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GEOLOGICAL SURVEY

Petroleum Developments in Illinois and Indiana during 1928

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*for name  
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Introduced by M. M. Leighton, Chief

The general unfavorable conditions in the petroleum industry are well reflected by the activity in the Illinois and Indiana fields. In spite of drilling in some attractive areas in Indiana which had been partially developed the previous year, the number of new wells in both states was less than for 1927. Apparently little change is to be expected in the amount of drilling in 1929, although development <sup>continue</sup> will be ~~in progress~~ in recently discovered areas of considerable promise in both states.

The production of oil decreased about <sup>500,000</sup> half a million barrels in Illinois from the 1927 figure, and increased about 200,000 barrels in Indiana. The changes in annual production in both states for the years 1924 to 1928 inclusive are shown in figure 1. The curves are projected for the 1929 production, which is estimated at approximately <sup>6,000,000</sup> ~~six~~ million barrels for Illinois and <sup>1,000,000</sup> ~~one~~ million barrels for Indiana.

Further details of the developments in each state follow.

### Illinois

*Production from*

*has*

Most of the wells in the State have declined to such a small

daily average ~~production~~ that, at the low price paid for oil, ~~they made~~ <sup>the</sup>

*amounts to*

*more than*

→ 1 little if any revenue above operating expenses. The proved productive

areas were largely developed before the start of the year, <sup>and</sup> Low prices

for crude oil were discouraging <sup>ed</sup> to wildcatters <sup>drilling in new areas,</sup> and as a result of this

combination of conditions, the number of wells drilled in the Illinois

fields fell below that for any year since the development of commercially

important oil production in the State.

Although no new pools were under development at the beginning of 1928, one pool of apparent commercial importance was discovered by the Ohio Oil Company in southwestern Illinois near Dupou, in St. Clair County, and favorable showings of oil in a well in southeastern Illinois, near Harrisburg in Saline County, indicate the success of wildcat operations in the State during the year. Other developments <sup>consisted of</sup> ~~were~~ <sup>ding</sup> extensions to proved producing areas or drilling to deeper sands in producing fields.

The total production of Illinois continued to decline during 1928, although the decline was slightly less than for the previous year.

Probably the decrease in production decline was due to the fact that <sup>in 1926</sup> there was an appreciable portion of the State total during 1926 which was flush production, <sup>which</sup> and declined rapidly during 1927. During 1928, however, ~~this effect of flush production was not present, and the decline~~ <sup>approximates</sup> ~~represents the normal decline of the average well in the State without~~ <sup>decrease of the old wells.</sup> ~~any effect of new production.~~ As the production curve, fig. 1 <sup>we</sup> shows, the total production for Illinois declined from about 8,000,000 barrels in 1924 to about 6,500,000 barrels in 1928. The largest part of this decline took place during 1927 and 1928, for no important new production was brought in during these years as had been during the other years.

In spite of the low price which will probably be maintained during all of 1929 for Illinois oil, there <sup>are</sup> ~~is a good prospect~~ that new production from the Dupre area will help to check the rate of decline of the State as a whole, and that the total for the year will be about 6,000,000 barrels.

Field developments as reported by the Oil and Gas Journal and supplemented by reports of the State Geological Survey ~~scout~~ are given in the table following. As the table shows, <sup>HH wells</sup> the greatest number of wells were <sup>in one county, were located</sup> drilled in Crawford County with 44 wells. Wabash County

## Summary by Counties

County -	Number of Completions	Total Initial Production	Dry holes	Gas	Old Wells Abd.
Clark	9	85	5	0	0
Crawford	44	501	12	6	6
Cumberland	3	3	2	0	0
Henderson	3	2	2	0	0
Jefferson	1	0	1	0	0
Knox	2	0	2	0	0
Lawrence	28	403	4	0	21
Livingston	1	0	1	0	0
Macon	1	0	1	0	0
Madison	2	0	2	0	0
Marion	1	0	1	0	3
Marshall	1	0	1	0	0
Morgan	1	8	0	0	0
McDonough	1	0	1	0	0
Saline	1	5	0	0	0
Shelby	1	0	1	0	0
St. Clair	4	165	2	0	0
Tazewell	1	0	1	0	0
Wabash	40	668	19	2	15
Total	145	1840	58	8	45

had practically the same number. More than half the total number of wells drilled in the State were located in these <sup>two</sup> counties. One of the interesting features of the developments of the year was the widespread distribution of the wildcat drilling, which was undertaken in Morgan, McDonough, Tazewell, Marshall, Madison, Marion, St. Clair, Macon, Shelby, Clay, Knox, Warren, Saline, Rock Island, and Livingston counties.

The Dupo field in St. Clair County near St. Louis was the <sup>most important</sup> ~~greatest~~ discovery of ~~proved merit~~ made during 1928 in Illinois oil operations. The discovery well was drilled by the Ohio Oil Company on a location made by E. R. Brockway, their geologist, and produced about 150

barrels per day from the "Trenton" lime at 660 feet. This discovery is <sup>well</sup> located in a northern extension of the Columbia-Waterloo anticline on which the Waterloo pool was developed in 1921. The northern <sup>ward</sup> extension of the anticline <sup>was</sup> had been mentioned in a Survey publication in 1921, but several dry holes were drilled along the axis north of the Waterloo field. <sup>and</sup> For that reason operators lost interest in <sup>the</sup> that territory. A second discovery of some promise was made in a well <sup>drilled</sup> about five miles southeast of Harrisburg in Saline County. A gas blowout <sup>occurred</sup> took place in this well at a depth of 1413 feet in the early part of November, 1928, and as a result the drilling rig was destroyed. Deeper drilling in the well showed that the <sup>producing</sup> sand was thin. The best available information indicates that this well will probably produce 5 barrels or less per day.

A comparison of the logs of the various wells which have been drilled southeast of Harrisburg has failed to demonstrate the presence of any folded structure which might explain the accumulation of the oil, and present information suggests that <sup>the presence</sup> lenticular sand <sup>bodies</sup> conditions in the Chester formation <sup>in oil accumulation</sup> in which the oil occurs is the controlling factor. In that case the discovery of other producing areas of a similar character will probably be expensive and difficult.

The Wabash County operators were successful in extending the producing area in that field to ~~some extent~~ during the year, but compared with the large amount of drilling <sup>done</sup> a few years ago, the field was fairly quiet ~~for the most part~~. The principal developments took place in the vicinity of Allendale. One deep well to the Ste. Genevieve lime was drilled south of Allendale but there was little other development except in drilling to the Biehl sand <sup>in new wells</sup> near <sup>older</sup> producing wells.

During the early part of 1928 two developments seemed to be promised for Lawrence County. The first of these was in the southeast part of the county about a mile south of the old Murphy pool; Although <sup>but</sup> three wells were drilled here, the production obtained was not ~~sufficiently~~ <sup>enough warrant</sup> large <sup>to</sup> ~~cause~~ a more extensive development. Drilling in the second <sup>areas</sup> of these <sup>in</sup> the northern part of Petty Township along the Crawford County line resulted in <sup>northward</sup> <sup>of</sup> an extension ~~to~~ the producing area, ~~to the north~~. Production here was obtained from lower Chester sands corresponding to the Kirkwood, Tracey, and possibly the McClosky sands of the Lawrence County fields. A portion of this development also took place in Southwest and Martin Townships, Crawford County, and is still in progress.

Outside of the southern part of Crawford County, there was

scattered development, Most<sup>ly</sup> of this took place within (5) or (6) miles of Robinson. ~~The~~ core drilling with a cable tool core-bit, undertaken by the Associated Producers Company in the area of their repressuring project north of Robinson, was one of the outstanding features of the other developments in the County.

The most interesting well drilled in Clark County was a test <sup>by</sup> of the Trenton Rock Oil and Gas Company on the Martinsville dome. The new well was drilled through the producing pays in the Kinderhook shale and the top of the Devonian limestone to test the Kimmswick<sup>g</sup> ("Trenton") limestone. Although this well was drilled so late in the year that its rate of production is not known, reports are that it will not make a very profitable producer. A second deep well was drilled during the year in Clark County about (3) miles south of West Union, but was in a synclinal area and failed to find production.

The testing of the Media structure in Henderson County by Pendarvis et al was one of the interesting developments in western Illinois. The geologic features of the area were determined by the State Geological Survey, and reported in Illinois Petroleum No. 13. The well drilled most nearly in the location recommended in this report found a

fairly good showing of oil at the horizon of the Hoing sand, the producing bed in the Colmar-Plymouth field about 30 miles to the south.

An additional well was completed south of Macomb in McDonough County in the Gin Ridge district. This location is about (4) miles east of the producing area at Plymouth, and is only a short distance from a well completed in 1926 which produced about (7) barrels of heavy oil *daily* from the Hoing sand.

Other interesting wildcat wells were drilled in Clay County about 25 miles south of Effingham, in Marion County about (10) miles south of Salem, near the town of Kell, and in Jefferson County about (7) miles south of Mt. Vernon near Ina. All of these wells have been drilled to more than 2000 feet depth. The Clay County well is still operating; the other wells have been abandoned.

The prospects of new developments in Illinois outside of the Dupo and Harrisburg areas do not appear particularly good at the present time. Further, as stated earlier in this report, the general conditions of the oil industry are not favorable for extensive new work. Accordingly, it is expected that there will be but little more drilling in the State during 1929 than there was during 1928.

## Indiana

For the second successive year the total production for the state of Indiana showed a slight increase over the previous year. This was again due to the considerable increase in the production in the southwestern portion of the State which more than offset the decline of the older Trenton reek fields in the northeastern section. The production curve<sup>(fig 1)</sup> shows that the annual production for the past few years had been slightly less than 1,000,000 barrels until 1928.

The first development of the Shell Company in Indiana was in Gibson County about three miles west of Oakland City. The well obtained oil and gas production from a sand near the base of the Chester at a depth of about 1400 feet, and it appears that a new producing area has been discovered. The new well is located about five miles south of the Oatsville pool which was discovered in 1921. Reports indicate that a considerable territory in the adjacent portions of Indiana is being leased ~~up~~ and that some prospecting will probably be undertaken in the area in spite of the unfavorable general oil conditions.

A second discovery was made in Spencer County, north of the Owensboro, Kentucky field. No wells of important size are reported for

this area, but the operators appear to be interested in testing their theory that the Owensboro field will continue north into Indiana, and after being encouraged in the idea by finding some production, are likely to continue their drilling during the coming year.

A third operation of interest was the renewed attempt to find commercial oil production in northwestern Indiana. Several wells were drilled in Pulaski County near Francesville in an attempt to get new production from the "Trenton" lime in the vicinity of some wells drilled in 1888. Other wells in this territory drilled in 1921 and 1922 found showings of oil and salt water in the "Trenton" lime. The drilling depth is about 1000 feet.

A summary of drilling operations, as given by the Oil and Gas Journal follows:

Summaries by Counties

County -	Complete	Total Initial Production	Dry holes	Gas wells	Old Wells Abandoned
Adams	5	56	0	0	5
Allen	3	0	1	2	0
Blackford	2	0	2	0	0
Crawford	1	0	1	0	0
Daviess	5	18	3	0	0
Decatur	6	0	0	6	0
Delaware	0	0	0	0	29
Floyd	1	0	0	1	0
Grant	2	0	2	0	0
Gibson	42	550	19	5	6
Harrison	12	0	2	10	0
Huntington	0	0	0	0	18
Jasper	1	0	1	0	0
Jay	10	30	7	0	14

La Grange	1	0	0	1	0
Madison	4	10	2	1	0
Marshall	1	0	1	0	0
Martin	3	0	2	1	0
Perry	1	0	1	0	0
Pike	21	180	10	4	10
Pulaski	1	0	1	0	0
Rush	6	0	1	5	0
Spencer	16	93	8	1	0
Stark	3	0	3	0	0
Steuben	1	5	0	0	0
Sullivan	28	503	9	1	2
Vigo	27	975	3	0	0
Warrick	1	0	1	0	0
Wells	0	0	0	0	1
Randolph	2	0	2	0	9
Total	<u>206</u>	<u>2420</u>	<u>82</u>	<u>38</u>	<u>94</u>

The large number of counties listed in this table shows the wide geographical distribution of the oil developments. In addition to the new developments already mentioned, there was drilling near established pools. The most important operation of this type was along the Vigo-Sullivan county line in the vicinity of Middletown. Here a large number of wells were completed in the pay near the top of the Devonian lime which is reached at a depth of about 2100 feet. Other operations of importance were new drilling in the vicinity of the Mt. Olympus pool in northern Gibson County, in the Francisco area in central eastern Gibson County, and in the southwestern part of Daviess County. Deep wildcats<sup>wells</sup> were drilled a few miles north of Evansville, and a few miles south of Covington<sup>but</sup> without success.

Although the Middletown and Francisco pools, which have made important contributions to the new production of the state during the past two years are largely drilled up, some additional drilling is looked for in both of these areas during 1929. It is expected that this development combined with the new developments already started in Spencer and Gibson Counties will probably offset the decline in production of the older wells in the State so that the total production of Indiana for 1929 will not be far from 1,000,000 barrels.