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SKELETON OF CAMARASAURUS LENTUS RECENTLY MOUNTED AT YALE.

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The skeleton of the holotype of *Camarasaurus (Morosaurus) lentus* (Marsh), Cat. No. Y. P. M. 1910, has been mounted by the veteran preparator Hugh Gibb with some rather interesting results. The author had access to the memoir on *Camarasaurus* by Osborn and Mook,[1] but at the time of reconstruction had not seen Gilmore's paper[2] on *Camarasaurus lentus*, based upon the practically complete skeleton in the Carnegie Museum. The latter would have been of the utmost value in preparing our mount, but the fact that the Yale assembling was done without reference to it renders their agreement in so many details all the more interesting as corroborative evidence of the correctness of Mr. Gilmore's conclusions, some of which are at variance with those of Osborn and Mook.

Both specimens, the Yale type and that at Carnegie, are immature, so that the separate elements of the vertebral column had not coalesced, with the exception of the three sacral spines. The Yale specimen measures about 21 feet in length to the Carnegie's 17, and the height at hips is 5 ft. 10½ in. to a little less than 5 ft., showing the latter to be yet younger and about 6/7 the size of the former.

In the Yale specimen the entire vertebral column is present from the second or third cervical to the tenth caudal with one or two later caudals. Of the limbs and their girdles there are present the left scapula, right coracoid, both humeri, the left radius and ulna, both ilia, the right pubis and left ischium, and both femora, tibiae, and fibulae. One cervical rib is present but no thoracic ribs. The disarticulated sacrum lacked

[1] Osborn, H. F. and Mook, C. C., *Camarasaurus, Amphicoelias*, and other sauropods of Cope. Mem. Amer. Mus. Nat. Hist., new series, Vol. III, Part III, pp. 249-387, Figs. 1-127, Pls. LX-LXXXV, 1921.

[2] Gilmore, C. W., A nearly complete articulated skeleton of *Camarasaurus*, a saurischian dinosaur from the Dinosaur National Monument, Utah, Mem. Carn. Mus., Vol. IX, No. 3, pp. 347-384, Figs. 1-5, Pls. XIII-XVII, 1925.

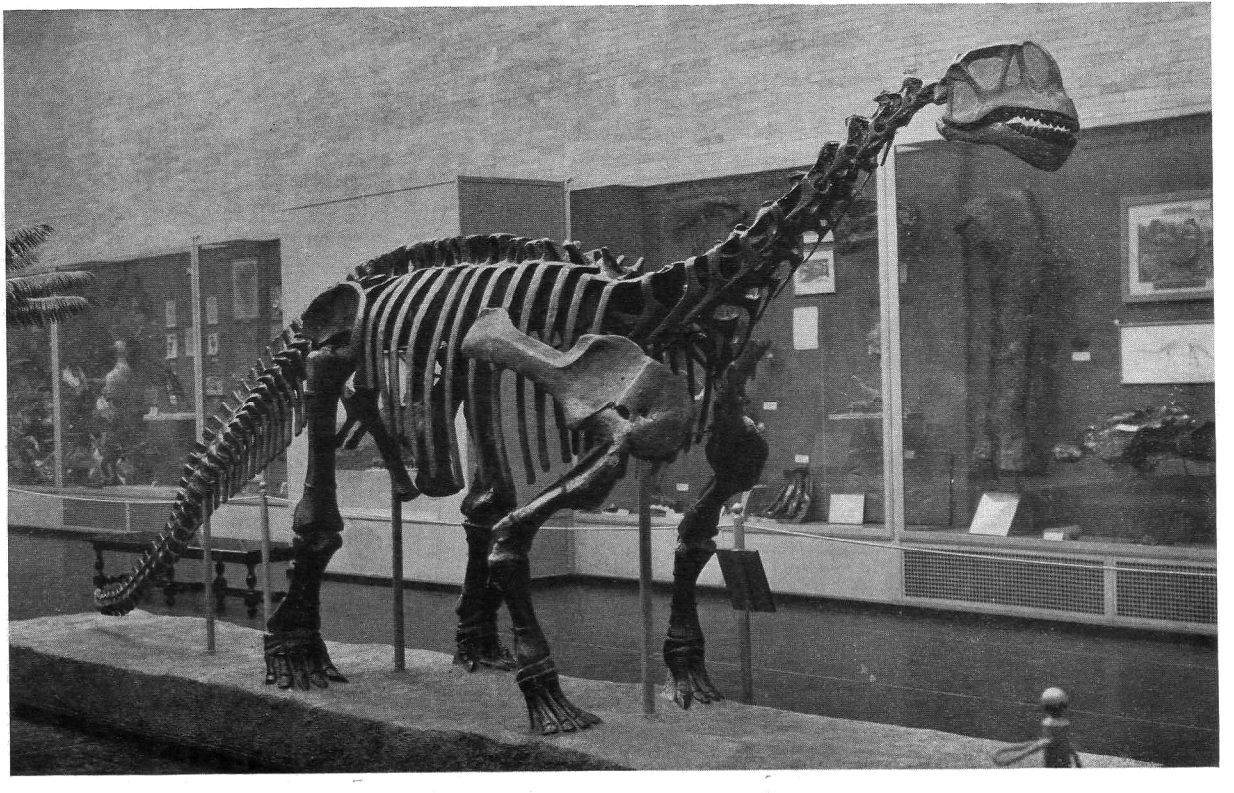

Fig. 1. *Camarasaurus lentus,* holotype skeleton, oblique front view.

one rib from either side, but the missing ones did not correspond, which eliminated the possibility of error here.

The vertebral formula on the Yale mount as restored is: cervicals 11, dorsals 12, sacrals 5, and caudals 52, agreeing with the Carnegie specimen, except for the number of cervicals and caudals, which are one fewer in each case in our specimen. Of the cervicals the atlas is missing and possibly also the axis, the bone which we interpreted as axis being probably the third cervical. This error is conceivable, as the centrum only is actually preserved.

There is no departure from Gilmore's description of the vertebrae. He speaks of the coalescence of the sacral spines in the adult. In the Yale specimen three over the primordial sacrals are already fused, showing that these are the first elements to coösify with approaching maturity. The sacrodorsal and sacrocaudal already form an integral part of the sacrum, making the number of sacrals five, rather than the four of Marsh's original description of *Morosaurus*, as Gilmore has demonstrated. The cervical ribs in the Yale mount are not long enough by half, and the thoracic ribs may be somewhat heavy and their length a little short. The position of the scapula agrees in both specimens so far as angulation and fore and aft positions are concerned, but the Yale scapula is perhaps a trifle higher relatively, thus bringing the anterior dorsals and posterior cervicals a little nearer the ground. The agreement with Gilmore's restoration is, however, very close and contrasts sharply with the Osborn-Mook restoration, in which the scapula is more nearly vertical, bringing the shoulders higher than the hips, to which Gilmore rightly objects. In the reconstruction of the Yale feet both carpus and tarsus are probably incorrect, as the elements in each instance are fewer than shown, there being no more than two at most. There is apparently no justification for the fore and aft extension of the distal chevrons, as these were not preserved and the Osborn-Mook restoration was followed.

There was difficulty in the reconstruction of the pelvis, and here a probable error lies in too great an allowance for cartilage between the several elements, thus making the acetabulum seem rather large.

The position of the anterior caudals which carries the tail well out over the ischia is another point of agreement between the Carnegie and Yale mounts, a feature justified by the form of the centra and the position of the zygapophyses.

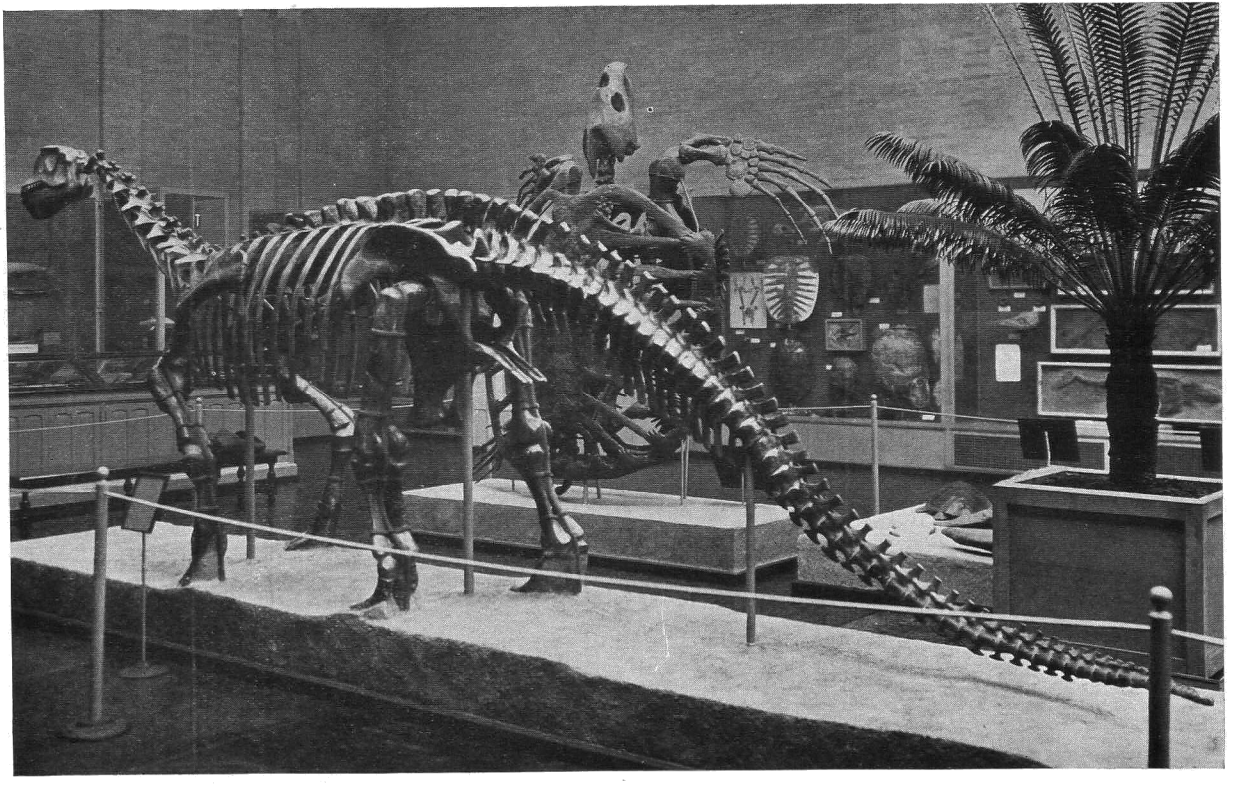

Fig. 2. *Camarasaurus lentus,* oblique rear view.

It is a source of gratification to see how nearly the two results tallied, Gilmore's based upon an articulated skeleton with bones largely preserved and *in situ* and the Yale specimen in which but a few of the vertebrae were preserved in position and with them some of the neural arches were badly crushed together. The resulting agreement must show that we are near the correct interpretation of this interesting species.

Gilmore accepts the Osborn-Mook conclusion as to the synonymy of *Camarasaurus* Cope and *Morosaurus* Marsh, the former having priority. He further reduces the number of species to four, *Camarasaurus supremus* Cope, *C. (Morosaurus) impar* (Marsh), *C. (Morosaurus) robustus* (Marsh), and *C. (Morosaurus) lentus* (Marsh). The types of *Morosaurus grandis* and *M. robustus*, which are probably conspecific, are both in the Yale Peabody Museum. The latter, a very perfect specimen, we intend to mount when the great *Brontosaurus excelsus* type is completed. The three sauropods, ranging in length from 21 to nearly 70 feet, should make a very impressive group.

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