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THE CORNING OIL AND GAS FIELD. *

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AREA.—This field lies in the three counties, Athens, Perry and Morgan. Leaving out of consideration at present a few small outlying pools, and starting at the south, the productive territory may be said to begin in Section 22, Trimple township, Athens county. From this point it runs almost due north to the Perry county line. The widest part of this portion of the field does not exceed one-half mile, while the narrowest portion permits of a single row only of wells.

It enters Monroe township, Perry county in Section 33, and runs almost due north towards Corning, but bends to the northeast about one mile south of that place. Here the productive territory attains a maximum width of 3 miles, the greatest in the field. The northeast course is continued to the Morgan county line, where it turns due north, skirting that line with a productive strip about one-half mile mide for 2½ miles, when it turns slightly to the east, entering Morgan county in Section 31 of Deerfield township. From that place it extends through Section 30 and into Section 19, beyond which it has not been traced. Development of this part of the field is retarded by floods of salt water which may limit it in this direction. The total length of the field is about 14 miles.

Outside of this belt are four pools, two of which are of little importance. One lies around Glouster, and has an area of less than one square mile. A second one lies in Sections 22 and 29, a short distance northwest of Glouster. This is the principal territory from which the gas of Corning and surrounding towns is derived. A third pool lies around Porterville, and the fourth known as the Oakfield lies from 3 to 5 miles north of Corning. It includes parts of sections 5, 21, 28, 29, 32, and 33 of Pleasant and 22, 27 and 34 of Bearfield townships. It is in this pool that the most extensive work is being done at the present time.

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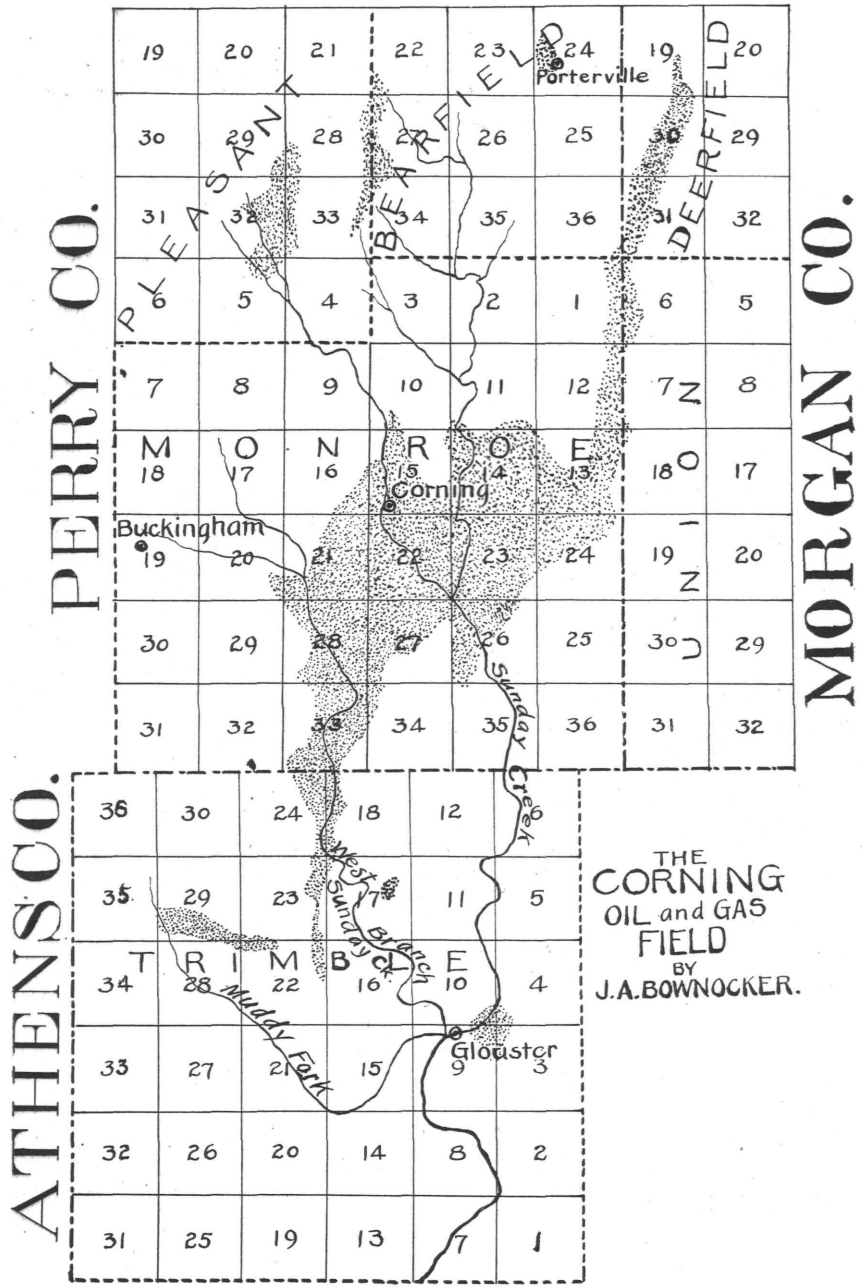
DISCOVERY.—Probably the first deep well drilled in the Sunday Creek Valley was near Burr Oak, about 4 miles south of Corning. Its date is not now known, but it must have been 40 or more years ago. Its depth is likewise unknown, but it is reported to have penetrated the salt sand. To this day it flows salt water, and with it sufficient gas to be ignited. This well, however, seems not to have aroused suspicion that there might be valuable liquids other than salt water buried in the rocks.

The discovery of oil in the Corning field was a matter of accident, and resulted directly from a scarcity of water for the Toledo and Ohio Central railroad. To remedy this a deep well was drilled in August, 1891, at the round house, about three-fourths of a mile south of Corning. The only water found was in the salt sand which is reported as having been struck at a depth of 630 feet. The supply was copious, but the salinity prevented its being used in locomotives. This brine was shut out of the well by casing and the drill forced down to a depth of 1507 feet. Finding no water at that depth the work ceased, but a few days later oil was thrown to the top of the derrick, and there were smaller eruptions later. However further disturbances of this sort were prevented by the company closing the well.

DEVELOPMENT.—The disclosure made by this well attracted the attention of oil men who immediately entered the field and began leasing territory. The citizens of Corning feared the territory was falling into the hands of the Standard Oil Company, and that it might not under such conditions be developed for years. Accordingly a home company styled "The Sunday Creek Oil & Gas Company," was organized in February, 1892, to make certain the development of the territory. The capital stock was placed at $10,000 in shares of $50, and $8900 of the stock was sold. Much of this was raised by citizens of the town subscribing for single shares.

The new Company was successful. By January 1st. 1898, 255% in dividends had actually been paid the stock holders. In September, 1898, a power for pumping the wells, and costing over $7000, was erected, the contractor taking the product of the wells until it paid for the plant. In November, 1899, the property together with $1250—the amount received in excess of the cost of the plant—was turned over to the original holders. The power is now (July 1, 1900,) pumping 20 wells, which have a daily production of 40 barrels.

The first well drilled by this Company was on the William Fisher farm in northwest quarter section 14, Monroe township, Perry county. The Berea was struck at 1012 feet, but the indications were so unfavorable for a paying well that it was not considered advisable to shoot it. However, on June 2d, 1892, after waiting nearly a month, the well was shot with 80 quarts of nitro-glycerine, which had been hauled from Sistersville, W. Va. The cost of the shot was $200. The


PERRY CO.
MORGAN CO.
ATHENS CO.
PLEASANT
BEARFIELD
DEERFIELD
MONROE
TRIMBLE
Porterville
Corning
Buckingham
Gloucster
Sunday Creek
West Branch Sunday Cr.
Muddy Fork
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first day following the shooting of the well it produced 12 barrels, and a year later was still producing 10 barrels per day. Following this other wells were drilled in sections 14 and 15. In all 25 have been drilled, only 3 of which were dry holes.

Other companies began work and the territory was rapidly leased and tested. Naturally operations began near the round house where oil had first been shown to exist. From this as a center the drill moved out in all directions until the limits of the field had been disclosed. The later work has been along the northeast end of the territory in Morgan county, where the oil seems to be shut out by reservoirs of salt water. During the present summer (1900) the valuable pool in the Oakfield district has been developed, though small wells had been found there several years earlier. The principal farms are the Porter, Longstreth, Donnelly, Monahan, McDonald and Grenen. The first well was on the Porter farm and was finished early in 1900. Its production was 35 barrels the first day. The second well was on the Monahan farm. It was completed soon after the Porter well and had an initial flow of 45 barrels in 24 hours. The next two wells were drilled on the Longstreth farm, and both were fair producers. Early in the Spring a well was completed on the Donnelly farm and flowed 125 barrels the first day. Other wells on this farm are much smaller. Two wells on the Grenen farm began flowing 675 and 90 barrels respectively. It is interesting to note that the development of this, the richest part of the Corning field, occurred late in the territory's history. Possibly other pools of equal richness may yet be discovered lying near the principal field.

An important step in the development of the field occurred on August 13th, 1893 when the Buckeye Pipe Line was completed. Before that the oil was transported by tank cars. The oil which is brought to the tanks partly by gravity and partly by suction, the latter being produced by an 8 horse-power gas engine, is stored in two iron tanks, one of which has a capacity of 30,000, and the other 28,000 barrels. From these tanks the oil is forced to Elba, a distance of 34 miles, through a 4 inch line. This work is done by a 35 horse power engine which gives a pressure in the line of from 700 to 1000 pounds per square inch. The rate at which the oil is transported varies with the temperature. In the summer when the oil is warm, and hence thin, 128 barrels may be pumped in one hour, but in the winter when the oil is cold and thick the transportation may be restricted to 11 barrels for the same period.

When the pipe line was completed the production of the field was about 500 barrels per day. It increased to 1300 barrels in 1896, but since then has declined. At present it ranges from 800 to 900 barrels per day. The total production of the field is shown by the following letter:

The Buckeye Pipe Line Company—Macksburg Division.

Oil City, Pennsylvania, October 25th, 1900.

J. A. Bownocker, Esq., Columbus, Ohio:

Dear Sir—Your favor of October 18th to Superintendent N. Moore, asking for the total production by years of the Corning Field, has been referred to me. Below please find the figures of oil received by The Buckeye Pipe Line Company from the Corning Field from August, 1893, to September, 1900:

Part of Year 1893	128,918.03	Bbls.
Year 1894	322,313.71	"
Year 1895	428,385.03	"
Year 1896	469,258.78	"
Year 1897	328,188.11	"
Year 1898	196,417.75	"
Year 1899	211,060.22	"
January 1st to July 31st, 1900	143,314.96	"
August, 1900	26,929.66	"
September, 1900	22,517.67	"
Total	2,277,303.90	Bbls.

July 31st, 1900, completes the first seven years production and thinking you might prefer to use the even years, I have given you the figures for the year 1900 to July 31st in one lump and the oil taken from that field for the months of August and September separately.

Trusting this will answer your purposes, I remain

Yours truly,

J. R. CAMPBELL, Treasurer.

LEASES.—At first the operators paid no bonuses, but gave a royalty of one-eighth of the oil to the land owners—a rate of compensation that has been usually maintained. To this there is one exception worthy of note. When the round-house well showed the existence of oil, and operators began leasing the surrounding territory, Fredrick Weaver, a thrifty German farmer residing a short distance east from the round-house, quietly visited the oil fields of Washington, Pennsylvania, and investigated the methods of leasing oil territory in that field. When he returned home he demanded a royalty of one-fourth the oil and a bonus of $200 for each of the eight wells which it was proposed should be drilled on his farm of eighty acres, and since his territory was regarded as very promising, these rather severe terms were granted. However, after drilling six wells, and the territory not meeting expectations, the contractors complained and Mr. Weaver generously reduced the bonus. More recently a royalty of one-sixth the oil has been received by holders of lands that were deemed especially promising,

and bonuses also have been received. The leases usually required that a well be drilled in from thirty to sixty days, but sometimes, especially in the least promising territory, six months were allowed.

That the field was a monopoly for no one is shown by the following list, which includes the chief operators of the district:

Corning Oil Company.
Denman & Thompson.
O'Connel Oil Company.
Brooks Oil Company.
Caldron & Snyder.
Sunday Creek Oil & Gas Company.
Perry County Oil Company.
W. B. Barker & Company.
Cleveland Oil Company.
Keystone Oil Company.
W. E. Detlor.
William Rosier.
J. H. Van Wormer.
Northeast Oil Company.
Becker Oil Company.
Allen, Sternberg & Company.
Bolivar Oil Company.
William McMullen.
A. Bulger & Company.
Corning Natural Gas Company.
L. D. Langmade.
Harrington Brothers.
Ohio Oil Company.
Church Oil Company.
Monroe Oil & Gas Company.
Weaver Brothers.
W. B. Irwin & Company.
George Best & Company.
Foster & Moran.
Fallen Rock Company.
Ohlviler & Chambers.
Mill Oil Company.
Hemlock Oil Company.
John Holden.
Wells & Foraker.
Longfellow & Stevens.
Russell Metzger.
McGee & Stewart.
Stratton & Mark.
National Oil Company.

GEOLOGY OF THE REGION.—The surface of the territory lies in the Lower Productive and Lower Barren coal measurers. The highest hills reach up to or extend above the Ames or Crinoidal limestone. In fact along the northeast extremity of the field the hills are capped by the limestones which underlie the Pittsburgh coal. The deepest valley—that of Sunday Creek—cuts through the Middle Kittanning coal, a short distance north of Corning, but at this town the seam named is under cover, while the Upper Freeport coal is at about drainage level.

The succession of strata under ground is shown by the following record kept and furnished the Survey by Mr. G. W. Delong, Superintendent of Schools, Corning. The well is located on lot 154 of the town just named, and the top of the well lies at the base of the Mahoning sandstone:

	Thickness of Stratum	Total Thickness
Shale	25 feet	25 feet
Bastard Lime	15 "	40 "
Sand	10 "	50 "
Coal (No. 6)	10 "	60 "
White Slate	65 "	125 "
Sand	15 "	140 "
White Slate	25 "	165 "
Blue	10 "	175 "
Sand	10 "	185 "
Slate	50 "	235 "
Shale	35 "	270 "
Sand	30 "	300 "
Black Shale	10 "	310 "
Lime	25 "	335 "
Shale with Concretions	100 "	435 "
Slate	25 "	460 "
Limestone (?)	30 "	490 "
Shale	35 "	525 "
Salt Sand	30 "	555 "
White Slate	100 "	655 "
Slate and Concretions	25 "	680 "
Shale	15 "	695 "
Little Salt Sand	20 "	715 "
White Slate	100 "	815 "
Slate and Concretions	100 "	915 "
Brown Shale	40 "	955 "
Black Shale	38 "	993 "
Top Berea		993 "
Bottom of Berea		1008 "

The depth of the well as shown by the steel line is 1012½ feet. It was drilled in the Fall of 1896, and was shot with twenty quarts of nitro-glycerine. It began flowing thirty barrels per day, but the production has diminished until at present it is producing only one barrel per day. Below the Berea the Bedford shales are found in their normal conditions.

THE OIL SAND.—This is in all cases the Berea. The sand has the light gray color so common in this formation in other parts of the state. It is moderately fine grained, but there is considerable variation in this respect. Usually it is a pure quartz sand, but occasionally has thin layers of dark shaly material running through it. In thickness it shows considerable variation, but never disappears in this field. The normal thickness is usually given as twenty feet and the maximum reported is eighty feet. This depth was found on the Potts farm about one and one-fourth miles northeast of Corning, and on the O'Farrell farm about two miles east from the same town. In both cases a dark gray shale, probably the Ohio, lay below. The Bedford on this theory had been swept away before the Berea was deposited. In such abnormal depths the additions always appear to be on the bottom, showing that the surface of the underlying Bedford shale was quite uneven. Here, as elsewhere in the state, the drill shows the upper surface of the Berea to be uniform. It is worthy of note that the production of oil does not vary as the thickness of the sand. In fact in this field the great thicknesses are generally poor producers.

The "pay streak" or that containing the oil and gas ranges in thickness from 3 to 8 feet, but very few of the wells attain the maximum figure. Towards the margin of the prodctive field the "pay streak" thins, and finally disappears. The top of the "pay" usually lies from 10 to 15 feet below the surface of the Berea. As a rule the "pay" is coarser than other parts of the Berea, and generally the coarser the rock the larger the well. Sometimes in the thick part of the Berea there are two "pay streaks."

THE WELLS.—The number of wells producing July 1, 1900, exceeded 600. About 100 dry holes have been drilled and about an equal number of wells have been abandoned, so that 800 is a fair approximation of the total number of wells drilled in the field. As a rule a well has been put down for each 8 to 10 acres of surface territory.

The wells have been cased through the salt sand, a depth of 555 feet in the valley at Corning. The casing has almost invariably been 5⅝ inches, inside measurement. The rocks comprising the underlying 160-180 feet, and terminating with the "Little Salt Sand" have furnished some water which has been disasterous to the wells. It reduced the gas pressure, thus necessitating pumping the wells earlier than otherwise would have been required, and perhaps prematurely

destroying the life of the well. Had the wells been cased through the "Little Salt Sand" time and money would have been saved, and the production of the field would have been larger.

The western side of the field is quite free from salt water. It is on that side that the principal gas territory lies. On the easern side of the field the conditions are more variable. In Trimble township, Athens county, the wells are free from water, while in Monroe township, Perry county, salt water is found in the northeast corner, and in Morgan county it is so abundant that operating is prevented. From this it appears that the western side of the Corning field is free from salt water, and that it is absent also on the eastern side at the southern margin of the territory, but that it increases rapidly to the northeast.

While the production of the wells after being shot has varied greatly, yet they have not furnished the great extremes that many other fields have. Few, if any of the wells, have started better than 125 barrels per day, and it has been estimated that the average for the entire field has been 20 barrels.

The wells have sufficient gas pressure to flow them during the earlier part of their lives, but later as the pressure diminishes they have to be pumped. Since the eastern side of the field has salt water the wells there have to be pumped earlier than those on the western side.

THE GAS WELLS.—The principal gas territory is that along Muddy Fork in Sections 22 and 29 Trimble township, Athens county, the best wells being found in the western half of the latter section on the lands of the Hocking Coal and Railroad company. The largest well in this field started at 3,000,000 cubic feet per day with a rock pressure of 400 pounds. It was drilled in the fall of 1897, and one year later was producing 2,000,000 cubic feet per day, and still another year later 1,500,000 cubic feet. Of the other wells in this territory two started at 2,000,000 feet each, two at 1,000,000 feet each, and three at 500,000 feet each. The decline in the smaller wells was not as rapid as in the larger ones since the demands made on them were not as heavy. Thus far no dry holes have been found in this territory. The reliance of the community is on this field where 5,000 acres are leased in one block.

Another district that has yielded considerable gas is that at Oakfield about 3 miles north of Corning. These wells started at 2,000,000, 1,500,000, 500,000, and 250,000 cubic feet per day respectively. Two of the smaller of these have been abandoned after having produced for two years. The largest of these wells, now four years old, is producing 500,000 cubic feet per day, and the second largest, now three years old, is producing the same amount. The wells in this field produce considerable oil and by some are rated as oil wells rather than gas ones.

Outside of these two places an occasional strip is found that produces gas in paying quantities. Thus about one mile northeast of Corning two wells were drilled, which combined produced 500,000 cubic feet per day. They produced three years and were then abandoned. About two miles north of Corning a good well was drilled on the Newberry farm. It started at 1,500,000 cubic feet per day, had an initial rock pressure of 400 pounds and lasted three years.

Another productive tract lies about 6 miles northeast of Corning on the Finley, Devore and Stoneburner farms. Three wells were drilled on the Finley farm, and started one at 1,500,000 and two at 250,000 cubic feet, with an initial rock pressure of 400 pounds. These wells lasted three years.

The operators of the wells have been much troubled with salt water in the Muddy Fork field and with oil in the Oakfield territory. Salt water is removed by "blowing" the wells. For this operation the wells are closed for a short period, usually about 30 minutes, allowing the gas pressure to increase; when this has become sufficiently strong the well is opened at the top and the gas then blows the water from the well. When the well has been cleansed in this manner it is closed and the gas turned back into the mains. Sometimes, however, the weight of the water is so great that the gas cannot drive it from the well in the manner just stated, especially is this true with wells that have been in use for a considerable period. Then an iron rod attached to a long pole is let down through the water, is raised and lowered, and the gas following the pole in its ascent finally drives the water from the well. This method of cleaning is known as "agitating." Finally the pressure of the gas becomes so small that it cannot lift the water with the help of "agitating," and then the well is dead. In winter time each well is cleaned every other day, and in the summer twice a week.

The gas wells in the Corning field are owned and operated by the Corning Natural Gas Company. It supplies Jacksonville, Trimble, Glouster, Murray City, New Straitsville, Shawnee, Hemlock, Corning, Rendville, Moxahala, New Lexington, and several interior hamlets. Almost the sole use of the fuel is for heat and light.

The company makes a rate of 20 cents per thousand feet by meter. Where the meter is not used, the prices in winter are $2.00 per month for the first fire; $1.50 for the second; $1.00 for the third; 75 cents for the fourth, and all additional fires at the latter figure. In the summer a charge of $1.50 for each cooking fire is made. For lights the charges are 25 cents each for the first two and 15 cents for each additional one.

The number of customers supplied by this company in 1900 was approximately as follows:

Corning	300
Glouster	250
New Lexington	250
Shawnee	200
New Straitsville	150
Other places	350
Total	1500

In the Fall of 1899 the wells of the company produced 6,000,000 cubic feet per day, but during cold weather when the demand for fuel was great they dropped to 3,000,000 cubic feet, and the rock pressure which was 300 pounds in the Fall was only 200 during the winter. On July 7th, 1900, the rock pressure of the wells in the Muddy Fork field ranged from 170 to 280 pounds, indicating a considerable drop from that of the preceding autumn. The company expects to drill four additional wells during the ensuing fall (1900) in the Muddy Fork territory, and by so doing expects to keep three wells closed, and thus maintain a good rock pressure.