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Fossil Mammals

A Fossil Carnivore Den

ONCE IN A LIFETIME, a truly unique concentration of fossils is discovered. This summer the Museum was fortunate in acquiring just such an accumulation of rare fossils, consisting of hundreds, perhaps thousands, of skull and jaw fragments, and an even greater number of post cranial pieces, which are remains of small mammals that lived during Early Tertiary time.

The bones were found in the DeBeque Formation of western Colorado, and were embedded in a lens-shaped body of limy clay, about four feet in diameter and four or five inches thick in the center. In addition to the abundant and diverse kinds of small mammals, lizard and bird bones have been recognized

among the fragments. The most likely explanation for such an accumulation of small animal remains—broken and disarticulated as they were—is that it represents the den or roost of a carnivore or carnivorous bird. In this case, I believe the discovery to be a rare carnivore den.

Professor Bryan Patterson (formerly Curator of Fossil Mammals, now Agassiz Professor at Harvard and Museum Research Associate) in twenty years of collecting for Chicago Natural History Museum in the DeBeque Formation had never been lucky enough to come across such a concentration of small mammals. He did build up a splendid collection of larger fossil mammals and, while discovering many exciting materials, also

made a number of enthusiastic friends for the Museum in the areas where he worked. It is one of these friends, Mr. Al Look, of Grand Junction, Colorado, who was responsible for our receiving notice of this present find, and for our opportunity to collect the specimens.

Over the years, Mr. Look has sent in to the Museum, or otherwise called to our attention, many interesting specimens. Last fall, following one of Mr. Look's talks on the geology and archaeology of western Colorado,¹ a young

¹ Mr. Look is the author of a popular book on the geology of the mountain states, "In My Backyard." Through his book and his popular lectures, he has done a great deal to interest westerners in the nation's geology.

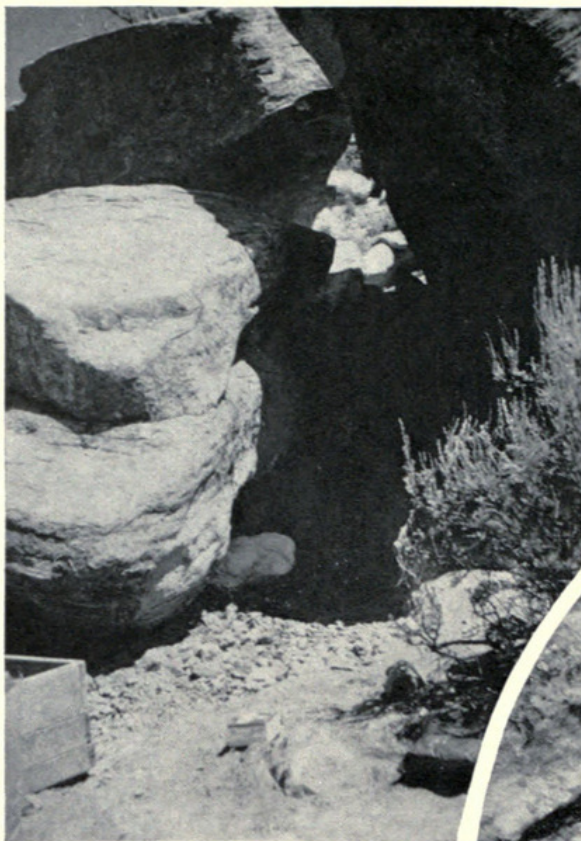


Figure 1: *View of carnivore den showing the massive sandstone tumble-blocks which protected the bone-filled lens of rock from rapid erosion. (Location of lens outlined in white.)*



member of his audience, Miss Sue Hill, introduced herself and showed him several tiny jaw fragments that she had found on her parents' ranch. Mr. Look needed no more than a glance to see that these fossils were unusual in that they came from a geologic formation that had previously yielded mostly large and medium-sized mammals. In this formation, the pantodonts *Leptolambda*, *Titanoides*, *Barylambda* and *Coryphodon*, the uinatheres *Proathyopsis* and *Bathyopsoides*, or the taeniodont *Lampadophorous* are the large forms to be expected. Medium-sized mammals such as carnivores, condylarths, primates, insectivores, and ungulates are also known, as Mr. Look knew. But only a few of the really small mammals had ever turned up—forms such as multituberculates, rodents, and the smallest of insectivores and primates. Mr. Look therefore immediately made arrangements for Miss Hill to show him the site of her discovery, near Rifle, Colorado. Their trip to the area coincided with a snowfall, and some snow removal was necessary before Mr. Look could dig out a somewhat larger sample of specimens. This he sent off to me.

On examining the specimens, I determined to collect, at the earliest opportunity, whatever material remained. During the second week in August, such

an opportunity occurred; I joined Mr. Look in Rifle and was taken to the Lynn Hill ranch to meet Miss Hill and her parents and to see the locality which, by that time, had produced nearly 100 specimens.

The DeBeque Formation extends over several thousands of square miles of western Colorado in Rio Blanco, Garfield, Mesa, and Delta counties. Rifle lies at the eastern edge of this area where the DeBeque Formation is lapped onto the upturned Mesozoic sediments—the Grand Hogback (Figure 2)—which, in turn, flank the major upthrust structure of the Park Range further to the east. I discovered that tumbled blocks from a massive sandstone channel situated fifty to 75 feet higher in the section had protected the carnivore den site from rapid erosion, and that most of the bone lens was still intact under one of these truck-sized, tumbled blocks of rock (Figure 1). Once I made certain that there was no articulation or clear association among the jumbled mass of bone, it was a simple matter to dig out the entire lens with pick and shovel and to sieve a concentrate of bone and pebbles for shipment back to the Museum.

Even a brief, preliminary study of these materials confirms the significance of the find made by Miss Hill and Mr.

Look. It has provided us with an unusual sampling (Figure 3) of a fauna of Early Tertiary time—a most interesting period in the evolutionary history of the placental mammals.

During this period most of the dominant mammals belonged to groups that had evolved from generalized stocks some ten million years earlier, and which had become extinct by the end of another ten to fifteen million years. Less conspicuous than the dominant mammals were small, generalized mammals. These

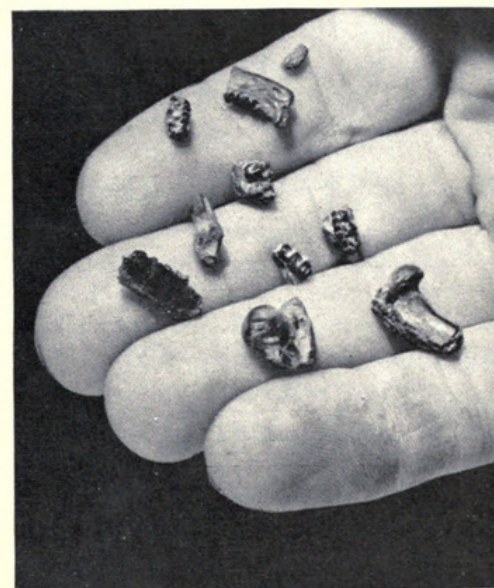


Figure 3: *Typical vertebrate bones from the den.*



Figure 2: *The Early Tertiary DeBeque Formation in which the carnivore den was found in the foreground. Mesozoic sediments comprising the Grand Hogback are in the background.*

were just beginning the second great placental adaptive radiation that led to most of the modern orders. The small, unobtrusive insectivores, primates, and condylarths of this discovery—species that were only tantalizingly suggested by a few specimens in the prior collections of the 1930's and 1940's—are representatives of early critical stages in the evolution of their respective lines. As such, the fossils from the carnivore den are certain to fill many gaps in our knowledge.

Throughout the collecting, the Lynn Hill family was most cooperative and helpful. We thank them for their generosity in providing us with this important collection, and welcome them as new friends of the Museum.



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