

STATE OF ILLINOIS
HENRY HORNER, *Governor*
DEPARTMENT OF REGISTRATION AND EDUCATION
JOHN J. HALLIHAN, *Director*
DIVISION OF THE
STATE GEOLOGICAL SURVEY
M. M. LEIGHTON, *Chief, Urbana*

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ILLINOIS PETROLEUM

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Oil and Gas Development in Illinois in 1937

BY ALFRED H. BELL

(New York Meeting, February, 1938)

THE year 1937 has been outstanding in the history of the Illinois oil industry. During the course of the year the state's daily production has been trebled, increasing from 12,000 bbl. per day at the beginning to 37,000 bbl. per day at the end, and the year's total, 7,426,000 bbl. is 66 per cent above the previous year's production of 4,475,000 bbl. The production in January was 368,000 bbl.; in December it was 1,085,000. Production from the old fields increased slightly. Most of the new production is from fields in the central part of the Illinois Basin, an area that for many years was considered unfavorable to the occurrence of oil and gas. The principal producing horizon of the new fields is the McClosky "sand," an oolitic limestone in the Ste. Genevieve formation of lower Mississippian age.

Although development has not yet gone far enough to permit accurate estimates of oil reserves in the new fields, it is believed that they are of the order of 100,000,000 barrels.

The following are the oil fields discovered in 1937 listed in order of amount of daily production at the end of the year; Noble (Richland County), Clay City, including Southeast Clay City (Clay and Wayne counties), Patoka (Marion County), New Centralia (Clinton County), Olney (Richland County), Cisne (Wayne County), Beecher City (Fayette County), and Rinard (Wayne County). One gas field, the Russellville, in Lawrence County, was discovered in 1937. For locations of the new fields see Fig. 1. A generalized geologic column for Illinois, showing producing horizons in the new fields, is given in Fig. 2.

The total productive area of the new fields at the end of 1937 was 1712 acres, in which 230 wells were producing. Thirty-five dry holes were drilled within $\frac{1}{4}$ mile of producing wells. At the end of the year there were 19 drilling wells, 28 rigs standing, 18 rigging up and 4 new locations in these fields.

In the whole state 447 wells were completed, of which 284 were oil producers and three gas producers. Total initial daily production of

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the oil wells was 78,499 bbl., an average of 276 bbl. per well. At the end of the year the average production per well in the new fields was slightly more than 100 bbl. per day, as compared with 0.8 bbl. per well per day in the old fields.

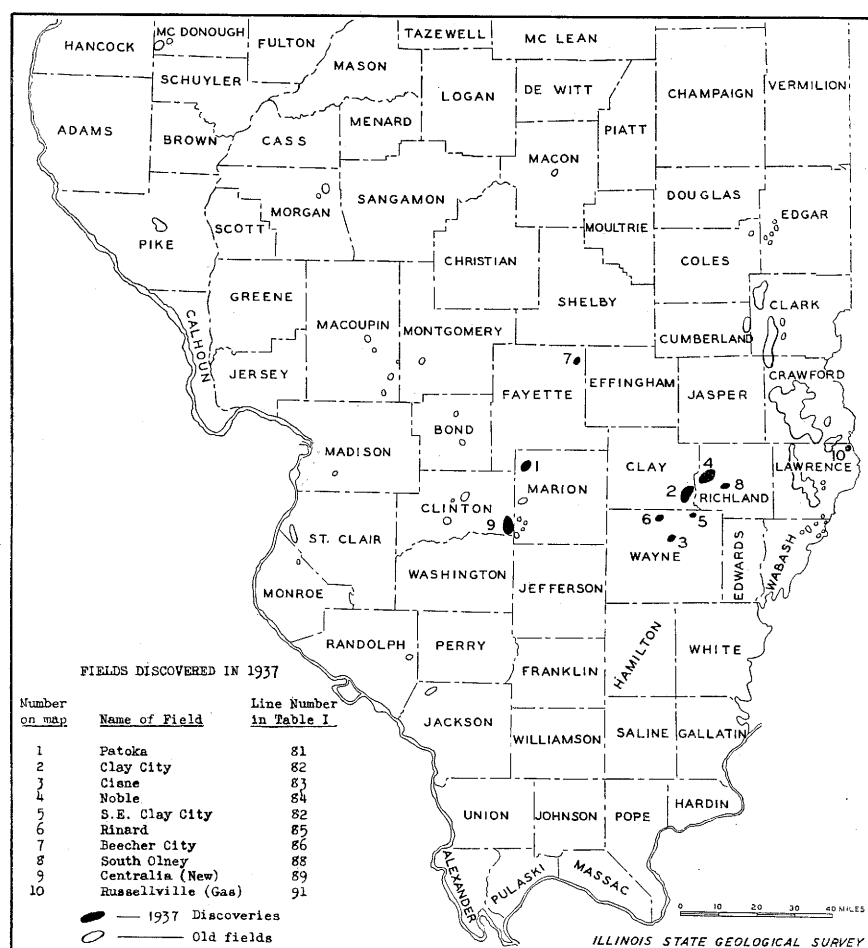


FIG. 1.—OIL AND GAS FIELDS OF ILLINOIS.

Total footage drilled was 902,795 ft. in all wells and 581,141 in producing wells. If the average cost of drilling is assumed to be \$4.50 per foot, there was an investment in drilling of a little more than \$4,000,000. The new fields produced up to the end of the year about 2,900,000 bbl. Half of the new wells began to produce after Oct. 1, and their average age at the end of the year was only about three months. Posted price at the end of the year was \$1.35 per barrel, but a considerable amount of oil

from the new fields was priced at \$1.26. Assuming an average price for the year of \$1.30, returns from oil from the new fields amounted to \$3,770,000. The production in the old fields was approximately

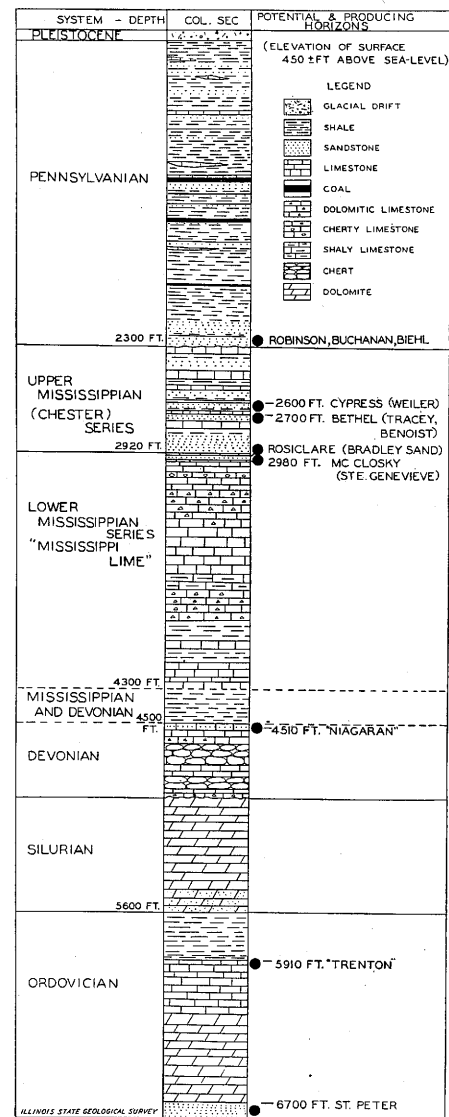


FIG. 2.—GENERALIZED GEOLOGIC COLUMN, NEW ILLINOIS BASIN FIELDS IN CLAY, RICHLAND AND WAYNE COUNTIES.

4,526,000 bbl., valued at approximately \$6,100,000, for which the average price was \$1.35. This gives a total value of \$9,870,000 for all of the oil produced in Illinois in 1937.

Geophysical methods of exploration, especially the reflection seismograph method, are being depended upon to a large extent by the major oil companies active in the Illinois Basin. The number of seismograph crews operating in the state has varied from about 10 to 15 throughout

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

Line Number	Field, County	Age, Years to End of 1937	Area Proved, Acres			Total Oil Production, Bbl.	
			Oil	Gas	Total	To End of 1937	During 1936
1	Warrenton-Borton, <i>Edgar</i>	31	100	0	100	28,400±	1,100
2	Westfield (Parker Twp.), <i>Clark, Coles</i>	33	9,000	55	9,055	x	x
3			850	75	925	x	x
4			9,000	0	9,000	x	x
5			1,500	0	1,500	x	x
6	Siggins (Union Twp.), <i>Cumberland, Clark</i>	31	3,580	75	3,655	x	x
7			3,135	55	3,190	x	x
8			435	15	450	x	x
9			855	105	960	x	x
10	York, <i>Cumberland</i>		310	40	350	x	x
11	Casey, <i>Clark</i>	30	1,925	55	1,980	x	x
12			190	15	205	x	x
13			400	0	400	x	x
14			1,525	15	1,540	x	x
15	Martinsville, <i>Clark</i>	30	710	155	865	x	x
16			15	20	35	x	x
17			275	35	310	x	x
18			105	0	105	x	x
19			170	0	170	x	x
20			195	0	195	x	x
21			5	0	5	x	x
22	North Johnson, <i>Clark</i>	30	1,320	20	1,340	x	x
23			1,115	0	1,115	x	x
24			160	0	160	x	x
25			820	5	825	x	x
26			215	0	215	x	x
27	South Johnson, <i>Clark</i>	30	1,715	65	1,780	x	x
28			185	5	190	x	x
29			295	0	295	x	x
30			1,675	35	1,710	x	x
31			845	5	850	x	x
32	Bellair, <i>Crawford, Jasper</i>	30	1,300	5	1,305	x	x
33			1,165	0	1,165	x	x
34			315	0	315	x	x
35			910	0	910	x	x
36	Clark County Division ¹		19,960	475	20,435	51,912,000±	463,600
37	Main, ² <i>Crawford</i>	31	35,135	515	35,650	x	x
38			340	0	340	x	x
39			33,795	510	34,305	x	x
40			1,000	0	1,000	x	x
41	New Hebron, <i>Crawford</i>	28	1,350	210	1,560	x	x
42	Chapman, <i>Crawford</i>	23	1,045	515	1,560	x	x
43	Parker, <i>Crawford</i>	30	1,310	30	1,340	x	x
44	Allison-Weger, <i>Crawford</i>	y	1,075	20	1,095	x	x
45	Flat Rock, ³ <i>Crawford</i>	y	1,375	545	1,820	x	x
46	Birds, <i>Crawford, Lawrence</i>	y	4,370	115	4,485	x	x
47	Crawford County Division ⁴		45,655	1,945	47,600	142,022,000±	1,546,000
48	Lawrence, <i>Lawrence, Crawford</i>	31	24,150	1,550	25,700	x	x
49			5,015	35	5,050	x	x
50			2,240	0	2,240	x	x
51			345	1,095	1,440	x	x

¹ Total of lines 1, 2, 6, 10, 11, 15, 22, 27, 32.² Includes Kibbie, Oblong, Robinson and Hardinsville.³ Includes Swearingen gas.⁴ Total of lines 37, 41, 42, 43, 44, 45, 46.

the year, the average being about 12. Magnetic and gravity surveys are being used to a minor extent to indicate structural trends. A small amount of structure test drilling is also being carried on.

Out of 127 wildcat wells drilled during 1937, 80 (63 per cent) were not located by any scientific means, 27 were located on the basis of seismo-

TABLE 1.—(Continued)

Line Number	Total Oil Production, Bbl.		Total Gas Production, Millions of Cu. Ft.				Number of Oil and/or Gas Wells							
	During 1937	Daily Average during Nov. 1937	To End of 1937	During 1936	During 1937	Maximum Daily during 1937	Completed to End of 1937	During 1937		At End of 1937				
								Completed	Abandoned	Temporarily Shut Down	Producing Oil Only	Producing Oil and Gas ^a	Producing Gas Only	Total Producing
1	821	2	0	0	0	0	22	0	0	1	13	0	0	13
2	x	x	x	0	0	0	1,616	0	3	48	367	0	0	367
3	x	x	x	0	0	0	185	0	0	y	y	0	0	y
4	x	x	x	0	0	0	1,438	3	0	y	y	0	0	y
5	x	x	x	0	0	0	12	0	0	y	y	0	0	y
6	x	x	x	0	0	0	995	0	2	y	914	y	0	914
7	x	x	x	0	0	0	854	0	0	y	y	y	0	y
8	x	x	x	0	0	0	90	0	0	y	y	y	0	y
9	x	x	x	0	0	0	192	0	0	y	y	y	0	y
10	x	x	x	0	0	0	70	0	0	y	44	y	0	44
11	x	x	x	0	0	0	532	0	0	16	472	y	0	472
12	x	x	x	0	0	0	41	0	y	y	y	0	0	y
13	x	x	x	0	0	0	82	0	y	y	y	0	0	y
14	x	x	x	0	0	0	319	0	y	y	y	0	0	y
15	x	x	x	0	0	0	213	0	9	y	126	0	0	126
16	x	x	x	0	0	0	7	0	0	y	y	0	0	y
17	x	x	x	0	0	0	63	0	0	y	y	0	0	y
18	x	x	x	0	0	0	21	0	0	y	y	0	0	y
19	x	x	x	0	0	0	34	0	0	y	y	0	0	y
20	x	x	x	0	0	0	39	0	0	y	y	0	0	y
21	x	x	0	0	0	0	1	0	0	y	1	0	0	y
22	x	x	x	x	x	x	485	0	9	y	448	y	0	448
23	x	x	x	x	x	x	296	0	0	y	y	0	0	y
24	x	x	x	x	x	x	32	0	0	y	y	0	0	y
25	x	x	x	x	x	x	177	0	0	y	y	y	0	y
26	x	x	0	0	0	0	44	0	0	y	y	y	0	y
27	x	x	x	x	x	x	534	0	1	y	486	y	0	486
28	x	x	x	x	x	x	38	0	0	y	y	y	0	y
29	x	x	x	x	x	x	59	0	0	y	y	y	0	y
30	x	x	x	x	x	x	401	0	0	y	y	y	0	y
31	x	x	x	x	x	x	170	0	0	y	y	y	0	y
32	x	x	x	x	x	x	485	0	4	y	403	0	0	403
33	x	x	x	x	x	x	309	0	0	y	y	0	0	y
34	x	x	x	x	x	x	63	0	0	y	y	0	0	y
35	x	x	x	x	x	x	182	0	0	y	y	0	0	y
36	461,560	1,201	x	y	y	y	4,977	3	28	65	3,278	y	0	3,278
37	x	x	x	x	x	x	7,319	1	0	153	5,235	y	0	5,235
38	x	x	x	x	x	x	68	0	y	y	y	0	0	y
39	x	x	x	x	x	x	7,141	7	12	y	y	y	0	y
40	x	x	x	x	x	x	108	0	y	y	y	y	0	y
41	x	x	x	x	x	x	296	1	0	2	180	0	0	180
42	x	x	x	x	x	x	193	0	0	2	75	0	0	75
43	x	x	x	x	x	x	256	1	0	y	222	0	0	222
44	x	x	x	x	x	x	146	0	0	y	65	0	0	65
45	x	x	x	x	x	x	286	3	1	y	154	0	0	154
46	x	x	x	x	x	x	684	0	2	y	480	0	0	480
47	1,632,174	4,410	x	y	y	y	9,187	13	15	157	6,406	y	1	6,407
48	x	x	x	x	x	x	4,388	0	0	y	3,304	y	y	3,304
49	x	x	x	x	x	x	1,231	0	y	y	y	y	y	y
50	x	x	x	x	x	x	475	0	y	y	y	y	y	y
51	x	x	x	x	x	x	243	0	y	y	y	y	y	y

^a Footnotes to column heads and explanation of symbols are given on page 19.

TABLE 1.—(Continued)

Line Number	Depth, Average in Feet		Oil Production Methods at End of 1937			Pressure, Lb. per Sq. In. ²⁵		Character of Oil, Approx. Average during 1937					Character of Gas, Approx. Average during 1937		
	Bottoms of Productive Wells	To Top of Productive Zone	Number of Wells		Injection into Reservoir ²⁴	Initial	Average at End of		Gravity A.P.I. at 60° F. ²⁶			Sulphur, Per Cent	Base ²⁷	B.t.u. per Cu. Ft.	Gal. Gasoline per M Cu. Ft.
			Flowing	Pumping			1936	1937	Maximum	Minimum	Weighted Average				
1	215	159	0	13	A4	200±	x	x	x	x	x	y	y	x	x
2			0	367		x	x	x	38.4	28.3	34.0	y	M	x	x
3	376	281	0	y		x	x	x	y	y	30.0	y	M	x	x
4	446	334	0	y		x	x	x	y	y	33.5	y	M	x	x
5	2,568	2,265	0	y	A2	x	x	x	(36.9)	27.4	37.0	y	M	x	x
6			0	914		x	x	x	y	y	35.0	y	M	x	x
7	465	367	0	y		x	x	x	y	y	34.0	y	M	x	x
8	562	478	0	y		x	x	x	y	y	(33.6)	y	M	x	x
9	590	556	0	y	27	x	x	x	33.9	30.0	(25.7)	y	M	x	x
10	680	588	0	44		x	x	x	37.2	27.2	(30.3)	y	M	x	x
11			0	472		x	x	x	y	y	29.2	y	M	x	x
12	358	263	0	y		x	x	x	y	y	(31.9)	y	M	x	x
13	426	309	0	y	A2	x	x	x	y	y	(30.1)	y	M	x	x
14	505	444	0	y		x	x	x	y	y	(33.6)	y	M	x	x
15			0	126		x	x	x	37.5	30.2	36.8	y	M	x	x
16	411	255	0	y		x	x	x	y	y	y	y	y	x	x
17	511	449	0	y	AG5	x	x	x	y	y	y	y	y	x	x
18	506	477	0	y		x	x	x	y	y	y	y	y	x	x
19	1,418	1,340	0	y		x	x	x	y	y	(38.9)	y	M	x	x
20	1,596	1,553	0	y		x	x	x	y	y	y	y	M	x	x
21	2,330	2,708	0	1	AG5	x	x	x	y	y	(39.6)	y	M	x	x
22			0	448		x	x	x	36.2	27.2	31.0	y	M	x	x
23	486	416	0	y		x	x	x	y	y	y	y	y	x	x
24	451	314	0	y		x	x	x	y	y	y	y	y	x	x
25	508	465	0	y	AG5	x	x	x	y	y	y	y	y	x	x
26	554	534	0	y		x	x	x	y	y	y	y	y	x	x
27			0	486		x	x	x	35.1	28.5	32.2	y	M	x	x
28	549	392	0	y		x	x	x	y	y	y	y	y	x	x
29	518	453	0	y	AG5	x	x	x	y	y	y	y	y	x	x
30	570	489	0	y		x	x	x	y	y	y	y	M	x	x
31	618	598	0	y		x	x	x	y	y	28.5	y	M	x	x
32			0	403		x	x	x	35.6	27.3	33.7	y	M	x	x
33	726	561	0	y	AG5	x	x	x	y	y	(32.4)	y	M	x	x
34	907	817	0	y		x	x	x	y	y	y	y	y	x	x
35	920	886	0	y		x	x	x	y	y	(37.0)	y	M	x	x
36			0	3,278		28	x	x	39.6	25.8	33.0	y	y	x	x
37			0	5,235	29	425±	y	y	36.8	25.1	33.0	y	M	960	2.5
38	822	508	0	y	G2	x	x	x	y	y	y	y	y	x	x
39	960	900	0	y		30	x	x	36.8	25.1	32.8	y	M	960	2.5
40	1,416	1,337	0	y		x	x	x	y	y	y	y	y	x	x
41	975	940	0	180		x	x	x	35.0	24.3	30.1	y	y	x	x
42	1,015	995	0	75	AG1	x	x	x	y	y	y	y	y	x	x
43	1,025	1,000	0	222	A7	x	x	x	y	y	y	y	y	x	x
44	930	912	0	65		x	x	x	30.4	22.6	29.5	y	y	x	x
45	945	935	0	154		x	x	x	26.6	20.1	22.5	y	y	x	x
46	950	930	0	480		x	x	x	34.1	26.5	31.8	y	y	x	x
47			0	6,406	31	425±	x	x	38.6	18.5	32.3	y	M	960	2.5
48			0	3,304	A1	650±	x	x	39.3	26.7	32.9	y	M	y	2.4
49	1,000	800	0	y	A1	x	x	x	y	y	y	y	y	x	x
50	1,265	1,250	0	y		x	x	x	y	y	y	y	y	x	x
51	1,345	1,330	0	y		x	x	x	y	y	y	y	y	x	x

²⁴ Numbers in this column indicate numbers of injection wells.²⁵ Pressures in the southeastern Illinois oil fields are estimated bottom hole pressures reported in previous Survey publications.²⁶ All gravities given prior to 1936 (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.²⁷ G1, A13.²⁸ G1, AG5, A19.²⁹ G17, AG20, A46.³⁰ G17, AG20, A46, W1.³¹ G19, AG21, A53, W1.

graph surveys, 17 on geologic surveys, 3 on a combination of seismograph and geologic data. Of the 80 wells located without scientific means 8 (10 per cent) were producers. All of these eight producers were within 1 to 4 miles of previously discovered production in the Clay City and

TABLE 1.—(Continued)

Line Number	Producing Rock						Number of Dry and/or Near-dry Holes to End of 1937	Deepest Zone Tested to End of 1937	
	Name	Age ¹	Character ²	Porosity ³	Net Thickness, Average in Feet	Structure ⁴		Name	Depth of Hole, Ft.
1	Unnamed	Pen	S	Por	±	ML	0	Pen	715
2	See below					D	103	Trenton	2,918
3	Shallow gas sand	Pen	S	Por	36	D	±		
4	Westfield lime	MisL	L	Cav	±	D	±	St. Peter	3,009
5	Trenton (Ord)	Ord	L	Por	±	D	±		
6	See below					D	28	Dev. limestone	2,010
7	First Siggins sand	Pen	S	Por	±	D	±		
8	Second and third Siggins sand	Pen	S	Por	±	D	±		
9	Lower Siggins sand	Pen	S	Por	±	D	±		
10	York sand	Pen	S	Por	±	AM	2		960
11	See below					AM	20	MisL	808
12	Upper gas sand	Pen	S	Por	±	AM	5		
13	Lower gas sand	Pen	S	Por	±	AM	12		
14	Casey sand	Pen	S	Por	±	AM	20		
15	See below					D	5	St. Peter	3,411
16	Shallow sands	Pen	S	Por	±	D	1		
17	Casey sand	Pen	S	Por	±	D	5		
18	Martinsville sand	MisL	L	Por	±	D	1		
19	Carper	MisL	S	Por	±	D	1		
20	"Niagaran"	Dev	L	Por	±	D	3		
21	Trenton	Ord	L	Por	±	D	1		
22	See below					AM	16	Mis	965
23	Claypool sand	Pen	S	Por	±	AM	12		
24	Shallow sands	Pen	S	Por	±	AM	4		
25	Casey sand	Pen	S	Por	±	AM	12		
26	Upper Partlow	Pen	S	Por	±	AM	16		
27	See below					AM	29	Mis	1,160
28	Claypool sand	Pen	S	Por	±	AM	3		
29	Casey sand	Pen	S	Por	±	AM	11		
30	Upper Partlow	Pen	S	Por	±	AM	29		
31	Lower Partlow	Pen	S	Por	±	AM	10		
32	See below					AM	15	MisL	1,471
33	"500 Ft." sand	Pen	S	Por	±	AM	3		
34	"800 Ft." sand	Pen	S	Por	±	AM	3		
35	"900 Ft." sand	MisU	S	Por	±	AM	12		
36					33±		216		
37	See below	34					202	Trenton (Ord)	4,620
38	Shallow sand	Pen	S	Por	±	ML	±		
39	Robinson sand	Pen	S	Por	25±	ML	171	Trenton (Ord)	4,620
40	Oblong	Mis	S or L	Por	±	A, ML	23	Mis	1,479
41	Robinson sand ³⁵	Pen	S	Por	±	ML	5	MisL	2,056
42	Robinson sand	Pen	S	Por	±	ML	10	Mis	2,279
43	Robinson sand	Pen	S	Por	±	ML	11	Pen?	1,127
44	Robinson sand	Pen	S	Por	±	ML	6	Pen	1,041
45	Robinson (Flat Rock)	Pen	S	Por	±	ML	9	Pen	1,032
46	Robinson sand	Pen	S	Por	±	ML	12	MisL	1,731
47		Pen, Mis	S	Por		ML	257	Trenton (Ord)	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		

³⁴ The Salvage Oil and Gas Co.—W. S. McGrillis No. 3, sec. 25, T. 8 N., R. 13 W., is producing in the "McClosky sand" at a depth of from 1409 to 1415 ft.

³⁵ The West Union Oil and Gas Co.—Ducommun No. 1, sec. 28, T. 6 N., R. 12 W., is producing in the "McClosky sand" from 1506 to 1528 ft.

TABLE 1.—(Continued)

Line Number	Field, County	Age, Years to End of 1937	Area Proved, Acres			Total Oil Production, Bbl.	
			Oil	Gas	Total	To End of 1937	During 1936
52			15,960	220	16,180	x	x
53			4,020	200	4,220	x	x
54			6,950	0	6,950	x	x
55	St. Francisville, Lawrence.....	y	420	0	420	x	x
56	Lawrence County Division ⁵		24,570	1,550	26,120	221,381,000±	1,995,000±
57	Allendale, Wabash.....	25	1,680	0	1,680	4,272,000±	133,000±
58	Total Southeastern Illinois field ⁶		91,855	3,970	95,825	419,615,400±	4,138,700
59	Colmar-Plymouth, Hancock, McDonough.....	24	2,450	0	2,450	2,287,800	153,000
60	Pike County Gas, Pike.....	327	0	8,960	8,960	0	0
61	Jacksonville Gas, Morgan.....	27 ⁸	30	1,290	1,320	2,100	0
62	Carlinsville, Macoupin.....	28 ⁹	30	50	80	x	0
63	Spanish Needle Creek, Macoupin.....	22 ¹⁰	0	80	80	0	0
64	Gillespie-Wyen, Macoupin.....	22	40	0	40	x	4,758
65	Gillespie-Bend Gas, Macoupin.....	14 ¹¹	0	80	80	0	0
66	Staunton Gas, Macoupin.....	21 ¹²	0	400	400	0	0
67	Litchfield, Montgomery.....	58 ¹³	100	0	100	22,000	0
68	Collinsville, Madison.....	28 ¹⁴	40	0	40	715	0
69	Ayers Gas, Bond.....	15	0	325	325	0	0
70	Greenville Gas, Bond.....	27 ¹⁵	0	160	160	0	0
71	Carlyle, Clinton.....	26	915	0	915	3,317,200±	28,200±
72	Frogstown, Clinton.....	19 ¹⁶	300	0	300	x	0
73	Sandoval, Marion.....	28	770	0	770	2,630,800±	30,160±
74	Centralia, Marion.....	27	175	0	175	x	y
75	Wamac, Clinton, Marion, Washington.....	16	250	0	250	372,750±	23,200±
76	Dupo, St. Clair.....	9	670	0	670	910,775	53,100
77	Waterloo, Monroe.....	17 ¹⁷	125	0	125	166,000	0
78	Sparta Gas, Randolph.....	20 ¹⁸	65	100	165	x	0
79	Ava-Campbell Hill, Jackson.....	20 ¹⁹	70	370	440	25,000	0
80	Bartleso, Clinton.....	2	93	0	93	91,700±	40,700±
81	Patoka, Marion.....	1	310	0	310	425,000	0
82	Clay City, Clay, Wayne.....	1	842	0	842	1,556,260	0
83	Cisne, Wayne.....	1	30	0	30	20,500±	0
84	Noble, Richland.....	1	470	0	470	947,340	0
85	Rinard, Wayne.....	1	10	0	10	2,100±	0
86	Beecher City, Fayette.....	1	10	0	10	y	0
87	Beecher City, ²⁰ Fayette.....	1	10	0	10	100±	0
88	Olney, Richland.....	1	10	0	10	600±	0
89	Centralia (New), Clinton.....	1	20	0	20	5,000±	0
90	Decatur, Macon.....	1 ²¹	10	0	10	600±	0
91	Russellville Gas, Lawrence.....	1	0	10	10	0	0
92	Total Illinois ²²		99,720	15,785	115,500	432,921,000 ²³	4,445,000 ²³

⁵ Total of lines 48 and 55.⁶ Total of lines 36, 47, 56, 57.⁷ Abandoned 1930.⁸ Abandoned 1937.⁹ Abandoned 1925±.¹⁰ Abandoned 1934.¹¹ Abandoned 1935.¹² Abandoned 1919.¹³ Abandoned 1904.¹⁴ Abandoned 1924.¹⁵ Abandoned 1923.¹⁶ Abandoned 1933.¹⁷ Abandoned 1930.¹⁸ Abandoned 1900.¹⁹ Abandoned 1934.²⁰ The discovery well was plugged back to the Cypress sand in February 1933.²¹ Wells drilled in 1922 and 1924; first production in 1937.²² Total of lines 58 to 91.²³ The total oil production is the figure furnished by the U. S. Bureau of Mines and is not the exact total of the figures given in the table, which were obtained from other sources.

Noble fields. Of the 47 wildcat wells located by scientific means, 11 (23 per cent) were producers.

NATURAL GAS

There are now two gas fields in Illinois from which gas is marketed off the producing leases, the Ayers field, Bond County, now 15 years old, and the Russellville field, Lawrence County, discovered in 1937. The Ayers field furnishes gas for the town of Greenville. One producing well was drilled in this field in 1937 (see Table 1, line 69). In the Russellville field gas is produced in two wells from sandstones in the Pennsylvanian at depths of 288 and 619 ft., respectively. The gas is transported

TABLE 1.—(Continued)

Line Number	Total Oil Production, Bbl.		Total Gas Production, Millions Cu. Ft.					Number of Oil and/or Gas Wells						
	During 1937	Daily Average during Nov. 1937	To End of 1937	During 1936	During 1937	Maximum Daily during 1937	Completed to End of 1937	During 1937		At End of 1937				
								Completed	Abandoned	Temporarily Shut Down	Producing Oil Only	Producing Oil and Gas ^a	Producing Gas Only	Total Producing
52	x	x	x	x	x	x	3,017	0	y	y	y	y	y	y
53	x	x	x	x	x	x	684	0	y	y	y	y	y	y
54	x	x	x	x	x	x	957	5	y	y	y	y	0	y
55	x	x	x	x	x	x	54	0	y	y	y	y	0	y
56	2,038,046±	5,584±	x	y	y	y	9,174	5	18	59	3,277	y	y	3,277
57	139,291±	381±	x	y	y	y	420	9	6	0	322	y	0	322
58	4,278,892±	11,578±	x	y	y	y	19,035	30	67	281	13,283	y	1	13,284
59	147,809	398	0	0	0	0	475	12	0	71	206	0	0	206
60	0	0	x	0	0	0	68	0	0	0	0	0	0	0
61	0	0	x	0	0	0	53	0	0	y	0	0	0	0
62	0	0	x	0	0	0	8	0	0	0	0	0	0	0
63	0	0	14.4	0	0	0	7	0	0	y	0	0	0	0
64	400	0	0	0	0	0	22	0	0	12	0	0	0	0
65	0	0	135.8	0	0	0	4	0	0	0	0	0	0	0
66	0	0	1,050	0	0	0	18	0	0	0	0	0	0	0
67	0	0	0	0	0	0	17	0	0	0	0	0	0	0
68	0	0	0	0	0	0	5	0	0	0	0	0	0	0
69	0	0	143,800	37,047	26,353	y	18	1	2	0	0	0	9	9
70	0	0	990	0	0	0	4	0	0	0	0	0	0	0
71	28,200±	77±	0	0	0	0	165	1	3	30	77	0	0	77
72	0	0	0	0	0	0	12	0	0	0	0	0	0	0
73	23,800±	70±	0	0	0	0	122	0	9	y	36	0	0	36
74	y	y	0	0	0	0	22	0	0	y	3	0	0	3
75	19,750±	55±	0	0	0	0	103	0	1	y	45	0	0	45
76	33,175	106	0	0	0	0	237	0	20	0	25	0	0	25
77	0	0	0	0	0	0	23	0	0	0	0	0	0	0
78	0	0	x	0	0	0	20	0	0	0	0	0	0	0
79	0	0	0	0	0	0	35	0	0	0	0	0	0	0
80	51,000±	140	0	0	0	0	21	12	1	0	20	0	0	20
81	425,000	2,464	0	0	0	0	93	93	0	0	93	0	0	93
82	1,556,260	7,987	0	0	0	0	80	80	0	0	80	0	0	80
83	20,500±	50	0	0	0	0	3	3	1	0	2	0	0	2
84	947,340	10,033	0	0	0	0	47	47	0	0	47	0	0	47
85	2,100±	36	0	0	0	0	1	1	0	0	1	0	0	1
86	y	0	0	0	0	0	1	1	0	0	1	0	0	1
87	100±	0	0	0	0	0	1	1	0	0	1	0	0	1
88	600±	0	0	0	0	0	1	1	0	0	1	0	0	1
89	5,000±	0	0	0	0	0	2	2	0	0	2	0	0	2
90	600±	32	0	0	0	0	2	2	0	0	2	0	0	2
91	0	0	2,288	0	2,288	0	2	2	0	0	0	0	2	2
92	7,426,000 ²³	33,026	x	y	y	y	20,727	289	104	394	13,925	y	12	13,937

east across the state line by a new 3-in. pipe line of the Kentucky Natural Gas Co. to Oaktown, Indiana.

In the new oil fields some gas is produced with the oil, and it is used for power on the leases. Few data are available on the amount of gas produced. The largest initial production reported was 2½ million cu. ft. (estimated) for Ohio Oil Company's Arbuthnot No. 1, the discovery well of the Noble field.

The Wiser Oil Company's Damon Smith No. 1, which opened a northern extension of the Clay City field, had an initial daily production

TABLE 1.—(Continued)

Line Number	Depth, Average in Feet		Oil Production Methods at End of 1937				Pressure, Lb. per Sq. In. ²⁵		Character of Oil, Approx. Average during 1937					Character of Gas, Approx. Average during 1937	
	Bottoms of Productive Wells	To Top of Productive Zone	Number of Wells		Injection into Reservoir ²⁴	Initial	Average at End of		Gravity A.P.I. at 60° F. ²⁵			Sulphur, Per Cent	Base ^e	B.t.u. per Cu. Ft.	Gal. Gasoline per M Cu. Ft.
			Flowing	Pumping			1936	1937	Maximum	Minimum	Weighted Average				
52	1,430	1,400	0	y		600±	x	x	y	y	y	y	y	x	x
53	1,580	1,560	0	y		650	x	x	y	y	y	y	y	x	x
54	1,710	1,700	0	y		x	x	x	y	y	y	y	y	x	x
55	1,865	1,843	0	45		600	x	x	37.3	37.3	37.3	y	y	x	x
56			0	3,277			x	x							
57	1,460	1,425	0	322	A1	x	x	x	35.9	24.1	35.1	y	y		
58			0	13,283	32		x	x	39.3	18.5	33.1	y	y	y	2.4
59	468	447	0	206	A68	x	x	x	y	y	y	y	y	0	0
60	275	265	0	0		x	x	x	x	x	x	x	x	x	x
61	335	330	0	0		135	x	x	x	x	x	x	x	850	y
62	398	380	0	0		x	x	x	x	x	27.7	x	y	x	x
63	405	305	0	0		y	y	y	x	x	x	x	y	y	y
64	670	650	0	0		x	x	x	x	x	30	x	y		
65	555	542	0	0		155	x	x	x	x	x	x	x	788	y
66	491	461	0	0		145	x	x	x	x	x	x	y	x	x
67	674	664	0	0		x	x	x	x	x	21.7	x	y	x	x
68	1,400	1,305	0	0		x	x	x	x	x	x	x	x	x	x
69	945	940	0	0		335	310	310	x	x	x	x	x	1,050	0
70	993	927	0	0		x	x	x	x	x	x	x	x	x	0
71	1,055	1,035	0	77	A28	x	x	x	37.0	34.2	35.2	y	y	x	x
72	957	950	0	0		x	x	x	y	y	31.9	y	y	x	x
73	1,560	1,540	0	36		x	x	x	35.1	32.7	34.5	y	y	x	x
74	1,150	1,130	0	3		x	x	x	35.0	31.0	32.0	x	x	x	x
75	760	720	0	45	W21	x	x	x	30.8	29.3	30.2	y	y	P	x
76	651	601	0	25		x	x	x	y	y	32.7	y	y	x	x
77	460	410	0	0		x	x	x	30.1	29.5	30.0	x	x	x	x
78	857	850	0	0		x	x	x	x	x	x	x	x	x	x
79	798	780	0	0		x	x	x	x	x	x	x	x	x	x
80	1,010	986	0	20		x	x	x	y	y	32.0	y	y	x	x
81	1,440	1,424	0	93		x	x	x	39.8	39.3	39.5	y	y	x	x
82	3,002	2,968	4	76		250	x	y	38.8	38.0	38.5	y	y	x	x
83	3,026	2,990	0	2		x	0	x	y	y	38.5	y	y	x	x
84	2,991	2,961	24	23		450	0	250±	y	y	38.5	y	y	x	x
85	3,154	3,144	0	1		x	0	x	y	y	38.5	y	y	x	x
86	1,503	1,497	0	1		275	0	x	y	y	36.0	y	y	x	x
87	3,100	3,070	0	1		x	0	x	y	y	37.0	y	y	x	x
88	3,083	3,065	0	1		x	0	x	y	y	38.5	y	y	x	x
89	1,370	1,342	0	2		x	x	x	y	y	39	y	y	x	x
90	2,076	2,020	0	2		x	0	x	y	y	39.5	y	y	x	x
91	310	288	0	0		140	0	x	x	x	x	x	x	947	y
92	622	619	28	13,897	33	261	0	x	x	x	x	x	x		

²⁵ G20, AG26, A74, W7.²⁵ G20, AG26, A170, W28.

of 200,000 cu. ft. of gas and 1400 bbl. of oil, or a gas-oil ratio of 143 cu. ft. per barrel. The average gas-oil ratio in the Clay City and Noble fields probably does not exceed 200 or 300 cu. ft. per barrel.

Gas discoveries in which the gas is not used outside of the producing leases were made near Longview in Champaign County and near Marissa in St. Clair County (Table 2, line 101). The former well was drilled to the Devonian and plugged back. It was not completed until 1938.

TABLE 1.—(Continued)

Line Number	Producing Rock						Number of Dry and/or Near-dry Holes to End of 1937	Deepest Zone Tested to End of 1937	
	Name	Age ¹	Character ²	Porosity ³	Net Thickness, Average in Feet	Structure ⁴		Name	Depth of Hole, Ft.
52	Kirkwood	MisU	S	Por	30	A	10		
53	Tracey	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
57	Biehl sand	Pen	S	Por	20	AM	49	MisL	2,228
58							610		
59	Hoing sand	Dev	S	Por	21	A	8	St. Peter	720
60	"Niagaran"	Sil	L	Por	10	A	0	St. Peter	893
61	Gas sand	Pen, Mis	S, SL	Por	5	ML	8	Trenton (Ord)	1,390
62	Unnamed	Pen	S	Por	z	A	0	Pen	410
63	Unnamed	Pen	S	Por	z	D	1	Pen	495
64	Unnamed	Pen	S	Por	z	T	14	Trenton (Ord)	2,560
65	Unnamed	Pen	S	Por	z	A	0	Pen	575
66	Unnamed	Pen	S	Por	z	A	0	Trenton (Ord)	2,371
67	Unnamed	Pen	S	Por	z	D	0	Pen	681
68	Trenton	Ord	L	Por	20	ML	0	Trenton (Ord)	1,500
69	Lindley (2d)	MisU	S	Por	5	A	2	MisL	1,150
70	Lindley (1st, 2d)	MisU	S	Por	z	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 y	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	Ord	L	Por, Cav	50	A	0	Trenton (Ord)	819
77	Trenton	Ord	L	Por	50	A	19	Trenton (Ord)	845
78	Sparta gas sand	MisU	S	Por	7	D	5	MisU	985
79	Unnamed	MisU	S	Por	18	A	y	Dev	2,530
80	Carlyle	MisU	S	Por	20	D	3	MisU	1,118
81	Benoist ³⁶	MisU	S	Por	16	A	18	MisL	1,618
82	Ste. Genevieve ³⁷	MisL	L	Por	8.7	A	8	MisL	3,197
83	Ste. Genevieve	MisL	S, L	Por	8	A?	1	MisL	3,144
84	Ste. Genevieve	MisL	L	Por	9.7	A	5	MisL	3,098
85	Ste. Genevieve	MisL	L	Por	5	A	0	MisL	3,154
86	Benoist	MisU	S	Por	6			Dev	3,170
87	Niagaran	Dev	L	Por		A?	0	Dev	3,170
88	Ste. Genevieve	MisL	L	Por	7	A	0	MisL	3,083
89	Benoist	MisU	S	Por	26	A	0	MisU	1,384
90	Niagaran	Dev	L	Por	30	N	0	Trenton (Ord)	2,800
91	{ Pennsylvanian sand	Pen	S	Por	22				
92	{ Pennsylvanian sand	Pen	S	Por	3	A	3	MisL	2,012
							699±		

³⁶ The Adams Oil and Gas Companies Sam Pugh No. 1, sec. 29, T. 4 N., R. 1 E., is producing from the Ste. Genevieve limestone at a depth of 1562 ft.

³⁷ The Pure Oil Company's Weiler No. 1, sec. 33, T. 3 N., R. 8 E., the discovery well in the Clay City field, produced from the Cypress sandstone until October 1937, when it was drilled deeper to the McClosky sand and the Cypress sandstone was cased off.

TABLE 2.—*Summary of Drilling Operations in Illinois*

Important Wildcats Drilled in 1937											
	County	Location			Total Depth, Ft.	Surface Formation	Deepest Horizon Tested	Drilled by	Initial Production per Day		Remarks
		Sec.	Twp.	Rge.					Oil, U. S. Bbl.	Gas, Millions of Cu. Ft.	
		Survey	Lat.	Long.							
1	Bond.....	16	5 N	3 W	1,087	Pleistocene	Chester	Hempen and Burgess			Dry
2	Bond.....	11	6 N	5 W	3,101	Pleistocene	St. Peter	Huber Drilling Corp.			Dry
3	Christian.....	29	12 N	2 W	1,122	Pleistocene	Lower Mississippian	Nokomis Oil Co.			Dry
4	Christian.....	36	15 N	2 W	1,964	Pleistocene	St. Peter	Parshall-Graham Oil Co.			Dry
5	Christian.....	27	12 N	2 W	3,112	Pleistocene	"Trenton"	Roger Bros. et al.			Dry
6	Clay.....	33	3 N	8 E	2,613	Pleistocene	Cypress	Pure Oil Co.	40 ¹		Dry
7	Clay.....	33	3 N	8 E	2,960	Pleistocene	Ste. Genevieve	Pure Oil Co.	2,642		
8	Clay.....	28	3 N	8 E	2,987	Pleistocene	Ste. Genevieve	Wiser Oil Co.	1,400		
9	Clay.....	12	2 N	6 E	3,163	Pleistocene	Ste. Genevieve	Benedum Trees Co.			Dry
10	Clay.....	8	2 N	8 E	3,057	Pleistocene	Ste. Genevieve	Gordon Oil Co.	1,226		
11	Clay.....	29	3 N	8 E	3,067	Pleistocene	Ste. Genevieve	Wicklund Development Co.			Dry
12	Clay.....	14	3 N	8 E	3,036	Pleistocene	Ste. Genevieve	Elmer Hupp et al.	25		
13	Clay.....	2	3 N	6 E	3,112	Pleistocene	Ste. Genevieve	Leonard Drilling Co.			Dry
14	Clay.....	17	3 N	7 E	3,002	Pleistocene	Ste. Genevieve	Jack Shaffer et al.			Dry
15	Clay.....	23	3 N	8 E	3,183	Pleistocene	Ste. Genevieve	Wicklund Development Co.			Dry
16	Clay.....	29	4 N	8 E	3,234	Pleistocene	St. Louis	Gulf Oil Corp.			Dry
17	Clay.....	7	3 N	8 E	3,075	Pleistocene	Ste. Genevieve	C. H. C. Oil Co.			Dry
18	Clay.....	31	4 N	8 E	3,072	Pleistocene	Ste. Genevieve	Bonnie Oil Co.			Dry
19	Clinton.....	32	2 N	3 W	1,051	Pleistocene	Cypress	J. E. Newton et al.			Dry
20	Clinton.....	11	1 N	2 W	1,365	Pleistocene	Chester	Carl Willi et al.			Dry
21	Clinton.....	28	2 N	3 W	1,206	Pleistocene	Paint Creek	W. C. McBride Inc.			Dry
22	Clinton.....	12	1 N	2 W	1,361	Pleistocene	Chester	Carl Willi et al.			Dry
23	Clinton.....	13	3 N	1 W	1,504	Pleistocene	Bethel	Patoka Pet. Corp.			Dry
24	Clinton.....	2	1 N	2 W	1,567	Pleistocene	Ste. Genevieve	Adams Oil and Gas			Dry
25	Clinton.....	6	1 N	3 W	1,429	Pleistocene	Ste. Genevieve	Willis et al.			Dry
26	Clinton.....	28	2 N	3 W	1,515	Pleistocene	Lower Mississippian	W. C. McBride Inc.			Dry
27	Clinton.....	4	1 N	2 W	1,521	Pleistocene	Lower Mississippian	Wise and Goldschmidt			Dry
28	Clinton.....	27	3 N	1 W	1,454	Pleistocene	Bethel	Adams Oil and Gas	156		Dry
29	Clinton.....	2	1 N	1 W	1,384	Pleistocene	Bethel	Adams Oil and Gas			Dry
30	Clinton.....	26	3 N	1 W	1,724	Pleistocene	Ste. Genevieve	McClanahan Oil			Dry
31	Clinton.....	3	2 N	4 W	1,235	Pleistocene	Lower Mississippian	W. C. McBride Inc.			Dry
32	DeKalb.....	35	41 N	5 E	4,348	Pleistocene	Pre-Cambrian	Paul Schulte et al.			Dry
33	DeKalb.....	27	42 N	3 E	2,970	Pleistocene	Cambrian	Barton et al.			Dry
34	Edgar.....	18	12 N	13 W	500	Pleistocene	Pennsylvanian	Hassett et al.			Dry
35	Edwards.....	3	2 S	10 E	4,932	Pleistocene	Lower Mississippian	Leach Brothers			Dry
36	Effingham.....	5	7 N	6 E	2,100	Pleistocene	Chester	W. H. Hazlett et al.			Dry
37	Effingham.....	5	7 N	6 E	3,150	Pleistocene	Lower Mississippian	Faurot, Mitchell and Hazlett			Dry
38	Effingham.....	26	6 N	5 E	4,117	Pleistocene	"Niagaran"	Kingwood and Carter Oil			Dry
39	Effingham.....	11	8 N	7 E	2,660	Pleistocene	Ste. Genevieve	Carter Oil			Dry
40	Fayette.....	31	5 N	3 E	172	Pleistocene	Pennsylvanian	O. A. Davis et al.			Dry
41	Fayette.....	16	5 N	3 E	2,292	Pleistocene	Ste. Genevieve	Rush and Milleken			Dry
42	Fayette.....	20	4 N	1 W	1,498	Pleistocene	Chester	Linville, Beaton and Ryer			Dry
43	Fayette.....	36	7 N	1 W	2,000	Pleistocene	Lower Mississippian	Universal Service Drilling Company			Dry
44	Fayette.....	13	4 N	1 W	1,601	Pleistocene	Ste. Genevieve	C. B. Tull et al.			Dry
45	Fayette.....	35	4 N	1 W	1,609	Pleistocene	Ste. Genevieve	Belcher et al.			Dry
46	Fayette.....	16	7 N	2 E	2,163	Pleistocene	Ste. Genevieve	Oil Development Co.			Dry
47	Fayette.....	12	8 N	3 E	3,100	Pleistocene	"Niagaran"	Carter Oil Co.	57 ²		Dry
48	Fayette.....	15	8 N	3 E	1,503	Pleistocene	Benoit	Carter Oil Co.	200 ³		Dry
49	Fayette.....	24	6 N	1 W	3,155	Pleistocene	Silurian	Benedum Trees			Dry
50	Fayette.....	22	6 N	1 E	1,733	Pleistocene	Ste. Genevieve	Hausmann et al. Adams Oil and Gas			Dry

¹ Cut 8 per cent with salt water.² In 17 hours.³ Estimated.

TABLE 2.—(Continued)

Important Wildcats Drilled in 1937

	County	Location			Total Depth, Ft.	Surface Formation	Deepest Horizon Tested	Drilled by	Initial Production per Day		Remarks
		Sec.	Twp.	Rge.					Oil, U. S. Bbl.	Gas, Millions of Cu. Ft.	
		Survey	Lat.	Long.							
51	Greene.....	25	10 N	13 W	800	Pleistocene	"Trenton"	Witt, Godey, and Robey			Dry
52	Hamilton....	22	3 S	7 E	3,452	Pleistocene	Ste. Genevieve	J. G. Buell			Dry
53	Hamilton....	32	3 W	5 E	3,324	Pleistocene	Chester	A. H. Carpenter et al.			Dry
54	Jasper.....	18	7 N	14 W	1,104	Pleistocene	Pennsylvanian	William Goodwin			Dry
55	Jasper.....	24	8 N	8 E	3,504	Pleistocene	Ste. Genevieve	H. H. Weinert			Dry
56	Jasper.....	10	7 N	8 E	3,205	Pleistocene	St. Louis	W. R. Anderson et al.			Dry
57	Kane.....	35	40 N	8 E	670	Pleistocene	St. Peter	Edward Duvall et al.			Dry
58	Lawrence....	30	5 N	10 W	622	Pleistocene	Pennsylvanian	Warren Hastings et al.	0.824		Dry
59	Lawrence....	30	5 N	10 W	660	Pleistocene	Pennsylvanian	Warren Hastings et al.			Dry
60	Lawrence....	30	5 N	10 W	2,012	Pleistocene	Salem	Warren Hastings et al.			Dry
61	Lawrence....	30	5 N	10 W	310	Pleistocene	Pennsylvanian	Warren Hastings et al.	0.250		Dry
62	Lawrence....	30	5 N	10 W	830	Pleistocene	Pennsylvanian	Warren Hastings et al.			Dry
63	Lawrence....	29	5 N	10 W	657	Pleistocene	Pennsylvanian	Warren Hastings et al.			Dry
64	Lawrence....	29	5 N	10 W	719	Pleistocene	Pennsylvanian	Warren Hastings et al.			Dry
65	Lawrence....	16	3 N	10 W	3,302	Pleistocene	"Niagaran"	Strauss et al.			Dry
66	Madison....	24	5 N	8 W	1,987	Pleistocene	"Trenton"	T. C. Havelka			Dry
67	Marion.....	21	4 N	1 E	1,418	Pleistocene	Bethel	Adams Oil and Gas	524		Dry
68	Marion.....	27	4 N	1 E	1,679	Pleistocene	Ste. Genevieve	Wiser Oil			Dry
69	Marion.....	29	4 N	1 E	1,612	Pleistocene	Ste. Genevieve	Adams Oil and Gas	29		Dry
70	Marion.....	28	4 N	1 E	1,425	Pleistocene	Bethel	Illinois Nat. Oil and Gas	300		Dry
71	Marion.....	22	4 N	1 E	1,707	Pleistocene	Chester	Ray Brown et al.			Dry
72	Marion.....	32	4 N	1 E	1,616	Pleistocene	Ste. Genevieve	Adams Oil and Gas			Dry
73	Marion.....	1	3 N	2 E	2,515	Pleistocene	Lower Mississippian	Texas Co.			Dry
74	Marion.....	4	4 N	3 E	3,671	Pleistocene	"Niagaran"	Carter Oil			Dry
75	Marion.....	18	4 N	1 E	1,725	Pleistocene	Ste. Genevieve	Ralph Ayers et al.			Dry
76	Marion.....	25	3 N	2 E	2,439	Pleistocene	Ste. Genevieve	Helmrich and Payne Inc.			Dry
77	Marion.....	3	3 N	1 E	1,575	Pleistocene	Chester	Roy Benoist			Dry
78	Marion.....	17	3 N	2 E	2,500	Pleistocene	Lower Mississippian	Target Drilling Co.			Dry
79	Marion.....	18	3 N	1 E	1,706	Pleistocene	Ste. Genevieve	Shell Pet. Corp.			Dry
80	Marion.....	33	4 N	1 E	1,530	Pleistocene	Chester	Palmer et al.			Dry
81	Marion.....	33	4 N	1 E	1,717	Pleistocene	Ste. Genevieve	J. Alexander et al.			Dry
82	Marion.....	33	4 N	1 E	1,477	Pleistocene	Bethel	J. Alexander et al.			Dry
83	Marion.....	33	4 N	1 E	1,482	Pleistocene	Bethel	J. Alexander et al.			Dry
84	Mason.....	22	23 N	7 W	1,000	Pleistocene	"Niagaran"	Werner Brothers			Dry
85	Perry.....	5	6 S	1 W	5,257	Pleistocene	St. Peter	Howard Forester			Dry
86	Pike.....	24	5 S	3 W	750	Pleistocene	"Trenton"	Super Oil Co.			Dry
87	Randolph....	31	4 S	5 W	1,003	Pleistocene	Chester	Tom Cain et al.			Dry
88	Richland....	8	3 N	9 E	2,990	Pleistocene	Ste. Genevieve	Ohio Oil Co.	1,996		Dry
89	Richland....	34	4 N	9 E	3,010	Pleistocene	Ste. Genevieve	Mammoth Oil and Refining Co.	1,501		Dry
90	Richland....	12	3 N	8 E	3,099	Pleistocene	Ste. Genevieve	Keith and MacMahon			Dry
91	Richland....	22	3 N	10 E	3,252	Pleistocene	Ste. Genevieve	Neely et al.			Dry
92	Richland....	16	3 N	9 E	2,961	Pleistocene	Ste. Genevieve	Southern Ill. Pet. Co.	145		Dry
93	Richland....	27	4 N	9 E	3,007	Pleistocene	Ste. Genevieve	C. L. McMahon			Dry
94	Richland....	14	3 N	8 E	3,043	Pleistocene	Ste. Genevieve	Robinson and Gordon	92		Dry
95	Richland....	8	2 N	10 E	3,235	Pleistocene	Ste. Genevieve	Wiser Oil Co.			Dry
96	Richland....	28	3 N	9 E	3,046	Pleistocene	Ste. Genevieve	Mammoth Oil and Refining Co.	250		Dry
97	Richland....	5	3 N	14 W	3,248	Pleistocene	Ste. Genevieve	Hollingsworth			Dry
98	Richland....	18	3 N	10 E	3,083	Pleistocene	Ste. Genevieve	Frost et al.	50		Dry
99	Richland....	31	5 N	9 E	3,200	Pleistocene	Ste. Genevieve	Kingwood and McMahon			Dry
100	Rock Island.	28	20 N	2 E	1,353	Pleistocene	Ordovician	Rockdale Oil and Gas			Dry
101	St. Clair....	36	3 S	6 W	800	Pleistocene	Chester	W. A. Holt			Dry ⁵
102	St. Clair....	18	1 S	7 W	2,013	Pleistocene	"Trenton"	A. J. Colgan et al.			Dry
103	Shelby.....	14	10 N	6 E	2,384	Pleistocene	Ste. Genevieve	J. A. English et al.			Dry
104	Wabash.....	27	1 N	12 W	1,480	Pleistocene	Pennsylvanian	Patton Oil Co.	20		Dry
105	Wabash.....	27	1 N	12 W	1,610	Pleistocene	Chester	Coastal Producing Co.			Dry
106	Wabash.....	7	1 N	11 W	1,510	Pleistocene	Pennsylvanian	Mahutska Oil			Dry

⁴ Natural flow through 1/4-in. choke.⁵ Small gas production, used for heating one building.

ACIDIZING IN THE NEW BASIN FIELDS

Almost all of the wells drilled in the Clay City, Cisne and Noble fields have been acidized. Wells having a small thickness of oil saturation or saturation with low permeability are treated before the well is put on production. Wells with high initial productions, which were not acidized at the time of completion, have been acidized when the daily production declined considerably. In almost every well treated production was increased to some extent, varying from slight increases up to fourfold. The wells are treated with 1000 to 4000 gal. of acid.

IMPROVED RECOVERY METHODS IN THE OLD FIELDS

The slow adoption of improved recovery methods in the old fields is due partly no doubt to the intense interest and activity in the new fields of the state.

TABLE 2.—(Continued)

Important Wildcats Drilled in 1937											
	County	Location			Total Depth, Ft.	Surface Formation	Deepest Horizon Tested	Drilled by	Initial Production per Day		Remarks
		Sec.	Twp.	Rge.					Oil, U. S. Bbl.	Gas, Millions of Cu. Ft.	
107	Wabash.....	28	1 N	13 W	1,863	Pleistocene	Pennsylvanian	Joe Young et al.			Dry
108	Wabash.....	7	1 N	11 W	2,225	Pleistocene	Ste. Genevieve	Adams Corners Oil Co.			Dry
109	Wabash.....	17	1 N	12 W	1,560	Pleistocene	Pennsylvanian	George Randolph et al.			Dry
110	Wabash.....	18	1 N	12 W	1,644	Pleistocene	Chester	Cecil Keneipp			Dry
111	Washington..	22	1 S	4 W	1,002	Pleistocene	Chester	Sunflower Oil Co.			Dry
112	Washington..	22	1 S	5 W	990	Pleistocene	Bethel	Sunflower Oil Co.			Dry
113	Washington..	36	1 N	2 W	1,666	Pleistocene	Ste. Genevieve	Milliken et al.			Dry
114	Wayne.....	26	1 N	7 E	2,987	Pleistocene	Ste. Genevieve	Pure Oil Co.	100		Dry
115	Wayne.....	26	2 N	8 E	3,066	Pleistocene	Ste. Genevieve	Myers and Fitzpatrick	5 ⁶		Dry
116	Wayne.....	33	2 N	7 E	3,154	Pleistocene	Ste. Genevieve	Benedum and Trees	50		Dry
117	Wayne.....	30	2 N	8 E	3,040	Pleistocene	Ste. Genevieve	Andy Bruner			Dry
118	Wayne.....	11	1 S	7 E	3,412	Pleistocene	Ste. Genevieve	Mammoth Oil and Refining Co.			Dry
119	Wayne.....	27	2 N	8 E	3,040	Pleistocene	Ste. Genevieve	Duncan Oil	583		Dry
120	Wayne.....	21	2 N	5 E	3,313	Pleistocene	St. Louis	Benedum and Trees			Dry
121	Wayne.....	12	1 N	6 E	3,314	Pleistocene	Ste. Genevieve	Benedum and Trees			Dry
122	Wayne.....	28	2 N	7 E	3,035	Pleistocene	Ste. Genevieve	Benedum and Trees			Dry
123	Wayne.....	31	2 S	6 E	3,042	Pleistocene	Ste. Genevieve	F. R. Washburn Pet. Corp.			Dry
124	Wayne.....	33	2 N	7 E	3,280	Pleistocene	Ste. Genevieve	Benedum and Trees			Dry
125	Wayne.....	4	1 N	7 E	3,216	Pleistocene	Ste. Genevieve	Midwest Development Co.			Dry
126	White.....	5	4 S	8 E	3,405	Pleistocene	Ste. Genevieve	Johnson and Cozart			Dry
127	Will.....	25	35 N	12 E	2,063	Pleistocene	Cambrian	Nelson et al.			Dry

	In Proven Fields	Wildcats
Number of wells drilling Dec. 31, 1937.....	20	14
Number of oil wells completed during 1937.....	262	22
Number of gas wells completed during 1937.....	1	2
Number of dry holes completed during 1937.....	56	104

* Per hour.

TABLE 3.—*Summary of Drilling and Initial Production in Illinois for 1937*

County	Number of Wells Drilled in 1937			Total Initial Production		Footage Drilled in 1937	
	Total Completed	Total Producing		Oil ^a	Gas ^b	Total	Producing Wells
		Oil	Gas				
Bond.....	5	0	1		1.000 ^c	7,102	951
Christian.....	3	0		0		7,237	0
Clark.....	7 ^c	3	^d	9		3,484	2,387
Clay.....	91	75		39,710 ^f		268,963	219,314
Clinton.....	29	15		1,165 ^g		34,979	14,559
Coles.....	1	0		0		355	0
Crawford.....	20 ^c	13		160		21,764	14,956
DeKalb.....	2	0		0		7,318	0
Edgar.....	1	0		0		500	0
Edwards.....	1	0		0		4,932	0
Effingham.....	4	0		0		12,027	0
Fayette.....	11	2		300 ^h		20,826	4,603
Greene.....	1	0		0		800	0
Hamilton.....	2	0		0		6,776	0
Hancock.....	2	0		0		1,184	0
Jasper.....	3	0		0		7,813	0
Kane.....	1	0		0		670	0
Lawrence.....	13	5	2	118	1.074	18,352	10,178
McDonough.....	15	12		50		6,607	5,332
Madison.....	1	0		0		1,987	0
Marion.....	122	93		6,499 ⁱ		169,632	124,073
Mason.....	1	0		0		1,000	0
Perry.....	1	0		0		5,257	0
Pike.....	1	0		0		750	0
Randolph.....	1	0		0		1,003	0
Richland.....	60	48		27,293 ^j		180,788	143,651
Rock Island.....	1	0		0		1,353	0
St. Clair.....	2	0		0		2,813	0
Shelby.....	1	0		0		2,384	0
Wabash.....	19	9		340		29,699	13,381
Washington.....	3	0		0		3,658	0
Wayne.....	20	9		2,855 ^k		63,160	27,756
White.....	1	0		0		3,405	0
Will.....	1	0		0		3,095	0
Total for State.....	447	284	3	78,499	2.074	902,795	581,141

^a Barrels.^b Millions of cubic feet.^c One pressure well.^d Two wells producing gas, which is used on the lease.^e Estimated.^f Clay City field.^g Bartelso, 886 bbl.; Centralia (new), 276 bbl.; Carlyle field, 3 bbl.^h Beecher City field.ⁱ Patoka field.^j Noble field, 27,243 bbl.; Olney field, 50 bbl.^k Cisne field, 222 bbl.; S.E. Clay City field, 2133 bbl.; Rinard field, 500 bbl.; total initial production for new fields, 77,819 bbl.

Acidizing.—In Lawrence County, out of 15 wells that were acid-treated, eight yielded increases in production, one was a new well with initial daily production after acidizing of 40 bbl., and six gave no results in increased production. The total daily production of the eight wells before acid treatment was 16 bbl.; after treatment, 110 bbl., a sixfold increase. The usual charge was 1000 gal. of acid. The producing strata treated in all of these wells was the McClosky oolitic limestone (Ste. Genevieve formation, lower Mississippian series). In the Dupo field, St. Clair County, one well was acid-treated and its production increased from 5 to 12 bbl. per day. The producing stratum is the Kimmswick (Trenton) limestone in the Ordovician.

Air Pressuring.—The air and gas repressuring plants in operation in 1936 continued during 1937 and four new air repressuring operations were begun with a total of 36 input wells.

Water-flooding.—Little new water-flooding was undertaken during 1937. Two of the uncontrolled water-flooding operations in the Allendale field, Wabash County, reported substantial increases in production. The water-flooding operation in the Carlyle field, Clinton County, begun in 1934, has been stopped.

PETROLEUM CONFERENCE

The fifth annual petroleum conference of Illinois-Indiana, held at Robinson, May 29, 1937, was attended by over 300 oil men, including representatives of all the principal oil-producing states. The program consisted of discussion of exploratory methods, development and operating problems. The fifth annual mineral industries conference at Urbana,

TABLE 4.—*Number of Wells in the New Fields, with Acreage*
DECEMBER 31, 1937

Field	Producing Wells	Dry Holes ^a	Drilling Wells	Rigs Standing	Rigging Up	Locations	Acres
Patoka.....	93	18	4	3	1	0	310
Clay City.....	80	8	3	7	4	4	842
Rinard.....	1	0	0	0	0	0	10
Noble.....	47	5	12	18	13	0	470
Cisne.....	2 ^b	1	0	0	0	0	30
Centralia (new).....	2	0	0	0	0	0	20
Beecher City.....	2	0	0	0	0	0	20
Olney.....	1	0	0	0	0	0	10
Russellville (gas).....	2	3	0	0	0	0	10
Total.....	230	35	19	28	18	4	

^a Within $\frac{1}{4}$ mile of production.

^b One producing well was abandoned.

TABLE 5.—*Discovery Wells in New Southern Illinois Oil Fields*

Field	County	Company	Date Completed	Farm	Well No.	Location Survey, Tp., Range	Total Depth, Ft.	Producing Formation		Initial Production, Bbl.
								Depth, Ft.	Name	
Patoka	Marion	Adams Oil & Gas	1-27-37	Merryman	1	21-4N-1E	1,418	1,391	Benoist	52
Clay City	Clay	Pure Oil Co.	2-26-37	Weller	1	33-3N-8E	2,613	2,608	Cypress	40
Clay City	Clay	Pure Oil Co.	5-15-37	B. Travis	1	33-3N-8E	2,960	2,950	McClosky	2,642
Clay City (SE. extension)	Wayne	Myers & Fitzpatrick	9-10-37	Shannon	1	26-2N-8E	3,066	3,056	McClosky	100
Cisne	Wayne	Pure Oil Co.	3- 4-37	Bradley	1	26-1N-7E	2,987	2,982	Ste. Genevieve	100 ^a
Noble	Richland	Ohio Oil Co.	8- 2-37	Arbuthnot	1	8-3N-9E	2,990	2,898	McClosky	1,996
Noble (NE. extension)	Richland	Mammoth Oil Refining Co.	9- 2-37	Heitz	1	34-4N-9E	3,009	2,972	McClosky	1,501
Noble (town)	Richland	S. Ill. Petr. Co.	10-21-37	Allard	1	16-3N-9E	2,961	2,950	McClosky	145 ^b
Rinard	Wayne	Benedum-Trees	10- 5-37	Knapp	1	33-2N-7E	3,154	3,144	McClosky	500 ^a
Beecher City	Fayette	Carter Oil Co.	12-20-37	Miller	1	12-8N-3E	3,100	3,070	"Niagaran"	57 ^c
Beecher City	Fayette	Carter Oil Co.	12-31-37	Clow	1	15-8N-3E	1,503	1,497	Benoist	200 ^a
Centralia (new)	Clinton	Adams Oil & Gas	11-30-37	Schmitz	1	2-1N-1W	1,384	1,348	Benoist	156
Olney	Richland	Frost et al.	12-33-37	Farris	1	18-3N-10E	3,084	3,065	McClosky	50

^a Estimated.^b First 12 hours.^c In 17 hours.

Oct. 8 and 9, had two half-day programs on oil—one on economic and legal questions, the other on geology and development.

OUTLOOK

With the discovery of oil at a number of widely scattered points in the basin late in 1937 and the early part of 1938, and with a large acreage under lease in the state, including a total of 2,400,000 acres by 12 major

TABLE 6.—*Illinois Completions for 1937*

Month	Comple- tions	Producing Wells	Month	Comple- tions	Producing Wells
January.....	5	1	July.....	27	18
February.....	6	6	August.....	49	31
March.....	9	4	September.....	92	63
April.....	15	7	October.....	76	55
May.....	14	10	November.....	71	40
June.....	22	16	December.....	61	36
Total.....				447	287

companies, there is every indication that drilling activity will increase greatly in 1938 and that other new fields will be discovered.

ACKNOWLEDGMENTS

The writer is indebted to many companies and individuals for furnishing information used in this report. Dr. George V. Cohee of the Survey staff assisted the writer in assembling the data.

FOOTNOTES TO COLUMN HEADINGS—TABLE 1

^a 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.

^b Wells producing both oil and gas are classified as "Producing Oil Only" unless gas from them is marketed off the lease.

^c W, water; G, gas; A, air; AG, air-gas mixture. Numbers following letters indicate numbers of injection wells.

^d Bottom-hole pressures are preceded by "e." All other figures represent pressures at casinghead with well closed.

^e P, paraffin; A, asphalt; M, mixed.

^f 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.

^g S, sandstone; SH, sandstone, shaly; Ss, soft sand; H, shale; L, limestone; LS, limestone, sandy; C, chalk; A, anhydrite; D, dolomite; Da, arkosic dolomite; GW, granite wash; P, serpentine; O, oolite; Slt, siltstone.

^h 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.

ⁱ 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; MI, 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.

^j 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.

EXPLANATION

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 1,8 xx,xxx ; or if the production is between 1,850,000 and 1,900,000, the author may report 1,9 xx,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.

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.

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, 1937 are in two divisions, designated as wildcat wells and wells in proven fields.