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Development of Mexico's Oil Industry

History of Mexican Oil

With the prices of petroleum, natural gas, uranium, and coal having increased dramatically in recent years, it is obvious that the possession of energy reserves enhances a nation's power, influence, and independence. Such was not the case early in this century, when entrepreneurs first discovered commercial quantities of oil in Mexico. The vital deposits served as a magnet, attracting ruthless profit seekers, avaricious transnational firms, and the diplomats and soldiers of industrialized countries. Once these foreigners had wheedled, bribed, intimidated, and coerced local politicians and their praetorian guards, the resources fell under the sway of outsiders, offending the dignity and attenuating the sovereignty of the possessing state.

The Aztecs had discovered petroleum along Mexico's heavily forested, rain-drenched coastal plain and used it before the arrival of the Spanish in 1519. They burned what later became known as *chapopote* in tribute to their gods, smeared it on their bodies as a medicine, and used it as a dye and glue. The Spanish subsequently caulked their boats with it. From Tampico to Poza Rica, the names of many localities—El Chapopote, El Chapopotal, Chapopotilla, Cerro de la Pez, Ojo de Brea, for example—mean "tar" or "pitch" and had a special significance to oil prospectors.[1]

Over three centuries elapsed before efforts focused on deriving a profit from this black gold. Five years after a railroad conductor, "Colonel" Edwin L. Drake, drilled his famous well near Titusville, Pennsylvania, in 1859, a group of Mexicans discovered and used small quantities of asphalt and crude in the Pánuco region of Tamaulipas and Veracruz states. In 1869 the Compañía Exploradora del Golfo Mexicana drilled in oil springs, discovered the year before by a Dr. Autrey, on the "Furbero" hacienda near Papantla in Veracruz. While the drilling effort proved unsuccessful, the firm did obtain some oil—later distilled into kerosene—by driving a tunnel in the vicinity of the springs. John C. Spear reported manifestations of oil on the Isthmus of Tehuantepec in 1872, and the following year Prieto described seepages along the Tamesí River in Tamaulipas. At the end of the decade, the Mexican

Treasury Department published a study of oil indications by the American geologist J. W. Foster.[2]

In 1876 a Boston sea captain so impressed financiers with tar samples from Tuxpan that he won support for a drilling operation. He found sufficient oil at about five hundred feet to supply a small refinery, which produced kerosene available for sale to local villagers. When his Boston partners refused to provide additional monies to this high-cost venture, he committed suicide.[3]

A new mining law in 1884 granted to surface owners the right to develop oil on their land. Years after this action other attempts at exploitation occurred, including that at the turn of the century by an Englishman named Burke, who—encouraged by abundant oil seepages along the Gulf Coast—persuaded the multimillionaire Cecil Rhodes to organize an exploration company. The London Oil Trust, as it was called, went bankrupt after pouring £90,000 into drilling operations in the Tuxpan region. Its legal successor, the Mexican Oil Corporation, invested £70,000 without being able to turn a profit.[4] Several leading foreign and Mexican experts claimed that the country lacked commercial quantities of oil.

Porfirio Díaz, a cunning dictator who imposed order on the country he ruled for thirty-five years after seizing power in 1876, gave a fillip to the development of Mexico's riches. A group of lawyers, economists, and intellectuals surrounded the crass *cacique,* a Mixtec Indian with little Spanish blood who "retained to the end of his life the simple and unsophisticated outlook of an Indian warrior."[5] These "*científicos*," imbued with Herbert Spencer's Social Darwinism and August Comte's positivism, believed in the inestimable value of technology, the advancement of the country through investment in mines, railroads, factories, and harbors, and the superiority of white men over Indians and mixed breeds.

They saw in Anglo-Saxon capitalism a means to uplift their unenlightened, uncivilized nation through the introduction of scientific efficiency. Yet peace was necessary in the age of Victoria Regina and Grover Cleveland to attract the foreign capital that could stimulate economic progress and—perhaps some day—permit the luxury of democracy. A policy of *pan o palo,* bread or the club, assured this peace. Lucrative opportunities awaited allies of Díaz, who used to say that a dog with a bone in his mouth cannot steal or kill. Enemies could expect repression or extermination. Peonage was widespread, and thousands of people perished in penal colonies or while working on sisal plantations in the Yucatán.[6] Díaz distrusted the army, which he allowed to dwindle to a "clutch of mummified generals."[7] To wield the crushing *palo,* he relied on a maleficent national constabulary known as the *rurales,* immediately recognizable in their broad felt hats, silver-buttoned uniforms, and silver-embellished saddles. These officially sanctioned bandits made Mexico one of the safest places in the world—for all except Mexicans.[8] Civil order clearly took precedence over civil liberties, whose advancement was decades away. As Díaz expressed it: "The day that we may say that the fundamental charter has given us a million colonists, then we have encountered the constitution that really suits us; it will not be a phrase on the lips—it will be a plow in the hands, a locomotive on the tracks, and money everywhere."[9]

"Few politics and much administration"—*poca política, mucha administración*—became the watchword of his regime. The purpose of prudent administration was to provide a suitable climate for the investment of dollars, francs, and pounds sterling that, alloyed with limited indigenous funds, would finance the construction of highways, ports, bridges, dams, and railroads—the sinews of an emerging national economy.

The regime's "scientificism" entailed the government's protection of, but not necessarily aid to, private enterprise. The formula succeeded in sending steel rails across the country as foreigners built flourishing railroad and mining industries during the Porfirian era. Such U.S. tycoons as E. H. Harriman, Jay Gould, and Collis P. Huntington helped extend Mexico's rail network from 417 miles in 1877 to 9,600 in 1901 to 15,325 in 1911.[10] A Yorkshire contractor named Weetman Dickinson Pearson, who later won fame for his oil discoveries, reconstructed a line across the Isthmus of Tehuantepec, joining the Pacific Ocean to the Gulf of Mexico. Americans also gained dominance over the mining sector as Mexico became the world's leading silver producer and second in copper output. Led by Guggenheim interests, U.S. firms controlled 840 of the approximately 1,000 foreign mining companies operating in Mexico in 1908.[11]

The prevailing philosophy also helped three entrepreneurs develop a petroleum sector to diminish dependence on coal for railroads, mining, and electrical generation. The first was Henry Clay Pierce, who came from St. Louis to Mexico in 1885 to head the Waters-Pierce Oil Company. This firm, a Standard Oil of New Jersey affiliate in which Pierce owned a 35-percent interest, soon obtained a concession to import oil. Substantially higher tariffs on refined products led him to purchase Pennsylvania crude from which he made kerosene in his Veracruz and Mexico City refineries. As Pierce gained a monopoly of the kerosene market, the import duties he paid yielded an attractive source of revenues to the Díaz regime.

Pierce was also active in the railroad business. Southern Pacific, itself engaged in geological investigations of Mexico's Northeast, had been awarded a contract to construct a rail link between San Luis Potosí and Tampico, to be operated under the name of Ferrocarril Central Mexicano. Pierce obtained the controlling interest in this line and became the chairman of its board. Anxious to locate fuel for his locomotives, he invited Edward L.

Doheny to investigate oil discharges along the company's right-of-way. Doheny was a wily product of the rough-and-tumble California oil industry in which he had amassed a fortune after discovering oil in Los Angeles in 1892. His influence later became so great in Washington that he purchased cabinet members and senators much in the way that a Medici collected Florentine art. The millionaire oilman gained prominence during the Harding administration for sending $100,000 cash "in a little black bag" to Albert B. Fall, secretary of the interior, after having fraudulently secured a lease for the navy petroleum reserves at Elk Hills, California. Long before the infamous Teapot Dome scandal, Doheny played a critical role in the unfolding drama of Mexico's oil development.

Doheny liked what he saw in Mexico. At one spot, thirty-five miles west of Tampico, oil literally oozed from the ground. He later said:

> We found a small conical-shaped hill—where bubbled a spring of oil, the sight of which caused us to forget all about the dreaded climate—its hot, humid atmosphere, its apparently incessant rains, those jungle pests the *pinolillas* and *garrapatas* (wood ticks), the dense forest jungle which seems to grow up as fast as cut down, its great distance from any center that we would call civilization and still greater distance from a source of supplies of oil well materials—all were forgotten in the joy of discovery with which we contemplated this little hill from whose base flowed oil in various directions. We felt that we knew, and we did know, that we were in an oil region which would produce in unlimited quantities that for which the world had the greatest need—oil fuel.[12]

Doheny acquired for $325,000 the three-hundred-thousand-acre "El Tulillo" hacienda at the convergence of the states of Tamaulipas, Veracruz, and San Luis Potosí and organized the Mexican Petroleum Company with an initial capital of $10 million. William L. Clayton, the American ambassador, introduced him to Díaz, who encouraged his prospecting with tax and tariff concessions. A decade later the counselor for the embassy lived in the home of the oil magnate's representative in Mexico, and Doheny's representative subsequently resided in the counselor's house.[13] The web of relationships thickened when Mrs. Doheny donated property on which a new chancery for the embassy was built.

Doheny benefited from the services of Ezequiel Ordóñez, who—unlike most Mexican geologists—believed that oil existed in Mexico. They made their initial strike on May 14, 1901, at a depth of 525 feet, in Ebano, a jungle-infested region of San Luis Potosí.[14] When Ferrocarril Central refused to purchase the fifty-barrel-per-day (bpd) output of this well—Pierce may have feared Doheny as a potential competitor[15]—Doheny set up a firm to provide asphalt for Mexico City, Guadalajara, Morelia, Tampico, Puebla, and Chihuahua.

By December 1903 Doheny's company had sunk about nineteen wells, and he was disappointed by the poor results after spending $1.5 million. At this point Ordóñez intervened, proposing that a well be drilled in the vicinity of massive oil oozings near the volcanic obtrusion, Cerro de la Pez, where Doheny had first seen the hill of oil. La Pez 1 came in on Easter Sunday, April 3, 1904, yielding fifteen hundred bpd from a depth of 1,650 feet. This was Mexico's first important oilfield, and as output rose sharply, the company signed long-term supply contracts with the Central and other railroads. It also agreed to sell two million barrels a year for five years to Standard Oil and shipped significant quantities to the east coast of the United States. The Mexican Petroleum Company found the Chijol reservoir, with geological characteristics similar to Ebano, a few miles northeast of Ebano in 1909.[16]

Doheny and his associates created the Huasteca Petroleum Company to explore outside the area of their original holdings. They first turned their attention south of Tampico, near the zone where Cecil Rhodes's company had unsuccessfully prospected, developing the Juan Casiano tract. After drilling two moderate producers, the company brought in Juan Casiano 7 in September 1910. By 1913 this well furnished nine million barrels annually or one third of total national production. La Huasteca was in a position to use much of this oil because it had prudently invested millions of dollars in the construction of roads, pipelines, and pumping stations.

Doheny's company was also responsible for an even more abundant gusher, Cerro Azul, which was completed in February 1916. Lying at the culmination of the "Golden Lane" or "southern fields," a series of reservoirs that stretched thirty miles from Dos Bocas to El Chapopote on the Tuxpan River, it was "the largest well the world had seen" with a measured flow of 260,858 bpd.[17]

La Huasteca owned its property in fee simple and enjoyed no concession from the state, although President Díaz had helped Doheny acquire access to the land of a recalcitrant owner. Still, Díaz urged Doheny, who thanks to oil properties in Mexico and elsewhere had become the largest oil magnate after John D. Rockefeller,[18] to allow the government first refusal should he decide to sell his holdings lest they fall into the hands of a powerful monopoly such as Standard Oil. Standard Oil of Indiana, which signed the purchase over to Standard Oil of New Jersey, did acquire the Doheny family's interest in La Huasteca and the Mexican Petroleum Company, but this was not until 1925—fourteen years after Díaz's political demise.

The third petroleum baron was the Yorkshireman Pearson, who had earned an international reputation in the construction business. Among his feats were the Dover naval base, the tunnel under the Thames River in London, the first dam in the Aswan region of Egypt, and two subway tunnels under the Hudson River.[19] Díaz paid him to undertake the drainage of Lake Texcoco, rebuild the port of Veracruz, and reconstruct the trans-Tehuantepec railway, with harbor terminals at both ends. Pearson supplied half the capital for the Tehuantepec Railroad Company, a government-organized enterprise, and supervised all construction and repair work. His efforts were rewarded with 37 percent of the system's net profits for five years and an even larger percentage thereafter. Díaz and Pearson inaugurated the new line by riding its entire 170 miles with their sons.[20]

In the course of completing these projects, Pearson's engineers informed him of the presence of oil in Mexico. Pearson found himself in Texas shortly after the great Spindle Top well spewed a jet-black stream of oil two thousand feet over Beaumont in 1901, marking the Lone Star State as an important depository of hydrocarbons. He immediately cabled his associates to buy and lease land and by 1906 controlled eight hundred thousand to nine hundred thousand acres. Knowing that geology in parts of Mexico was similar to that of Texas, he hired the engineer who had brought in the Spindle Top and began exploring near San Cristóbal on the Isthmus of Tehuantepec. His goal was the establishment of the country's first integrated oil firm. The engineer's discoveries led him to build a refinery, storage center, and pipeline at Minatitlán to take care of the anticipated output from the San Cristóbal wells. Low productivity, however, forced him to purchase supplies from other producers. Undaunted, Pearson sought to shatter the Waters-Pierce kerosene monopoly in a confrontation that became known as the "great Mexican oil war." He absorbed severe losses on the way to garnering nearly one quarter of the retail market.[21]

The Díaz administration granted Pearson vast concessions on government-owned property in five states in order to prevent Standard Oil from securing a monopoly. All told, he invested $25 million in exploration before bringing in San Diego 2 in May 1908 with an initial daily yield of twenty-five hundred barrels, opening the Dos Bocas pool. This discovery was eclipsed when San Diego 3 blew in on July 4, 1908. So great was the pressure on this well, located seventy miles south of Tampico on the shore of the Laguna de Tamiahua, that it destroyed the derrick and drillpipe. Worse, the well caught fire, sending a one-thousand-foot column of flame into the air and burning uncontrollably for fifty-eight days. Estimates of the oil output varied from fifteen thousand to eighty thousand bpd. Vividly described in newspapers throughout the world, the "blowout" aroused interest in Mexico's oil wealth. Even though the disaster virtually exhausted the local pool, two subsequent wells produced at a rate of several hundred barrels.[22]

Pearson, who may have "garnered larger profits from Mexico than any other man, either during or since the Spanish conquest,"[23] set up the Compañía Petróleo "El Aguila" in 1908 to operate his leases in the Tampico district. Everything Pearson touched turned to black gold for his second major well, Potrero del Llano 4, completed about twenty miles west of Tuxpan in December 1910, was a gusher. Despite tremendous hydrostatic and gas pressure, the work crew avoided a fire as it struggled for two months to cap a flow estimated at one hundred thousand bpd. Potrero del Llano produced ninety-three million barrels of oil in twenty-four years and was the most prolific producer in the Golden Lane. The discovery of this field launched an oil boom in Mexico which attracted attention comparable to that lavished on the Persian Gulf a half century later. Pearson recorded his third key discovery in 1913 when the Aguila company opened the South Chinampa–North Amtalán field on the Los Naranjos lease several miles south of La Huasteca's Juan Casiano wells.

Many of Díaz's advisers favored British over American investments. Still, the president was anxious to balance these interests to prevent the domination of either. He therefore encouraged the work of men of both countries by sponsoring helpful legislation and assisting land acquisition. For example, the Petroleum Law of 1901, which authorized the government to grant concessions in public lands, enabled Pearson and Doheny to operate in extensive areas. The November 25, 1909, mining law reaffirmed the subsoil rights of the surface owner. This measure became the basis for the companies' later resistance to the nationalization of Mexico's oil.[24] Díaz also permitted the unfettered exploration of petroleum and petroleum products, duty-free importation of drilling and refining equipment, and the exemption of capital stock from virtually all federal taxes.

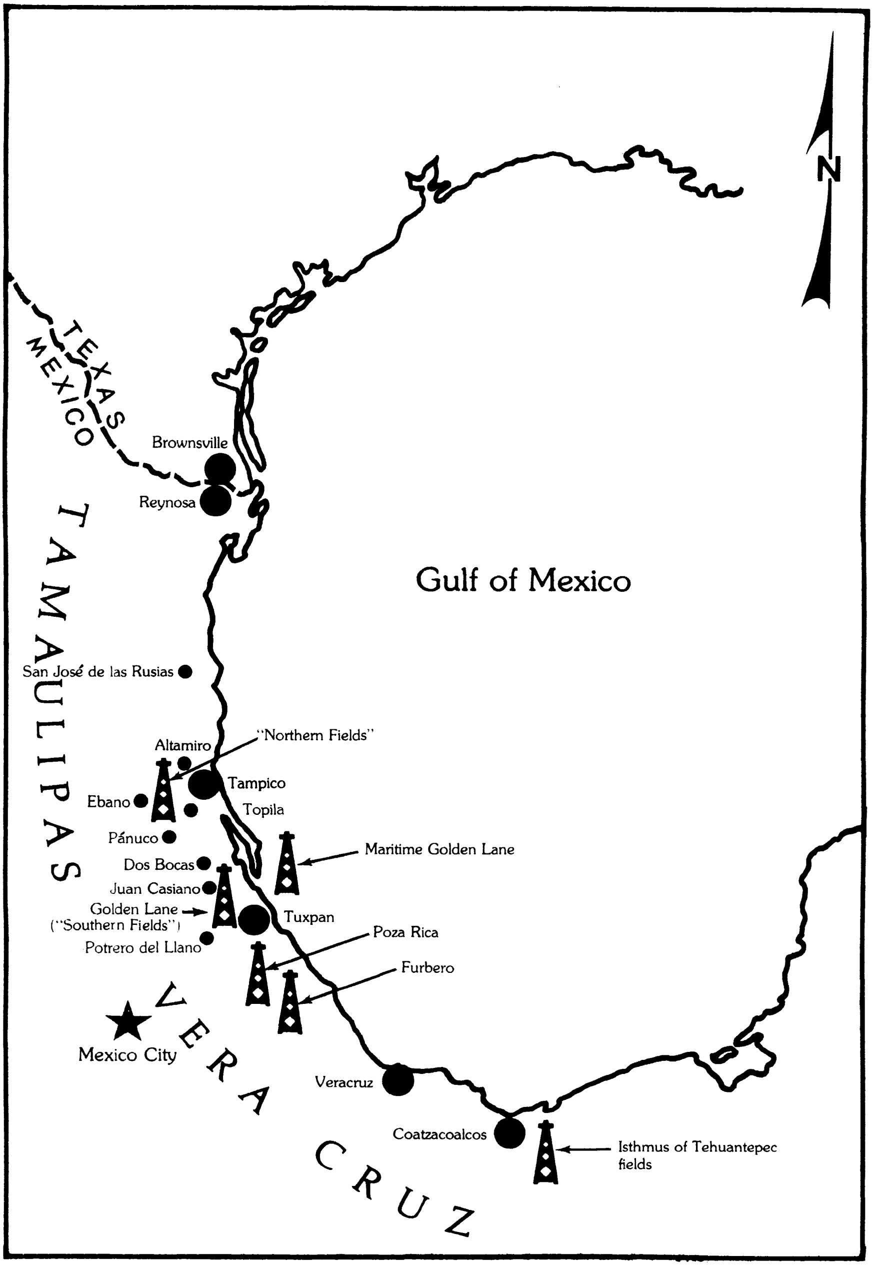
Fierce competition with Doheny notwithstanding, Pearson's El Aguila company—which boasted Díaz's son and his finance minister, José Y. Limantour, the foremost *científico,* as board members—became Mexico's preeminent producer following the Potrero del Llano strike. Winston Churchill, then first lord of the Admiralty, contributed mightily to its success when in 1912, over strenuous opposition, he converted the Royal Navy from coal to oil so that its vessels could achieve sufficient speed to outmaneuver the German battle fleet. Thus the First Battle Division glided into combat with the kaiser's Kriegsflotte propelled by Mexican bunker oil, which met fully 75 percent of British needs. That Pearson was a backbencher of the then-ruling Liberal party helped El Aguila land the supply contract.[25] Henry Ford also nourished the demand for Mexico's petroleum when he transformed the automobile from an upper-class luxury to a convenience affordable by millions of families. Too, the lowering of import duties by the United States enhanced the attractiveness of Mexican crude to major fuel oil consumers who had often been inconvenienced by undependable supplies from the Gulf Coast fields of Texas and Louisiana.[26]

Even though Doheny and Pearson, knighted in 1911 as Viscount Cowdray, came to dominate the petroleum industry, some 160 American and European firms, many of which were small independents, sought to profit from the newly found wealth. The Southern Pacific Railroad, which had been vigorously prospecting for oil since 1907, discovered the important Pánuco field near Tampico in 1910. With a cumulative production of 276 million barrels to January 1, 1935, the deposit proved to be the most important of the northern fields. Emboldened by its success, the railroad chartered the East Coast Oil Company in early 1911 to handle its petroleum activities in the Tampico region. The same year, it opened the productive Topila pool twelve miles east of Pánuco. The Royal Dutch Shell group entered the country in 1912 and soon formed the Mexican Dutch Company "La Corona," whose Pánuco 5, completed in January 1914, proved one of the most spectacular wells in the northern fields. Royal Dutch Shell acquired control of El Aguila from Pearson in mid-1919 and gradually integrated it with La Corona.[27] The leases of Penn Mex yielded 59 million barrels from eighty-seven producing wells, the most productive of which was Alamo 2 near the southern end of the Golden Lane.

Gulf Oil secured valuable leases in both the northern and southern fields and recorded a peak production of nearly 25 million barrels in 1922. The Texas Company commenced activities in the Tampico region around 1911 and achieved a maximum output of 9.8 million barrels nine years later. Standard Oil of New Jersey did not begin operations in Mexico as a producer until 1917, when it bought the Transcontinental Petroleum Company, owned by American, British, and Mexican interests. Transcontinental boasted only a single active well at the time of the purchase; however, massive investment by Jersey Standard raised the company's output to 50,000 bpd by mid-1918. The lure of profits attracted venture capital into pipelines, refineries, railroads, docks, and tankers.[28] "From the Doheny fields north and west of Tampico to the Cowdray fields almost two hundred miles south near Papantla and Poza Rica, the foreigners owned or controlled virtually every acre of potentially productive oil land."[29] Map 1 shows the principal deposits.

Production soared from 10,000 barrels in 1901 to 3.9 million in 1908 to 55 million in 1917 to 193.4 million in 1921. This rapid increase took place despite a populist social revolution which began in 1910, when Francisco I. Madero, a well-to-do intellectual and spiritualist, challenged the domestic and foreign policies of Díaz and helped overthrow him the following year. Some American oil companies allegedly backed the insurgency because they perceived a decidedly pro-British cast to policies effected by Díaz and his lieutenants. Specifically, Standard Oil is believed to have offered Madero and his forces a

MAP 1 *Principal Oil Deposits*



loan of between $500,000 and $1 million for "certain concessions" under a new government.[30] Only circumstantial proof buttresses this contention, which also holds that Pearson contributed to the Porfirista cause. For more than a decade, much of Mexico resembled a Tolstoyan battlefield festooned with conniving politicians, stacked corpses, penurious peasants, invading forces, and disheveled armies marching off in different directions.

That the "Golden Age" of Mexican oil occurred during this upheaval can be explained by the remote location of the coastal fields, the poor roads between them and the country's central combat theaters, the companies' use of bribery and their own brutal "white guards" or *guardias blancas* to secure the tropical petroleum zone, and the constant threat to combatants that American forces would intervene if the area's sanctity were violated. After all, U.S. Marines occupied Veracruz for seven months following the bloody seizure of the port on April 21, 1914, ostensibly to prevent the unloading of German arms.[31] As once explained by Philander C. Knox, President Taft's secretary of state, U.S. naval vessels patrolled the Gulf Coast to keep the Mexicans "in a salutary equilibrium, between a dangerous and exaggerated apprehension and a proper degree of wholesome fear."[32] In addition, Gen. Manuel Peláez staged an uprising against the constitutional government of Venustiano Carranza, who emerged as president in 1914, and seized control of a large portion of the oil-producing regions. At the height of the civil war, the oil companies paid the rebellious general, with whom they closely cooperated, $15,000 per month to protect their properties.[33] Other commanders also received danegeld from the companies.

Ironically, output began declining in 1922 after the next chief executive, Alvaro Obregón, had made great strides toward restoring peace. Ruinous exploitation had diminished the productivity of the wells, and operating costs had begun to rise. In addition, the companies began fretting over their status under a viable government that might collect taxes and listen sympathetically to labor demands. Unless designed to advance their interests, government interference was anathema to these corporations, especially the American firms which—except on public lands—faced few regulations at home. At this time there were no taxes levied on oil production in the United States, and only fifteen state governments imposed a gasoline tax in 1921.[34]

As a result cheaper fields enticed many investors to Venezuela, where President Juan Vicente Gómez, who seemed almost as pliant and cooperative as Díaz, promised huge reserves and immediate profits. (Daily production in this Andean republic expanded from 6,100 barrels in 1922 to 515,200 in 1938.)[35] Some medium-sized firms left Mexico, while others shut down refineries, dismantled pipelines, and closed terminals. More than half of the workers employed by foreign companies were discharged.[36] The rate of well-drilling increased two and one-half times between 1921 and 1926, and the number of wells drilled in the 1924–1927 period was five times greater than the number completed before the production peak in 1921. But the majority of wells opened at this time were dry, compared with less than 38 percent of the wells abandoned at the termination of drilling before 1921.[37]

This downward slide in output continued until the early 1930s when El Aguila, controlled for a decade by Royal Dutch Shell, discovered the rich Poza Rica deposits between Tampico and Veracruz, approximately twenty-five miles south of the old producing fields of the Golden Lane. Until the opening of the Reforma area near Villahermosa in the early 1970s, Poza Rica was Mexico's premier producer—with a cumulative output of 941 million barrels to December 31, 1968, and an estimated ultimate production of 2.8 billion barrels. Although companies such as La Corona opened new pools in the Tampico area, both the northern fields and the Golden Lane suffered depletion or serious water encroachment. The decline in their production was partially offset in later years by Poza Rica and discoveries in the Isthmus of Tehuantepec (Tonalá and Nuevo Teapa, 1928; El Burro, 1930; El Plan, 1931; and Cuichapa, 1935).[38] Nonetheless, daily yields plunged from 193,398 bpd in 1921 to 32,805 in 1932, rising slightly to 38,506 in 1938. The companies contended that the country possessed promising new reservoirs. Yet a medley of factors—the debilitation of existing fields, low market prices, domestic taxes, U.S. tariffs, the financial depression in the United States, and uncertainty over ownership rights—militated against large investments in exploration and development.[39] The companies turned their attention to Venezuela and the Middle East.

Expropriation

For years the firms delighted their American and European shareholders with attractive dividend checks. Yet they won few friends in Mexico because they treated their holdings as foreign enclaves, sought the protection of their home governments, and arrogantly embroiled themselves in the host country's politics. These corporations claimed not simply to hold ten- or twenty-year concessions but to own the mineral deposits which they exploited. Their proprietary view, embedded in the 1884 mineral law and subsequent Porfirian statutes, offended Mexico's social-reformist Constitution of 1917. Strongly influenced by the Hispanic concept of property, Article 27 of the charter described as "inalienable and imprescriptible" the nation's ownership of subsoil deposits, including "petroleum and all hydrocarbons, solid, liquid, or gaseous." Although the Mexican Supreme Court ruled ten years later that companies holding concessions before 1917 enjoyed perpetual rights, the