GEOLOGY OF THE GOLDEN - GREEN MOUNTAIN AREA
JEFFERSON COUNTY, COLORADO

By

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ABSTRACT

A detailed geologic map superposed on the U. S. Geological Survey topographic map was prepared for an area of approximately 35 square miles located in the Golden and Morrison Quadrangles, Jefferson County, Colorado.

The purpose of the investigation was three-fold:

1. To make a detailed geologic map superposed on the new topographic base maps.

2. To map the geology in accordance with the detailed stratigraphic divisions established by LeRoy (19) in 1946.

3. To make a detailed study of the post-Laramie sediments in the Golden-Green Mountain area and elsewhere in the Denver Basin, and to correlate them with the post-Laramie sediments previously mapped and studied in the Denver Basin.

Physiographically, the area lies along the boundary between the Colorado Piedmont or western edge of the Denver Basin and the Front Range of the Rocky Mountains.

Stratigraphically, the rocks range in age from pre-Cambrian to Paleocene. The geologic mapping was done in accordance with the detailed stratigraphic section of the Golden-Morrison area established by LeRoy. The writer made a further refinement in the upper part of the stratigraphic column and the geologic map by mapping the Arapahoe, Denver, the three Table Mountain lava flows, and the lower and upper members of the Green Mountain conglomerate, each as separate formations. The Arapahoe, Denver, and Green Mountain formations are all fluviatile, lacustrine, continental sediments. Glacial evidence was not found in the Green Mountain conglomerate.

Structurally, the principal feature is the east flank of the Front Range arch which is broken by the Golden thrust fault. The dips of the strata steepen in approaching the Golden fault. The stratigraphic throw of the Golden fault increases from about 7000 feet at the southwest part of the area to a maximum of about 11,000 feet at the mouth of Clear Creek Canyon.

The Arapahoe, Denver, and Green Mountain formations are separated by erosional disconformities. No angular discordance was observed in the field. Structural contour maps drawn on three different horizons in the late Cretaceous and Paleocene indicate gentle post-Cretaceous and post-Paleocene warping. The evidence of stratigraphy, sedimentography, and structural geology date the Golden fault as late Paleocene.

Concerning post-Laramie stratigraphic correlations in the Denver Basin, the following conclusions are expressed:

1. The Arapahoe formation is the lithologic and time equivalent of the basal part of the Lower Dawson arkose. It thins and becomes finer grained to the south and southeast.

2. The Denver formation is the lithologic and time equivalent of that part of the Lower Dawson extending from the base of the basal andesitic (Tda) unit in the Colorado Springs area up to the widespread erosional disconformity between the Lower and Upper Dawson.

3. The Green Mountain conglomerate is the lithologic and time equivalent of the basal part of the Upper Dawson.