The relations of electrical values to formation fluids, lithology, porosity and permeability, drilling fluids, and hole diameter are discussed.

Electrical logs have furnished valuable records of the wells drilled. They have formed the basis for much of the stratigraphic and structural work in the territory. Recognition of commercial saturation in wells and prediction of reservoir behavior have been successful in some cases by integration of electrical log data with core and production information. The electrical log has been a valuable tool in guiding completions.

The available electrical-log information on the wells of the Illinois basin promises additional future value in further exploration and secondary-recovery operations.

14. HOMER C. MOORE, Oil Exploration, Inc., Tulsa, Oklahoma, "Seismic Comments, Illinois Basin."

This is a short generalized discussion of some improvements in seismograph instruments and their use in shooting in the Illinois basin. Mention is made of the importance of weathering interpretations, the need of sufficient control in localizing small structures, and the necessity for cooperation of geologist and geophysicist.

15. JAMES B. MACELWANE, St. Louis University, St. Louis, Missouri, "Seismicity of Mississippi Valley."

Seismicity and the factors which govern it are not readily susceptible to quantitative definition and determination even under the best conditions. The seismicity of the Mississippi Valley in particular has been under observation too short a time in general, and in particular by means of seismographs it has been studied at too few points even in recent years to allow more than a qualitative and sketchy assessment. The area may be divided in general into several provinces such as the upper, middle, and lower Mississippi Valley, the Gulf Coast, and the larger tributary valleys.

16. DONALD G. SUTTON, Sun Oil Company, Evansville, Indiana, "Geology of Uniontown Pool, Union County, Kentucky."

The Uniontown pool in northern Union County, Kentucky, discovered in September, 1942, produces mainly from the Waltersburg, Tar Springs, and Cypress sandstones of the Chester series, Upper Mississippian system. It produces in a minor way from a sandstone of Pennsylvanian age and from the Palestine and Hardinsburg sandstones and the Menard limestone of the Chester series.

The structure consists of an elongate dome, the western side of which is closed against the upthrown side of a normal fault.

There are 229 producing wells in the field, which had produced 8,600,000 barrels of oil to October 1, 1947. The producing area covers approximately 2,000 acres.

17. H. H. BYBEE, Carter Oil Company, Mattoon, Illinois, "Hitesville Consolidated Pool, Union County, Kentucky."

The Hitesville Consolidated pool is on a broad elongate anticline trending north and south, $4\frac{1}{2}$ miles north of the Shawneetown-Rough Creek fault system in Union County, Kentucky, at the southern extremity of the Illinois basin. The pool was discovered in February, 1943, and has expanded to include approximately 3,500 productive acres. The Chester produces from the Waltersburg, Tar Springs, upper and lower Cypress, and Aux Vases sands. The Ste. Genevieve produces from seven separate porous McClosky zones. Sixty-one per cent of the wells in the pool produce from the McClosky and 20 per cent from the Cypress. The multiple zones of McClosky production constitute the outstanding feature of the pool.

18. ILEY B. BROWNING, Consulting, Ashland, Kentucky, "Slaughters Oil Pool, Webster County, Kentucky."

This description of the Slaughters oil pool includes: (1) extent of the development; (2) the geology of the field in detail, with emphasis on the faults, their structure, and relation, and effect on the accumulation of oil and gas, and (3) the producing formations with production figures to date.

In conclusion the relation of this structure to the general structure of the area and the probability of its extent and bearing on other development south of the Shawneetown-Rough Creek fault are discussed. Slides and maps illustrate the principal features.

19. W. L. EFFINGER, The California Company, New Orleans, Louisiana, "Geology of Two Recent Deep Tests in Kentucky and Tennessee."

In 1946–1947 two deep tests, one on the Cincinnati arch in Kentucky, and one on the Nashville dome in Tennessee, were the first wells to penetrate the entire sedimentary section in this geologic province.

The California Company's A. R. Spears No. 1, located 1.7 miles northwest of McKinney, Lincoln County, Kentucky, reached the total depth of 6,117 feet, stopping in rhyolite porphyry, probably pre-Cambrian in age. This test was drilled on a local anticline on the south plunge of the Cincinnati

arch. Starting in the lower part of the Tate formation of the upper Ordovician, the well penetrated 418 feet of argillaceous limestones and shales of upper Ordovician, Maysville, Eden, and Cynthiana groups; 191 feet of middle Ordovician, Lexington limestone; 651 feet of lower Ordovician, Wells Creek dolomite; 2,936 feet Cambro-Ordovician dolomite probably more or less equivalent to the Knox dolomite group of Tennessee; 137 feet of Cambrian limestone and dolomite with minor amounts of gray shale tentatively correlated with the Maynardville limestone; 739 feet of Cambrian reddish brown and gray shales with some fossil fragments, and gray interbedded siltstones, considered to be in part correlative of the Nolichucky formation; 615 feet of quartzitic sandstone with intercalated green and gray shales and siltstones that may be middle or lower Cambrian in age; 25 feet of Cambrian or pre-Cambrian limestone, the lower part containing pebbles of rhyolite; and 356 of rhyolite porphyry, probably pre-Cambrian in age.

The California Company's E. W. Beeler No. 1, located ½ mile southwest of Campbellsville, Giles County, Tennessee, reached the total depth of 5,750 feet, stopping in granite, probably pre-Cambrian in age. This well is on a prominent local closure on the southwestern extension of the axis of the Nashville dome. Starting in limestone of the Carters formation of the middle Ordovician, this well penetrated 660 feet of middle Ordovician, Black River-Stones River limestone; 69 feet of lower Ordovician, Wells Creek dolomite; 4,571 feet of Cambro-Ordovician dolomite probably correlative of the Knox and Bibb-Ketona-Brierfield groups; 338 feet of Cambrian calcareous and shaly dolomite; 77 feet of quartzite and quartzitic sandstone, Cambrian or pre-Cambrian in age; and 45 feet of granite.

20. REX P. GRANT, Department of Conservation, Lansing, Michigan, "Recent Developments in Western Michigan."

The Western Michigan district comprises seven counties in the west-central part of the state. The district includes the area from Muskegon, north to Manistee, west to Cadillac, and south to the vicinity of Big Rapids. The area is fortunately situated as regards transportation facilities, being served by four Lake Michigan ports and a network of railroads and highways.

Although one of the major pools of the state, the Muskegon pool, was discovered in this district in 1927, the area apparently was not very attractive to the operating companies and development until recently has been slow. Other fields in the district are Hart, discovered in 1932 but now abandoned, Ravenna gas field in 1936, Dalton in 1940, Sauble in 1942, Woodville and Goodwell in 1943, Stony Lake in 1946, and Kimball Lake in 1947. All oil fields produce from the Traverse (Devonian) limestone; Muskegon also produced from the Dundee (Devonian) limestone. The Ravenna gas field produces from the "Berea," a sandy limestone member of the Ellsworth (Mississippian) formation.

Stony Lake field, Oceana County, was discovered in December, 1946, by the Carter Oil Company. During 1947 the field was expanded to 26 wells which, by November 1, had produced approximately 275,000 barrels of oil. The field has been developed on a spacing pattern of one well to each 40-acre unit, with wells drilled in the northeast corner of each unit. The Kimball Lake field, Newaygo County, discovered by the Sun Oil Company in February, 1947, had produced by November 1, approximately 619,000 barrels of oil from 82 wells. The field is being developed on a diagonal 20-acre pattern; the wells are drilled in the northeast and southwest corners of 40-acre units. Both fields were located by core drilling. Their discovery has resulted in a renewal of interest and vigorous exploration in western Michigan.

21. GEORGE V. COHEE, United States Geological Survey, Ann Arbor, Michigan, "Lower and Middle Silurian Rocks in Michigan Basin."*

The discovery of the Howell gas field, Livingstone County, Michigan, with gas production from the base of the Salina formation and the top of the Niagara group, has added to the interest in the possibility of commercial production from these rocks in other areas in the Michigan basin. Gas and oil have been produced from the Cataract formation and Niagara group in fields in southwestern Ontario for many years, and showings of oil and gas were reported in Niagara rocks penetrated by wells in various areas in Michigan.

Cataract rocks of lower Silurian age and Niagara rocks of middle Silurian age occur in the subsurface in the Michigan basin, and they crop out, or underlie glacial drift, around the margin of the basin. The rocks are exposed in places in the Northern Peninsula of Michigan, eastern Wisconsin, northeastern Illinois, northern Indiana, northwestern Ohio, and southwestern Ontario, Canada.

The Cataract formation which includes the "White Medina" and "Red Medina" gas-producing sandstones in Ontario west of Niagara River, is 45–190 feet thick in the Michigan basin. The Cataract is represented by dolomite and shale in the Michigan basin, and sandstones of the eastern facies are absent.

The Niagara group of the Michigan basin is composed almost entirely of dolomite, with some chert and shale in places. Shale, which grades laterally into dolomite, occurs in the group in northern Indiana. The lower part of the Niagara in eastern Michigan and the Northern Peninsula of Michigan

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