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ABSTRACTS

In alphabetical order - author's last name.

DRILLING MUD: A 20TH CENTURY HISTORY

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Drilling mud, the fluid mixture used in rotary drilling, is as important to petroleum resource development as blood is to the human body. Important conditions that drilling mud affects include the cleaning of cuttings from the wellbore, controlling subsurface pressures, reducing reactivity and instability of the formation, and reducing fluid loss into the formation. Water was the first drilling fluid, and its usage is documented back to the ancient Egyptian and Chinese cultures and simple rotary tool drilling. A few patents in the 1800s further mention the use of a drilling fluid in early rotary drilling designs. Early rotary water well drilling would have made mud as the water mixed with natural clay deposits, and observations on its superior ability to clean the hole versus water alone was probably noted. The petroleum drilling in Corsicana, Texas (1890s), and Spindletop, Texas (1901), indicate the use of natural drilling mud (drilling mud from the local clays) was an established part of rotary drilling by this time. Technical descriptions of the U.S. Bureau of Mines in 1913 and 1914 were the beginning of a long history of the science and engineering of drilling mud usage. The first major changes to drilling mud occurred in the 1920s with the addition of weighting materials (barite, iron oxides) and usage of mined bentonite clays. This also gave rise to the first commercial drilling mud companies such as NL Baroid. The 1930s was the true beginning of engineered drilling mud in response to deeper and more difficult drilling conditions. Oil companies developed major research programs in mud design during this time frame. Major geologic and borehole conditions that required new mud designs included overpressured formations, unstable *heaving* shales, and hydrocarbon traps along salt dome flanks. After World War II, training of field personnel for better mud management became common as did mud engineers. Another major factor in mud design began in the 1970s when new environmental regulations began defining what was chemically acceptable in coastal and offshore mud disposal. This gave rise to numerous studies and publications concerning mud chemistry and toxicity from the 1970s onward, and also gave rise to some mud modifications where mud/cuttings discharges were allowed.

VALVOLINE'S ORGINS: THE ROLE OF DR. JOHN ELLIS, M.D.

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At the very first official auto race in the United States, in 1895, Valvoline motor oil was lubricating the engine of the winning car. Today, it is a brand with significant name recognition among thousands of ardent NASCAR fans and one that provides its owner, Ashland, Inc., with annual sales of up to \$1.5 billion.

Unlike the Rockefeller oil empire, whose Standard Oil brand names vanished in antitrust proceedings and marketing schemes, the Valvoline name has survived intact since Dr. John Ellis trademarked it in the 1860s. Business textbooks use Valvoline as a case study in how to effectively promote and maintain a brand.

This paper examines the little-known story of Dr. Ellis and Valvoline's early years. Based largely on papers deposited at the Drake Well Museum Archives at Titusville, Pennsylvania, in addition to material at the New-York Historical Society and secondary sources, it traces the background of Ellis, who learned and practiced dentistry until he could save enough money to enter medical school. Upon completing his studies, he worked as a surgeon in Detroit before moving to Binghamton, New York. He embraced the teachings of Emanuel Swedenborg and then became a homeopath. Ellis invested in Binghamton's Continuous Oil Refining Company, and he soon developed an interest in the technical process. He patented several refining methods, using equipment he developed. One of his new procedures yielded a lubricating oil made from petroleum.

In the mid-1860s, Ellis moved the company to Brooklyn, New York, the center of coal oil refining since the late 1840s. Kerosene producers there had begun switching to petroleum shortly after Colonel Edwin Drake's discovery of oil in Pennsylvania in 1859. Ellis entered into an agreement with one of these producers, Robert A. Cheesebrough, and began to man-

age the refinery, which produced his lubricating oil as well as Cheesebrough's petrolatum. Some sources suggest that Dr. Ellis came up with the brand name for Cheesebrough's product: Vaseline. When Cheesebrough decided to join the Standard Oil Trust in 1880, Ellis dissolved the partnership and shifted refining operations to New Jersey, across the Hudson River from Manhattan, and moved the company's offices to Lower Manhattan.

Letters written by Dr. Ellis and his son, W. D. Ellis, who ran the Leonard and Ellis Oil Company, formed to sell their product lines, reveal interesting lives as well as progressive business strategies. Both father and son concerned themselves with marketing matters as much as technical issues. They often explained to correspondents the merits of their *100 percent petroleum lubricant*, which had no animal or vegetable oils to degrade steam valves. It was with those critical steam valves in mind that Ellis named the most expensive of the company's oils: Valvoline. Ellis also took pains to inform customers that he bought petroleum produced only in Pennsylvania, anticipating by decades the *Pennsylvania-grade crude oil* tagline.

Unlike John D. Rockefeller, whose millions ensured that his personal name would live on even if his brand name did not, John Ellis left a considerable portion of his estate to his Swedenborgian church when he died in 1896. His son took control of the company, incorporated it, and expanded its operations before selling it to a Cincinnati investor in 1929, just months before the Great Crash. The Ellis legacy—the Valvoline brand name in its brilliant red-and-blue-V logo—continues to speed past NASCAR grandstands filled with racing fans and customers who need motor oil for their personal vehicles.

THE MAKING OF AN OIL HISTORY POSTER

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Poster: At first blush it would seem that the production of a poster about oil history would be a simple, rapid and inexpensive endeavor. However, based on the experience gained while preparing the *Progress from Petroleum: Through the Decades with Oil and Gas* poster, we now realize that (much like writing/publishing an article or book) the making and subsequent distribution of an accurate attractive poster suited to multiple nationwide audiences entails significant research, effort, creativity, editing, coordination, and expense. This two-panel presentation illustrates key decision points involved in the design and production of this colorful poster financed with public sector funding.

HISTORICAL MARKERS SUBSIDIZED BY THE PETROLEUM HISTORY INSTITUTE (PHI)

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Poster: Information about oil history is provided not only via oral, written, photographic, and electronic presentations. Outdoor roadside markers are permanent visible reminders of important people, events, places, companies, and inventions. Significant leaders and developments within the oil/gas industry have been recognized by numerous states in the form of historical markers. In 2004, the Petroleum History Institute activated a program of helping subsidize the production of such new markers throughout the USA. Applications for such donations are welcome; they should be directed to the PHI office. This single-panel poster provides photos and sample text for the historical markers in Pennsylvania which have been subsidized to date by PHI: Densmore Tank Cars; Byron D. Benson; and Samuel C. T. Dodd.

EBENEZER BALDWIN ANDREWS (1821-1880) – PIONEER OIL GEOLOGIST

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E. B. Andrews was born in Danbury, Connecticut, on April 29th, 1821, but spent most of his life in Ohio and what became West Virginia; part of the western frontier of the time. The youngest of seven children born to Reverend William and Sarah (Parkhill) Andrews, Ebenezer had a single sister and five brothers, and of the six boys in the family, five of them followed their father into the ministry, including Ebenezer. After beginning his college work at Williams College, he transferred to Marietta College where his brother Israel was a mathematics professor. After graduating with the Class of 1842, Ebenezer did his theological training at Princeton and was ordained in the Congregational Church in 1846. After serving for several years as pastor for churches in Housatonic, Massachusetts, and New Britain, Connecticut, he was invited to give a commencement address at his *alma mater*, Marietta College, and so impressed the faculty, that he was elected to the Chair of Natural Sciences in 1851. This was quite a change from the pulpit to the outcrop, but apparently he had a keen interest in nature, especially geology. It was during his time at Marietta College and shortly after Edwin Drake's discovery that he turned his attention to petroleum and its field relation-