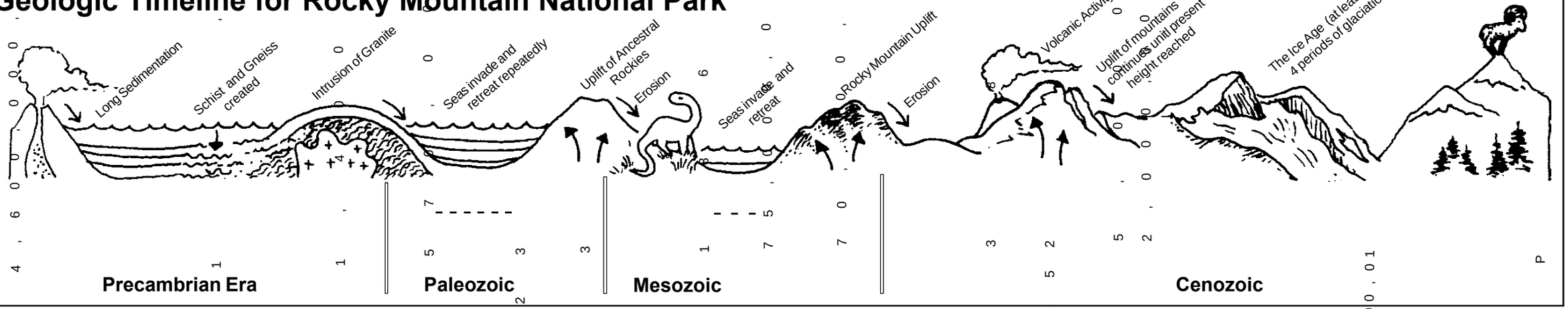
Geologic Timeline for Rocky Mountain National Park



GLACIATION

While uplifts and volcanoes provided the major geological building blocks of the park, it was the glaciers that sculpted the landscapes that we marvel at today.

Some two million years ago, at the beginning of the Pleistocene "ice age," streams cut V-shaped valley drainages into hard rock before the climate cooled. In the higher of these valleys, deep snow compacted into ice which then flowed as glaciers, widening the gouges into U-shaped valleys. These converging rivers of ice flowed down into the lower valleys where the ice melted and dropped debris scraped from the mountainsides above. Debris deposits along the valley sides are referred to as lateral moraines. Material left at the farthest extension of the glaciers are terminal moraines.

During the latest time of major glaciation, starting about 28,000 years ago, glaciers from Forest Canyon, Odessa Gorge, and other tributary valleys all flowed together to form a large glacier which melted in the area now called Moraine Park. This massive glacier left distinct lateral moraines along the south and north sides of Moraine Park and a terminal moraine against Eagle Cliff Mountain to the east. Similar glaciers melted and left moraines in the areas now called Glacier Basin, Horseshoe Park, and the Kawuneeche Valley. The Bear Lake and Grand lake areas were dammed naturally by terminal moraines.

PRESENT LANDSCAPE

Today, the Precambrian granites and metamorphic rocks predominate throughout the central and eastern sections of the park and a few remnants of sedimentary rock are found among the volcanic formations of the Never Summer Mountains along the park's west boundary.

Steep-sided, semicircular scars (cirques), often snow filled, form the tops of U-shaped, glaciated valleys. Chasm Lake, below the east face of Longs Peak, rests in such a cirque. A cirque on Sundance Mountain is easily seen from Trail Ridge Road, and numerous others are visible from the Bear Lake Road. Glacial erosion also left scratches or striations, grooves, and polished surfaces on some of the rocks, especially along the Old Fall River Road. The few small glaciers and stationary snowfields in the park that occupy the tops of glacial valleys only hint at the Ice Age behemoths that once held sway. Andrews Glacier shows evidence of down-valley movement, but it melts back during dry years. Global warming could reduce the glaciers and snowfields even further.

Some areas of the park on the high mountaintops and at lower altitudes were not glaciated. The Twin Owls and Gem Lake Trail areas had coarse-grained granite rounded into interesting shapes by millions of years of non-glacial erosion.

Rocky Mountain National Park occupies only a small part of the 200 mile-long Front Range of the Rocky Mountains, but the park's mountaintops show the spectacular effects of ancient erosion, while many of its valleys display classic features of glaciation.

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