STATE OF ILLINOIS
WILLIAM G. STRATTON, *Governor*
DEPARTMENT OF REGISTRATION AND EDUCATION
VERA M. BINKS, *Director*

GLACIAL-DRIFT GAS IN ILLINOIS

Wayne F. Meents

DIVISION OF THE
ILLINOIS STATE GEOLOGICAL SURVEY
JOHN C. FRYE, *Chief*
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ABSTRACT

Glacial-drift gas in Illinois occurs mainly in the northeast fourth of the state in some 60 areas in 27 counties. There are about 460 producing gas wells of which 250 are flowing pressure wells and the remainder are vaccum pumped. Some 172 pressure wells have been tested for open-flow gas volume and several dozen vacuum-pumped wells have been tested for formation vacuum. More than 200 such gas wells had been abandoned before the testing series began in 1946; many of them were drilled before 1900.

Samples of gas have been collected from 216 wells throughout the state for gas gravity measurements or complete Orsat absorption analyses. Methane content of the gases tested ranged from 22.5 to 95.5 percent. Gas volume tested ranged from a few hundred up to 1,700,000 cubic feet per day, average being 70,000 cubic feet per day.

Formation vacuums range from zero to 14.5 inches mercury, and many of the vacuum-pumped wells flow gas under pressure on days of low atmospheric pressure. Average depth of the glacial-drift gas wells is 132 feet below the surface. Pressures range from near zero to 64 PSI with the majority of the wells between 5 and 20 PSI.

The gas is believed to be derived from buried soil zones and from organic matter in deep buried valleys. The glacial end moraines control the accumulation of drift gas by providing a cover of glacial till thick enough to prevent escape of the gas.

It is estimated that several billion cubic feet of drift gas has been consumed by homes in Illinois since 1900, definitely placing drift gas in the economic group of natural resources.

INTRODUCTION

Wells producing gas from glacial drift deposits have been observed and samples of gas have been analyzed by the Illinois State Geological Survey as far back as the early 1920's, but detailed tests of volumes and pressures were not attempted until 1946. As new gas areas were discovered throughout the northern part of the state, many requests were received asking for information as to what

type of gas was encountered and how long the supply would last. To answer these and other questions I worked part of 1946 and throughout the summer months of 1947 and 1948, visiting many farmers in all of the known areas and testing wells where connections were available and farmers were willing to cooperate. Many new areas of drift gas have been discovered in recent years because the old dug water wells, 25 to 40 feet deep, were not furnishing enough water and deeper drilling became necessary.

Glacial-drift gas areas in Illinois, generally in the northeast part of the state, comprise some 460 producing gas wells in 27 counties (fig. 1). About half of them are pressure wells and half are vacuum pumped. Open-flow tests have been made on 172 wells, and gas samples have been collected from 216 wells, including samples from the majority of the tested wells.

Several wells that were pressure wells when tested are now being vacuum pumped, and several of the tested wells have been abandoned because of lack of gas or encroachment of water. More than 200 wells had been abandoned before this study was begun.

Acknowledgments

I am indebted to H. B. Willman of the Survey staff for his helpful criticism, aid in preparing, and interpretation of glacial geology of the gas well area maps. The majority of the Orsat gas analyses and many of the gas gravity tests were analyzed and measured by William Armon of the Survey's Analytical Chemistry Section. He also assisted on several field sampling trips. Charles Carter, formerly of the Oil and Gas Section, collected several of the earlier gas Orsat analyses samples in the Ohio, LaMoille, and Shelbyville areas.

Several water well drillers assisted in making gas tests and furnished needed drillers logs. They are Henry Albrecht of Ohio, Alvin Albrecht of Tiskilwa, and F. R. Bratt of Danvers. Other water well drillers throughout the state have given valuable gas well data such as logs and locations of unknown gas wells. The late Sam Huette of Morton, a gas well vacuum pump expert, assisted in studying the mechanics of vacuum pump installations.

STRATIGRAPHY

Approximately three-fourths of the glacial-drift gas wells in Illinois are producing gas from the Sangamon soil zone (fig. 2) and the remainder from the Sankoty sand (fig. 3). The stages and substages of the Pleistocene are graphically shown in figure 4. Numerous well log records and sample studies by Horberg (1953) adequately cover the Pleistocene studies of the area. General geology of each area and scattered wells are discussed under area reports that follow. Owing to the lack of drilling samples and logs on glacial-drift gas wells in Illinois, it is impossible to do detailed stratigraphic work except to correlate gas-zone depths, of which most farmers will have record, with glacial soil zones.

SOURCE OF GAS

Much of the glacial-drift gas originated from buried soils, peats, and organic-rich silts associated with the interglacial stages, especially the Sangamon soil which represents a long time interval between the Illinoian and Wisconsinan Stages. Although the peaty deposits are commonly related to the glacial deposits overlying the true soils, for convenience the sequence associated with the soils

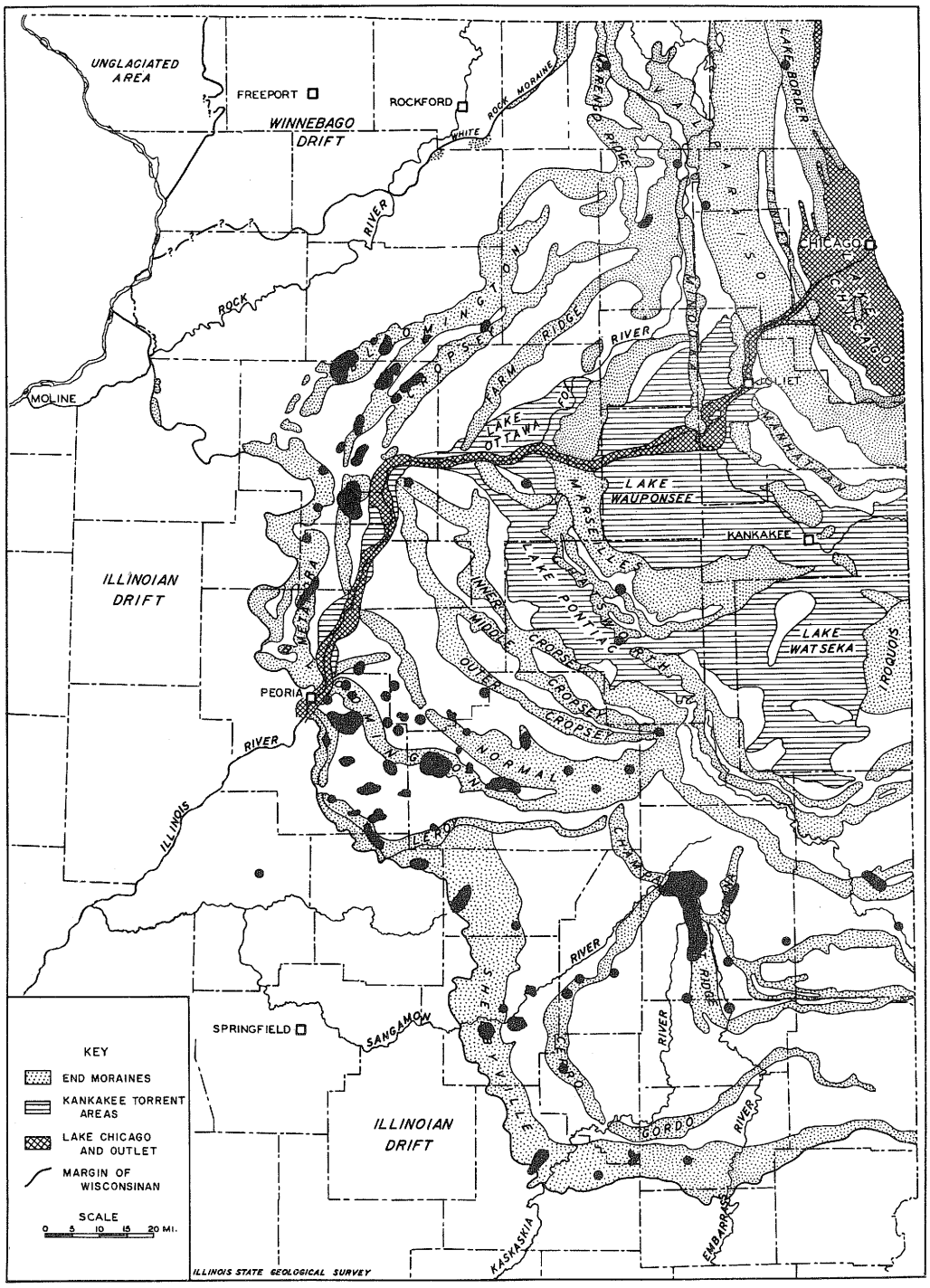


Fig. 1 - Drift-gas in Illinois (solid black) by Meents, 1959, shown in relation to glacial geology (Ekblaw, 1960)

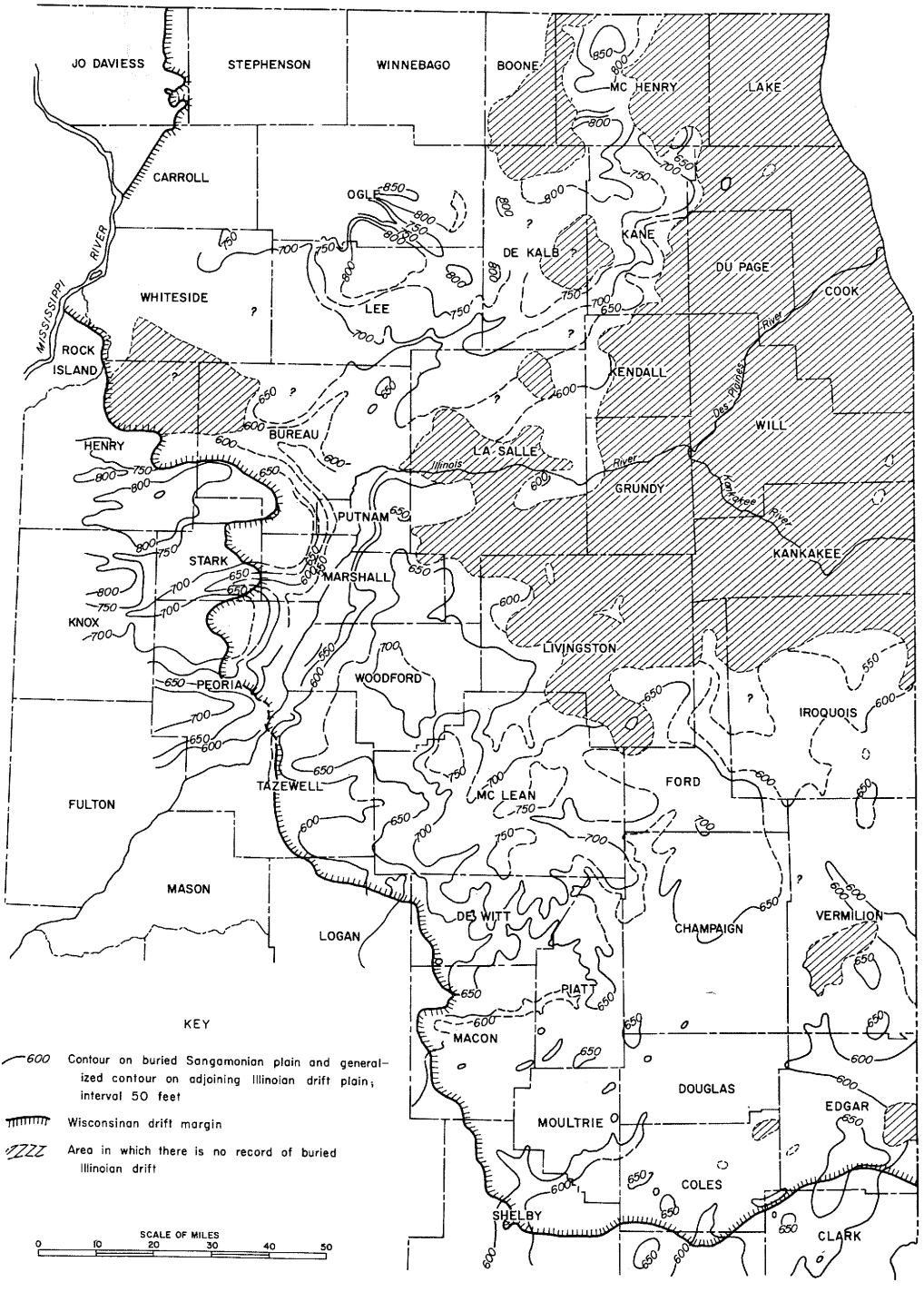


Fig. 2 - Contour map of buried Sangamonian plain (after Horberg, 1953)

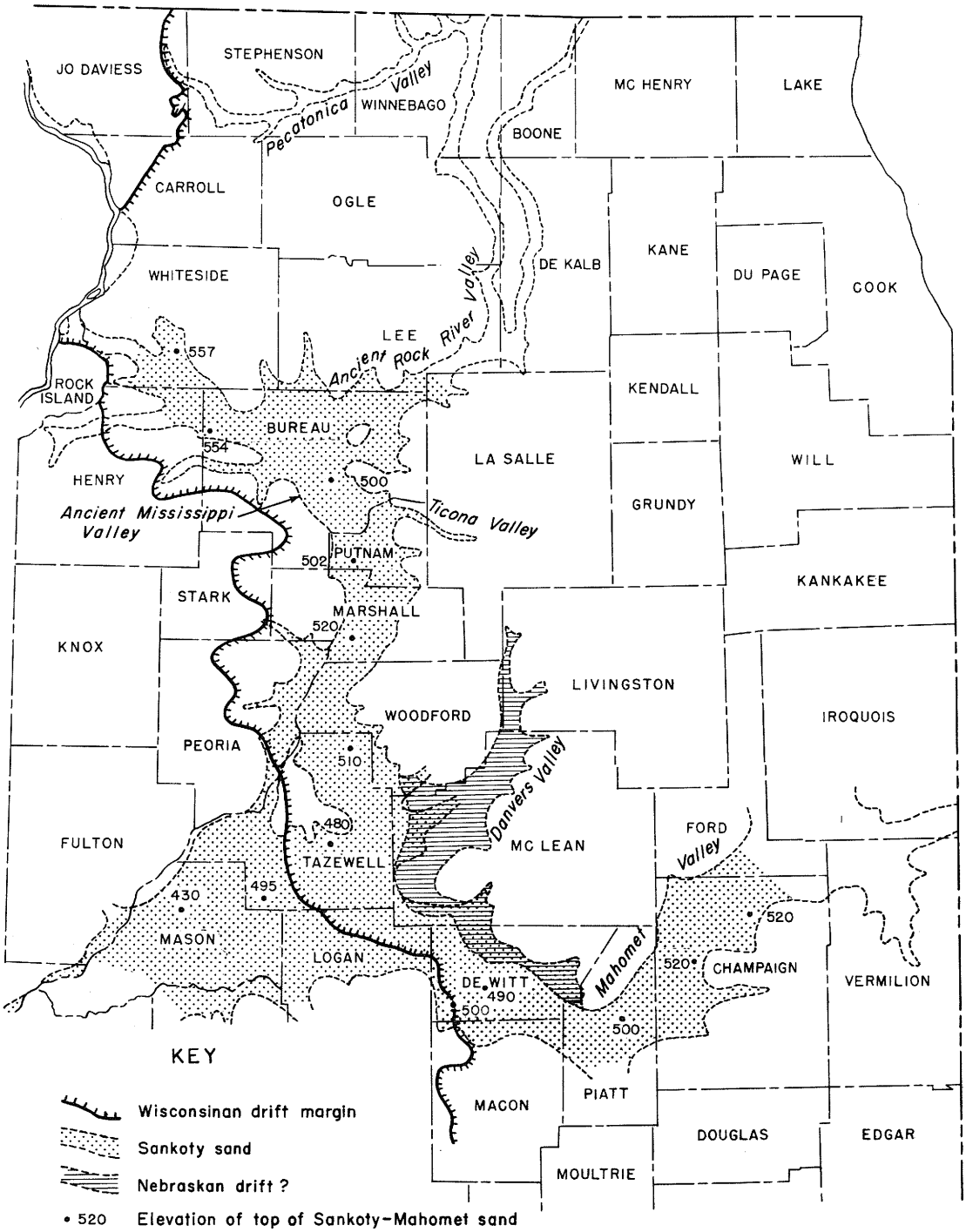
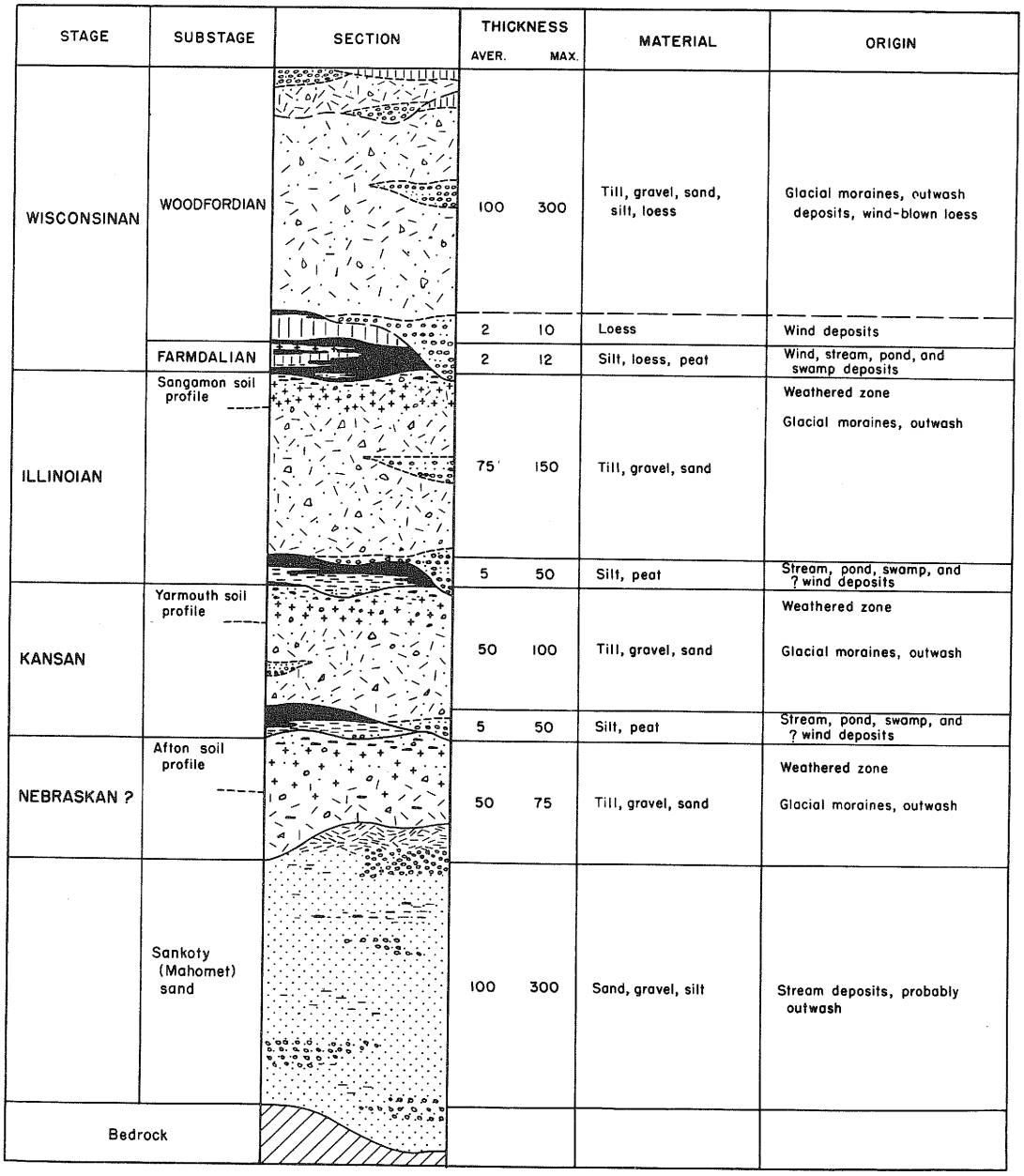


Fig. 3 - Areas underlain by Sankoty-Mahomet sand (after Horberg, 1953)



STAGE	SUBSTAGE	THICKNESS AVER.	THICKNESS MAX.	MATERIAL	ORIGIN
WISCONSINAN	WOODFORDIAN	100	300	Till, gravel, sand, silt, loess	Glacial moraines, outwash deposits, wind-blown loess
		2	10	Loess	Wind deposits
	FARMDALIAN	2	12	Silt, loess, peat	Wind, stream, pond, and swamp deposits
ILLINOIAN	Sangamon soil profile	75	150	Till, gravel, sand	Weathered zone Glacial moraines, outwash
		5	50	Silt, peat	Stream, pond, swamp, and ? wind deposits
KANSAN	Yarmouth soil profile	50	100	Till, gravel, sand	Weathered zone Glacial moraines, outwash
		5	50	Silt, peat	Stream, pond, swamp, and ? wind deposits
NEBRASKAN ?	Afton soil profile	50	75	Till, gravel, sand	Weathered zone Glacial moraines, outwash
	Sankoty (Mahomet) sand	100	300	Sand, gravel, silt	Stream deposits, probably outwash
Bedrock					

Fig. 4 - Graphic section of Pleistocene deposits in northeastern Illinois (after Horberg, 1953)

is referred to as the soil zone. In many areas drift gas is produced directly from the soil zone or from a sand-gravel bed above or below the zone.

In a few areas of deeper production, such as areas producing from the Sankoty sand, the source of the gas is either plant material in the sand, or perhaps a coal bed directly below (Meents, 1958).

Gas-producing zones in some wells cannot be correlated because of lack of information as to glacial geology or lack of drillers logs on the gas wells in question.

The soil zones have been referred to as "forest beds," and the drillers sometimes refer to them as "black soil," "peat," "black dirt," "black drift," "driftwood," "brush piles," "woodyard," "chipyard," "black muck," "black mud," "loam," or "black clay."

The accumulation of glacial-drift gas in any one area is controlled by the amount of glacial drift above the gas zone, and the amount of glacial drift above is determined by the positions of the glacial end moraines (fig. 1) or valley fills (fig. 3). Area reports discuss the subject in detail.

GAS TESTING PROCEDURE

The open-flow gas measurements listed in table 1 (p. 34-55) were taken with the orifice well tester on 166 wells, four tests were made with the pitot-tube, and two by the side static pressure method four diameters from the outlet of the flow nipple. The pitot-tube was used on four of the larger wells ranging up to 1,700,000 cubic feet per day. The orifice well tester was used on all clean (free of sand and gravel) flowing gas wells with volumes up to 1,000,000 cubic feet per day. Side static pressure method was used on two wells that were emitting large amounts of sand and gravel.

In most of the tests on pressure gas wells, connections were made directly at the well head, but a few flow tests were made by connecting a garden hose to available connections in the farm house basement so that gas flowed out through this arrangement to the orifice tester outside. If connections for flow tests could not be made, pressure gauge readings were taken.

In areas of vacuum well pumps (fig. 5) it was useless to test the output side of the pump because the volume depends on the size of the pump and electric motor driving it. Enough gas was pumped for house heating, etc., in all cases. Several formation vacuum tests were made in these areas where connections were available between the vacuum pump and well head.

Gas Volumes and Pressures

Gas well volumes measured from a few hundred cubic feet per day up to 1,700,000, with an average of 70,000 cubic feet; many of the better wells produced 10,000 to 20,000 cubic feet per day. The largest volume of 1,700,000 was tested on the Law farm or lot in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ NE$\frac{1}{4}$ sec. 16, T. 29 N., R. 6 E., Livingston County. This well flowed a good water spray on testing and was flooded out a few weeks after testing. The next larger volume of 1,450,000 cubic feet per day was obtained on the Reed well in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ SE$\frac{1}{4}$ sec. 1, T. 11 N., R. 3 E., Shelby County. This well was used for furnace heat for eight months, then became partially flooded with water.

Shut-in pressures on the better wells are less than 20 PSI, and several good wells had one-fourth to one-half pound. The top pressure measured was 64 PSI on the Young well in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ SE$\frac{1}{4}$ sec. 27, T. 24 N., R. 6 E., in the Arrowsmith area (fig. 17). This well became flooded immediately.

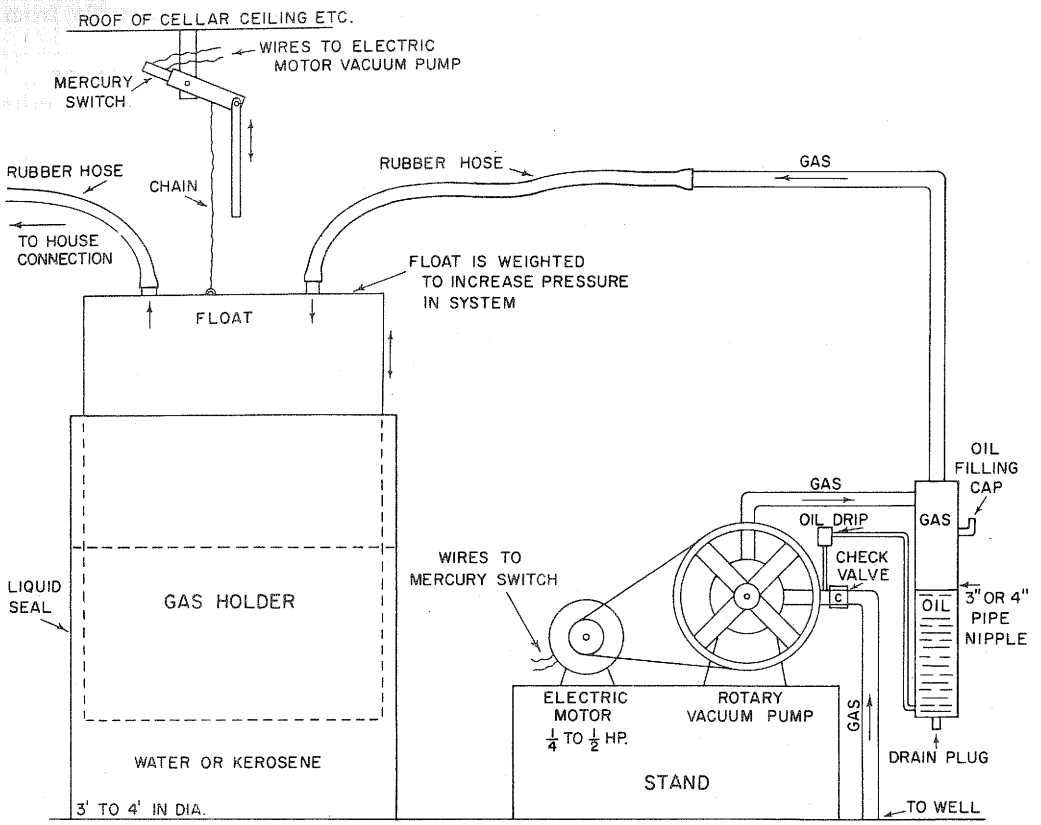


Fig. 5 - Typical vacuum gas pump installation

It is my opinion that most large-volume wells or high-pressure wells (when drilled) will become flooded with water shortly after part of the gas has been withdrawn. The high volume and pressure are due to the water behind or directly below the gas in the formation. Large volumes would be more than 200,000 cubic feet per day, and high pressures would be above 25 PSI. Gas zones in numerous wells are only a few inches thick, according to drillers, but this can not be verified by drilling through the gas zone on high-volume "wild" wells because of the danger of fire and flying gravel, including pebbles. In such wells the drill is removed immediately after tapping the gas pay and the well is shut in if possible.

The formation vacuum was measured in the vacuum-pumped areas such as Princeton area (fig. 13), Tazewell County and adjacent area (fig. 15), Carlock, Bloomington, and Danvers area (fig. 16), Boynton-Union area (fig. 18), Tiskilwa area (fig. 6) Meents, 1958), and in a few scattered wells. The vacuum ranged from zero to 14.5 inches of mercury. In the Tiskilwa area (fig. 6) 49 wells are vacuum pumped although they will flow under slight pressure on days when atmospheric pressure is low (fig. 7). I have arrived at a figure of 3000 cubic feet of gas per day for average farm consumption including the home and a few other buildings. Several utilities companies are using a gas volume figure of 2000 cubic feet of gas per day for average home use in calculating future supplies for new city subdivisions.

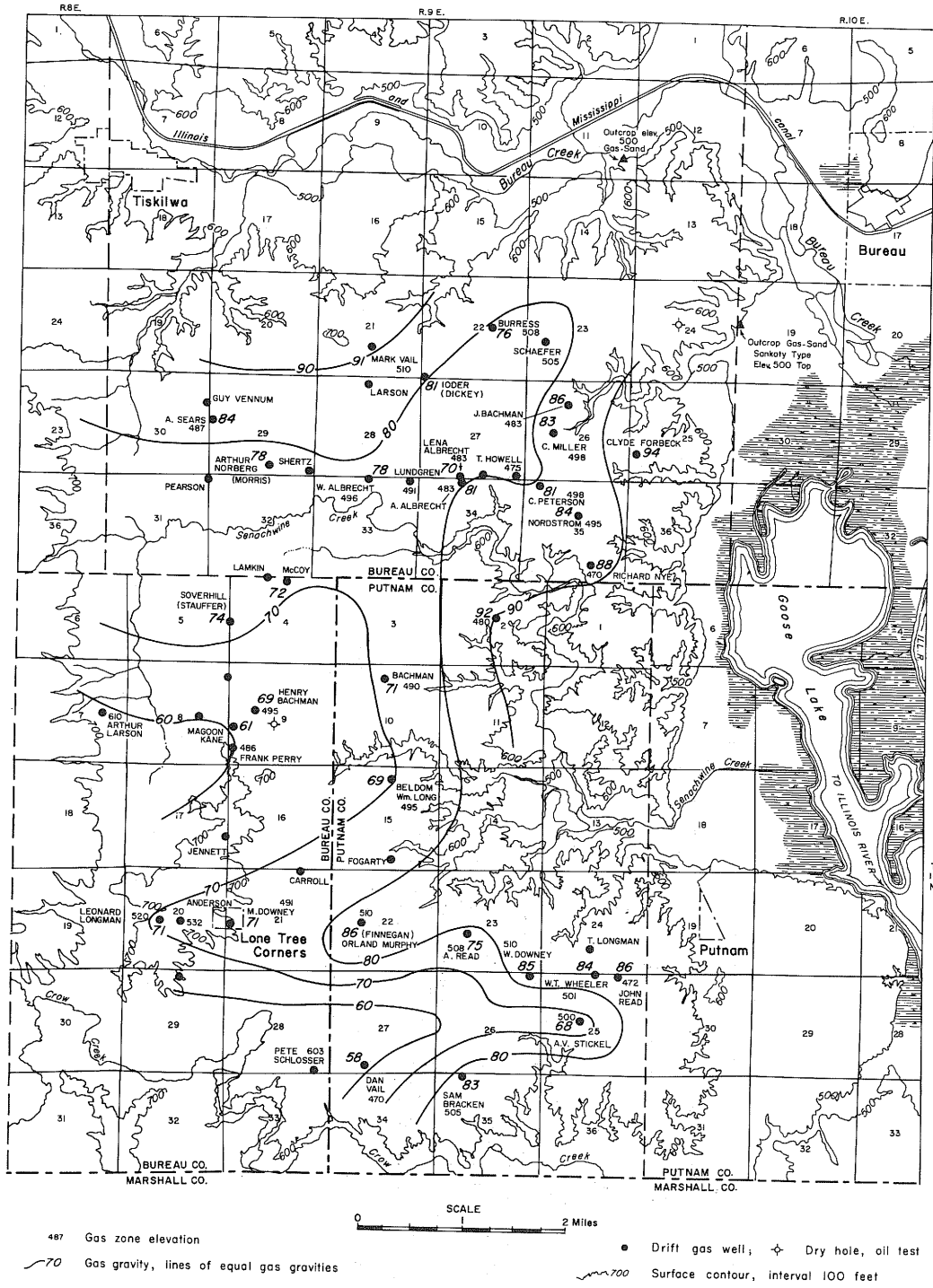


Fig. 6 - Drift-gas wells andgas gravities in the Tiskilwa area (Meents, 1958)

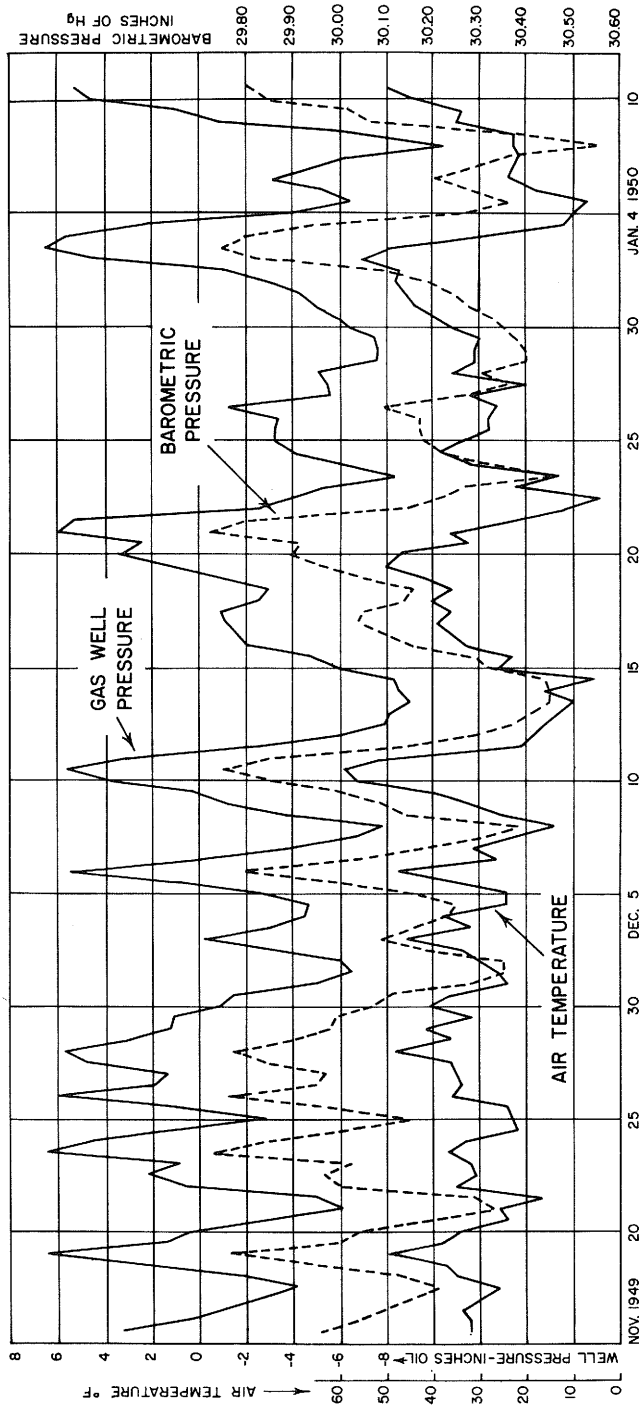


Fig. 7 - Record of gas-well pressures, barometer readings, and air temperatures during a two-month period, November 1949 to January 1950, for the Alvin Albrecht farm gas well, sec. 34, T. 15 N., R. 9 E., Bureau County (Meents, 1958).

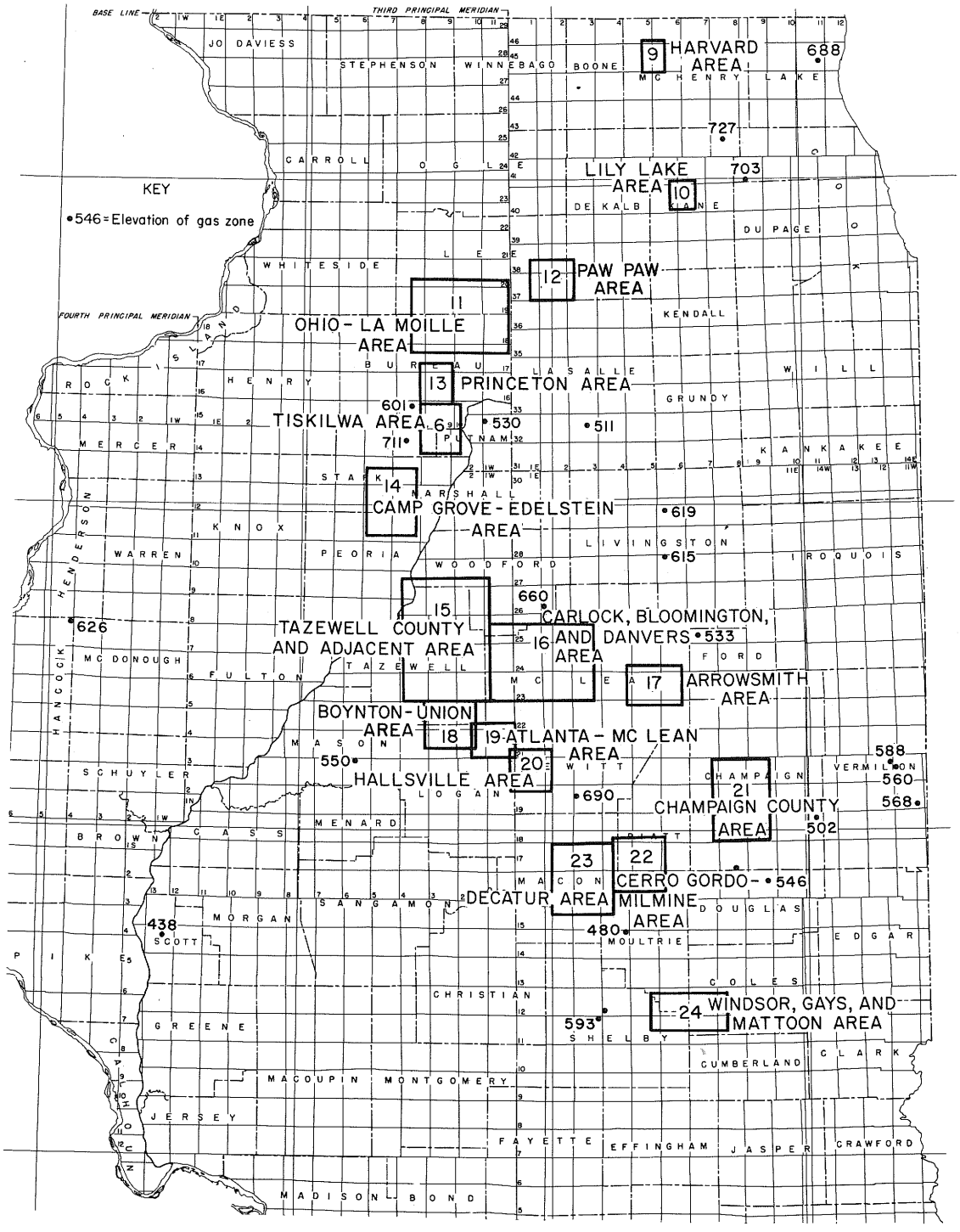


Fig. 8 - Index map showing glacial-drift-gas areas and isolated wells

Gas Gravities and Analyses

Gas samples were collected from about 190 glacial-drift gas wells throughout the state. The specific gravity was measured on nearly all samples and complete Orsat absorption analysis on 30 (table 2, p. 56-58). Samples from nonpressure wells were pumped into the sampling tank, which was usually an evacuated 96 cubic inch steel bottle, and samples from pressure wells were taken by purging gas through the jet valve available on the tank. A few of the early Orsat analyses samples were collected by the water-filled one-gallon or five-gallon bottle method.

Gas samples were analyzed by the Illinois Geological Survey's laboratory in Urbana. The specific gravity of the gases was measured by the effusion method, using the U. S. Bureau of Standards type of specific gravity apparatus, which is the comparison of the specific gravity of a gas to the specific gravity of air, air being 1.00 and pure methane being 0.55. The gravities of glacial-drift gas in Illinois are governed by the amount of nitrogen versus the amount of methane, other constituents being minor. The more methane present the lighter the gas, and vice versa.

The average gravity of the glacial-drift gas in Illinois is 0.66. The purest gas encountered (0.56) was in the Plotner well in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ NE$\frac{1}{4}$ sec. 34, T. 18 N., R. 9 E., Champaign County area (fig. 21) and in the Freeland well in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ SW$\frac{1}{4}$ sec. 1, T. 14 N., R. 4 E., Moultrie County. The heaviest and most impure burnable gas was sampled in a well in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ SE$\frac{1}{4}$ sec. 2, T. 14 N., R. 9 E., Putnam County (fig. 6; Meents, 1958), which measured 0.92. The lower gravity gases have net Btu values ranging up to nearly 900, whereas the higher gravity gases range as low as 214 (table 2, p. 56-58). Periodic sampling of the same wells

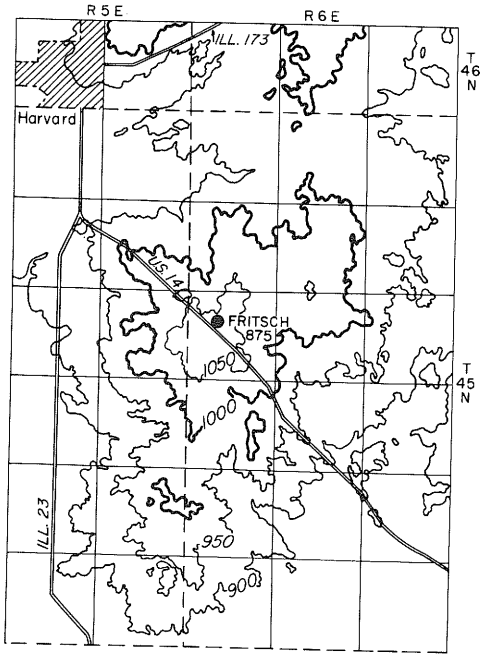


Fig. 9 - Harvard area

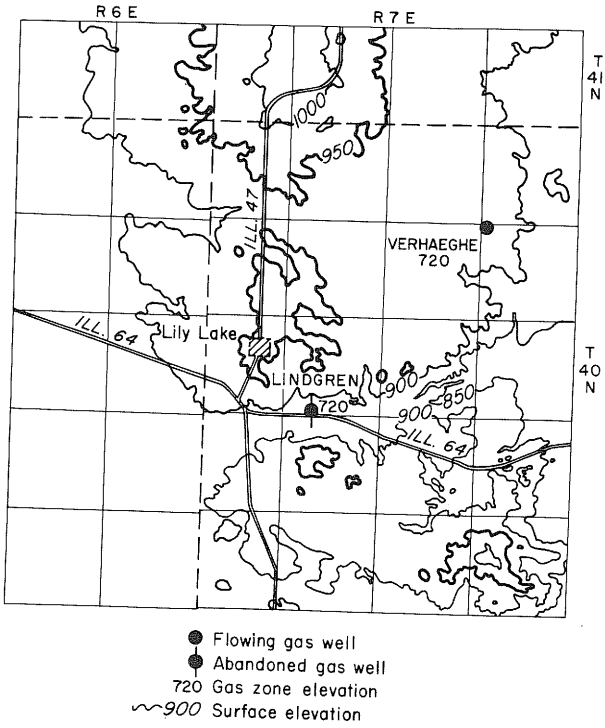


Fig. 10 - Lily Lake area

in three different areas have shown the gravities to become lighter and the gases to become purer. In the Child well (T. 19 N., R. 9 E.) in the Ohio-LaMoille area (fig. 11) the gas would not burn, but after flowing the well to the atmosphere for several weeks it became burnable. The first gravity test measured 0.89 in 1948, the second 0.87 in 1950, and the third 0.83 in 1953. The Diekhoff well (T. 22 N., R. 3 W.) in the Boynton-Union area (fig. 18) measured 0.81 in 1948 and 0.72 in 1953. The Moore well (T. 19 N., R. 11 W.) in Vermilion County had a measured gas gravity of 0.92 when drilled on April 26, 1954, and on May 6, 1954, the gravity measured 0.84. In all three wells the first gas gravity test was high to very high compared to the average of 0.66 for Illinois.

GEOLOGY AND GENERAL DISCUSSION OF AREAS

Figure 8 and table 1

Harvard Area (fig. 9)

The Fritsch well is on the Marengo Ridge end moraine (fig. 1), on the mile wide highest part of the moraine in the Harvard area. The elevation of the producing gas-zone, 875 feet, is close to the 850-foot contour of the Sangamon soil zone (fig. 2). The nearest surface elevation of 850 feet is 4 miles to the southwest, far enough to prevent lateral leakage of the gas.

Lily Lake Area (fig. 10)

In the Lily Lake area the Verhaeghe and the Lindgren wells do not follow the highest part of the surface topography, but they have the same gas-zone elevation of 720 feet. The Sangamon soil zone is 700 to 750 feet (fig. 2). These wells are on or near the Marengo Ridge end moraine.

Ohio-LaMoille Area (fig. 11)

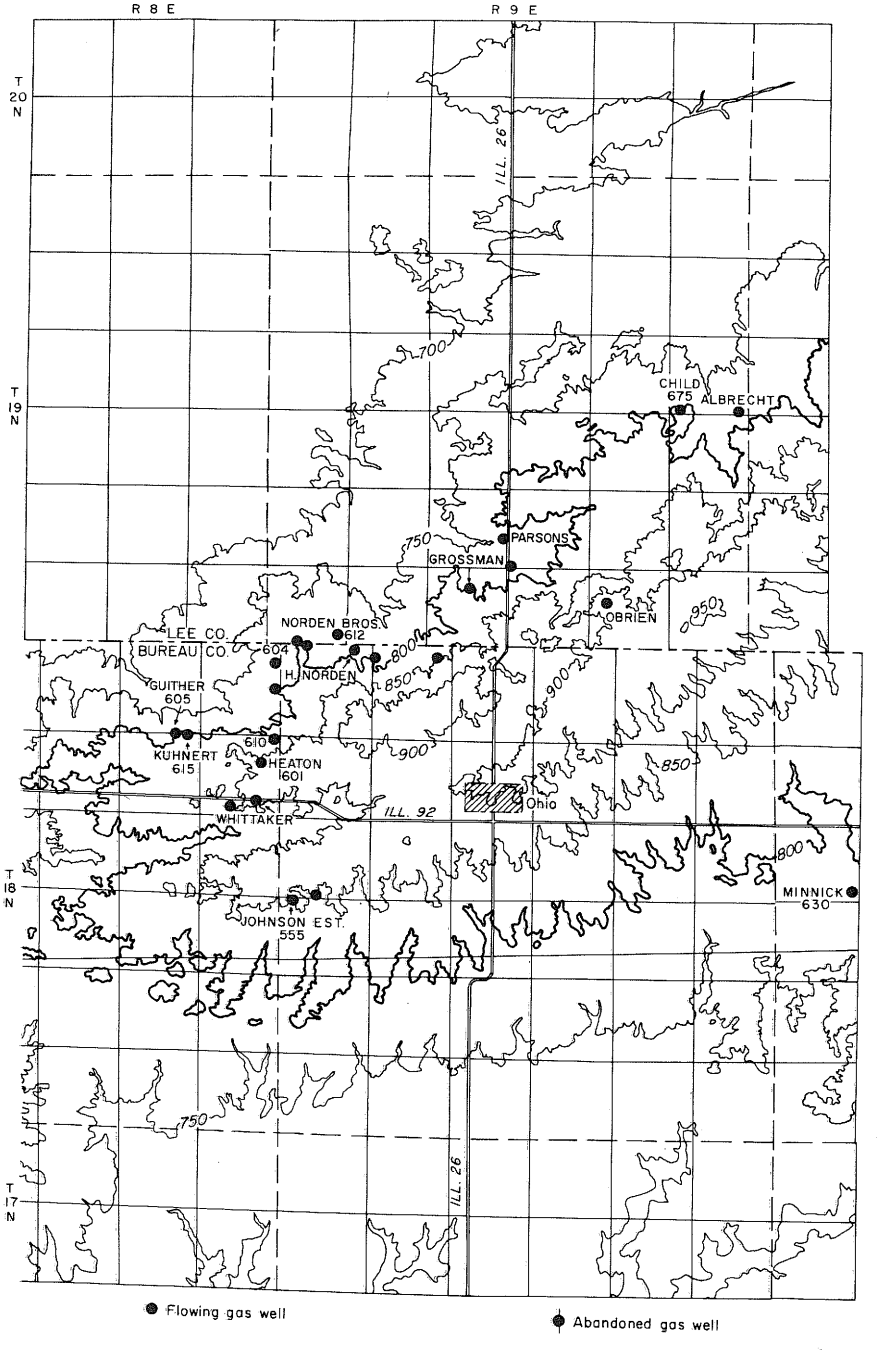
Gas wells throughout the Ohio-LaMoille area are on the Bloomington, Dover, and Cropsey end moraines. Most of the elevations of the gas zone correlate with the Sangamon soil zone. All of the drift-gas wells in the area are pressure flowing wells and originally were good gas producers. At the time of rechecking in 1956 and 1958, only a few wells were used for house heating and the remainder for hot water or cooking. Wells producing enough gas for furnace or room heater use are the Stamberger well in the east, the Faivre well in the north, the Johnson Estate and Whittaker wells in the west, and the Schaill well in the central part.

Paw Paw Area (fig. 12)

In the Paw Paw area the Abell and Betz wells are on the Cropsey end moraine (fig. 1). The elevation of the gas zone of the Betz well falls between the Sangamon soil zone contours of 700 and 750 feet. The Betz well was drilled deeper for water after it was tested for gas. The Abell well is a producing water well with enough gas for hot water and cooking; it is the only well in this area where gas is being consumed.

Princeton Area (fig. 13)

Gas wells in the Princeton area are influenced by the Dover end moraine (fig. 1) and are producing gas from or near the Sangamon soil zone and, in a few wells, from the Sankoty sand. The wells in the northern three-fourths of the area


R 8 E
R 9 E
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T 19 N
T 18 N
T 17 N
ILL. 26
700
CHILD
675
ALBRECHT
PARSONS
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GROSSMAN
O'BRIEN
950
NORDEN BROS.
612
LEE CO.
BUREAU CO.
604
800
H. NORDEN
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GUITHER
605
900
610
KUHNERT
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HEATON
601
850
Ohio
WHITTAKER
ILL. 92
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MINNICK
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JOHNSON EST.
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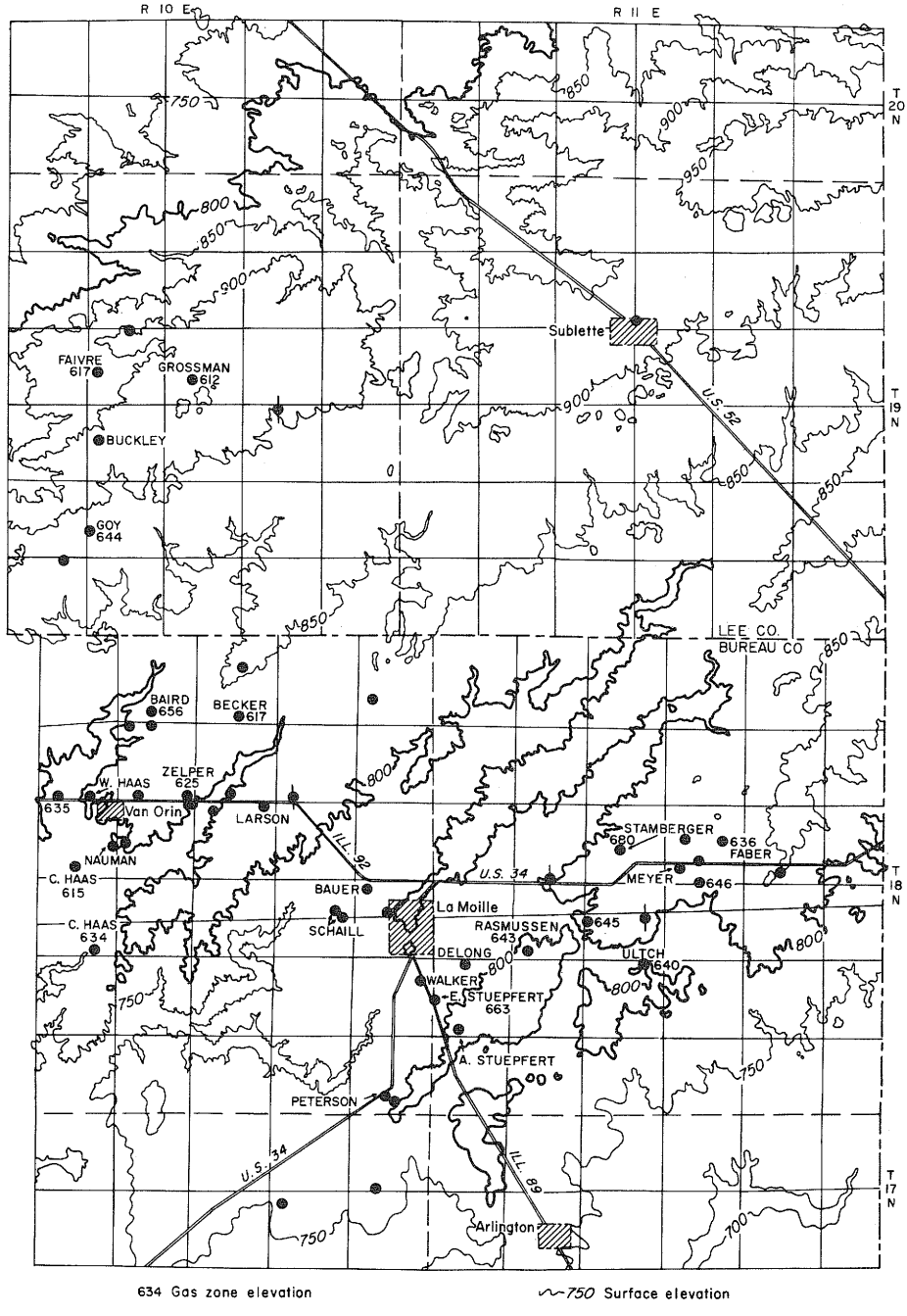
ILL. 26
Flowing gas well
Abandoned gas well

Fig. 11 -



Ohio - LaMoille area

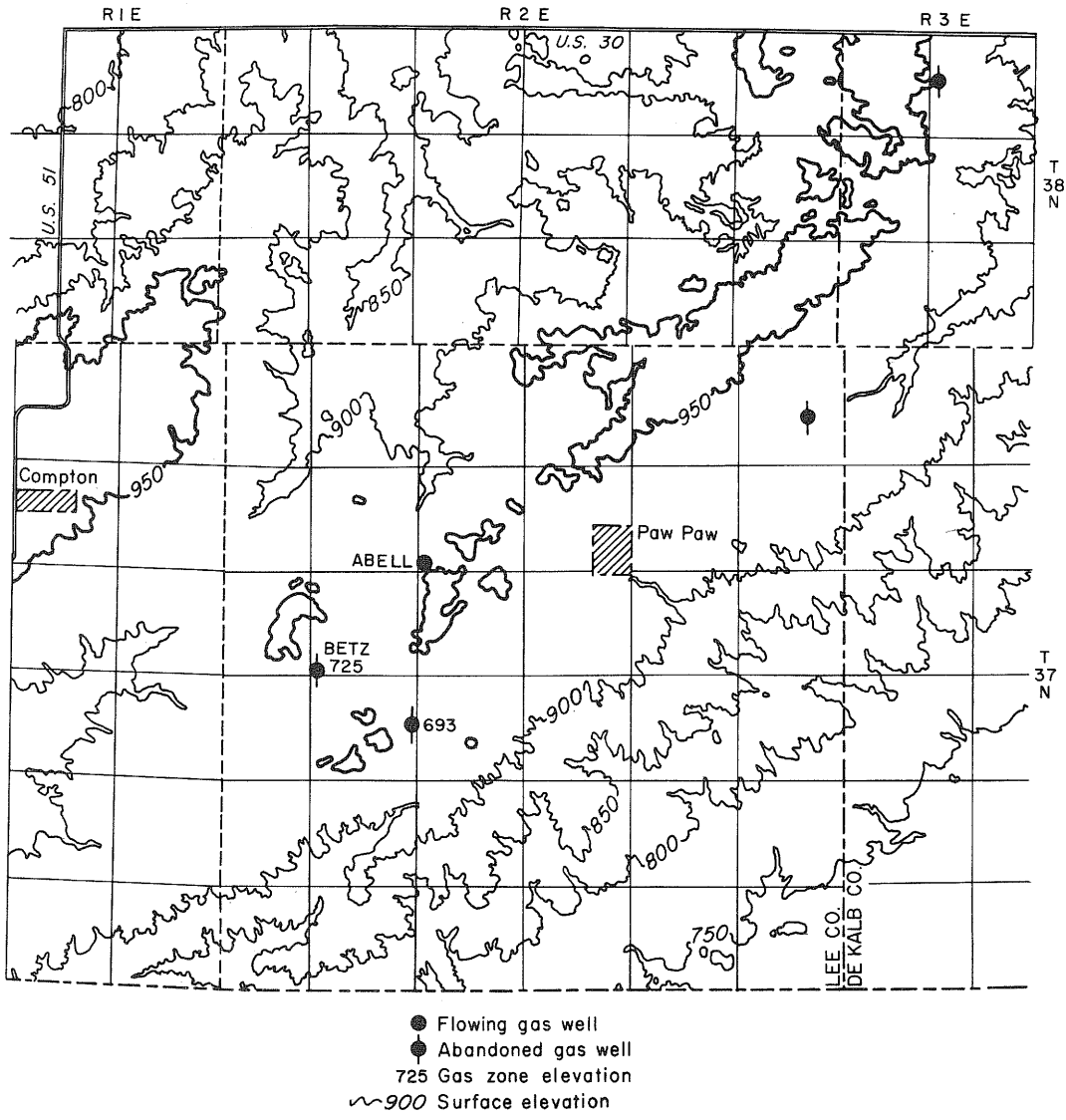


Fig. 12 - Paw Paw area

are probably in or near the Sangamon soil zone. About half of the producing glacial-drift gas wells were vacuum pumped in this area at the time of original tests (1948), and they were at the verge of flowing on days of low atmospheric pressure; this accounts for the low open-flow gauges on nearby flowing pressure wells in the northeast fourth of the area. Probably many of the original pressure wells are vacuum pumped at present.

Camp Grove-Edelstein Area (fig. 14)

The three gas wells in the Camp Grove-Edelstein area are on the Bloominton and Metamora end moraines, and they produce from the Sangamon soil zone. All of

the producing wells originally tested in the south portion of the area have been abandoned because of too much water, and the remaining well on the Baer farm has been producing gas from a water well with a static water level of 50 feet and not enough gas for general use except cooking. The Green well in the northern area appears to be free of water and is used only for cooking, although it probably could supply enough gas for more units.

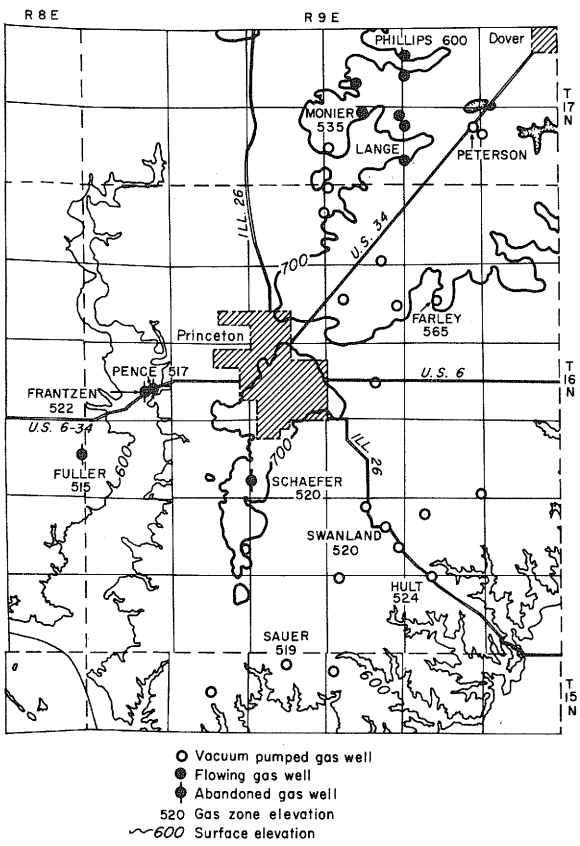


Fig. 13 - Princeton area

Tazewell County and Adjacent Area (fig. 15)

A few gas wells in the Tazewell County area, such as the Zion Evangelical Church, Zimmerman, and Gerber wells in T. 25 N., R. 4 W., and the Schwartz well nearby in T. 25 N., R. 3 W., are on the Leroy end moraine. Another group of wells on the Bloomington or Metamora end moraines is the H. Schertz, E. Schertz, and the Sommers wells in T. 26 N., and T. 27 N. The elevations of the gas zone in all of the above wells correspond to the Sangamon soil zone. The remainder of the gas wells in this area have gas-zone elevations that are level with the Sankoty sand (fig. 3) or some other soil zone deeper than the Sangamon. These are associated with the ancient Mississippi River valley and its tributaries.

All of the wells around the city of Morton are vacuum pumped, as noted on the map. Contamination of the gas has occurred in the wells in the city, probably because of leaks, and as a result the wells are gradually being abandoned away from town. The gas from the Straesser well east of town became unburnable a few months after a gas sample was collected. This gas had a measured gravity of 0.85 which is near the upper burnable limit of 0.92 or 0.93. The Strunk well on the west side of Morton has not been used since about 1940, and in 1948 the formation vacuum was 5.1 inches of mercury, in 1950 it was 1.4 inches, in 1954, 2.0 inches, in 1956, 1.3 inches, and in 1958, 1.0 inch of mercury, indicating a replacement of formation vacuum by air through some uncapped well or wells, probably in Morton.

The R. Yordy well south of Morton was vacuum checked in 1952 with 6.5 inches mercury on the gas formation; in 1954 it was 5.7 inches; in 1956, 5.0 inches; and in 1958 it was 4.5 inches of mercury, which may indicate further contamination of air in gas wells to the south of town. Other wells in this area with high gas gravities, such as the Aupperle well north of Morton, may have bad well casings that cause air leaks or perhaps bad gas has migrated in from the outcrops.

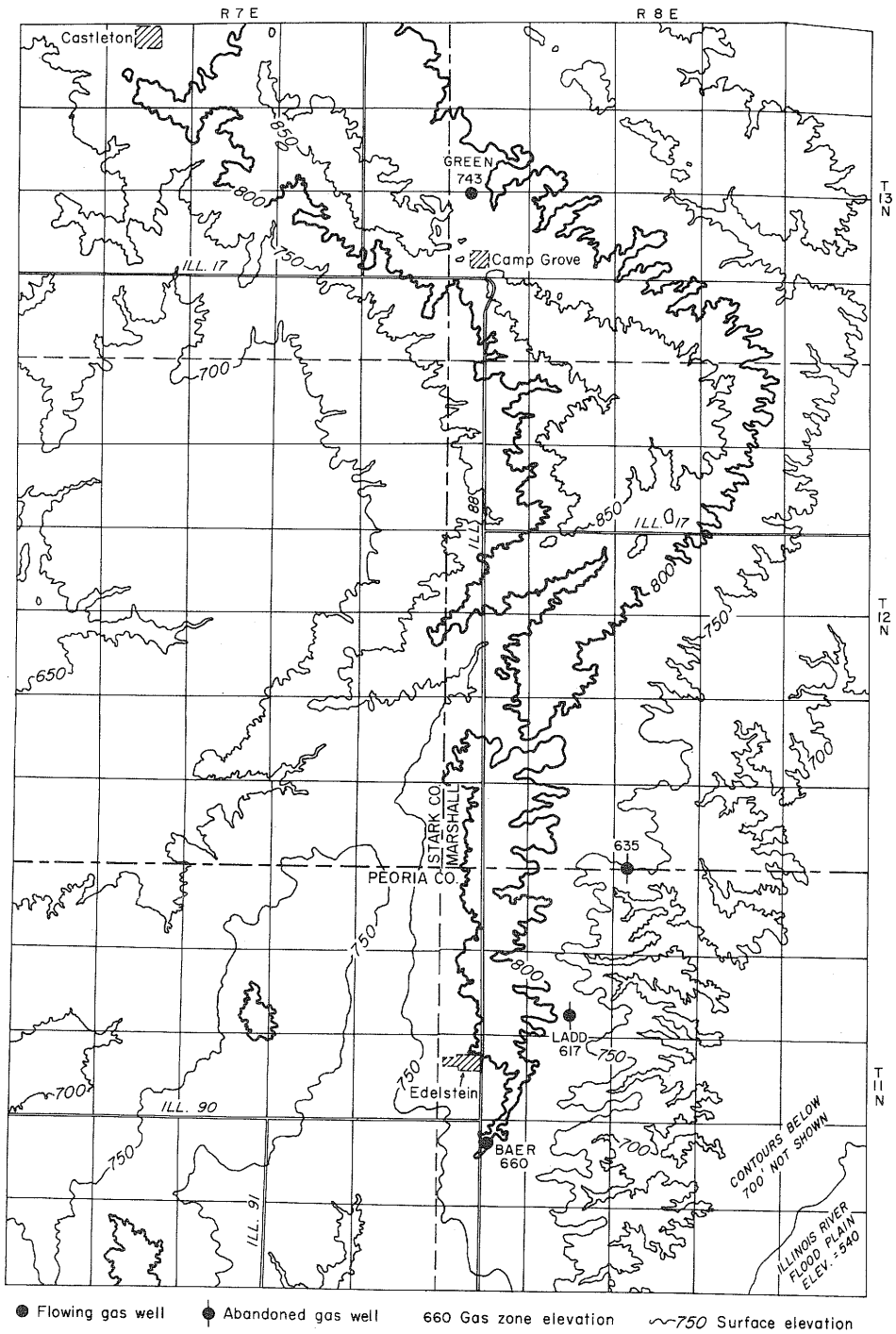
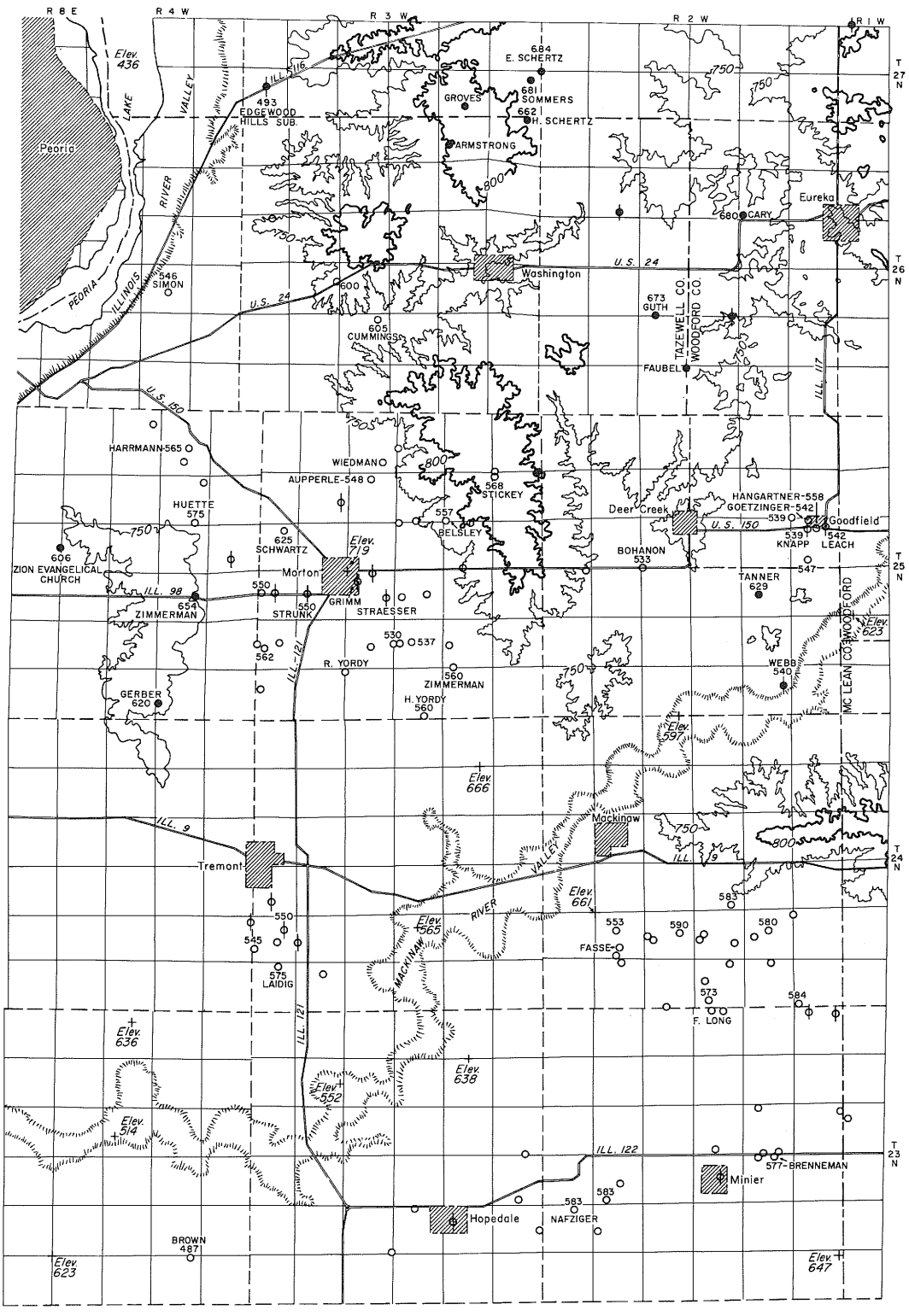


Fig. 14 - Camp Grove - Edelstein area



○ Vacuum pumped gas well ● Flowing gas well ⊕ or ⊕ Abandoned gas well 575 Gas zone elevation ~750 Surface elevation

Fig. 15 - Tazewell County and adjacent area

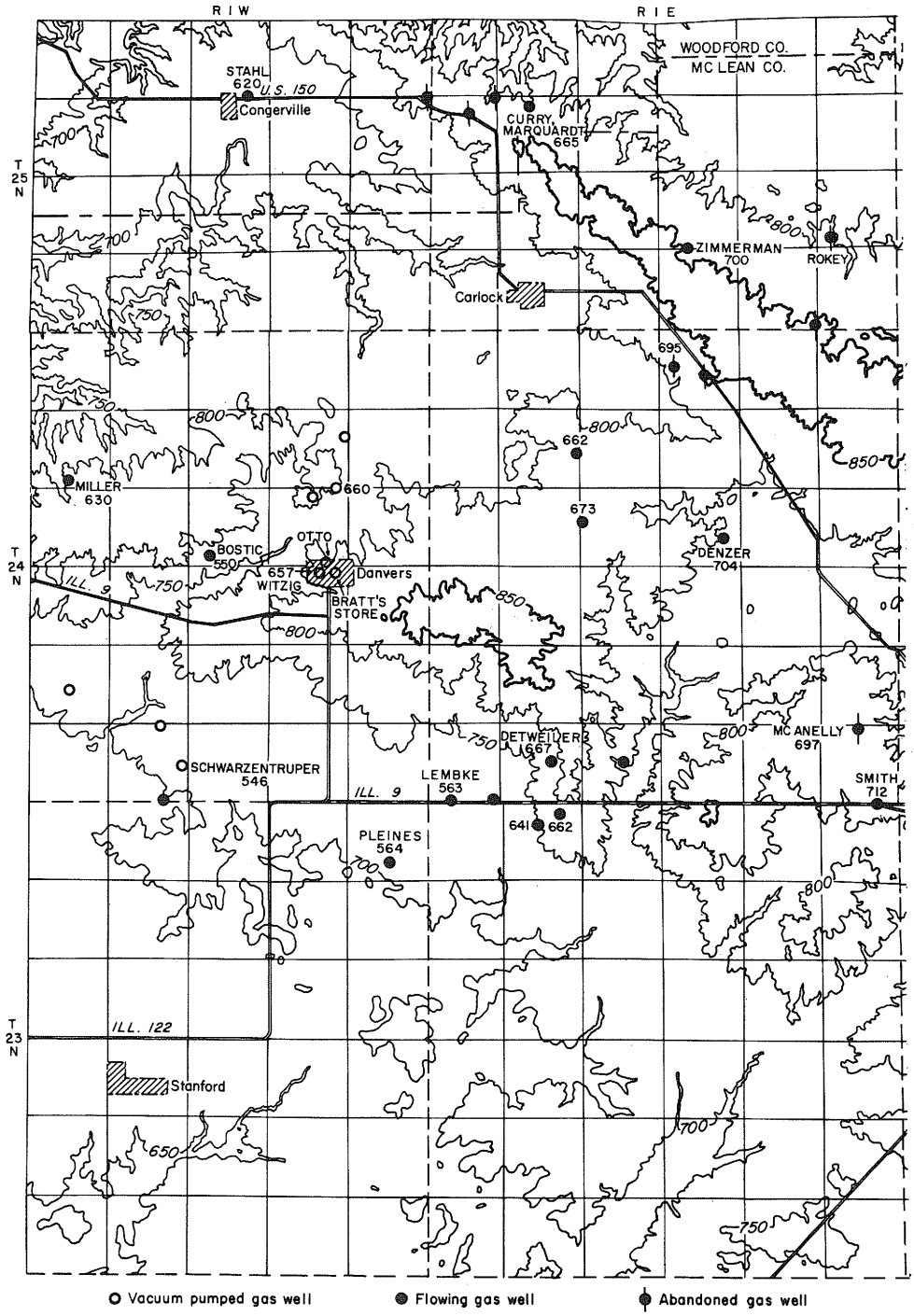
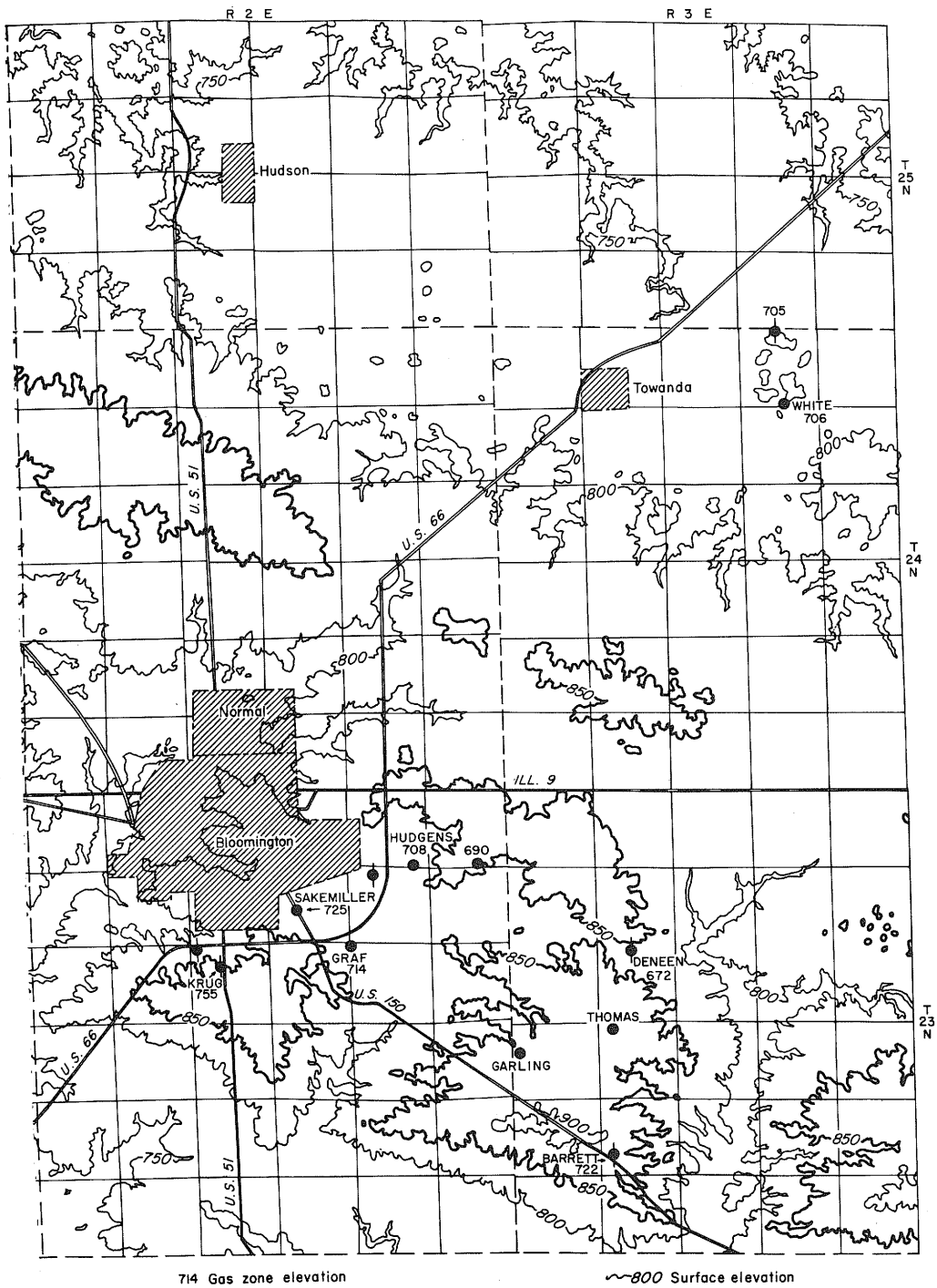


Fig. 16 - Carlock,



Bloomington, and Danvers area

The original gas well pressure in Goodfield, T. 25 N., R. 2 W., in 1948 was 2 7/8 PSI on the Knapp well. The Hangartner well, tested in 1949 with a pressure of 2 1/4 PSI, has been rechecked every year as follows: in 1950 it had 2 1/8 PSI; in 1951, 1 1/2 PSI; in 1952, 1 3/16 PSI; in 1953 it was vacuum pumped (all gas wells in the city were vacuum pumped at this time); in 1955, 3.1 inches of mercury formation vacuum; in 1956, 4.7 inches of mercury; in 1957, 6.6 inches of mercury; in 1958, 8.7 inches of mercury, and in January 1959, 11.5 inches of mercury. For comparison, the gas wells in Danvers to the southeast about 9 miles have a formation vacuum of 14.5 inches of mercury.

Carlock, Bloomington, and Danvers Area (fig. 16)

Gas wells producing in the Carlock, Bloomington, and Danvers area are on or near the Normal and Bloomington end moraines and produce from the Sangamon soil zone. Four wells have gas-zone elevations corresponding to the Sankoty sand elevation. These are the Bostic, Schwarzentruper, Pleines, and the Lembke wells in or near T. 24 N., R. 1 W.

Some 40 gas wells in Danvers are all vacuum pumped. Formation vacuum of 12.0 inches of mercury was measured on the Witzig well in 1947, in 1952 it measured 13.4 inches of mercury, in 1954 it was 13.6 inches, and in 1955 it was 14.2 inches of mercury. Vacuum checking was continued on the newly drilled Otto well and in 1956 it measured 14.0 inches of mercury, in 1957 it was 14.3 inches of mercury, and in 1958, 14.5 inches of mercury which is the highest measured anywhere.

Arrowsmith Area (fig. 17)

Gas wells in the Arrowsmith area are on the Normal end moraine. The Bane well gas zone (elevation 702 feet) is about 50 feet below the Sangamon soil zone and the Young well gas zone is about 100 feet below the Sangamon. These gas zones are very near to the bedrock, according to available information from logs of water wells. The Pleines well gas-zone elevation of 700 feet is exactly the same as the Sangamon soil zone. Water had to be pumped from this well every six months in order to have enough gas for house use.

Boynton-Union Area (fig. 18)

Wells producing gas in the Boynton-Union area are on the LeRoy end moraine. A group of wells surrounding the Springer well appears to be off the morainal trend and their gas-zone elevations appear to correlate with the Sankoty sand. The Diekhoff well and the B. Mowry well produce from the Sangamon soil zone and other wells surrounding these probably do, but this can not be determined due to the lack of information. In the vacuum pumped area, data in regard to formation vacuum was not available due to the inaccessible connections to well heads. Wells in the Springer group are the most southerly vacuum pumped wells in Illinois except for the Harrold well in sec. 18, T. 19 N., R. 3 E., DeWitt County.

Atlanta-McLean Area (fig. 19)

The Bowers and McReynolds wells in the Atlanta-McLean area are on the LeRoy end moraine, and the Bevan, Bauer, and Mountjoy wells are on the Shelbyville end moraine. All of the gas-zone elevations correlate with the Sangamon soil zone. Practically all wells in this area have had water problems.

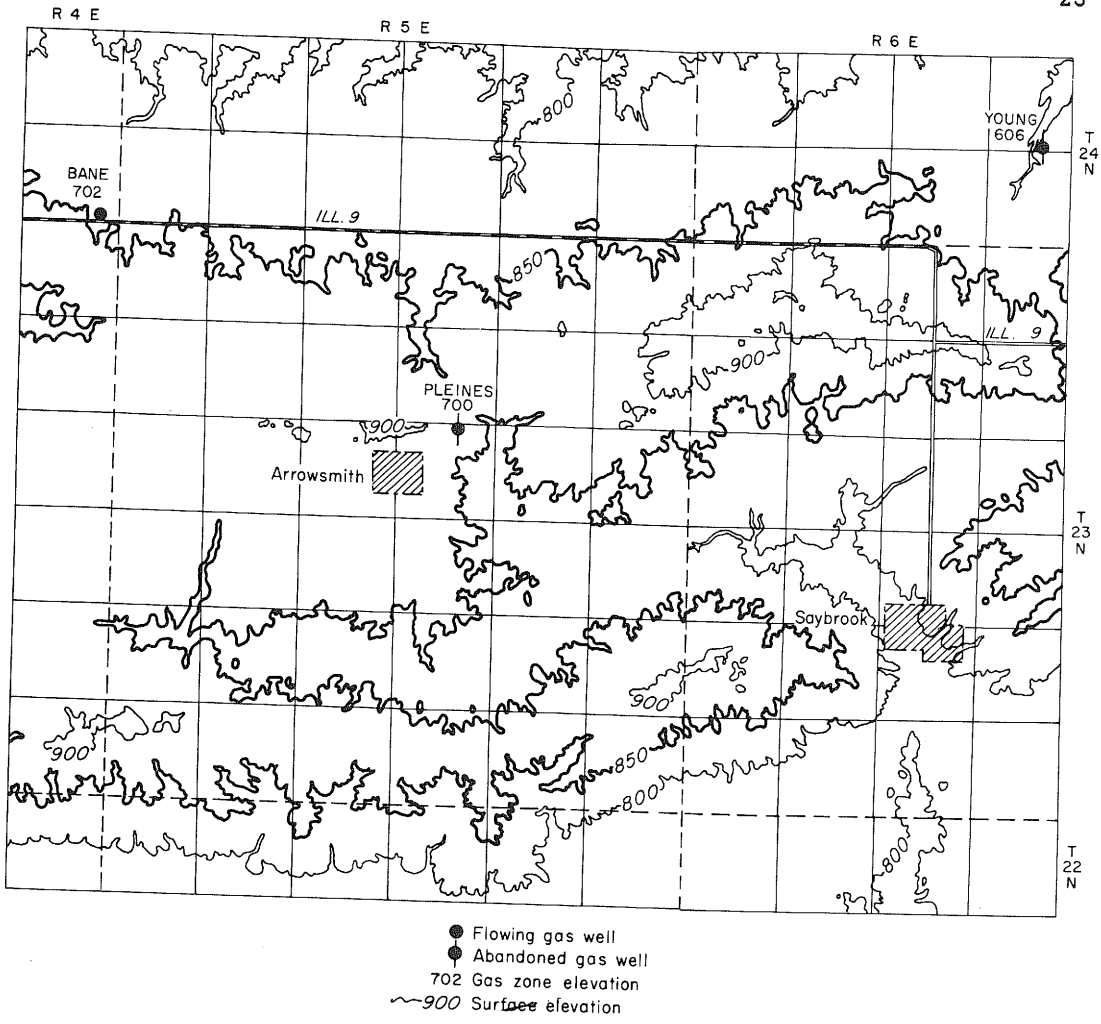


Fig. 17 - Arrowsmith area

Hallsville Area (fig. 20)

All wells in the Hallsville area are on the Shelbyville end moraine, and gas-zone elevations correspond to the Sangamon soil zone. The Douglas well is one of the better wells in the state, drilled in 1907 and producing more gas than needed for furnace use. Crude gas burner attachments surrounded by firebricks placed in hard-coal stoves were used, consuming three to four times the amount of gas a modern day stove or furnace would use. The Douglas well gas zone is 16 to 36 feet higher than the gas zone in the wells in Hallsville and vicinity, probably placing it above water levels encountered in the other wells.

Champaign County Area (fig. 21)

Gas wells northwest of Champaign are on the Champaign end moraine; wells to the south are on the West Ridge end moraine; and the remaining gas wells to the northeast are on the Urbana end moraine. Elevations of the gas zones correspond

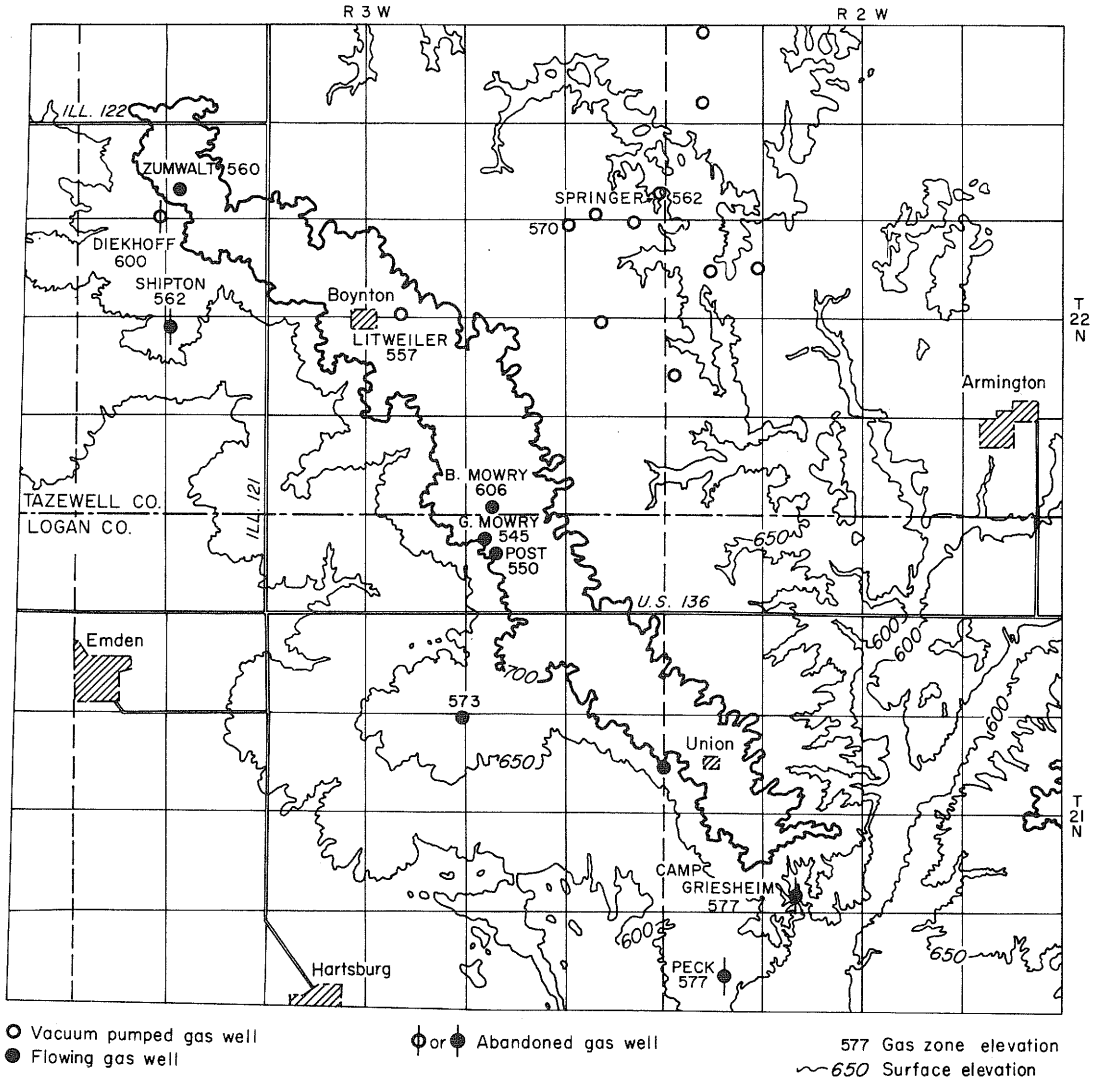


Fig. 18 - Boynton-Union area

to the Sangamon soil zone except the Plotner well in the southeast corner of the area. The Plotner well gas zone cannot be correlated with any known soil zone because of the lack of well log information.

All of the glacial-drift gas wells northwest of Champaign have had water problems except the Shipman well which appears to be one of the better wells in this section of the state. The Clapper well appears to be one of the better "water problem" wells in this group; after removing water from the well in 1951, the well has yielded enough gas for furnace use.

The Bateman gas well in this area measured 26,500 cubic feet of gas per day and 14 PSI pressure in May 1948. In the following winter, water practically flooded out the gas and a second test was conducted. On this test very little gas and large "slugs" of water flowed from the well. About 20 pounds of dry ice

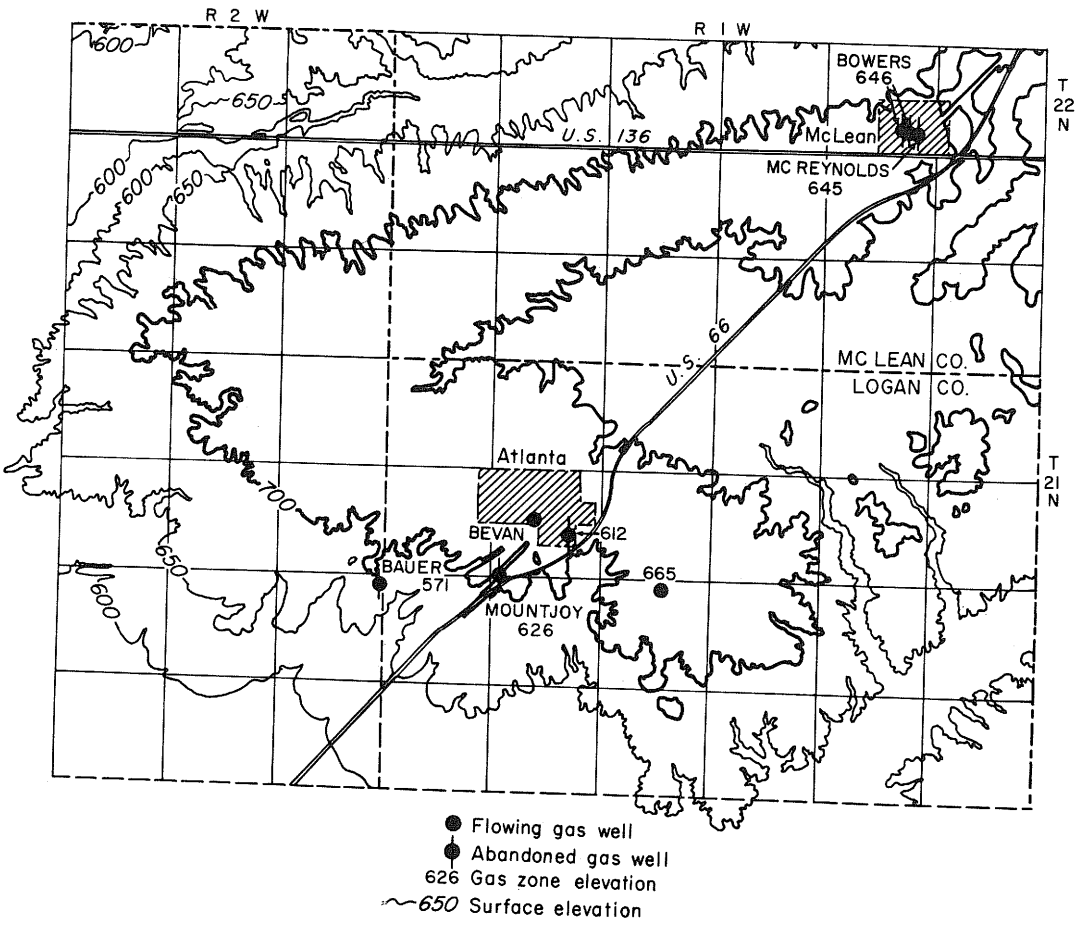


Fig. 19 - Atlanta-McLean area

(carbon dioxide) was placed in the 2-inch well casing and the casing head valve was shut; the pressure built up to 37 PSI (original before the test was 3 PSI) in 15 minutes and stayed there for 5 minutes and then dropped to 14 1/2 PSI. Casing head valve was opened and 500 cubic feet of gas was measured; water level and ice measured 46 feet from top, total depth being 96 feet. Gas returned the next day and since then the well has yielded enough gas for hot water, cook stove, and heating stove.

Many of the old wells northeast of Urbana have been abandoned or practically abandoned. The newer wells tested in this area were discovered during drilling for water, and because the amount of gas encountered was too small to use, the wells were abandoned or were drilled deeper for water.

Gas wells to the south of Champaign have been used for years in heating homes. The Maxwell and Hardin wells are still being used for home heating. The other wells in this area were good wells when drilled in the early 1900's, but at present most of the gas has been consumed so that some wells have been abandoned, and only a few still supply enough gas for cooking.

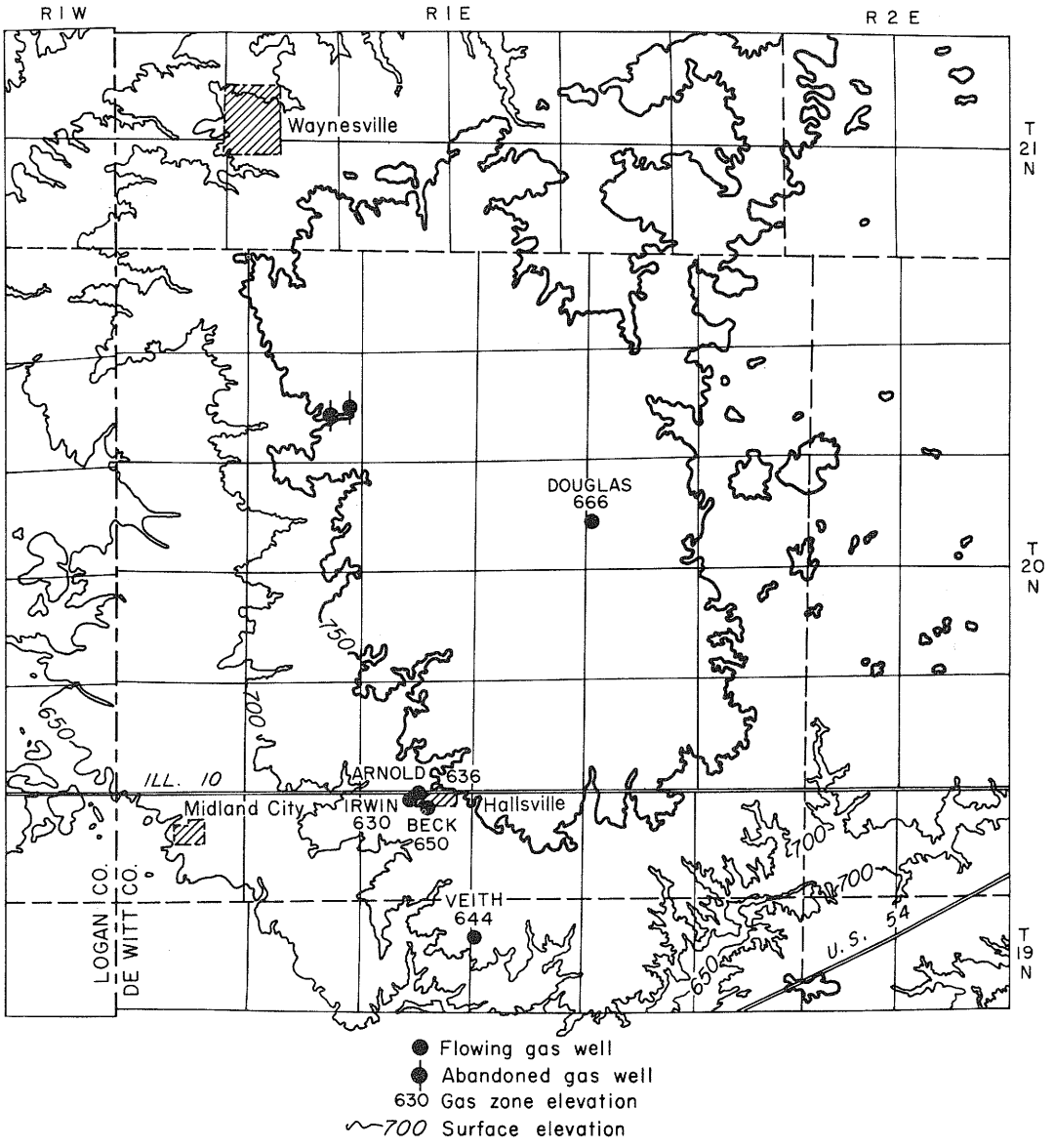


Fig. 20 - Hallsville area

Cerro Gordo-Milmine Area (fig. 22)

The gas wells of the Cerro Gordo-Milmine area are on the Cerro Gordo end moraine and their gas zone elevations correspond to the Sangamon soil zone. The Dobson well is another good well in this section of the state.

Decatur Area (fig. 23)

The gas wells of the Decatur area are influenced by the broad Shelbyville end moraine, and their gas-zone elevations correspond to those of the Sangamon

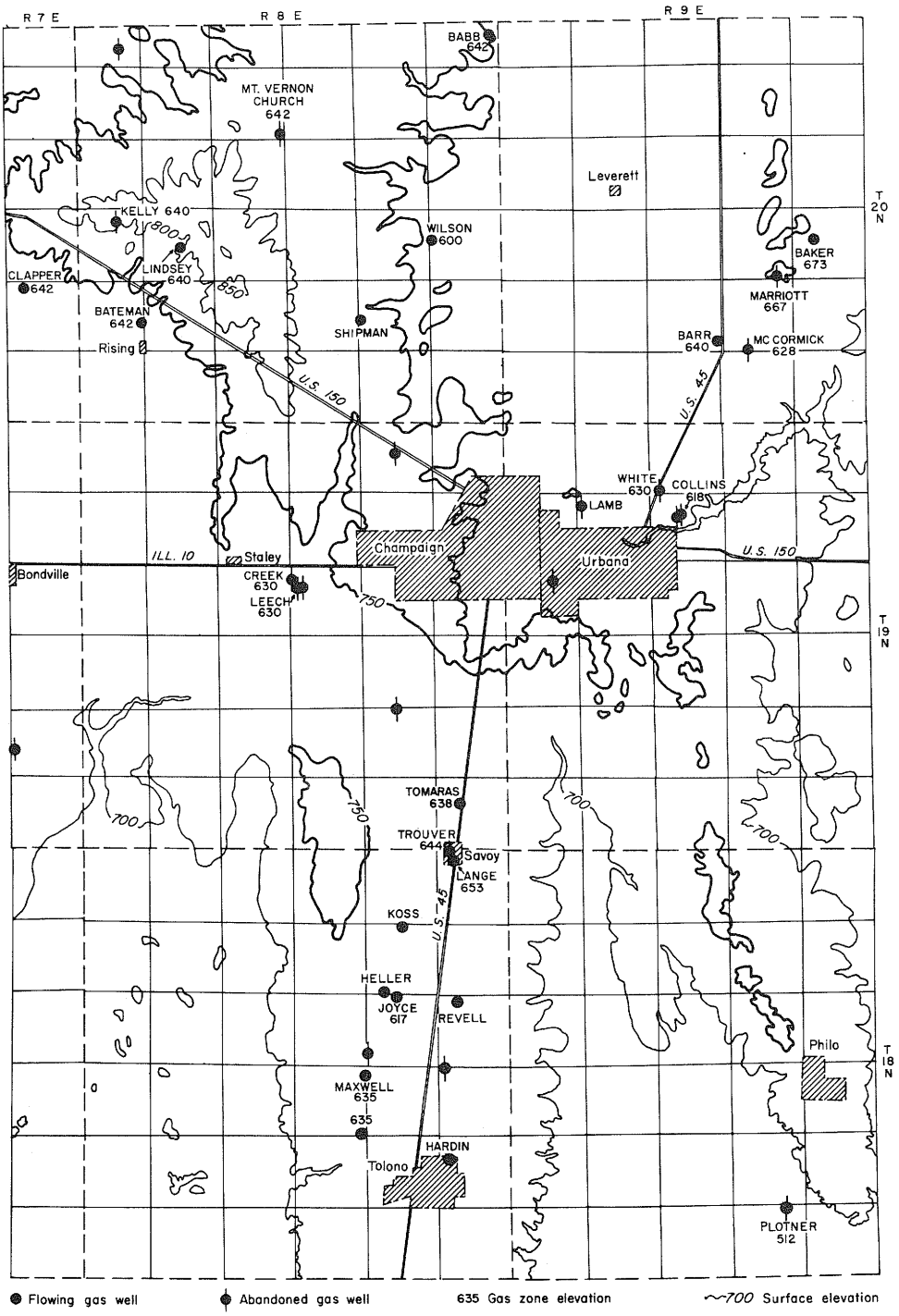


Fig. 21 - Champaign County area

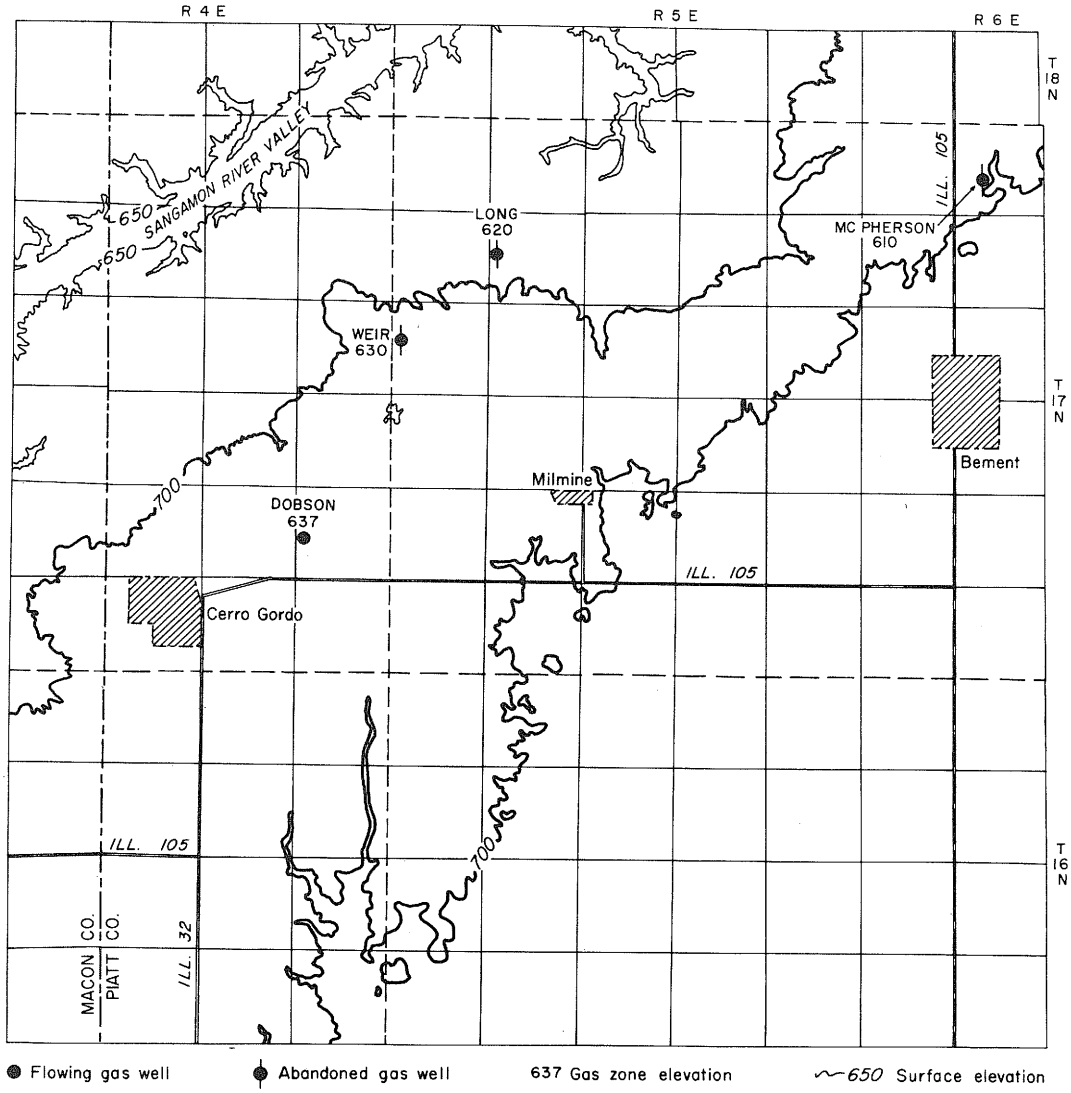


Fig. 22 - Cerro Gordo-Milmine area

soil zone. The Sangamon soil zone crops out along the Sangamon River at an elevation of 600 feet, causing a few of the wells to have a higher nitrogen content due to contamination by air. The Heinkel well had a high gas gravity of 0.87 and the Gammon well one of 0.82, indicating possible contamination. The gas gravity of the Decatur Gun Club well was also slightly high with a reading of 0.79, and it is only a quarter of a mile from the Sangamon River valley and possible outcrops. All of the glacial-drift gas wells in this area are poor producers except for the Decatur Gun Club and the Hiser wells. The Gun Club well has not been used enough to determine the life of the gas, and the Hiser well has not been used since it was drilled.

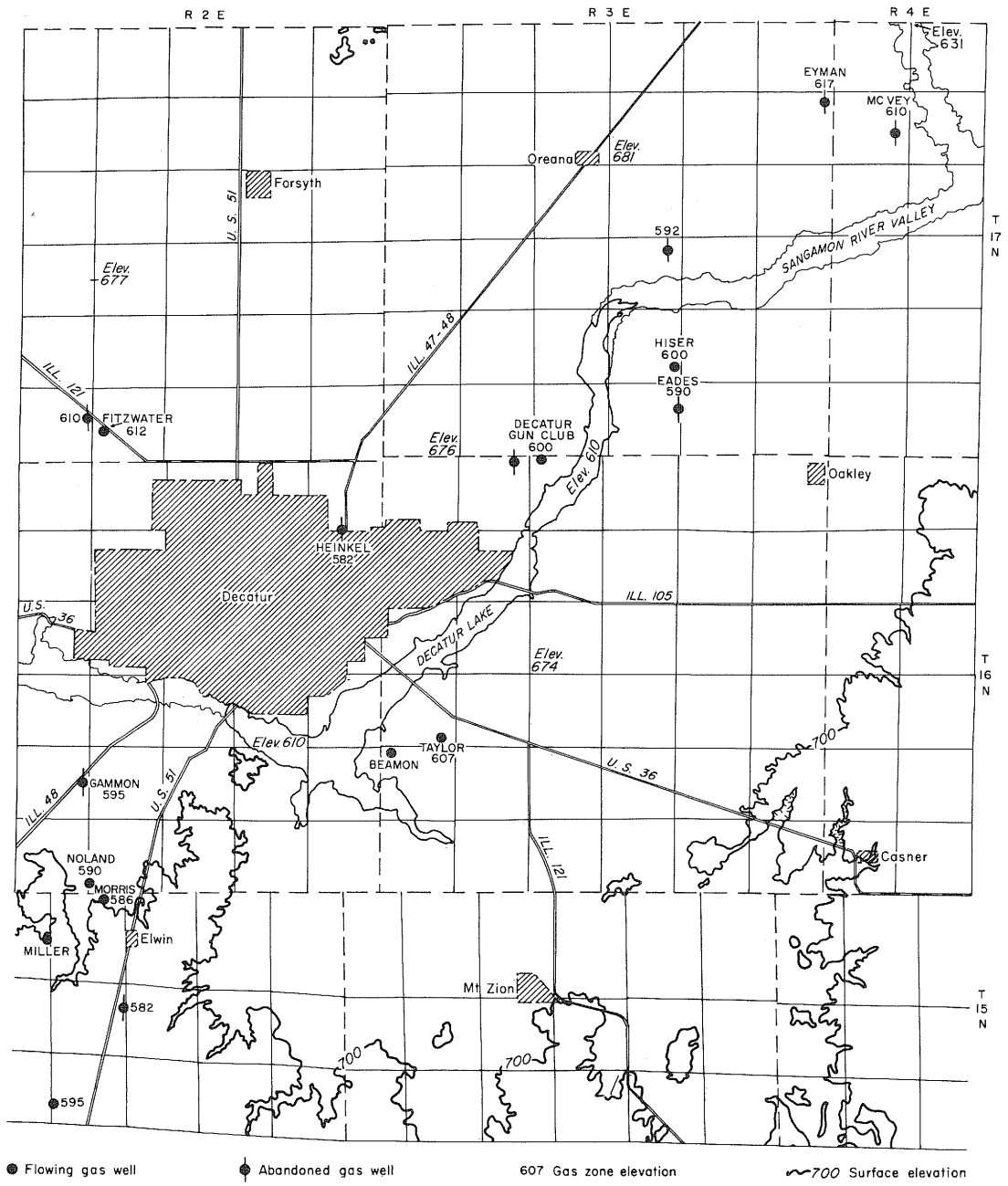


Fig. 23 - Decatur area

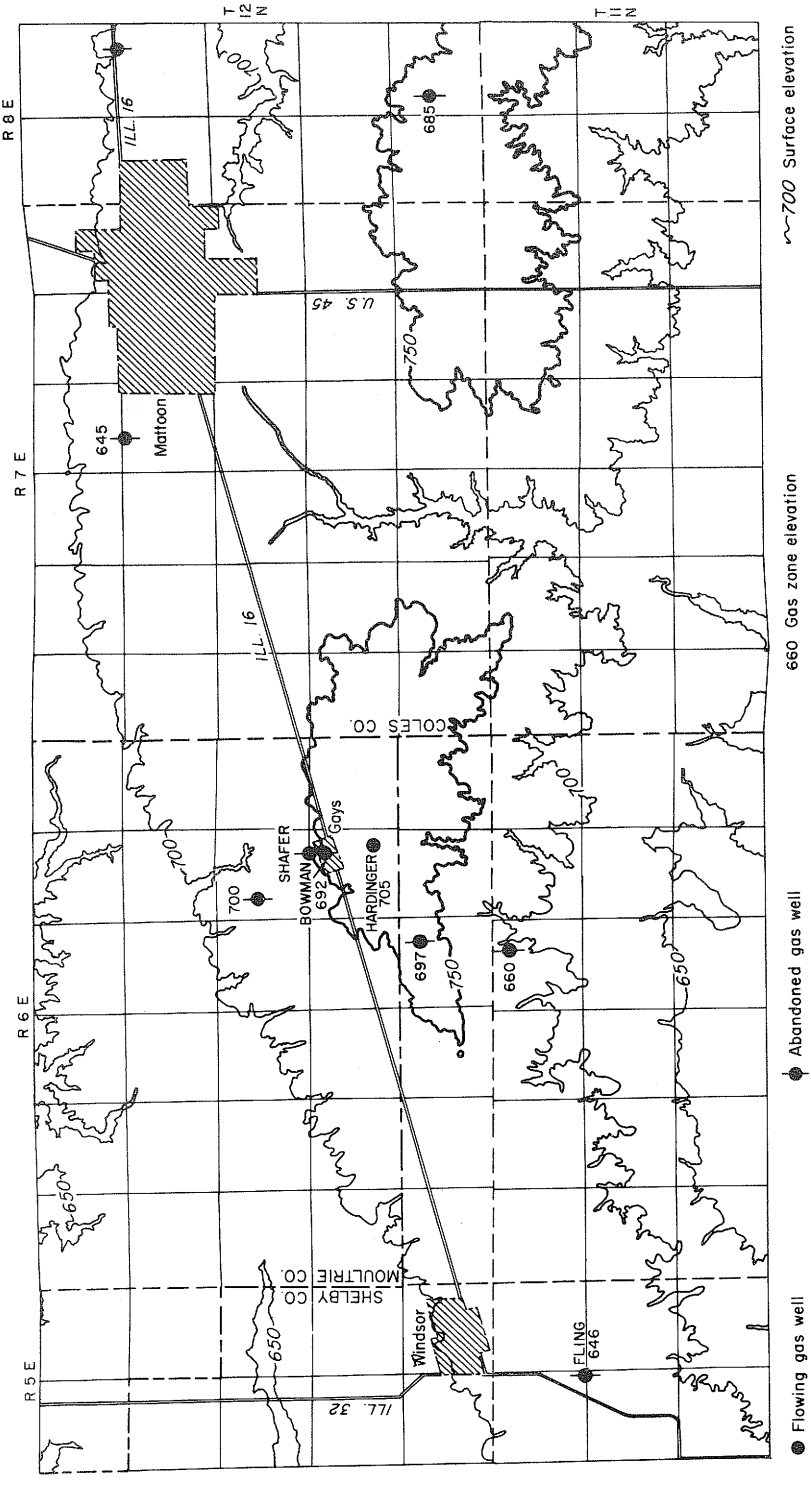


Fig. 24 - Windsor, Gays, and Mattoon area

Windsor, Gays, and Mattoon Area (fig. 24)

The wells in the Windsor, Gays, and Mattoon area are on the Shelbyville end moraine, and generally the gas-zone elevations follow the Sangamon soil zone. All wells in the area are abandoned or nearly abandoned.

Miscellaneous Wells by Counties (table 1)

Bureau County

The Milo School well is on the Bloomington end moraine and produced gas from the Sangamon soil zone. The Larson well (fig. 6) may be associated with Normal end moraine and the gas with Sangamon soil zone. The Elmore well is near the Bloomington end moraine and is producing gas from near the Sangamon soil zone.

Champaign County

The Yates well may be associated with the West Ridge end moraine and the Mohr well is not directly connected with any moraine. Information on the gas zones is not available.

Cook County

The Giertz well is on the Valparaiso end moraine and information as to gas zone is not available.

DeWitt County

The Harrold well is on the eastern side of the broad Shelbyville end moraine and the gas zone correlates with the Sangamon soil zone.

Douglas County

The Hawkins well is on the Urbana end moraine, and the gas zone information is not available.

Ford County

The Steinberg well is on the Outer Cropsey end moraine; no information is available on gas zone correlation.

Kane County

The Sykes well is on the Farm Ridge end moraine and the gas horizon corresponds to the Sangamon soil zone.

Lake County

The Natzke well is on one of the Lake Border end moraines and no information is available about the gas zone.

LaSalle County

The Walter well is on the Farm Ridge end moraine, but there is no information on gas zone correlation.

Livingston County

The Leister and Law wells are associated with the Chatsworth end moraine; no information is available on gas zone correlation.

Moultrie County

The Freeland well is on the Cerro Gordo end moraine; no information on gas zone correlation.

Putnam County

The Maulfair well, on the Inner Cropsey end moraine, is producing gas from the Sankoty sand.

Shelby County

The Reed well is on the Shelbyville end moraine; the gas zone corresponds with the Sangamon soil zone.

Vermilion County

The Moore, Sheppard, and Johnson wells are on the east extension of the Paxton end moraine; all gas-zone elevations are at or near the Sangamon soil zone.

The wells are located half a mile from the Vermilion River and the North Fork valleys. According to local residents, gas could be seen bubbling from swampy areas along the valley floors. The elevation of these valley floors ranges from 500 feet to 580 feet.

Woodford County

Rumbles well is between the Outer Cropsey and the Normal end moraines and may be producing gas from the Sangamon soil zone.

Tiskilwa Area (fig. 6; Meents, 1958)

All of the 49 producing gas wells in the Tiskilwa area are in the Sankoty sand of the Ancient Mississippi Valley. The Sankoty sand crops out along the present Illinois River bluff and the gas becomes progressively purer away from the bluff line as is indicated by gravity tests.

CONCLUSIONS

The amount of morainic material above the gas-producing zone controls the amount and quality of the gas, as has been shown on the maps of the area surface and gas-zone elevation. The gas is generally concentrated and more pure under the thick cover of the end moraines and is not present away from the end moraines unless in a bedrock valley fill such as the Ancient Mississippi Valley. Low Btu gas or poor quality gas is usually encountered near a stream valley transversing an end moraine, mainly because of the exposure or nearness of the gas zone to the surface.

High gas pressures in wells may indicate either a very good gas reservoir or, more often, a water drive and therefore a gas well of short duration. The pressure wells, when attached to furnaces, quite often will cone water up into the well,

thus damaging the gas supply, but they will operate for years furnishing gas for cook stoves or other low-volume gas units. Vacuum pumps cannot be used on gas wells of this type.

Several billion cubic feet of glacial-drift gas has been consumed by homes in Illinois. The total volume may be as high as 6 billion, but due to the lack of information on old abandoned wells (about 200), accurate figures cannot be obtained.

REFERENCES

Horberg, Leland, 1953, Pleistocene deposits below the Wisconsin drift in northeastern Illinois: Ill. Geol. Survey Rept. Inv. 165.

Meents, Wayne, 1958, Tiskilwa drift-gas area, Bureau and Putnam Counties, Illinois: Ill. Geol. Survey Circ. 253.

Table 1. - Results of Tests on

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
		Harvard Area (fig. 9)				
Fritsch	NW SE NW 18-45N-6E	1957	1957	188	875	8 1/2
		Lily Lake Area (fig. 10)				
Verhaeghe	NW NW NW 10-40N-7E	1946	1946	200	720	44
Lindgren	SW SE SW 17-40N-7E	1953	1953	165	720	1/4
		Paw Paw Area (fig. 12)				
Abell	NE SW SW 9-37N-2E	1934	1947	-	-	18
Betz	SW SW SW 17-37N-2E	1949	1949	212	725	11
		Ohio-LaMoille Area (fig. 11)				
Guither	SE SW SE 2-18N-8E	1924	1947	185	605	3 1/2
Kuhnert	SW SE SE 2-18N-8E	1940	1947	195	615	9 3/4
Heaton	NW SE NE 12-18N-8E	1939	1948	259	601	15
Whittaker	NE SW SE 12-18N-8E	1923	1948	-	-	16 1/2
Johnson Est.	NE NW NW 19-18N-9E	1900	1947	300	555	22 1/2
Becker	SW SW SE 3-18N-10E	1952	1952	215	617	21
Baird	SE SE SW 4-18N-10E	1904	1948	169	656	8 3/4
W. Haas	SE SW SE 8-18N-10E	1900	1948	-	-	13 1/2
Zelper	SW SE SE 9-18N-10E	-	1948	175	625	1/8
Larson	NE NE NE 15-18N-10E	1900	1948	-	-	9
C. Haas	NE SE SW 17-18N-10E	1910	1948	170	615	12
Nauman	NE NE SE 17-18N-10E	-	1948	-	-	1 1/2
Minnick	NE SE SE 18-18N-10E	1941	1948	162	630	3 1/2
C. Haas	SE SW SE 20-18N-10E	1940	1948	141	634	4
Schaill	SW SW NE 23-18N-10E	1900	1951	-	-	8 1/8
Schaill	SE SW NE 23-18N-10E	1900	1947	-	-	9 3/8

Glacial-Drift Gas Wells in Illinois

Open flow volume Cubic feet per day			Buildup pressure		Gas gravity	Remarks
Starting test	Steady flow	Test min.	PSIG	Min.		
			Harvard Area (fig. 9)			
121,000	44,000	65	2 5/8	10	.80	Used in furnace for 2 months, ran low; for hot water and cooking since.
			Lily Lake Area (fig. 10)			
62,000	40,000	120	10	10	.58	Used in 2 homes for hot water and cooking; not enough for furnace; 103' of water.
1,680	1,680	18	3 7/8	5	.63	Drilled deeper for water.
			Paw Paw Area (fig. 12)			
11,700	11,700	10	17½	5	.69	Used in furnace to 1952, then for hot water and cooking; well supplies water.
27,800	27,800	5	-	-	.72	Drilled deeper for water.
			Ohio-LaMoille Area (fig. 11)			
579	579	15	1 5/8	9	.70	
3,970	3,970	15	9	5	-	Original pressure 13 PSI.
10,700	8,210	9	7½	30	.67	
30,000	30,000	6	16	1	.68	16 PSI in 1953.
83,000	83,000	15	22½	1	.60	23 PSI in 1954, used in furnace.
-	-	-	-	-	.61	Water in well; enough gas for cooking.
80,000	80,000	3	-	-	.62	Same pressure in 1954.
8,400	5,520	36	7½	2½	.61	14 PSI in 1954, room heaters and cooking.
200	200	15	-	-	.62	
20,900	20,900	4	9	1	.60	
2,710	2,710	6	10	2½	-	Same pressure 1954.
709	669	9	-	-	.60	
990	990	10	3½	15	.59	
689	689	6	2	4	.59	
90,000	77,600	18	6	40	.61	Never used; 6 3/8 PSI in 1956.
135,000	135,000	15	-	-	.57	Used in furnace; 7 1/8 PSI in 1958.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
		Ohio-LaMoille Area - continued				
Bauer	NE NW NW 24-18N-10E	1898	1948	-	-	8 3/4
Walker	NW SE NE 25-18N-10E	1890	1948	-	-	2
Peterson	NE SE SW 36-18N-10E	1898	1948	-	-	7
Faber	SE SW NE 15-18N-11E	1909	1947	192	636	17
Stamberger	NE NE SW 16-18N-11E	1934	1948	150	680	16 3/4
Rasmussen	SE SW SW 20-18N-11E	1900	1948	172	643	7 3/4
Ultch	NE NW NE 28-18N-11E	1907	1948	160	640	11
Delong	NE NE NW 30-18N-11E	1898	1948	-	-	7 1/8
A. Stuepfert	SW SE SW 30-18N-11E	1898	1948	-	-	5 1/2
E. Stuepfert	NW NW SW 30-18N-11E	1908	1948	127	663	7
Child	SW SW SW 13-19N-9E	1948	1948	150	675	9 1/2
Parsons	SE NE SE 28-19N-9E	1934	1948	-	-	2 3/8
Norden Bros.	NW SE SE 31-19N-9E	1945	1948	163	612	14 1/4
Grossman	NW SW NE 33-19N-9E	1936	1948	-	-	7 3/8
O'Brien	SW SE NW 35-19N-9E	-	1948	330	595	1 3/8
Grossman	SW NE SW 15-19N-10E	1949	1949	330	612	20 1/2
Faivre	NW NW SW 16-19N-10E	1906	1948	268	617	16 1/2
Buckley	SE SW NW 21-19N-10E	-	1947	-	-	5
Goy	NW NW SW 28-19N-10E	1910	1948	250	644	12
		Princeton Area (fig. 13)				
Sauer	SE NE NW 4-15N-9E	-	1948	147	519	Vac
Fuller	SE SE NE 24-16N-8E	1949	1950	135	515	6 3/4
Farley	SE SE NW 11-16N-9E	-	1948	135	565	Vac
Bence	NW NE SE 18-16N-9E	1949	1949	63	517	3 1/2

Continued

Open flow volume Cubic feet per day			Buildup pressure		Gas gravity	Remarks
Starting test	Steady flow	Test min.	PSIG	Min.		
			Ohio-LaMoille Area - continued			
9,775	4,655	33	1½	4	.60	Same pressure, used for cooking in 1958.
1,445	710	30	-	-	.61	
765	600	12	1¼	3	.63	Some cooking.
8,900	8,900	15	19½	30	.59	Same pressure; used for cooking and hot water in 1958.
74,900	75,700	9	16½	½	.59	Same pressure; used in furnace in 1958.
1,430	1,390	9	.6	4	.62	
2,430	2,430	6	8 3/4	2½	.62	Used for cooking; 15 PSI in 1954.
8,812	8,812	6	7	1	.61	Same pressure; used for cooking in 1954.
300	300	6	5	2	.62	Used for hot water at times.
2,965	2,965	6	7	½	-	
38,000	38,000	30	7¼	2½	.89	3½ PSI in 1953; used in furnace, 1952-1954, for cooking since.
4,755	4,755	6	2 3/8	1	-	
6,270	6,270	6	13 3/4	1	-	Used in furnace up to 1953.
3,020	2,600	18	5½	2½	.75	Same pressure; used for cooking in 1958.
1,130	1,060	15	-	-	.69	Pressure was 13¼ PSI in 1951; had not been used for 2 years.
-	-	-	-	-	.65	Same pressure in 1957.
63,200	55,500	12	16	1	-	Same pressure in 1958; used in room heaters.
4,720	4,720	15	-	-	.69	Home abandoned.
-	-	-	-	-	.68	
			Princeton Area (fig. 13)			
-	-	-	-	-	.70	
-	-	-	-	-	.67	6 3/4 PSI in 1951; used for hot water and cooking in worker houses one summer.
-	-	-	-	-	.67	
10,000	10,000	6	-	-	.69	Never used; gas ran out.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
		Princeton Area - continued				
Frantzen	NE NW SE 18-16N-9E	1954	1954	58	522	10 1/4
Schaefer	NW SW SW 21-16N-9E	1947	1948	190	520	3 3/4
Swanland	SE SW NE 27-16N-9E	1948	1948	145	520	Vac
Hult	NE NW NW 35-16N-9E	1959	1959	136	524	Vac
Phillips	NW SW NW 26-17N-9E	1900	1948	104	600	2 3/4
Monier	NE NE NW 34-17N-9E	1926	1948	165	535	1/2
Lange	SW NW SW 35-17N-9E	-	1948	-	-	Vac
Peterson	SE NE NE 35-17N-9E	1898	1948	-	-	1 1/2
		Camp Grove-Edelstein Area (fig. 14)				
Ladd	SW NW SE 8-11N-8E	1945	1948	173	617	14 3/4
Baer	SW NW NW 19-11N-8E	1940	1948	150	660	3/4
Green	NW NE NW 30-13N-8E	1908	1948	87	743	2 1/4
		Tazewell County and Adjacent Area (fig. 15)				
Long	NW NW NE 3-23N-2W	1910	1948	-	-	Vac
Brenneman	NW NW NE 23-23N-2W	1920	1948	69	577	Vac
Nafziger	NW NW NE 30-23N-2W	1918	1948	72	583	Vac
Brown	NW NE NE 35-23N-4W	1944	1948	186	487	1/4
Fasse	SW NW SE 29-24N-2W	-	1948	-	-	Vac
Laidig	NW SW NE 31-24N-3W	1946	1948	68	575	Vac
Goetzinger	SE SE SW 12-25N-2W	1948	1948	205	542	2 3/4
Hangartner	SW NW NE 13-25N-2W	1949	1949	192	558	2 1/4
Knapp	S½-NE NW 13-25N-2W	1946	1948	208	539	2 7/8
Leach	SW NE NE 13-25N-2W	1948	1948	210	542	2 1/4
Bohanon	SW SW SW 16-25N-2W	1923	1948	200	533	Vac

Continued

Open flow volume Cubic feet per day			Buildup pressure			
Starting test	Steady flow	Test min.	PSIG	Min.	Gas gravity	Remarks
			Princeton Area - continued			
9,600	5,000	12	7 1/8	25	.67	Never used.
21,500	20,030	24	3 3/8	1½	.67	Used in furnace for one winter; well abandoned.
-	-	-	-	-	.68	
-	-	-	-	-	.66	
1,096	1,084	9	2 3/8	2	.63	
1,040	1,040	3	-	-	.66	
-	-	-	-	-	.69	Very light gas flow at times.
3,280	3,150	15	-	-	.65	Vacuum pumped in 1958; enough gas for cooking without pumping.
			Camp Grove-Edelstein Area (fig. 14)			
240,000	240,000	1	14½	1	.62	Used for one winter, well became flooded with 40 feet of water.
758	740	9	3/4	4	.69	Used for cooking in 1958
21,100	16,140	45	1½	2	.60	Same pressure; used for cooking in 1958.
			Tazewell County and Adjacent Area (fig. 15)			
-	-	-	-	-	.70	
-	-	-	-	-	.68	
-	-	-	-	-	.64	
960	945	6	-	-	.67	Vacuum pumping enough gas for a large house in 1958.
-	-	-	-	-	.68	
-	-	-	-	-	.68	4.0 inches mercury pump vacuum.
180,800	164,600	40	2 3/8	2	.64	Vacuum pumped since 1953.
170,000	170,000	15	-	-	.66	Used in furnace under well pressure to 1953; vacuum pumped since.
44,000	43,600	15	2 7/8	1	.67	Abandoned.
8,900	6,610	55	2	8	.67	
-	-	-	-	-	.68	Pressure up to 1938; vacuum pumped since.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
	Tazewell County and Adjacent Area - continued					
Tanner	NW NE SW 23-25N-2W	-	1954	103	629	9
Webb	SW SE NE 35-25N-2W	1952	1952	165	540	2
Wiedman	NE SW SE 4-25N-3W	-	1950	-	-	Vac
Aupperle	E½ NE NW 9-25N-3W	1920	1948	162	548	Vac
Belsley	SW SW SW 11-25N-3W	1947	1948	223	557	Vac
Stickey	NW NW NW 12-25N-3W	-	1948	225	568	Vac
Schwartz	NW SE NE 18-25N-3W	1955	1956	90	625	2 3/4
Strunk	SW SW NW 20-25N-3W	1933	1948	165	550	Vac
Straesser	NW NE SE 21-25N-3W	-	1950	-		Vac
Zimmerman	SE SW SW 26-25N-3W	-	1950	120	560	Vac
R. Yordy	NW NW NW 33-25N-3W	-	1948	-	-	Vac
H. Yordy	SE SW SE 34-25N-3W	1955	1955	115	560	Vac
Harrmann	SW SW NE 2-25N-4W	1930	1948	135	565	Vac
Huette	SE SW SE 11-25N-4W	1920	1948	160	575	Vac
Zion Church	SE SE NE 17-25N-4W	1949	1949	137	606	24
Zimmerman	SE SW NE 23-25N-4W	1948	1949	86	654	1/2
Gerber	SW NW SW 35-25N-4W	1950	1950	135	620	7
Cary	C SW SW 11-26N-2W	1919	1948	74	680	2 3/8
Guth	SW SE SW 21-26N-2W	1951	1952	102	673	16 1/2
Faubel	NE NE NE 33-26N-2W	-	1954	-	-	2 1/2
H. Schertz	NE NW NE 1-26N-3W	1918	1948	130	662	7 1/4
Armstrong	SE NW SW 2-26N-3W	1921	1948	-	-	6 1/2
Cummings	NE NE 28-26N-3W	1917	1956	75	605	Vac
Simon	NW NW SE 23-26N-4W	1936	1952	154	546	Vac
E. Schertz	NW NW NW 31-27N-2W	1924	1948	101	684	8

Continued

Open flow volume Cubic feet per day			Buildup pressure		Gas	
Starting test	Steady flow	Test min.	PSIG	Min.	gravity	Remarks
			Tazewell County and Adjacent Area - continued			
-	-	-	-	-	.74	Used in furnace; 9 PSI in 1958.
31,000	27,600	18	1 7/8	½	.99	Would not burn, probably nitrogen.
-	-	-	-	-	.68	
-	-	-	-	-	.87	Well vacuum was 1.9 inches mercury in 1950.
-	-	-	-	-	.62	Well vacuum was 8.6 inches mercury in 1948.
-	-	-	-	-	.66	
-	-	-	-	-	.62	Used in furnace.
-	-	-	-	-	-	Dead well, 1.0 inch mercury vacuum in 1958.
-	-	-	-	-	.85	
-	-	-	-	-	.65	
-	-	-	-	-	.67	Well vacuum was 4.5 inches mercury in 1958.
-	-	-	-	-	.66	Well vacuum was 6.6 inches mercury in 1958.
-	-	-	-	-	.70	
-	-	-	-	-	.71	Well vacuum was 3.7 inches mercury in 1956.
78,320	69,260	15	22	6	.59	Used gas in furnace one winter, water in well.
1,100	1,100	9	-	-	.66	Used in furnace up to 1949.
240,000	160,000	16	4	16	.65	Used in furnace part of one winter, ran low because of water in well.
700	645	6	1 3/4	12	.63	
-	-	-	-	-	.66	Used in furnace for 3 years; and in 1 to 2 room heaters since.
-	-	-	-	-	.62	Enough for hot water heater.
3,910	7,400	26	5 7/8	5	.60	Same use and pressure in 1954.
43,780	43,150	6	6 1/2	1	.63	Used in room heater and cooking in 1954.
-	-	-	-	-	.77	
-	-	-	-	-	.85	
1,250	600	21	7/8	9	.62	Abandoned, original pressure of 28 PSI when drilled.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
		Tazewell County and Adjacent Area - continued				
Groves	SW NW SE 35-27N-3W	1918	1948	-	-	2 3/4
Sommers	SW NE NE 36-27N-3W	1912	1948	109	681	2 1/8
		Carlock, Bloomington, and Danvers Area (fig. 16)				
Hudgens	SW SE SE 2-23N-2E	1958	1958	130	708	25
Sakemiller	NE NE SW 10-23N-2E	1937	1948	110	725	3 1/4
Graf	NW NW NW 14-23N-2E	1943	1948	133	714	23
Krug	NE SE NW 16-23N-2E	1946	1948	118	755	6 1/2
Deneen	NE NE NW 17-23N-3E	1918	1948	168	672	-
Garling	SW SW NW 19-23N-3E	1908	1948	-	-	5 7/8
Thomas	N½ NW NW 20-23N-3E	1920	1948	-	-	5 7/8
Barrett	SE NW SW 29-23N-3E	1946	1948	180	722	15
Pleines	NW SW SE 1-23N-1W	1934	1948	150	564	9
Denzer	NW NE SE 15-24N-1E	1948	1949	96	704	6
Lembke	SW SE SW 31-24N-1E	1947	1948	170	563	10
Detweiler	SW SW NE 32-24N-1E	1918	1948	108	667	1 3/4
McAnelly	NE NE NW 36-24N-1E	1947	1948	118	697	16
Smith	SE SW SE 36-24N-1E	1938	1948	110	712	11 1/2
White	SW SW SE 3-24N-3E	1931	1948	94	706	20
Miller	SE SE SW 8-24N-1W	1909	1948	180	630	5/8
Otto	SE SW SE 14-24N-1W	1955	1955	-	-	Vac
Bostic	NE SW SW 15-24N-1W	1945	1948	243	550	3 1/4
Witzig	N½ NW NE 23-24N-1W	-	1947	153	657	Vac
Schwarzentruper	NE NE SE 33-24N-1W	1890	1948	174	546	2 7/8
Curry & Marquardt	SW NE NW 20-25N-1E	1958	1958	145	665	23

Continued

Open flow volume Cubic feet per day			Buildup pressure			
Starting test	Steady flow	Test min.	PSIG	Min.	Gas gravity	Remarks
			Tazewell County and Adjacent Area - continued			
16,700	975	36	3/4	9	.65	
1,590	1,590	5	-	-	.62	Same, used for hot water heater and cooking.
			Carlock, Bloomington, and Danvers Area (fig. 16)			
-	-	-	-	-	.59	Used in furnace 1958.
4,120	2,950	21	2 1/8	3	.60	Used in hot water heater only in 1958.
11,700	2,920	39	1 3/4	5	-	Hot water heater only in 1957.
86,600	83,200	12	5 1/4	½	.70	Used up to 1954 for hot water heater in Motel.
450,000	450,000	10	21	10	-	Used in furnace for 5 months; well became flooded.
1,290	1,290	8	5 7/8	11	.62	Hot water heater and some cooking in 1958.
7,140	1,150	36	1 1/4	11	.65	Used in hot water heater at times, 1958.
20,000	15,000	24	4½	4	.60	2½ PSI in 1950, not enough for cooking at times; water in well, abandoned 1951.
104,000	103,000	9	8 3/4	½	.66	Original pressure was 25 PSI in 1934, plenty of gas for house heat.
21,900	15,520	45	3 3/4	3	.65	Gas was used in furnace for 3 months, original pressure was 15 PSI in 1948.
52,000	52,000	10	9	½	.64	Same pressure, used in furnace 1958.
5,320	3,280	54	1 1/8	4	-	
487,000	481,000	7	16	½	.65	Well was flooded out soon after it was drilled.
81,000	27,000	70	3 1/4	6	.71	Gas used from 1938 through 1947.
33,200	33,000	9	19	3	.63	Gas used in summer house.
5,000	4,050	15	-	-	.64	Gas was used in cooking, room heaters, and gas lights in 1948; no lights in 1958.
-	-	-	-	-	-	Well vacuum was 14.5 inches mercury in 1958.
18,800	16,100	30	2 7/8	½	.59	Gas used in furnace up to 1950.
-	-	-	-	-	.62	Well vacuum was 14.2 inches mercury in 1955.
13,300	12,300	45	2½	½	.65	Original pressure was 24 PSI; used in furnace to 1947, in garage in 1958.
94,000	78,500	39	19½	12	.62	Not used yet.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
	Carlock, Bloomington, and Danvers Area - continued					
Rokey	NE SW SW 25-25N-1E	1936	1948	-	-	10 3/4
Zimmerman	SW SE SW 27-25N-1E	1947	1948	140	700	12 7/8
Stahl	SE SW SE 15-25N-1W	1954	1954	125	620	4 7/8
	Arrowsmith Area (fig. 17)					
Pleines	NW NW NE 15-23N-5E	1935	1948	179	700	29 1/2
Bane	SW SW SE 36-24N-4E	1957	1957	140	702	39
Young	SW SW SE 27-24N-6E	1953	1953	216	606	64
	Boynton-Union Area (fig. 18)					
Camp Griesheim	NW SE SW 17-21N-2W	-	1948	73	577	1/2
Peck	SW NW SE 19-21N-2W	1934	1948	53	577	1/2
Diekhoff	SE SE SE 7-22N-3W	1948	1948	91	600	2 1/4
Zumwalt	SE NW SW 8-22N-3W	1920	1948	156	560	1/4
Springer	SE NE SE 12-22N-3W	1915	1948	90	562	Vac
Litweiler	SW SE SW 15-22N-3W	-	1948	162	557	5/8
Shipton	NW NW NW 20-22N-3W	1915	1948	95	562	3/4
B. Mowry	SW SE SW 26-22N-3W	1952	1952	115	606	18
G. Mowry	NE SW NW 35-22N-3W	1946	1946	178	545	4 1/2
Post	SW SE NW 35-22N-3W	1944	1948	170	550	3
	Atlanta-McLean Area (fig. 19)					
Bevan	SE SE NW 20-21N-1W	1925	1948	-	-	-
Mountjoy	NW NW NW 29-21N-1W	1952	1953	80	626	5 1/4
Bauer	SE NE NE 25-21N-2W	1950	1950	124	571	8 3/4
Bowers	NW SW SE 35-22N-1W	1902	1947	-	-	6 3/8
Bowers	NE SW SE 35-22N-1W	1921	1947	66	646	7 7/8

Continued

Open flow volume Cubic feet per day			Buildup pressure			
Starting test	Steady flow	Test min.	PSIG	Min.	Gas gravity	Remarks
			Carlock, Bloomington, and Danvers Area - continued			
33,200	33,000	15	9½	¼	.63	Used up to 1954 and ran out.
23,700	4,050	80	3 5/8	15	.62	Not enough gas for furnace use in 1947.
13,300	12,660	12	4 3/8	6	.61	Used in furnace one winter; 4 PSI in 1957 and not used.
			Arrowsmith Area (fig. 17)			
6,000	3,120	8	6½	6	.67	Water was pumped out of well every 6 months, abandoned before 1957.
264,000	20,000	105	11 1/8	30	.60	Not used yet.
40,800	29,500	18	52½	2	.62	Abandoned.
			Boynton-Union Area (fig. 18)			
400	300	3	-	-	.66	Used for cooking a few weeks.
475	475	15	-	-	-	Original pressure was 6½ PSI, home abandoned 1958.
10,000	10,000	15	2 1/8	½	.81	Used in furnace under pressure to 1949, vacuum pumped to 1950; for cooking through 1956, then ran out.
500	500	9	-	-	.65	
-	-	-	-	-	.68	
10,200	10,200	10	5/8	½	.63	Vacuum pumped since 1954.
21,500	21,500	15	5/8	1	.70	Out of gas in 1957.
-	770,000	8	17 7/8	2	.67	Never used.
4,700	4,700	15	-	-	.58	5 3/4 PSI in 1953, cooking and hot water; same use in 1958.
28,300	16,700	15	2½	2½	.61	Original pressure was 5 PSI; house heating; same use in 1958.
			Atlanta-McLean Area (fig. 19)			
-	-	-	-	-	.66	Original pressure was 5 PSI
190,000	190,000	5	4 3/4	30	.67	Used in 2 room heaters up to 1954 and ran out.
330,000	330,000	6	8 5/8	1	.68	Used in furnace through 1952, well became flooded.
94,500	16,700	27	1	5	-	Abandoned in 1947, too much water in well.
7,450	7,530	13	7½	2	-	Abandoned in 1947, too much water in well.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
			Atlanta-McLean Area - continued			
McReynolds	NE SW SE 35-22N-1W	1947	1947	67	645	9 1/4
			Hallsville Area (fig. 20)			
Veith	NW SW NW 3-19N-1E	1957	1957	76	644	4
Douglas	NW NW SW 14-20N-1E	1907	1947	104	666	4 3/8
Arnold	NW NW NE 33-20N-1E	-	1947	114	636	9
Beck	SW NW NE 33-20N-1E	1956	1957	92	650	-
Irwin	NE NE NW 33-20N-1E	-	1947	118	630	9 3/8
			Champaign County Area (fig. 21)			
Lange	SE NW NW 1-18N-8E	1933	1949	85	653	6 1/2
Trouver	NE NW NW 1-18N-8E	1950	1950	120	644	-
Heller	SE SW SW 11-18N-8E	1915	1948	-	-	7 1/2
Koss	NE NE NW 11-18N-8E	1910	1948	-	-	6 3/4
Revell	SW NE NW 13-18N-8E	1900	1948	-	-	4 1/4
Joyce	NE NE NW 14-18N-8E	1890	1948	125	617	12 1/4
Maxwell	SE NE NE 22-18N-8E	1923	1948	105	635	14 1/2
Hardin	NE SW NW 25-18N-8E	1920	1946	-	-	-
Plotner	NW NE NE 34-18N-9E	1947	1947	175	512	57
Creek	SW NW NW 15-19N-8E	1950	1950	93	630	-
Leech	NW SW NW 15-19N-8E	1946	1946	95	630	8 1/2
Tomaras	NW SE NW 36-19N-8E	1900	1948	100	638	2 1/4
White	SE SW SW 4-19N-9E	1954	1954	97	630	1 1/2
Lamb	SW NW NW 8-19N-9E	1952	1952	116	-	1 1/2
Collins	NE SE NW 9-19N-9E	1953	1953	89	618	1/2
Clapper	NE NW NW 25-20N-7E	1948	1948	93	642	10 1/2

Continued

Open flow volume Cubic feet per day			Buildup pressure			
Starting test	Steady flow	Test min.	PSIG	Min.	Gas gravity	Remarks
			Atlanta-McLean Area - continued			
30,500	30,500	15	9	5	.65	Used in furnace through 1947 and ran out, water in well.
			Hallsville Area (fig. 20)			
1,400	1,100	20	-	-	.72	Used for hot water heater and cooking for 2 months, water in well.
137,800	137,800	10	4 1/4	7	.63	Used in heating stoves and cooking, same pressure 1958.
4,700	3,540	40	4 1/2	5	.61	
11,900	11,000	20	5/8	12	-	Orig. pressure 12 PSI; in 2 furnaces part of one winter, ran low; not used at time of test.
51,400	31,900	30	-	-	.61	8 PSI in 1958, used for furnace heat each fall.
			Champaign County Area (fig. 21)			
28,000	28,000	2	6 3/4	$\frac{1}{2}$	.66	Used in furnace 2 years; in fireplace up to 1958; orig. pressure 15 PSI.
2,450	2,450	10	7 1/4	25	.75	Well abandoned after test.
17,500	17,500	20	6 3/4	2	.58	Used for cooking and hot water heater, original pressure was 12 PSI.
3,370	750	24	1 1/8	$2\frac{1}{2}$	.60	
650	650	9	3 1/8	2	-	
41,000	25,800	33	7 5/8	4	.58	Used in hot water heater in 1958.
23,400	20,900	9	9 3/8	7	.59	Used in furnace since Oct. 1957.
225,000	225,000	30	-	-	-	In furnace 1946, ran low; 2 stoves, 2 water heaters, at times in room heater since 1947; 11 PSI in 1958.
800,000	880,000	15	50	1	.56	Good spray of water with gas, well abandoned.
7,980	5,170	40	-	-	-	Well abandoned, too much water.
81,600	81,000	60	-	-	.61	Never used.
4,000	4,000	9	2	1	.58	Original pressure was 15 PSI.
6,035	4,670	30	1 1/2	5	.72	Abandoned.
11,800	11,800	15	-	-	.98	Gas would not burn, to drill deeper for water
528	528	15	-	-	-	Will make into a water well.
60,000	60,000	10	-	-	.67	Good water spray, drilled deeper and made into a water well.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
			Champaign County Area - continued			
Clapper (2nd well)	NE NW NW 25-20N-7E	1948	1948	93	642	9 1/2
Babb	NW NE SE 1-20N-8E	1928	1951	110	642	1/4
Mt.Vernon Church	SE SE SE 9-20N-8E	1949	1956	130	642	-
Kelly	SW NE NE 19-20N-8E	1947	1947	185	640	-
Lindsey	NW NW SE 20-20N-8E	1949	1949	166	640	14 1/2
Wilson	SW SW NW 24-20N-8E	1917	1948	140	600	1
Shipman	NW NW SW 26-20N-8E	1915	1949	-	-	8 1/2
Bateman	SE NE SE 30-20N-8E	1915	1948	96	642	14
Marriott	SW SE SE 22-20N-9E	1900	1948	83	667	2 3/4
Baker	SW SE NW 23-20N-9E	1933	1948	67	673	5/8
McCormick	SE SE SW 27-20N-9E	1951	1951	102	628	3/4
Barr	NE SE SE 28-20N-9E	-	1949	90	640	1/4
			Cerro Gordo-Milmine Area (fig. 22)			
Dobson	NW NW SW 25-17N-4E	1944	1948	95	637	15
Long	SW SW NW 8-17N-5E	1947	1948	56	620	10
Weir	SW SW NW 18-17N-5E	1954	1954	99	630	19
McPherson	NW NE SW 6-17N-6E	1948	1949	100	610	19
			Decatur Area (fig. 23)			
Morris	NW NE NE 4-15N-2E	1924	1948	112	586	1/4
Miller	SE SE NE 5-15N-2E	-	1947	-	-	1/4
Heinkel	SE SE SW 1-6N-2E	1946	1948	58	582	2
Gammon	SW SE NE 29-16N-2E	1948	1948	70	595	-
Noland	NW SW SW 33-16N-2E	1910	1947	100	590	1/2
Decatur Gun Club	NE NW NW 4-16N-3E	1953	1953	75	600	3 3/4

Continued

Open flow volume Cubic feet per day			Buildup pressure		Gas	
Starting test	Steady flow	Test min.	PSIG	Min.	gravity	Remarks
			Champaign County Area - continued			
400,000	170,000	10	9 1/2	½	-	Slight spray of water, some sand; well cleaned in 1951; used in furnace since.
-	100	10	-	-	.69	
3,400	3,400	15	4 5/8	12	-	Water produced from the well at a depth of 154 feet, ran out of gas in 1957.
97,000	97,000	15	6 1/2	30	.62	Drilled deeper for water.
260,000	260,000	5	-	-	.67	Used in furnace 2 weeks, 1/2 PSI and very little gas in 1958.
884	780	15	3/4	4	.66	Was water well up to 1944, original gas pressure was 15 PSI.
70,000	70,000	9	8 1/2	2½	.66	Used in furnace, 4½ PSI in 1958.
10,600	26,500	12	13 1/8	5	.63	Water in well; not enough gas for furnace, enough for cooking and hot water.
24,500	20,900	21	2	4½	-	Measured 20 feet of water in well June 1950, gas volume shut off.
1,340	1,000	32	-	-	.71	Gas used for hot water.
8,000	8,000	10	3/4	1	.64	Used for cooking and room heater, well plugged up with sand in 1954.
-	100	-	-	-	.71	Never used.
			Cerro Gordo-Milmine Area (fig. 22)			
229,000	229,000	11	13	4	.59	Used in furnace, 10 PSI in 1958.
10,100	400	41	1/4	3	.60	10 PSI 18 days after test, well abandoned.
170,000	96,000	23	11	2	.63	Used in furnace for 2 weeks, ran out of gas; 30 feet of water in well.
6,390	4,650	56	9	12	.67	Used for one month, ran out of gas.
			Decatur Area (fig. 23)			
300	300	10	-	-	.72	Used in cookstove and gas light fixtures; original pressure was 15 PSI.
975	1,000	10	-	-	.71	Used in cookstove.
-	43,200	10	-	-	.87	Used in large furnace to heat a warehouse, abandoned in 1951.
4,800	5,000	6	3 1/4	15	.82	Never used, abandoned.
900	975	12	1/2	2	-	
98,000	96,000	14	3 1/2	1	.79	Used occasionally in space heaters, 4 PSI in 1957.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
		Decatur Area - continued				
Taylor	NW SE SE 19-16N-3E	1954	1954	65	607	7 1/4
Beamon	NE NW NW 30-16N-3E	-	1954	-	-	4
Fitzwater	NE NW SW 33-17N-2E	1949	1950	38	612	5
Eyman	NE NE 12-17N-3E	1949	1949	63	617	-
Hiser	NE SE SE 27-17N-3E	-	1948	95	600	9
Eades	NE SE NE 34-17N-3E	1958	1958	86	590	-
McVey	NW NE SE 7-17N-4E	1949	1949	70	610	3/4
		Windsor, Gays, and Mattoon Area (fig. 24)				
Fling	SE SE SE 2-11N-5E	1910	1947	72	646	1
Bowman	SE NW NE 26-12N-6E	1949	1949	60	692	2
Hardinger	NW NE SE 26-12N-6E	1935	1948	60	705	3/8
Shafer	NW NE NE 26-12N-6E	1954	1954	-	-	12
		MISCELLANEOUS WELLS BY COUNTIES (fig. 8)				
		Bureau County				
Milo School	SE SE SE 16-14N-8E	1953	1954	179	711	8 3/4
Larson, fig. 6	NE NW SE 7-14N-9E	-	1947	85	610	8 1/2
Elmore	NW SE NE 10-15N-8E	1950	1950	79	601	8 1/2
		Champaign County				
Yates	SW SW SW 34-17N-8E	-	1948	-	-	4 1/2
Mohr	NE NW SE 8-18N-14W	1951	1951	170	502	11
		Cook County				
Giertz	SE SE NE 33-41N-9E	1957	1957	112	703	9 3/8
		DeWitt County				
Harrold	SE NE NE 18-19N-3E	1952	1952	60	690	-

Continued

Open flow volume Cubic feet per day			Buildup pressure			
Starting test	Steady flow	Test min.	PSIG	Min.	Gas gravity	Remarks
			Decatur Area - continued			
67,900	54,500	19	6 1/2	15	.67	Used for winter heat, 4½ PSI in 1955, 2½ PSI in 1957.
-	-	-	-	4	.68	Not used.
-	-	-	-	-	.70	Water heater only in 1952.
1,600	-	-	-	-	.66	Water came in hole when testing gas volume.
406,000	400,000	7	9	½	.64	Never used.
28,000	17,000	45	7	10	.61	To drill deeper for water; water in hole after gas volume test.
300	200	9	-	-	.71	
			Windsor, Gays, and Mattoon Area (fig. 24)			
20,900	14,340	40	-	-	-	For cooking to 1956; now depends on atmos. pressure; orig. pressure 15 PSI, 1910.
2,920	1,300	21	14	3	.63	Never used.
3,450	3,450	5	-	-	-	Used in cookstove when gas is available, 1958.
14,000	12,000	3	11	5	.62	Used in 2 room heaters for 2 months and ran out, well abandoned.
			MISCELLANEOUS WELLS BY COUNTIES (fig. 8)			
			Bureau County			
11,000	11,000	8	8 1/4	10	.66	Used for heat part of one winter, well abandoned.
140,000	140,000	5	7 1/2	5	.74	Used for furnace heat.
10,200	9,660	12	7 1/2	3	.70	Used for furnace heat, 10 PSI in 1958.
			Champaign County			
8,370	2,070	60	7/8	3	.64	Used in hot water heater up to 1954 and ran out.
1,300	1,300	10	8 1/2	10	.62	Water in well, abandoned.
			Cook County			
36,500	14,100	50	3	1	.61	
			DeWitt County			
41,000	41,000	15	1	18	.69	Used in furnace 3 weeks; vacuumed pumped since 1953; 1.5 inches mercury vacuum on formation in 1958.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
MISCELLANEOUS WELLS BY COUNTIES (fig. 8)-continued						
			Douglas County			
Hawkins	NW SW NW 14-16N-9E	1955	1955	104	546	33
			Ford County			
Steinberg	SE SW SW 29-25N-7E	1944	1944	247	533	32
			Kane County			
Sykes	SW SE NW 16-42N-8E	1954	1954	163	727	38
			Lake County			
Natzke	SW NE NE 23-45N-11E	1957	1958	97	688	24
			LaSalle County			
Walter	NE SE SE 15-32N-3E	1946	1949	137	511	8 1/4
			Livingston County			
Leister	NW NW NE 4-27N-6E	-	1949	70	615	23
Law	NW NW NE 16-29N-6E	1955	1955	110	619	24
			Moultrie County			
Freeland	SW SW SW 1-14N-4E	1948	1948	210	480	47 3/4
			Putnam County			
Maulfair	NW NE SW 7-32N-1W	-	1953	160	530	Vac
			Shelby County			
Reed	NE NE SE 1-11N-3E	1946	1947	72	593	21
			Vermilion County			
Moore	NE NE NW 26-19N-11W	1954	1954	75	568	7 1/2

Continued

Open flow volume Cubic feet per day			Buildup pressure		Gas gravity	Remarks
Starting test	Steady flow	Test min.	PSIG	Min.		
MISCELLANEOUS WELLS BY COUNTIES (fig. 8) - continued						
Douglas County						
145,000	29,800	58	20	22	.59	Never used, no pressure in 1958.
Ford County						
1,000	1,000	4	-	-	-	Never used, abandoned.
Kane County						
570,000	570,000	8	37	½	.66	Used in furnace for 2 months and for cooking up to 1956; 82½ feet of water in hole and no gas Oct. 1957.
Lake County						
132,000	92,000	45	17	10	.61	Used gas for 2 days and ran out, well became plugged.
LaSalle County						
232,000	51,000	56	3	9	.87	Used for a few weeks and ran low, 45 feet of water in hole.
Livingston County						
400	400	10	5 7/8	15	.63	Used in cookstove.
1,700,000	1,700,000	10	24	½	-	With good spray of water and gravel, gas cleaned up when valve was closed to volume of 627,000 cu. ft.; later flooded.
Moultrie County						
206,000	14,000	40	3	10	.56	90 feet of water in well, drilled deeper for water.
Putnam County						
-	-	-	-	-	.88	Gas gravity in 1958 was also .88.
Shelby County						
1,450,000	1,450,000	12	20 1/4	2	.57	Used in furnace for 8 months and ran low, used in hot water heater to 1952 and drilled deeper for water.
Vermilion County						
18,600	14,200	12	6 1/4	3	.92	Flooded out, never used.

Table 1. -

Farm	Approx. location	Date drilled	Date tested	Gas depth	Elev. gas zone	Shut-in pressure PSI
MISCELLANEOUS WELLS BY COUNTIES (fig. 8) - continued						
Vermilion County - continued						
Sheppard	SW SW SW 18-20N-11W	1943	1943	127	560	-
Johnson	NE NW SE 12-20N-12W	1944	1947	70	588	4 1/8
Woodford County						
Rumbles	SE SE SE 30-26N-2E	1948	1948	82	660	2 7/8
MISCELLANEOUS WELLS ON ILLINOIS DRIFT						
Hancock County						
Hobby	SW NW NW 1-7N-5W	1955	1955	112	626	3
Mason County						
Dare	SW SE SE 4-20N-6W	1955	1955	60	550	4
Scott County						
Boester	SW SE SE 15-14N-13W	1954	1954	107	438	3 1/4

Continued

Open flow volume Cubic feet per day			Buildup pressure			
Starting test	Steady flow	Test min.	PSIG	Min.	Gas gravity	Remarks
MISCELLANEOUS WELLS BY COUNTIES (fig. 8)- continued						
Vermilion County - continued						
-	-	-	-	-	.75	Never used.
16,400	2,090	65	2 3/4	11	.71	Used for cooking up to 1958, less than 600 cubic feet in July 1958.
Woodford County						
5,170	5,350	15	2 7/8	2	.77	Used in furnace for 3 days, ran out; well flooded with 45 feet of water.
MISCELLANEOUS WELLS ON ILLINOIS DRIFT						
Hancock County						
500	500	15	1/4	8	.66	Measured 48 feet of water in well, will abandon.
Mason County						
-	9,500	-	1 3/4	15	.87	Well had been blowing for 3 days previous to test, gas has not been used.
Scott County						
5,450	4,740	45	-	-	.75	Original pressure 29 PSI; used in furnace for 20 days, ran out 8 days before test.

Table 2. - Analyses of Glacial-Drift Gas in Illinois

	Location	Methane CH_4	Ethane C_2H_6	Illum.	CO_2	CO	O_2	Nitrogen N_2	H_2	Btu/cu ft at 760mm; 60°F Gross	Net	Specific gravity Calculated	Determined
						Ohio-LaMoille Area (fig. 11)							
Guither	SE SW SE 2-18N-8E	67.1	8.3	0.1	1.0	0.1	0.1	23.3	0.0	829	748	.70	
Whittaker	NE SW SE 12-18N-8E	82.2	0.2	0.2	0.9	0.4	0.9	14.9	0.3	842	756	.63	.68
H. Norden	NW NE NE 6-18N-9E	77.2	0.9	0.3	4.4	0.0	0.1	17.1	0.0	802	723	.67	
Schaill	SW SW NE 23-18N-10E	92.7	0.6	0.2	1.2	0.8	2.8	1.2	0.5	956	861	.59	.61
Faber	NW SE SE 15-18N-11E	95.5	0.4	0.3	0.5	0.3	0.6	2.4	0.0	978	881	.57	.59
Meyer	NE SW SW 15-18N-11E	92.4	4.6	0.0	0.3	0.0	0.3	2.4	0.0	978	881	.59	
Albrecht	SE SE SE 13-19N-9E	48.5	2.6	0.0	0.7	0.1	0.3	47.5	0.3	538	485	.77	
Child	SW SW SW 13-19N-9E	40.8	0.2	0.8	0.2	0.2	0.8	57.0	0.0	432	390	.80	.83
Grossman	SW NE SW 15-19N-10E	85.1	0.2	0.1	1.5	0.8	0.6	11.7	0.0	857	772	.63	.65
Buckley	SE SW NW 21-19N-10E	66.6	0.6	0.1	0.5	0.1	0.2	31.9	0.0	686	618	.69	.69
Goy	NW NW SW 28-19N-10E	67.1	0.9	0.2	0.7	0.0	0.3	30.6	0.2	699	629	.69	.68
						Tazewell County and Adjacent Area (fig. 15)							
Hangartner	SW NW NE 13-25N-2W	72.2	0.1	1.4	0.6	0.7	2.0	22.5	0.5	762	687	.57	.56
Aupperle	E½ NE NW 9-25N-3W	26.4	0.1	1.2	5.2	0.2	0.7	65.6	0.6	294	265	.88	.88
Grimm	SE NW NW 21-25N-3W	63.3	9.0	0.4	2.3	0.1	0.6	24.2	0.1	809	731	.72	
Guth	SW SE SW 21-26N-2W	78.9	0.0	0.2	1.9	0.2	0.8	17.7	0.3	804	724	.65	.66

Carlock, Bloomington, and Danvers Area (fig. 16)													
Bratt's Store	NW NE NE 23-24N-1W	81.5	0.1	0.1	4.9	0.6	1.7	11.0	0.1	831	750	.66	.68
Arrowsmith Area (fig. 17)													
Young	SW SW SE 27-24N-6E	90.6	3.2	0.1	0.4	0.4	0.7	4.6	0.0	977	882	.60	.62
Boynton-Union Area (fig. 18)													
Diekhoff	SE SE SE 7-22N-3W	81.0	0.2	0.5	2.1	1.2	0.4	14.3	0.3	837	754	.64	.72
G. Mowry	NE SW NW 35-22N-3W	90.4	4.2	0.1	3.4	0.6	0.9	0.0	0.4	977	898	.61	.62
Champaign County Area (fig. 21)													
Maxwell	SE NE NE 22-18N-8E	95.1	0.7	0.9	1.0	0.0	0.6	1.5	0.2	992	894	.58	.59
Decatur Area (fig. 23)													
Hiser	NE SE SE 27-17N-3E	91.7	1.0	0.1	3.8	0.8	0.3	2.0	0.3	951	856	.61	.64
Cook County													
Giertz	SE SE NE 33-41N-9E	78.9	0.0	0.0	0.0	0.0	0.2	20.9	0.0	799	719	.64	.61
Kane County													
Sykes	SW SE NW 16-42N-8E	80.2	0.0	0.0	0.0	0.5	0.4	18.5	0.4	814	733	.63	.65
Lake County													
Natzke	SW NE NE 23-45N-11E	79.7	0.0	0.1	0.1	0.7	0.3	18.7	0.4	812	731	.63	.61
LaSalle County													
Walter	NE SE SE 15-32N-3E	23.5	0.0	0.0	0.0	0.0	0.2	76.3	0.0	238	214	.87	-

Table 2. - continued

	Location	Methane CH_4	Ethane C_2H_6	Illum.	CO_2	CO	O_2	Nitrogen N_2	H_2	Btu/cu ft at 760mm; 60°F Gross	Net	Specific gravity Calculated	Determined
						Putnam County							
Maulfair	NW NE NW 7-32N-1W	25.1	0.1	0.0	0.2	0.0	0.9	73.7	0.0	256	230	.86	.88
						Shelby County							
Okaw Township School	NE NE NE 30-12N-4E	83.7	3.4	0.1	1.7	0.2	0.8	10.1	0.0	909	819	.63	-
						Vermilion County							
Moore	NE NE NW 26-19N-11W	31.5	3.5	0.1	0.7	0.3	1.2	62.6	0.1	385	347	.84	.84
Sheppard	SW SW SW 18-20N-11W	52.3	1.5	0.0	0.4	0.0	0.6	45.2	0.0	556	501	.75	-
Johnson	NE NW SE 12-20N-12W	68.5	0.1	0.5	0.4	0.7	0.9	28.3	0.6	702	638	.68	.72

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