

and Archæan No. 4; and then the Subcarboniferous limestone (Cb<sup>1</sup>) bends over the summit, saddle-like, with some outcropping Devonian along the middle. It is a complex system of zigzags in the great 30,000-foot pile of rock formations. From the range of strata involved, and their thickness, it is apparent that the making of the mountain was preceded by an accumulation of strata from the top of the Cretaceous down to the Archæan; and that the strata were slowly formed in a subsiding area, or geosyncline, like the strata of the Appalachians.

The relation of the Wasatch to the Uinta Mountains is learned by following the outcropping belts from near Weber southeastward to Echo, and thence to the Uinta. The whole series of beds, from the Cambrian to the uppermost Cretaceous (the Laramie, Cr<sup>4</sup>, finely cross-lined), is here included. The dips are eastward 45° or more to Echo, which has Cr<sup>4</sup> either side, where they are 20°, and then northwestward to the top of the Uinta; there is hence a syncline at Echo, and an anticline at the broad Uinta summit, where the dip is 4° to 5° north and south; the rock, Cb<sup>2</sup>, is the middle Carboniferous.

Over the neck between the Uinta plateau and the Wasatch Range, there is a large area of igneous rock (trachyte) lettered *f* (the initial of fire, or the Latin *focus*), apparently a consequence of the enormous amount of warping in the great pile of rocks. Two other smaller trachytic areas exist to the north in the same line. The Wasatch and Uinta regions were, therefore, involved in a common system of profound movements, in which were flexures and warpings, with fractures deep enough to let out melted rock. Moreover, the country east of the Wasatch participated in the warping; for the Cretaceous beds occurring over it have high dips, and are portions of flexures, or of upturned masses, that have become isolated by the large amount of denudation which the country has undergone, the excavations being not now visible only because they became filled by the depositions of the Eocene Tertiary. The Uinta plateau, on the landward side of the Wasatch, has some relation in position to the Cumberland Table-land on the landward side of the Appalachians. The great Uinta mass, 20 by 150 miles in area, is divided by deep fractures into a few blocks which are only slightly displaced, as well illustrated by Powell. Seventy-five miles south of Great Salt Lake, where the Wasatch Mountains proper may be said to end, there commences the series of "high plateaus," which extends southward to the borders of the Colorado Cañon. This plateau region is one of great faults, of few gentle flexures, and of monoclinal uplifts, with intersecting cañons as a result of its denudation. The rocks are the same that make the Wasatch and Uinta Mountains, except that large areas are covered with igneous outflows.

The following cut (Fig. 336), by Powell, represents a portion of the plateau region north of the Colorado Cañon, with its flexures sometimes passing into faults. The Colorado River flows in Marble Cañon. The heights look small, but the fault at W. K., the West Kaibab fault, is 2000 feet high; at E. K., the East Kaibab, 3000 feet; at T., the Toroweap fault, 700 feet; at