10. EDWARD J. COOMBS, Sun Oil Company, Evansville, Indiana, RALPH E. ESAREY, Indiana University, Bloomington, Indiana, "Subsurface Correlations of Lower Silurian Formations in Southern Illinois and Indiana."

Silurian lithology and correlation in southern Illinois and Indiana are discussed, with particular reference to the Bainbridge limestone and related beds.

The Bainbridge formation of southeastern Missouri represents the Niagaran sediments of this area. The average thickness of the formation along the outcrop in Missouri is about 130 feet. Eastward in the subsurface of Illinois thicknesses of 200 feet or more are found.

The Niagaran of southeastern Indiana includes the Louisville, Waldron, Laurel, and Osgood formations. These formations total about 80 feet in thickness at the outcrop and thicken to more than 200 feet in southwestern Indiana.

Lithologic and electric-log characteristics are discussed, along with criteria for subsurface identification.

Cross-section studies trace the Silurian beds from their outcrop in Missouri through the subsurface of Illinois and Indiana to the outcrop along the Cincinnati arch. Correlations are based essentially on lithologic and stratigraphic relationships.

11. E. A. OBERING, Mt. Vernon, Illinois, "St. Jacob Field, Madison County, Illinois."

The St. Jacob field, on the west flank of the Southern Illinois Coal basin 23 miles east by northeast of St. Louis, Missouri, was discovered in May, 1942. Accumulated production on October 1, 1947, was 1,847,966 barrels of oil and the average production during September was 567 barrels of oil daily from 48 wells. The field is on 20-acre spacing and the productive area covers approximately 1,000 acres. The oil occurs in porous zones in the Trenton (Kimmswick or Galena) limestone formation, and the wells are completed at an average depth of 2,370 feet.

The St. Jacob field comprises two distinct pools separated by a pronounced saddle and characterized by differences in oil-water contact levels, reservoir energy, volume of water, and corrosive nature of the water.

The structure of the north pool is a dome-like anticline, slightly elongate east-northeast and west-southwest, and the structure of the south pool is an asymmetrical anticline with north and south elongation. Reverse or west dip of 186 feet has been established on the south anticline which is an indication of the amount of closure.

The strata below the Pleistocene till or glacial drift are represented by the following sequence of beds in descending order: the Pennsylvanian series, the Upper Mississippian or Chester series, the Lower Mississippian including the St. Louis limestone, Salem limestone and Osage group, the New Albany shale, the Devonian limestone, the Silurian limestone and dolomite, the Maquoketa shale, and the Trenton (Kimmswick or Galena) limestone.

12. L. E. WORKMAN AND ALFRED H. BELL, Illinois State Geological Survey, Urbana, Illinois, "Deep Drilling and Deeper Possibilities in Illinois."*

During the 4 years, 1944 to 1947, fifteen oil test wells were drilled in Illinois to the St. Peter sandstone, of which twelve penetrated to various formations below the St. Peter, one reaching the basement rocks.

Isopach maps of various formations between the St. Peter sandstone and the basement rocks, supplemented with cross sections, show the influence of the Ozark and Wisconsin positive structural areas. Notable variations in the stratigraphic sequence are the disappearance of the Galesville sandstone and the introduction of an oolitic limestone in the Cambrian strata in central Illinois.

Maps show the structure of the Illinois basin on the top of the St. Peter sandstone and the general configuration of the basement surface so far as known. Isocons on the St. Peter map show the total mineral content of water in the St. Peter sandstone.

Some of the geologcial factors that should be considered in prospecting for oil in these deep strata are discussed.

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13. C. A. BAYS[1], R. C. COOPER[2], F. W. MITCHELL[3], G. W. PRESCOTT[4], AND C. K. RUDDICK[5], "Electrical Well Logging in Illinois Basin."

Electrical logging has been widely used in the exploration and development of the Illinois basin oil fields of Illinois, Indiana, and Kentucky. Standard logging techniques have evolved during the decade of activity in the basin.

[1] Illinois State Geological Survey, Urbana, Illinois.
[2] Sinclair Wyoming Oil Company, Evansville, Indiana.
[3] Consulting Geologist, Mt. Carmel, Illinois.
[4] Illinois State Geological Survey, Urbana, Illinois.
[5] Schlumberger Well Surveying Corporation, Mattoon, Illinois.

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