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ABSTRACTS

In alphabetical order - author's last name.

**DRILLING MUD: A 20<sup>TH</sup> 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-