The widespread use of chemicals on oil and gas reservoirs composed of limestones has attracted the attention of engineers and geologists to the many wells producing from sands. The early attempts to treat wells producing from sands were not uniformly successful. During the past several years the authors have been collecting cores from various producing horizons; most of them have been studied in the laboratory. In certain areas chemicals have been used on sands with good results. This paper discusses the results of the laboratory work and contains a compilation of well treating data. Of the more than 300 cores studied, over 80% showed an increase in permeability when acidized in the laboratory. The average permeability increase was over 500%. The average acid solubilities of the more than 80 different oil-producing sands was 8.5%.

The authors have also included data on compressive strength of the cores before and after acidizing and chemical and x-ray analyses of typical sands.

35. WILLIAM L. RUSSELL, Wells Surveys, Inc., Tulsa, Oklahoma
Applications of Radioactivity Logging

Radioactivity logging is the only known method of making accurate lithologic records through casing and cement. At present, radioactivity logs are used chiefly to determine exactly where to perforate the casing and cement, and the process has been highly successful in this use. Other applications consist in determining sample lag, making correlations and cross sections, locating faults, mapping subsurface structure for deeper drilling, logging beds too thin for electric logs to record, making detailed lithologic records of oil sands for use in connection with the recovery of oil by water flooding, and surveying potash deposits in cased wells. Well Surveys, Inc., has also developed a method for determining the radioactivity of cores and samples which has proved its value in interpreting the logs and in solving problems of sedimentation.

36. F. H. LAHEE, Sun Oil Company, Dallas, Texas
Wildcat Drilling in 1940

Statistics on wildcat drilling during 1940 indicate that approximately 12.8% of the holes drilled, and 13.5% of the footage drilled, was successful in discovering oil or gas. The average depth of hole was over 3,640 feet, or more than 300 feet greater than in 1939.

Figures on the relative success of the various technical and non-technical methods of selecting wildcat locations are presented.

37. J. C. BARCKLOW, Lane-Wells Company, Oklahoma City, Oklahoma
Radioactivity Well Logs, Their Use and Application in Fields of Petroleum Geology, Economic Geology, and Petroleum Engineering

Much experimental work has been done in the past on radioactivity as applied to making well logs. Recently, about June, 1940, such logs were offered to the industry on a commercial basis. Since that time great strides have been made in the technique of producing these logs. With the advent of logs of this sort many uses and applications for them have suggested themselves. They no doubt will occupy a prominent place in the petroleum industry as the members of that industry become better acquainted with them.

ROCKY MOUNTAINS

38. C. E. DOBBIN, U. S. Geological Survey, Denver, Colorado
Developments in Rocky Mountain Region in 1940

There were no major discoveries of oil and gas in unproved areas in the Rocky Mountain district in 1940, most of the drilling being restricted to inside locations in major fields.

In Wyoming, good shows of oil encountered in the Shannon sandstone member of the Steele shale (Upper Cretaceous) in the Cole Creek field during deeper drilling in 1937 were tested further in 1940 and commercial production found; one relatively small oil well was drilled in the North Labarge field, Sublette County, about two miles northwest of the nearest production in the Labarge field; and wells deepened a few feet in the Tensleep sandstone (Pennsylvanian) in the Mahoney field, Carbon County, and to the basal member of the Tensleep in the Lost Soldier field, Sweetwater County, were good oil wells. During 1940, commercial amounts of oil were first found in the Tensleep in the East Mahoney (West Ferris) field, Carbon County. No new producing zones were found elsewhere in the Rocky Mountain district during 1940. However, in February,