

a few weeks, all that was to change. On October 5, 1915, exploration activities carried out by a small team of geologists resulted in an oil strike of major proportions, the Stapleton #1, paving the way for a sudden new influx of population and an equally sudden new way of life for the people of Butler County. The discovery and development of the newly discovered El Dorado oilfield would change not just one small town in Kansas, but the whole country, and perhaps even the world.

The search for oil was far from a scientific activity in most of America around the turn of the century; in fact, many of the men who drilled the first tentative wells in Kansas had more in common with gamblers than geologists. When first the City of El Dorado and then the company that was to become *Cities Service* hired geologists onto their crew, many wildcat drillers of the time laughed. The philosophy they espoused was, *If you drill and get it, you've got it; and if you don't, you haven't*. But geologists like Charles N. Gould and J. Russel Crabtree were undaunted by their opponents, and kept on day by day with their methodical survey of Butler County's surface features, relating them to known oil strikes in the county and in similar areas, and creating new maps that were among the first to add contours to their representations of geologic formations. Following the pioneering successes on the El Dorado oil fields, men like Deering Marshall of Wichita later said that *when we started prospecting we did not have much faith in the ability of geologists to tell whether oil or gas was likely to be found in one place or another. That has been taken out of us. We would not consider locating a hole now without the advice of a geologist*. These early advances in scientific exploration and mapping would spread quickly to other oilfields and companies throughout the country, and would forever change the way drilling was planned and carried out.

Harry Doherty's Cities Service Company might have taken the lion's share of the field on account of his faith in geology, but everybody was trying to get in on the drilling game however they could, whether that was as lessor or lessee, roustabout or retailer. Butler County's population nearly doubled in size between the 1910 and 1920 state censuses, from 23,000 to over 43,000 people, with most of this growth taking place only in the latter half of that 10-year period. The prolific El Dorado fields supplied a large amount of the oil that went towards fueling and lubricating the trucks, ships, and airplanes that came into extensive use during World War I, the world's first mechanized war, lending credence to the statement of local newspaper editor Rolla J. Clymer that *oceans of oil helped float the Allies to victory*.

The boom lasted through the 1920s, and even after production began to seriously decline in the 1930s still many of the boom towns persisted, and oilfield work remained a significant way of life for many residents of Butler County. As oilmen such as Jacob Moellendick became wealthy off the

natural riches of the county they turned to other pioneering ventures, funneling their wealth and vision into building up Wichita and developing it as the soon-to-be-proclaimed *Aviation Capital of the World*. Companies such as Beechcraft, Travel Air, and Cessna all saw their birth as a result of Butler County oil money, which continued to fund innovation in the industry for the next few decades. Now, one hundred years after that very first El Dorado strike, the legends and the legacy of the oil boom live on.

THE CONSTRUCTION OF A UNIQUE PIPELINE IN THE CAUCASUS

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Pipeline transportation in oil industry came into existence after the mid-1860s. Until the mid-1860s oil was transported in barrels and then in cisterns. In 1863, Dmitry Mendeleev suggested the use of pipelines for a transportation of oil from fields to oil refineries, and in 1877, he put forward the idea of constructing an oil pipelines over long distances. The same year, he visited the USA in order, as he explained *...to learn the reason of flourishing of oil business in America, find out the obstacles that delay this in our country and what needs to be in order to remove this delay*. In his fundamental work called Foundations of Chemistry (Saint-Petersburg, 1895, 6th edition), which was translated into numerous languages, Mendeleev noted that, *When oil pipeline from Baku to the Black Sea will be constructed in South Caucasus (there are many of them in America, they deliver crude oil from Pennsylvania to the coast of the ocean, where oil is turned into kerosene and other products), the Baku oil will give an opportunity to produce the burning oil and that, without any doubt, will find a huge market*.

Let's note here that first iron oil pipeline with 5-cm diameter and 6-km length was constructed in the USA (Pennsylvania) in 1865. By the 20th century, the USA possessed over 10 thousand kilometers of oil pipelines connecting the Pennsylvanian oil fields with oil refineries and markets in Pittsburgh,

Philadelphia, New York City, Cleveland, and other cities; as well as the four oil pipelines directing oil to the Atlantic harbors for exporting from country. In 1914, the USA had 14 thousand kilometers of pipelines, while Russia had only 1278 km.

The first Russian oil pipeline of 9-km length, 3-inch (7.62 cm) diameter and 80 thousands-poods (approx. 11,600 barrels) delivery capacity was built in Baku in 1878, in the fields of *Nobel Brothers Co.* in Balakhany (Balakhany-Black city). The pipeline was designed by the talented engineers Alexander Bari and Vladimir Shukhov. The latter put forward a number of principles, which are still being applied in pipelining today.

In 1879, A. Bari (who opened his company *Bari, Sytenko & Co.*) and V. Shukhov received an order from the oil producer G. Lianozov to construct a similar oil pipeline of 11.5-versts (Old Russian measure of distance equal to 3500 feet or 1.07 km; 12.3 km). A second oil pipeline in Balakhany-Black city was built in 1879, which was of a better quality taking into account the experience of previous work. Following the implementation of Lianozov's pipeline, *Bari, Sytenko & Co.* also received offers to build additional pipelines from other Baku industrialists – e.g. Mirzoyev, Kokorev and Benkendorf. In 1884, the Baku oilfields had five pipelines (three pipelines Balakhany-Black city, as well as the Balakhany-Surakhany plant and Surakhany plant Zikh spit) with total delivery capacity of more than 200 thousand poods of oil per day (approx. 29,000 barrels). The design and construction of the first pipelines in Baku was of great importance and went beyond the scope of their practical use, i.e. these projects already contained the basis of the first scientific theory of design and construction of pipelines invented by V. G. Shukhov. An American engineer Herbert Twaddle was the first who attempted to construct the Caspian-Black Sea pipeline in 1877-1878.

The October revolution in 1917 made its own corrections to the development of the Baku oil business. To the credit of Bolsheviks, it is worth to noting that against the forecasts of western specialists, they, in addition to restoration of destroyed oilfields, also made the fundamental changes to the production technology (application of subsurface pumps and conventional pumping units). Baku-Batum pipeline started again operating in May of 1921 and once again the Baku oil flowed into Europe: oil was the only commodity for obtaining hard currency for young Soviet state. Much later the electrification of pumping wells led to sharp increase of oil production and in 1941 oil production in Baku constituted 23.5 million tons (71.4% of all oil production in the USSR). But little of this oil would have reached its market without the oil pipelines, thus they are an important part of the Baku oil history.

SOLOMON'S TEMPLE MUSJID-I-SULEIMAN & THE QUEST FOR OIL IN THE MIDEAST

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In 1901 an Englishman, William Knox D'Arcy, was awarded a concession to explore for oil in an area that covered three-fourths of Persia, today's Iran. D'Arcy had become wealthy from investments in a gold mine at Mount Morgan, Queensland, Australia, and from a friend had heard about the potential of oil in Persia. He hired a middle-aged engineer, George Bernard Reynolds, to run the operation. Drilling in southwestern Persia was challenging. Summertime temperatures reached 125F degrees, hostile tribes were a constant threat, guards to protect the workers and equipment were inadequate, and drilling with cable-tool rigs 150-miles from the coast posed logistical and mechanical difficulties. After three years and two non-commercial wells, D'Arcy was out of funds, heavily in debt, and seeking investors. He approached the Rothschilds and Rockefeller companies, but when the British Admiralty learned of his entreaties to foreigners, the Admiralty encouraged an agreement between D'Arcy and Burmah Oil Company, a successful English public company. Burmah Oil set out to drill four wells, but after four years and expenditures of hundreds of thousands pounds sterling, they, too, were ready to quit the project. But before a letter from the home office arrived in Persia instructing Reynolds to halt operations and wrap up the project, on May 26, 1908 the No. 1 Musjid-i-Suleiman came in flowing 297 bopd, the first commercial discovery of oil in the Mideast.

Following the discovery and limited additional drilling, Burmah Oil formed a new public company, the *Anglo-Persian Oil Company* (APOC), and raised two million pounds sterling in one day. Funds were used to re-pay Burmah Oil and D'Arcy for their costs, to purchase the remaining interest in the concession, to further develop the property, and to build a pipeline and a refinery. Three years later, APOC was nearly out of funds, the high-sulfur crude proved difficult to refine, and the company faced problems marketing its products.

By 1905 Germany's naval build-up challenged Britain's hundred-year old supremacy at sea. First Sea Lord Admiral John Arbuthnot Fisher early-on recognized that Britain would eventually fight a war with Germany, and had converted much of the British fleet from coal to fuel oil because ships which ran on fuel oil were faster and did not require coaling stations around the world. However Britain had no secure source of fuel oil. The Admiralty considered reaching an agreement with Lord Cowdray, whose Mexican company El Aguila had discovered vast quantities of oil in the Golden Lane near