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 relifing 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 to the Age of Mammals because of the tremendous increase in species and numbers of mammals during that period. All of Agate was found in the same strata in which geologists call the Arikaree Group of the Miocene Epoch, which spanned the period from 23 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. From the recorded fossils, it appears that there were no whales or sharks here at this time. The geology of the area itself is interesting because of the rich fossil deposits.

ANCIENT LIFE

In the summer of 1904, O. A. Peterson of the Carnegie Museum conducted the first scientific excavation at this site. They excavated a small hill which Loomis called Amberst 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 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.

THE COOK FAMILY

In 1905, Prof. E. B. Loomis and a party from Amherst College joined the collectors. They excavated in a small hill which Loomis called Amberst 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 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.

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. B. Loomis and four students of Amherst College joined the collectors. They excavated in a small hill which Loomis called Amberst 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 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.

In 1905, Prof. E. B. Loomis and a party from Amherst College joined the collectors. They excavated in a small hill which Loomis called Amberst 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 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.

In 1905, Prof. E. B. Loomis and a party from Amherst College joined the collectors. They excavated in a small hill which Loomis called Amberst 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 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.

The Agate site contains an outstanding record of a chapter of evolution to the Age of Mammals because of the tremendous increase in species and numbers of mammals during that period. All of Agate was found in the same strata in which geologists call the Arikaree Group of the Miocene Epoch, which spanned the period from 23 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. From the recorded fossils, it appears that there were no whales or sharks here at this time. The geology of the area itself is interesting because of the rich fossil deposits.