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## DEVELOPMENTS IN EASTERN INTERIOR BASIN IN 1945<sup>1</sup>

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### ABSTRACT

Drilling in the Eastern Interior basin decreased 15 per cent and production decreased 2½ per cent in 1945. The removal of well-spacing restrictions by the Federal Government about September 1 did not result in any noticeable increase in drilling. There was little deep testing in 1945, and nearly all of the new wells produced from sandstones and limestones of the Mississippian system.

Production in Kentucky reached a new high of slightly more than 10 million barrels.

Drilling is expected to continue in 1946 at nearly the same rate as in 1945, with possibly an increase in wildcat testing due to the expiration of a large acreage of 10-year leases in the Illinois basin.

### INTRODUCTION

Drilling in the Eastern Interior basin decreased by 15 per cent in 1945 as compared with 1944. The removal of well-spacing restrictions by the Federal Government about September 1 did not result in any noticeable increase in drilling. Forty-six new pools were discovered, all of them small. Total production in 1945 was approximately 88 million barrels, which amounted to 5.1 per cent of the total for the United States.

Total production in Illinois was 75,210,000 barrels of oil, of which it is estimated that 90 per cent came from Mississippian strata, a little less than 4 per cent each came from Pennsylvanian and Devonian strata, and a little more than 1 per cent each from Silurian and Ordovician strata.

Production in both western Kentucky and southwestern Indiana came dominantly from the Mississippian system.

<sup>1</sup> Reprinted from *Bull. Amer. Assoc. Petrol. Geol.*, Vol. 30, No. 6 (June, 1946), pp. 879-885.

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TABLE I  
POOLS DISCOVERED IN EASTERN INTERIOR BASIN IN 1945

| Pool                           | County     | Company and Farm                   | Location  | Total Depth (Feet) | Depth to Top (Feet) | Producing Formation    | Initial Production (Barrels) <sup>a</sup> | Date of Completion | No. of Wells Producing in Pool Dec. 27, 1945 |
|--------------------------------|------------|------------------------------------|-----------|--------------------|---------------------|------------------------|---|--------------------|--|
| ILLINOIS                       |            |                                    |           |                    |                     |                        |   |                    |  |
| 1. Acon South                  | Hamilton   | Rudy, Marlow I                     | 20-3S-7E  | 3,430              | 3,384               | McClosky               | 25+0                                      | 7/24/45            | 1  |
| 2. Bartleso W.                 | Clinton    | Mosebach, J. Meyers I              | 18-1N-3W  | 976                | 933                 | Cypress                | 6+2                                       | 10/30/45           | 1  |
| 3. Brownsville                 | White      | H. H. Weinert, Kisner I            | 31-5S-0E  | 3,186              | 3,118               | Roscilare;<br>McClosky | 187                                       | 3/13/45            | 32   |
| 4. Gallagher                   | Richland   | Pure, J. C. Howard A-1             | 13-2S-0E  | 3,243              | 3,107               | McClosky               | 06+81                                     | 10/10/45           | 1  |
| 5. Goldengate N.               | Wayne      | Dell & Duncan, T. A. Leach I       | 9-2S-9E   | 3,407              | 3,303               | Lower O'Hara           | 122                                       | 11/6/45            | 2  |
| 6. Huey                        | Clinton    | Goldschmidt & Schierman, Jentzen I | 32-2N-2W  | 1,266              | 1,250               | Roscilare              | 26+2                                      | 8/14/45            | 3  |
| 7. Hunt City                   | Jasper     | W. W. Shafer, M. Stifel I          | 2-7N-10E  | 2,715              | 2,542               | Roscilare              | 25+10                                     | 0/25/45            | 1  |
| 8. Ingraham W.                 | Clay       | Kingwood, Fulk I                   | 13-5N-7E  | 2,577              | 2,532               | Cypress                | 52+67                                     | 8/21/45            | 2  |
| 9. Iola W.                     | Clay       | Texas, Wyette Jones I              | 18-5N-4E  | 2,505              | 2,404               | McClosky               | 12+8                                      | 1/16/45            | 0  |
| 10. Keenville                  | Wayne      | Gulf, M. Anderson I                | 26-7S-5E  | 3,158              | 2,998               | Aux Vases              | 11+240                                    | 2/5/45             | 1  |
| 11. Mepignrove S.              | Edwards    | Aetna & Hayes, C. Greathouse I     | 23-1N-10E | 3,320              | 3,244               | Lower O'Hara           | 80  | 3/20/45            | 1  |
| 12. Markham City W.            | Jefferson  | Gulf, F. W. Purcell I              | 4-3S-4E   | 3,165              | 2,913               | Aux Vases              | 27+120                                    | 11/13/45           | 1  |
| 13. Maunie West                | White      | B. M. Heath, North Storms I        | 31-7N-10E | 3,149              | 3,038               | McClosky               | 38+4                                      | 7/17/45            | 1  |
| 14. Newton North               | Jasper     | Shulman Bros., Ben Buntion I       | 12-2N-1E  | 2,863              | 2,856               | McClosky               | 37+30                                     | 11/27/45           | 1  |
| 15. Oakton West                | Marion     | Buell & Doran, Lee Bunn I          | 31-7N-10E | 1,760              | 1,750               | Cypress                | 125                                       | 5/20/45            | 21   |
| 16. Parkersburg N.             | Richland   | Cent. Pipe Line, Lee Bunn I        | 28-3N-14W | 3,132              | 3,078               | McClosky               | 48+30                                     | 10/30/45           | 1  |
| 17. Passport                   | Jasper     | Magnoia, F. Stanley I              | 12-4N-3E  | 3,905              | 3,903               | Roscilare              | 326                                       | 6/12/45            | 1  |
| 18. Rural Hill W.              | Hamilton   | Tule Water, W. B. Johnson I        | 33-6S-5E  | 3,483              | 3,229               | Aux Vases              | 33+30                                     | 3/13/45            | 4  |
| 19. Sarsville N.               | Edwards    | Cent. Pipe Line, Ch. Ohold I       | 30-1N-14W | 2,860              | 2,882               | Bethel                 | 91+25                                     | 6/19/45            | 1  |
| 20. Seminary                   | Richland   | H. W. Carter, D. C. Borah I        | 28-2N-10E | 3,202              | 3,199               | McClosky               | 224                                       | 10/2/45            | 2  |
| 21. Shattuc                    | Clinton    | Murphy & Conroy, L. Noller I       | 28-2N-10E | 1,286              | 1,279               | Cypress                | 25  | 6/12/45            | 2  |
| 22. Shawneetown                | Hamilton   | Ferrai, J. Oldham, I               | 24-6S-9E  | 2,837              | 2,648               | Aux Vases              | 19+6                                      | 9/11/45            | 1  |
| 23. Springerton                | Hamilton   | Carters, Oil, F. W. Nutt. Ins. I-A | 14-4S-7E  | 3,327              | 3,293               | Aux Vases              | 137                                       | 9/4/45             | 3  |
| 24. Stanford                   | Clay       | Pure & Lynn, J. Gouges I           | 24-3N-7E  | 3,936              | 3,928               | McClosky               | 888                                       | 10/2/45            | 9  |
| 25. Sumpter                    | White      | Leorio, E. Morgan I                | 35-4S-0E  | 3,379              | 2,599               | Tar Springs            | 33+38                                     | 11/13/45           | 1  |
| 26. Willow Hill N.             | Jasper     | Robinson & Puckett, Roberts I      | 20-7N-10E | 2,860              | 2,599               | McClosky               | 180                                       | 5/15/45            | 2  |
| INDIANA                        |            |                                    |           |                    |                     |                        |   |                    |  |
| 27. Crunk                      | Posey      | W. Duncan, A. Meinschein I         | 16-7S-12W | 2,712              | 2,705               | McClosky               | 48  |                    | 1  |
| 28. Farmersville               | Posey      | Central States, E. Blackburn I-A   | 20-6S-W   | 1,107              | 1,102               | Mansfield              | 1,116 MCFG                                | Jan.               | 1  |
| 29. French                     | Spencer    | F. H. Rhodes, Montgomery-Eagley I  | 30-7S-7W  | 1,160              | 1,148               | Tar Springs            | 108+13                                    | Oct.               | 1  |
| 30. Jeffries                   | Posey      | Carter Oil, A. S. Cox I            | 14-7S-14W | 2,992              | 2,673               | Tar Springs            | 128                                       | July               | 1  |
| 31. Johnson W.                 | Gibson     | Magnoia, E. L. Dike I              | 25-2S-13W | 2,995 PB           | 2,655               | Aux Vases              |   |                    | 1  |
| 32. Lysle                      | Gibson     | Deep Vein Coal, Fee I              | 1-2S-12W  | 2,826              | 2,826               | Bethel                 | 172                                       | June               | 1  |
| 33. Mt. Carmel E.              | Gibson     | Ryan Oil, F. G. Putnam I           | 16-5S-12W | 2,436              | 2,124               | Hardinburg             | 25  | June               | 3  |
| 34. Oliver                     | Posey      | I. T. Peek, A. Reineke I           | 12-6S-13W | 1,760              | 1,760               | Peru                   | 1,650 MCFG                                |                    | 1  |
| 35. St. Wendell E.             | Posey      | B. Hackhush, H. Goeldle I          | 24-5S-12W | 2,372 PB           | 2,368               | Weller                 | 10+30                                     |                    | 1  |
| KENTUCKY                       |            |                                    |           |                    |                     |                        |   |                    |  |
| 36. Anthonen                   | Henderson  | Ryan Oil Co., Clafton I            | 0-0-24    | 2,946              | 2,925               | Jackson                | 15  | Dec.               | 1  |
| 37. Beaver Pond                | Daviess    | Snyder & Slaughter, Hollis I       | 9-0-30    | 830                | 820                 | Tar Springs            | 8   | June               | 1  |
| 38. Corydon East               | Henderson  | Fleming-Swann, Patterson I         | 1-0-22    | 2,272              | 2,265               | Cypress                | 125                                       | May                | 1  |
| 39. Dixie                      | Todd       | Salec Bros. et al., Liles I        | 21-0-22   | 2,301              | 2,280               | Cypress                | 373                                       | May                | 1  |
| 40. Elkton                     | Henderson  | Hobson-Putnam, Stinson I           | 8-D-20    | 1,392              | 1,380               | Devonian               | 370                                       | August             | 1  |
| 41. Henderson                  | Henderson  | Basin Drig. Co., Kasey Bros. I     | 8-P-23    | 2,448              | 2,440               | McClosky               | 370                                       | Dec.               | 1  |
| 42. Pincy                      | Crittenden | J. Resnik, Woodall I               | 7-K-20    | 1,400              | 1,389               | Benoist                | 30  | Sept.              | 1  |
| 43. Robinsville                | Union      | J. Englbarg, Blake I               | 22-P-20   | 2,350              | 2,330               | Cypress                | 210                                       | Oct.               | 1  |
| 44. Uniontown E.               | Union      | Ryan Oil Co., Greenwell I          | 17-P-20   | 2,287              | 2,283               | Cypress                | 130                                       | May                | 1  |
| 45. Waverly                    | Union      | Ashland, Verona Coal "A" I         | 7-O-21    | 2,287              | 1,122               | Waltersburg            | 591,000 cu. ft.                           | Oct.               | 1  |
| 46. Unnamed (shut in gas well) | Daviess    | Sohio, Sauer I                     | 17-P-27   | 1,131              |                     |                        |   | Sept.              | 1  |

<sup>a</sup> Oil and water.

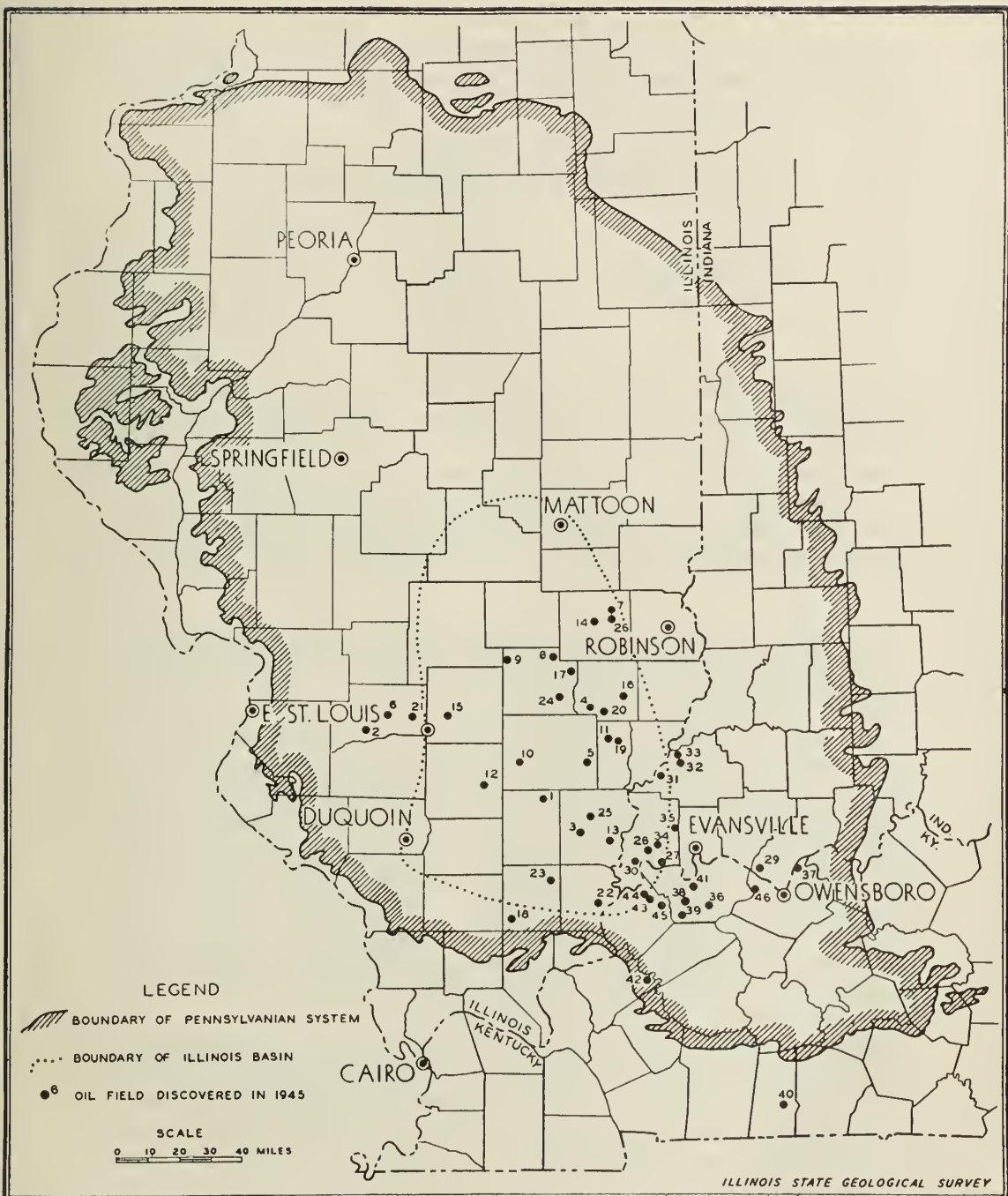


FIG. 1.—Map of Eastern Interior basin showing new oil pools discovered in 1945.  
For list of pools see Table I.

## DEVELOPMENT

Approximately 2,538 wells were drilled for oil or gas in the Eastern Interior basin in 1945 as compared with 2,967 in 1944, a decrease of 15 per cent. The following table shows the distribution by states.

| NUMBER OF COMPLETED WELLS<br>(Excluding water and gas input wells, salt-water disposal<br>wells and old wells worked over) |       |       |
|--|-------|-------|
|  | 1944  | 1945  |
| Illinois   | 1,991 | 1,761 |
| Southwestern Indiana   | 276   | 259   |
| Western Kentucky   | 700   | 518   |
|  | 2,967 | 2,538 |

## NEW POOLS DISCOVERED

As shown in Table I, 46 new pools were discovered in 1945 in the Eastern Interior basin. Of these new pools, 26 are in Illinois, 9 are in Indiana, and 11 are in Kentucky.

The most noteworthy of the Illinois pools discovered in 1945 are: Brownsville, White County, with 32 wells and a total production to the end of 1945 of 205,000 barrels; Odin, Marion County, with 21 wells and a total production of 84,000 barrels; and Stanford, Clay County, with 9 wells and a total production of 105,000 barrels.

## ILLINOIS

All of the new pool discovery wells in Illinois in 1945 produced from Mississippian formations, 12 in Chester series sandstones, and 14 in the Ste. Genevieve formation of the Lower Mississippian series.

*New producing formations.*—Additional producing formations discovered in Illinois oil pools in 1945 numbered 26, of which 11 were in the Chester series, 14 in the Ste. Genevieve formation of the Lower Mississippian series, and 1 in the Devonian limestone. The Devonian discovery was in the Woodlawn pool, Jefferson County. It was The Texas Company's E. Eubanks Community well No. 1 in Sec. 35, T. 2 S., R. 1 E., total depth 3,746 feet, top of the Devonian at 3,663 feet, initial production 65 barrels of oil.

*Extensions.*—Extensions to pools discovered by outpost wells (from  $\frac{1}{4}$  mile to 2 miles from production) in Illinois numbered 47, of which 1 was in the Pennsylvanian, 16 were in the Chester series, 23 in the Ste. Genevieve, 5 in combinations of Chester and Ste. Genevieve, and 2 in Silurian.

*Exploratory methods and results.*—Subsurface geology and the reflection seismograph continue to be the methods most used in the location of exploratory wells. Of the 26 pools discovered in 1945, the discovery wells of 19 were located on the basis of geology, 4 on a combination of seismograph and geology, 1 on seismograph, and 2 not on any scientific basis.

The only kind of geophysical work reported to have been done in Illinois in 1945 was reflection seismograph, the total amount of which declined from 33 party-months in 1944 to 25 party-months in 1945, a decline of about 24 per cent.

*Wildcat drilling.*—The total number of wildcat completions in Illinois increased from 441 in 1944 to 460 in 1945, an increase of 5 per cent. Of the total, 73 or 16 per cent were successful in obtaining production.

Of the 460 wildcat wells completed in 1945, 232 were located more than 2 miles from production as compared with 261 in 1944. Of the 232 wildcats, 26 or 11 per cent were successful, the same percentage as in 1944.

*Deep testing.*—There was little deep testing in Illinois in 1945. In the Illinois basin (central deeper part of the Eastern Interior basin) only 1 test was drilled below the Mississippian, namely, the well which discovered Devonian production in the Woodlawn pool, Jefferson County.

*Pool development drilling.*—The pools which had the most producing wells added during 1945 were: Clay City Consolidated, Clay and Wayne counties, 112 wells added; Boyd, Jefferson County, 77 wells added; Mattoon, Coles County, 61 wells added; Albion Consolidated, Edwards County, 54 wells added; Bible Grove, Clay, and Effingham counties, 53 wells added.

Most of the drilling in Illinois was in the deep basin area, especially in the following ten counties: Clay, Coles, Edwards, Effingham, Hamilton, Jefferson, Richland, Wabash, Wayne, and White. White ranked first with 230 completions of which 159 were producing wells.

An outstanding feature of 1945 development was the growth of the Mattoon pool, Coles County, in the latter part of the year. This pool was discovered in 1939, but to the end of 1944 it had only 12 producing wells. The successful com-

TABLE II  
SELECTED LIST OF MOST NOTEWORTHY DRY TESTS IN ILLINOIS IN 1945

| <i>Pool</i> | <i>County</i> | <i>Company and Farm</i>   | <i>Location</i>        | <i>Total Depth</i> | <i>Deepest Formation</i> | <i>Depth to Top</i> | <i>Date of Completion</i> |         |
|-------------|---------------|---------------------------|------------------------|--------------------|--------------------------|---------------------|---------------------------|---------|
| 1.          | Clark         | Loyd, Bays 1              | 21-11N-12W             | 2,432              | Devonian                 | 2,376               | 4-24-45                   |         |
| 2.          | Huey          | Clinton                   | Mosebach, Jentzen 1    | 29-2N-2W           | 2,720                    | Devonian            | 2,685                     | 10-2-45 |
| 3.          | Clinton       | Big Chief, Gieseke 1      | 9-2N-5W                | 2,042              | Plattin                  | 2,866               | 8-7-45                    |         |
| 4.          | Hancock       | Heavener, Broadhead 1     | 14-5N-5W               | 1,000              | St. Peter                | 941                 | 6-26-45                   |         |
| 5.          | Collinsville  | Madison                   | Benoist, Keller 4      | 8-3N-8W            | 2,105                    | St. Peter           | 2,177                     | 1-9-45  |
| 6.          | Madison       | Eason, Albrecht 1         | 20-5N-5W               | 2,719              | Trenton                  | 2,618               | 10-9-45                   |         |
| 7.          | Tazewell      | Guengerich, Mathis 2      | 24-25N-3W              | 2,235              | Shakopee                 | 2,210               | 11-20-45                  |         |
| 8.          | Union         | Mims, Potashnick 1        | 26-13S-3W              | 1,525              | Joachim                  | ?                   | 11-20-45                  |         |
| 9.          | Cordes        | Washington                | Shell, Sharkowski 13-D | 2,887              | Devonian                 | 2,735               | 12-18-45                  |         |
| 10.         | Washington    | Inland Oil, Lichtenfels 1 | 22-1S-3W               | 2,808              | Devonian                 | 2,734               | 9-4-45                    |         |

pletion of a wildcat well in July of 1945 extended the pool 2 miles southwest and started an active drilling campaign. There were extensions toward the north, west, and south until by the end of 1945 the pool was 8 miles long north and south, and about 2 miles wide at the widest part. At the end of 1945 there were 68 wells in the Mattoon pool with a total daily yield of about 6,500 barrels of oil, and there were about 100 drilling wells in the area or about one third of the total

drilling in the state. Production is mainly from the Rosiclare sandstone member of the Ste. Genevieve formation and the Cypress sandstone.

The development of the Mattoon pool has led to increased interest in the possibilities of the northern part of the Illinois basin which has had relatively few wildcat tests as compared with the southern part. As a result Coles, Cumberland, Shelby, Moultrie, and some adjacent counties will probably have increased exploratory drilling in 1946.

Drilling is expected to continue through 1946 at about the same rate as in 1945. The expiration during the year of a large acreage of 10-year leases in the Illinois basin will probably result in increased wildcat testing.

#### SOUTHWESTERN INDIANA

The following statement on southwestern Indiana was furnished by R. E. Esarey, professor of geology, Indiana University, Bloomington, Indiana.

The most important discoveries in southwestern Indiana during the year 1945 were made in western Gibson County (Table I, Nos. 31, 32, 33). One of these, the Lysle pool, opened by the Deep Vein Coal Company's Fee 1, might develop into a major pool. In addition to the present producing sands, other Chester beds and the Ste. Genevieve may be saturated. The entire area is under lease and will be thoroughly tested during the coming drilling season.

Extensions to several of the old pools in northeastern Gibson County have been made with the finding of saturation in both shallower and deeper beds. Most of the wells were small producers, but the Shoultz well of the Chester Oil Company had an initial production of 250 barrels. There is continued activity in this area.

New producing beds were found in the Jeffries pool in Posey County, which will add materially to that county's total production. Mink Island and Point Township have had several good completions during the year. Knox County is being prospected more thoroughly (core-drilling and slim-hole testing) but only a few locations have been made. Extensions to the St. Thomas and St. Francisville pools look encouraging, but the areas are not sufficiently developed to make satisfactory evaluations.

Some prospecting for Devonian production by coring and geophysical work is being carried on in Sullivan and Vigo counties. However, no leasing or testing is known to have started yet.

An interesting deep test<sup>3</sup> was R. D. Brown's Ada Bingham No. 1, Sec. 16, T. 1 S., R. 11 W., in the abandoned Patoka pool, Gibson County, Indiana, total depth 6,198 feet, completed in December, 1945. It was abandoned with a hole full of sulphur water after penetrating the St. Peter sandstone for 118 feet.

#### WESTERN KENTUCKY

The following statement regarding developments in Kentucky in 1945 was

<sup>3</sup> *Oil and Gas Jour.*, Vol. 44, No. 41 (February 16, 1946), p. 111.

furnished by D. J. Jones, State geologist, Lexington, Kentucky.

Preliminary figures for 1945 indicate that Kentucky oil production slightly exceeded 10,000,000 barrels, and for the second year in succession has topped all previous records.

Since the close of the war the number of exploratory wells has fallen off, and the total number drilled in western Kentucky in 1945 was slightly more than 500 as compared with 700 for the previous year. The decrease in wildcat tests is especially evident in the counties where there is little or no production, in spite of the fact that a number of them may become important producers. This observation applies particularly to those counties in the southern part of the basin.

Continued development in Henderson, Union, and Webster counties has been responsible for a very large percentage of the increase in production, and a total of 323 wells were drilled in these counties.

Production has been developed from eleven formations, ranging from basal Pottsville to the "Corniferous." A small well producing from the "Corniferous" was reported from Todd County. This outpost should stimulate Devonian testing throughout much of this part of the basin.

The formations furnishing the greater part of the new production were the Palestine, Tar Springs, Hardinsburg, Cypress, Bethel, and the McClosky. A summary of drilling operations reveals that out of a total initial production of approximately 30,000 barrels, a total of 28,900 barrels was produced from these formations.

Five tests penetrated beds of Ordovician age, none of which was productive.

Ten new pools were developed during the year.

Daily production for the month of December, 1945, averaged approximately 29,400 barrels as compared with 29,000 for the same month of 1944. This indicates the probability that 1946 production figures will exceed those of 1945.

