

History of the petroleum industry

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The **petroleum industry** is not of recent origin, but <u>petroleum</u>'s current status as the key component of politics, society, and technology has its roots in the early 20th century. The invention of the internal combustion engine was the major influence in the rise in the importance of petroleum.

Early history

Four thousand years ago, according to <u>Herodotus</u> and confirmed by <u>Diodorus Siculus</u>, <u>asphalt</u> was used in the construction of the walls and towers of <u>Babylon</u>; there were oil pits near Ardericca (near Babylon), and a pitch spring on <u>Zacynthus</u> (<u>Ionian islands</u>, Greece). Great quantities of it were found on the banks of the river <u>Issus</u>, one of the tributaries of the <u>Euphrates</u>. Ancient <u>Persian</u> tablets indicate the medicinal and lighting uses of petroleum in the upper levels of their society.

Oil was exploited in the Roman province of Dacia, now in Romania, where it was called picula.

The use of petroleum dates back to ancient China more than 2000 years ago. In <u>I Ching</u>, one of the earliest Chinese writings cites the use of oil in its raw state without refining was first discovered, extracted, and used in China in the first century BCE. In addition, the Chinese were the first to use petroleum as fuel as the early as the fourth century BCE. [2][3][4][5]

The earliest known oil wells were drilled in China in 347 AD or earlier. They had depths of up to about 800 feet (240 m) and were drilled using bits attached to bamboo poles. [6][7][8] The oil was burned to evaporate brine and produce salt. By the 10th century, extensive bamboo pipelines connected oil wells with salt springs. The ancient records of China and Japan are said to contain many allusions to the use of natural gas for lighting and heating. Petroleum was known as burning water in Japan in the 7th century. In his book Dream Pool Essays written in 1088, the polymathic scientist and statesman Shen Kuo of the Song Dynasty coined the word 石油 (Shíyóu, literally "rock oil") for petroleum, which remains the term used in contemporary Chinese and Japanese (Sekiyū).

The first streets of <u>Baghdad</u> were paved with <u>tar</u>, derived from petroleum that became accessible from natural fields in the region. In the 9th century, <u>oil fields</u> were exploited in the area around modern <u>Baku</u>, <u>Azerbaijan</u>. These fields were described by the <u>Arab geographer Abu al-Hasan 'Alī al-Mas'ūdī</u> in the 10th century, and by <u>Marco Polo</u> in the 13th century, who described the output of those wells as hundreds of shiploads. <u>Distillation of Petroleum was described by the Persian alchemist, Muhammad ibn Zakarīya Rāzi (Rhazes). [9] There was production of chemicals such as <u>kerosene</u> in the <u>alembic</u> (*alambiq*), which was mainly used for kerosene lamps. [11] Arab and Persian chemists also distilled</u>

crude oil in order to produce <u>flammable</u> products for military purposes. Through <u>Islamic Spain</u>, distillation became available in <u>Western Europe</u> by the 12th century. It has also been present in Romania since the 13th century, being recorded as păcură.

The earliest mention of petroleum in the Americas occurs in <u>Sir Walter Raleigh</u>'s account of the <u>Trinidad Pitch Lake</u> in 1595; while thirty-seven years later, the account of a visit of a Franciscan, Joseph de la Roche d'Allion, to the oil springs of New York was published in <u>Gabriel Sagard</u>'s *Histoire du Canada*. A Finnish born Swede, scientist and student of <u>Carl Linnaeus</u>, <u>Peter Kalm</u>, in his work *Travels into North America* published first in 1753 showed on a map the oil springs of Pennsylvania. [1]

In 1710 or 1711 (sources vary) the Russian-born Swiss physician and Greek teacher <u>Eirini d'Eyrinys</u> (also spelled as Eirini d'Eirinis) discovered asphaltum at <u>Val-de-Travers</u>, (Neuchâtel). He established a bitumen mine *de la Presta* there in 1719 that operated until 1986. [14][15][16][17]

In 1745 under the Empress Elizabeth of Russia the first oil well and refinery were built in <u>Ukhta</u> by Fiodor Priadunov. Through the process of distillation of the "rock oil" (<u>petroleum</u>) he received a kerosene-like substance, which was used in oil lamps by Russian churches and monasteries (though households still relied on candles). [18]

Oil sands were mined from 1745 in Merkwiller-Pechelbronn, Alsace under the direction of Louis Pierre Ancillon de la Sablonnière, by special appointment of Louis XV. [19][20] The Pechelbronn oil field was active until 1970, and was the birthplace of companies like Antar and Schlumberger. The first modern refinery was built there in 1857. [19]

Modern history

The modern history of petroleum began in the 19th century with the refining of paraffin from crude oil. The Scottish chemist James Young in 1847 noticed a natural petroleum seepage in the Riddings colliery at Alfreton, Derbyshire from which he distilled a light thin oil suitable for use as lamp oil, at the same time obtaining a thicker oil suitable for lubricating machinery. In 1846, Baku (settlement Bibi-Heybat) the first ever well drilled with percussion tools to a depth of 21 meters for oil exploration. In 1848, Young set up a small business refining the crude oil. The new oils were successful, but the supply of oil from the coal mine soon began to fail (eventually being exhausted in 1851). Young, noticing that the oil was dripping from the sandstone roof of the



Oil field in California, 1938.

coal mine, theorized that it somehow originated from the action of heat on the coal seam and from this thought that it might be produced artificially.

Following up this idea, he tried many experiments and eventually succeeded, by distilling <u>cannel coal</u> at a low heat, a fluid resembling <u>petroleum</u>, which when treated in the same way as the seep oil gave similar products. Young found that by slow distillation he could obtain a number of useful liquids from it, one of which he named "paraffine oil" because at low temperatures it congealed into a substance resembling paraffin wax. [21]

The production of these oils and solid <u>paraffin wax</u> from coal formed the subject of his patent dated 17 October 1850. In 1850 Young & Meldrum and Edward William Binney entered into partnership under the title of E.W. Binney & Co. at <u>Bathgate</u> in <u>West Lothian</u> and E. Meldrum & Co. at Glasgow; their works at Bathgate were completed in 1851 and became the first truly commercial oil-works and oil refinery in the world, using oil extracted from locally mined <u>torbanite</u>, shale, and bituminous coal to manufacture <u>naphtha</u> and lubricating oils; paraffin for fuel use and solid paraffin were not sold till 1856.

Abraham Pineo Gesner, a Canadian geologist developed a process to refine a liquid fuel from coal, bitumen and oil shale. His new discovery, which he named kerosene, burned more cleanly and was less expensive than competing products, such as whale oil. In 1850, Gesner created the Kerosene Gaslight Company and began installing lighting in the streets in Halifax and other cities. By 1854, he had expanded to the United States where he created the North American Kerosene Gas Light Company at Long Island, New York. Demand grew to where his company's capacity to produce became a problem, but the discovery of petroleum, from which kerosene could be more easily produced, solved the supply problem.



Shale bings near <u>Broxburn</u>, 3 of a total of 19 in West Lothian

In 1848 the first modern oil well was drilled in Asia, on the Aspheron Peninsula north-east of Baku, by Russian engineer F.N. Semyenov. [22]

Ignacy Łukasiewicz improved Gesner's method to develop a means of refining kerosene from the more readily available "rock oil" ("petr-oleum") seeps, in 1852, and the first rock oil mine was built in Bóbrka, near Krosno in central European Galicia (Poland) in 1854. These discoveries rapidly spread around the world, and Meerzoeff built the first modern Russian refinery in the mature oil fields at Baku in 1861. At that time Baku produced about 90% of the world's oil.

The question of what constituted the first commercial oil well is a difficult one to answer. Edwin Drake's 1859 well near Titusville, Pennsylvania, discussed more fully below, is popularly considered the first modern well. [23] Drake's well is probably singled out because it was drilled, not dug; because it used a steam engine; because there was a company associated with it; and because it touched off a major boom. However, the first well ever drilled anywhere in the world, which produced oil, was drilled in 1857 to a depth of 280 feet by the American Merrimac Company in La Brea (Spanish for "Pitch") in southeast Trinidad in the Caribbean. [24] Additionally, there was considerable activity before Drake in various parts of the world in the mid-19th century. A group directed by Major Alexeyev of the Bakinskii Corps of Mining Engineers hand-drilled a well in the Baku region in 1848. [25] There were engine-drilled wells in West Virginia in the same year as Drake's well. [26] An early commercial well was hand dug in Poland in 1853, and another in nearby Romania in 1857. At around the same time the world's first, but small, oil refineries were opened at Jasło, in Poland, with a larger one being opened at Ploiești, in Romania, shortly after. Romania is the first country in the world to have its crude oil output officially recorded in international statistics, namely 275 tonnes. [27][28] In 1875, crude oil was discovered by David Beaty at his home in Warren, Pennsylvania. This led to the opening of the Bradford oil field, which, by the 1880s, produced 77 percent of the global oil supply. However, by the end of the 19th century, the Russian Empire, particularly the Branobel company in Azerbaijan, had taken the lead in production. [29]

Samuel Kier established America's first oil refinery in Pittsburgh on Seventh avenue near Grant Street, in 1853. In addition to the activity in West Virginia and Pennsylvania, an important early oil well in North America was in Oil Springs, Ontario, Canada in 1858, dug by James Miller Williams. The discovery at Oil Springs touched off an oil boom which brought hundreds of speculators and workers to the area. New oil fields were discovered nearby throughout the late 19th century and the area developed into a large petrochemical refining centre and exchange. The modern US petroleum industry is considered to have begun with Edwin Drake's drilling of a 69-foot (21 m) oil well in 1859, 132 on Oil Creek near Titusville, Pennsylvania, for the Seneca Oil Company (originally yielding 25 barrels per day (4.0 m³/d), by the end of the year output was at the rate of 15 barrels per day (2.4 m³/d)). The industry grew through the 1800s, driven by the demand for kerosene and oil lamps. It became a major national concern in the early part of the 20th century; the introduction of the internal combustion engine provided a demand that has largely sustained the industry to this day. Early "local" finds like those in Pennsylvania and Ontario were quickly outpaced by demand, leading to "oil booms" in Ohio, Texas, Oklahoma, and California.

Early crude production in the U.S.

Year	Volume
1859	2,000 barrels (~270 t)
1869	4,215,000 barrels (~5.750 × 10 ⁵ t)
1879	19,914,146 barrels (~2.717 × 10 ⁶ t)
1889	35,163,513 barrels (~4.797 × 10 ⁶ t)
1899	57,084,428 barrels (~7.788 × 10 ⁶ t)
1906	126,493,936 barrels (~1.726 × 10 ⁷ t)

By 1910, significant oil fields had been discovered in the <u>Dutch East Indies</u> (1885, in <u>Sumatra</u>), <u>Persia</u> (1908, in <u>Masjed Soleiman</u>), <u>Peru</u> (1863, in <u>Zorritos District</u>), <u>Venezuela</u> (1914, in <u>Maracaibo Basin</u>), and <u>Mexico</u>, and were being developed at an industrial level. Significant oil fields were exploited in <u>Alberta</u> (Canada) from 1947. First offshore oil drilling at Oil Rocks (Neft Dashlari) in the Caspian Sea off Azerbaijan eventually resulted in a city built on pylons in 1949. Availability of oil and access to it, became of "cardinal importance" in military power before and after World War I, particularly for navies as they changed from coal, but also with the introduction of motor transport, tanks and

airplanes. [34] Such thinking would continue in later conflicts of the twentieth century, including World War II, during which oil facilities were a major strategic asset and were extensively bombed. [35] In 1938, vast reserves of oil were discovered in the Al-Ahsa region along the coast of the Persian Gulf.

Until the mid-1950s <u>coal</u> was still the world's foremost fuel, but after this time oil quickly took over. Later, following the <u>1973</u> and <u>1979</u> energy crises, there was significant <u>media</u> coverage on the subject of oil supply levels. This brought to light the concern that oil is a limited resource that will <u>eventually run out</u>, at least as an economically viable energy source. Although at the time the most common and popular predictions were quite dire, a period of increased production and reduced demand in the following years caused an <u>oil glut in the 1980s</u>. This was not to last, however, and by the first decade of the <u>21st century discussions</u> about peak oil had returned to the news.

Today, about 90% of vehicular fuel needs are met by oil. Petroleum also makes up 40% of total energy consumption in the United States, but is responsible for only 2% of electricity generation. Petroleum's worth as a portable, dense energy source powering the vast majority of vehicles and as the base of many industrial chemicals makes it one of the world's most important commodities.

The top three oil producing countries are <u>Saudi Arabia</u>, Russia, and the United States. [36] About 80% of the world's readily accessible reserves are located in the Middle East, with 62.5% coming from the Arab 5: <u>Saudi Arabia</u> (12.5%), <u>UAE</u>, <u>Iraq</u>, <u>Qatar</u> and <u>Kuwait</u>. However, with high oil prices (above \$100/barrel), Venezuela has larger reserves than Saudi Arabia due to its crude reserves derived from bitumen.

See also

- Pennsylvania oil rush
- Petroleum
- Petroleum industry
- Energy (society)
- Texas Oil Boom

References

- One or more of the preceding sentences incorporates text from a publication now in the <u>public</u> <u>domain</u>: <u>Chisholm, Hugh</u>, ed. (1911). "Petroleum". <u>Encyclopædia Britannica</u> (11th ed.). Cambridge University Press.
- 2. Gao, Zhiguo. "Environmental Regulation of Oil and Gas". Kluwer Law International. p. 8. {{cite web}}: Missing or empty |url= (help)
- 3. Rapp, George (1985). "Archaeomineralogy". Springer. p. 237. {{cite web}}: Missing or empty | url= (help)
- 4. Deng, Yinke (2011). "Ancient Chinese Inventions". p. 40. ISBN 978-0521186926. {{cite web}}: Missing or empty | url= (help)
- 5. Burke, Michael (September 8, 2008). "Nanotechnology: The Business" (published 2008). p. 3. ISBN 9781420053999. {{cite web}}: Missing or empty | url= (help)
- 6. Dalvi, Samir (November 3, 2015). "Fundamentals of Oil & Gas Industry for Beginners:". <u>ISBN</u> <u>978-9352064199</u>. {{cite web}}: Missing or empty |url= (help)
- 7. Ulrich Vogel, Hans. "The Great Well of China" (https://www.scientificamerican.com/article/the-grea t-well-of-china/). Scientific American. 268 (6): 116–121. doi:10.1038/scientificamerican0693-116 (https://doi.org/10.1038%2Fscientificamerican0693-116).
- 8. ASTM timeline of oil (http://www.astm.org/COMMIT/D02/to1899_index.html)
- 9. <u>Salim Al-Hassani</u> (2008). "1000 Years of Missing Industrial History". In Emilia Calvo Labarta; Mercè Comes Maymo; Roser Puig Aguilar; Mònica Rius Pinies (eds.). *A shared legacy: Islamic science East and West*. Edicions Universitat Barcelona. pp. 57–82 [63]. ISBN 84-475-3285-2.
- 10. Kasem Ajram (1992). *The Miracle of Islam Science* (2nd ed.). Knowledge House Publishers. ISBN 0-911119-43-4. OCLC 26084778 (https://www.worldcat.org/oclc/26084778).
- 11. Zayn Bilkadi (<u>University of California, Berkeley</u>), "The Oil Weapons", <u>Saudi Aramco World</u>, January–February 1995, pp. 20-7
- 12. Joseph P. Riva Jr.; Gordon I. Atwater. "petroleum" (http://www.britannica.com/EBchecked/topic/45 4269/petroleum). *Encyclopædia Britannica*. Retrieved 2008-06-30.
- 13. Istoria Romaniei, Vol II, p. 300, 1960
- 14. (broken link) (http://www.ville-geneve.ch/mhng/page1/bal-05-23.htm) Muséum d'histoire naturelle, Geneva. accessed 2007-10-26

- 15. Le bitume et la mine de la Presta (Suisse), Jacques Lapaire, *Mineraux et Fossiles* No 315 (http://www.minerauxetfossiles.com/revue/dernier_numero/numero_info45.htm) Archived (https://web.archive.org/web/20080222224244/http://www.minerauxetfossiles.com/revue/dernier_numero/numero_info45.htm) 2008-02-22 at the Wayback Machine
- 16. "Asphaltum" (https://books.google.com/books?id=JZBMAAAAMAAJ&pg=PA345&dq=Eyrini)
 Stoddart's Encyclopaedia Americana (1883) pages 344–345
- 17. Eirinis' paper, entitled "Dissertation sur la mine d'asphalte contenant la manière dont se doivent régler Messieurs les associés pour son exploitation, le profit du Roy, & celui de la Société, & ce qui sera dû à Mr d'Erinis à qui elle apartient 'per Ligium feudum' " is held at the BPU Neuchâtel Fonds d'étude [Ne V] catalogue (http://opacrbnj.rero.ch/gateway) Archived (https://web.archive.or g/web/20081217024428/http://opacrbnj.rero.ch/gateway) 2008-12-17 at the Wayback Machine
- 18. "Archived copy" (https://web.archive.org/web/20110714163353/http://www.nepsite.com/node/594 4). Archived from the original (http://www.nepsite.com/node/5944) on 2011-07-14. Retrieved 2009-09-22. {{cite web}}: Unknown parameter | deadurl= ignored (|url-status= suggested) (help)
- 19. History of Pechelbronn oil (http://www.musee-du-petrole.com/site%20anglais/page%204.htm)
 Archived (https://web.archive.org/web/20090725054948/http://www.musee-du-petrole.com/site%2
 0anglais/page%204.htm) 2009-07-25 at the Wayback Machine
- 20. "The oil wells of Alsace; a discovery made more than a century ago. What a Pennsylvania operator saw abroad--primitive methods of obtaining oil--the process similar to that used in coal mining" (http://query.nytimes.com/mem/archive-free/pdf?res=F7071EF635551B7A93C1AB1789D 85F448884F9). New York Times. 23 February 1880.
- 21. Russell, Loris S. (2003). *A Heritage of Light: Lamps and Lighting in the Early Canadian Home*. University of Toronto Press. ISBN 0-8020-3765-8.
- 22. [1] (http://www.sjvgeology.org/history/)
- 23. <u>"Titusville, Pennsylvania, 1896" (http://www.wdl.org/en/item/11368/)</u>. *World Digital Library*. 1896. Retrieved 2013-07-16.
- 24. Down A L "History of Trinidad's Oil" (Address to the 22nd Annual Dinner Geological Society of Trinidad and Tobago 1960)
- 25. Matveichuk, Alexander A. Intersection of Oil Parallels: Historical Essays. Moscow: Russian Oil and Gas Institute, 2004.
- 26. McKain, David L., and Bernard L. Allen. Where It All Began: The Story of the People and Places Where the Oil Industry Began—West Virginia and South- eastern Ohio. Parkersburg, W.Va.: David L. McKain, 1994.
- 27. The History Of Romanian Oil Industry (http://www.rri.ro/arh-art.shtml?lang=1&sec=9&art=3596)
 Archived (https://web.archive.org/web/20090603102058/http://www.rri.ro/arh-art.shtml?lang=1&sec=9&art=3596) 2009-06-03 at the Wayback Machine
- 28. PBS: World Events (https://www.pbs.org/eakins/we_1844.htm)
- 29. Akiner(2004), p. 5
- 30. Turnbull Elford, Jean. Canada West's Last Frontier. Lambton County Historical Society, 1982, p 110
- 31. May, Gary. Hard Oiler! The Story of Early Canadians' Quest for Oil at Home and Abroad. Dundurn Press, 1998, p. 59
- 32. John Steele Gordon (http://www.americanheritage.com/articles/magazine/ah/2007/1/2007_1_23.s html) Archived (https://web.archive.org/web/20080420194514/http://www.americanheritage.com/articles/magazine/ah/2007/1/2007_1_23.shtml) 2008-04-20 at the Wayback Machine "10 Moments That Made American Business", American Heritage, February/March 2007.

- Oil and world power (http://www.americanforeignrelations.com/O-W/Oil-Oil-and-world-power.html),
 Encyclopedia of the New American Nation
- 34. David Fromkin, A Peace to End All Peace, p.261, 354, (1989)
- 35. Hanson Baldwin, 1959, "Oil Strategy in World War II" (http://www.oil150.com/essays/2007/08/oil-st rategy-in-world-war-ii) Archived (https://web.archive.org/web/20090815114446/http://www.oil150.com/essays/2007/08/oil-strategy-in-world-war-ii) 2009-08-15 at the Wayback Machine, American Petroleum Institute Quarterly Centennial Issue, pages 10–11. American Petroleum Institute.
- 36. InfoPlease (http://www.infoplease.com/ipa/A0922041.html)
- 29. ^ www.geohelp.net/world.html
- 30. \(^\text{www.azer.com/.../102_oil_chronology.html}\)
- 31. ^ archives.datapages.com/data/phi/v12_2011/yusif.pdf
- 32. \text{ www.energy-101.org/non-renewable-energy/petroleum-facts/petroleum-history}

Further reading

- Akiner, Shirin; Aldis, Anne, eds. (2004). The Caspian: Politics, Energy and Security. New York: Routledge. ISBN 978-0-7007-0501-6.
- Bamberg, J.H. (1994). *The History of the British Petroleum Company, Volume 2: The Anglo-Iranian Years*, 1928–1954 (https://web.archive.org/web/20090611165112/http://www.mtholyoke.edu/acad/intrel/energy/achnacarry.htm). Cambridge University Press. Archived from the original (http://www.mtholyoke.edu/acad/intrel/energy/achnacarry.htm) on 2009-06-11. {{cite book}}: Unknown parameter | deadurl= ignored (|url-status= suggested) (help)
- Black, Brian C. Crude Reality: Petroleum in World History (2012)
- Mau, Mark; Edmundson, Henry (2015). Groundbreakers: the Story of Oilfield Technology and the People Who Made It Happen. UK: FastPrint. ISBN 978-178456-187-1.
- Maugeri, Leonardo. The Age of Oil: The Mythology, History, and Future of the World's Most Controversial Resource (2006)
- Pongiluppi Francesco, The Energetic Issue as a Key Factor of the Fall of the Ottoman Empire, in "The First World War: Analysis and Interpretation" (edited by Biagini and Motta), Vol. 2., Cambridge Scholars Publishing, Newcastle, 2015, pp. 453–464.
- Painter, David S. (1986). Oil and the American Century: The Political Economy of US Foreign Oil Policy, 1941–1954. Baltimore, MD: Johns Hopkins University Press. ISBN 978-0-801-82693-1.
- Rouhani, Fuad (1971). A History of OPEC. New York, NY: Praeger.
- Vassiliou, Marius (2009). Historical Dictionary of the Petroleum Industry. Lanham MD: Rowman and Littlefield-Scarecrow Press. p. 665. ISBN 0-8108-5993-9.
- Williamson, Harold F. and Arnold R. Daum. (1959) The American petroleum industry: The age of illumination, 1859-1899.
- Williamson, Harold F. (1963) The American Petroleum Industry the Age of Energy 1899-1959.
- Yergin, Daniel (1992). The Prize: The Epic Quest for Oil, Money & Power.
- Mirbabayev, Miryusif F. (2008) Concise history of Azerbaijani Oil. Baku, Azerneshr.

External links

■ <u>Crude (http://www.abc.net.au/science/crude/)</u>: 2007 Australian Broadcasting Corporation documentary [3 x 30 minutes] about the formation of oil, and humanity's use of it.

■ Template:En icon Template:Ar icon <u>Treatise on Petroleum and Its Treatment, along with Various Kinds of Tar and Gums (http://www.wdl.org/en/item/4297/)</u>, 18th century

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