

## EXPEDITION TO THE DINOSAUR NATIONAL MONUMENT, UTAH

The department of geology of the United States National Museum has long been desirous of obtaining a mountable skeleton of one of the large sauropodous dinosaurs to be utilized as a central feature in the main hall devoted to the exhibit of fossil vertebrates. In the latter part of 1922, the opportunity for securing such a skeleton was presented when the Carnegie Museum of Pittsburgh abandoned opera-



FIG. 16.—Sign on the Victory Highway near Jensen, Utah, directing visitors to the Dinosaur National Monument. Erected by the Vernal Chamber of Commerce. (Photograph by C. W. Gilmore.)

tions at the Dinosaur National Monument in northeastern Utah. In the course of their final excavating, the Carnegie collectors uncovered two partially articulated skeletons of *Diplodocus*, which were left *in situ*, since a sufficient amount of such material had already been secured. When this fact and the intention of the Carnegie Museum to cease operations in the region were communicated to the officials of the Smithsonian Institution, plans were formulated for taking up the work, and in May, 1923, Mr. C. W. Gilmore, curator of vertebrate paleontology, was detailed to take charge of such operations as were necessary to secure a mountable skeleton of one of these huge reptiles.



FIG. 17.—View of the quarry at the Dinosaur National Monument. The slope in the center foreground was excavated for dinosaur remains by the Carnegie Museum. The dump may be seen in the lower left hand corner. (Photograph by Earl Douglass.)



FIG. 18.—General view of the region surrounding the Dinosaur National Monument with Green River at right. The arrow indicates the location of the quarry. (Photograph by Earl Douglass.)

The fossil deposit in the Vernal Valley, near Jensen, Utah, now known as the Dinosaur National Monument (see figs. 16, 17, and 18), was discovered by Mr. Earl Douglass in 1909, and has been worked continuously by the Carnegie Museum since that time. The material secured there—some 300 tons—is greater in quantity and finer in quality than the sum of all that has been obtained hitherto in America. The fossil bones are found here in a thick, cross bedded sandstone of variable hardness that is tilted up to an angle of  $60^\circ$ , as is clearly indicated in the accompanying illustrations.



FIG. 19.—View showing the steeply inclined plane of the fossil bearing sandstone, with blocks of fossils being boxed preparatory to shipping. (Photograph by Earl Douglass.)

Mr. Gilmore arrived at the quarry on May 15. A preliminary survey showed that the two skeletons uncovered by the Carnegie collectors had been partially worked out in relief, as illustrated in figures 20 and 21. These are here referred to as No. 355 and No. 340. It was at once decided that No. 355 (see fig. 21), although lacking much of the neck and some other parts, would form the basis of a mountable skeleton, its value being materially increased by its articulated condition, while the preserved parts of No. 340 would serve admirably to replace the missing bones of No. 355.

Regular work in the quarry was begun on May 24 and proceeded continuously up to August 8. The employment of three men with ex-





FIG. 20.—General view of the skeletons of *Diplodocus* collected by the National Museum. Men are working on specimen No. 355 at the right, and No. 340 is shown near the floor of the quarry to the left. The large plastered blocks on the ledge are portions of the neck of No. 340. (Photograph by Arthur Coggeshall.)



FIG. 21.—Photograph showing a more detailed view of specimen No. 355 as it was uncovered by Carnegie Museum collectors. The squares, 4 feet across, are painted on the rock to assist in properly mapping the bones. (Photograph by Arthur Coggeshall.)

perience in this field, together with the assistance of Mr. Norman H. Boss of the Museum's paleontological force, who joined the expedition on June 5, were largely responsible for the successful outcome of the operations.

The work of quarrying these often fragile bones from the ledge of rock without doing irreparable damage is a slow and tedious operation, involving the skill of both the stone cutter and the miner. Further difficulty is encountered in handling by primitive methods the immense blocks of rock enclosing the bones, with the subsequent arduous work of boxing and transportation. The largest block quarried, containing the sacrum with attached hip bones, weighed nearly 6,000 pounds when ready for shipment. The transportation of the boxes to the railroad involved a haul by teams of 150 miles across country and over a range of mountains 9,100 feet above sea level. However, 34 large boxes having a combined weight of over 25 tons were safely transported.

The expedition resulted in the acquisition of sufficient material for a good skeletal mount of *Diplodocus* which, it is estimated, will exceed 80 feet in length with a height at the hips of 14 feet.

#### COLLECTING FOSSIL FOOTPRINTS IN VIRGINIA

In September Mr. Charles W. Gilmore, curator of vertebrate paleontology, United States National Museum, visited the farm of Mr. F. C. Littleton, near Aldie, Loudoun County, Virginia, for the purpose of investigating the reported discovery of fossil footprints. In excavations made by Mr. Littleton in the red Triassic shale in quest of flagstone, numerous footprints were to be observed. These occur in four distinct horizons in a vertical distance of perhaps 100 feet. In two instances at least prints were found in successive layers. Three-toed imprints predominate though they vary in size from a length of three to fourteen inches. A few tracks were noticed having four toes, evidently terminated with wide, flat unguals. All of these are probably of dinosaurian origin, but a few small 4- or 5-toed tracks with traces of sharp claws perhaps pertain to some other group.

While as a whole the tracks bear a striking similarity to those from the Trias of the Connecticut Valley, a critical study and comparison of them would be most interesting. They are of further interest as being the first footprints to have been found in the State of Virginia.

Through the courtesy of Mr. Littleton, Mr. Gilmore again visited the locality and with the assistance of Mr. N. H. Boss collected a fine slab, two by twelve feet, on which were the imprints of a 3-toed