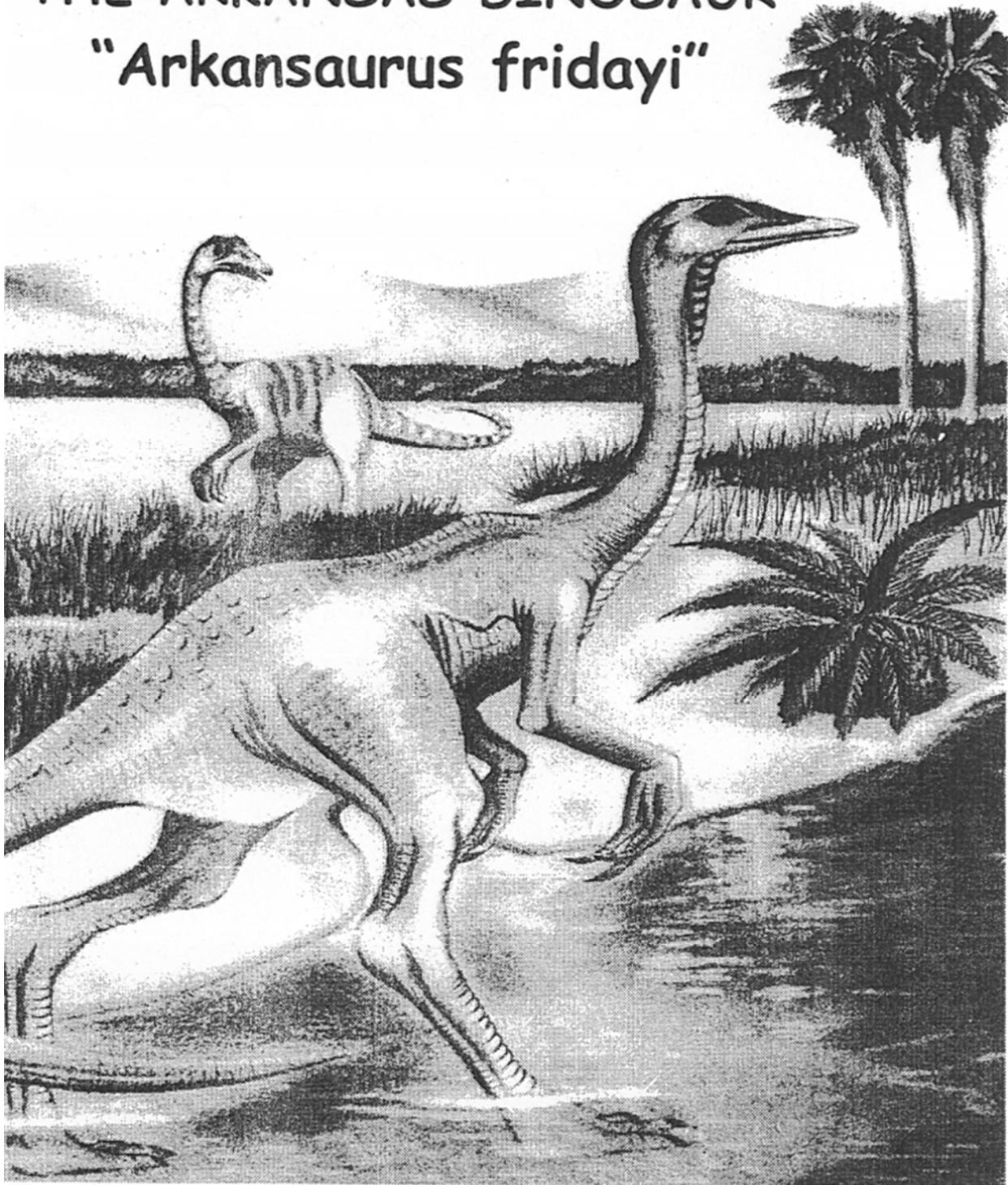


# THE ARKANSAS DINOSAUR "Arkansaurus fridayi"



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1998, revised 2007  
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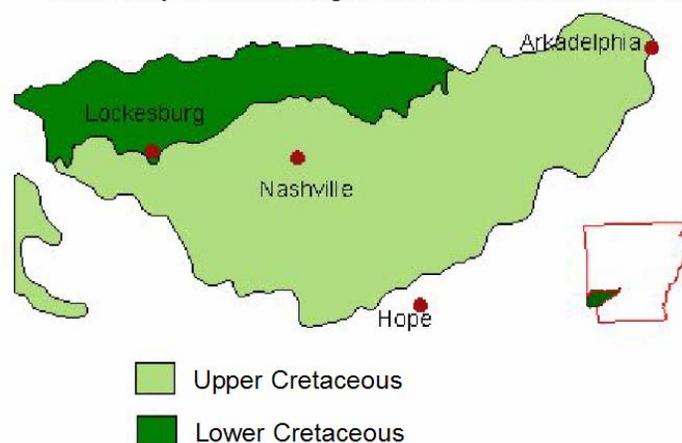
“Arkansaurus fridayi”  
The Arkansas Dinosaur

*The dinosaur stood behind the brush, silently waiting for the large sauropods walking along the coastline to pass. Slowly he emerged, walking on two legs, to scavenge the shoreline for food. He paused, raising his long slender neck to a full height of 15 feet, and sniffed the air for larger predators. Other small dinosaurs were out searching for food as well, and he noticed a relative foraging in nesting sites. This ostrich-like cousin had a horny beak with no teeth and was observed consuming insects, larvae, fruits, plants, and of course his current objects – eggs. Pausing to playfully kick around a few oysters in the shallow seawater, “Arkansaurus” continued his search, looking toward the sea where the encroaching water had submerged islands of rock that once stood above sea level...*

Around 144 to 97 million years ago, in the Early Cretaceous interval of geologic time, a shallow sea covered the southeastern and western portion of what is now North America. In the area we know as Arkansas, waters of the Gulf of Mexico advanced northward and covered the area southeast of the Ouachita Mountains. Sand, gravel, and clay eroded from the Ouachita area, were carried southward by streams to be deposited along the shoreline. When the amount of sand and gravel being contributed was reduced, the evaporite minerals gypsum and celestite were precipitated from sulfate rich seawater. Along the shoreline of this shallow sea, dinosaurs roamed singly and in packs.

Evidence of dinosaurs along the shoreline, comes from a relatively small area in the southwestern part of our state. Thousands of tracks of sauropods were found in a gypsum quarry in Howard County (Fig. 2). The only scientifically described dinosaur bones found in Arkansas were foot bones discovered, during August of 1972, by Mr. J.B. Friday in a gravel pit near the community of Lockesburg, in east-central Sevier County (Fig. 1). Other bones and mostly bone fragments have been found but are not identifiable and some remains may have even been recovered, but not brought to the attention of the scientific community.

Fig. 1 Location of Cretaceous age rock in the state and the community of Lockesburg where the foot bones were found.



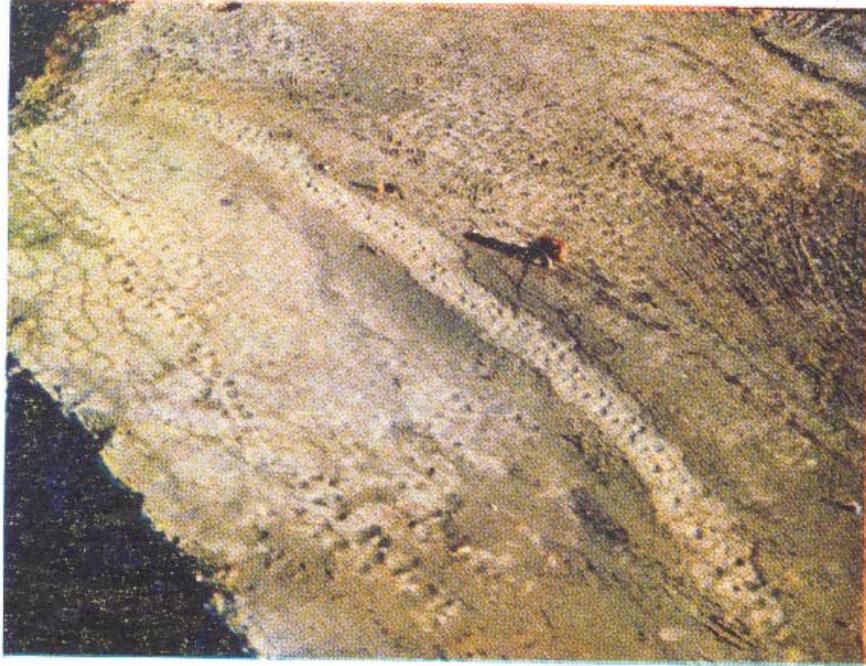


Fig. 2. Dinosaur trackway in gypsum quarry.  
*From Arkansas Naturalist, March 1984*

Dr. James Harrison Quinn, at that time a professor at the University of Arkansas in 1973, cleaned, assembled, and compared the foot bones with the feet of two similar-appearing dinosaurs (one older and one younger) previously described in the literature. He then constructed clay models of the missing bones, to complete the partially assembled foot. Next, he made a latex mold and cast replicas of the foot (Fig. 3). Finally, Dr. Quinn described the bones and informally gave our dinosaur the name “*Arkansaurus fridayi*”.

“Arkansaurus fridayi”, was part of a community in Early Cretaceous time that included large dinosaurs such as sauropods (gigantic four-footed plant-eaters), ankylosaurs (four-footed armored plant-eaters) and carnosaurs (large meat-eaters). Since only minimal information can be learned from foot bones the description of “Arkansaurus” is based largely on what is known of similar-appearing dinosaurs.

Fig. 3. Cast of foot of "Arkansaurus fridayi"



“Arkansaurus” was probably a swift hunter who preyed on small animals, insects, and eggs. He may have added to his diet by eating fruits and leaves of plants. This dinosaur was bipedal (walked on two legs), and possibly stood 6 to 15 feet tall and may have been even taller. Its neck was relatively long and slender with a small head that may have had teeth located in the front part of the jaw. Although the skull was small compared to his body size, “Arkansaurus” most likely had a relatively large brain, providing intelligence comparable to that of some large modern-day flightless birds. Unusually large eye sockets indicate exceptionally good vision and by reference to some modern reptiles and birds, paleontologists believe the small dinosaurs like “Arkansaurus” were able to distinguish colors and were brightly patterned. Arkansaurus’ front limbs were long, having a specialized hand with three functional digits. The first digit of the hand was opposable, like a thumb, giving the creature the ability to grasp.

Initially, “Arkansaurus fridayi” was thought to be related to an ostrich-like dinosaur with the scientific name *Ornithomimus*. These dinosaurs were 9 to 15 feet in length, and stood 6 feet high at the hips, with very long slim hind legs and a remarkably specialized foot that had three toes. The central foot bone was compressed between the outer two allowing for swifter movements. Since these dinosaurs had a horny beak instead of teeth they were thought to be omnivorous (animal- and plant-eating) or possibly herbivorous (plant-eating). These creatures’ bones were hollow and did not preserve well. Other bones, important in identification, have not

been found, making it easy for “*Arkansaurus fridayi*” to be described in different ways and even called by different scientific names. As more discoveries are made and the scientific community gathers more information, it will become easier to identify dinosaur remains.

In 1993 Dr. James I. Kirkland, Senior Paleontologist of Dinamation International Society, recovered a collection of bones, including arms and legs of an unknown species of a bipedal carnivorous dinosaur (theropod) from rocks of Early Cretaceous age in Utah. He first considered this dinosaur to be related to the group including *Ornithomimus*, but the structure of the hands indicated it was too primitive to be placed in that group. However, the structure of the ankle was almost identical to a dinosaur called *Ornitholestes*. In the early fall of 1995, Dr. Kirkland examined the foot of “*Arkansaurus fridayi*” at the University of Arkansas at Fayetteville and concluded it was very similar to his new beast, although “*Arkansaurus*” was much larger. Dan Chure, a paleontologist with Dinosaur National Monument, is currently studying the foot bones of “*Arkansaurus*”. He agrees with the earlier belief that this dinosaur is a relative of *Ornithomimus*, although our creature is a primitive specimen and would be the oldest known representative of this group.

If our dinosaur belongs in the same group as *Ornitholestes*, rather than *Ornithomimus*, then our dinosaur may have possessed teeth and had a carnivorous diet. One description of *Ornitholestes*, based on a partial skeleton of Late Jurassic age (163-144 million years ago), shows that this was a small bipedal dinosaur about 3 to 6 feet in length. This dinosaur possessed long slender limbs and resembled the ostrich-like dinosaur *Ornithomimus*, but was somewhat smaller.

More fossils that may aid in the proper identification of “*Arkansaurus fridayi*” were discovered from rocks of Early Cretaceous age in Maryland. These bones consist of fragments of a similar dinosaur about the same size as “*Arkansaurus*”. This specimen is currently being described.



Fig. 4. A model of *Arkansaurus fridayi* from the Arkansas Geological Commission Learning Center

## GEOLOGY

The town of Lockesburg is underlain by a sequence of Early Cretaceous sedimentary rock called the Trinity Group, which in this area is approximately 700 feet thick. The Trinity consists of deposits of clay, sand, gravel, limestone, and the evaporite minerals gypsum and celestite, that accumulated on the southern flank of the eroded ancestral Ouachita Mountains. Overlying the discovery site are terrace deposits, usually composed of gravel, marking a former water level. These deposits are of Quaternary age, about 1.6 million years ago to recent.

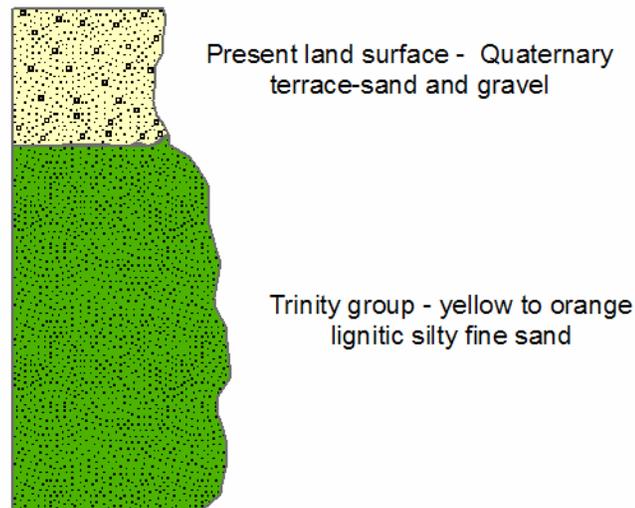


Fig. 5 General geologic column

*... Early Cretaceous time ended with uplift that brought the submerged islands once again above water. In some areas violent volcanic explosions blasted through the rocks while fragments were probably ejected into the air. After several phases of volcanic activity the Gulf waters advanced northward again. In Late Cretaceous time, beds of gravel, sand, and clay were once again deposited, covering the bones and layers of rock that would one day be unearthed to discover the remains of a dinosaur known as “Arkansaurus fridayi”.*