A series of four maps show where oil and gas are produced from sands in the Pennsylvanian below the base of the Cherokee, in the Cherokee formation itself, in the interval between the top of the Cherokee and the Checkerboard limestone, and in the interval from the Checkerboard limestone to the top of the Pennsylvanian. Cross sections show the position of these sands and units in the stratigraphic column. It is hoped that these maps will furnish additional information on the character and position of these sand bodies, and on the occurrence of oil and gas in them.

63. EDWIN A. DAWSON, chairman of committee of Shawnee Geological Society, Shawnee, Oklahoma
Occurrence of Oil and Gas in Pennsylvanian Sands in Central Oklahoma

64. J. A. MULL, Republic Natural Gas Company, Wichita, Kansas
Stream Channels Applied to Arbuckle of Central Kansas Uplift

The Arbuckle surface on the nucleus of the often rejuvenated northwest-southeast-trending Central Kansas uplift was exposed as a land mass at intervals before the first Pennsylvanian sea invasion, for sufficient time to permit the positive and negative features of topography to be well developed. Subsequent movements have not greatly altered the detail topography on this nucleus. As a consequence, dendritic and radial drainage patterns can be traced by well control throughout the area. These channels are largely responsible for the separation of most of the buried hills which are now productive of oil. Outside the nucleus of the uplift, the above principles still apply, although they play a minor role in some areas as a result of early Pennsylvanian movement.

CALIFORNIA

65. EUGENE H. VALLAT, Continental Oil Company, Los Angeles, California
Exploration Work in California during 1940

The discovery rate for the year 1940 in California declined. This followed and was accompanied by a decrease in geophysical work and exploratory drilling while geological employment remained approximately the same. Only one new oil field was discovered and there were a few areal and depth extensions of known fields. Several wildcat wells were completed as small producers in what, at present, appear to be non-commercial accumulations.

Drilling within fields increased California's potential production but additions to reserves has lagged behind withdrawals and lowering of estimates in fields under development. Faster drilling has accelerated the approach to a drilled up status for California fields. An attempt is made to arrive at the cost and length of payout time for an average top allowable well as an indication of the optimum expectancy for operating capital put into development wells.

Methods of attack now being used on the California exploration problem are referred to briefly.

66. ROLLIN ECKIS, Richfield Oil Corporation, Bakersfield, California
Stevens Sand, Southern San Joaquin Valley, California

The Stevens sand, first penetrated in 1936 by the Shell Oil Company's discovery well at Ten Sections oil field, is present beneath a large part of the southern San Joaquin Valley in Kern County, California. It has a maximum known thickness of about 2,000 feet, and at present is yielding commercial production from seven different structures.

It comprises a series of more or less interconnected sands that lies below the top of a prominent chert zone within the upper Miocene. This paper deals primarily with the distribution, character and probable origin of the sand body.

67. E. W. GALLIHER, Barnsdall Oil Company, Los Angeles, California
E. R. ATWILL, Union Oil Company of California, Los Angeles, California
Progress of Stratigraphic Studies in California

Many geologists in California have been converted to the belief that the stratigraphic type of trap will provide a majority of future oil fields in the state. Therefore, considerable impetus has been given to the study of sedimentation from every possible approach.

This paper presents the various methods now used in California to study sedimentation and stratigraphy, describing briefly the results obtained to date and analyzing the future trend of this type of work.