Output From New Illinois Fields and Probable Trend

By ALFRED H. BELL*

It is now almost a year since the first big Illinois Basin well came in. This was Pure Oil Co. No. 1 B. Travis, the discovery well of the McClosky sand production in the Clay City field. It had an initial daily production of 2,642 bbls. flowing. With the background of a year's development it is now possible to appraise the significance of the new discoveries in the area with more accuracy than has been possible previously.

Since January 1, 1937, 12 new oil pools have been discovered in Illinois in which 428 wells were producing on April 28, 1938, a total of approximately 30,700 bbls. of oil per day (72 bbls. per well per day). Of the 428 wells in the new fields 25 were flowing on April 28, 1938, all in the Noble field, Clay County, and the remaining 403 were being pumped. Reservoir pressures are low, the amount of gas produced per barrel of oil recovered is relatively small, and the flowing life of the wells is short. The daily rate of production for a single well declines rapidly at first, especially in the fields producing from the McClosky oolitic limestone.

Up to May 1, 1938, the new fields of Illinois have yielded approximately 6,300,000 bbls. of oil in 11 months.

The old fields of the state continue to produce

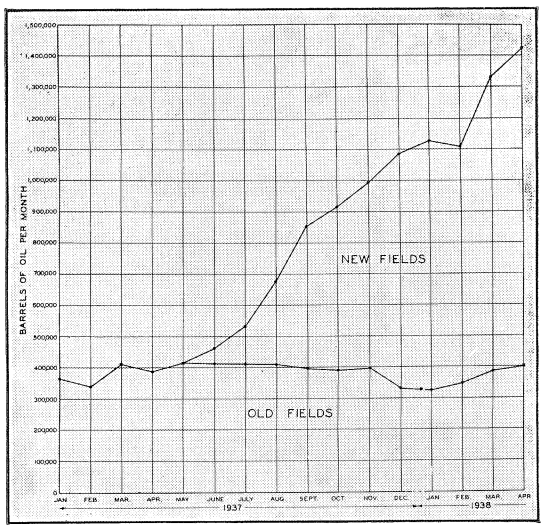

Fig. 1—Monthly production of crude oil in Illinois from January, 1937, to April, 1938. Total figures for the state are from the U. S. Bureau of Mines monthly reports, except for April, 1938, which is estimated. The division into old and new fields is approximate

at about the same rate as during the past few years, an average of about 384,000 bbls. per month or 4,225,000 bbls. during the same 11-month period.

In view of the opening of new fields in Illinois and a substantial increase in output of oil above the level of production from the old fields, it may be interesting to consider whether the production of the new fields has had an appreciable effect upon the current market conditions in the oil industry. There is a tendency to regard the situation in Illinois as a substantial factor in contributing to the unusually large supply of petroleum stocks aboveground. This assumption appears to be unwarranted if increased output is calculated on a basis of days' supply for the United States added by the state in 1937 over 1936 which is nine-tenths of a day.

A more accurate perspective of the situation can be obtained by comparing the increase in 1937 in Illinois with those of other states. On a basis of an average daily demand of 3,200,000 bbls. of crude oil, the contribution of important producing states is as follows:

TABLE 1—CRUDE OIL PRODUCTION*
(Thousands of barrels)

State—	Increase 1937 over 1936	Added days' supply for United States
Texas	83,321	26.0
California	23,748	7.0
Oklahoma	22,369	7.0
Kansas	12,344	3.9
New Mexico	11,574	3.6
Louisiana	10,019	3.1
Wyoming	4,121	1.3
Michigan	4,000	1.3
Illinois	2,951	0.9
Pennsylvania	2,085	0.6

*Prepared by Dr. W. H. Voskuil, mineral economist, Illinois State Geological Survey.

Increases in Arkansas and Indiana are negligible and losses were recorded for Colorado, Kentucky, Montana and New York.

Monthly production of crude oil in Illinois, with an approximate division into old and new fields is shown graphically in Figure 1. The very steep upward trend during the period, July to September, 1937, was caused principally by the new flush production in the Clay City and Noble fields. This is in contrast to a more gentle upward trend which has continued, with some fluctuations, up to the present.

In this connection it is of interest to compare the monthly increases in production for the state with the number of new oil wells completed each month. This is done in the following table:

TABLE 2—MONTHLY CRUDE OIL PRODUCTION AND WELL COMPLETIONS IN ILLINOIS

	Crude oil production in Illinois (bbls.)*	Increase over previous month (bbls.)	No. of new oil wells comp.	Increase per new oil well (bbls.)
1937—				
June	463,000	53,000	16	3,300
July	530,000	67,000	18	3,700
August	674,000	144,000	31	4,650
September	849,000	175,000	63	2,800
October	912,000	163,000	56	2,900
November	990,000	78,000	41	1,900
December	1,085,000	95,000	37	2,560
1938—				
January	1,128,000	43,000	40	1,070
February	1,108,000	—20,000	35	—570
March	1,330,000	222,000	82	2,700
April	1,420,000	90,000	71	1,260

*Statistics from U. S. Bureau of Mines except for April, 1938, which is estimated.

The rather steady downward trend in added production per new well completed is illustrated in the last column of this table. The actual amount of production added by the new wells each month is greater than that shown in the table, because production from the wells completed in previous months is declining. During the next few months as drilling development continues in the new fields of Illinois it is likely the decline of the producing wells will continue in an increasing quantity in relation to the added production from the new wells. If so, the production curve will continue to rise during the next few months but at a declining rate. In other words, a balance appears likely between new production and the decline of production from previous wells, which would result in

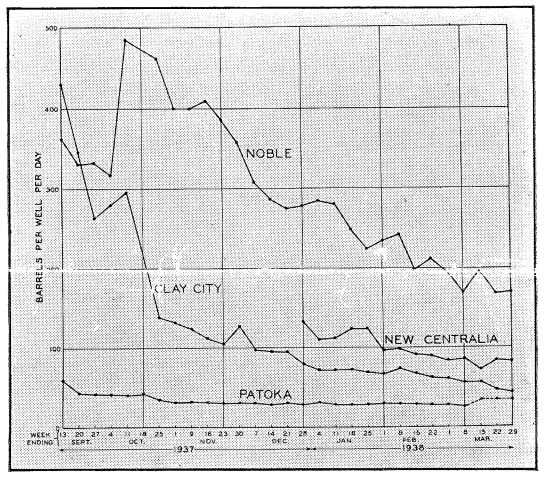

Fig. 2—Decline curves for four new Illinois fields, based on average production per well per day by weeks from September 6, 1937, to March 29, 1938. (Production in the Patoka field began in February, 1937. McClosky production began in the Clay City field late in May, 1937, and in the Noble field in August, 1937)

relatively steady rate of production for the state. This balance may, of course, be disturbed by the discovery of important new fields or by economic factors such as price changes or proration.

The average rate of production decline per well in the four new fields of Illinois which have yielded the largest production to date are illustrated graphically in Figure 2. It will be noted that the early declines are much more rapid in the fields producing from the McClosky (Ste. Genevieve oolitic limestone)—the Clay City and Noble fields —than they are in the fields producing from the Bethel sandstone (Benoist sand) of the Chester series—Patoka and New Centralia fields. Thus, the spectacular initial productions obtained in some of the McClosky wells are not a true indication of the long-time trend of oil production in this region.

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