal epiphysis has come away. *J. b. 6, no. 10.*
13. Diagram outline of the same specimen, p. 56.

WING-METACARPAL BONE, &c.

PL. 6.



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Plate VII.

Wing Finger.

- Fig. 1. Exterior aspect of proximal end of first phalange of the wing finger. *J. c3. 16. 12, p. 56.*
2. Inner aspect of proximal end of a small wing metacarpal bone which has lost its proximal epiphysis; it shows the notch for the pneumatic foramen. *J. c. 1. 8. 8.*
3. Fragment of the proximal end of a large wing metacarpal bone, showing near the fig. 3 part of the articular surface. *J. c. 3. 15. 10.*
4. Distal end of first phalange of the wing finger. *J. c 6. 31. 7, no. 1.*
5. Distal articular surface of a first phalange.
6. Distal end of a first phalange. *J. b. 6, no. 4.*
-
7. Proximal end of the second phalange of the wing finger. *J. c2. 12. 12, p. 57.*
8. Proximal end of a small second phalange. *J. b. 7, no. 7.*
9. Proximal end of a large second phalange. *J. b. 7, no. 4.*
-
10. Side view of distal end of right femur. *J. b. 11, no. 11, p. 62.*

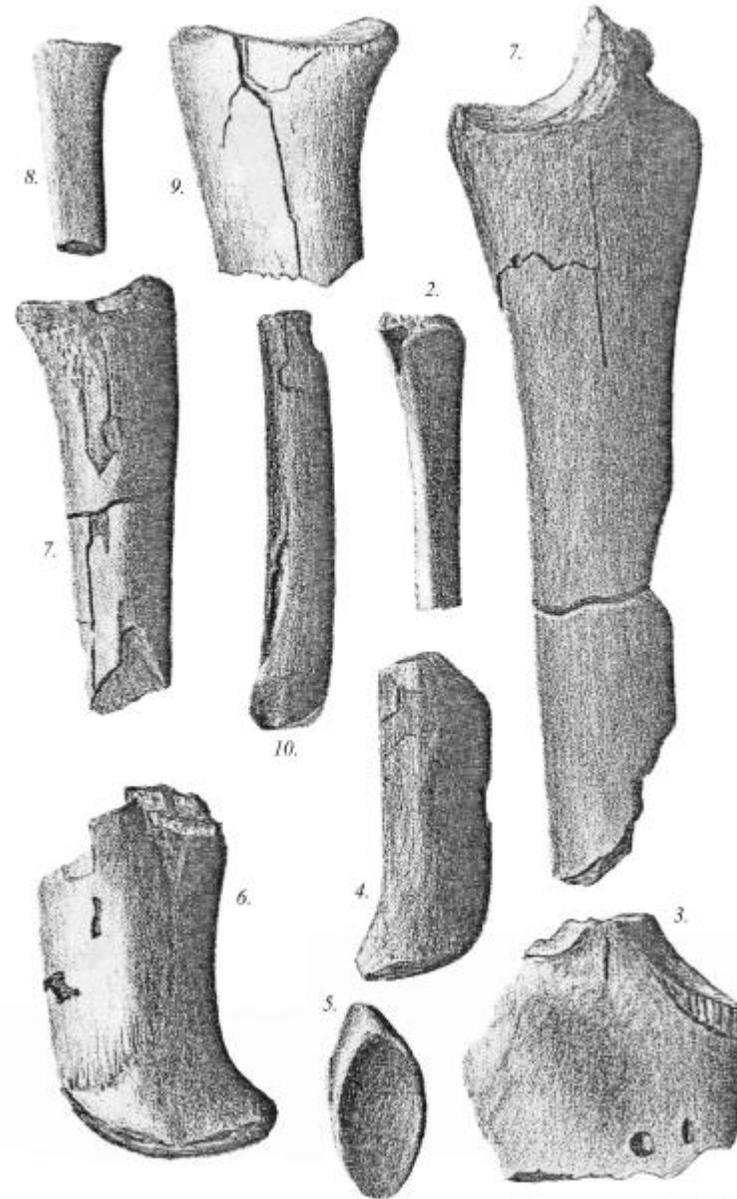


Plate VIII.

Pelvis, Femur, Tibia, &c.

PELVIS, FEMUR, TIBIA, &c.

PL. 8.

Fig. 1. Fragment of a large right os innominatum. The faint Y-shaped lines in the acetabulum indicates the limits of the three component pelvic bones; fig. 1 is placed at the posterior border of the ischium. *J. b. 10, no. 1.*

2. Imperfect right os innominatum, with the anterior and posterior wings of the ilium broken away. *J. b. 10, no.4, p. 59.*
3. Imperfect left os innominatum showing the small obturator foramen which divides the pubis from the ischium. On the anterior border of the pubis is seen a depression, which may have given attachment to the epipubic bone. *J. b. 10, no. 3.*

4. Visceral aspect of an imperfect right ischium. *J. c4. 20. 2.*

5. Exterior side aspect of a right femur. *J. c2. 11. 20.*

6. Front aspect of the same specimen, p. 62.

7. Posterior aspect of proximal end of right femur of a different genus, showing a pit for the obturator muscle. *J. b. 11, no. 1.*

8. Front aspect of the same specimen.

9. Outline of the proximal articular end; the obturator pit is darkened.

10. Posterior aspect of distal end of right femur. *J. b. 11, no. 20.*

11. Outline of the distal articular end of the same specimen.

12. Distal end of a large right femur. *J. b. 11, no. 12.*

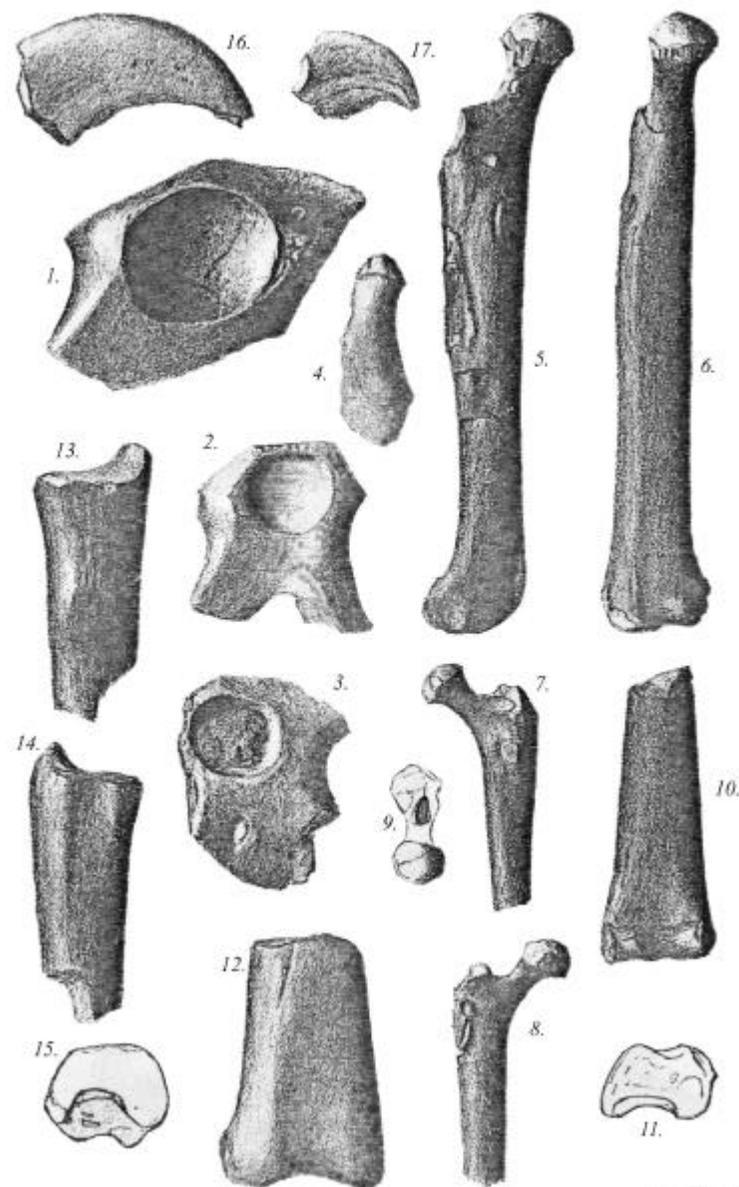
13. Proximal end of tibia (?front aspect). *J. b. 12, no. 8.*

14. Another view of the same specimen. *P. 62.*

15. Outline of the articular aspect of the same tibia. The non-articular part is shaded.

16. Claw phalange. *J. c1. 2. 5, p. 59.*

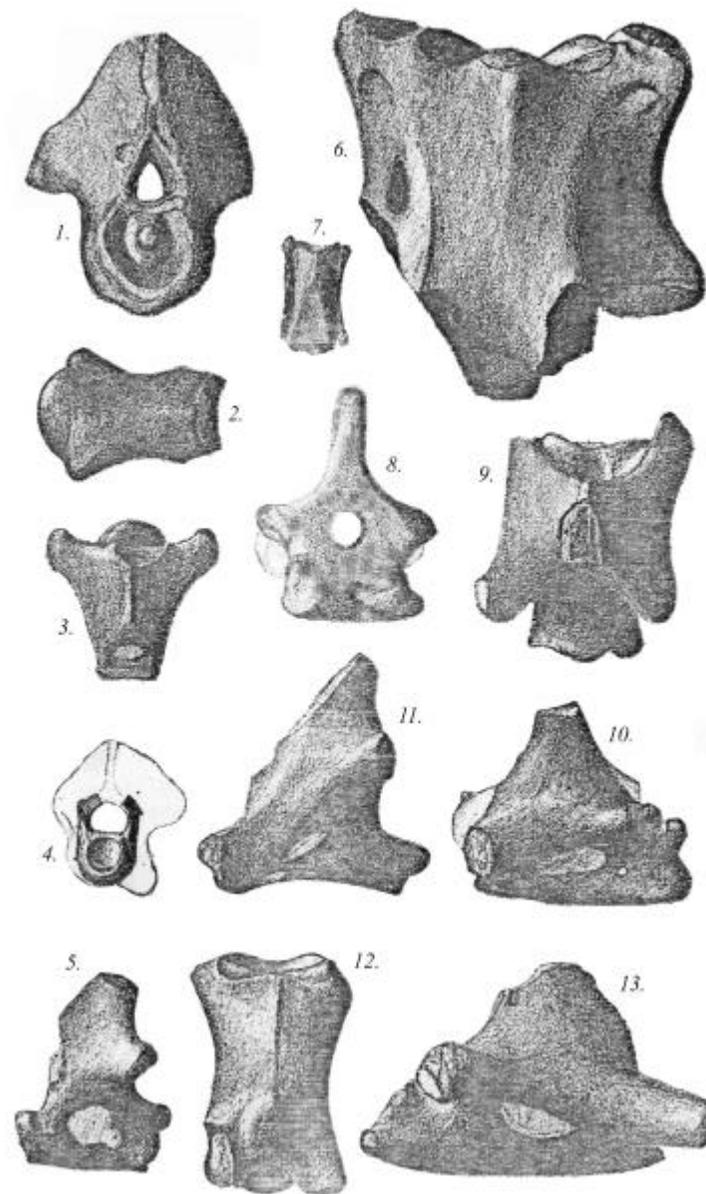
17. Claw phalange. *J. b. 9, no. 4.*



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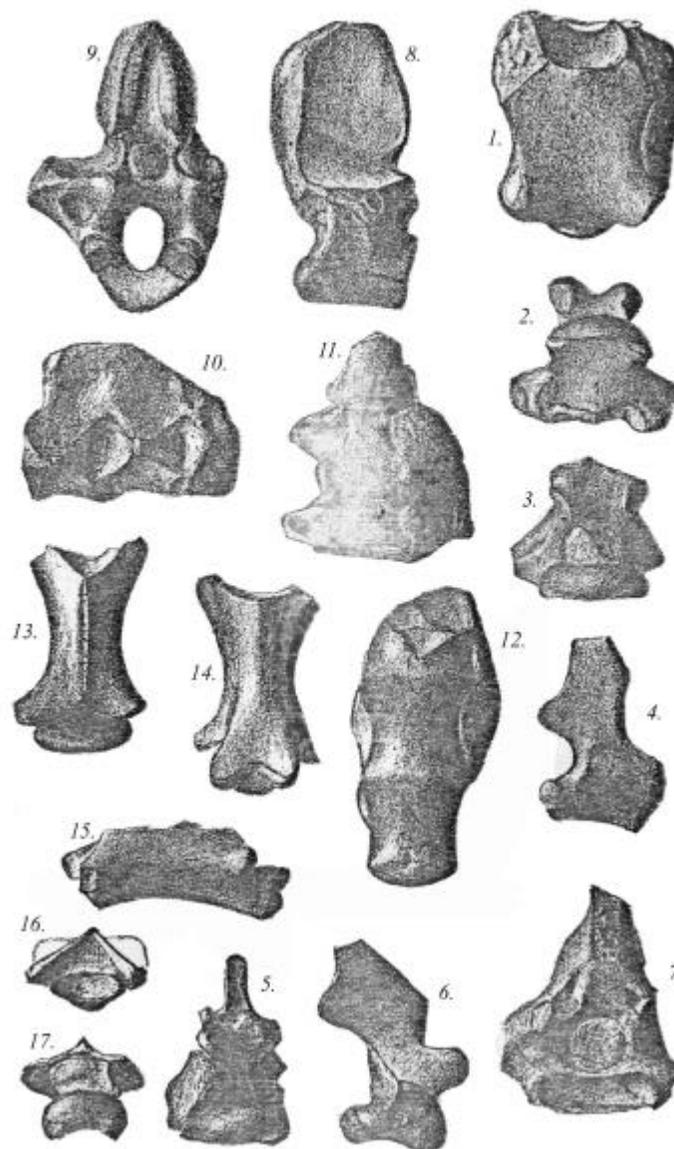
Neck Vertebrae..

- Fig. 1. Anterior aspect of an axis to which the atlas was not ankylosed. **J.** c3. 15. 2, p. 64.
2. Ankylosed atlas and axis seen from the base of the vertebrae. **J.** c. 1, no. 8.
3. Ankylosed atlas and axis seen from above. **J.** c. 1, no. 14.
4. Atlas, neural arch imperfect. **J.** c. 1, no. 10.
5. Ankylosed atlas and axis seen from the side, the neural arch of the atlas is wanting. The light space in the centrum of the axis is the pneumatic foramen. **J.** c. 1, no. 14.
-
6. Large cervical vertebra seen from below. **J.** c. 2, no. 42, p. 65.
7. Small cervical vertebra seen from below. **J.** c. 2, no. 43.
8. Cervical vertebra seen from behind. **J.** c. 2, no. 5.
9. Cervical vertebra seen from above. **J.** c. 2, no. 23.
10. Cervical vertebra seen from the left side. **J.** c5. 27. 1, no. 4.
11. Cervical vertebra of another genus seen from the left side. **J.** c. 2, no. 13.
12. Base of the centrum of the last true cervical vertebra. **J.** c. 2, no. 40.
13. Right side of cervical vertebra. **J.** c. 2, no. 7.



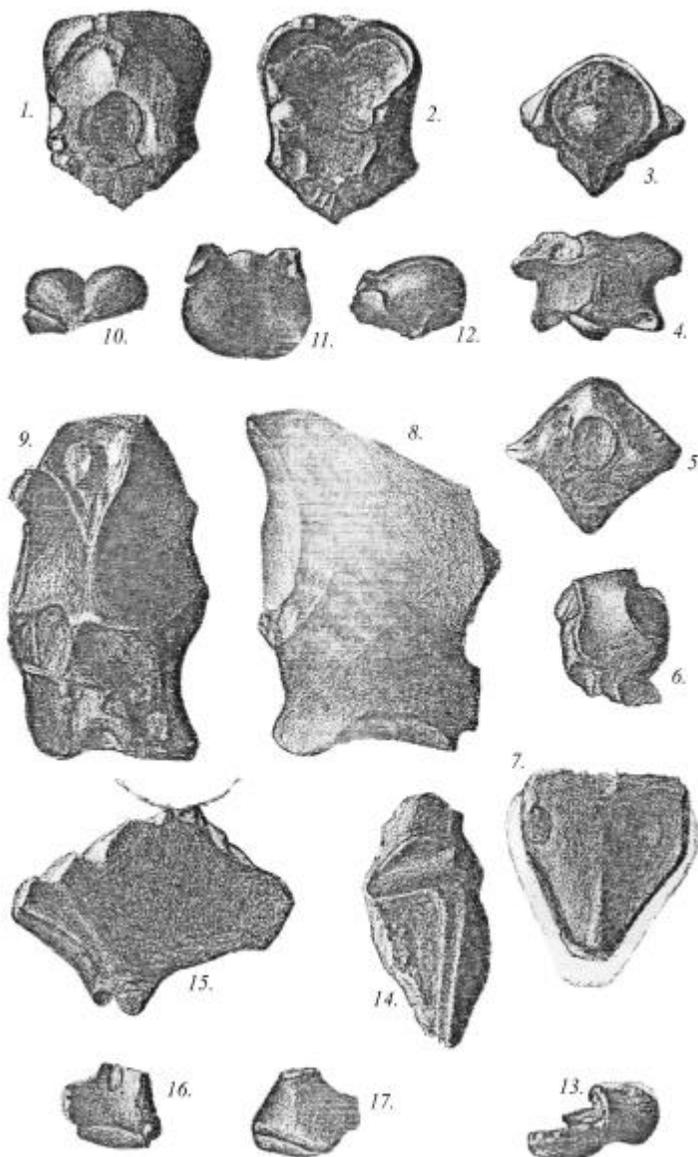
Back and Tail Vertebrae.

- Fig. 1. Centrum of a vertebra from the region between the neck and the back, called pectoral. *J. c.* 3, no. 19, p. 69.
2. Dorsal vertebra seen from below. *J. c.* 2. 12. 3, no. 2.
 3. The same specimen seen from behind.
 4. Right side view of a dorsal vertebra showing the neural spine nearly perfect. *J. c.* 3, no. 20.
 5. The same specimen seen from behind.
 6. Right side of dorsal vertebra showing anterior and posterior zygapophyses. The neural spine broken.
 7. Front view of the same specimen. The centrum is seen to form but a small part of the anterior articular surface.
-
8. Right side of a sacral vertebra. *J. c.* 4, no. 1, p. 73.
 9. Front aspect of the same specimen. The neural arch forms part of the intervertebral articulation with the centrum.
 10. Side view of the anterior part of a sacrum, presented by H. C. Raban Esq. *J. c.* 4, no. 3.
 11. The same specimen seen from below.
 12. Inferior aspect of the posterior part of sacrum of a different genus. *J. c.* 4, no. 2.
-
13. Large caudal vertebra seen from above. *J. c.* 5, no. 9.
 14. The same specimen seen from beneath, p. 75.
 15. Left side of the same specimen.
 16. Posterior aspect of the same specimen.



Cranium.

- Fig. 1. Occipital aspect of the skull of a Pterosaurian. *J.* c. 8, no.2, p. 84.
2. Anterior aspect of the same skull, showing a transverse section of the brain cavity fractured through the parietal bones. At its base on each side are seen the optic lobes.
3. Anterior aspect of a Pterodactyle skull of a different genus. *J.* c. 8, no. 1. The frontal bones have come away from the parietal at the suture, p. 80.
4. Superior aspect of the same specimen looking upon the parietal, supra-occipital, and ex-occipital bones.
5. Occipital aspect of the same specimen, showing the foramen magnum, the absence of the basi-occipital bone, and the basi-sphenoid mass.
6. Side view of the same specimen, showing below the girdling occipital crest the excavation for the quadrate bone's articulation with the skull, and the forward prolongation of the basi-sphenoid mass.
7. Palatal aspect of the basi-sphenoid bone. *J.* c. 9. To be compared with the small triangular-mass in fig. 5, p. 85.
8. Side view of the ethmo-sphenoid mass, *J.* c. 9, showing the lateral boundary of the front of the cerebral hemispheres, p. 85.
9. Posterior aspect of the same specimen, showing parts of the cups which covered the anterior termination of the cerebral lobes.
10. Anterior view of the cerebral lobes in a natural mould of the brain, in the collection of J. F. Walker, Esq. It may be compared with figs. 2. and 9, p. 87.
11. Superior aspect of a natural mould of the brain, showing the outline of the cerebral lobes, and the cerebellum between them behind. Portions of bone in the temporal region are left attached, p. 87.
12. Side view of the same specimen; one cerebral lobe is seen behind the other. The anterior termination of this figure may be compared with the posterior outline in fig. 8.
13. Side view of the basi-occipital bone, p. 78.
14. Palatal aspect of quadrate bone, showing the articulation for the lower jaw, and the thin quadrato-jugal attached to its outside, p. 89.
15. Exterior aspect of the quadrato-jugal and quadrate bones. Above the articulation in German species is the outline of orbit of the eye.
16. Anterior aspect of the distal end of a left quadrate bone.
17. Posterior aspect of the same specimen, showing the wing for the pterygoid articulation.



Facial Bones and Lower Jaw.

- Fig. 1. Side view of the dentary bone of *Ornithocheirus machaerorhynchus*, showing its posterior attenuation towards the palate. *J.* c6. 33. 1, p. 113.
2. Superior aspect of the same specimen, showing the palatal groove and tooth sockets.
3. Articular end of left ramus of mandible, *J.* c4, showing its posterior termination, p. 91.
4. Articular end of left ramus of mandible, *J.* c6. 32. 2, fractured through the articulation.
5. Side view of anterior part of dentary bone of *Ornithocheirus Cuvieri*? *J.* c. 15, p. 113.
6. Side view of anterior part of premaxillary bone of *Ornithocheirus microdon*, fractured at both ends. *J.* c. 29, p. 116.
7. Palatal aspect of the same specimen, showing the palatal ridge and tooth sockets.
8. Palatal aspect of anterior part of premaxillary bone of *Ornithocheirus denticulatus*. *J.* c5. 28. 1, p. 122.
9. Side view of the same specimen.
10. Tooth showing absorption by the successional tooth, on the inner side of the fang. *J.* c. 27, no. 10, p. 92.
11. Tooth. *J.* c. 1. 1. 4.
12. Fang of a large tooth. *J.* c. 27, no. 34.
13. Undetermined [? Pterigoid end of palatine bone]. *J.* c. 1. 2. 7, p. 91.
14. Other side of same specimen.
15. ?*Vomar*, side view. *J.* c. 10, no. 2, p. 88.
16. ?Palatal view of the same specimen.
17. Pelvis with a bone attached like the middle part of *J.* c. 10, no. 2. ? Neural arch of sacral vertebra.

