Limited isopach data indicate that southeastern Idaho, from southwest to northeast, contains rocks of basinal, marginal, and foreland thicknesses. Generally, the lithofacies maps tend to confirm these relationships.

Five unsuccessful wildcat wells have been drilled in the province which covers 4,000 square miles. Four of the five wells were drilled on anticlines located in the synclinoria, and one was drilled in the imbricate area. Although results to date have been somewhat discouraging, the area has not been completely tested. None of the wells have penetrated the Paleozoic section beneath the Mississippian-Madison limestone, and numerous large folds, offering multiple objectives, have not been tested.

25. WASATCH PLATEAU REVIEW, CENTRAL UTAH.
GRAHAM S. CAMPBELL, Consultant, Salt Lake City, Utah.

The Wasatch Plateau is an elevated tract in central Utah, having a north-south length of 60 miles and a width of 20 miles. It is not a separate or unique geologic feature, but rather a segment of the long transition belt between the Great Basin and the Colorado Plateau.

Rocks capping the plateau are Tertiary Eocene and uppermost Cretaceous in age. The Mesozoic section is about 12,000 feet thick, thickening and becoming more clastic toward the west. The Paleozoic rock thickness is probably comparable with that of the Mesozoic. The Ferron and Dakota sands of Cretaceous age are gas-productive on the plateau.

The Wasatch monocline constitutes a very distinctive topographic and structural boundary between the plateau and Sanpete Valley on the west. Except for normal fault-block tilting and/or slumping, the plateau top is almost flat. Little, if any, actual bending of the strata is evident except on the monocline. A north-south fault system of Tertiary age is predominant throughout the plateau. Although there is probably a deep-seated fault beneath the Wasatch monocline, many of the smaller faults on the Wasatch Plateau and in Sanpete Valley may be due to movement and solution of salt-bearing beds in the underlying Jurassic rocks.

Structural and stratigraphic evidence tends to shift the Great Basin-Colorado Plateau boundary westward from previously assigned positions. This would increase the area of potential oil-bearing post-Paleozoic rocks considerably.

It is suggested that the Paunsaugunt and Wasatch plateaus were parts of the same province through Wasatch time, and that the Paunsaugunt, 100 miles south, offers the same excellent Cretaceous oil and gas possibilities as those offered by the Wasatch Plateau.

26. GAS AND OIL OPERATIONS IN UINTA BASIN OF UTAH.
DORSEY HAGER, Consultant, Salt Lake City, Utah.

The Uinta basin of Utah is going into its 5th year of oil production. To date there is one field, Red Wash, of importance with nearly 8,000 acres proven and 24 producing wells which yield around 5,000 barrels daily. Most of the production is choked down until transportation can take care of the situation.

Nearly 100 holes have been drilled, resulting in the discovery of five oil fields, two possible oil fields, and two gas fields. The discovery rate is 7 out of 70 or one producer, or potential producer, out of 10 tests. With the 8,000 square miles in the basin, the average dry-hole density is one hole to 110 square miles. However, with the proximity of dry holes to the nearby fields, the ratio is more nearly one to 400. There are nearly 20 square miles of proved area, or one square mile proved to 400 unproved.

Nearly all the fields are due to stratigraphic traps so that the situation for new discoveries is unique in that new fields should be of the same type.

The south rim of the basin has two gas fields in the Wasatch and in the Mesaverde beds. Conditions there are similar to those in the San Juan basin. It is possible that a major gas area may be developed on the south rim of the basin.

Drilling and operating costs are high in the basin due to transportation, and to the oil carrying high proportions of wax, 20–50%, with pour points of 90°–110°.

When drilling costs are reduced and when there is a solution to the handling of the oil, the Uinta basin should be an important producer with numerous new gas and oil fields.

27. GAS PROSPECTS OF NORTHEASTERN UTAH AND NORTHWESTERN COLORADO.
WARREN L. TAYLOR, El Paso Natural Gas Company, Salt Lake City, Utah.

Recent gas discoveries in the Greater Uinta basin of northeastern Utah and northwestern Colorado, in rocks of Jurassic, Cretaceous, and Tertiary age, together with the prospect of a market outlet, have centered interest on the area as a potential future gas reserve.

Commercial gas discoveries to date have been widely scattered in the following formations: Entrada, Morrison, Dakota, Mesaverde, Wasatch, and Green River. However, these discoveries indicate the following problems which must be solved in future exploration and development before sizable reserves of natural gas are definitely established:

(1) Questionable reflection of surface structural features at depth.
(2) Abrupt lateral porosity and permeability variations.
(3) Deposition of sands sufficiently developed to provide appreciable reserves.

(4) Exceptionally high carbon dioxide and/or nitrogen content of the gas from certain areas in northwestern Colorado.

28. Oil and Gas Possibilities of North Park Basin, North-Central Colorado.
R. M. Thompson, Hiawatha Oil and Gas Company, Denver, Colorado.

Stratigraphy of North Park and Middle Park is contrasted to that of South Park for clarification of tectonic and structural differences. These differences may have had profound influence upon the accumulation of hydrocarbons.

Sediments of the North Park basin are analyzed because significant changes take place within short distances in potential reservoir rocks. Unconformable relationships exist to a profound extent in Tertiary and Upper Cretaceous rocks and their importance to accumulation of oil may be significant.

Petroleum development in the area has been sporadic and at times as spectacular as it has been disappointing. Development indicates that carbon dioxide gas in one part of a basin does not necessarily condemn other portions. Significant discoveries may yet be made in this and similar intermountain basins because factors of stratigraphy and structure are favorable.

29. Little Beaver Field Area.
W. C. MacQuown, Jr., Deep Rock Oil Corporation, Denver, Colorado.

Exploratory drilling in the rapidly developing Little Beaver field area of Adams and Washington counties, Colorado, has given rise to oil discoveries at Badger Creek, East Mountain View, and West Woodrow. These field discoveries and others northeast and northwest have revived interest in largely stratigraphically trapped oil in winnowed sandstone reservoirs of the Graneros and Dakota group south of the South Platte River. Previous discoveries in the general area at Middlemist and Lee fields had not held promise of large reservoirs in this part of the Denver basin where structural closure, as determined by the seismograph, is close to the limits of error inherent in this method of prospecting, and where indicated structures are small.

Cross sections, structural contour maps, and isopachous maps indicate stratigraphic-structural relationships conducive to commercial accumulation of gas and oil. However, the presence of numerous alternating shallow marine and continental environments of sedimentation makes mapping of the extension of existing fields difficult and the mapping of wildcat prospects a technique yet to be perfected.

30. Stratigraphic Relations of Lyons Sandstone in Denver Basin.
Bruce F. Curtis, Continental Oil Company, Denver, Colorado.

Newest of the producing formations in the Denver basin is the Lyons sandstone, a reservoir probably Permian in age.

Lyons production was first established in 1953 at Keota field and an apparently much larger pool has since been proved at Black Hollow. The Lyons sandstone is limited westward by outcrops along the Colorado Front Range, and in other directions by changes of facies. Through the central, deeper part of the Denver basin much additional exploration of this new pay sand is anticipated.

31. Pre-Permian Section East of Front Range in Colorado.
Joseph R. Clair, Consultant, Denver, Colorado.

The pre-Permian section is discussed with particular regard to the changing facies encountered eastward from the Front Range.

The magnitude of the Permian-Pennsylvanian unconformity in northern Colorado is pointed out. Maps and cross sections are presented to show graphically the areas of marked facies change and to indicate areas where best reservoir conditions may be anticipated.

32. Permian Facies in Eastern Nevada.
Joseph Lintz, Jr., Nevada Bureau of Mines and Mackay School of Mines, Reno, Nevada.

The Summit Springs Unit No. 1 well drilled by the Standard of California and Continental Oil companies in northwestern White Pine County, Nevada, penetrated 5,200 feet of sediments containing 23% gypsum and anhydrite beds. Wolfcampian fusulinids occur in beds underlying the lowest gypsum. The presence of evaporites had not been suspected from studies of the outcrops. Shows of oil and gas were encountered in this sequence of beds. Lack of knowledge precludes consideration of a barrier between the evaporites and the open sea.

33. Sevy Dolomite in East-Central Nevada.
John C. Osmond, 124 Ellis Road, Havertown, Pennsylvania.

Nolan first described the Sevy in the Gold Hill district of western Utah in 1935. His evidence pointed to Middle Devonian age for the non-fossiliferous formation.

In east-central Nevada and adjacent Utah the Sevy consists of 500–1,600 feet of aphanic, homoge-