

GEOLOGY: HOW THE SOUTHWEST BEGAN

Driving through the Western states of Colorado, Utah and Nevada is like passing through a vast geological museum whose exhibits are the rocks, plateaus, mountains, deserts and canyons dating back more than 300 million years. They are in effect a living museum, since the earth-shaping processes they represent are continuing even today, though so imperceptibly they go unnoticed when measured against the span of a human lifetime.

At almost every bend of the road, you'll see examples of the many processes: the uplifted, faultblock backbone of middle America we call the Rocky Mountains; rocks in places like Utah's Zion and Bryce Canyon National Parks, that were sculpted into a thousand bizarre shapes and sizes by centuries of erosive wind and water; canyons gnawed deep and wide by rivers; peaks thrust skyward by volcanism; valleys carved by the glacier giants of the Ice Age.

Much of the evidence of this earth building is seen in national parks and monuments of the West. If geology interests you, most park visitor centers have

special exhibits and displays on the subject.

You may want to purchase a few basic books and booklets which are also available in the parks. In addition, rangers are well versed on geologic history, and will be happy to answer questions you have. Geology can be complicated, but how it applies in the Rocky Mountain West can be divided into five or six simple "chapters," each spanning millions of years.

More than 300 million years ago, most of the West was covered by a vast, shallow sea, its surface broken only by a few hills and low lying plains. Wind and water gradually wore down some of these peaks, but another group of mountains, known as the Ancestral Rockies began to rise from the same sea in a chain that extended from Wyoming to Texas. About 230 million years ago, the eastern floor of the sea was tilted by gigantic forces within the earth. The climate became tropical in nature, and dinosaurs flourished. Although the soft sandstone and limestone materials that built these earliest Rockies can be found even today, the mountains themselves were almost

completely worn away by erosion by about 160 million years ago.

Then occurred a period that geologists call the Laramide Revolution, lasting about 100 million years. More mountain building occurred as the crust of the earth, weakened and strained by the great weight of the ancient sea began to buckle and fold upward.

The Laramide Revolution ended about 60 million years ago, this entire portion of the continent had risen above water, never to sink again.

Next, volcanoes added their fury to the process which, as by the geysers and hot springs of Yellowstone National Park, continues to a lesser extent even today. Much older clues to volcanism can be seen in rock formations like Devil's Tower in Wyoming, 865 feet high, designated a national monument in 1906-first in the nation.

Finally, there were the glaciers. You'll see their handiwork here, too, in the distinctive canyons, valleys and plateaus sculpted by their tremendously heavy, slowly moving forms during the Ice Ages.

Notice:

The fall of 1999 hunting season revealed the body of fugitive Pilon. Those remains were discovered by Navajo men hunting on the reservation downstream and in-land of Mexican Hat. A reward of \$150,000 was split between the men.