

L.G.S:  
P 28  
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Geol Survey

Press Bulletin Series

For The Oil And Gas Industry

STATE OF ILLINOIS  
HENRY HORNER, *Governor*  
DEPARTMENT OF REGISTRATION AND EDUCATION  
JOHN J. HALLIHAN, *Director*  
DIVISION OF THE  
STATE GEOLOGICAL SURVEY  
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No. 28

ILLINOIS PETROLEUM

August 8, 1936

Oil and Gas Development in Illinois in 1935\*

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(Presented before the American Institute of Mining and Metallurgical Engineers, New York Meeting, February, 1936)

DRILLING activity increased in Illinois in 1935. There were 34 completions as compared with 26 in 1934 and 18 wells were drilling at the end of 1935. Some large blocks of acreage were leased in Marion and Clay counties near the central part of the Illinois structural basin. Production of oil in the state totaled 4,305,000 bbl., a decrease of 4 per cent from that of 1934. There was some curtailment of production in the early part of 1935 but none after April 30 as shown in the following table.

PERIOD	PERCENTAGE PRODUCED OF POTENTIAL PRODUCTION (USING SEPTEMBER 1934 AS BASIS)
Jan. 1–Feb. 20.....	79
Feb. 21–Feb. 25.....	85
Feb. 26–Feb. 28.....	79
Mar. 1–Mar. 11.....	85
Mar. 12–Mar. 31.....	100
Apr. 1–Apr. 9.....	80
Apr. 10–Apr. 30.....	86
May 1–Dec. 31.....	100

This is equivalent to an average curtailment throughout the year of 5 per cent.

The price of Illinois crude oil at the wells remained constant during 1935 at \$1.13 per barrel. A small amount of oil was sold at a lower price, notably from the Dupo field, but to arrive at a value for the state's production there would be little error in assuming an average price of \$1.13, giving a total value of \$4,864,465.

\* Published with the permission of the Chief, Illinois State Geological Survey, Urbana, Illinois. Manuscript received at the office of the Institute March 5, 1936. Reprinted from *Trans. A.I.M.E.* (1936) **118**, 238–250.

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FEB 04 1936

TABLE 1.—*Oil and Gas Production in Illinois*

Line Number	Field, County	Age, Years to End of 1933	Area Proved, Acres			Total Oil Production, Bbl.			
			Oil	Gas	Total	To End of 1935	During 1934	During 1935	Daily Average during Nov. 1935
1	Warrenton-Borton, <i>Edgar</i> .....	29	100	0	100	26,500±	730±	550±	1.5
2	Westfield (Parker Twp.), <i>Clark</i> ,								
3	<i>Coles</i> .....	31	9,000	50	9,050	x	x	x	x
4			850	70	920	x	x	x	x
5			9,000	0	9,000	x	x	x	x
6			1,500	0	1,500	x	x	x	x
7	Siggins (Union Twp.) <i>Cumberland</i> ,								
8	<i>Clark</i> .....	29	3,580	75	3,655	x	x	x	x
9			3,135	55	3,190	x	x	x	x
10			435	15	450	x	x	x	x
11			855	105	960	x	x	x	x
12	York, <i>Cumberland</i> .....		310	40	350	x	x	x	x
13	Casey, <i>Clark</i> .....	29	1,925	55	1,980	x	x	x	x
14			190	15	205	x	x	x	x
15			400	0	400	x	x	x	x
16			1,525	15	1,540	x	x	x	x
17	Martinsville, <i>Clark</i> .....	28	710	155	865	x	x	x	x
18			15	20	35	x	x	x	x
19			275	35	310	x	x	x	x
20			105	0	105	x	x	x	x
21			170	0	170	x	x	x	x
22			195	0	195	x	x	x	x
23			5	0	5	x	x	x	x
24	North Johnson, <i>Clark</i> .....	28	1,320	20	1,340	x	x	x	x
25			1,115	0	1,115	x	x	x	x
26			160	0	160	x	x	x	x
27			820	5	825	x	x	x	x
28			215	0	215	x	x	x	x
29	South Johnson, <i>Clark</i> .....	28	1,715	65	1,780	x	x	x	x
30			185	5	190	x	x	x	x
31			295	0	295	x	x	x	x
32			1,675	35	1,710	x	x	x	x
33			845	5	850	x	x	x	x
34	Bellair, <i>Crawford</i> , <i>Jasper</i> .....	28	1,300	5	1,305	x	x	x	x
35			1,165	0	1,165	x	x	x	x
36			315	0	315	x	x	x	x
37			910	0	910	x	x	x	x
38	Clark County Division <sup>1</sup> .....		19,960	465	20,425	50,986,000±	507,000	479,000	1,350
39	Main <sup>2</sup> , <i>Crawford</i> .....	29	35,135	515	35,650	x	x	x	x
40			340	0	340	x	x	x	x
41			33,795	510	34,305	x	x	x	x
42			1,000	0	1,000	x	x	x	x
43	New Hebron, <i>Crawford</i> .....	26	1,350	210	1,560	x	x	x	x
44	Chapman, <i>Crawford</i> .....	21	1,045	515	1,560	x	x	x	x
45	Parker, <i>Crawford</i> .....	28	1,310	30	1,340	x	x	x	x
46	Allison-Weger, <i>Crawford</i> .....	y	1,075	20	1,095	x	x	x	x
47	Flat Rock <sup>3</sup> , <i>Crawford</i> .....	y	1,375	545	1,820	x	x	x	x
48	Birds, <i>Crawford</i> , <i>Lawrence</i> .....	y	4,370	115	4,485	x	x	x	x
49	Crawford County Division <sup>4</sup> .....		45,655	1,945	47,600	138,844,000	1,572,000	1,532,000	4,400
50	Lawrence, <i>Lawrence</i> , <i>Crawford</i> .....	29	24,150	1,550	25,700	x	x	x	x
51			5,015	35	5,050	x	x	x	x
52			2,240	0	2,240	x	x	x	x
53			345	1,095	1,440	x	x	x	x
54			15,960	220	16,180	x	x	x	x
55			4,020	200	4,220	x	x	x	x
56			6,950	0	6,950	x	x	x	x
57	St. Francisville, <i>Lawrence</i> .....	y	420	0	420	x	x	x	x
58	Lawrence County Division <sup>5</sup> .....		24,570	1,550	26,120	217,435,000	1,908,000	1,785,000	5,100

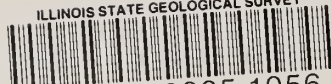
<sup>1</sup> Total of lines 1, 2, 6, 10, 11, 15, 22, 27, 32.<sup>2</sup> Includes Kibbie, Oblong, Robinson & Hardinsville.<sup>3</sup> Includes Swearingen Gas.<sup>4</sup> Total of lines 37, 41, 42, 43, 44, 45, 46.<sup>5</sup> Total of lines 48 and 55

TABLE 1.—(Continued)

Line Number	Average Oil Production, Bbl.			Total Gas Production, Millions Cubic Feet				Number of Oil and/or Gas Wells							
	Per Acre to End of 1935 <sup>b</sup>	Per Acre-foot to End of 1935	Per Well Daily during Nov. 1935	To End of 1935	During 1934	During 1935	Maximum Daily during 1935	Completed to End of 1935	During 1935			At End of 1935			
									Completed	Abandoned	Temporarily Shut Down	Producing Oil Only	Producing Oil and Gas <sup>c</sup>	Producing Gas Only	Total Producing
1	275	x	0.18	0	0	0	0	22	0	0	4	8	0	0	8
2	x	x	x	x	0	0	0	1,610	0	5	32	380	0	0	380
3	x	x	x	x	0	0	0	184	0	0	y	y	0	0	y
4	x	x	x	x	0	0	0	1,413	0	y	y	y	0	0	y
5	x	x	x	x	x	0	0	12	0	y	y	y	0	0	y
6	x	x	x	x	0	0	0	995	0	3	y	916	y	0	916
7	x	x	x	x	0	0	0	854	0	0	y	y	y	0	y
8	x	x	x	x	0	0	0	90	0	0	y	y	y	0	y
9	x	x	x	x	0	0	0	192	0	0	y	y	y	0	y
10	x	x	x	x	0	0	0	70	0	0	y	44	0	0	44
11	x	x	x	x	0	0	0	532	0	8	7	506	0	0	506
12	x	x	x	x	0	0	0	41	0	0	y	y	0	0	y
13	x	x	x	x	0	0	0	82	0	0	y	y	0	0	y
14	x	x	x	x	0	0	0	319	0	0	y	y	0	0	y
15	x	x	x	x	0	0	0	213	0	32	y	135	0	0	135
16	x	x	x	x	0	0	0	7	0	y	y	y	0	0	y
17	x	x	x	x	0	0	0	63	0	y	y	y	0	0	y
18	x	x	x	x	0	0	0	21	0	y	y	y	0	0	y
19	x	x	x	x	0	0	0	34	0	y	y	y	0	0	y
20	x	x	x	x	0	0	0	39	0	y	y	y	0	0	y
21	x	x	x	0	0	0	0	1	0	0	0	1	0	0	1
22	x	x	x	x	x	x	x	485	1	0	29	428	y	0	428
23	x	x	x	x	x	x	x	296	0	y	y	y	y	0	y
24	x	x	x	x	x	x	x	32	0	y	y	y	0	0	y
25	x	x	x	x	x	x	x	177	0	y	y	y	y	0	y
26	x	x	x	0	0	0	0	44	1	y	y	y	y	0	y
27	x	x	x	x	x	x	x	533	0	14	1	485	y	0	485
28	x	x	x	x	x	x	x	38	0	y	y	y	y	0	y
29	x	x	x	x	x	x	x	59	0	y	y	y	y	0	y
30	x	x	x	x	x	x	x	401	0	y	y	y	y	0	y
31	x	x	x	x	x	x	x	170	0	y	y	y	y	0	y
32	x	x	x	x	x	x	x	485	0	2	y	407	0	0	407
33	x	x	x	x	x	x	x	309	0	0	y	y	0	0	y
34	x	x	x	x	x	x	x	63	0	0	y	y	0	0	y
35	x	x	x	x	x	x	x	182	0	0	y	y	0	0	y
36	2,554	77	0.4	x	y	y	y	4,944	1	64	73	3,309	y	0	3,309
37	x	x	x	x	x	x	x	7,312	2	131	165	5,375	y	0	5,375
38	x	x	x	x	x	x	x	68	0	y	y	y	0	0	y
39	x	x	x	x	x	x	x	7,134	2	y	y	y	y	0	y
40	x	x	x	x	x	x	x	108	0	y	y	y	y	0	y
41	x	x	x	x	x	x	x	295	0	17	1	180	0	0	180
42	x	x	x	x	x	x	x	193	0	8	y	83	0	0	83
43	x	x	x	x	x	x	x	255	0	0	y	221	0	0	221
44	x	x	x	x	x	x	x	146	0	0	y	72	0	0	72
45	x	x	x	x	x	x	x	281	1	3	3	161	0	0	161
46	x	x	x	x	x	x	x	683	1	3	9	474	0	0	474
47	3,041	121	0.6	x	y	y	y	9,165	4	162	179	6,565	y	1	6,566
48	x	x	x	x	x	x	x	4,383	2	35	6	3,331	y	y	3,331
49	x	x	x	x	x	x	x	1,228	0	y	y	y	y	y	y
50	x	x	x	x	x	x	x	475	2	y	y	y	y	y	y
51	x	x	x	x	x	x	x	243	0	y	y	y	y	y	y
52	x	x	x	x	x	x	x	3,017	0	y	y	y	y	y	y
53	x	x	x	x	x	x	x	684	0	y	y	y	y	y	y
54	x	x	x	x	x	x	x	950	0	y	y	y	y	0	y
55	x	x	x	x	x	x	x	54	0	y	y	45	y	y	45
56	8,849	x	1.5	x	y	y	y	9,164	3	35	6	3,376	y	y	3,376

<sup>b</sup> Footnotes to column heads and explanation of symbols are given on page 13.

TABLE 1.—(Continued)

Line Number	Average Depth, Ft.		Oil Production Methods at End of 1935		Pressure, Lb. per Sq. In. <sup>e</sup>		Character of Oil Approx. Average during 1935					Character of Gas, Approx. Average during 1935		
	Bottoms of Productive Wells	To Top of Productive Zone	Number of Wells	Injection into Reservoir <sup>d, 8</sup>	Average at End of		Gravity <sup>13</sup> A. P. I. at 60° F.			Sulfur, Per Cent	Base <sup>7</sup>	B.t.u. per Cu. Ft.	Gal. Gasoline per M. Cu. Ft.	
					Initial	1934	1935	Maximum	Minimum					Weighted Average
	Pumping													
1	215	159	8	x	x	x	x	x	x	y	y			
2			380		200±	x	x	38.4	28.3	34.0	y	M	x	x
3	376	281	y			x	x	y	y	30.0	y	M	x	x
4	446	334	y			x	x	y	y	33.5	y	M	x	x
5	2,568	2,265	y			x	x	y	y	37.0	y	M	x	x
6			916	A2	x	x	x	(36.9)	27.4	33.0	y	M	x	x
7	465	367	y		x	x	x	y	y	34.0	y	M	x	x
8	562	478	y		x	x	x	y	y	33.6	y	M	x	x
9	590	556	y		x	x	x	y	y	(25.7)	y	M	x	x
10	680	588	44		x	x	x	33.9	30.0	(30.3)	y	M	x	x
11			506		x	x	x	37.2	27.2	29.2	y	M	x	x
12	358	263	y		x	x	x	y	y	(31.9)	y	M	x	x
13	426	309	y		x	x	x	y	y	(30.1)	y	M	x	x
14	505	444	y		x	x	x	y	y	(33.6)	y	M	x	x
15			135	A2	x	x	x	37.5	30.2	36.8	y	M	x	x
16	411	255	y		x	x	x	y	y	y	y	y	x	x
17	511	449	y		x	x	x	y	y	y	y	y	x	x
18	506	477	y		x	x	x	y	y	y	y	y	x	x
19	1,418	1,340	y		x	x	x	y	y	(38.9)	y	M	x	x
20	1,596	1,553	y		x	x	x	y	y	y	y	y	x	x
21	2,830	2,708	1		x	x	x	y	y	39.6	y	M	x	x
22			428		x	x	x	36.2	27.2	31.0	y	M	x	x
23	486	416	y		x	x	x	y	y	y	y	y	x	x
24	451	314	y		x	x	x	y	y	y	y	y	x	x
25	508	465	y		x	x	x	y	y	y	y	y	x	x
26	554	534	y		x	x	x	y	y	y	y	y	x	x
27			485		x	x	x	35.1	28.5	32.2	y	M	x	x
28	549	392	y		x	x	x	y	y	y	y	y	x	x
29	518	453	y		x	x	x	y	y	y	y	y	x	x
30	570	489	y		x	x	x	y	y	y	y	y	x	x
31	618	598	y		x	x	x	y	y	y	y	y	x	x
32			407	AG2	x	x	x	35.6	27.3	28.5	y	M	x	x
33	726	561	y		x	x	x	y	y	32.4	y	M	x	x
34	907	817	y		x	x	x	y	y	y	y	y	x	x
35	920	886	y		x	x	x	y	y	37.0	y	M	x	x
36			3,309	G1 A7 AG13	x	x	x	39.6	25.8	33.0	y		x	x
37			5,375	<sup>10</sup>	425±	y	y	36.8	25.1	33.0	y	M	960	2.5
38	822	508	y		x	x	x	y	y	y	y	y	x	x
39	950	900	y		425±	x	x	36.8	25.1	32.8	y	M	960	2.5
40	1,416	1,337	y	11	x	x	x	y	y	y	y	y	x	x
41	975	940	y		x	x	x	35.0	24.3	30.1	y	y	x	x
42	1,015	995	83	G2 AG1	x	x	x	y	y	y	y	y	x	x
43	1,025	1,000	221		x	x	x	y	y	y	y	y	x	x
44	930	912	72		x	x	x	30.4	22.6	29.5	y	y	x	x
45	945	935	161		x	x	x	26.6	20.1	22.5	y	y	x	x
46	950	930	474	A7	x	x	x	34.1	26.5	31.3	y	y	x	x
47			6,566	<sup>12</sup>	425±	x	x	38.6	18.5	32.5	y	M	960	2.5
48			3,331	A1	650±	x	x	39.3	26.7	32.9	y	M		2.4
49	1,000	800	y		x	x	x	y	y	y	y	y	x	x
50	1,265	1,250	y		x	x	x	y	y	y	y	y	x	x
51	1,345	1,330	y		x	x	x	y	y	y	y	y	x	x
52	1,430	1,400	y		600±	x	x	y	y	y	y	y	x	x
53	1,580	1,560	y		650	x	x	y	y	y	y	y	x	x
54	1,710	1,700	y		x	x	x	y	y	y	y	y	x	x
55	1,865	1,843	45		600	x	x	37.3	37.3	37.3	y	y	x	x
56			3,376	A1		x	x						x	x

<sup>8</sup> Numbers in this column indicate numbers of injection wells.<sup>9</sup> G1, A3, AG11. <sup>10</sup> G15, A24, AG20, W1. <sup>11</sup> G15, A24, AG20, W1. <sup>12</sup> G17, A31, AG21, W1.<sup>13</sup> All gravities given (except those in parentheses) were from data for the year 1925 furnished by the Illinois Pipe Line Co. Gravities in parentheses are for particular samples; see Illinois State Geol. Survey Bull. 54 Table 3. The values have been converted from Baumé to A. P. I. gravities.

TABLE 1.—(Continued)

Line Number	Producing Rock						Number of Dry and/ or Near-dry Holes to End of 1935	Deepest Zone Tested to End of 1935	
	Name	Age <sup>a</sup>	Character <sup>b</sup>	Porosity <sup>c</sup>	Net Thickness, Average Ft.	Structure <sup>d</sup>		Name	Depth of Hole, Ft.
1	Unnamed	Pen	S	Por	z	ML	0	Pen	715
2	See below.					D	99	Trenton (Ordo)	2,918
3	Shallow gas sand	Pen	S	Por	36	D	z		
4	Westfield lime	MisL	L	Por	z	D	z		
5	Trenton (Ordo)	Ordo	L	Cav Por	z	D	z		
6	See below.					D	28	Dev limestone	2,010
7	First Siggins sand	Pen	S	Por	z	D	z		
8	Second and third Siggins sand	Pen	S	Por	z	D	z		
9	Lower Siggins sand	Pen	S	Por	z	D	z		
10	York sand	Pen	S	Por	z	AM	2		960
11	See below.					AM	20	MisL	808
12	Upper gas sand	Pen	S	Por	z	AM	5		
13	Lower gas sand	Pen	S	Por	z	AM	12		
14	Casey sand	Pen	S	Por	z	AM	20		
15	See below.					D	5	St. Peter	3,411
16	Shallow sands	Pen	S	Por	z	D	1		
17	Casey sand	Pen	S	Por	z	D	5		
18	Martinsville sand	MisL	L	Por	z	D	1		
19	Carper	MisL	S	Por	z	D	1		
20	"Niagaran"	Dev	L	Por	z	D	3		
21	Trenton	Ordo	L	Por	z	D	1		
22	See below.					AM	16	Mis	965
23	Claypool sand	Pen	S	Por	z	AM	12		
24	Shallow sands	Pen	S	Por	z	AM	4		
25	Casey sand	Pen	S	Por	z	AM	12		
26	Upper Partlow	Pen	S	Por	z	AM	16		
27	See below.					AM	29	Mis	1,160
28	Claypool sand	Pen	S	Por	z	AM	3		
29	Casey sand	Pen	S	Por	z	AM	11		
30	Upper Partlow	Pen	S	Por	z	AM	29		
31	Lower Partlow	Pen	S	Por	z	AM	10		
32	See below.					AM	14	MisL	1,471
33	"500 Ft." sand	Pen	S	Por	z	AM	3		
34	"800 Ft." sand	Pen	S	Por	z	AM	3		
35	"900 Ft." sand	MisU	S	Por	z	AM	12		
36					33±		213		
37	See below.					ML	200	Trenton (Ordo)	4,620
38	Shallow sand	Pen	S	Por	z	ML	z		
39	Robinson sand	Pen	S	Por	25±	ML	167	Trenton (Ordo)	4,620
40	Oblong	Mis	S or L	Por	z	A, ML	23	Mis	1,479
41	Robinson sand	Pen	S	Por	z	ML	5	MisL	2,056
42	Robinson sand	Pen	S	Por	z	ML	10	Mis	2,279
43	Robinson sand	Pen	S	Por	z	ML	10	Pen?	1,127
44	Robinson sand	Pen	S	Por	z	ML	6	Pen	1,041
45	Robinson (Flat Rock)	Pen	S	Por	z	ML	8	Pen	1,032
46	Robinson sand	Pen	S	Por	z	ML	12	Mis L	1,731
47		Pen, Mis	S	Por	z	ML	251	Trenton (Ordo)	4,620
48	See below.					A	84	St. Peter	5,190
49	Bridgeport sand	Pen	S	Por	40	A	19		
50	Buchanan	Pen	S	Por	15	A	3		
51	"Gas" sand	MisU	S	Por	15	A	5		
52	Kirkwood	MisU	S	Por	30	A	10		
53	Tracy	MisU	S	Por	20	A	11		
54	McClosky	MisL	L	Por	10	A	24		
55	Kirkwood	MisU	S	Por	22	ML	0	Mis	1,900
56							84	St. Peter	5,190

TABLE 1.—(Continued)

Line Number	Field, County	Age, Years to End of 1933	Area Proved, Acres			Total Oil Production, Bbl.			
			Oil	Gas	Total	To End of 1935	During 1934	During 1935	Daily Average during Nov. 1935
57	Allendale, Wabash.....	23	1,670	0	1,670	4,000,000	220,000±	280,000±	760±
58	Southeastern Illinois Field <sup>6</sup> .....		91,845	3,960	95,805	411,265,000	4,207,000	4,077,000	11,611
59	Colmar-Plymouth, McDonough-Hancock.....	215	2,450	0	2,450	1,987,000	81,000	86,800	407
60	Pike County Gas, Pike.....	30		8,960	8,960	0	0	0	0
		Abd. 1930							
61	Jacksonville Gas, Morgan.....	25	30	1,290	1,320	2,100	0	0	0
62	Carlinsville, Macoupin.....	26	30	50	80	x	0	0	0
		Abd. 1925±							
63	Spanish Needle Creek, Macoupin..	20	0	80	80	0	0	0	0
		Abd. 1934							
64	Gillespie-Wyen, Macoupin	20	40	0	40	x	1,095	1,925	5±
		Abd. 1935							
65	Gillespie-Benld Gas, Macoupin...	12	0	80	80	0	0	0	0
		19							
66	Staunton Gas, Macoupin.....	Abd. 1919	0	400	400	0	0	0	0
		56							
67	Litchfield, Montgomery.....	Abd. 1904	100	0	100	22,000	0	0	0
		26							
68	Collinsville, Madison.....	Abd. 1921	40	0	40	715	0	0	0
69	Ayers Gas, Bond.....	13	0	280	280	0	0	0	0
		25							
70	Greenville Gas, Bond.....	Abd. 1923	0	160	160	0	0	0	0
71	Carlyle, Clinton.....	24	915	0	915	3,261,000±	26,400	39,500	124
		17							
72	Frogtown, Clinton.....	Abd. 1933	300	0	300	x	0	0	0
73	Sandoval, Marion.....	26	770	0	770	2,577,000	34,300±	27,000	74
74	Centralia, Marion.....	25	175	0	175	x	y	y	y
75	Wamac, Clinton, Marion, Washington.....	14	250	0	250	330,000±	25,000±	30,000±	70
76	Dupo, St. Clair.....	7	670	0	670	824,500	40,200	51,500	132
		Abd. 1930							
77	Waterloo, Monroe.....	15	125	0	125	166,000	0	0	0
		47							
78	Sparta Gas, Randolph.....	Abd. x	65	100	165	x	0	0	0
		18							
79	Ava-Campbell Hill, Jackson.....	Abd. 1934	70	370	440	25,000	0	0	0
80	Total Illinois <sup>7</sup> .....		97,885	15,730	113,615	421,042,000	4,452,000	4,314,000	12,322

<sup>6</sup> Total of lines 36, 47, 56, 57.<sup>7</sup> Total of lines 58 to 79 inclusive.

TABLE 1.—(Continued)

Line Number	Average Oil Production, Bbl.			Total Gas Production, Millions Cubic Feet				Number of Oil and/or Gas Wells							
	Per Acre to End of 1935 <sup>b</sup>	Per Acre-foot to End of 1935	Per Well Daily during Nov. 1935	To End of 1935	During 1934	During 1935	Maximum Daily during 1935	Completed to End of 1935	During 1935		At End of 1935				
									Completed	Abandoned	Temporarily Shut Down	Producing Oil Only	Producing Oil and Gas <sup>c</sup>	Producing Gas Only	Total Producing
57	2,395	120±	2.3	x	y	y	y	407	0	15	y	326	y	0	326
58	4,510	130±	0.8	x	y	y	y	18,953	7	276	257	13,577	y	0	13,577
59	811	38	1.6	0	0	0	0	454	4	0	15	256	0	0	256
60	0	0	0	x	0	0	0	68	0	0	0	0	0	0	0
61	70	14±	0	x	x	x	x	53	0	y	y	0	0	y	y
62	x	x	0	x	0	0	0	8	0	0	0	0	0	0	0
63	0	0		14.4	0	0	0	7	0	y	0	0	0	0	0
64	x	x	0.6	0	0	0	0	22	0	0	4	8	0	0	
65	0	0	0	135.8	0	0	0	4	0	4	0	0	0	0	0
66	0	0	0	1,050	0	0	0	18	0	0	0	0	0	0	0
67	220	x	0	x	0	0	0	17	0	0	0	0	0	0	0
68	x	x	0	0	0	0	0	5	0	0	0	0	0	0	
69	0	0	0	80.4	13.4	13.4	y	15	0	0	0	0	0	0	8
70	0	0	0	990	0	0	0	4	0	0	0	0	0	0	0
71	3,564±	178±	1.2	0	0	0	0	164	0	0	5	102	0	0	102
72	x	x	0	0	0	0	0	12	0	0	0	0	0	0	0
73	3,347	167±	2.0	0	0	0	0	122	0	0	9	36	0	0	36
74	x	y	y	0	0	0	0	22	0	2	y	3	0	0	3
75	1,320	66	1	0	0	0	0	103	0	2	y	70	0	0	70
76	1,230	24	3.4	0	0	0	0	230	3	9	0	38	0	0	38
77	1,328	y	0	0	0	0	0	23	0	0	0	0	0	0	0
78	x	x	0	x	0	0	0	20	0	0	0	0	0	0	0
79	35	x	0	x	0	0	0	35	0	0	0	0	0	0	0
80	4,301		0.8	x	y	y	y	20,347	18	289	286	14,000	y	8	14,098





TABLE 1.—(Continued)

Line Number	Producing Rock						Number of Dry and/ or Near-dry Holes to End of 1935	Deepest Zone Tested to End of 1935	
	Name	Age <sup>e</sup>	Character <sup>a</sup>	Porosity <sup>i</sup>	Net Thickness, Average Ft.	Structure <sup>i</sup>		Name	Depth of Hole, Ft.
57	Biehl sand	Pen	S	Por	20	AM	43	MisL	2,228
58							591		
59	Hoing sand	Dev	S	Por	21	A	0	Trenton (Ordo)	805
60	Niagaran	Sil	L	Por	10	A	0	St. Peter	893
61	Gas sand	Pen, Mis	S, SL	Por	5	ML	8	Trenton (Ordo)	1,390
62	Unnamed	Pen	S	Por	x	A	0	Pen	410
63	Unnamed	Pen	S	Por	x	D	1	Pen	495
64	Unnamed	Pen	S	Por	x	T	14	Trenton (Ordo)	2,560
65	Unnamed	Pen	S	Por	x	A	0	Pen	575
66	Unnamed	Pen	S	Por	x	A	0	Trenton (Ordo)	2,371
67	Unnamed	Pen	S	Por	x	D	0	Pen	681
68	Trenton	Ordo	L	Por	20	ML	0	Trenton (Ordo)	1,500
69	Lindley	MisU	S	Por	5	A	0	MisL	1,150
70	Lindley	MisU	S	Por	x	A	0	Mis	1,065
71	Carlyle	MisU	S	Por	20	A	17	Sil	2,620
72	Carlyle	MisU	S	Por	7	D	0	Carlyle <i>y</i>	962±
73	Benoist	MisU	S	Por	20±	D	7	Mis	1,732
74	Dykstra, Wilson, Benoist	Pen, MisU	S	Por	20	D, ML	6	MisL	1,779
75	Petro	Pen	S	Por	20	D	0	Benoist	1,484
76	Trenton	Ordo	L	Por Cav	50	A	0	Trenton (Ordo)	819
77	Trenton	Ordo	L	Por	50	A	19	Trenton (Ordo)	845
78	Sparta gas sand	MisU	S	Por	7	D	5	MisU	985
79	Unnamed	MisU	S	Por	18	A	<i>y</i>	Dev	2,530
80							664±		

The following table shows production in Illinois by months in 1935, according to the U.S. Bureau of Mines.

Jan.....	332,000	May.....	382,000	Sept.....	370,000
Feb.....	295,000	June.....	358,000	Oct.....	391,000
Mar.....	370,000	July.....	377,000	Nov.....	369,000
April.....	338,000	Aug.....	379,000	Dec.....	344,000

Of the 34 wells completed in Illinois during the year, 19 were wildcats (Table 2) and 15 were in proved areas.

Wells drilled in 1935 that may open new pools were limited to two gas wells (estimated initial daily open-flow capacity 300,000 and 250,000 cu. ft. respectively), and one small oil well (initial daily production 2 bbl.), all in Lamotte Township (parts of T.6N and T.7N., R 11E.) Crawford County (Table 2, Nos. 9, 11 and 7). The gas horizon is a Pennsylvanian sandstone at depths of 600 and approximately 700 ft. respectively in the two wells. The oil well was in the Tracey sand (basal Chester series).

TABLE 2.—Summary of Drilling Operations in Illinois during 1935

Wildcats Drilled in 1935												
County	Location			Total Depth, Ft.	Surface Formation	Deepest Horizon Tested	Drilled by	Initial Production per Day		Pressure, Lb. per Sq. In.	Remarks (Note Dry Holes Here)	
	Sect on, Survey	Township, Lat.	Range, Long.					Oil, U.S. Bbl.	Gas, Millions Cu. Ft.			
1 Bond	NW.SE.25	6 N.	4 W.	957	Ple <sup>1</sup>	Chester	Rea, Evans et al.	0	50	365	Dry	
2 Christian	NE.SW.29	12 N.	2 W.	455	Ple	Pen	Nokomis Oil Co.					
3 Coles	SW.NW.21	12 N.	9 E.	1050	Ple	Pen	Richard Eke.	2	25	Dry		
4 Clinton	NE.NW.30	2 N.	2 W.	1102	Ple	Chester	W. L. Young G. & R. Co.					
5 Clinton	SW.SW.10	2 N.	2 W.	1344	Ple	Chester	Young Bros.	2	30	Dry		
6 Clinton	SE.NE.35	2 N.	3 W.	1032	Ple	Chester	J. B. Lampen et al.					
7 Crawford	SE.SE.24	7 N.	11 W.	1451	Ple	Ste. Genevieve	Karnes et al.	20	25	Dry		
8 Crawford	NE.NE.25	7 N.	11 W.	888	Ple	Pen	Karnes et al.					
9 Crawford	SW.NW.10	6 N.	11 W.	710	Ple	Pen	Karnes et al.	20	25	Dry		
10 Crawford	SW.SE.2	6 N.	11 W.	1010	Ple	Pen	Salvage Oil & Fuel Co.					
11 Crawford	SW.SW.21	7 N.	11 W.	610	Ple	Pen	Karnes et al.	20	25	Dry		
12 Crawford	NW.SW.25	8 N.	13 W.	983	Ple	Pen	W. M. Goodman et al.					
13 Fayette	NE.SE.17	6 N.	1 W.	1548	Ple	Ste. Genevieve	Hurricane Creek Oil Co.	22	1.05	Dry		
14 Greene	NE.NE.17	11 N.	12 W.	953	Ple	Plattin	K. H. Murray Tr.					
15 Hancock	SW.SE.11	4 N.	9 W.	833	Ple	"Trenton"	J. P. Walker	22	1.05	Dry		
16 Hancock	SW.eor.33	5 N.	8 W.	755	Ple	Plattin	J. P. Walker					
17 McDonough	SE.NE.31	7 N.	4 W.	546	Ple	Dev	Blandinsville Oil & Gas Co.	22	1.05	Dry		
18 McDonough	NW.NE.31	7 N.	3 W.	575	Ple	Dev	J. P. Walker					
19 Monroe	NW.NE.32	3 S.	10 W.	720	Ple	Trenton	Crouch, Alspach et al.	22	1.05	Dry		
Total												

	In Proven Fields	Wildcats
Number of wells drilling Dec. 31, 1935.....	4	14
Number of oil wells completed during 1935.....	12	2
Number of gas wells completed during 1935.....	0	3
Number of dry holes completed during 1935.....	3	14

<sup>1</sup> Pleistocene.

Two other wells (Table 2, Nos. 12 and 1) indicate extensions to old producing areas. One of these (Table 2, No. 12), an oil well in northern Crawford County, was located in one of the numerous "dry" patches interspersed with the productive areas,  $\frac{1}{4}$  mile from the nearest production to the southeast and to the northeast. The other (Table 2, No. 1) is a gas well and indicates a westward extension for about one mile of the Ayers gas field.

Of the 15 wells drilled in proved areas, 12 were oil producers and 3 were dry holes. Six of the 15 wells were in the Colmar-Plymouth field, McDonough County, and of these four were producers having initial productions of 1, 5, 5 and 8 bbl. respectively. In the southeastern Illinois field, which has produced about 97 per cent of the state's production to date, six wells were drilled, including one deepened in Lawrence County, which was dry in the McClosky. One of the remaining five wells in the southeastern Illinois field was in Clark County, two in Crawford County, and two in Lawrence County, initial productions 1, 2, 4, 5 and 40 bbl. respectively. Three new producers were brought in in the Dupo field, St. Clair County, with initial productions of 70, 125 and 40 bbl. respectively. The average initial production of the 14 new producers in the whole state in 1935 was 23 barrels.

With the recent intensification of the search for new oil reserves, the attention of the industry is being directed toward all areas that seem to have any possibility of production. The deeper portion of the Illinois structural basin is now receiving a good deal of attention. The State Geological Survey has made an investigation in this area, the results of which have been published<sup>1</sup>. Independent geological work by certain oil companies has led to the leasing of some large blocks of acreage, and seismograph surveys are now in progress. It seems likely that drilling will be undertaken before long, especially if the geophysical findings appear encouraging.

The third annual petroleum conference of Illinois-Indiana, jointly sponsored by the Illinois-Indiana Petroleum Association, Illinois State Geological Survey, and Indiana Division of Geology, was held June 1, 1935, at Robinson, Ill. Geologic, engineering and economic problems related to the recovery of petroleum in Illinois and Indiana were discussed by various speakers from within and without these states. It is planned to publish papers presented at the conference. Abstracts have already been published in the *Oil and Gas Journal* and were the subject of editorial comment in the *Petroleum Engineer*.

Water-flooding of oil sands to increase the recovery of oil received much attention from Illinois operators. According to a recent study by

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<sup>1</sup> J. M. Weller and A. H. Bell: Geology and Oil and Gas Possibilities of Parts of Marion and Clay Counties with a Discussion of the Central Portion of the Illinois Basin. Illinois State Geol. Survey *Rept. of Investigations* No. 40 (1936).

the Illinois State Geological Survey, the results of which are to be published, there are 12 intentional floods in the Allendale field, Wabash County. In most of these, water from an upper sand is being allowed to flow by gravity into the oil sand through abandoned wells having defective casing. Large increases in oil production in near-by wells have resulted in most instances, but in some wells the production has already declined considerably below the peak. The production records of the wells in these flood areas indicate a highly permeable sand and consequent rapid movement of the water and oil through it. The increase of production of the Allendale field from about 220,000 bbl. in 1934 to about 280,000 bbl. in 1935 (a 30 per cent increase) is attributed largely to the action of these water-floods.

The air repressuring operation in the Colmar-Plymouth field, McDonough County, begun on a comparatively small scale in February, 1934, is now one of the largest in Illinois. Upon the completion of arrangements to market the oil at a new small refinery close to the field the large compressors were put in operation July 2, 1935. There are now 63 air-input wells in the whole field, old oil wells being used for this purpose. Air is injected at a pressure of 47 to 50 lb. per sq. in. An appreciable increase in production has resulted (Table 1) but since production in the field was considerably restricted between Jan. 1 and July 2, 1935, this is not a true index to the results obtained. It is expected that the rate of production previous to installation of the repressuring equipment will be increased at least twofold.

Eighteen wells were acidized in Illinois fields in 1935. In seven of these the oil yield was substantially increased; in another seven there was no increase in yield; for the remaining four no data are available. All of the seven wells in which the yield was increased are in Lawrence County and produce from the McClosky "sand" in the Ste. Genevieve oolitic limestone. Of the 11 wells that either gave no increase or for which data are not available, one is in the Casey pool, Clark County, two are "Trenton" wells in the Dupo field, and the remaining eight are McClosky wells in Lawrence County.

Up to date the restricted market for crude oil has discouraged acid treatment of Illinois wells, but with improvement in the economic situation this method of stimulating oil yield will probably find increasing use<sup>1</sup>.

Data on the production of natural gas and natural gasoline in 1935 are not yet available. According to the U. S. Bureau of Mines Statistical Appendix to Minerals Year Book, the production of natural gas in Illinois was 1631 million cubic feet in 1933 and 1838 million cubic feet

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<sup>1</sup> For a discussion of possible areas for acid treatment in Illinois see A. H. Bell: Possible Areas for Acid Treatment in Illinois. Papers on Improved Methods of Exploring for and Recovering Petroleum in Illinois. Illinois State Geol. Survey (1934) 49-52.

in 1934. The average value in cents per thousand cubic feet at the wells in 1934 was 7.7 and the total value at the wells \$144,000. Data concerning natural gasoline from 1930 to 1934 inclusive are given in Table 3.

Production data for oil and gas were furnished by the U.S. Bureau of Mines; the Illinois Pipe Line Co., Findlay, Ohio; the Ohio Oil Co., Marshall, Ill.; Petro Oil and Gas Co., St. Louis, Mo.; Bond County Gas Co., Greenville, Ill.; and Southwestern Oil and Gas Co., Sandoval, Ill. Mr. William C. Imbt, of the Survey staff, assisted the writer in assembling the statistical data for this report.

TABLE 3.—*Natural Gasoline Produced in Illinois*

Year	Production, Thousands of Gallons	Value		Natural Gas Treated, Millions Cu. Ft.	Yield, Gal. per M. Cu. Ft.
		Total Thousands of Dollars	Unit, Cents		
1930	6840	420	6.1	2721	2.52
1931	5024	204	4.6	2106	2.39
1932	4558	139	3.2	1924	2.37
1933	3673	194	5.3	1701	2.14
1934	3810	183	4.8	1512	2.52

PRODUCED BY COUNTIES IN 1934

Clark and Cumberland..	391	20		173	2.26
Crawford.....	1809	91		691	2.74
Lawrence and Wabash..	1610	72		648	2.48
State total.....	3810	183		1512	2.52

FOOTNOTES TO COLUMN HEADINGS—TABLE 1

<sup>a</sup> In areas where both oil and gas are produced, unless gas is marketed outside the field, such areas are included in column headed "Oil." Manufacture of casinghead gasoline and carbon black is interpreted as outside marketing of gas.

<sup>b</sup> Production per acre is determined by dividing into the number of barrels of oil the sum of the number of acres assigned to "Oil" plus such number of acres of the total assigned to "Oil and gas" as represents the portion thereof occupied by oil.

<sup>c</sup> Wells producing both oil and gas are classified as "Producing oil only" unless gas from them is marketed off the lease.

<sup>d</sup> W, water; G, gas; A, air; AG, air-gas mixture. Numbers following letters indicate number of injection wells.

<sup>e</sup> Bottom-hole pressures are preceded by "e." All other figures represent pressures at casinghead with well closed.

<sup>f</sup> P, paraffin; A, asphalt; M, mixed.

<sup>g</sup> Cam, Cambrian; Ord, Ordovician; Sil, Silurian; Dev, Devonian; Mis, Mississippian; MisL, Lower Mississippian; MisU, Upper Mississippian; Pen, Pennsylvanian; Per, Permian; Tri, Triassic; Jur, Jurassic; CreL, Lower Cretaceous; CreU, Upper Cretaceous; Eoc, Eocene; Olig, Oligocene; Mio, Miocene; Pli, Pliocene.

<sup>h</sup> S, sandstone; SH, sandstone, shaly; Ss, soft sand; ll, shale; L, limestone; LS, limestone, sandy; C, chalk; A, anhydrite; D, dolomite; Da, arkosic dolomite; GW, granite wash; P, serpentine.

Figures are entered only for fields where the reservoir rock is of pore type. Figures represent ratio of pore space to total volume of net reservoir rock expressed in per cent. "Por" indicates that the reservoir rock is of pore type but said ratio is not known by the author. "Cav" indicates that the reservoir rock is of cavernous type; "Fis," fissure type.

<sup>i</sup> A, anticline; AF, anticline with faulting as important feature; Af, anticline with faulting as minor feature; AM, accumulation due to both anticlinal and monoclinical structure; H, strata are horizontal or near horizontal; MF, monocline-fault; MU, monocline-unconformity; ML, monocline-lens; MC, monocline with accumulation due to change in character of stratum; M1, monocline with accumulation against igneous barrier; MUP, monocline with accumulation due to sealing at outcrop by asphalt; D, dome; Ds, salt dome; T, terrace; TF, terrace with faulting as important feature; N, nose; S, syncline.

\* Information will be found in text as indicated by symbols; A, name of author, other than above, who has compiled the data on the particular field; C, chemical treatment of wells; G, gas-oil ratios; P, proration; U, unit operation; R, references; W, water; O, other information.

#### INTERPRETATIONS\*

Generally in Table 1 the unit for presentation of data is a field. For our purposes a field is defined as the whole of a surface area wherein productive locations are continuous. Such unit commonly includes and surrounds nonproductive areas. Such unit commonly includes a great variety of geologic conditions—several units of continuous productive reservoirs of distinctly different structure and of distinctly different stratigraphy. Therefore it is hoped that our authors will subdivide "field" so as to enable students to make analyses that may have scientific and/or commercial value.

As to each space in the tabulation, it is either (1) not applicable, (2) the proper entry is not determinable, (3) the proper entry is determinable, but not determinable from data available to the author, (4) the proper entry is determinable by the author. In spaces not applicable, the author will please draw horizontal lines; in spaces where the proper entries are not determinable, the author will please insert *x*; in spaces where the proper entries are determinable but not determinable from data available to the author, the author will please insert *y*; in spaces where the proper entries are determinable by the author he will, of course, make such entries. Generally, *y* implies a hope that in some future year a definite figure will be available.

Inability to determine precisely the correct entry for a particular space should not lead the author to insert merely *y*. Contributions of great value may be made by the author in many cases where entries are not subject to precise determination. In such cases the author should use his good judgment and make the best entry possible under the circumstances. For many spaces, the correct entries represent the opinion of the author (for example, "Area Proved") and in such cases the entries need not be hedged to such extent as in cases where the quantities are definite yet can be ascertained only approximately by the author.

In cases under definite headings but where figures are only approximate, the author may use *x*. For example, if the total production of a field is known to be between 1,800,000 and 1,850,000, the author may report 1,8xx,xxx; or if the production is between 1,850,000 and 1,900,000, the author may report 1,9xx,xxx.

Where a numeral is immediately to the left of *x* or *y*, such numeral represents the nearest known number in that position.

As to quantity of gas produced from many fields the question will arise as to whether the figures should include merely the gas marketed or should include also estimates of gas used in operations and gas wasted. Although rough approximations may be involved, our figures should represent as nearly as possible the total quantity of gas removed from the reservoir.

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\* Quoted from Circular to Authors by James Terry Duce, Geologist, The Texas Company, and Vice Chairman for Production, A.I.M.E. Petroleum Division, 1935 and 1936.

While we have not provided a column for showing the thickness of the productive zone, generally the difference between average depth to bottoms of productive wells and average depth to top of productive zone will represent approximately the average thickness of the productive zone. For fields where this is not true because of unusually high dips, or for other reasons, it is suggested that the authors indicate in their texts the approximate average thickness of the productive zone.

The figure representing net thickness of producing rock should correspond to the total of the net portions of the producing zone which actually yield oil into the drill hole. It is recognized that for some fields the authors can make only rough guesses—so rough that figures would be of no value. In such cases the authors should enter either  $x$  or  $y$ , whichever is more appropriate. Production per acre-foot will have to be treated, of course, in the same manner for the corresponding fields.

We are particularly anxious to have every author give due consideration to the determination of structural conditions of each oil and/or gas body. Please consider each oil and/or gas reservoir and indicate its structure. The mere fact that a reservoir is on an anticline is not proof that the structural condition affecting the accumulation is anticlinal; for example, an oil and/or gas body limited by the upper margin of a lens on the limb of an anticline is "ML" as to structure. By all means, if the oil body occupies any position in the lens other than its upper limit, please so indicate clearly by footnote, for "ML" means, unless modified, that the accumulation is at the upper part of the lens. In every case where the oil and/or gas body terminates short of the up-dip continuity of the reservoir, please carefully check your evidence and then appropriately record your conclusion. "Terrace," "Nose" and "Syncline" are the only terms in our legend which presume such continuity.

Please note that the heading "Number of Dry and/or Near-dry Holes" is intended to cover only such holes as are within the limits of the defined fields.

In Table 2 are listed the important wildcat wells completed during the year. By the term "important" is meant: wells discovering new fields; wells resulting in the discovery of important extensions to old fields; wells discovering new zones in old fields; wells condemning important areas or resulting in significant stratigraphic information, even if the wells are dry; and exceptionally deep wells. At the foot of this table the total number of wells drilled in each district is given, segregated as to oil wells, gas wells and dry holes. The number of wells drilling on Dec. 31, 1935 are in two divisions, designated as wildcat wells and wells in proven fields.

