XIV. *Description of Fossil Remains of Two Species of a Megalanian Genus* (Meiolania) *from "Lord Howe's Island."*

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[Plates 29–32.]

In 1884 I was favoured by Dr. Woodward, F.R.S., F.G.S., with the inspection of a series of fossil remains from "Lord Howe's Island," which had been transmitted by the Government of New South Wales (Department of Mines) to the Department of Geology in the British Museum of Natural History.

These fossils indicated a Saurian Reptile allied to the genus, characters of which are described and figured in the 'Philosophical Transactions of the Royal Society' for the years 1858, 1880, and 1881.

The geographical conditions of the island, its extent not exceeding six miles in length by one mile in average width, and its distance from the nearest continental tract of land—about 450 miles due east of Port Macquarie, Australia—lent unusual interest to acquisitions of knowledge of the kinds of vertebrate air-breathing animals which had there left evidence of their nature and affinities.

The most singular of the Saurians of Australia, now extinct, was the many-horned toothless kind, which has received the name of *Megalania*, an addition to the osteology of which, throwing light upon its medium and mode of locomotion, was the subject of a late communication to the Society.*

A reptile of this genus, or nearly allied thereto, but of a species inferior in size, I conclude, after comparison of the fossil remains, to claim a generic or sub-generic distinction, and propose to designate it *Meiolania*.

These fossils arrived imbedded in a coral-sand rock,† and are indicative of two species slightly differing in size and in characters not explicable on difference of individual age. They have been carefully worked out of their matrix by Mr. Barlow, of the British Museum, with his usual skill and care, to which the "Department of Geology" owes the display of instructive characters of many of its rare fossil specimens.

* "Description of Fossil Remains, including Foot-bones, of *Megalania prisca*." Read January 28, 1886.

† See Appendix to the present Paper.

The subject of figs. 1–2 (Plate 29) is the occipital and basi-sphenoidal part of the skull, showing the reptilian character of a single occipital condyle. Of this specimen the marginal portions, 2, 2, fig. 1, supplied by the ex-occipitals are slightly convex; the larger proportion (*ib.*, 1), due to the basi-occipital, is more feebly concave; but the sutures, still discernible in the corresponding part of *Megalania prisca*,* are obliterated, and the shape of the condyle is semicircular, not elliptical. Its breadth is 33 mm., its height is 22 mm.

The outlet of the brain case (foramen magnum, *ib.*, *n*) is of equal size to that in the larger genus, and is elliptical, not circular. Its vertical diameter is 25 mm., its transverse diameter is 23 mm.

The confluent side extensions of the occiput, formed by the basi-, ex-, and par-occipitals, constitute a massive extent of bone (*ib.*, 4, *p*) 2 inches in vertical diameter and $1\frac{1}{2}$ inches transversely. The part directed downward (*p*) and extending below the condyle is divided by a large irregular cavity (*x*) from the transverse cuboidal mass (4) above. The super-occipital spine or ridge (*n s*) is sharper than in *Megalania prisca* (fig. *cit.*); its summit, showing a broader base, is broken off. The breadth of the occiput is 4 inches 8 lines (100 mm.), its height $2\frac{1}{2}$ inches (65 mm.).

The cranial cavity at the fore part of this segment (Plate 29, fig. 2, *n*) of the skull gives 30 mm. in the transverse, 35 mm. in the vertical diameter. The portions of cranial wall continued forward from the sides of the brain case are thin, not exceeding 2 mm. The roof of the brain case here preserved is impressed by a transverse semicircular canal or sinus (*s*) 3 mm. in diameter. The lower border of the anterior fracture shows the canal leading down to the recess (*r*, fig. 2) lodging the pituitary remnant of the primitive pharyngeal tract. Half-way between the fore and hind apertures of the brain case a small tuberosity (*t*) rises from the middle of the floor. Behind this, where the side wall rises from the floor, are two small orifices, leading each to a canal which has its outlet (fig. 1, *u*) at the base of the ex-occipital.

In advance of these intracranial foramina is the entry of a larger canal leading to an irregular cavity (fig. 1, *x*), widely opening, in the present mutilated fossil, at *y* (fig. 2) upon the under part of the broad and deep par-occipital process, *p*. From this cavity or chamber a canal, 12 mm. by 10 mm. diameter, leads obliquely inwards and forwards (fig. 2, *y*) towards the wall of the pituitary chamber. The under surface of the basi-occipital is concave, expanding as it descends and advances. Its junction, and here coalescence, with the basi-sphenoid is indicated by a pair of ridges which diverge from near the mid-line outward and backward. The par-ex-occipitals (4, 4) are sub-quadrate masses, terminated each by a hemispheroid cavity with a thin sharp border. Each ex-occipital is excavated behind and below by the chamber, into which opens the canal from the larger of the three foramina on each side of the occipital division of the cranial chamber. A large foramen (fig. 1, *m*) on the upper and fore part of the ex-occipital leads also to the sinus (*x*), from which cavity is continued a wider

* 'Phil. Trans.,' 1880, vol. 171, Plate 36, figs. 1 and 2.

channel (*y*) opening on the outer side of the "sella turcica"; with this opening communicates the "trigeminal canal" (fig. 2, *e*).

Returning to the base of this part of the skull, will be seen, half an inch from the mesial ends of the basi-sphenoidal ridges, a second basal floor formed by a flattened horizontal plate of bone with a smooth under-surface 2 inches broad at the hind border and narrowing as it advances to an inch and a quarter's breadth, where it terminates with a forward production of its angles, between and above which protrudes a continuation of the proper "basis cranii" constituting the floor of the pituitary cavity. The interspace between the true and false basis cranii is 2 mm. vertically at the fore part, 3 mm. at the hind part of the supplementary plate. The breadth of the hinder interspace is 40 mm., of the anterior interspace 25 mm. The extreme breadth of this singularly complex part of the skull is 4 inches, the vertical diameter of the occiput is 3 inches; but this would be exceeded if the superoccipital spine were entire.

What I regard as the cranial outlet of the trigeminal nerve opens into a wider passage leading to the large irregular smooth-surfaced chamber (fig. 1, *x*), excavated at the under part of the par-occipital production (*p*). The flatness of the basi-sphenoidal tract contrasts with the concavity of that region shown at 5, fig. 2, Plate 36 ('Phil. Trans.,' 1880, vol. 171) in *Megalania prisca*. The amount and degree of modification of the hinder part of the skull of *Meiolania* add to other grounds for generic or subgeneric distinction of the present horned Saurian, manifested by the fossils next to be described.

In the same block with the occipital part of the skull was sent the fore end of, apparently, the same skull (Plate 29, figs. 3–6), judging by relative size, colour, and state of fossilisation. This specimen included the floor of the outer nostril (figs. 3 and 6, *n*, *n*) with a partial bony septum (*ol*) commencing half an inch behind the nasal aperture. The breadth of this nostril is $1\frac{1}{2}$ inches; the smooth surface of the cavity to which it leads contrasts with the coarse reticulate sculpturing of the surface at the fore part of the upper jaw, which describes a transverse convex curve to the fractures (figs. 4, 6, *m*, *m*), severing the fossil from the rest of the skull. The alveolar border (fig. 4) is a trenchant plate (*a*) with a semi-circular notch at the mid-line. The plate is thickened by a slight buttress of bone on each side of the notch; there is not a trace of dental alveolus. The smooth channel (*b*), of which the trenchant border (*a*) forms the outer wall, is half an inch in breadth, and is bounded behind by a shorter and lower pair of ridges (*ib.*, *c*, *c*) almost parallel with the foremost. Each of the hind ridges (*c*, *c*) commences opposite the thicker mesial part of the outer ridge (*a*). The intervening channel (*d*) sinks deeper than the lateral ones into the jaw's substance. The bony palate extends backward from the mesial ends of the hind ridges, where it has a breadth of half an inch; it narrows as it extends outwards to the terminations of those ridges.

The floor of the nasal cavity (fig. 6, *n*) extends backward for half an inch behind the anterior opening, then abruptly sinks to a plane (fig. 5, *g*) half an inch below the hind

borders of the partially divided passages. This seemingly second floor also extends beneath the floor of that fore part of the outer nostril, as it were, undermining it, and contracting to a blind end two-thirds of an inch in advance of the overlying base of the partial bony "septum narium" (fig. 6, *ol*). The smooth surface of the naso-palatal cavity extends outward and downward on each side of the above part of the floor and behind the outer ends of the hinder trenchant walls of the alveolar channels.

The thickness of the jaw-bone forming the side walls of the palatal tracts at a transverse line drawn across the lower floor (fig. 6, *g*) of the nasal chamber is two-thirds of an inch. The fracture of this part of the upper jaw on the right side exposes a small smooth-surfaced sinus (fig. 5, *i*). The under-surface of the mid-portion (fig. 4, *g*) of the bony palate shows a pair of depressions (*ib.*, *l*, *l*), from each of which a small canal is continued into the substance of the upper jaw.

If the fossil above described (Plate 29, figs. 3–6) be compared with the corresponding part of the skull of *Megalania prisca*,* the bony narial septum will be seen to be similarly incomplete, dividing the lower half only of the nostril. The trenchant border of the beak (fig. 3, Plate 38, *ib.*) is similarly incomplete; the trenchant border of the upper mandible of *Megalania* shows also a median notch, which I deemed might be "due to accident" (*tom. cit.*, p. 1043), but it is only partially so.

If the under-surface of the fore end of the upper jaw of *Meiolania* (fig. 4) be compared with that part of *Megalania* (fig. 3, Plate 38), the difference, added to those already and subsequently noticed in other parts of the skull, may be admitted to exceed mere specific distinction. The second trenchant ridge in *Megalania* is co-extensive and parallel with the outer one, and is followed by a third nearly parallel ridge, but lower, and of less extent. In both Reptiles these ridges were, most probably, sheathed with horn, as in the Chelonian Reptiles. The bony roof of the mouth is continued in *Megalania* a short way behind the third trenchant ridge. The narrower medial backward production of the bony palate has not, in *Megalania*, the mid-longitudinal rising with the lateral and perforated depressions as in *Meiolania*. The anterior transverse curve of the upper mandible (premaxillaries) is greater in the smaller edentulous Saurian.

The partial bony septum (fig. 3, *ol*) terminates obtusely in *Meiolania* without trace of fracture. The vertical extent of the fore and outer plate of the upper jaw in *Meiolania* is relatively greater than in *Megalania*, and no trace of the outer channel impressing the interspace between the nostril and orbit is present in the portion of Meiolanian skull above described.†

Plate 30 represents the upper surface, natural size, of the portion of the skull of *Meiolania platyceps* which could be exposed in the block of matrix in which it was buried. The skull had suffered fracture, with some dislocation of parts, but retained

* 'Phil. Trans.,' 1880, vol. 171, Plate 37, fig. 1, and Plate 38, fig. 3.

† See Plate 38 *tom. cit.*, fig. 1, *o n*.

the positions in which they had become imbedded. The partially detached right horn-core, fig. 2, is figured below, in the position to show its curvature.

Three eminences of the outer table of the cranium, Plate 30, *a*, *b*, *c*, answer to the three protruding from each side of the corresponding parts of the skull in *Megalania prisca*.* The homologues of the shorter horn-cores are represented in *Meiolania* by low obtuse eminences, *a*, *c*. The main horn-core, *b*, rises from a broadly elliptical base to a height of 4 inches, following the convex curvature, which is backward and slightly outward; its basal circumference is $6\frac{1}{2}$ inches. The right side of the cranial wall had suffered a greater degree of fracture, and the main horn-core had become detached; its relative position in the mass of matrix is nearly parallel transversely with the left undisturbed horn-core. The side of the cranial wall, from which the right horn is detached, shows the hinder rudimental core, *c*; it differs from the anterior one, *a*, in its lower development, and narrower, more elongate, basal proportions.

The tract of the upper wall of the skull, continued forward from the main horn-core and anterior protuberance, *a*, includes the upper border of the left orbit, *o*, and that preserved portion of the frontal region extends to the right orbit *o*. The skull-wall is continued forward to the outer nostril, *ol*, of which the right border is preserved, with a portion of that side of the upper jaw, 21, 22.

On the under-side of this maxillo-premaxillary part of the skull, Plate 29, fig. 4, is shown the absence of tooth-sockets, and their replacement, in the present species of *Meiolania*, by three curved, nearly parallel, trenchant ridges, with the two intervening channels. The osseous parts, which had been ensheathed by the perishable corneous beak, differ from that of *Megalania prisca* (Plate 38, fig. 3, 'Phil. Trans.,' 1880) inasmuch as the intermediate ridge subsides sooner at its fore end, leaving the mesial portion of this surface of the bony mouth as a broader and shallower depression undivided by the forward continuation of the second ridge. In *Meiolania minor* a third trenchant ridge is not developed.

The outer surface of the skull-wall of *Meiolania platyceps*, Plate 30, is sub-reticulate, the boundaries of the depressions being barely prominent. The only traceable suture on the exposed tract of skull is a medial one between the parial frontals and nasals. The basal mutilation of this part of the skeleton of *Meiolania* (Plate 31, fig. 1) is such as to preclude reliable description. The right main horn-core (Plate 30, fig. 2) is so displaced, by probably disturbing movements of the matrix, as to show the degree of backward curvature.

The characters above described indicate a larger species than *Meiolania minor*, but add grounds for the generic distinction from the still larger Australian horned Saurian. The fracture at the upper surface of the skull, marked *x* in Plate 30, may relate to a seventh horn-core; if so, it has a hinder position in relation to the orbit than in the subject of fig. 1, Plate 38, of the 'Phil. Trans.' for 1880.

* Plate 37, fig. 1, *b*, *e*, *f*, 'Phil. Trans.,' 1880.

Subsequent discoveries in Lord Howe's Island may indicate sexual modifications in *Meiolania*, but the occipital and mandibular characters above defined, the subjects of Plates 1 and 2, are of higher taxonomic value.

The main horn-core, *b*, in *Meiolania*, is shorter in proportion to its basal breadth; the hinder protuberance is lower and has a longer base; the reticular sculpturing of the superficies of the larger horns and contiguous parts of the cranial wall is more strongly marked than in *Megalania*. Here, also, I may observe that, if the part marked *x* in Plate 30 be merely fracture, the nasal horn in the Moloch Saurian ('Phil. Trans.,' 1880, Plate 37, fig. 8) has not a bony support, and such might be the case in the horned Saurians of Lord Howe's Island.

The length of the imbedded portion of the skull of *Meiolania platyceps*, above described, is $9\frac{1}{2}$ inches; the breadth across the bases of the biggest horn-cores is $6\frac{1}{2}$ inches.

The subject of fig. 2, Plate 31, is the symphysial extremity of the mandible of a larger *Meiolania*, including similar modifications for support of a lower horny beak, and the commencement of the mandibular rami thence diverging. The anterior of the trenchant ridges, *a*, *a*, is notched in the middle; the next is divided by a median channel. The partially preserved oral surface extends backward on a tract of bone, *e*, half an inch in vertical breadth or thickness, which overlies the smooth inner surface, *f*, of the attached parts of the mandibular rami. The anterior trenchant border terminates at each outer end in a tuberosity, *t*, from which the corresponding border of the ramus descends, and expands to form a smooth, broad, slightly concave surface, *f*, defining the upper part of so much of the ramus as is here preserved. The rough granulo-reticulate outer surface of the lower jaw, continued at right angles from the smooth upper surface, makes an abrupt bend inward to a broad, flattened, similarly sculptured, under-surface of the beginning of the ramus, where it extends freely backwards from the masticatory and symphysial part of the lower jaw. The breadth of the lower surface, at the fracture, is $1\frac{1}{3}$ of an inch; the depth of the thick ramus here, between the upper smooth and lower sculptured surfaces, is half an inch. The concave inner surface of the ramus, where it is continued from and undermines the hinder masticatory part of the symphysial end, is smooth. The breadth of the mandible at the fractured ends of the rami is 5 inches. This portion of jaw indicates a massive powerful bone.

The above-described fossil reached me in a detached state.

A second block of matrix includes an anterior vertebra, part of a scapula, and fragment of a humerus.

Of the vertebra, the hinder part is exposed, the fore part of the centrum is imbedded in the matrix. A deep and well-defined concavity occupies the hind part of the centrum, showing an epicœlian character. This articular surface is continued upon a pair of processes extending backward, and slightly diverging from the hinder and under part of the centrum. Each process is short and thick, and terminates obtusely with an articular surface slightly convex, apparently for the attachment of a rib. The

proportion of the margin of the articular concavity of the centrum, not continued upon the parapophysis, is sharply defined; this articular surface is $1\frac{1}{3}$ inch by 1 inch 2 lines.

In Part III., 'Phil. Trans.,' 1881, vol. 172, portions of the dermal skeleton, with productions meriting the name of "caudal horns," were described and figured. *Meiolania* repeats, with modifications, these characters of *Megalania*.

An osseous sub-cylindrical sheath, with similar defensive processes, was brought to light in one of the blocks of matrix forming part of the series of fossils from Lord Howe's Island (figs. 3 and 4, Plate 31). To get clear demonstration that this sheath included vertebræ, a portion was removed, and careful detachment of inclosed matrix brought to light caudal centrums, one sufficiently well preserved to show the elongate sub-cylindrical shape of the vertebral body, and the reduced area of the neural canal overarched by a simple thin bridge of bone. The three segments, subjects of fig. 3, consist each of an exo- and endo-skeleton. The former, *x*, *x*, is a cylinder, $2\frac{1}{3}$ inches long, with an upper and a lower lateral pair of obtuse processes, *d*, *d'*. The thickness of the sheath varies from 2 mm. to 10 mm., the interspace between it and the included vertebra varies from 13 mm. to 3 mm. The osseous processes may have supported horny sheaths. The tail was relatively as long, probably, as in the Moloch Lizard (Plate 37, fig. 9, 'Phil. Trans.,' 1880); and, as in that surviving representative, the terminal segments ceased to develope caudal horns. A portion of this part of the tail is the subject of fig. 4, Plate 31. The endo-skeleton, reduced to the vertebral centrums, is partially exposed.

A singular appendage this long and seemingly inflexible tail must have been in the living *Meiolania*, contrasting with that part of the frame in the Chelonian order, whilst the edentulous modification at the opposite end of the body resembled that of the Tortoises and Turtles. The greater and closer affinity to the Saurian section of Reptilia is manifested by the vertebræ and parts of the limbs which have been brought to light.

The portion of scapula includes the glenoid cavity, a little mutilated at the margin, and part of the expanded body or blade; the "neck" supporting the cavity is well marked. The breadth of the preserved portion of this bone is 4 inches, the opposite diameter is 2 inches. The absence of any trace of suture between the blade and neck, or in the articular cavity, precludes a reference of the fossil to a coracoid.

The portion of humerus includes the expanded proximal end, the shaft supporting which has undergone fracture; this discloses a large medullary cavity, the wall varying from 5 to 3 mm. in thickness. Though fragmentary, this fossil is acceptable as testifying to a terrestrial stage of active life.

In a former memoir * was noted the coalescence of the centrum and neural arch of a trunk vertebra;† and in the series of comparisons with the spinal column in other

* "Description of Remains of *Megalania prisca*," Part II., 'Phil. Trans.,' 1880, vol. 171, p. 1037.

† P. 1038.

Reptilia, both extinct and existing, a like coalescence of the vertebral elements was found in the small existing Australian lizard (*Moloch*).

As this osteological character is the rule in the "warm-blooded" Vertebrates, the neural arch retaining, for the most part, its earlier stage of development in the cold-blooded air-breathers, I was, in some measure, prepared by structures above described to recognise a corresponding advance of osteogeny in the piers of the pelvic arch of *Meiolania*.

In Anthropotomy the pelvic elements, recognised as becoming ossified from three chief centres, received the names of "ilium," "ischium," and "pubis"; but, coalescing into a single bone in the adult, this was described as the "nameless bone"—*os innominatum*. Such coalescence is rare in the class *Reptilia*, and it adds to the singular characters of the Megalanian Family of the Antipodes. I subjoin three figures of this "innominate" fossil from Lord Howe's Island, and on the grounds of locality and contiguity refer it to the genus *Meiolania*. The coalesced pelvic elements are denoted in Plate 32, figs. 1, 2, and 3, by the numerals indicative of them in the descriptions of the modifications of that part of the reptilian skeleton in my 'Anatomy of Vertebrates.'* Reference to those figures will show the contrast between the expanded (*Mammalian*) character of the bone, 62, in Crocodiles, and the almost columnar form in the Lacertian pelvis. This latter form is attained or retained in *Meiolania*. The ilium, 62, is a triedral column, moderately expanded at the proximal end to join by a rough syndesmosis with a short sacrum; and, at the distal end, to contribute its share to the acetabulum, *a*. One angle of the shaft or body of the bone looks outward, one plane inward. The anchylosis of the osseous elements, which has dominated to an unusual extent in the skull of the Megalanian family, prevails in the pelvis. There is no trace of a suture which would indicate the share taken by the ilium in the formation of the acetabular cavity.

The upper or "proximal" end of the triedral ilium expands in a moderate degree to unite by a rough surface (fig. 2, *s*) with a sacrum. The opposite, outer, surface of this expansion (fig. 1) is also roughened, but in a minor degree, for attachment of a "glutæus" muscle. Acetabular sutures indicative of the shares respectively taken by the ischium, 63, and pubis, 64, are also obliterated by the firm anchylosis of the pelvic bones of this powerful extinct Saurian. The contour of the acetabulum deviates slightly from the circular toward the triangular form: the ischial and pubic angles are rounded off (fig. 1, *a*). The diameter of the acetabular outlet gives two inches: the depth of the cavity is rather less than one inch. These dimensions indicate the femur of *Meiolania* to have equalled that of the largest known Crocodilian in size.

Of the pubic element, 64, little more than two inches are preserved: the bone contracts to a triedral form as it recedes from the articular cavity for the thigh-bone. A smaller proportion of the ischium, 63, is preserved, and it indicates an assumption of a more lamellate figure as it recedes from the acetabulum. The length of the

* Vol. 1, 1866, p. 188, fig. 119, *Crocodilus*; p. 191, fig. 121, *Monitor*.

above-described portion of pelvis is $6\frac{2}{3}$ inches; the fractured ischio-pubic end is $3\frac{1}{2}$ inches. The size of this part of the fossil skeleton agrees with that indicated by the Meiolanian trunk-vertebræ, which hardly differ, save in size, from those previously described and figured in the type-species of the Megalanian family.* The subjects of a former paper indicated a pentadactyle and unguiculate character of one, probably the fore, pair of limbs in *Megalania*.

Geological Appendix.

"Lord Howe's Island is formed of three elevated basaltic masses, connected by low-lying grounds of blown coral-sand formation. The latter consists almost entirely of fine rounded grains and comminuted fragments of corals and shells." "The coral-sand rock is, in some places, very hard, but in others soft and easily disintegrated; and was found to consist, when analysed, of carbonate of lime, with traces of phosphoric acid."†

The authorities of the Geological Department of the Museum of Natural History report that: "The matrix in which the remains" (Meiolanian) "forwarded by Dr. Fitzgerald were embedded corresponds exactly with the description given by Mr. H. Wilkinson." "It consists of the minutely comminuted and semi-rounded remains of coral fragments, shells, and spines and plates of Echini, with occasional grains of volcanic substances, such as augite, magnetite, and altered lava-fragments. It appears to be in a great measure simply an agglomerate, perhaps of an Æolian‡ nature; for a cementing medium is only partially present. So little cohesion is there between the particles, which are of a tolerably uniform size, that it was with the greatest difficulty slices sufficiently thin for the microscope could be prepared."

Mr. T. Davies, F.G.S., of the "Department of Mineralogy, Natural History Museum," who has kindly examined slides, writes:—"The whole is cemented by a clear crystalline calcite, which does not, however, entirely fill the interstitial spaces, but is sufficient to cement together adjoining grains. The fragments appear to owe their rounded aspect not alone to attrition, but probably partly to the solvent action which yields the crystalline calcite for the partially cementing medium."

"The block of coral-rock in which portions of the remains were entombed contained a number of irregular cavities ranging from less than an inch in size up to as much as six and nine inches in diameter. These cavities were partially, or sometimes wholly, filled with a deep chocolate-brown soil, having all the appearance of the usual rich volcanic soils of the Australian continent. By dissolving the soluble parts in water, a residue of volcanic products was left."

* 'Phil. Trans.,' 1880, vol. 171, Plates 34 and 35.

† "Report," by Mr. Henry Wilkinson, of the Department of Mines, Sydney.

‡ This term signifies "wind" as the moving agent in contradistinction to "aqueous" and "igneous" forces.

Description of the Plates.*

PLATE 29.

Meiolania minor.

Fig. 1. Occipital segment of the skull; back view.
Fig. 2. Occipital segment of the skull; front view.
Fig. 3. Fore end of upper jaw; front view.
Fig. 4. Fore end of upper jaw; under view.
Fig. 5. Fore end of upper jaw; upper view.
Fig. 6. Fore end of upper jaw; back view.

PLATE 30.

Fig. 1. Skull of *Meiolania platyceps;* upper surface, natural size.
Fig. 2. Right horn-core, showing curvature.

PLATE 31.

Meiolania platyceps.

Fig. 1. Under surface of the skull; one-third natural size.
Fig. 2. Upper view of the fore end of the mandible of a larger individual.
Fig. 3. Upper view of three caudal vertebræ.
Fig. 4. Upper view of caudal vertebræ, nearer the tail-end. In both views a portion of the exo-skeleton is removed, to show its thickness and the inclosed endo-skeletal vertebræ.

PLATE 32.

Pelvic Bones of *Meiolania.*

Fig. 1. Outer view, showing the acetabular cavity.
Fig. 2. Inner view.
Fig. 3. Side view.

* All the figures are of the natural size, save where otherwise expressed. The "letters" and "numerals" are explained in the text.

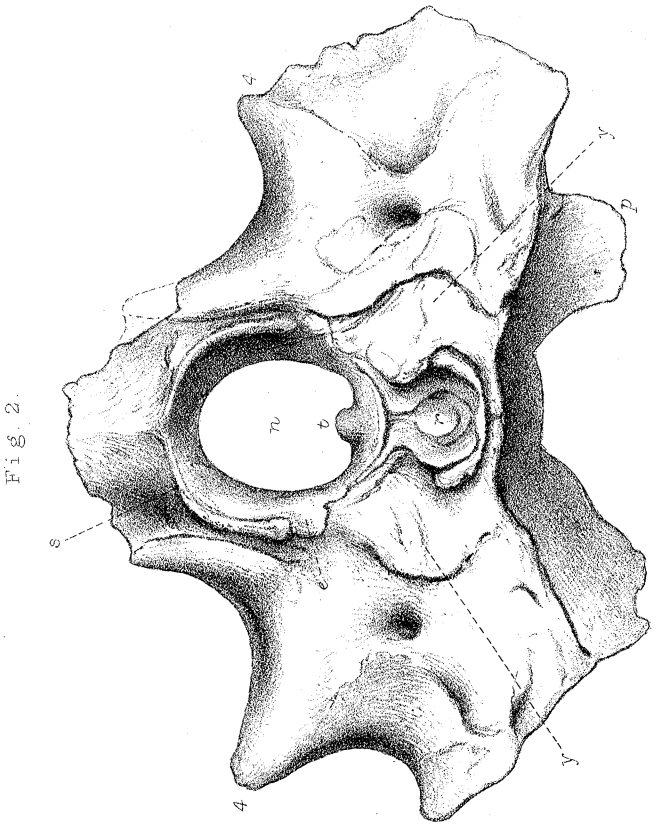
Fig. 2.
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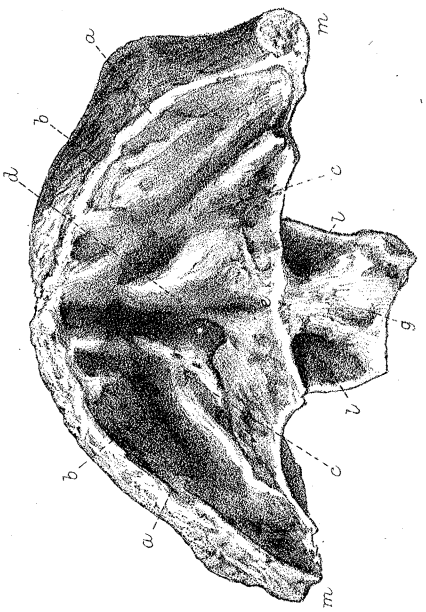
Fig. 4.
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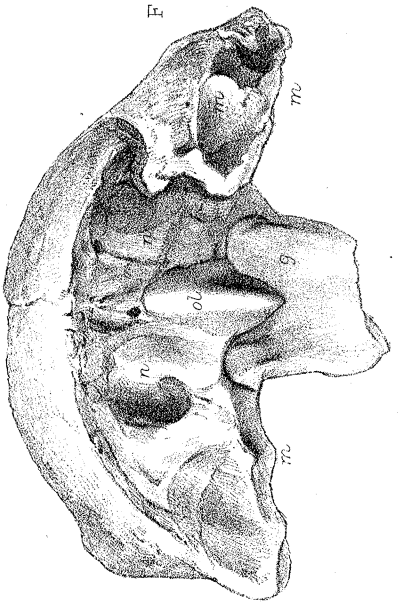
Fig. 6.
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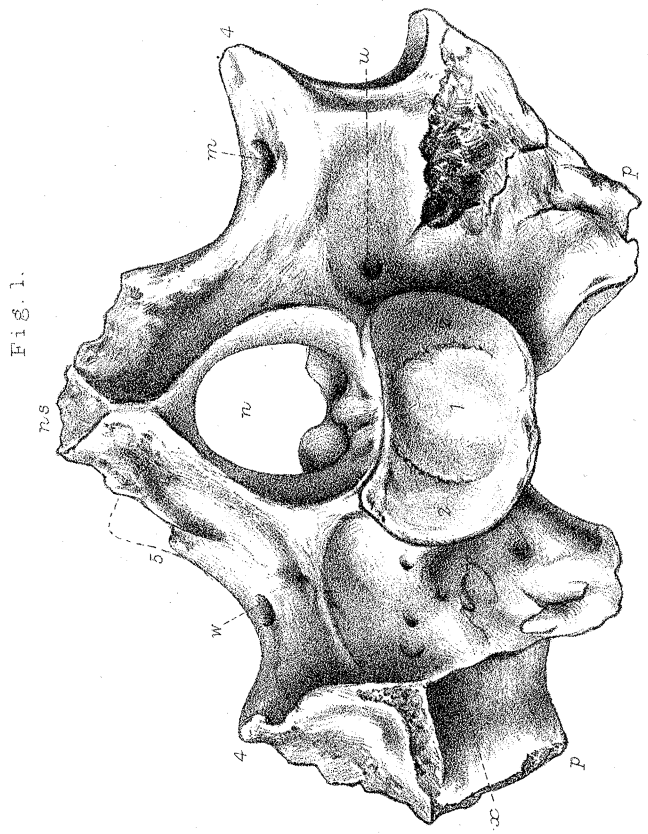
Fig. 1.
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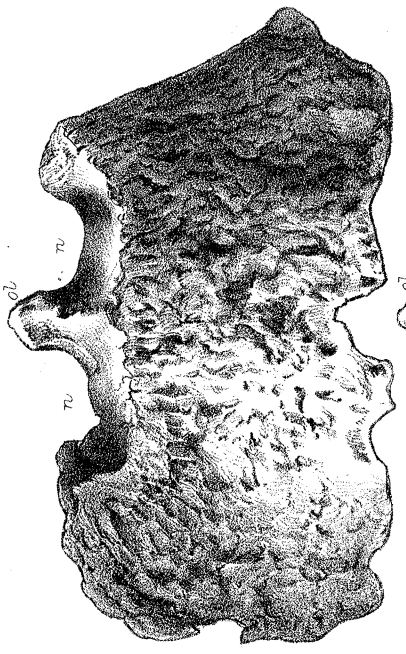
Fig. 3
n
v

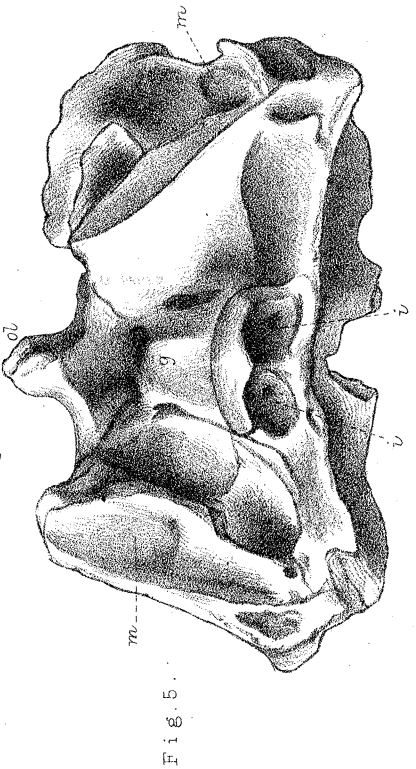
Fig. 5.
m
v
g
i
i
m

Fig. 1.

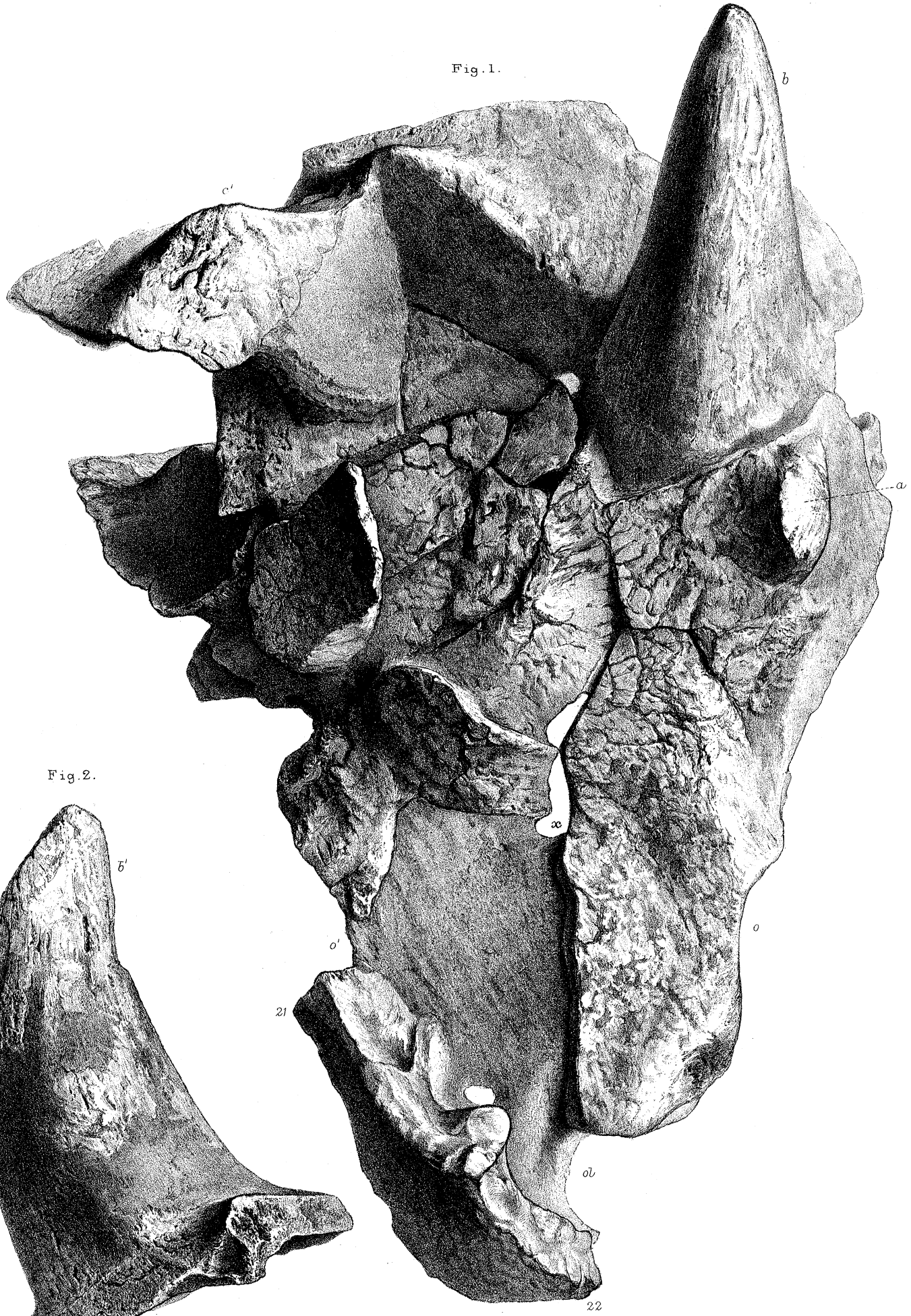

Fig. 2.

W. H. Wesley ad. nat. lith.

West, Newman & C° imp.

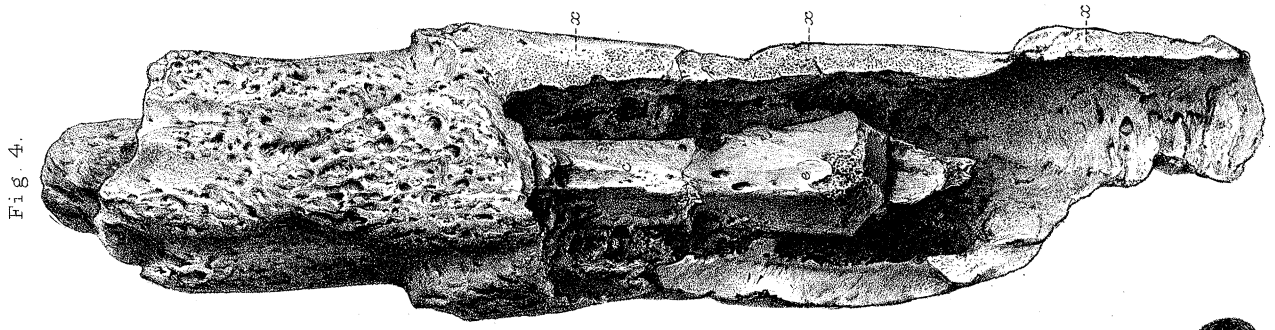

Fig. 4.

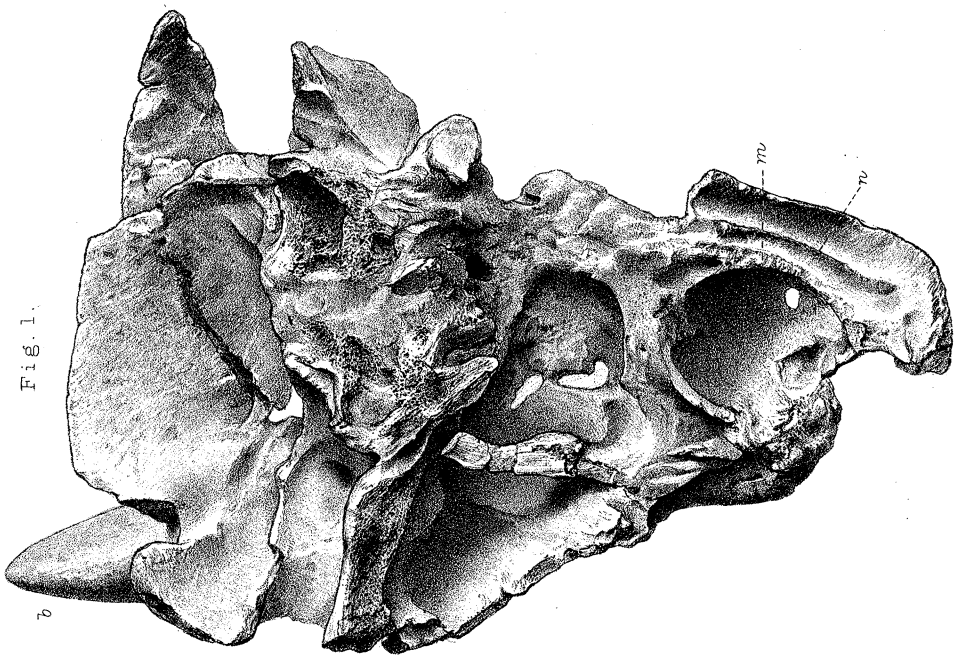

Fig. 1.

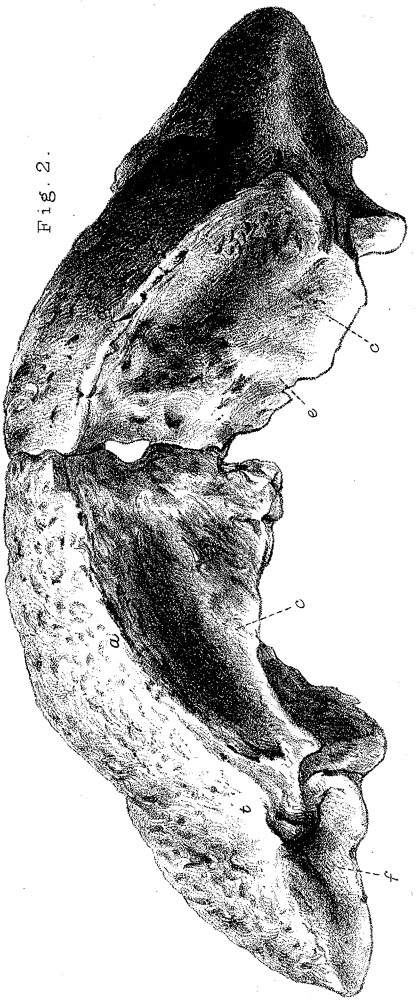

Fig. 2.

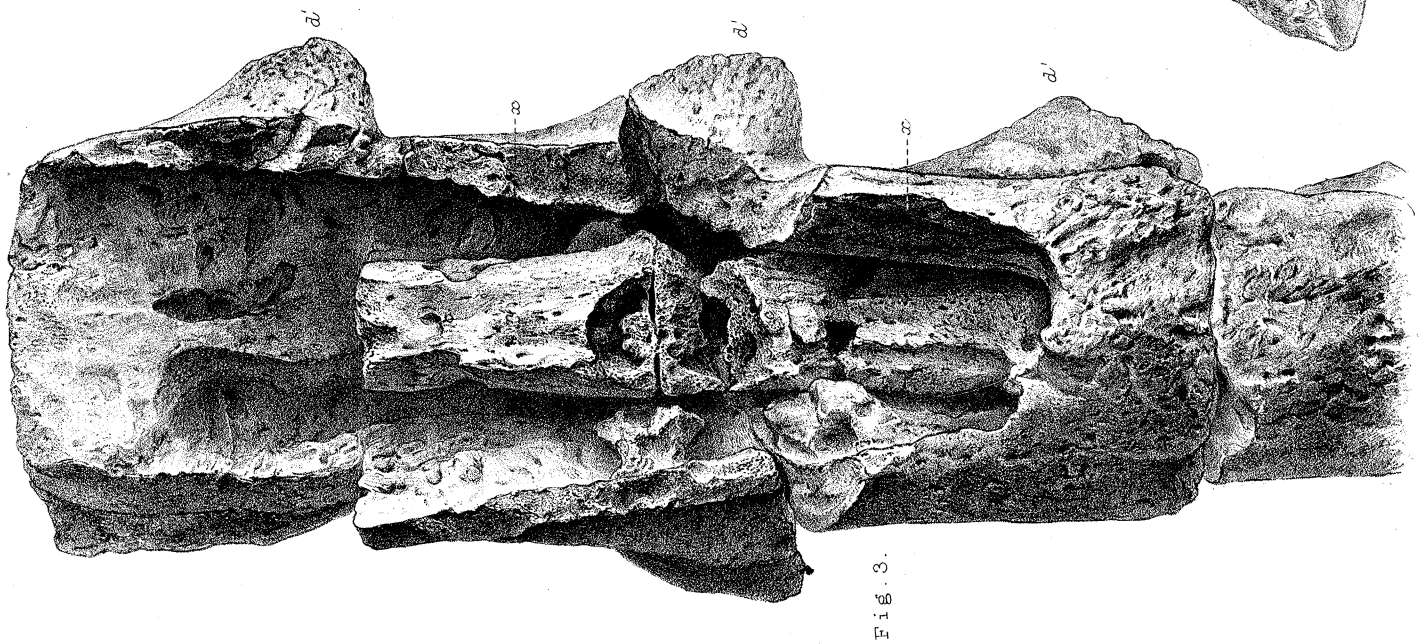

Fig. 3.

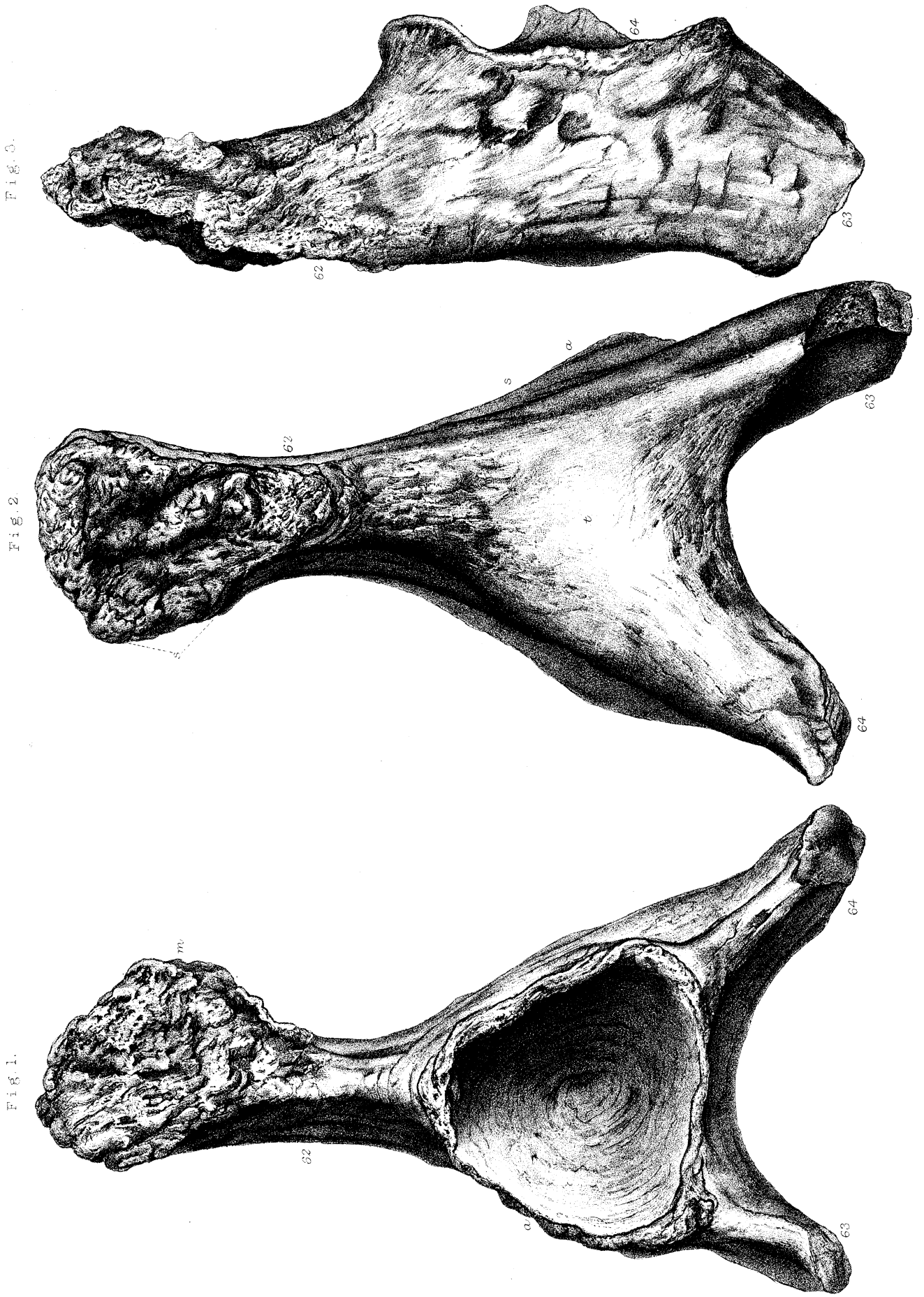
Fig. 3.
64
62
63
Fig. 2.
a
s
63
62
x
4
64
Fig. 1.
m
64
62
a
63