VIII. *Description of Fossil Remains, including Foot-bones, of* Megalania prisca.—Part IV.

By Sir Richard Owen, *K.C.B., F.R.S., &c.*

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[Plates 13–15.]

I have been favoured to receive from my friend, Dr. George Bennett, F.L.S., of Sydney, New South Wales, a further collection of fossil bones "from the Gowrie Creek, Darling Downs, Queensland." Their correspondence in mineralized condition and colour indicates, and a vertebra supports by its degree of resemblance to the subject* of Plate 34, in the "Philosophical Transactions" for 1880, their reference to *Megalania prisca*.

I subjoin figures of the vertebra of the natural size. The neural spine is represented by a ridge which slightly expands at the hind end, Plate 13, fig. 3, *ns*, where it has been broken and worn down; but, as a "spine," it has been smaller and shorter than in the vertebra compared (Phil. Trans., *ut supra*). The abraded base of the spine, *ns*, occupies one inch of the hinder part of the ridge, traversing the mid-line of the neural arch, its greatest breadth being half an inch.

The outer surface of all the prominences of this vertebra shows the effects of the attrition to which it has been subject from repeated rollings during the "freshets" of the river. A comparison of fig. 13, Plate 15, of the present fossil with fig. 2, Plate 35, of the 'Philosophical Transactions' for 1880, will show the minor length of the centrum in comparison with its breadth, a proportion which, with the reduced spine, bespeaks a sacral character, and suggests that the previously described vertebra may have come from the lumbar region. The "tranverse processes," *d*, *d*, which, on the sacral hypothesis, articulated with iliac elements of the pelvic arch, have been broken off or ground down to their basal origin. The articular surfaces of the centrum, *b*, *c*, figs. 1, 2, 4, Plate 13, are, as in fig. 1 of the Plate above cited, oblique from above downward and backward, in basal contour widely elliptical, that at the fore end of the centrum, *c*, being, according to the Saurian rule, concave, the opposite, hinder surface, *b*, convex.

The anterior outlet of the neural canal, Plate 13, fig. 2*a*, *n*, is tranversely oval, and the canal there is partially divided into three channels by a low sharp ridge extending from each side of the upper half of the canal wall, and by a mid-ridge from the floor of the canal. The breadth of this orifice is twice its vertical diameter. The posterior outlet, fig. 2, *n*, has reverse proportions; the vertical diameter is 13 millims., the

* Now in the Museum of Natural History, Cromwell Road.

transverse one 10 millims., the lateral ridges project from the middle of each side wall; a lower broader ridge rises from the middle of the floor, but subsides as it extends along the canal.

It may be objected that a supply of neural energy to the pair of hind-limbs would call for greater space to lodge the expanse of the supplying portion of the myelon; but, if the now nearest known ally of *Megalania*—to wit, the diminutive existing *Moloch* lizard of Australia—be a guide, reference to the figure of its skeleton in the 37th Plate of the Phil. Trans. for 1880, will not encourage such objection. The lower lateral divisions of the neural canal of the present fossil vertebra may have lodged the origins of the crural nerves. It seems, probable, from present experience, that complete restoration of the great land or fluviatile horned Saurian of Australia will be by piecework. The present vertebra, like the subject of Plate 34, *tom. cit.*, exceeds in size any such in the skeletons of the existing *Crocodilia* of the Australian rivers which have come under my examination.

The articular surfaces of the prezygapophyses, *z*, *z*, look obliquely upward, inward, and slightly backward; those of the postzygapophyses, *z'*, *z'*, with opposite aspects, have suffered abrasion of the hinder border. The broken and abraded surfaces of this much-rolled bone expose a close cancellous structure, and the degree of petrifaction gives the fossil a massive character and great weight.

The remains accompanying the above described vertebra are of a foot or feet of *Megalania;* as I cannot determine whether of a "fore" or "hind" limb I term them "metapodials."

I was puzzled for a time by the subject of figs. 5–8, Plate 14. A bone as broad as long by no means suggested a metacarpal or metatarsal one; yet it was associated with others of, unquestionably, a fore or a hind foot. Sufficient of the proximal articular surface, fig. 5, *a*, remained to show it to have been very slightly concave, and it was continuous, at right angles, with a narrow flattened facet, elongated in a fore-aft direction, fig. 8, *a*, indicative of a collateral bone. The distal joint, fig. 8, *c*, forming one of the angles of the triangular bone, was entire, and presented a convex condyle which bespoke its reception by the proximal articular cup of a toe-phalanx.

The unusual triangular shape of the present metapodial is due to an extension of the entire shaft from the side opposite to that which supports the surface, *a* in fig. 8, and gradually losing breadth as it approaches the distal condyle, *c*. Along one side of the flattened surface there extends a raised, rough, narrow tract, fig. 5, *d*, *f*, indicative of the insertion of a powerful muscle. A broader, oblique, roughened tract, near the middle of the opposite side of the shaft, fig. 7, *e*, gives a similar indication of muscular implantation.

The lateral production of the metapodial shaft gradually loses breadth and thickness, and terminates in an obtuse border, *d*, figs. 6, 7, which extends, with a slight convex curvature, to the distal condyle, *c*. The figs. 5–8 of this singular bone may dispense with further verbal description.

The subject of figs. 10, 11, 12, Plate 15, is a metapodial with the family characters of that of figs. 5–8, Plate 14. It is from the same locality, shows the same colours and mineralized condition, and a similar, though inferior, proximal expansion; but with extensions of the flattened articular surface on both right and left sides of the proximal end of the shaft, showing it to have been situated somewhere between the innermost and the outermost of the metapodial series. The length of this bone is 2 inches, 10 lines=73 millims.; its antero-posterior breadth at the proximal end is 28 millims.; the same distal breadth is 20 millims.; the tranverse proximal breadth is 20 millims., the same distal breadth is 28 millims. The distal articulation, *c*, is a hemispheroid condyle, with a prominence on each side of the base, for ligamentous attachment.

The subject of figs. 13, 14, is also a metapodial, with an antero-posterior expanse of the proximal half of the shaft greater in degree than in the foregoing specimen, but less, in comparison with the length of the bone, than is the expanse shown in figs. 5 and 7, Plate 14. The proximal articular surfaces, *a*, *b*, meet at an acute angle defining that end of the bone by a curved edge. The broader articular surface, fig. 13, *a*, is flat, the narrower one, fig. 14, *b*, is slightly convex. The expanse of the bone is from before backwards. The distal half of the shaft, above the condyle, is triedral. On the expanded part of the shaft is the oblong, smooth, seemingly articular surface, figs. 13, 14, *d*, which bends round an angle of the beginning of the contracted part of the shaft. Another oblong, smooth prominence, fig. 13, *e*, is defined upon the opposite side. Two facets of the contracted part of the shaft meet at an obtuse ridge which terminates in an oblong smooth protuberance, fig. 13, *f*. On the opposite side of the distal end is a well defined oval tract, fig. 14, *g*.

Of the phalanges I select a proximal, figs. 16, 17, and a distal or ungual, figs. 18, 19, specimen, figures of which, with those of the metapodial bones, may serve as guides in the recognition of similar evidences of the megalanian genus, and add to the knowledge of the geographical distribution in Australia of this remarkable reptilian form. The proximal phalanx, figs. 16, 17, continues the character of unusual breadth of the upper end; it gives transversely 35 millims., the antero-posterior diameter of the middle of the shaft being 12 millims. The proximal articular surface, fig. 17, *a*, is moderately concave, bounded on each side by a stout tuberosity. The distal trochlea, 20 millims. transversely by 10 millims., *c*, fig. 16, is feebly convex antero-posteriorly, more feebly concave transversely. It seems to have been a phalanx of a first or a fifth toe.

Ungual phalanges of the intervening toes have a deeper trochlear proximal joint, fig. 18, *a*; beyond this surface the bone is perforated by a transverse canal, *b*, the lower wall of which forms a cross bar, *c*, affording an insertional leverage to the flexor tendon. From each outlet of the canal a groove extends forward, subsiding at the roughened core of the claw. The metapodials of the chameleon approach in some proportions, though remotely, the megalanian peculiarities of the foot-bones, but a more close examination and extensive comparison of these parts of the reptilian skeleton are needed.

Description of the Plates.

PLATE 13.

Sacral Vertebra of *Megalania prisca*.

Fig. 1. Side view.
Fig. 2. Back view.
Fig. 3. Upper view.
Fig. 4. Under view.

PLATE 14.

Metapodial Bone.

Fig. 5. Front view.
Fig. 6. Upper view.
Fig. 7. Back view.
Fig. 8. Side view.

PLATE 15.

Metapodials and Phalanges.

Fig. 10. Side view.
Fig. 11. Front view.
Fig. 12. Upper view.
Fig. 13. Side view.
Fig. 14. Opposite side view.
Fig. 15. Proximal end.
Fig. 16. Back view of a proximal phalanx.
Fig. 17. Proximal end of the same.
Fig. 18. Side view of a distal phalanx.
Fig. 19. Upper view of the same.

All the figures are of the natural size.

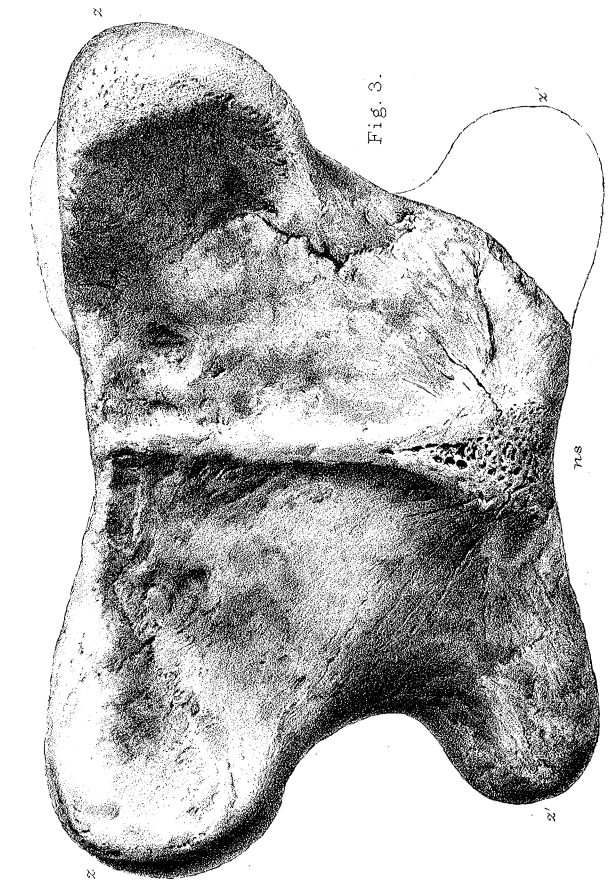


Fig. 3.
z
z'
n.s
z
z'

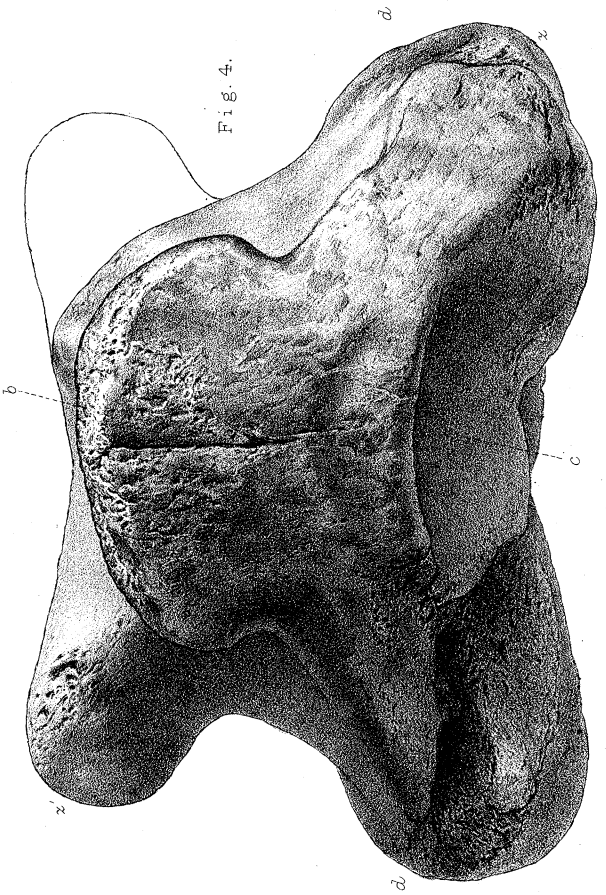


Fig. 4.
a
z
b
c
z'
a

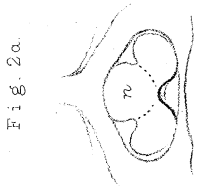


Fig. 2a.
n

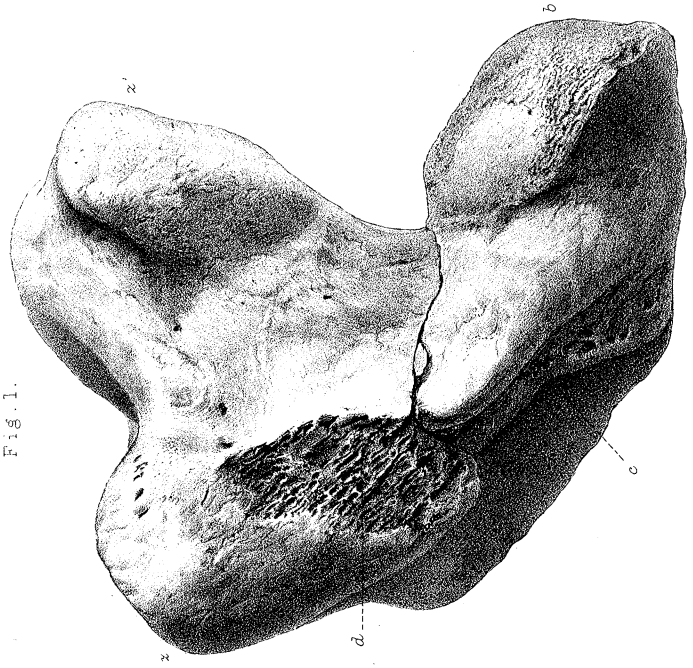
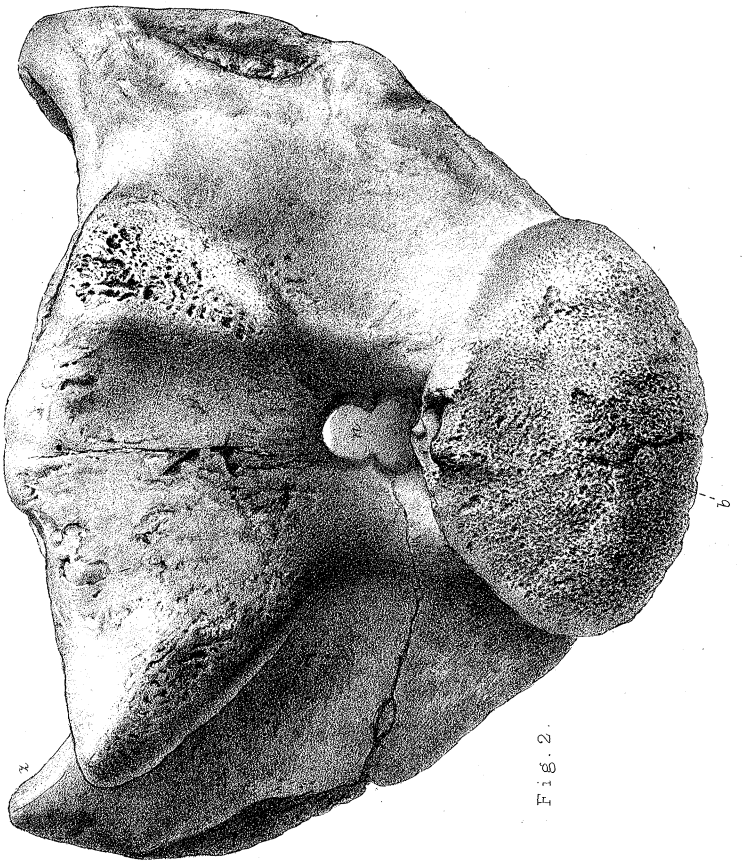


Fig. 1.
b
z'
c
z
a


b'
z
Fig. 2.

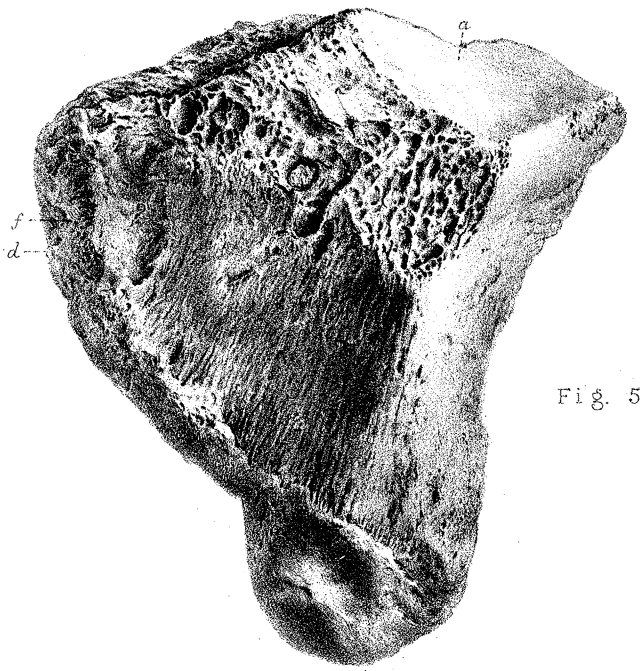


Fig. 5.

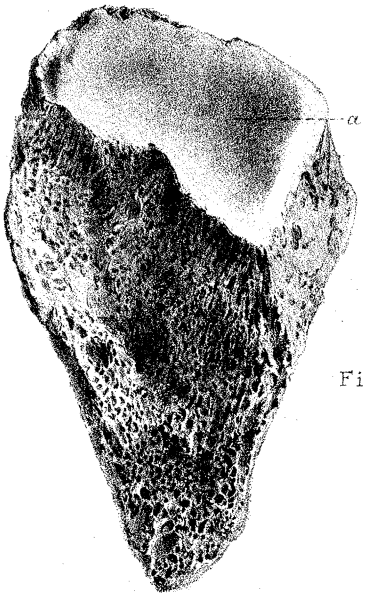


Fig. 6.

Fig. 7.

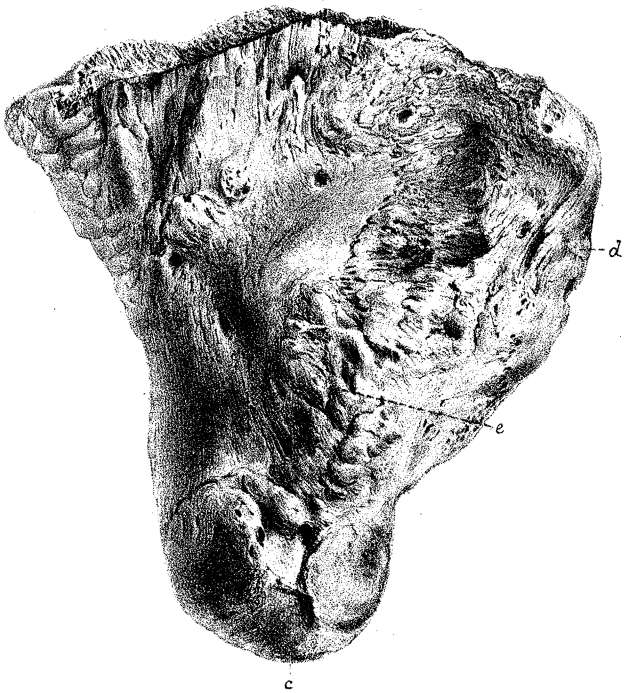


Fig. 8.

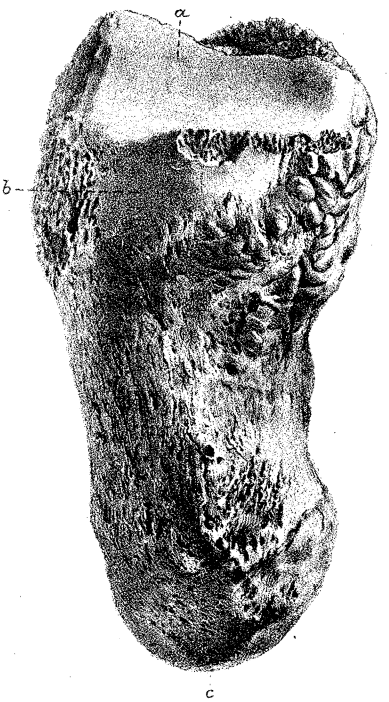
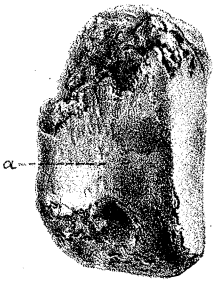


Fig. 10.

Fig. 11.

Fig. 12.



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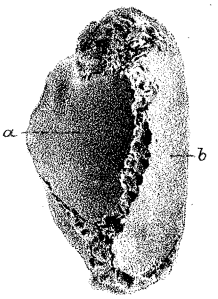
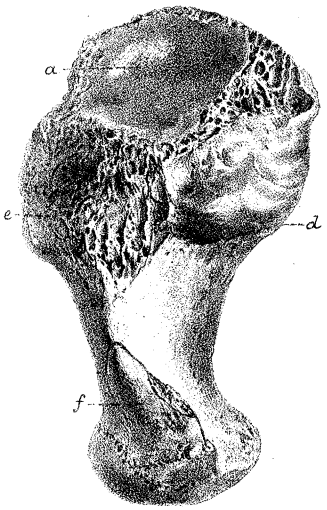


Fig. 13.



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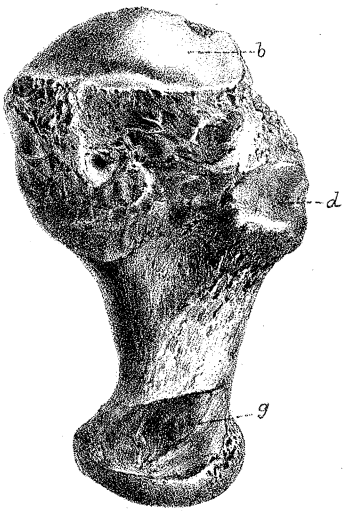

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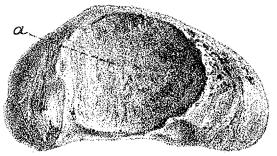
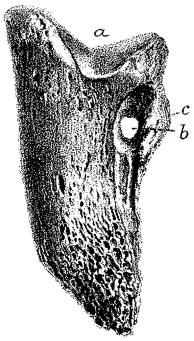


Fig. 18.



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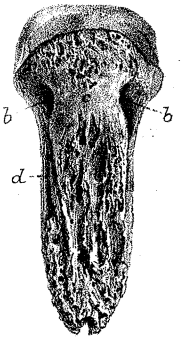

Fig. 16.