



## Review: The Principal Characters of American Cretaceous Dinosaurs

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classes of vertebrates. Regarding segmentation in vertebrates as compared with invertebrates, our author considers the body-segment of a vertebrate not as a single organ, but as the combination of a neuromere arising from the ectoderm with the scleromere and myomere arising from the mesoderm, which arise independently of each other and are not in any way to be taken together. Such an antithesis between the neuromere and the other organ-segments do not exist in the segments of the Articulates. Ihering also expresses the opinion that Semper's revival of the hypothesis of Geoffroy St. Hilaire and Treviranus is a matter rather of personal convictions than a subject for scientific discussion. This hits the nail on the head. He also shows that in vertebrates the new segments of vertebrates, in early life, are terminal; while the new segments of articulates are interpolated between the penultimate and terminal segments of the body. The law for articulates is not new to American students,<sup>1</sup> though only German and Swiss authorities are quoted in the present work.

THE PRINCIPAL CHARACTERS OF AMERICAN CRETACEOUS DINOSAURS.—Prof. Marsh, in the November number of the *American Journal of Science and Arts*, gives an account of the characters of several genera of saurians from the Rocky Mountain region. This paper gives us, for the first time, the characters of their ilium and the mode of its junction with the pubis and ischium, and the structure of the feet and of the axis vertebra, all points of great value to comparative anatomy and palæontology. He also extends to certain genera, characters of the skeleton which have been already determined in nearly allied forms. He proposes for them all a new division of the *Dinosauria* which he terms *Sauropoda*, with the following definition: (1.) Fore and hind limbs nearly equal in size. (2.) Carpal and tarsal bones distinct. (3.) Feet plantigrade, with five toes on each foot. (4.) The precaudal vertebrae contain large cavities apparently pneumatic. (5.) The neural arches are united to the centrum by suture. (6.) The sacral vertebrae do not exceed four, and each supports its own transverse process. (7.) The chevrons have free articular extremities. (8.) The pubes unite in front by ventral symphysis. (9.) The third trochanter is rudimentary or wanting. (10.) The limb bones were without medullary cavities.

We remark, with reference to the above definition, that it embodies the characters of a well-marked division of reptiles, but that many of the characters given do not have such significance; or, in other words, do not possess the value which Prof. Marsh attaches to them. Thus, while some of them should be retained, Nos. 1, 4, 5, 7 and 10 must be rejected.

An important improvement over his previous essays is noticeable in this one, in that the author gives a definition for the only new genus proposed, viz: *Diplodocus*, which is, therefore, a real addi-

<sup>1</sup> See Packard's Guide to the Study of Insects.

tion to scientific nomenclature. But, on the other hand, Prof. Marsh does not deviate, throughout this paper, from his usual habit of ignoring the work of contemporary naturalists.<sup>1</sup> We cite the following instances: The division called by Marsh *Sauropoda*, was named by Owen, thirty-seven years ago, the *Opisthocæla*, and more recently by Seeley, the *Cetiosauria* (the latter name without definition). Several genera of the group have been determined by other authors, of which no mention is made, while new names are given them. Such is *Caulodon*, which at a later date is termed *Morosaurus*; and *Camarasaurus*, from which *Atlantosaurus* of later origin has never been distinguished. The name *Apatosaurus*, introduced as "described by the writer," is an equally unknown quantity in palæontology.<sup>2</sup> The various descriptions of the characters of the limb and pelvic bones, and of the skeleton in general, are all given as though new, the recognition of work done by others, usually thought indispensable in scientific literature, being quite omitted. A reference is made, however, to the early determination of the age of the beds in which some of these fossils were found by Dr. Hayden and Prof. Cope, as erroneous; but the author fails to notice the later views of Prof. Cope, in which he corrected both Prof. Marsh<sup>3</sup> and the determinations which were made before him.

MEEHAN'S NATIVE FLOWERS AND FERNS.<sup>4</sup>—We are glad to notice the increasing number and value of our popular works of natural history. Such handbooks have long been common in England and on the Continent, but somehow we, in America, have not had them. Works like these, however, seem now to be much in demand. They undoubtedly have, when well conducted, an educational influence. The name of Mr. Meehan is a guarantee for the excellence of the text. He gives a pleasant conversational account of each flower, and contrives at the same time to introduce much interesting scientific matter, which may lead the reader to personal research. Herein lies the value of these illustrated manuals. He who comes to them for amusement may tarry for information. One part is to be issued every two weeks, and will contain four colored plates. Mr. Alois Lunzer has here produced very satisfactory work. Indeed, we are at a loss to see how the Messrs. Prang & Co. can furnish so much for so small a sum; the price of each part is but fifty cents, while both letter-press and plates are elegant. A somewhat familiar acquaintance

<sup>1</sup>An apparent exception, is that of a distinguished English palæontologist, who is noticed in a foot note, but his precise service, that of the determination of the structure of the pelvis in *Iguanodon*, is unfortunately not specified.

<sup>2</sup>I note here that the supposed new genus of *Mammalia* recently noticed by Prof. Marsh as derived from the same beds, is in a similarly unsatisfactory condition, not the least ground for its creation having been given.

<sup>3</sup>Proc. Amer. Philos. Soc., 1877, p. 234.

<sup>4</sup>*The Native Flowers and Ferns.* By THOMAS MEEHAN. Boston, L. Prang & Co., 1878.