lifts and monoclines that generally face southwesterly. The southwestern part includes the minor basins (Henry, Kaiparowits, Black Mesa, and Blanding), the broad Mogollon slope, and uplifts and monoclines that generally face eastward.

The "salt" anticlines, piercements, and graben of the Paradox basin are the most special structures of the Plateau. Their folding and piercement began in Permian time, continued intermittently through Triassic and Jurassic time, and culminated in Laramide time. Subsequent collapse may be partly related to Cretaceous loading, partly to Laramide folding, and partly to solution of the salt.

In addition to the elongate, tangentially compressed uplifts such as San Rafael, Circle Cliffs, or Zuni, there are several domical uplifts due to the stock and laccolithic intrusions such as the La Sal, Abajo, or Ute centers. These centers fall on three nearly parallel, northwesterly trending lines.

The earliest tectonic events that appear to have influenced the present structure occurred during late Paleozoic time. Three northwesterly trending Permo-Pennsylvanian positives developed on and adjoining the Plateau. From northeast to southwest, these are the Front Range, Uncompahgre, and Zuni. All appear to have been asymmetrical toward the southwest where they were immediately adjoined in order by the Colorado, Paradox, and San Juan sags or basins. During Triassic and Jurassic time, local folding occurred in the Paradox fold belt and elsewhere and broad, slight epeirogenic sagging developed in a northwesterly direction between the Uncompahgre and Zuni positives. In late Jurassic time, the southern rim of the Plateau was generally tilted northward. During late Cretaceous time, the Plateau was markedly depressed and slowly tilted northward as it became a part of the Rocky Mountain geosyncline.

Despite the fact that the descriptive tectonics of the Plateau are fairly well known, there still remain several problems concerning the cause, nature, and history of deformation and the character, nature, and history of fluid movement. Among these problems are (1) influence of the Precambrian structures on later deformation, (2) Paleozoic and Mesozoic diastrophisms as interpreted from stratigraphy, (3) cause and nature of Laramide movements especially in relation to the formation of the adjoining Rockies belts, (4) significance of the fracture systems, (5) Cenozoic erosional history and basin sedimentation, and (6) paleodynamics of the rock fluids.

12. WILLIAM LEE STOKES, University of Utah, Salt Lake City
Tectonics of Wasatch Plateau and Near-by Areas

The Wasatch Plateau of south-central Utah is a large table-like remnant of high ground not yet destroyed by the general erosion of the Colorado River system. The basic structure is monoclinal with a regional westward dip that is gentle on the east and steep on the west. Superimposed on the basic structure is a broad anticline, the Monument Peak uplift, consisting of two folds that plunge slightly east of north into the Uinta basin. These folds, in turn, are modified by a north-trending system of fault zones which fall into the North Gordon, Pleasant Valley, and Joes Valley zones. The Joes Valley zone is largest, having a total length of about 75 miles and an average width of 2 miles. It and the other zones are splintered by numerous small faults and the downward displacement reaches a maximum of 3,000 feet.

The regional westward dip of the Plateau is related to the origin of the San Rafael Swell. The greatest folding of the Swell must have been post-Cretaceous pre-Eocene by analogy with the Waterpocket fold on the south. Since the Monument Peak uplift shows structural alignment with the Swell, it probably originated at the same time.

The complex fault zones are obviously of later origin. They are tensional features and cut all surface rocks including Pleistocene moraines. They are related to the deep-seated Wasatch monocline and probably to subsidence and solution effects in the salt-bearing Jurassic rocks below. The western flank of the Wasatch Plateau is complex with numerous faults, unconformities, and landslides. This complexity may be due to growth and collapse of salt structures.

13. W. W. MALLORY, Phillips Petroleum Company, Denver
Tectonic Development of Cordilleran Region

The Cordilleran region of Western United States is a segment of the Cordilleran geosyncline. Its western and eastern borders are the Pacific Coast Ranges and the Wasatch or Teton line. The Cordilleran geosyncline differs from its cratonic neighboring regions, the Colorado Plateau and the Rocky Mountains, by (1) containing extreme thicknesses of sedimentary and volcanic rocks and by (2) having experienced true orogeny. Like its counterpart, the Appalachian geosyncline, it has dual facies expression. An inner (cratonward or miogeosynclinal) belt has thick sediments lithologically similar to cratonic rocks; an outer (seaward or eugeosynclinal) belt has very thick graywackes, volcanics, and other lithotopes.

It is convenient to describe the tectonic development of the geosyncline in four stages, each of which exhibited a distinctive tectonic pattern. Stage I, comprising only the Cambrian period, was essentially simple failure of the continent margin by subsidence behind a progressively inward migrating hingeline. Sediment source was cratonic.

Stage II was a complex interplay of orogeny, volcanism, and deposition with long duration. It