HoustonBusiness

A Perspective on the Houston Economy

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Houston in 1900
Part 2. Houston and the Texas Oil Industry

By 1910 the administration and management of Texas oil, as well as much of its equipment-manufacturing capacity, had shifted to Houston, and its consolidation in Houston would continue steadily through the early decades of the century.

The last issue of *Houston Business* looked at the forces that shaped the Houston economy of 1900, primarily lumber and cotton. Although lumber and cotton remained powerful forces in 1900, the economic momentum brought by the completion of the rail system in Texas and exploitation of the Blackland Prairie and East Texas timber was rapidly coming to an end. Houston would need new sources of growth in the 20th century if it were to continue to flourish.

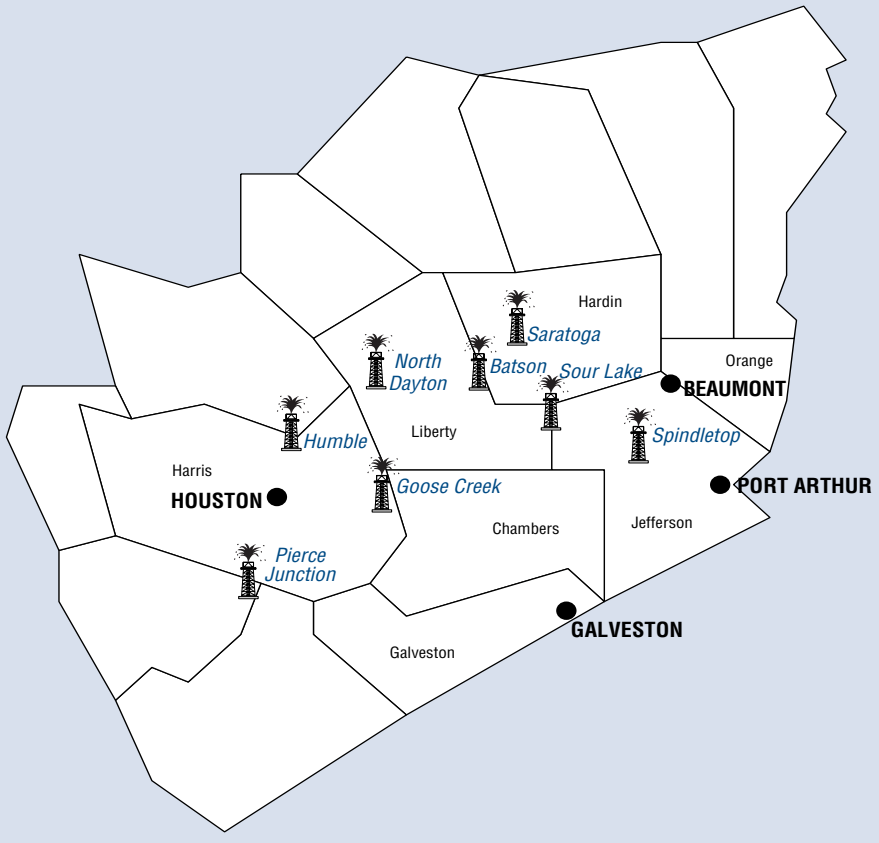
Houston's spur to growth in the new century would come from two seemingly random acts of nature. In September 1900 a great hurricane destroyed Galveston, effectively ending the Houston–Galveston rivalry and clarifying the value of a ship channel and an inland port on the Texas Gulf Coast. Then in January 1901, the Spindletop gusher near Beaumont came in, producing unexpected riches and kicking off a frenzied search for oil in Gulf Coast salt domes. Houston would capitalize on these short-term riches with nearby oil fields, but more important, it would secure a long-term future in oil by making itself the focal point of a new Texas oil industry.[1]

This article examines the oil industry's early development and its shift from Spindletop and Beaumont to Houston. A future article will look at the 19th century rivalry between Houston and Galveston, the importance of the 1900 hurricane and its effect on Houston's economic development in the 20th century.

Oil in Texas

Significant oil deposits had been discovered in Texas long before Spindletop. Spanish explorers had used asphalt from Sabine Pass to repair the bottom of their ships in 1543, and seeps of tar, asphalt and petroleum had been documented in 18 Texas counties by 1874.[2] Many of these 19th century sightings were in East Texas, at locations such as Oil

Figure 1
Texas Oil and Gas Since 1543



Springs in Nacogdoches County, Sour Lake and Saratoga in Hardin County, along White Oak Bayou in Harris County and in the vicinity of Spindletop in Jefferson County.

A merchant named L. T. Barrett and his three partners drilled the state's first successful oil well in 1866 at Oil Springs.[3] Completed at 110 feet, the well produced 10 barrels of oil per day, but further drilling in the area failed. During the 1880s, however, success by subsequent drillers turned Oil Springs into the state's first active oil field, with a primitive refinery and oil gathering lines. Oil drilling was typically done using deep-water-drilling cable rigs, all that was available in East Texas during this era. These primitive rigs were often an important cause of failure.

The most significant oil development in Texas before Spindletop began in Corsicana in 1894. Although oil seepages had been noted in the area, the Corsicana field was discovered by water drillers seeking a deep artesian well. Like the rest of the Blackland Prairie, Corsicana was suffering through the prolonged agricultural depression of the 1890s, and industrial water supplies would offer Corsicana an opportunity to diversify away from cotton. Once the oil was found, a group of local businessmen organized an oil development company and bought leases in the vicinity of the discovery. They brought in two experienced Pennsylvania drillers, James M. Guffey and John H. Galey, to test the field in exchange for a half interest in the production. Four of the first five wells were productive, and a significant oil boom was soon under way.

Production rose quickly from 65,975 barrels in 1897 to 836,000 barrels by 1900, or just over 1 percent of the U.S. total.[4] Because the development of the field was wasteful and chaotic, and because of problems marketing the Texas oil, the mayor of Corsicana invited an experienced oilman to inspect the field and suggest operational improvements. Joseph S. Cullinan, who had gained experience in all phases of oil development and marketing as an employee and manager for Standard Oil, recognized opportunity in Texas and immediately struck out with his own company in the Corsicana fields. He signed long-term contracts with producers, organized the gathering of oil from the fields, built storage facilities and constructed the first significant refinery in the state.

Although Spindletop and other Gulf Coast salt dome discoveries would soon dwarf Corsicana oil, it had a lasting effect on Texas oil history. First, Corsicana brought together many of the key actors at Spindletop.[5] Guffey and Galey, for example, would finance the successful drilling at Spindletop and, with further funding from the Mellons of Pittsburgh, would found Gulf Oil Co. Cullinan—often recognized as the father of Texas oil—would come to Spindletop to rationalize production, storage and marketing, much as he had done at Corsicana. He would found the Texas Co. and build it into a major oil power, later known as Texaco.

Though oil drew a number of capable Texans to both Corsi-

cana and Spindletop, Corsicana also set an early pattern of acquiring skilled labor and oil field equipment from established oil-producing regions in Ohio and Pennsylvania. Capital also typically came from non-Texas sources. Just as the Mellons financed Gulf Oil, the Pew family of Philadelphia became a major influence at Spindletop and later Texas fields, using Sun Oil Co. as a vehicle.

A second important factor at Corsicana was the use of rotary drilling. Introduced in the Dakota Territory in 1882, this drilling method was extremely successful in the shallow Corsicana sands, cutting drilling costs per foot by two-thirds or more compared with those typically experienced in the Pennsylvania oil fields.[6] Walter B. Sharp originated the method of using fluid mud to plaster and hold up soft formations. Penetration of the Spindletop salt dome was finally accomplished with a rotary rig moved from Corsicana and operated by former Sharp employees. Rotary drilling innovations would become an important building block for Houston's oil-machinery industry.

The Spindletop area, with its low hills, was unlike any known oil-bearing geologic structure in 1900. Reports from both the U.S. Geological Service and from state geologists had warned investors of no known scientific basis for oil to be discovered at Spindletop. But once the salt dome was penetrated, what happened at Spindletop made history. There had been previous gushers, but after an eruption of mud and water, this one catapulted the drill pipe over the top of the derrick. It unleashed a stream of oil twice the height of the derrick that ran uncontrolled for nine days. Successful wells at Corsicana produced 20–40 barrels per day; Spindletop production was 75,000–100,000 barrels per day!

The Spindletop phenomenon riveted the attention of every geologist and potential oil investor in the United States. Trains arrived bearing tourists curious to see the gusher. Leasing activity was frenzied, and Beaumont became the greatest of all oil boomtowns. (Houston even briefly billed itself as the "Gateway to Beaumont.") However, by spring of 1902 some of the Spindletop wells ceased to flow due to wasteful production practices, and soon most were producing more saltwater than oil. This led to a major fallout of producers who had signed long-term contracts, and exploration efforts shifted to other area salt domes. Cullinan and the Texas Co., with Sharp heading the exploration arm, quickly found success at Sour Lake in March 1902. Other Hardin County domes at Saratoga and Batson produced gushers within a year. Exploration then moved on to Humble (1905) and Goose Creek (1908) in Harris County.

A pattern quickly developed: discovery of a salt dome gusher, rapid and wasteful exploitation, production decline, then movement to the next salt dome. Olien and Olien described the process as "a cluster of familiar faces in a string of new locations."[7]

The Oil Industry and Houston

The Texas oil industry kept a significant presence in Beaumont through much of the first 10 years of the 20th century. However, by decade's end the administration and management of Texas oil, as well as much of its equipment-manufacturing capacity, had shifted to Houston. Beaumont became primarily a regional refining area, distilling crude oil that arrived by pipeline from other parts of Texas, Oklahoma and Louisiana. The growth of an industrial oil infrastructure in Texas, and its consolidation in Houston, would continue steadily through the early decades of the century.

The most immediate impact of the Spindletop discovery was cheap fuel for local industry. Cullinan, as part of his marketing efforts at Corsicana, had worked with the Cotton Belt Railroad[8] to develop an oil-burning mechanism for locomotives. The first successful run of a Cotton Belt passenger train powered by oil had been from Corsicana to Hillsboro in 1898. Texas railroads now quickly converted from wood or coal to oil, as did street electric railways, breweries, brickyards, ice factories and cottonseed mills. The first pipeline to Houston ended at oil storage facilities located at the intersection of tracks for the Houston East and West Texas Railway and the International–Great Northern Railroad. Cheap energy cut costs, boosted profits and made the region more competitive.

In 1905, the Texas Co. still operated from Beaumont, but Cullinan wrote to a colleague in New York that "the time will come—perhaps at no distant day—when we want our general office in Houston instead of Beaumont, as Houston seems to me to be the coming center of the oil business in the Southwest."[9] The Texas Co. did, in fact, move to Houston in 1908, followed by Gulf Oil in 1916 and regional Shell offices in 1933.

The most significant production company to come out of Houston itself began when Ross S. Sterling organized his various oil holdings into Humble Oil Co. in 1911 and moved the offices to Houston the following year. To attract volume purchase terms for his crude oil, Sterling needed to be a bigger producer, and he invited a number of other producers (almost all with roots at Spindletop) to join in a combined company. William S. Farish, Robert L. Blaffer, Walter W. Fondren and Harry C. Wiess of Beaumont were among the group that combined their assets into the new Humble Oil and Refining Co. in 1917. Standard Oil Co. of New Jersey bought a controlling interest in 1919 but left management largely in Texas hands for many years. The company today is Exxon Mobil Corp.

Although machine shops in both Houston and Beaumont quickly learned to handle oil field repairs, the growth of the oil machinery industry was slow. A highly developed rail network and good water transportation made shipment of tubular goods and refining equipment relatively easy, and established producing regions such as Ohio, Pennsylvania and West Virginia initially supplied most of this equipment.[10]

One important early path to the development of a Texas oil machinery industry was the innovative development and use of the rotary rig by locals. In Beaumont, Parker Well Works was an early provider of rotary rig parts, using the manufacturing facilities of Southern Car Manufacturing Supply Co. But the real innovation in the industry was the product of partners Walter Sharp and Howard R. Hughes, Sr.

Sharp and Hughes had twice given up on promising wildcats—at Goose Creek and Pierce Junction—because of their inability to drill through hard rock formations with the technology of the day. Existing fishtail bits wore out quickly and had to be replaced often, and they tended to produce a hole that tapered to a narrower gauge at greater depth. With his partner's permission, Hughes took a vacation to concentrate on the problem and arrived at a solution in just two weeks. Hughes' famous design for a rock bit consisted of cone-shaped revolving cutters with teeth that exercised a chipping or crushing action on the rock under the weight of heavy steel pipe. The new bit drilled a true hole with 10 times the speed of any existing bit.[11] The Hughes bit is still in use around the world today.

Sharp-Hughes Tool Co. was formed in 1908 to manufacture the bit in Houston, and in 1910, when more capital was needed, the seemingly ever-present Joseph Cullinan joined them as a partner. Upon Sharp's death in 1912, Hughes assumed control of the company and later incorporated it as Hughes Tool Co. In 1917, a competing version of the rock bit emerged when Clarence E. Reed opened a plant in Houston to produce the Reed roller bit and reamer.

Other early oil field machinery examples in Houston can be cited.[12] James Abercrombie, a drilling supervisor, invented a device to prevent high-pressure blowouts due to high gas pressure; Harry Cameron revamped his machine shop to produce the preventer, opening Cameron Iron Works in 1922. In 1917, Howard Smith Co. began the manufacture of pipe fittings and other supplies for Texas oil fields, and W-K-M Manufacturing opened in 1920 to produce rotary slips and pipeline valves. By 1920, Houston was home to the state's most important concentration of oil field machinery companies.

Refineries also came to the Houston Ship Channel. The Spindletop legacy for the Beaumont area dwindled to three large refineries: the Gulf Oil and Texas Co. plants at Port Arthur and the Magnolia Oil plant at Beaumont. It was Joseph Cullinan who established the criteria for a good refinery location in Texas: large acreage, plenty of fresh water, deepwater shipping, and protection from storms and floods. Having witnessed the 1900 hurricane and another great storm in 1907, Cullinan felt that both Galveston and Texas City failed the fourth requirement, leaving only Beaumont–Port Arthur and the Houston Ship Channel as viable alternatives.

Among the early refineries in Houston were Galena–Signal (1916), Sinclair (1918), Deep Water Refining (1919) and Humble Oil and Refining (1920). By 1930, eight refineries were operating on the Houston Ship Channel, running 194,000 barrels of crude per day.[13] Despite Cullinan's reservations, Texas City had four refineries by 1939.

Simply dating the movement into Houston of major oil companies, such as the Texas Co. or Gulf Oil, or the birth of new firms in the city, such as Sharp-Hughes Tool, places the formative years for the city's oil industry in the 1908–16 period. The key moment in creating Houston's oil industry probably came earlier, however, in 1904–05, when several of the

most influential circles in the Texas oil industry converged on the city.[14] Active exploration of the Humble oil field, just north of Houston, was under way throughout 1904, and the first significant completion of an oil well was in January 1905, pulling many of the Spindletop pioneers within Houston's sphere of influence. Blaffer, Farish and Fondren were all working in Houston by this time.

While Cullinan was contemplating the future move of Texas Co. offices to Houston from Beaumont in 1905, he had already moved himself and his family there from Corsicana; James Autry, Texas Co.'s chief lawyer, moved to Houston from Beaumont the same year. Former Gov. James Hogg, a major political power in oil and a member of Texas Co.'s board of directors, took a suite at the Rice Hotel and moved his Austin office to Houston. Both Walter Sharp and Howard Hughes relocated their families to Houston in 1904.

Olien and Olien describe the many "business circles" in the early days of Texas oil and the need to be a part of these circles to survive.

> [T]hose who settled into stable business circles…or combined their holdings, tended to endure in the high-risk industry, functioning as promotors in some industries and investors in others….The lone wolves at Spindletop who did not work within circles rarely survived the decade as significant players…[as] they failed to spread the high risks of exploration and production over enough ventures.[15]

The circles that coalesced in Houston were more than survivors; they were among the most successful and astute in the industry. The nexus of knowledge and power in Texas oil had moved to Houston by 1904–05, and it continued to grow thereafter. Perhaps Houston's initial attraction (as compared with Corsicana's or Beaumont's) to oilmen such as Cullinan, Farish and Sharp was its advantages as a regional capital: superior communications, transportation and infrastructure. These were the same factors that had made Houston the center of the state's lumber industry 20 years earlier, when most of the logs were being cut in Beaumont.

But the earliest signal of a permanent presence for oil in Houston, the sign that it would be more than another in a string of stops for familiar faces, was the arrival of these key actors and their families. To be connected to this knowledge loop was absolutely crucial in a volatile and risky industry, and many others would follow these influential pioneers into the city.

Such clustering of economic activity, if successful, builds its own momentum whether the industry is oil, financial services, autos or software. The larger the cluster, the more specialized the knowledge and skills inside it, making it more attractive to those outside and, finally, making the cluster even bigger as it attracts more participants. This circular and cumulative process has brought oil-driven growth to Houston—both upstream and downstream—for over a century.

Notes

1 For another look at this important moment in Houston's history, see Harold L. Platt, "Houston at the Crossroads: The Emergence of the Urban Center of the Southwest," *Journal of the West* 18 (July), 1979, pp. 51–61.

2 C. A. Warner, *Texas Oil and Gas Since 1543* (Houston: Gulf Publishing Co., 1939).

3 W. T. Block, "Oil Industry in East Texas Traces Roots Back to 1860s," www.wtblock.com/wtblockjr/oil5.htm (first published in the *Beaumont Enterprise*, January 8, 2000).

4 John O. King, "The Early Texas Oil Industry: Beginnings at Corsicana, 1894–1901," *The Journal of Southern History* 32 (November), 1966, pp. 506–07.

5 For a longer discussion of the business circles that developed at both Corsicana and Beaumont, see Diana Davids Olien and Roger M. Olien, *Oil in Texas: The Gusher Age, 1895–1945* (Austin: University of Texas Press, 2002), pp. 47–50.

6 King, p. 507.

7 Olien and Olien, p. 43.

8 Officially known as the St. Louis and Southwestern Railway.

9 John O. King, *Joseph Stephen Cullinan: A Study of Leadership in the Texas Petroleum Industry, 1897–1937* (Nashville: Vanderbilt University Press for the Texas Gulf Coast Historical Association, 1970), p. 182.

10 Olien and Olien (p. 59) cite the example of Oil Well Supply Co., which manufactured its products in Pittsburgh and marketed them through outlets in Beaumont, Corsicana and Humble.

11 R. C. Gano, "Howard Robard Hughes, Sr." in *The Handbook of Texas Online* (Austin: Texas State Historical Association, 2002), www.tsha.utexas.edu/handbook/online.

12 The examples are from David G. McComb, *Houston: A History* (Austin: University of Texas Press, 1981), pp. 80–81, and Olien and Olien, pp. 59–62.

13 McComb, p. 80.

14 The timing of these personal and family moves into the city is noted in Marguerite Johnson, *Houston: The Unknown City* (1836–1946) (College Station: Texas A&M University Press, 1991), pp. 126–27.

15 Olien and Olien, p. 64.

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It has been a long year for Houston and for Texas. It doesn't matter whether you compute rates over the past three months, six months or the whole year, job growth in Houston and other major Texas cities has been consistently close to zero.

The latest news on Houston remains mixed. Upstream improvements in drilling were put on hold by uncertainty over energy prices, but downstream chemicals have seen recent gains in sales and profits. The Houston Purchasing Managers Index is pointing to local expansion for the second consecutive month, but retail sales remain sluggish. Existing home sales in June held up at last year's levels, while new home sales were off by 5 percent. By the end of the year, the ongoing U.S. recovery and a falling dollar should have most local indicators pointing upward again.

Retail and Auto Sales

Retail sales remain slow in Houston, running 1 or 2 percent behind last year's. Because retailers were not aggressive in stocking up, they've had few inventory problems as a result of sluggish business.

Auto sales, in contrast, were up a striking 26 percent, but the increase is partly attributed to sales lost last year during Tropical Storm Allison. Year-to-date sales are off only 3 percent compared with the same period in 2001.

Energy Prices

Crude oil prices have stayed in a narrow range since late May, weakening briefly from $26 to $24 per barrel, then returning to $26. Only the usual news seemed to move the market: OPEC, Iraq and an occasional refinery glitch. Inventories remained high but were unchanged in recent weeks.

Gasoline demand is up only about 1 percent this summer, and inventories filled early in the driving season. Inventories and retail price have remained very stable in recent weeks. Refiners improved profit margins from the dismal levels of the first quarter but were forced to reduce production runs to control inventory.

Oil and Gas Machinery

After a turnaround in April and a 16 percent rise over the following seven weeks, the U.S. rig count flattened in June and early July. The number of working rigs has fallen from 859 on May 24 to only 840 currently. International drilling, which never experienced the deep downturn seen in the United States, has now been flat for several months. Drilling and oil machinery suppliers say that sales have also flattened and that pricing remains weak, with substantial excess capacity.

The recent drilling slowdown is attributable to uncertainty about the course of natural gas prices. Gas prices weakened amid signs that inventories were headed for record levels this summer, barring unusually hot weather that could drain stocks. Inventories are currently 19 percent above the five-year average level for this time of year.

Petrochemicals

Basic petrochemicals experienced strong demand in recent weeks, with prices rising sharply for ethylene, propylene and styrene. Profits improved sharply, with higher product prices plus feedstock prices that were stable to falling. Plastic producers also pushed through a series of price increases for polyethylene, polypropylene, polystyrene and PVC. Fundamentals have not increased this much for all segments of the industry, and high levels of plant outages over the summer may have created a tightness for important products such as ethylene that cannot be sustained into this fall.

Housing Markets

Houston housing took different directions in June, with existing home sales matching those of June 2001, while new home sales were off about 5 percent. Low interest rates and a flight of funds from the stock market seemed to be keeping local housing markets strong despite slow job growth. The improvement in existing home sales has to be viewed with caution, as the coverage of homes under the multiple listing service has expanded recently to include some new homes and nonbroker listings offered for a fee.

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