

CHAPTER
20

The Oil Industry

1900–1940

SECTION 1 The Oil Industry in Texas

SECTION 2 The Oil Boom After Spindletop

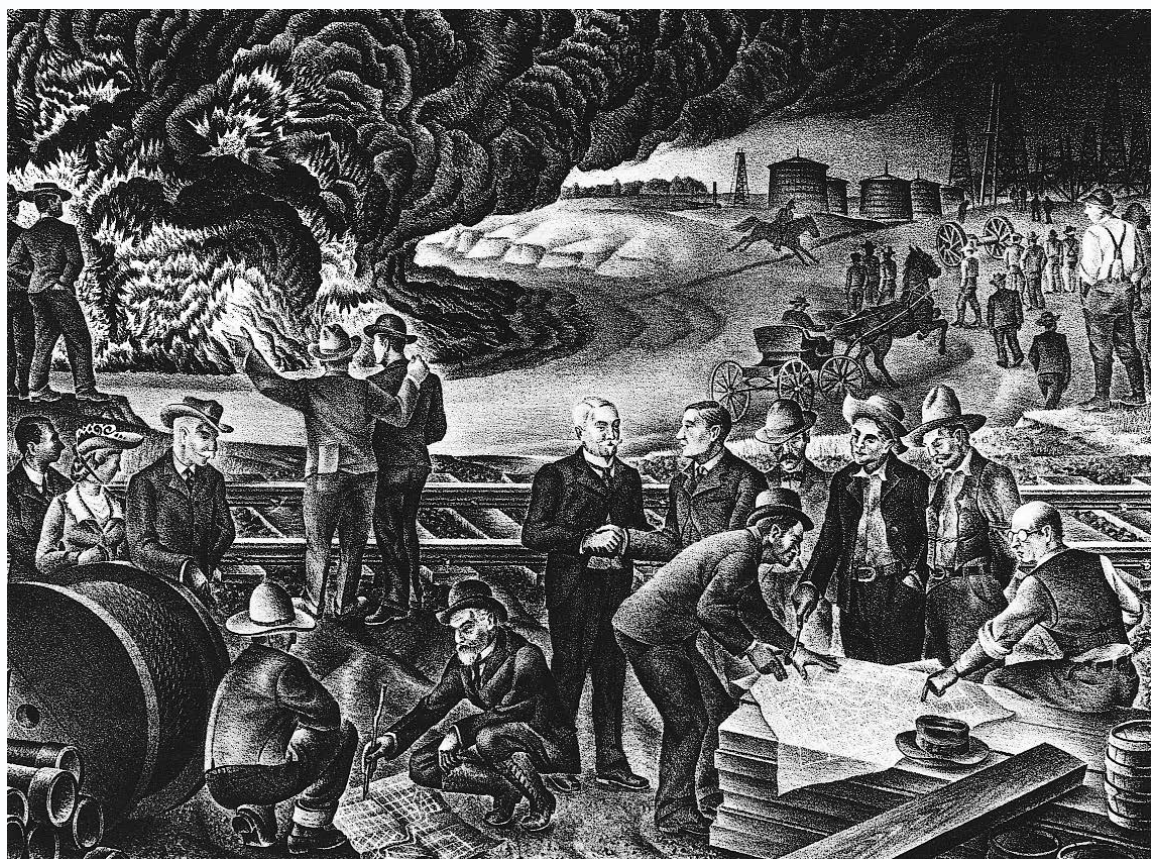
SECTION 3 The Impact of Oil on Texas



VIEW THE **Texas on Tape**
CHAPTER 20 VIDEO LESSON.

The oil rigs were just like bristles in a hairbrush. . . . Just as thick as they could be. There was no spacing whatsoever. . . . You really have no idea how dense they were. . . . You looked out the door and it was just like cactus.

Mrs. John Berry, recalling Burkburnett, Texas, in 1918



Alexander Hogue, *Swindletop*

1900

1910

1920

1930

1940

1902 Spindletop produces over 17.5 million barrels of oil

1901 Anthony Lucas strikes oil at Spindletop



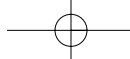
Oil drill bit

1914 Houston Ship Channel opens

1916 Federal Aid Road Act is made law

1930 C. M. "Dad" Joiner makes a major oil discovery in East Texas

1936 Texas has more than 1.5 million vehicles
1936 State highways total more than 21,000 miles



SKILL BUILDER

Reading Social Studies



Spindletop

Before You Read

What comes to mind when you think of the Texas oil industry? Do you think of oil-powered machines such as cars and airplanes? What about the effects of oil use on the environment and the economy? Perhaps you have read or seen news reports about dangerous oil spills or the rise and fall of oil prices. The oil industry touches the lives of Texans in many different ways.

Think about

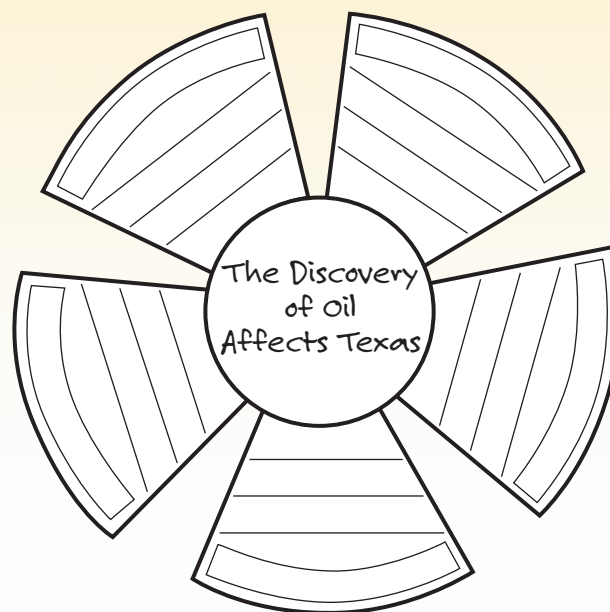
- how Texans use oil each day
- where oil comes from
- how oil use affects the air and water in Texas
- alternative sources of energy

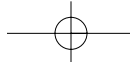
As You Read

Until the early 1900s, lumber was the leading industry in Texas. However, after oil was discovered at Spindletop in 1901, oil became the state's number-one industry. The discovery of large deposits of oil in Texas affected the economy as well as many aspects of daily life. Completing this graphic organizer for Chapter 20 will help you to understand how the growth of the oil industry has affected life in Texas.

- Copy the wheel diagram in your Texas Notebook.
- As you read, list five areas of life in Texas that have been affected by the oil industry.
- Below each main idea, list details that describe how the oil industry changed life in the state.

Organizing Information





The Oil Industry in Texas

Why It Matters Now

The discovery of oil in Texas more than 100 years ago changed transportation and industry in our state and around the globe.

TERMS & NAMES

petroleum, reserve, Pattillo Higgins, Spindletop Hill, **geologist,** Gladys City Oil, Anthony Lucas, **lease, derrick, boom, natural gas**

OBJECTIVES

1. Identify Spindletop.
2. Explain the economic and social impacts of the oil industry on Texas.
3. Evaluate the effects of scientific discoveries and technological advances on the use of fossil fuels and the land in Texas.

MAIN IDEA

The Texas oil industry began in 1901 with the Spindletop oil discovery. This legendary oil strike was the start of a new era of growth for Texas.

WHAT Would You Do?

Write your response to *Interact with History* in your *Texas Notebook*.



INTERACT WITH HISTORY

Imagine that there is an unusual hill outside your town. Although most residents believe the hill is worthless, someone moves there and strikes oil—more oil than anyone has ever seen before. How do you think this discovery will affect life in your town?



Gas lamp advertisement

Oil Becomes an Industry

When people think of Texas, they often think of oil. But for many years, Texas oil had little value. Spaniards used the oil they saw oozing from the ground on their boats to stop leaks. Years later, farmers complained of oil ruining their crops. Without automobiles, trucks, buses, or airplanes to consume oil products, there was little use for the mineral. Most often, it was used to lubricate machinery and to produce kerosene for lamps. However, when the railroads began using oil for fuel in the 1880s, the fossil fuel was suddenly in high demand.

In 1859 Pennsylvania became the first state to produce American oil. Texas wasted little time getting into the act. Just seven years later, the Melrose **Petroleum** Oil Company drilled Texas's first successful oil well in Nacogdoches County. Unfortunately, the well produced only ten barrels a day and soon was abandoned. Other Texas wells were equally disappointing. Then, in 1894, drillers tapped into a major **reserve** in Corsicana. As the first significant oil supply in the state, the Corsicana discovery encouraged drilling across East Texas.

petroleum *a thick, oily liquid found deep in the earth, used in a natural or refined state as fuel*

reserve *a supply of a natural resource that is known to exist but has not yet been used*

One Texan's Vision

One man who dreamed of “striking it rich” in Texas oil was Pattillo Higgins. Higgins, who grew up in Beaumont, bought land near his hometown and started a business making bricks. Higgins went on to



plan an industrial town on nearby Spindletop Hill. He believed there was oil under its salt dome.

At that time, **geologists** believed the Gulf Coast region had little oil. Still, Higgins followed his hunch about the salt dome. In 1892 he organized a partnership to buy Spindletop Hill and create the Gladys City Oil, Gas, and Manufacturing Company. The purpose of the company was to drill for oil and develop the area around the hill. After several failed attempts to locate oil, Higgins resigned from the company. He still believed, however, that there was oil under Spindletop Hill. Higgins placed ads in newspapers, magazines, and journals to find geologists and engineers who would carry on his exploration.

The Spindletop Gusher

One of Higgins's ads caught the attention of mechanical and mining engineer Anthony Lucas. Lucas had managed salt-mining operations for a Louisiana company. He had traveled the nation in search of gold and salt, becoming the country's leading expert on salt domes. In 1899 he answered Higgins's ad, became convinced of the Texan's theory, and **leased** land at Spindletop. Lucas drilled to a depth of 575 feet, at which point his lightweight equipment collapsed.

Out of money, Lucas asked for financial help from the Pennsylvania businesspeople who had developed the oil field in Corsicana. Using heavier equipment and an experienced drilling team, Lucas began drilling again at Spindletop in October 1900. On January 10, 1901, Lucas hit the largest reserve of oil the world had ever seen.

When the Lucas rig hit oil, six tons of 4-inch drilling pipe shot from the ground with tremendous force, as Lucas later described.

geologist *a scientist who studies the origin, history, and structure of the earth*



Patsillo Higgins

lease *to contract to use something for a set period of time in exchange for a fee*



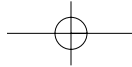
THEN & NOW

DRILLING RIGS At Spindletop the oil in the ground was under great pressure. When the driller's bit pierced the oil-filled rock layers, crude petroleum shot out in a giant shower, spilling oil all over the ground. Called a gusher, this oil fountain was estimated to produce between 70,000 and 100,000 barrels per day. The Spindletop gusher became the symbol of Texas oil wealth. Modern drilling equipment is designed to prevent gushers. A set of valves called a Christmas Tree at the top of the well is designed to contain the tremendous pressure of the oil. Drilling rigs are frequently placed in coastal waters as well as on land, so avoiding spills that would pollute the environment is especially important. In fact, the warm water under drilling platforms is often host to a variety of marine life. ● **What do you think early oil drillers would have been most concerned about when they hit a gusher?**



Spindletop gusher in 1901

Modern offshore drilling rig



One Star Legends

Anthony Lucas

Anthony Lucas was born Antonio Francisco Luchich in 1855 in Austria. Before becoming a mining engineer, he served in the Austrian navy. After visiting an uncle in the United States in 1879, Lucas decided to stay in the country. He managed operations for a mining company and became an expert on salt domes. • **How did this Austrian immigrant help the economic development of Texas?**



TEXAS VOICES

It went to a height of 300 ft. above the derrick . . . then, twisted and bent by the strong wind . . . it broke off with a crash and fell to the ground, fortunately injuring no one. The remaining 4-in. pipe . . . followed with great rapidity, and was shot through the top of the derrick. Simultaneously, the water which filled the well . . . was expelled to a great height; and a column of gas, rock-fragments and oil followed it, at first at the rate of about 250 barrels per hour, rapidly increased to 500, 1000 barrels, etc., until on the third day the discharge . . . was estimated . . . to be at least 3000 42-gallon barrels of oil per hour, or about 75,000 barrels in 24 hours.

Anthony F. Lucas, "The Great Oil Well near Beaumont, Texas"

The Spindletop gusher shot oil more than 100 feet into the air for nine days until the well was finally capped. Oil from the gusher formed a large lake around the base of the **derrick**.

Fearing that the lake—and the well—would catch fire, the drilling team put up a barrier to keep the lake away from the rig. Eventually, the lake did erupt into a raging fire, but the workers' efforts paid off. Even though all the pooled oil burned up, the well remained safe.

Spindletop Oil Boom

The Spindletop well, named Lucas No. 1, first produced between 70,000 and 100,000 barrels per day, much more than any other well in the world at that time. In fact, some estimate that the Lucas well produced more oil in one day than the rest of the world's wells combined. Oil drillers immediately rushed to Gladys City to drill. In a matter of weeks, Spindletop was covered with a forest of oil derricks. They were packed so closely that a person could step from one to another without ever setting foot on the ground.

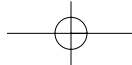
The discovery at Spindletop began the first of many oil **booms** in Texas. Because of the rush to drill, area landowners were able to sell their land at prices several times the land's previous worth. One man who had tried for three years to sell his land for \$150 sold it for \$20,000. Fifteen minutes later, the buyer resold it for \$50,000. Also, Beaumont's population grew rapidly, growing from about 10,000 to 50,000 people in just a few months. The city never shared fully in the profits, however. Most of the new oil companies moved their business offices to Houston, a larger city with better rail connections.

derrick a framework or tower over an oil well used to support drilling equipment

boom a time of great economic growth

Oil fire at Spindletop





Effects of the Spindletop Discovery

The growing number of wells at Spindletop resulted in overdrilling. After producing more than 17,500,000 barrels of oil in 1902—about 47,900 barrels per day—the Spindletop wells began to slow down. Just two years later, they pumped only about 10,000 barrels per day. Eventually, the businesses that had moved to Gladys City to serve the oil workers began to close down, and their owners moved away. By then, Spindletop had earned its place in history. The oil boom at Spindletop led to the creation of some 600 oil companies, including later giants such as Texaco, Gulf, and Mobil. It also inspired a statewide search for oil and a dramatic shift to an oil economy in Texas. Oil replaced lumber as the leading Texas industry, and oil companies began turning out millions of gallons each year. In short, the discovery of oil at Spindletop changed the future of Texas. By providing a new source of inexpensive, efficient fuel, it also changed the future of transportation and industry.

Natural Gas, An Important Resource

Along with oil, Texas oil fields produced **natural gas**. At first, there were no pipelines to transport it, and it was burned up in the field. This resulted in a terrible waste of a natural resource. Until huge natural gas pipelines could be laid to transport the fuel to market, however, the potential of this clean-burning fuel would not be realized.



Early Uses of Petroleum

From its early history, petroleum was used by different cultures for a variety of purposes. The ancient Egyptians used it to prepare mummies for burial. The ancient Greeks poured petroleum on the ocean to set fire to enemy ships. Native Americans used oil in medicines. Native Americans also used petroleum to waterproof their canoes. • **How is petroleum commonly used throughout the world today?**

natural gas *a fossil fuel formed deep inside the earth, often found with oil*

SECTION 1 ASSESSMENT

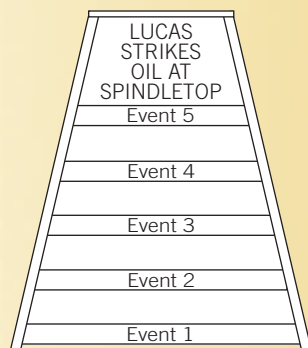
Terms & Names

Identify:

- petroleum
- reserve
- Pattillo Higgins
- Spindletop Hill
- geologist
- Gladys City Oil
- Anthony Lucas
- lease
- derrick
- boom
- natural gas

Organizing Information

Use an organizer like the one shown to sequence the events leading to the Spindletop gusher. Start with the earliest events at the bottom and work your way up.



What happened next after oil was struck at Spindletop?

Critical Thinking

1. Identify Spindletop and explain its importance to Texas history.
2. How did the discovery of major oil resources in Texas affect the state's economy? How did it affect life in Texas?
3. How did technology play an important role in the discovery of oil at Spindletop?

Interact with History

Review your response to *Interact with History* in your Texas Notebook. How does your response compare to the effects of the discovery of oil at Spindletop discussed in the chapter?

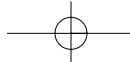
ACTIVITY

History

Research the world's first discovery of an oil reserve, which was made by Edwin Drake in Titusville, Pennsylvania, in 1859. Write a report comparing this discovery with the one at Spindletop.



Go to www.celebratingtexas.com to research the Activity topic.



SECTION



The Oil Boom After Spindletop

Why It Matters Now

Petroleum refining became the leading Texas industry, and oil remains important in the Texas economy today.

TERMS & NAMES

boomtown, refinery, Humble Oil and Refining Company, **wildcatter,** oil strike, Columbus M. “Dad” Joiner, hot oil

OBJECTIVES

1. Analyze the effects of scientific discoveries and technological advances on the oil and gas industry.
2. Explain how C. M. “Dad” Joiner’s work affected Texas.
3. Trace the boom-and-bust cycle of oil and gas during the 1920s and 1930s.

MAIN IDEA

After Spindletop, the race was on to discover oil in other parts of Texas. In just 30 years, wells in all regions of the state made Texas the world leader in oil production.

A REAL-LIFE STORY

With the discovery of oil at Spindletop, thousands of fortune seekers flooded into Texas, turning small towns into overcrowded cities almost overnight. An oil worker’s wife described life in East Texas in 1931.

There were people living in tents with children. There were a lot of them that had these great big old cardboard boxes draped around trees, living under the trees. And any- and everywhere in the world they could live, they lived. Some were just living in their cars, and a truck if they had a truck. And I tell you, that was bad. Just no place to stay whatsoever.

Mary Rogers, interview in *Life in the Oil Fields*



Casing Crew Alley, Desdemona, Texas

Oil, Oil Everywhere

The oil boom of the 1920s and 1930s caused sudden, tremendous growth in Texas. Quiet, rural areas soon were overrun with oil derricks. The population, new industries, and the economy grew at astounding rates. As more oil was produced, more uses for it were found. In 1901 one flour-milling company began using oil as a fuel to run its machinery. Other mills followed its lead. Soon brick and tile factories, ice factories, hotels, railroads, and electric car companies also switched to oil for fuel.

At that time, oil was very cheap. Spindletop produced so much oil that, in 1901, the black liquid sold for three cents a barrel. By contrast, oil has cost an average of about \$30 per barrel in recent years. That’s a 1,000 percent increase over 1901 prices!



As demand for oil increased, oil companies began drilling into salt domes around Beaumont, in the Big Thicket area, and in Louisiana. Industry giants such as John D. Rockefeller's Standard Oil Company moved in. They expanded the search for oil into East, Central, and North Texas.

The Rise of Boomtowns

As drilling increased, **boomtowns** sprang up around successful wells. These towns attracted not only businesspeople but also ordinary people whose crops had failed or who hoped to get rich through oil-related businesses. They were from every imaginable walk of life. Often the first to arrive were thrill-seeking drifters known as boomers. Boomers followed the action, working on a rig only until oil was struck. Then they were off to the next well. The boomers often turned towns like McCamey, Batson, Wink, and Borger into wild, rowdy places.

Crowded, noisy conditions weren't the only drawbacks to life in the boomtowns. Crime, disease, and a lack of safe drinking water were major worries. Most towns popped up so quickly that there was no time to develop water or sewer systems. As a result, dysentery (DIS•en•teh•ree), typhoid fever, and other diseases were numerous. At one point, when oil sold for three cents a barrel, a single cup of clean drinking water cost five cents.

The lack of sewage and drainage systems, along with frequent Texas rainstorms, made mud a terrible problem in the boomtowns. One oil worker described conditions on a typical downtown street.

TEXAS VOICES

I saw them hauling machinery. . . . They pulled them by oxen and had to float them on floats 'cause everything was so deep in mud. No mule or nothing could stand it. And I know lots of times . . . they'd carry people across the street. . . . Wade in mud about up to their knees. If you put any boards across there, why, these big teams come along, oxen and everything. Wouldn't be nothing there in three minutes after you built a walk there.

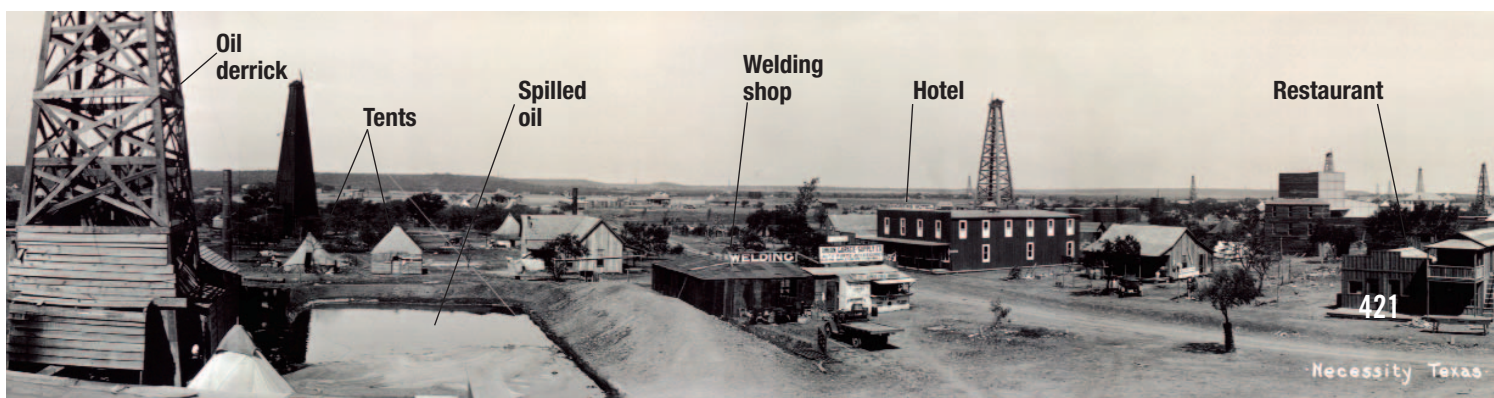
Frank Hamilton, interview in *Life in the Oil Fields*

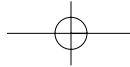


- ▲ Muddy, unpaved streets were a common hazard in boomtowns.
- What were some of the problems caused by the poor road system?

boomtown a town that experiences a major increase, or boom, in population due to sudden rapid economic growth

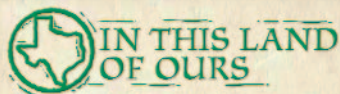
- ▼ Necessity, Texas, rose in population from 115 in 1910 to 800 in 1920, four years after oil was discovered. By 1930 it had dropped to 25.
- Look at the features labeled in the picture. Why would you find each of these in an oil boomtown?





▲ People worked in the oil fields for many reasons. Some worked for short periods of time and then moved on, while others enjoyed the thrill of the search and the opportunity to make good money. ● **Why do you think so many people were able to find jobs in the oil fields?**

refinery *a plant where raw petroleum is purified and is made into other products, such as gasoline and kerosene*



PLACE

Deep in the Amazon rain forests of Ecuador is a town called Lago Agrio, Spanish for “sour lake.” There isn’t a sour lake for hundreds of miles, but Lago Agrio is in the middle of Ecuador’s Amazon oil fields. It was named by oil workers from Texas who recalled the town of Sour Lake, Texas, and the early days of the oil industry in their home state. ● **What places in Texas were named after places in other countries?**

Life in the Oil Patch

Life as an oil worker could be adventurous but was full of hard work and danger. Because the rigs operated 24 hours a day, most people worked at least 12 hours every day. The pay was good, but rig bosses expected hard work for their money. A worker who didn’t do his share would likely be fired on the spot. Within minutes, someone else would take his place.

Long work hours, slick surfaces, and escaping gases could make work on the rigs extremely dangerous. The invisible and odorless gases that escaped from the wells could burn a worker’s eyes, cause vision problems, and even cause illness or death. A fall from a derrick onto sharp tools or equipment could result in injury or death. In addition, wells could be shut down at a moment’s notice, leaving workers and their families broke and hungry. Still, many people traveled long distances to work in the Texas oil fields and formed life-long friendships during the boom.

Oil Creates New Industries

Oil discoveries created a demand for new industries and businesses nearby. **Refineries** were built near the fields to make the oil usable for industry. Early refineries were built in Corsicana, Beaumont, Port Arthur, and along the Houston Ship Channel, which opened in 1914. Companies built pipelines to connect their refineries to distant oil fields. The Humble Oil and Refining Company—later Exxon/Mobil—built the largest refinery on the Gulf Coast. By 1925 there were 80 refineries in the state of Texas.

Other oil-related services and supply industries developed. Selling and repairing tools and oil field equipment became big business. Other industries made clothing and boots for workers. Sawmills churned out lumber for the construction of derricks. Hotels were built to house workers and their families, and hundreds of restaurants sprang up to feed them.

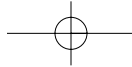
TEXAS VOICES

Everything stayed open twenty-four hours, the eating places and all, because the men worked night shifts and day shifts. I’ve seen my brother-in-law stay up twenty-four hours at the lumberyard. Businessmen usually had their living quarters at their place of business because of that. They worked Sunday. It was no different from any other day because the oil field operated twenty-four hours a day, seven days a week.

*Allie V. Scott, interview in *Life in the Oil Fields**

The Search for Oil Expands

After Spindletop, the search for oil spread to other parts of the state. In just ten years, oil was found in places like Burkburnett, Petrolia,



Wichita Falls, and on the Waggoner Ranch in North Texas. **Wildcatters** also made discoveries at Ranger, Desdemona, and Breckenridge, in West Central Texas, and Batson, Goose Creek, Sour Lake, and Humble in southeastern Texas. Successful wells also were established at Borger and Amarillo in the Texas Panhandle, and a major boom developed in Big Lake, Wink, Monahans, McCamey, and other places in the Permian Basin of West Texas.

wildcatter *person who drills wells hoping to find oil in areas not known to be oil fields*



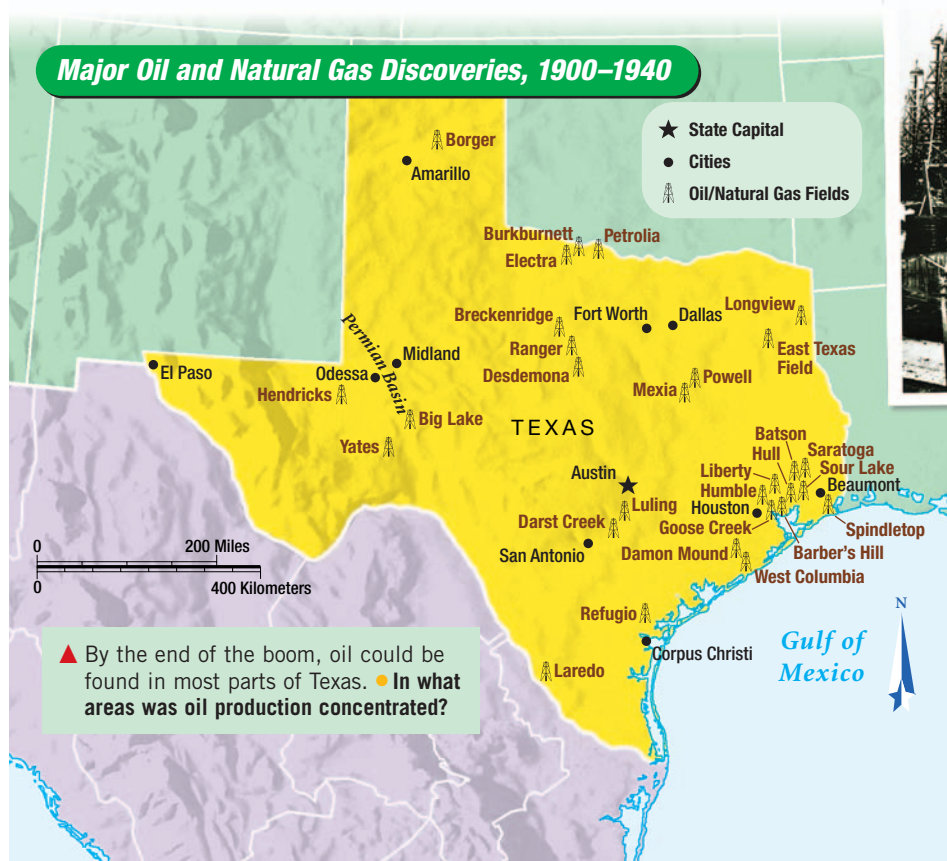
Columbus M. "Dad" Joiner

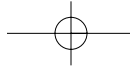
Before moving to Texas, C. M. "Dad" Joiner practiced law in Tennessee and served in the Tennessee state legislature. He then moved to Oklahoma, where he was said to have made and lost two fortunes in oil. Upon his arrival in Texas, Joiner made an incredibly rich oil strike in East Texas. He eventually sold his well and leases to H. L. Hunt of Dallas. Hunt went on to become one of the richest oil businesspeople in the world. "Dad" Joiner died almost penniless 17 years later, however. ● **Why was "Dad" Joiner's oil strike so important?**

The East Texas Oil Field

Most of the giant oil discoveries, or strikes, of the 1920s were made in West Texas. But the eastern part of the state soon became the hot spot. In 1930 Columbus M. "Dad" Joiner made one of the richest oil discoveries in history. Joiner believed that there was oil in Rusk County, despite geologists' doubts. He drilled two dry holes near Henderson and, on October 3, struck oil on the third try. The well, named the Daisy Bradford No. 3 after the landowner, opened the largest oil field in the world at that time, spanning more than 40 miles in length. Because people considered Joiner to be the father of the East Texas oil field, they gave him the nickname "Dad." They also named the town near the great oil field Joinerville in his honor.

The East Texas wells produced so much oil over the following months that the government had to step in to regulate the industry to keep the price from falling too far. Within the first year, 1,200 fields were giving out 900,000 barrels of oil per day. The oil fields covered five counties and contained about one-third of the nation's oil reserves. Companies began drilling everywhere—even in people's yards—in towns such as Gladewater, Longview, Kilgore, and Tyler. In a very short time, drillers were pumping far more oil than the public could use.





▲ With new sources of inexpensive oil and the construction of refineries, gas stations sprang up around the state, such as this 1917 Gulf station in West Texas. ● **What other Texas industries “boomed” after the discovery of oil?**

Texas Oil Affects the World

So much oil was pumped that it “flooded” the market. Meanwhile Texas and the nation had fallen into the Great Depression—a time of low economic activity and high unemployment. As a result, the bottom fell out of oil prices. Oil that had been selling for more than a dollar per barrel in 1930 fell to eight cents per barrel by 1931. To control prices, the Texas and U.S. governments set limits on production. The Texas Railroad Commission had the power to regulate the amount of oil that producers could supply. Governor Ross Sterling sent in the National Guard to enforce the Railroad Commission’s

rule. Still, some well owners produced oil above the limit in order to make all the profits they could. This illegal product was called hot oil.

In 1933 the government finally began to restore order. In that year the posted price for a barrel of oil varied from 75 cents in January to 10 cents in April to 75 cents again in August. A barrel of oil sold for \$1.00 from September through the end of the year. Prices rose to about \$1.10 per barrel by 1938.

Because Texas was the world’s leading oil producer by the end of the 1930s, even slight changes in production levels were felt worldwide. The more oil Texas produced, the lower oil prices dropped. The less oil it produced, the higher prices rose. These changes in oil prices often had a major effect on the automobile industry, shipping costs, travel, and other areas of life. It is difficult to overestimate how important Texas oil became to local, national, and world markets.

SECTION 2 ASSESSMENT

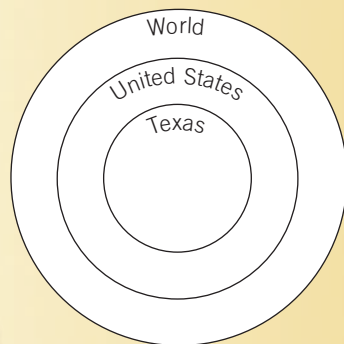
Terms & Names

Identify:

- boomtown
- refinery
- Humble Oil and Refining Company
- wildcatter
- oil strike
- Columbus M. “Dad” Joiner
- hot oil

Organizing Information

Use a concept map like the one shown to list ways the Texas oil boom affected the economy and society on local, national, and international levels.



Do you think the Texas oil boom had the most impact on oil markets in Texas, the United States, or the world? Why?

Critical Thinking

1. How did scientific discoveries and technological advances in the early 1900s help create the Texas oil boom?
2. How did C. M. “Dad” Joiner’s discovery change the Texas oil industry?
3. Overdrilling at Spindletop and in the East Texas

fields resulted in unprofitable periods during the Texas oil boom. How were the situations at Spindletop and in East Texas similar? different?

A Real-Life Story

Review *A Real-Life Story* on page 420. Why do you think people were willing to live in such overcrowded conditions during the Texas oil boom? What do you think happened to living conditions over time?

ACTIVITY

Economics

Create a diagram that illustrates the boom-and-bust cycle of oil and gas during the 1920s and 1930s.



Go to www.celebratingtexas.com to research the Activity topic.



Reading a Flowchart

LEARNING *the Skill*

Flowcharts are used to make complicated information easier to understand. A flowchart is a diagram that breaks down a process into several parts or steps. Often, flowcharts use illustrations and arrows to show the connections among the parts or steps. Flowcharts sometimes use labels to identify their parts. Many flowcharts use text to explain each step.

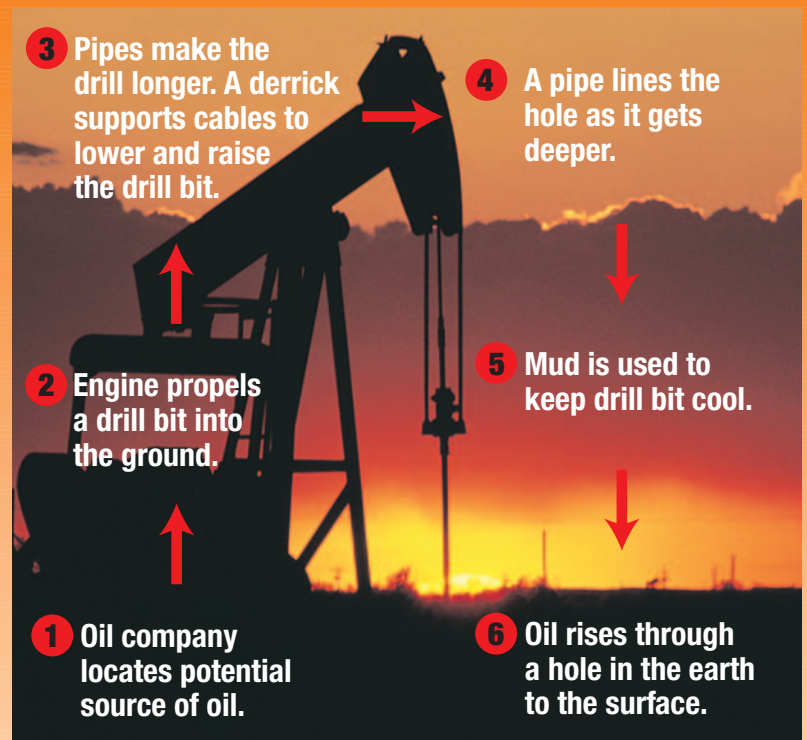
To read a flowchart, use the following steps:

- Read the title of the flowchart. What is the flowchart about?
- Read any labels on the flowchart.
- Look for any numbered steps. These often show the order in which actions take place in a process.
- Locate any arrows. Arrows typically show the direction in which a process moves.
- Summarize in your own words what the flowchart shows. What steps make up the process? How does the process work?

PRACTICING *the Skill*

Study the following flowchart. Then answer the questions that follow.

OIL: FROM UNDERGROUND TO ABOVE THE GROUND



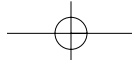
1. According to the title, what is the flowchart about?
2. What is the next step after a location for underground oil is identified?
3. What is the function of the derrick?
4. Summarize the information in the flowchart in your own words.

APPLYING *the Skill*

You have learned that oil refineries make oil into different products. Oil refining begins with a process called fractional distillation. This process allows the different substances to be easily separated. Research the process of fractional distillation. Then create a flowchart that illustrates this process. Finally, write three questions that can be answered by reading your flowchart. Exchange flowcharts with a partner and answer each other's questions.



Go to www.celebratingtexas.com to research this topic.



SECTION



The Impact of Oil on Texas

Why It Matters Now

Without the oil industry, the way Texans work, play, travel, and live would be very different.

TERMS & NAMES

petrochemical, synthetic rubber, toxic waste, Federal Aid Road Act, Amon Carter Museum

OBJECTIVES

1. Analyze the impact of the oil and gas industry on Texas and the United States.
2. Analyze the effects of the discovery of oil and gas on the development of Texas.
3. Analyze the effects of technological advances such as the automobile and airplane on the development of Texas.

MAIN IDEA

The oil industry has been very important to the growth and development of industry, technology, culture, and education in Texas.

WHAT Would You Do?

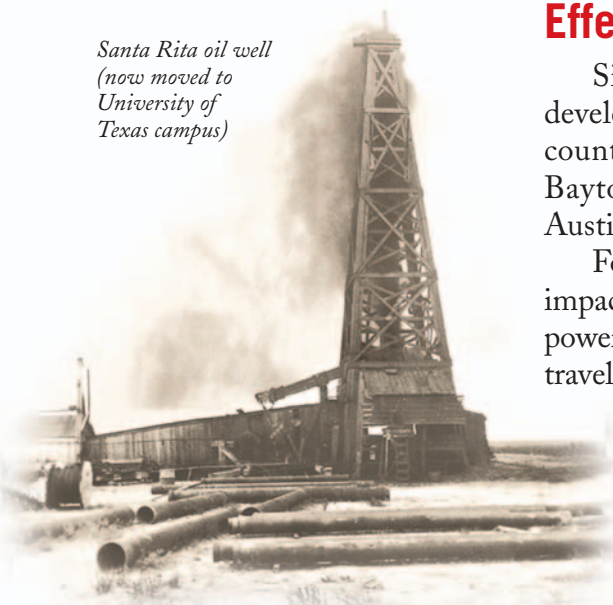
Write your response to *Interact with History* in your *Texas Notebook*.



INTERACT WITH HISTORY

Imagine that you are a reporter for a national magazine during the 1930s. You are assigned to write a feature story about the oil boom in Texas since 1901. What people, places, and events would you write about? How has oil affected Texas in these 30 years?

*Santa Rita oil well
(now moved to
University of
Texas campus)*



Effects of the Oil Boom

Since its discovery at Spindletop, oil has been a major influence on development in all regions of Texas. Houston and Midland are home to countless oil companies. Corpus Christi, Beaumont, Port Arthur, and Baytown boast major oil refineries. Even the University of Texas at Austin had an operating oil well on its campus for years.

For evidence of the power of oil, just take notice of how oil has an impact on transportation. The cars, trucks, and buses you see each day are powered by oil products such as gasoline and diesel. The asphalt roads they travel on were made using oil. Also, the Texas skies are filled with airplanes fueled by oil-based jet fuel. Oil is even a source of electric power.

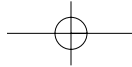
Look around you. Many of the plastic and rubber products in your home and classroom are made from oil-based chemicals. In fact, the development of the **petrochemical** industry is significant evidence of the oil industry's impact on Texas.

The Petrochemical Industry

In the 1920s chemists found ways to remove chemicals from petroleum to make everyday household items. Also, during World War II, when many overseas supplies were unavailable, chemicals were used to make explosives and **synthetic rubber** for tires. This demand led to further growth and development of the petrochemical industry.

petrochemical *a chemical made from petroleum or natural gas*

synthetic rubber *rubber that comes from chemicals rather than from plants*



Although petrochemicals provided many important benefits to the Texas economy and the public, their production raised environmental concerns. The processes used to separate these chemicals from oil created tons of **toxic waste** each year. They also released cancer-causing fumes and gases into the air. In years to come, Texas would launch a major effort to control pollution caused by petrochemical and other industries.

toxic waste *poisonous by-product from chemical production*



To Economics

Hundreds of petrochemical plants in Texas produce products such as ethylene (ETH•uhl•een), used to ripen fruit, and propylene (PROH•pull•een), used as antifreeze in car radiators. Plastics, tires, inks, fertilizers, and many other widely used products are made from petrochemicals. At one time, the world's largest ethylene production plants were located along the Texas Gulf Coast. ● **Has the development of the petrochemical industry had a positive or negative effect on Texas? Why?**

The Development of Transportation

Besides creating new industries, the oil boom led to improvements in Texas transportation. Automobiles, which were first seen in Texas around 1900, would not have been practical if not for oil production. Although alarmed at first by the noisy engines of early cars, Texans quickly learned to appreciate the automobile.

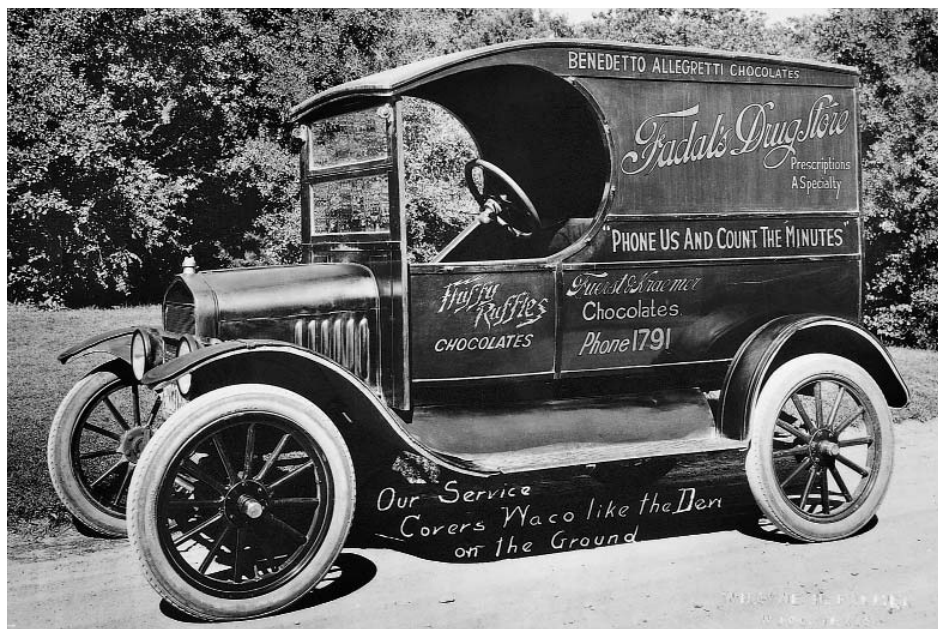
With the automobile came the need for better roads. City streets often stretched a bit past the city limits and then ended in pastures or at rivers. In 1903 concerned citizens formed "good roads" associations in Texas to work toward improving roads. Some even volunteered to do roadwork.

Requests for a highway system began in 1903. However, little was done until 1916, when the Federal Aid Road Act provided for state highway departments. Highways also made way for the development of motels, roadside restaurants, gasoline stations, and other businesses.

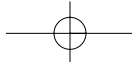
Travel in Texas

Airplanes were rarely seen in Texas skies until World War I. These new forms of transport created an immediate demand for fuel. During the World Wars, the U.S. military established air bases in Texas because of the open spaces, level ground, and warm climate. Airline companies followed soon after, serving all the state's major cities.

Strengthening the tie between oil and air travel, Amon G. Carter, an oil executive and Texas newspaper owner, helped make Fort Worth a major center of aircraft production. Howard Hughes, a Houston manufacturer of oil drilling equipment, tested and raced airplanes. He made headlines in the 1930s by setting a world air-speed record.



◀ Texas officially recognized the automobile in 1907, when the state set its first speed limit at 18 miles per hour. Soon Texans fell in love with the automobile. Fadal's Drug Store in Waco used this truck for deliveries. It bragged that "Our Service Covers Waco Like the Dew on the Ground." ● **How do you think the introduction of automobiles affected cities?**



Oil's Contributions to Culture and Education

Many museums, art galleries, colleges, and universities in Texas owe their existence to individuals and institutions related to the oil industry. During the 1900s, Houstonian Hugh Roy Cullen donated more than \$11 million of his oil fortune to the University of Houston and to Houston hospitals. Amon G. Carter established the Amon G. Carter Foundation for cultural and educational purposes. Furthermore, in his will he provided for the building of the Amon Carter Museum in Fort Worth. He specified that the museum would be free and open to all.

▲ When construction began on the original Main Building of the University of Texas at Austin, Ashbel Smith said, "Smite the rocks with the rod of knowledge, and fountains of unstinted wealth will gush forth." His words came true in 1923 when oil was discovered at Santa Rita Oil Well on land owned by the university in West Texas. ● **Why do you think the legislature originally gave the university land in West Texas?**

Apart from donations from successful businesspeople, the oil industry has provided great support to public education in Texas. The University of Texas and Texas A&M University have received millions of dollars in oil profits through the state's Permanent University Fund. The oil industry has its critics, but as one oil worker pointed out, many Texans view oil as the state's lifeblood.

TEXAS VOICES

They've picked on the oil industry that's paved more roads, built more schools, educated more children, and has done more for the United States than any industry alive today. I dare anybody to say that's not true.

Clell Reed, interview in *Life in the Oil Fields*

SECTION 3 ASSESSMENT

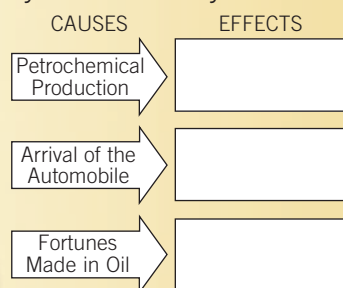
Terms & Names

Identify:

- petrochemical
- synthetic rubber
- toxic waste
- Federal Aid Road Act
- Amon Carter Museum

Organizing Information

Use a cause-and-effect diagram like the one shown to identify the effects of three developments caused by the oil industry in Texas.



How have you personally benefited from one of these developments?

Critical Thinking

1. What impact did the petrochemical industry have on Texas and the United States?
2. What effect did the discovery of oil have on the development of modern Texas?

3. What effects did the automobile and airplane have on the development of Texas?

Interact with History

Review your response to *Interact with History* in your Texas Notebook. Referring to the important people and events you listed, create a front-page newspaper article about the Texas oil boom.



Go to www.celebratingtexas.com to research the Activity topic.

ACTIVITY

History

Many Texans made their fortunes in oil. Research one major oil businessperson and his or her accomplishments. Develop an interactive report about that person and present it to your class.



John Ulbig, Tony Fenoglio, and Frank Ulbig, Montagne

GETTING *Connected*

1. To get started, log on to www.celebratingtexas.com and go to **Chapter 20**.
2. Focus your search on information and links to the discovery of oil at Spindletop and the oil industry in Texas throughout the present day.
3. Find information and visuals that answer the following questions:
 - How did the discovery of oil at Spindletop affect the Gladys City/Beaumont area?
 - Where were other major oil discoveries made in Texas?
 - When and where did Texas experience oil booms?
 - How much oil has been produced in Texas since the discovery at Spindletop up to today?
 - What kinds of products are made from petroleum?

Creating a Scrapbook

Texas Oil

The discovery of oil at Spindletop in 1901 began the first oil boom in Texas. Thousands of people poured into the Gulf Coast region hoping to strike it rich in the oil business. The Spindletop oil field provided jobs for many Texans and caused towns like Beaumont to turn into busy cities almost overnight. The development of the oil industry in Texas is a memorable chapter in Texas's history. Use the Internet to find information on Spindletop and the production and use of petroleum in Texas today. Then use the information to create a scrapbook of photos, graphs, and charts documenting the Texas oil booms.

DEVELOPING *Your Presentation*

Imagine that you are a volunteer at the Spindletop–Gladys City Boomtown Museum at Lamar University. You have been asked to create a scrapbook that records the history of the first Texas oil boom and the impact of oil through present times. Your scrapbook will become part of a traveling display that will be sent to schools and museums across Texas. Conduct additional online searches as needed to gather information. Use computer programs to create graphs and charts. Be sure to include several of the following in your presentation.

- An **overview** detailing the history of Spindletop and the oil boom that followed
- A **line graph** showing population changes in Beaumont, Houston, Wichita Falls, and Amarillo between 1900 and 1940
- A **pictograph** of oil production in Texas from the first oil boom to the present
- A **chart** of products made from petroleum
- **Photographs** with **captions** that illustrate the oil booms
- A **time line** that includes important events

CHAPTER 20 ASSESSMENT

VISUAL Summary

OIL CHANGES TEXAS

The gusher at Spindletop sets off the Texas oil boom, forever changing the future of the Lone Star State.

Spindletop inspires further exploration. Soon wells around the state are producing massive amounts of oil, making Texas the world's number-one oil producer.

Besides creating a new economy for Texas, oil has had far-reaching effects on industry, technology, culture, and education.

TERMS & NAMES

Explain the significance of each of the following:

1. Pattillo Higgins
2. Spindletop Hill
3. Anthony Lucas
4. oil strike
5. Columbus M. "Dad" Joiner
6. hot oil
7. Federal Aid Road Act
8. Amon Carter Museum

REVIEW QUESTIONS

The Oil Industry in Texas

(pages 416–419)

1. Was Spindletop the first place oil was discovered in the United States? in Texas?
2. How did discovering oil at Spindletop affect local, national, and international oil markets?

The Oil Boom After Spindletop

(pages 420–424)

3. What is one way the oil boom changed the environment in Texas? What might be the long-term effects of these changes?
4. How did the Texas oil boom affect the price of oil?

The Impact of Oil on Texas

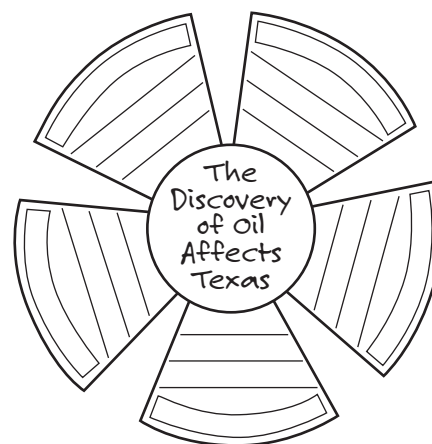
(pages 426–428)

5. How were petrochemicals used during times of war?
6. How did oil lead to developments in transportation?

READING SOCIAL STUDIES

After You Read

Review your completed wheel diagram. Consider both the positive and negative effects that the growth of the oil industry has had on the state of Texas. Do you feel that the benefits of oil use are more important than the negative effects, or vice versa? Summarize your opinion in your Texas Notebook.



CRITICAL THINKING

Drawing Conclusions

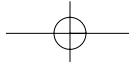
1. Spindletop was the world's largest oil resource at the time it was discovered. What do you think was the most important overall effect of this discovery?

Making Inferences

2. How did the Texas oil boom in the early twentieth century help make Texas, the United States, and the world more dependent on one another?

Recognizing Cause and Effect

3. How has the production of petrochemicals affected the environment?



MAP & GEOGRAPHY SKILLS

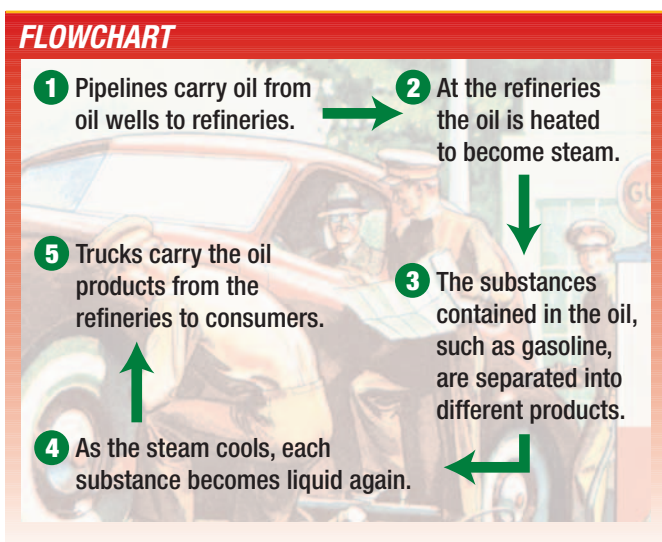
Applying Skills



1. According to the map, which cities had easy access to overseas shipping routes?
2. Which cities do you think were oil towns?

SOCIAL STUDIES SKILLBUILDER

Reading a Flowchart



1. What occurs after the substances become liquid again?
2. Summarize in your own words what the flowchart is about.



CHAPTER PROJECT

Creating a Boomtown Model

Using the Internet, primary sources, biographies, and other resources, research the characteristics of a store, tent, derrick, or other structure found in a typical Texas boomtown during the 1920s and 1930s. Then create a model of your chosen structure. Be sure to make your model historically accurate and to include as much detail as possible. When you have completed your model, write a one-page explanation of the structure's purpose and features. Finally, as a class, arrange the models to create a model boomtown.



Go to www.celebratingtexas.com to research this topic.



SCIENCE, TECHNOLOGY & SOCIETY ACTIVITY

Oil Exploration

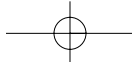
In the early days, oil pioneers like Pattillo Higgins and Anthony Lucas had to dig and drill to find oil. Since that time, however, other methods, such as using sonar, radar, and geological studies, have been developed to locate oil. Research the ways oil is located today. Then write a brief summary in your Texas Notebook about each method you found.



CITIZENSHIP ACTIVITY

Protecting Our Environment

While removing oil, natural gas, and other fossil fuels from the earth, oil companies also have polluted our water and skies and harmed Texas plant and animal life. Consider the Reduce-Reuse-Recycle approach to protecting our environment: use less, reuse more, and recycle used products. Working in groups of two or three, use a problem-solving process to identify ways Texans can help reduce the negative environmental effects of the oil industry. Make a diagram to explain your strategies. Share your solutions as a class.



Identifying Primary and Secondary Sources

LEARNING *the Skill*

A person who saw, heard, or otherwise experienced an event can provide a primary source. *Primary* means “first,” so an account given by a person who witnessed an event firsthand is a primary source. Original documents such as the Texas Constitution, treaties, and court transcripts are all examples of primary sources. Videotapes, photographs, journals, and letters are also primary sources.

All non-primary sources are secondary sources. Most secondary sources are based on primary sources. Interviews with eyewitnesses of an event are primary sources. However, any reports or articles created from the information in the interviews are considered secondary sources.

PRACTICING *the Skill*

Use your knowledge of primary and secondary sources and your knowledge of social studies to answer the question. **Read the question and answer explanations that follow to help you answer the TAKS practice questions on the following page.**

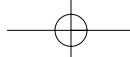
DeWitt County in southeastern Texas prospered in the decade just prior to the Civil War. From 1850 to 1860, the value of all livestock in the county increased from \$160,055 to \$721,826. The number of head of beef cattle in the county increased from 12,246 to 47,085. Production of principal farm crops such as Indian corn and cotton also showed huge gains along with the number of acres of improved farmland.

- | | |
|--|--|
| <p>1 What primary source would support the information in this paragraph?</p> <p>A original DeWitt county records</p> <p>B an 1850 newspaper article telling a rancher’s observations</p> <p>C an interview with a farmer about raising cotton today</p> <p>D a history book of life in DeWitt County</p> | <p>A Correct. Original DeWitt County records are a primary source because the information is based on first-hand observation.</p> <p>B Incorrect. The rancher could not accurately report information about the entire county.</p> <p>C Incorrect. An interview about raising cotton today would not be accurate for 1850.</p> <p>D Incorrect. A description of life in DeWitt County may or may not be reliable, depending on the author’s point of view.</p> |
|--|--|

Primary Sources	Secondary Sources
Journals, letters, logs Interviews Questionnaires, surveys Original documents Eyewitness accounts Pictures Autobiographies	Encyclopedia articles Historical novels Magazine articles Textbooks Documentaries Research papers Biographies

Primary and Secondary Sources

- Documents such as journals, letters, and legal papers are often primary sources. Interviews, on-site observations, and questionnaires are also primary sources. Books and magazine articles that contain information based on primary sources are considered secondary sources.
- Consider the reliability of the source. A person who witnessed but did not record an experience until many years after it happened might not provide information that is completely accurate. Stories based on facts may not always present information accurately.
- Consult multiple sources. You should always work with both primary and secondary sources when conducting research. Collect as much firsthand information as possible. Use books and magazines recommended by a primary source.



APPLYING *the Skill*

Use the paragraph and your knowledge of social studies to answer the questions on this page.

Spanish missionaries began growing cotton in Texas as early as 1745. Each year, the missionaries produced several thousand pounds of cotton that was spun and woven by their craftsmen. Anglo American colonists began cotton cultivation in 1821, and by 1852 Texas was one of the top ten cotton-producing states. The 1849 census listed cotton production at more than 58,000 bales, and that number increased to nearly 432,000 bales in 1859. Cotton farmers prospered in Texas during the 1850s in part because Native Americans were being removed from areas that were suitable for cotton farming. Cotton production decreased during the Civil War but picked up again with the introduction of barbed wire in 1870 and the building of the railroads.

- 1 Which of these would be primary-source support for statements about the period when the Spanish missionaries starting growing cotton in Texas?
 - A a work of fiction based on historical facts
 - B records from the missions in San Antonio
 - C a journal entry written by a Texas colonist in 1821
 - D a modern map of the Spanish missions in central Texas

- 2 Which would be the most reliable source for evidence that the cotton industry in Texas continued to expand into the 1900s?
 - F records of the proceedings of the Texas legislature
 - G accounts of unusual weather patterns in Texas
 - H state and county agricultural records
 - J U.S. Army reports of the numbers of Native Americans on reservations

- 3 Which would **NOT** be a primary source for a research project on the growth of the cotton industry in Texas?
 - A a Texas almanac
 - B the journal of a Texas cotton farmer
 - C personal opinions about cotton farming
 - D quotations from county agricultural officials

- 4 What additional information could be used to explain the growth of the cotton industry in Texas?
 - F how cotton is spun into cloth
 - G how to care for cotton clothing
 - H the number of miles of paved roads in Texas
 - J the climate, soil, and weather characteristics of Texas

Choose a topic of interest from Unit 5. Use your library or the Internet to create a list of three primary and three secondary sources that you could use in researching the topic.