XI. *Description of some Remains of the Gigantic Land-Lizard* (Megalania prisca, Owen), *from Australia.*—Part III.

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Received January 20,—Read February 3, 1881.

[Plates 64–66.]

Mr. George Frederick Bennett, pursuing, after transmission of the subjects of Part II.,* his exploration of the drift-bed of "King's Creek," succeeded in extricating other fossils which, from their size and contiguity with those previously exhumed, he concluded to be portions of the same individual.

On the reception and readjustment of these supplementary fossils, which, like their predecessors, reached me in a fragmentary condition, my surprise at the additional armature of the animal, so exemplified, exceeded that with which I contemplated the evidences of the cranial weapons of the great extinct Lacertian.

If, indeed, the last received fossils had first come to hand a conclusion that they formed part of some huge Armadillo might have been condoned.

They consist of portions of the armour of a tail, and include three annular segments and the terminal cap of an osseous sheath, of which the two hindmost rings had coalesced with each other and the cap (Plate 65, figs. 1, 2, and 3). The anterior detached ring (ib., *a*, and fig. 4) may have come from a more advanced part of the tail, but the peripheral border of the hinder aperture (ib., fig. 4, *e*, *e*) fits that of the front aperture of the foremost of the coalesced group (ib., figs. 1–3, *a′*, *b*).

Each of the annular segments sends off two pairs of massive conical processes, like the horn-cores of the skull, but of larger size, being broader and thicker in proportion to their length and rather more obtuse at the apex. The cone forming the tip of the tail-sheath (ib., figs. 1–3, *c*) is simple and cap-shaped.

The area of the detached ring (Plate 64) is of a wide, vertically oblong, or ovoid shape, 6 inches in vertical, 5 inches in transverse, diameters, with a moderately smooth inner surface. A feebly developed medial longitudinal ridge projects downward or centrad from the upper part or key-stone of the arch. The outside transverse diameter of the segment, excluding the well-defined processes, is $6\frac{1}{2}$ inches, the antero-posterior diameter or length of the ring is $6\frac{1}{2}$ inches. The thickness of the bony wall near the hind border is from 8 to 10 lines, decreasing a little toward that margin;

* Phil. Trans., Vol. 171, 1880, p. 1037.

the front border thins off almost to an edge. This border was received by the hind one of the segment in advance; the hind border, though somewhat mutilated, fits very fairly the front border of the foremost of the coalesced segments; in its present state it is, in great part, formed by the hind borders of the bases of the two pairs of solid conical processes.

Of these the upper or dorsal pair (Plate 65, figs. 1–4, *a, a*) are the largest and longest; the transverse diameter of the base of each is 4 inches; the antero-posterior diameter is $3\frac{3}{4}$ inches; the height, taken from the outer border of the base of the cone, is 4 inches. The body of the cone is subtrihedral with the apex directed obliquely upward, outward, and backward. The medial and hinder facets are convex both across and lengthwise; the antero-external facet is partly flattened across and is concave lengthwise. The surface of this horn-core is roughened by numerous small neuro-vascular foramina, like those upon the cephalic weapons, indicative of the activity of the sheath-forming periosteum. The second pair, or lateral cores (ib., ib., *b, b*) are much smaller, and are mammilloid in shape. Each measures $2\frac{1}{2}$ inches across the base and rises to the same height, measured along the outer basal border. The hind border of the ring, as here conserved, is continued directly upon the base of the core; the extension thereto from the fore border is more gradual. From tip to tip of the dorsal cores (*a, a*) is 10 inches; the same admeasurement of the lateral pair (*b, b*) gives 9 inches.

The cavity of the readjusted portions of the free caudal dermosteal girdle contained no corresponding endo-skeletal segment, nor any adherent parts of such. The vertebra had probably escaped the research of my friend.

The anterior aperture of the antepenultimate coalesced segment exposed the corresponding caudal vertebra (Plate 64).

The key-stone ridge, answering to that noted in the foregoing segment, was here confluent with the neural spine (*ns.*) of its vertebra; a like confluence attached the hæmal spine (*hs.*) to the floor. Thus the area of the girdle was bisected by the vertebra. But the presence of a ridge (*e, e*) from each side of the inner surface of the girdle, and the fractured ends of answerable transverse processes (*d, d*) directed thereto, indicated that the surrounding wall had been strengthened by both transverse and vertical buttresses. The centrum of this caudal vertebra is compressed and is directly continued, by coalescence, with the bases of both neur- and hæm-apophyses. The centrum contracts to both these junctions, and narrows transversely to its exposed anterior part, the broken surface of which indicates bony union with a caudal vertebra in advance. The neural canal (*m*) has a transverse diameter of 5 lines, the vertical diameter is less: a low ridge projects from the floor of the canal. The section of the hæmal canal (*p*) gives a vertical ellipse 3 lines by $1\frac{1}{2}$ lines.

The inner surface of the bony girdle is moderately smooth, as in the anterior segment: the outer surface differs chiefly in the larger size of the lateral horn-cores (*b′*). The upper or dorsal pair (Plate 64, *a′*) present the same size as in the free segment, with the same general form and direction, but sloping a little more outwards, so that their inner or medial surfaces meet along the upper mid-line of the supporting ring at a more open angle (Plate 64, *a′*, *a′*). The antero-posterior diameter of the base of each core is $4\frac{1}{2}$ inches, and is coextensive with that dimension of the supporting girdle: the transverse basal diameter of each upper core is the same: the height or length of the core taken along the upper medial line is $5\frac{1}{2}$ inches; taken along the outer side of the cone it is $4\frac{1}{2}$ inches.

Of the lateral horn-cores (*b′*, *b′*) the fore-and-aft length of the base is co-extensive with that of its supporting ring: the height of the core from the upper border of the base is 2 inches. The apex is less obtuse than that of the antecedent lateral core. The under side or basal border of the core *b′* is directly continued into the under and outer surface of the girdle. The outside vertical diameter of the antepenultimate girdle is $6\frac{1}{2}$ inches, its transverse diameter taken at the interspace of the dorsal and lateral cores is 7 inches. The same diameter of the area of the girdle is 5 inches; its vertical diameter is $4\frac{1}{2}$ inches. The contour of the anterior outlet is subquadrate with the angles broadly rounded off, and the sides bulging a little inward opposite the caudal diapophyses.

The penultimate segment presents a similar structure to the preceding, with some loss of depth and breadth, and a little increase of length, viewed laterally, as in Plate 65, fig. 1. The homologous processes, or horn-cores, are indicated by the letters *a″* and *b″* in figures 1–3 of that Plate. The apex of *a″* is directed backward and outward, that of *b″* is relatively less produced than in the antecedent segment.

The terminal segment (ib. ib., *c*) is a simple cone, with a base of 3 inches in both transverse and vertical diameters, and a subobtuse apex directed backward.

At the under surface of the preserved parts of the tail-sheath (ib., fig. 3) the last two segments have the line of confluence more feebly marked than above or at the sides, their respective contributions to the under surface being indicated by a shallow linear transverse depression. The under surface of the antepenultimate segment (ib., *b**) is broadly heptagonal, with the anterior transverse border forming a low angle forward. The corresponding part of the free segment is, in great part, broken away. The whole of the preserved under surface of the above portion of the tail-sheath is flattened and shows marks of attrition against the surface on which the *Megalania* trod, as if ossification had there extended into the dermal coat.

That the horny sheaths of the above-described bony supports or cores arming the end of the tail may have been applied to deliver blows upon an assailant, seems not improbable, and this part of the organisation of the great extinct Australian Dragon may be regarded, with the cranial horns, as parts of both an offensive and defensive apparatus.

As with the cranial weapons, so with the caudal ones, examination and comparison were, in the first place, instituted in relation to all available specimens of existing *Lacertilia;* and the most notable instance of tail-armature seemed to be that of a small

Uromastix, from Zanzibar, recently described and figured as *U. princeps* by my friend and colleague A. W. E. O'Shaughnessy, Esq., in the 'Proceedings of the Zoological Society of London,' for June 1, 1880 (p. 445, plate 43). The striking character and proportions of the caudal weapons of this Lizard may, perhaps, weigh for admission of a copy of the above-cited figure, amongst the illustrations of the present paper (Plate 66, fig. 1). In this recent instance, however, the horns, or horny spines, are confined to the tail.

As in *Megalania* they have an annular arrangement and are best developed on the dorsal and dorso-lateral parts of each ring. Those (ib., figs. 1–3, *b*, *b*) corresponding with the dorso-lateral horns in *Megalania* are the largest; the laterals, or medi-laterals (ib., *c*, *c*) are relatively smaller: the rest of the lateral and underpart of each ring is covered by oblong narrow, flat scales in two transverse series (ib., figs. 2, 3); the anterior (ib., *d*, *d*) short, the posterior series (ib., *e*, *e*) long,—an arrangement which seems to multiply the number of the cutaneous segments. The spines of second degree as to size which spring from the dorsal surface of the tail (ib., fig. 1, *a*, *a*) are six in number on each ring, arranged in the same transverse line: they are shorter than the dorso-lateral series, and slightly diminish toward the mid-line.

All the spines are rather more compressed, more triangular, more sharply pointed, than in *Megalania*: the series *a* and *b*, especially the latter, are relatively larger and longer; but it must be remembered that in the case of the great extinct Lizard we have only the osseous cores of these weapons, and that their sheath of true horny material may have greatly added to the efficiency of the strange and grotesque armature.

In *Uromastix*, moreover, as was noted in Part II. (tom. cit., p. 1047) in reference to the cranial horns of *Moloch*, histological development has not advanced in the diminutive Lizards beyond the fibro-cartilaginous stage of the productions of the corium supporting the corneous sheaths.

Pursuing this track of comparison it was with interest I found in the small existing Australian species that, although the caudal horns or spines are relatively somewhat smaller in *Moloch horridus* than in *Uromastix princeps*, they more closely repeated in number and arrangement the conditions of the caudal armature above described in *Megalania prisca*.

The annular disposition is, in the main, maintained. Taking one of the cutaneous rings near the base of the tail the following horns are present (Plate 66, figs. 4, 5, and 6).

The dorsals (*a*) are in a single pair, as in *Megalania*, with an interspace equal to their own basal breadth. External to these is a dorso-lateral pair (ib., *b*, *b*) divided from the dorsals by a space rather wider than their own basal diameter. Next come a "lateral pair" (ib., fig. 5, *c*) projecting from the middle of the side-surface of each annular series, but placed, in some of them, rather farther back than the dorso-laterals. Then come the spines of a ventro-lateral pair (ib., *d*) nearly on the same vertical line with the laterals; but, as in *Megalania*, of markedly smaller size and projecting from the margin of the under surface of the tail. On this part may be distinguished some still smaller spines, with a scattered arrangement.

At the under surface of the basal part of the tail the horns (*b*, *c*, *d*) appear as shown in fig. 6, the surface is flattened and finely tuberculate but without spines. Towards the hinder half of the tail the two horns of the lateral pair deviate from the transverse parallel arrangement, and assume a zig-zag one, but with longitudinal intervals in proportion to their gradually decreasing size : the dorsal spines longest retain their horn-like proportions.

Moloch horridus thus exemplifies a closer resemblance in the number and arrangement of the annular series of caudal horns to *Megalania* than does *Uromastix princeps*, and a closer repetition also in the shape and proportions of the individual horns : they are not compressed, but are more regular cones than in the Zanzibar Lizard. If the apex of the cone be sharper in *Moloch* than in *Megalania*, such difference may be due, as before remarked, to the absence of their corneous covering in the massive bony cores exemplified in the fossils from "King's Creek."

It is probable that the arrangement of these singular caudal weapons in the part of the tail of *Moloch*, which part is wanting in our present evidences of *Megalania*, may indicate the character of the armature of such missing evidences. But that the tail in *Moloch* is different at its terminal portion from the corresponding part in *Megalania* is demonstrable and not any of the horny cones have bony bases.

For a repetition of so singular a structure we must go to a higher class of Vertebrates. Before, however, entering upon comparative details afforded by certain members of the Mammalian class, some further notice may be expected of dermal ossifications, more especially caudal ones, in the class *Reptilia*.

In the group of existing Lizards to which both *Moloch* and *Uromastix* are akin there are genera, *e.g.* *Scincus*, *Tiliqua*, in which the scales, or most of them, are supported by bones : in *Cyclodus* the degree of ossification is such as to raise the surface of the skin both of the trunk and tail into prominences, which, however, are obtuse.

The chief dermal ossifications in the order *Chelonia* form, as is well known, the horizontal plates which become confluent with the neural spines and pleurapophyses of the dorsal vertebræ ; also with the sternum and sternal ribs : the marginal plates of the carapace are independent skin-bones. But as no such ossifications are associated with the caudal vertebræ, further notice of these *Reptilia* is uncalled for in the present relation. A bony basis of the horny armour of parts of the tegument is constant in the species of the order *Crocodilia*. Along the dorsal and lateral regions, but especially the dorsal, in the neck, trunk, and tail, the outer surface of certain of such scutes is produced into a ridge. In the Alligators ventral as well as dorsal scutes have an osseous support. This character is so remarkable in the extinct *Crocodilia* of the Oolitic period that the Teleosaur of the Caen deposits was characterised by CUVIER as "l'espèce la mieux cuirassée de tout le genre."*

* 'Ossemens Fossiles,' tom. v., pt. 2, p. 139.

In the Wealden *Goniopholis* the quadrangular dorsal scutes are united, tile-wise, by peg-and-socket joints; the equally thick ventral scutes join each other by thick sutural borders, and an annular arrangement of the armour needs but little to be complete.*

This, in fact, is effected in a more closely mailed Saurian described under the name of *Ætosaurus ferratus.*† Nearly a score of these extinct Reptiles, in all their panoply, were discovered and exposed on one slab of "Middle Keuper sandstone," at Haslach, in Wirtemberg. The arrangement of the scutes is annular. The long axis of the dorsal ones is transverse and a single pair spans the back and corresponding surface of the tail: the ventral scutes are quadrangular, in four transverse pairs: there is a single large lateral scute on each side. Thus twelve scutes compose each dermal segment or circle. But in none is the outer surface produced into a ridge or spine.

In *Hylæosaurus* the petrified osseous supports indicate the back to have been defended by long, compressed sharp-pointed triangular spines, probably in pairs, resembling in shape and relative size the caudal ones of *Uromastix princeps;* but evidence of the dermal caudal armature of the above Dinosaur is wanting.

To this part of *Megalania* the nearest approach in its cold-blooded class seems to be made by a Liassic Dinosaur (*Scelidosaurus Harrisonii*).

The surface of this Saurian was defended by longitudinal series of massive dermal bones, those occupying the median and upper surfaces being arranged in pairs upon the trunk and base of the tail. External to these were lateral series, at least two in number on the trunk, having a similar shape and ridged exterior; but in some of the mid-dorsal series, the bony support of the horny tegument was developed into a stout conical shape, like those on the caudal girdles of *Megalania.* Each endoskeletal segment of the tail of the Scelidosaur was associated with an annular series of detached dermal ossicles of considerable size and thickness. Where best preserved, beyond the base of the tail, they are four in number (Plate 66, fig. 7). The largest (*a*) protects the upper surface of the segment, the next in size (*c*) the under surface, and a pair of smaller scutes (*b*) are applied one on each side of the same segment. These plates are termed "dermo-neural," "dermo-hæmal," and "dermo-lateral" respectively, in the undercited monograph.‡

The dermo-neural plate of the segment figured in Plate 66 is of an oblong shape, with an excavated base, the sides of which converge to an apical elevated ridge, with a longitudinally convex contour. A portion of the left side of the base has been removed to expose the hollow, in which a small depression receives the summit of the neural spine: the fore part of the basal cavity rests upon the upper surface of a produced anterior zygapophysis of the inclosed caudal vertebra.

* "Report on British Fossil Reptiles," vol. of the British Association, &c., for 1841, p. 70.

† OSCAR FRAAS, 'Monograph on *Ætosaurus*,' 4to., 1877.

‡ Volume, 4to., issued by the Palæontographical Society, for 1862, p. 22 of the "Monograph on Liassic Reptilia."

The dermo-hæmal ossification (ib., ib., *c*) resembles the dermo-neural one (*a*) in a reversed position; its base is also excavated, and receives in a special depression the end of the hæmal spine; it is not situated exactly opposite the one above but is further back. In both bones the outer surface is finely rugose, the inner or concave surface is smooth.

The dermo-lateral ossicles are oblong and sub-elliptic; similarly rugose externally, smooth in the inner surface, and not directly attached or applied to any part of the corresponding vertebra. In the segment selected for Plate 66, fig. 7—about the 20th of the caudal series—the transverse processes of the vertebra have ceased to be developed.

It is obvious that if these detached portions of the dermo-skeleton of a caudal segment of the Scelidosaur had been connected by continuous ossification in the intervening corium, a bony cylinder would have resulted, such as the extinct *Megalania* presents: but with the difference as regards the number of the outwardly projecting processes.

The closer repetition of the Megalanian caudal character is presented by members of the Mammalian class. In the gigantic extinct species of the loricate family of the order *Bruta* forming the type of the genus *Glyptodon*,* the extent of tail preserved measured in the specimen on which the genus was founded 3 feet 6 inches in length, and was inclosed in a defensive osseous sheath, showing an annular arrangement of the skin-bones.

In the basal half of this sheath the constituent ossicles are arranged in segments, and each segment is composed of two annular series of ossicles, the proximal series presenting the rose-pattern of those of the main part of the carapace, the distal series of larger and more prominent ossicles repeating rather the character of the hinder marginal series of the carapacial bones.† The constituent ossicles have more or less coalesced in each segment; and, of these, the seven basal rings remain distinct, allowing a certain extent of flexibility in that part of the tail. The terminal portion of the tail-sheath forms, as in *Megalania*, one continuous osseous case, closed at the tip, near which it developes two lateral large and massive conical bosses, the apex being obtuse. A series of progressively smaller and less prominent lateral ones indicates six or more rings to have contributed to this bony sheath; and smaller supplementary elliptical plates, above and below the larger lateral ones, complete the

* 'Appendix' to PARISH (Sir WOODBINE) 'Buenos Ayres from the Conquest,' 8vo., 1838, pp. 217 and 433, plate 1; Proceedings of the Geological Society of London, March, 1839, p. 236; Trans. Zool. Soc. (2nd series), vol. vi., p. 81.

† The figure of the carapace in my 'Catalogue of the Fossil Mammals in the Museum of the Royal College of Surgeons of England' is copied by NODOT ('Description d'un nouveau genre d'Edenté fossile,' plate 4): a more complete restoration of the entire exo-skeleton and exposed parts of the endo-skeleton forms the subject of plate 36 of the excellent work of BURMEISTER (German M. and Phil. D., Director of the Public Museum of Buenos Ayres), entitled 'Anales del Museo Publico de Buenos Ayres,' 4to., 1870–1874.

complex defensive peripheral developments of the osseous tail-armour of *Glyptodon clavipes.* But the species of *Glyptodon* of which the tail-sheath more closely resembles that of *Megalania,* as exemplified by the subjects of the present paper, is the *Glyptodon* (*Schistopleurum*) *asper* of BURMEISTER.*

The bony tail-rings are nine in number (Plate 66, fig. 8), and each ring is composed, as in *Glyptodon clavipes,* and, partially, in *Uromastix princeps,* of a smaller and larger series of ossicles (ib., *d, e*); but those of the hinder series (*e*) are each developed into a conical protuberance, smallest in the two proximal rings and increasing in size, prominence, and sharpness of apex, to the fourth ring; thence the horn-like bosses decrease in number, though hardly in size, to the terminal closed segment of the sheath.

In an antecedent girdle may be distinguished one dorsal pair (Plate 65, fig. 5, *a, a*), a dorso-lateral pair (ib., *b, b*), a ventro-lateral pair (ib., *c, c*), and two smaller ventral pairs (*d, d'*), of massive conical protuberances.

In number and arrangement the pattern of the small existing Lacertian (*Moloch*) is adhered to; but the great Armadillo, in the osseous basis of the protuberances as well as in their relative size, repeats more closely the armature of the terminal segments of the bony tail-sheath of *Megalania.* The relations of the exo- to the endo-skeleton are also essentially the same. The neural spine of the caudal vetebra, in *Glyptodon,* rises to contact with the roof of the overarching bone, but expands and divides to give a more extended support (ib., ib.). The hæmal spine in like manner expands, but in a minor degree, upon the floor of the cylinder. Moreover, in the caudal segment, the subject of fig. 5, the transverse processes are developed and similarly expand to buttress the side walls of the dermosteal sheath.

In the caudal segment of *Megalania,* the subject of Plate 64, both neural and hæmal spines do expand at their terminal confluence with the sheath, and if, as is probable, the lack of extension of the transverse processes (*d, d*) be due to accidental fracture and loss, the inward projections of the parts of the sheath against which, if entire, they abutted, indicate, also, expanded terminations. But the difference in the relative size of the endoskeletal element of the tail-segment is manifestly in favour of the Mammal.

The unlooked for anticipation, so to speak, of the loricate character of tail of certain members of placental Mammals by a genus of oviparous Lacertians has suggested the following final remarks.

The Pangolins (*Manis*) offer a singular exception in their high class to other Mammalia in the scaly nature of their tegument in which the imbricate arrangement of the horny tissue repeats the common condition of the covering of Lizards. I conceive this, with their toothless character, their gizzard and gastric glands, and their Reptilian retention of intra-abdominal testes, to contribute a more significant indication of their position in the scale of the warm-blooded, viviparous, and lactiferous

* 'Anales del Museo Publico de Buenos Ayres,' 4to., 1871, p. 411, plate 40.

class than the shape or substance of any portion of the deciduous appendages of their fœtus.

The dermal bones of the Armadillos (*Dasypus*) have been cited, in like relation to guidance as to status in the Mammalian series; and now, for the first time, we are enabled to show that the singular annular arrangement of such ossifications, sustaining massive conical cores of corneous weapons, is a repetition of, or, as it were, has been borrowed from, an antecedent cold-blooded, air-breathing class.

And what are the Mammals that most resemble the scale-clad and bone-clad genera in other organic phenomena? I refer not, now, to the Monotremes and Marsupials; these, by common consent of Systematists, are deposed from the place they hold in the Cuvierian system, and are relegated to the lowest position in their class. They manifest marked differences amongst themselves, but there is an anatomical character common and peculiar to them. It is a cerebral one, in which the great commissure of the brain, as it exists in all other and higher Mammals, is represented by a rudiment, the connexions and position of which are best expressed by the term "hippocampal commissure."

With the Pangolins and Armadillos are associated, also by a cerebral character, the Rodents, Insectivores, Bats, and Sloths. In every species of these Orders, as in the species of *Bruta*, the cerebral hemispheres are not extended over any part of the cerebellum, and, with few exceptions, are outwardly smooth or unconvolute. At such a stage of Mammalian development is it that we find, as in the Lizards and Snakes, species becoming torpid in winter, of which Dormice among the *Rodentia* and Bats among insect-eaters are notable instances. In such low Mammals the heart, as in *Reptilia*, retains the faculty of circulating carbonised or black blood. Again, as the Pangolin borrows the scales and the Armadillo the scutes of the Reptiles, so the Hedgehogs and Porcupines borrow, for their covering, the main part of the feather, that, namely, to which it is reduced in the wings of the Cassowary.

The supernumerary neck-vertebræ and their free or floating ribs is an osteological character which has been continued from the Crocodiles to the Sloths; and the latter smooth-brained Mammals show kinship with the antecedent cold-blooded air-breathing Vertebrates, by the tenaceous post-mortem irritability of the muscular fibre and the long continuance of its contractile response to stimulants.

Description of the Plates.

PLATE 64.

Front view of the ante-penultimate caudal segment, showing the exo- and endo-skeletal parts; natural size: *Megalania prisca*.

PLATE 65.

Fig. 1. Side view of the four terminal exo-skeletal segments of the tail: *Megalania prisca.*

Fig. 2. Upper view of the same segments.

Fig. 3. Under view of the same segments.

Fig. 4. Back view of the foremost segment. (The above figures are reduced in the degree shown by comparison with Plate 64.)

Fig. 5. Front view of corresponding caudal segment, showing the exo- and endo-skeletal parts; half the natural size. *Glyptodon asper* (BURMEISTER).

PLATE 66.

Fig. 1. *Uromastix princeps;* natural size (after O'SHAUGHNESSY*).

Fig. 2. Side view of exo-skeleton of the tail of ditto; natural size (original).

Fig. 3. Under view of the same part (original).

Fig. 4. Upper view of two exo-skeletal segments of the tail; natural size. *Moloch horridus.*

Fig. 5. Side view of three exo-skeletal caudal segments; natural size. Ib.

Fig. 6. Under view of three exo-skeletal segments, nearer the end of the tail; natural size. Ib.

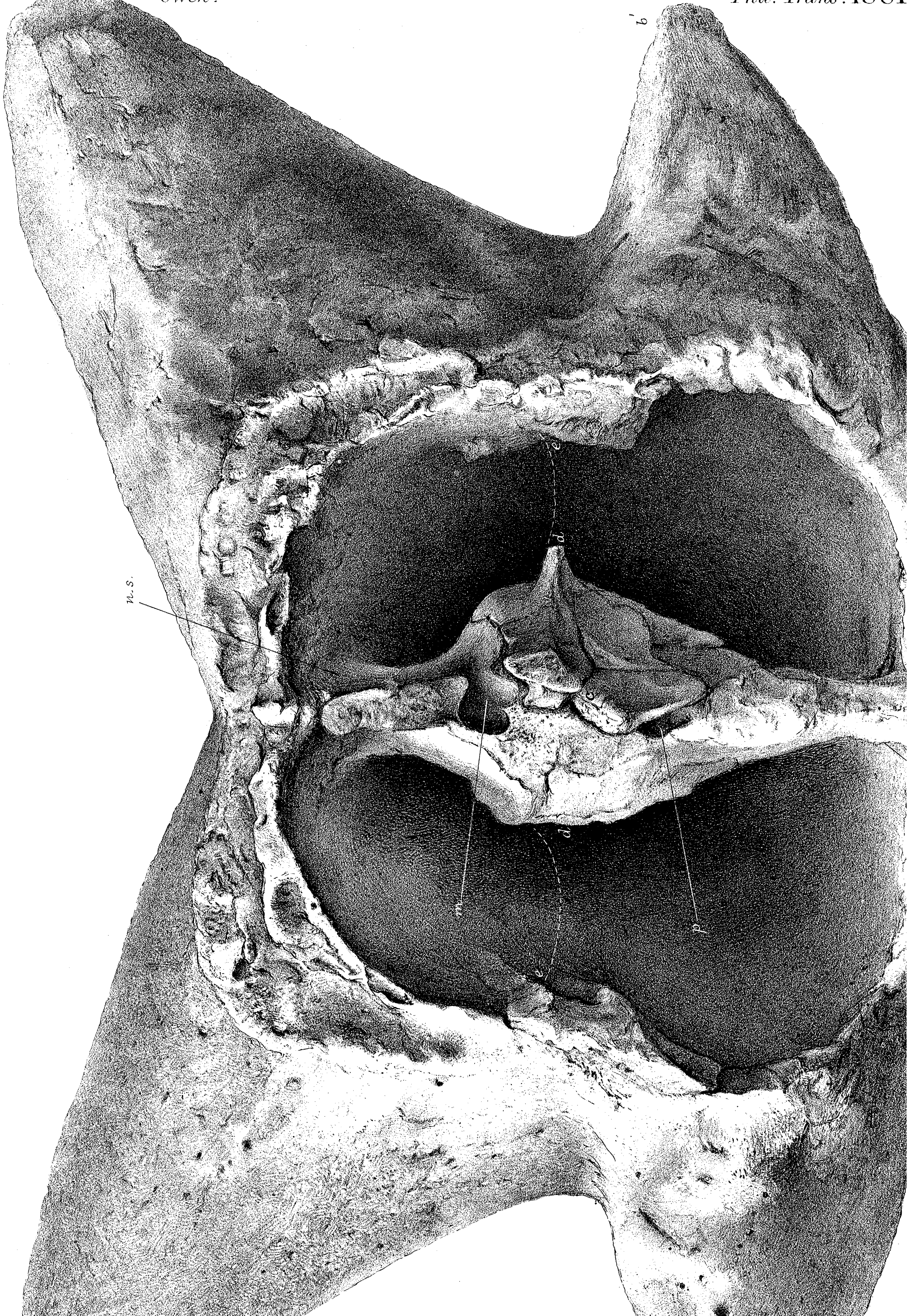
Fig. 7. Side view of the endo- and exo-skeletal parts of a caudal segment; natural size. *Scelidosaurus Harrisonii.*

Fig. 8. Side view of the exo-skeletal segments of the tail; one-eighth the natural size. *Glyptodon asper* (after BURMEISTER).

Fig. 9. Upper view of the five terminal exo-skeletal segments of the tail; one-eighth the natural size. *Glyptodon asper* (after BURMEISTER).

Fig. 10. Under view of the same segments (after BURMEISTER).

* *Op. cit.*, Plate 43.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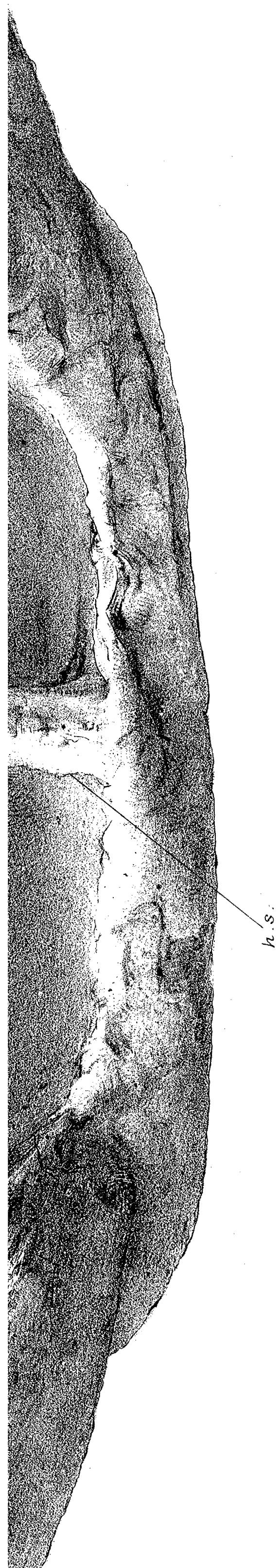
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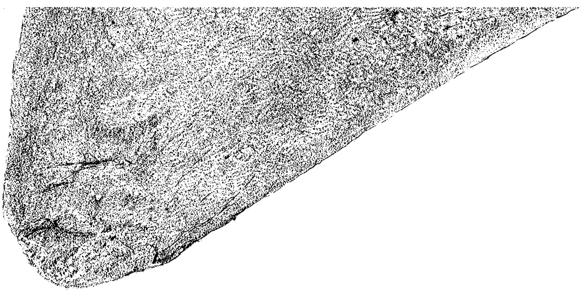

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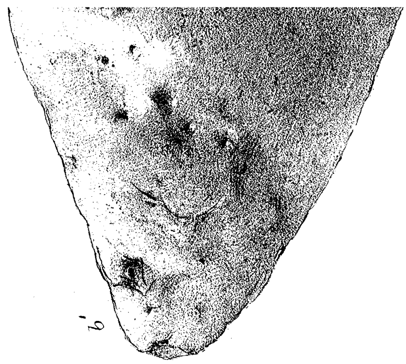

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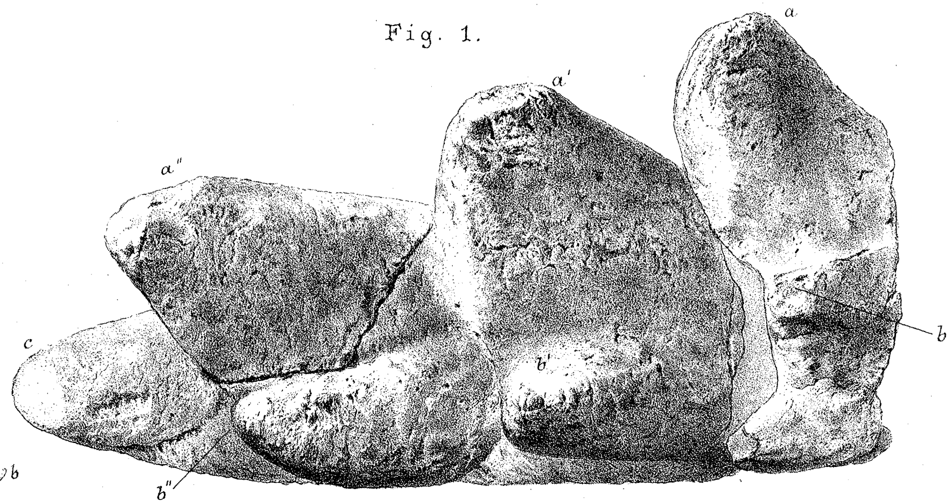
Fig. 1.



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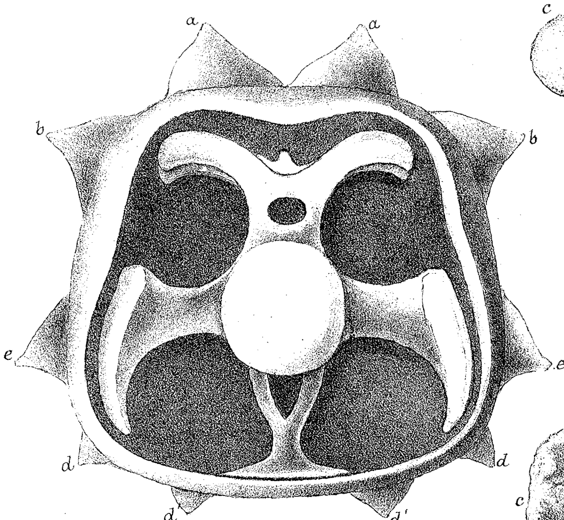

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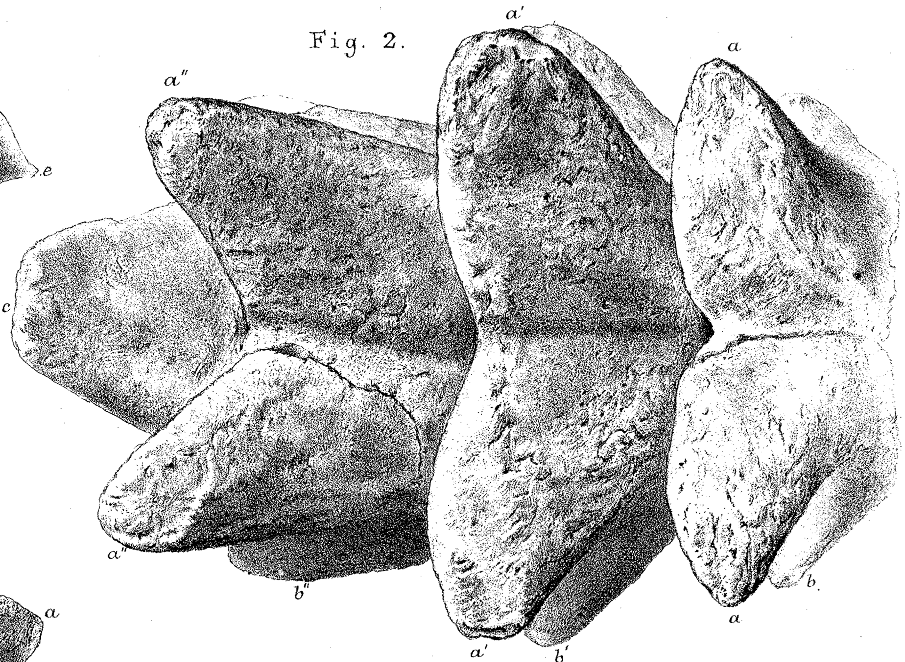

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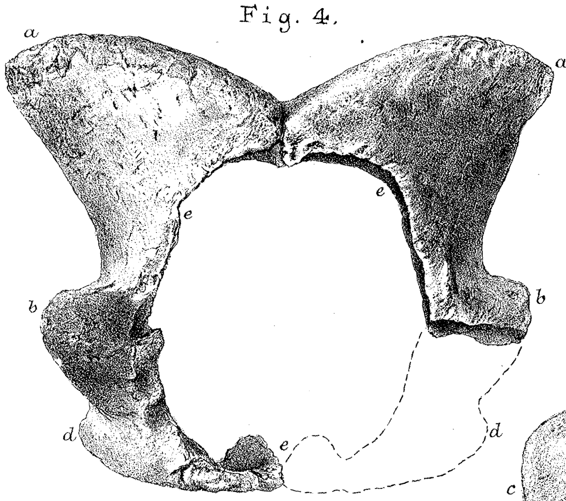
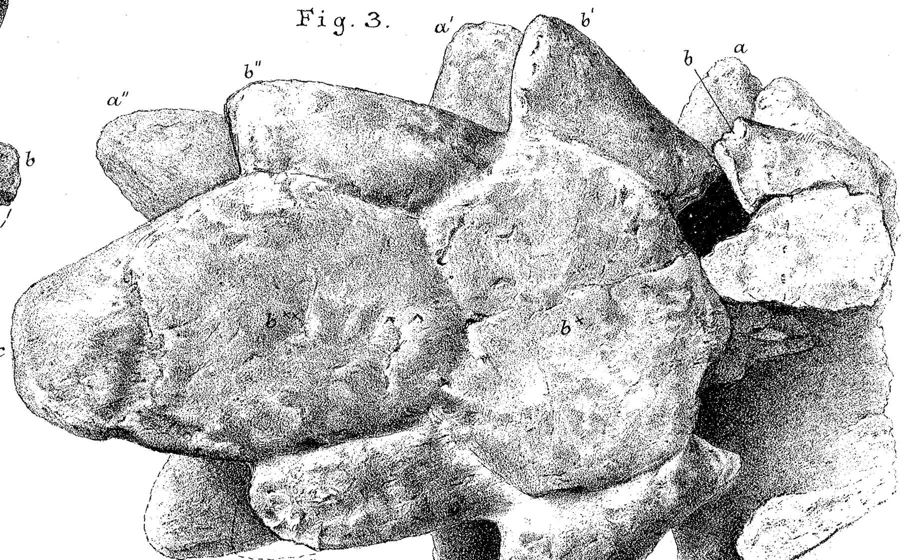
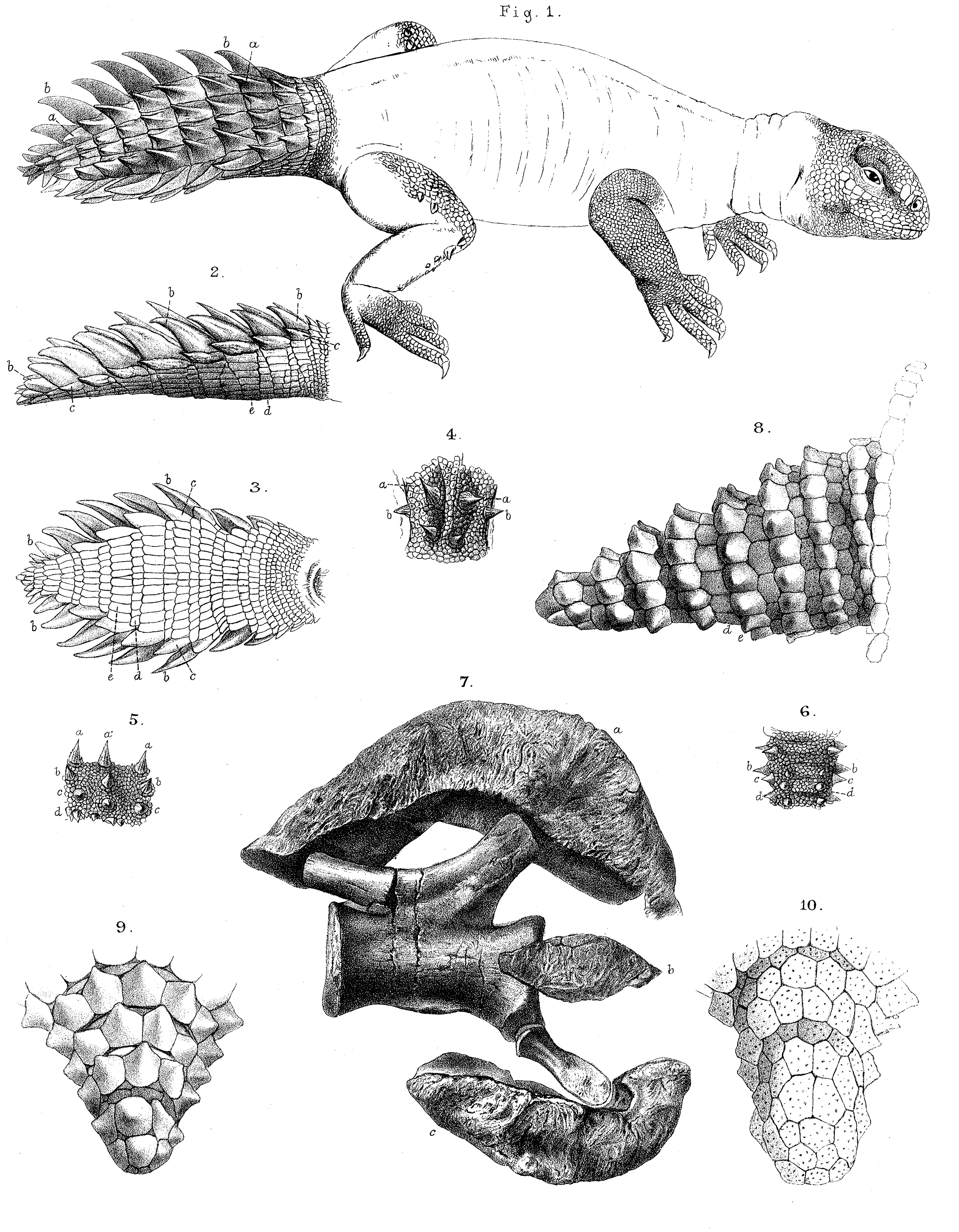


Fig. 3.

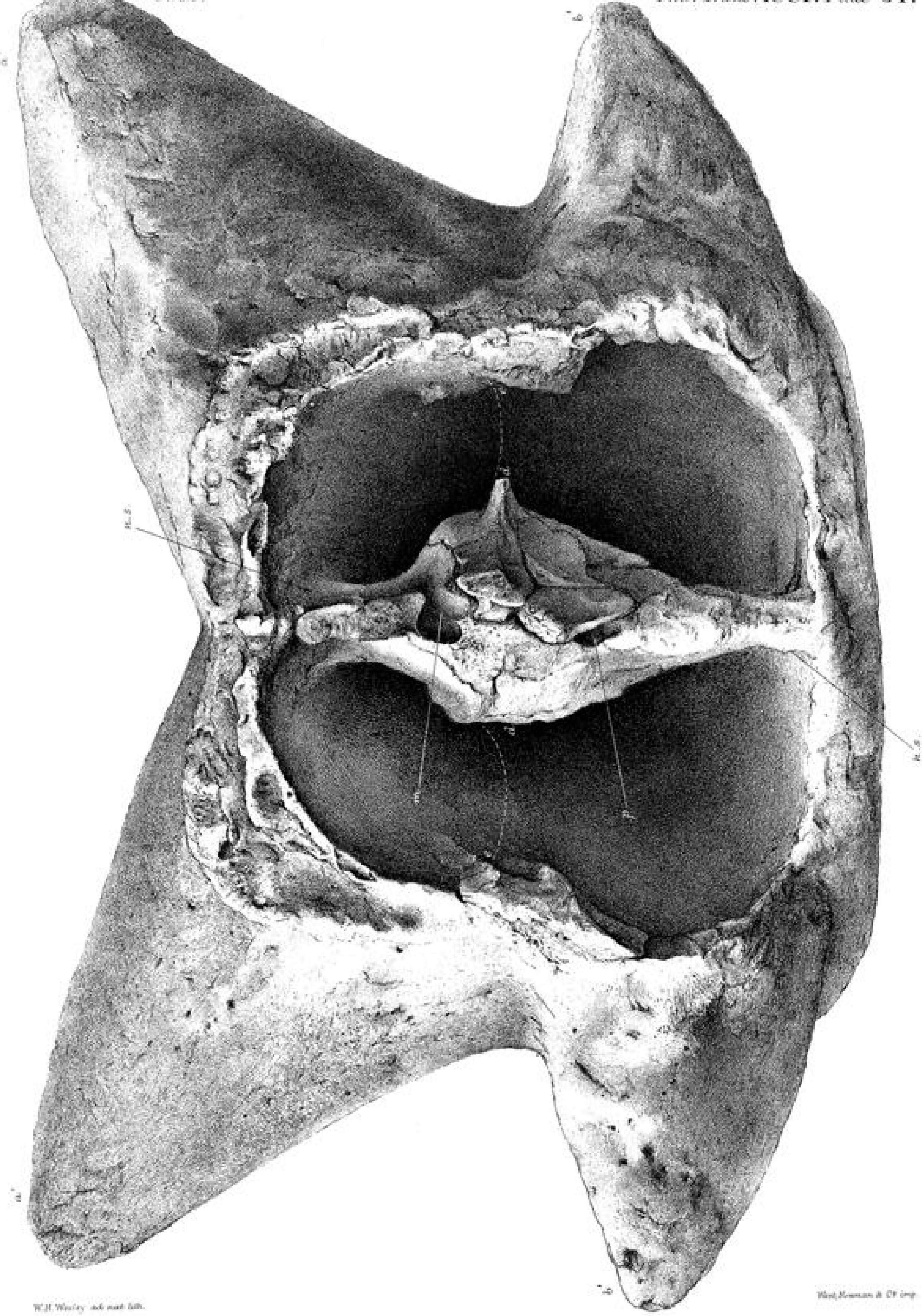


W.H. Wesley ad. nat. lith.

West Newman & Co imp.



W. H. Wesley lith. West Newman & Co. imp.



W.H. Wesley ad nat. lith.

West, Newman & Co imp.