

In the Colorado Plateau the Morrison formation of Upper Jurassic age may be divided into two parts.

The lower part consists of two gradational and intertonguing lithologic members—the Salt Wash sandstone member, present in southeastern Utah, western Colorado, and extending short distances into Arizona and New Mexico; and the Recapture shale member, present in northwestern New Mexico, northeastern Arizona, and extending a short distance into southeastern Utah. Both members consist predominantly of fluvial deposits of sandstone and claystone with increasing proportions of sandstone and conglomerate near the main sources. The Salt Wash member was derived from sedimentary rocks, mainly from a southwesterly source, probably in western Arizona. The Recapture member was derived from sedimentary, igneous, and metamorphic rocks, mainly from a southern source, probably in west-central New Mexico. Away from these source areas the members become thinner and contain increasing proportions of claystone and limestone. The Salt Wash sandstone member generally is absent northeast of the crest of the ancestral Uncompahgre uplift and it loses its identity, except in a few places in the Central Colorado basin where discontinuous sandstone beds, considered to be Salt Wash, are present.

The upper part of the Morrison formation likewise consists of two lithologic members—the Brushy Basin shale member and the Westwater Canyon sandstone member. The Brushy Basin member is present over all the Colorado Plateau except for a belt extending from south-central Utah to central New Mexico, where it is absent, partly as a result of pre-Dakota erosion. The Westwater Canyon member occupies the lower part of the Brushy Basin interval in southeastern Utah, northwestern New Mexico, and northeastern Arizona; it is thought to replace the Brushy Basin by gradation and intertonguing. The Westwater Canyon consists of fluvial deposits of sandstone and minor claystone and represents a continuation of deposition similar to that of the lower part of the Morrison. It appears to have the same source and source rocks as the Recapture member. It also is conglomeratic near its source and becomes thinner and nonconglomeratic away from the source area. The Brushy Basin shale member is predominantly varicolored claystone with minor lenses of sandstone, conglomerate, and limestone, and consists in large part of fluvial deposits. However, in lithologic characteristics, it contrasts sharply with the rest of the Morrison. The member may contain beds formed in ephemeral lakes or playas, and some of the material may have been contributed by ash falls. Evidence for the source of the Brushy Basin member is meager.

27. STRATIGRAPHY AND STRUCTURE OF NORTHEASTERN STRAWBERRY VALLEY QUADRANGLE, UTAH. By HAROLD J. BISSELL, Brigham Young University, Provo, Utah.

The Northeastern Strawberry Valley Quadrangle embraces approximately 240 square miles of the area where the south-central Wasatch Mountains meet the southwestern flank of the Uinta Mountains and form the northwestern boundary of the Uinta Basin. This report concerns the stratigraphy and structure of this geologically important region, with an accompanying geologic map depicting for the first time the features on an adequate scale.

An aggregate thickness of 38,000 feet of sedimentary strata, in age from Upper Pennsylvanian through Eocene is exposed within the area. Most of the sediments are marine. A few thousand feet of andesitic volcanics of Oligocene or Miocene age overlies the older strata in a few places. In addition, portions of the area were modified by Pleistocene glaciation.

From the standpoint of structural geology, this area is of great interest for it lies at the locus of the east-west-trending Uinta Mountains and the north-south Wasatch Mountains. Geologic mapping proves that overfolded strata of the south-central Wasatch Mountains allochthon were thrust some tens of miles eastward upon the foreland of the flat to gently inclined strata of the southwestern Uinta Mountains. The uparching and ramp thrusting of the Uintas occurred after the east-west thrusting, followed by high-angle normal faulting, uplift, and tilting.