Conference on Western Pennsylvania’s Energy Heritage and Future
Wednesday, August 26, 2009
Senator John Heinz History Center
Pittsburgh, Pennsylvania

Presentation of Plaque Commemorating the Birth of the Petroleum Industry
Thursday, August 27, 2009
Drake Well Museum
Titusville, Pennsylvania

Historic Landmarks Awards Committee
Final Report
October 30, 2009
Background

A Symposium on the Future of Energy was held in Pittsburgh in November 2008, sponsored jointly by the Pittsburgh Sections of the American Chemical Society (ACS) and the American Institute of Chemical Engineers (AIChE). As a follow-up, members of the steering committee for that event formed a committee to hold an event in 2009 focusing on Western Pennsylvania’s Energy Heritage and Future. The intent was to incorporate recognition of pioneering work in our area that led to the development of the worldwide petroleum industry, as well as to include background on the role of other energy sources such as natural gas and nuclear power. For this year’s effort, the committee was renamed the Historic Landmarks Awards Committee, which worked closely with the ACS Historic Chemical Landmarks Program.

Al Mann, Chair of the Committee, had previously developed a historical narrative on the Drake Well in Titusville PA and had uncovered historical information on Samuel Kier’s early work in Pittsburgh on purifying crude oil by distillation. It was natural to combine the two efforts and hold commemorative events in both Pittsburgh and Titusville.

Summary of the Conferences

The Conference on Western Pennsylvania’s Energy Heritage and Future was held on Wednesday, August 26 in the Senator John Heinz History Center, 1212 Smallman Street, Pittsburgh, PA 15222, (412) 454-6000. A plaque commemorating Samuel Kier’s initial distillation efforts, to be erected on the terrazzo wall of the USX Tower at 7th Avenue and Grant Street in downtown Pittsburgh, was presented by Thomas Lane, 2009 President of the ACS. Approximately 40 people attended.

A plaque commemorating the Birth of the Petroleum Industry was held on Thursday, August 27, 2009, in the auditorium of the Drake Well Museum, 202 Museum Lane, Titusville, PA 16354, (814) 827-2797. ACS President Thomas Lane presented the plaque to Barbara Zolli, Manager of the Drake Well Museum. Dale Keairns, past Chair of the AIChE (2008) and SAIC Technical Fellow at the U.S. Department of Energy National Energy Technology Laboratory, Pittsburgh, PA, spoke on “Colonel Drake, The Quest for Oil, and Chemical Landmarks.” Approximately 50 people attended. This event corresponded to the 150th anniversary celebration of the Drake Well completion.

The program booklet for the Pittsburgh event was produced by Committee member Jim Miller. The ACS Historic Chemical Landmarks Program produced a four-page brochure covering both events.

Pittsburgh City Council issued a proclamation on September 1, 2009 in recognition of the Kier plaque presentation. Councilman Patrick Dowd presented the proclamation to Al Mann, Committee Chair, and to James Edwards, Executive Director of the John R. McCune Charitable Trust. Mr. Edwards gave a talk at the Pittsburgh conference on the contributions of his great-great grandfather Charles Lockhart.

The Allegheny County Executive, Dan Onorato, issued a proclamation on August 20, 2009.
The committee held numerous meetings and conference calls from January through August 2009, focused primarily on the Pittsburgh event. Committee members solicited speakers and funds for this event. Al Mann served as liaison among the national ACS, the Drake Well Museum, and the Heinz History Center.

**Publicity**

Christina Mastromatteo sent PR notices to radio stations KDKA and KQV, to Channel 11, and to the Pittsburgh Tribune-Review. Tom Ruppel, as secretary of the committee, sent email invitational letters to about 20 engineering faculty members of nearby colleges and universities.

The Pittsburgh Post-Gazette published an article “Birth of an Industry” in its Business Section on Thursday, August 27.

The Pittsburgh Tribune-Review published an article by Kim Leonard on October 4, 2009, entitled “Oil Boom: Pittsburgh Was Nation’s First Petroleum Capital.”
http://www.pittsburghlive.com/x/pittsburghtrib/lifestyles/
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Refining Crude Oil

Samuel Kier’s Still
Pittsburgh, Pennsylvania

Near this site in the 1850s, Samuel Kier constructed a cast-iron distillation unit for refining crude oil. Kier’s one-barrel still produced kerosene, a clean burning lamp fuel. Later, Kier built a five-barrel still and invented a lamp that minimized smoke and odor. Kier’s refining process touched off the search for more dependable sources of crude oil, which led to the drilling of the nation’s first oil well in Titusville, Pennsylvania. These two technologies – refining and drilling – made Pennsylvania the undisputed center of the early oil industry.

American Chemical Society August 26, 2009
Appendix 2. Presentation of ACS plaque commemorating Samuel Kier. Presented to Al Mann by Tom Lane, ACS President, Senator John Heinz History Center, Pittsburgh PA, August 26, 2009
Appendix 3. Text of ACS plaque commemorating the birth of the petroleum industry, to be installed at the Drake Well Museum, Titusville PA

The Drake Oil Well

Drake Well Museum
Titusville, Pennsylvania

On this site Samuel Drake drilled the world’s first oil well, striking oil on August 27, 1859. Crude oil – which seeps to the surface in this part of Pennsylvania – was often collected and used medicinally to treat rheumatism and sprains. Later, refined oil began to be burned in lanterns. The demand for oil grew, setting off a search for a way to recover the large quantities of oil thought to exist below the surface. Drake, with the assistance of William Smith, known as “Uncle Billy,” found oil at a depth of 69 ½ feet, prompting the first American oil boom. As a result, Pennsylvania became the undisputed center of the early oil industry.

American Chemical Society August 27, 2009
Appendix 4. Presentation of ACS Plaque at Drake Well Museum, Titusville PA, by Tom Lane, ACS President, August 27, 2009

Left to right: Scott Hutchinson (Pennsylvania State Representative, 64th District); Tom Lane (President, ACS); Barbara Zolli (Director, Drake Well Museum); Glenn Thompson (U.S. Representative, Pennsylvania)
Western Pennsylvania’s Energy Heritage and Future
Heinz History Center
August 26, 2009

8:30-8:55  Registration

8:55-9:00  Welcome

9:00-9:30  William C. King
           Vice President, Gulf Oil Corporation (retired)
           Western Pennsylvania’s Remarkable Energy Heritage, and Our Nation’s
           Energy Future

9:30-10:00  Lester B. Lave
            Carnegie Mellon University
            The Economics of Energy

10:00-10:30  Brian R. Beebe
             Westinghouse Electric Company
             Westinghouse’s Role in the Nuclear Renaissance

10:30-11:00  Break

11:00-11:30  Samuel McLaughlin
             CNX Gas Corporation
             Natural Gas from Marcellus Shale

11:30-12:00  James M. Edwards
              Executive Director, John R. McCune Charitable Trust
              Charles Lockhart – Petroleum Pioneer and Philanthropist

12:00-12:15  Tom Lane
             President, American Chemical Society
             Presentation of ACS Historic Landmark Award commemorating Samuel
             Kier’s pioneering work in refining crude oil by distillation, initiated in
             Pittsburgh in the early 1850s

To register for the program, or for additional information, please contact Al Mann at  alfred.mann@verizon.net or (412) 661-5947
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The Organizing Committee

The following individuals contributed their time and talent for the
success of this event: Paul Brezovec, Gary Hall, Al Mann, Christina
Mastromatteo, Jim Miller, Tom Ruppel, and Mordecai Treblow
Western Pennsylvania’s Remarkable Energy Heritage, and Our Nation’s Energy Future
William C. King
Vice President, Gulf Oil Corporation (retired)

The remarkable contributions of Southwestern Pennsylvania to the world’s energy supplies, and the resulting standard of living, including coal, petroleum, natural gas, alternating current, and nuclear power will be reviewed. From the standpoint of energy supply and use, the next few decades will differ markedly from the post World War II period. Some contributing reasons:

- On a per-capita basis, energy consumption in China and India is relatively low. Coming consumption growth in these two and other developing countries will strain the world’s energy supply capabilities.
- Greenhouse gas emissions will rise due to increased energy consumption, and to continuing deforestation. This will impact global warming.
- These trends are of such magnitude that programs to effectively address them must be developed over the next decade or two.

A number of opportunities for such programs in several energy fields will be presented and briefly reviewed. They will include two categories: the pressing need for energy conservation, and for producing current and potential energy supplies as cleanly as possible. A proposal will be presented for cutting the present Gordian Knot in how the nation is addressing this vital issue, and which may provide a melding of the nation’s extensive talents to successfully cope with this urgent area of need.

About the Speaker

Mr. King’s professional career included thirty-eight years with the Gulf Oil Corporation, from 1948 until his retirement in 1985. He served as Director of Marketing Research and Economic Analysis; Vice President of Gulf’s chemical activities in Europe and the Middle East; and Director, Policy Analysis in the Public Affairs Department. He was the author of the corporation’s Energy Policy Statement issued in 1974, of its Meeting National Energy Needs pamphlet in 1978, and of numerous corporate position papers during the energy crises of 1973 and 1979. In 1980 he was elected Vice President, Corporate Planning. He is the author of Chapter 6 in the Handbook of Strategic Planning, John Wiley & Sons, 1986.

In 1985 Mr. King initiated the effort to establish the Heinz History Center. Earlier this year both he and Mr. Stephen Graffam were presented the Center’s History Maker of the Year Awards as the founding fathers of the History Center. They continue as Trustees Emeriti of the Center.

Mr. King received a Bachelor of Science Degree in Chemical Engineering from Carnegie Institute of Technology in 1942. He served in World War II with the U. S. Army Corps of Engineers for 41 months, including 27 months in the China Burma India Theater where his battalion built a B-29 Bomber Base in Eastern India, and portions of the Ledo-Stilwell Road in Northern Burma. After being discharged at the end of the war with the rank of Captain, he obtained a Master of Science Degree from M.I.T. before joining Gulf Oil.
The Economics of Energy
Lester B. Lave
Professor of Economics, Carnegie Mellon University

Eventually, the laws of thermodynamics constrain what we can do. However, with large inputs of energy from the sun and large amounts of “congealed” solar energy in the form of fossil fuels, there is no immediate concern with entropy. Even in the long term, invention can get us closer to theoretical limits in our processes and find less energy intensive ways to satisfy human needs and wants. Economists start with the fact that consumers prefer consumption today to the same amount of consumption in the future (under general conditions). The resulting discount rate means that we would be happy to take $\frac{2}{3}X$ today rather than get $X$ some years hence. Thus, there are three central features of the economics of energy: 1. we give less and less importance to occurrences in the future as they get further out in time. 2. We have large stocks of energy today that are inexpensive, although they are subject to depletion. 3. Most people are optimistic that innovation will continue to result in better products in the future, products that use less energy (if energy prices rise), and products that discharge less environmental pollution. Thus, minimizing entropy has not played a central role in the economics of energy or in public decision making in the US. While economic and thermodynamic thinking are not completely disparate, they are different. Economists want to minimize the cost of a process, rather than minimizing entropy or fuel use or water. In contrasting economic thinking about energy with environmental, sustainability, and thermodynamic thinking about energy, I show the sources of some contradictions in public policy and the behavior of companies.

About the Speaker

Lester Lave (B.A. [Economics], Reed College; Ph.D. [Economics], Harvard University) is the Harry B. and James H. Higgins Professor of Economics and University Professor at Carnegie Mellon’s Tepper School of Business.

Professor Lave’s research and teaching focus on applied economics, particularly identification and structuring of public issues involving environmental quality and risk management. His work has included setting safety goals for dams and other engineered structures, setting safety standards for nuclear reactors, modeling the effects of global climate change, and assessing the value of information in tests for carcinogenicity. He is the head of the university-wide Green Design Initiative which is working with businesses, such as IBM, and with government agencies, such as the Department of Energy, to address the fundamental problems in pollution prevention.

Professor Lave is a member of the Institute of Medicine of the National Academy of Science and a recipient of the Distinguished Achievement Award of the Society for Risk Analysis.
Westinghouse's Role in the Nuclear Renaissance
Brian R. Beebe
Director of Core Engineering, Westinghouse Electric Company

Since the mid 1980s there has been a declining demand for electricity that was generated by nuclear power. During the 1990s several nuclear power plants that were ordered were stopped in mid construction and moth-balled. Universities began to scale back on Nuclear curriculums and many Universities closed whole Nuclear departments. The Nuclear industry began to shrink as the industry itself went quickly from growth and development to simply maintaining the safe operation of its existing fleet around the world. In early 2000, the rising concern of Global Warming combined with both the increasing safe operation of the worldwide nuclear reactors with a decreasing cost in nuclear reactor operation, there arose a renewed optimism in the prospect of new nuclear reactor power. Westinghouse Electric Company has been involved in commercial nuclear reactor power from the very beginning. Working hard with the Nuclear Industry to change operational habits to focus first and only on safety and utilizing technology to inherently design into existing operating and future designs passive safety operational characteristics, Westinghouse, in its new position as a leader of nuclear power within the TOSHIBA Group, is at the forefront of the Nuclear Renaissance that is now being realized across the globe. This short presentation will walk through the factors that are bringing the Nuclear renaissance to a reality and present Westinghouse's history in nuclear power, current position within the nuclear industry, and how Westinghouse is poised for the near and distant future of the commercial nuclear industry.

About the Speaker

Brian R. Beebe is Director of Core Engineering at Westinghouse Electric Company’s Nuclear Fuel Division. Westinghouse is the recognized world leader in the building of Nuclear Power Electric Generating Plants, Operational Support for Nuclear Power Plants, Nuclear Fuel Development and Supply and overall nuclear power generation research and development. Core Engineering is responsible for PWR and BWR methods, modeling, licensing, and operational support of more than 100 nuclear reactors around the world. Brian is a three time recipient of the George Westinghouse Engineering Signature Award of Excellence, a five time recipient of the Performance Excellence Award, and a graduate of the Westinghouse Customer First leadership Program. During his tenure at Westinghouse Brian has worked at many of Westinghouse’s facilities worldwide including living for 2 years in Västerås, Sweden. Prior to joining Westinghouse Brian received his MS and BS with High Honors in Nuclear Engineering from the University of Florida.
Natural Gas from Marcellus Shale
Samuel McLaughlin
Vice President-Northern Appalachia, CNX Gas Corporation

The Marcellus Shale is a deep geological formation stretching more than 95,000 square miles through parts of Ohio, Pennsylvania, West Virginia and New York making it the most expansive shale gas play in the country. At an estimated depth between 4000 feet and 8500 feet and ranging anywhere from 50 feet and 200 feet thick, this high-volume reservoir is estimated to hold more than 500 trillion cubic feet of natural gas. If only 10% of that gas (50 trillion cubic feet) were to be recovered, that volume would be enough to supply the entire United States for about two years and have a value of about one trillion dollars.

The Commonwealth currently imports almost 75 percent of the natural gas it uses every day. The Marcellus Shale formation holds enough recoverable natural gas reserves to not only serve Pennsylvania’s needs, but to turn the state into a significant exporter of energy, generating equally significant economic benefits.

Sam McLaughlin, vice president of Northern Appalachia Operations for CNX Gas, will provide background on CNX Gas Corporation and the operating unit under his purview in Western Pennsylvania and Northern West Virginia. He’ll also provide some exciting information on the prolific geological formation known as the Marcellus Shale.

About the Speaker

Samuel McLaughlin began his career with CONSOL Energy Inc. in 1980 as a summer student. After graduating from West Virginia University in 1983 with a degree in Mining Engineering, McLaughlin joined CONSOL on a full time basis and took his first management role at 23. During his tenure at CONSOL, he held various coal mine management roles ranging from section foreman to assistant superintendent. In 2005, when CONSOL created and then spun out CNX Gas from its gas assets, McLaughlin joined CNX Gas as a Production Manager and in 2006 assumed the role of General Manager – Northern Appalachia Operations.

Mr. McLaughlin has been instrumental in the development and success of CNX Gas by leading the development of the company’s Northern Appalachia business unit. With McLaughlin’s leadership and his team’s efforts over the last three years, the company’s Northern Appalachia Operations have gone from a 2 million cubic feet per day startup to a 60+ million cubic feet per day fully profitable business unit. Today the division has over 200 wells, a staff of 60 and works with over 100 contracting firms.
Charles Lockhart – Petroleum Pioneer and Philanthropist
James M. Edwards
Executive Director, John R. McCune Charitable Trust

Charles Lockhart (1818-1905) was an early trading partner of Samuel Kier, whose pioneering work in petroleum refining is being recognized in today’s event. In 1861, Lockhart built the first commercial oil refinery in the United States. Called the Brilliant Oil Works, it was located in Pittsburgh on the Allegheny River in what is now known as Highland Park, and processed crude petroleum barged from the newly developed oilfields around Titusville and Oil City, Pennsylvania. Lockhart soon built or bought several other refineries in the Pittsburgh area and also built the Atlantic Refinery in Philadelphia.

Early in his career, Lockhart introduced innovative concepts in the oil business that are still practiced to this day. Within a few years, Lockhart joined forces with John D. Rockefeller and others to form the Standard Oil Company, and amassed a considerable fortune. He was also involved in a number of other enterprises outside the realm of petroleum. Lockhart donated much of his wealth, mostly anonymously, to major hospitals, churches, and other institutions in the Pittsburgh area. He also developed an impressive art collection well in advance of other better-known entrepreneurs of his day.

About the Speaker

James M. Edwards graduated from Shady Side Academy and Stanford University with an A.B. in English in 1979. He worked for Union National Bank, Union National Corporation, and Integra Financial Corporation in various trust and lending capacities from 1980 to 1990. He is Chairman of the Distribution Committee of the McCune Foundation, a $350 million family foundation operating in western Pennsylvania. He is also Executive Director of the John R. McCune Charitable Trust, an $85 million family foundation which makes education, healthcare, and social services grants, primarily in western Pennsylvania.

Mr. Edwards is a Director of The Lockhart Company, and sits on the Board of Allegheny Cemetery. He is past President of the Board of Trustees of Shadyside Presbyterian Church, and a former trustee of Children’s Hospital of Pittsburgh and Chatham College. He currently is Chairman of the Allegheny County Industrial, Hospital, Higher Education and Residential Finance Development Authorities.

Mr. Edwards writes, speaks, and appears regularly on the subject of family philanthropy and foundations. He spoke to the Council on Foundations Annual Convention in Dallas, Texas in February, 1999 on the topic “Tales from the Crypt or Prescription for the Future,” and before the Philanthropy Roundtable on “Donor Intent in Perpetuity.”
We gratefully acknowledge the financial support of the companies listed on this page.
Oil seeps to the surface in many parts of the world, including northwestern Pennsylvania. The Seneca tribe, part of the inquisitive nation, collected seep oil for hundreds of years, using it as a harsh, insect repellent; and tonic. It also burned but was unpopular as a lamp oil due to its unpleasant odor and smoke.

Candles and whale oil provided most of the artificial light in the decade before the Civil War. Whale oil was also used for lubrication. But demand intensified — and prices skyrocketed — with the development of mechanized transportation and industrialization. This demand fueled the search for new sources of light.

In the 1850s, scientists in Britain began producing an illuminant from the distillation of coal. Dr. Abraham Gesner, a New Brunswick geologist, made the first successful coal oil in North America, using a bituminous mineral found in New Brunswick. Gesner called it "kerosin" from the Greek for "wax" and "oil," which soon became kerosene.

**SAMUEL KIER**

Others tried using petroleum — originally marketed as a medicine — as an illuminant. Seepage petroleum plagued salt wells operators as it frequently came to the surface with salt brine. At Tarentum, twenty miles north of Pittsburgh, Samuel Kier and his father owned salt wells which produced an annoying quantity of oil along with the desired brine.

Kier thought the oil contaminating his wells was similar to the "American medicinal oil" his wife took for a serious illness. Chemical analysis proved the two oils identical, and in 1853, Kier started marketing the oil from his wells as "Kier's Petroleum, or Rock Oil."

Kier claimed his "medicine" — sold in 1854 for 50 cents — cured burns, ulcers, cholera, asthma, indigestion, melancholy, and blindness.

Kier's salt well produced more petroleum than he could sell, so he began looking for other uses for it. He sent a sample to Professor James Curtis Booth of the Franklin Institute in Philadelphia, later president of the American Chemical Society, who suggested distilling petroleum for use in lighting. Armed with a drawing provided by Booth, Kier built a one-barrel, cast-iron still on Seventh Avenue in Pittsburgh and began to sell distilled petroleum, which he called "carbon oil," for $1.50 a gallon.

At the time there was no suitable lamp in which to burn Kier's kerosene. He began experimenting with lamp burners to let more air enter, which allowed the oil to burn more brightly, although it still gave off a disagreeable odor. But the light was clear and the price reasonable, so Kier built a larger, four-barrel still.

Others succeeded in removing the disagreeable odor by beating oil with acid. Still, the utility of using petroleum as an illuminant was limited by the difficulty of getting it out of the ground.

**THE PENNSYLVANIA ROCK OIL COMPANY**

In the early 1860s, a New York lawyer named George Bisell came across a sample of petroleum from Titusville, Pennsylvania. Bisell noted its resemblance to coal oil, and he and his partner, Jonathan Evelleth, sent an agent to investigate its source. The agent gave a favorable report, and the two lawyers proceeded to organize the Pennsylvania Rock Oil Company.

Investors were slow to buy stock in the new company until a favorable report written by Benjamin Silliman, Jr., professor of chemistry at Yale University, concluded that the company possessed "a raw material from which, by simple and not expensive process, [it] may manufacture very valuable products."

**COLONEL DRACKE**

Col. Edwin Drake is famous for drilling the first oil well in 1859. Much about Drake and his well is accidental. Even his title — Colonel — came not from military ascendancy but because James Townsend, a bank president and one of the oil company backers, thought it lent prestige to Drake and the quest for oil.

When Drake and Townsend met, Drake was in his late 30s, having spent much of his adult life working for railroads. Townsend said Drake was worth of stock — his total life savings — in the Pennsylvania Rock Oil Company. Townsend decided to send the new investor — whose previous railroad work entitled him to free transportation to Pennsylvania — to secure title to lands for the company and to report on the prospect of finding oil.

Drake inspected the oil country and told Townsend that a fortune could be made in petroleum. Encouraged by this news, Townsend arranged for the company to be reconstituted as the Seneca Oil Company with Drake as largest stockholder and president. The company also hired Drake as general manager for the princely sum — to him — of $1,000 a year. In May 1861, Drake moved to Titusville, did some more scouting around, and decided to drill a well.
Drake needed two things to drill: an engine and someone with experience boring into salt wells. The equipment was easy; Drake ordered an engine, built a pump house, and asked Townsend for $3,000 to pay for the supplies. The expert proved more difficult to find. Drake spent several months in 1856–59 trying to find a driller. Potential candidates thought Drake "crazy" to drill for oil.

Finally, Drake found William Smith, a blacksmith who had made tools for Samuel Kier and who had done some drilling. "Uncle Billy" Smith agreed to work for $3.50 a day, make his own tools, and throw in the services of his 15-year-old son. Smith arrived in Titusville in May 1859, and found that Drake's men had been digging a hole 150 feet from Oil Creek.

Smith discovered that the hole — located close to the creek and below the level of the stream — kept filling with water. He tried pumping out the water, with little success. Finally, Drake and Smith obtained cast iron pipe which they drove about 32 feet into the bedrock, past the water — using a white oak battering ram. By mid-August Smith began drilling his well with steam power, through the pipe, averaging about three feet a day.

The slow progress invited gibes from the locals. More seriously, the investors decided to pull the plug. With Townsend directing Drake to shut down operations. Before receiving these instructions, Drake borrowed $500 locally. The loan allowed him to pay off his creditors and continue work, though Drake must have feared the end was near.

On Saturday, August 27, with the drill at a depth of 69 feet, work stopped. Everyone expected to have to drill at least several hundred feet deeper. The next day, "Uncle Billy" inspected the well and saw fluid at the top of the pipe. Smith realized it was oil. News spread along Oil Creek and into Titusville, but Drake did not get the word until Monday morning when he arrived at the well and saw Smith surrounded by barrels, tubs, and jugs of oil. No one realized it at the time, but Drake had drilled in the only spot in the region where oil could be found at such a shallow depth as 69 feet.

**AFTERMATH**

In 1860, wells in northwestern Pennsylvania produced several hundred thousand barrels and by 1862 production reached three million barrels. The nation's oil boom was beginning, and huge fortunes would soon be made. But not by Colonel Drake. He failed to act quickly to control production and he had not bought much land in the area. In 1866 the Seneca Oil Company secured its connection to Drake, paying him $1,000 for the use of his name on barrels.

By the end of the Civil War, Drake had lost all his money and his health. He moved first to Vermont and then to New Jersey because he thought the sea might improve his health. In the late 1860s, old acquaintances from the oil industry raised $4,000 for Drake. In 1873, the Pennsylvania Legislature allotted Drake $10,000 annually. In November 1880, after years of bad health and constant pain, Drake died poor and a pensioner, never having benefited from "discovering" oil in Titusville, Pennsylvania, on August 27, 1859.

**THE SIGNIFICANCE OF PENNSYLVANIA OIL**

Swelling production of Pennsylvania oil led to a rapid drop in price, which drove many producers out of business but which also drove consumers away from other sources of illumination, allowing Pennsylvania oil to corner the market. The cycle of boom and bust plagued Pennsylvania oil production until John D. Rockefeller organized Standard Oil and imposed order on the industry in the 1870s. The next decade Thomas Edison's light bulb and electric light replaced kerosene, threatening the dominance of oil. The petroleum industry would be saved, in turn, by the coming of the automobile and the need for gasoline, supplied by other areas of production, particularly Texas and then foreign sources. But in the latter part of the 19th century, Pennsylvania oil dominated the market, pointing the way to America's eventual reliance on petroleum.
Appendix 8. City of Pittsburgh proclamation commemorating the Kier still, September 1, 2009

WHEREAS, in 1859 Edwin Drake was the first person in the world to apply well drilling technology to produce significant quantities of crude petroleum at Titusville, PA; and,

WHEREAS, it is an important but little known fact that Samuel Kier of Pittsburgh was the first person to refine crude oil by distillation, five years earlier than Drake’s discovery, in about 1854; and,

WHEREAS, in 1861 Charles Lockhart built the first commercial scale oil refinery in Pittsburgh’s Highland Park neighborhood. That plant was put to use to refine crude oil produced at Titusville. Lockhart became a prominent citizen of East Liberty and a generous philanthropist; and,

WHEREAS, to commemorate the 150th anniversary of the drilling of the Drake well, the American Chemical Society presented a National Historical Chemical Landmark award at Titusville on Thursday, August 27, 2009 and another commemorating Samuel Kier’s work at the Heinz History Center in Pittsburgh on Wednesday August, 26; and,

WHEREAS, today’s extensive worldwide petroleum industry is a direct outgrowth of the efforts of Drake, Kier and Lockhart, first demonstrated here in Western Pennsylvania; and,

WHEREAS, the idea for the historic landmark recognition came from Highland Park resident and American Chemical Society member, Alfred Mann;

NOW, THEREFORE BE IT RESOLVED, that the Council of the City of Pittsburgh does hereby recognize and commemorate the achievements of these innovative and entrepreneurial western Pennsylvanians; and,

BE IT FURTHER RESOLVED, that the Council of the City of Pittsburgh commends Mr. Alfred Mann of Highland Park for celebrating this important part of our region’s history.

SPONSORED BY COUNCIL MEMBER PATRICK DOWD

AFFIRMED BY COUNCIL PRESIDENT DOUGLAS SHIELDS
AND COUNCIL MEMBERS REV. RICKY V. BURGESS, DARLENE HARRIS, THERESA KAIL-SMITH, BRUCE A. KRAUS, JIM MOTZNIK, TONYA PAYNE, AND WILLIAM PEDUTO

Douglas Shields, President of Council
Attest: Linda Johnson-Wasler, Clerk of Council

Presented in Council, September 1st, 2009
Appendix 9. Councilman Patrick Dowd presenting proclamation commemorating Samuel Kier’s still, Pittsburgh City Council Chambers, September 1, 2009
Appendix 10. Response by James Edwards
Appendix 11. Response by Alfred Mann
WHEREAS, in 1854, Samuel Kier of Pittsburgh was the first person to refine crude oil by distillation to create kerosene for lamps; and

WHEREAS, five years later in Titusville, Edwin Drake was the first person to apply well drilling technology to produce significant quantities of crude petroleum; and

WHEREAS, in 1861, Charles Lockhart built the first commercial scale oil refinery in Highland Park, which was utilized to refine crude oil produced at Titusville; and

WHEREAS, the American Chemical Society will present a National Historical Chemical Landmark award to commemorate Samuel Kier’s work at the Senator John Heinz History Center on Wednesday, August 26, 2009; and

WHEREAS, to commemorate the 150th anniversary of the drilling of the Drake well, the American Chemical Society will also present a National Historical Chemical Landmark award at Titusville Drake Well Museum in Crawford County the following day.

NOW, THEREFORE, BE IT RESOLVED that I, Allegheny County Executive Dan Onorato, by virtue of the authority vested in me, do hereby proclaim August 26, 2009, “Samuel Kier Day” in Allegheny County.

FURTHERMORE, I do hereby acknowledge the contributions of Edwin Drake and Charles Lockhart and commend them for their commitment to the advancement of technology in our region.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the County of Allegheny to be affixed this 20th day of August 2009.

DAN ONORATO
Allegheny County Executive
Appendix 14. Lester Lave speaking on “The Economics of Energy,” Heinz History Center, August 26, 2009
Appendix 15. Brian Beebe speaking on “Westinghouse’s Role in the Nuclear Renaissance,” Heinz History Center, August 26, 2009
Appendix 16. Samuel McLaughlin speaking on “Natural Gas from Marcellus Shale,” Heinz History Center, August 26, 2009
Appendix 17. James Edwards showing photograph of Charles Lockhart, petroleum pioneer. Heinz History Center, August 26, 2009
Appendix 18. James Edwards showing photograph of Charles Lockhart’s Brilliant Oil Works, Heinz History Center, August 26, 2009
Appendix 19. Jim Miller reading Proclamation by Allegheny County Executive Dan Onorato, Heinz History Center, August 26, 2009
Appendix 20  
Symposium Committee at Heinz History Center, August 26, 2009

Left side, front to back: Mordecai Treblow, Jim Miller, Dale Keairns, Bill King, Carol King, Tom Lane, Judah Ginsberg

Right side, back to front: James Edwards, Melinda Edwards, Genevieve Mann, Al Mann, Tom Ruppel, Gary Hall, Paul Brezovec
Appendix 21. Second Kier still, in Drake Well Museum, Titusville PA
Appendix 22. Drake Well pump replica, Drake Well Museum, Titusville PA
Appendix 23.  Drake well replica, Drake Well Museum, Titusville PA
Appendix 24. Faculty members contacted

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Allegheny Conference on Community Development
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Appendix 25. Letter to faculty members announcing the Historic Landmarks events

Dear xxxx:

You are invited to attend two events which celebrate the rich history of chemistry and chemical engineering in Pennsylvania.

A half-day conference on “Western Pennsylvania’s Energy Heritage and Future” will be held at the Heinz History Center in Pittsburgh on Wednesday August 26, 2009. The conference celebrates the development by Samuel Kier in downtown Pittsburgh in the 1850s of the first one-barrel distillation unit for refining crude oil. It was the world’s first oil refinery. The American Chemical Society will make a Historic Landmark Award presentation commemorating the Kier still. The attached 2-page brochure lists the speakers, subjects and details. Please see the location, parking and preregistration cost ($10) given in the brochure.

Additionally, on Thursday August 27, 2009, the American Chemical Society will declare a National Historical Chemical Landmark in Titusville, Pennsylvania, commemorating the 150th anniversary of the drilling of the first oil well in the world by Edwin Drake in 1859. Also attached, “The Development of the Pennsylvania Oil Industry” provides a revealing history of the origin of the nascent oil industry in western Pennsylvania. These events are sponsored by the Pittsburgh Sections of the American Chemical Society and the American Institute of Chemical Engineers, with major support and participation by the American Chemical Society (Washington, DC).

If you are interested in attending either of these events, please let me know. We have tried to get wide coverage in order to reach as many technical and community types as possible. Events such as these are worth celebrating.

Thank you,

Thomas Ruppel
U.S. Dept. of Energy, Retired
Appendix 26. Historic Landmarks Awards Committee

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