

**The Pterosaur Database**

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Lydekker R., 1888, Catalogue of the fossil Reptilia and Amphibia in the British Museum (Natural History). Part I. London, pp. 2–42.

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CATALOGUE  
OF THE  
FOSSIL REPTILIA  
AND  
AMPHIBIA  
IN THE  
**BRITISH MUSEUM**  
(NATURAL HISTORY),  
CROMWELL ROAD, S.W.  
**PART 1.**

CONTAINING

THE ORDERS - ORNITHOSAURIA, CROCODILIA, DINOSAURIA,  
SQUAMATA, RHYNCHOCEPHALIA, AND,  
PROTEROSAURIA .

BY

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LONDON.

PRINTED BY ORDER OF THE TRUSTEES.

1888.

ABBREVIATIONS OF SERIALS QUOTED IN THIS VOLUME.

[Where not otherwise stated, the works are in 8vo.]

*Abh. k.-bay Ak. Wiss.*-Abhandlungen der mathematisch-physikalischen Classe der königlich-bayerischen Akademie der Wissenschaften zu München. *Munich.*

*Acta Ac. Theod.-palat.*-Acta physica et historica Academiae electoralis scientiarum.....Theodoro-palatinae. *Mannheim.*

*Amer. Journ.*-The American Journal of Arts and Sciences. *Newhaven. (U.S.A.)*

*Amer. Nat.*-American Naturalist. Salem, Mass. *(U.S.A.)*.

*Ann. du Muséum.*-Annales du Muséum d'Histoire Naturelle à Paris, 4to. *Paris.*

*Ann. Gén. Sci. Phys. Brussels.*-Annales générales des Sciences physiques. *Brussels.*

*Ann. Mag. Nat. Hist.*-Annals and Magazine of Natural History. *London.*

*Ann. Sci. Géol.* Annales des Sciences Géologiques. *Paris.*

*Ann. Soc. B. Sci. Orléans.*-Annales de la Société Royale d'Orléans.

*Ann. Soc. Sci. Bruxelles.*-Annales de la Société Scientifique de Bruxelles.-*Brussels.*

*Anzeig. k. Ak. Wiss. Wien.*-Anzeiger der kaiserlichen Akademie der Wissenschaften zu Wien; mathematisch-naturwissenschaftliche Classe. *Vienne.*

*Arch. Mus. Teyler.* -Archives Musée Teyler. *Haarlem.*

*Arch. Sci. Phys. Nat.* -Bibliothèque Universelle et Revue Suisse; Archives des Sciences Physiques et Naturelles. *Geneva.*

*Archiv f. Nat.* -Archiv für die gesammte Natarlehre (Kastner), *Nuremberg.*

*Asiatic Researches.* - *Calcutta.*

*Ber. Senckenb. Nat. Ges.* -Bericht über die Senckenbergische Naturforschende Gesellschaft. *Frankfort.*

*Biol. Centralblati.* -Biologisches Ceutralblatt. *Rosenthal; Erlangen.*

*Bull. Ac. B. Belg.* -Bulletin de l'Académie Royale des Sciences....de Belgique. *Brussels.*

*Bull. Hus. B. Hist. Nat. Belg.* -Bulletin du Musée Royal d'Histoire Naturelle de Belgique. *Brussels.*

*Bull. Soc. Géol. France.* -Bulletin de la Société Géologique de la France. *Paris.*

*Bull. Soc. Linn. Normandie.* -Bulletin de la Société Linnéenne de Normandie. *Caen.*

*Charlesworth's London Geological Journal.* -*London.*

*Comptes Rendus.* -Competes Rendus hebdomadaires des Séances de l'Académie les Sciences. 4to. *Paris,*

*Comblait. nat. Ver. Regensberg.* -Correspondenz-Blatt des naturwissenschaftlichen Vereins in Regensberg. *Ratisbon.*

*Denkschr. k. Ak Munchen.* -Denkschriften der koniglichen Akademie der Wissenschaften zu München. 4to. *Munich.*

*Denkschr. k, Ak. Wiss. Wien.* -Denkschriften der kaiserlichen Akademie der Wissenschaften ;  
mathematisch-naturwisseuschaftliche Classe. 4to. *Vienna.*

*Geol. Mag.* -Geological Magazine. *London.*

*Jahrb. k. preuss. geol. Landesanst.* -Jabrbuch der königlichen preussischen geologischen Landesanstalt und Bergakademie.  
*Berlin.*

*Jahresh. Fer. Nat. Wurt.* -Jahreshefte des Vereins für vaterländische Naturkunde in Württernberg. *Stuttgart.*

*Journ. As. Soc. Beng.* -Journal of the Asiatic Society of Bengal. *Calcutta.*

*Journ. Linn. Sec.* -Journal of the Linnean Society; Zoology. 4to. *London.*

*Journal-Morphol.* -Journal of Morphology. *Boston, U.S.*

*London & Edinb. Philos. Mag.* -*London and Edinburgh Philosophical Magazine. London and Edinburgh.*

*Mem. Ai. R. Linc.* -Atti della Reale Accademia dei Lincei; Memorie. 4to. *Rome*

*Mem. du Muséum.* -Mémoires du Muséum d'Histoire Naturelle à Paris. 4to. *Paris,*

*Mem. Oeil. Surv. Enq.* -Memoirs of the Geological Survey of Great Britain. Pls., 4to. *London.*

*Mém. Soc. Géol. France.* -Mémoires de la Société Géologique de la France. 4to. *Paris.*

*Mem. Soc. Linn. Normandie,* -Mémoires de la Société Linnéenne de .Normandie. 4to. *Caen.*

*Mon. Pal. Soc.* -Monographs of the Palaeontographical Society. *London.*

*Museum Senckenbergq.* -Museum Senckenbergianum: Abhandlungren aus dem Gebiete der beschreffinden Naturgeschichte.  
4to. *Frankfort.*

*Neues Jahrb.* -Neues Jahrbuch fur Mineralogie, Geologie und Paldontologie. *Stuttgart.*

*Notiz. Gebiet. Nat. Heilk.* -Notizen aus dem Gebiete der Natur- und Heilkunde. *Erfurt.*

*Nouv. Archiv. d. Museum.* -Nouvelles Archives du Museum d'Histoire Naturelle a Paris. 4to. *Paris.*

*Nova Acta Ac. Caes. Leop. -Car.* -Nova Acta Academiae Caesareae Leepoldino-Carolince Germanicae Naturae Curiosorum.  
4to. *Dresden.*

*Pal. Abhandl.* -Paldontologische Abhandlungen. 4to. *Berlin.*

*Paleontographica.* -Palaeontographica: Beitrage zur Naturgesehichte der Vorwelt. 4to. *Cassel.*

*Palaeontologia Indica.* -Memoirs of the Geological Survey of India: Palaeontologia Indica. 4to, *Calcutta.*

*Phil. Trans.*-Philosophical Transactions of the Royal Society. 4to. *London*.

*Proc. Ac. Nat. Sci. Philad.*-Proceedings of the Academy of Natural Sciences of Philadelphia. *Philadelphia*.

*Proc. Amer. Assoc.*-Proceedings of the American Association for the Advancement of Science. *Salem*.

*Proc. Amer. Phil. Soc.*-Proceedings of the American Philosophical Society. *Philadelphia*.

*Proc. Boston Soc. Nat. Hist.*-Proceedings of the Boston Society of Natural History. *Boston, US*.

*Proc. Dorset Nat. Hist. Club.*-Proceedings of the Dorset Natural-History and Antiquarian Field Club. *Sherborne*.

*Proc. Geol. Assoc.*-Proceedings of the Geologists' Association. *London*.

*Proc. Geol. Soc.*-Proceedings of the Geological Society. *London*.

*Proc. R. Soc.*-Proceedings of the Royal Society. *London*.

*Proc. Zool. Soc.* -Proceedings of the Scientific Meetings of the Zoological Society of London. *London*.

*Quart. Journ. Geol. Soc.*-The Quarterly Journal of the Geological Society of London. *London*.

*Rec. Geol. Surv. Ind.*-Records of the Geological Survey of India. *Calcutta*.

*Rep. Brit. Assoc.*-Report of the British Association for the Advancement of Science. *London*.

*Rev. Quest. Sci.*-Revue des Questions scientifiques. *Brussels*

*Revue Encyclopédique* -Revue Encyclopédique, etc. *Paris*.

*Sitz. Ges. Morph. Munchen.*-Sitzungsberichte der Gesellschaft für Morphologie und Physiologie in München. *Munich*.

*Sitz. k-bay. Ak. Wiss.*-Sitzungsberichte der mathematisch-physikalischen Classe der k.-bayerischen Akademie der Wissenschaften zu München *Munich*.

*Sitz. k bohm. Ges. Wiss.*-Sitzungsberichte der k. böhmischen Gesell. seit der Wissenschaften. *Prague*.

*Smiths. Contrib. Knowl.*-Contributions to Knowledge by the Smithsonian Institution. 4to. *Washington*.

*Tram. Amer. Phil. Soc.*-Transactions of the American Philosophical Society. 4to. *Philadelphia*.

*Trans. Camb. Phil. Soc.*-Transactions of the Cambridge Philosophical Society. 4to. *Cambridge*.

*Trans. Geol. Soc.*-Transactions of the Geological Society of London. 4to. *London*.

*Trans. N. Zealand Inst.*-Transactions and Proceedings of the New Zealand Institute. *Wellington*.

*Ver. schw. nat. Ges.*-Verhandlungen der schweizerischen naturforschenden Gesellschaft. *Various Swiss Towns*.

*Vid. Med. Nat. Foren. Kjöbenhavn.* -Videnskabelige Meddelelser fra den Naturhistorisk Forening i Kjöbenhavn, *Copenhagen*.

*Wiegmann's Archiv.*-Archiv für Naturgeschichte....Herausg. von A F. A. Wiegmann. *Berlin*.

*Zool. Anzeig.* - Zoologischer Anzeiger. *Leipsic*.

CATALOGUE  
OF  
FOSSIL REPTILIA  
AND  
AMPHIBIA.

Class REPTILIA.

ARCHOSAURIAN BRANCH.

THE three Orders included in this branch present the following characters in common.

Teeth usually set in distinct sockets, never ankylosed to the jaws, and confined to premaxilla, maxilla, and dentary. No parietal foramen; two temporal arcades; infratemporal fossa not roofed over by bone; quadrate immovably fixed; frequently no columella (epipterygoid). Anterior ribs double-headed<sup>1</sup>; dorsal vertebrae with long transverse processes, which may be placed entirely on the arch; frequently more than two sacral vertebrae. No T-shaped interclavicle or precoracoid. Pectoral and pelvic limbs present; humerus without distal foramen, but occasionally with ectepicondylar groove; proximal row of tarsus consisting of astragalus, and calcaneum. Abdominal ribs generally present. In the limbs the number of phalangeals is liable to variation, although approximating, more or less, to the arrangement obtaining in the Squamata (infra). There may be a lateral vacuity in the mandible.

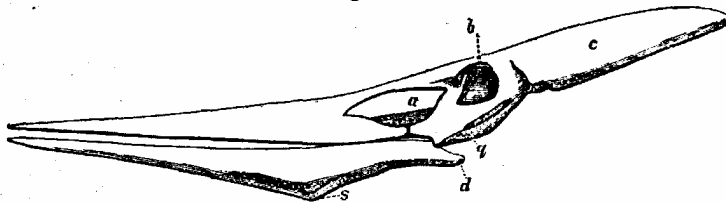
Order ORNITHOSAURIA.

Pectoral limb adapted to support a patagium; body probably naked. Vertebrae procoelous, without persistent neuro-central suture; cervicals longer than dorsals; precaudals not numerous; from three to six in sacrum<sup>2</sup>; cervical ribs, at least in *Rhamphorhynchus*, crocodilian<sup>3</sup>. Skull large, more or less bird-like in contour, with the bones ankylosed in the adult; jaws elongated, the greater portion of upper one formed by premaxilla; mandibular symphysis ankylosed; occipital condyle situated on base of cranium. Orbits large, usually with sclerotic ossifications<sup>4</sup>; narial aperture approximated to orbit, but separated by preorbital vacuity, with which it may be confluent. Teeth simple and pointed. Scapula and coracoid long and slender, latter without fontanelle; no clavicle; sternum broad, and keeled superiorly. Carpus with a proximal and distal bone; four functional digits in manus; phalangeals of ulnar digit<sup>5</sup> of manus much elongated, and terminal one not clawed. Pelvis weak; ilium generally extended on both sides of acetabulum; pubis directed forwards; ischium short and wide; pelvic limb short; fibula, and sometimes astragalus, united with tibia. Bones hollow, and frequently with pneumatic foramina. Habits volant. The brain seems to have been bird-like.

Suborder PTERANODONTIA.

Teeth absent; cranium (fig. 1) with a long, - backwardly-produced supraoccipital crest, and nares completely confluent with preorbital vacuity. Scapula generally articulating with spines of dorsal vertebrae, which are ankylosed together. This, Suborder is at present unrepresented in the Collection.

Fig. 1.



*Pteranodon longiceps*, Marsh. -Left lateral view of skull; from the Cretaceous of North America. 1/12.  
a, preorbital vacuity; b, orbit; c, supraoccipital crest; d, angle of mandible; g, quadrate;  
s, symphysis. (After Marsh.)

Suborder PTEROSAURIA.

Teeth in both jaws; cranium without backwardly-projecting supraoccipital crest, and with the nares usually more or less completely separated from the preorbital vacuity. Scapula (at least usually) not ankylosed to spines of dorsal vertebrae, which are from one another; four phalangeals in ulnar digit of manus.

Family PTERODACTYLIDAE.

Short tail; skull. bird-like, either long or short; jaws toothed to, their anterior extremity; nares usually large, and imperfectly separated from preorbital vacuity; length of metacarpus considerably exceeding half that of ulna; proximal half of tarsus distinct from tibia.

## Genus PTENODRACON<sup>6</sup>, Lydekker.

Skull very short, and the muzzle not produced into a rostrum; teeth confined to anterior extremity of jaws; nares and preorbitalvacuity apparently not separated ; cervical vertebrae comparatively short.

### **Ptenodracon brevirostris** (Sommerring<sup>7</sup>).

Syn. *Ornithocephalus brevirostris*, Sommerring<sup>8</sup>.

*Pterodactylus meyeri*, Munster<sup>9</sup>.

*Ornithocephalus mayeri*, Wagner<sup>10</sup>.

Zittel ('Palaeontographica,' vol. xxix. p. 79) suggests that the so-called *P. meyeri* is not distinct from the present species, which is fully confirmed by a comparison of the type specimens of the latter with his figure. The species is the only known example of the genus, and is about the size of a sparrow; the length of the cranium being 0,028.

*Hab.* Europe (Germany).

**42736.** A slab of lithographic limestone, containing the greater part of the skeleton ; from the Kimeridgian of Kelheim, Bavaria. Figured by von Meyer in the 'Fauna der Vorwelt-Rept. Lith. Schief.' pl. iv. fig. 2, as *Pterodactylus meyeri*, of which it is the type.

*Van Breda Collection. Purchased, 1871.*

**39352.** Cast of the preceding specimen.

*Purchased, 1865.*

## Genus PTERODACTYLUS, Cuvier<sup>11</sup>.

Syn. *Ornithocephalus*, Sommerring<sup>12</sup>.

*Macrotrachelus*, Giebel<sup>13</sup>.

*Diopecephalus*, Seeley<sup>14</sup>.

Skull slender and elongated into a narrow rostrum, of which the alveolar margins are straight; teeth placed vertically, and none extending behind the middle of the narial aperture; cervical vertebrae frequently much elongated; scapula and coracoid separate; pubis<sup>15</sup> short and rounded, without bony symphysis; pes with four functional digits, and frequently an aborted fifth digit with only one phalangeal<sup>16</sup>. None of the species attain a very large size.

### **Pterodactylus antiquus** (Sommerring<sup>17</sup>).

Syn. *Ornithocephalus antiquus*, Sommerring<sup>18</sup>.

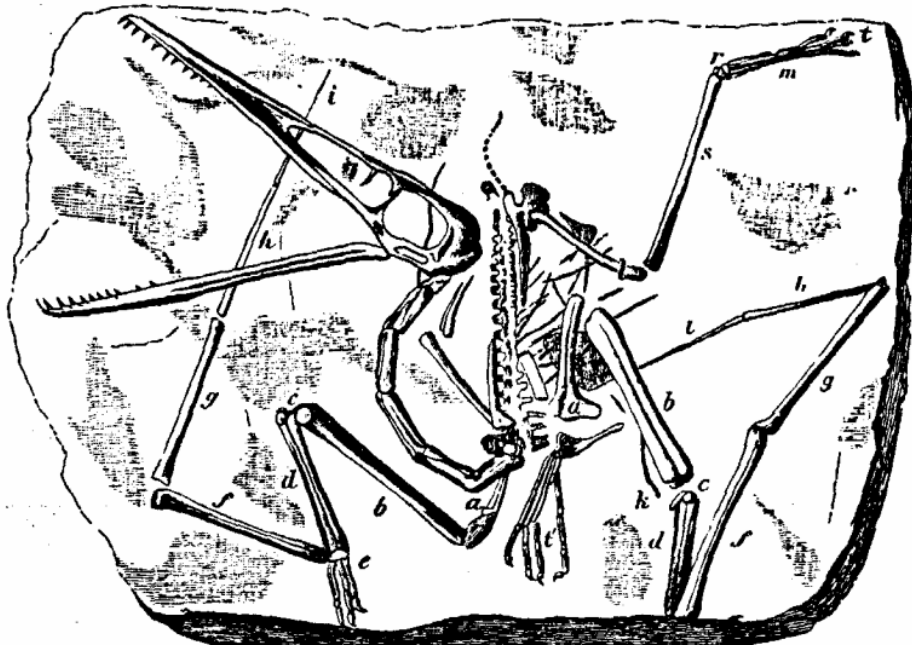
*Pterodactylus longirostris*, Cuvier<sup>19</sup>,

*Ornithocephalus longirostris*, Wagler<sup>20</sup>.

*Macrotrachelus longirostris*, Giebel<sup>21</sup>.

This is the type species, and is of medium size; the length of the cranium in the type specimen is 0,107, and that of the entire skeleton about 0,300. Typically the neck and rostrum are much elongated, and the teeth do not extend backwards to the narial aperture; but there are said to be transitions in this respect towards the next form<sup>22</sup>. The preorbital vacuity is partially separated from the narial aperture.

*Hab.* Europe (Germany).



**Fig. 2.** *Pterodactylus antiquus*. -Skeleton; from the Kimeridgian of Bavaria. About  $\frac{1}{2}$  a, humerus; b, radius and ulna; c, carpus; d, metacarpus; r, clawed digits; f, g, h, i, phalangeals of ulnar digit; k, rib; l, femur; s, tibia; t, tarsus; m, metatarsals; t, phalangeals of pes.

**R. 336.** Cast of a slab of lithographic limestone, containing the nearly entire skeleton. The original (fig. 2) was obtained from the Kimeridgian of Eichstädt, Bavaria; and is preserved in the Museum at Munich. It is the type of the genus and species, and is figured by Collini in the *Acta Ac. Theod. Palat.* vol. v. pl. v. (1784), without name; by Cuvier in the '*Ann. du Muséum*,' vol. xiii. pl. xxxi., without specific name; by Sömmerring in the '*Denkschr. k. Ak. München*,' vol. iii. pl. v.; by Cuvier in the '*Ossemens Fossiles*,' 2nd ed. vol. v. pt. 2, pl. xxiii., as *P. longirostris*; by Buckland in his *Geology and Mineralogy (Bridgewater Treatise)*, pl. xxi. ; and by Meyer in the '*Fauna der Vorwelt-Rept. Lith. Schiefer*,' pl. ii. fig. 1.

*Purchased, 1883.*

**R. 388.** A split block of lithographic limestone, containing the entire skeleton, but wanting the mandible and the anterior half of the cranium; from Eichstädt. This specimen is slightly smaller than the preceding, but otherwise agrees exactly.

*Purchased, 1884.*

### ***Pterodactylus kochi* (Wagner<sup>23</sup>).**

Syn. *Ornithocephalus kochi*, Wagner<sup>24</sup>.  
*Pterodactylus scolopaciceps*, Mayer<sup>25</sup>.  
*Diopecephalus kochi*, Seeley<sup>26</sup>.

Allied to the preceding, but typically of rather smaller size, with a shorter neck and rostrum, and the teeth extending back to the narial aperture. The length of the cranium varies from 0,066 to 0,080.

The identity of *P. scolopaciceps* with this form is given on the authority of Zittel<sup>27</sup>; by whom it is suggested that the species may be only a variety of *P. antiquus*.

*Hab.* Europe (Germany).

**37360.** Casts of a split slab of lithographic limestone, showing a considerable portion of the skeleton. The original is from the Kimeridgian of Eichstädt, Bavaria; and is preserved in the Museum at Munich; it is figured by Meyer in the '*Fauna der Vorwelt-Rept. Lith. Schiefer*,' pl. iii. fig. 2; and also by Zittel, in the *Palaeontographica*,' vol. xxix. pl. xiii. fig. 1.

*Purchased, 1863.*

**37359.** Cast of a slab of lithographic limestone, containing the entire skeleton. The history of the original is the same as that of the last specimen; and it is figured by Meyer, *op. cit.* pl. i. fig. 2, under the name of *P. scolopaciceps*, of which it is the type.

*Purchased, 1863.*

### ***Pterodactylus pulchellus*, Meyer<sup>28</sup>.**

Zittel<sup>29</sup> identifies with this species the somewhat smaller *P. elegans*, Wagner<sup>30</sup>; in the type specimen of the present form the length of the cranium is 0,0465; the rostrum is as much elongated as in the preceding species; but the teeth are confined to the extremities of the jaws. In some specimens of the so-called *P. elegans* the preorbital vacuity is separated from the narial aperture.

*Hab.* Europe (Germany).

**42735.** A slab of lithographic limestone, containing the impression of the nearly entire skeleton, and a few fragments of bone; from the Kimeridgian of Eichstädt, Bavaria. Counterfeit of the specimen figured by Meyer in the '*Fauna der Vorwelt-Rept. Lith. Schiefer*,' pl. i. fig. 1, under the name of *P. longirostris*; but subsequently made the type of the present species (see '*Palaeontographica*,' vol. x. p. 9).

*Van Breda Collection. Purchased, 1871.*

**39351.** Partially restored cast of the preceding specimen.

*Purchased, 1865.*

### ***Pterodactylus spectabilis*, Meyer<sup>31</sup>.**

This is a small species, apparently allied to *P. pulchellus*, but regarded by its describer as having a larger skull, and different proportions in some of the limb-bones. Its right to specific distinction may be doubtful<sup>32</sup>.

*Hab.* Europe (Germany).

**38150.** Cast of a split block of lithographic limestone, containing the nearly entire skeleton. The original (fig. 3) was obtained from the Kimeridgian of Eichstädt, Bavaria, and is the type; it is figured by Meyer in the '*Palaeontographica*,' vol. x. pl. i. (1861).

*Purchased, 1864.*

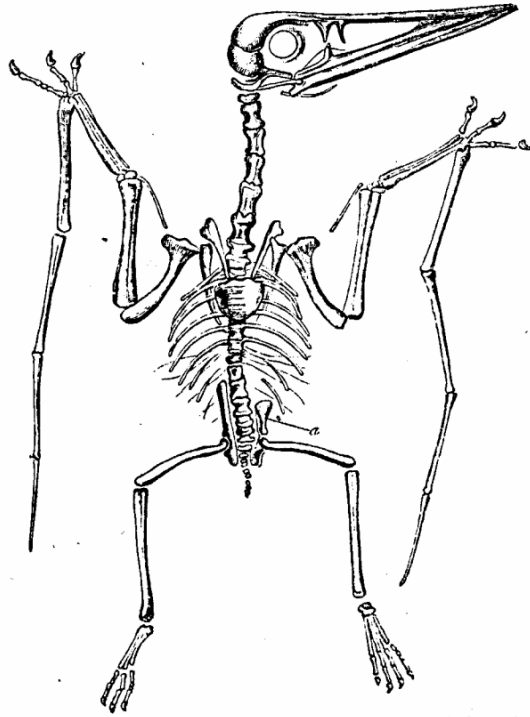


Fig. 3. *Pterodactylus spctabilis*.—The nearly entire skeleton, viewed from the ventral aspect; from the Kimeridgian of Bavaria. On the left side the pubis (prepubis) is shown at a, while on the right the ilium is exposed. 1/2.

### ***Pterodactylus rhamphastinus*** (Wagner<sup>33</sup>).

Syn. *Ornithocephalus rhamphastinus*, Wagner<sup>34</sup>.  
*Diopecephalus rhamphastinus*, Seeley<sup>35</sup>.

A large species, with the narial aperture and preorbital vacuity entirely confluent; the length of the cranium is 0,215; the teeth are short and stout, and extend unusually far back, reaching in the upper jaw nearly to the middle of the narial aperture; the cervical vertebrae are comparatively thick.

*Hab.* Europe (Germany).

**37363-4.** Two casts of a split slab of lithographic limestone, showing the greater portion of the skeleton. The original was obtained from the Kimeridgian of Daiting, Bavaria, and is the type of the species; it is figured by Wagner in the 'Abh. k\_bay. Ak. Wiss.' vol. vi. pt. i. pl. v.

*Purchased, 1863.*

### ***Pterodactylus longicollum***, Meyer<sup>36</sup>.

Syn. *Diopecephalus longicollum*, Seeley<sup>37</sup>.

A species of large size, but smaller than the preceding, with the narial aperture and preorbital vacuity entirely confluent; the length of the cranium is 0,145; the teeth are slender, and those of the upper jaw do not extend posteriorly to within a considerable distance of the narial aperture.

*Hab.* Europe (Germany).

**37990.** Cast of a slab of lithographic limestone, showing a considerable portion of the skeleton. The original is from the Kimeridgian of Eichstädt, Bavaria; and is figured by Meyer in the 'Fauna der Vorwelt-Rept. Lith. Schiefer,' pl. vii. figs. 1-3.

*Purchased, 1862.*

**37990 a.** Two casts of a split slab of lithographic limestone, showing some of the bones of the fore limb and pes of a Pterodactyle referred by Meyer to the present species. The original is from the Kimeridgian of Bavaria; and is figured by Meyer, op. cit. pl. vii. fig. 4.

*Purchased, 1862.*

### Genus **CYCNORHAMPHUS**, Seeley<sup>38</sup>.

Rostrum elongated and expanded into a broad, swan-like beak, with the teeth confined to its extremity; neck long; and (according to Seeley) the pubis of either side meeting in a bony symphysis. As mentioned by Zittel, the characters of the nares as given by Seeley require modification.

## **Cycnorhamphus suevicus** (Quenstedt<sup>39</sup>).

Syn. *Pterodactylus suevicus*, Quenstedt<sup>40</sup>.  
*Pterodactylus wurtembergicus*, Quenstedt<sup>41</sup>.  
*Pterodactylus eurychirus*, Wagner<sup>42</sup>.  
*Ornithocephalus eurychirus*, Wagner<sup>43</sup>.

This is the only known species of the genus, and is of comparatively large size; the length of the cranium being 0,158.  
*Hab.* Europe (Germany).

**37370 x** Cast of a slab of lithographic limestone, showing the nearly entire skeleton. The original was obtained from the Kimmeridgian of Nürtingen, Würtemberg; and is the type of the species; it is described and figured by Quenstedt in the memoir cited.

*Purchased, 1863.*

### *Family Uncertain.*

Tail apparently long; jaws toothed to their anterior extremity; relative lengths of metacarpus and ulna unknown; skull long or short; astragalus, at least in some instances, united to tibia.

It is uncertain whether the members of this group should be included in the *Rhamphorhynchidae*, or should form a distinct family.

## Genus **ORNITHOCHIRUS**, Seeley<sup>44</sup>.

Including *Palaeornis*, Mantell<sup>45</sup>, *Cimoliornis*, Owen<sup>46</sup>. *Coloborhynchus*, Owen<sup>47</sup>, *Criorhynchus*, Owen<sup>48</sup>, *Doratorhynchus*, Seeley<sup>49</sup>, *Cretornis*, Fritsch<sup>50</sup>.

All the species are known by such fragmentary remains that no accurate diagnosis can be given. In the upper jaw the anterior teeth frequently curve in advance of the muzzle; the teeth may be rounded or compressed, and are frequently inclined forwards; there is a median longitudinal ridge on the palate, and a corresponding groove in the mandibular symphysis; the scapula and coracoid are frequently ankylosed. The skull may be either short, or with a long rostrum. Seeley<sup>51</sup> considers that there are only three digits in the manus of some species; and there appears to have been a long tail<sup>52</sup> in at least some forms.

This genus includes the largest known members of the Suborder; if less imperfect specimens were forthcoming it might probably be subdivided into groups or genera, but at present the only safe course seems to arrange the species according to the geological horizons from which the type examples were obtained. Many of the species are probably invalid.

### *A. Species typically from the Chalk.*

## **Ornithochirus compressirostris** (Owen<sup>53</sup>).

Syn. *Pterodactylus compressirostris*, Owen<sup>54</sup>.

Referred to this genus by Seeley ('Ornithosauria,' p. 92). The species is of very large size, and has the skull produced into a very long and narrow rostrum, with numerous small teeth. Owen estimates the length of the entire skull at about 0,450.  
*Hab.* Europe (England).

**39410.** Two fragments of the cranial rostrum; from the Lower Chalk of Burham, Kent. These specimens are the type, and are figured by Owen in his '1 Cretaceous Reptilia,' pl. xxviii. figs. 8-10, a restoration of the skull being given in pl. xxvii. fig. 1.

*Bowerbank Collection. Purchased, 1865.*

**39416.** Fragment of a rostrum probably belonging to this species; from the Chalk of Kent.

*Same history.*

*The following specimens are referred to this species by Owen.*

**49004.** The imperfect radius and ulna; from the Chalk of Burham. (*fig.*) Figured by Owen, *op. cit.* pl. xxx. figs. 5, 5 a.

*Toulmin-Smith Collection. Purchased, 1869.*

**39411.** An imperfect wing-bone (? first phalangeal of the ulnar digit); from Burham. Figured by Owen, *op. cit.* pl. xxx. *fig. 4.*

*Bowerbank Collection. Purchased, 1865.*

**49003.** The imperfect proximal extremity of a bone, apparently homologous with the preceding; from Burham. Figured by Owen, *op. cit.* pl. xxxii. *fig. 2.*

*Toulmin-Smith Collection. Purchased, 1869.*



***Ornithochirus cuvieri*** (Bowerbank<sup>55</sup>).

Syn. *Pterodactylus cuvieri*, Bowerbank<sup>56</sup>.  
*Coloborhynchus cuvieri*, Owen<sup>57</sup>.

Referred to this genus by Seeley ('Ornithosauria,' p. 113), by whom it is provisionally recorded from the Cambridge Greensand. Fully equal in size to the preceding species, but with the rostrum shorter and thicker, and the teeth larger and less numerous, and characterized by a marked lateral compression. The limb-bones referred by Owen to this species are regarded as indicating an expanse of wing of not less than 18 feet.

*Hab.* Europe (England).

**39409.** The greater portion of the cranial rostrum, showing the dental alveoli (some with tooth-germs) and two detached teeth; from the Lower Chalk of Burham, Kent. This *type*, and is figured by Bowerbank in the Proc. Zool. Soc.' 1851, pl. iv. (lettered *longirostris*), and also by Owen in his 'Cretaceous Reptilia' (Mon. Pal. Soc.), pl. xxviii. figs. 1-7.  
*Bowerbank Collection. Purchased, 1865.*

*The following specimens are provisionally referred to this species.*

**37982.** An imperfect tooth of very large size; from the Lower Chalk of Halling, Kent.

*Purchased 1864*

**41637.** An imperfect bone of the wing; from the Lower Chalk of Burham, Kent. Figured by Owen, *op. cit.* pl. xxx, figs. 1-3. (? First phalangeal of ulnar digit.)

*Toulmin-Smith Collection. Purchased, 1869.*

***Ornithochirus* (?) *giganteus*** (Bowerbank<sup>58</sup>).

Syn. *Pterodactylus giganteus*, Bowerbank<sup>59</sup>.  
*Pterodactylus conirostris*, Owen<sup>60</sup>.

Smaller than the preceding, with the skull not produced into a distinct rostrum, and with the teeth short, rounded, and not projecting in advance of the muzzle; scapula and coracoid ankylose. The form of the muzzle approximates to that of *Scaphognathus crassirostris*, but the teeth do not extend so far back. The calculated length of the cranium on the proportions of that of the latter would be 0,255.

*Hab.* Europe (England).

**39412.** The associated anterior extremities of the upper and lower jaws, pectoral girdle, and fragments of bones; from the Lower Chalk of Burham, Kent. These specimens may be regarded as the types; and are figured by Bowerbank in the 'Quart. Journ. Geol. Soc.' vol. ii. pl. i. fig. 1; in Dixon's 1 Geology, of Sussex,' pl. xxxviii. figs. 4, 5 (as *P. conirostris*); and in Owen's 'Cretaceous Reptilia,' pl. xxxi. fig 8. 1 - 6.

*Bowerbank Collection. Purchased, 1865.*

*The following specimens from the same locality are referred by Owen to this species; all belong to the Bowerbank Collection.*

**39413.** An imperfect bone (?part of sternum). Figured by Owen, *op.cit.* pl. xxxi. fig. 9.

**39415 a.** Termination of a long-bone. Figured by Bowerbank, *op. cit.* pl. i. fig. 5, and by Owen, *op. cit.* pl. xxxi. fig. 10.

**39417.** Shaft of a bone of the wing. Figured by Bowerbank, *op. cit.* pl. i. fig. 6; by Dixon, *op. cit.* pl. xxxviii. fig. 7 (as *P. conirostris*); and by Owen, *op. cit.* pl. xxxi. fig. 11.

**39414.** Part of the shaft of a long-bone (?tibia). Figured by Bowerbank, *op. cit.* pl. i. fig. 3; and by Owen, *op. cit.* pl. xxxi. fig. 12.

**39415 b.** Two portions of long-bones, and portion of a rib. Figured by Bowerbank, *op. cit.* pl. i. fig. 4; and by Owen, *op. cit.* pl. xxxi. fig. 13.

**39413.** Fragment of a long-bone. Figured by Bowerbank, *op. cit.* (Fig.) pl. i. fig. 7, and by Owen, *op. cit.* pl. xxxi. fig. 14.

***Ornithochirus diomedius*** (Owen<sup>61</sup> ex Gervais).

Syn. *Climoliornis diomedius*, Owen<sup>62</sup>.

It is probable that this form is identical with one of the preceding species.

*Hab.* Europe (England).

**39418.** The distal extremity of the ulnar metacarpal; from the Middle Chalk of Kent. This specimen is the type, and is figured by Owen in the 1 Trans. Geol. Soc.' ser. 2, vol. vi. pl. xxxix. fig. 2 (as a bird-bone); in his 1 British Fossil Mammals and Birds,' p. 545, fig. 230 (,Is *Cimoliornis*); and in his 'Cretaceous Reptilia' (Mon. Pal. Soc.), pl. xxxii. fig. 4.

*Bowerbank Collection. Purchased, 1865.*

### **Ornithochirus hlavatschi** (Fritsch<sup>63</sup>).

Syn. *Cretornis hlavatschi*, Fritsch<sup>64</sup>.

The type of *Cretornis*. Of medium size; known by the humerus; may be identical with one of the preceding.  
*Hab.* Europe (Bohemia).

**R. 1031.** Cast of the left humerus and some imperfect metacarpals and phalangeals of the wing. The originals, which are the types, were obtained from the Upper Chalk (Iserschichten) of Zarecka Lhota, near Chotzen, Bohemia; and are described by Fritsch in the 'Sitz. k. böhm. Ges. Wiss.' for 1880, pp. 275-6, as belonging to a Bird. The humerus (described by Fritsch as a coracoid) has a length of 0,074; and, though somewhat smaller, closely resembles the Wealden specimen No. 2353.

*Presented by Dr. Anton Fritsch, 1887.*

*Specifically undetermined specimens from the Chalk.*

**41638.** The distal extremity of the ulnar metacarpal; from the Middle Chalk of Kent. Figured in the 'Quart. Journ. Geol. Soc.', vol. iv. pl. ii. figs. 4, 5; and in Owen's 'Cretaceous Reptilia' (Mon. Pal. Soc.) pl. xxxii. fig. 5.

*Toulmin-Smith Collection. Purchased, 1869.*

**39417.** An homologous fragment; from the same horizon.

*Bowerbank Collection. Purchased, 1865.*

**49005.** Part of shaft of a long-bone (? femur); from the Lower Chalk of Burham, Kent. Figured by Owen, op. cit. pl. xxxii. fig. 3.

*Smith Collection. Purchased, 1878.*

**R. 39.** Four imperfect long-bones ; from the Chalk of Snodland, Kent.

*Shrubsole Collection. Purchased, 1880.*

*B. Species typically from the Cambridge Greensand.*

### **Ornithochirus sedgwicki** (Owen<sup>65</sup>).

Syn. *Pterodactylus sedgwicki*, Owen<sup>66</sup>.  
*Coloborhynchus sedgwicki*, Owen<sup>67</sup>.

Apparently allied to *O. cuvieri*, but with the anterior dental alveoli relatively larger, a corresponding increase in the depth of the muzzle, and a larger total number of alveoli in a corresponding space.

*Hab.* Europe (England).

**35213.** Fragment of the premaxillary rostrum, showing three pairs of dental alveoli; from the Cambridge Greensand.

*Purchased, 1859.*

**35220.** A smaller fragment of the premaxillary rostrum, showing two pairs of dental alveoli; from the same formation.

*Purchased, 1859.*

**35376.** Anterior extremity of the mandibular symphysis; from the same formation. This specimen was determined by Sir R. Owen, and agrees generally with the type mandible figured in his *Cretaceous Reptilia* (Mon. Pal. Soc.), 1<sup>st</sup> Suppl. p. 2 (1859), pl. i. fig. 2, although of somewhat greater depth.

*Purchased, 1859.*

**35412 a.** Greater portion of a smaller mandibular symphysis agreeing in general characters with the preceding specimen, and perhaps belonging to this species; from the same formation. Closely resembles the specimen figured by Owen, op. cit. pl. i. fig. 7.

*Purchased, 1859.*

**39105.** Part of a similar mandibular symphysis ; from the same formation.

*Bowerbank Collection. Purchased, 1865.*

### **Ornithochirus fittoni** (Owen<sup>68</sup>).

Syn. *Pterodactylus fittoni*, Owen<sup>69</sup>.

Referred to this genus by Seeley ('*Ornithosauria*,' p. 118). The premaxillary rostrum is much less deep than in the preceding species; and the dental alveoli are relatively larger, and separated from one another by longer intervals.

*Hab.* Europe (England).

**R. 510.** The extremity of a mandibular symphysis, showing three pairs of dental alveoli, which agree in relative size and position with those of the type premaxillary rostrum figured by Owen, op. cit. pl. i. fig. 3.

*Purchased, 1885.*

**Ornithochirus (?) simus** (Owen<sup>70</sup>).

Syn. *Pterodactylus simus*, Owen<sup>71</sup>.  
*Criorhynchus simus*, Owen<sup>72</sup>.  
(?) *Pterodactylus woodwardi*, Owen<sup>73</sup>.

Of very large size, and characterized by the great depth and bluntness of the muzzle. If, as is very probable, this species should prove generically distinct from the preceding forms, the name *Criorhynchus* might be retained for it<sup>74</sup>.

*Hab.* Europe (England).

- 35412.** Fragment of the muzzle; from the Cambridge Greensand. This specimen, although rather smaller, agrees with the type example figured by Owen in his 'Cretaceous Reptilia,' 3rd Suppl. pl. i. figs. 1, 2, as belonging to the upper jaw, but is referred by Seeley ('Ornithosauria,' p. 127) to the mandible.  
*Purchased, 1859.*
- R. 546.** Fragment of the extremity of the premaxillae, not improbably belonging to a larger individual of the present species; from Cambridgeshire. This specimen, which apparently agrees in character with the one figured by Owen, op. cit. pl. ii. fig. 3, under the name of *Pterodactylus woodwardi*, if rightly determined, would indicate the correctness of Seeley's view as to the position of the type specimen, and also that *P. woodwardi* may be a synonym of this form.  
*Purchased, 1885.*
- 35418.** An imperfect upper tooth, agreeing with the second tooth in the preceding specimen; from Cambridgeshire. Figured by Owen, op. cit. pl. iv. fig. 4, and referred to the present species.  
*Purchased, 1859.*
- 35418 a.** A very similar specimen. From Cambridgeshire.  
*Same history.*
- Specifically undetermined specimens from, the Cambridge Greensand.  
(Some of these bones may perhaps belong to the Pteranodontia<sup>75</sup>.)*
- 35435.** Fragment apparently belonging to the premaxillary rostrum, containing one broken tooth.  
*Purchased, 1859.*
- 41787.** Hinder portion of an Ornithosaurian or Avian cranium.  
*Purchased, 1869.*
- 44173.** Model of a natural cast of the brain-cavity. The original is preserved in the Geological Museum, Cambridge, and is described and figured by Seeley in his 'Ornithosauria,' p. 87, pl. xi. figs. 10-12.  
*Presented by Mr. H. Keeping.*
- 35436.** Fragment of a rostrum, with three pairs of dental alveoli.  
*Purchased, 1859.*
- R. 485.** The extremity of a mandibular symphysis, showing three pairs of dental alveoli, one of which contains a broken tooth.  
*Presented by Sir R. Owen, K.C.B.*
- 35241.** A large broken tooth (? *O. simus*).  
*Purchased, 1859.*
- R. 474.** Seven teeth, mostly imperfect.  
*Presented by Sir R. Owen, K.C.B.*
- 35241 a, 35419, 35427.** Sixteen more or less imperfect teeth.  
*Purchased, 1859.*
- 35411.** The axis vertebra of a large species.  
*Purchased, 1859.*
- R. 547.** The conjoint atlas and axis vertebrae of a considerably smaller form.  
*Purchased, 1885.*
- R. 548.** The conjoint atlas and axis vertebrae of a rather smaller individual.  
*Same history.*
- 35410.** The conjoint atlas and axis vertebrae, in which the centrum of the latter is rather shorter than in the preceding specimen.  
*Purchased 1859.*
- 35410 a.** A very similar specimen.  
*Purchased, 1859.*
- 35242.** Another similar specimen, wanting the greater portion of the neural spine.  
*Purchased, 1859.*

- 35829.** The axis vertebra of a form in which the centrum. is shorter than in the preceding. *Purchased, 1859.*
- 43982.** A very similar specimen. *Purchased, 1872.*
- 43982 a.** The axis vertebra of a smaller form. *Purchased, 18 72.*
- 46370.** Four imperfect cervical<sup>76</sup> vertebrae of a large species. *Purchased, 1875.*
- 35215, 35223-4, 35423-4.** Five imperfect cervical vertebrae of large size. *Purchased, 1859.*
- 35215 a.** A large imperfect cervical vertebra. *Purchased, 1859.*
- 35245.** An imperfect cervical vertebra of a large species. *Purchased, 1859.*
- R. 475.** A large imperfect cervical vertebra. *Presented by Sir R. Owen, K.C.B.*
- R. 56.** Two large imperfect cervical vertebrae. *Purchased, 1881.*
- R. 549.** Five imperfect cervical vertebrae belonging to individuals of different sizes. *Purchased, 1885.*
- 43983.** An imperfect cervical vertebra of a species of medium size. *Purchased, 1872.*
- 43983 a.** An imperfect cervical vertebra of a smaller form. *Purchased, 1872.*
- 41786.** Part of a cervical vertebra of a still smaller form. *Purchased, 1869.*
- 35243.** Two imperfect vertebrae provisionally referred to the cervical region. *Purchased, 1859.*
- R. 475.** A dorsal vertebra. Very similar to the specimen figured by Seeley, op. cit. pl. x. figs. 2-4. *Presented by Sir R. Owen, K.C.B.*
- 35425.** A very similar dorsal vertebra. *Purchased, 1859.*
- 35244.** An imperfect dorsal vertebra of similar type. *Purchased, 1859.*
- 35244 a.** The centrum of a small trunk vertebra. *Purchased, 1859.*
- 35377.** A lumbar vertebra. *Purchased, 1860.*
- 35246.** An imperfect anterior sacral vertebra. *Purchased, 1859.*
- R. 459.** A caudal vertebra of a large species. Somewhat smaller than the specimen figured by Seeley, op. cit. Pl. X. figs. 13, 14. *Presented by Sir R. Owen, K.C.B.*
- 35248.** Four caudal vertebrae of rather smaller size. *Purchased, 1859.*
- 35247.** A smaller imperfect caudal vertebra. *Purchased, 1859.*
- 35249.** An imperfect caudal vertebra of still smaller size. *Purchased, 1859.*

- 35421.** Cast of the anterior portion of the sternum of a large species. The original is preserved in the Geological Museum at Cambridge, and is figured by Owen, *op. cit.* 3rd Suppl. *pl. ii. figs. 7-9*, and also by Seeley, *op. cit.* *pl. i. fig. 1.*  
*Purchased, 1859.*
- R. 541.** The imperfect anterior portion of a rather smaller sternum.  
*Purchased, 1885.*
- 41782.** The anterior portion of a sternum, agreeing in size with the preceding.  
*Purchased, 1869.*
- 35405.** The anterior portion of a smaller sternum. Figured by Owen, *op. cit.* 3rd Suppl. *pl. ii. figs. 10-12.*  
*Purchased, 1859.*
- 35409.** The glenoidal extremity of the anchylosed right scapula and coracoid of a large species. Very similar to the specimen figured in Owen's 'Cretaceous Reptilia,' 1st Suppl. *pl. i. figs. 1-3.*  
*Purchased. 1860.*
- 35226.** A more imperfect, but otherwise very similar, specimen belonging to the opposite side.  
*Purchased, 1859.*
- R. 553.** The glenoidal extremity of the anchylosed scapula and coracoid of a smaller form.  
*Purchased, 1885.*
- R. 552.** The glenoidal extremity of a smaller anchylosed scapula and coracoid.  
*Same history.*
- R. 551.** The glenoidal extremity of the anchylosed right scapula and coracoid of a small species.  
*Same history.*
- 41780.** The glenoidal extremity of the right scapula.  
*Purchased, 1869.*
- R. 554.** The proximal extremity of the right Scapula.  
*Purchased, 1885.*
- 35231.** Two specimens of the glenoidal extremity of the coracoid.  
*Purchased, 1859.*
- 35232.** The glenoidal half of a coracoid.  
*Purchased, 1859.*
- 35378.** The proximal extremity of the right humerus of a large species.  
*Purchased, 1860.*
- 35214.** The proximal extremity of the right humerus of an equally large form.  
*Purchased, 1859.*
- 35225.** The proximal extremity of a rather smaller left humerus.  
*Purchased, 1859.*
- 35408.** The proximal extremity of a nearly similar left humerus.  
*Purchased, 1860.*
- 35830.** The proximal extremity of a rather smaller right humerus.  
*Purchased, 1860.*
- 41779.** The proximal extremity of a considerably smaller left humerus.  
*Purchased, 1869.*
- 35413.** The slightly imperfect right humerus of a small form. Very similar to the specimen figured by Seeley, 'Ornithosauria,' *pl. iv. fig. 1.*  
*Purchased, 1860.*
- R. 1032.** Cast of the distal extremity of the left humerus of a large species. The original is preserved in the Geological Museum at Cambridge, and is figured by Seeley, *op. cit.* *pl. iv. fig. 13.*  
*Presented by Mr. H. Keeping.*
- 41778.** The proximal extremity of the ulna of a large species.  
*Purchased, 1869.*
- 35229.** The proximal extremity of the ulna of a small species.  
*Purchased, 1859.*
- 41777.** The distal extremity of the ulna of a very large species.  
*Purchased, 1869.*

- 35324.** The distal extremity of a rather smaller ulna. *Purchased, 1859.*
- B. 555.** A specimen which is apparently the distal portion of the ulna of a small species. *Purchased, 1885.*
- 41781.** The distal portion of the radius of a small species. *Purchased, 1869.*
- 37954.** The right proximal carpal of a large species. Very similar to the specimen figured by Seeley, *op. cit.* pl. v. fig. 1.  
*Presented by Sir R. Owen, K.C.B., 1863.*
- 43987.** The right proximal carpal of equal size with the preceding. *Purchased, 1872.*
- 35235.** The left proximal carpal of a specifically distinct form. *Purchased, 1859.*
- 35330.** The left proximal carpal. *Purchased, 1859.*
- 35422.** A rather smaller left proximal carpal. *Purchased, 1859.*
- R. 543.** The left distal carpal of a very large species. *Purchased, 1885.*
- 36156.** The right distal carpal of a rather smaller form. *Purchased, 1861.*
- 35407.** The imperfect left distal carpal of an apparently similar form. *Purchased, 1860.*
- 35237.** A slightly smaller right distal carpal. *Purchased, 1859.*
- R. 544.** A very similar imperfect right distal carpal. *Purchased, 1885.*
- 35405.** A nearly similar imperfect left distal carpal. *Purchased, 1860.*
- 35420.** The right distal carpal of a rather smaller form. Figured by Owen in his 'Cretaceous Reptilia,' 3rd Suppl. pl. iv. figs. 7, 10. *Purchased, 1859.*
- R. 1032 a.** Cast of a similar right distal carpal. The original is in the Geological Museum, Cambridge, and is said to be the one figured by Seeley in his 'Ornithosauria,' pl. v. figs. 7-10. *Presented by Mr. H. Keeping.*
- R. 550.** An imperfect right distal carpal, agreeing in size with the preceding specimen. *Purchased, 1885.*
- R. 542.** The distal extremity of the ulnar metacarpal of a large species. Very similar to the specimen figured by Owen, *op. cit.* 1st Suppl; pl. iv. figs. 9-11. *Same history.*
- 39108.** A rather larger specimen of a corresponding fragment of the opposite side, showing none of the shaft. *Bowerbank Collection. Purchased, 1865.*
- 39107.** A rather smaller. specimen of a corresponding fragment, with a portion of the shaft. *Same history.*
- 43984.** A similar specimen, without any of the shaft. *Purchased, 1872.*
- 43985.** Four specimens of the distal extremity of the homologous bone, two of which show portions of the shaft. *Purchased, 1872.*
- 35239.** The imperfect proximal extremity of the first phalangeal of the ulnar digit of the manus of a very large species. *Purchased, 1859.*
- 39106.** The proximal extremity of the homologous bone of a smaller form. This bone agrees closely with the less imperfect one figured by Seeley, *op. cit.* pl. vii. fig. 1. *Bowerbank Collection. Purchased, 1865.*

- 35227.** A very similar specimen.  
*Purchased, 1859.*
- 41783.** The imperfect proximal portion of an homologous bone, apparently agreeing very closely with the preceding.  
*Purchased, 1869.*
- 35325.** The distal extremity of the first phalangeal of the ulnar digit of the manus of a large species.  
*Purchased, 1859.*
- 35325 a.** A similar fragment, of rather smaller size.
- 35216.** Fragment of the shaft, of a wing-bone of a large species.  
*Purchased, 1859.*
- 35228, -328 -9.** Five fragments of shafts of smaller wing-bones.  
*Purchased, 1859-60.*
- R. 487.** The imperfect terminal phalangeal of one of the clawed digits of the manus. Very similar to the specimen figured by Seeley, *op. cit. pl. viii. fig. 16.*  
*Presented by Sir R. Owen, K.C.B*
- 41784.** Termination of a bone said to belong to the second phalangeal of the ulnar digit of the manus.  
*Purchased, 1869.*
- 43988.** The proximal portion of the femur of a small species. Agrees closely with the entire bone figured by Seeley *v, op. cit. pl. viii. figs. 5, 6.*  
*Purchased, 1872.*
- 35230.** The distal half of the left femur of a form agreeing closely in size with the preceding.  
*Purchased, 1859.*
- R. 478.** The distal portion of a rather smaller left femur.  
*Presented by Sir R. Owen, K.C.B.*
- 35230 a.** The proximal portion of a tibia. Slightly smaller than the specimen figured by Seeley, *op. cit. pl. viii. figs. 13, 14.*  
*Purchased, 1859.*

*C. Species typically from the Gault.*

**Ornithochirus daviesi** (Owen<sup>77</sup>).

Syn. *Pterodactylus daviesi*, Owen<sup>78</sup>.

A species agreeing approximately in size with *O. fittoni*, but with smaller and more numerous teeth; it appears highly probable that this form is really identical with *O. denticulatus*, Seeley<sup>79</sup>, from the Cambridge Greensand.  
*Hab.* Europe (England).

- 43074.** The extremity of the mandibular rostrum; from the Gault (Fig.) of Folkestone. This specimen is the type, and is figured by Owen, *op. cit. pl. i. figs. 5, 6.* There are five dental alveoli in a space equal to that which contains three in the mandible referred to *O. fittoni*.  
*Purchased, 1871.*

*Specifically undetermined specimens from the Gault of Folkestone.*

- R. 47.** Four imperfect bones belonging to the wing.  
*Purchased, 1881.*
- 37238.** Two imperfect wing-bones.  
*Purchased, 1863.*
- 40096.** Two imperfect wing-bones.  
*Purchased, 1866.*
- 47212.** The nearly entire tibia, of which the total length is 0,220. As in *Dimorphodon*, this bone has a distal trochlea, looking as though the astragalus were ankylosed to it.  
*Purchased, 1876.*

*D. Species typically from the Wealden.*

**Ornithochirus nobilis** (Owen<sup>80</sup>).

*Syn. Pterodactylus nobilis*, Owen<sup>81</sup>.

This species is of large size, but is too imperfectly known to admit of its distinctive characters being given.

*Hab.* Europe (England).

**36552.** Part of the second (?) phalangeal of the ulnar digit of the manus; from the Wealden of the Isle of Wight. This specimen is figured by Owen in his 'Liassic Reptilia,' pt. ii. pl. xix. fig. 10, and is the type.

*Mantell Collection. Purchased, 1853.*

**36552 a.** Fragments of bones associated with the preceding.

*Same history.*

**R. 176.** Considerable portion of the skeleton of a large Ornithosaurian not improbably belonging to this species; from the Wealden of Brook, Isle of Wight. The skeleton is fragmentary, and much crushed; the hinder part of the cranium is preserved, as well as parts of the vertebral column and numerous portions of the wing-bones; the anterior part of the sacrum is well shown. The portion of the cranium has been bisected in order to show the brain-cavity; but the contour of the latter is not very clear.

*Fox Collection. Purchased, 1882.*

**Ornithochirus(?) clifti** (Mantell<sup>82</sup>).

*Syn. Palaeornis clifti*, Mantell<sup>83</sup>.  
*Pterodactylus clifti*, Bronn<sup>84</sup>.

The following specimens indicate a form considerably smaller than the preceding, which is provisionally referred to the present genus.

*Hab.* Europe (England).

**2353.** The proximal extremity of the left humerus; from the Wealden of Cuckfield, Sussex. This specimen is figured by Mantell in his 'Fossils of Tilgate Forest,' pl. viii. fig. 11 (1827), and also in the 'Trans. Geol. Soc.' ser. 2, vol. v. pl. xiii. fig. 3, as the bone of a bird; but was refigured by Owen in the 'Quart. Journ. Geol. Soc.' vol. ii. pp. 99-100, figs. 5, 7, and referred to the Ornithosauria.

*Mantell Collection. Purchased, 1830.*

**2353 a.** The imperfect distal part of apparently the same left humerus. Figured by Mantell, *op. cit.* p. viii. fig. 15, and pl. xiii. figs. 1, 1 a (as a bird-bone), and in his 'Medals of Creation,' 1st ed. vol. i. p. 806, fig. 149 (as *Palaeornis*); also by Owen, *op. cit.* p. 97, figs. 1, 2, 3. This specimen is the type.

*Same history.*

**Ornithochirus** (?), sp.

Distinguished from the preceding by a considerable difference in the contour of the head of the humerus.

*Hab.* Europe (England).

**R. 558.** The imperfect proximal extremity of the left humerus from the Wealden of Brook, Isle of Wight.

*Purchased, 1885.*

**ornithochirus (?) curtus** (Owen<sup>85</sup>).

*Syn. Pterodactylus curtus*, Owen<sup>86</sup>.

A comparatively small form, definitely known only by the following specimen.

*Hab.* Europe (England).

**R. 1440.** The distal extremity of the tibia; from the Wealden of Sussex. Figured by Owen, *loc. cit.* In the anchylosis of the proximal portion of the tarsus to its distal extremity, this bone agrees with the tibia from No. 47212 .

*Mantell Collection. Purchased, 1838.*

*Specifically undetermined specimens from the Wealden.*

**2458.** Shaft of a long-bone ; from the Wealden of Cuckfield, Sussex. Figured by -Mantell, in the 'Trans. Geol. Soc.' ser. 2, vol. v. pl. xiii. fig. 6, as a bird's bone.

*Same history.*

**2470.** Shaft of a long-bone ; from the same locality. Figured by Mantell, *op. cit.* pl. xiii. fig. 5.

*Same history.*



2455. Three imperfect long-bones; from the same locality.

Same history.

*E. Species typically from the Purbeck.*

**Ornithochirus validus** (Owen<sup>87</sup>).

Syn. *Pterodactylus validus*, Owen<sup>88</sup>.  
*Pterodactylus macrurus*., Seeley<sup>89</sup>.  
*Doratorhynchus validus*, Seeley<sup>90</sup>.

The lower jaw, originally described by Seeley as *P. macrurus*, but subsequently provisionally identified with this species, has the symphyseal groove characteristic of *Ornithochirus*. The species is of comparatively large size.

*Hab.* Europe (England).

40653. The second phalangeal. of the ulnar digit of the manus; from the Middle Purbeck beds of Swanage, Dorsetshire. This specimen is the type, and is figured (without description) by Owen in his 'Liassic Reptilia,' pt. ii. pl. xix. fig. 7.

*Purchased, 1867.*

*The following specimen may perhaps belong to the present genus.*

2462. A phalangeal of the ulnar digit of the manus, embedded in a slab of the Purbeck Limestone of Swanage. Length 0,103.

*Mantell Collection. Purchased, 1838.*

Family **RHAMPHORHYNCHIDAE**.

Tail (at least usually) long; skull less bird-like than in the *Pterodactylidae* and often comparatively short and stout; jaws not ways toothed to their anterior extremity; nares frequently small and separated by a complete bar from the preorbital vacuity; metacarpus much shorter than half the length of the ulna; proximal half of tarsus sometimes ankylosed to tibia.

Genus **SCAPHOGNATHUS**, Wagner<sup>91</sup>.

Syn. *Pachyrhampheus*, Fitzinger<sup>92</sup>.  
*Brachytrachelus*, Geibel<sup>93</sup>.

In the type species, skull massive, without a distinct rostrum nares small, and separated by a broad bar from preorbital vacuity teeth subequal, nearly vertical, and extending anteriorly to the extremities of the jaws, and backwards to the hinder part of the preorbital vacuity; alveolar border of jaws and inferior border of mandible nearly straight; neck short and thick; tail unknown; other characters as in *Rhamphorhynchus*. Zittel<sup>94</sup> would include both this genus and *Ornithochirus* in the latter.

**Scaphognathus crassirostris** (Goldfuss<sup>95</sup>).

Syn. *Pterodactylus crassirostris*, Goldfuss<sup>96</sup>.  
*Pachyrhampus crassirostris*, Fitzinger<sup>97</sup>.  
*Ornithocephalus crassirostris*, Wagner<sup>98</sup>.  
*Brachytrachelus Crassirostris*, Giebel<sup>99</sup>.  
*Rhamphorhynchus crassirostris*, Wagner<sup>100</sup>.

The type species; the length of the skull is 0,120. Zittel<sup>101</sup> concludes that the tail was long.

*Hab.* Europe (Germany).

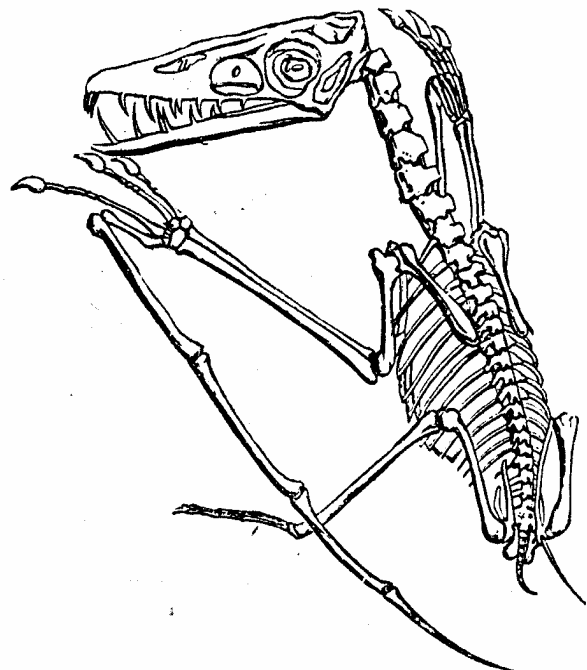


Fig. 4. *Scaphognathus crassirostris*;  
from the Kimeridgian of Bavaria. 1/3

n, nares; o, preorbital vacuity; t, orbit.  
The restoration of the tail is incorrect

**43468.** Casts of a split slab of lithographic limestone, showing the greater portion of the skeleton. The original (woodcut, fig. 4) was obtained from the Kimeridgian of Bavaria, and is preserved in the Museum at Bonn. It is figured by Goldfuss in the 'Nova Acta Ac. Caes. Leop.-Car.' vol. xv. pt. i. pls. 7-9; by Buckland in his Mineralogy and Geology (Bridgewater Treatise), pl. xxii. ; by Meyer in the Fauna der Vorwelt-Rept. Lith. Schiefer,' pl. v. figs. 1, 2; and by Owen in his 'Cretaceous Reptilia' (Mon. Pal. Soc.), pl. xxvii.

Presented by K. Murchison, Esq., 1872.

**43437.** Cast showing the left side of the skull of the preceding specimen. Figured by Meyer, op. cit. pl. v. fig. 3. The symphysis of the mandible shows a median descending ridge on the ventral surface.

Same history.

Genus **RHAMPHORHYNCHUS**, Meyer<sup>102</sup>.

Teeth usually not extending to the extremities of the jaws; those of the mandible subequal in size, and all inclined forwards; nares moderate, and separated by a broad bar from preorbital vacuity; alveolar border of premaxilla concave, and of mandible convex, and inferior border of latter concave; scapula and coracoid separate or ankylosed; neck thick, and of moderate length ; proximal tarsals usually distinct, but ankylosed to the tibia in *R. grandis*; either four or five functional digits in pes, the fifth digit having two phalangeals. Pubis narrow, elongated, and bent, and uniting in a bony symphysis; ischium ankylosed to ilium; sacrum with from three to five vertebrae. Hind limb usually comparatively weak; and the long tail with a terminal membranous expansion (fig. 5), and the vertebrae bound together by ossified tendons.

**Rhamphorhynchus longicauda** (Munster<sup>103</sup>).

Syn. *Pterodactylus longicaudus*, Munster<sup>104</sup>.  
*Ornithocephalus longicaudatus*, Wagner<sup>105</sup>.  
*Rhamphorhynchus longicaudatus*, Ammon<sup>106</sup>.

The type species. Of small size, and perhaps without an edentulous interval at the extremity of the upper jaw. The length of the cranium is 0,043; and the scapula and coracoid are distinct, and approximate in structure to those of *Pterodactylus*.

Hab. Europe (Germany).

**37361.** Cast of a slab of lithographic limestone, entire skeleton. The original is preserved in the Museum at Leucktenberg, and was obtained in 1846 from the Kimeridgian of Eichstadt, Bavaria ; it is one of the types, and is figured by Von Meyer in the 'Fauna der Vorwelt-Rept. Lith. Schiefer,' pl. ix. fig. 5. Another skeleton wanting the skull is figured by Zittel in the 'Palaeontographica,' vol. xxix. pl. xi.

Purchased, 1863.

**Rhamphorhynchus muensteri** (Goldfuss<sup>107</sup>).

Syn. *Ornithocephalus muensteri*, Goldfuss<sup>108</sup>.  
*Pterodactylus muensteri*, Meyer<sup>109</sup>.  
*Ramphorhynchus phyllurus*, Marsh<sup>110</sup>.

Regarded by Zittel<sup>111</sup> as closely allied to the following form, but with the scapula and coracoid frequently ankylosed, with a fifth digit in the pes, and with the patagium rather wider. The same writer identifies the so-called *R. phyllurus* with this species. If the next form be also specifically identical, the present name should stand.

Hab. Europe (Germany).

**43004.** A slab of lithographic limestone, containing the imperfect skeleton, of which the cranium and mandible are entire; from the Kimeridgian of Eichstadt, Bavaria. The length of the cranium is 0,080.

Van Breda Collection. Purchased, 1871.

**42738.** A slab of lithographic limestone containing an imperfect skeleton (without the skull),, provisionally referred to this species; from Eichstadt. Figured by You Meyer in the ' Fauna der Vorwelt-Rept. Lith. Schiefer, ' pl. x. fig. 3, under the name of *R. gemmingi*. It agrees in size with the present form..

Van Breda, Collection. Purchased, 1871.

**39353.** Cast of the preceding specimen.

Purchased, 1865.

**R. 300.** Cast of a slab of lithographic limestone, showing the nearly entire skeleton and the impression of the patagium. The original, which was obtained from Eichstadt in 1873, is preserved in the Museum at Yale College, Connecticut, U.S.A., and is figured by Marsh in the 'Amer. Journ.' ser. 3, vol. xxiii. pl. iii., under the name of *R. phyllurus*, of which it is the type. The length of the cranium is about 0,091. A restoration is given in woodcut fig. 5.

Presented by Prof. O. C. Marsh, 1883.

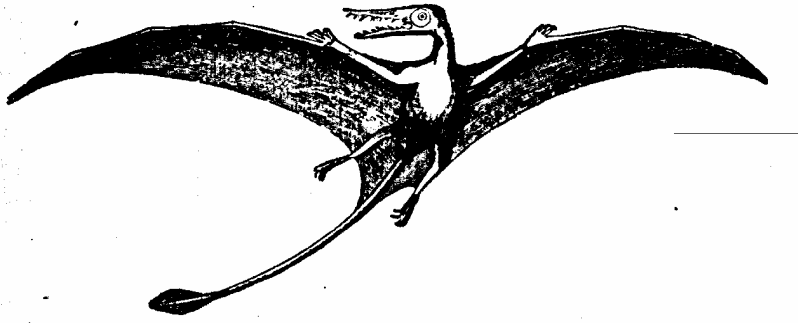


Fig. 5. Restoration of *Rhamphorhynchus muensteri*. 1/7. (After Marsh.)

### **Rhamphorhynchus gemmingi**, Meyer<sup>112</sup>.

Syn. *Pterodactylus (hamphorhynchus) gemmingi*, Meyer<sup>113</sup>.  
*Ornithocephalus gemmingi*, Wagner<sup>114</sup>.  
*Rhamphorhynchus longimanus*, Wagner<sup>115</sup>.  
*Rhamphorhynchus meyeri*, Owen<sup>116</sup>.

Of Medium size, the length of the cranium being usually about 0,125 the extremity of the mandible not upwardly recurved; the scapula and coracoid separate and apparently either four or five Digits in the pes.

*Hab.* Europe (Germany).

**R. 231.** Cast of a slab of lithographic limestone, showing the cranium and detached mandible. The original, which is the type, was obtained from the Kimeridgian of Steinbruche, near Solenhofen, Bavaria, and is preserved in the Museum at Munich. It is figured by Goldfuss in the 'Nova Acta Ac. Caes. Leop-Car.' vol. xv. pt. i. pl. xi. fig. 1; by Wagner in the 'Abh. k.-bay. Ak. Wiss.' vol. ii. pt. i. pl. vi.; and by Meyer in the 'Fauna der Vorwelt Rept. Lith. Schiefer,' pl. iii. fig. 4 (as *R. gemmingi*). The length of the cranium is 0,095.

*Egerton Collection. Purchased, 1882.*

**49151.** Cast of a slab of lithographic limestone, showing, the nearly entire skeleton. The original is from the Kimeridgian of Bavaria, and is figured by Wagner in the 'Abh. k.-bay. Ak. Wiss.' vol. viii. pt. ii. pl. xvi. fig. 1, under the name of *R. longimanus*, of which it is one of the types. The length of the cranium is 1,080.

*Purchased, 1877.*

**37362.** Cast of a slab of lithographic limestone, showing a considerable portion of the skeleton; from the Kimeridgian of Solenhofen, Bavaria. The original is figured by Wagner, *op. cit.* pl. xvii., under the name of *R. longimanus*.

*Purchased, 1863.*

**37003.** A slab of lithographic limestone, showing the mandible and a large part of the rest of the skeleton; from Solenhofen. Figured by Owen in his '1 Liassic Reptilia' (Mem. Pal. Soc.), pt. ii. pl. xix. figs. 5, 6, under the name of *R. meyeri*, of which it is the type. In the presence of five digits to the pes (one of the so-called specific characters) it agrees with the specimen figured by Zittel in the 'Palaeontographica,' vol. xix. pl. xii. fig. 2.

*Haberlein Collection. Purchased, 1862.*

**37787.** A split slab of lithographic limestone, containing the greater part of a skeleton, without the skull, provisionally referred to a large individual of this species; from Solenhofen. The bones are somewhat 1 longer than those of figured examples; the length of the four phalangeals of the ulnar digit of the manus being respectively (1) 0,148, (2) 0,118, (3) 0,110, (4) 0,110.

*Same history.*

### **Rhamphorhynchus grandis** (Cuvier<sup>117</sup>)

Syn. *Pterodactylus grandis*, Cuvier<sup>118</sup>.  
*Ornithocephalus grandis*, Wagner<sup>119</sup>.

This species is of much larger size than the preceding, the length of the second phalangeal of the wing-digit in the type-specimen being 0,194. It was founded upon bones of the manus and pes, which were referred both by Wagner and Meyer to *Pterodactylus*; but the relative shortness of the metacarpals in the figure given by Wagner in the 'Abh. k.-bay. Ak. Wiss.' vol. vi. pt. iii. pl. xix., shows that it belongs to the Rhamphorhynchine type. The proximal portion of the tarsus is ankylosed to the tibia, and the hind limb was probably stronger than in the other species. The following specimen, which is only provisionally referred to this species, indicates a smaller individual than the type; the extremity of the mandible is strongly recurved upwards, and the length of the skull is about 0,200.

*Hab.* Europe (Germany).

**37002.** A slab of lithographic limestone containing the greater part of a skeleton, provisionally referred to the present species from the Kimeridgian of Eichstadt, Bavaria. The length of the second phalangeal of the wing-digit is 0,165, that of the third 0,140, and that of the fourth 0,136. The teeth are markedly compressed laterally; the tibia and tarsus are not visible.

*Haberlein Collection. Purchased, 1862.*

**42737.** A split slab of lithographic limestone showing the conjoint tibia and fibula and pes of a large Ornithosaurian, which may belong either to the present or an allied form; from Eichstadt. In the ankylosis of the proximal portion of the tarsus to the tibia this specimen agrees with the imperfect pelvic limb of *R. grandis* figured by Meyer in the 'Fauna der Vorwelt-Rept. Lith. Schiefer,' pl. vii. fig. 7. The length of the tibia in the present specimen is 0,141, against 0,198 in the latter, and thus agrees in relative size with No. 37002.

*Van Breda Collection. Purchased, 1871.*

Genus **RHAMPHOCEPHALUS**, Seeley<sup>120</sup>.

Distinguished from *Rhamphorhynchus* by the anterior mandibular teeth being taller than the posterior, which are directed nearly vertically, and by the great constriction of the cranium between the orbits. The scapula and coracoid were united<sup>121</sup>.

The apparent generic distinctness from *Rhamphorhynchus* of the forms included in this group was first pointed out by Huxley in the memoir cited under the head of *R. depressirostris*.

**Rhamphocephalus bucklandi** (Meyer<sup>122</sup>).

Syn. *Pterodactylus bucklandi*, Meyer<sup>123</sup>.

*Rhamphorhynchus bucklandi*, Hurley<sup>124</sup>.

Including:- *Pterodactylus duncani*, Owen<sup>125</sup>.

*Pterodactylus kiddi*, Owen<sup>126</sup>.

The mandible figured by Huxley in the 'Quart. Journ. Geol. Soc.' vol. xv. pl. xxiv. fig. 2, may be regarded as the type. This species is larger than *Rhamphorhynchus grandis*, and has more than five lower teeth, with the inferior border of the mandibular ramus highly concave<sup>127</sup>.

Since no characters have been adduced by which the specimens named *Pterodactylus duncani* and *P. kiddi* can be distinguished from the present species, they are provisionally included under this heading, although one or other of them may be distinct. *R. prestwichi*, Seeley<sup>128</sup>, may apparently be identical either with the present or following species.

*Hab.* Europe (England).

*The following specimens are from the Lower Jurassic of Stonesfield, Oxfordshire. Some doubtless belong to the present species, but others may be specifically distinct; in the latter event one of the names proposed by Owen might perhaps be adopted.*

**40126.** An imperfect humerus. Slightly smaller than the specimen figured by Huxley in the 'Quart. Journ. Geol. Soc.' vol. xv. pl. xxiv. fig. 7.

*Purchased.*

**38016.** A bone, which is probably the radius. Length 0,132.

*Purchased, 1862.*

**R. 1030.** Cast of the first phalangeal of the ulnar digit of the manus. The original is in the Oxford Museum, and it; probably the specimen noticed in Phillips's Geology of Oxford, p. 224. Length 0,135.

*Purchased.*

**R. 1029.** Cast of the proximal extremity of a similar bone. Original in the Oxford Museum.

*Purchased.*

**40126 b.** The first phalangeal of the ulnar digit of the manus. This specimen is figured by Owen in his 'Mesozoic Reptilia' (Mon. Pal. Soc.), pt. i. pl. i. fig. 18, under the name of *Pterodactylus duncani*, of which it is the type. The length (exclusive of the proximal projection) is 0,137, and the specimen cannot be distinguished from No. It. 1030.

*Purchased, 1866.*

**40126 a.** The homologous bone of a smaller individual. This bone is figured by Owen, op. cit. pl. i. fig. 17, under the name of *Pterodactylus kiddi*, of which it is the type. Its length (exclusive of the proximal projection) is 0,123; and there is no reason why it should not have belonged to an immature individual of the same species in the preceding specimen.

*Same history.*

**38019.** The proximal part of a similar bone.

*Purchased, 1862.*

**38020.** The proximal extremity of a similar bone.

*Same history.*

**40126 g.** A considerably smaller homologous bone belonging to the same side as No. 40126 b. Length (exclusive of proximal process) 0,100.

*Purchased, 1866.*

**40126 d.** The second phalangeal of the ulnar digit of the manus. Figured by Owen, op. cit. pl. i. fig. 28. length 0,160.

*Same history.*

- 38014.** The second or third phalangeal of the same digit. Length 0,142. *Purchased, 1862.*
- 38015.** A similar bone. *Same history.*
- 38025.** An imperfect homologous bone, with impression of the entire shaft. *Same history.*
- 40126 f.** A similar bone; imperfect. *Purchased, 1866.*
- R. 1028.** Cast of a bone which is probably a second or third phalangeal of the wing-digit. Original in Oxford Museum. *Purchased.*
- 40126 c.** Two vertebrae in a crushed condition. *Purchased, 1866.*
- 40126 i.** A rib. *Purchased.*
- 37765.** A rib. *Purchased.*
- 28610.** A rib. *Purchased.*
- 47999 a.** A crushed bone not improbably belonging to the pectoral girdle. *Presented by the Hon. R.. Marsham, 1877.*
- 28610 a.** An undetermined imperfect bone. *Purchased.*
- 40126 n.** An undetermined imperfect bone. *Purchased.*

\* Numerous other imperfect bones in the Collection are not catalogued.

*The following specimens may indicate young individuals:*

- 40126 p.** Four terminal phalangeals of the ulnar digit of the manus. Length of smallest 0,023. *Purchased.*
- 28610 b.** An homologous bone. *Purchased.*
- 28610 c.** A humerus. Length 0,019. *Purchased.*

### **Rhamphocephalus depressirostris** (Huxley<sup>129</sup>).

Syn. *Rhamphorhynchus depressirostris*, Huxley<sup>130</sup>.  
(?) *Pterodactylus aclandi*, Owen<sup>131</sup>.

Characterized by the presence of only five lower teeth, and by the slight concavity of the inferior border of the mandibular ramus. The following specimen indicates a large form agreeing in characters with this species, and from its size is probably the same as Owen's *P. aclandi*; if these specimens should be specifically distinct from this species, the latter name might be retained.

Hab. Europe (England).

**47991.** Part of the tight ramus of a mandible, provisionally referred to this species, and showing the four posterior teeth and the alveolus of the first tooth; from the Lower Jurassic of Stonesfield, Oxford. This specimen is larger than the type mandible of the present species, but is otherwise similar.

*Presented by the Hon. R. Marsham, 1877.*

*The following specimens from the same locality agree in relative size with the preceding mandible.*

- 40126 j.** The ulna. Length (excluding olecranon) 0,157. The distal extremity agrees very closely with that of the corresponding bone (No. 35324) of *Ornithochirus* from the Cambridge Greensand. *Purchased, 1866.*
- 40126 c.** The first phalangeal of the ulnar digit of the manus. Figured by Owen in his 'Mesozoic Reptilia' (Mon. Pal. Soc.), pt. i. pl. i. fig. 19, under the name of *Pterodactylus aclandi*, of which it is the type. Length (exclusive of proximal projection) 0,145. *Purchased, 1866.*

- 40126 k.** A second or third phalangeal of the homologous digit. Length 0,210. Same history.
- 40126 l.** An imperfect corresponding bone. Same history.
- 40126 m.** A terminal phalangeal of the ulnar digit of the manus. Length 0,186. Same history.
- 40126 n.** A similar bone. Same history.
- 40126 o.** The proximal portion of a similar bone. Same history.

Genus **DIMORPHODON**, Owen<sup>132</sup>.

Jaws toothed to their extremities; anterior teeth in both jaws large, but posterior mandibular ones very small; nares large, and separated by a narrow bar from preorbital vacuity; coracoid and scapula united; proximal tarsals united to tibia; five digits in pes. According to Owen's restoration<sup>133</sup>, the pubis and ischium form an expanded shoot of bone at right angles to the narrow ilium, which is extended to an equal length on either side of the acetabulum.

**Dimorphodon macronyx** (Buckland<sup>134</sup>).

Syn. *Pterodactylus macronyx* Buckland<sup>135</sup>.  
(?) *Pterodactylus mardereri*, Owen<sup>136</sup>.

The type species. Length of the cranium usually about 0,220. *Ornithocephalus banthensis*, Theodori<sup>137</sup> (*Dimorphodon banthensis*, Owen<sup>138</sup>), was identified with it by Meyer; but the anterior extremity of the jaws is edentulous, as in *Rhamphocephalus*, and the species is the type of *Dorygnathus*, Wagner<sup>139</sup>. The specimen on which *P. mardereri* is founded does not appear to be specifically distinct from the present form.

*Hab.* Europe (England).

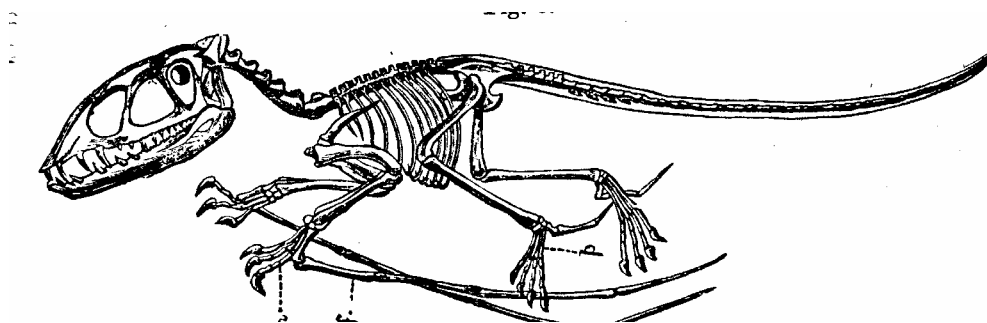


Fig. 6. *Dimorphodon macronyx*.—Restored skeleton; from the Lower Lias. . 1/7.  
f, proximal phalangeal of the ulnar digit of the manus; m, corresponding phalangeal of adjacent digit;  
p, metatarsus. (After Owen.)

- R. 1034.** Slab containing a considerable portion of the skeleton from the Lower Lias of Lyme-Regis, Dorsetshire. The type. Figured by Buckland in the 'Trans. Geol. Soc.' ser. 2, vol. iii. pl. xxvii. (1835). The skull and most of the vertebrae are wanting. Purchased.
- R. 1035.** The skull and fragments of the rest of the skeleton from Lyme-Regis. Figured by Owen in his 'Liassic Reptilia,' pt. ii. pl. xvii. Purchased. About 1858.
- 41212-13.** The skull and greater portion of the rest of the skeleton; from Lyme-Regis. Figured by Owen, op. cit. pl. xviii. Purchased, 1868.
- 43486-7.** Two imperfect mandibular rami; from Lyme-Regis. Presented by the Earl of Enniskillen, 1874.
- 41346.** The entire tail; from Lyme-Regis. Figured by Owen, op. p. cit. pl. xix. fig. 4. Purchased, 1869.
- R. 590.** Part of the right side of the cranium, showing part of the nasal and preorbital vacuities. Purchased, 1885.

*The following specimens from the Lower Lias of Lyme-Regis are all provisionally included under this specific heading, but some may be distinct.*

- 42016.** The distal extremity of the right humerus. Figured by Owen in his 'Mesozoic Reptilia' (Mon. Pal. Soc.), pt. I pl. i. figs. 13, 14.  
*Purchased, 1870.*
- 43974.** The left humerus. The length of this specimen is 0,076; the length of the corresponding bone in No. 41212 being 0,092 ; both have a similar curved shaft.  
*Purchased, 1872.*
- 41348.** The right humerus, wanting the distal extremity. This specimen is figured by Owen, op. cit. pl. i. figs. 7-9, under the name of *Pterodactylus marderi*, of which it is the type; it agrees in size with the last specimen, and presents no characters which can be regarded as of specific value.  
*Purchased, 1869.*
- R. 591.** The right humerus, imperfect proximally, of a rather smaller individual.  
*Purchased, 1885.*
- R. 1036.** The imperfect left humerus of an individual agreeing approximately in size with the preceding.  
*Purchased About 1858.*
- R. 35.** The imperfect metacarpus, belonging to a larger individual than the one from which Owen's restoration is made.  
*Purchased, 1880.*
- 41347.** Three phalangeals of the ulnar digit of the manus.  
*Purchased, 1869.*
- 42016 a.** A phalangeal of the ulnar digit of the manus.  
*Purchased, 1870.*
- 43053.** A phalangeal of the ulnar digit of the manus.  
*Purchased, 1871.*
- 43052.** A bone, probably belonging &to the manus.  
*Purchased, 1871.*
- 41347 a.** An imperfect bone, which is probably the femur.  
*Purchased, 1869.*
- 43973.** The slightly imperfect tibia and fibula. This specimen agrees closely with the corresponding element in Owen's restoration, the length being 0,125. The distal extremity evidently consists of the proximal portion of the tarsus.  
*Purchased, 1872.*
- 43051.** The tibia and fibula of a smaller individual. Length. 0,104.  
*Purchased, 1871.*
- 41347 b.** A similar tibia and fibula, imperfect proximally.  
*Purchased, 1869.*
- 47464.** The tibia and fibula of a very young individual .  
*Purchased, 1876.*
- 41347 c.** An undetermined long-bone.  
*Purchased, 1869.*
- R. 223.** An apparently homologous bone, belonging, to a smaller individual.  
*Purchased, 1882.*

## ORNITHOSAURS OF UNCERTAIN GENERIC POSITION.

There is no evidence as to the genus (or genera) to which the following forms (which are from the typical horizon of *Pterodactylus* and *Rhamphorhynchus*) should be referred. The distal portion of the ulnar metacarpal is remarkable for having a bony plate suturally attached to one of its lateral surfaces, which doubtless aided in supporting the patagium.

### SPECIES *a.*

*Pterodactylus manseli*, Owen<sup>140</sup>.

This species it; only known by the following bones, which agree approximately in size with those of *Dimorphodon*.  
*Hab.* Europe (England).

- 41970.** The distal portion of the left humerus; from the Kimeridge Clay of Weymouth, Dorsetshire. This specimen is the type, and is figured by Owen, op. cit. pl. i. figs. 10-12.  
*Purchased, 1870.*

- 43035.** The proximal extremity of the first phalangeal of the ulnar digit of the manus; from Weymouth. This specimen is referred to the present species by Owen, and figured by him, op. *cit.* pl. i. figs. 20, 21. Purchased, 1871.
- 44182.** Seven specimens of the same extremity of the homologous bone; from Weymouth. Purchased, 1873.
- B. 559.** A Similar Specimen; from Weymouth. Purchased, 1886.
- 45918.** A similar specimen, showing more of the shaft. Purchased, 1874.

*The following specimens from the Kimeridge of Weymouth may probably be referred either to the present or the next form.*

- R. 563.** An extremity of (apparently) one of the bones of the forearm. Purchased, 1886.
- 41404.** A similar specimen. Purchased, 1869.
- 41232.** An homologous Specimen of a smaller individual. Purchased, 1868.
- 42376.** Two proximal carpals. Figured by Owen, op. *cit.* pl. i. figs. 24-27. Purchased, 1870.
- 42376 a.** A similar bone. Purchased, 1870.
- R. 562.** A similar bone. Purchased, 1886.
- 41886.** A similar bone. Purchased, 1869.
- 41887.** A similar bone, imperfect. Same history.
- 43034.** The distal extremity of the ulnar metacarpal. Purchased, 1871.
- 44183.** The distal portion of an homologous bone. The accessory lateral ossification is well shown. Purchased, 1873.
- R. 561.** The distal extremity of a smaller example of the homologous bone. Purchased, 1886.
- 43571.** Three fragments of phalangeals of the ulnar digit of the manus. Purchased, 1872.
- 43571 a.** An imperfect undetermined long-bone. Same history.

**SPECIES b.**

*Pterodactylus pleydelli*, Owen<sup>141</sup>.

Said to be distinguished from the preceding form by its somewhat inferior dimensions.  
*Hab.* Europe (England).

- 42378.** The distal portion of the left humerus ; from the Kimeridge Clay of Weymouth, Dorsetshire. This specimen is the type, and is figured by Owen, op. *cit.* pl. i. figs. 15, 16. Purchased, 1870.
- 42374.** The proximal extremity of the first phalangeal of the ulnar digit of the manus; from Weymouth. Figured by Owen, op. *cit.* pl. i. figs. 22,23, and provisionally referred to this species. Same history.
- 41404, 41884, 41885, 41971, 42374, 44182.** Six apparently similar specimens; from Weymouth. Purchased.



## SPECIES c.

Of considerably larger size than either of the preceding forms.

*Hab.* Europe (England).

**41179.** The distal extremity of the ulnar metacarpal; from the Kimeridge Clay of Weymouth, Dorsetshire. across the condyles is 0,016, against 0,008 in No. 44183 (Species a).

The diaeter

*Purchased, 1868.*

## ORDINAL POSITION UNCERTAIN.

Genus **ORNITHODESMUS**, Seeley<sup>142</sup>.

The specimen on which this genus is founded is regarded by its describer as probably Avian, although presenting certain indications of affinity with Dinosauria. The impossibility of its belonging to the present Order does not, however, appear to be proved.

**Ornithodesmus Cluniculus**, Seeley<sup>143</sup>.

*Hab.* Europe (England).

**R. 187.** The imperfect sacrum; from the Wealden of Brook, Isle of Wight. The type; figured by Seeley in the, Quart. Journ. Geol. Soc.' vol. xliii. pl. xii. figs. 1-6.

*Fox Collection. Purchased, 1884.*

## Footnotes

- 1 Zittel ('Palaeontographica,' vol. xxix. pp. 63, 64) suggests that all the ribs of Pterodactylus are single-headed; and Marsh thinks that the same structure may obtain in Coelurus.
- 2 Seeley ('Ornithosauria, pp. 110, 111) states that there are but two anchylosed vertebrae in the sacrum of *Scaphognathus* (*Pachyrhamphus*), and none in that of *Dimphodon*.
- 3 See Baur, 'Amer. Nat.' 1886, p. 980.
- 4 Perhaps wanting in Pteranodontia.
- 5 Regarded by Owen, March, and Zittel ('Palaeontographica,' vol. xxix. p. 54) as the fifth of the typical series; the styliform ossification on the radial side of the carpus (fig. 3) representing the pollex.
- 6 Seeley ('Ornithosauria,' p. 111) proposed to use *Ornithocephalus* in this, an application which has been shown by Zittel ('Palaeontographica,' vol. xxix P. 80) to be inadmissible.
- 7 Denkschr. k. Ak. München, vol. vi. p. 89 (1820).-*Ornithocephalus*. (Read 1816.)
- 8 Loc. cit.
- 9 Neues Jahrb. 1842, p. 35.
- 10 Abb. k.-bay. Ak. Wiss. vol. vi. pt. i. p. 167 (1851).
- 11 Ann. d. Muséum, vol. xiii. p. 424 (1809).-*Pterodactyle*.
- 12 Denkschr. k. Ak. München, vol. iii. p. 126 (1812).
- 13 Allgemeine Paläontologie, p. 231 (1852).
- 14 Ann. Mag. Nat. Hist. ser. 4, vol. vii. P. 35 (1871).
- 15 Prepubis, or epipubis of some writers.
- 16 Zittel, 'Palaeontographica,' vol. xxix. p. 62 (1882).
- 17 Denkschr. k. Ak. München, vol. iii. p. 126 (1812).-*Ornithocephalus*.
- 18 Loc. cit.
- 19 Ossemens Fossiles, 2nd ed. vol. v, pt. 2, p. 359 (1824).
- 20 Syst. Amphib. p. 61 (1830).
- 21 Allgemeine Paläontologie, p. 231 (1852).
- 22 Vide Zittel, 'Palaeontographica,' vol. xxix, p. 71 (1882).
- 23 Abb. k.-bay. Ak. Wiss. vol. ii. p. 168 (1837).- *Ornithocephalus*.
- 24 Loc. cit.
- 25 Fauna der Vorwelt-Rept. Lith. Schiefer, p. 83 (1860).
- 26 Ann. Mag. Nat. Hist. ser. 4, vol. vii. p. 35 (1871).
- 27 'Palaeontographica,' vol. xxix. p. 71 (1882).
- 28 Neues Jahrb. 1861, p. 470.
- 29 'Palaeontographica,' vol. xxix. p. 77 (1882).
- 30 Sitz. k.-bay. Ak. Wiss. 1861, vol. i. p. 363.
- 31 Neues Jahrb. 1861, p. 467.
- 32 See Zittel, 'Palaeontographica,' vol. xxix. p. 77 (1882),
- 33 Abh. k.-bay. Ak. Wiss. vol. vi. pt. i. p. 132 (1851).-*Ornithocephalus*.

- 34 Loc. cit.
- 35 Ann. Mag. Nat. Hist. ser. 4. vol. vii. p. 35 (1871).
- 36 Neues Jahrb. 1854, p. 52.
- 37 Ann. Mag. Nat. Hist. ser. 4, vol. vii. p. 35 (1871).
- 38 'Ornithosauria,' p. 111 (1870).
- 39 Ueber *Pterodactylus suevicus* (Tübingen, 1855).-*Pterodactylus*.
- 40 Loc. Cit.
- 41 Neues Jahrb. 1854, p. 570-Subsequently withdrawn.
- 42 Abh. k.-bay. Ak. Wiss. vol. viii. pt. ii. p. 444 (1858).
- 43 *Ibid.* p. 448.
- 44 Ornithosauria, p. 112 (1870).-Amended. Also mentioned in 1 Index to Aves, &c., in Cambridge Museum,' p. xvi (1869); *Ptenodactylus* of the latter page was withdrawn, on account of being preoccupied.
- 45 Medals of Creation, 1st ed. vol. ii. p. 806 (1844)-Preoccupied and inappropriate.
- 46 Brit. Foss. Mamm. and Birds, p. 545 (1846).-Inappropriate.
- 47 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 6 (1874).
- 48 *Ibid.* p 7.
- 49 Quart. Journ. Geol. Soc. vol. xxxi. p. 465 (1875).
- 50 Sitz. k. böhm. Ges. Wiss. for 1880, p. 276 (1881).
- 51 Vide Geol. 31ag. dec. 2, vol. viii. p. 17 (1881).
- 52 It has been suggested by Seeley (Quart. Journ. Geol. Soc. vol. xxxi. p. 466) that the vertebrae originally described by him as caudal may be cervical, but from the analogy of *Rhamphorhynchus* the writer is inclined to adhere to the original view.
- 53 Cretaceous Reptilia (Mon. Pal. Soc.), p. 95 (1851). - *Pterodactylus*.
- 54 Loc. cit.
- 55 Proc. Zool. Soc. 1851, p. 15.-*Pterodactylus*.
- 56 *Loc. cit.*
- 57 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p 6 (1874).
- 58 Quart. Journ. Geol. Soc. vol. ii. p. 8 (1846).-*Pterodactylus*.
- 59 *Loc. cit.*
- 60 In Dixon's 'Geology of Sussex,' p. 401 (1850).
- 61 Brit. Foes. Mamm. and Birds, p 545 (1846).-*Cimoliornis*.
- 62 *Loc. cit.*
- 63 Sitz. k. böhm. Ges. Wiss. for 1880. p. 276. (1881).- *Cretornis*.
- 64 *Loc. cit.*
- 65 Rep. Brit. Assoc. for 1858, Trans. of Sections, p. 98 (1859).-*Pterodactylus*.
- 66 *Loc. cit.*
- 67 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 6 (1874).
- 68 Cretaceous Reptilia (Mon. Pal. Soc.), 1st Suppl. p. 4 (1859).-*Pterodactylus*.
- 69 *Loc. cit.*
- 70 Cretaceous Reptilia (Mon. Pal. Soc.), 3rd Suppl. p. 2 (1860).-*Pterodactylus*.
- 71 *Loc. cit.*
- 72 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 7 (1874).
- 73 Cretaceous Reptilia, *op. cit.* p. 4.
- 74 In the preliminary publication of the name *Ornithochirus* (Seeley, Index to Aves &c. in Camb. Mus. p. xvi [1869]) it was applied to this species; but in the later memoir ('Ornithosauria,' p. 127) the forms with spear-shaped jaws were taken as the types. See also Geol. Mag. 1881, pp. 15, 16. It would apparently only lead to worse confusion to revert to the original application of the name.
- 75 The toothless *Ornithostoma* has been described from them beds; *vide* Seeley, Ann. Mag. Net. Hist. ser. 4, vol. vii. p. 35, note (1871).
- 76 In assigning these vertebrae to the cervical region the writer follows Owen, *op. cit.* 1st Suppl. pl. ii.; *vide supra*, note 2, p. 11.
- 77 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 2 (1874).-*Pterodactylus*.
- 78 *Loc. cit.*
- 79 'Ornithosauria,' p. 122, pl. xii. figs. 8, 9 (1870).
- 80 Liassic Reptilia (Mon. Pal. Soc.), pt. ii. pl. xix. fig. 10 (1870).
- 81 *Loc. cit.*
- 82 'Medals of Creation,' 1st ed. vol. ii. p. 806 (1844).-*Palaeornis*.
- 83 *Loc. cit.*
- 84 'Index Palaeontologicus,' p. 895 (1848).
- 85 Liassic Reptilia (Mon. Pal. Soc.), pt. ii. pl. xix. figs. 8-9 (1870).-*Pterodactylus*.
- 86 *Loc. cit.*
- 87 *Ibid.* pl. xix. fig. 7.
- 88 *Loc. cit.*
- 89 'Index to Aves &c., in Camb. Mus.,' p. 89 (1869).
- 90 Quart. Journ. Geol. Soc. vol. xxxi. p. 465 (1875).
- 91 Sitz. k.-bay. Ak. Wiss. 1863, vol. i. p. 519.
- 92 Syst. Rept. p. 35(1843).-Preoccupied by a genus of Birds (Gray, 1840).
- 93 'Allgerneine Paläontologie,' p. 231 (1852).-Preoccupied by a genus of Coleoptera (Schonh. 1847).
- 94 Palaeontographica, vol. xxix. p. 64 (1882).
- 95 Nova Acta Ac. Caes. Leop.-Car. vol. xv. pt. i. p. 63 (1832).-*Pterodactylus*.
- 96 Loc. Cit.
- 97 Syst. Rept. p. 35 (1843).
- 98 Abh. k.-bay. Ak. Wiss. vol. vi. pt. i. P. 189 (1851).
- 99 'Allgemeine Paläontologie,' p. 231 (1852).
- 100 *Op. cit.* vol. viii. pt. ii. P. 505 (1858).

- 101 Palaeontographica, vol. xxix. p. 64 (1882).
- 102 Neues Jahrb. 1846, p. 463.
- 103 *Ibid.* 1839, p. 677. -*Pterodactylus*.
- 104 Loc. cit.
- 105 Abh. k.-bay. Ak. Wiss. vol. vi. pt. i. p. 190 (1851).
- 106 Corr.-blatt. Nat. Ver. Regensburg, vol. xxxviii. p. 155 (1884).
- 107 Nova Acta Ae. Caes. Leop.-Car. vol. xv. pt. L p. 112 (1831).- *Ornithocephalus*.
- 108 Loc. cit.
- 109 Palaeologica, p. 116 (1832).
- 110 Amer. Journ, ser. 3, vol. xxiii. p. W (1882).
- 111 Palaeontographica, vol. xxix. pp. 62-63 (1882).
- 112 Palaeontographica, vol. i. p. 1 (1846).
- 113 Loc. cit.
- 114 Abh. k.-bay. Ak. Wise. vol. vi. p. 190 (1851).
- 115 *Ibid.* vol. viii. pt. ii. p. 494 (1858).
- 116 Liassic Reptilia (Mon. Pal. Soc.), pt. ii. p. 80 (1870).
- 117 Oss Foss. 2nd ed. vol. v. pt. ii. p. 382 (1824).-*Pterodactylus*.
- 118 *Loc. cit.*
- 119 Abh. K. bay. Ak. Wise. vol. vi. pt. i. P. 190 (1851).
- 120 Quart. Journ. Geol. Soc. vol. xxxvi. p. 27 (1880).
- 121 See Huxley, Quart. Journ. Geol. Soc. vol. xv. pl. xxiv. fig. 6.
- 122 Palaeologica, p. 117 (1832).-*Pterodactylus*.
- 123 *Loc. cit.*
- 124 Quart. Journ. Geol. Soc. vol. xv. p. 658 (1859).
- 125 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 11 (1874).
- 126 *Loc. cit.*
- 127 See p. 666 of the memoir by Huxley above cited.
- 128 Quart. Journ. Geol. Soc. vol. xxxvi. p. 27 (1880).
- 129 Quart. Journ. Geol. Soc. vol. xv. p. 663 (1859).-*Rhamphorhynchus*.
- 130 *Loc. cit.*
- 131 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 11 (1874).
- 132 Rep. Brit. Assoc. for 1858, Transactions of Sections, p. 97 (1859).
- 133 Liassic Reptilia (Mon. Pal. Soc.), pl. xx. Zittel ('Palaeontographica,' vol. xxix. p. 64) doubts the correctness of this restoration.
- 134 Proc. Geol. Soc. vol. i. p. 127 (1829).-*Pterodactylus*.
- 135 *Loc. cit.*
- 136 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 12 (1874).
- 137 Notiz. Nat. Heilk. vol. xxix. p. 103 (1830).-This name has the priority.
- 138 Palaeontology, 2nd edit. p. -975 (1861).
- 139 Sitz. k.-bay. Ak. Wiss. 1861, p. 520.
- 140 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 8 (1874).
- 141 Mesozoic Reptilia (Mon. Pal. Soc.), pt. i. p. 9 (1874).
- 142 Quart. Journ. Geol. Soc. vol. xliii. p. 206 (1887)
- 143 Loc. cit.

## SUPPLEMENT.

Order ORNITHOSAURIA (suprá, i. p. 2).

Family RHAMPHORHYNCHIDAE (suprá, i. p. 27).

Genus SCAPHOGNATHUS (suprá, i. p. 27).

**Scaphognathus purdoni**, Newton<sup>1</sup>.

Of large size, the length of the skull being approximately 0,190 (7.5 inches). Teeth apparently more numerous than in type species; preorbital vacuity more ovoid, and the whole cranium less depressed, with a distinct median channel between the prefrontals and frontals.

*Hab.* Europe (England).

**B. 1613.** Cast of the cranium, showing the brain in situ, but wanting the greater portion of the rostrum. The original was obtained from the Upper Lias of Whitby, Yorkshire, and is figured by Newton in the 'Phil. Trans.' for 1888, pls. lxxvii., lxxviii. Some remarks on the relations of the bones are made by Baur in the 'Geol. Mag' decad. iii. vol. vi. p. 171.

*Made in the Museum, 1888.*

Genus RHAMPHORHYNCHUS (suprá, i. p. 29).

**Rhamphorhynchus gemmingi** (suprá, i. p. 31).

**B. 1692.** Cast of a slab of lithographic limestone, showing the bones and the impression of the patagium of the left pectoral limb. The original was obtained from the Lower Kimeridgian of Winterberg, near Eichstadt, Bavaria; and is preserved in the Museum at Munich. It is described and figured by Zittel in the 'Palaeontographica' vol. xxix. P. 51, pl. X.

*By exchange, 1889.*

**Rhamphorhynchus jessoni**, Lydekker (n. sp.).

A provisional species, apparently allied to *R. gemmingi*. The cervical vertebrae show a distinct facet on the centrum for the articulation of a cervical rib. The pelvis and sacrum exhibit the characteristic features of the genus; the ischium being ankylosed to the ilium, and the latter attached to four vertebrae of the sacrum, by ankylosed ribs.

*Hab.* Europe (England).

**R. 1755.** Portions of the skeleton; from the Oxford Clay, St. Ives, Huntingdonshire. The types. These comprise several vertebrae, from the cervical, dorsal, and sacral regions; the imperfect ilia and ischia; one femur, and the distal half of another; and some other fragmentary bones.

*Presented by T. Jesson, Esq., 1890.*

<sup>1</sup> Proc. Roy. Soc. vol. xliii p 436 (1888).