STATE GEOLOGICAL SURVEY OF KANSAS

BULLETIN 62

EXPLORATION FOR OIL AND GAS IN WESTERN KANSAS DURING 1945

BY WALTER A. VER WIEBE

Printed by Authority of the State of Kansas
Distributed from Lawrence

UNIVERSITY OF KANSAS PUBLICATIONS

JUNE, 1946

STATE OF KANSAS

ANDREW F. SCHOEPPEL, *Governor*

STATE BOARD OF REGENTS

LA VERNE B. SPAKE, *Chairman*

JERRY E. DRISCOLL
FRED M. HARRIS
MRS. ELIZABETH HAUGHEY
WILLIS N. KELLY
LESTER McCOY
DREW McLAUGHLIN
GROVER POOLE
OSCAR STAUFFER

MINERAL INDUSTRIES COUNCIL

JOHN ALLISON, *Chairman*
M. L. BREIDENTHAL
HOWARD CAREY
LESTER McCOY
J. E. MISSIMER
BRIAN O'BRIAN, *Vice-Chairman*
J. A. SCHOWALTER
CHESTER SCOTT
K. A. SPENCER
W. L. STRYKER
B. O. WEAVER

STATE GEOLOGICAL SURVEY OF KANSAS

DEANE W. MALOTT, M.B.A., LL.D., Chancellor of the University of Kansas, and ex officio Director of the Survey

RAYMOND C. MOORE, Ph.D., Sc.D.
State Geologist and Director of Research

JOHN C. FRYE, Ph.D.
Executive Director

BASIC GEOLOGY

STRATIGRAPHY, AREAL GEOLOGY, AND PALEONTOLOGY
John M. Jewett, Ph.D., Geologist
Lowell R. Laudon, Ph.D., Geologist*
Edith H. Lewis, Secretary
Ann Jeffords, B.M., Assistant

PUBLICATIONS AND RECORDS
Betty J. Hagerman, Secretary
Donald E. Dowers, Draftsman†
Robyn Ashby, Draftsman
Bernita K. Mansfield, B.S., Draftsman

MINERAL RESOURCES
SOUTHEAST KANSAS FIELD OFFICE
George E. Abernathy, E.M., Ph.D., Geologist
Jean Helbig, Stenographer

COAL AND MINERAL STATISTICS
Walter H. Schoewe, Ph.D., Geologist
Arthur L. Bowsher, B.S., Geologist†

MINERAL RESOURCES

OIL AND GAS GEOLOGY
M. L. Thompson, Ph.D., Geologist
Doris B. Leonard, B.S., Geologist
Walter A. Ver Wiebe, Ph.D., Geologist*
Arden D. Brown, Well Sample Curator

WICHITA WELL SAMPLE LIBRARY
Ethelyn McDonald, M.A., Well Sample Curator

INDUSTRIAL MINERALS AND CERAMICS
Norman Plummer, A.B., Ceramist
Ada Swineford, M.S., Geologist
Russell Runnels, B.S., Chemist
Robert M. Dreyer, Ph.D., Geologist*
E. D. Kinney, M.E., Metallurgist*
William B. Hladik, Laboratory Tech.
W. P. Ames, A.B., Laboratory Assistant
Ethel W. Owen, Laboratory Assistant
Carrie B. Thurber, Laboratory Assistant

COOPERATIVE PROJECTS WITH UNITED STATES GEOLOGICAL SURVEY

GROUND-WATER RESOURCES
V. C. Fishel, B.S., Engineer in Charge
Bruce F. Latta, A.B., Geologist
Charles C. Williams, M.A., Geologist
Oscar S. Fent, B.S., Geologist
Alvin R. Leonard, A.B., Geologist
Delmar W. Berry, A.B., Geologist
James B. Cooper, A.B., Well Driller
Charles K. Bayne, A.B., Instrumentman
W. W. Wilson, Scientific Aide
Murl H. Rush, Jr., Draftsman
Wilma Howard, Stenographer
Phyllis Mosley, Typist

MINERAL FUELS RESOURCES
Wallace Lee, E.M., Geologist in charge
Constance Leatherock, B.S., Geologist

TOPOGRAPHIC SURVEYS
C. L. Sadler, Division Engineer
Max J. Gleissner, Section Chief
J. P. Rydeen, Topographer

SPECIAL CONSULTANTS: Ray Q. Brewster, Ph.D., Chemistry; Claude W. Hibbard, Ph.D., Vertebrate Paleontology; Eugene A. Stephenson, Ph.D., Petroleum Engineering.

COOPERATING STATE AGENCIES: *State Board of Agriculture, Division of Water Resources*, George S. Knapp, Chief Engineer; Robert Smrha, Assistant Chief Engineer; *State Board of Health, Division of Sanitation*, Paul D. Haney, Chief Engineer and Director, Ogden S. Jones, Geologist.

† Absent on leave for military service.
* Intermittent employment only.

CONTENTS

ILLUSTRATIONS

TABLES

EXPLORATION FOR OIL AND GAS IN WESTERN KANSAS DURING 1945

By
WALTER A. VER WIEBE

ABSTRACT

According to the best information available, 1,420 test holes were drilled in the western part of the state during 1945; of this number 645 were oil wells and 212 were gas wells. The total production of oil in the state during 1945 was 98,429,869 barrels, which is about 1½ million barrels less than the production in 1944. The production of gas for the state was 124,100 million cubic feet, which is approximately 10,000 million cubic feet less than the total for the previous year. The western part of the state accounts for all but about 5,000 million cubic feet of the gas.

The amount of geophysical work done in 1945 was not as great as that reported for the previous year. Only a few of the 35 new pools found in western Kansas are credited to such geophysical work. Most of them were found by the intelligent application of subsurface data derived from other test wells. Five of the new pools are in Barton County, and there are three each in Ellis, Pawnee, Rooks, Russell, Sedgwick, and Sumner Counties. The most valuable find for the year is the Ryan pool, in Rush County. An interesting new discovery is the Adams Ranch pool in Meade County in the southwestern part of the state. A large flow of gas was found here in the upper strata of the Mississippian system. Nine of the new oil and gas pools were discovered by rank wildcat tests located more than 10 miles from production, while 12 are credited to ordinary wildcat tests located between 2 and 10 miles from production. The remaining 14 pools were found by extension wildcat tests. The ratio of wildcat tests to new discoveries is approximately 15 to 1.

At least 48 western counties were tested by one or more holes and production was obtained in 32 of these. One new county, Meade, was added to the growing list of counties in which oil or gas has been found. The counties in which 100 or more tests were drilled are Barton (291), Russell (128), and Ellis (100). Stafford County had 81 tests and McPherson County had 80 tests. In regard to producing wells, Barton County was first with 167 wells and Russell County was second with 83 wells. Stevens County had 71 successful wells, Ellis 51, McPherson 50, and Grant 48.

INTRODUCTION

Previous publications.—The State Geological Survey of Kansas has issued eleven reviews of oil and gas developments in the western part of the state. The first of these was published in 1928 as Mineral Resources Circular 1. A second report, published in 1933 as Mineral Resources Circular 2, describes developments in

1928, 1929, and 1930; Mineral Resources Circular 3, published in 1934, describes developments in 1931 and 1932. In 1938 a cumulative report was issued as Mineral Resources Circular 10. This gives information on the areal geology, stratigraphy, and structure of each county producing oil or gas at that time. The history of development for succeeding years may be found in Mineral Resources Circular 13 and in Bulletins 28, 36, 42, 48, 54, and 56. For information on oil and gas history and development in eastern Kansas, the reader is referred to Bulletin 57, published in 1945 by the State Geological Survey.

Acknowledgments.—This report on developments in western Kansas would not have been possible without the generous cooperation of many individuals in Wichita. Foremost in importance are the records of the Conservation Division of the State Corporation Commission. Mr. T. A. Morgan, Director of this division, has at all times been willing to furnish data which otherwise might have been difficult to obtain. Many geologists of Wichita contributed information needed in parts of the report. I wish to mention particularly F. E. Mettner of the Transwestern Oil Company, Harold Smedley of the Skelly Oil Company, Frank Brooks of the El Dorado Refining Company, Robert Carmody of the Gulf Oil Corporation, Lee Cornell of the Stanolind Oil and Gas Company, Edward Koester of Darby and Bothwell, Inc., and Charles Evans of the Skelly Oil Company. The cards prepared by the Kansas Well Log Bureau have proved to be most helpful.

Wildcat exploration.—Wildcat exploration was important during 1945. Such drilling was encouraged by the demands for oil and gas in the war effort. Many of the major oil companies drilled rank wildcat tests in areas which were at that time far removed from proved production. For purposes of classification wildcat wells may be divided into three categories. Test wells located more than 0.5 mile but less than 2 miles from production at the time of drilling are classed as extension wildcats; wells located more than 2 miles but less than 10 miles from production are classed as ordinary wildcats; and wells located more than 10 miles from production are classed as rank wildcats. During 1945 at least 322 wildcats were drilled in the western part of the state. Of this number, 61 were completed as oil or gas wells. A total of 1,420 test wells was drilled in western Kansas during 1945—of these 645 found oil, 212 found gas, and 563 were dry holes. The ratio of successful wells

TABLE 1.—*Wells drilled in western Kansas in 1945, by counties*

County	Oil	Gas	Dry	Total
Barber	8	14	19	41
Barton	164	3	124	291
Clark			2	2
Comanche			1	1
Decatur			5	5
Edwards			4	4
Ellis	51		49	100
Ellsworth	23		13	36
Finney	4	9	2	15
Gove			1	1
Graham	10		18	28
Grant		48		48
Gray			2	2
Harper			3	3
Harvey	4		1	5
Haskell		42	1	43
Hodgeman			1	1
Kearny		7		7
Kingman			7	7
Kiowa			1	1
Lane			2	2
McPherson	47	3	30	80
Morton			1	1
Meade		1		1
Ness	8		6	14
Norton	2		4	6
Pawnee	15	1	12	28
Phillips	6		7	13
Pratt	36	5	16	57
Rawlins			3	3
Reno	9		19	28
Rice	41		31	72
Rooks	25		22	47
Rush	16	1	6	23
Russell	83		45	128
Saline	14		9	23
Scott	2		1	3
Sedgwick	7	2	18	27
Seward		2	1	3
Sheridan	12		3	15
Sherman			1	1
Stafford	41		40	81
Stanton		2		2
Stevens		71		71
Sumner	15	1	21	37
Thomas			2	2
Trego	2		8	10
Wallace			1	1
Totals	645	212	563	1,420

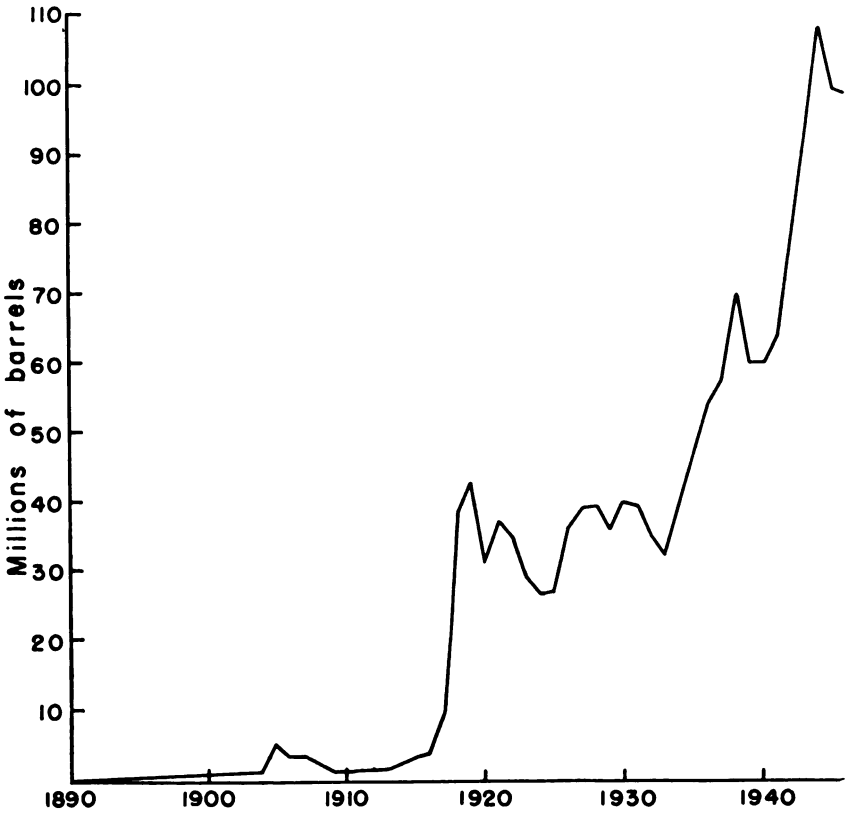

FIG. 1.—Annual oil production in Kansas from 1890 to 1945.

to dry holes is approximately 8 to 5. This ratio is not much different from that of the previous year.

Oil production.—The amount of oil produced in Kansas during 1945 is 98,429,869 barrels. This is somewhat less than the 1944 production (Fig. 1). Most of the new oil wells were drilled in Russell, Barton, Stafford, Pratt, Ellis, McPherson, and Rice Counties. Table 1 shows the number of wells drilled in each county. The largest number of new oil wells for any one pool is 66 in the Kraft-Prusa pool of northeastern Barton County. In the large Trapp pool, 59 new oil wells were drilled. This pool was somewhat enlarged during the year by the completion of wells between the Trapp pool as previously defined and near-by pools. The pool which increased most because of such additions is the Hall-Gurney pool of Russell

County. This pool now includes the former Williamson and Mohl pools.

According to L. B. Taylor, Conservation Division engineer, the maximum recovery per acre in the large pools of western Kansas (Silica, Kraft-Prusa, Trapp, Bemis, Burnett, and Geneseo) to the end of 1945 was 14,000 barrels. The lowest recovery per acre was 4,000 barrels and the average was 6,200 barrels. Tests conducted by the State Corporation Commission indicate that drainage conditions in these pools ordinarily affect wells as far as 660 feet away from a given well, and may affect wells as far as 1,320 feet away.

The total number of producing oil wells in Kansas at the end of 1945 was 23,568. Of these, 6,566 were prorated and 17,012 were not prorated. During the year at least 785 new oil wells were completed in Kansas, and 535 oil wells were plugged and abandoned as unprofitable for further exploitation.

Gas production.—The amount of gas produced in Kansas during 1945 was 124,100,219 thousand cubic feet as compared to 134,702,825 thousand cubic feet produced during the previous year when a record high figure was reached (Table 2). Of this total, 80,704,992 thousand cubic feet came from the large reservoir in the Hugoton district. Other large producing districts were the Medicine Lodge pool in Barber County which produced 13,655,523 thousand cubic feet and the Otis pool in Rush County which produced 6,021,592 thousand cubic feet. Eastern Kansas furnished about 5 billion cubic feet of this gas.

New pools.—During 1945, 30 new oil pools and 5 new gas pools were found in western Kansas. Table 3 lists these pools by counties. The best oil pool in the group is the Ryan pool in Rush County. Wells in this pool had large initial productions and many wells have been drilled around the discovery well since January. There is a high ratio of gas to oil in the pool, which has interfered somewhat with the production of oil in some wells. The Vohs pool in Rooks County will probably prove to be the second best find for the year. Two producing zones have been found in this pool. It is difficult to evaluate the other new oil pools because many of them have had no wells drilled except the discovery well. None of the new gas pools gives evidence of covering a large area. The most interesting new gas well is the Adams Ranch well in Meade County.

The new reserves attributable to new pools of 1945 are probably small. One authority has estimated that the new reserves for these pools will not exceed 10 million barrels. When one considers that the total sale of oil from the pools of western Kansas during 1945 was about 60 million barrels, it is evident that the reserves are being depleted rapidly. Only one barrel of new oil has been found to replace six taken out of the ground.

TABLE 2.—*Kansas natural gas production in 1944 and 1945*
(From records of the Conservation Division, Kansas Corporation Commission)

Field	1944 M cu. ft.	1945 M cu. ft.
Aetna	34,607	101,888
Alden	1,155,751	615,428
Barton County, miscellaneous	176,083	
Belpre		2,368,835
Burrton	2,465,035	1,535,664
Cairo (Viola)	182,993	157,740
Carmi	8,187	24,279
Chegwidden		110,631
Chitwood	1,853,222	1,428,131
Cowley County, miscellaneous	375,763	754,527
Cunningham (Arbuckle)	1,172,446	403,242
Cunningham (Viola)	5,708,863	3,020,241
Eastern Kansas, miscellaneous*	5,700,000	5,130,000
Ellsworth	90,445	
Hollow	25,160	4,712
Hugoton	83,007,568	80,704,992
Krier		168,151
Lake City		457,189
Lyons	309,926	244,245
McCarty	762,957	
McLouth	1,173,085	228,593
McPherson County	934,035	921,071
Medicine Lodge	14,356,418	13,655,523
Merten	218,468	80,363
Orth	346,537	295,177
Otis	12,112,495	6,021,592
Rice County, miscellaneous	176,896	
Schraeder	101,253	314,104
Silica		134,382
Sperling	11,636	14,308
Wellington	244,193	131,840
Whelan	138,037	289,367
Yoder	469,521	574,631
Zenith-Peace Creek	445,931	1,576,867
Zook	947,314	2,632,506
Totals	134,702,825	124,100,219

* Estimated

TABLE 3.—*Oil and gas pools discovered in western Kansas during 1945*

County, field, and location of discovery well	Discovery well	Producing zone	Depth, feet	Month of discovery	Initial prod. per day, bbls.
Barber County					
Medicine Lodge Northeast 8-33-12W	Skelly No. 1 Boggs "A"	"Mississippi lime"	4,472-4,493	December	5 mil. cu. ft. gas
Barton County					
Beaver South 27-16-12W	Ash No. 1 Rieman "A"	Arbuckle	3,353-3,356	August	350
Dundee 29-20-14W	Champlin No. 1 Christianson	Arbuckle	3,607-3,611	May	6 mil. cu. ft. gas
Feltes Northwest 3-16-12W	Black-Marshall No. 1 Miller	Arbuckle	3,342-3,345	June	117
Hess West 36-20-14W	Phillips No 1 Spani	K.C.-Lans.	3,249-3,276	February	4,470
Unruh 24-20-15W	Harbar Drilling No. 1 Unruh	Arbuckle	3,641-3,644	June	2,565
Ellis County					
Cromb 22-11-20W	Darby & Bothwell No. 1 Cromb	K.C.-Lans.	3,466-3,471	September	190
Herzog North 19-13-16W	Gulf No. 1 Dreiling	Arbuckle	3,487-3,493	March	2,453
Nicholson 30-11-20W	Phil-Han No. 1 Nicholson	Arbuckle	3,842-3,853	October	446
Graham County					
Luck 13-8-22W	Helmerich and Payne No. 1 Luck	K.C.-Lans	3,418-3,438	February	328
Faulkner 27-10-22W	Wood River No. 1 Faulkner "A"	K.C.-Lans.	3,629-3,633	January	406
McPherson County					
Battle Hill 24-18-1W	Sharon Drilling No. 1 Crowther "A"	"Chat"	2,825-2,831	September	250
Meade County					
Adams Ranch 8-35-30W	Stanolind No. 1 Adams Ranch	"Mississippi lime"	5,858-5,925	February	88 mil. cu. ft. gas
Ness County					
Manteno 31-19-25W	Chalmette No. 1 Bowman	Mississippian	4,549-4,576	October	400
Norton County					
Ray West 26-5-21W	Cities Service and Helmerich and Payne No. 1 Hansen "D"	Arbuckle	3,650-3,652	March	102
Pawnee County					
Benson 30-23-15W	Stanolind No. 1 Benson	K.C.-Lans.	3,853-3,869	July	357
Ryan Southeast 12-20-16W	W. F. Hildebrand *et al.* No. 1 Wickstrom	Arbuckle	3,739-3,748	December	143
Shady 34-22-16W	J. M. Huber No. 1 Katchelman	Arbuckle	4,063-4,065	November	36 mil. cu. ft. gas
Phillips County					
Logan 3-5-20W	Helmerick and Payne-Tidewater No. 1 Bowman "A"	K.C.-Lans.	3,149-3,178	November	201
Rooks County					
McClellan 9-9-19W	Phil-Han No. 1 McClellan	K.C.-Lans.	3,343-3,348	September	185
Palco Townsite 26-9-20W	Keyes No. 1 Neil	Arbuckle	3,847-3,865	October	211
Vohs 14-10-19W	Darby & Bothwell No. 1 Vohs	K.C.-Lans. Arbuckle	3,365-3,370 3,559-3,562	June	380

TABLE 3.—*Oil and gas pools discovered in western Kansas during 1945, concluded*

County, field, and location of discovery well	Discovery well	Producing zone	Depth, feet	Month of discovery	Initial prod. per day, bbls.
Rush County					
Loretto 21-16-17W	El Dorado Refining No. 1 Urban	Arbuckle	3,533-3,537	August	1,300 M cu. ft. gas
Ryan 35-19-16W	Inland No. 1 Peterson	Arbuckle	3,725-3,737	January	2,591
Russell County					
Atherton North 7-13-14W	Derby No. 1 Rogg	Arbuckle	3,195-3,200	May	462
Atherton West 23-13-15W	Coralena No. 1 Olson	K.C.-Lans.	3,269-3,278	October	29
Donovan North 3-15-15W	Wolf Creek No. 1 Strock	K.C.-Lans.	3,197-3,216	May	75
Sedgwick County					
Greenwich South 22-26-2E	J. P. Gaty No. 1 Stollei	"Chat"	2,896-2,909	October	468
Hohn 22-27-1W	Turner and Fuller No. 1 Hohn	K.C.-Lans.	2,779-2,827	May	100
Petrie 36-26-1W	British American No. 2 Petrie	Viola	3,387-3,389	August	417
Sheridan County					
Studley Southwest 32-8-26W	Continental No. 1 Hoxie State Bank	K.C.-Lans.	3,758-3,773	May	280
Sumner County					
Bellman 15-30-1E	Hatfield *et al.* No. 1 Bellman	Simpson	3,798-3,804	October	141
Perth 12-33-2W	Carter No. 1 Latimer	Simpson	4,264-4,278	May	157
Val Verde 23-33-2E	El Dorado Refining No. 1 Patterson	"Bartlesville"	3,280-3,287	February	20
Trego County					
Cotton 15-12-21W	Harbar Drilling No. 1 Cotton	Arbuckle	3,858-3,978	January	40

OIL AND GAS DEVELOPMENT IN WESTERN KANSAS COUNTIES

BARBER COUNTY

A total of 41 test wells were drilled in Barber County (Fig. 2) during 1945, 8 of which were oil wells, 14 were gas wells, and 19 were dry holes. One of the wildcat tests was far enough removed from present production to be classed as the discovery of a new gas pool, the **Medicine Lodge Northeast** pool. Here the discovery well was drilled by the Skelly Oil Company on the Boggs Ranch in the NW cor. NE¼ sec. 8, T. 33 S., R. 12 W. Gas was found near the top of the Mississippian limestone between depths of 4,472 and 4,493 feet. The initial production of the well was more than 5 million cubic feet of gas.

The **Marjorie East** pool, which has been combined with the **Marjorie** pool, now produces both oil and gas. The first well to find oil was drilled by the J. M. Huber Corporation on the Sadie Clay farm in the Cen. E½ SE¼ SW¼ sec. 28, T. 30 S., R. 13 W. It was completed on May 16 for a potential production of 240 barrels per day. Subsequently, the same operator completed an additional oil well in sec. 32 and one in sec. 33 of the same township. Nine other tests were drilled in the immediate vicinity of the producing wells. Five of these wells were successful in finding gas and four were dry holes.

In the **Clara** pool two new gas wells were completed and one dry hole was drilled near by. In the **Sun City** pool one additional oil well was drilled, making a total of eight wells producing from the

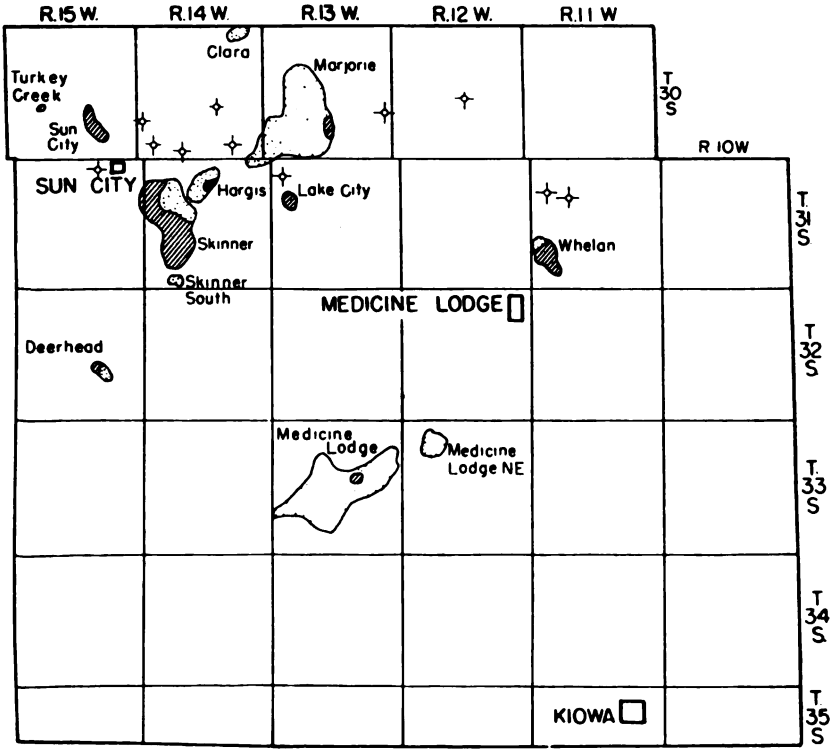

FIG. 2.—Barber County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

TABLE 4.—*Oil and gas pools of Barber County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Bear Creek 30-31-15W		abandoned during 1945					
Deerhead 22-32-15W	1943	80	3,728	40,205	2	Viola	4,950
Hargis 9-31-14W	1945	40	none	none	2	Viola	4,405
Lake City 7-31-13W	1937	320	32,775	180,525	1 2 1	Viola Simpson Arbuckle	4,435 4,530 4,607
Marjorie 28-30-13W	1944	120	7,710	7,710	3	Viola	4,515
Medicine Lodge 13-33-13W	1937	200	none	45,700	2	Misener	4,845
Skinner 29-31-14W	1943	3,000	42,800	63,135	7 1	Viola Arbuckle	4,626 4,585
Skinner Northwest 17-31-14W		Combined with Skinner					
Sun City 35-30-15W	1941	300	217,500	528,450	8	K.C.-Lans.	4,344
Turkey Creek 20-30-15W	1943	40	13,255	13,255	1	Simpson	4,438
Whelan 32-31-11W	1934	800	207,455	1,337,915	20	"Chat"	4,355
			thousand cubic feet				
Clara 2-30-14W	1944	160			1 1 1	Simpson Viola Arbuckle	4,435 4,509 4,540
Deerhead (gas) 26-32-15W	1942	1,000	inc. with Lake City		2	Viola	4,931
Hargis (gas) 3-31-14W	1944	640	inc. with Lake City		1	Viola	4,403
Lake City (gas) 7-31-13W	1945	320	457,189	457,189	1	Viola	4,435
Marjorie (gas) 31-30-13W	1944	1,000	inc. with Lake City		7	Viola	4,511
Marjorie East 32-30-13W		Combined with Marjorie					
Medicine Lodge (gas) 13-33-13W	1927	6,000	13,655,525	102,832,525	36	"Chat"	4,455
Medicine Lodge Northeast 8-33-12W	1945	600	none	none	1	"Chat"	4,472
Skinner (gas) 17-31-14W	1944	2,000	inc. with Lake City		4	Viola	4,630
Skinner South 32-31-14W	1944	640			1	"Douglas sand"	4,023
Whelan (gas) 32-31-11W	1945	800	289,367	289,367	1	"Chat"	4,355

Kansas City-Lansing limestone. In the **Whelan** pool one oil well and one gas well were drilled during 1945. Three wells were completed in the **Hargis** pool, which was discovered in 1944. Two of

the wells produce both oil and gas, and the other was completed as a gas well.

Much activity took place in the Skinner area, and the **Skinner** and **Skinner Northwest** pools were joined before the close of the year. Of the seven tests drilled in that area, two are oil wells, three are gas wells, and two are dry holes. The wells in this area are scattered, and no doubt many additional wells will be drilled within its limits in future years. The gas occurs in the Viola formation, and the oil occurs both in the Viola formation and the Arbuckle dolomite. Only one gas well was completed in the **Deerhead** pool during the year.

Table 4 gives information on the oil and gas pools in Barber County. These pools and the dry wildcat wells drilled in 1945 are shown on Figure 2.

Exploratory wells.—Relatively few exploratory wells were drilled in Barber County during 1945. One of these, a well drilled by A. M. Landon on the House lease in the SE cor. NW¼ sec. 22, T. 30 S., R. 12 W., can be classed as a rank wildcat. In this well the Viola dolomitic chert was found at 4,519 feet, the Simpson sandstone at 4,602 feet, and the Arbuckle dolomite at 4,723 feet. A wildcat test was drilled in sec. 24, T. 30 S., R. 13 W. by the Cities Service Oil Company on the Smith lease. Five extension wildcats were drilled in T. 30 S., R. 14 W. All of these were dry. Farther south and just north of the Whelan pool two wildcat tests were drilled in T. 31 S., R. 11 W. One was drilled by the Stanolind Oil and Gas Company on the Chain farm in sec. 7. It was completed at a total depth of 4,850 feet, about 49 feet below the top of the Arbuckle dolomite. The other well was drilled by the Skelly Oil Company on the Axline farm in sec. 8. It was completed at a total depth of 4,730 feet, about 18 feet below the top of the Viola dolomite. No other tests were drilled farther south except the discovery well in the Medicine Lodge Northeast pool.

Barton County

During 1945 291 test wells were completed in Barton County (fig. 3). Of these, 164 were oil wells, 3 were gas wells, and 124 were dry holes. Among the wildcat wells, approximately 103 can be classified as extension tests, 14 as ordinary wildcat tests, and 4 as rank wildcat tests. Five wildcat tests were successful in finding new pools. One of these is a gas pool, the Dundee pool in the south-

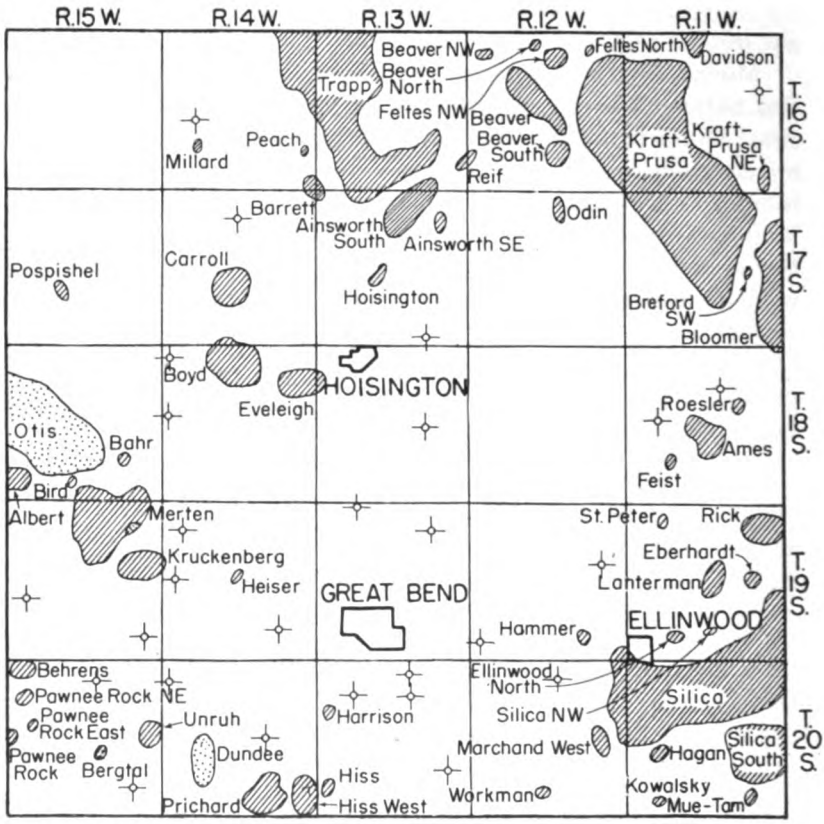

FIG. 3.—Barton County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

western part of the county. The other four are small oil pools, the Beaver South, Feltes Northwest, Hiss West, and Unruh.

As usual, the most drilling was done in the northeastern part of the county. There the **Kraft-Prusa** pool still dominates. At least 66 oil wells were added to this pool in 1945, making a total of 441 wells (Table 5). This pool, like many others in western Kansas, produces from several different zones, the highest being high in the Pennsylvanian system. In T. 16 S., R. 12 W. one oil well was added to the producers in the **Beaver** pool. The large **Trapp** pool was extended southward by the addition of 20 oil wells in T. 16 S., R. 13 W. and 9 oil wells in T. 16 S., R. 14 W.

The **Carroll** pool, discovered late in 1944, was fairly well drilled out during 1945. It now has 11 wells. In the next lower row of townships activity was centered on the **Boyd** pool, where 11 additional oil wells were completed. One well was completed by the Republic Natural Gas Company on the Smith farm in the NW¼ SW¼ NW¼ sec. 7, T. 18 S., R. 13 W. as a long extension of the **Eveleigh** pool. This well has a potential capacity of 85 barrels per day.

There was also much interest in the area south and southeast of the large **Otis** gas pool, in the western part of the county. This pool is discussed under Rush County. Several producing wells were added to the **Albert** pool and 12 oil wells were added to the **Merten** pool. There was much activity south of Great Bend in the area of the **Pritchard** and **Hiss** pools and a new pool, the **Hiss West**, was opened between these pools. It is likely that these three pools will eventually become one producing area, although some limiting dry holes are present. West of the Pritchard pool the Champlin Refining Company drilled the discovery well in the **Dundee** gas pool when it completed the first well on the Christianson farm in the NE¼ SW¼ NE¼ sec. 29, T. 20 S., R. 14 W. This well is capable of producing 6 million cubic feet of gas per day. The producing formation is the Arbuckle dolomite. In June the Harbar Drilling Company found oil on the Unruh farm in the NE cor. NW¼ sec. 24,

TABLE 5.—*Oil and gas pools of Barton County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Ainsworth South **26-16-13W**	1936	5,000			1	Shawnee	2,925
					1	K.C.-Lans.	3,170
					23	Arbuckle	3,390
Ainsworth Southeast **11-17-13W**	1943	800	4,232	17,932	1	Arbuckle	3,358
Albert **30-18-15W**	1935	1,600	116,400	1,215,625	21	Reagan	3,601
Ames **22-18-11W**	1943	250	62,280	126,255	1	Sooy	
					6	K.C.-Lans.	3,042
					1	Arbuckle	3,348
Bahr **26-18-15W**	1943	40	23,845	35,415	1	Reagan	3,495
Barrett **36-16-14W**	1943	150	18,130	42,780	3	Arbuckle	3,463
Beaver **16-16-12W**	1934	1,200	823,790	1,990,340	7	Oread	2,885
					23	Arbuckle	3,348
					1	Reagan	3,335

TABLE 5.—*Oil and gas pools of Barton County, continued*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Beaver North 4-16-12W	1937	160	16,110	282,410	3	Arbuckle	3,316
Beaver Northwest 6-16-12W	1942	160	12,520	45,110	2	K.C.-Lans.	3,066
Beaver South 27-16-12W	1945	80	5,470	5,470	2	Arbuckle	3,359
Behrens 6-20-15W	1944	160	21,420	21,420	4	Arbuckle	3,719
Bird 33-18-15W	1940	40	4,835	19,735	2	Reagan	3,508
Bloomer 36-17-11W	1936	5,000	2,851,570	21,560,570	262	K.C.-Lans. Arbuckle	3,044 3,257
Boyd 4-18-14W	1942	800	289,935	418,885	1 27	K.C.-Lans. Arbuckle	 3,438
Breford Southwest 23-17-11W	1942	40	3,743	17,180	1	Arbuckle	3,299
Carroll 21-17-14W	1944	640	40,270	40,270	9	Arbuckle	3,356
Davidson 4-16-11W	1928	400	48,505	279,495	12	K.C.-Lans. Sooy Arbuckle	3,016 3,317 3,314
Eberhardt 14-19-11W	1935	320	23,778	264,750	2 2	K.C.-Lans. Arbuckle	3,194 3,311
Ellinwood North 33-19-11W	1937	40	3,920	63,630	1	Arbuckle	3,328
Eveleigh 11-18-14W	1943	250	56,824	98,739	7	Arbuckle	3,339
Feist 29-18-11W	1936	40	none	56,625	1	Arbuckle	3,430
Feltes North 2-16-12W	1944	160	100	478	1	Arbuckle	3,338
Feltes Northwest 3-16-12W	1945	80	8,210	8,210	2	Arbuckle	3,342
Hagan 20-20-11W	1938	160	37,720	180,575	4	Arbuckle	3,323
Hammer 35-19-12W	1940	120	25,920	37,890	5	Arbuckle	3,348
Harrison 18-20-13W	1942	40	none	1,430	1	Arbuckle	3,498
Heiser 16-19-14W	1935	40	9,795	28,525	1	K.C.-Lans.	3,228
Hiss 31-20-13W	1936	640	101,330	516,090	5	K.C.-Lans.	3,270
Hiss West 25-20-14W	1945	400	included with Hiss		6	K.C.-Lans.	
Hoisington 21-17-13W	1938	160	26,400	188,900	1 2	K.C.-Lans. Arbuckle	3,222 3,440
Kowalsky 32-20-11W	1941	40	none	2,540	1	Arbuckle	3,378
Kraft-Prusa 10-17-11W	1937	10,000	4,493,635	19,541,675	12 34 395 	Shawnee K.C.-Lans. Gorham Arbuckle Reagan	2,885 3,160 3,335 3,281 3,310
Kraft-Prusa Northeast 36-16-11W	1941	160	119,490	119,490	3	Arbuckle	3,351

TABLE 5.—*Oil and gas pools of Barton County, concluded*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Kruckenberg 14-19-15W	1939	160		14,465	1	Arbuckle	3,580
Lanterman 15-19-11W	1935	500	63,660	706,650	7 5	K.C.-Lans. Arbuckle	3,109 3,235
Marchand West 24-20-12W	1939		See Silica pool				
Merten 10-19-15W	1942	1,000	96,770	150,630	20	Reagan	3,551
Millard 29-16-14W	1943	40	none	3,402	1	Arbuckle	3,462
Mue-Tam 35-20-11W	1942	40	2,045	16,825	1	Arbuckle	3,312
Odin 10-17-12W	1941	40	2,190	23,630	1	Arbuckle	3,340
Otis			See Rush County				
Pawnee Rock			See Pawnee County				
Pawnee Rock East 17-20-15W	1941	40	9,685	12,524	1	Arbuckle	3,814
Pawnee Rock Northeast 7-20-15W	1944	160	29,997	41,465	4	Arbuckle	3,753
Peach 25-16-14W	1944	40	1,916	3,969	1	Arbuckle	3,404
Pospishel 20-17-15W	1939	40			1	Arbuckle	3,548
Pritchard 34-20-14W	1944	700	116,110	139,675	11	Arbuckle	3,455
Reif 30-16-12W	1944	160	7,536	16,580	1 1	K.C.-Lans. Arbuckle	3,253 3,399
Rick 1-19-11W	1936	400	182,610	620,700	11 2	K.C.-Lans. Arbuckle	3,106 3,355
Roesler 14-18-11W	1943	40	5,140	18,370	1	Arbuckle	3,291
Silica 12-20-11W	1931	32,000	5,855,095	66,974,930	628	Shawnee K.C.-Lans. Arbuckle	2,955 3,328
Silica Northwest 27-19-11W	1943	40	included with Silica		1	Arbuckle	3,331
Silica South 24-20-11W	1935	3,680	included with Silica		5 121	K.C.-Lans. Arbuckle	3,035 3,268
St. Peter 5-19-11W	1944	40	11,292	19,110	1	Arbuckle	3,387
Trapp			See Russell County				
Unruh 24-20-15W	1945	40	6,405	6,405	1	Arbuckle	3,641
Workman 33-20-12W	1944	40	4,806	6,081	1	Arbuckle	3,407
			thousand cubic feet				
Bergtal 22-20-15W	1941				1	Arbuckle	3,689
Dundee 29-20-14W	1945	160			2	Arbuckle	3,607
Merten (gas) 10-19-15W	1945		80,363				
Rick (gas) 1-19-11W	1941		134,382		1	K.C.-Lans.	3,147

TABLE 6.—*Dry wildcat wells drilled in Barton County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Hartman No. 1 Pichner	NW cor. NW¼ 13-16-11W	3,399	3,430
Chalmette No. 1 Ochs	SW¼ SE¼ NW¼ 20-16-14W	3,481	3,490
Ash No. 1 Moses	NE cor. SW¼ 35-17-13W	3,342	3,358
Gear No. 1 Dietz	NE cor. NE¼ 9-17-14W	3,448	3,460
Kingwood No. 1 Musenberg	SE cor. SE¼ 10-18-11W	3,334	3,400
Hartman No. 1 Schubert	SW cor. SE¼ 17-18-11W	3,397	3,425
Carter No. 1 Bates	NE¼ SW¼ NE¼ 23-18-13W	3,321	3,355
Continental No. 1 Brant (Strat.)	SE¼ NW¼ SW¼ 6-18-14W	3,563	3,610
Helmerich and Payne No. 1 Schneider	SW cor. SW¼ 18-18-14W	3,521	3,731
Lion No. 1 Hammeke	SW cor. NW¼ 13-19-12W	3,376	3,450
Hartman No. 1 Harris	NE¼ SE¼ NW¼ 31-19-12W	3,396	3,435
Republic Natural Gas No. 1 Harmison	NE cor. NE¼ 5-19-13W	3,399	3,451
Virginia Drilling No. 1 Lischesky	NE cor. NE¼ 11-19-13W	3,421	3,471
Ainsworth Bros. No. 1 Fenn	SW cor. NE¼ 7-19-14W	3,572	3,605
Sunray No. 1 Ewing	NE cor. NW¼ 19-19-14W	3,540	3,660
Republic Natural Gas No. 1 Essmiller "B"	SE cor. SW¼ 26-19-14W	3,505	3,550
Gordon No. 1 Werhahn	SW cor. SE¼ 19-19-15W	3,662	3,712
Lion No. 1 Wolf	NE¼ NW¼ NW¼ 36-19-15W	3,595	3,739
W. L. Hartman No. 1 Southern	SE cor. SW¼ 3-20-12W	3,419	3,450
Hartman No. 1 Gaunt	SE cor. NE¼ 3-20-13W	3,445	3,476
Hartman No. 1 Piller	SW cor. NE¼ 8-20-13W	3,504	3,542
Hartman No. 1 Selle	NE cor. SE¼ 10-20-13W	3,464	3,483
Hartman No. 1 Hofmaster	SW cor. NW¼ 25-20-13W	3,520	3,595
Manning No. 1 Dirks	SW cor. SW¼ 6-20-14W	3,612	3,665
Kiowa No. 1 Asher	SE cor. NE¼ 22-20-14W	3,565	3,614
Stanolind No. 1 Cameron	SE cor. SW¼ 3-20-15W	3,679	3,733
Vickers No. 1 Schmitt	NW cor. NE¼ 35-20-15W	3,679	3,710

T. 20 S., R. 15 W. The oil in this well occurs nearly 80 feet below the top of the Arbuckle dolomite. The potential capacity of the well is more than 2,000 barrels per day. This pool is called the **Unruh** pool.

Exploratory wells. — Twenty-seven dry wildcat tests were drilled more than 2 miles from production in Barton County during 1945. These wells are listed in Table 6 and shown in Figure 3.

Clark County

At the present time there is only one pool in Clark County (Fig. 4), the **Morrison** pool. This pool was discovered in 1926, and since that time it has produced approximately 150,000 barrels of oil and a small amount of gas. Both oil and gas occur in the Viola cherty limestone. This fairly good recovery of oil prompted the Olsen Drilling Company to drill another test well in the Morrison pool during 1945. It was drilled on the Graff farm in the Cen. NW¼ NW¼ sec. 20, T. 32 S., R. 21 W. At a depth of 6,440 feet the Viola cherty limestone was encountered but no oil was found. The test was then drilled into the Arbuckle dolomite, which was found at 6,746 feet, and the hole was completed as a dry hole at a total depth of 6,774 feet.

One other test well was drilled in Clark County during 1945, the Phillips Petroleum Company No. 1 Birdsall in the Cen. NW¼ SE¼ sec. 24, T. 31 S., R. 23 W. In this well Meramecian strata were found at 5,222 feet and consist of alternating oölitic limestone and brown lithographic limestone. The Warsaw dolomite was found at 5,640 feet, the Cowley formation at 5,950 feet, the St. Joe limestone at 6,050 feet, and the Chouteau cherty limestone at 6,045 feet. There

Table 7.—*Oil and gas pools of Clark County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Morrison (oil) 17-32-21W	1936	160	1,885	146,035	2	Viola	6,467
Morrison (gas) 21-32-21W	1926	1,000	none	small	1	Sooy	5,443

is much black shale in the lower part of the St. Joe formation. The Viola in this well consists of four major lithologic units; in descending order, dolomite, coarsely crystalline limestone, dolomite, and coarsely crystalline limestone. The lower limestone has a sandy base. The Simpson rocks consist of green shale from 6,484 to 6,560 feet and of sandstone from 6,560 to 6,586 feet. The Arbuckle dolomite was penetrated from 6,586 feet to the total depth of 6,817 feet. The Arbuckle is very sandy from 6,680 to 6,700 feet and very dolocastic below that level.

Information on the Morrison pool is given in Table 7.

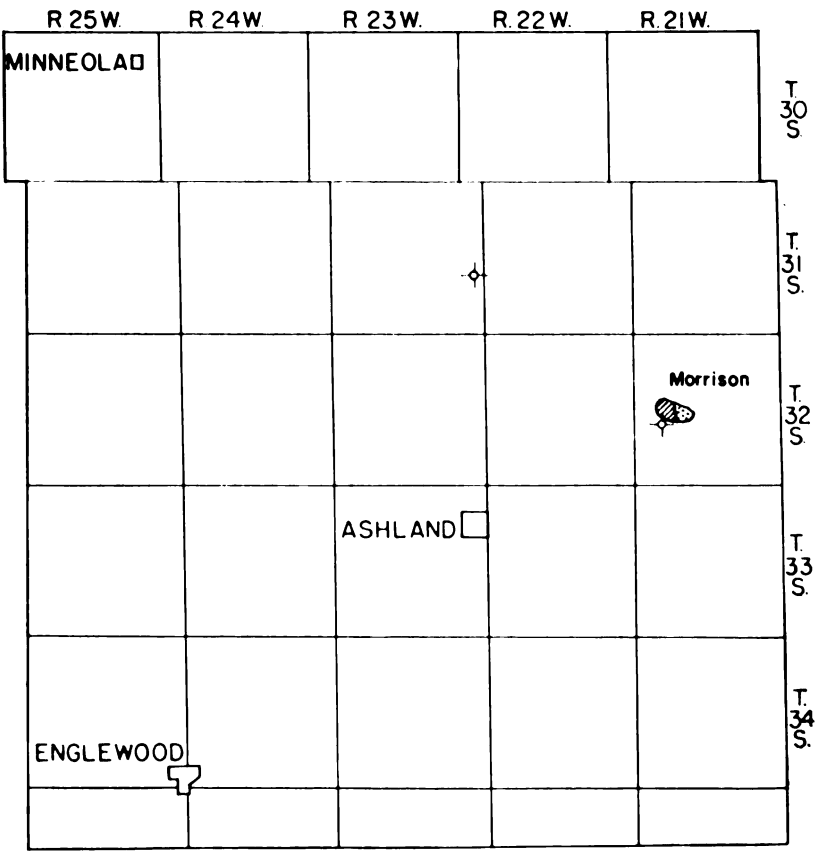

FIG. 4.—Clark County map showing oil and gas pools and dry holes drilled in 1945. (Gas, dots; oil, diagonal lines.)

Edwards County

At the present time there is only one small pool in Edwards County (Fig. 5), the **Belpre** pool. The **McCarty** gas pool was abandoned during 1945. Information on the Belpre pool is given in Table 8.

Four test wells were drilled in Edwards County during 1945. As the map (Fig. 5) shows, these tests were well distributed over the county. One well was drilled by the Continental Oil Company on the Krupp farm in the SE¼ NW¼ NE¼ sec. 21, T. 23 S., R. 19 W. In this test the top of the Kansas City-Lansing limestone was found at 4,010 feet and the top of the Mississippian strata at 4,576 feet. Examination of the well cuttings shows that the Osagian cherts extend from 4,576 feet to 4,640 feet. The chert is white, opaque, and tripolitic. The St. Joe limestone, extending from 4,640 to 4,665 feet, consists of coarsely crystalline white, pink, and brown limestone containing large oölitic balls in the basal layers. Pure white Misener sandstone was found between 4,665 and 4,683 feet with the usual opaline basal layer. The sandstone rests upon the Ordovician Viola formation at 4,683 feet. The Viola is cherty limestone at the top and has a very thick cherty dolomite section down to 4,835 feet. From 4,835 to 4,850 there is a coarsely crystalline limestone layer succeeded below by an unusual buff dolomite containing a large amount of tripolitic chert. These dolomites rest upon the Simpson dolomite and brown chert at 4,945 feet. The Simpson also contains sandstone and green shale. The Arbuckle dolomite was found at 4,985 feet; it is dolocastic, brown and pink, and extends to the total depth of 5,031 feet.

The second test well was drilled by the Texas Company on the Crissman farm in the SW cor. NE¼ sec. 11, T. 24 S., R. 20 W. Here the top of Kansas City-Lansing limestone was found at 4,035 feet and the top of the Mississippian strata at 4,620 feet. The company employed a special mud expert to condition the drilling mud used in this well; therefore, the well cuttings from this test are almost like cable tool cuttings and the lithologic information is very valuable for correlating the formations in this part of the state. The Osagian cherts extend from 4,620 to 4,670 feet. The St. Joe limestone consists of alternating granular dolomite and coarsely crystalline pink and white limestone. The lowest dolomite of the St. Joe has large round sand grains embedded in it. The Misener sand-

stone was found at 4,725 feet and extended to 4,760 feet where it rests upon the Viola. The Viola consists of two cherty dolomite zones separated by a thin layer of coarsely crystalline limestone from 4,870 to 4,890 feet. The basal layer of the Viola is a coarsely crystalline sand-studded limestone. The Simpson green shale was found at 4,978 feet, the Wilcox sandstone at 5,000 feet, and the Arbuckle dolomite at 5,040 feet. The Arbuckle is pink and finely crystalline above but dolocastic and medium crystalline below. The test was abandoned at a total depth of 5,128 feet.

The third well was drilled by the Cities Service Oil Company on the Minet estate in the SE cor. NE¼ sec. 15, T. 25 S., R. 17 W. In this well, the top of the Kansas City-Lansing limestone was found at 3,969 feet and the top of the Mississippian strata at 4,455 feet. The Osagian cherts extend from 4,455 to 4,520 feet and rest upon the Misener sandstone which extends to 4,550 feet. The Viola formation consists of discolored dolomite and pink flaky limestone

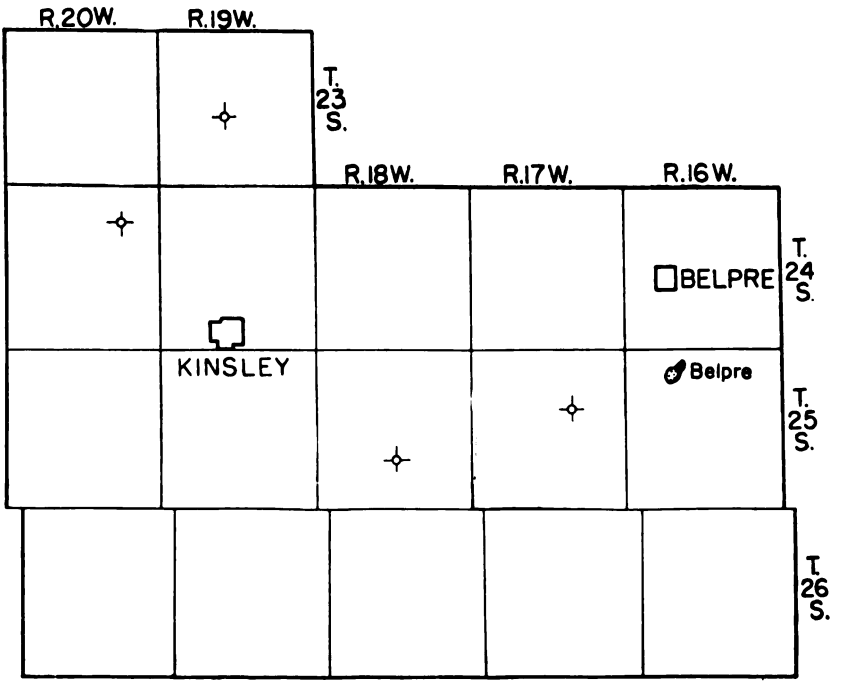

FIG. 5.—Edwards County map showing Belpre oil and gas pool and dry holes drilled in 1945. (Gas, dots; oil, diagonal lines.)

and chert down to a depth of approximately 4,760 feet where unaltered coarsely crystalline limestone appears in the samples. The Simpson rocks, which consist of typical bright-green shale, are found at 4,795 feet. The Arbuckle dolomite was found at 4,855 feet and extends to the total depth of 4,885 feet.

The fourth test well drilled in Edwards County during the year is the Superior Oil Company well on the Garey farm in the NW cor. NW¼ sec. 27, T. 25 S., R. 18 W. Here the Kansas City-Lansing limestone was found at 4,063 feet, the top of the Mississippian strata at 4,626 feet, the Osagian cherts at 4,626 feet, and the Misener sandstone at 4,693 feet. The Misener is a fine, even-grained sandstone resting upon detrital Viola at 4,719 feet. Detrital materials are present in the samples down to 4,810 feet. They consist of pink coarsely crystalline limestone, red shale, much pink chert with three kinds of dolomite, and several other kinds of chert. The unaltered Viola consists of alternations of cherty dolomite and coarsely crystalline limestone (three sets) down to the top of the Simpson at 4,955 feet. The Simpson is normal green shale and sandstone except for a thin layer of dolomitic sandstone between 5,010 and 5,015 feet. The Arbuckle dolomite was found at 5,027 feet and extended down to the total depth of 5,091 feet.

TABLE 8.—*Oil and gas pools of Edwards County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Belpre (oil) 8-25-16W	1943	160		2,496	1	K.C.-Lans.	3,807
Belpre (gas) 8-25-16W	1942				2	K.C.-Lans.	3,807
McCarty (gas) 31-25-17W			Abandoned				

ELLIS COUNTY

Ellis County (Fig. 6) received much attention from oil operators during 1945. A total of 100 wells were drilled during the year, of which 51 were oil wells and 49 were dry holes. Among the wildcat wells three can be classed as rank wildcat tests, seven as ordinary wildcats, and the others as extension wildcats. One of the rank wildcat tests, the Darby & Bothwell No. 1 Cromb in the NE¼

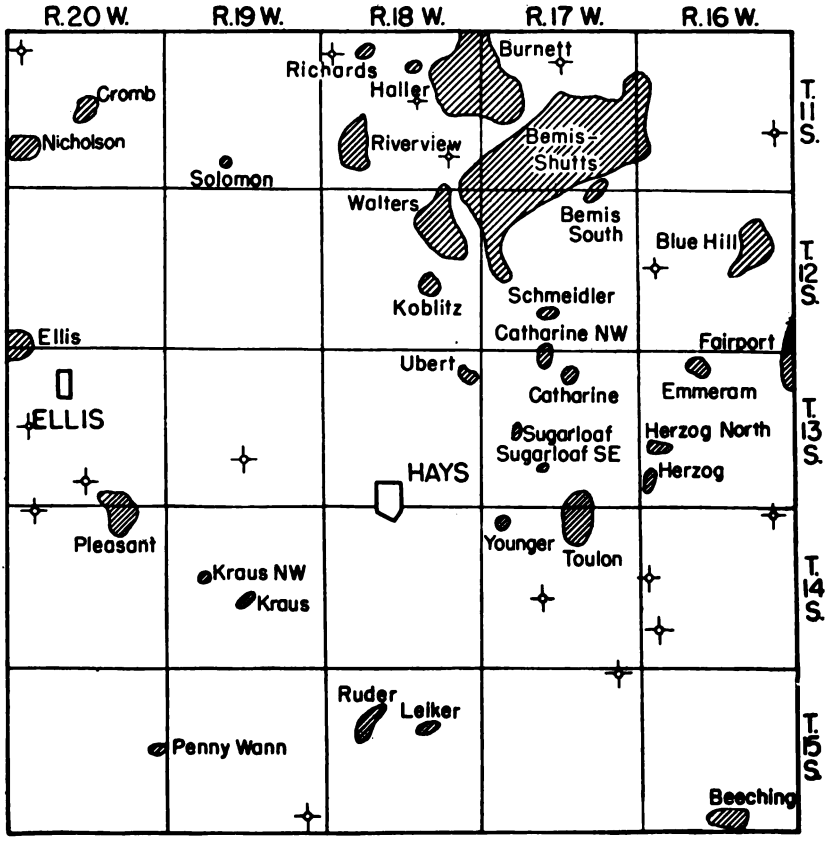

FIG. 6.—Ellis County map showing oil pools and dry wildcat wells drilled in 1945.

NW¼ NW¼ sec. 22, T. 11 S., R. 20 W., was successful in finding a new pool, named the **Cromb** pool. This well found oil in the Kansas City-Lansing limestone between 3,466 and 3,471 feet after plugging back from a saturated one in the Arbuckle dolomite. The initial production was 190 barrels of oil, but some water accompanied the oil.

One of the ordinary wildcat tests, the Phil-Han No. 1 Nicholson well in the SE cor. NW¼ sec. 30, T. 11 S., R. 20 W., found oil in the Arbuckle dolomite at a depth of 3,842 feet. This well is 2 miles west of the Cromb test and was completed in October. The discovery well in this new pool, the **Nicholson** pool, had an initial production of 446 barrels per day.

The **Herzog North** pool was found when the Gulf Oil Company completed the first well on the Dreiling farm in the Cen. S½ SE¼ SE¼ sec. 19, T. 13 S., R. 16 W. Oil was encountered in the Arbuckle dolomite, the top of which was found at a depth of 3,487 feet. When tested with the echometer this well was found to be capable of producing 2,453 barrels of oil per day.

TABLE 9.—*Oil pools of Ellis County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Beeching 34-15-16W	1943	300	45,865	109,515	6	K.C.-Lans.	3,156
Bemis-Shutts 16-11-17W	1935	14,000	5,136,455	37,678,655	471	Arbuckle	3,380
Bemis South 2-12-17W	1938	40	9,575	67,495	1	Arbuckle	3,592
Blue Hill 14-12-16W	1937	900	114,750	974,700	1 14 2	Topeka K.C.-Lans. Arbuckle	3,030 3,072 3,360
Burnett 1-11-18W	1937	5,000	3,174,250	21,893,450	2 208	K.C.-Lans. Arbuckle	3,093 3,570
Catharine 3-13-17W	1936	160	4,165	143,595	1	K.C.-Lans.	3,262
Catharine Northwest 4-13-17W	1944	640	11,600	11,600	1 3	K.C.-Lans. Arbuckle	 3,590
Cromb 22-11-20W	1945	40	2,221	2,221	1	K.C.-Lans.	3,466
Ellis 31-12-20W	1942	700	159,435	383,442	16	Arbuckle	3,832
Emmeram 4-13-16W	1937	160	14,365	172,155	4	K.C.-Lans.	3,262
Fairport			See Russell County				
Haller 10-11-18W	1936	40	1,370	21,400	1	Topeka	3,045
Herzog 30-13-16W	1940	200	35,470	235,220	5	Arbuckle	3,450
Herzog North 19-13-16W	1945	160	30,510	30,510	3	Arbuckle	3,487
Koblitz 23-12-18W	1937	800	72,565	463,125	9	Arbuckle	3,694
Kraus 22-11-19W	1936	100	3,225	75,450	1	Sooy	3,735
Kraus Northwest 17-14-19W	1942	40			1	Gorham	3,798
Leiker 14-15-18W	1943	80	14,225	35,645	1 1	K.C.-Lans. Arbuckle	3,292
Nicholson 30-11-20W	1945	40	1,550	1,550	1	Arbuckle	3,842
Penny Wann 13-15-20W	1936	80	14,415	76,655	3	Sooy	3,653
Pleasant 2-14-20W	1944	1,000	85,910	91,850	16	Reagan	3,877
Richards 5-11-18W	1938	120	none	106,785	2	K.C.-Lans.	3,332

TABLE 9.—*Oil pools of Ellis County, concluded*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Riverview 19-11-18W	1943	900	108,900	431,520	18	Arbuckle	3,610
Ruder 17-15-18W	1935	700	45,890	867,875	12 2	K.C.-Lans. Arbuckle	3,422 3,572
Schmeidler 28-12-17W	1944	400	16,690	16,690	4	Arbuckle	3,625
Solomon 28-11-19W	1936	160			2	Arbuckle	3,629
Sugarloaf 17-13-17W	1941	180	22,080	122,980	2	Arbuckle	3,645
Sugarloaf Southeast 28-13-17W	1941	40	5,630	31,440	1	K.C.-Lans.	3,312
Toulon 3-14-17W	1935	200	41,600	282,860	6 2	K.C.-Lans. Arbuckle	3,298 3,512
Ubert 12-13-18W	1936	160	12,850	221,870	3	Arbuckle	3,707
Walters 2-12-18W	1936	1,500	346,130	3,187,230	1 36	Topeka Arbuckle	3,160 3,619
Younger 6-14-17W	1944	160	16,343	17,565	4	Arbuckle	3,574

Very little activity took place in the older pools of this county. Four oil wells were added to the large **Bemis-Shutts** pool. Five oil wells were added to the **Riverview** pool a few miles farther west. Three additional wells were drilled in the **Schmeidler** pool south of the Bemis-Shutts pool, and the **Walters** pool, southwest of the Bemis-Shutts, received four additional wells. Two new oil wells were drilled in the **Herzog** pool in the southwestern part of T. 13 S., R. 16 W. and three oil wells were added to those in the **Catharine Northwest** pool.

The **Pleasant** pool, located a few miles south of the townsite of Ellis, was fairly active, resulting in the addition of 13 oil wells. The **Younger** oil pool, 10 miles farther east, was enlarged by the addition of three oil wells. In the **Ruder** pool, in the south-central part of the county, three oil wells were completed during the year.

Information on the oil pools in Ellis County is given in Table 9. In Table 10 all the dry wildcat wells drilled in Ellis County in 1945 are tabulated and depths to the Arbuckle dolomite are given. These dry wildcat wells are shown on Figure 6.

TABLE 10.—*Dry wildcat wells drilled in Ellis County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Carter No. 1 Matheson	Cen. SE¼ SW¼ 24-11-16W	3,415	3,464
Comanche No. 1 Simpson	NE¼ NW¼ NW¼ 10-11-17W	3,384	3,421
Darby & Bothwell No. 1 Richardo	SE cor. SW¼ 6-11-18W	3,574	3,610
Mazda No. 1 Meistrell	SE¼ SW¼ NE¼ 15-11-18W	3,459	3,486
Royer-Farris Drilling No. 1 Jacobs	NE cor. SE¼ 26-11-18W	3,686	3,761
Herndon Drilling No. 1 Scnneider	Cen. E½ SE¼ SW¼ 6-11-20W	3,703	3,756
Fred Anschutz No. 1 Hoff	SE cor. SE¼ 18-12-16W	3,655	3,691
Cities Service No. 1 Dechant	NW cor. NW¼ 27-13-19W	3,805	3,825
Phil-Han No. 1 Raynesford	SW cor. SW¼ 17-13-20W	3,897	3,930
El Dorado Refining No. 1 Rankin	NE cor. NE¼ 33-13-20W	3,918	3,950
Cinoil, Inc. No. 1 Berens "A"	SE¼ NW¼ NW¼ 1-14-16W	3,450	3,469
Raymond Gear No. 1 Brungardt	NE cor. SW¼ 18-14-16W	3,421	3,452
Cities Service No. 1 Brungardt	SE¼ NE¼ SE¼ 30-14-16W	3,454	3,490
Maguire Industries No. 1 Stecklein	SE cor. NW¼ 21-14-17W	3,517	3,572
B & R Drilling No. 1 Gable	NW cor. NW¼ 5-14-20W	3,874	3,911
Derby No. 1 Schumacher	NW cor. NW¼ 1-15-17W	3,495	3,530
Virginia Drilling No. 1 Zimmerman	SE cor. NW¼ 36-15-19W	3,568	3,597

ELLSWORTH COUNTY

A total of 36 test wells were drilled in Ellsworth County (Fig. 7) during 1945, of which 23 were oil wells and 13 were dry holes. There were three wildcat wells, of which one may be classed as a rank wildcat, one as an ordinary wildcat, and one as an extension wildcat. Reference to the map published in Bulletin 56 will show that wildcat wells in 1944 covered a rather wide area. This probably accounts for the reduced activity during 1945.

The area of the large **Stoltenberg** pool was increased by the addition of 17 oil wells. Three new wells were added to the **Bloomer** pool in the southwestern part of the county, one well was added to the **Wilkens Southeast** pool, and two wells were added to the

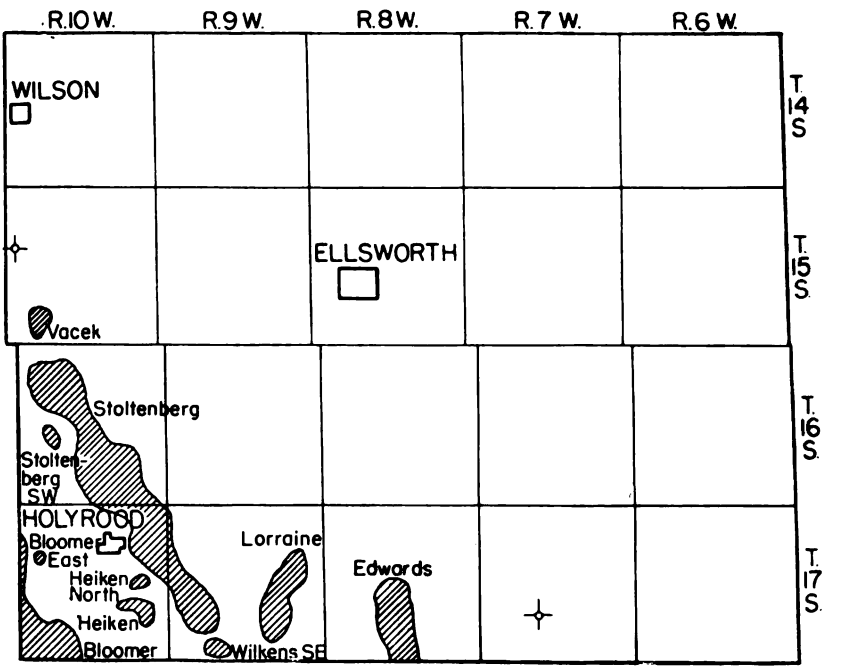

FIG. 7.—Ellsworth County map showing oil pools and dry wildcat wells drilled in 1945.

Stoltenberg Southwest pool. Additional information on the oil pools of Ellsworth County is given in Table 11.

Exploratory wells.—The wildcat wells drilled in Ellsworth County in 1945 are shown on the map (Fig. 7). The only rank wildcat test was one drilled by the Phillips Petroleum Company on the Shan farm in the SW¼ SE¼ NW¼ sec. 28, T. 17 S., R. 7 W. This well has an elevation of 1,705 feet. The Kansas City-Lansing limestone was encountered at a depth of 2,750 feet, the Sooy conglomerate at 3,171 feet, the Viola dolomite at 3,344 feet, the Simpson rocks at 3,428 feet, and the Arbuckle dolomite at 3,494 feet. The well was abandoned as a dry hole at a total depth of 3,524 feet. The other wildcat shown was drilled by Bartlett, Davis, and Simpson & Noble on the Zahradnik farm in the SE cor. NW¼ sec. 18, T. 15 S., R. 10 W. The Kansas City-Lansing limestone was encountered at 2,938 feet, the Simpson rocks at 3,265 feet, and the Arbuckle dolomite at 3,308 feet. The well was a dry hole and was abandoned at a total depth of 3,344 feet.

TABLE 11.—*Oil pools of Ellsworth County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Bloomer			See Barton County				
Bloomer East 18-17-10W	1944	40		Abandoned	1	Arbuckle	3,309
Edwards			See Rice County				
Heiken 25-17-10W	1930	160	3,368	39,360	2	Arbuckle	3,269
Heiken North 24-17-10W	1942	180	24,400	74,890	3	Arbuckle	3,212
Lorraine 13-17-9W	1934	5,500	190,670	9,605,870	60	K.C.-Lans. Arbuckle	3,060 3,200
Stoltenberg 22-16-10W	1931	9,300	2,725,225	19,394,755	1 283	K.C.-Lans. Arbuckle	3.333
Stoltenberg Southwest 20-16-10W	1940	360	23,745	103,925	6	Arbuckle	3,349
Vacek 32-15-10W	1944	160	3,608	5,584	2	Arbuckle	3,315
Wilkens Southeast 32-17-9W	1942	600	54,390	178,300	6	Arbuckle	3,220

FINNEY COUNTY

At the present time there is only one oil pool in Finney County (Fig. 8), the **Nunn** pool discovered by the Atlantic Refining Company in 1938. At the close of 1944 there were seven wells in this pool, and during 1945 four more oil wells were added. The Nunn total of 406,470 barrels of oil. The production during 1945 was 154,210 barrels. With the exception of the well described below, all the oil is produced from the upper part of the Mississippian strata.

The Atlantic No. 1 McHugh well drilled during 1945 in the SW cor. sec. 23, T. 21 S., R. 34 W., is producing from the Kansas City-Lansing limestone. The occurrence of oil in the Pennsylvanian limestone in this part of Kansas is significant. It suggests that many additional areas in western Kansas may be expected to produce oil, inasmuch as oil is also found in the Kansas City-Lansing rocks in wide areas farther east and northeast. The No. 1 McHugh test was drilled through the usual producing zone without finding oil and was then drilled on down to test lower formations. It reveals an interesting sequence of beds. The usual sandy zone generally referred to the Ste. Genevieve formation of Mississippian age was

found between 4,599 and 4,716 feet. Some oil was found in a sandy layer between 4,710 and 4,716 feet. The St. Louis, Spergen, and Warsaw limestones were penetrated from 4,770 to 5,010 feet and the Osagian cherty limestones were found between 5,010 and 5,090 feet. In this interval there are some thin dolomites and one rather thick zone of dolomite. The St. Joe limestone, which consists of crinoidal limestone, oölitic limestone, and one thin dolomite stratum, extends down to 5,307 feet where it rests on the Misener sandstone. Below the Misener is the Viola, which consists of dolomite and about 40 percent chert. The amount of chert gradually diminishes downward. The top of the Arbuckle dolomite in this well is not definitely known. It may be at 5,407 feet where the dolomite is not cherty or it may be at 5,480 feet where some green shale was found. Between 5,464 and 5,480 feet there is some dolocastic dolomite which contains chert studded with translucent quartz. This layer and the green shale suggest an equivalence with the Simpson rocks which are found better developed farther east.

The western part of Finney County is in the large Hugoton gas field. There were nine gas wells in the county at the close of 1944 and during 1945 nine additional gas wells were completed. One of them was drilled within 2 miles of the Nunn pool in the SE¼ NW¼ NW¼ sec. 33, T. 21 S., R. 34 W. This well extends the limits of the Hugoton field about 7 miles north, and suggests that the northernmost limits are still to be found.

Only one rank wildcat was drilled in Finney County during 1945. It is the Sinclair No. 1 Ely test in the NW cor. SE¼ sec. 30, T. 21 S., R. 28 W., about 35 miles east of the Nunn pool. In this test the top of the Mississippian strata was found at 4,620 feet, dolomites of the Warsaw formation at 4,620 feet, and the Osagian cherty dolomites from 4,730 to 4,866 feet. In this part of the state the next lower formation, the St. Joe limestone, may be expected at about 4,900 feet, and the base of the Mississippian at approximately 5,060 feet.

HUGOTON GAS FIELD

The Hugoton gas field (Fig. 8) of southwestern Kansas is one of the largest gas fields in the world. It was discovered in 1922 when the Defenders and Traders Oil Company completed their first test on the Boles lease in sec. 3, T. 35 S., R. 34 W., Seward County. The next well was drilled 5 years later in Stevens County. The first

wells in Morton and Grant Counties were completed during 1930. Subsequently, the field was extended into Kearny, Haskell, Finney, and Stanton Counties. During 1944 the northernmost wells were those in T. 22 S. in Finney County. However, during 1945 a well was completed still farther north in Finney County in sec. 33, T. 21 S., R. 34 W. near the Nunn pool. The area of the Hugoton field is more than 2 million acres and the limits have not yet been found. During 1944, 70 gas wells were completed in the field and during 1945 an additional 181 wells were drilled. This makes a total of 597 gas wells drilled in the field to the close of 1945. During the year 80,705 million cubic feet of gas were taken from the Hugoton field. This figure compares favorably with the previous year's total of 83,008 million cubic feet.

The gas in the Hugoton field is produced from thin porous dolomitic rocks of upper Permian age. Gas has been found at five levels in the Herington, Krider, Winfield, Fort Riley, and Florence limestones. The productivity of wells ranges from a few million cubic feet to somewhat more than 25 million cubic feet per day. The actual production of each well is determined by a formula set up by the Kansas State Corporation Commission.*

During 1945 there were 48 gas wells completed in Grant County, 42 in Haskell County, 71 in Stevens County, 9 in Finney County, 7 in Kearny County, 2 in Seward County, and 2 in Stanton County. This total of 181 new producers sets a record for yearly drilling in the field. The largest well completed in Grant County was the Columbian Fuel Corporation No. 1 Beavers, in the NW cor. SE¼ sec. 28, T. 28 S., R. 35 W., which had an initial capacity of nearly 31 million cubic feet per day. The largest producer drilled during the year in Haskell County was the Cities Service and United No. 1-C Jones well in the Cen. E½ NE¼ SW¼ sec. 3, T. 28 S., R. 34 W., which had an initial capacity of 34½ million cubic feet per day. One dry hole was drilled in this county by the Carter Oil Company on the Dietz farm in the Cen. E½ E½ W½ sec. 6, T. 29 S., R. 31 W. The largest producer in Stevens County was completed by the Republic Natural Gas Company on the Holt farm in the Cen. NW¼ sec. 21, T. 32 S., R. 37 W. This well is capable of yielding nearly 37 million cubic feet of gas per day. The largest well in Finney County was completed by the National Re-

* See State Geological Survey of Kansas Bulletin 48, p. 81, 1943.

fining Company on the Tate ranch in the NW cor. SE¼ sec. 18, T. 25 S., R. 34 W. The initial capacity of this well is nearly 22 million cubic feet per day. The largest producer in Kearny County was drilled by Kansas Natural Gas Inc. and Cities Service Oil Company on the Weber farm in the NW¼ NW¼ SE¼ sec. 21, T. 24 S., R. 35 W. The capacity of this well when tested was approximately 32½ million cubic feet per day. In Seward County one dry hole was completed by the Carter Oil Company on the Chapple farm in the Cen. E½ E½ W½ sec. 23, T. 31 S., R. 32 W. This well found the Hollenberg dolomite at 2,572 feet and the Florence cherty limestone at 2,855 feet. It was abandoned at a total depth of 2,890 feet. The largest producer in Seward County was completed by Helmerich & Payne Inc. and Cities Service Oil Company on the Royce ranch in the NE cor. SW¼ sec. 2, T. 31 S., R. 34 W. The initial capacity of this well was 20½ million cubic feet of gas per day. One dry hole, the Stanolind Oil and Gas Company No. 1 Heiken well in the Cen. sec. 19, T. 32 S., R. 40 W., was completed in Morton County at a total depth of 2,592 feet. This test is approximately 7 miles northwest of the nearest producing well in the field. The largest producer in Stanton County was a wildcat test, the No. 1 Campbell-Congden-Parker drilled by the Stanolind Oil and Gas Company in the Cen. sec. 31, T. 28 S., R. 39 W. This well was completed in February with an initial capacity of a little more than 1½ million cubic feet of gas. Another rank wildcat test in Stanton County, which was drilled approximately 10 miles north and west of the production in Grant County, was completed for an initial potential of almost a million cubic feet of gas. This test was drilled by the Stanolind Oil and Gas Company on the Fegan farm in the Cen. sec. 3, T. 27 S., R. 39 W.

Graham County

Graham County (Fig. 9) was actively prospected during 1945. At least 28 test wells were drilled, of which 10 are oil wells and 18 are dry holes. As the map shows, the wildcat tests were well scattered and served to eliminate a large part of the county's acreage from further consideration. These wildcats numbered 15; 8 may be classified as rank wildcat tests, 5 as ordinary wildcat tests, and 2 as extension wildcat tests. Two of the rank wildcats were successful in finding new oil pools. The discovery well in the **Luck** pool

is the Helmerich & Payne Inc. No. 1 Luck test in the NE cor. NE¼ sec. 13, T. 8 S., R. 22 W. In this well, oil was found in the Kansas City-Lansing limestone between depths of 3,418 and 3,438 feet. The specific gravity of the oil is 35°, and the initial production of the discovery well was 328 barrels of oil per day. One dry hole was subsequently drilled as an offset to the discovery well.

The other new pool in Graham County is the **Faulkner** pool, which was found by the Wood River Oil & Refining Company when they completed the first test on the Faulkner farm in the SW¼ SE¼ SE¼ sec. 27, T. 10 S., R. 22 W. Oil was found in the Kansas City-Lansing limestone between depths of 3,629 and 3,633 feet, about 79 feet below the top of the Kansas City-Lansing limestone. The specific gravity of the oil is 27°, and the initial capacity

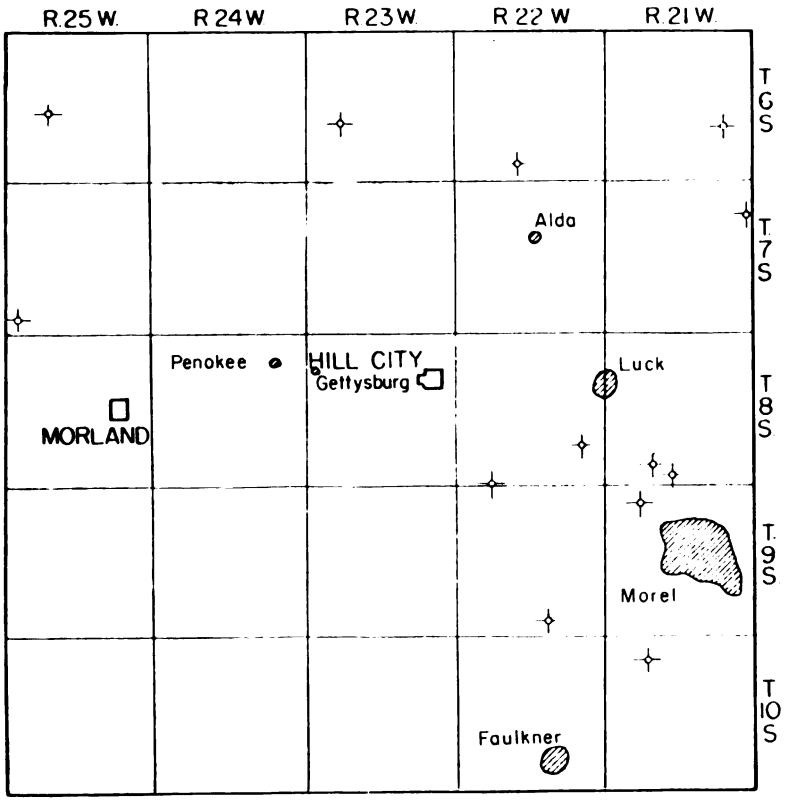

FIG. 9.—Graham County map showing oil pools and dry wildcat wells drilled in 1945.

TABLE 12.—*Oil pools of Graham County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Alda 15-7-22W	1944	40	9,160	9,160	1	K.C.-Lans.	3,518
Faulkner 27-10-22W	1945	640	19,660	19,660	5	K.C.-Lans.	3,629
Gettysburg 7-8-23W	1941	40	2,420	20,630	1	K.C.-Lans.	3,725
Luck 13-8-22W	1945	40	7,714	7,714	1	K.C.-Lans.	3,418
Morel 15-9-21W	1938	7,000	1,095,430	3,007,250	2 55	Sooy Arbuckle	3,712 3,718
Penokee 11-8-24W	1940	40	4,900	45,900	1	K.C.-Lans.	3,750

TABLE 13.—*Dry wildcat wells drilled in Graham County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Hansen No. 1 Hansen "B"	SE cor. SE¼ 23-6-21W	3,750	3,810
Maguire Industries No. 1 Stimatze	NW¼ NE¼ NW¼ 33-6-22W	3,954	4,005
Cities Service No. 1 McKim	NE cor. SW¼ 20-6-23W	4,005	4,040
Continental No. 1 Jackson	NE cor. NE¼ 20-6-25W	——	4,214
Barnsdall No. 1 Roberts	NE cor. NE¼ 12-7-21W	3,650	3,700
Continental No. 1 McFaddin	SE cor. NW¼ 31-7-25W	——	3,974
Iron Drilling No. 2 Green	SE¼ NW¼ NE¼ 32-8-21W	3,785	3,810
Phillips Petroleum No. 1 Jelie	SE¼ NW¼ SW¼ 33-8-21W	3,776	3,813
Royer-Farris No. 1 Holland	NW cor. NW¼ 25-8-22W	3,726	3,756
Hartman and Keyes No. 1 Stady	SE cor. SW¼ 32-8-22W	3,920	3,980
Helmerich & Payne No. 1 Miller	SW cor. SW¼ 5-9-21W	3,777	3,825
Skelly No. 1 Russell	NW¼ SE¼ NE¼ 34-9-22W	4,055	4,080
W. L. Hartman No. 1 Towns	SE cor. SE¼ 5-10-21W	3,878	3,928

of the well was 406 barrels of oil per day. Four other oil wells were completed in this pool before the end of 1945.

Additional information on the oil pools in Graham County is given in Table 12.

Exploratory wells.—A determined effort was made during 1945 to find additional oil pools in Graham County. Figure 9 shows the dry wildcat wells completed during the year and Table 13 gives data regarding each of these wells.

Grant County

A total of 48 wells were drilled in Grant County during 1945, and all were successful in finding gas. The largest well was drilled by the Columbian Fuel Corporation in the NW cor. SE¼ sec. 28, T. 28 S., R. 35 W. to a total depth of 2,768 feet. The initial potential of this well was 30,800,000 cubic feet of gas per day. This county is considered a part of the Hugoton gas field, and the wells drilled in Grant County are shown in Figure 8. Information concerning gas production in the Hugoton field is given under Finney County.

Harvey County

There was little drilling in Harvey County (Fig. 10) during 1945. Only five wells were completed; four of these were oil wells in the southern end of the **Halstead** pool and one was a dry hole. The production in the new wells is from the top of the Mississippian system, the same zone which produces in the remainder of the pool. Information on the oil and gas pools of Harvey County is given in Table 14.

The wildcat test was drilled by the Harbar Drilling Company on the Strausz lease in the SW cor. NE¼ sec. 6, T. 22 S., R. 2 W. In this test the top of the Mississippian was found at a depth of 3,124 feet, the Misener sandstone at 3,537 feet, the Hunton dolomite at 3,550 feet, the Sylvan shale at 3,570 feet, the Viola limestone at 3,663 feet, the Wilcox sandstone at 3,690 feet, and the Arbuckle dolomite at 3,777 feet. The test was abandoned as a dry hole at a total depth of 3,804 feet. The elevation of this test was 1,473 feet above sea level.

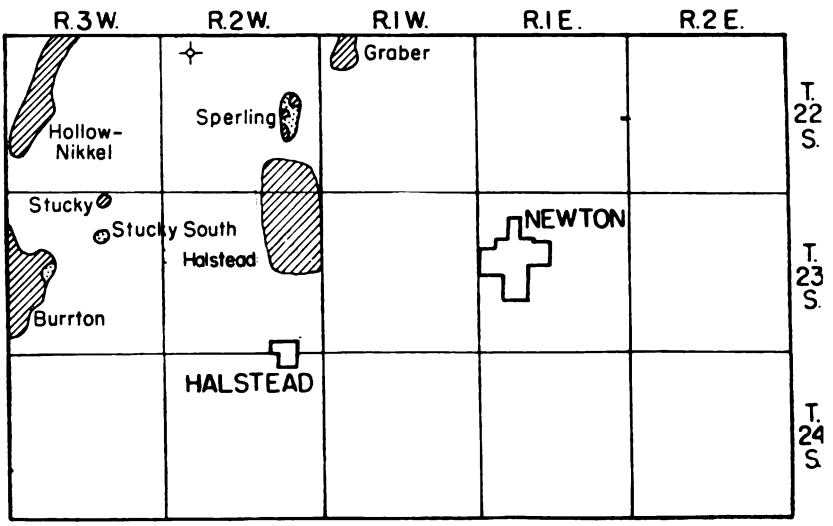

FIG. 10.—Harvey County map showing oil and gas pools and dry holes drilled in 1945. (Gas, dots; oil, diagonal lines.)

TABLE 14.—*Oil and gas pools of Harvey County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Burrton			See Reno County				
Burrton Northeast 9-23-3W	1943		Abandoned				
Graber			See McPherson County				
Halstead 36-22-2W	1929	1,300	67,395	1,594,322	23	"Chat"	3,005
Hollow-Nikkel 30-22-3W	1931	1,500	182,940	19,856,290	53	"Chat" Hunton Simpson	3,195 3,507 3,500
Sperling 23-22-2W	1935	500	22,955	497,155	5	Hunton	3,279
Stucky 3-23-3W	1942	40	310	1,067	1	"Chat"	3,224
			thousand cubic feet				
Sperling (gas) 23-22-2W	1935	600	14,308	6,254,054	2	"Chat"	2,955
Stucky South 10-23-3W	1944	160			1	Mississippian	3,269

Haskell County

During 1945, 42 gas wells and 1 dry hole were completed in Haskell County. The total number of gas wells in the county at the end of 1945 was 83; these wells are shown on Figure 8. Information on production in the Hugoton field and a short discussion of the largest producer and the dry hole drilled in 1945 in Haskell County are given under Finney County.

Kearny County

There is only one oil pool in Kearny County (Fig. 8) at the present time, the **Patterson** pool. This pool was discovered by the Stanolind Oil and Gas Company in 1941. It produces oil from a sandstone near the base of the Pennsylvanian system. During 1945, 32,005 barrels of oil were produced from the three wells in the pool, and the cumulative production to the end of that year is 147,855 barrels.

Kearny County also produces gas. The gas wells are a part of the Hugoton field which was described under Finney County. Seven additional gas wells were drilled in Kearny County during 1945. The largest producer drilled is on the Weber farm in the NW cor. SE¼ sec. 21, T. 24 S., R. 35 W. It is capable of producing about 32½ million cubic feet of gas per day.

Kingman County

In Kingman County (Fig. 11) there is only one pool at the present time, the **Cunningham** oil and gas pool. This pool was found by the Skelly Oil Company when the first well was completed on the Miles farm in 1931. Subsequently it was greatly enlarged and was combined with the Cairo pool of Pratt County in 1944. The enlarged pool covers more than 1,500 acres and contains 120 wells. One of the remarkable features of this pool is the large number of producing zones. In various wells gas was found in the Permian system in the Herington, Fort Riley, Kinney, Neva, Cottonwood, Glenhock, and Americus limestones. The amount of gas found ranges from one quarter million to 6 million cubic feet. Similar amounts of gas were found in the Wabaunsee and Shawnee groups of the Pennsylvanian system, and much larger amounts were found in the Viola dolomite, Simpson sandstone, and Arbuckle dolomite. Two Arbuckle wells are still producing gas. They pro-

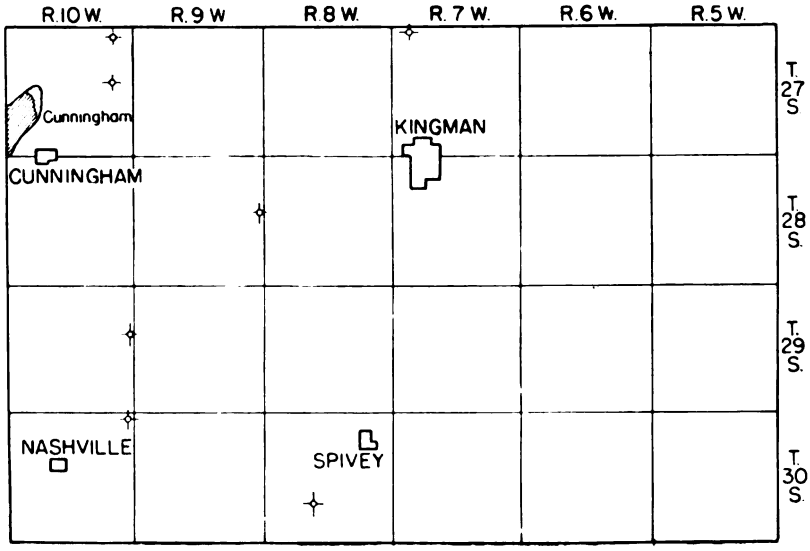

FIG. 11.—Kingman County map showing Cunningham oil and gas pool and dry holes drilled in 1945. (Gas, dots; oil, diagonal lines.)

duced 403,242 thousand cubic feet of gas during 1945. Most of the gas at the present time is derived from the Viola dolomite (See Pratt County). The oil comes from three porous oölitic limestones in the Kansas City-Lansing rocks of the Pennsylvanian system. During 1945, 540,740 barrels of oil were produced from the Cunningham pool; the cumulative production to the end of that year is 5,476,480 barrels.

One of the valuable by-products from the Cunningham pool is helium gas. This gas is extracted from the natural gas before it is allowed to enter the commercial and domestic markets. Engineers of the Bureau of Mines have designed a plant which extracts the helium from a given quantity of gas in less than one minute. The helium is stored until it is needed.

Exploratory wells.—During 1945, seven test wells were drilled in Kingman County. These wells are shown on the map (Fig. 11). Two of the wells are ordinary wildcats located in T. 27 S., R. 10 W. within 10 miles of the Cunningham pool. One of them is the Bridgeport No. 1 Amerine well, in the SW cor. SW¼ sec. 1, and the

other is the Lion Oil Company No. 1 McMichael well in the SW cor. NW¼ sec. 13. In the Bridgeport test the Kansas City-Lansing limestone was found at 3,500 feet, the Viola dolomite at 4,305, the Simpson rocks at 4,374 feet, and the Arbuckle dolomite at 4,467 feet. The well was abandoned at a total depth of 4,520 feet.

One wildcat test, the Kingwood Oil Company No. 1 Fulton, was drilled 3 miles northwest of the abandoned Kingman pool, in the NE cor. NE¼ sec. 6, T. 27 S., R. 7 W. In this well the Kansas City-Lansing limestone was found at 3,243 feet, the Mississippian limestone at 3,922 feet, the Kinderhookian shale at 4,105 feet, the Viola dolomite at 4,292 feet, the Simpson rocks at 4,334 feet, and the Arbuckle dolomite at 4,436 feet. The well was abandoned as a dry hole at a total depth of 4,470 feet. Ten miles southwest of Kingman, the Magnolia Petroleum Company drilled a test on the Callahan farm in the NW¼ SE¼ SE¼ sec. 13, T. 28 S., R. 9 W. Here the top of the Kansas City-Lansing limestones was found at 3,426 feet, the Mississippian limestone at 4,036 feet, the Kinderhookian shale at 4,162 feet, the Viola dolomite at 4,352 feet, the Wilcox sandstone at 4,396 feet, and the Arbuckle dolomite at 4,518 feet. The test was abandoned as a dry hole at a depth of 4,548 feet. In the southwestern part of the county the B & R Drilling Company completed a dry hole on the Theis farm in the NE cor. NE¼ sec. 13, T. 29 S., R. 10 W. In this test the Kansas City-Lansing limestone was found at 3,668 feet, the Mississippian limestone at 4,235 feet, the Kinderhookian shale at 4,363 feet, the Viola dolomite at 4,532 feet, the Simpson rocks at 4,598 feet, and the Arbuckle dolomite at 4,702 feet. The hole was abandoned at a total depth of 4,735 feet. A few miles southwest of Spivey the Vickers Petroleum Company drilled a test well on the Carrick farm in the SW cor. NW¼ sec. 28, T. 30 S., R. 8 W. The Kansas City-Lansing limestone was found at a depth of 3,580 feet, the Kinderhookian shale at 4,530 feet, the Viola dolomite at 4,646 feet, the Wilcox sandstone at 4,690 feet, and the Arbuckle dolomite at 4,810 feet. The test was drilled to a total depth of 4,853 feet before being abandoned as a dry hole. In the extreme southwestern township of the county, near Nashville, the B & R Drilling Company drilled a test well on the Carter farm in the NE cor. NE¼ sec. 1, T. 30 S., R. 10 W. The Mississippian limestone was found at 4,217 feet, the Viola dolomite at 4,477 feet, the Simpson rocks at 4,535 feet, and the Arbuckle dolomite at 4,648 feet. The test was abandoned 52 feet lower as a dry hole.

Kiowa County

In the report for 1944 (Bulletin 56) it was reported that Kiowa County (Fig. 12) had become one of the producing counties of western Kansas when gas was discovered in the Alford well drilled by the Lion Oil Refining Company. Because of the lack of marketing facilities, no gas has been produced from the **Alford** pool to the close of 1945.

Only one test well was drilled in Kiowa County during 1945, the Stanolind Oil and Gas Company No. 1 Zentz well in the SW cor. SW¼ sec. 29, T. 29 S., R. 18 W. In this well, the top of the Kansas City-Lansing limestone was reported at a depth of 4,650 feet and the top of the Mississippian at 4,897 feet. Examination of the samples shows that the upper part of the Mississippian strata consists of Osagian chert succeeded downward by white dolomite and crystalline limestone containing about 50 percent chert. The St.

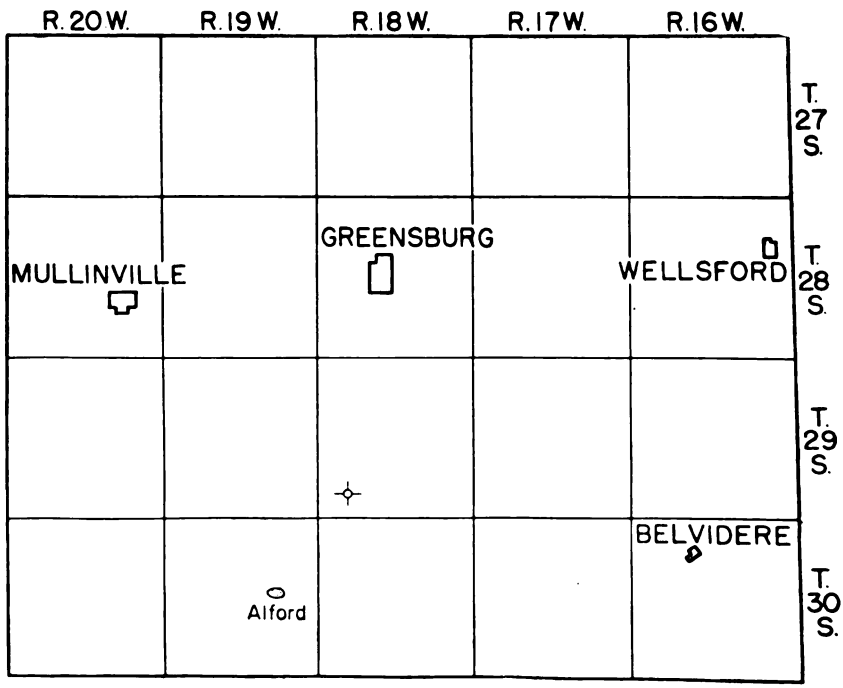

Fig. 12.--Kiowa County map showing Alford gas pool and dry hole drilled in 1945.

Joe limestone was encountered at 4,940 feet and consists of flaky, white, brownish and pink crinoidal limestone. The Misener sandstone was found at 5,087 feet and rests upon the Viola coarsely crystalline limestone at 5,097 feet. The upper Viola limestone is somewhat dolomitic and, as shown in cores, is broken by thin green shale layers. Below this upper limestone there are two sequences of cherty dolomite and coarsely crystalline limestone, as is common in western Kansas. The lowest layer of the Viola limestone is studded with sand grains. The top of the Simpson rocks was found at 5,342 feet. They consist of typical green shale with thin layers of finely crystalline brown dolomite. The Arbuckle dolomite was encountered at a depth of 5,383 feet, and the well was abandoned in the Arbuckle at a total depth of 5,440 feet. There were no shows of oil or gas.

McPherson County

There was much drilling activity in McPherson County during 1945. A total of 80 wells were drilled, of which 47 were oil wells, 3 were gas wells, and 30 were dry holes. Most of the drilling was in T. 17 S., R. 1 W. and near the Jenday pool.

One new oil pool, the **Battle Hill** pool, was found in McPherson County during 1945. The discovery well in this pool was drilled by the Sharon Drilling Company on the Crowther "A" lease in the NW¼ SW¼ NW¼ sec. 24, T. 18 S., R. 1 W., not far from the Canton North pool. Oil was found in the Mississippian "Chat" between depths of 2,825 and 2,834 feet. The potential capacity of this well is approximately 250 barrels of oil per day.

There are six pools in the northeastern corner of the county—the Gypsum Creek, Henne, Crowther, Roxbury, Roxbury South, and Roxbury Southeast pools. Five oil wells were added to the **Henne** pool during 1945, eight oil wells were added to the **Crowther** pool, and one well was added to the **Gypsum Creek** pool. Two oil wells and three dry holes were drilled in the **Lindsborg** pool in the north-central part of the county. Two dry holes were drilled in the **Paden** pool during 1945. Eight other dry holes were drilled in the same township, two in the northeastern part, four on the outskirts of the **Canton North** pool, and two on the northern part of the Jenday pool. This township now seems to have been adequately tested for oil.

The **Jenday** pool, discovered in 1944, was the scene of much activity. As a consequence, 25 oil wells were completed in this pool. Incidentally, the **Jenday South** pool was linked with the main Jenday pool even before the close of 1944. Two small oil wells were added to the **Chindberg** pool, northeast of the town of McPherson. In the **Ritz-Canton** area three small gas wells, one oil well, and three dry holes were completed.

Table 15 gives information on the oil and gas pools of McPherson County, and the dry wildcat wells drilled in the county during 1945 are listed in Table 16. The oil and gas pools and dry wildcat wells drilled in 1945 are shown on Figure 13.

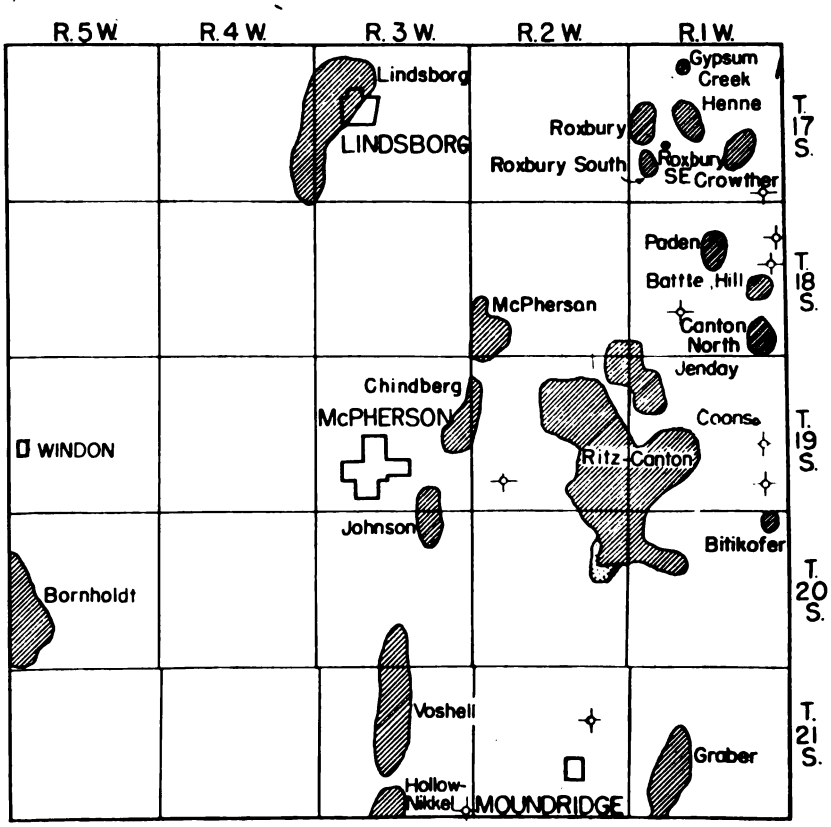

FIG. 13.—McPherson County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

TABLE 15.—*Oil and gas pools of McPherson County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Battle Hill 24-18-1W	1945	40	4,195	4,195	1	"Chat"	2,825
Bitikofer 1-20-1W	1940	180	34,555	127,387	5	"Chat"	2,885
Bornholdt 30-20-5W	1937	2,600	1,412,230	9,052,430	143	"Chat"	3,292
Canton North 26-18-1W	1936	300	72,385	222,135	8	"Chat"	2,803
Chindberg 18-19-2W	1929	700	54,880	1,551,280	5 20	K.C.-Lans. "Chat"	2,363 3,007
Crowther 26-17-1W	1942	1,000	245,030	727,920	24	"Chat"	2,778
Graber 32-21-1W	1934	2,800	272,355	8,171,785	2 128	Misener Hunton	3,323 3,274
Gypsum Creek 4-17-1W	1944	40	3,545	3,755	2	"Chat"	2,619
Henne 21-17-1W	1940	900	192,185	879,360	25	"Chat"	2,658
Hollow-Nikkel			See Harvey County				
Jenday 1-19-2W	1944	2,500	130,990	206,482	33	"Chat"	2,984
Johnson 25-19-3W	1932	1,200	78,040	2,986,610	15	"Chat"	3,032
Lindsborg 8-17-3W	1938	4,800	751,785	2,871,905	91 15	Viola Simpson	3,352 3,360
McPherson 29-18-2W	1926	2,000	47,160	1,102,425	23	"Chat" Viola	2,967 3,140
Paden 10-18-1W	1943	800	166,320	320,420	15	"Chat"	2,752
Ritz-Canton 1-20-2W	1929	13,000	742,560	38,604,210	209	K.C.-Lans. "Chat" Viola Simpson	2,360 2,935 3,412 3,440
Roxbury 18-17-1W	1938	2,500	302,060	2,035,720	38	"Chat"	2,684
Roxbury South 30-17-1W	1942	320	37,625	166,375	4	"Chat"	2,658
Roxbury Southeast 20-17-1W	1943	40	3,856	9,270	1	"Chat"	2,665
Voshell 9-21-3W	1929	3,500	588,100	25,912,100	84	"Chat" Viola Simpson Arbuckle	3,095 3,301 3,322 3,394
			thousand cubic feet				
Coons 13-19-1W	1940	40			1	"Chat"	2,897
Ritz-Canton (gas) 12-20-2W	1929		921,071		19	"Chat"	2,935

TABLE 16.—*Dry wildcat wells drilled in McPherson County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Mississippian, feet	Total depth, feet
Barbara No. 1 Blaine	Cen. S½ NW¼ NW¼ 36-17-1W	2,805	2,845
Hurlbutt No. 1 Morrison	Cen. S½ NW¼ SE¼ 12-18-1W	2,806	2,826
Republic Natural Gas No. 1 Ruth	NE cor. SW¼ 13-18-1W	2,805	2,828
Sharon Drilling No. 1 Leasure "A"	SE cor. NE¼ 29-18-1W	2,858	2,928
Darrah No. 1 Leffler	NE¼ NW¼ NW¼ 24-19-1W	2,904	2,942
Nelson Drilling No. 1 Sinclair	SW cor. SW¼ 25-19-1W	2,889	3,422
Veeder Supply No. 1 Borth	NW¼ SW¼ SW¼ 29-19-2W	2,994	3,640
Darrah and Allison No. 1 Stuckey	SW cor. NE¼ 14-21-2W	2,947	3,222
Panhandle Eastern No. 1 Waltner	SE cor. SE¼ 36-21-3W	3,116	3,778

MEADE COUNTY

An interesting highlight of the 1945 record is the finding of gas in Meade County. The Stanolind Oil and Gas Company started drilling a test well on the Adams Ranch in the SW cor. SW¼ sec. 8, T. 35 S., R. 30 W. during 1944. This well was a deep test and took 6 months drilling time before it was completed at a total depth of 7,921 feet. Gas shows were found in several zones in the Mississippian system. These were tested after the hole had been drilled into the Arbuckle dolomite and plugged back. Final tests showed a capacity of 25 million cubic feet of gas from a porous zone at 6,127 feet. Lesser quantities of gas were found between 5,858 and 5,883 feet and between 5,885 and 5,925 feet. This pool has been named the **Adams Ranch** pool.

The stratigraphic sequence of beds found in this well is very interesting. Gravels of the Tertiary Ogallala were found to extend to 180 feet where dark-grey Cretaceous clay was found. The Cretaceous extends down to 405 feet and rests upon red siltstones and clays of the Permian Whitehorse formation. The Blaine gypsum was found at 670 feet, the Flowerpot shale at 740 feet, and the Cedar Hills sandstone at 830 feet. The Salt Plain red siltstones and the Harper redbeds extend down to 1,235 feet, where the Stone Corral dolomite appears. The Ninnescah red and green silty clays were

penetrated from 1,315 to 1,710 feet where gray and green clays of the Wellington formation were encountered. There is much gypsum in the Wellington, and gypsum predominates in the lower part of the interval from 1,710 to 2,370 feet. Four dolomites were found between 2,370 and 2,636 feet; these are probably the equivalents of rocks from the Herington limestone member of the Nolans limestone to the Fort Riley member of the Barneston limestone, Wolfcampian series. Limestone greatly predominates from 2,636 to 3,040 feet, the base of the Americus limestone. Limestones of the Shawnee group were found between 3,170 and 3,665 feet. Much black shale, the age of which is questionable, occurs between 3,665 and 4,450 feet. The Kansas City-Lansing limestone probably may

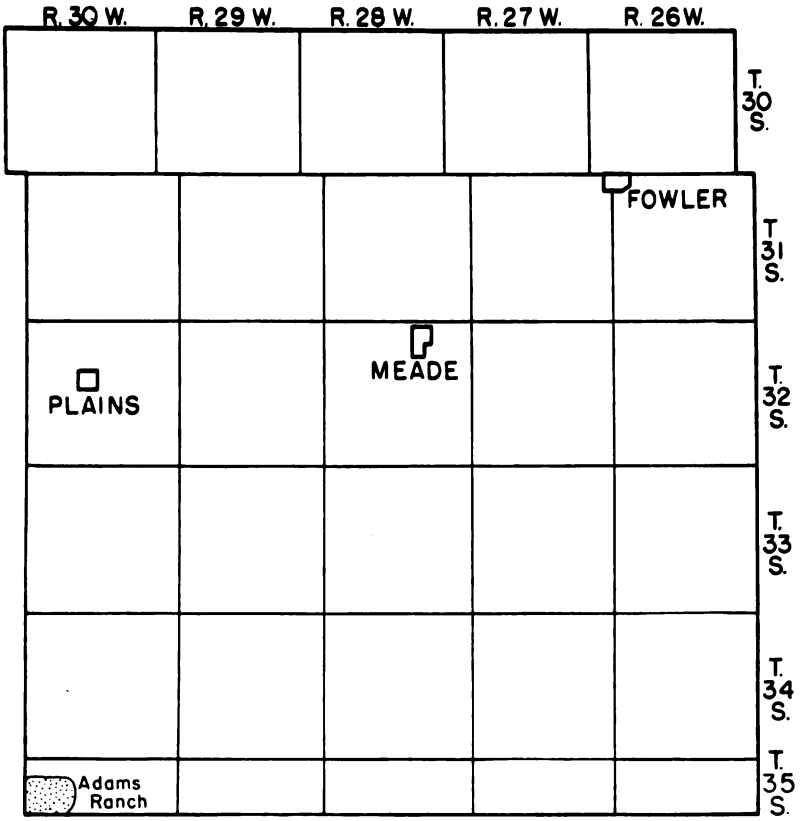

FIG. 14.—Meade County map showing Adams Ranch gas pool.

be identified at 4,335 or 4,450 feet. There is an alternation of thin limestone and thin black shale layers from that depth to 5,470 feet, and some oölitic limestones occur in the interval. The Cherokee shale probably was encountered at 5,470 feet, below which are alternating black shales and thin limestones. Coarsely crystalline Morrowan limestones containing glauconite and sand were found at 5,760 feet and rest upon Chesterian rocks at 5,850 feet.

Numerous cores were taken below 5,850 feet. Therefore, the rocks of the upper Mississippian can be differentiated with some confidence. The Chesterian strata consist of crinoidal limestones, green shales, and lithographic limestone. The St. Louis and Ste. Genevieve formations are probably present, but their limits cannot be determined definitely. The Spergen consists largely of oölitic limestone with a calcite or lithographic matrix. The Warsaw dolomite was found at 6,617 feet and rests upon the Cowley argillites at 6,940 feet. The St. Joe limestone consists chiefly of dolomite, but has some thin limestones at the top. It rests upon the cherty Chouteau limestones at 7,295 feet.

The Mississippian strata rest directly upon the Viola limestone, the top of which lies at 7,415 feet. In this part of the state the Viola is a cherty limestone instead of a cherty dolomite. The limestone is lithographic and crystalline, and the chert is dark gray to black. Simpson rocks were found at 7,638 feet and consist of black sand-studded dolomite at the top with alternations of green shale and sandstone below. The Arbuckle dolomite, consisting mostly of finely crystalline brown dolomite, was found at 7,704 feet. Some layers in the Arbuckle contain dolocastic dolomite and white chert.

Morton County

No gas wells were drilled in Morton County in 1945, and the total number of gas wells completed in that county remained 35. These wells are shown on Figure 8. Information concerning the Hugoton field is given under Finney County.

During the year one dry hole was completed by the Stanolind Oil and Gas Company on their Heiken Gas Unit lease in the Cen. sec. 19, T. 32 S., R. 40 W. This test was drilled to a total depth of 2,589 feet, and plugged back to 2,335 feet in an unsuccessful attempt to obtain production.

Ness County

There was much interest shown in the oil possibilities of Ness County during 1945, even though this is not reflected in the number of test wells completed. The total number of wells drilled in the county is 14, of which 8 are oil wells, and 6 are dry holes. Five oil wells and two dry holes were completed in the **Aldrich** pool; one producer and one dry hole were drilled in the **Arnold** pool; and one oil well was added to the **Kansada** pool which was discovered in 1944.

One well was completed in the southern part of the county by the Chalmette Petroleum Company on the Bowman farm as the discovery well of a new pool. The well is in the NW cor. NE¼ sec. 31, T. 19 S., R. 25 W., and the new pool has been named the **Manteno** pool. Oil was found in the soft porous fine-grained dolomite which

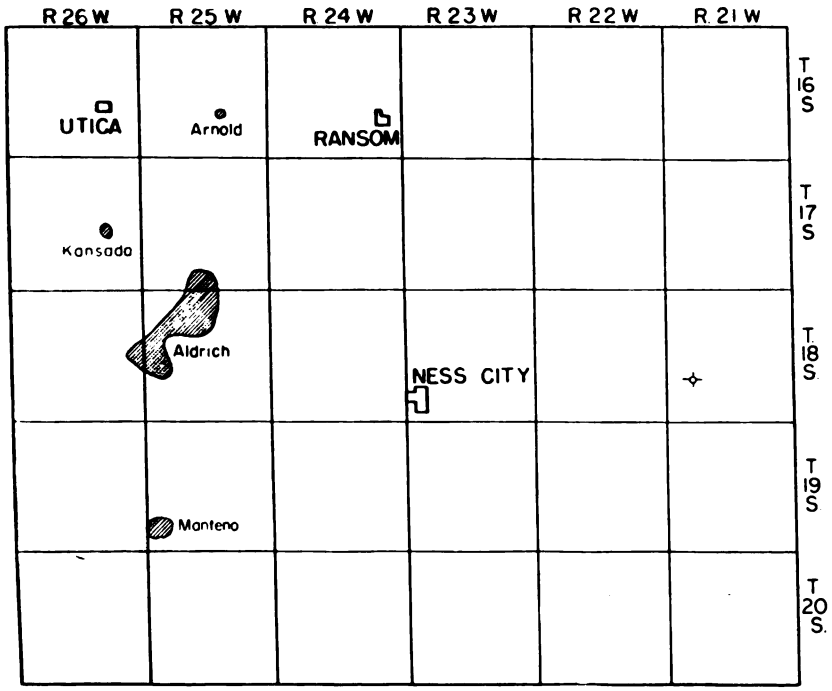

Fig. 15.—Ness County map showing oil pools and dry wildcat well drilled in 1945.

is the uppermost member of the Mississippian in this part of the state. The discovery well was rated as being capable of producing 400 barrels of oil per day between depths of 4,549 and 4,576 feet. Two offset wells drilled later were completed as dry holes.

Additional information on the oil pools in Ness County is given in Table 17, and these pools are shown on Figure 15.

Exploratory wells.—One rank wildcat was drilled in the county by the Transwestern Oil Company on the Cornellson farm in the SW cor. NW¼ sec. 29, T. 18 S., R. 21 W. In this test the Kansas City-Lansing limestone was found at 3,630 feet and the Mississippian strata at 4,198 feet (Schlumberger tops). The Osagian rocks at the top of the Mississippian consist of buff and white glauconitic dolomite and about 50 percent fresh tripoli and white chert. The St. Joe formation was found at 4,285 feet and consists of interbedded brown lithographic and oölitic limestones, with much crinoidal limestone at the base. Below the St. Joe, chunky finely crystalline dolomites which may be of Kinderhookian age were encountered; they are succeeded below by a thin layer of sand-studded green shale (4,405 to 4,410 feet). The Viola limestone lies below the Mississippian and consists of reworked materials down to 4,470 feet where fresh cherty dolomite was found. A thin impure conglomerate at about 4,575 feet probably represents Simpson rocks. The top of the Arbuckle dolomite was found at 4,580 feet and this dolomite extends down to the total depth of 4,670 feet.

TABLE 17.—*Oil pools of Ness County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Aldrich 7-18-25W	1929	6,000	269,325	1,062,575	20	Warsaw	4,428
Arnold 22-16-25W	1943	160	19,590	30,940	3	Warsaw	4,538
Kansada 23-17-26W	1944	160	4,048	4,780	2	Warsaw	4,450
Manteno 31-19-25W	1945	40	3,750	3,750	1	Mississippian	4,549

NORTON COUNTY

Very little drilling was done in Norton County (Fig. 16) during 1945. Of six test wells drilled two were oil wells and the others

were dry holes. One of the oil wells is the discovery well in the new **Ray West** pool. It was drilled in March by the Cities Service Oil Company and Helmerich & Payne on the Hansen farm in the Cen. SW¼ NW¼ sec. 26, T. 5 S., R. 21 W. Oil was found in the Arbuckle dolomite at a depth of 3,650 feet. At least nine porous zones which give promise of yielding oil in worth-while quantities were found higher in the well. The well is rated as having a capacity of 102 barrels of oil per day. The other oil well in the county was drilled by the Phillips Petroleum Company in the same section, township, and range, on the Kemper farm, and was completed for an initial potential of 32 barrels of oil per day with approximately 1 percent water. The Arbuckle dolomite was encountered at 3,640

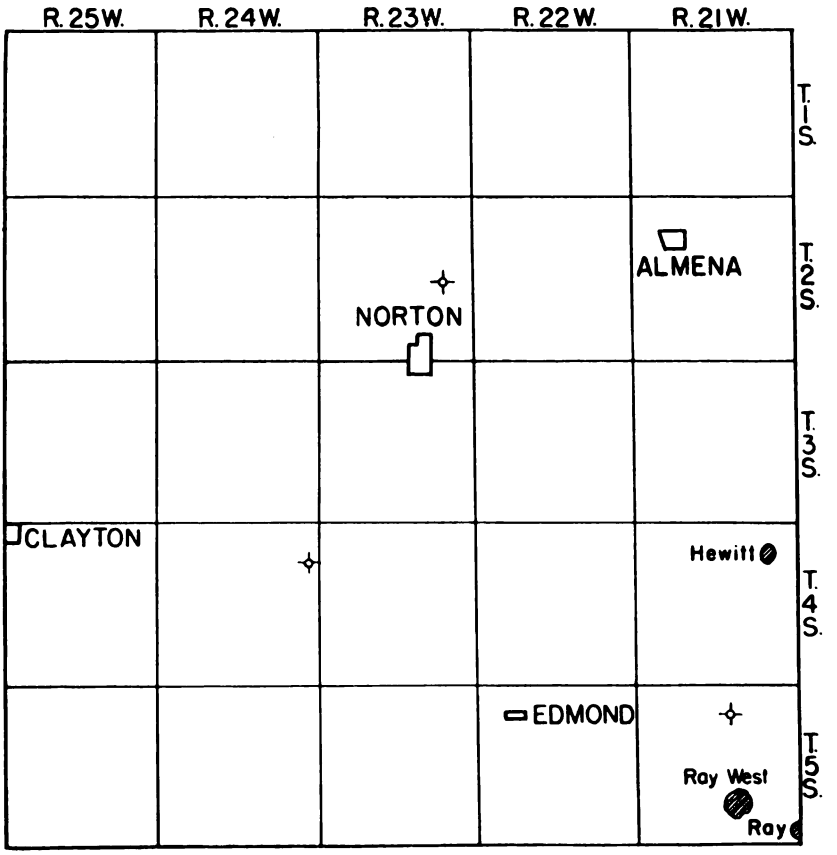

FIG. 16.—Norton County map showing oil pools and dry wildcat wells drilled in 1945.

feet and the well reached a total depth of 3,652 feet. The Cities Service Oil Company drilled a dry hole on the west edge of the Ray West pool in sec. 27, T. 5 S., R. 21 W. on the Wiltrout farm.

The **Hewitt** pool, discovered in 1941, produced 4,105 barrels of oil during 1945 making a cumulative total to the end of 1945 of 30,156 barrels. Production is from the Kansas City-Lansing limestone at a depth of 3,404 feet. There is only one well in the pool. The **Ray** pool, which extends a short distance into Norton County, is described under Phillips County.

Exploratory wells.—Three dry wildcat wells were drilled in Norton County during 1945. These wells are shown on Figure 16. The well in the NE cor. NE¼ sec. 23, T. 2 S., R. 23 W. was drilled by the B & R Drilling Company on the Scott farm. The top of the Kansas City-Lansing rocks was encountered at 3,380 feet and the top of the Arbuckle dolomite at 3,656 feet. The well was abandoned at a total depth of 3,666 feet. The Sinclair-Prairie Oil Company No. 1 Reed well, in the SW cor. NE¼ sec. 12, T. 4 S., R. 24 W., was drilled to a total depth of 3,869 feet. In this test the top of the Kansas City-Lansing limestone was found at 3,631 feet and the Arbuckle dolomite at 3,814 feet. Bridgeport Oil Company drilled a well on the Riemann "A" lease, in the NE cor. NE¼ sec. 10, T. 5 S., R. 21 W., to a total depth of 3,620 feet. The top of the Kansas City-Lansing rocks was encountered at 3,218 feet and the top of the Arbuckle dolomite at 3,470 feet.

Pawnee County

Prospecting was active in Pawnee County during 1945, due mainly to the discovery of a good pool, the Ryan pool, in the southern part of adjacent Rush County. At least 14 wildcat tests were completed during the year; of these three succeeded in finding oil or gas. One of the new pools, the **Ryan Southeast,** was found by W. F. Hildebrand *et al.* when a well on the Wickstrom farm in the NW cor. NW¼ sec. 12, T. 20 S., R. 16 W. was completed. This well is located about 1 mile north of the Pawnee Rock pool and a similar distance from the Ryan pool, and will probably serve to connect those two pools into one producing area.

A second new pool was discovered when the J. M. Huber Corporation completed the first well on the Katchelman lease in the NE cor. NE¼ sec. 34, T. 22 S., R. 16 W. The test was completed as a

gas well capable of furnishing 36½ million cubic feet of gas per day. Some oil was found in the Simpson dolomite at 4,063 feet, but the amount was not deemed sufficient to be of commercial importance. Gas is produced from the Arbuckle dolomite at a depth of 4,063 feet, about 5 feet below the top of the formation. The new pool was named the **Shady** gas pool.

The discovery well in the third new pool in Pawnee County, the **Benson** pool, was drilled by the Stanolind Oil and Gas Company on the Benson lease in the NW¼ NE¼ NW¼ sec. 30, T. 23 S., R. 15 W., in the southeastern part of the county. Gas was found in the Arbuckle dolomite and the well was then plugged back to the Kansas City-Lansing limestone where a porous zone between depths of 3,853 and 3,869 feet produced 357 barrels of oil per day. The gravity of the oil is 23° A.P.I.

Among the 28 tests drilled in the county during 1945, 10 were oil wells in the Pawnee County part of the **Ryan** pool (See Rush County). One well was added to the **Pawnee Rock** pool, and 148,945 barrels of oil were produced from the 27 wells in this pool during 1945.

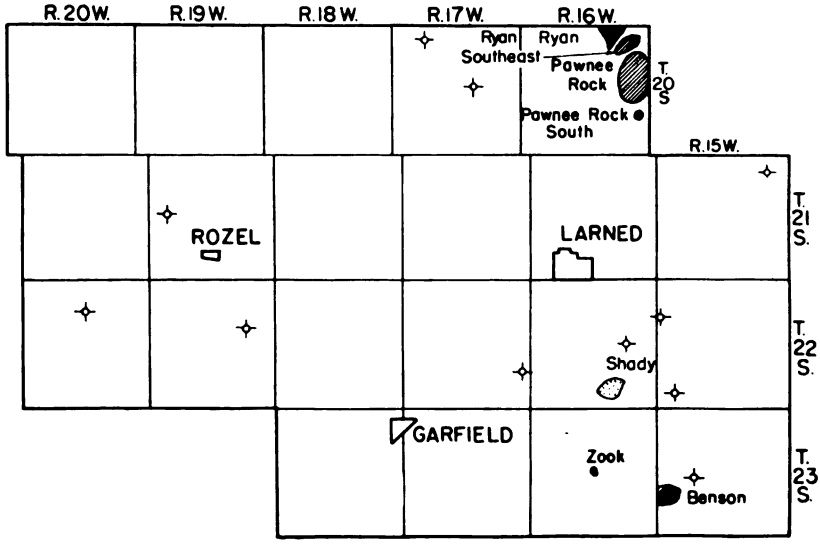

FIG. 17.—Pawnee County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

Information on the oil and gas pools in Pawnee County is given in Table 18, and these pools are shown on Figure 17.

Exploratory wells.—In addition to the three wildcat wells which discovered new pools in Pawnee County, 11 dry wildcat tests were drilled in the county during 1945 (Fig. 17). These wells supply interesting data on the strata in that part of the state. The J. M. Huber Corporation drilled a test on the Singer farm in the NW cor. SE¼ sec. 5, T. 20 S., R. 17 W. to a total depth of 4,002 feet. In this well the top of the Kansas City-Lansing limestone was found at 3,550 feet and the Arbuckle dolomite at 3,962 feet. The Continental Oil Company drilled a well on the Weisensee farm in the SE cor. SE¼ sec. 15, T. 20 S., R. 17 W.; the Kansas City-Lansing limestone was encountered at 3,525 feet and the Arbuckle dolomite at 3,894 feet. The well was drilled to a total depth of 3,967 feet.

The Inland Oil Company completed a dry hole in the SW¼ NW¼ SW¼ sec. 1, T. 21 S., R. 15 W. on the English farm. Here the top of the Kansas City-Lansing was encountered at 3,340 feet, and the top of the Arbuckle at 3,670 feet. The well was drilled into the granite at 3,709 feet and penetrated granite for 5 feet before being abandoned. The J. M. Huber Corporation drilled a well on

TABLE 18.—*Oil and gas pools of Pawnee County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Benson 30-23-15W	1945	40	4,595	4,595	1	K.C.-Lans.	3,853
Pawnee Rock 13-20-16W	1936	2,400	148,945	1,401,075	27	Arbuckle	3,825
Pawnee Rock South 25-20-16W	1944	40	4,650	11,474	1	Arbuckle	3,819
Ryan			See Rush County				
Ryan Southeast 12-20-16W	1945	40	805	805	3	Arbuckle	3,688
Zook 16-23-16W	1942		575	7,016	2	Arbuckle	4,066
			thousand cubic feet				
Shady 34-22-16W	1945	160	none	none	1	Arbuckle	4,063
Zook (gas) 16-23-16W	1941	640	2,632,506	2,632,506	2	Arbuckle	4,066

the Floto farm in the NE cor. SE¼ sec. 18, T. 21 S., R. 19 W. to a total depth of 4,580 feet. Samples from this test show that the top of the Mississippian strata was found at 4,259 feet. The upper 16 feet of Mississippian rocks consists of residual Osagian chert, below which the Misener sandstone occurs. This sandstone rests on the Viola cherty dolomite at 4,364 feet and the well ended in cherty dolomite. Two zones of coarsely crystalline limestone are present in the well, one between 4,420 and 4,435 feet and the other between 4,457 and 4,465 feet.

The Vickers Petroleum Company drilled a well on the Hartman farm in the NW cor. SW¼ sec. 7, T. 22 S., R. 15 W. to a total depth of 4,127 feet. Here the Kansas City-Lansing limestone was found at 3,570 feet and the Arbuckle dolomite at 4,100 feet. In the Galliart test drilled by the J. M. Huber Corporation in the NE cor. NE¼ sec. 31, T. 22 S., R. 15 W, the top of the Kansas City-Lansing limestone was found at 3,562 feet and the Arbuckle dolomite at 4,031 feet. The total depth of this well is 4,042 feet. A test well was drilled by Helmerich & Payne on the Johnson farm in the SW cor. SE¼ sec. 14, T. 22 S., R. 16 W., 3 miles north of the new Shady gas pool. The Kansas City-Lansing limestone was encountered at 3,622 feet and the Arbuckle dolomite at 4,079 feet. The well reached a total depth of 4,121 feet. About 53 feet of Simpson rocks was present in this test. The same operators drilled a test on the Lowrey farm in the NW cor. NE¼ sec. 25, T. 22 S., R. 17 W., about 4 miles west of the Shady gas pool. The top of the Kansas City-Lansing limestone was found at 3,659 feet and the top of the Arbuckle dolomite at 4,217 feet. There was a good show of oil in the Kansas City-Lansing limestone between 3,753 and 3,771 feet. The well was abandoned at 4,257 feet.

Two important wildcat tests were drilled in the western part of the county by the Continental Oil Company. One of these is in the NE cor. NE¼ sec. 14, T. 22 S., R. 19 W. on the Osgood farm and was drilled to a total depth of 4,615 feet. In this well, the Mississippian Osagian cherts were found at 4,276 feet, the Kinderhookian sandy shale and sandstone at 4,390 feet, the Viola limestone and cherty dolomite at 4,431 feet, the Wilcox sandstone at 4,551 feet, and the Arbuckle dolomite at 4,583 feet. The other test was drilled in the SE¼ SW¼ NE¼ sec. 9, T. 22 S., R. 20 W. on the Norris farm. Here the Osagian cherts were encountered at 4,335 feet, the St. Joe oölitic limestone at 4,387 feet, the Kinderhookian shale and sand-

stone at 4,393 feet, and detrital Viola material at 4,452 feet. Samples from this well show that the Viola was partly reworked and partly a joint-plane solution residuum. From 4,452 to 4,565 feet the material consists of weathered dolomite, sand-studded limestone, waxy chert, and bright-green shale and sandstone. A layer of sandstone was encountered between 4,565 and 4,575 feet, below which there is the same mixture of materials as described above, including much limestone with large sand grains embedded. At 4,660 feet detrital Arbuckle material was encountered, succeeded below by a mixture of materials similar to that found higher in the well. Between 4,680 feet and the total depth of 4,702 feet there is much weathered and sand-studded dolomite, green shale, and chert. It is likely that this test did not reach the unaltered Arbuckle dolomite.

The Skelly Oil Company drilled a test well in the SW¼ NE¼ NE¼ sec. 20, T. 23 S., R. 15 W. on the Hall Estate, several miles north of the new Benson pool. Here the Kansas City-Lansing limestone was found at 3,662 feet and the Arbuckle dolomite at 4,158 feet. The hole was abandoned at a total depth of 4,171 feet.

Phillips County

During 1945, 13 wells were drilled in Phillips County (Fig. 18), of which 6 were oil wells and 7 were dry holes. There are six oil pools in Phillips County, the Bow Creek, Dayton, Dayton North, Hansen, Logan, and Ray pools. The **Logan** pool was discovered in November, 1945, when a well was completed by Helmerich & Payne and Tidewater Oil Company on the Bowman "A" lease in the NW¼ NW¼ SE¼ sec. 3, T. 5 S., R. 20 W. Oil came into the hole from porous zones in the Arbuckle dolomite between depths of 3,381 and 3,387 feet and 3,391 and 3,404 feet. Later this well was plugged back to a porous zone in the Kansas City-Lansing limestone. The initial production of the discovery well is 201 barrels of oil per day.

The **Dayton North** pool was enlarged toward the south by the addition of three oil wells. One of these had an initial production of 124 barrels of oil per day but the others were smaller. More than 119,000 barrels of oil have been produced from this pool. It is probable that the Dayton North pool will eventually merge with the **Dayton** pool to the south. One producer was completed in the

Hansen pool during 1945 and one dry hole was drilled in the southeastern part of the pool. One new well was added to the **Ray** pool in the southwestern part of the county. This well was drilled by the Cities Service Oil Company in the NE¼ NW¼ SW¼ sec. 27, T. 5 S., T. 20 W. The Kansas City-Lansing limestone was found at 3,296 feet, the Arbuckle dolomite at 3,546 feet, and the Reagan sand at 3,611 feet. The well was completed at 3,628 feet and had an initial potential of 189 barrels of oil per day and some water.

Additional information on the oil pools of Phillips County is given in Table 19.

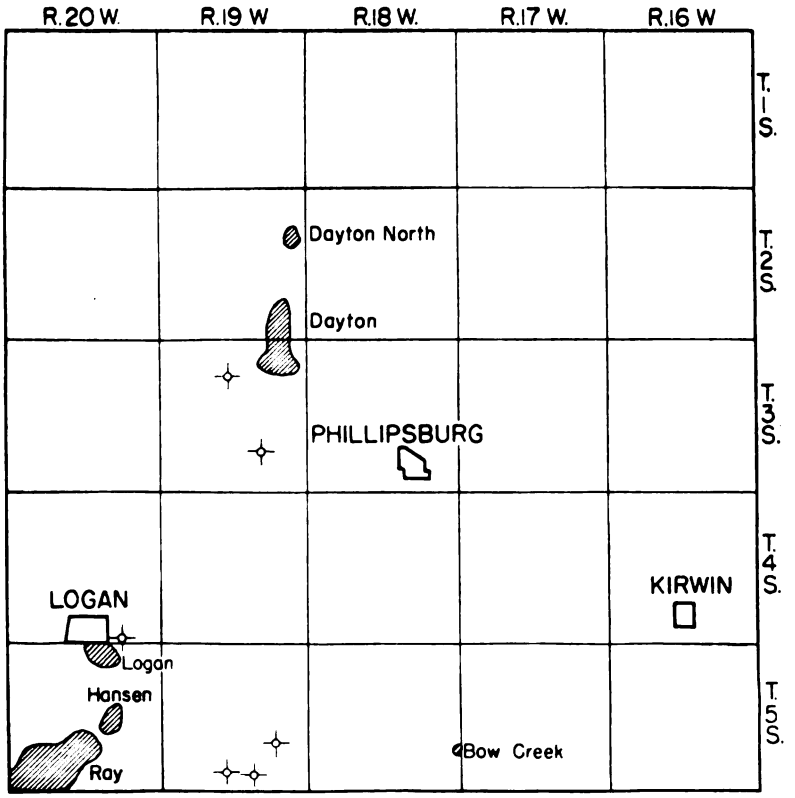

Fig. 18.—Phillips County map showing oil pools and dry wildcat wells drilled in 1945.

TABLE 19.—*Oil pools of Phillips County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Bow Creek 25-5-18W	1939	40	2,560	32,185	1	K.C.-Lans.	3,111
Dayton 36-2-19W	1941	1,200	97,750	590,025	25	K.C.-Lans.	3,430
Dayton North 13-2-19W	1943	640	46,220	119,470	9	K.C.-Lans.	3,406
Hansen 14-5-20W	1943	600	108,440	229,090	1 10	K.C.-Lans. Arbuckle	3,363 3,530
Logan 3-5-20W	1945	40	none	none	1	Arbuckle	3,149
Ray 32-5-20W	1940	3,000	1,143,695	4,395,835	77	Arbuckle Reagan	3,575 3,540

Exploratory wells.—Six dry wildcat wells were drilled in Phillips County during 1945 (Fig. 18). One test was drilled by the Bridgeport Oil Company in January, 1945, on the Grau farm in the SW¼ NW¼ NW¼ sec. 26, T. 3 S., R. 19 W. The top of the Kansas City-Lansing limestones was encountered at 3,236 feet and the Arbuckle dolomite at 3,635 feet. The test was abandoned at 3,635 feet. The Denver Oil Company drilled a well on the Mueller farm in the NE¼ SW¼ SE¼ sec. 9, T. 3 S., R. 19 W., about 6 miles west of the Dayton pool. This well was drilled to a total depth of 3,575 feet. The top of the Kansas City-Lansing rocks was found at 3,210 feet, and the top of the Arbuckle dolomite at 3,548 feet. The Stanolind Oil and Gas Company No. 1 Wiltrout well, in the SW cor. SW¼ sec. 35, T. 4 S., R. 20 W., is only 2 miles northeast of the new Logan pool, but was drilled before the Logan pool was discovered. In this well, the top of the Kansas City-Lansing limestone was found at 3,085 feet, and the top of the Arbuckle dolomite at a depth of 3,384 feet. The test was abandoned at a total depth of 3,396 feet.

In T. 5 S., R. 19 W., three dry holes were completed. One was drilled in sec. 26 by the Texas Company on the Mai farm, the second was drilled by Allen *et al.* on the Schorer farm in sec. 33, and the third was drilled by the Skelly Oil Company on the Thayer farm in the SE cor. NE¼ sec. 34. In this test the top of the Kansas City-Lansing limestone was found at 3,204 feet and the Arbuckle dolomite at 3,480 feet. The hole was abandoned 23 feet lower at 3,503 feet. There were good shows of oil in several zones in the Kansas City-Lansing limestone, and one good show in the Arbuckle dolomite.

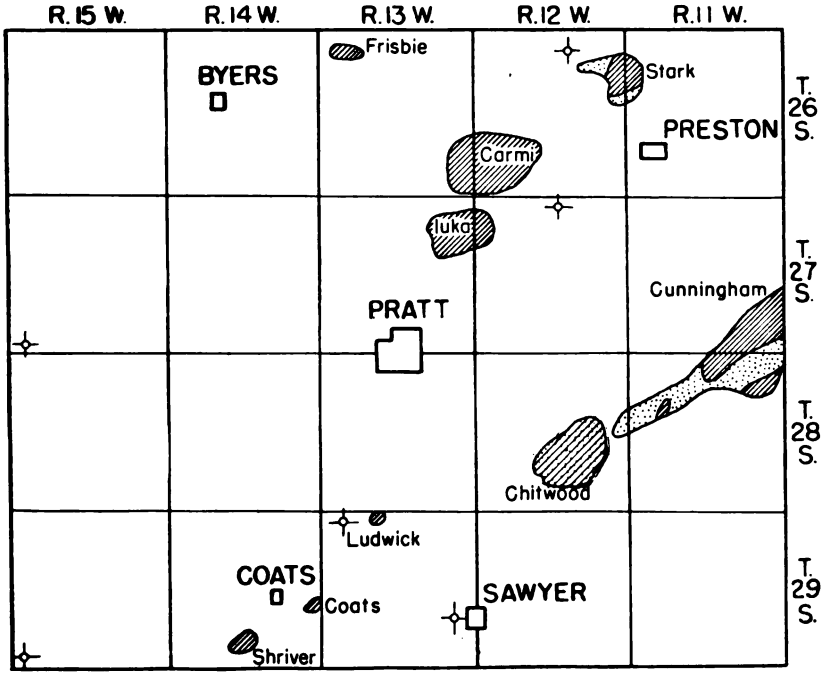

FIG. 19.—Pratt County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

PRATT COUNTY

Drilling activity in Pratt County (Fig. 19) during 1944 was on a reduced scale. Only 57 wells were drilled, as compared with 103 in 1944. Six wildcat tests were completed and all these were dry holes.

During 1945, two oil wells were added to the **Stark** pool, one in sec. 7, T. 26 S., R. 11 W. and one in sec. 12, T. 26 S., R. 12 W. The **Carmi** pool was slightly enlarged by the completion of two oil wells. In this pool two deep salt-water disposal wells were drilled by the Shell Petroleum Company, and one dry hole was drilled by the Bishop Oil Company in the SW cor. SE¼ sec. 21, T. 26 S., R. 12 W.

In the **Chitwood** pool 27 oil wells were completed during 1945, some of which produce oil from the Simpson rocks and gas from the Viola dolomite. Such dual completion wells are located in secs. 26 and 27, T. 28 S., R. 12 W. Five gas wells were also completed in the Chitwood pool, and three dry holes were drilled in an effort to ex-

tend the pool southward and southwestward. The Kansas City-Lansing rocks have been added as a producing zone in this pool.

In the **Ludwick** pool two dry holes were drilled, and in the **Shriver** pool three oil wells were completed. In the **Coats** pool three wells were completed during 1945; one of these was temporarily abandoned at 4,460 feet, one produced oil, and one was a dry hole. The oil well, the Lion Oil Company No. 3 Andrews in the NW¼ SE¼ SE¼ sec. 24, T. 29 S., R. 14 W., produces from the Arbuckle dolomite, a new producing horizon in this pool. The top of the Arbuckle was found at 4,298 feet, which is 173 feet higher than the same stratum in the No. 1 Andrews well and 113 feet higher than in the No. 2 Andrews well. This relationship gives some clue to the high relief of the Arbuckle in this pool, a very unusual condition in Kansas and probably duplicated only in the Oxford pool and some other pools on the southern end of the Nemaha granite ridge. There was little activity in the large **Cunningham** pool. Only one oil well and one dry hole were completed there in 1945. This pool is discussed under Kingman County.

Additional information on the oil and gas pools of Pratt County is given in Table 20. It will be noted that the Chitwood and Carmi pools are listed for the first time as gas pools. A large amount of gas was produced from the Chitwood pool; the gas is derived from the Viola limestone.

Exploratory Wells.—Six wildcat tests, two of them rank wildcats, were completed in Pratt County during 1945. These are shown in Figure 19. One of the rank wildcat wells is the Tri-State Drilling Company No. 1 Bryant, in the NE¼ SW¼ SE¼ sec. 31, T. 27 S., R. 15 W. Here the top of the Kansas City-Lansing limestone was found at 4,130 feet and the top of the Mississippian strata at 4,619 feet. Samples show that down to 4,660 feet the strata belong to the Osagian series; at that depth the green Kinderhookian shale appears. The fine even-grained Misener sandstone was encountered at 4,675 feet and extends down to 4,730 feet where it rests on decayed limestone and weathered chert of the Viola formation. Fresh Viola cherty dolomite was found at 4,775 feet, coarsely crystalline limestone at 4,825 feet, Simpson dolomitic sandstone at 4,865 feet, impure Wilcox sandstone at 4,930 feet, and Arbuckle dolomite at 4,946 feet. The total depth of the well is 5,000 feet. There were oil shows in the Misener sandstone and in the dolomitic

Simpson sandstone. The other rank wildcat test was drilled in the extreme southwestern corner of the county by the Sinclair Oil Company in the NE cor. SW¼ sec. 31, T. 29 S., R. 15 W. on the Peters farm. In this well residual chert of the Osagian series was found at 4,645 feet, detrital and decayed limestones and red shales of the reworked Viola at 4,690 feet, and residual Viola chert between 4,740 and 4,780 feet where a green shale appears in the sequence. Fresh Viola cherty dolomite was encountered at 4,795 feet, coarsely crystalline limestone at 4,850 feet, a second zone of cherty dolomite at 4,875 feet, and a lower limestone at 4,990 feet. This limestone is sand-studded and rests on green Simpson shale at 5,000 feet. The Wilcox sandstone was found at 5,020 feet; it extends down to 5,085 feet with some intercalations of green shale to the top of the Arbuckle dolomite. The test was abandoned at 5,160

TABLE 20.—*Oil and gas pools in Pratt County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Carmi 29-26-12W	1942	3,000	1,158,940	4,187,895	1 89	Simpson Arbuckle	4,271
Chitwood 23-28-12W	1943	3,000	968,655	1,513,175	1 17 49 3	K.C.-Lans. Viola Simpson Arbuckle	4,396
Coats 24-29-14W	1944	600	35,085	53,365	3 2	Simpson Arbuckle	4,402
Cunningham			See Kingman County				
Frisbie 5-26-13W	1943	400	38,805	94,425	4	K.C.-Lans.	3,947
Iuka 11-27-13W	1937	2,000	188,965	838,935	20 2	Simpson Arbuckle	4,292 4,354
Ludwick 4-29-13W	1944	40	10,005	14,220	1	Simpson	4,489
Shriver 33-29-14W	1944	300	43,505	47,115	5	Simpson	4,557
Stark 18-26-11W	1941	600	161,670	471,110	16	Viola	4,121
			thousand cubic feet				
Cunningham (gas) 7-28-11W	1935	20,000	157,740	41,340,735	40	Viola	4,278
Carmi (gas) 29-26-12W	1942	3,000	24,279		1	Viola	4,122
Chitwood (gas) 23-28-12W	1943	3,000	1,428,131		10	Viola	4,340
Stark (gas) 13-26-12W	1941	600	none		2	Viola	4,121

feet in the Arbuckle dolomite. There were good shows of oil in the lower part of the Pennsylvanian sequence, but none in the older rocks.

The Kingwood Oil Company drilled a well on the Hoskinson farm, in the SE cor. SE¼ sec. 3, T. 26 S., R. 12 W., which was abandoned at a total depth of 4,350 feet. The depth to the top of the Arbuckle dolomite in this test was 4,290 feet. The Amerada Petroleum Company No. 1 Drews well, in the SE cor. NW¼ sec. 3, T. 27 S., R. 12 W., encountered the top of the Arbuckle at 4,601 feet and was drilled to a total depth of 4,634 feet. In the NW¼ SE¼ NE¼ sec. 6, T. 29 S., R. 13 W. the Skelly Oil Company drilled a dry hole on the Moore farm to a total depth of 4,670 feet. The top of the Arbuckle was encountered at 4,644 feet in this well. A wildcat test 6 miles from production was drilled by the Bridgeport Oil Company on the Brown farm in the NW cor. NW¼ sec. 25, T. 29 S., R. 13 W. at the town of Sawyer. In this well the top of the Kansas City-Lansing limestone was reported at 3,881 feet, the Mississippian at 4,348 feet, the Simpson dolomite at 4,569 feet, and the Arbuckle dolomite at 4,689 feet. The test was abandoned at 4,791 feet after tests were carried out to see if enough gas might be present between 4,466 and 4,472 feet to make a commercial well. Approximately 1 million cubic feet of gas came into the hole at this level.

Reno County

Drilling activity in Reno County was on a much reduced scale during 1945. Only 28 wells were completed, of which 9 are oil wells and 19 are dry holes. Nevertheless, as the map (Fig. 20) shows, some attempt was made to find new oil pools in the county. The wildcat tests are well scattered. Four of them are rank wildcats, two are ordinary wildcats, and four are extension wildcat tests drilled near pools. Details on these test wells are presented in Table 22.

In the **Zenith-Peace Creek** pool, one of the largest pools ever found in Kansas, six oil wells and four dry holes were completed during 1945. Two oil wells were added to the **Abbyville** pool near the center of the county, and one additional oil well was completed in the **Lerado Southwest** pool. Production figures and other data pertaining to the oil and gas pools of Reno County are given in Table 21 and these pools are shown in Figure 20.

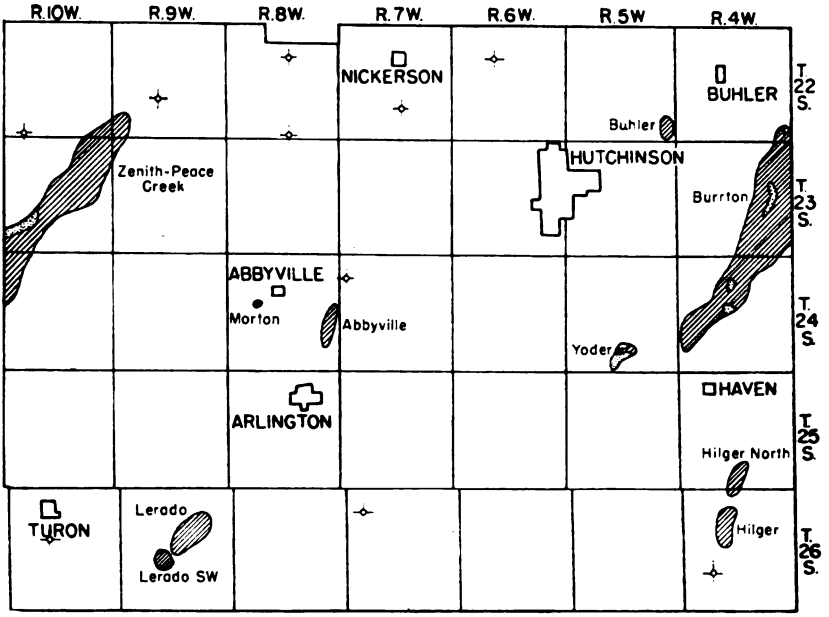

FIG. 20.—Reno County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

TABLE 21.—*Oil and gas pools of Reno County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Abbyville 24-24-8W	1927	360	27,210	534,485	12	K.C.-Lans.	3,540
Buhler 25-22-5W	1938	500	30,355	516,356	5	Viola Simpson	3,890 3,897
Burrton 23-23-4W	1931	5,000	1,346,010	39,778,010	360	"Chat" Hunton	3,266 3,583
Hilger 16-26-4W	1934	600	109,070	3,075,650	22	Viola	4,062
Hilger North 34-25-4W	1943	500	160,495	294,595	12	Viola	4,099
Lerado 11-26-9W	1935	1,800	39,145	2,578,385	20	Viola	4,128
Lerado Southwest 21-26-9W	1944	160	22,200	28,990	3	Viola	4,177
Morton 17-24-8W	1944	40	3,830	18,650	1	K.C.-Lans.	3,180
Zenith-Peace Creek 21-23-10W	1941	6,000	1,422,845	7,668,795	123 1	Viola Arbuckle	3,773
Yoder 34-24-5W	1935	500	900	83,770	5	"Chat"	3,450

TABLE 21.—*Oil and gas pools of Reno County, concluded*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			thousand cubic feet				
Burrton (gas) 23-23-4W	1930	5,000	1,535,664	60,448,664	52	"Chat"	3,298
Yoder (gas) 34-24-5W	1936	800	574,631		6	"Chat"	3,402
Zenith-Peace Creek (gas)			See Stafford County				

TABLE 22.—*Dry wildcat wells drilled in Reno County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Coralena and Texas No. 1 Williams	NE¼ SW¼ SW¼ 9-22-6W	4,003	4,038
Continental No. 1 Chesky	SE¼ NE¼ NW¼ 27-22-7W	3,951	3,990
Allen and Drillers Gas No. 1 Snook	SW¼ NW¼ SW¼ 10-22-8W	3,554	3,654
Sterling Drilling No. 1 Osenbaugh	SW cor. SW¼ 34-22-8W	4,048	4,080
Plains Exploration No. 1 Updegrove	SW cor. SW¼ 21-22-9W	3,814	3,844
Hershfield No. 1 Jones	SW cor. SW¼ 32-22-10W	3,692	3,742
Hershfield No. 1 Deupser	NE cor. NW¼ 7-24-7W	4,151	4,185
Kingwood No. 1 Hilger	NW cor. NE¼ 29-26-4W	4,159	4,210
Derby No. 1 Warfield	NE cor. NE¼ 7-26-7W	4,325	4,357
Phillips No. 1 Baden	SW cor. NW¼ 16-26-10W	4,396	4,428

RICE COUNTY

Rice County was actively prospected during 1945, with a total of 41 oil wells and 31 dry holes reported for the year. Many wildcat tests and also many marginal pool tests were drilled. No new pools were discovered, however, and the marginal pool wells are capable of producing only small amounts of oil.

In the **Geneseo** pool four tests were drilled, all of which proved to be dry holes. One dry hole was completed in the **Smyres** pool. There was much activity in the **Chase** pool during the year, and at least 25 wells were drilled in various parts of the pool. Of

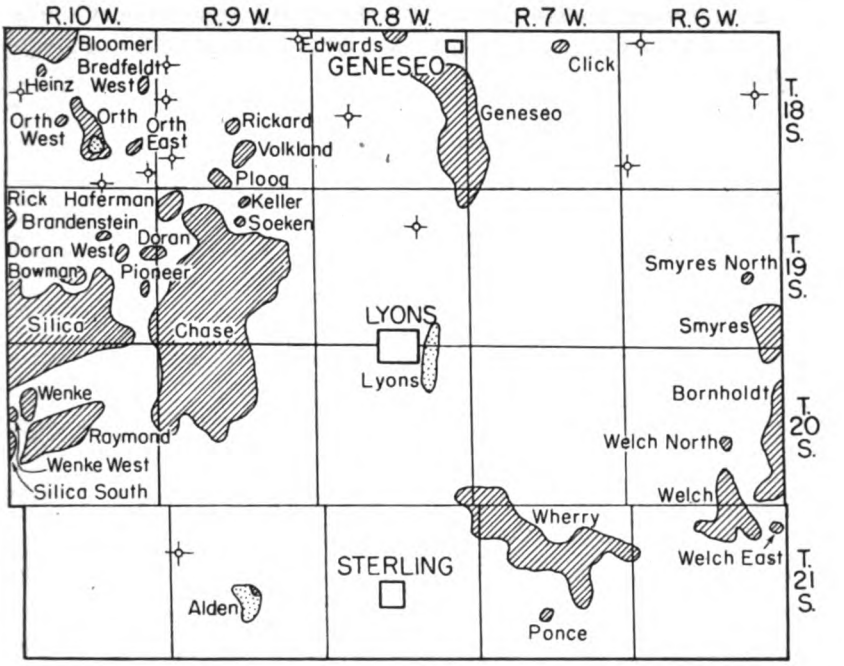

Fig. 21.—Rice County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

these, 19 are oil wells, mostly of small capacity, and 6 are dry holes. Most of the drilling was in the peripheral parts of the pool. A dry hole was completed in the **Brandenstein** pool. The **Doran West** pool was enlarged by the completion of five oil wells. None of these wells is large, but the production figures given in Table 23 indicate that this pool will add considerable to the sum total of oil produced in Rice County. The Rice County part of the large **Silica** pool was enriched by the addition of six small oil wells. To offset this gain, four dry holes were drilled on the margin of the pool. One new well was added to the **Bowman** pool, which lies a short distance north of the Silica pool. One good-sized well was added to the **Raymond** pool; seven oil wells were completed in the **Welch** pool, in the southeastern part of the county; and one oil well was completed in the **Wenke** pool.

Additional information on the oil and gas pools of Rice County is given in Table 23 and these pools are shown on Figure 21.

Exploratory wells.—Figure 21 shows the dry wildcat wells drilled in Rice County during 1945. Data on these wells are given in Table 24.

TABLE 23.—*Oil and gas pools of Rice County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Alden 22-21-9W	1944	500	829	829	1	Misener	3,317
Bloomer			See Barton County				
Bowman 21-19-10W	1936	250	34,195	244,394	4 2	K.C.-Lans. Arbuckle	3,032 3,272
Brandenstein 10-19-10W	1933	160	21,820	450,372	3	K.C.-Lans.	3,014
Bredfeldt West 12-18-10W	1939	80	3,585	42,445	2	Arbuckle	3,260
Chase 32-19-9W	1931	8,500	3,072,235	40,390,365	23 390	K.C.-Lans. Arbuckle	2,942 3,246
Click 3-18-7W	1943	40	920	5,630	1	Misener	3,182
Doran 13-19-10W	1936	300	57,265	347,165	8	Arbuckle	3,291
Doran West 14-19-10W	1944	600	63,850	73,580	8	Arbuckle	3,264
Edwards 3-18-8W	1936	2,600	947,045	6,982,995	88	Arbuckle	3,278
Geneseo 25-18-8W	1934	5,600	2,278,345	17,082,850	1 196	Simpson Arbuckle	3,132
Gouldner 16-18-19W		160			2	K.C.-Lans.	2,884
Haferman 6-19-9W	1936	800	78,890	828,490	10	Arbuckle	3,192
Heinz 8-18-10W	1938	80	6,015	72,865	1 1	K.C.-Lans. Arbuckle	3,000 3,254
Keller 3-19-9W	1943	40	6,935	20,685	1	Sooy	3,240
Orth 27-18-10W	1932	1,000	108,870	1,280,700	19 2	K.C.-Lans. Pre-Camb.	2,915 3,240
Orth East 25-18-10W							
Orth West 21-18-10W	1944	40	2,985	6,050	1	Arbuckle	3,235
Pioneer 25-19-10W	1942	40	11,090	37,115	2	Arbuckle	3,281
Ploog 33-18-9W	1930	500	24,225	1,421,100	8	Arbuckle	3,252
Ponce 28-21-7W	1936	40	2,955	42,115	1	Sooy	3,388
Proffitt 12-20-10W	1938	40			1	Arbuckle	3,227
Raymond 21-20-10W	1929	1,200	552,375	8,965,725	29 35	K.C.-Lans. Arbuckle	3,130 3,330
Rick			See Barton County				
Rickard 22-18-9W	1935	160	12,770	128,935	4	Arbuckle	3,324
Silica			See Barton County				

TABLE 23.—*Oil and gas pools of Rice County, concluded*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Silica South			See Barton County				
Smyres 36-19-6W	1942	1,000	224,060	845,825	22	"Chat"	3,339
Smyres North 23-19-6W	1944	40	836	836	1	"Chat"	3,342
Soeken 10-19-9W	1937	40			1	K.C.-Lans.	3,339
Volkland 27-18-9W	1943	300	79,325	184,100	7	Arbuckle	3,221
Welch 2-21-6W	1924	1,500	81,315	4,599,355	28	"Chat"	3,370
Welch East 1-21-6W	1941	80	4,675	22,185	2	"Chat"	3,341
Welch North 23-20-6W	1937	160	4,540	66,745	3	"Chat"	3,334
Wenke 7-20-10W	1935	500	90,930	799,810	10	Arbuckle	3,360
Wenke West 18-20-10W	1938	80	15,060	114,720	2	Arbuckle	3,292
Wherry 11-21-7W	1933	7,200	275,595	9,555,985	107	Sooy	3,358
			thousand cubic feet				
Alden (gas) 22-21-9W	1937	400	615,428	13,387,463	6	Misener	3,317
Lyons 35-19-8W	1888	1,500	244,245	11,949,171	1 3	Simpson Arbuckle	3,290 3,277
Orth (gas) 27-18-10W	1933	640	295,177		2	K.C.-Lans.	2,906
Thurber			Name changed to Alden				

TABLE 24.—*Dry wildcat wells drilled in Rice County During 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Harbar Drilling No. 1 Blake	SE cor. NE¼ 6-18-6W	not reached	3,688
Midstates No. 1 Kasparek	SW cor. NW¼ 13-18-6W	3,966	4,005
Bridgeport No. 1 Deal "B"	NE cor. NW¼ 31-18-6W	3,454	3,508
*Continental No. 1 Adams	SW¼ NW¼ NE¼ 20-18-8W	3,446	3,515
Phil-Han No. 1 Brownleewee	NE¼ SE¼ NW¼ 1-18-9W	3,264	3,284
Plains Exploration No. 1 Habiger "B"	NE¼ SE¼ NW¼ 7-18-9W	3,252	3,282
Plains Exploration No. 1 Habiger	SE¼ NE¼ SW¼ 18-18-9W	3,207	3,225

TABLE 24.—*Dry wildcat wells drilled in Rice County during 1945, concluded*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Globe Refining No. 1 Roesler	SW cor. SE¼ 30-18-9W	3,269	3,303
Inland No. 1 Poppelreiter	NW cor. NE¼ 18-18-10W	3,312	3,342
Keyes Drilling No. 1 Zink	SE cor. SE¼ 34-18-10W	3,266	3,310
Palmer No. 1 Behnke	SE¼ SW¼ NE¼ 36-18-10W	3,288	3,343
Chalmette No. 1 Bolton "A"	SE cor. NE¼ 10-19-8W	3,208	3,297
Taxman No. 1 Inscho	SE cor. SW¼ 7-21-9W	3,394	3,425

*Completed in 1944.

ROOKS COUNTY

Rooks County was one of the most actively prospected counties in western Kansas during 1945. This does not mean that the largest number of wells was drilled there, but it does mean that operators were impressed by the possibilities of this county and aggressively sought to find new production. The map (Fig. 22) shows that wildcat test wells were drilled in many parts of the county. Three of these tests were successful in finding new oil pools—McClellan, Palco Townsite, and Vohs.

The **McClellan** pool was found by the Phil-Han Oil Company when a well on the McClellan farm in the NW cor. SW¼ sec. 9, T. 9 S., R. 19 W. was completed at a depth of 3,530 feet. The oil is derived from the Kansas City-Lansing limestone between depths of 3,343 and 3,348 feet. The initial production of the well was 185 barrels of oil per day. The **Palco Townsite** pool was opened by the Keyes Drilling Company when the first well on the Neil farm was completed. Oil was found in the Arbuckle dolomite between depths of 3,847 and 3,865 feet. The discovery well is in the Cen. N. line NE¼ NE¼ sec. 20, T. 9 S., R. 20 W., next to the town of Palco in the southwestern part of the county. The well is rated as having a capacity of 211 barrels of oil per day. The new **Vohs** pool was discovered by Darby & Bothwell, Inc. The location of the first well is in the NE cor. NE¼ sec. 14, T. 10 S., R. 19 W. on the Vohs farm. It was drilled to a total depth of 3,562 feet, and oil was found in the

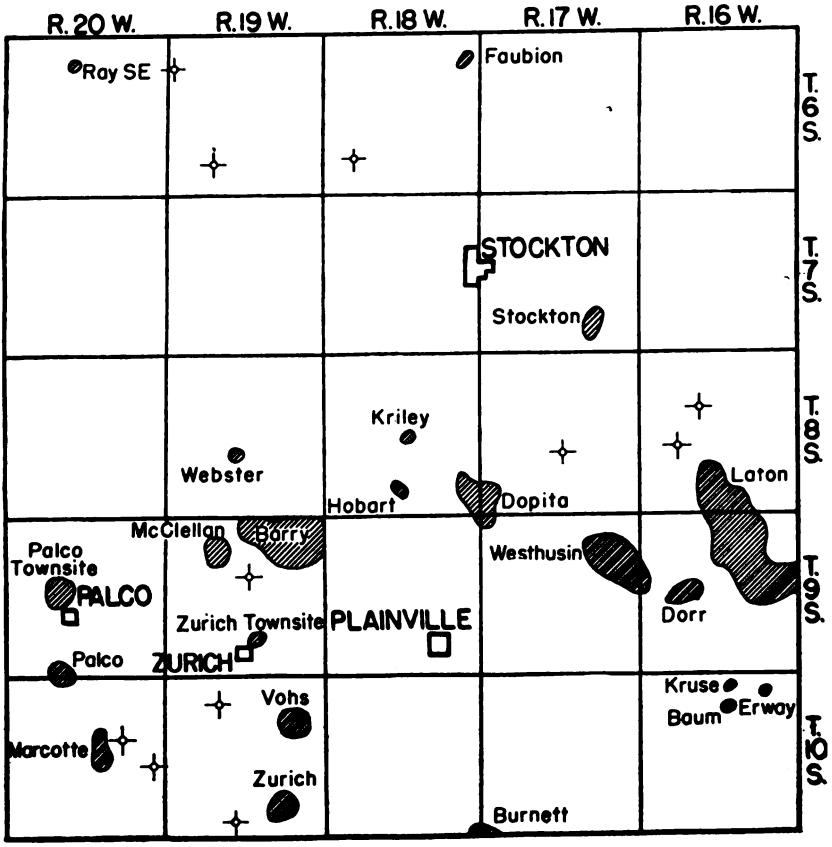

FIG. 22.—Rooks County map showing oil pools and dry wildcat wells drilled in 1945.

Arbuckle dolomite between depths of 3,559 and 3,562 feet. A potential capacity of 380 barrels was assigned to this well. In October oil was found by the Sinclair Oil Company in the Kansas City-Lansing limestone at 3,365 feet in the No. 1 Vohs test in the NE¼ NW¼ NW¼ sec. 13, T. 10 S., R. 19 W., and before the close of the year oil was found in several zones in the Kansas City-Lansing limestone. The discovery well was therefore plugged back to one of these zones and it now produces oil only from the Kansas City-Lansing limestone. At the end of 1945 there were six wells in the pool, and one of these is reported to be producing from the Dodge limestones above the Kansas City-Lansing limestone. This well, the Stanolind Oil and Gas Company No. 2 Seneçal in the

TABLE 25.—*Oil pools of Rooks County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Barry 11-9-19W	1941	1,100	551,170	1,092,230	6 19	K.C.-Lans. Arbuckle	3,435
Baum 10-10-16W	1941	40	1,535	7,885	1	K.C.-Lans.	3,057
Burnett			See Ellis County				
Dopita 31-8-17W	1934	500	49,105	384,155	2 8	K.C.-Lans. Arbuckle	3,212 3,409
Dorr 20-9-16W	1941	250	47,100	104,412	5	K.C.-Lans.	3,230
Erway 2-10-16W	1941	40	6,935	34,040	1	K.C.-Lans.	3,136
Faubion 12-6-18W	1936	80	1,000	49,860	1	K.C.-Lans.	3,128
Hobart 33-8-18W	1944	180	11,954	24,845	3	K.C.-Lans.	3,209
Kriley 22-8-18W	1943	40		2,683	1	Arbuckle	3,331
Kruse 3-10-16W	1928	40			1	K.C.-Lans.	3,115
Laton 11-9-16W	1927	1,400	219,130	2,635,590	93	K.C.-Lans.	3,228
Marcotte 15-10-20W	1943	300	153,495	203,670	7	Arbuckle	3,752
McClellan 9-9-19W	1945	120	1,952	1,952	2	K.C.-Lans.	3,343
Palco 5-10-20W	1943	300	55,105	74,180	4	Arbuckle	3,824
Palco Townsite 20-9-20W	1945	40			1	Arbuckle	3,847
Ray Southeast 9-6-20W	1941	40	8,290	36,220	1	Reagan	3,600
Stockton 35-7-17W	1937	80	3,985	34,660	1	K.C.-Lans.	3,180
Vohs 14-10-19W	1945	600	12,967	12,967	6	K.C.-Lans. Arbuckle	3,365 3,559
Webster 21-8-19W	1930	40	none	56,369	1	Arbuckle	3,434
Westhusin 11-9-17W	1936	1,000	125,125	901,235	21	K.C.-Lans.	3,231
Zurich 26-10-19W	1934	500	19,935	176,450	8	K.C.-Lans.	3,340
Zurich Townsite 27-9-19W	1944	40	7,730	13,835	1	Arbuckle	3,647

NE¼ SW¼ SW¼ sec. 12, T. 10 S., R. 19 W., was completed on December 29, 1945. The oil was found between depths of 3,357 and 3,366 feet.

Four oil wells were completed at the north and south ends of the **Laton** pool during 1945. In the **Webster** pool two wells were drilled and these were both completed as dry holes. Seven oil wells were added to the **Westhusin** pool and three oil wells were

completed in the **Barry** pool. Two oil wells and two dry holes were completed in the **Zurich** pool, one dry hole in the **Zurich Townsite** pool, one dry hole in the **Palco** pool, and two dry holes in the **Marcotte** pool.

Additional information on the oil pools of Rooks County is given in Table 25, and these pools are shown on Figure 22.

Exploratory wells.—The dry wildcat wells drilled in Rooks County during 1945 are listed in Table 26 and the depth to the top of the Arbuckle and total depth of each well are given. These dry holes are shown on Figure 22.

TABLE 26.—*Dry wildcat wells drilled in Rooks County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Harbar Drilling No. 1 Biggee	Cen. W½ NW¼ SW¼ 29-6-18W	3,593	3,644
Harbar Drilling No. 1 Brobst	NW cor. NW¼ 7-6-19W	3,615 (basal sand) 3,631 (Pre-Camb.)	3,645
Appleman and Wolf No. 1 Fleming	SE cor. SE¼ 29-6-19W	3,627	3,665
Palmer No. 1 Denio	SE¼ SW¼ SE¼ 9-8-16W	3,450	3,513
Derby No. 1 Brown	Cen. S½ SE¼ NE¼ 20-8-16W	3,373	3,393
Bridgeport No. 1 Stampfer "F"	NE cor. SW¼ 22-8-17W	3,560	3,600
Phil-Han No. 1 Nech	SW¼ NE¼ NW¼ 15-9-19W	3,514	3,545
Royer & Farris Drilling No. 1 Baldwin	NW cor. NW¼ 9-10-19W	3,782	3,784
Doley No. 1 Lane	NE cor. SE¼ 33-10-19W	3,694	3,724
Ferrier Drilling No. 1 Stithem	SW cor. NW¼ 14-10-20W	3,816	3,826
Skelly No. 1 Suter	NE cor. SW¼ 24-10-20W	3,769	3,799

RUSH COUNTY

One of the best oil pools to be discovered during 1945 was found in southern Rush County. This discoverey served to revive interest in the county as a whole. Nevertheless the total number of wells drilled is only 23, of which 16 are oil wells, 1 is a gas well, and 6 are dry holes. The name of this new pool is the **Ryan** pool and it is located in the extreme southeastern township of Rush county next to the Pawnee County line. The discovery well was drilled by the Inland Oil Company on the Peterson farm in the SE cor.

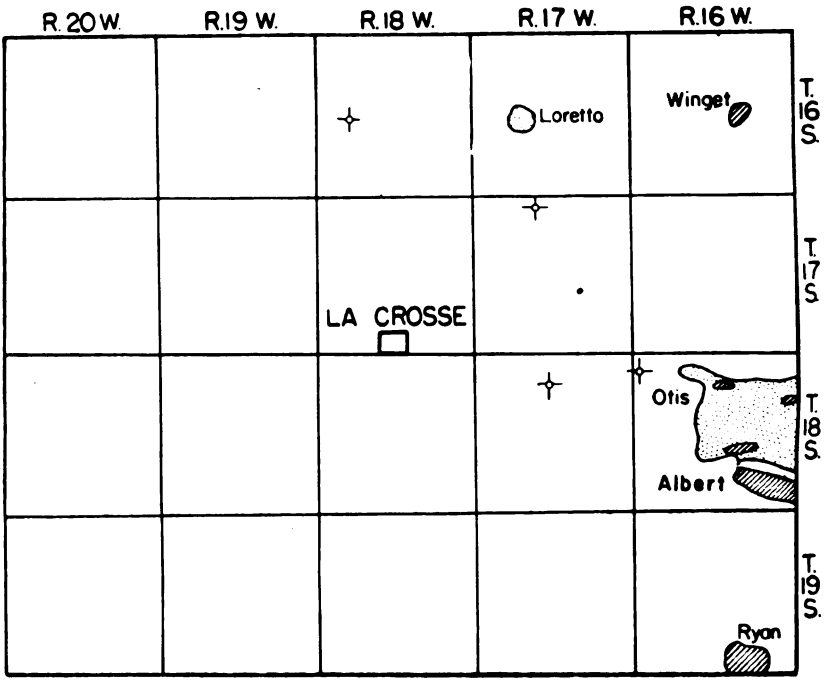

FIG. 23.—Rush County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

SW¼ sec. 35, T. 19 S., R. 16 W., and was credited with a potential capacity of nearly 2,600 barrels of oil with some water. Before the close of the year there were 22 producing wells in the pool, of which 12 were in Rush County and 10 in Pawnee County. One dry hole was also drilled in the Rush County part of the pool. Many of the wells had much smaller initial productions than the discovery wells, and most of them produce a little water with the oil. The southeastern wells in sec. 34, T. 19 S., R. 16 W. and one of the southernmost wells in sec. 35 also produce much gas along with the oil.

The second new pool in Rush County was found by the El Dorado Refining Company on the Urban farm in the NW¼ NE¼ NW¼ sec. 21, T. 16 S., R. 17 W. The new pool has been named the **Loretto** gas pool. The discovery well found gas in the Arbuckle dolomite between depths of 3,533 and 3,537 feet, and was rated as having a capacity of 1,300 thousand cubic feet of gas. The gas has

a large percentage of helium dissolved in it. The pressure was 925 pounds per square inch at the time of testing.

Four oil wells were added to the Rush County part of the **Albert** pool in T. 18 S., R. 16 W. One dry hole was drilled about a mile north of the **Winget** pool. In the **Otis** gas pool one well now produces gas from the Neva limestone at a much shallower depth than in the other wells in the pool. This high gas zone was found by the Cities Service Oil Company on the Bahr farm in the Cen. N. line NE¼ SW¼ sec. 35, T. 18 S., R. 15 W., in the Barton County part of the pool. The potential capacity of the well is 32 million cubic feet of gas per day.

During 1945 steps were taken to prolong the life of the Otis field by constructing a large repressuring plant. This plant is in the southwestern corner of the Crowell lease about 3 miles west of Albert on properties of the Morgan, Flynn, and Cobb Companies. There are five compressor units of 230 horsepower each and two electric generator units of 150 horsepower each. These units, together with the engine house, will involve an expenditure of approximately $75,000 and will service about 15 of the combination oil and gas wells near the center of the field. Inasmuch as no gas is permitted to be wasted in this field, production is held to a certain ratio per barrel of oil produced. It will now be possible, under this new repressuring program, to produce additional amounts of gas.

TABLE 27.—*Oil and gas pools of Rush County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Albert			See Barton County				
Otis 10-18-16W	1934	1,200	296,665	2,812,300	26	Reagan	3,527
Ryan 35-19-16W	1945	800	175,976	175,976	22	Arbuckle	3,656
Winget 15-16-16W	1936	120	none	50,578	1	K.C.-Lans.	3,243
			thousand cubic feet				
Loretto 21-16-17W	1945	160	none	none	1	Arbuckle	3,533
Otis (gas) 11-18-16W	1930	15,000	6,007,608	105,650,103	1 72	Neva Reagan	3,507

The excess gas will be returned to the Reagan sandstone to be stored for future use and to serve as an expellant of additional oil. It is believed that about 15 million cubic feet of gas can be run through the new plant daily. In addition to the repressuring effects hoped for, some revenue will be derived from the gasoline which will be squeezed out of the gas as it passes through the plant. Smaller plants similar to the one described have been in operation in the Otis field since 1940. One was constructed on the Maneth Brackley lease by the Kenwood Oil Company, and another was completed early in 1945 on the Koriel lease of the Schermerhorn interests.

Figure 23 shows the oil and gas pools of Rush County and information on these pools is given in Table 27.

Exploratory wells.—Four dry wildcat wells were drilled in Rush County during 1945. These are shown on Figure 23 and information regarding them is given in Table 28.

TABLE 28.—*Dry wildcat wells drilled in Rush County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Reagan feet	Total depth, feet
Vickers and B & R Drilling No. 1 Schuckman	NW cor. NW¼ 20-16-18W	3,597	3,620
B & R Drilling No. 1 Brack	SE cor. NW¼ 4-17-17W	3,588 (pre-Camb.)	3,594
Skelly No. 1 Scheuerman	NE cor. SW¼ 6-18-16W	3,510 (pre-Camb.)	3,523
Great Lakes Carbon No. 1 Kottal	NE cor. NE¼ 9-18-17W	3,593 3,610 (pre-Camb.)	3,611

RUSSELL COUNTY

During 1945 at least 128 test wells were completed in Russell County, of which 83 were oil wells and 45 were dry holes. The only counties to exceed this number of completions were Barton and Butler. Only 16 of the test wells were wildcat tests, and three of these found new pools. All the margins of present pools in Russell County were explored for possible extensions to the pools. The Williamson pool was united with the large Hall-Gurney pool. Connecting wells were also drilled between the Mohl and Hall-Gurney pools. It is likely that before another report is written the Hall-Gurney pool will also include the Gustason Northwest, Forest

Hill, and Dubuque pools, and it is probable that the large Trapp pool may be united with the Hall-Gurney pool before the end of 1946.

One of the new pools is located several miles north of the Atherton pool, and was therefore named the **Atherton North** pool. The discovery well in this pool is the Derby Oil Company No. 1 Rogg well, in the SE cor. SW¼ sec. 7, T. 13 S., R. 14 W. Oil was found between depths of 3,195 and 3,200 feet in the Arbuckle dolomite. The initial capacity of the well was 462 barrels of oil per day. An additional producer was drilled south of the discovery well in sec. 18, and three dry holes were completed in the pool before the end of 1945.

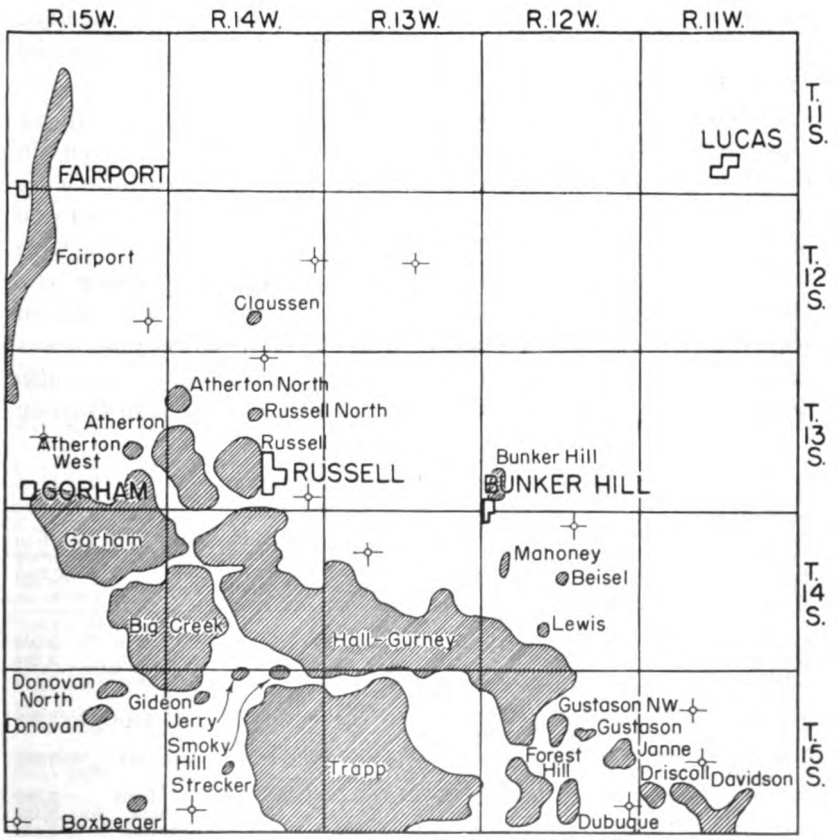

FIG. 24.—Russell County map showing oil pools and dry wildcat wells drilled in 1945.

Another new pool to be found in Russell County in 1945 is the **Atherton West** pool. The discovery well in this pool was drilled by the Coralena Oil Company on the Olson farm in the Cen. S. line SE¼ SE¼ sec .23, T. 13 S., R. 15 W. Oil was found in the Kansas City-Lansing limestone between depths of 3,269 and 3,278 feet. The well was drilled into the Arbuckle dolomite, but was later plugged back to the showing in the porous Kansas City-Lansing limestone. This pool is approximately 1 mile west of the main Atherton pool. Another oil well was completed in this pool before the end of the year.

The **Donovan North** pool, in the southwestern part of the county, was found by the Wolf Creek Oil Company when the first well on the Strock farm was completed in May. The discovery well is in the SE cor. SE¼ sec. 3, T. 15 S., R. 15 W. Oil is derived from the Arbuckle dolomite at a depth of 3,216 feet. The estimated capacity of the discovery well is 75 barrels per day.

There was much drilling in the older pools of the county. In the oldest pool, the **Fairport** pool, three new wells were completed. In the **Russell** pool at least seven oil wells and one dry hole were drilled. The new oil wells greatly enlarge the area on the west side of the pool in sections 28 and 29 and make the eventual joining with the Atherton pool only a matter of time. In the old **Gorham** pool eight oil wells and three dry holes were completed, and one oil well was added to the **Mahoney** pool. The **Hall-Gurney** pool was enlarged by the completion of 20 new oil wells; 8 dry holes were also drilled in that pool during the year. The area of the Hall-Gurney

TABLE 29.—*Oil pools of Russell County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Atherton 30-13-14W	1935	1,900	151,595	1,766,605	7 29	K.C.-Lans. Arbuckle	3,008 3,284
Atherton North 7-13-14W	1945	80	8,130	8,130	2	Arbuckle	3,195
Atherton West 23-13-15W	1945	40	none	none	2	K.C.-Lans.	3,269
Beisel 15-14-12W	1944	40	3,040	5,780	1	Arbuckle	3,266
Big Creek 36-14-15W	1935	6,800	926,235	8,305,505	187	K.C.-Lans. Gorham Arbuckle	2,908 3,152 3,171
Big Creek East			Joined to Big Creek				
Boxberger 36-15-15W	1935	160	9,150	184,775	3	K.C.-Lans.	3,147

TABLE 29.—*Oil pools of Russell County, concluded*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Bunker Hill 31-13-12W	1935	200	none	74,825	3	K.C.-Lans.	2,965
Claussen 27-12-14W	1944	40	1,920	2,510	1	K.C.-Lans.	2,855
Davidson			See Barton County				
Donovan 10-15-15W	1935	200	15,410	140,335	5	K.C.-Lans.	3,193
Donovan North 3-15-15W	1945	40	none	none	1	Arbuckle	3,216
Driscoll 30-15-11W	1940	160	8,340	61,860	3	Arbuckle	3,255
Dubuque 34-15-12W	1935	700	50,420	384,145	6	K.C.-Lans. Arbuckle	3,275 3,330
Fairport 8-12-15W	1923	3,600	737,285	17,811,605	145	K.C.-Lans. Gorham	2,950 3,211
Forrest Hill 29-15-12W	1941	1,000	199,565	544,865	21	Shawnee Arbuckle	3,320
Gideon 8-15-14W	1930	40	1,355	48,015	1	Sooy	3,266
Gorham 32-13-15W	1926	9,000	2,055,320	29,063,210	6 290	Shawnee K.C.-Lans. Arbuckle Reagan	2,765 3,027 3,289 3,299
Gustason 14-15-12W	1941	160	18,415	71,520	3	K.C.-Lans.	3,050
Gustason Northwest 15-15-12W	1943	400	65,895	133,645	4 4	K.C.-Lans. Arbuckle	3,021 3,322
Hall-Gurney 30-14-13W	1931	28,000	3,755,385	27,081,590	4 3 462 109	Wabaunsee Topeka K.C.-Lans. Gorham Arbuckle	 2,675 2,985 3,165 3,192
Janne 24-15-12W	1943	240	30,365	54,570	1 5	K.C.-Lans. Arbuckle	 3,319
Jerry 4-15-14W	1942	120	7,320	33,200	1 6 1	Wabaunsee K.C.-Lans. Arbuckle	 2,985
Lewis 28-14-12W	1940	40	800	11,930	1	Wabaunsee	2,317
Mahoney 8-14-12W	1940	160	2,615	42,475	2	K.C.-Lans.	2,977
Mohl			Joined to Hall-Gurney				
Russell 22-13-14W	1934	1,500	435,575	6,413,195	12 48	K.C.-Lans. Arbuckle	3,195 3,280
Russell North 15-13-14W	1942	40	795	20,880	1	K.C.-Lans.	2,978
Smoky Hill 2-15-14W	1938	40			4	K.C.-Lans.	2,950
Steinert 21-15-15W	1936			Abandoned			
Strecker 21-15-14W	1943	80	9,965	24,105	2	Arbuckle	3,342
Trapp 23-15-14W	1936	35,000	14,428,340	76,018,680	6 163 838	Shawnee K.C.-Lans. Arbuckle	2,889 3,062 3,252
Williamson			Joined to Hall-Gurney				

pool was greatly extended when the **Williamson** and **Mohl** pools were joined to it by connecting wells.

Enough wells were drilled between the **Big Creek** and **Big Creek East** pools to prove that they are one producing area. Three oil wells and seven dry holes were completed in the area of the Big Creek pool during 1945. One oil well and one dry hole were drilled in the **Gustason Northwest** pool; this pool is now less than a mile from the Hall-Gurney pool. Seven new oil wells were added to the **Forest Hill** pool. The Dubuque pool was enlarged on the west side by the completion of one new oil well. This brings the area of the Dubuque pool to within about one-half mile of the nearest producer in the Forest Hill pool.

There was much drilling in the area of the large **Trapp** pool. In the Russell County part of this pool at least 25 oil wells and 6 dry holes were completed. In the **Smoky Hill** pool two oil wells were drilled; this pool is now less than 1 mile from the **Jerry** pool. One dry hole was completed in the **Atherton** pool and one in the **Donovan** pool. One dry hole extension was drilled in the **Gideon** pool.

TABLE 30.—*Dry wildcat wells drilled in Russell County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Carter No. 1 Wilson	Cen. NE¼ SW¼ 15-12-13W	3,453	3,485
Cooperative Refinery No. 1 Bear	SW¼ SE¼ NE¼ 13-12-14W	3,507	3,526
Midstates No. 1 Ross	SE cor. SW¼ 25-12-15W	3,278	3,319
G. W. Davis No. 1 Krug	NE cor. NE¼ 3-13-14W	3,141	3,155
Kingwood No. 1 Hoover	NE¼ NW¼ SW¼ 36-13-14W	3,336	3,386
Skelly No. 1 Schulte	NE¼ SW¼ NW¼ 20-13-15W	3,289	3,299
Tuesday No. 1 Whitmer	NW cor. SE¼ 3-14-12W	3,368	3,420
Brunson Drilling No. 1 Dumler	SE cor. NE¼ 8-14-13W	3,358	3,380
Simpson & Noble No. 1 Oliver	NW cor. SW¼ 9-15-11W	3,311	3,362
Lion No. 1 Daniels	Cen. NE¼ SW¼ 21-15-11W	3,272	3,327
Yellow Cab No. 1 Casey	SE¼ NW¼ NE¼ 36-15-12W	3,383	3,400
J. M. Huber and D. T. Ingling No. 1 Karst	NE cor. NE¼ 31-15-14W	3,359	3,390
Kiowa Drilling No. 1 De Wald	NE¼ SW¼ SW¼ 21-15-15W	3,460	3,477

The oil pools of Russell County are shown on Figure 24 and additional information on these pools is given in Table 29.

Exploratory wells.—In addition to the three wildcat tests which discovered new oil pools in Russell County, 13 tests were drilled. These are shown on the map (Fig. 24) and are listed in Table 30.

Saline County

A total of 23 test wells were drilled in Saline County (Fig. 25) during 1945, of which 14 were oil wells and 9 were dry holes. Two oil wells were completed in the **Hunter** pool. There was much activity in the **Salina** pool, near the center of the county, during 1945. Eleven oil wells were completed in this pool, which enlarged the area of the pool to the north, west, and south. Only one dry hole was drilled in the pool. One oil well was completed in the

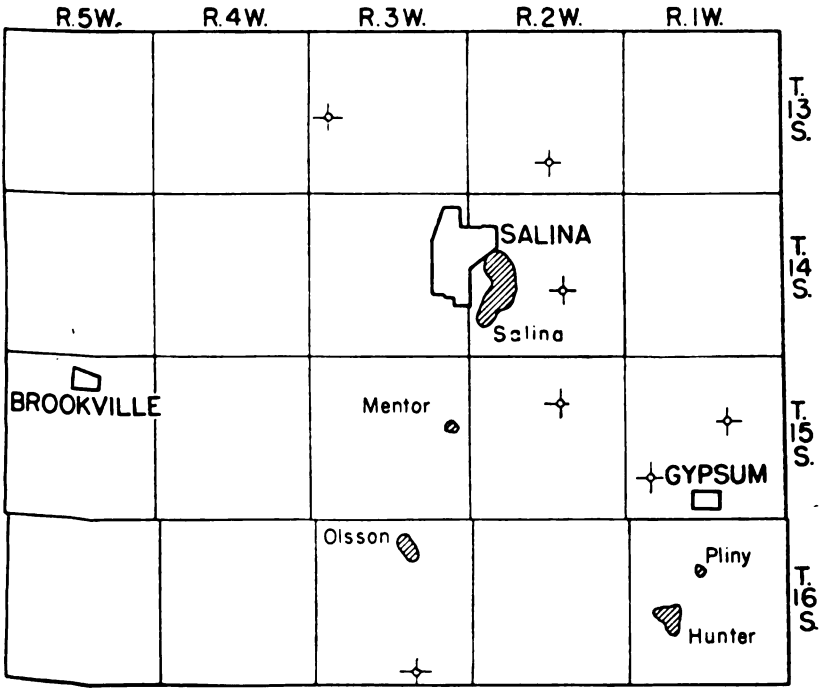

Fig. 25.—**Saline** County map showing oil pools and dry wildcat wells drilled in 1945.

Olsson pool. An extension to the **Mentor** pool was drilled in sec. 23, T. 15 S., R. 3 W., but was completed as a dry hole at 3,471 feet. Additional information on the oil pools of Saline County is given in Table 31.

Exploratory wells.—The good results in the Salina pool spurred operators to try for other similar pools. As a result seven wildcat tests were drilled in the county. These are shown on the map (Fig. 25) and data pertaining to them are presented in Table 32. None of the wildcat tests was able to find additional oil or gas pools, but valuable information was derived from them.

TABLE 31.—*Oil pools of Saline County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Hunter 20-16-1W	1943	850	121,915	411,805	19	"Chat"	2,681
Mentor 13-15-3W	1944	40	1,932	1,932	1	Viola	3,258
Olsson 10-16-3W	1929	160	18,885	34,695	3	Viola	3,303
Pliny 9-16-1W	1943	40	1,020	8,035	1	K.C.-Lans.	1,989
Salina 30-14-2W	1943	650	70,910	88,650	13	Viola	3,223

TABLE 32.—*Dry wildcat wells drilled in Saline County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Viola, feet	Total depth, feet
Ed Adair No. 1 Walden	SW cor. SW¼ 27-13-2W	3,162 3,345 (Arbuckle)	3,355
Westgate-Greenland No. 1 Shank	NE cor. NE¼ 19-13-3W	3,545 3,747 (Arbuckle)	3,819
Stanolind No. 1 Thelander	Cen. W½ SW¼ NE¼ 22-14-2W	3,259 3,422 (Arbuckle)	3,500
Anderson-Prichard No. 1 Olsson "A"	NW cor. SW¼ 14-15-1W	3,154	3,196
California No. 1 Juelfs	NE cor. NE¼ 30-15-1W	2,010 (K.C.-Lans.)	2,695
Ingling *et al.* No. 2 Reiff	Cen. S½ SW¼ SE¼ 10-15-2W	2,825 (Miss. lime)	2,868
M & L No. 1 Lindell	NE cor. SE¼ 34-16-3W	3,437	3,450

Scott County

All the drilling in Scott County (Fig. 26) during 1945 was in the area of the **Shallow Water** pool. Two good oil wells were completed there. One is in sec. 14, T. 20 S., R. 33 W. and was drilled by Holl and Hay on the Dague Estate. The other is in section 15 of the same township and range and was drilled by the Atlantic Refining Com-

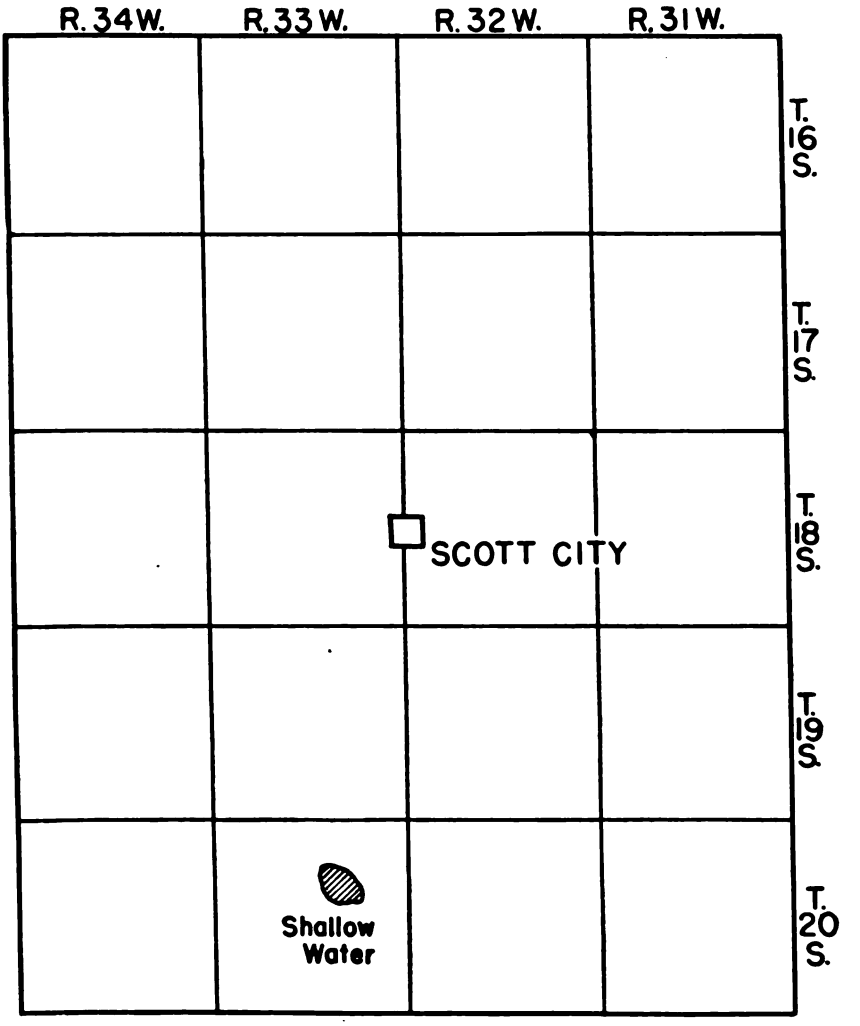

Fig. 26.—Scott County map showing Shallow Water oil pool.

pany on the Vaniman lease. A dry hole was drilled on the northwest side of the pool by the Holl and Hay interests. This test is the No. 2 well on the Roark lease and is in the Cen. S½ SW¼ SE¼ sec. 10. Production from the Shallow Water pool for the year 1945 was 121,200 barrels of oil. This makes a cumulative total to the end of 1945 of 1,450,030 barrels. There are now 12 wells in the pool, all of which produce from rocks belonging to the Meramecian series of the Mississippian system.

Sedgwick County

During 1945, at least 27 tests were drilled in Sedgwick County, of which 7 were oil wells, 2 were gas wells, and 18 were dry holes. Three new pools were found in the county. One of these is the **Greenwich South** pool discovered when J. P. Gaty drilled the first well on the Stollei lease in the SW¼ SE¼ SW¼ sec. 22, T. 26 S.,

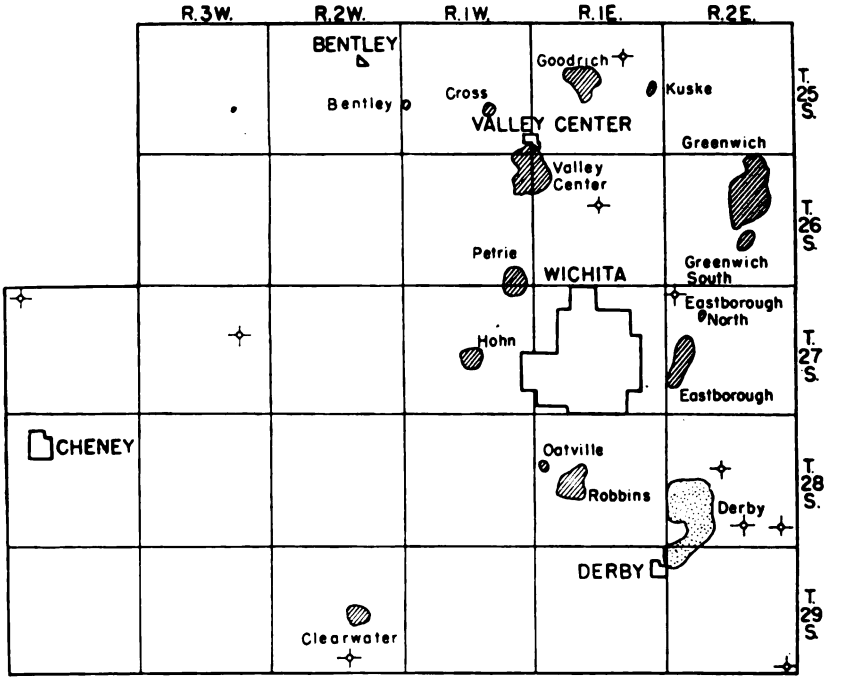

Fig. 27.—Sedgwick County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

R. 2 E. Oil was found between depths of 2,896 and 2,909 feet in the cherty top of the Mississippian system. The well was given a rating of 468 barrels per day. A second well in the same pool was completed later by the Texas Company. The discovery well in the **Hohn** pool was drilled by Turner and Fuller in the NW cor. SW¼ sec. 22, T. 27 S., R. 1 W., on the Hohn farm. Here oil was found in the Kansas City-Lansing limestone between depths of 2,779 and 2,827 feet. This well is capable of producing 100 barrels of oil per day. The **Petrie** pool was found by the British American Oil Company when the second well on the Petrie farm was completed in August. This well is in the NW¼ SW¼ SW¼ sec. 36, T. 26 S., R. 1 W. Oil was found in the Viola limestone between depths of 3,387

TABLE 33.—*Oil and gas pools of Sedgwick County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Bentley **19-25-1W**	**1929**	**40**			**1**	**K.C.-Lans.**	**2,911**
Clearwater **22-29-2W**	**1944**	**300**	**20,780**	**23,925**	**5**	**K.C.-Lans.**	**2,913**
Cross **29-25-1W**	**1929**	**160**	**3,750**	**63,830**	**2**	**K.C.-Lans.**	**2,690**
Eastborough **19-27-2E**	**1929**	**1,000**	**331,150**	**8,544,000**	**29**	**"Chat"** **Viola**	**2,956** **3,238**
Eastborough North **8-27-2E**	**1938**	**80**			**1**	**Viola**	**3,258**
Goodrich **16-25-1E**	**1928**	**640**	**203,945**	**3,922,675**	**6** **18** **6**	**K.C.-Lans.** **"Chat"** **Kinderhookian**	**2,614** **3,010** **3,334**
Greenwich **14-26-2E**	**1929**	**700**	**228,650**	**10,122,210**	**41**	**"Chat"** **Viola** **Simpson** **Arbuckle**	**2,885** **3,321** **3,350**
Greenwich South **22-26-2E**	**1945**	**80**	**410**	**410**	**2**	**"Chat"**	**2,896**
Hohn **22-27-1W**	**1945**	**40**	**2,243**	**2,243**	**1**	**K.C.-Lans.**	**2,779**
Kuske **24-25-1E**	**1929**	**40**	**none**	**145,028**	**1**	**Sooy**	**3,013**
Oatville **18-28-1E**	**1937**	**80**			**1**	**Simpson**	**3,489**
Petrie **36-26-1W**	**1945**	**40**	**3,825**	**3,825**	**1**	**Viola**	**3,387**
Robbins **20-28-1E**	**1929**	**420**	**60,295**	**3,242,055**	**49**	**Mississippian**	**3,090**
Valley Center **1-26-1W**	**1928**	**1,500**	**179,945**	**21,218,695**	**6** **5** **48**	**K.C.-Lans.** **Kinderhookian** **Viola**	**3,380** **3,366**
Derby (gas) **32-28-2E**	**1937**	**2,400**			**1** **2**	**Stalnaker** **Lansing**	**2,215** **2,228**

and 3,389 feet, and the well was rated as having a capacity of 417 barrels per day.

Five wells were drilled by the Beech Aircraft Corporation in the area of the **Derby** gas pool. Two of these were gas wells and the other three were dry holes. Three oil wells were completed during 1945 in the **Clearwater** pool. There are now five oil wells in this pool.

The oil and gas pools of Sedgwick County are shown on Figure 27 and information on these pools is given in Table 33.

Exploratory wells.—Ten wildcat tests were drilled in various parts of Sedgwick County during 1945. These are shown on the map (Fig. 27) and information on them is given in Table 34.

TABLE 34.—*Dry wildcat wells drilled in Sedgwick County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Taxman No. 1 Rausch	SE cor. NW¼ 14-27-3W	4,262	4,275
Phillips No. 1 Northcutt	SE¼ SW¼ NE¼ 6-27-4W	4,126	4,164
Branine No. 1 Tjaden	SE cor. NW¼ 34-29-2W	3,590 ("Chat")	3,634
Pickrell and Lindas No. 1 Mayall	NW cor. SW¼ 11-25-1E	3,641	3,656
Charles Starck No. 1 Overman	SW cor. NW¼ 15-26-1E	3,065 (Mississippian)	3,083
Beech Aircraft No. 1 Hinkle	SW¼ SE¼ NW¼ 6-27-2E	3,350 (Viola)	3,369
Beech Aircraft No. 1 Gehring	NE¼ NW¼ SW¼ 16-28-2E	3,386	3,404
Beech Aircraft No. 1 Goodwin	NE¼ NW¼ NW¼ 34-28-2E	3,314 (Simpson)	3,375
Beech Aircraft No. 1 Brooks	NE¼ SE¼ NW¼ 36-28-2E	3,338	3,347
El Dorado Refining No. 1 Fuller	SW cor. SE¼ 36-29-2E	3,460 (Simpson)	3,472

SEWARD COUNTY

Two gas wells and one dry hole were completed in the Seward County part of the Hugoton gas field during 1945. Both gas wells were drilled in T. 31 S., R. 34 W. in the northwestern corner of the county. Helmerich & Payne and Cities Service Oil Company drilled their No. 1 Royce well in the NE cor. SW¼ sec. 2, and the well tested for an initial potential of 20,650,000 cubic feet of gas. The Stevens County Gas Company No. 1 Reed well, in the

Cen. N½ N½ SE¼ sec. 11, produced on test 9,042,000 cubic feet of gas. The dry hole was drilled by the Carter Oil Company on their No. 1 Chapple lease, in the Cen. E½ E½ W½ sec. 23, T. 31 S., R. 32 W. The two gas wells drilled during 1945 bring the total number of gas wells in Seward County to 14 (Fig. 8). Information about gas production in the Hugoton gas field is given under Finney County.

Sheridan County

Twelve oil wells and three dry holes were completed in Sheridan County (Fig. 28) in 1945. One new pool was found during the

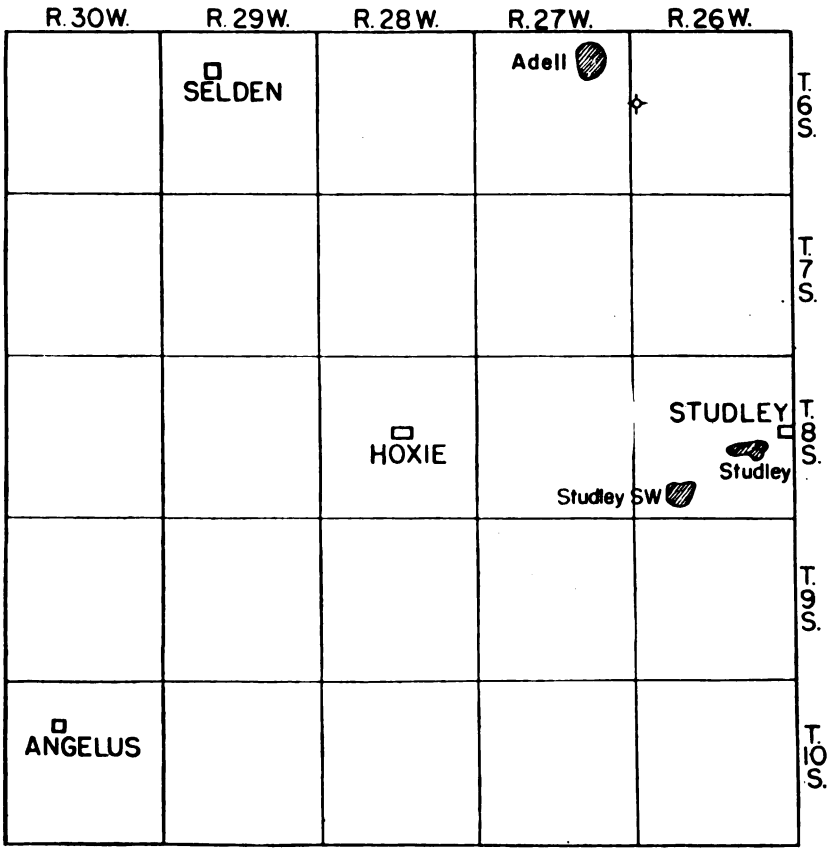

Fig. 28.—Sheridan County map showing oil pools and dry wildcat well drilled in 1945.

year when the Continental and Cities Service Oil Companies completed a test well on land of the Hoxie State Bank in the NE cor. NE¼ sec. 32, T. 8 S., R. 26 W. Oil was found in this well in a cherty limestone between depths of 3,758 and 3,773 feet. Strong oil shows were also found in an oölitic limestone between 3,796 and 3,808 feet and in a similar oölitic limestone between 3,816 and 3,832 feet. The base of the Kansas City-Lansing rocks was found at 3,920 feet and the top of the Mississippian strata at 4,195 feet. The upper part of the Mississippian consists of weathered chert down to 4,220 feet where the St. Joe oölitic limestone was found. It rests on Ordovician cherty dolomites at a depth of 4,240 feet. The Arbuckle dolomite was encountered at 4,272 feet and extends down to the total depth of 4,323 feet. No oil or gas was found in the pre-Pennsylvanian strata, and the test was plugged back to the producing zone at 3,758 feet. The initial capacity of the well was 280 barrels of oil and some water. This pool has been named **Studley Southwest.**

There are two other pools in Sheridan County—Studley and Adell. In the **Adell** pool eleven oil wells and two dry holes were completed during 1945. The production for the year, therefore, shows a decided increase over the previous year. The total cumulative production to the end of 1945 is more than 200,000 barrels of oil.

Additional information on the oil pools in Sheridan County is given in Table 35.

Exploratory wells.—One dry wildcat well was drilled in Sheridan County by the Continental Oil Company on the Hardesty farm in the NE cor. SW¼ sec. 18, T. 6 S., R. 26 W. In this test the Arbuckle dolomite was encountered at a depth of 4,138 feet, and the well was abandoned at a total depth of 4,163 feet.

TABLE 35.—*Oil pools of Sheridan County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Adell 11-6-27W	1944	600	201,265	211,215	18	K.C.-Lans.	3,755
Studley 23-8-26W	1943	400	50,250	170,565	6	K.C.-Lans.	3,810
Studley Southwest 32-8-26W	1945	40	1,824	1,824	1	K.C.-Lans.	3,758

Stafford County

Stafford County has nearly as many pools as Russell or Barton County. However, the total area of the producing wells is not as great as in those counties. With the exception of the Zenith-Peace Creek pool, most of the pools in the county cover a relatively small area. During 1945 no new pools were added; much drilling was done in all parts of the county, however, and 41 oil wells and 40 dry holes were completed.

Two wells were added to the **Snider South** pool. In the **Mueller** pool no less than 12 oil wells and one dry hole were completed. One oil well and one dry hole were completed in each the **Syms, Sand Hills,** and **Sittner** pools. An extension well, which was completed

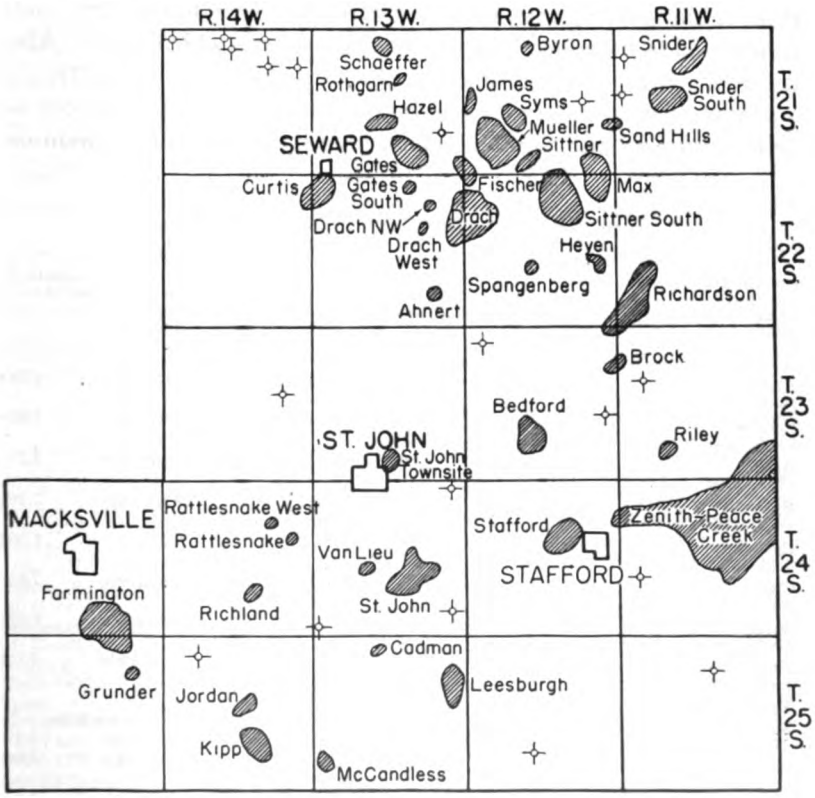

Fig. 29.—Stafford County map showing oil pools and dry wildcat wells drilled in 1945.

as a dry hole, was drilled about one-half mile northeast of the Sittner pool. The dry hole in the Syms pool, the Republic No. 1 Krkosska test in the Cen. S½ SW¼ NW¼ sec. 21, T. 21 S., R. 12 W., is especially interesting. Green Simpson shale was found at 3,510 feet immediately below the Sooy cherty conglomerate. For the most part the shale is oxidized red, but some is brown, especially near the base. The top of the Arbuckle dolomite was found at 3,553 feet and drilling was in Arbuckle to a depth of 3,573 feet. For the next 114 feet, the samples show oil-stained medium crystalline dolomite of the Arbuckle type together with brown and black shale. Phosphate pebbles are plentiful at many levels. Sand grains and some dolomite rhombs are embedded in the black shale. Much unaltered green Simpson shale occurs between 3,665 and 3,687 feet (total depth). The samples from this well were secured from cable-tool drilling and are regarded to be reliable. The well is believed to have been drilled into an old Arbuckle cavern. Also it is likely that the black shale is oil-soaked Simpson shale. This is a unique combination and one rarely duplicated in the history of drilling in Kansas. Sinkholes and caverns are not uncommon on

TABLE 36.—*Oil and gas pools of Stafford County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Ahnert 26-22-13W	1941	40	4,010	27,415	1	Arbuckle	3,784
Bedford 21-23-12W	1940	850	117,440	958,165	21	Arbuckle	3,859
Brock 12-23-12W	1944	640	35,284	36,150	6	Arbuckle	3,680
Byron 4-21-12W	1943	40	1,892	8,557	1	Arbuckle	3,460
Cadman 4-25-13W	1944	40	1,287	3,329	1	Viola	4,064
Curtis 6-22-13W	1942	300	39,705	104,840	5	Arbuckle	3,693
Drach 12-22-13W	1937	2,200	505,510	1,751,430	44	Arbuckle	3,690
Drach Northwest 11-22-13W	1944	40			1	Arbuckle	3,738
Drach West				See Drach			
Farmington 34-24-15W	1943	400	190,300	367,600	1 13	Kinderhookian Arbuckle	4,417
Fischer 31-21-12W	1938	120	36,535	249,340	4	Arbuckle	3,641
Gates 27-21-13W	1933	700	122,645	1,213,375	13	Arbuckle	3,675
Gates South 3-22-13W	1943	40			1	Arbuckle	3,704

TABLE 36.—*Oil and gas pools of Stafford County, concluded*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Grunder 11-25-15W	1943	40	2,670	10,560	1	K.C.-Lans.	3,945
Hazel 21-21-13W	1942	160	38,720	143,020	4	Arbuckle	3,692
Heyen 24-22-12W	1943	360	44,395	73,515	7	Arbuckle	3,652
James 18-21-12W	1943	160	18,240	34,730	3	Arbuckle	3,554
Jordon 15-25-14W	1936	260	50,145	537,845	7	K.C.-Lans.	3,722
Kipp 27-25-14W	1937	300	52,750	459,360	11	K.C.-Lans.	3,827
Leesburgh 12-25-13W	1938	600	246,500	1,563,650	16	Arbuckle	4,153
McCandless 30-25-13W	1944	200	47,970	76,010	4	Simpson	4,251
Max 25-21-12W	1938	500	136,300	671,090	3 9	K.C.-Lans. Arbuckle	3,356 3,570
Mueller 29-21-12W	1938	600	Inc. in Sittner pool		25	Arbuckle	3,594
Rattlesnake 13-24-14W	1938	160	9,135	70,800	4	K.C.-Lans.	3,608
Rattlesnake West 11-24-14W	1944	40	4,682	8,867	1	K.C.-Lans.	3,759
Richardson 36-22-12W	1930	1,200	647,625	7,117,935	61	Arbuckle	3,537
Richland 27-24-14W	1944	160	41,665	56,165	5	Arbuckle	4,232
Riley 28-23-11W	1940	120	16,685	80,185	2	K.C.-Lans.	3,323
Rothgarn 10-21-13W	1943	120	13,525	52,550	3	Arbuckle	3,569
Sand Hills 19-21-11W	1944	40	9,708	9,708	2	Arbuckle	3,548
Shaeffer 3-21-13W	1941	300	25,140	235,680	5 1	K.C.-Lans. Arbuckle	3,404 3,546
St. John 23-24-13W	1935	1,200	151,490	1,897,110	1 24	K.C.-Lans. Arbuckle	3,588 4,075
St. John Townsite 33-23-13W	1944	300	77,285	113,285	7	Arbuckle	3,919
Sittner 33-21-12W	1937	1,700	244,840	810,315	4 4	K.C.-Lans. Arbuckle	3,278 3,600
Sittner South 3-22-12W	1938	660	167,860	1,144,370	20	Arbuckle	3,501
Snider 3-21-11W	1936	320	20,975	290,265	2	Simpson	3,362
Snider South 16-21-11W	1938	360	94,325	500,000	10 1	Simpson Arbuckle	3,402
Spangenberg 21-22-12W	1943	40	10,905	31,945	1	Arbuckle	3,691
Stafford 15-24-12W	1940	600	301,145	1,764,570	20 1	Viola Arbuckle	3,836 3,945
Syms 20-21-12W	1943	80	18,370	29,890	3	Arbuckle	3,580
Van Lieu 20-24-13W	1943	120	32,500	125,050	3	Arbuckle	4,069
Zenith-Peace Creek 23-24-11W	1937	6,000	2,893,400	20,828,205	383	Viola	3,860
Zenith-Peace Creek (gas) 23-24-11W	1937	1,800	1,576,867	th. cu. ft.		Viola	3,860

the high parts of the Barton arch, but they rarely contain such a mixture of materials.

Three oil wells were added to both the **Heyen** and Curtis pools, and one well was completed in the **Drach** pool. Six oil wells and two dry holes were completed in the **Brock** pool. There was some new development along the northern fringe and at the extreme western end of the large **Zenith-Peace Creek** pool; a total of nine oil wells and two dry holes were completed there. Two wells were completed in the **Farmington** pool. One extension dry hole was

TABLE 37.—*Dry wildcat wells drilled in Stafford County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Magnolia No. 1 Schlochtermeyer	NE cor. NW¼ 7-21-11W	3,472	3,498
Sohio No. 1 Rader	NW¼ NE¼ SW¼ 18-21-11W	3,561	3,600
Ed Adair *et al.* No. 1 Roberts	SE¼ SE¼ SE¼ 14-21-12W	3,600	3,616
W. P. Faulkner No. 1 Fanshier	NW cor. NW¼ 25-21-13W	3,696	3,742
Hannum Drilling No. 1 Hartman	SW cor. NW¼ 2-21-14W	3,762	3,785
Helmerich & Payne No. 1 Asher	NE¼ SE¼ SE¼ 4-21-14W	3,642	3,692
Max Cohen No. 1 Langer	NW cor. NE¼ 4-21-14W	3,552	3,634
Mid Plains and Ainsworth Bros. No. 1 Heuelsen	NW cor. NW¼ 6-21-14W	3,710	3,735
W. L. Hartman *et al.* No. 1 Anschutz	SE cor. NW¼ 11-21-14W	3,694	3,750
Hartman and Keyes No. 1 Hiss	NE cor. SW¼ 12-21-14W	3,675	3,704
Plains Exploration No. 1 Bowman	SW cor. NW¼ 17-23-11W	3,759	3,784
Hinkle No. 1 Metz	NE cor. SE¼ 6-23-12W	3,768	3,816
Swearer *et al.* No. 1 Tuckwood	NW cor. SE¼ 24-23-12W	3,851	3,871
Swearer *et al.* No. 1 Peats	SE cor. SE¼ 14-23-14W	3,977	4,027
Sohio No. 1 Richardson	NE cor. SE¼ 19-24-11W	4,059	4,095
Republic Natural Gas No. 1 Asher	NW cor. NE¼ 1-24-13W	4,008	4,038
Sinclair-Prairie No. 1 Harter	SW¼ NW¼ SW¼ 31-24-13W	4,412	4,437
Phillips No. 1 Effie	NE cor. NW¼ 36-24-13W	4,142 4,754	4,757 (Pre-Camb.)
Champlin Refining No. 1 Guthrie	SW¼ SE¼ NE¼ 10-25-11W	4,090	4,118
Plains Exploration No. 1 Bonham	Cen. NE¼ NW¼ SE¼ 28-25-12W	4,190	4,216
J. J. Lynn No. 1 Wilson	SW cor. SW¼ 5-25-14W	4,380	4,446

drilled in each of the following pools: **Byron, Fischer,** and **Richardson.** One dry hole was completed in each the **St. John, Richland,** and **McCandless** pools, and one dry hole and one extension dry hole were drilled in both the **Max** and **James** pools.

Additional information on the oil and gas pools in Stafford County is given in Table 36, and these pools are shown on Figure 29.

Exploratory wells.—Twenty-one dry wildcat wells were drilled more than 2 miles from production in Stafford County in 1945. These wells are shown on the map (Fig. 29) and data regarding them are given in Table 37.

Stanton County

Two wildcat wells drilled by the Stanolind Oil and Gas Company in the early part of 1945 were completed as small gas wells on the western edge of the Hugoton field (Fig. 8). The No. 1 Campbell-Congden-Parker well, in the Cen. sec. 31, T. 28 S., T. 39 W., tested for a little more than 1½ million cubic feet of gas. In this well the Herington dolomite was reported at 2,330 feet, the Winfield dolomite at 2,471 feet, and the Wreford dolomite at 2,600 feet. The other test, located in the Cen. sec. 3, T. 27 S., R. 39 W., was completed for an initial potential of 948,000 cubic feet of gas.

Information on the Hugoton field, which includes the eastern part of Stanton County, is given under Finney County.

Stevens County

The greatest activity in the Hugoton field (Fig. 8) during 1945 was in Stevens County where 71 gas wells were completed. A total of 288 gas wells were drilled in this county to the end of 1945. The largest producer completed during the year was drilled by the Republic Natural Gas Company on the Holt farm in the Cen. NW¼ sec. 21, T. 32 S., R. 37 W. This well tested 36,927,000 cubic feet of gas per day.

The Stevens County Oil and Gas Company completed the first well to be drilled in T. 31 S., R. 36 W. This test was drilled in sec. 10 in the Cen. N½ SE¼ on the Lahey farm, and was completed for an initial potential of 23 million cubic feet of gas per day.

Information about gas production in the Hugoton field, which includes all of Stevens County, is given under Finney County.

Sumner County

The search for oil in Sumner County dates back to 1915 when the **Vernon North** pool was discovered. The pool with the largest recovery is the **Oxford** pool which was found in 1927. The second largest pool, the **Wellington**, was found in 1929. During the same year the productive **Caldwell** pool was discovered. Since then some drilling has been done in this county every year, but no new large supplies of oil or gas have been found.

During 1945 a total of 37 tests were completed in Sumner County, of which 15 were oil wells, 1 was a gas well, and 21 were dry holes. Not less than 15 wildcat tests were drilled, of which three were successful in finding oil. The first of these new pools is the **Perth** pool which was found in May. The discovery well was

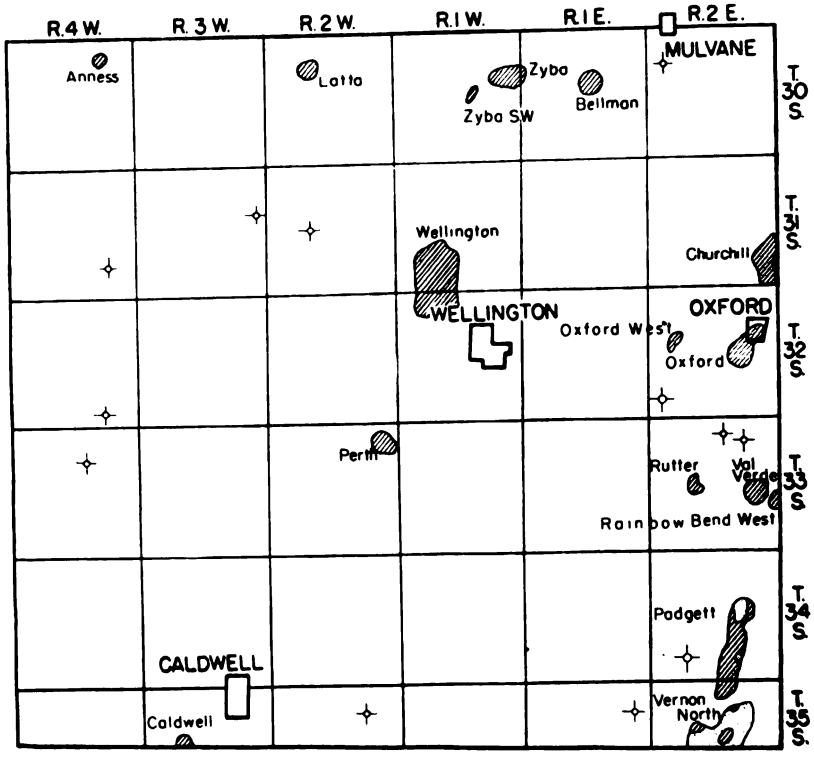

FIG. 30.—Sumner County map showing oil and gas pools and dry wildcat wells drilled in 1945. (Gas, dots; oil, diagonal lines.)

drilled by the Carter Oil Company on the Latimer farm in the Cen. NW¼ NE¼ sec. 12, T. 33 S., R. 2 W., and production is from a sandstone in the Simpson rocks between depths of 4,264 and 4,278 feet. The second pool was found by a test well drilled between the Rainbow Bend West pool and the Rutter pool and has been named the **Val Verde** pool. The discovery well was drilled by the El Dorado Refining Company on the Patterson farm in the SE cor.

TABLE 38.—*Oil and gas pools of Sumner County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production	Cumulative production to end of 1945	Number of wells	Producing zone	Depth to producing zone, feet
			barrels				
Anness 2-30-4W	1937	40	10,525	89,035	1	Simpson	4,394
Bellman 15-30-1E	1945	40	1,656	1,656	1	Simpson	3,798
Caldwell 17-35-3W	1929	200	36,970	1,212,270	4	Simpson	4,765
Churchill 25-31-2E	1926	1,000	90,000	18,911,872	58 1	Stalnaker Arbuckle	1,820 2,632
Latta 9-30-2W	1927	400	46,620	932,310	12	K.C.-Lans.	3,042
Oxford 25-32-2E	1927	800	176,440	15,218,840	45	Stalnaker Layton Arbuckle	2,020 2,510 2,890
Oxford West 17-32-2E	1926	160	10,490	546,060	3	Arbuckle	
Padgett 23-34-2E	1924	1,800	60,000	2,198,845	20	"Mississippi lime"	3,474
Perth 12-33-2W	1945	80	3,020	3,020	1	Wilcox	4,264
Rainbow Bend West 24-33-2E	1926	160	11,000	443,000	3	Bartlesville Arbuckle	
Rutter 21-33-2E	1926	80	5,695	86,815	2	"Mississippi lime"	3,315
Val Verde 23-33-2E	1945	40	none	none	1	Bartlesville	3,280
Vernon North 15-35-2E	1930	500	70,000	505,350	16	"Mississippi lime"	3,443
Wellington 33-31-1W	1929	1,200	195,980	5,650,320	95	"Chat"	3,655
Zyba 7-30-1E	1937	200	36,910	94,900	6	Simpson	3,866
Zyba Southwest 22-30-1W	1944	40	11,252	16,284	1	Simpson	3,918
			thousand cubic feet				
Padgett (gas) 23-34-2E	1924	1,800			10	"Mississippi lime"	3,474
Vernon North (gas) 15-35-2E	1915				4		
Wellington (gas) 33-31-1W	1929	1,200	131,840		45	"Chat"	3,655

NE¼ sec. 23, T. 33 S., R. 2 E. Oil was found in the Bartlesville sandstone at a depth of 3,280 feet. The third pool was found by the Aladdin Petroleum Company on the Bellman farm in the NE¼ NE¼ SW¼ sec. 15, T. 30 S., R. 1 E. Here oil is produced from a sandstone in the Simpson rocks between depths of 3,798 and 3,804 feet. The well was rated as having a capacity of 141 barrels of oil per day. This is called the **Bellman** pool.

An interesting new development in Sumner County is the discovery of oil reserves in the Arbuckle dolomite in the old **Churchill** pool. This pool was discovered in 1926 when oil was found in the Stalnaker sandstone at a depth of about 1,820 feet. This pool lies directly on the granite ridge, and Pennsylvanian strata overlap the very old Ordovician Arbuckle dolomite. The well which found production in this dolomite is the Shell Oil Company No. 12 Churchill in the Cen. E½ SE¼ SW¼ sec. 25, T. 31 S., R. 2 E. The top of the Arbuckle dolomite was found at 2,632 feet and oil appeared between depths of 2,632 and 2,657 feet. The well is capable of producing 190 barrels of oil per day, but approximately 80 barrels of water is produced with the oil. According to information

TABLE 39.—*Dry wildcat wells drilled in Sumner County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
M. J. Sullivan No. 1 Corban-Edwards	SE¼ SW¼ SE¼ 17-31-2W	4,351	4,365
Barnsdall No. 1 Hare	NE cor. NE¼ 13-31-3W	4,395	4,450
Carter No. 1 Webber	Cen. NW¼ SE¼ 26-31-4W	4,554	4,617
Carter No. 1 Springer	Cen. NW¼ SW¼ 35-32-4W	4,425	4,470
Carter No. 1 Sumpter	Cen. SW¼ SW¼ 10-33-4W	4,637	4,743
Texas No. 1 Wirt	NW cor. SW¼ 11-35-2W	4,304 ("Chat")	4,514
Carnahan *et al.* No. 1 Parker	NE cor. SE¼ 7-30-2E	3,606	3,650
John Winters No. 1 Butterworth	Cen. W½ NW¼ NE¼ 31-32-2E	3,735 (Simpson)	3,775
Ed Adair No. 1 Gardner	NE cor. SW¼ 3-33-2E	3,512	3,537
Ed Dorado Refining No. 1 Damett	NW¼ NE¼ NW¼ 13-33-2E	3,253 ("Chat")	3,316
E. K. Carey No. 1 Johnson	NW cor. NE¼ 32-34-2E	3,480 ("Chat")	3,537
Fidelity Royalty No. 1 Carson	SW¼ NW¼ SW¼ 12-35-1E	3,492 ("Chat")	3,735

given in a previous report (Mineral Resources Circular 10, 1938, p. 165) four test wells were drilled in the early days in an attempt to find oil in the Arbuckle dolomite, but all these were failures.

The oil and gas pools in Sumner County are shown on Figure 30, and information on these pools is given in Table 38.

Exploratory wells.—The twelve exploratory wells in Sumner County which were not successful in finding oil or gas are listed in Table 39 and are shown on Figure 30.

Trego County

Drilling in Trego County was on a somewhat reduced scale during 1945. Nevertheless eight wildcat tests were started and of

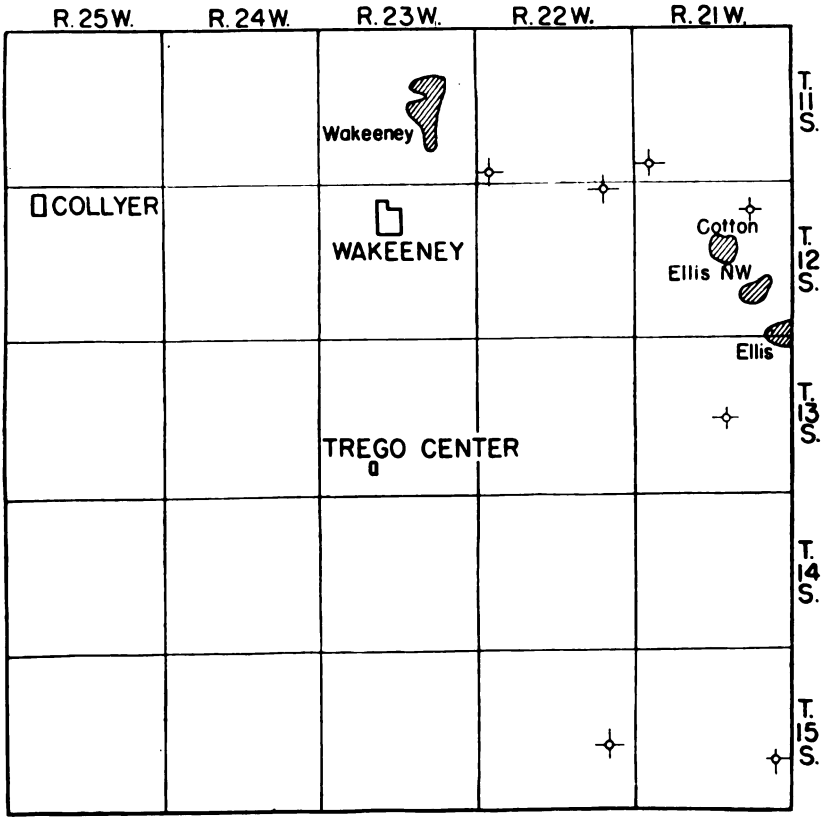

Fig. 31.—Trego County map showing oil pools and dry wildcat wells drilled in 1945.

these one was successful in finding a new oil pool which is called the **Cotton** pool. The discovery well was drilled by the Harbar Drilling Company on the Cotton farm in the SW cor. NE¼ sec. 15, T. 12 S., R. 21 W. Here oil was found in the Arbuckle dolomite at a depth of 3,958 feet. This well had an initial production of 40 barrels of oil per day.

Only one new oil well was added to the older pools of Trego County. This well is in the **Ellis Northwest** pool. One dry hole was drilled in the **Wakeeney** pool.

Additional information on the three oil pools in Trego County is given in Table 40, and the pools are shown on Figure 31.

Exploratory wells.—Seven dry wildcat wells were drilled in Trego County during 1945. Four of these were located on the trend between the Ellis Northwest and Wakeeney pools. These wildcat wells are shown on Figure 31 and information on them is given in Table 41.

TABLE 40.—*Oil pools of Trego County*

Pool and location of discovery well	Discovery year	Area, acres	1945 production, bbls.	Cumulative production to end of 1945, bbls.	Number of wells	Producing zone	Depth to producing zone, feet
Cotton 15-12-21W	1945	40	none	none	1	Arbuckle	3,958
Ellis			See Ellis County				
Ellis Northwest 26-12-21W	1944	200	26,045	44,425	4	Arbuckle	3,925
Wakeeney 14-11-23W	1934	640	37,530	599,280	6	K.C.-Lans.	3,619

TABLE 41.—*Dry wildcat wells drilled in Trego County during 1945*

Company and farm	Location (Sec., T., R.)	Depth to top of Arbuckle, feet	Total depth, feet
Lauck & Moncrief No. 1 Musgrave	SW cor. NE¼ 31-11-21W	4,023	4,060
Ohio No. 1 Silkman	Cen. NE¼ SW¼ 31-11-22W	4,078	4,203
Sohio No. 1 Schaefer	NE cor. NW¼ 11-12-21W	3,964	4,054
Ohio No. 1 Koelsch	NE cor. NE¼ 2-12-22W	4,047	4,174
Continental No. 1 Sours	SE cor. NW¼ 22-13-21W	4,032	4,066
Continental No. 1 North	SE cor. NW¼ 25-15-21W	4,026 (Sooy)	4,143
A. R. Jones No. 1 Wahlberg	SE cor. SE¼ 23-15-22W	4,690	4,715

EXPLORATORY WELLS IN NONPRODUCING COUNTIES

During 1945, 22 test wells were drilled in the nonproductive counties of western Kansas. These rank wildcat tests furnish invaluable geological information, and the data secured will lead the way to more precise location of tests in the future. The test wells will be described by counties in alphabetical order.

One test was drilled in **Comanche County** during 1945. It is located in the Cen. SE¼ NW¼ sec. 27, T. 31 S., R. 18 W. and was drilled by the Harbar Drilling Company on the Boisseau land to a total depth of 6,008 feet. The important mapping zone, the top of the Kansas City-Lansing limestone, was reported at a depth of 4,456 feet, and the top of the Mississippian strata at 5,115 feet. Samples show that the upper Mississippian in this area consists of 85 feet of white, flaky, slightly crinoidal and glauconitic limestone below which there are very cherty limestones of the Osagian series down to 5,290 feet. The Cowley formation, from 5,290 to 5,500 feet, is represented by gray speckled silty shale containing a sparingly distributed amount of blue chert. The St. Joe and thin Chouteau formations are represented by lithographic and crinoidal limestones which contain approximately 50 percent black chert. At 5,625 feet the Viola cherty dolomite was encountered. This dolomite is medium crystalline and gray for the most part, but some is micro-rhombohedral and dolocastic. The chert, which ranges from 30 to 50 percent in amount, is blue and white in the upper part. At the base of the cherty dolomites (between 5,745 and 5,765 feet) there is some very dark dolomite and black chert. Coarsely crystalline limestone is found between 5,765 and 5,809 feet, and there is sand in the lowest stratum. The Simpson rocks are very dolomitic in this well. The upper 10 feet consists of dolomite and the succeeding 40 feet down to 5,860 feet consists of very dolomitic sandstone. Between 5,860 and 5,966 feet there are alternations of rather pure sandstone and typical green shales. The Arbuckle dolomite from 5,966 to 6,008 feet consists of finely crystalline brown vuggy dolomite without chert. Some oil and water were found by testing between 5,617 and 5,645 feet. The oil was believed to be coming from the basal Mississippian strata, but the water from the Viola dolomites drowned out the oil. Good shows of oil were also found between 5,115 and 5,138 feet in the upper part of the Mississippian and between 5,148 and 5,158 feet.

Five test wells were drilled in **Decatur County** during 1945. In these wells the base of the Fort Hays limestone is found at depths approximating 1,000 feet, the Dakota sandstone at 1,350 feet, the Morrison beds at 1,900 feet, and the top of the Permian at about 2,050 feet. The layers in the Permian and the upper Pennsylvanian are not easy to differentiate and consist of alternating red shales and thin limestones. At lower depths thicker limestones are found, and one of these is usually designated as the probable Kansas City-Lansing limestone. The base of the limestones is fairly definite in the wells and is found at a depth of about 3,550 feet. In the Continental No. 1 Brown well, drilled in the NE cor. NE¼ sec. 33, T. 3 S., R. 27 W., the top of the Marmaton shales was found at 3,775 feet. The Marmaton consists mostly of red shales down to the top of the erosional Arbuckle at 3,945 feet. In other wells the Marmaton contains much granitic detritus as well as chert and sandstone. Samples from the Brown well indicate that the Arbuckle dolomite from 3,945 feet to the total depth of 3,982 feet was all reworked material or a crevice filling. In near-by wells the Arbuckle seems to be the very old Bonneterre part of the formation and usually has Reagan sandstone beneath it. Two other tests in Decatur County were drilled by the Continental Oil Company. One was on the Lauda farm in the NE¼ NW¼ SW¼ sec. 3, T. 4 S., R. 27 W. and the other was on the Mair farm in the NE¼ SW¼ SW¼ sec. 26, T. 5 S., R. 27 W. In the Lauda test the Arbuckle was absent and granite wash was found at 3,973 feet. In the Mair test the Arbuckle dolomite was reported at a depth of 4,076 feet and the total depth was 4,082 feet.

In all these tests encouraging shows of oil were found in the lower part of the Pennsylvanian strata. For a time it seemed that the operators would have sufficient oil in the Brown well to make a commercial well. It has been the experience of operators in Decatur County that there are excellent shows in practically every well and sometimes at several horizons, but so far none has been important enough to make an oil well.

Two stratigraphic tests were drilled by the Stanolind Oil and Gas Company in Decatur County. One well was drilled in the SE cor. SE¼ sec. 32, T. 2 S., R. 26W. The top of the Kansas City-Lansing was encountered at 3,449 feet, the base of the Kansas City-Lansing at 3,665 feet, and the pre-Cambrian at 3,917 feet. The well reached a total depth of 3,925 feet. The other test was drilled in the

SE cor. sec. 32, T. 2 S., R. 26 W. to a total depth of 4,020 feet. The top of the Kansas City-Lansing was found at 3,550 feet, the top of the Arbuckle at 3,959 feet, and granite at 4,007 feet.

One test well was drilled in **Gove County** on the Metz farm by Modesett and Sallows. In this test, located in the NE cor. NE¼ sec. 26, T. 12 S., R. 29 W., the Stone Corral dolomite was reported at 1,740 feet, the Topeka limestone at 3,622 feet, and the Kansas City-Lansing limestone at 3,858 feet. A good show of oil was found between 4,152 and 4,156 feet in the basal layer of the Kansas City-Lansing rocks. This layer was partly oölitic and crinoidal. Marmaton rocks were encountered at 4,160 feet and extend to 4,452 feet where Mississippian strata were found. Samples show that the Mississippian consists of buff granular porous dolomite of the Warsaw formation down to 4,475 feet. Between 4,475 and 4,520 feet a fossiliferous reef was found which probably takes in part of the normal Osagian section. Typical Osagian dolomites and cherts were found between 4,520 feet and 4,595 feet. The chert is bluish and bluish white, and the amount of chert ranges from 30 to 100 percent at various depths. The St. Joe limestone in this well consists of oölitic limestone at the top, but mostly of lithographic and finely crystalline limestones. There is an unusual layer of sandstone between 4,660 and 4,665 feet. Below this the St. Joe consists of brown, white, and pink crinoidal limestone down to the top of the Arbuckle dolomite at 4,710 feet. The Arbuckle is composed of finely crystalline gray and brown dolomite with much sandstone and chert at the base. The well was abandoned at 4,760 feet.

Two test wells were drilled in **Gray County** during 1945. One of these, the Texas Company No. 1 Seal well, is located in the NW cor. NW¼ sec. 9, T. 24 S., R. 27 W. Here the Stone Corral dolomite was reported at 1,760 feet and the Herington dolomite at 2,505 feet. Samples indicate that the Sooy conglomerate lies at a depth of 4,740 feet and consists of red limestone, red shale, sandstone, and weathered chert. The Mississippian strata were encountered at 4,766 feet and the Meramecian limestones and oölites extend down to 4,820 feet. The Warsaw dolomite, consisting of dolomite, blue chert, and quartz, was found between 4,820 and 4,995 feet. There is a layer of white and coarsely crinoidal limestone near the middle of the formation (4,870 to 4,900 feet) which indicates reef conditions. The Osagian cherty limestones begin at 4,995 feet, although the percentage of chert is very low down to 5,080 feet. Between

5,080 and 5,130 feet blue and white chert and sphalerite embedded in white and buff granular dolomite are abundant. The St. Joe formation consists of flaky pink and brown limestone at the top and oölitic crinoidal limestones from 5,160 to 5,190 feet. An unusual dolomite was found at 5,190 feet and extends down to 5,225 feet where the Misener sandstone was encountered. This sandstone is 15 feet thick and rests upon Viola cherty dolomites at 5,240 feet. The Viola in this well is composed of dark-gray granular dolomite containing about 20 percent dull-white porcelaneous chert. This material rests upon green Simpson shale at 5,385 feet. Coarsely crystalline basal limestone of the Viola is missing in this well. The Simpson rocks, which contain some impure phosphatic sandstone as well as characteristic bright-green shale, are thin and rest upon the Arbuckle dolomite at 5,402 feet. The Arbuckle is medium crystalline, dolocastic, and pale brown and pink in color. The dolomite between 5,420 and 5,500 feet is very porous. An unusual amount of sphalerite is present between 5,530 and 5,550 feet. The well was abandoned at a total depth of 5,550 feet.

The second well in Gray County was drilled by Earl F. Wakefield *et al.* on the Brubaker farm in the SE¼ NW¼ SE¼ sec. 18, T. 24 S., R. 28 W. It was completed on the last day of the year at a total depth of 4,953 feet in Mississippian strata. In this test the Dakota sandstone was reported at 400 feet, the top of the Permian at 1,060 feet, the Stone Corral dolomite at 1,870 feet, and the Kansas City-Lansing limestone at 4,099 feet. The Pennsylvanian limestones rest upon a thin sandstone at 4,840 feet and this basal sandstone lies upon the Mississippian strata at 4,852 feet. Samples of the Mississippian strata in this test show that chert is present between 4,852 and 4,865 feet. The strata from 4,865 to 4,950 feet are mostly lithographic limestone containing thin oölitic zones.

Three test wells were drilled in **Harper County** during 1945. One of these was the Lion Oil and Refining Company No. 1 Muir test in the SE cor. SE¼ sec. 10, T. 31 S., R. 8 W. Samples show that the strata from 4,390 to 4,445 feet are almost 100 percent chert and belong to the Osagian series of the Mississippian system. A good show of oil was noted in this cherty zone. The remainder of the Mississippian consists of white crinoidal and lithographic limestone down to 4,590 feet. The samples indicate black Chattanooga shale from 4,590 to 4,755 feet. The black shale rests upon the Viola cherty dolomite at 4,755 feet. The upper Viola consists of very

dark argillaceous dolomite and dark chert and has the usual coarsely crystalline limestone at the base. This limestone rests upon Simpson rocks at 4,810 feet. The Simpson consists of pure medium-grained and even-grained sandstone down to 4,870 feet, impure sandstone down to 4,890 feet, and typical green shale from 4,890 to 4,931 feet where the Arbuckle dolomite was encountered. The Arbuckle is strongly dolocastic, medium crystalline, and pale brown in color. The well was still in Arbuckle at the total depth of 5,051 feet.

A second test drilled in Harper County is located on the Meyer farm in the SE¼ SW¼ NE¼ sec. 4, T. 35 S., R. 6 W. and was drilled by the Pure Oil Company. In this well the top of the Kansas City-Lansing limestone was reported at 4,055 feet and the top of the Mississippian strata at 4,670 feet. Samples show that the Mississippian consists of cherty dolomite between 4,670 and 4,685 feet. Between 4,685 and 4,805 feet there is much finely crystalline limestone and some cherty zones containing blue and gray speckled chert. The Cowley type of dirty limestones and dolomites begins at 4,805 feet and extends down to 5,105 feet. The limestone is minutely speckled with gray and brown dots and the chert is mostly blue and black; there is also much gray speckled and spiny chert, however; some of the limestone is quite glauconitic. The brownish-black scaly shale of the Chattanooga shale appears at 5,105 feet and rests upon the Viola coarsely crystalline limestone at 5,177 feet. A layer of dolomite which probably belongs to the Simpson sequence was encountered at 5,205 feet. Good shows of oil were found in this dolomite. At 5,215 feet the samples show pure quartz sandstone. At a lower depth the sandstone becomes impure and it rests upon typical green shale at 5,330 feet. There is another coarse and uneven-grained sandstone layer between 5,380 and 5,406 feet. The top of the Arbuckle dolomite was found at 5,406 feet and drilling continued in the Arbuckle down to the total depth of 5,520 feet. The samples contain small amounts of oölitic chert at several depths. The dolomite is mostly finely crystalline, pale cream or brown in color, flaky and chunky in nature. The third test was drilled by the Lion Oil and Refining Company on the Leeper farm in the NW¼ SE¼ NE¼ sec. 15, T. 31 S., R. 8 W. The top of the "Mississippi lime" was found at 4,380 feet, and the test was drilled to a total depth of 4,397 feet where the operators abandoned it temporarily.

A very interesting test well was drilled in **Hodgeman County** on the trend of production in Ness County to the north. This test well was drilled by Darby and Bothwell on the Faulkner farm in the SW cor. SW¼ sec. 11, T. 22 S., R. 26 W. The Stone Corral dolomite was reported at 1,610 feet and the Heebner shale at 3,824 feet. Samples show that the basal Pennsylvanian conglomerate appears at 4,490 feet and consists of red shale, fine even-grained sandstone, and weathered chert. This material rests upon the Spergen limestone at 4,512 feet. The Warsaw dolomite was found between 4,535 and 4,660 feet, with a thin limestone layer between 4,580 and 4,600 feet. The Osagian rocks consist of dolomite containing about 40 percent gray spiny or faint bluish chert. The percentage of chert increases downward to the base of the Osagian at 4,775 feet. An unusual sandstone is found in the section between 4,775 and 4,785 feet. The St. Joe formation contains dolomite from 4,785 to 4,810 feet and oölitic limestone from 4,810 to 4,860 feet. A thin dolomite from 4,860 to 4,875 feet marks the base of the St. Joe. The Misener sandstone was found between 4,875 and 4,885 feet and consists of conglomeratic material and quartz grains of uneven size. The Viola, which was found at 4,885 feet, is not uniform in this well. It consists mostly of gray chunky dolomite or white granular dolomite, but there is also micro-rhombohedral dolomite and dolocastic dolomite in the middle part. Much white and tripolitic chert is present from 4,885 to 5,063 feet. The amount of chert ranges from 30 to 50 percent. There is no coarsely crystalline basal limestone in this well, and the cherty dolomites rest directly on the Simpson sandstone and green shale. The sandstone is impure and phosphatic. There is a specular brownish-black dolomite in the lower part of the Simpson between 5,073 and 5,084 feet which rests upon a sandy dolomite considered the top of the Arbuckle at 5,084 feet. The Arbuckle consists of medium crystalline dolocastic brown dolomite. Some dead oil was found in this dolomite between 5,110 and 5,120 feet. The test was abandoned at 5,126 feet.

In **Lane County** two wildcat tests were drilled during 1945. One of these was the Skelly Oil Company No. 1 James well in the NE cor. NE¼ sec. 25, T. 16 S., R. 29 W. Here the top of the Kansas City-Lansing limestone was reported at 3,973 feet and the Pennsylvanian basal materials at 4,567 feet. The basal conglomerate consists of two sandstone layers separated by red and green shales. There is also some blue chert and purple shale at the base. This

material lies upon the Spergen oölitic limestone at 4,605 feet. The samples show Warsaw dolomite from 4,620 to 4,680 feet and Osagian cherty dolomites from 4,680 to 4,820 feet. The upper Osagian rocks contain about 20 percent blue speckled and gray speckled chert. The lower Osagian rocks consist of clean white granular dolomite and about 80 percent blue and white opaque chert. The St. Joe limestone, which was encountered at 4,820 feet, consists of brown crinoidal calcitic limestone to 4,880 feet and oölitic limestone to 4,890 feet. The basal Mississippian layer is impure gray and black limestone which rests upon the Arbuckle dolomite at 4,900 feet. The upper part of the Arbuckle is finely crystalline dense chunky dolomite or resinous brown dolomite. Between 4,960 and 4,970 feet much dull white waxy chert is included with the dolomite. The Arbuckle was drilled to the total depth of 5,032 feet.

The second well in Lane County was drilled by the same operators on the Fagerquist farm in the NE cor. SW¼ sec. 22, T. 18 S., R. 30 W. It was located on the basis of a core drill high. The top of the Kansas City-Lansing limestone was reported at 3,924 feet in this well. The basal conglomerate of the Pennsylvanian system is very thin and consists of a sandstone with uneven grains and green sandy clay from 4,554 to 4,560 feet. Mississippian oölitic limestones extend from 4,560 to 4,640 feet, and a thin layer of Warsaw dolomite was found between 4,640 and 4,660 feet. Below this depth, the samples show more oölitic limestone down to 4,710 feet and gray granular porous dolomite down to the top of the Osagian series at 4,765 feet. The Osagian rocks down to 4,900 feet consist of approximately 50 to 80 percent chert. The dolomite is calcitic and the chert is mostly pale blue and speckled. The St. Joe limestone extends from 4,900 to 4,970 feet, and consists of brown crinoidal limestone above and limestone with large lumpy inclusions below. The material from 4,970 to 5,016 feet is hard to classify. It consists of calcitic material set in dolomite rhombs. From 5,000 to 5,016 feet it is almost black and contains glassy semiopaque chert at the very base. This may be basal Mississippian, but if so it differs from the normal sequence in this part of the state. Some microlithologists classify it as Viola in age.

A very important test well was drilled in **Rawlins County** by the Sinclair Oil Company on the Robbins farm in the SW cor. NE¼ sec. 32, T. 4 S., R. 35 W. This well was mentioned in the 1944 re-

port, but the sequence of beds was not described there. The following tops were reported by the operators: base of the Fort Hays limestone, 1,405 feet; Dakota sandstone, 1,815 feet; Morrison formation, 2,425 feet; Permian redbeds, 2,595 feet; Shawnee rocks, 4,164 feet; Douglas rocks, 4,305 feet; Kansas City-Lansing limestones, questionable at 4,415 feet; and Sooy conglomerate at 4,542 feet. The samples indicate, however, that the Kansas City-Lansing limestones may occur at 4,040 feet. Limestone with dead oil was found between 4,083 and 4,100 feet. Some oölitic limestones are present down to 4,470 feet, the base of the Kansas City-Lansing sequence. There is much sandstone between 4,555 and 4,695 feet, which suggests the Sooy sequence in this interval. Samples indicate the presence of a thin layer of Warsaw dolomite from 4,695 to 4,705 feet. The Osagian cherty dolomites begin at 4,705 feet and extend down to 4,785 feet. There is a thick layer of coarsely crystalline limestone which may be a fossiliferous reef between 4,740 and 4,765 feet. An unusual sandstone appears between 4,785 and 4,795 feet. It is fine-grained, brown, and quartzitic and has about 15 feet of soft flaky bright-green shale below it down to 4,810 feet. The St. Joe limestone was encountered at 4,810 feet and consists of alternating layers of rich-brown lithographic and oölitic limestones. Chert is present at several levels. The St. Joe rests directly upon the Arbuckle dolomite at 4,930 feet. The Arbuckle is gray or pale-brown chunky dolomite with a chert zone between 4,960 and 4,970 feet, glauconite from 4,980 to 5,010 feet, and much sand between 5,010 and 5,045 feet. Nonsandy and glauconitic dolomite are present down to 5,100 feet. The dolomite from 5,100 to 5,140 feet is very glauconitic, pink in color, and vuggy. It rests upon the Reagan sandstone at 5,140 feet. The Reagan is medium to coarse-grained, uneven and rounded, with large grains in the basal layers. Between 5,185 and 5,205 feet there is some fine silty micaceous material which may be granite wash. The top of the fresh granite was found at 5,205 feet and the drill penetrated it to the total depth of 5,219 feet. Shows of oil were found at several depths in the lower Pennsylvanian limestones, but not in the older rocks.

Two stratigraphic tests were drilled by the Stanolind Oil Company in Rawlins County during the year. The test in the SW cor. NE¼ sec. 20, T. 1 S., R. 34 W. reached a total depth of 4,817 feet. The top of the Topeka limestone was reported at 4,015 feet, the Kansas City-Lansing limestone at 4,145 feet, Mississippian rocks at

4,775 feet, Arbuckle dolomite at 4,803 feet, and pre-Cambrian rocks at 4,809 feet. The second test, drilled in the SW cor. SE¼ sec. 14, T. 4 S., R. 35 W., was abandoned at a total depth of 4,657 feet. In this well the top of the Topeka limestone was reported at 3,930 feet, the top of the Kansas City-Lansing limestone at 4,062 feet, the base of the Kansas City-Lansing at 4,240 feet, and the top of the pre-Cambrian at 4,653 feet.

In **Sherman County** one test well was drilled during 1945, the Sinclair Oil Company Cogswell well in the SW cor. SW¼ sec. 20, T. 10 S., R. 38 W. In this test the top of the Kansas City-Lansing limestone was reported at 4,450 feet and the base of the Kansas City-Lansing at 4,905 feet. The samples show green shales down to 4,970 feet and a sandy gray clay down to 4,998 feet, the top of the Mississippian strata. Alternating layers of micro-oölitic and lithographic limestones of the Spergen formation occupy the interval from 4,998 to 5,090 feet, where a reef limestone occurs. This rests upon the Warsaw dolomite at 5,115 feet. The Warsaw is a dirty gray porous granular dolomite resting upon Osagian cherty rocks at 5,155 feet. The Osagian rocks are sparsely cherty above, but abundantly cherty below. They contain limestone with the chert except from 5,220 to 5,245 feet where dolomite accompanies the chert. The St. Joe limestone which was encountered at 5,245 feet, becomes oölitic downward from 5,290 feet. The oölites are large, have a calcitic matrix, and a thick white shell. There is a very thin layer of sandstone from 5,380 to 5,382 feet, at which depth the Arbuckle dolomite was found. The Arbuckle is gray and vuggy down to 5,430 feet. Below that it is brown and only slightly vuggy. There is much celestite between 5,560 and 5,570 feet. Some dolocastic dolomite appears in the last few samples. The total depth is 5,640 feet, still in the Arbuckle dolomite.

Two important wildcat tests were drilled in **Thomas County** during 1945. Both were drilled by the Texas Company. One of them is on land of the Federal Land Bank in the SW¼ NE¼ SW¼ sec. 7, T. 8 S., R. 35 W. Here the top of the Kansas City-Lansing limestone was reported at 4,115 feet and the top of the Mississippian strata at 4,772 feet. Oölitic limestone of the Spergen formation was found between 4,772 and 4,810 feet. The Warsaw dolomite is black or dark brown, very porous, and contains many bryozoans. Rocks of the Osagian series extend from 4,885 to 4,980 feet. The upper 25 feet consists of dolomite containing blue and ashen

speckled chert, the middle part consists of dark-brown nodular oölitic limestone containing the same kind of chert, and the lower part is like the upper part. The amount of chert ranges from 40 to 60 percent. The top of the St. Joe limestone was found at 4,980 feet. This formation consists mostly of lithographic brown limestone down to 5,030 feet. At that depth a thin oölitic limestone is succeeded by a very unusual sandstone layer between 5,040 and 5,060 feet. This sandstone is clean, white, and rather even-grained. Between 5,060 and 5,110 feet the samples show a sequence of crinoidal chalky white limestone. The basal 16 feet down to the top of the Arbuckle at 5,126 feet consists of oölitic and crinoidal limestones. The Arbuckle dolomite is pink and vuggy at the top, but brown, finely crystalline, and slightly vuggy at a lower depth. From 5,195 to 5,226 feet, the total depth, the dolomite is dolocastic and includes 10 percent gray spongy chert. No shows of oil or gas were found.

The second test was drilled on the McArthur ranch in the SE¼ NE¼ SW¼ sec. 18, T. 8 S., R. 36 W. Samples from this well show the top of the Topeka limestone at 3,840 feet, the top of the Kansas City-Lansing limestone at 4,210 feet, the Marmaton shales at 4,410 feet, and the Cherokee shales at 4,660 feet. The Sooy conglomerate, consisting of sandstone layers and much red and yellow shale, extends from 4,780 to 4,896 feet. The uppermost Mississippian consists of 14 feet of Warsaw dolomite succeeded by cherty lithographic limestone down to 4,960 feet. Some of the chert is oölitic, a very unusual condition. More typical Warsaw dolomite which is brown, buff, and gray, very porous, and includes quartz and bryozoans, is present down to 5,020 feet. The Osagian rocks were encountered at 5,020 feet and unusual reef lithology is indicated. The upper 50 feet consists of alternating layers of dolomite and crinoidal limestone with small amounts of speckled chert. Between 5,080 and 5,110 feet the samples show dolomite containing about 50 percent blue and white chert. The basal 20 feet consists mostly of white opaque tripolitic and blue chert. The St. Joe limestone appears at 5,130 feet. It is mostly brown lithographic limestone down to 5,220 feet, but some of the limestone is flaky and calcitic or oölitic. There is brown oölitic and crinoidal limestone between 5,220 feet and the top of the Arbuckle at 5,263 feet. The Arbuckle consists of pale-brown, finely crystalline, slightly vuggy dolomite to a depth of 5,320 feet. Below that depth the samples show a flaky

dolomitic limestone. In the lowest layers the limestone is brown and lithographic and has rhombs of dolomite embedded. The total depth of the well is 5,372 feet. There were good shows of oil in the upper part of the Kansas City-Lansing limestone between 4,210 and 4,220 feet and again between 4,360 and 4,380 feet. Some oil stains were noted in a cherty limestone between 4,770 and 4,780 feet. There were no oil indications in the older rocks.

One test well was drilled in **Wallace County** during 1945. It is the Champlin Refining Company No. 1 Swisegood well in the SE¼ SW¼ NE¼ sec. 11, T. 13 S., R. 42 W. The operators reported the top of the Fort Riley limestone at 3,420 feet, the Topeka limestone at 4,123 feet, and the Kansas City-Lansing limestone at 4,433 feet. Samples indicate that Morrowan rocks are present between 5,040 and 5,095 feet. They consist of brown calcitic slightly glauconitic limestone and thin layers of green shale. The St. Louis limestone, which contains thin layers of dolomite, is present between 5,095 and 5,130 feet. The Spergen formation extends from 5,130 to 5,210 feet; it consists of micro-oölites and lithographic limestones down to 5,176 feet where a thin layer of blue chert is found. Below the chert there is green and black shale. The Warsaw dolomite was encountered at 5,210 feet. It consists of about 10 feet of fine granular dark-brown dolomite and about 50 feet of reef limestone. Another layer of dolomite 20 feet thick appears at 5,270 feet; this may be the upper part of the Osagian series. The samples from 5,290 to 5,330 feet show mottled and lithographic limestone containing much semiopaque gray and blue chert. Similar chert containing buff finely granular dolomite is found between 5,330 and 5,360 feet. The St. Joe limestone extends from 5,360 to 5,490 feet and consists of pale-brown lithographic limestone down to 5,420 feet. Below that depth the limestones are partly oölitic and crinoidal in certain zones. The top of the Arbuckle dolomite was found at 5,490 feet. The Arbuckle consists of gray or brown finely crystalline dolomite, some of which is studded with sand. The total depth of the well is 5,541 feet. There were no oil or gas shows in this test.

INDEX

R.40W. R.39W. R.38W. R.37W. R.36W. R.35W. R.34W. R.33W. R.32W.

FRIEND

T.D. 5155 T.D. 6071

T.D. 4927

T.D. 4750

NUNN POOL

TENNIS

PATTERSON POOL

T.D. 2865

ALFALFA

T.D. 5204

GILLESPIE

LAKE McKINNEY

DEERFIELD

HOLCOMB

GARDEN CITY

MAYLINE

T.D. 2821

KENDALL

LAKIN

ARKANSAS RIVER

SUTTON

HARTLAND

T.D. 800

T.D. 2790

HAMILTON COUNTY KEARNY COUNTY FINNEY COUNTY

SHOCKEY

T.D. 2551

T.D. 2600

BIG BOW

ULYSSES

HICKOK

COGNAC

RYUS

LAWSON

SUBLETTE

ZIONVILLE

SATANTA

STANTON COUNTY GRANT COUNTY HASKELL COUNTY

MOSCOW

T.D. 4037

T.D. 5521 PB 2650

T.D. 1480

HUGOTON

WOODS

T.D. 5032

ARKALON

FEDERITA

ROLLA

5/30/44

T.D. 1420

T.D. 1830

LIBERAL

MORTON COUNTY STEVENS COUNTY SEWARD COUNTY

FIG. 8.—Map of the Hugoton gas field and adjacent area showing all gas and oil wells drilled to the end of 1945. Wells drilled in 1945 are underscored.