

Article XV.— A NEW PHYTOSAUR FROM THE PALISADES NEAR
NEW YORK.¹

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PLATES XLIX AND L.

It is of some interest that a new and very large Parasuchian has been found in the Trias of New York.¹ Dr. Matthew in the summer of 1912 very kindly suggested that I should describe the specimen; I am much obliged to the American Museum for this opportunity. When I came to New York in March, 1911, the specimen in the American Museum of Natural History was immediately shown to me. It had been discovered a few months previously and was still in a half prepared state. I saw at once it was a Phytosaur though another interpretation had been pronounced before even in the newspapers.

The specimen was found near Fort Lee on the right side of the Hudson River opposite New York. The matrix is a red sandy marl hardened or rather burned by the overlying trap. The bed is 20 feet below the thick sheet of basalt of the Palisades. This basalt is not a superficial flow, but a horizontal dyke or sill which metamorphosed the underlying sediments. It does not lie everywhere absolutely concordant to the bedding. These beds as well as the basalt belong to the Newark red series and in former times probably were in connection with the same beds of Connecticut and Massachusetts. Except for a few fossil fishes described by Newberry, fossils had not yet been known from near New York City.

The large plate of matrix (155/125 cm.) contains the pelvis, both hind legs without feet, small parts of the body and tail and a few dermal scutes.

Dorsal vertebrae: There are 4 vertebrae belonging to the thoracic region as they possess relatively long diapophyses. The dorsal spines are but little lower than in *Rutiodon carolinensis* (cf. MacGregor: Mem. Am. Mus. Nat. Hist., IX, 2, 1906).

¹ [The finding of a large fossil reptile in the Palisades opposite New York City two or three years ago aroused considerable local interest. Fossils are very rare in this vicinity and the Fort Lee Reptile could fairly be regarded as the "oldest inhabitant" of New York City of whom any authentic relics had been found. When discovered the skeleton was almost wholly buried in rock and was conjectured to be a Dinosaur; but when the rock was chiselled away from the specimen it was recognized as belonging to another group of extinct reptiles. The scientific description of the specimen was intrusted to Dr. Friedrich von Huene who is generally recognized as the foremost authority upon Triassic reptiles and who kindly consented to supply the observations which follow. The geologic level of the specimen is near the base of the Newark group, pertaining therefore to the older Newark fauna as distinguished by Lull. (Amer. Jour. Sci. Vol. XXXIII, 1912, pp. 397-427.) W. D. Matthew.]

Sacral vertebra: A sacral vertebra without upper arch is lying near the abdominal ribs. It seems to be the first sacral vertebra, because the sacral ribs are much weaker than those of the second sacral vertebra of *R. carolinensis* shown by MacGregor.

Caudal vertebræ: 4 anterior caudal vertebræ and fragments are lying near to each other behind the pelvis. They possess very high and straight dorsal spines similar to those of *R. carolinensis*.

Hæmapophyses: Remains of two hæmapophyses are visible, both of them lack the lower end. One of them is still attached to the penultimate tail vertebra by its articular facets, but most of the other parts are missing. The second specimen shows the articular facets divided as in all Parasuchians, which in contradistinction to those of dinosaurs are not connected by a bridge.

Ribs: Beside the left tibia and fibula there are few thoracic ribs, but no articular ends are preserved. Also the rib lying over the left pubis is a thoracic rib.

Abdominal ribs: A large number of abdominal ribs are lying anterior to the pelvis. They are straight and slightly curved; several of them (6) are apparently of the median line and show a sudden curvature in lesser (for instance two on the side of the right femur) or greater (4 or 5 in the big mass) degree. They belong to the median and posterior part of the plastron. Two specimens below the sacral vertebra form a sharp angle and consist of two straight branches; they come from the most anterior part of the plastron.

Ilium: Both ilia show their lateral aspect. The left ilium is partly covered by the proximal end of the left femur. The contour of the ilium is — except for the closed acetabulum — more similar to that of the Triassic Theropoda than to that of the European Phytosaurs, because it is lower and longer and at the same time possesses a sharp spine directed anteriorly. The ilium if compared with *R. carolinensis* shows the following distinctions: in *R. carolinensis* the contact line of the pubis at the lower border is relatively much shorter than in the recently discovered specimen. The length of this contact line in *R. carolinensis* is one third of the distance from the spina anterior to the spina posterior but in this specimen only a little more than one half. The whole breadth of the acetabulum is nearly the same: the distance from the spina anterior to the spina posterior is one third longer than the width of the acetabulum in this specimen and one half in *R. carolinensis*. There is not much difference in the vertical breadth in the two species. The upper border in *R. carolinensis* is a little more curved and the posterior process a little narrower than in this species.

Pubis: The left pubis is lying near the caput of the left femur and the

posterior process of the right ilium is above it. The bone shows the ventral face. The right pubis is near the lower border of the plate. The pubis of *R. carolinensis* is a good deal shorter as compared with the ilium and compared with its own length it is broader than in the new species.

Ischium: The left ischium is but little displaced near the left ilium and covers a small part of the right ischium; the latter shows the medial and this the lateral face. The whole bone is heavier and the posterior end broader than in *R. carolinensis*.

Femur: The left hind leg lies near the abdominal ribs and the dorsal vertebræ, the right leg near the isolated pubis. The femur in its form (as the ilium) is similar to that of the Triassic Theropoda, only it is more curved. Its length is 43–44 cm. and it is the largest Parasuchian femur I have ever seen (*Mystriosuchus rütimeyeri* has a length of 40 cm.).

Tibia and Fibula: The tibia is extraordinarily heavy as compared with all other Parasuchians. It is the same with the fibula which shows an S-like curvature. In the right leg the distal end of the fibula is lying near the proximal end of the tibia. The femur is but little more than $1\frac{1}{2}$ times the length of the tibia (1.57:1.00). In *R. carolinensis* this relation is quite different (1.97:1.00).

Dermal scutes: The dermal scutes are not very well preserved, but one can recognize the same type as in *R. carolinensis* and the European *Mystriosuchus* which is quite different from *Phytosaurus*. In particular one scute of the tail is in fairly good preservation and shows the characteristic form.

From this last similarity it is justifiable to conclude that the skull had a long and low snout.

The specimen from Fort Lee was skillfully prepared by Mr. Ch. Falkenbach. The figure of it is given in Plate L. Here is also given the figure (Plate XLIX) of the recent artificial slabmount of the remains of *Rutiodon carolinensis* described by MacGregor; it does of course not claim certainty in the number of the presacral vertebræ and the arrangement of the scutes, and perhaps in a few other points.

The comparison of the two specimens shows at least a specific difference. Therefore I propose to call the New York animal ***Rutiodon manhattanensis*** n. sp. The species described by Marsh as *Belodon validus* is based only on a fragment of a right scapula (Yale University collection No. 2056). It is not adequate for the type of a species. It is a pity that the Phytosaurs of western and central North America are not yet sufficiently known, so that the skeleton of *Rutiodon manhattanensis* cannot be compared with other American Phytosaurs except *R. carolinensis*.

The skull of *Rutiodon* has already been compared with European Phytosaurs, but not so the skeleton to any extent. *Rutiodon* and the European

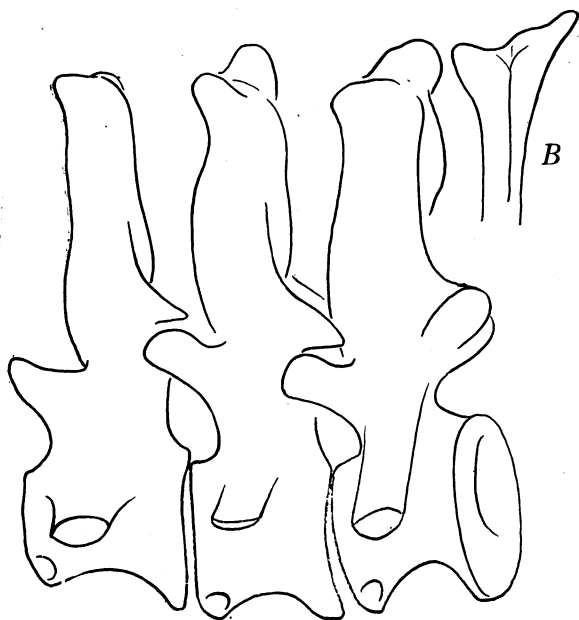


Fig. 1. *Mystriosuchus planirostris* M. Middle cervical vertebrae. One half natural size. Stubensandstein of the Middle Keuper, from Pfaffenhofen, Württemberg. No 12671 Naturalienkabinet, Stuttgart. B, Last dorsal spine from behind.

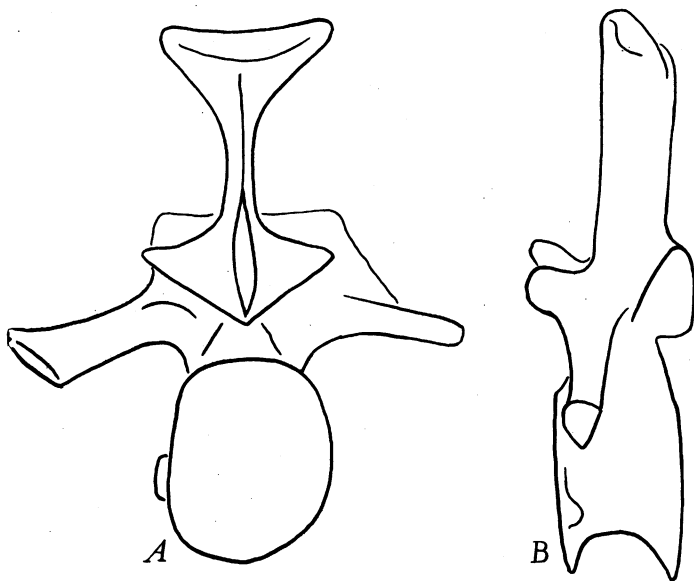


Fig. 2. *Phytosaurus kapffi* M. Cervical vertebra. One half natural size. Stubensandstein of the Middle Keuper, from Heslach near Stuttgart. In the Naturalienkabinet, Stuttgart. A from behind, B from left side.

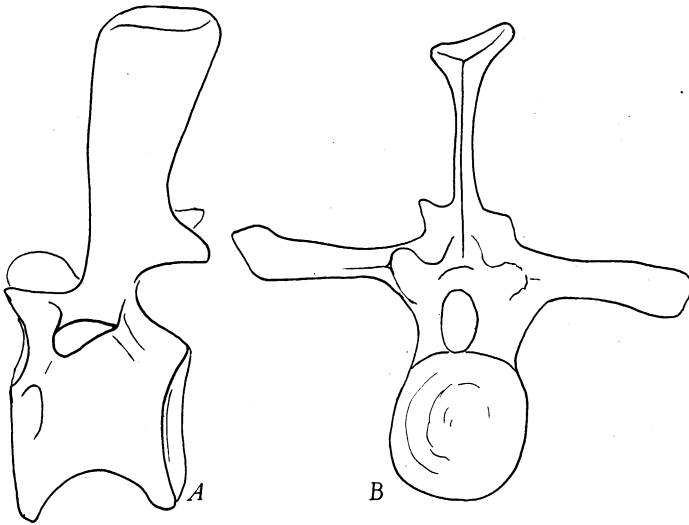


Fig. 3. (?) *Mystriosuchus planirostris* M. Dorsal vertebra. *A* from left side, *B* anterior view. One half natural size. Heschl, etc. as in Fig. 2. No. 5999.

Mystriosuchus are hardly different, generically, and should probably be united in one genus, as I have already proposed some time ago, only the name *Rutiodon* dates from 1856 and is very much older than *Mystriosuchus*. Prof. E. Fraas very kindly gave me the opportunity of seeing all the remains of *Mystriosuchus* and *Phytosaurus* in the Stuttgart Museum. The skeletal difference between these two genera is very clear. The centra of cervical and dorsal vertebræ are shorter in *Phytosaurus* and the dorsal spines every-

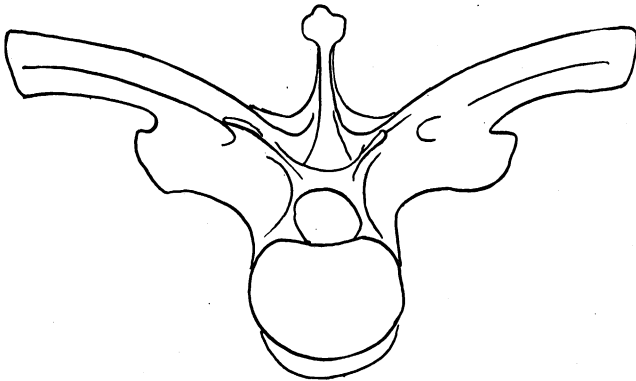


Fig. 4. (?) *Phytosaurus kappfi* M. Dorsal vertebra, anterior view. One half natural size. Heschl etc., as in Fig. 2; in the British Museum Nat. Hist. No. 38072.



Fig. 5.

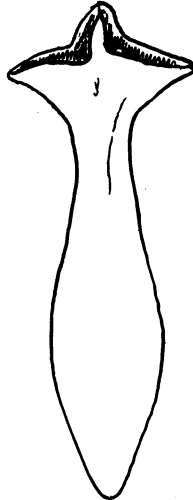


Fig. 7.

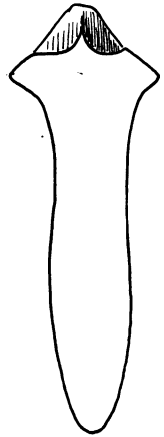


Fig. 8.

Fig. 5. *Mystriosuchus planirostris* M. Middle caudal vertebra, from left side. One half natural size, from Pfaffenhofen, etc. as in Fig. 1. No. 12671.

Fig. 7. *Mystriosuchus planirostris* M. Interclavicle, ventral aspect, much diminished, from the Stubensandstein of Aixheim, Württemberg. In the Naturallienkabinet at Stuttgart.

Fig. 8. *Phytosaurus kappfi* M. Interclavicle, ventral aspect, much diminished, from Heschach, etc. as in Fig. 2.

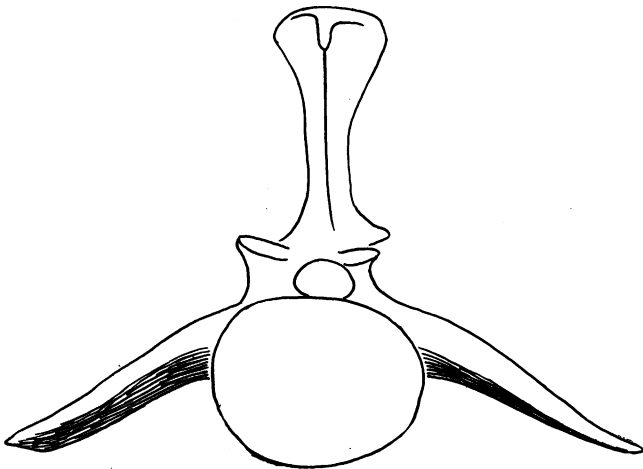


Fig. 6. *Phytosaurus kappfi* M. Anterior caudal vertebra, anterior view. One half natural size, from Heschach, etc. as in Fig. 2.

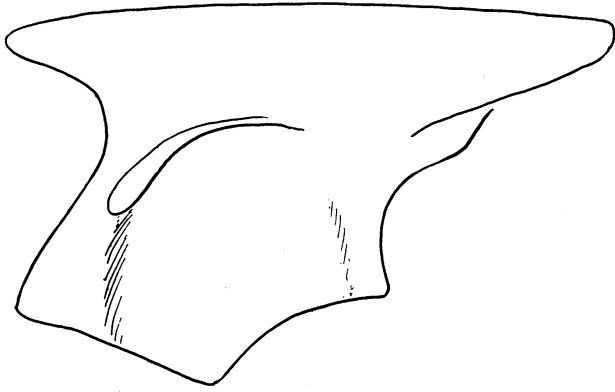


Fig. 9. *Mystriosuchus planirostris* (?) M. Left ilium, lateral aspect. One half natural size; from Pfaffenhofen, etc. as in Fig. 1.

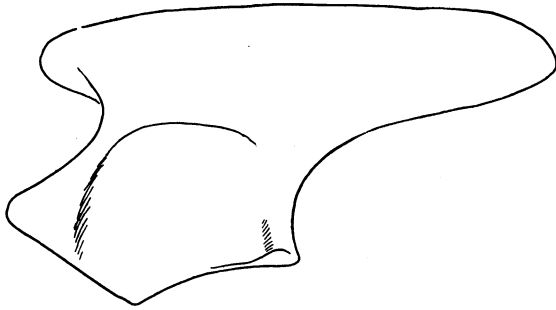


Fig. 10. *Phytosaurus kapfi*. M. Left ilium, lateral aspect. One third natural size; from Heschl, etc. as in Fig. 2.



Fig. 11.



Fig. 12.

Fig. 11. *Mystriosuchus plieningeri* M. Left femur from below (inverted to a right one), much diminished. Aixheim, etc. as in Fig. 7.

Fig. 12. *Phytosaurus kapfi* M. Right femur from below. Much diminished. Heschl, etc., as in Fig. 2.

where lower, especially in the anterior dorsal and anterior or entire caudal region. The whole construction of the vertebræ is higher in *Mystriosuchus* (the same in *Rutiodon*). The thickening of the upper end of the dorsal spines of the cervical, anterior dorsal and anterior caudal vertebræ is greater in *Phytosaurus* than in *Mystriosuchus* and the latter does not have any thickening at all of that part in the caudal vertebræ. In the anterior girdle the interclavicle has a different form in the two genera. In the posterior girdle most of the differences are in the ilium. The main difference in the femur is a strong curvature at the beginning of the distal third of its length

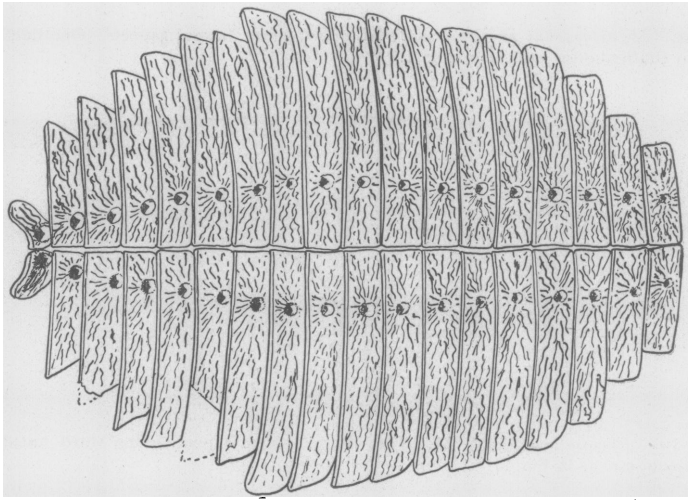


Fig. 13. *Phytosaurus kapffi* M. Dorsal armature and first caudal pair, much diminished. Composed from several individuals. Heselach, etc., as in Fig. 2.

in *Phytosaurus*; it is more curved than in any *Mystriosuchus* or *Rutiodon*. The difference in the dermal armature is sufficiently known.

I should think *Rutiodon* and *Mystriosuchus* were better swimmers than *Phytosaurus* on account of their higher vertebræ (giving space for stronger musculature) and more compressed body. The slender snouted *Phytosaurs* are the largest ones; *Mystriosuchus rütimeyeri* is the latest and at the same time the largest European form; but *Rutiodon manhattanensis* is the largest one I have ever seen. It is also probable that the strata of Fort Lee belong to the upper Trias as do those of Connecticut and Massachusetts. The reasons for this probability I have given some time ago.

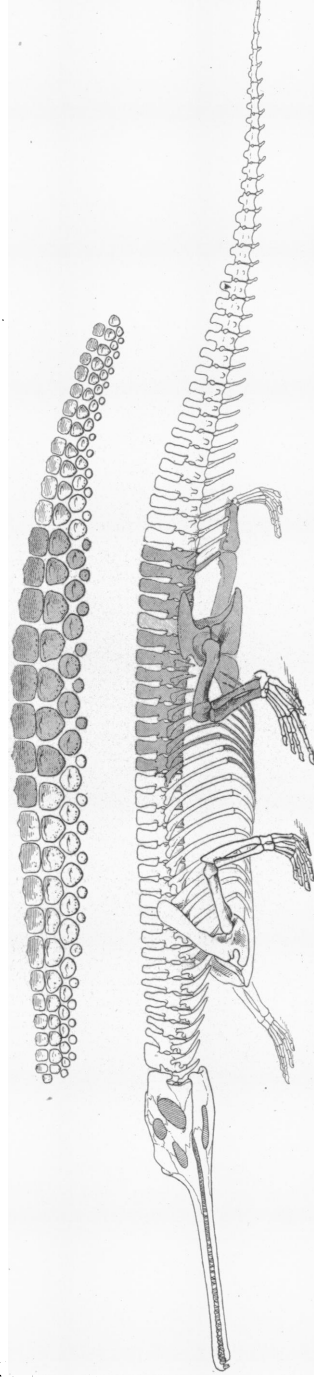
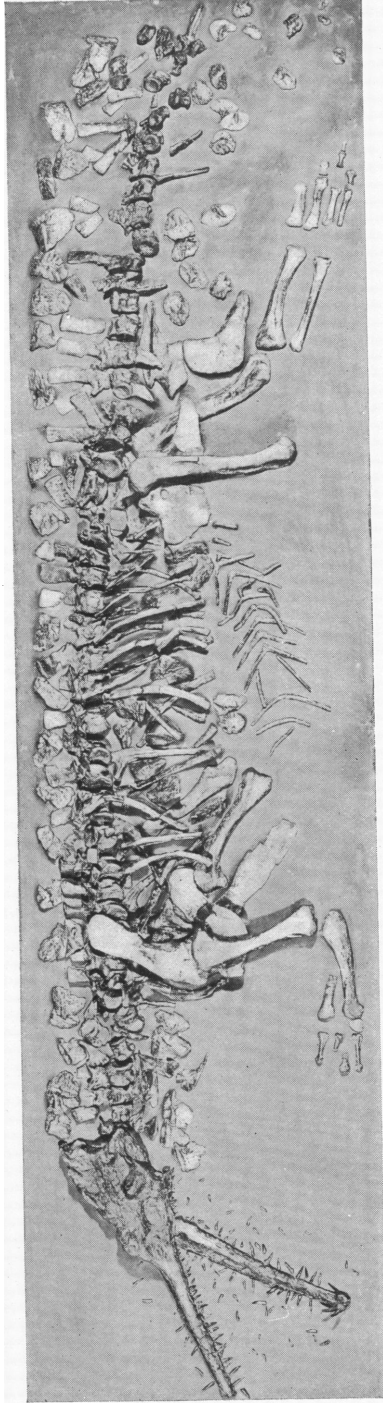


Fig. 14. Diagram of *Eutiodon* showing parts preserved in the Fort Lee specimen. From Matthew.



RUTIODON CAROLINENSIS Emmons.

From the Upper Triassic of Egypt, Chatham County, North Carolina. About $\frac{1}{4}$ th natural size. Set in a slab mount in the American Museum of Natural History.



RUTIODON MANHATTANENSIS SP. NOV.

From the Upper Triassic of Fort Lee, New Jersey, at the base of the Palisades opposite New York City. About $\frac{1}{10}$ th natural size. In the American Museum of Natural History.

