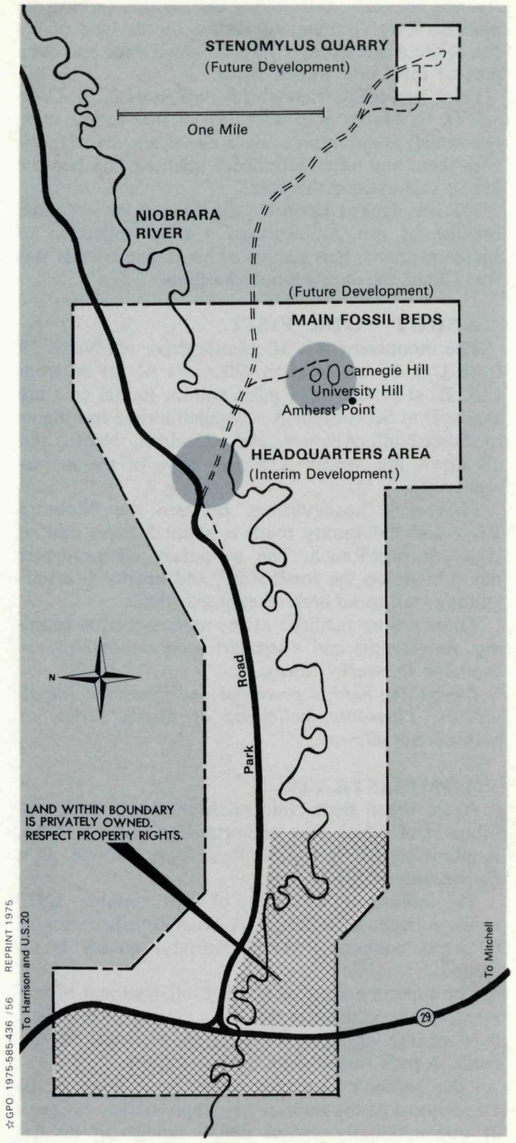


☆GPO 1975 585-436 /56 REPRINT 1975

FOR YOUR SAFETY

Watch for **rattlesnakes** while viewing the fossil areas or walking anywhere in the park. Avoid these snakes; do not molest them.

NATIONAL PARK SERVICE
U.S. DEPARTMENT of the INTERIOR

Cover: A view of the *Stenomylus* quarry as it appears today.

AGATE FOSSIL BEDS

Twenty million years ago strange creatures walked a Miocene savanna. Careful digging at these quarries has brought to light the bones of these animals so long extinct.

NATIONAL MONUMENT • NEBRASKA

Here at Agate Fossil Beds National Monument are concentrated the fossils of animals in beds of sedimentary rock, formed, about 20 million years ago, by the compression of mud, clay, and erosional materials deposited by the action of water and wind. These species of animals, then so numerous, have long been extinct. The beds, which acquired their name from their proximity to rock formations containing agates, are under the grass-covered Carnegie and University Hills. From the summits of these hills, named by early collecting parties, you can look down on the lazy meanders of the Niobrara River, 200 feet below.

Early pioneers of scientific research in the West centered many of their activities here. Capt. James H. Cook was the first white man to discover fossil bones at Agate Fossil Beds, about 1878. Since then, bones from the site have been exhibited throughout the world. Captain Cook and his son, Harold, made Agate Springs Ranch a headquarters for paleontologists and acquired an excellent fossil collection.

AGATE FOSSIL BEDS TODAY

Scientists estimate that at least 75 percent of the fossil-bearing parts of the hills are unquarried. The Miocene fossil mammal bones are extremely abundant, comprise a variety of different species, and are remarkably well preserved, with numerous complete skeletons.

Except for livestock that graze on the hills which relieve the comparatively flat open valley of the Niobrara River, the scene is relatively undisturbed.

The landscape is carpeted predominantly with grasses such as prairie sandreed, blue grama, little bluestem, and needle-and-thread. The prairie flowers —lupine, spiderwort, western wallflower, sunflower, and penstemon—add color to this grassland scene. Small soapweed, a yucca, growing on the hillsides, is particularly attractive, especially in late summer when its dark green spears stand out among the brown grass.

Cottonwoods and willows along the river add to the attractiveness of the scene and supply resting places and shelter for birds and other animals.

Animals are typical of the western plains: mule deer, pronghorn, coyote, cottontail, and prairie rattlesnake.

DEVELOPMENT OF AGATE FOSSIL BEDS

The Service plans to expose representative fossil remains at Carnegie and University Hills by removing the layers of sediments above the 2- to 3-foot thick horizontal fossil beds. You will then be able to see the fossil skeletons of many creatures just as they were buried millions of years ago, and feel closely associated with the now-extinct animals of a past age. Here, too, you will have an opportunity to watch scientists exposing the deposits, reconstructing some of the skeletons, and reliefing certain deposits in place.

Plans call for interpretive structures at major points of interest and for permanent buildings at the headquarters site. Roads, trails, and a bridge across the Niobrara River will provide access to these points.

GEOLOGY OF THE FOSSIL SITE

The Agate site contains an outstanding record of a chapter of evolution frequently referred to as the Age of Mammals because of the tremendous increase in species and numbers of mammals during that period.

All of Agate's fossil deposits are found in what geologists call the Arikaree Group of the Miocene Epoch, which spanned the period from 25 to 13 million years ago. The group is in turn divided into three formations—Gering, Monroe Creek, and Harrison. The Harrison beds contain practically all of the known fossils at this site. The sedimentary rocks of this group are principally sandstone. The quarries are in the lower part of the Harrison, and the "devil's corkscrews"—casts of ancient beaver burrows—are in the upper part, which was laid down perhaps a million or more years after the lower part of the formation.

ANCIENT LIFE

By far the most common mammal at Agate Fossil Beds was the *Diceratherium,* a two-horned rhinoceros. This fleetfooted grazer was smaller than a Shetland pony, and roamed the plains in numbers as great as those of our bison before 1850.

The most unusual looking animal was the *Moropus,* a large, heavily built mammal about 7 feet at the shoulders. The head was horselike, the neck suggested faintly a giraffe, the torso a tapir, the front legs a rhinoceros, and the hindlegs a bear. Most unusual were the feet, which were armed with large claws used for defense and for digging up roots and bulbs.

Perhaps the most ferocious was the *Dinohyus,* or "Terrible Pig"—a monstrous beast more than 7 feet tall at the shoulders and about 10 feet long. It had a massive head with large tusks and a small brain. However, unlike our domestic pig, its legs were quite long and slender. It was apparently an aggressive creature and was frequently wounded in battle.

Large herds of a delicate, graceful little mammal—the *Stenomylus*—roamed the Miocene plains. It was slightly over 2 feet tall and had long, slender legs and deerlike hooves.

Fragments of fossils have been found of many other animals that lived here during the Miocene Epoch.

THE FOSSIL-COLLECTING STORY

In the summer of 1904, O. A. Peterson of the Carnegie Museum at Pittsburgh came to Agate, and with the able assistance of Harold Cook, then 17, conducted the first scientific excavation at this site. They discovered a rich quarry, containing a type of rhinoceros that was new to science.

In 1905, Prof. E. H. Barbour and four students of the University of Nebraska opened a quarry in the side of University Hill. Both the Carnegie Museum and the University of Nebraska worked their respective quarries for a number of collecting seasons. Yale University also collected at the quarries about the same time.

In 1906, Prof. E. B. Loomis and a party from Amherst College joined the collectors. They excavated in a small hill which Loomis called Amherst Point. Returning in 1907 and again in 1908, the Loomis party discovered a quarry of *Stenomylus* skeletons. Approximately 18 skulls, together with enough scattered bones to complete the skeletons, were collected from one pocket. In an adjacent area, three complete skeletons were found.

In 1909, the Carnegie Museum removed at least 40 skeletons. The American Museum of Natural History collected here for about 20 years, starting in 1910.

Several other institutions sent collecting parties to Agate in later years. The last excavation was made at the *Stenomylus* quarry in 1950 by the South Dakota School of Mines and Technology.

Typical portion of a fossil layer.

THE COOK FAMILY

To learn how this site in the valley of the Niobrara became one of such intense interest, you must know something about the Cook family.

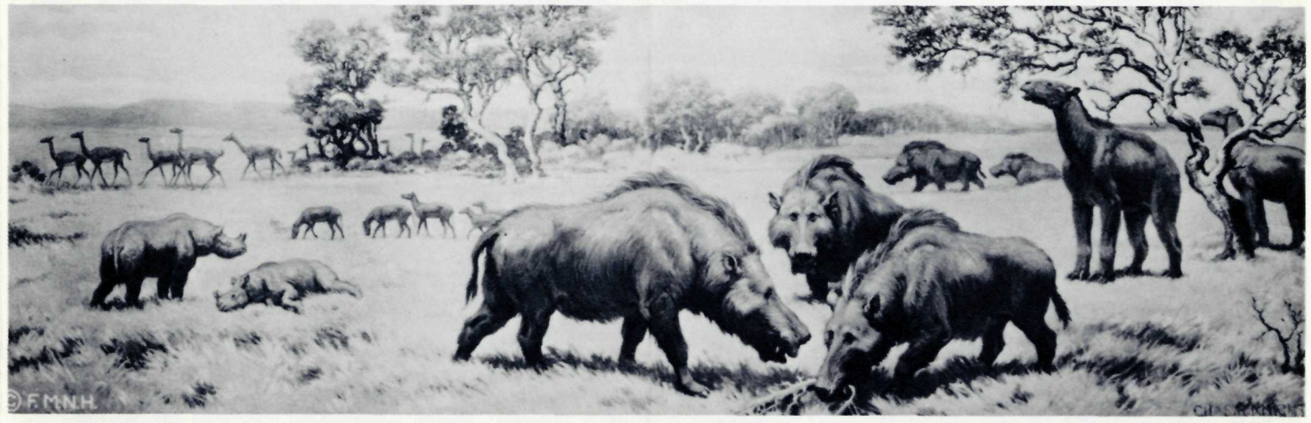
Capt. James H. Cook acquired the Agate Springs Ranch in 1887 from his father-in-law, Dr. E. B. Graham, who had established it a few years earlier as the 0-4 Ranch.

At 16, James left his home in Michigan and became a cowboy riding herd on unpredictable Texas longhorns on long cattle drives from Mexico to Montana. He was a big game hunter and guide in 1878 in Wyoming and later in New Mexico.

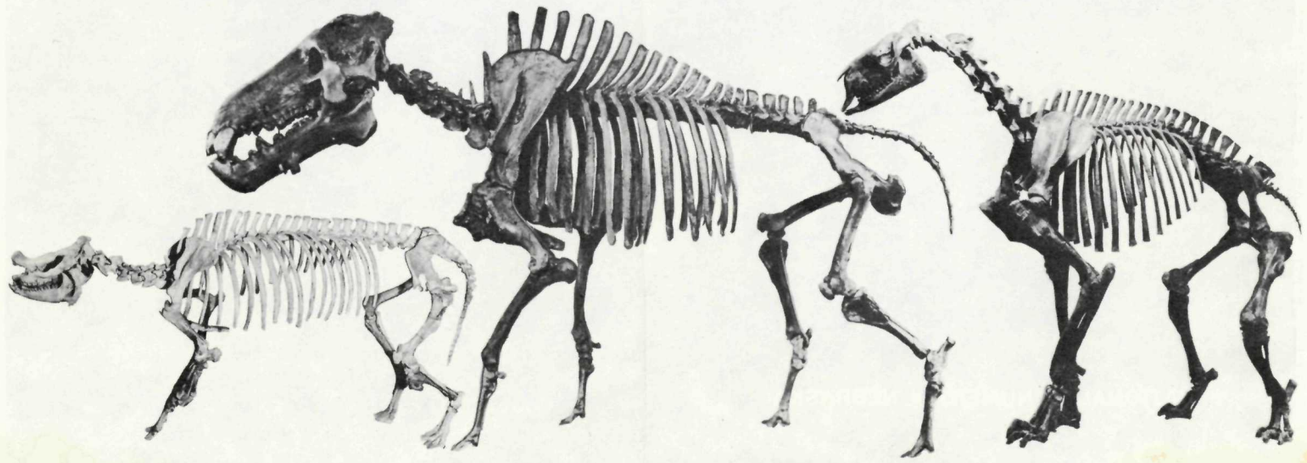
Captain Cook served with distinction as a scout attached to the 8th U.S. Cavalry in New Mexico during the campaign of 1885-86 against the famous Apache chieftain, Geronimo. During this service, he married Kate Graham; he settled for the rest of his life at the Agate Springs Ranch, which once had been part of the Sioux Indian lands.

Cook had made friends with Professors E. D. Cope and O. C. Marsh, who were two of the world's most renowned palentologists. Because of his associations with them and other prominent scientists, he became keenly interested in this field.

He was looked upon by the Indians as a friend; because of this, he acquired a large collection of Indian artifacts. Best known of his Indian friends was Red Cloud, the daring Sioux chieftain.



These animals lived in western Nebraska about 22 million years ago. In a visualization of a Miocene savanna, above, in the left foreground, are shown the *Diceratherium,* the small rhinoceros whose fossil remains are so abundant in the park. In the center of the mural are the *Dinohyus,* or "Terrible Pig," the skeleton of which was removed from University Hill by the University of Nebraska. At the far right, are the *Moropus,* a clawed relative of the horse and rhinoceros families. Below, shown left to right, are the reconstructed skeletons of the *Diceratherium, Dinohyus,* and *Moropus* (not to scale).



ABOUT YOUR VISIT

The monument is a 30-minute drive via Nebr. 29 from U.S. 20 at Harrison (20 miles north) or from U.S. 26 at Mitchell (34 miles south). Rental cars are available at Scottsbluff. A scheduled airline has flights to Scottsbluff, Alliance, and Chadron, Nebr., and all three are within a 2-hour drive of the monument site.

Monument headquarters, between the Niobrara River and the county road, is about 3 miles east of Agate Springs Ranch. The temporary visitor center has exhibits on the fossil story, and nearby is a self-guiding trail to an area of exposed fossils.

There are no facilities at the monument for camping. Restaurants and overnight accommodations are available in nearby towns.

Everything here is protected and preserved for all visitors. Therefore, collecting of fossils, rocks, or plants is not allowed.

ADMINISTRATION

Agate Fossil Beds National Monument, the establishment of which was authorized on June 5, 1965, is administered by the National Park Service, U.S. Department of the Interior.

The monument, consisting of approximately 1,970 acres, is irregular in shape. A small detached area of 60 acres containing the *Stenomylus* quarry is included.

The superintendent of Scotts Bluff National Monument, whose address is Box 427, Gering, NB 69341, is in charge of Agate Fossil Beds National Monument. A park ranger is on duty at the site.

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.