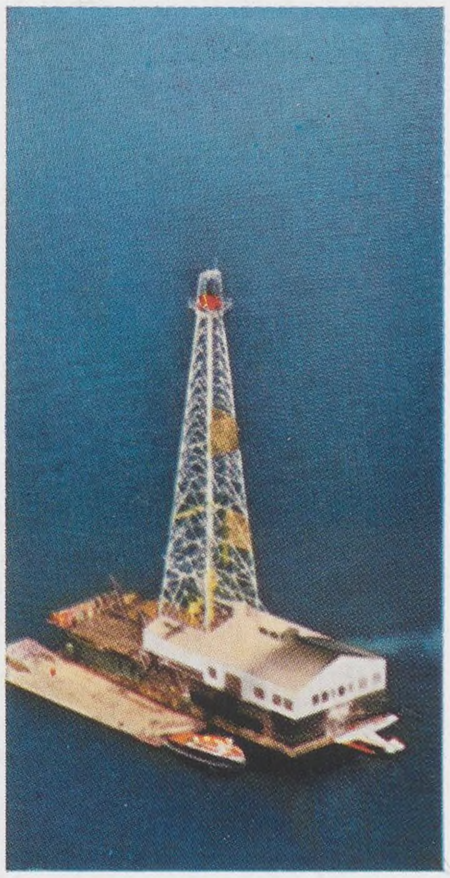
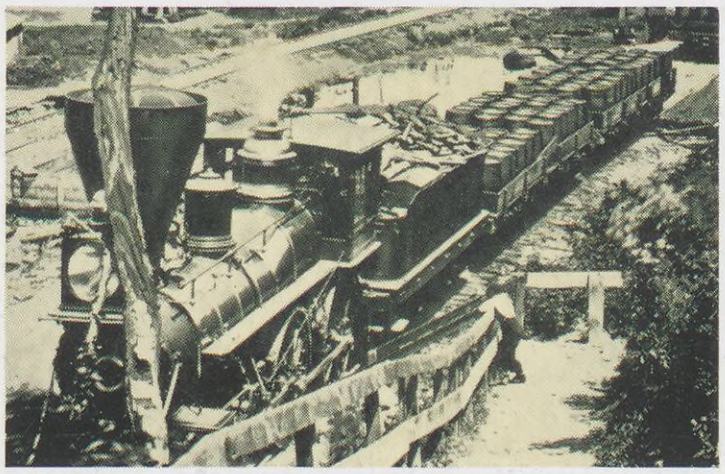
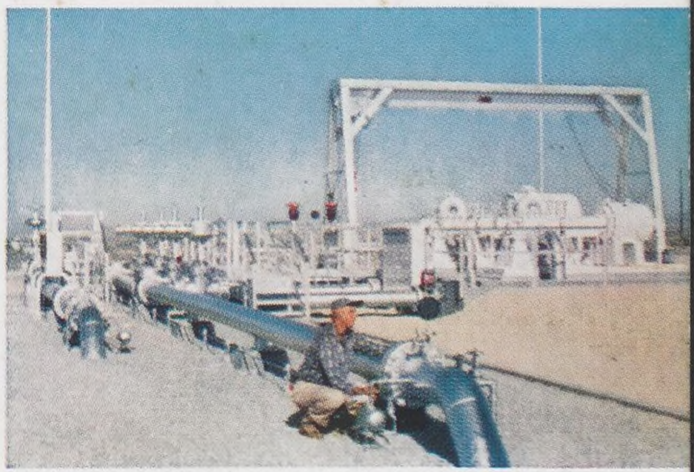


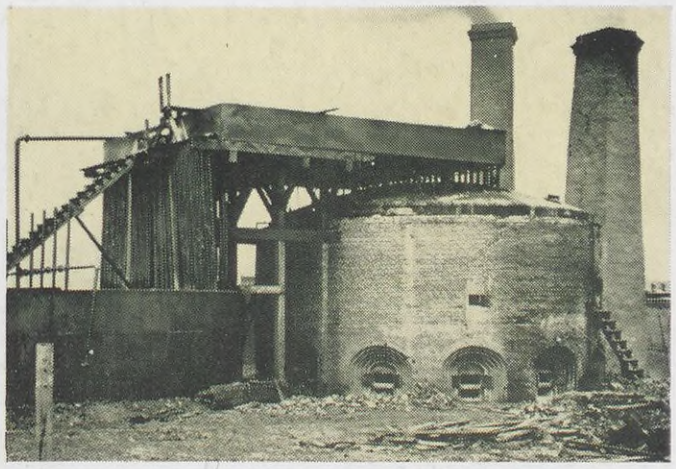
SHELL NEWS

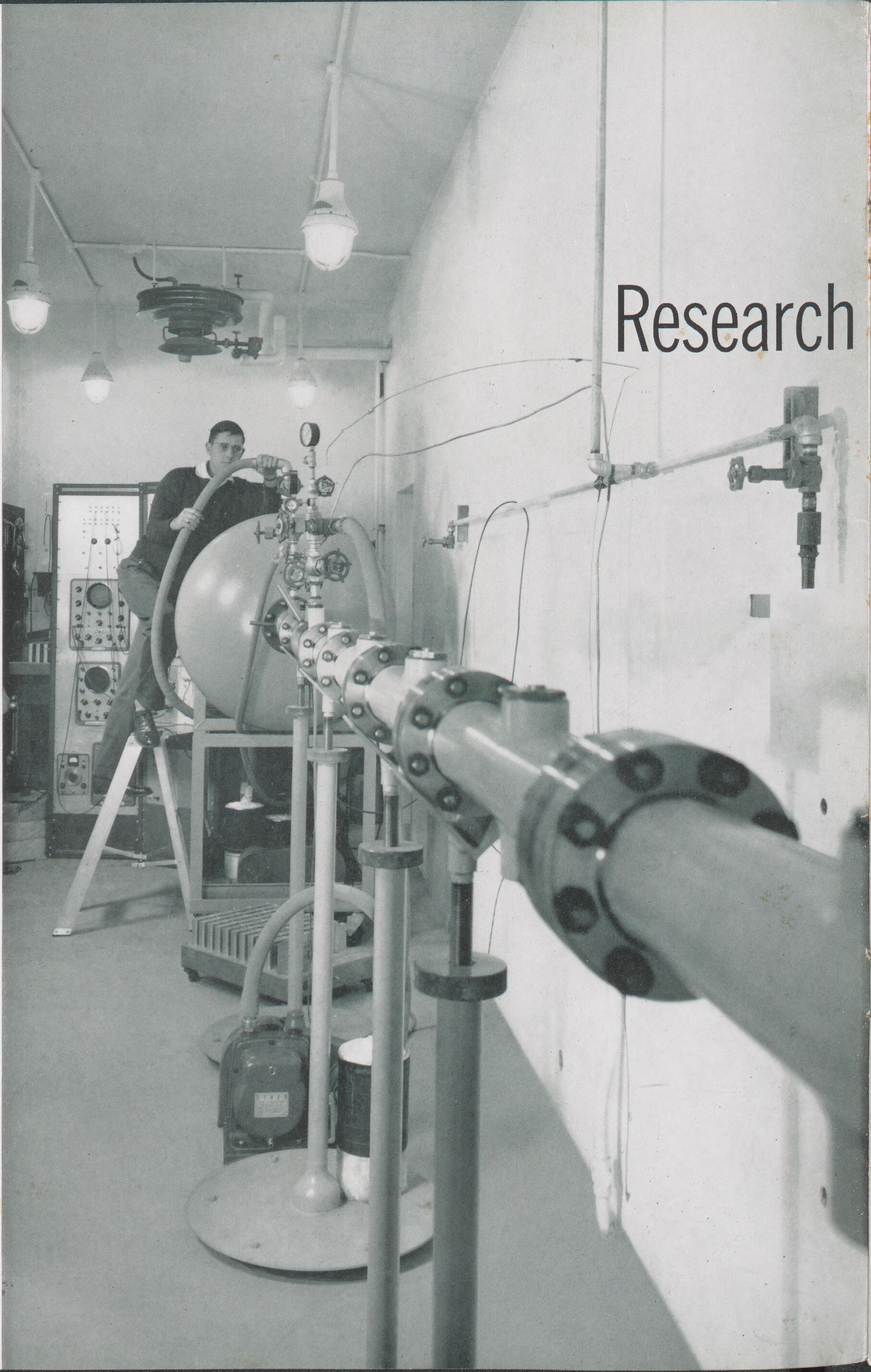
FEBRUARY 1959

CENTURY OF OIL PROGRESS









Research

The shock tube is being prepared for a "shot" by H. W. Clark, Senior Laboratory Assistant of the Chemical Engineering Department. He is securing a fitting into the tube's vacuum chamber.

with a BANG

Emeryville Research Center takes a bead on fundamental research in gases with a "shock tube" that looks like a cannon

A small cement building at the Emeryville Research Center is the scene of perhaps the loudest fundamental research ever conducted by Shell Development Company scientists.

The noise comes from a new piece of experimental equipment called a "shock tube." It looks and sounds like a cannon. The tube part is an 18-foot length of six-inch steel pipe, divided into two sections. One end is connected to a steel vacuum chamber three feet in diameter, the other end is closed.

With this apparently simple equipment, Shell Development's Chemical Engineering Department hopes to study chemical reactions under extreme temperature and pres-

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Dedicated to the principle that the interests of employees and employer are mutual and inseparable

Employee Communications Department
New York, N. Y.

contents

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ABOUT THE COVER

Contrasts between the old and the new in the four major phases of the oil industry illustrate the progress the industry has made during its first 100 years:

Exploration and Production—(top two pictures on cover)—On the left is the Drake well near Titusville, Pa. At right is a view of a modern offshore drilling rig on location off the coast of Louisiana.

Transportation—(second row)—At left is a train of the early 1860's hauling oil in wooden barrels on flatcars. The picture at right was taken at the Cameron Ariz., Pump Station on the 725-mile Four Corners Pipe Line.

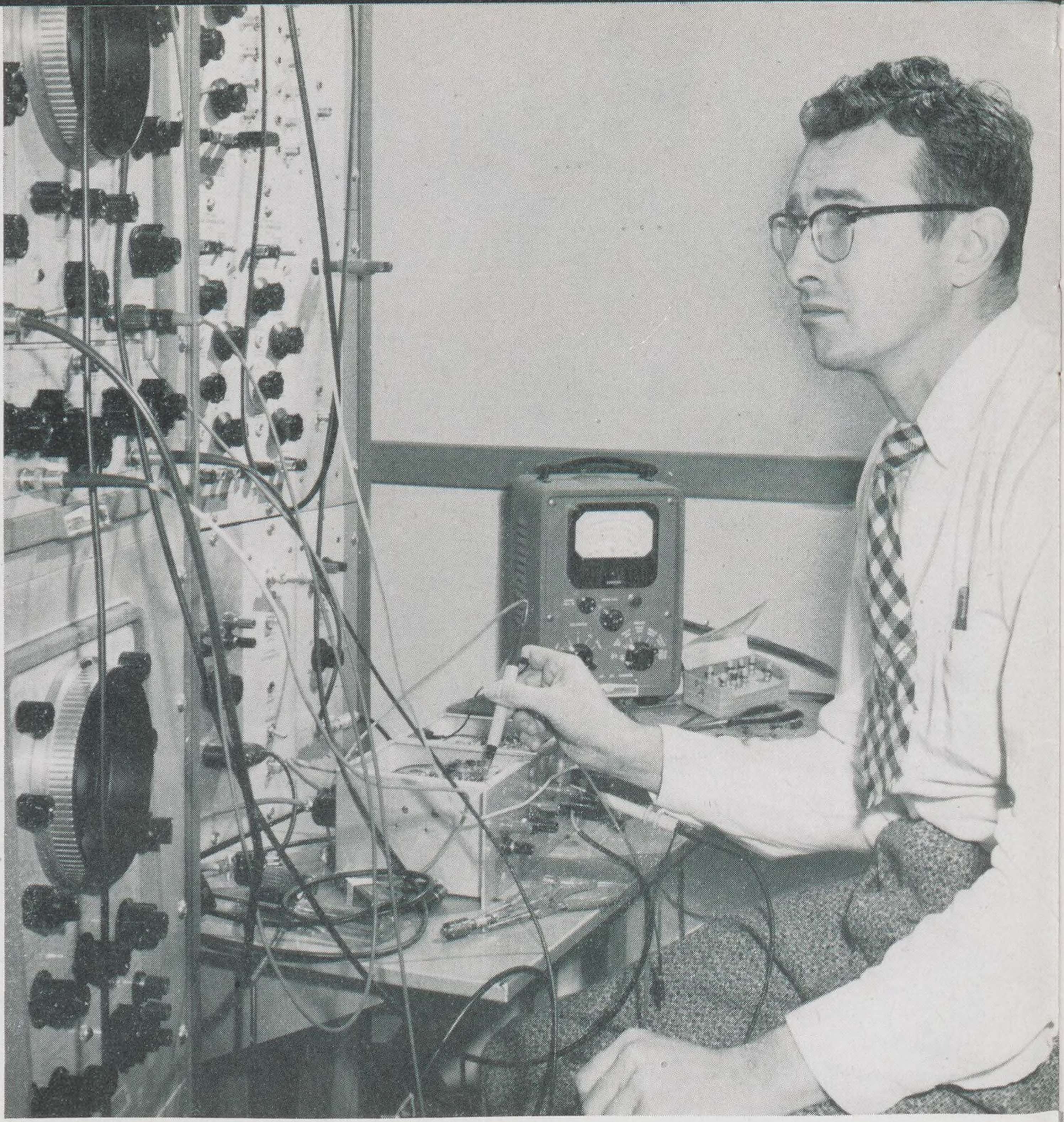
Manufacturing—(third row)—On the left is a view of Shell's Norco Refinery. The picture at right shows a portion of Brundred Refinery at Oil City, Pa., in the 1860's.

Marketing—(bottom row)—At left is a drawing of a man filling a barrel with kerosene from an oil cabinet, used in stores during the late 1800's for dispensing oil products. At right is a modern Shell service station.

The first in a series of three articles commemorating the oil industry's centennial starts on page 10. The second article, to be published in a forthcoming issue of SHELL NEWS, will feature Shell contributions during the industry's first 100 years.

RESEARCH WITH A BANG

continued



Engineer R. W. Kunstman checks one of more than a score of units in the electronic instrument system used with the shock tube.

sure. The temperature and pressure—and the noise—come from the shock wave.

This search for general knowledge is typical of Emeryville's fundamental research which seeks to add knowledge in fields of present or potential interest to Shell. Although fundamental research is not limited to immediate commercial goals, knowledge resulting from it can lead to solutions of pressing technical problems and to new products or processes.

The physical behavior and chemical reactions of gases are fields of interest to Shell. Reacting gases under varying temperatures and pressures is a common process in chemical plants. But there are still many unanswered questions concerning the true nature of very rapid reactions of gases at high temperature and pressure.

The problem is that the physical processes—heating, cooling and mixing—tend to obscure the true results of a chemical reaction taking place in the usual apparatus. The shock tube solves this problem as inexpensively and efficiently as possible, according to engineer P. F. Deisler of the Chemical Engineering Department, who is in charge of the apparatus.

For example, Deisler said, if we want to react gas A and gas B in conventional equipment, we may get a small amount of gas C and a large amount of gas D which we do not want.

We consider that a great period of time is required to heat these materials to, say, 5,000°C, he added. Thus, the large amount of gas D may have been formed during the long time required to heat the materials to this temperature and to cool them. The only way to find out how much, is to cut the heating and cooling time to as close to nothing as possible, and study the reaction in a nearly pure state.

The shock tube makes this possible with gases, Deisler said, because heating and cooling time in the tube are, for all practical purposes, instantaneous.

Speed is the secret of the shock tube experiment. The experiment is all over in thousandths of a second—with the effects of the physical processes eliminated.

To run an experiment, a vacuum is created in the cylinder. An aluminum disc separates this from the short—or high pressure—section of the tube. This chamber is filled with a light gas. Another aluminum disc separates this section from the longer section—or reaction chamber—of the tube.

The shock tube is isolated in one room of the concrete block building. In an adjacent instrument room, scientists can watch the tube through small windows while controlling the conditions of each experiment.

The scientists set the ultimate pressure and temperature they want inside the shock tube. When the gas (preferably helium) reaches the pre-determined pressure in the high pressure section, an electric discharge splits the disc between the two sections of the tube and the shock wave is on its way.

The discs were quite an engineering problem in their own right. They must rupture exactly the same way every time, at the right time. Each disc has a circle divided into six equal parts embossed on it. The depth of the embossing determines when the disc will rupture. When a disc bursts, it leaves a crown-like shape with six triangular points on it perpendicular to the disc surface. Emeryville engineers spent considerable time determining the exact depths and patterns needed and designing and building a piece of equipment that will produce these discs quickly and accurately.

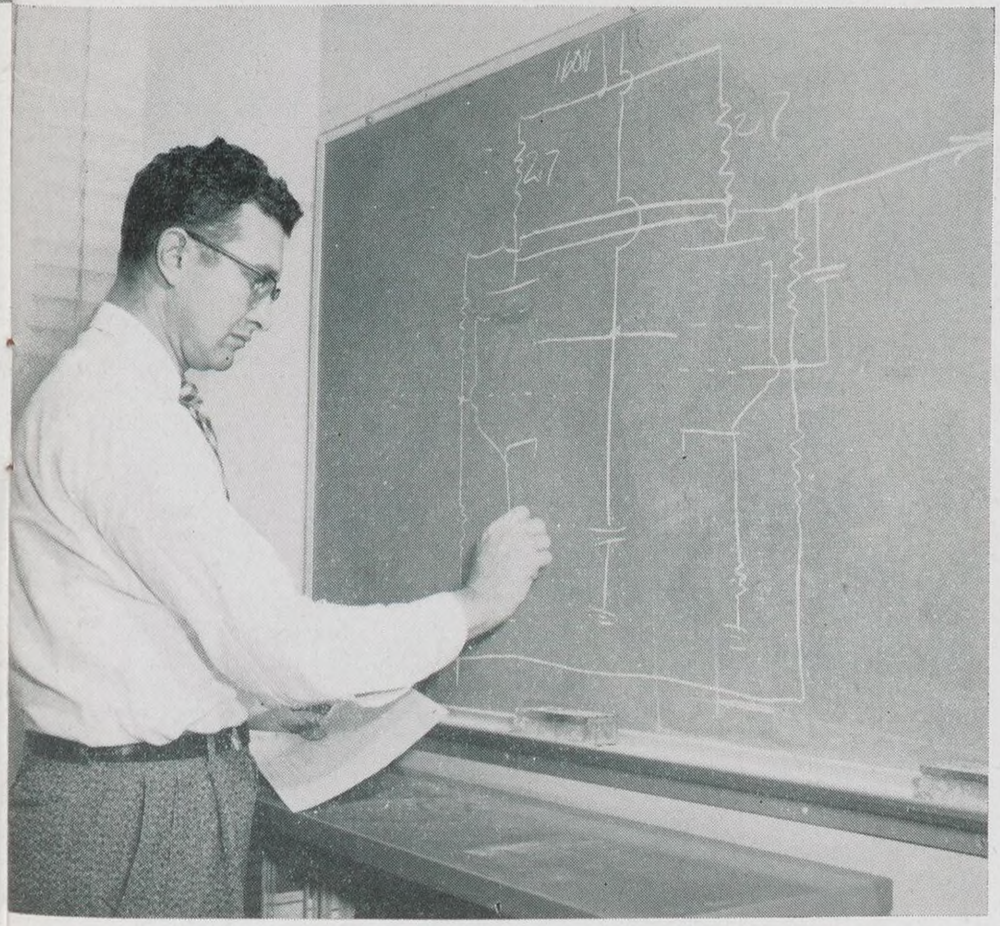
When the disc bursts, the wave travels up to 10,000 feet per second. Gas molecules in its path are raised thousands of degrees in millionths of a second. A second discharge, electronically triggered at a pre-determined time by the first one, breaks the disc at the vacuum chamber. The light, driver gas is evacuated and the cooled gas under study is left in the reaction chamber for later chemical analysis.

Everything happens so fast that a special camera is used to photograph the electronic instruments that tell what is happening inside the tube. (The electronic instrument system itself is so complex that it took engineer R. W. Kunstman of the Chemical Engineering Department about a year to design and develop it.)

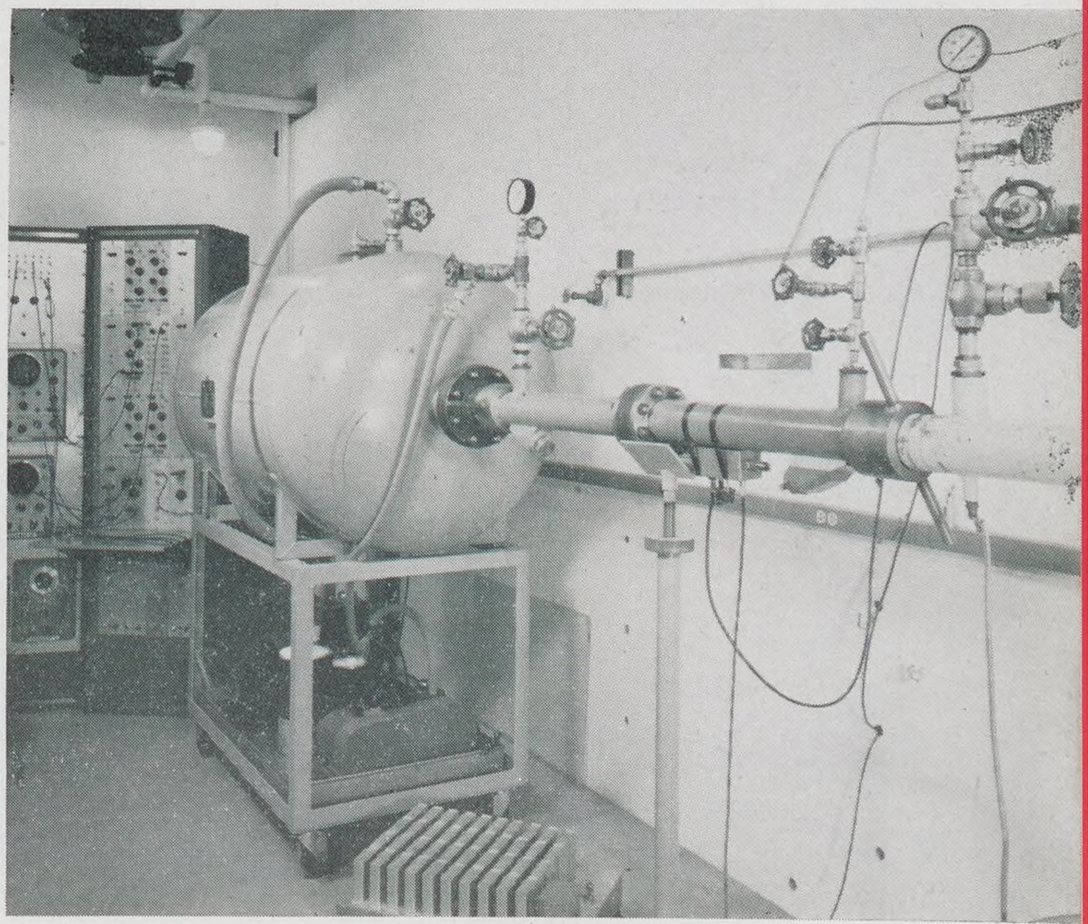
Working at top speed, Emeryville engineers hope to make two shots a day. How many will be made is not known. And no one can say when an "interesting" reaction might turn up.

But just one reaction could be significant enough to start a research program eventually leading to a new Shell process or product ●

Sketching part of the instrument system is Kunstman, who went to the blackboard many times during the 12 months' work required to develop it. Instruments record data on reactions in the tube when the shock wave is sent through it. Simultaneously, photographs are taken of the electronic instruments.



Components of the shock tube in its special room as shown in this picture are, left to right, the instrument racks, the steel vacuum tank, the four-foot, high-pressure section of the shock tube itself, and the start (white colored) of the 14-foot reaction section. On the floor, foreground, is a bank of condensers.



The first reel of flexible marine pipe, manufactured in England for Shell, is unloaded from a freighter at New Orleans onto a barge for transportation to Shell's terminal at Harvey, La.

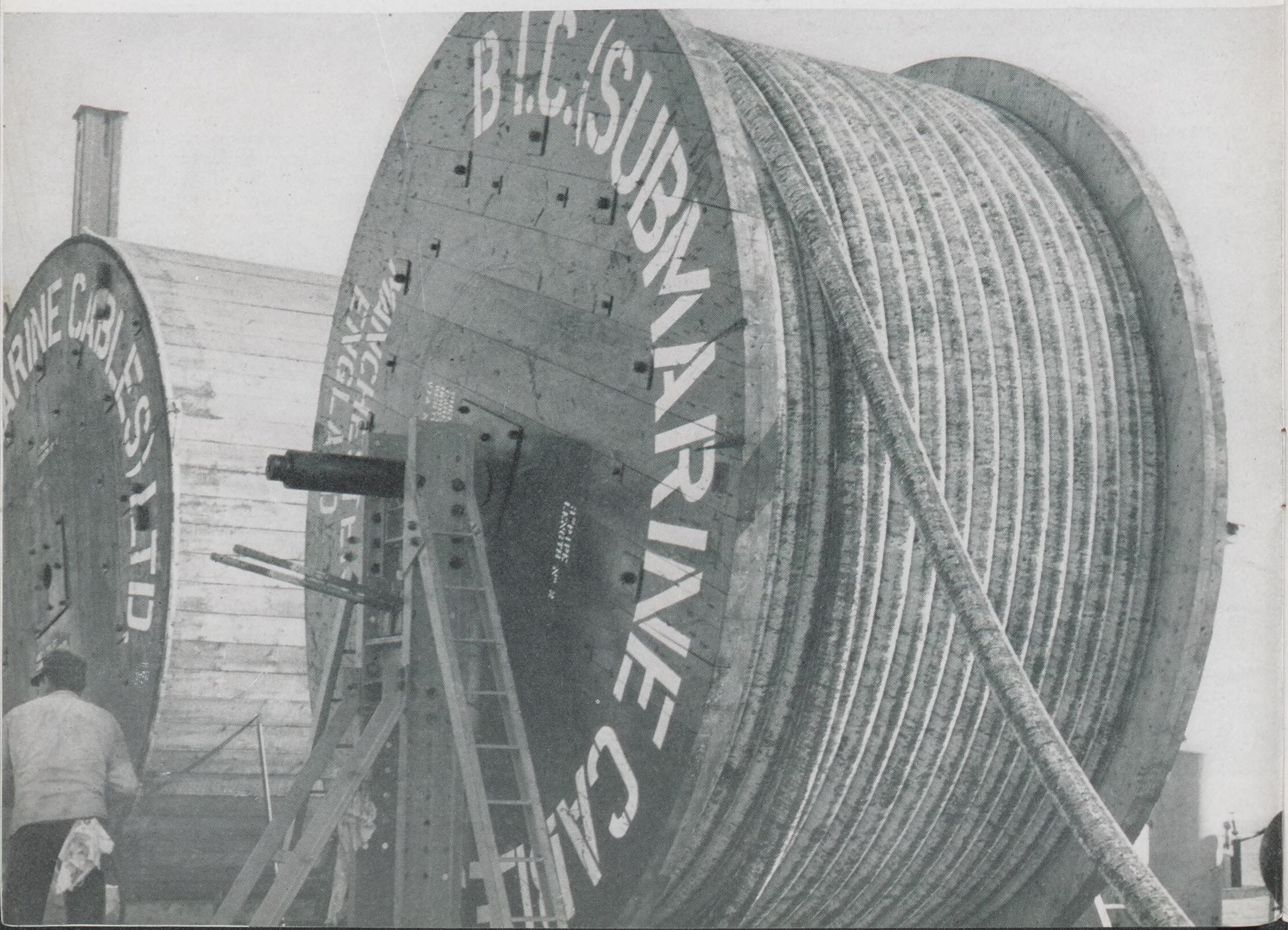
A pipe line that can be reeled out like thread from a spool is being tested by Shell in the Gulf of Mexico.

Nine hundred feet of pipe were laid last November in the New Orleans Exploration and Production Area's South Pass Block 27 Field, about 80 miles southeast of New Orleans. This flexible pipe line is carrying crude oil from a well to a production platform—where oil is gathered from wells before it is re-piped to a terminal ashore.

Made of plastic and insulating material wrapped in steel tape, the pipe has an inside diameter of three inches and an outside diameter of 4½ inches. It was designed for pressures of 2,000 pounds per square inch and it weighs

REELING

The New Orleans Area tests a flexible



12.2 pounds per foot—heavier than steel pipe of the same diameter. It was made by British Insulated Callenders, Ltd., of England, which is joint sponsor of the test.

Providing flexible pipe for underwater use is nothing new to the British firm. During World War II it manufactured the pipe for more than 60 lines carrying fuel under the English Channel from England to the Continent. Those lines were expendable and it remains to be proved whether flexible lines will be economic in offshore oil work.

Flexible pipe could have these advantages: it is easy to transport; it requires no heavy equipment for laying; it is flexible enough for the sharp drop from a laying barge to a sea floor; it can be laid quickly.

The laying job in Block 27 went smoothly. The 14-foot diameter reels on which the pipe was shipped from England were mounted on an axle aboard a conventional pipe-laying barge. The pipe was reeled a distance of about 900 feet in water 35 feet deep in just 30 minutes. Then it was cut to proper length with a hacksaw and connected to the well and the platform.

The test is the first of its kind. If it proves successful, it could provide a new answer to some big problems of offshore oil work ●

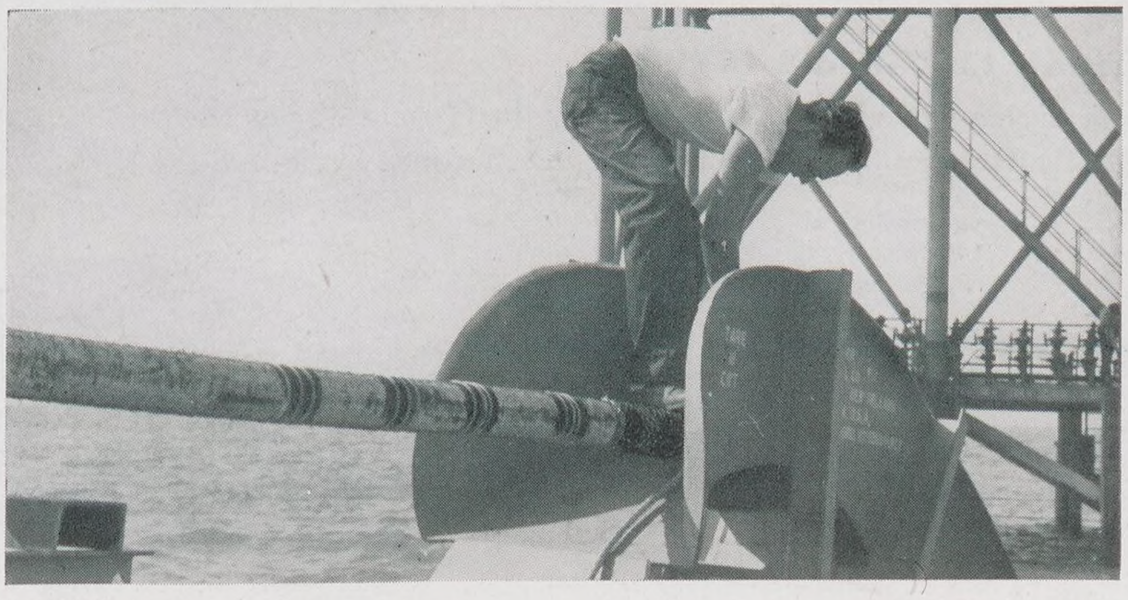
OUT A PIPE LINE

pipe line that may solve some offshore problems

Mounted on a conventional pipe-laying barge, the 14-foot diameter reel is ready to pay out the flexible pipe, which is made of plastic and insulating material wrapped in steel tape. The experimental pipe was laid between a Shell well and production platform. ◀

Paying out pipe by hand (right) is done until a cable is passed ▶ from the pipe's end to the production platform, in the background, where oil is gathered from wells before it is re-piped to a terminal. After the pipe is secured to the platform, the pipe-laying barge moves away towards the nearby well, laying pipe as it goes along.

At the chute, below, a contractor's employee helps steer the pipe smoothly. The chute is designed to give the pipe a gentle slope for its descent into the water and thus prevent kinks in its core. ▼



Further appointments take place in . . .

SHELL CHEMICAL CORPORAT

As explained in January SHELL NEWS by President R. C. McCurdy, basic steps have been taken which will lead to a new organization of Shell Chemical Corporation based completely on lines of products, each with its own integrated manufacturing, marketing and supporting facilities.

Following are brief descriptions of the five Divisions, together with appointments which have been made since those announced in the January SHELL NEWS.

AGRICULTURAL CHEMICALS DIVISION

(This Division engages in lines of business previously represented by the Agricultural Chemical Sales Division, and now includes the Denver Plant.)


M. R. SPRINKLE

NAME	NEW POSITION	FORMER POSITION
Manufacturing		
M. R. SPRINKLE	Manager Manufacturing	Manager Development, Head Office Manufacturing
Marketing		
J. J. LAWLER	Sales Manager	Sales Manager, Agricultural Chemical Sales Division


J. J. LAWLER

AMMONIA

(This Division has been and will continue as an integrated operation including the Shell Point and Ventura Plants.)


F. A. HORSLEY

NAME	NEW POSITION	FORMER POSITION
Manufacturing		
F. A. HORSLEY	Manager Operations	Superintendent, Shell Point Plant
Marketing		
V. C. IRVINE	Sales Manager	(Same position)


V. C. IRVINE

INDUSTRIAL CHEMICALS DIVISION

(This Division is engaged in the general lines of business previously represented by the Chemical Sales Division [with the exception of Plastics and Resins]. It includes the Houston, Norco, Dominguez and Martinez Plants and the Houston Research Laboratory.)


E. S. ROBB


J. W. HYDE

NAME	NEW POSITION	FORMER POSITION
Manufacturing		
E. S. ROBB	Manager Manufacturing	Manager Engineering, Head Office Manufacturing
J. W. HYDE	Manager Operations	Superintendent, Houston Plant
C. H. PLOMTEAUX	Superintendent, Houston Plant	Assistant to Vice President, Head Office Manufacturing


C. H. PLOMTEAUX

ATION'S NEW ORGANIZATION


K. R. FITZSIMMONS


W. Q. MOONEY


W. A. McCORMICK


D. L. YABROFF


J. B. HENDERSON


A. V. SNIDER

NAME	NEW POSITION	FORMER POSITION
Marketing		
K. R. FITZSIMMONS	Manager Marketing	Sales Manager, Chemical Sales Division
W. Q. MOONEY	Sales Manager	Assistant to Sales Manager, Chemical Sales Division
W. A. McCORMICK	Manager Sales Development	Assistant to Manager, Sales Development, Chemical Sales Division
Research and Development		
D. L. YABROFF	Manager Research and Development	Manager Market Development, Head Office Marketing
J. B. HENDERSON	Manager Process Development	Assistant Superintendent, Norco Plant
A. V. SNIDER	Manager Product Development	Manager Export, Chemical Sales Division

PLASTICS AND RESINS DIVISION

(This Division has taken over activities in epoxy resins, bisphenol and phenol, the Riverton, N. J. plant site and work on plastics ventures. It programs and functionally supervises through a Superintendent its part of the Houston Plant's operations and directs its share of the work of the Houston and Torrance Research Laboratories.)


D. B. LUCKENBILL


D. N. RINDSBERG


W. C. LOWREY


D. P. JONES


J. G. DICKERSON


F. M. McMILLAN


J. F. ROORDA, JR.


D. S. HERR

NAME	NEW POSITION	FORMER POSITION
Manufacturing		
D. B. LUCKENBILL	Manager Operations	Section Leader, Manufacturing Operations, Head Office
D. N. RINDSBERG	Superintendent, Houston Plant	Assistant Superintendent, Houston Plant
Marketing		
W. C. LOWREY	Manager Marketing	Assistant Manager, Market Development, Head Office Marketing
D. P. JONES	Sales Manager	New York District Manager, Chemical Sales Division
J. G. DICKERSON	Manager Sales Development	Boston District Manager, Chemical Sales Division
Research and Development		
F. M. McMILLAN	Manager Research and Development	Department Head, Organic Chemistry, Shell Development Company, Emeryville
J. F. ROORDA, JR.	Manager Process Development	Assistant Superintendent Technical, Houston Plant
D. S. HERR	Manager Product Development	Manager Sales Development, Chemical Sales Division

SYNTHETIC RUBBER DIVISION

(This Division engages in lines of business previously represented by the Synthetic Rubber Sales Division, and now includes the Torrance Plant and Torrance Research Laboratory.)

R. L. KITTLE

J. E. TOEVS

S. T. RAYCRAFT

NAME	NEW POSITION	FORMER POSITION
Manufacturing		
R. L. KITTLE	Manager Manufacturing	Manager Operations, Head Office Manufacturing
Marketing		
J. E. TOEVS	Sales Manager	Sales Manager, Synthetic Rubber Sales Division
S. T. RAYCRAFT	Assistant Sales Manager	San Francisco District Manager, Chemical Sales Division
Research and Development		
F. W. HANNSGEN, JR.	Manager Research and Development	Manager Sales Development, Synthetic Rubber Sales Division
V. L. KELDSEN	Manager, Process Development	Assistant Manager Development, Head Office Manufacturing

F. W. HANNSGEN, JR.

V. L. KELDSEN

In addition, the following appointments have been made to the Head Office organization.

R. K. WALTERS	Manager Engineering Head Office	Assistant Manager Engineering, Head Office Manufacturing
H. I. WOLFF	Assistant Manager Engineering, Head Office	Assistant Manager Development, Head Office Manufacturing
P. E. JOYCE	Manager Export, Head Office	Manager Export Sales and Development, Agricultural Chemical Sales Division

R. K. WALTERS

H. I. WOLFF

P. E. JOYCE

news and views

REVIEW OF 1958

Total United States oil demand, including exports, was down about 1⅔ per cent and domestic demand was up about 1½ per cent in 1958 compared with 1957, according to Frank M. Porter, president of the American Petroleum Institute.

Porter said in the A.P.I.'s annual report on the industry that 1958 as a whole was not a particularly good year, despite the increase in domestic demand and a general improvement in inventories. He expressed hope that the up-swing in the second half of 1958 will continue through 1959, the industry's centennial year.

The reason for the decline in 1958 total demand was largely because 1957 exports were above normal due to the Suez crisis. Total demand for 1958 was estimated at 3,368 million barrels and domestic demand 3,266 million barrels.

Production of domestic crude dropped from 2,617 million barrels in 1957 to 2,461 million barrels in 1958. Among reasons for this decline were: lower total demand for crude oil and products, large crude oil inventory liquidation, and an increase of more than 36 million barrels in all imports.

Well completions in 1958 were estimated at about 48,000, down 6,000 from 1957 and down 10,250 from the all-time high in 1956. Exploratory well completions were estimated at 10,550, with 9,200 of these dry holes. Successful completions were 1,000 oil and 350 gas wells.

In refining, capacity was estimated to have increased to 9,743,000 barrels daily but throughput was down to 7,594,000 barrels daily—325,000 barrels a day below 1957.

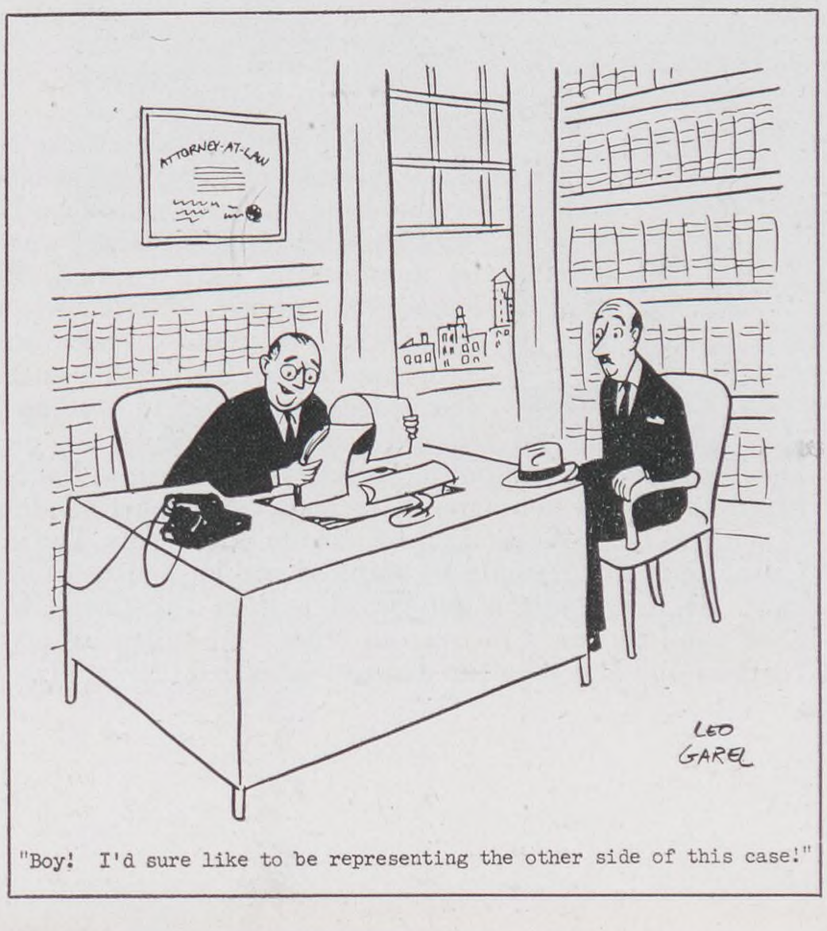
However, oil companies continued to invest heavily in the future, Porter said. Preliminary reports from the Chase-Manhattan Bank indicate domestic capital expenditures were only slightly under the 1957 peak of $6,400 million. Since the end of World War II, oil companies and oil men have put more than $56,850 million into capital expansion and development.

AWARD FOR PECTEN

A Certificate of Special Merit was presented recently (see photo above right) to Shell Oil Company by the New York Employing Printers Association for an outstanding example of printing of the Shell pecten.

The printing of the pecten which won the award was designed for use on tank trucks. Even in printed form, it appears to be three-dimensional.

The pecten was among 2,000 entries at the 17th Annual Exhibition of printing sponsored by the Association. Thornton Beall (left in photo), Manager Marketing Distribution, Head Office, accepted the award on behalf of Shell.



"Boy! I'd sure like to be representing the other side of this case!"

CENTURY OF OIL PROGRESS

Highlights of the Petroleum Industry's First 100 Years

THE first successful well drilled for oil in the United States came in August 27, 1859, near Titusville, Pa. The U. S. oil industry marks its beginning from this date and is celebrating 1959 as its centennial year.

But the history of petroleum in this country starts more than 300 years ago. The first recorded discovery of oil came from French missionaries in 1627. They reported an oil spring near the present site of the town of Cuba in southwestern New York. Later, other missionaries, soldiers, explorers and settlers told of seeing oil in both New York and northwestern Pennsylvania and how the Indians used it as a medicine.

The Seneca Indians were the first petroleum dealers. They gathered oil by soaking it up with blankets where it floated on streams and small lakes. They used it as an ointment for wounds as well as an internal medicine, and it became an item of trade at Niagara, N. Y.

Following is a brief account of events leading to the drilling of the first oil well and some of the highlights of the oil industry during its first 100 years. The dates in the picture captions are the years the pictures were taken.

Drake Well Museum

1 Early settlers in western Pennsylvania used the Indian method of gathering oil and by the late 1700's "Seneca Oil" or "Indian Oil" was sold by apothecaries as a cure-all. Petroleum was widely distributed after 1847, when Samuel M. Kier started gathering it from his father's salt wells near Tarentum, Pa., and bottling it as the "most wonderful remedy ever discovered." (See picture above of wrapper and bottle for Kier's Petroleum.) But Kier's supply exceeded the demand, so he consulted a Philadelphia chemist to learn if oil might be used in other ways. The chemist told him that it could be distilled and burned as an illuminant. So Kier built a one-barrel still in Pittsburgh in the 1850's and became a pioneer oil refiner. He called his product "carbon oil" and soon the demand exceeded the supply.

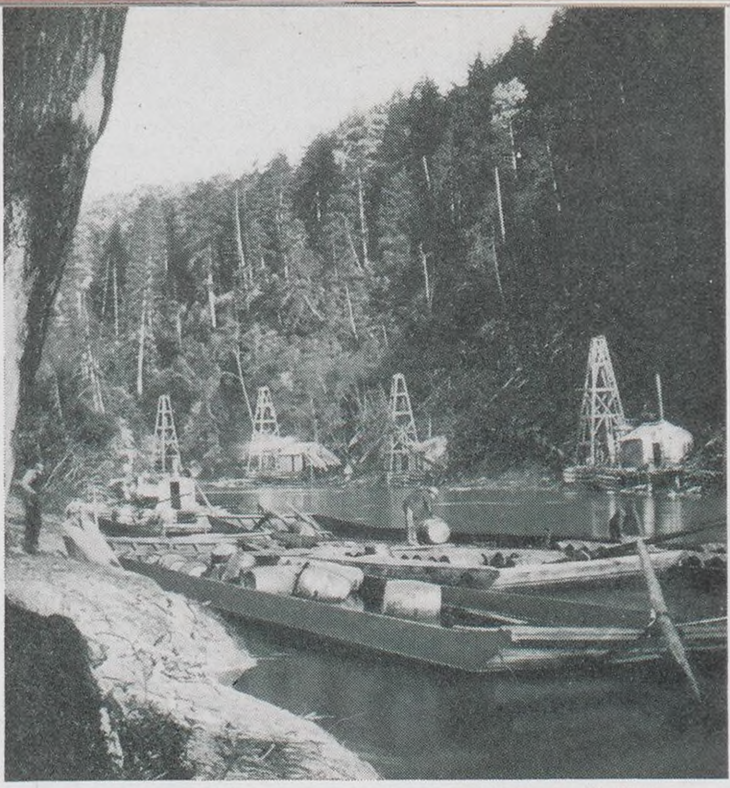
2 George H. Bissell, a young New York City lawyer, and his partner, Jonathan G. Eveleth, purchased a farm which had oil springs near Titusville in northwestern Pennsylvania in November, 1854. A month later they organized the first oil company, the Pennsylvania Rock Oil Company of New York. The financial crises of 1854 and 1857, as well as disagreement among stockholders, slowed the progress of the new company. Finally, the Seneca Oil Company of Connecticut was formed in 1858 and immediately leased the oil farm. Bissell is generally given credit for the idea of drilling a well for oil. It is said that he got the idea from an advertisement for Kier's Petroleum which featured the derrick of a salt well. "Colonel" Edwin L. Drake, a former railroad conductor, was appointed agent for the Seneca Oil Company and sent to the Titusville farm in 1858 to drill for oil. After a year of preparations, Drake hired William (Uncle Billy) Smith, a salt well driller, to drill a well near the largest oil spring on the farm. On August 27, 1859, they struck oil at 69½ feet. (The most famous picture of the Drake well is shown below. It was taken in 1861 and shows Drake, right, talking with Peter Wilson, a Titusville druggist.)

Drake well in 1861

Drake Well Museum

Early oil field, about 1863 Drake Well Museum

3 Drake's well produced 25 barrels of oil a day, which sold for $18 a barrel. Within 24 hours after the discovery, hundreds of people were scrambling to buy land and start drilling for oil. Titusville became the first oil boom town and wells were started up and down the valley along Oil Creek. As more oil was produced, the price of crude oil dropped and by 1861 reached a low of 10 cents a barrel. (Funk Farm, a typical oil field on Oil Creek is shown above. In the foreground is the Empire well, the first big flowing well, which produced 3,000 barrels a day.)



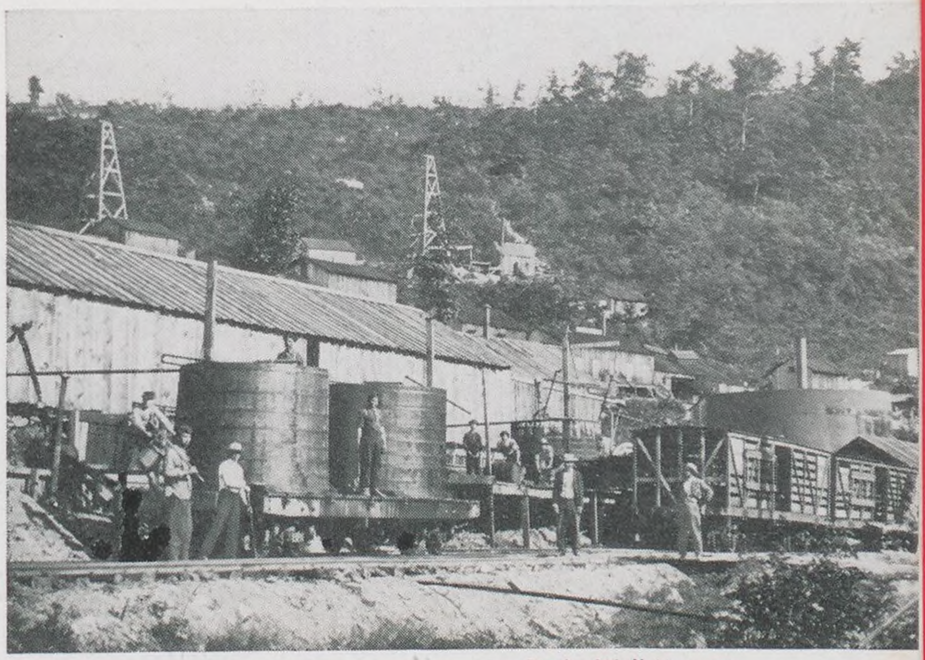
Loading flatboats, about 1862 Drake Well Museum

5 Transportation was a major problem of the early oil producers. During the first few years, crude oil had to be shipped out of the oil region in wooden barrels on wagons or flatboats to the main railroad lines. (See picture above of barrels being loaded on flatboats at Funkville.) These modes of transportation were slow and expensive, and much oil was lost on the rough roads and in collisions on the crowded creek. A railroad was built alongside Oil Creek in 1862 and the situation improved.

Drake Well Museum

Great Western Refinery, about 1861

4 While there was a ready market for kerosene made from petroleum, refinery capacity was too small to take care of crude oil production. At first, most of the oil was refined by coal oil refiners, who were quick to realize that petroleum was a better raw material than the so-called "coal" (actually oil shale) from which they had been making kerosene. As production continued to increase, small refineries were built in the oil region and it wasn't long before large refineries were constructed in Pittsburgh and the port cities of Cleveland, New York, Philadelphia and Baltimore. (One of the early refineries built in the oil region is shown above—The Great Western Refinery at Pioneer, Pa.)



Tank car, 1865 Drake Well Museum

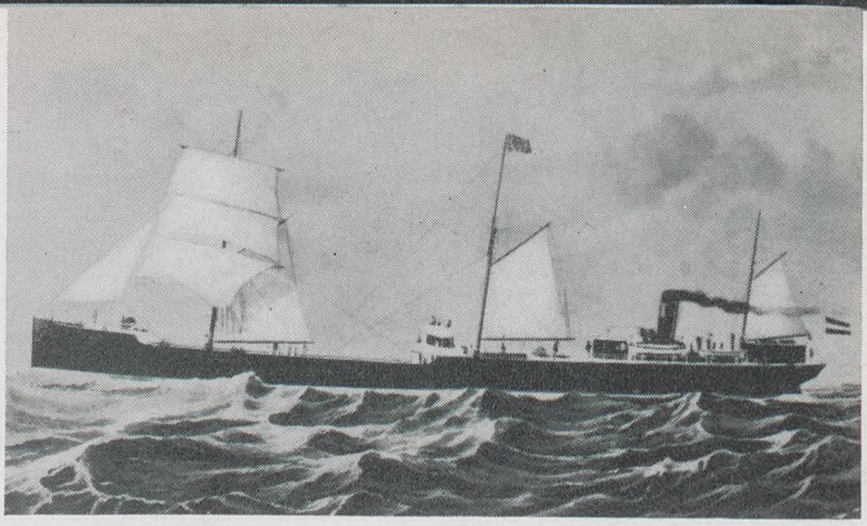
6 At first, railroads hauled oil in barrels on flatcars. Then, in 1865 the tank car was introduced—two wooden tanks on a flatcar, each holding about 45 barrels of oil. (See picture above taken at Gregg's Switch, Pa.) During the same year Samuel Van Syckel, an oil buyer, built the first successful pipe line—a two-inch line about five miles long connecting an oil field to the Oil Creek Railroad. Within a short time, many other pipe lines were constructed and began transporting oil much more cheaply than by previous means.

Pipe Line vs. railroad, 1874 Drake Well Museum

7 Wagon drivers fought bitter battles with the early pipeliners—cutting lines and setting fire to storage tanks. But they failed to discourage the construction of new lines. However, as longer lines were built, the pipeliners had another battle on their hands—this time with the railroads. For example, in 1874 the Columbia Conduit Company built a pipe line to a town near Pittsburgh, passing under railroad tracks. After operation of the line started, railroad men wrecked the pipe under the tracks. It was repaired, but then torn up again. Since the pipe line crossed the tracks at a highway, Columbia Conduit's solution was to haul the oil across in tank wagons—on a public road—and then put it in storage tanks and pump it on to its destination. (See picture above showing the operation.)

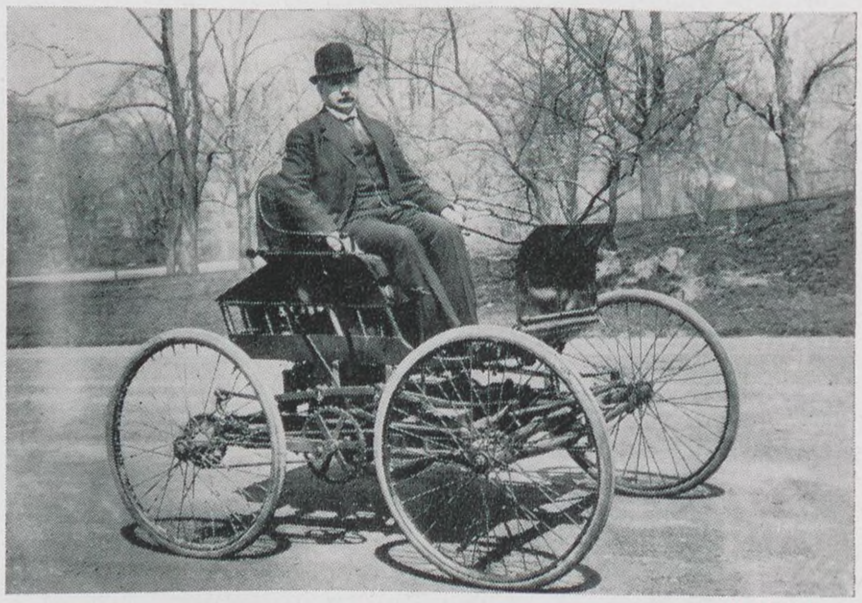
8 In the winter of 1879, the Tidewater Pipe Company, Ltd., started construction of a six-inch pipe line from northwestern Pennsylvania across the Allegheny Mountains to a railroad junction 109 miles to the southeast. The largest previous line was three inches in diameter and 30 miles long, and most people thought the Tidewater project would be a failure. After fighting severe winter weather (see painting below of workers sledging pipe in the snow) and the opposition of the railroads, the line was completed in May, 1879—a major accomplishment in the history of the oil industry. Five years later the line was extended to the Atlantic Coast.

Sledging pipe, 1879 Tidewater Oil Company



First bulk tanker, 1886 Atlantic Refining Company

9 Kerosene made from petroleum was the best and cheapest illuminant the world had ever known and was the major product of the early refineries. Ten years after the Drake well started producing, American crude oil and kerosene were being shipped to almost every country in the world. European countries were the first to fit their cargo ships with permanent tanks for carrying oil and kerosene. In the 1880's the first tankers were built to carry liquid cargoes in bulk. (Pictured above is the first such tanker, the "Gluckauf," built in England.)

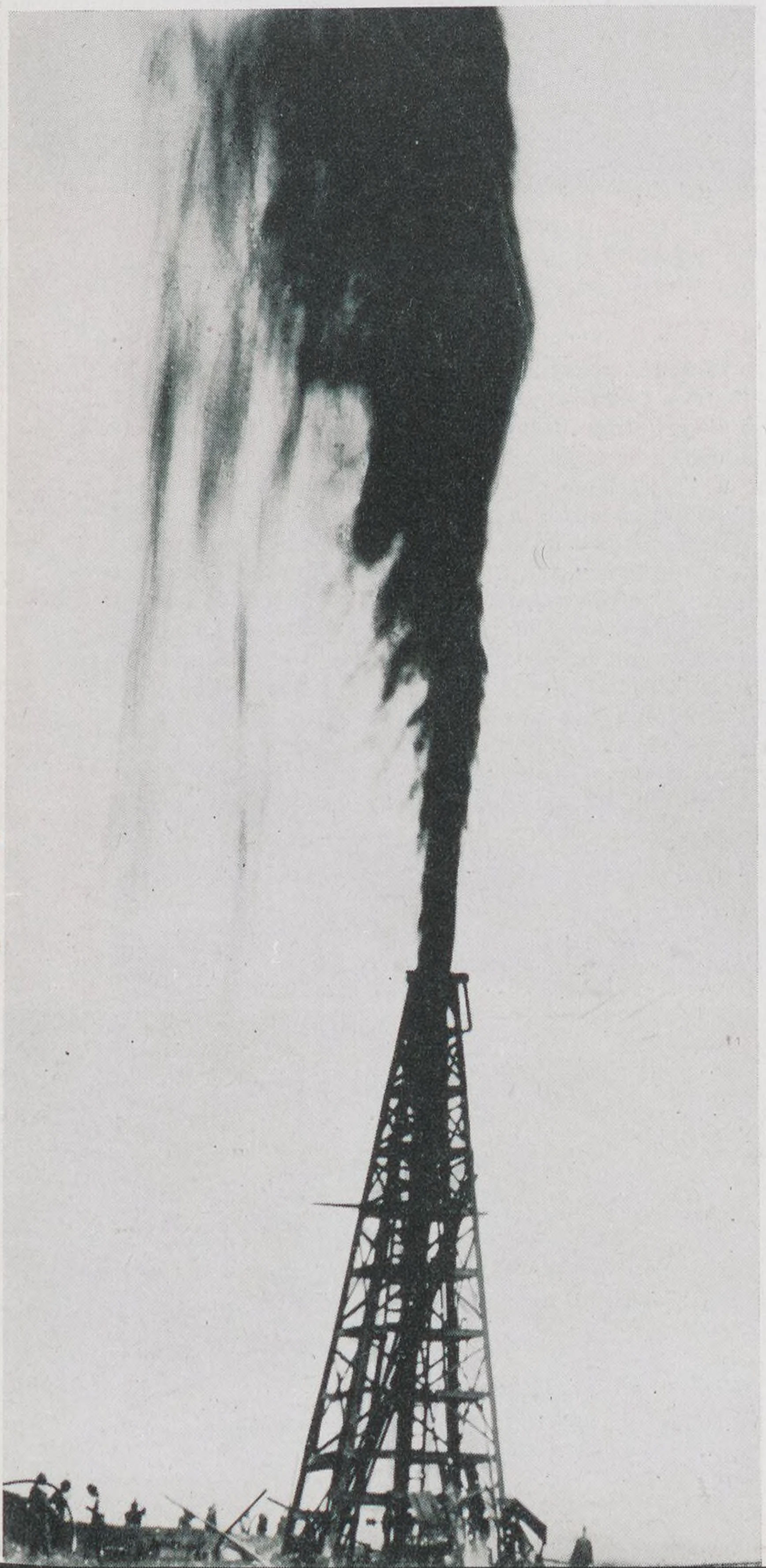


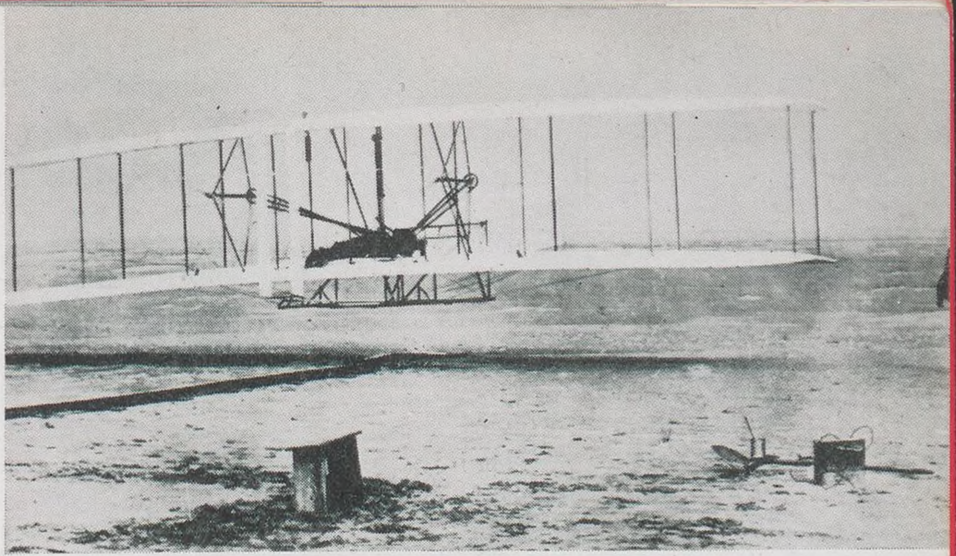
Elwood Haynes auto, 1894 Brown Brothers

10 In about 1870, men in the United States and Europe started experimenting with one of the major byproducts in the manufacture of kerosene—gasoline. And in 1877 Nikolaus August Otto of Germany completed the first practical gasoline engine. The first gasoline automobile was built in Europe shortly afterward. An American-built "gasoline buggy" did not appear until the early 1890's. (One of the earliest American gasoline-powered cars is shown above. It was built by Elwood Haynes in Kokomo, Ind.) At the beginning of this century, three types of automobiles were vying for public favor—steam, gasoline and electric. By 1915, the gasoline car had won the battle.

11 A few years after the Drake discovery, oil was being produced in commercial quantities in West Virginia, Ohio and Kentucky. Production then followed in California, Texas, Kansas, Illinois, Michigan, Indiana and Oklahoma. However, at the turn of the century Pennsylvania was still the principal oil-producing state. Texas already had two oil fields; but it was the discovery of Spindletop Field in 1901 that started the Southwest on its way to becoming the nation's largest oil-producing region. Spindletop's spectacular discovery well, the Lucas Gusher located near the town of Beaumont, spouted between 75,000 and 100,000 barrels of oil a day for nine days before it was brought under control. (See picture of this well below.) Spindletop's huge output made oil available in large quantities and at low prices so that, for the first time, it could be used economically as fuel in ships and factories. Several major oil companies (The Texas Company and Gulf Oil Corporation among them) got their start at Spindletop.

Spindletop gusher, 1901





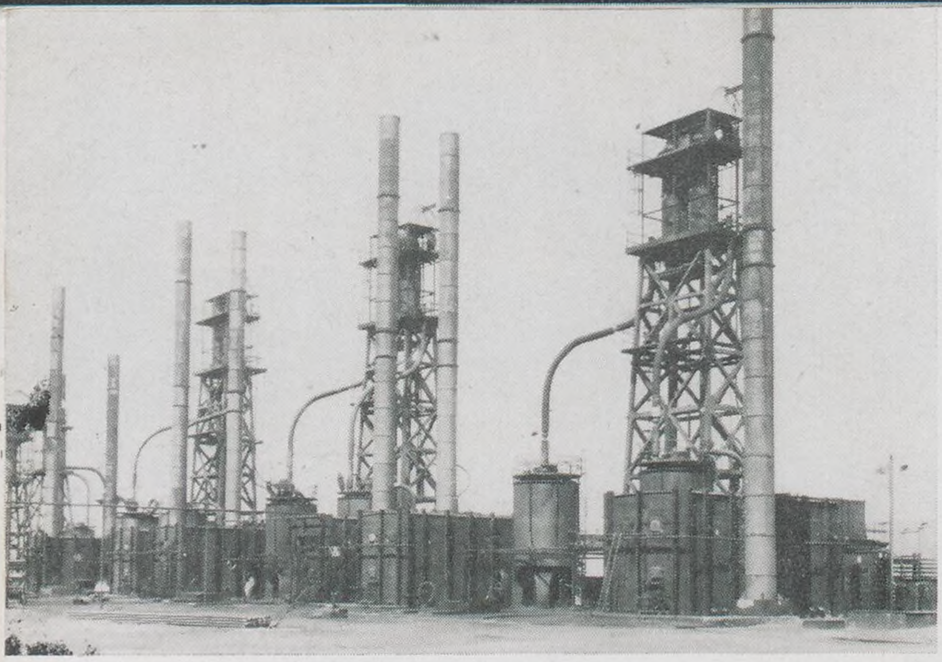
Wright brothers, 1903

Institute of Aeronautical Sciences

12 The first successful flight of a motor-driven airplane, by the Wright brothers in 1903 (see picture above), opened another new market for the oil industry. The gasoline engine was still in its infancy, but Wilbur and Orville Wright decided it was the best for the job and built one for their first plane. The weight of steam engines, with their heavy boilers, had contributed to the failure of previous attempts to fly powered aircraft. Carpenters and blacksmiths built the first airplanes equipped with ordinary gasoline engines which burned the same fuel used by automobiles. However, as more powerful engines were developed, the oil industry had to provide better fuels and lubricants. As a pioneer supplier of aviation "spirit," Shell became a leader in the development of aviation fuels and lubricants, as well as the nation's leading supplier of commercial aviation fuel.

13 Probably the first time Shell "Motor Spirit" was used in the United States was in an airplane flown by Claude Grahame-White, prominent English aviator, at the Harvard-Boston Aero Meet in 1910. Two years later, in September 1912, Shell gasoline was first sold commercially in the United States by the American Gasoline Company, organized at Seattle, Wash., by the Royal Dutch/Shell Group to market on the West Coast. (See picture below of Shell's first Seattle bulk depot and "service station." The oil industry first sold gasoline to motorists at bulk depots and garages. However, the new market created by the gasoline automobile spurred the industry to build gasoline stations on well-traveled streets and highways. The first drive-in station was opened in St. Louis in 1905. Today, more than 180,000 service stations serve motorists throughout the nation.

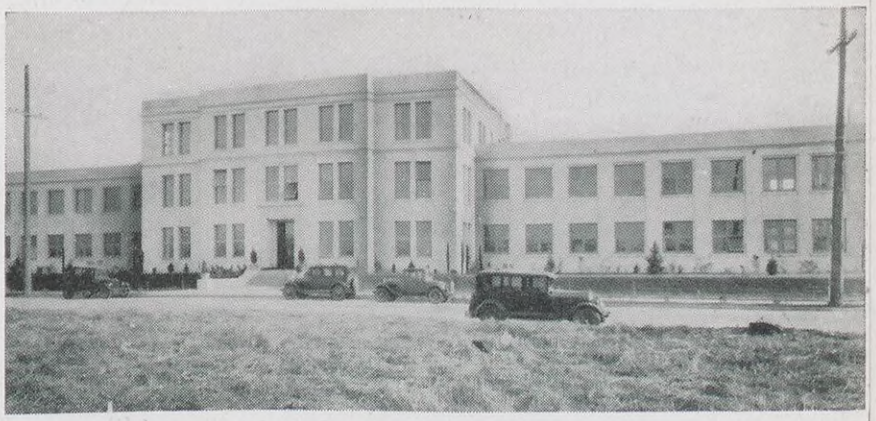
First Shell depot, 1912


Dubbs cracking units, 1925

14 The invention of the self-starter in 1909 boosted the popularity of the gasoline automobile and soon mass production techniques were introduced to build cars in large numbers. As a result, the demand for gasoline increased sharply, causing producers to intensify their search for oil and refiners to seek new methods of increasing gasoline production. Refineries still used the straight distillation process, which produced gasoline in relatively small quantities. A way had to be found to get more gasoline out of a barrel of crude oil. Refiners started experimenting with the "cracking" process—the breaking apart by heat and pressure of heavier petroleum molecules, such as those found in fuel oil—to make more light products such as gasoline. After considering the many different "cracking" processes under development, Shell became the first licensee of the Dubbs process late in 1919 and the first Dubbs unit was completed at the Wood River Refinery in March, 1921. (The picture above shows four Dubbs units at Wood River in 1925.) Shell made improvements in the Dubbs process and installed it in its other refineries. By the 1930's, the Dubb's process had become the leading thermal cracking process in the oil industry. On the eve of World War II, refineries started using catalytic cracking to make base stock for aviation fuel. In this process, a catalyst (a substance which promotes chemical changes in other materials without being changed itself) breaks down heavy hydrocarbon molecules. Blending components for most automobile gasoline manufactured today are made by this process.

15 During the early days of cracking, little was done about utilizing the gases produced as by-products of the cracking process. Some gas was used as refinery fuel and some was sold to factories for fuel. The rest was disposed of by burning it in flares. Also, oil field gas that could not be sold was often flared. As oil field production and refinery capacity increased, the volume of these gases became too great to waste and oil companies started investigating ways they might be converted into useful products. Shell organized Shell Development Company in 1927 to carry out basic hydrocarbon research, with the immediate goal of making new products from these gases. (See picture above right of Shell Development's first laboratory at Emeryville, Calif., completed in 1928.) In 1929 Shell Chemical Corporation was organized to manufacture chemicals from by-product gases. Late in 1930, Shell Chemical started the manufacture of secondary butyl alcohol at Martinez, Calif. and in 1931 at Shell Point the manufacture of ammonia from air and oil field gas—both pioneer processes in the new field of petroleum-based chemicals. Research by Shell and other oil companies has produced hundreds of products. Oil industry laboratories also have improved techniques for finding and producing oil which have contributed greatly to increasing oil reserves.

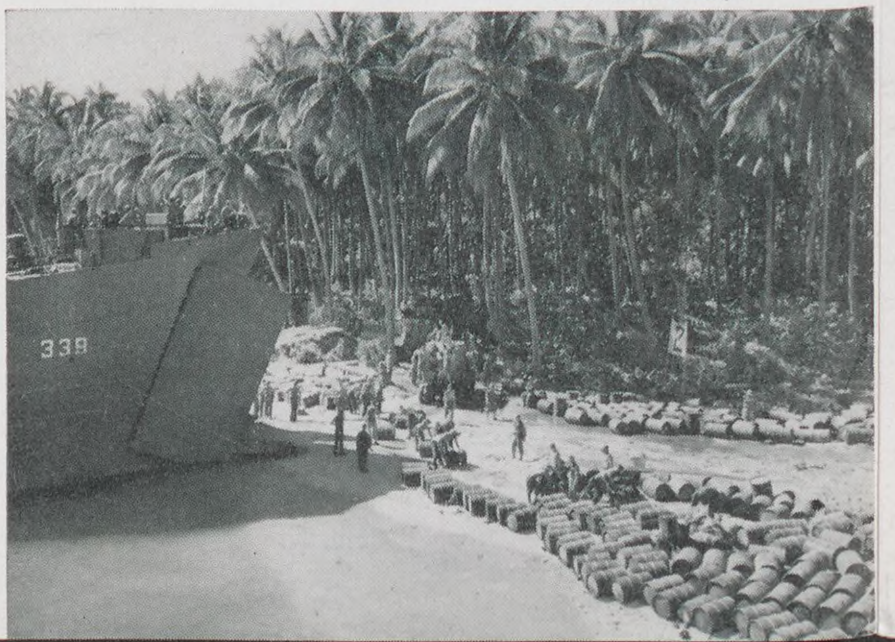
Emeryville Research Center, 1928

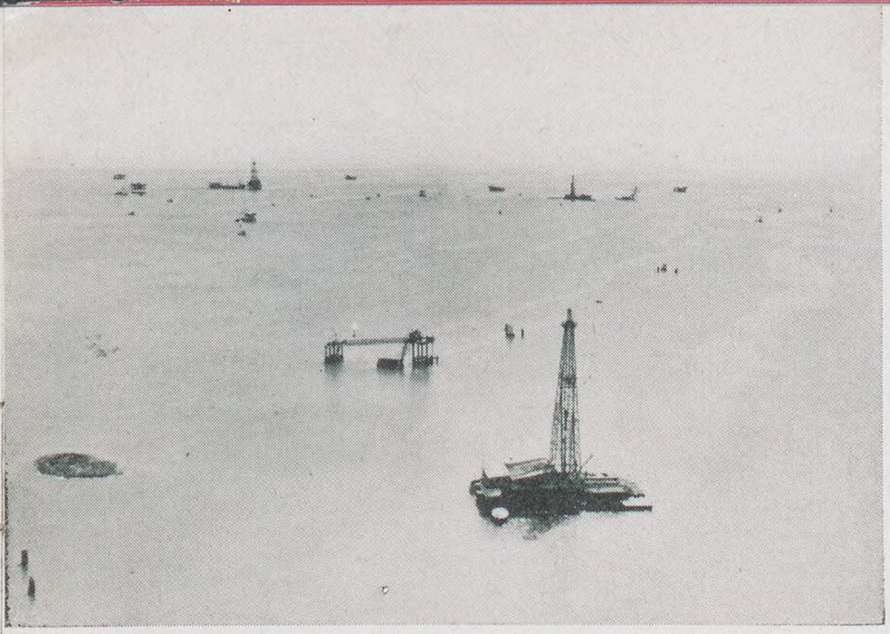


16 Petroleum research figured prominently in the oil industry's contribution to the war effort during World War II. Shell and other oil company scientists developed ways of manufacturing synthetic rubber and toluene (the basic ingredient of TNT) from petroleum. They also made possible high octane aviation gasoline, various rust inhibitors, "jellied gasoline" for flame throwers and incendiary bombs, special lubricants used in making war weapons and hundreds of other vital products. The oil industry also helped win the war in other ways. At home, it increased oil production, boosted refinery capacity and helped build emergency pipe lines. On the battlefront, the industry reached every phase of the fighting, for it provided the power for airplanes, ships, tanks, trucks and mobile guns. Motor fuel and lubricants followed the first wave of every invasion. (See picture below of U. S. Marines unloading drums of gasoline and oil from an LST at Bougainville Island in the South Pacific.)

Bougainville, 1943

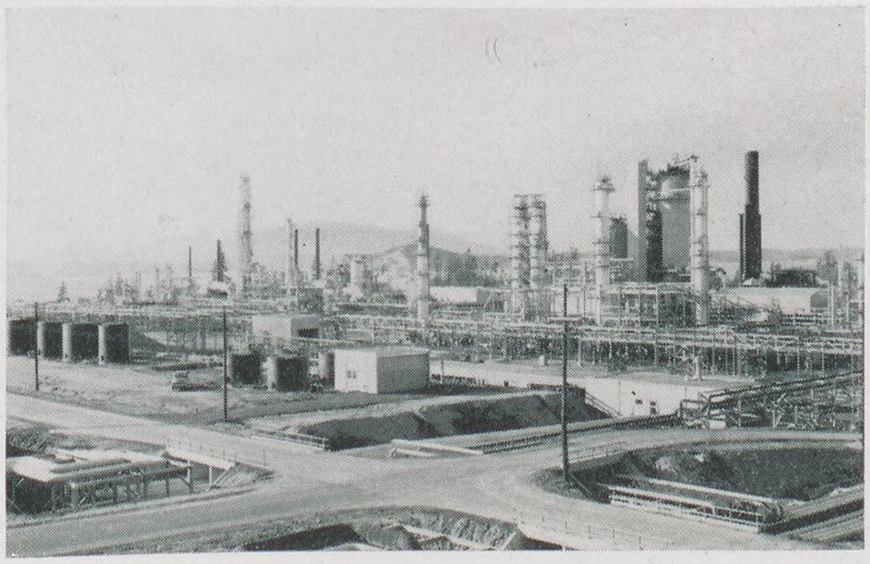
U. S. Marine Corps





Offshore drilling, 1957

17 Since the end of World War II, the oil industry has invested more than $56.5 billion in capital expansion and development. The major portion of this money has been spent in exploration and production. In its continuing search for new oil reserves, the industry started exploring U. S. coastal waters—where drilling costs are much higher than those on land. (See picture above of offshore drilling rigs in Shell's Block 69 Field off the coast of Louisiana.) And drilling on land increased—more than 40,000 wells were completed each year since 1950. The high was in 1955, when more than 58,000 wells were completed. As the industry expands, so does its work force. In 1859, fewer than 100 people were employed in producing, refining, transporting and marketing oil. One hundred years later, the U. S. industry directly employs more than 1,650,000 people and makes jobs possible for at least a million others.



Anacortes Refinery, 1957

18 The annual demand for U. S. petroleum has grown from about 500 barrels in 1859 to an estimated 3.3 billion barrels in 1958. Kerosene was the only saleable product made by the first refiners. Since then, the number of products manufactured by the oil industry has grown to more than 1,000. (Pictured above is a typical modern refinery—Shell's Anacortes, Wash., Refinery, built in 1955.)

Fueling jet, 1958

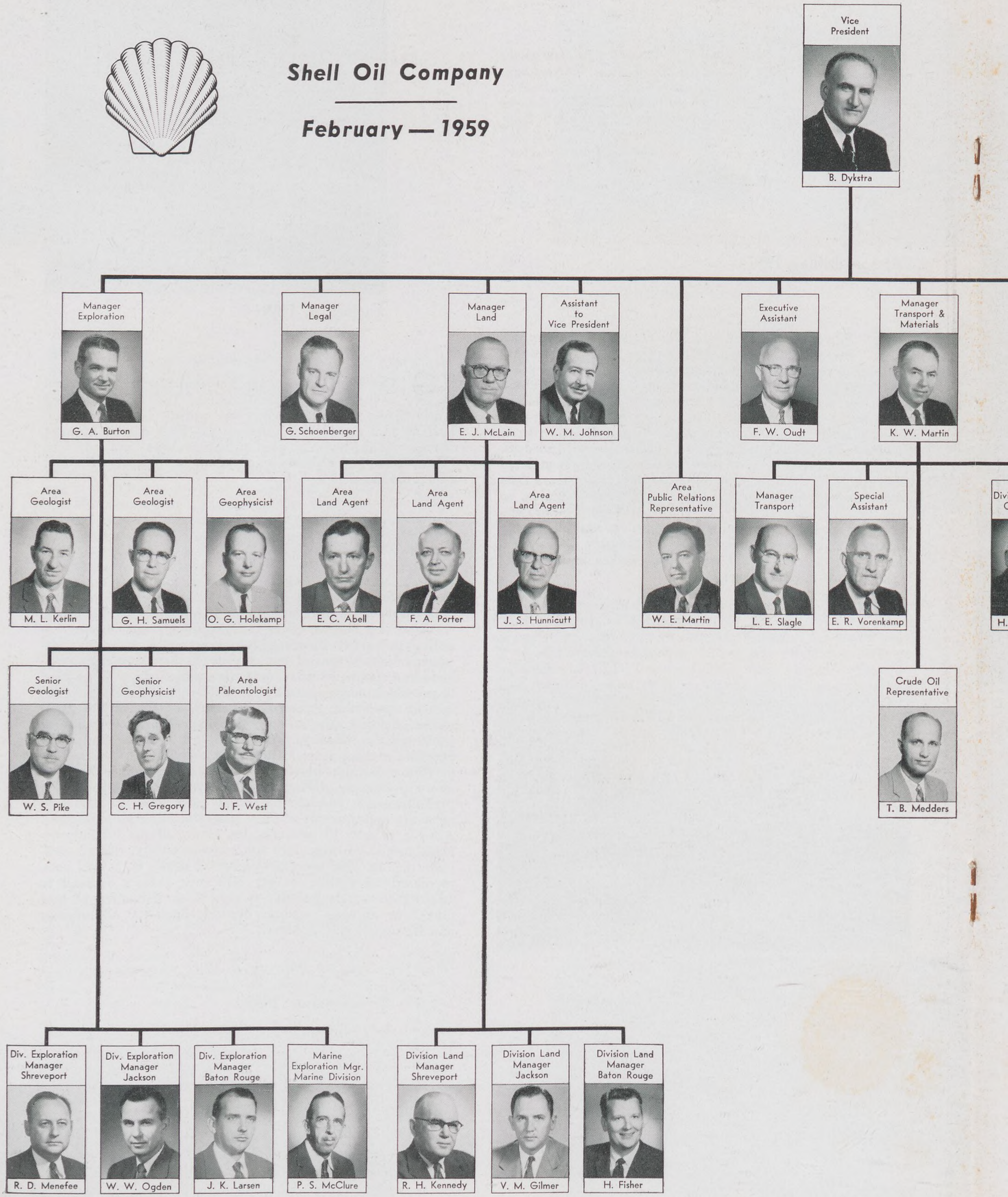
19 One hundred years ago, kerosene was being launched as the best available illuminant. Today, it has started a new career as fuel to power the world's fastest airliners. Turbine fuel made from kerosene has been chosen by most commercial airlines to be used in their prop-jets and pure jets. (The picture above shows preparations being made to re-fuel a huge Boeing 707 jet.)

20 Automobile gasoline is the oil industry's major refined product. The early "filling station" sold one grade of gasoline and motor oil, and grease in cans. Today the retail service station offers many products and services as well as a variety of automobile accessories. It is the consumer's link to the oil industry's vast distribution system—including trucks, railroad tank cars, ships and product pipe lines—which makes possible the delivery of petroleum products at reasonable prices. (See picture of the modern Shell station below.) The number of automobiles continues to grow and the industry is ready to meet their demands. The gasoline of today is a vastly different product in quality and performance from the straight-run gasoline of only 40 years ago. For example, during the last 15 years the octane level of premium-grade gasoline has risen more than 10 points to meet the requirements of more powerful automobile engines. After a century of progress, the future of the oil industry looks bright. Looking into the second century, experts estimate that by 1968 the demand for oil in the U. S. will have increased more than 40 per cent over today's demand to 12,820,000 barrels per day—which is an indication of how much our growing economy depends upon the oil industry and its remarkable products.

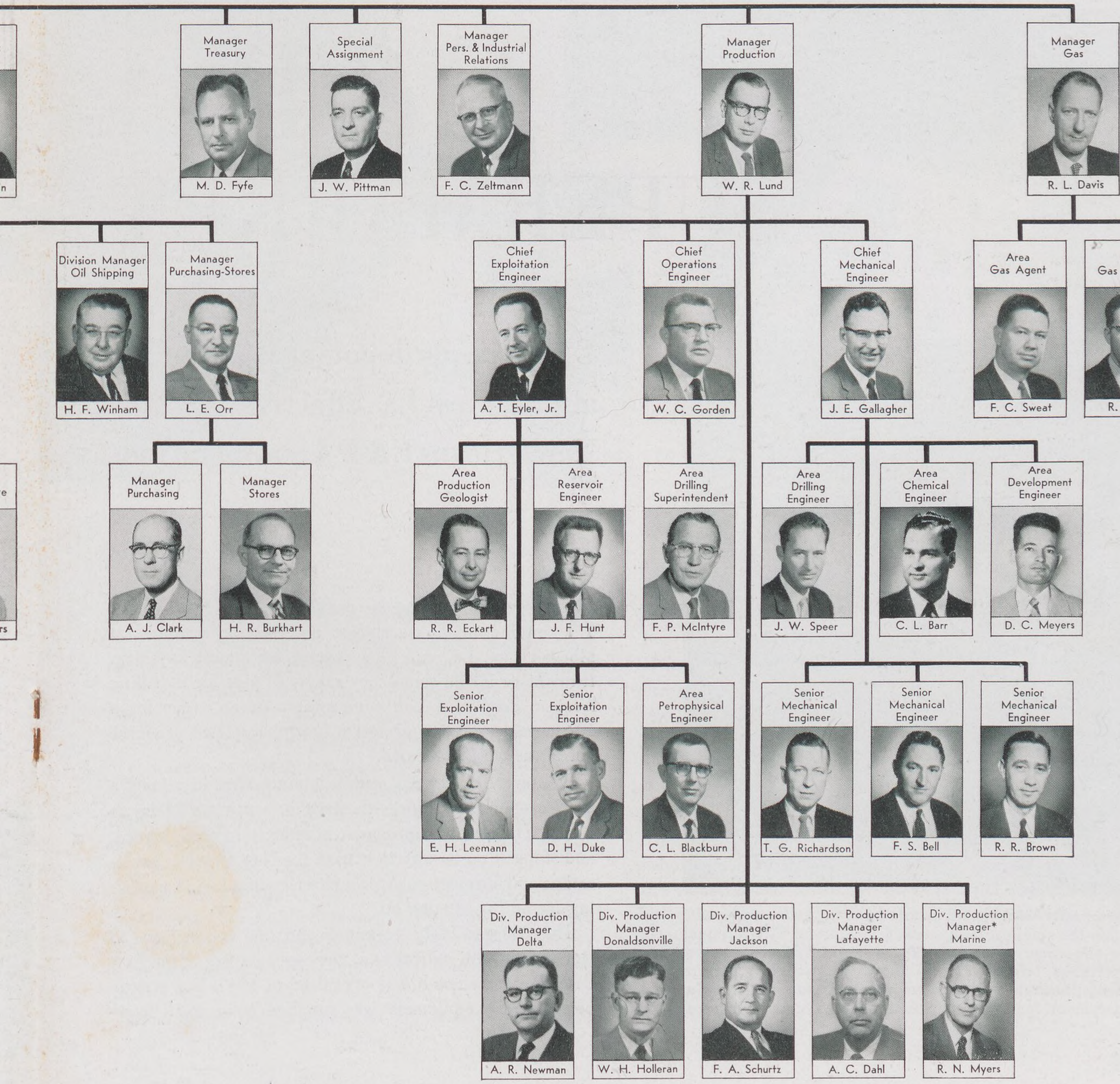
Service station, 1958

Shell Oil Company

February — 1959



New Orleans Exploration and Production Area Organization

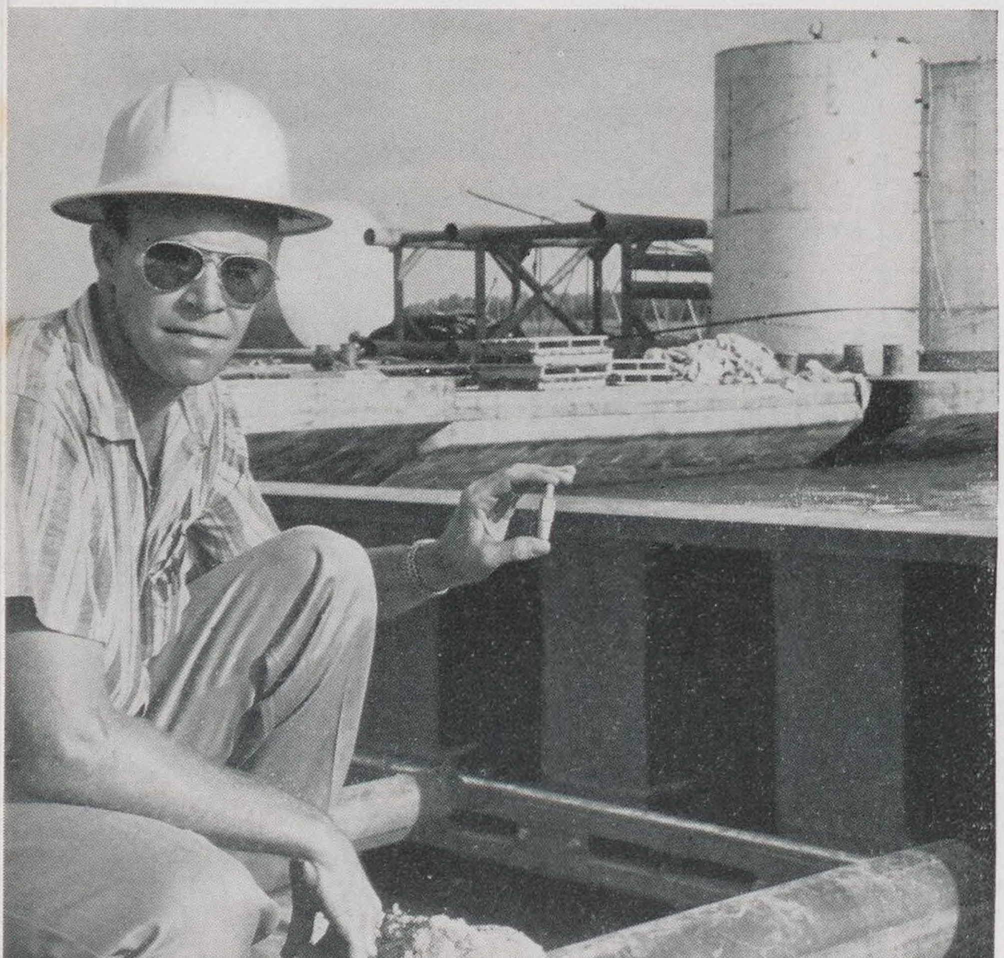


*Acting

Efficient arrangement of storage bins in Morgan City Terminal allows Warehousemen L. J. Buarisco (left), and H. J. Myers to fill small-parts requisitions in minutes.

E & P SUPERMARKET

Giant supply depots at Morgan City and Harvey, La., effectively service New Orleans E & P Area operations



Size contrast is shown by Leadman M. J. Rentrope, who holds the smallest item stocked at Morgan City terminal —a one-ounce valve—to compare it with two six-ton storage tanks (right) and a 40-ton well jacket structure (center background) used to protect offshore wells. Large equipment for offshore sites is often stored on barges.

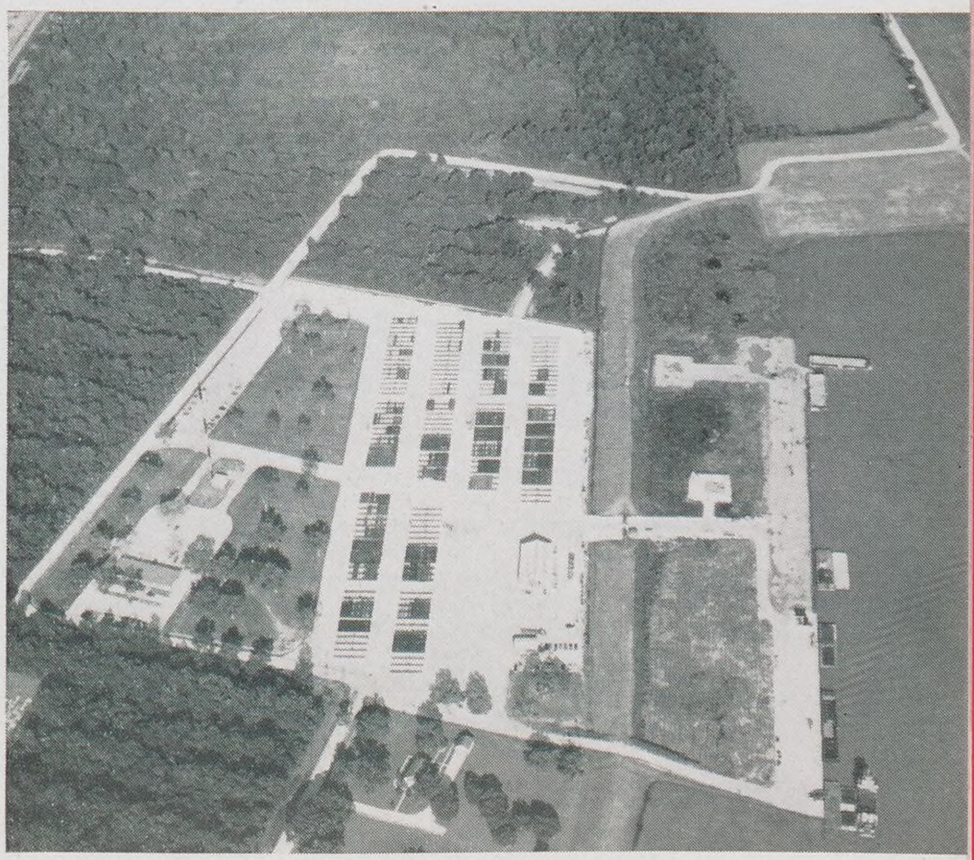
A telephone or teletype message at any hour to the million-dollar warehouse and marine terminal at Morgan City, La., can be a request for almost anything. It might be for an emergency supply of pipe for a drilling location deep in a Louisiana swamp or an order for a 40-ton well jacket to protect a newly-completed producer out in the Gulf of Mexico.

Whatever the request, within minutes after its receipt a precise operation begins—the terminals operate 24 hours a day. The needed equipment is quickly located, loaded, and shipped on its way to help in the New Orleans Exploration and Production Area's never-ending job of exploring for and producing oil.

The Morgan City terminal and its counterpart at Harvey, La., are indicative of the rapid growth of the New Orleans Area since it was organized in 1947. For a number of years, equipment was supplied from small ware-

◀ **Good housekeeping** at Morgan City Terminal is demonstrated by Leadman Ivy Dartez as he prepares to place a board along a stack of pipes showing they are perfectly straight. Neatness is essential at the depot because of the vast amounts of materials stored there.

Aerial view of the Terminal shows the modern administration building (left), dock area (right) and 68 racks in the yard (center) holding many types of pipe. The Terminal services south-central Louisiana and the Gulf. A depot at Harvey supplies southeastern Louisiana, Mississippi and offshore fields near the Delta.



houses and pipe yards. As activities fanned out both on land and offshore, existing supply facilities became overcrowded; orders placed with different suppliers for materials not stocked by Shell became increasingly difficult to coordinate.

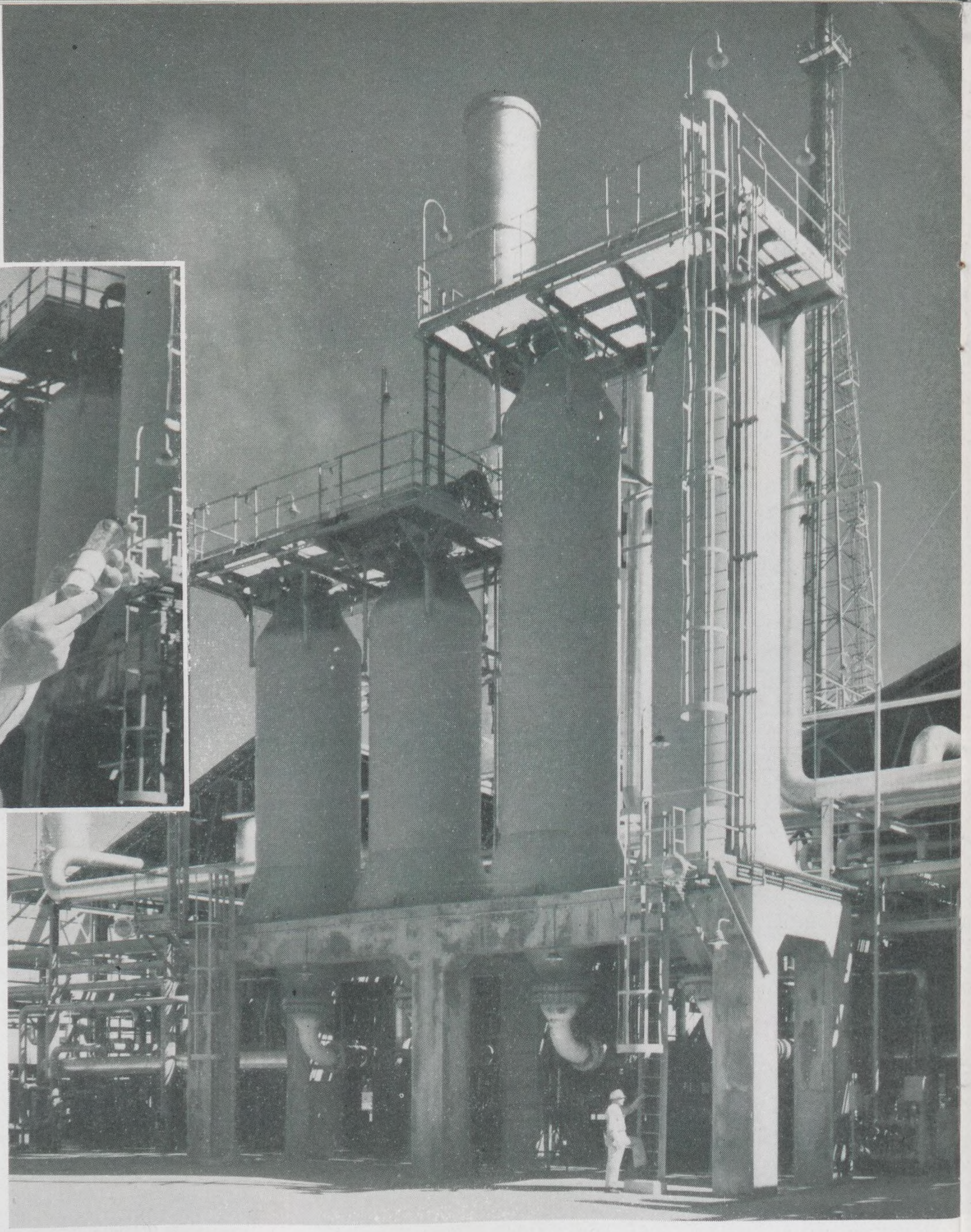
To keep pace with expanding operations, Shell decided to centralize its stock at key locations. In 1956, the Harvey terminal—Shell's first giant central depot in the United States—was opened across the river from New Orleans to supply southeastern Louisiana and offshore fields near the mouth of the Mississippi.

Continued growth, however, soon created the need for the Morgan City installation, opened last year on a 50-acre plot along Bayou Boeuf—50 miles south of Baton Rouge—to service operations in south-central Louisiana and the Gulf.

Location of the terminals on key waterways enables Shell to receive and deliver materials by boats, barges and float planes, as well as by railroad, trucks and helicopters. Because of the predominance of offshore and bayou operations in the New Orleans Area, the terminals are also good jumping-off points from which Area personnel, and contract and service company crews, are transported to work sites by boats and aircraft.

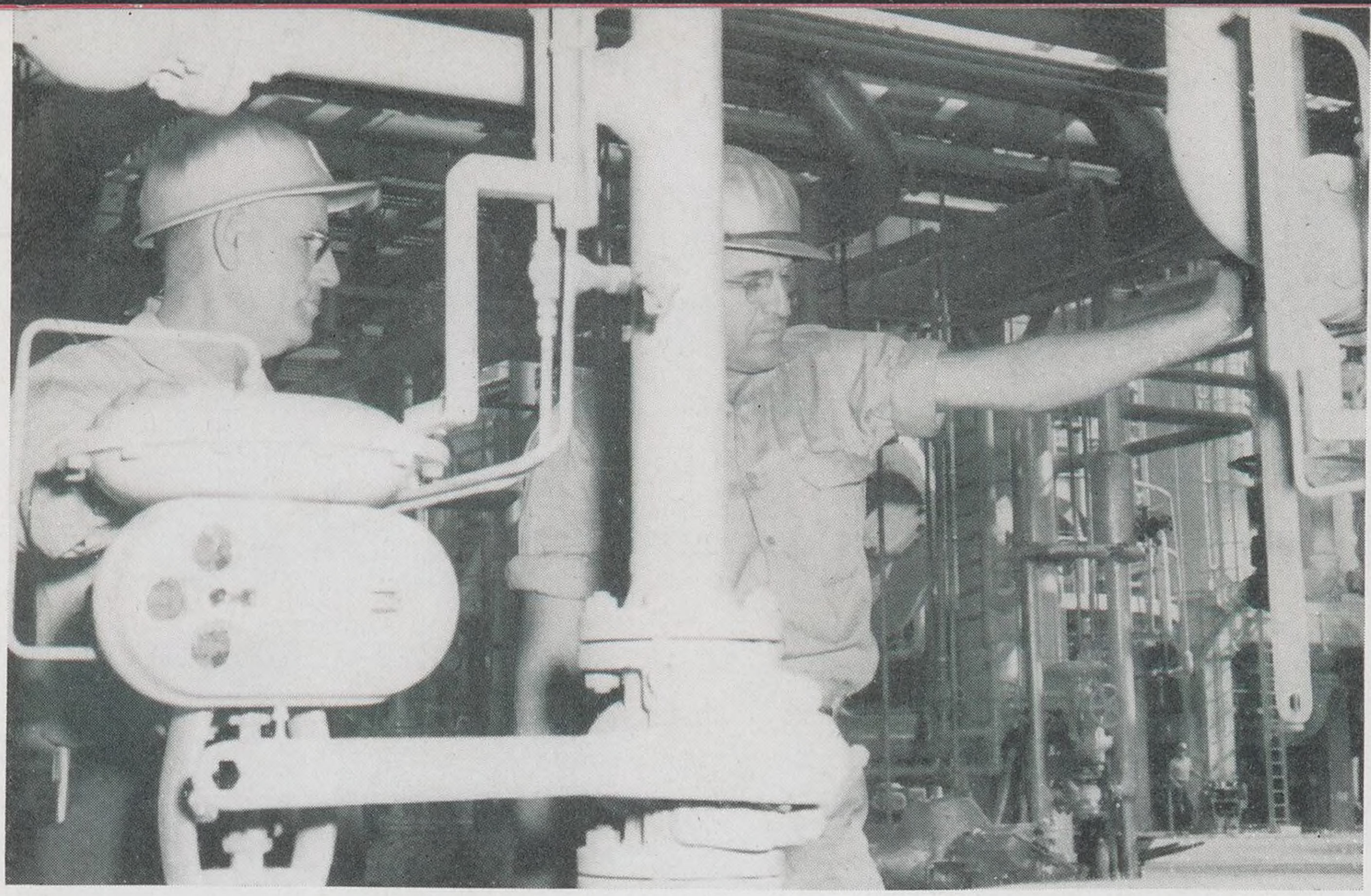
The terminals usually stock a three-month supply of equipment—valued at about $3 million in each terminal. The pipe yards at each location hold about 25,000 tons of tubular material, including drill pipe and casing. Inside the warehouses, every type of equipment—from nuts and bolts to massive machines—is stocked, ready for any emergency or routine call.

On the following pages, the operation of the Morgan City terminal is illustrated—from an order for tubing to its delivery at the rig.



The heart of the octane improvement project completed late last year at the Norco Refinery is the Platformer reactor unit, above, which can upgrade 16,000 barrels of gasoline components daily to high octane levels. Operator U. C. Hymel stands at the base of the reactors. In the inset picture above left, R. H. Bartholomew, Assistant Manager Aromatics, displays a sample of the $14-a-pound platinum catalyst, more than 78,000 pounds of which are used in the Platformer reactors.

The prefractionator column, at left in an angled photograph, is used to adjust the boiling range of the feed naptha before it is fed into the hydrodesulfurizer and then into the Platformer reactors. Shift Foreman L. J. Richard is shown on a catwalk of an adjoining unit.



Making adjustments on the desulfurizer compressor: Operating Assistant J. O. St. Amant, left, and Shift Foreman L. P. Guglielmo.

The Platformer project completed recently at the Norco Refinery is in effect a . . .

NEW OCTANE BOOSTER

THE competitive race for motorists' gasoline business starts a long way back of the service station pump. One of the key stretches on the course is the refinery, where molecules of crude oil are rearranged and rebuilt to make the powerful fuels needed by today's automotive engines.

Among the major problems of refining are these: to get more gasoline from crude oil, and to get gasoline of a high octane number (a measure of gasoline's anti-knock quality).

These problems have been with refiners for decades. They have become more severe in recent years with the large increases in demand for all types of gasoline, particularly high octane gasoline.

Simple distillation of crude oil produced the first gasoline. But the percentage of gasoline obtained by this method is limited to the gasoline content of the crude as it comes from the ground—which varies from one type of crude to another. Among the processes developed to increase the percentage of gasoline yield from all types of crude have been: thermal cracking, thermal reforming, polymerization, alkylation and catalytic cracking. While these processes raise the octane number over that made by simple distillation, their main purpose is to increase the percentage of gasoline obtained from crude oil.

A recent development to increase quality, rather than quantity, is Platforming. This process of reforming gasoline molecules gets the first part of its name from platinum, the catalyst used in the process—along with heat and pressure—to cause the needed molecular rearrangement.

Platforming is the key process in an octane improvement program launched several years ago by Shell Oil Company's six refineries. The Platformer at the Norco Refinery, pictured on these pages, is the latest one built by Shell.

The Norco project involved construction of several major units including: a Platformer, which can upgrade 16,000 barrels daily of gasoline components; a hydrodesulfurizer to remove sulfur and other undesirable constituents; a prefractionator or feed stock preparation column to adjust the boiling range of the feed stock; and a depropanizer column for processing gases produced in the Platformer.

The cost for the Norco project was about $14 million. This figure is a measure of the money that must be spent and the project itself is a measure of the technological advances that must be made to stay ahead in the gasoline market ●

SHELL PEOPLE *in the news*

SHELL OIL COMPANY MARKETING ORGANIZATION

C. F. MARTINEAU

C. F. MARTINEAU has been made Special Assistant to the General Manager, Head Office Marketing Departments. Mr. Martineau, who holds a Bachelor's degree in economics from Oxford University in England, joined Shell Oil Company as an Inspector at the Martinez Refinery in 1932. In 1934 he was transferred to the former Oakland Marketing Division where he served in various sales positions. The following year he accepted an assignment with Asiatic Petroleum Company, Limited, in London, and two years later was transferred to Shell Oil Company of Canada, Limited. In 1946 he returned to Shell Oil Company and served as a District Manager in the Oakland Marketing Division. In 1948 he was named Resale Manager of the Sacramento Marketing Division and the following year was appointed an Assistant to the Vice President Marketing at Head Office in New York. He was named Sales Manager of the Detroit Marketing Division in 1951, and in 1953 was assigned as Sales Manager of the New York Marketing Division.

D. B. CLARK

D. B. CLARK has been named Sales Manager of the New York Marketing Division succeeding C. F. Martineau. Mr. Clark, who holds a Bachelor's degree in economics and chemistry from Stanford University, joined Shell Oil Company in 1937 as a Clerk in the New York Marketing Division. He became District Manager of the former Port Washington, N. Y. Marketing District in 1939 and assumed a similar position in the former Inwood, N. Y. District in 1945. He was named Sales Manager of the Albany Marketing Division in 1947 and in 1949 was appointed Sales Manager of the Seattle Marketing Division.

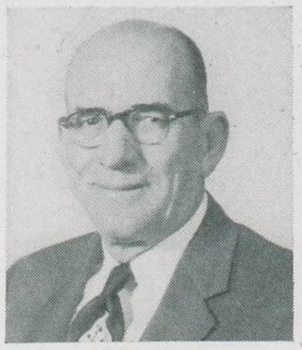
J. G. WILLIAMS

J. G. WILLIAMS has been named Sales Manager of the Seattle Marketing Division, succeeding D. B. Clark. Mr. Williams, who holds a Bachelor's degree in history and English from the University of California, joined Shell Oil Company in 1932 as a Salesman in the San Francisco Marketing Division. Following various assignments in that Division and in the San Francisco Office, he was transferred to the New York Marketing Division in 1949 as Retail Manager. The following year he became Manager of the Fort Wayne District in the Indianapolis Marketing Division and, in 1955, Manager of the Honolulu District in the Honolulu Marketing Division.

J. E. MOREHOUSE, JR.

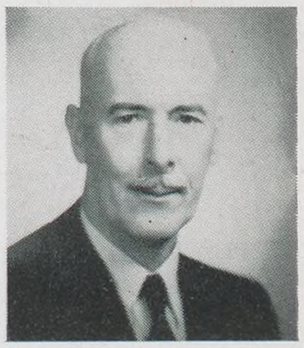
J. E. MOREHOUSE, JR., has been named Marketing Service Manager at the San Francisco Office. Mr. Morehouse, who holds a Bachelor's degree in psychology and economics from Princeton University, joined Shell Oil Company as a Salesman in the New York Marketing Division in 1937. He was named Marketing Service Manager of the New York Division in 1946 and later served as Manager of the former Port Washington and Inwood Districts before being transferred to Head Office in 1951 as Retail Sales Supervisor in the Fuel Oil Department. The following year he was named Manager of the Policy and Procedure Division of the Marketing Administration Office. In 1954, he became Personnel Manager of the Chicago Marketing Division and, in 1957, Assistant Manager in the Wage and Salary Division of the Head Office Personnel and Industrial Relations Organization.

They have RETIRED

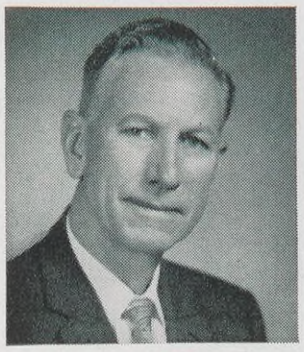


O. AYME
Norco Refinery
Engineering

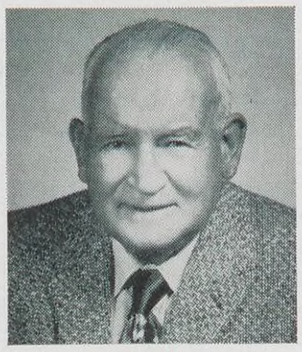
W. R. BALFOUR
Shell Development Co.
Emeryville



B. C. BLACK
Houston Area
Land



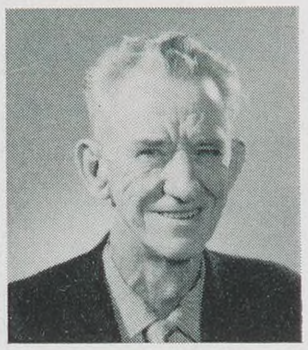
G. S. BROWN
Los Angeles Division
Marketing Service



D. BRYMER
Pacific Coast Area
Purchasing-Stores

D. F. CALDARAZZO
Martinez Refinery
Engineering

P. B. CALDWELL
Head Office
Marketing

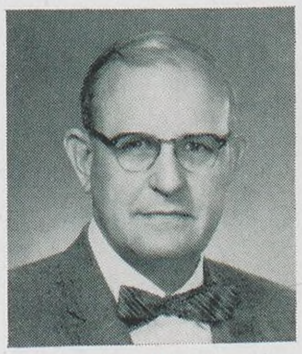


C. O. CARLSON
Shell Development Co.
Emeryville

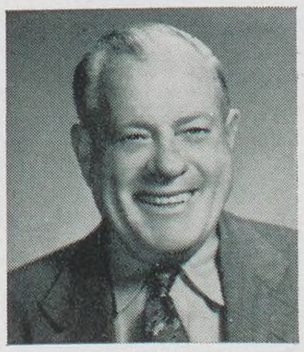
BIRD C. CLARK
Shell Development Co.
Emeryville

E. F. CODNER
Pacific Coast Area
Production

H. A. CONNOR
Boston Division
Sales

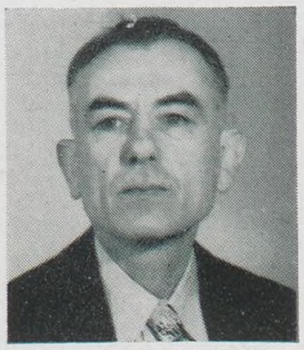


F. E. DAVIE
Pacific Coast Area
Production

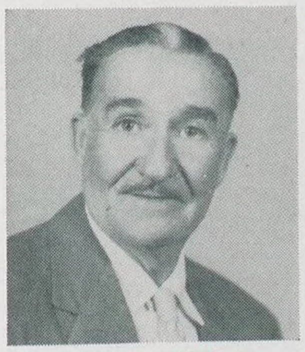


R. DAVIS
Sewaren Plant
Eng. & Maintenance

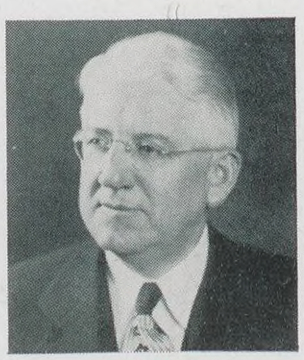
D. B. ESPY
Shell Development Co.
Emeryville



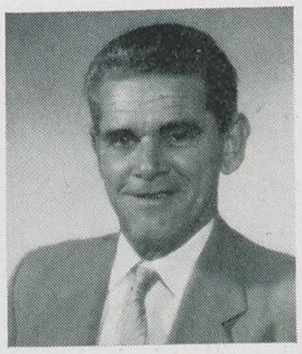
J. EULA
Wilmington Refinery
Engineering



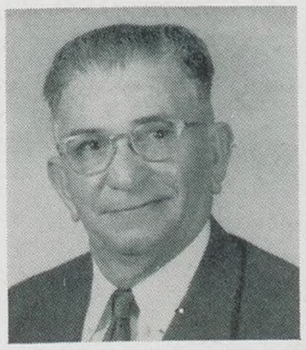
E. H. EYERS
Wood River Refinery
Engineering



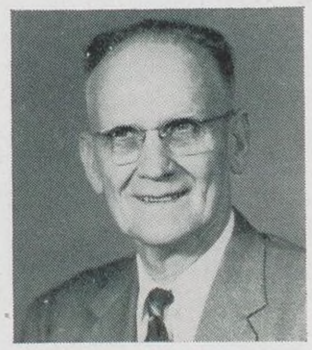
F. FARLEY
Boston Division
Marketing Service



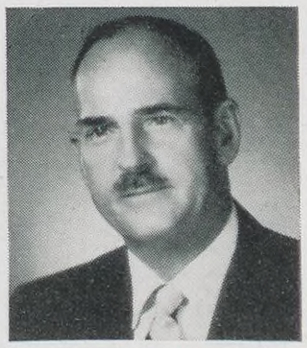
L. C. FERAY
Houston Refinery
Engineering



I. H. FLORES
New Orleans Area
Gas



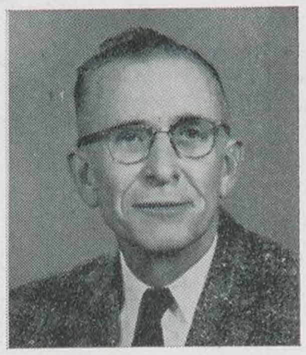
L. G. FRAZIER
Wood River Refinery
Engineering



T. J. GLOVER
Los Angeles Division
Sales

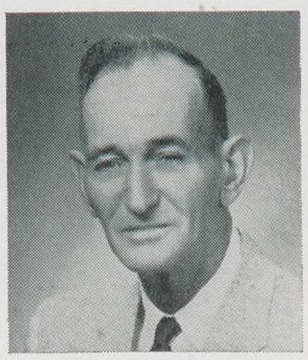
J. GRAY
Los Angeles Division
Operations

I. C. GREW
Pacific Coast Area
Treasury



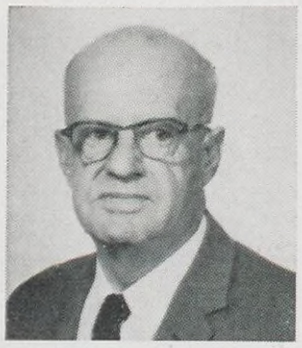
H. H. HAISLEY
Indianapolis Division
Operations

C. W. HAND
Wood River Refinery
Engineering



R. W. HARDY
Pipe Line Dept.
Bradley, Ill.

T. P. HEFTER
Shell Chemical Corp.
Dominguez Plant



P. D. HISHON
Shell Development Co.
Emeryville

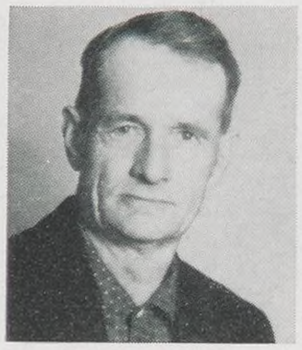
Z. R. HORTON
Houston Area
Production

H. G. HUNT
New York Division
Sales

E. E. KUNIHIRO
Honolulu Division
Operations

F. J. MARGESON
Houston Area
Land

F. A. MARINO
Martinez Refinery
Stores

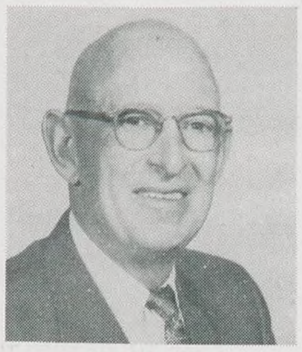


O. D. McDANIEL
Tulsa Area
Production

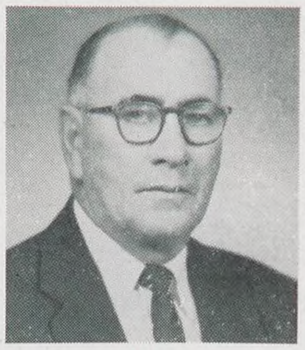
C. McREYNOLDS
Wood River Refinery
Engineering

F. A. MILLER
Wood River Refinery
Engineering

H. M. MONTGOMERY
Tulsa Area
Transport



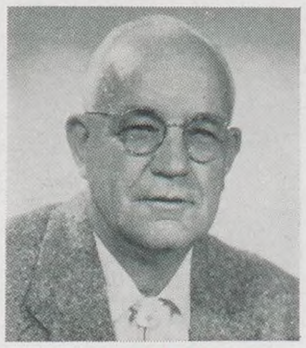
C. A. MOORE
Wood River Refinery
Purchasing-Stores



J. MOORE
Tulsa Area
Production

A. LOUISE MORTOLA
Indianapolis Division
Sales

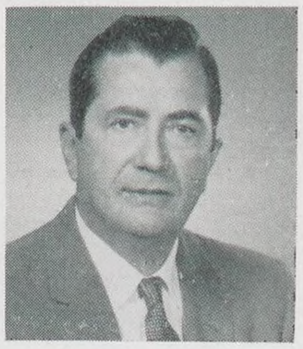
G. A. MUNN
San Francisco Office
Marketing Service



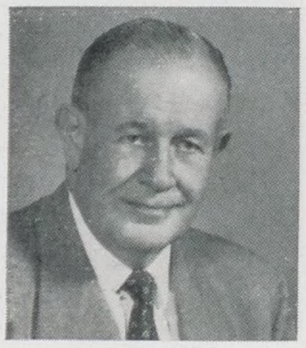
C. A. NORMANDY
Pacific Coast Area
Production

F. B. NURDIN
Tulsa Area
Production

A. T. PERRETT
Sacramento Division
Treasury

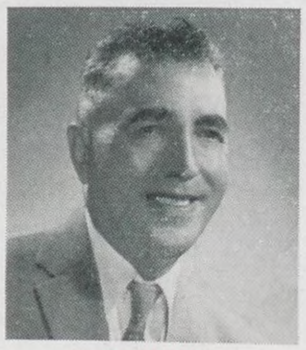


T. F. PHILLIANS
Pipe Line Department
Los Angeles, Calif.



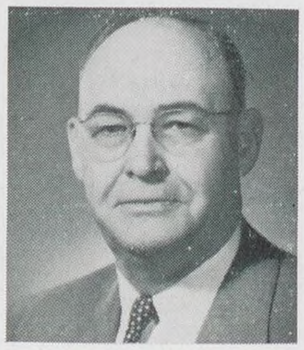
L. C. PITTWOOD
Portland Division
Sales

J. B. RAINES
Wood River Refinery
Engineering

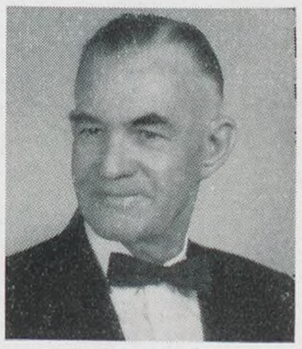


M. D. RAMALHO
Sewaren Plant
Eng. & Maintenance

C. REYNOLDS
Houston Area
Transport

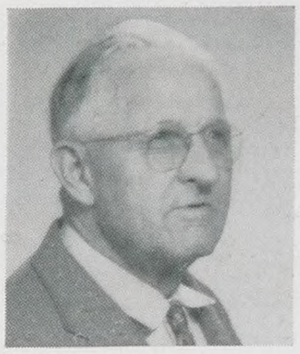


D. R. RICHARDS
Indianapolis Division
Operations

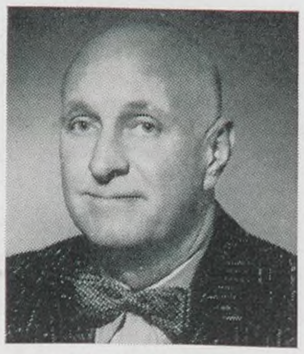


W. O. RODGERS
Wood River Refinery
Engineering

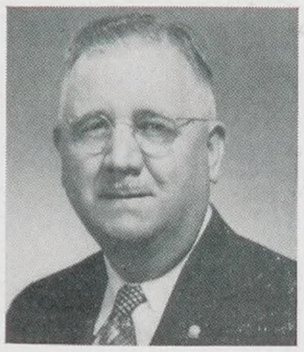
A. S. ROWE
Wilmington Refinery
Engineering



D. SMITH
Houston Area
Production

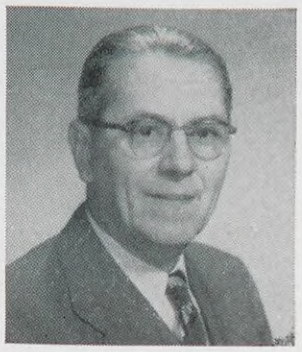


C. L. STEVENS
Pacific Coast Area
Purchasing-Stores



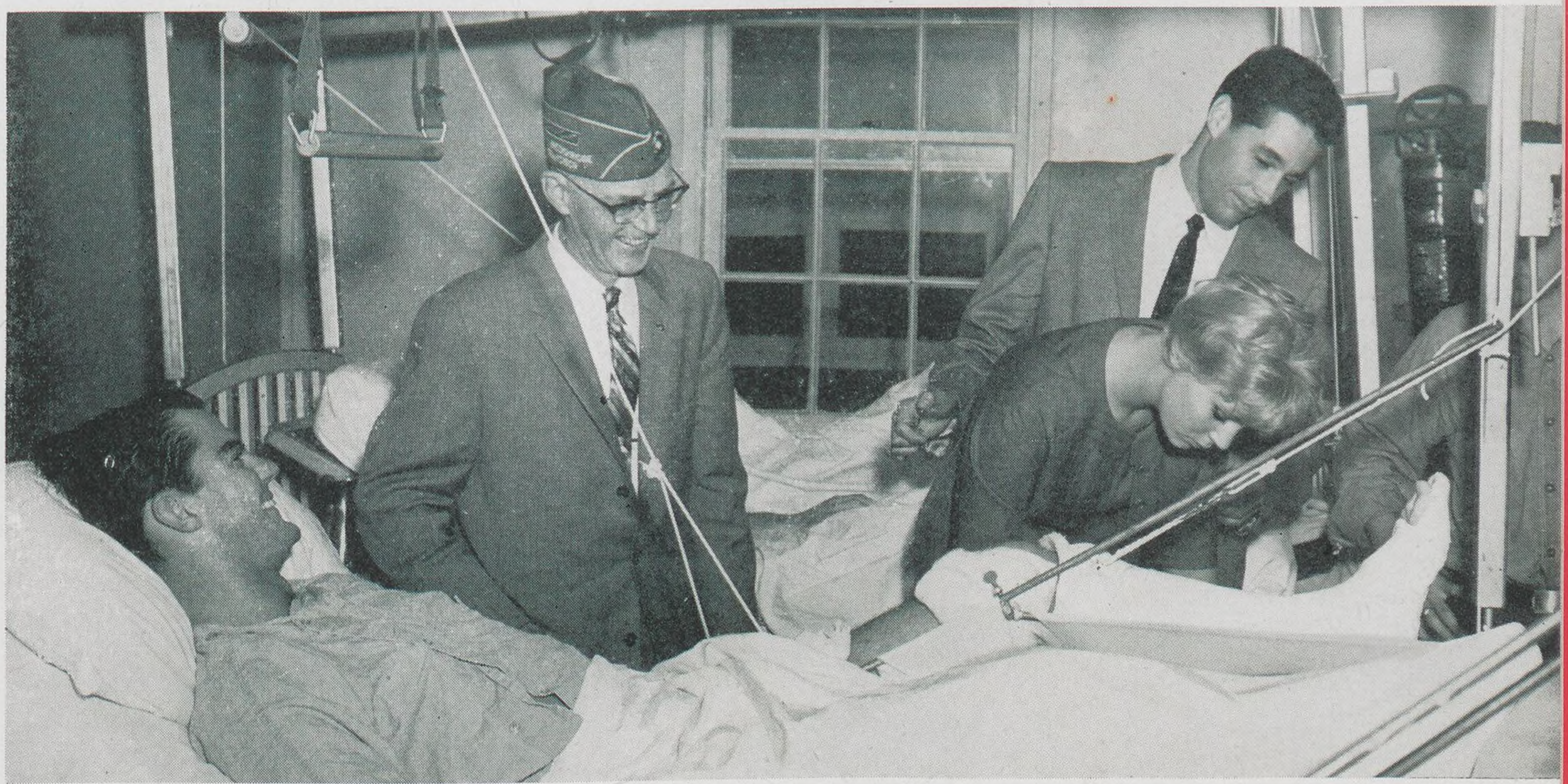
E. J. THEESSEN
Houston Area
Exploration

C. W. THOMAS
Head Office
Financial



L. H. VENTRES
Head Office
Manufacturing

SHELL Coast to Coast



ALL-STAR CAST

Evy Norlund, Miss Denmark of 1958, right, autographs the cast of a Marine patient at a Naval hospital in Oakland, Calif. Waiting his turn behind her is motion picture star Kerwin Mathews. The man who arranged the visit is Harold V. Wine, standing at left, of Shell's San Francisco Office. Wine, a Marine veteran, is Commandant of the General Brackinridge Detachment of the Marine Corps League, an organization that aids Marines.

ACTING HONORS

The Long Beach Community Players named M. E. Westmoreland, Pumper at the Wilmington - Dominguez Refinery, the best actor of the year. He is shown above made up for one of the several roles he portrayed in the group's plays last year.

FOUR ACES

One "hole-in-one" is an unusual feat for any golfer. But Production Foreman H. B. Brooks of the Midland Exploration and Production Area now has four to his credit. He shot his first one in 1939 and repeated again in 1957. Last August he made his third ace on the No. 7 hole of the Hobbs, N. M., Municipal Golf Course. He shot his fourth "hole-in-one" on the same hole just two months later.

MANAGEMENT COURSE

Participants and staff of the sixth Shell Management Course, held for four weeks recently at Arden House at Harriman, N. Y., were, first row, left to right: G. M. McCawley, Head Office; E. D. Maxfield, Head Office; B. Van Dyke, Head Office; J. R. Noles, Head Office; P. T. Fowler, Kilgore; H. S. M. Burns, President of Shell Oil Company; J. T. Cashman, Head Office; R. J. Benson, Montreal; H. Wearne, Albany; H. L. Reed, Houston. Middle row, left to right: W. J. Roche (Staff), Head Office; R. L. Maycock, Houston; J. D. Heldman, Head Office; R. H. Nanz, Jr., Houston; J. F. Roorda, Jr., New York; C. S. MacGregor, Anacortes; R. K. MacIntyre, Head Office; J. B. Rosen, Emeryville; J. V. Lindsey, Midland; T. K. Harris, Head Office; R. A. Harvey, Indianapolis; J. E. Carter (Staff), Head Office; H. K. O'Gara (Staff), Head Office. Top row, left to right: J. H. Pittinger, Wichita Falls; A. J. Foote, Toronto; J. P. Driscoll, Sewaren; E. R. Shorey, Jr., Edmonton; J. T. Doyle, Los Angeles; R. A. Pratt, Houston; R. H. Findley, Head Office; A. V. Snider, New York; D. B. Clark, New York; R. B. Lewis, Head Office; A. C. Batchelder, Emeryville.

CHAMPION SEAMSTRESS

After studying sewing for less than five months, Sheryl Angstman, 12, daughter of Attorney A. C. Angstman of the Denver Exploration and Production Area's Legal Department, won first prize in an eight-state sewing contest for 10 to 12-year-olds. She won a sewing machine.

TRAVEL BY CYCLE

Motorcycling is the No. 1 hobby in the family of Shift Foreman R. R. Yarnell of the Wood River Refinery. For several years, Yarnell and his wife, Sadie, have traveled on a motorcycle equipped with one large seat for both of them. Last year they covered 4,515 miles on a three-week vacation trip to California. Shown here are Mr. and Mrs. Yarnell talking to their son, Brock, left, also a motorcycling enthusiast.

SINGING SALESMAN

Industrial Salesman H. A. Rau, Jr., of the Baltimore Marketing Division, recently donned costume and make-up, below, and assumed the role of "Pooh-Bah" (Lord High Everything Else) in "The Mikado." Rau is one of the Salem Singers of the Salem Lutheran Church of Catonsville, Md., sponsor of the production. He has belonged to several vocal groups and studied violin. His wife, Elsie, is a choir director and was musical director of "The Mikado."

SAFETY MEDAL WINNER

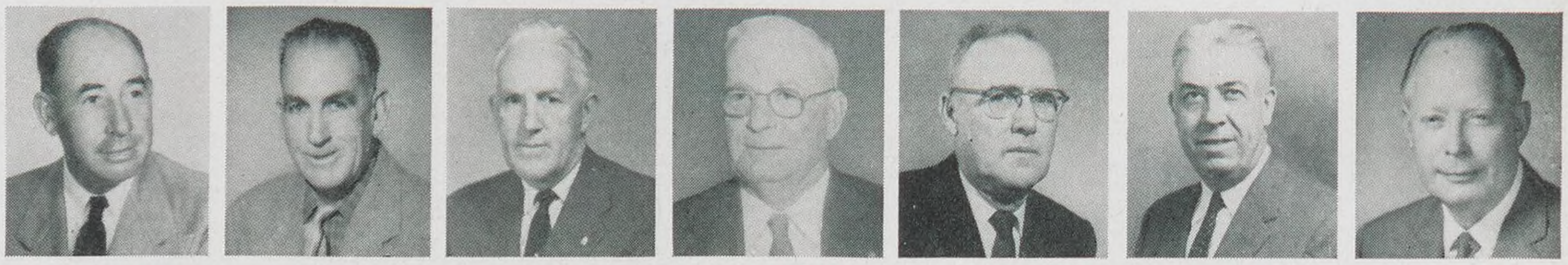
The President's Medal of the National Safety Council recently was awarded Water Flood Operator J. H. Gerken, of the Tulsa Exploration and Production Area's Illinois Division, for saving a life by applying artificial respiration. Gerken, left, used artificial respiration techniques which he learned in the Shell safety program, to revive a contractor's employee who was overcome by fumes while cleaning out a storage tank. He is congratulated above by M. H. Guess, Illinois Division Production Manager.

Service BIRTHDAYS

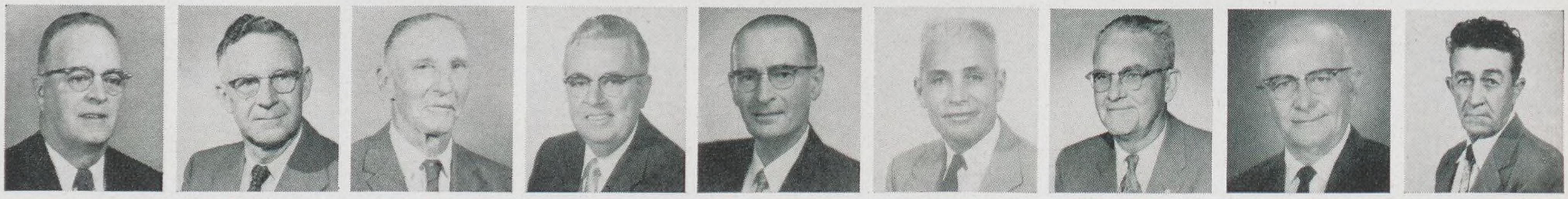
Forty Years

D. A. BRUGH
Shell Pipe Line Corp.
Mid-Continent Division

Thirty-Five Years



L. B. ASHMAN, Pacific Coast Area, Gas
J. F. BRADY, Pacific Coast Area, Production
A. E. BREWER, Tulsa Area, Production
W. L. CANNON, Tulsa Area, Production
S. P. CHRISTY, Wilmington Refinery, Distilling
J. C. GORMAN, Wood River Refinery, Compounding
H. S. HOLMES, Los Angeles Division, Marketing Service



T. E. HOOPER, Wood River Refinery, Utilities
W. F. KEEGAN, Martinez Refinery, Cracking
R. W. LEMMON, Tulsa Area, Production
J. M. LONGINOTTI, San Francisco Office, Transp. & Supp.
D. T. PERRETT, Denver Area, Treasury
P. REBOWE, JR., Norco Refinery, Engineering
R. H. SONNIKSON, Martinez Refinery, Lubricating Oils
A. W. WEBER, Tulsa Area, Production
W. WEBER, Norco Refinery, Marine Shipping

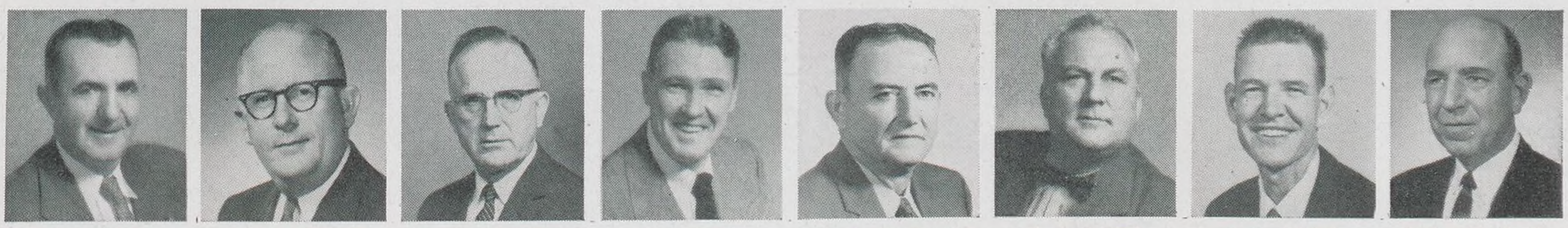
Thirty Years

L. ANGELIUS, San Francisco Office, Transp. & Supp.
G. D. BANQUER, Shell Chemical Corp., Norco Plant
W. B. BECKER, Houston Area, Exploration
G. G. BIGGAR, Head Office, Public Relations
G. J. BLANYER, Houston Refinery, Engineering
E. T. BRADLEY, Boston Division, Treasury
B. J. BRAUD, Norco Refinery, Catalytic Cracking

A. T. BRODEUR, Boston Division, Operations
W. T. BUTLER, New Orleans Division, Marketing Service
J. V. COCKER, Los Angeles Division, Treasury
S. CODEGA, Boston Division, Operations
H. G. COLE, Pipe Line Department, East Chicago, Ind.
W. D. COUNSELLER, Cleveland Division, Treasury
H. D. CROMBIE, Boston Division, Sales
E. J. CRONIN, Boston Division, Operations
J. L. CROW, Martinez Refinery, Treasury

J. J. DAVIS, Minneapolis Division, Operations
A. DEFILIPPO, Boston Division, Operations
H. H. DEITCHMAN, Boston Division, Treasury
J. E. DEMPSEY, Boston Division, Operations
L. E. DODGE, Boston Division, Operations
G. E. EARLE, New Orleans Area, Production
J. E. ELLIS, Indianapolis Division, Operations
J. A. FRASER, New York Division, Sales
E. FREDRICKS, New Orleans Division, Operations

Thirty Years *continued*



S. A. GARDELLA
Boston Division
Operations

W. J. GARDINER
Los Angeles Division
Marketing Service

A. H. GARRISON
Wood River Refinery
Administration

J. W. HAFEY
Boston Division
Operations

M. B. HAMBRICK
Shell Pipe Line Corp.
West Texas Division

A. R. HAMEL
Boston Division
Operations

R. G. HANEY
New Orleans Area
Production

C. L. HANNA, JR.
Houston Refinery
Distilling

C. C. HARMENING
Indianapolis Division
Operations

W. L. HOLMES
Head Office
Marketing

H. G. HUNT
New York Division
Sales

J. F. JANESCO
Boston Division
Marketing Service

A. J. KELLER
Pipe Line Department
Waltham, Mass.

N. C. KING
Pacific Coast Area
Production

L. A. KNIPPING
Wood River Refinery
Engineering

W. J. LAMB
Albany Division
Sales

L. T. LANDECHE
Norco Refinery
Engineering

N. E. LARSON
Shell Chemical Corp.
San Francisco

F. W. LEWIS
Pacific Coast Area
Purchasing-Stores

C. S. LINDSEY
Houston Refinery
Engineering

J. W. LOCKE
Pacific Coast Area
Exploration

A. MacDONALD
Boston Division
Operations

V. C. MAYBERRY
Houston Refinery
Engineering

C. D. McCARTHY
Boston Division
Operations

DELIA R. McNAMARA
Boston Division
Treasury

J. J. McNEIL
Boston Division
Sales

E. H. MILLER
Boston Division
Operations

J. H. MILLS
Boston Division
Administration

C. MONAHAN, JR.
Boston Division
Operations

W. F. J. MURPHY
Head Office
Marketing

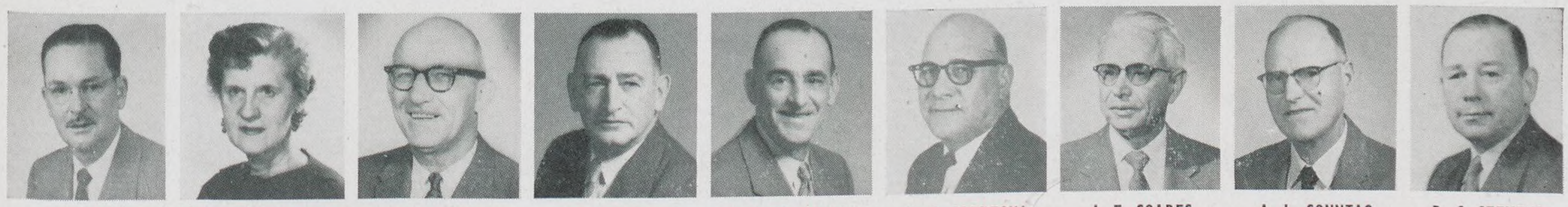
J. P. NAMNOUN
Boston Division
Sales

W. E. NUGENT
Head Office
Financial

G. E. NUTTALL
Head Office
Transp. & Supp.

C. J. QUIGLEY
Boston Division
Operations

A. H. RATHERT
Head Office
Financial



G. F. REID
Martinez Refinery
Engineering

ISABEL R. ROBERTSON
St. Louis Division
Administration

R. B. ROGERS
New Orleans Area
Transport & Materials

E. RYALLS
Boston Division
Operations

J. A. ST. PIERRE
Boston Division
Operations

N. C. SARDEGNA
Norco Refinery
Effl. Cont., Fire & Safety

J. E. SOARES
Martinez Refinery
Engineering

A. L. SONNTAG
Midland Area
Gas

R. C. STEVENS
Boston Division
Operations

F. H. STODDARD
Boston Division
Operations

P. T. TAYLOR
Wilmington Refinery
Engineering

N. THEW
Houston Refinery
Gas

W. B. VAN HORN, JR.
Anacortes Refinery
Purchasing-Stores

H. V. VICKNAIR
Norco Refinery
Engineering

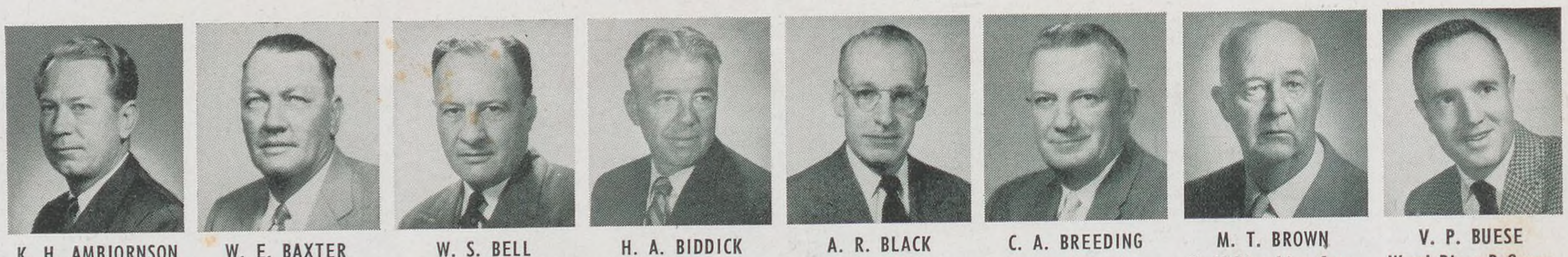
L. C. WALTHER
Martinez Refinery
Treasury

R. G. WEBER
Portland Division
Treasury

R. J. YOUNG
Houston Area
Pers. & Ind. Rel.

A. ZENGER
Portland Division
Sales

Twenty-Five Years



K. H. AMBJORNSON
Shell Development Co.
Emeryville

W. E. BAXTER
New Orleans Area
Production

W. S. BELL
Houston Area
Legal

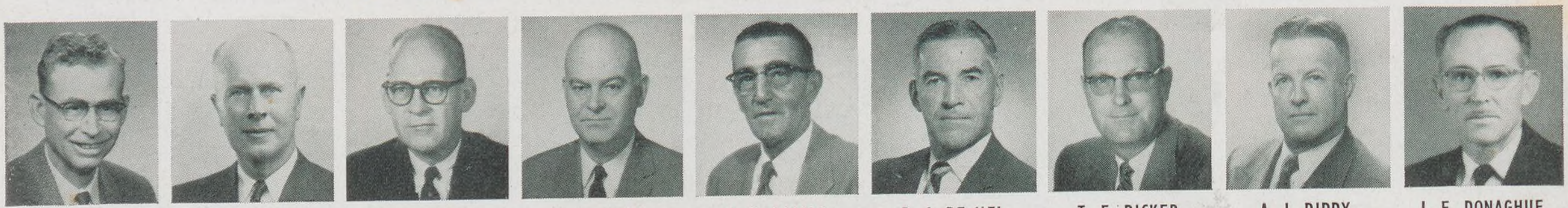
H. A. BIDDICK
Tulsa Area
Production

A. R. BLACK
Head Office
Manufacturing

C. A. BREEDING
Portland Division
Sales

M. T. BROWN
Shell Pipe Line Corp.
West Texas Division

V. P. BUESE
Wood River Refinery
Lubricating Oils



L. L. CLARK
Pacific Coast Area
Production

L. C. COOPER
Wood River Refinery
Engineering

J. B. CORKINS
Shell Chemical Corp.
San Francisco

H. L. CREEL
Head Office
Transp. & Supp.

J. E. DAIGLE
Houston Refinery
Engineering

D. J. DE MEL
Pacific Coast Area
Production

T. E. DICKER
San Francisco Division
Sales

A. I. DIDDY
Seattle Division
Sales

J. E. DONAGHUE
Tulsa Area
Gas

T. P. DOWDY
Houston Area
Production

O. M. DUNCAN
Wood River Refinery
Engineering

F. A. DUVALL
Houston Area
Land

H. S. EUSTIS
Baltimore Division
Manager

J. M. FLEMING
Honolulu Division
Sales

R. V. FORESTER
Shell Pipe Line Corp.
Texas-Gulf Division

J. E. FORSYTHE
Indianapolis Division
Treasury

R. E. GARVEY
Houston Area
Exploration

E. B. GUIDRY
Norco Refinery
Engineering

W. T. HARLESS
Houston Area
Land

C. W. HOLMAN
Shell Pipe Line Corp.
Mid-Continent Division

C. J. HURST
Anacortes Refinery
Administration

D. D. INGRAM
Seattle Division
Operations

W. KUHNEMAN
Chicago Division
Sales

T. E. LAMB
San Francisco Division
Operations

J. L. LOHSE
Pacific Coast Area
Exploration

W. R. LUND
New Orleans Area
Production

L. P. McGARY
Shell Pipe Line Corp.
Head Office

I. W. MILLER
Wood River Refinery
Lubricating Oils

W. B. MILLER
Houston Refinery
Engineering

H. C. MILLICAN
Norco Refinery
Thermal Cracking

A. D. PAYNE
Sacramento Division
Operations

D. F. REDDICK
Shell Pipe Line Corp.
Head Office

C. E. RICHARDSON
Portland Division
Treasury

H. C. ROBERTS
Martinez Refinery
Pers. & Ind. Rel.

J. W. ROCHE
Calgary*
Expl. & Prod.

E. H. RUSH
Pipe Line Dept.
Indianapolis, Ind.

H. J. TAPOGNA
San Francisco Division
Operations

L. W. TIPPERY
Portland Division
Operations

A. L. TOUPS
Houston Area
Gas

JANET VELIE
Head Office
Financial

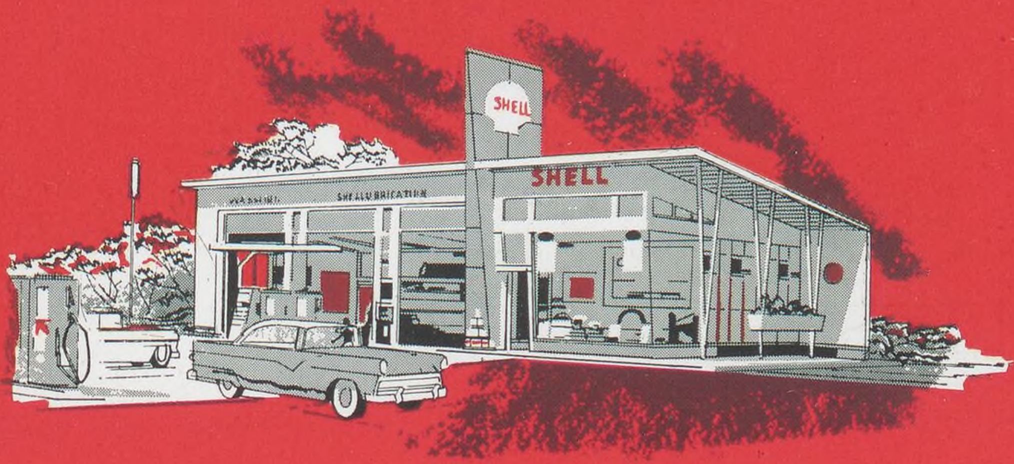
F. W. WELLS
Shell Development Co.
Houston

W. L. WILGUS
Tulsa Area
Exploration

V. E. WILLIAMS
Wood River Refinery
Gas

L. A. WILLIG
San Francisco Division
Operations

** On loan to Shell Oil Company of Canada, Limited* matters of fact



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Houston 24, Texas

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New York, N. Y.
Permit No. 1101

(This will appear as an advertisement this month in national magazines.)

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How to protect a world on the move

PROTECTING a world of goods on the way to you—corrugated boxes are bumped, squeezed, twisted and tumbled. But the paperboard is made so tough that almost everything from boats to bottles is safely packed in it.

One of the world's largest producers of paperboard is a machine in the Jacksonville, Fla., mill of the St. Regis Paper Company. Longer than a football field, it has thousands of lubricated parts. Water, heat and extreme pressures are constant threats. Before installing it, St. Regis consulted Shell who had helped solve lubrication problems at the mill for many years. The recommended oils and greases were applied, and have provided trouble-free performance.

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