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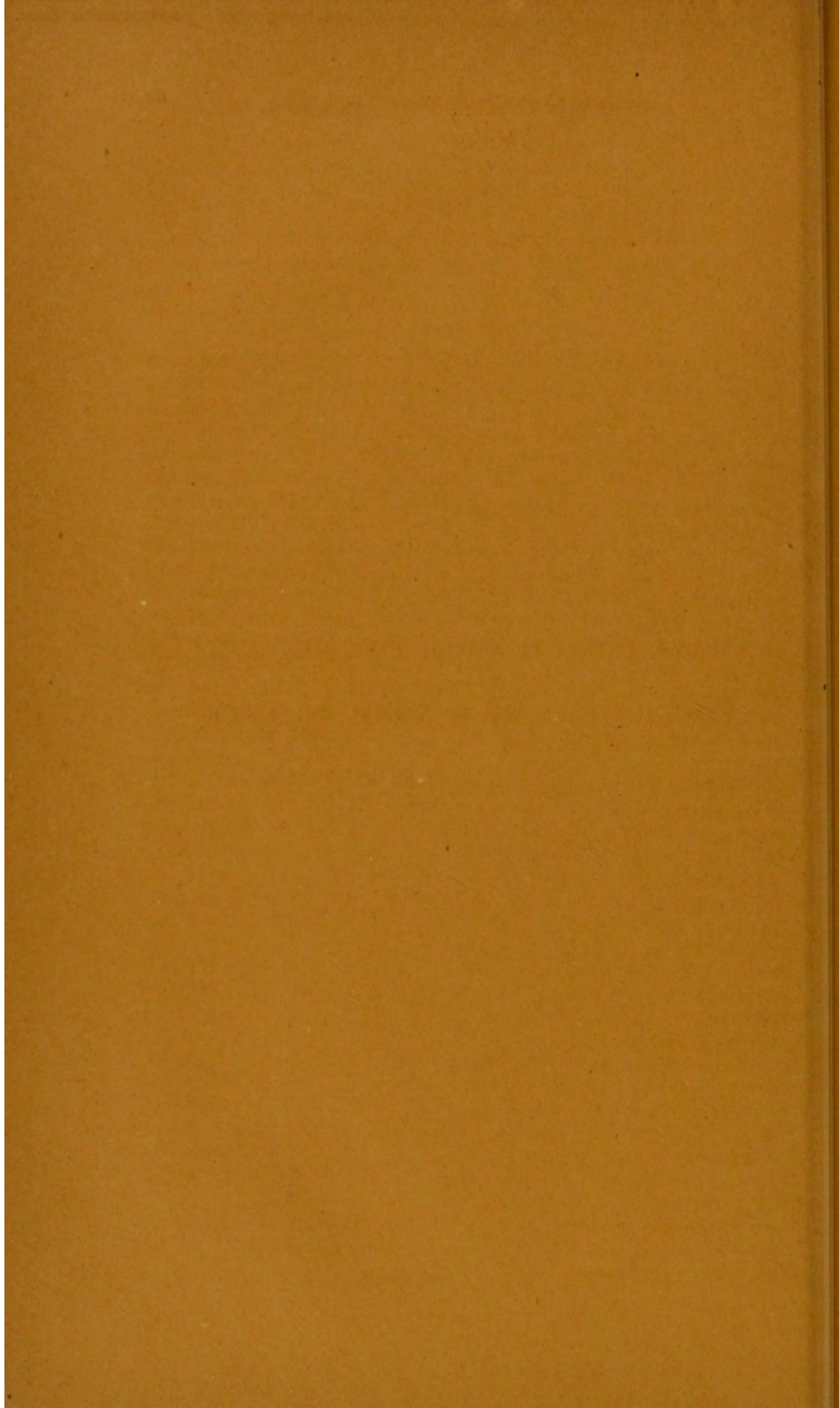
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A SMALL LIZARD FROM THE NEOCOMIAN
ROCKS OF COMÉN, NEAR TRIESTE.

On REMAINS of a SMALL LIZARD from the NEOCOMIAN ROCKS of COMÉN, near TRIESTE, preserved in the GEOLOGICAL MUSEUM of the UNIVERSITY of VIENNA. By Prof. SEELEY, F.R.S., F.G.S., of King's College, London.

[PLATE IV.]

PROFESSOR EDUARD SUESS, F.M.G.S., recently received from Comén, near Trieste, a specimen showing the hinder half of the skeleton of a lizard which he has desired me to describe. Unlike the two fine slabs from the island of Lesina, preserved in the k.-k. geologische Reichsanstalt, which are in a pale yellowish limestone matrix, this specimen is from a limestone slab nearly black; the animal shown upon it has lain exposed for some time in the quarry and suffered by the solvent action of the rain. Prof. Suess mentioned to me that the colour merely indicated one of the many alterations in the limestone, and that, since it was collected by a former pupil, no doubt could attach either to its stratigraphical or geographical position. Prof. Kornhuber does not appear to have been quite certain as to the position of the Lesina rocks in the Cretaceous series; but while I was in Vienna, Professor Pisani mentioned to me that he had identified thirteen species of fish with Upper Neocomian species; and as fish constitute the chief fossils of the deposit, this must be held conclusive evidence of the geological age of these lizards.

This new fossil (Pl. IV. fig. 1) at first sight presents a considerable resemblance to the *Hydrosaurus lesinensis* of Kornhuber, as was pointed out to me by Prof. Suess; but the differences are so remarkable and important that I find myself unable to include it in the same genus. The specimens in the Museum of the Imperial Geological Survey were shown to me by the Director Franz Ritter von Hauer. They are admirably preserved, and, as Kornhuber has stated, appear to indicate an animal with 9 cervical, 30 dorsal, and 2 sacral vertebræ, and a tail of which only the 24 anterior vertebræ are preserved. The type is distinguished by the remarkable stoutness of the dorsal ribs, by the very long and large neural spines and early caudal vertebræ; and it possessed well-developed limbs, of which the hinder pair were much larger than the anterior pair. The specimen which I have now to describe has only the hindmost 12 dorsal vertebræ preserved. There are presumably 2 sacral vertebræ; and then succeeds the tail, of which about 65 vertebræ are preserved or indicated by impressions; and it is probable that more remained in the slab which had been adjacent but was not collected.

The length of the 12 dorsal vertebræ is about 55 millims.; and the remainder of the vertebral column, as preserved, measures along the curves of the tail nearly 200 millims. The dorsal region is exposed so as to display the attachment of the ribs. The ilium is the

only pelvic element clearly exhibited; and that is directed backward in the usual lacertian manner (fig. 1, r). The hind limbs are preserved, though they were fast becoming obliterated by weathering. The caudal vertebræ lie upon one side, and consequently do not give a very distinct idea of their forms. They, however, show no trace whatever of the neural spine, though the chevron bones are well developed, and are preserved down the greater part of the tail. The dorsal vertebræ apparently rest upon the neural surface and expose the visceral surface. This may be inferred from the form of the centrum, the curvature of the ribs, which are concave in length as exposed, and the fact that the ilium underlies the femur; but the face of each centrum has been somewhat dissolved, so that it cannot in any case be said to exhibit the unaltered appearance of the bones. Each centrum in the dorsal region is rather less than $\frac{1}{2}$ a centim. in length, and is about 6 millims. wide in front. The sides converge posteriorly to about 3 millims.; so that, besides being a far smaller animal, the lower dorsal vertebræ appear here to be relatively shorter, and the centrum, instead of having the concave lateral outlines of *Hydrosaurus*, has its side rather convex in length; and the anterior surfaces on each side of the anterior articulation look more forward and less outward than in that genus. There is, moreover, no indication of the transversely concave outline of the intervertebral union—but in place of it a notch in the anterior border, as though there were a small ossicle at the junction of each two vertebræ; but this apparent notch may be nothing but the neural canal exposed in this position by the thin base of the centrum being there dissolved. As the vertebræ pass downward towards the sacrum, their aspect seems to be less massive, and the posterior end becomes a little more compressed from side to side. There are slight indications of two ridges running longitudinally on the base of the centrum from the outer corners of the anterior cup towards the posterior articular ball. All the dorsal vertebræ were furnished with ribs; but they become shorter and smaller towards the sacrum. On the right side of the specimen they lie together, touching each other along their lengths, except in the case of the last three or four, which are only indicated by impressions. The ribs appear to be flat on the under side and moderately curved; the rib of the third vertebra preserved is 2 centims. long and 2 millims. wide at the proximal end. The ribs appear to be tubular and single-headed; they taper evenly to a blunt point, but scarcely give the impression of being relatively so stout as the ribs of *Hydrosaurus*. The sacral vertebræ are no better defined than those of the dorsal region, being partly covered by femoral bones. There is an angular bend in the tail, beyond which the vertebræ lie on their sides more perfectly displayed than in the case of the first few caudals. The neural arches of the caudal vertebræ were low, without any indication of neural spines, the neural arch being concave superiorly from front to back, and articulating with the arches of adjacent vertebræ by zygapophyses, which were elevated high above the neural surface. The neural arch widens in front, and is smooth at the sides.

There is no trace preserved of transverse processes, such as may be presumed to have existed. The chevron bones are relatively long and slender and directed backward parallel to each other. The vertebræ rapidly decrease in size, and in the latter half of the tail preserved are small. These hindermost vertebræ (that is, after about the thirty-fifth) appear to develop a slight neural spine, which is slender, directed backwards nearly horizontally, and terminates without any decrease in thickness, in a rounded end; but these spines can only be detected in some eight vertebræ. The neural arch appears to be preserved to the end of the series, where the whole lateral measurement of the vertebra is less than 2 millims., and its length does not greatly exceed 2 millims. The height from the base of the centrum to the middle of the neural arch at about the eighth caudal is $3\frac{1}{2}$ millims., the neural arch forming less than half of this height. The union between the centrams is not well defined. The chevron bones in the first dozen vertebræ appear to be about $5\frac{1}{2}$ millims. long. There thus appear in the tail to be differences from *Hydrosaurus lesinensis* in the relatively small development of the neural spine, which never extends upward as a broad plate in this form, and, when it does exist, is a slender backwardly-directed process. The earlier chevron bones in the present fossil appear to have been relatively broader; and in the absence of any indication of transverse processes, it is impossible to affirm that those processes existed.

The pelvis is imperfectly seen on both sides. The ilium extends on the right side parallel to the vertebræ (fig. 1, r), but its anterior part is covered by the head of the femur. The part exposed is fully 7 millims. long; its outer edge is rounded; it expands anteriorly a little, but appears to be distinguished by its slender form and parallel sides. On the left side of the specimen, underlying the other femur and articulating with a bone in front, which may well be the articular part of the ilium, is a curved bony element (nearly 8 millims. long, wider than the ilium), which from its position might well be the ischium. The bend in it occurs in its anterior third; it is comparatively slender, and only expands a little at its distal end. The slender form of the ilium and its relative length are points of difference from the species with which this has been compared. Both hind limbs are fairly well preserved. The femur of the left side (fig. 1, m) is about 11 millims. long, a good deal constricted in the middle, and flattened and expanded at the distal end, which is concave from side to side; the anterior margin of the bone is concave in length, while the posterior margin is more straight. The characters of the articular head are not well defined, owing to the way in which the bone is compressed; but the head appears to have been well rounded, and to have measured about half a centim. from front to back. There are no indications of the distal epiphyses represented by Kornhuber.

The tibia (fig. 2, t) has its anterior margin straight, and its posterior margin concave. It is about 7 millims. long. The proximal end is greatly expanded; and the shaft is relatively more slender than in Kornhuber's species. The fibula (fig. 2, f) is a rather more slender bone, without any indication of proximal expansion; it widens at

the distal end to 3 millims., which about corresponds to the proximal width of the tibia. The tarsal bones (fig. 2, *ts*) are not well preserved, but appear to consist of one large bone below the tibia, which is apparently polygonal, and two smaller bones placed below the fibula; but there has probably been at least a third bone, which was distal in position and is not preserved. The metatarsus (fig. 2, *mt*) is not very distinct; and it is difficult to say whether the metatarsal bones were entirely distinct from each other. The specimen would appear to indicate that there were at least three metatarsals. The bone below the large tarsal element is short and broad, reminding one in its proportions of that of a Plesiosaur. It articulates by a large proximal facet with the large tarsal bone, and by a small facet at the proximal end with the distal tarsal element adjacent to it. Its width at the proximal end is over 2 millims.; and it appears to be about 4 millims. long. The metatarsals on the outer side are not preserved. There are five digits (fig. 2, *i-v*) formed of slender bones with a median groove on the dorsal surface of the first row. There are two bones in the first digit, which is short and terminates in a pointed bone, the distal end of which is a little curved and apparently carried a claw. There are three bones in the second digit, which is about twice the length; but the fracture in the slab passes through the middle of the terminal small phalange. In the third digit there may have been four phalanges; but the fracture passes through the third, which is so large that it is not likely to have carried a claw. There appear to have been four phalanges in the fourth digit; and in the fifth the number cannot be satisfactorily determined; but there do not appear to have been more than three. The three inner digits have the proximal surfaces of the proximal row of bones in the same line; but the two outer digits look as though placed a little higher up, which is in accord with the ordinary Lizard plan. The total length of the longest digit as preserved is about 9 millims.; and the total length from the proximal end of the tibia is a little over 21 millims. It will thus be seen that the tarsus and digits differ considerably from those indicated by the animal described as *Hydrosaurus lesinensis*.

It is of course with this type that the present specimen must be chiefly compared; and the form and proportion of the dorsal vertebræ, the mode of articulation of the ribs, and the characters of the caudal vertebræ, especially in the neural spine and transverse process, indicate a distinct type. The pelvis is also distinct, while the proportions of the segments of the limb differ in as remarkable a way, and necessitate placing this fossil in a distinct genus. Though, from the imperfect preservation of the specimen, its more important characters remain unknown, it may be conveniently distinguished as *Adriosaurus Suessii*. Its affinities need the assistance of more perfect remains for their elaboration.

I am indebted to Prof. Suess for the opportunity of making this record, and adding another species to the Secondary representatives of the lizard group.

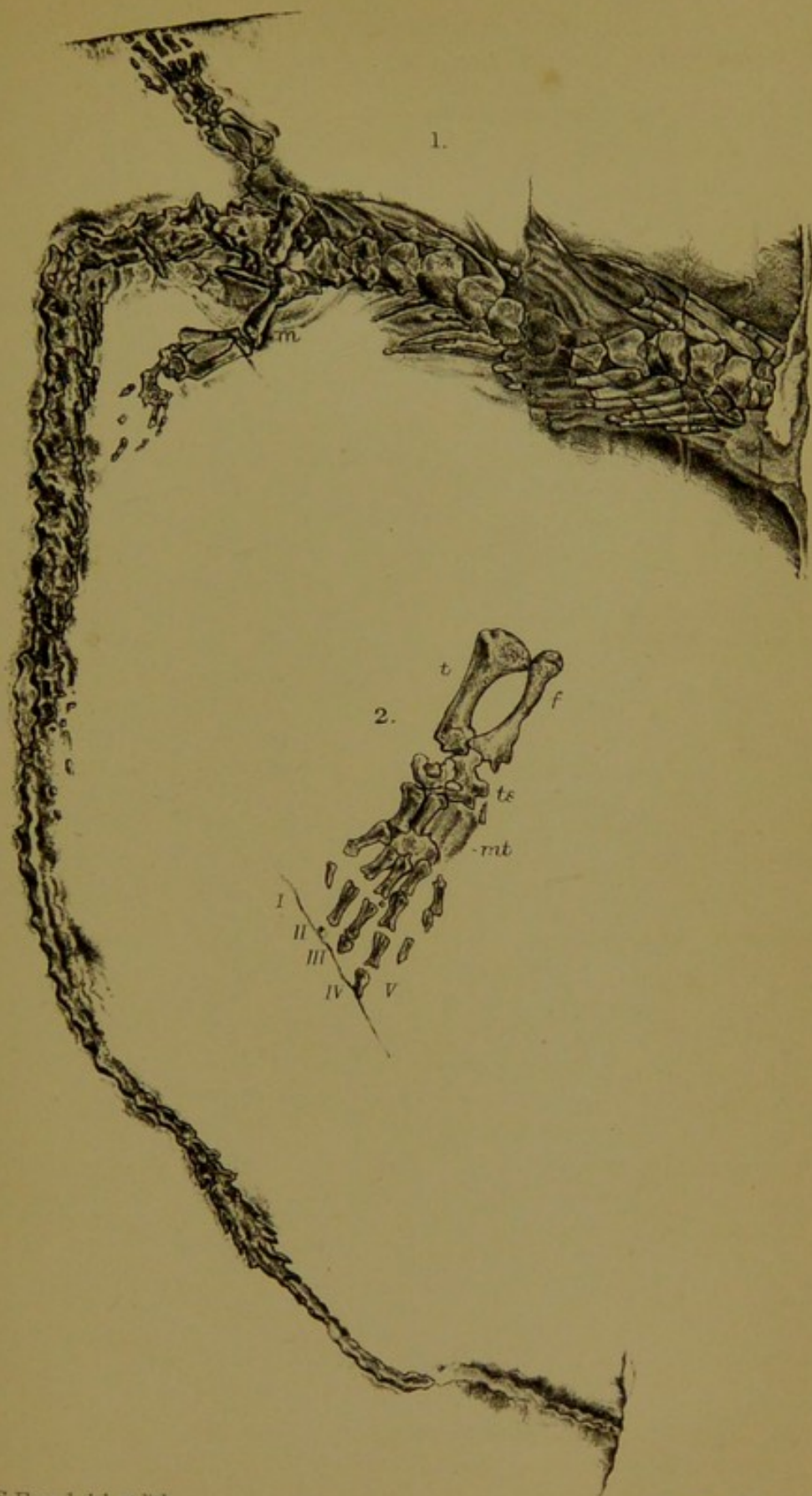
EXPLANATION OF PLATE IV.

- Fig. 1. Tail of *Adriosaurus Suessii*, natural size: *i*, ilium; *m*, femur.
2. Hind limb, from right side, enlarged: *t*, tibia; *f*, fibula; *ts*, tarsus;
mt, metatarsus; *i*, *ii*, *iii*, *iv*, *v*, digits.

DISCUSSION.

Mr. HULKE said that he had no doubt that the species described by Prof. Seeley belongs to a genus distinct from *Hydrosaurus*. He compared the former with the Geckos in respect of their having bony scales.

The AUTHOR stated that the distinction of the vertebræ had been rendered difficult through chemical action. He doubted as to the existence of scutes in the specimen.



A.S. Foord del et lith.

Mintern Bros. imp.

ADRIOSAURUS SUESSII.

