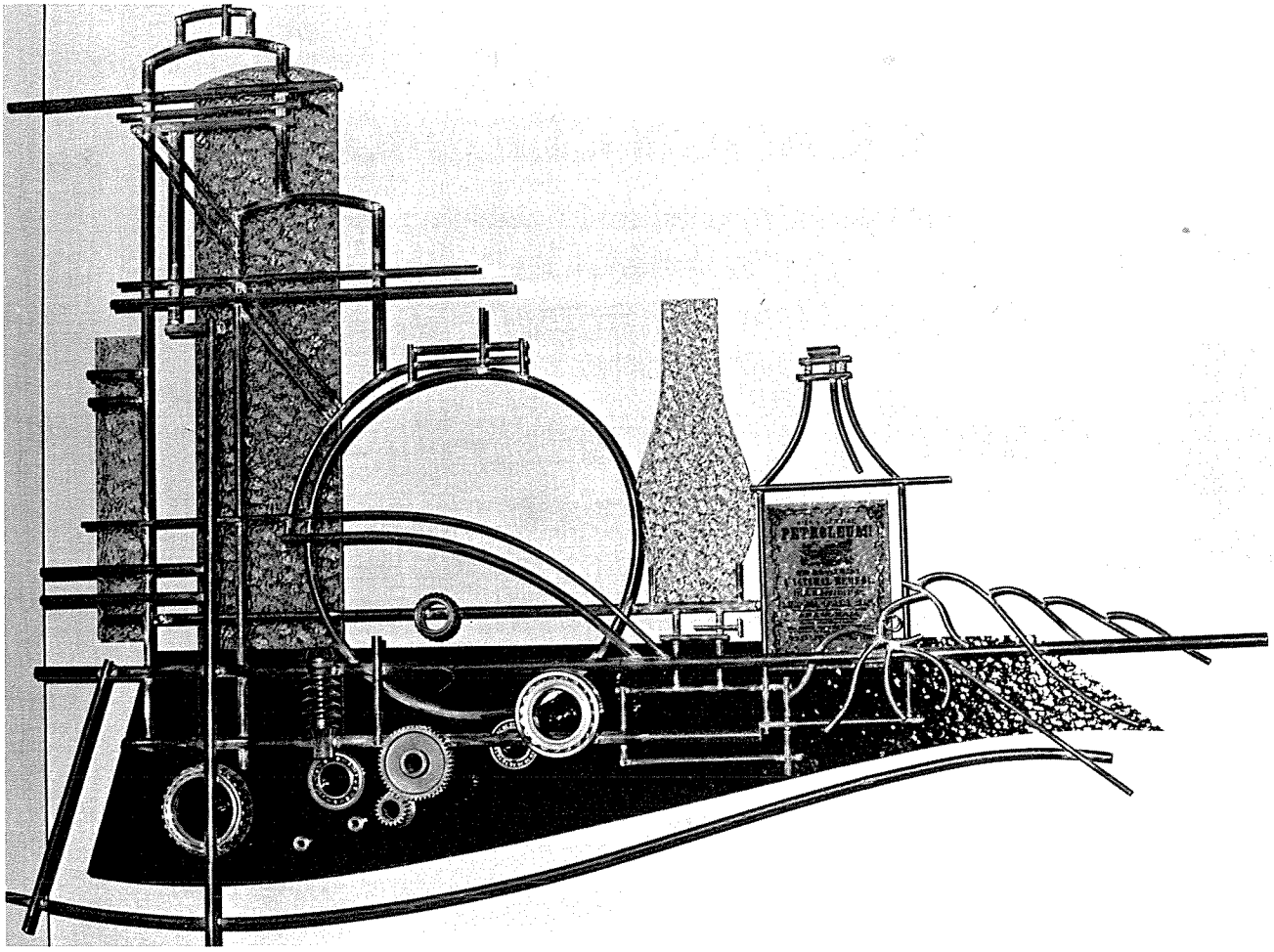

A NATIONAL HISTORIC
MECHANICAL ENGINEERING
LANDMARK

THE DRAKE OIL WELL

Titusville, Pennsylvania
October 21, 1979
1:00 pm

The American Society of Mechanical Engineers

DEDICATION CEREMONY

National Historic Mechanical Engineering Landmark
The Drake Oil Well
Titusville, Pennsylvania
1:00 PM, October 21, 1979

PROGRAM

WELCOME
John T. Pope, Vice President, ASME Region V

INTRODUCTION OF HONORED GUESTS
James B. Koeneman, Chairman, Erie Section

ASME LANDMARK PROGRAM
J.J. Ermenc, Chairman, ASME National History & Heritage Committee

REMARKS
A.F. Rhodes, Past-President ASME; John Ortloff, Past-Chairman, Petroleum Division

HISTORY OF DRAKE OIL WELL
Vance Packard, Historic Site Administrator, Drake Oil Well Museum

PRESENTATION OF PLAQUE
Donald N. Zwiep, President, The American Society of Mechanical Engineers

ACCEPTANCE OF PLAQUE
Vance Packard

CLOSING REMARKS
James B. Koeneman

We wish to express our gratitude to the following companies which made the printing of this brochure possible: Pennziol; Quaker State Oil Refinery; U.S. Steel, Oilwell Division.

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I. PROLOGUE

The Bronze plaque commemorates the Drake Oil Well at Titusville, Pennsylvania, a National Historic Mechanical Engineering Landmark as follows:

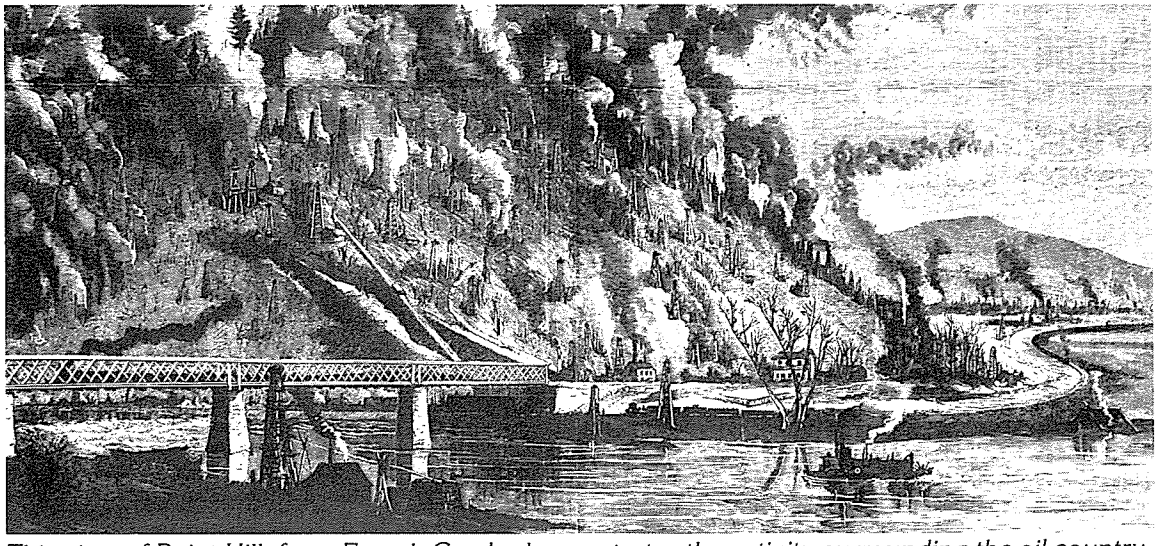
> "The drilling of this oil well, by Edwin L. Drake in 1859, is the event recognized as marking the modern phase of the petroleum industry. A series of revolutionary technological changes, unforeseen even by the most prophetic, followed. An emerging source of concentrated energy and abundant chemical compounds, petroleum supported sweeping changes in our modes of illumination, power development, transportation, and industrial chemistry. Few events in history have so transformed the face of civilization."

It is doubtful whether Drake or others realized the full significance of his success at the time. He had demonstrated in a practical way how oil could be secured in great abundance. By applying salt-well drilling techniques, the vast subterranean deposits of petroleum could be tapped, and a new industry was born. An industry which not only provided the world with a cheap and efficient illuminant, but also a source of unexcelled lubricating oil. Later, it would serve as the fuel for the internal combustion engine — an invention which would change the way of life for everyone.

The story which follows relates significant events leading up to Drake's involvement and the subsequent drilling of the well.

II. OIL CREEK

By 1864 Oil Creek had become celebrated as the site of the richest oil-producing region on earth. It was described then in one historical document, "as a tortourous mountain stream, taking its rise in the northern part of the State of Pennsylvania, [and]



This view of Point Hill, from French Creek, demonstrates the activity surrounding the oil country at the height of its boom.

after a course of about thirty miles empties into the Allegheny River . . . The valley through which Oil Creek takes its course is narrow, flanked on each side by high and rugged hills, on top of which are broad fields of excellent farming land. The scenery on Oil Creek at one time, no doubt, was quite picturesque. But now the bottom lands are dotted with tall derricks, wooden engine-houses, and iron smoke-stacks, out of which columns of black smoke roll upward to the clouds. The pines and hemlock are cleared from the mountain sides, and all is busy life."

Prior to this time, however, Oil Creek's main industry was lumber. It was near the saw-mills that oil first made its appearance in large quantities in this country. Excavation for oil can be dated as early as the 1500s, when an extinct race of people, called the Mound Builders, dug close to 2000 pits along the creek. Little is known of their culture, and even today they remain something of a mystery.

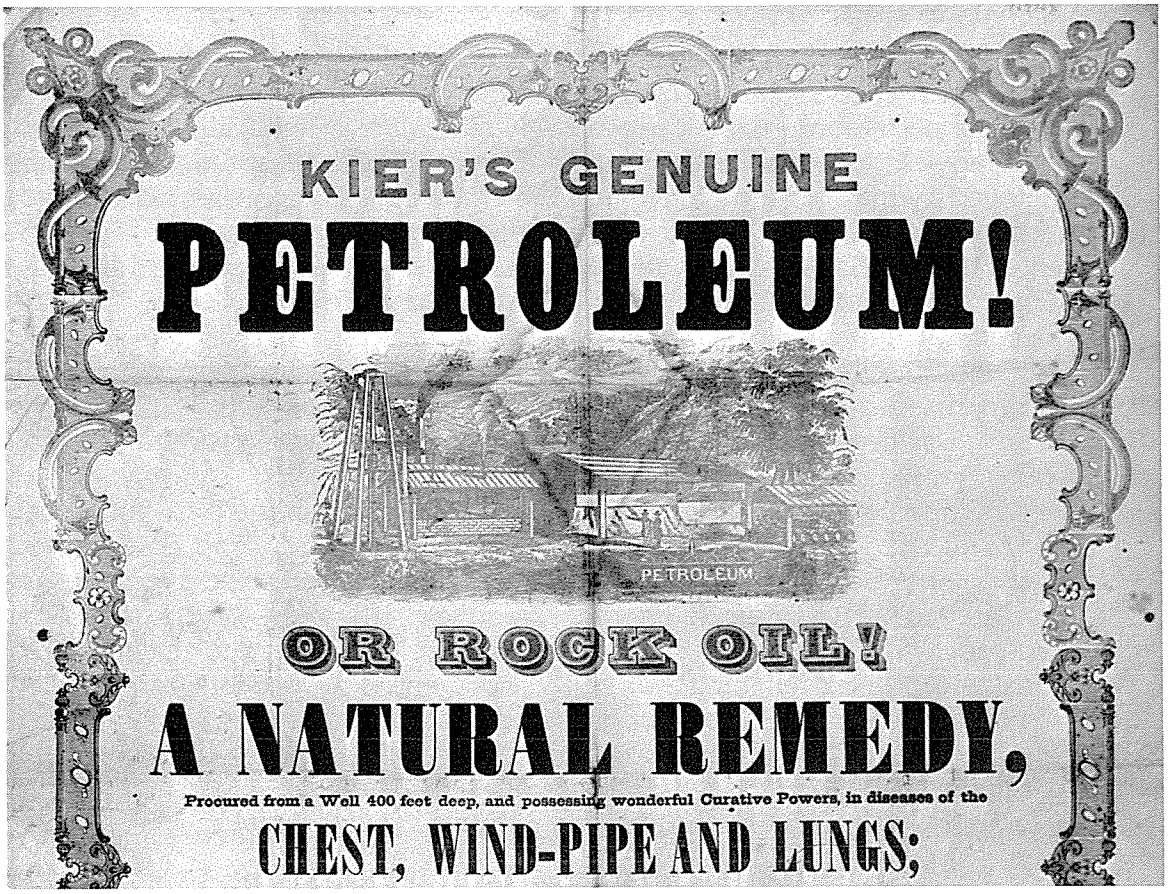
III. THE FIRST REFINERS

In 1849 Samuel Kier exploited the idea of bottling and selling petroleum as a medicine. Kier was a businessman who owned refractories, coal mines, and an iron foundry, and was one of the initiators of a transportation company which operated canalboats between Pittsburgh and Philadelphia. For years his father's salt wells, located on the Allegheny River near Tarentum, Pennsylvania, had yielded a small amount of petroleum. But it was an unwelcome substance and a source of annoyance. Knowing of no use for the oil, well-owners ran it onto the ground and quite often into the canal, much to the disgust of canalboat owners. The "greasy stuff" ruined their hemp cables and made a mess of their newly painted boats. Kier opened an establishment in Pittsburgh where the oil was put up in half-pints and wrapped in a descriptive circular telling of the wonderful curative properties of "Kier's Petroleum or Rock Oil."

Unable to dispose of the two or three barrels produced daily by the salt wells, Kier sought out Professor James C. Booth, long-time president of the American Chemical Society, to find other outlets for his petroleum. Booth first suggested that Kier offer it as a solvent for gutta-percha, a rubber-like material containing resin. After further analysis, Booth determined that by distilling it, a good illuminant could be produced. Following drawings made by the professor, Kier erected a one-barrel still on Seventh Avenue in Pittsburgh and began to distill petroleum. The year was 1850. He called the distilled product "carbon oil," and sold it for $1.50 a gallon. But while "carbon oil" burned with a bright light, the odor was quite disagreeable to most users.

Nearly ten years elapsed before acid-treating was developed and perfected to remove the objectionable odor. The man responsible was A.C. Ferris, a New York coffee and spice dealer, who saw the illuminant burning in a store and realized its marketability. He developed a method of treating the oil with sulphuric acid and caustic soda, which produced an oil of light lemon color, nearly odor-free.

By 1859 Ferris had disposed of almost 1200 barrels of oil, taken largely from the Tarentum wells. Water and gas leakage in the wells soon forced him to abandon his operations. Nevertheless, his improved refining process encourage others to continue in their attempts to market petroleum.



Kier's advertisement for Rock Oil — used to cure all ills.
This replica pictures the salt-well derrick which inspired the idea of drilling oil.

IV. THE FIRST PETROLEUM COMPANY

Dr. Francis Beatty Brewer moved to the village of Titusville in 1851 to join his father's lumber mill. He was a Dartmouth graduate who had been practicing medicine in northern Vermont. Upon examination of the oil spring on his land he, too, thought petroleum valuable and sought ways to exploit it. He hired a local farmer to dig pits and trenches which brought oil from the ground into a central collecting basin. He then arranged a series of wooden paddles, which skimmed oil from the surface. This method made it possible to collect 18 gallons a day. At the close of his first year of business, Brewer had recovered 1095 gallons, which he valued at $831. The oil was used chiefly in the saw-mills for lighting and lubrication of the machinery.

Brewer wanted to expand his oil speculation. He purchased the Hibbard farm in Titusville, where the principal petroleum springs in northwestern Pennsylvania were located. The price was $5000. He, with law partners Jonathan G. Eveleth and George Bissell, organized the Pennsylvania Rock Oil Company of New York on December 30, 1854. This appears to have been the first petroleum company in America, if not the world.

However, these were hard times. A New York State law which held all stockholders liable for company debts, plus the lack of coinfidence by the public, due to ignorance of the value of petroleum, made it exceedingly difficult to sell stock.

The turning point came in 1855. Professor Benjamin Silliman, Jr. of Yale College, was employed by the company to analyze the crude oil. His report heralded its economic value. A number of New Haven capitalists, including James M. Townsend, president of the City Savings Bank, were impressed by Silliman's report and agreed to buy stock on provision that the company reorganize under the liberal corporate laws of Connecticut.

Eveleth and Bissell agreed, and the Pennsylvania Rock Oil Company of Connecticut was organized on September 18, 1855. Its capital stock was $300,000. The Hibbard farm was deeded to the company, but the New York backers retained a controlling share of the stock.

There was little harmony, however, between the New Haven and New York stockholders, and little progress was made. While matters were at a standstill, Bissell saw an advertisement in a store window for Kier's Rock Oil, which portrayed a salt-well derrick. It occurred to him that petroleum might be drilled in the same way. He persuaded two prominent Wall Street real estate brokers to lease the Hibbard farm and drill for oil. Unfortunately for Bissell, the Panic of 1857 prevented the brokers from fulfilling the terms of their contract. A series of business deals put the lease into the hands of Townsend. He and his New Haven associates decided to reorganize, drill for oil, and monopolize the operations.

They formed the Seneca Oil Company on March 23, 1858, with Edwin L. Drake, a stockholder, as General Agent.

V. DRILLING THE WELL

Edwin L. Drake spent the first years of his life on farms in New York and Vermont. He received a "common-school" education and, at the age of nineteen, left home for adventures west. In 1849 he returned to the east and became a conductor on the New York and New Haven Railroad. By the summer of 1857 illness had forced him to give up his position, his wife had died and he was now living alone at the Tontine Hotel. It was here that he met James Townsend, a fellow boarder. Townsend acquainted Drake with the current petroleum activity, and Drake invested his life savings ($200) in the oil company.

Edwin L. Drake

It was Townsend's opinion that if anything momentous was going to occur in the petroleum business, someone had to go to Titusville, inspect the property and make a secret report. Drake was the ideal person. He had recovered from his illness, had no ties, and possessed a railroad pass insuring free transportation. Townsend furnished the money and instructions, and Drake headed for Pennsylvania.

Townsend, with a fine flair for the dramatic and a knowledge of what prestige can sometimes accomplish, had forwarded legal documents and other mail in envelopes boldly addressed to "Colonel" E.L. Drake. From that time on, Drake was a "Colonel."

Upon completion of his investigations, Drake returned to New Haven and reported with confidence that a future and a fortune were waiting to be made. He returned to Titusville in May of 1858 as the general manager of the Seneca Oil Company. For this he received a yearly salary of $1000, the most he had ever earned.

His first order of business was to reopen the pits and trenches previously constructed by Brewer in 1853. By the middle of August he was satisfied that drilling was the cheapest method. In fact, he had already ordered an engine and constructed a pump house, in anticipation of hiring a driller. This took longer than he expected. It wasn't until February, when he felt finding a driller was hopeless, that he received a letter from Mr. Peterson which recommended William A. "Uncle Billy" Smith, a blacksmith from Salina. Smith had experience in making tools for the Kier and Peterson Wells and in drilling. He was hired at $2.50 a day.

But Drake still had problems to overcome before drilling could begin. His men had been cribbing the hole as they dug to prevent cave-ins, but they couldn't keep the water out. The well was only 150 feet from Oil Creek, and it was below the level of the stream. No matter how much the pump was used, more water seeped in.

Drake obtained sections of pipe ten feet long and, with a battering ram drove these sections down through the shifting sands and clay. This was the first employment of a drive pipe in an oil well — a principle still in use today. The pipe was successful in eliminating the water, and operations began again in the middle of August.

Drilling was done through the pipe, and consequently progress was slow — often less than three feet a day were penetrated. Confidence in the venture had been dwindling for some time, and by now the New Haven people decided not to risk more than the $2500 they had already invested. Townsend directed Drake to pay all bills and close down. Fortunately, Drake had already borrowed five hundred dollars from a bank in Meadville and was able to continue operations.

On Saturday afternoon, August 27, as Drake and his men were about to quit work, the drill dropped into a crevice at a depth of sixty-nine feet from the surface and slipped down 6 inches. They pulled out the tools and went home, never dreaming that they had struck oil; they had expected to go down several hundred feet more. Late the next day Smith visited the well, peered into the pipe, and saw a dark fluid floating on top of the water within a few feet of the derrick floor. Oil had been struck!

It was nearly two months later before the event was covered by the New Haven press, though a small story was published by the New York Tribune on September 13th. Townsend et al wanted to be certain that the supply of oil would not be exhausted within a few days. Their fears were soon allayed — the well yielded an average of 1000 gallons daily for 3 years.

Though no one knows for certain the exact drilling method used by Drake, the following 1865 account is probably an accurate estimation of Drake's process, since by this date there were little changes in the method:

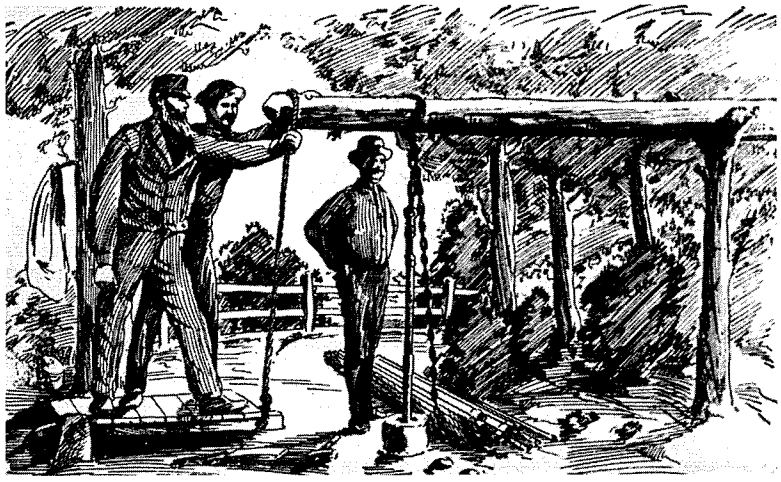
> ". . . a huge derrick is erected . . . this is a square frame of timbers, substantially bolted together, making an enclosure about forty feet high and about ten feet at the base, tapering somewhat as it ascends. This is generally boarded up a portion of the distance to shelter the workmen. A grooved wheel or pully hangs at the top, and a windlass and crank are at the base. A short distance from the derrick a small steam engine, either stationary or portable, is fixed and covered with a rough board shanty. A pitman rod connects the crank of the engine with one end of a large wooden walking-beam, placed midway between the engine and the derrick, the beam being pivoted on its center about twelve feet from the ground.
>
> "The walking-beam is a rude imitation of that of a side-wheel steamer. A rope attached to its other end passes over the pulley at the top of the derrick, and terminates immediately over the intended hole. A cast-iron pipe, from 4½ to 5 inches in diameter, is driven into the surface ground, length following length until the rock is reached.
>
> "Two huge links of iron, called 'jars,' are attached to the end of the rope. At the end of the lower link a long and heavy iron pipe is fixed, and in the end of this is screwed the drill, about three inches in diameter, and a yard long. When all is ready, the drill and its heavy attachments are lowered into the tube and the engine set in motion. With every elevation of the derrick end of the walking-beam, the drill strikes the rock, the heavy links of the 'jars' sliding into each other and thus preventing a jerking strain on the rope. The rock, as it is pounded, mixes in a pulverized condition with the water constantly dripping into the hole, and assumes a pasty form. After a while the drill is hoisted out and a sand-pump dropped into the hole. The sand pump is a copper tube, about five feet long, and little smaller than the drill, having a valve in its bottom opening upwards and inwards.
>
> "As the tube is dropped into the hole the pasty mass rushes into it through the valve and remains there. When this has been done several times, the tube is hoisted out and emptied, the operation being repeated until the hole is clear, when the work of drilling commences. It is evident that as the drill is not round at the point, but with a chisel-shaped edge, the hole would not be round unless some other means were adopted. This is partially accomplished by the borer, who sits on a seat about six or eight feet above the hole, and holds a handle fixed to the rope, giving the latter a half-twist at every blow. By this means a nearer approach to a cylindrical hole is attained. But the hole must be as nearly round as possible, and therefore the tools are taken out, and a 'rimmer,' or 'reamer,' sent down, which cuts down the irregularities of the hole.
>
> "When the hole has been sunk to a sufficient depth and 'strikes oil,' the next thing is to extract the oil from the well. If a flowing well has been

> struck, all the trouble on this head is saved, as the oil and gas rush out in a stream, sometimes with such violence that the men have to make their arrangements with considerable rapidity, or the precious fluid runs to waste. The first business is to tube the well. An iron pipe, with a valve at the bottom like the lower valve of a pump, is run down the entire depth of the well, the necessary length being obtained by screwing the sections firmly together. If the oil does not flow spontaneously, a pump-box, attached to a wooden rod, also made of sections screwed into each other is inserted in the tube, and the upper end of the rod attached to the 'walking-beam.' The well is now ready for pumping."

Prior to this first attempt at drilling, there were even more primitive methods of collecting oil. They present quite a contrast to today's sophisticated drilling processes.

> An 1810 account: "The mode of collecting is this: the place where it is found bubbling up in the creek is surrounded by a wall or dam to a narrow compass, a man then takes a blanket, flannel, or other woolen cloth, to which the oil adheres, and spreading it over the surface of the enclosed pond, presses it down a little, then draws it up, and running the cloth through his hands, squeezes out the oil into a vessel prepared for the purpose; thus twenty or thirty gallons of pure oil can be obtained in two or three days by one man."

By 1865 the boom in Titusville had much the same effect on "oil prospectors" as did the gold rush in California. Smaller, unfinanced drillers hoping for riches used the "spring-pole" method. This was a slow, simple process referred to as "Kicking down a well." An elastic pole, about fifteen feet long, was placed over a fulcrum with the large end fastened to the ground. Two or three feet from the free end, the drilling tools were connected with the pole and dropped into the driving pipe. Attached to the free end of the pole were stirrups in which two men placed a foot and pulled down, permitting the drilling bits to drop on the rock. When they loosened their hold, the pole would spring back a few inches pulling the tools back up. The same thing could be done by using a platform. Repeating this procedure rapidly all day long enabled them to drill on an average about three feet a day. Though laborious, the spring pole method provided men with a cheap method for sinking a well in shallow territory.



"Kicking down a well."

VI. THE INDUSTRY'S GROWTH BEGINS

It was natural that speculation in petroleum would start shortly after Drake's well demonstrated its accessibility in large quantities. Petroleum was soon a favorite speculative commodity.

From the time the first well was struck in August, 1859, until the close of that year, the average price per barrel was $20. The price in 1860 was $9.60, and by 1861 production was so much in excess of demand that the average price was only 49 cents a barrel (forty-two gallons).

Panic swept the nation when the Civil War began, and the oil country was hard hit. Much of the yield from the larger wells — some producing more than 3,000 barrels a day — was allowed to flow in waste into Oil Creek. Small wells were simply abandoned. By the fall of 1861, the price of crude oil had droped to ten cents a barrel, its lowest price on record before, and certainly since.

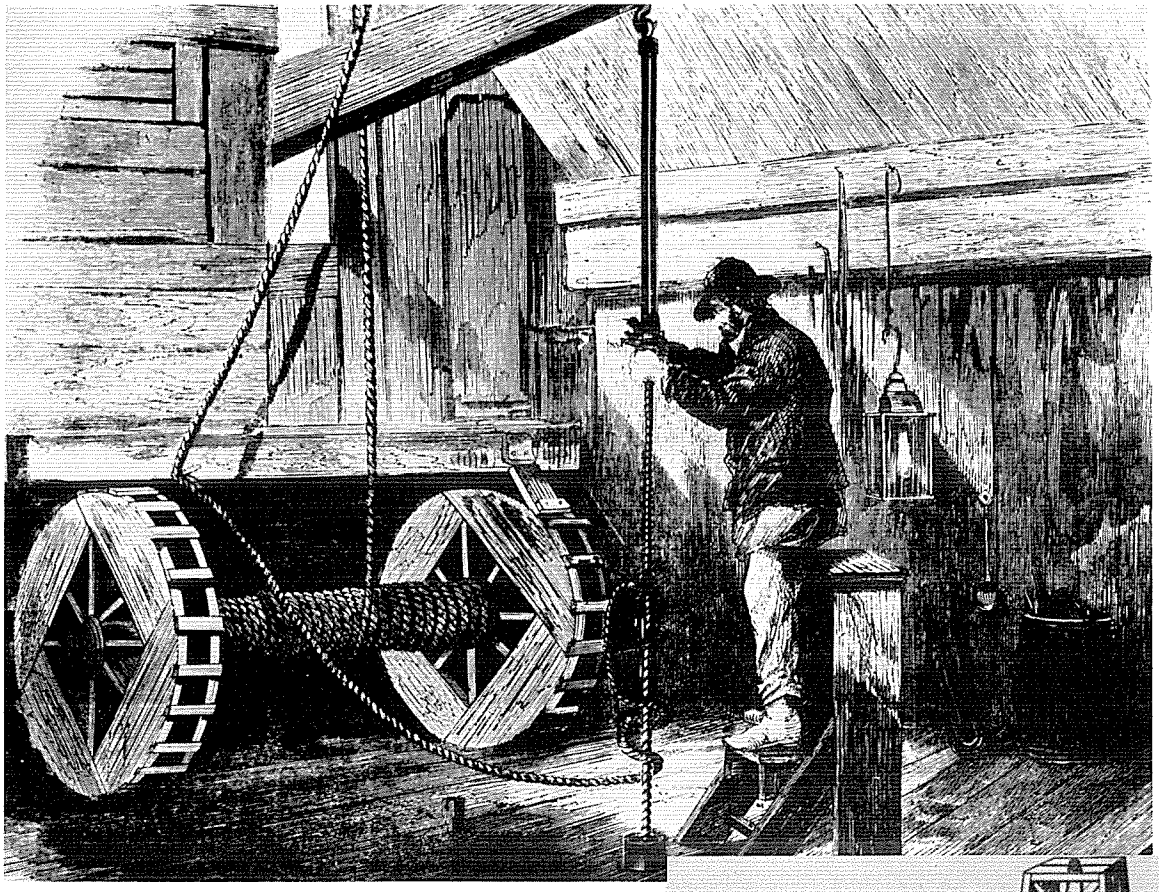
In an attempt to bolster the market and limit production, producers met at Rouseville, Pennsylvania, to form the Oil Creek Association. They accomplished practically nothing. This was oildom's first attempt at price control.

Gradually petroleum was introduced into foreign countries, and as its acceptance as an illuminant increased so did its demand, and the price advanced accordingly. The first export was in 1861, 27,000 barrels valued at $1,000,000.

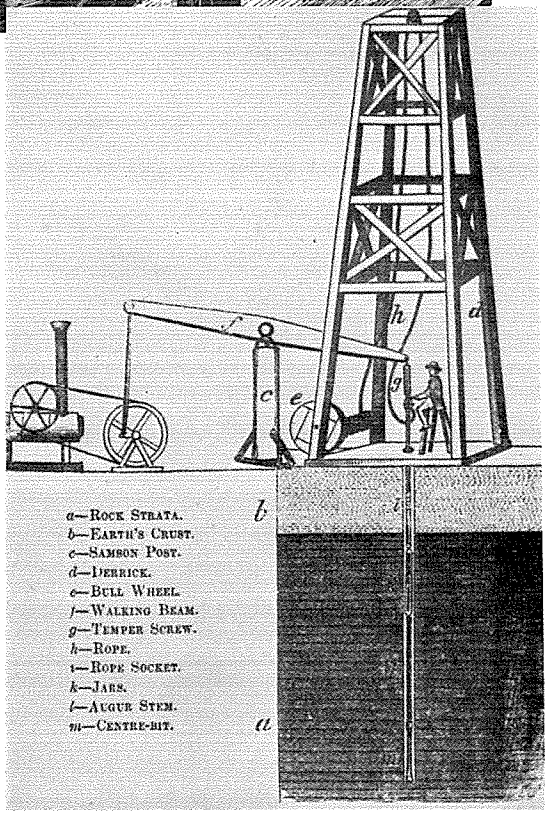
By 1864 the average price per barrel had risen to $7.62. This stimulated operations in producing circles to such an extent that within a ten-year period production was up to 30,000 barrels a day, and the average price had dropped to $1.30 a barrel.

Various attempts were made to organize an oil exchange where buyers and sellers could meet, ascertain with some accuracy the amount of oil being produced and sold, and transact their business in accordance with standardized rules and regulations. At first the people formed little personal exchanges of their own, gathering in knots around the telegraph offices. An article written in the late 1800s describes the maverick-like operation:

> Brokers are, by the nature of their business, very closely connected. Each has his correspondent "on the Creek" and elsewhere, with whom he shares the brokerage arising from the purchases or sales made through their joint exertions; and it often happens that each broker is obliged to call in the oil of another, till the commission is so divided and subdivided that it will hardly pay the telegraph bills of the different parties. In fact, brokerage is a hard-worked and poorly-paid profession, and yet there is an excitement about it that forms a great attraction. The men are a jolly, jovial set, free and generous with their money and kind offices, and as theirs is a business where much is of necessity left to their honor, each takes a pride in keeping his word on an equal footing with his bond.



Sketch of a Borer carefully turning the drilling bit to create a circular hole.



Early Well Being Drilled — This method of drilling a well became common after the abandonment of the spring-pole method. Taken from Eaton's "Petroleum: A History of the Oil Region of Venango County, Pennsylvania."

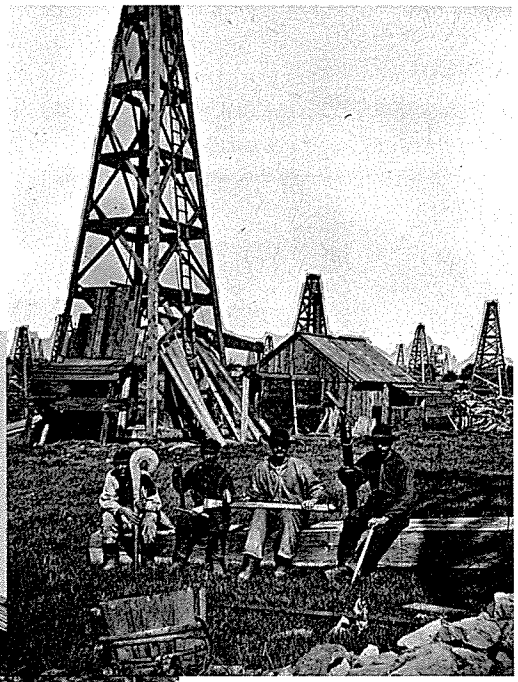
VII. EPILOGUE

In retrospect it is remarkable that Drake happened to drill in the only spot in the oil country where he could have found petroleum at a depth as shallow as sixty-nine feet.

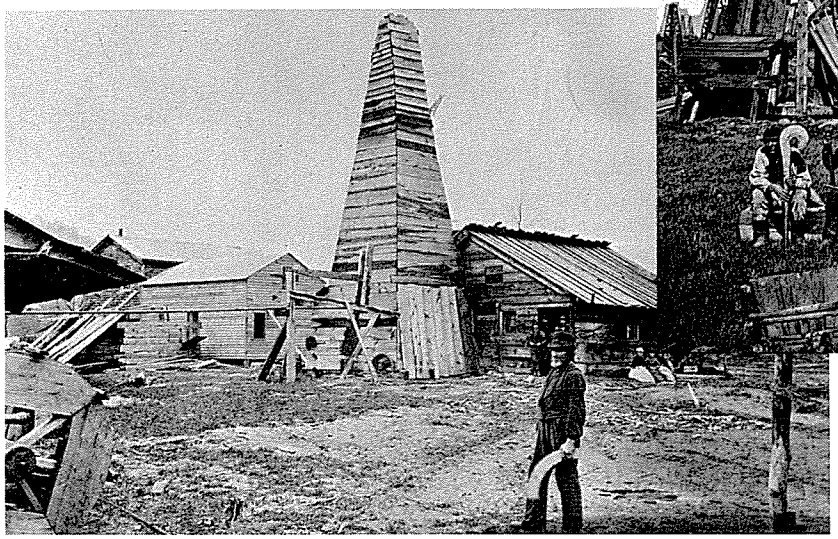
Titusville was never the same. In 1857 its population had been approximately 150 — by 1865 it had reached nearly 6000. The boom that swept over the town made rich men of paupers or paupers of rich men, and when the vast deposits of petroleum were gone, the surrounding towns which sprung up during this period were left ghost towns.

As for Drake, his fame and success were shortlived. Soon after the well was completed he ceased to be a factor in the petroleum industry. For a while he served as a justice of the peace and an oil buyer to New York merchants. He finally left Titusville in 1863. Eventully he lost everything he had through a series of unsuccessful speculations on oil stocks. He was a victim of neuralgia and retired to an invalid's chair where he spent the rest of his waking hours.

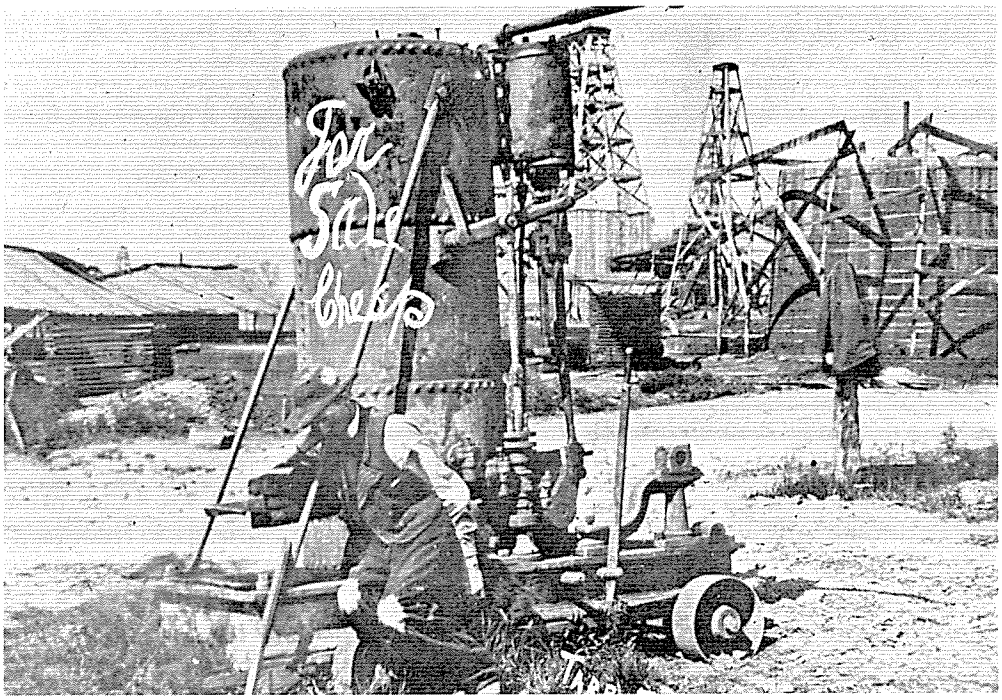
In 1873 his unfortunate condition became known to the General Assembly of Pennsylvania, which voted to pay him an annual income of $1500 in recognition of the important contribution he had made to the economic development of the Commonwealth. Upon his death in 1880, the pension was transferred to his second wife. Drake was buried in Bethlehem where he was living at the time of this death. In 1901 his body was moved to Titusville, and a monument was erected in his memory.



Oil field workers holding their tools. At the left is a wrench, and in the center, a drill bit. Other derricks are seen in the background.



A photograph of the original Drake Oil Well, with "Uncle Billy" Smith in the foreground.



Not everyone struck it rich.

OIL ON THE BRAIN

CHORUS

Stock's par, stocks up,
Then on the wane,
Everybody's troubled with
"Oil on the Brain."

VERSE

There's various kinds of oil afloat,
Cod liver, Castor, Sweet;
Which tend to make a sick man well
And set him on his feet.
But ours a curious feat performs —
We just a well obtain
And set the people crazy with
"Oil on the Brain."

There's neighbor Smith, a poor young man,
Who couldn't raise a dime,
Had clothes which boasted many rents,
And took his "nip" on time,
But now he's clad in Dandy style,
Sports diamonds, kids, and cane;
And his success was owing to
"Oil on the Brain."

Miss simple drives her coach and four,
And dresses in high style;
And Mr. Shoddy courts her strong,
Because her "Dad's struck ile,"
Her jewels, velvets, laces, silks,
Of which she is so vain,
Were bought by "Dad" the time he had
"Oil on the Brain."

The lawyers, doctors, haters, clerks,
Industrious and lazy,
Have put their money all in stocks,
In fact, have gone "oil crazy,"
They'd better stick to briefs and pills,
Hot irons, ink, and pen,
Or they will "kick the bucket" from
"Oil on the Brain."

There's "Maple Shade," "Excelsior,"
"Bull Creek," "Big Tank," "Dalzell:"
And "Keystone," "Star," "Venango," "Briggs,"
"Organic" and "Farrell,"
"Petroleum," "Saint Nicholas,"
"Corn Planter," "New Creek Vein;"*
Sure 'tis no wonder many have
"Oil on the Brain."

**names of oil wells.*

The speculation in oil lands and stocks stimulated the composition of many songs, like this one, which reflected the effect the petroleum "craze" had on people of all walks of life. "Oil On The Brain" was published by O. Diston & Company, Boston, 1865. The words and music are by Eastburn.

NATIONAL HISTORIC MECHANICAL ENGINEERING LANDMARK PROGRAM

In September 1971 the ASME Council reactivated the Society's History and Heritage program with the formation of a National History and Heritage Committee. The overall objective of the Committee is to promote a general awareness of our technical heritage among both engineers and the general public. A charge given the Committee is to gather data on all works and artifacts with a mechanical engineering connection which are historically significant to the profession — an ambitious goal, and one achieved largely through the volunteer efforts of the Section and Division History and Heritage Committees and interested ASME members.

Accordingly, two major programs are carried out by the Sections and Divisions under the direction of the National Committee: 1) a listing of industrial operations and related mechanical engineering artifacts in local Historic Engineering Records; and 2) a National Historic Mechanical Engineering Landmark program. The former is a record of detailed studies of sites in each local area; the latter is a demarcation of local sites which are of national significance — people or events which have contributed to the general development of civilization.

In addition, the Society cooperates with the Smithsonian Institution in a joint project which provides contributions of historical material to the National Museum of History and Technology in Washington, D.C. The Institutions's permanent exhibition of mechanical engineering memorabilia is under the direction of a curator, who also serves as an ex officio member of the ASME National History and Heritage Committee.

The Drake Oil Well, Titusville, PA is the thirty-eighth landmark to be designated since the program began in 1973. The others are:

Ferries and Cliff House Cable Railway Power House, San Francisco, CA
Leavitt Pumping Engine, Chestnut Hill Pumping Station, Brookline, MA
A.B. Wood Low-Head High-Volume Screw Pump, New Orleans, LA
Portsmouth-Kittery Naval Shipbuilding Activity, Portsmouth, NH
102-inch Boyden Hydraulic Turbines, Cohoes, NY
5000 KW Vertical Curtis Steam Turbine-Generator, Schenectady, NY
Saugus Iron Works, Saugus, MA
Pioneer Oil Refinery, Newhall, CA
Chesapeake & Delaware Canal, Scoop Wheel and Engines, Chesapeake City, MD
U.S.S. Texas, Reciprocating Steam Engines, Houston, TX
Childs-Irving Hydro Plant, Irving, AZ
Hanford B-Nuclear Reactor, Hanford, WA
First Air Conditioning, Magma Copper Mine, Superior, AZ
Manitou and Pike's Peak Cog Railway, Colorado Springs, CO
Edgar Steam-Electric Station, Weymouth, MA
Mt. Washington Cog Railway, Mt. Washington, NH
Folsom Power House #1, Folsom, CA
Crawler Transporters of Launch Complex 39, J.F.K. Space Center, FL
Fairmont Water Works, Philadelphia, PA
U.S.S. Olympia, Vertical Reciprocating Steam Engines, Philadelphia, PA
5 Ton "Pit-Cast" Jib Crane, Birmingham, AL
State Line Generating Unit #1, Hammond, IN
Pratt Institute Power Generating Plant, Brooklyn, NY

Monongahela Incline, Pittsburgh, PA
Duquesne Incline, Pittsburgh, PA
Great Falls Raceway and Power System, Paterson, N.J.
Vulcan Street Power Plant, Appleton, WI
Wilkinson Mill, Pawtucket, RI
New York City Subway System, New York, NY
Baltimore & Ohio Railroad, Baltimore, MD
Ringwood Manor Iron Complex, Ringwood, NJ
Joshua Hendy Iron Works, Sunnyvale, CA
Hacienda La Esperanza Sugar Mill Steam Engine, Manati, PR
RL-10 Liquid-Hydrogen Rocket Engine, West Palm Beach, FL
A.O. Smith Automated Chassis Frame Factory, Milwaukee, WI
Reaction-Type Hydraulic Turbine, Morris Canal, Stewartsville, NJ
Experimental Breeder Reactor 1 (EBR-1), Idaho Falls, Idaho

ACKNOWLEDGEMENTS

The Erie Section and the Petroleum Division of The American Society of Mechanical Engineers gratefully acknowledge the efforts of all who cooperated on the landmark dedication of the Drake Oil Well, Titusville, Pennsylvania.

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

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This brochure was compiled and edited by Carron Garvin-Donohue and Jill Birghenthal, of the ASME Public Relations Staff, based on the following material: *Pennsylvania Petroleum 1750–1872,* Paul. H. Giddens, Pennsylvania Historical & Museum Commission, 1947; *This Was Early Oil,* Ernest Miller, PH&MC, 1968. Michael Davidson of the Drake Oil Well Museum assisted with editing, and the Museum staff were invaluable in compiling photographs and resource material.

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