Recent Developments in Alaska
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J. W. Watson, Jr., DeGolyer & MacNaughton, Dallas, Tex.
New Devonian Productive Reef, Swan Hills-Virginia Hills Area, West-Central Alberta, Canada
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ABSTRACTS

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LATE MESOZOIC POSITIVE AREA IN WESTERN UTAH
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Throughout most of the eastern Great Basin major parts of the stratigraphic section are missing. In general effusive volcanic rocks of Early Tertiary age overlie strata ranging in age from Precambrian to Permian. Because sedimentary rocks of Mesozoic and early Cenozoic age are generally absent it has been difficult to interpret the geologic history of these eras. Individual units and sequences of the early Tertiary volcanic rocks have been correlated over most of the eastern Great Basin and western Colorado Plateau. These rocks provide a valuable datum for the deciphering of the structural and stratigraphic evolution of the region.

A study of the contact relationships of the volcanic datum to the older rocks indicates the existence of a linear positive element in western Utah, called herein the Sevier arch, during the late Mesozoic era. The axis of this arch trends generally northeast and is more or less parallel with the axis of the Manhattan geanticline of central Nevada and the early Cordilleran geanticline of eastern Nevada that became positive in Devonian and latest Paleozoic time respectively. The Sevier arch appears to be the third of a series of major upwarps developed by the eastward progression of the Paleozoic and Mesozoic orogenies.

It is convenient to describe the tectonic development of the Sevier arch in six stages. Stage I was represented by deposition of Triassic and Jurassic sediments westward as far as the early Cordilleran geanticline.

Stage II was initiated by linear uplift of the Sevier arch that extended from west-central Utah into southern Nevada. Material eroded from the arch was transported eastward into the Rocky Mountain seaway to form the thick clastic formations of latest Jurassic (?) and Cretaceous age.

Stage III was climaxed by regional thrusting that culminated the upwarping and folding of the previous stage. Highlands produced by this phase of the orogeny extended from southern Nevada northward at least as far north-central Utah. Erosion of these highlands resulted in deposition eastward of material that formed rocks of latest Cretaceous and early Tertiary age.

Stage IV resulted in continued erosion that reduced the region to one of mild topographic relief.

In stage V early Tertiary volcanics were deposited over the region as an extensive sheet.

In stage VI late Tertiary deformation superposed the characteristic basin and range type structure upon the structural features of late Mesozoic and early Tertiary age.

(2) GEOLOGY OF NORTH TEJON FIELD
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The North Tejon field is approximately 25 miles south of Bakersfield, 2½ miles north of the Tejon-Grapevine field, in the southern end of the San Joaquin Valley. The discovery well was the Reserve Oil and Gas Company's "Butler-Wehr" No. 67-18, completed in March, 1957, from the interval 11,850–12,200 feet. Production is from the Vedder sand of lower Miocene (Zemorrian) age. This discovery was the result of a combined geological-geophysical effort. Initial regional subsurface geologic studies indicated the possible presence of a structural bowing in the area, and subsequent seismic work substantiated this hypothesis. Shortly after the discovery, the Standard Oil Company of California obtained a 50% interest in approximately 2,000 acres surrounding the No. 67-18. Since that time, Standard and Reserve, with Reserve as operator, have drilled and completed 5 additional wells in the Vedder. Development by Reserve Oil and Gas Company is proceeding with three drilling strings.

The field is at present divided into two areas; the Main area, site of the original discovery, and the Highway area, a westerly extension discovered in April, 1958, by Richfield Oil Corporation. Indications at present point to a probable joining of the two areas as drilling continues. The structure of the field is interpreted as a northeast plunging nose, complicated to a small degree by faulting. The fault appears to control accumulation to some degree. The main controlling factor appears to be an updip permeability barrier.

Stratigraphically the area is fairly simple, the only really anomalous unit being the basalt section, which varies in thickness from 2,000 feet in the Main area to 50 feet or less in the Highway area. Production in both of the areas is from the Vedder sands. These sands are found at depths ranging from 8,700 feet in the Highway area to 12,000 in the Main area, indicating an oil column of 3,300 feet.