XX. *Description of an Extinct Lacertian Reptile,* Rhynchosaurus articeps, *Owen, of which the Bones and Foot-prints characterize the Upper New Red Sandstone at Grinsill, near Shrewsbury. By* Richard Owen, F. R. S., G. S. &c., *Hunterian Professor in the Royal College of Surgeons.*

[Read *April* 11, 1842.]

The existence of a small four-footed animal, at the period of the deposition of the New Red Sandstone near Shrewsbury, was announced by Dr. Ogier Ward of that city, at the meeting of the British Association at Birmingham; the evidence then brought forward consisting of foot-prints only. These Ichnolites most nearly resembled those figured in the Memoir on the New Red Sandstone of Warwickshire, by Messrs. Murchison and Strickland*, but differed in giving more distinct indications of the terminal claws, and less distinct impressions of the connecting web: the innermost toe is more diminutive, and there is an impression, always at a definite distance from the fore-toes, like a hind-toe pointing backwards, and which seems to have only touched the ground by its point, as in some wading birds: reminding one of the form of some of the Ichnolites discovered by Dr. Hitchcock, in the New Red Sandstone at Connecticut, which have been referred to the class of birds.

Any evidence of a warm-blooded and quick-breathing class of animals at so remote a period as the New Red Sandstone epoch requires to be very closely sifted, and the chance of obtaining any analogical facts, bearing upon the explanation of the 'Ornithicnites' of Professor Hitchcock, induced me to spare no exertions to obtain further insight into the problematical creature of the Grinsill quarries.

* Geological Transactions, Second Series, Vol. V. pl. xxviii.

Through the kind and zealous attention of Dr. Ward to the quarrying operations in his neighbourhood, various fossils were from time to time secured and transmitted to me, which at length enabled me to form a clear opinion of the nature and affinities of the animal in question. I say of the animal that impressed the sands with its feet, because, with respect to the bones, Dr. Ward observes in his letter accompanying them: "As they have always been found nearly in the same bed as that impressed by the footsteps I have described, I am induced to believe that these are the bones of the same animal:" and in this opinion, from the correspondence of size between the bones and foot-prints, and from the circumstance of the absence of other observed bones or foot-prints in the same quarry, I entirely coincide.

The vertebræ, to which my attention was first directed, proved the species to belong to the Lacertine or lower division of the great Saurian group of reptiles*. These bones will be first described.

Vertebræ.—Both surfaces of the centrum are concave and are deeper than in the biconcave vertebræ of the extinct Crocodilians; the texture of the centrum is compact throughout. In the dorsal series the two lateral surfaces join the under surface at a nearly right angle, the transverse section presenting a subquadrate form, with the angles rounded off: the under surface and sides are regularly concave longitudinally.

The neural arch is anchylosed with the centrum, without trace of suture, as in most Lizards; it immediately expands and sends outwards from

* An extended survey of the modifications of this class of Vertebrata from their first appearance on the Earth's surface to the present time, is necessarily attended with different views of their classification than can be derived from an acquaintance, however close, with existing species only. I propose to divide the Reptilia into eight orders: viz. Dinosauria, Enaliosauria, Crocodilia, Lacertilia, Pterosauria, Chelonia, Ophidia, and Batrachia. They are here enumerated in the descending scale of organization. The Saurian division was represented of old by reptiles manifesting the crocodilian grade of structure, under a rich variety of modifications, constituting, besides the typical and still represented groups, two other orders, now wholly extinct; it has since subsided into a swarm of small Lacertians, headed by so few examples of the Crocodilian or Loricate species, that it is no marvel such relics of a once predominating tribe should have found a humble place in Linné's System of Nature, as co-ordinate members of the genus *Lacerta*.

each angle of its base a broad triangular process with a flat articular surface; the two anterior surfaces look directly upwards, the posterior ones downwards; the latter are continued backwards beyond the posterior extremity of the centrum; the tubercle for the simple articulation of the rib is situated immediately beneath the anterior oblique process. So far the vertebræ of the *Rhynchosaurus*, always excepting their biconcave structure, resemble the vertebræ of most recent lizards. In the modification next to be noticed, they show one of the vertebral characters of the *Dinosauria**. A broad obtuse ridge rises from the upper convex surface of the posterior articular process, and arches forwards along the neurapophysis† above the anterior articular process, and gradually subsides anterior to its base: the upper part of this arched angular ridge forms, with that of the opposite side, a platform, from the middle line of which the spinous process is developed. This structure is not present in existing lizards; the sides of the neural arch in their vertebræ immediately converge from the articular processes to the base of the spine, without the intervention of an angular ridge formed by the side of a raised platform. The base of the spinous process in the Rhynchosaur is broadest behind, and commences there by two roots or ridges, one from the upper and back part of each posterior articular process: they meet at the posterior part of the summit of the neural arch, whence the spinous process is continued upwards as a simple plate of bone, its base extending forwards along about two thirds of the length of the platform, which then again divides into two ridges which diverge from each other in slight curves to the anterior and external angles of the neurapophyses. The interspace of the diverging anterior crura of the base of the spine is occupied by a triangular fossa, not continued into the substance of the spine; this fossa is bounded below by a horizontal plate of bone extended over the anterior part of the spinal canal, and terminated by a convex outline. The anterior margin of the spinous

* The characters of this extinct Order of Reptiles are given in the Report of the British Association, 1841, p. 102.

† The vertebral nomenclature, which I have been compelled to invent for the requisite clearness and brevity of description of these most complicated and most common of Reptilian fossils, is explained in the Geological Transactions, Vol. V, pt. iii, Second Series, p. 518.

process is thin and trenchant; the height of the spine does not exceed the antero-posterior diameter of its base; it is obliquely rounded off. The spinal canal sinks into the middle part of the centrum, and rises to the base of the spine, so that its vertical diameter is twice as great at the middle as at the two extremities: this modification resembles, in a certain degree, that of the vertebræ of the *Palæosaurus* from the Bristol conglomerate*. The following are dimensions of the most perfect of the dorsal vertebræ of the *Rhynchosaurus*:—

	Lines.
The length of the centrum	$5\frac{1}{2}$
Height of the articular end	3
Breadth of the articular end	$2\frac{2}{3}$ $\frac{1}{3}$
From the lower margin of the posterior extremity of the centrum to the posterior part of the base of the spine	5
From the lower margin of the posterior extremity of the centrum to the summit of the spine	9
Antero-posterior extent of base of spine	4
Breadth of the neural arch, from the outer margin of one anterior articular process to that of the opposite side	$8\frac{1}{2}$
Breadth of the neural arch at the interspace between the anterior and posterior articular processes	4
Breadth of the neural arch across the middle of the spinous platform	2

Skull.—The most complete specimen yet obtained of this instructive part of the skeleton of the *Rhynchosaurus* is imbedded in a portion of the coarse-grained sandstone from the Grinsill quarries. The lower jaw is in its natural position, as when the mouth is shut, showing that the parts had not been dislocated when they became imbedded in the sand.

The skull presents the form of a four-sided pyramid, compressed laterally, and with the upper facet arching down in a graceful curve to the apex, which is formed by the termination of the muzzle.

The very narrow cranium, the wide temporal fossa on each side, bounded behind by the bifurcations of the parietal and the mastoid, and laterally by a strong compressed zygoma, with a long tympanic pedicle descending vertically from the point of union of the transverse and

* Geological Transactions, Second Series, Vol. V. p. 349, pl. xxix.

zygomatic arches, and terminating in a convex pulley for the articular concavity of the lower jaw,—the large and complete orbits, and the short, compressed, and bent-down maxillæ,—all combine to prove the fossil to belong to the Lacertine division of the Saurian Order.

The lateral compression and depth of the skull, the great vertical extent of the superior maxillary bone, the small relative size of the temporal spaces, the great depth of the lower jaw, prove that it does not belong to a reptile of the Batrachian Order. The shortness of the muzzle, and its compressed form, equally remove it from the Crocodilians. No Chelonian has the tympanic pedicle so long, so narrow, or so freely suspended to the posterior and lateral angles of the cranium.

The general aspect of the skull differs, indeed, from that of existing Lacertians, and singularly resembles that of the bird or turtle, and the resemblance is increased by the apparent absence of teeth. The intermaxillary bones, moreover, are double, as in the Chelonia, and also symmetrical, not united by a median ascending process; but, with this exception, all the more essential characters of the skull are those of the Lizard.

Of the proper parietes of the cerebral cavity, the portion formed by the parietal and frontal bones is exposed. The *parietal* is traversed by a thin, but high median crest longitudinally: the sides are convex, and the breadth of the bone diminishes towards the occiput: here it divides into two branches, which pass outwards, more transversely than in existing Lizards. There is no perforation either in the parietal bone, or in the coronal suture. This suture is transverse. At the anterior part of the parietal crest two lines diverge from each other at a right angle to the upper part of the orbit, and separate the median from the post-frontals; a nearly transverse suture divides the fore-part of the parietal from the post-frontals. The *median frontal* bone is single, like that of the new-world Thorictes (*Thorictes*, *Tejus*) and Iguanæ, not divided, as in the Varanians. It expands slightly as it advances towards the fore-part of the orbits, the oblique lines dividing the median frontal from the post-frontals, and the supra-orbitary ridges are raised, so that the interspace is slightly concave; and the surface is also broken by

irregular elevations and depressions. The *post-frontal* is divided by a nearly transverse suture. This bone completes the upper and outer part of the orbit by a thin well-defined curved plate; an irregular blunt ridge descends in a nearly vertical direction behind this plate, and then the posterior frontal is continued backwards in the form of a long compressed plate gradually terminating in a point, which overlaps the zygomatic bone. This forms the medium of union between the long posterior frontal and the parietal fork. The posterior frontal is divided by a suture, as in the Iguanæ; the anterior division forms a projecting curved plate at the upper and outer part of the circumference of the orbit, and prolongs forward the rim of that cavity beyond the plane of the head.

The *tympanic* bone is bent like the Italic *f*, and is slightly expanded transversely at its distal extremity: its posterior surface is exposed in the present fossil, showing it to be convex and rounded, and continued externally in the form of a thin plate, which is concave posteriorly. The thick convex stem divides near the lower end into two ridges, which diverge, like the condyles of a humerus, and intercept the trochlea on which the concave articulation of the lower jaw plays. The tympanic trochlea is convex from behind forwards, concave from side to side.

The orbit is large, nearly circular in form, and its bony frame is complete; this is formed above by the median, anterior and posterior frontals, before by the anterior frontal and lachrymal, below by the malar, and behind by the malar and posterior frontal.

The *malar* bone, as in most lizards, is long, slender, and bent upon itself, but its external surface is unusually concave, the orbital plate projecting outwards, like the corresponding rim formed by the frontal bone. The anterior or horizontal branch of the malar gradually tapers to a point, which is wedged in between the lachrymal and superior maxillary; the posterior branch ascends at nearly a right angle and is applied obliquely to the posterior part of the descending process of the posterior frontal: at the angle between the two portions of the malar a process is continued backwards for about half an inch, but its extremity is broken off.

The *lachrymal* bone presents the same relative size and position as in the *Thorictes*, *Lacerta*, and most Lizards; a tubercle rises from about the middle of its external surface.

The *superior maxillary* is a broad vertical triangular plate of bone, with a smooth external surface: the alveolar border projects externally like a ridge, above which the bone is slightly concave: this ridge appears to be slightly dentated, and overlaps the corresponding alveolar border of the lower jaw. The posterior superior margin of the maxillary bone is slightly concave, and joins the malar and lachrymal bones, and a small part of the prefrontal: the anterior superior margin joins the upper half of the elongated intermaxillary bone, which divides it from the nasal bone and the external nostril: the lower side or base of the triangle, which forms the alveolar border, is convex.

The most singular character of the cranium of the present fossil Reptile is afforded by the *intermaxillary* bones. These, in their length and regular downward curvature, give to the fore-part of the skull the physiognomy of that of an accipitrine bird; but they differ essentially from both those of the bird and lizard, in being on each side distinct throughout their whole length, and in gradually diminishing to their inferior or rostral extremity, which is not expanded or continued laterally to form any part of the alveolar border of the upper jaw. Each intermaxillary bone is a slender subcompressed elongated bone, bent so as to describe a quarter of a circle; the upper half is thinner, but rather broader, than the lower one, and is wedged in between the superior maxillary, frontal, and nasal bones: the lower half, which is somewhat narrower, but thicker and subcylindrical, *projects freely downwards beyond the superior maxillary bone;* and the deep anterior extremity of the lower jaw is applied to the posterior surface of these produced extremities of the two intermaxillaries when the mouth is closed. The two intermaxillaries converge towards each other from their posterior origins, and are in close contact with each other where they form the singular curved and prominent beak.

The external nostril I presume to be situated between the upper diverging ends of the intermaxillaries, but a fracture of the fossil at

this part prevents the determination of the precise form of this aperture, or the mode of termination of the nasal bones. These bones, if not actually absent in the present fossil, as in most Chelonia, must have been extremely small, as in the Chameleon.

The *lower jaw* is of considerable depth, and exceeds, as in most Saurians, the length of the cranium. The articular cavity is deep and wide: the angle of the jaw is broken off in the fossil directly behind this cavity on the left side, but is continued backwards beyond it for more than half an inch on the right side. The ramus gradually expands in the vertical direction, and becomes thinner from side to side, as it advances forwards, to about its middle part, which is just behind the orbit, where it measures 11 lines in depth: it then begins gradually to diminish vertically to the symphysis, which again slightly increases to its termination, which is obliquely truncated, much compressed laterally, and applied against the deflected extremities of the intermaxillaries. The posterior half of the maxillary ramus is slightly convex externally; the anterior narrower part slightly concave: the superior margin describes a slight but graceful sigmoid curve, convex posteriorly, and concave anteriorly, where it is adapted to the convex alveolar border of the upper maxillary bone, to the inner side of which it is closely applied. The alveolar border forms an external, convex, projecting ridge, analogous to that of the upper jaw.

The composite structure of the lower jaw is very clearly displayed in the fossil. The articular piece is short, but is continued forwards as a slender process below the angular piece *e*, as in the *Varanus*. The angular piece is relatively larger than in *Varanus*, and presents nearly the same proportions as in *Thorictes*. The supra-angular is longer, and occupies the proportion of the jaw formed by the supra-angular and coronoid elements in *Thorictes* and other Lizards. The opercular element extends farther upon the outside of the jaw from its lower margin than in the existing Lizards; *Thorictes*, again, in this respect, coming nearest to *Rhynchosaurus*. The dentary element constitutes the rest of the outer side of the ramus, but not the slightest trace of teeth is discernible. The fossil seems to have been preserved with the mouth

naturally closed, and the upper and lower jaws are in close contact. In this state they must originally have been buried in the sandy matrix, which afterwards hardened around them: and since true Lizards, owing to the uninterrupted succession of their teeth, do not become edentulous by age, we must conclude that the state in which the Rhynchosaurus was buried, with its lower jaw in undisturbed articulation with the head, accorded with its natural state while living, so far as the less perishable parts of its masticatory organs were concerned. Nevertheless, since a view of the inner side of the alveolar border has not been obtained, we cannot be assured of the edentulous character of this very singular Saurian; for in the *Agamæ* and *Chameleons* the dental system, seen only from the outside of the jaws, appears to be represented by mere dentations of the alveolar border, and the anchylosed bases of the teeth, the crowns of which really form the dentations, are recognizable only by an inside view.

But the indications of the dental system are indisputably much less obvious in the *Rhynchosaurus* than in these existing Lacertians: the dentations of the upper jaw are absolutely feebler than in the Chameleon, and no trace of them can be detected in the lower jaw. The absence of the coronoid process, which is conspicuously developed in all Lizards, corresponds with the unarmed state of the jaw; and the resemblance of the *Rhynchosaurus* in this respect to the *Cheloniæ*, and to *Chelys ferox*, indicates that the correspondence actually extended to the edentulous condition of the jaws. The resemblance of the mouth to the compressed beak of certain sea-birds, the bending down of the curved and elongated intermaxillaries, so as to be opposed to the deep symphysial extremity of the lower jaw, are further indications that the ancient Rhynchosaur may have had its jaws incased by a bony sheath, as in Birds and Turtles.

I proceed now briefly to notice the other portions of the skeleton, which, from their size, texture, and community of stratum and locality, are with much probability referable to the *Rhynchosaurus*.

Considerable portions of two rami of two distinct lower jaws, in portions of sandstone from the Grinsill quarries, show the same struc-

ture as that of the jaw in the cranium above described: the thick edentulous alveolar border is bounded below on the outside by the longitudinal channel: the lower border of the ramus is thick and smoothly rounded, it is somewhat abruptly constricted immediately behind the deflected extremity or symphysis. The structure of the bone is very compact; the fractured end demonstrates the large cavity, common in Reptiles, which is included between the opercular and dentary pieces.

One piece of fine-grained sandstone contains a considerable proportion of four of the dorsal vertebræ in a connected chain, which measures 1 inch 10 lines.

Near this chain of four and a smaller part of a fifth vertebræ there are portions of four ribs. These have a simple, not a bifurcated head; they are subcompressed, pretty uniformly curved, and grooved longitudinally on both sides; the longest portion of rib measures two inches, following the curvature.

The same fragment of sandstone contains three flat bones, which offer several striking modifications, whether they be compared with the constituents of an os innominatum or of the scapular arch. The most entire of the three bones* has a thick articular end, a long, broad, and thin plate, forming the body of the bone; and a moderately long trihedral process given off from the convex margin near the articular end. In these characters the comparative anatomist conversant with the modifications of the skeleton in recent and extinct Saurians will recognise a resemblance to the scapula of the Iguanodon and Hylæosaur, in a minor degree to the ischium of the Crocodile, and somewhat more remotely to the pubis of the Tortoise. The trihedral process, in the second comparison, would match the anterior pubic process of the Crocodile's ischium, but the entire bone would differ from that of the Crocodile in the slenderness of the pubic process, in the greater breadth and less length of the body of the bone, and in its extreme thinness; it increases in thickness, however, as in the Crocodile's ischium, towards the articular end. The correspondence of the trihedral process

* Plate vi, fig. 8.

of the bone in question with the long spinous process of the Chelonian pubis, is less close than the one just discussed. If the present well-marked bone of the Rhynchosaur be regarded as a scapula, it is to that bone in the *Dinosauria* that it offers most resemblance; and the prismatic process would then correspond with the one sent off from the anterior part of the glenoid articular surface in the scapula of the Hylæosaur and Iguanodon. The concavity at the neck of the bone, at the side opposite that from which the process extends, also gives it a nearer resemblance to the Dinosaurian scapula than to the Crocodilian ischium: it differs from the scapula of the Crocodile in having the posterior margin beyond the neck straight instead of convex; the corresponding margin in the ischium being concave. The blade of the bone, considered as scapula, is broader and shorter than in either the Dinosaurs or Crocodiles: its outer surface is slightly convex. Supposing the scapula to be placed vertically upon the thicker articular end, the prismatic process is directed forwards and downwards. There are a few pits or inequalities near the neck or thick articular margin in the present fossil. The outer surface of the plate is marked with extremely fine striæ, radiating from the neck.

	In.	Lines.
Length of the bone	1	8
Breadth of the neck	0	$5\frac{1}{2}$
Breadth of the base	1	0
Length of the trihedral process	0	8

*Coracoid**.—The remains of a thin and broad plate of bone, attached by a short neck to an apparently articular thickened head or process, might be compared to a coracoid, since it resembles, so far as it is preserved, the coracoid of Lizards, more than it does any other known bone; there is not, however, the perforation near the articular surface. The breadth of the neck is 6 lines; that of the body of the bone which remains 13 lines; the length or diameter at right angles to the above is 10 lines. The bone is thinned off to an edge, which is gently convex.

Humerus†.—A third bone, imbedded in the same piece of sandstone at a little distance from the preceding, is expanded at both extremities,

* Plate vi, fig. 9, *a*. † Plate vi, fig. 9, *c*.

contracted and twisted in the middle. One of the expanded extremities, apparently the proximal end, is nearly entire: it terminates by an irregular convex border not thinned off to an edge, but adapted to the formation of a joint, and to the attachment of cartilage. The exposed surface of the expanded head is concave from side to side, somewhat resembling the expanded and bent pubic plate in Lizards. The opposite extremity is broken across: it shows the commencement of a slight longitudinal ridge near its middle part. This bone bears most resemblance to a humerus; but I am at present unable to determine it unequivocally. If compared with the left pubis of Lacertians, the entire and bent extremity corresponds with the median portion of that bone; but the middle part or stem is much longer in the fossil; and the broken end which would agree with the acetabular end of the pubis, is too thin to have entered into the formation of such a cavity in the fossil: it likewise wants the perforation which characterizes the pubis in Lizards. The same thinness and imperforate condition of the fractured end oppose the comparison of the present bone with the coracoid of the Crocodile:

	In.	Lines.
Length of this bone as far as complete	1	9
Breadth in the middle	0	3
Breadth of entire expanded extremity	0	10

In the slab containing the above-described bones there are other fragments of bone; but too small and imperfect for profitable description. Those of which I have endeavoured to make the form and analogies intelligible, though evidently peculiar, as might be expected in a Saurian with so strange a head, and perhaps with a hind toe directed backwards as in Birds, may be regarded as most probably constituents of a strong and well-developed pectoral arch, and a humerus: and they indubitably indicate a mechanism for locomotion on land, which would agree with that of the animal that has left the impressions of its footsteps upon the same sandstone.

Radius and Ulna.—Another piece of coarse-grained sandstone from the same quarry contains a series of seven or eight vertebræ, in a very fragmentary state; also two or three ribs, rather more slender and not

so distinctly grooved as in the fine-grained slab, and the proximal extremities of two long bones, which most resemble a lizard's radius and ulna. The shaft of the radius is more slender than that of the ulna: one side is flat, the other convex: it expands and assumes a subtrihedral figure, by the development of a slight longitudinal ridge: its proximal end is compressed and more suddenly expanded: its breadth is 2¼ lines; that of the shaft of the bone is 1 line. The impression, partly broken away in the stone, indicates the greater expansion of the distal end of this bone, with a length of 1 inch 3 lines. The proximal end of the ulna has a distinct trihedral figure, and the expanded extremity is produced backwards, so as to indicate the olecranon: the breadth of the head is 4 lines; that of the middle of the shaft is 2½ lines. There is a portion of a broad and flat bone in this piece which may have belonged to the scapular arch.

Ilium.—In another piece of stone, with the other portion of the same chain of five vertebræ, there is a broad flat bone, apparently terminating in a long narrow process at one end, which may be an ilium: its length is indicated to be at least 1 inch 7 lines.

Femora.—A thin piece of burr, or coarse-grained sandstone, contains the articular end of a broad and flat bone, in which the raised oblong surface of the joint is divided by a smooth channel, and may be compared with the cotyloid portion of the ilium: the same piece of stone contains the shafts of two long bones, most probably femora. The length of the most perfect of these is two inches, and this does not include the distal end: the diameter of the middle of the shaft is 2½ lines: the surface of the preserved middle part shows the shaft to have been somewhat angular: the compact outer wall of the bone is about a quarter of a line thick: a large medullary cavity extends the whole length of the shaft, agreeing with the indications of terrestrial habits yielded by the bones before described: the extremities of the femora are spongy, but much decomposed and stained with iron-mould.

There are few genera of extinct reptiles of which it is more desirable to obtain the means of determining the precise modifications of the locomotive extremities than the *Rhynchosaurus*. The fortunate preservation

of the skull has brought to light modifications of the Lacertine structure leading towards Chelonia and Birds, which were before unknown: the vertebræ, likewise, exhibit very interesting deviations from the Lacertian type. The entire reconstruction of the skeleton of the *Rhynchosaurus* may be ultimately accomplished, if the collection and preservation of the fossils of the Grinsill quarries be continued with the same activity and care, as have already produced so important an accession to Palæontology through the well-directed zeal of Dr. Ogier Ward, and other members of the Literary and Scientific Association at Shrewsbury.

DESCRIPTION OF THE PLATES.

Plate V.

Skull of the *Rhynchosaurus articeps*.

Fig. 1. Side view.
2. Three-quarters' view.
3. Upper view.
4. Front view.
5. Back view.

All the figures are of the natural size, and the same parts are marked with the same letters in each figure.

Cranium and Upper Jaw.

a Intermaxillaries.
b Nasal.
c Frontal.
d Maxillary.
e Anterior frontal.
f Lachrymal.
g Malar.
i Posterior frontal.
ï Orbital division of ditto.

m Mastoid.
l Temporal.
n Parietal.
o Supra-occipital.
q Bifurcated process of Parietal.
r Tympanic.

Lower Jaw.

a Dentary piece.
b Opercular ditto.
d Articular ditto.
e Angular ditto.
f Coronoid ditto.

Plate VI.

Vertebræ and other Bones of the *Rhynchosaurus articeps*.

Fig. 1. Chain of five dorsal vertebræ, vertically bisected, shewing the concave articular surfaces, and the ventricose spinal canal.

2. Opposite and more mutilated side of the same chain, with a portion of the ilium.

3. Upper view of an entire dorsal vertebra.

4. Upper view of fig. 1, shewing the grooved ribs.

5. A chain of caudal vertebræ.

6. A portion of the left ramus of the lower jaw.

7. A chain of vertebræ, with ribs; fragment of Scapula, Radius and Ulna.

8. Right scapula.

8. *a*. Corresponding bone of the *Hylæosaurus* much reduced, shewing a similar process from the acromion.

9. Part of the coracoid *a*, the clavicle, and humerus *b*.

10. Part of the ilium, and of both femora.

All the parts of the Rhynchosaur are of the natural size.

Fig 1.

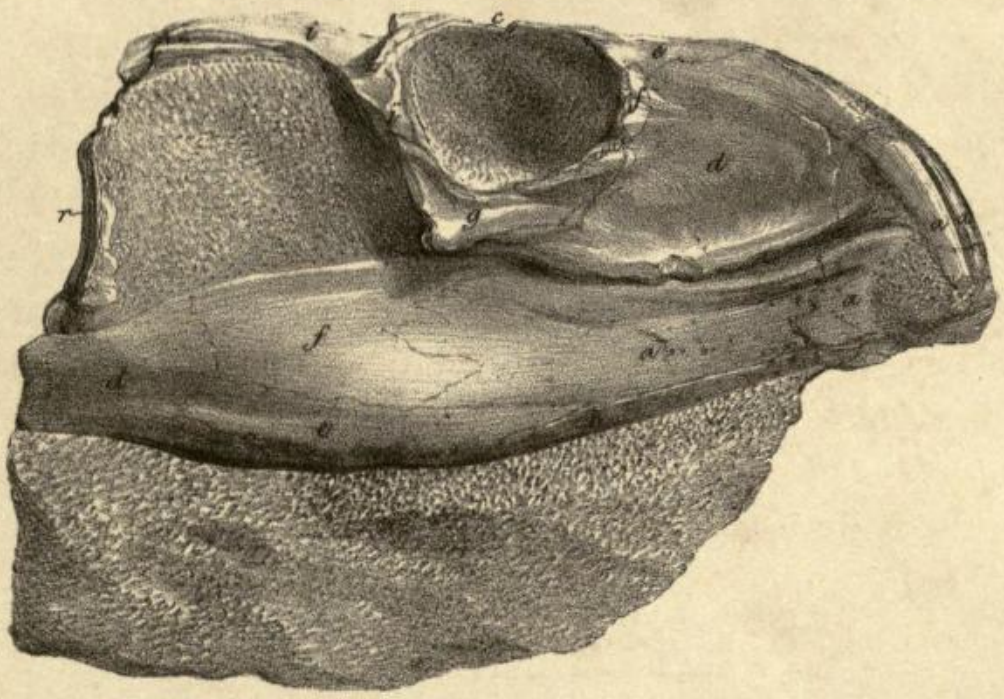


Fig. 3.

Fig 4.

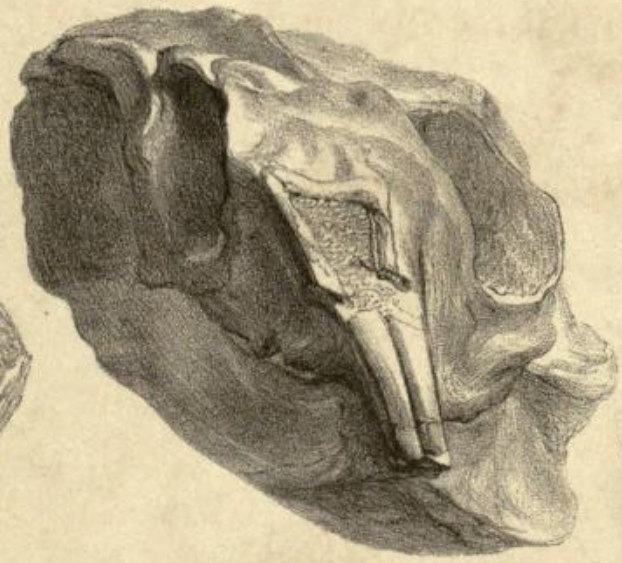


Fig. 5.

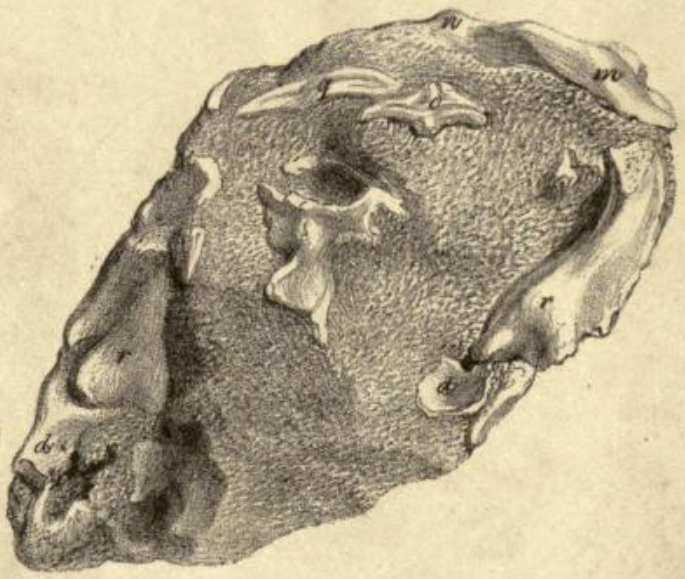
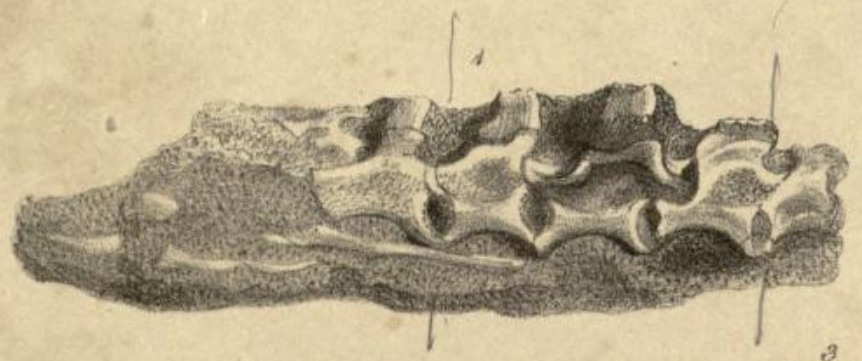


Fig 2.

Lithog. from Nature by G. Scharf.

Rhynchosaurus.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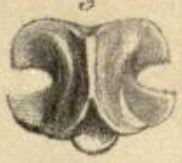
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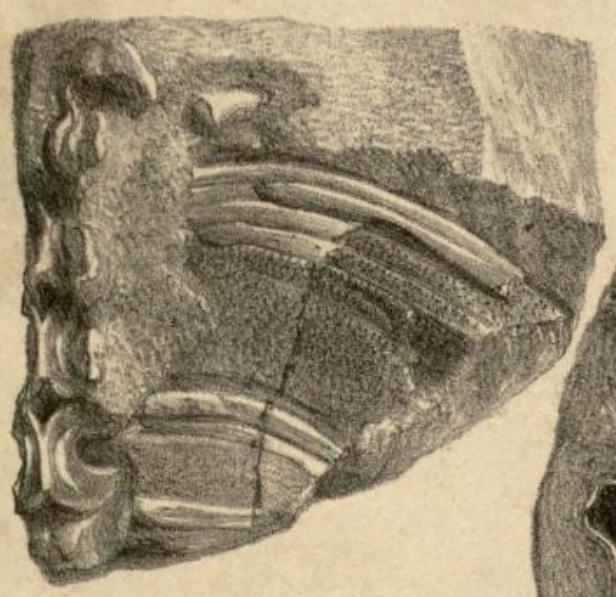
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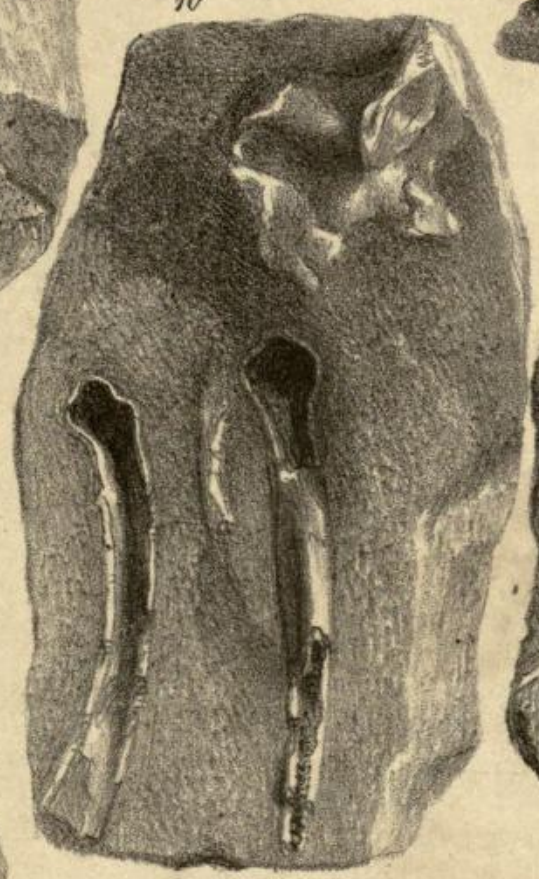
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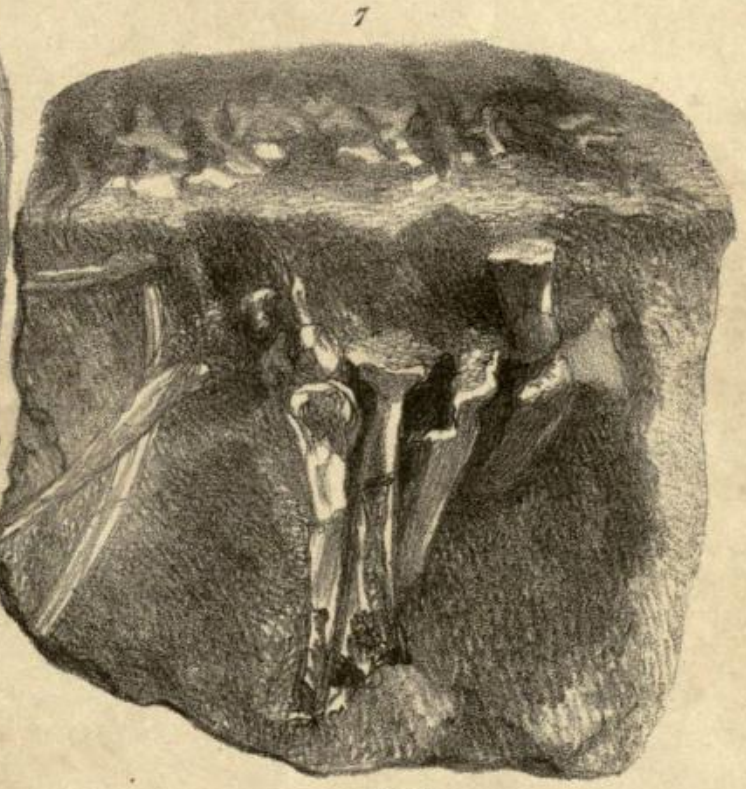
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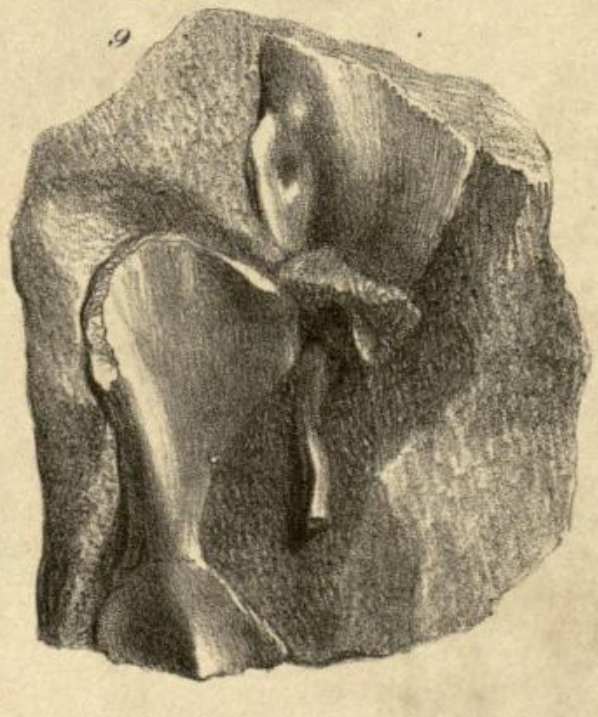
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Lithog. from Nature by G. Scharf.

Rhynchosaurus.