

**REPRINT FROM THE ORIGINAL BOOKLET**  
by CHARLES N. STREVELL  
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# DINOSAUROPODES



This article first appeared in the 1932 Christmas edition of the Deseret News. It has been made into a more convenient form for distribution to my friends.

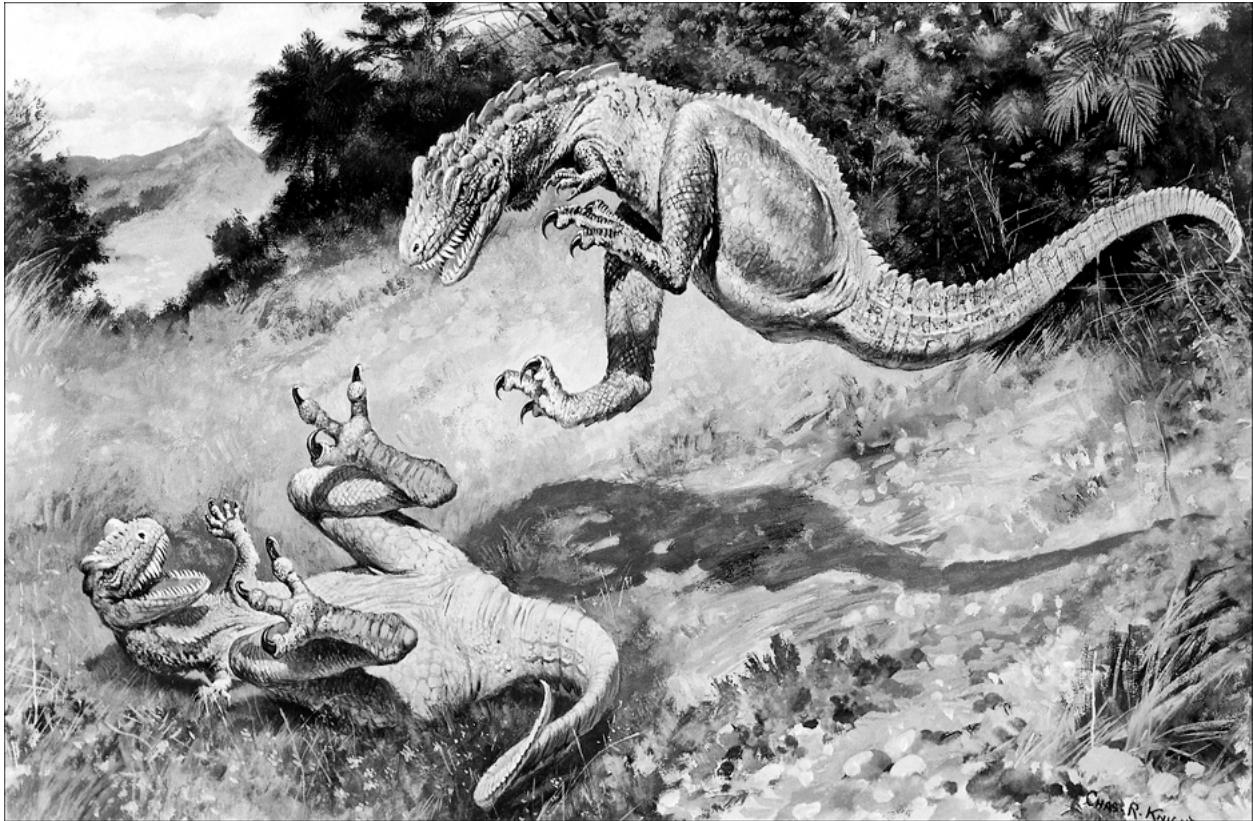
It is given with the hope that it may prove as interesting to you as my hobby has been to me.

Your friend,

Handwritten signature of Charles N. Strevell.

# DINOSAUROPODES

CHARLES N. STREVELL



Dinosaurs in Combat

ONE of the most interesting chapters of the earth's past history is that of the time when there were laid down the Triassic strata of the famed Connecticut Valley, interesting in the profusion of its indicated life and fascinating in the baffling obscurity which shrouds most of its former denizens, the only records of whose existence are 'Footprints on the sands of time.'

"It is not surprising therefore, that geologists should have turned to the collecting and deciphering of such records with zeal; nor is it to be marveled at that, after exhaustive researches of the late President Edward Hitchcock, workers should have been attracted to other more productive fields, leaving the foot prints aside as of little moment compared with the wonderful discoveries in the great unknown west."

The remarks quoted above are by Dr. Richard Swann Lull of Yale University in the introduction to his "Triassic Life of the Connecticut Valley" and cannot be improved on for the beginning of an article on footprints, whether found in Connecticut or Utah.

The now famous tracks in the brown stone of the Connecticut Valley seem to have first been found by Pliny Moody in 1802 when he ploughed up a specimen on his farm, showing small imprints which later on were popularly called the tracks of Noah's raven. In 1835 Dr. James Deane called Professor Hitchcock's attention to them and his suspicion that they might have been made by animals. When Dr. Hitchcock's work was published in 1836 the

tracks were believed to have been made by birds dinosaurs being practically unknown. Present day developments and knowledge are a complete verification of the suspicion that they were made by animals. It is not strange that the tracks found in the Connecticut Valley were thought to be bird tracks which they resembled in size and shape.

### **Not Discovered**

At this time the dinosaur remains at Jensen and the footprints in the coal fields of Utah had not been discovered. Looking at a Utah dinosaur footprint a yard and a half long, one would naturally think of animals, and not birds.

The first dinosaur to be recognized as such was found near Oxford, England, in 1824. The scientific name Dinosauria was proposed by Sir Richard Owen in 1842 and is now universally used. For a long time our knowledge of dinosaurs was very imperfect and literally fragmentary, depending mostly upon scattered teeth, isolated vertebrae, or fragments of bone picked up on the surface or casually encountered in a mine or quarry. Now, however, owing mainly to the labors of American palaeontologists, also to the rich deposits of fossils in our western states, we have an extensive knowledge of the dinosaurs, of their size, structure, habits and general appearance.

Comparatively little was known about dinosaurs in Utah prior to the great work of the late Dr. Earl Douglass of Carnegie Institute which began in 1908 and continued for twelve years. In 1909 on the very summit of a rough jagged peak, he discovered one of the largest known dinosaurs yet found in Utah, or else where. Its bones were sent to Carnegie Museum where it was named in honor of Mrs. Andrew Carnegie, *Apatasaurus Louisae*. In addition to being one of the largest creatures that ever walked on earth, its skeleton is said to be one of the most complete ever recovered of this remarkable race of extinct reptiles. This skeleton has become most famous through presentation of plaster casts of it to museums in foreign countries. It is 84 feet in length, a snake-like neck, and a tail more than 40 feet long. It is now on exhibition in the Carnegie Museum at Pittsburgh.

Public interest in Utah regarding dinosaurs was greatly stimulated by Dr. Frederick J. Pack of the University of Utah and resulted in securing for the museum, one of the finest collections of dinosaur skeletons owned by a university.

### **Dearth of Bones**

One of the most remarkable features of the fossil remains is the dearth of actual bones and the marvelous abundance of footprints in the Connecticut Valley.

In the new Peace River British Columbia field, tracks and osseous remains are not equally mingled, for though more than 400 dinosaur tracks were observed, not even a fragment of bone is found. At the National Dinosaur Monument at Jensen, Utah, hundreds of skeletons are found but no footprints, while in Utah coal fields no osseous remains are found, where there are hundreds of footprint casts. In the Grand Canyon and on Mt. Timpanogas in Utah, foot prints are found having been exposed by erosion. In the coal fields the sandstone covering is usually very heavy and the footprints of dinosaurs are found only when tunnels are run on the coal seams, thereby exposing the casts.

Millions of years ago during the Cretaceous period, great swamps were formed and sluggish streams followed winding shifting courses to the sea. This swampy area extended from Utah to Kansas and from New Mexico to Montana. There were growing in these swamps and on the low lands, giant ferns, palms and hardwood trees. This luxuriant growth of vegetable matter was later buried and turned into coal, forming the extensive beds of coal found in Utah at an average elevation of 7,000 feet above sea level. During this time there was developed a group of the most remarkable reptiles the world has ever known. When the coal forming vegetation had settled to the thickness of coal seams now found there, various types of these reptiles, now known as dinosaurs or terrible lizards, lived on the shores or in the Cretaceous Seas and marshes and walked over the coal beds leaving their tracks, much as one would do if walking over a muddy field. If one can visualize these ungainly animals in the shallow water or lumbering along leaving their tracks on swampy shores, or on top of coal beds, he will have a fairly good idea of what took place millions of years ago in that part of Utah now known as Carbon, Emery and Grand counties.



### **TRACHODON - THE DUCK BILLED DINOSAUR**

#### **Differ In Size**

Dinosaur remains already found by scientists indicate that the dinosaurs differed greatly in size, shape, structure and habits. Some were plant eaters; others fed on flesh, sometimes of the smaller and weaker dinosaurs; some walked on four feet; others with small weak forelimbs, walked entirely upon strongly developed hind legs; some had reptile-like feet; others were bird-footed; some had three-toed feet and others four-toed.

It is thought that many of the dinosaurs walked erect.. Impressions on the sands of the Connecticut Valley seem to show this plainly. In England and Belgium the evidence is thought to be more conclusive than in the Connecticut sands and the casts made in the natural moulds show the impression of toes very clearly and the conclusion is drawn that if the animals had walked flat footed as we do, the prints of the toes would have been followed by a long heel mark.

In Utah the prints show a long and well developed heel mark. It is probable that walking erect and the size and weight of the dinosaurs made it necessary for them to walk flat footed.

After the dinosaurs had made their tracks, the peat or coal was overwhelmed by the sea, submerging the coal bed and the tracks were filled with sand which hardened and formed the casts we now find. How long this ancient sea continued to deposit sand above the coal bed we know not, but it must have been for ages and long enough to bury the lower seam of coal under nearly fifty feet of sandstone. Evidently the sea filled with sand until the water became shallow, and again the coal forming vegetation flourished which was later buried and turned into coal, forming the middle seam before the sea again overwhelmed the land and another deposit of sand which is now sand stone 150 feet in thickness filled the sea and for the third time the swamps and lowlands were covered with a luxuriant growth of trees, ferns and coal forming plants, which in time became what we now know as the third or upper coal seam. Two thousand feet or more of sandstone are above the third seam. It contains small seams of coal but the conditions prevent working or exploring them. Since casts have been found in the lower seam, also in the upper, which are separated by 200 feet of coal and Mesa Verde sandstone, what shall we infer? Did the dinosaurs exist during this entire period or did



those who made the prints on the lower seam become extinct and others appear when the conditions were more favorable?

### **Lived Many Ages**

One scientist believes that dinosaurs lived through countless ages; that the time they lived will equal the time that mammals have lived. He cites the fact that Dead Lodge Canyon in the Red Deer River region, is over six hundred feet deep and dinosaur bones are found from top to bottom. The Cretaceous rocks in which Duckbill dinosaur remains are found are many thousand feet thick. The Niobrara is over a thousand feet thick in western Kansas.

The reason the dinosaurs became extinct was, as the continent rose out of the water, the swamps in which they lived were gradually drained off. They were too large to migrate and at last became extinct for lack of proper food. Of course, the dinosaurs that could withstand the lack of abundant food would live longer. Eventually all became extinct.

Now that we have found that the dinosaurs are actually extinct, let us turn to "the only records of whose existence are footprints on the sands of time." The prints and casts found would not have been recovered except for the opening of the coal seams and mining the coal, which is mined up to the sandstone roof, exposing the casts. The tracks were filled with sand which is now sandstone and are attached to and a part of the sandstone roof. Several years ago Professor William Peterson of the Agricultural College of Logan, Utah, discovered in the roof of the Standard mine, a cast measuring 34 inches long and 21 inches wide. Some local publicity was given by newspapers and an interesting bulletin was issued by the college. Apparently little thought has been given to collecting these wonderful specimens and the Peterson cast was not removed until recently when it was added to the Strevell collection which now consists of 33 footprint casts, 27 of which are Pes (hind foot) casts, of seven species, and six Manus (front foot) casts.

Dr. Charles W. Gilmore of the Smithsonian Institute, Washington, D.C., writes: "Unfortunately we do not know of any fossil remains of dinosaurs from the Mesa Verde formation, so that we have no direct suggestions to offer as to the makers of these tracks. Probably it is one of those made in the Mesa Verde formation which occurs in the roof of Utah coal mines. All that we have seen are three-toed. If the toes are blunt and rather broad it seems quite likely they were made by one of the larger members of the Hadrosauridae or Duck-billed dinosaurs, all of which are plant feeding. If the toes bore sharp claws it is quite certain the dinosaur responsible for the footprints was a flesh-eater, some of which reached a very large size." Dr. Gilmore makes it clear that the footprint casts so far found in Utah were made by plant feeding dinosaurs, as there is no evidence of claws on any of the casts.

Dr. Barnum Brown of the American Museum of Natural History, New York City, has examined this collection. He was very much interested in *Dinosauropodes Magrawii*, which is easily twice the size of *Tyrannosaurus*, a footprint so large that it seems almost an impossibility.

### **Largest Found**

This gigantic footprint, the largest yet found in Utah, measures 4 feet, 5 1/2 inches long; 2 feet, 8 inches wide; the stride was 12 feet and width of trackway 3 feet 8 inches.

It was donated by Mr. R. W. Magraw, of the Chesterfield Coal company, to the University of Pennsylvania, his alma mater. Mr. E. H. Burdick, Utah state geologist, had a replica made, which is in the Strevell collection. The existing conditions and the number of tracks exposed in the mine workings at Standardville make it possible to measure accurately a dinosaur's stride and trackway. We found four tracks 34 inches long, 27 inches wide, evidently made by the hind feet of a large three-toed dinosaur. The stride was 10 feet 4 inches, trackway 3 feet 7 inches. Nearby we found a four-toed track 16 inches long.

An interesting feature is that many, if not the majority of the tracks, show that the dinosaurs were walking in an easterly direction. It is said that "in England the tracks all run one way, from west to east."

The discovery and collection of these footprint casts has been of great interest to eastern paleontologists, owing to their size, compared with those of the Connecticut Valley as well as to local scientists and enthusiasts.

Dr. Richard Swan Lull of Peabody Museum, Yale University, writes that "the photographs of dinosaur footprints are very interesting. I think it might be quite worthwhile to publish the photographs and a description of these tracks. I am sending you a copy of 'Triassic Life of the Connecticut Valley' which I wish you to accept with my compliments, to which I would refer you for comparison with specimens of the Yale collection." It is owing to Dr. Lull's suggestion and advice that this article has been prepared. Dr. Lull has honored Utah by classifying the prints in the Strevell collection. He finds that the species are new to science. All species are named N. Sp. Lull.

### **Eight Species**

There are eight species, seven of which are Pes, (hind foot prints). These include twenty-five specimens. The remaining species are Manus, (hand or fore feet) consisting of six specimens. Two others remain to be classified. He has also approved the group name "Dinosauripodes" (terrible lizard foot) coined by the late Dr. Earl Douglass. The scientific name of the large species from the Utah coal fields is "Dinosauripodes Magrawii, N. Sp. Lull."

Desire to know what dinosaur made the gigantic footprint has resulted in two years of correspondence and research. Too great credit cannot be given Dr. Lull for his time and knowledge in classifying the footprints in the interest of paleontology, also to Dr. Thorpe his assistant. Dr. Charles W. Gilmore, Smithsonian Institute, Washington, D.C., and Charles H. Sternberg, San Diego, California, author of the "Life of a Fossil Hunter," have furnished much valuable information.

Scientists have stated that no such collection of large dinosaur footprints exists elsewhere. It would have been impossible to secure them except for permission granted by Mr. F. A. Sweet, president of the Standard Coal company, for removal of the footprint casts and the interest and co-operation of Mr. W. D. Wilson, who has, with the assistance of the miners, secured the majority of casts in this collection.

Through the interest of Mr. Wallace Bransford, the collection is at present in attractive quarters in the Bransford Apartment building, Salt Lake City, Utah.

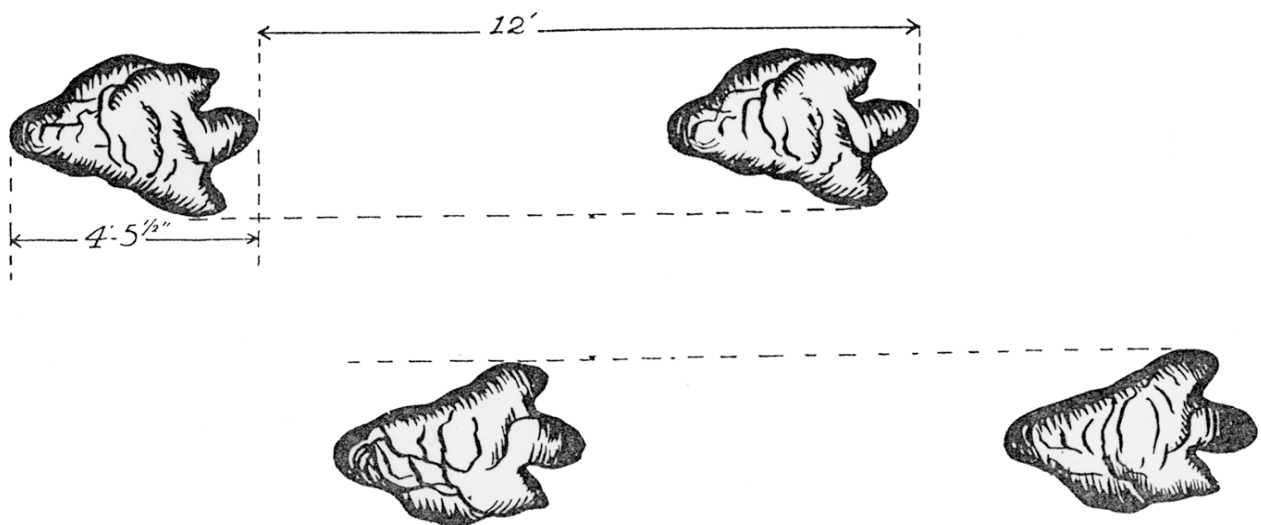
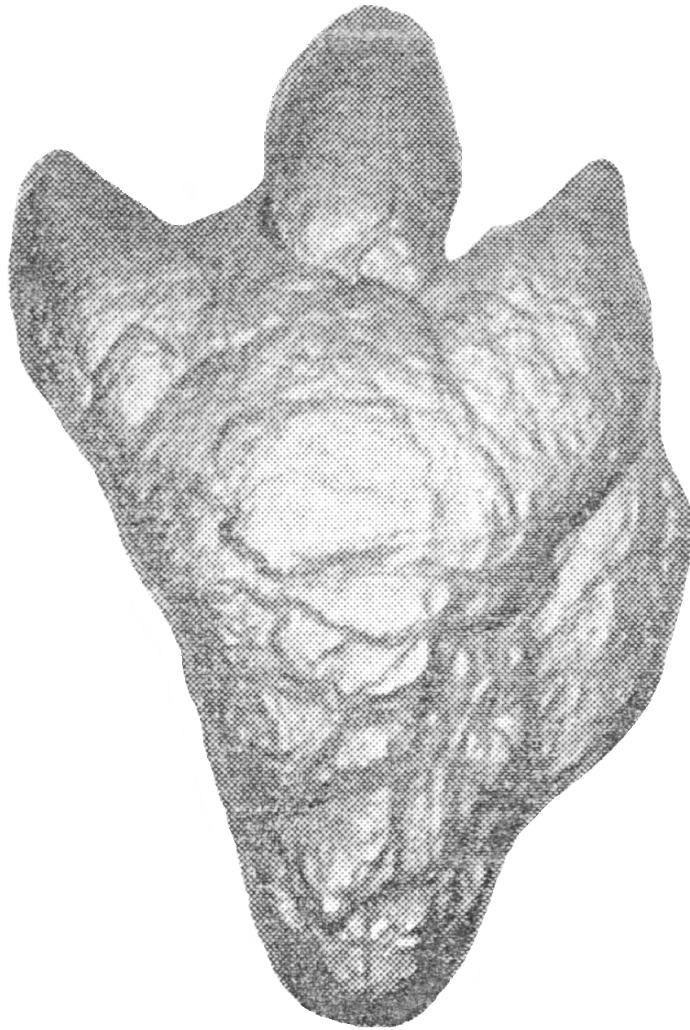
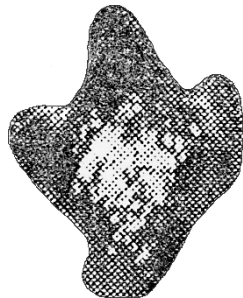


Illustration shows stride and length of foot of *Dinosauripodes Magrawii*.  
He stepped off 12 feet at each stride. His foot was 4 feet 5 1/2 inches long, trackway 3 feet 6 inches.



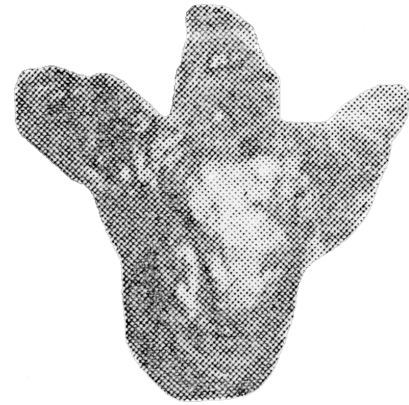
**Dinosauropodes Magrawii**

N. Sp. Lull, Pes; Type specimen, Catalog No. 1. Length of entire foot including heel, 4 feet, 5 1/2 inches, length of step 12 feet, trackway 3 feet 6 inches. Other specimens of this species are Cat. No. 2 D-Strevell, Pes; Cat. No. 3 D-Maguire, Pes. Three three-toed casts.



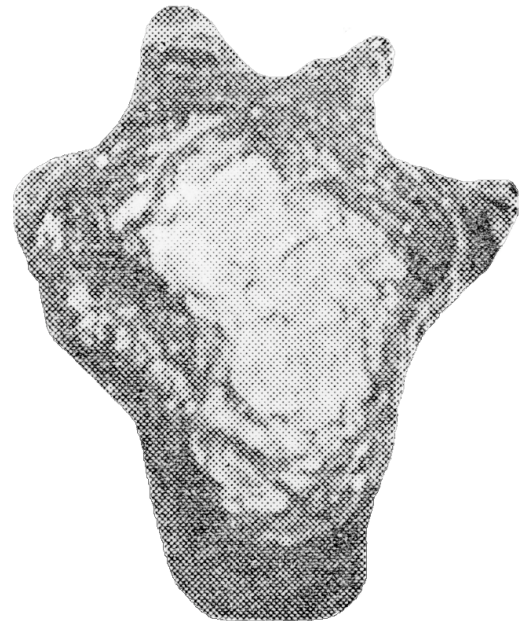
**Dinosauropodes Nettletoni**

N. Sp. Lull, Pes; Type Specimen Catalogue No. 18. Length of entire foot including heel 9 1/2 inches. Other specimens of this species is Cat. No. 19 D-Watson, Pes. Two small three-toed casts.



**Dinosauropodes Sternbergii**

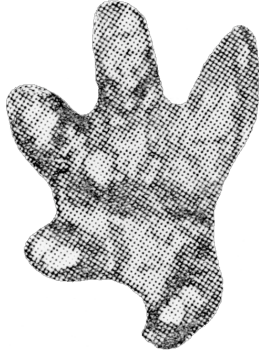
Sp. Lull, Pes; Type specimen Catalogue No. 17. Length of entire foot including heel 1 foot 11 inches. Only specimen of the species. Three three-toed cast.



**Dinosauropodes Osborni**

N. Sp. Lull, Pes; Type specimen, Catalogue No. 20, Length of entire foot including heel, 1 foot 3 1/2 inches. Other specimens of this species are Cat. No. 21 D-Beckwith, Pes; Cat. No. 22 D-Pettit, Pes; Cat. No. 23 D-Granger, Pes; Cat. No. 24 D-Burdick, Pes, Cat. No. 25 D-Monroe, Pes. Six four-toed casts.

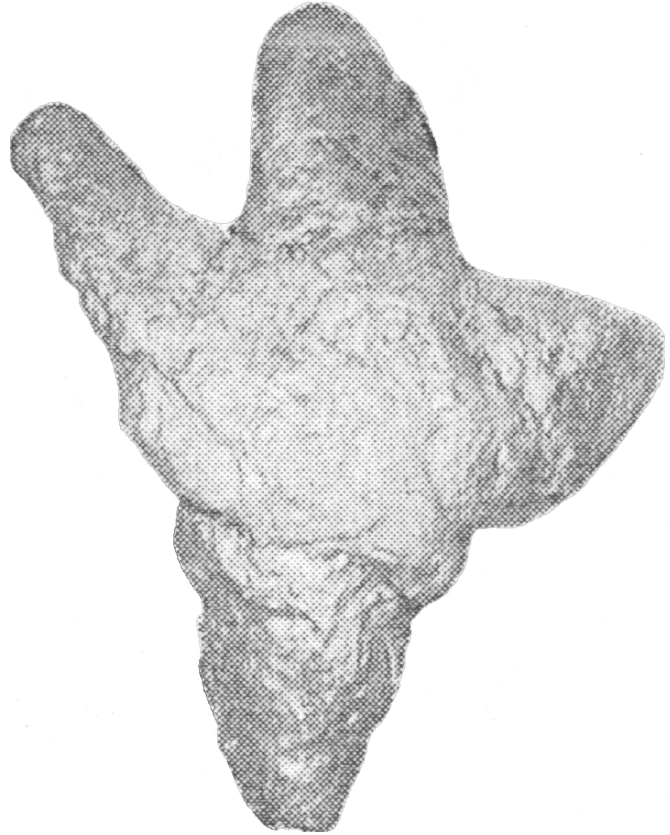




**Dinosauripodes Crawfordii**

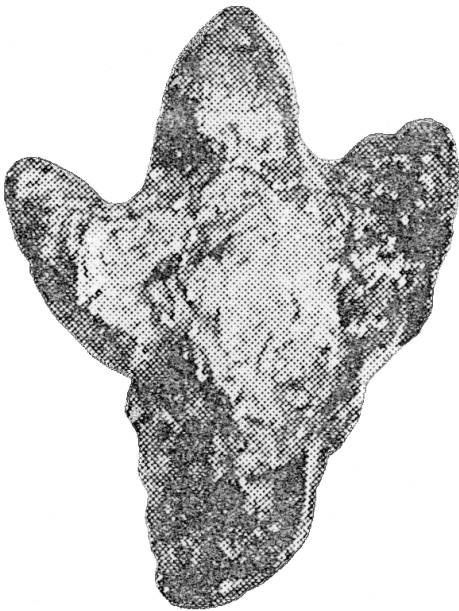
N. Sp. Lull, Manus, Type specimen Catalogue No. 26. Length of entire hand (or foot) including heel, 1 foot. Other specimens of this species, Cat. No. 27 D-Thomas, Manus; Cat. No. 28 D-Pack, Manus; Cat. No. 29 D-Kelly, Manus; Cat. No. 30 D-Kirkpatrick, Manus; Cat. No. 31 D-Pierce, Manus. Six four-toed casts.

Two specimens are unclassified-they are D-Pulverii and D-Lamphii-and are very unusual. Evidently the dinosaur's foot slipped when making the impressions.



**Dinosauripodes Wilsoni**

N. Sp. Lull, Pes; Type specimen, Catalogue No. 4, length of entire foot including heel, 2 feet, 10 1/2 inches, length of step 10 feet 4 inches, trackway 3 feet 7 inches. Other specimens of this species are Cat. No. 5 D-Miles, Pes; Cat. No. 6 D-Lull, Pes; Cat. No. 7 D-Peterson, Pes. Four three-toed casts.



**Dinosauripodes Bransfordii**

N. Sp. Lull, Pes; Type specimen, Catalogue No. 8. Length of entire foot including heel, 2 feet, 5 inches. Other specimens of this species are Cat. No. 9, D-Douglass, Pes; Cat. No. 10 D-Brown, Pes; Cat. No. 11 D-Gillmore, Pes; Cat. No. 12 D-Resser, Pes; Cat. No. 13 D-Andrews, Pes. Six three-toed casts.



**Dinosauripodes Sweetii**

N. Sp. Lull, Pes; Type specimen, Catalogue No. 14. Length of entire foot including heel 1 foot, 11 inches. Other specimens of this species are Cat. No. 15 D-Outcalt, Pes; Cat. No. 16, D-Littlejohn, Pes. Three three-toed casts.