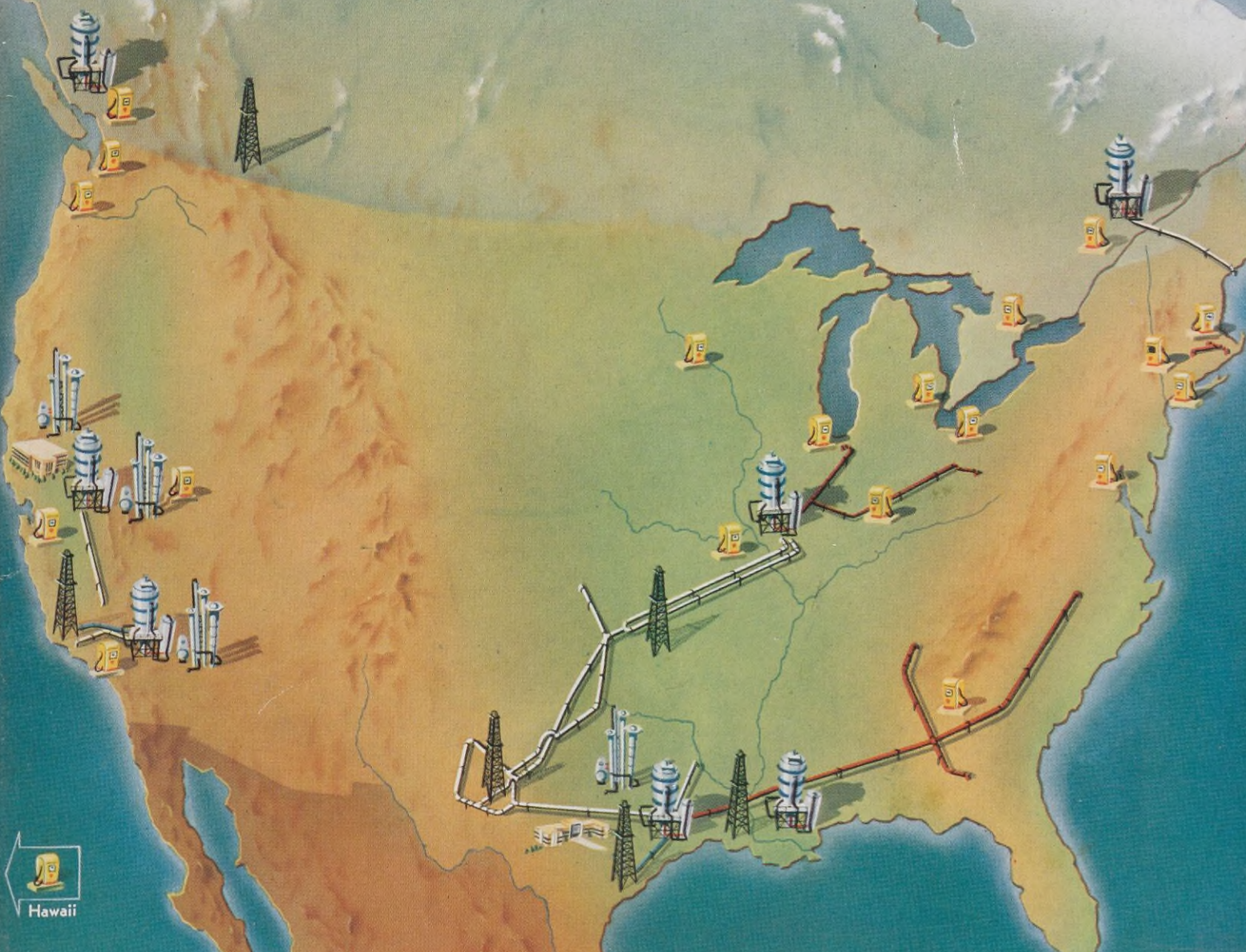
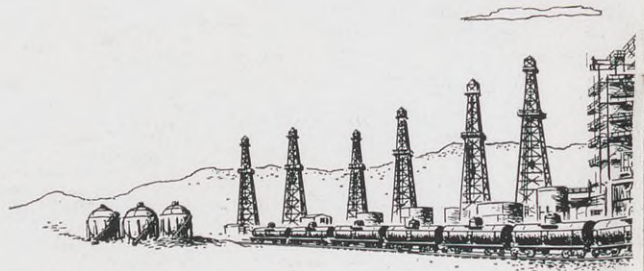


SHELL NEWS

SPECIAL ISSUE — REVIEW OF 1949



APRIL 1950



UPS AND DOWNS OF



IN the years immediately after the war there was a sharp and continued rise in the demand for petroleum products thereby confounding all the forecasters who had predicted a drop in demand or at best a leveling off. They thought that the extra civilian demand when rationing was lifted would scarcely compensate for the drop in military requirements. New cars were not to be had because of material shortages, and industry generally had to undergo the pangs of being reborn on a peacetime production basis. What the crystal gazers overlooked was the determination of John Citizen (and Mrs.) to ride the highways and see his own country on anything with four wheels and a motor, new or old. They also underestimated the ability of American industry to readjust itself to production for peace just as it had confounded our enemies by its ultra rapid adjustment to production for war.

This sharp increase in demand caused a scarcity; and I say *scarcity* deliberately rather than *shortage*, because there was always enough, though, as you all know, we used every conceivable makeshift to make the available supply go round. The situation was tight, and the market was strong. Prices rose, so did expenses, but the profit margin was enough to cause the outlay of billions of dollars of capital to drill more oil wells and to increase refining and transportation capacity.

All went well until toward the end of 1948 when it began to become clear that the rate of increase of demand was slowing up and that the industry had been more than usually successful in its search for new oil fields. On top of this came the winter of 1948-1949 which was away over normal temperature in the areas where most of the heating oil is consumed. The industry's working and reserve stocks of products which



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

Employee Publications Division
Personnel Department, New York

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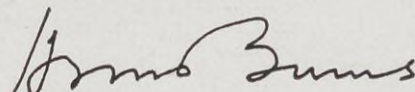
AN INDUSTRY

had been greatly depleted during the scarcity period were once more fully replenished.

All of this resulted in an unbalanced position, accentuated by a leveling off in demand during 1949. To avoid economic waste, production allowables were substantially reduced from the peak rates which had been reached in 1948. This meant that for every "shut-in" barrel of our own low-cost production we had to purchase a replacement barrel at current market prices. With regard to refined products, the anxiety to reduce inventories brought about depressed market prices. To put it bluntly, the fuzz is off the peach.

Now we are faced with intense competition in a real old fashioned buyer's market. Although our own operating expenses and construction costs remain high, in the past year we have made a good deal of progress toward reducing costs through the use of imagination and ingenuity. Much, however, remains to be done. We must learn to do more with less. This means we must focus our efforts more sharply so that there is the least possible waste of effort. Teamwork and enthusiasm on the part of all employees should make 1950 a year in which we consolidate our position in the markets, keep abreast in our manufacturing techniques and continue to be successful in the discovery of new crude oil sources to replace those we are currently exhausting.

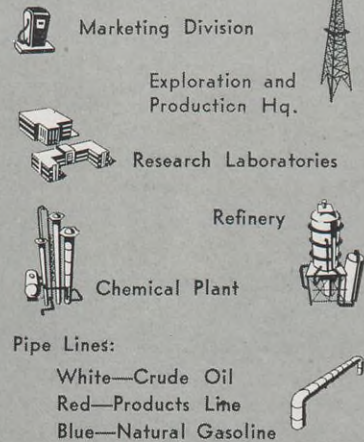
With full confidence, I leave you to take it from here.



President
SHELL OIL COMPANY

THIS MONTH'S COVER

The map on the front cover is a symbolic treatment of Shell's operations in the United States and Canada. The legend follows:



Any employee who wishes a copy of the Annual Report to Shareholders may obtain one by writing to the Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N. Y.



Exploration and Production

IN 1949, for the first time since pre-war days, crude oil production amply exceeded demand and the industry once again felt the effects of substantial reductions in allowances. Largely as a result of this curtailment, Shell's production fell below the record highs established in each of the three preceding years.

At the same time exploration and land leasing activities continued at a high level in order to maintain the Company's share of reserves. Both seismic and gravity methods resulted in discoveries of new areas of interest, where exploratory work is continuing. Thirty-six wildcat wells, either on a 100 per cent ownership basis or in partnership with others,

were drilled, resulting in nine discoveries, and a number of important additions to reserves also resulted from major extensions to producing fields through semi-exploratory drilling.

Production Off Slightly

By the year's end, Shell's net crude oil production totaled 70,095,000 barrels, a drop of a little more than eight million barrels from 1948. The Company had completed 296 new producing oil wells and 43 gas wells. It had drilled 57 dry holes. The additional successes brought the total of productive oil and gas wells wholly owned by Shell and held jointly with others to 9,538.

Successful wildcats in the Houston Area included Fordtran, a partnership venture and a gas distillate producer that will add gas reserves in the Sheridan—Provident City area; Big Foot, a shallow test resulting in a small production of 44 gravity oil; and Baldwin Deep, producing gas and distillate from 9,900 feet. In Louisiana, a Shell farmout discovery well was completed in October when Niloco's Industrial Lumber Company No. 2 began production at 109 barrels a day. At Turtle Bayou, a Shell discovery well was completed with the extremely high initial tubing pressure of 8,000 pounds per square inch to produce 65 barrels of distillate and $24\frac{3}{4}$ million cubic feet of gas daily.

A wildcat at Walnut Creek, Oklahoma, turned into a 119-barrel-a-day oil producer from a depth of 9,050 feet. A wildcat started in 1949 at Rattlesnake, Kansas, has since been brought in as a successful discovery well, flowing 497 barrels a day.

On the Pacific Coast a wildcat re-

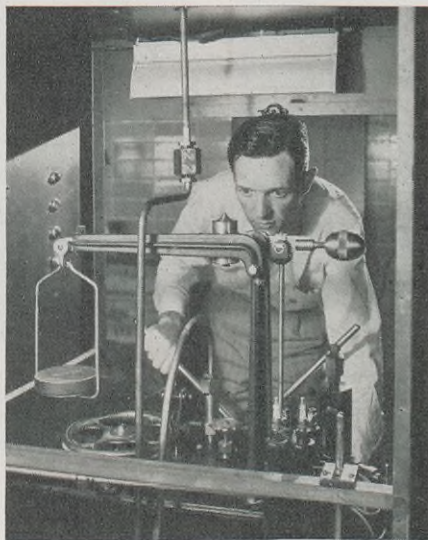
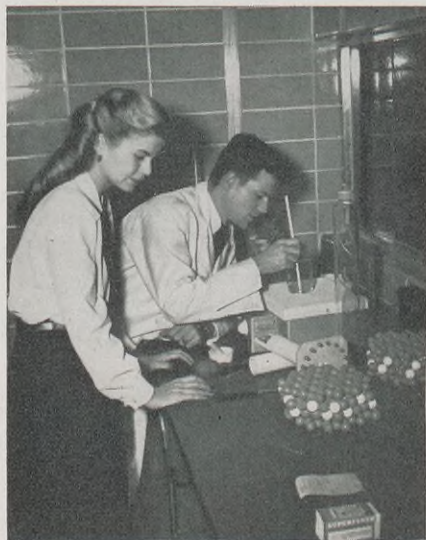
sulted in discovery of a small gas field about 30 miles west of Sacramento and not far from the Winters gas field discovered by Shell in 1946. The new discovery, called the Pleasant Creek Field, produces gas from a formation at a depth of 3,000 feet.

Shell's seismic, gravity and mag-

netic surveys during the year were widespread, and included the Continental Shelf adjacent to California, Louisiana and Texas. Also by these methods, activities in the Rocky Mountain areas of Wyoming and Utah were expanded. Activity also moved to outlying territories in Montana, the Dakotas and other areas in the North-Central states. Active exploration continued in West Texas, the Anadarko Basin of Oklahoma, in California and other familiar territory.

So far as offshore work in the Gulf was concerned, Shell's efforts compared favorably with those of the many other companies similarly engaged, with two seagoing seismic and two gravimeter parties at work most of the year.

The lease play in the Williston Basin, which embraces most of Montana and North and South Dakota, started in April, and to date it is estimated that about 12 million acres



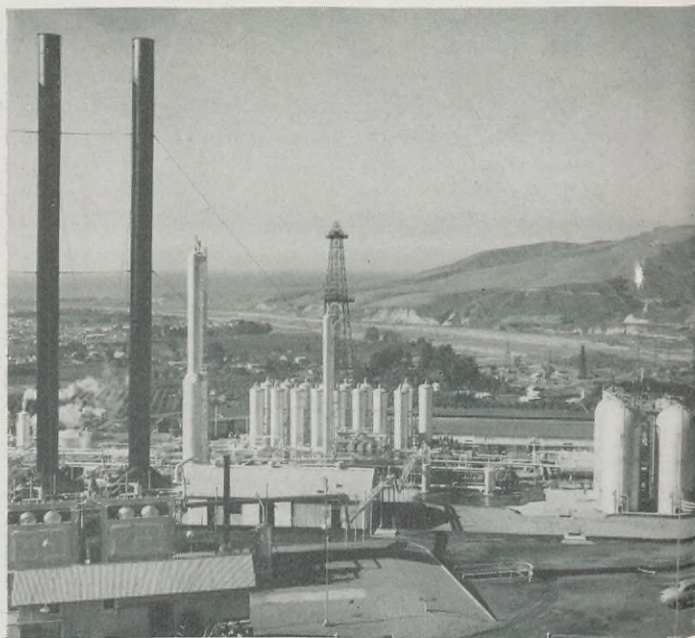
As activities in the field resulted in discoveries like the Pleasant Creek gas field in California (opposite page) personnel of the research laboratory at Houston (shown at work above) continued long-range studies in a program aimed at the development of techniques and apparatus to be used in locating and producing oil.



Exploration work was widespread during the year, including the Gulf of Mexico (above), West Texas (left) and as far north as the Alberta plains in Western Canada.



Old exploration methods contrasted with the new when seismic parties (above) slogged through swamps which were impassable to mobile equipment, and other parties (below) worked with helicopters and newly developed underwater gravimeters.



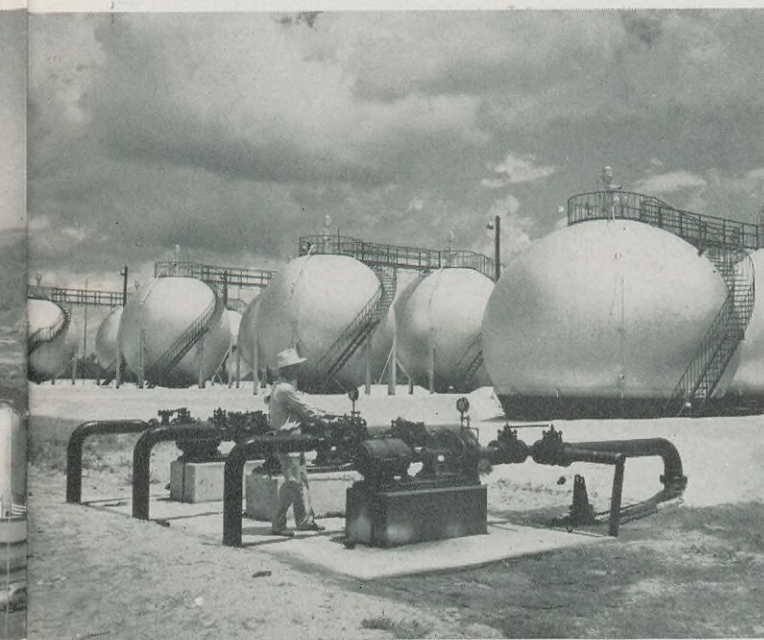
The fractionating column (above, to the right of the smoke stacks) is part of expanded facilities at Ventura. It is the first "fat oil" de-ethanizer at a Pacific Coast natural gasoline plant.

have been leased by oil companies. Shell secured substantial holdings and exploration work was pressed forward despite intense cold and snow in the winter months. Snow plows became standard equipment for seismograph crews, although the winter in Wyoming was milder than the previous one and drilling operations were carried on without interruption.

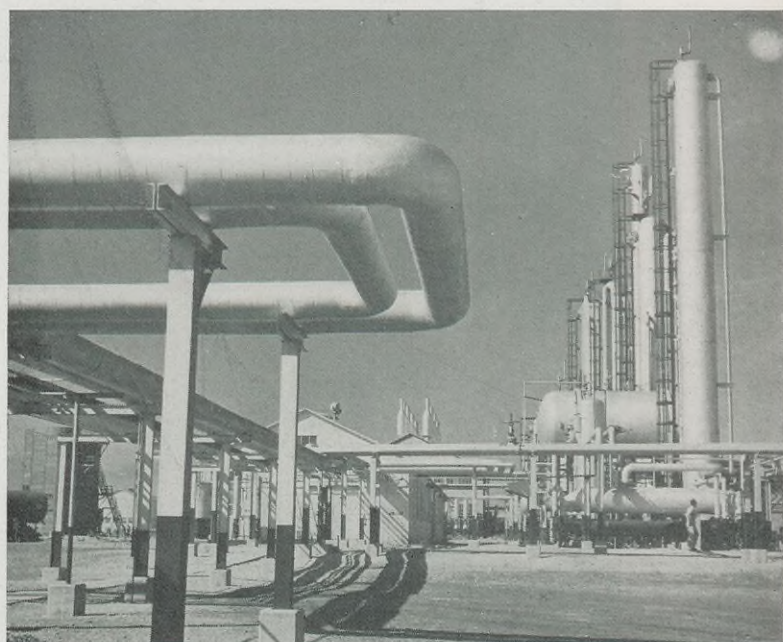
The Old vs. the New

In Louisiana wet terrain brought into contrast the newest and oldest in techniques. Gravity exploration was carried on by helicopter and a new underwater gravimeter while seismic parties slogged on foot through swamps impassable to mobile equipment.

Arrangements were made during the year for the Company to operate directly in Alberta and Saskatchewan Provinces of Western Canada, where a substantial exploration program is under way. More than four million acres of land are under reservation or lease to Shell, and a number of skilled exploration personnel have been transferred from operations in Louisiana and the Southwest to the accel-



Storage tanks similar to these at Sheridan, Texas (above), were added at several points as expansion continued to meet the need for increased facilities to handle liquid products from gas.



Additions to Wasson Gas Plant No. 2 (above), Wasson No. 1 and TXL Plant were completed. The total amount of gas processed by these plants in 1949 increased to over 60 billion cubic feet.

erating oil play in Canada.

Production activities were marked by continued development of existing fields and the placing in service of new operating techniques and newly developed equipment to increase speed and efficiency.

In California a semi-exploratory test in the Ventura River bottom effected a northerly extension of the Ventura Avenue Field, which for many years has been one of Shell's main sources of crude supply on the Pacific Coast. Shell's Schmidt No. 1 well was brought in with a daily production of 729 barrels of 28.3 gravity oil and 574,000 cubic feet of gas from a depth of 10,545 to 11,040 feet. After the new well's completion, the field was extended eastward by completion of Hartman Ranch No. 8 for a daily production of 1,012 barrels of oil and 704,000 cubic feet of gas.

Outstep drilling in 1949 nearly doubled the producing area of the Elk City, Oklahoma, field, which is now approximately six miles long and two miles wide. Shell completed 18 producing wells during the year, competitors 9. Of some 900,000 barrels of oil thus far produced, 72 per

cent has come from Shell operated wells. One Company rig and 12 rigs under contract to Shell are now in operation at Elk City.

The Main Pass area in Louisiana Gulf waters, scene of Shell's spectacular well fire in March, was restored to good standing with the completion of three new wells for initial daily production of 154, 537 and 441 barrels respectively. The boundaries of this field have not yet been defined.

Fields Extended

Semi-exploratory wells at Provident City and Live Oak, Texas, extended those two fields. A number of less striking extensions were achieved in other fields and, of course, active programs of development were continued in fields where previously discovered reserves justified additional wells.

Among major items of new and improved equipment is Marine Rig No. 10. It is mounted on a converted LST with a slotted hull which permits it to be towed onto a previously anchored pontoon. The rig can drill to 15,000 feet in water not exceeding 15 feet in depth. A new type of portable

well servicing hoist, first to be used East of the Rockies, was developed and mounted on a specially designed truck. It is streamlined and the aluminum framed alloy steel unit weighs only 25 tons. Older types ran to 35 tons and over.

In East Texas successful large scale use has been made of automatic and semi-automatic electrical devices for controlling tank valves and regulating producing wells. The application of automatic controls to 84 wells, resulting in greater efficiency and lower production costs, is likely to be the forerunner of a widespread change in the industry's approach to daily production.

Among other moves designed to reduce operating expenses, Shell consummated in September an exchange of properties with Phillips Petroleum. Each company acquired leases and production better located with respect to its own operations and pipe lines. Phillips was assigned 201 wells in the Texas Panhandle, with daily gross production of 1,039 barrels, in exchange for that company's interests in 182 wells in various North Texas fields having a gross rated



During 1949, Shell Oil Company's drilling activities, illustrated by the rig above, continued at a high level throughout widespread areas of the United States. In the past year, 296 new producing wells and 43 producing gas wells were completed. Through the use of new operating techniques and modern equipment, the speed and efficiency of the drilling program was increased.

production of 1,296 barrels each day.

In the Midland Area, 43 wells of Shell's 241 in the Wasson Field were re-worked and formation packers efficiently utilized to improve high gas-oil ratios. Well recompletions and modernization of equipment on the Bowen lease in the McCamey Field brought similar results. Production here was increased by about 12,000 barrels a month and estimated ultimate recovery was also scaled upward. Possibilities of similar activities in other Company producing areas are being investigated.

At Benton, Illinois, the first water in this large waterflooding project was pumped into the substantially depleted oil reservoir in November. The waterflooding is expected to increase ultimate recovery by as much as 50 per cent and should begin to

show some results by about mid-1950.

Gas sales and production of liquid products from gas took another big jump in 1949, spurred on by emphasis on conservation and the growing economic importance of this phase of the petroleum business.

Provident City Plant Started

Construction was started on a new gas processing plant at Provident City which will handle an average of 60 million cubic feet of gas per day and recover about 2,500 barrels of liquid products per day by high pressure absorption. Approximately 50 million cubic feet of residue gas will be dehydrated each day and sold to the Texas Eastern Transmission Corporation to be piped to the east through the Big and Little Inch pipe lines.

In West Texas, an addition to Was-

son Gasoline Plant No. 2 was completed in 1949. The daily average of liquid products turned out by the two Wasson plants and the TXL Plant increased from 6,758 barrels in December 1948 to 9,782 barrels in December 1949. Gas sales increased even more—from 46,989,000 cubic feet per day to 103,983,000 cubic feet a day in the same period. Total gas processed by the three West Texas plants in 1949 was well over 60 billion cubic feet.

A major modernization program at the Ventura Gasoline Plant was completed during the year. A recently installed fractionating column, a "fat oil" de-ethanizer, is the first such unit to be operated at a natural gasoline plant on the Pacific Coast and makes possible a greater recovery of propane. The Ventura Plant's daily aver-

age production of 2,381 barrels of liquid products, which it set over a 20 year period, has now been raised to 3,500 barrels per day. It processes between 55 and 60 million cubic feet of wet gas a day.

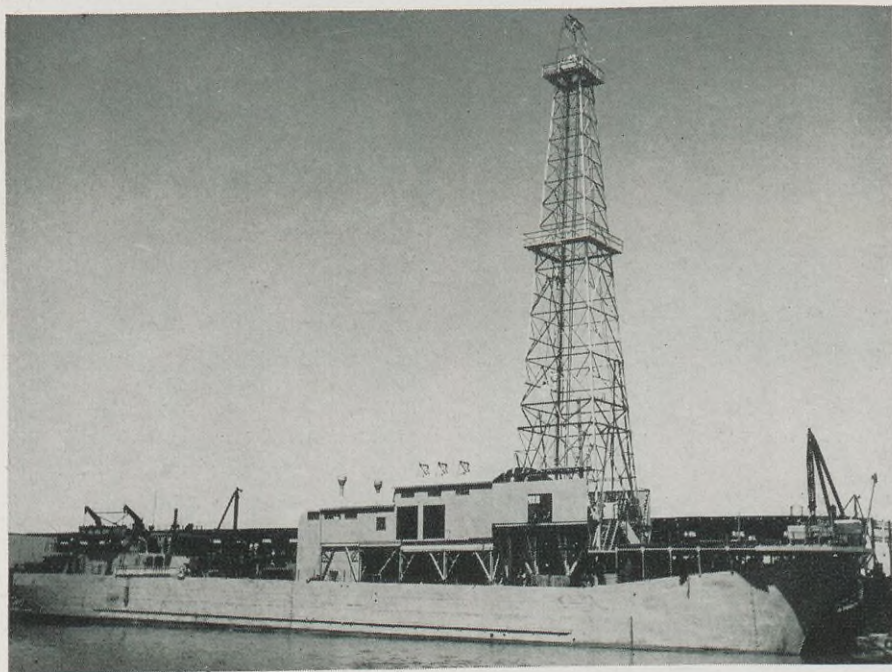
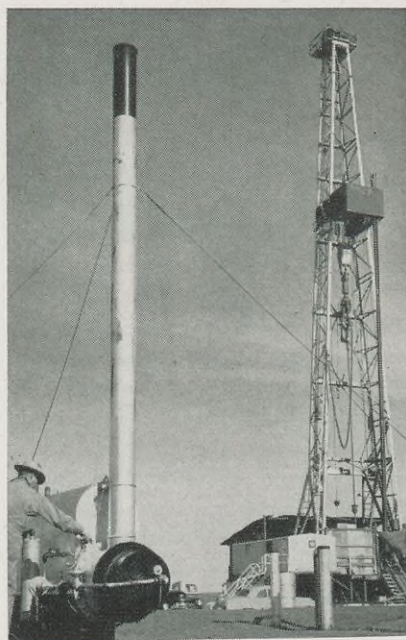
Expansion at Elk City

Rapid development and increased reserves attained in the Elk City Field during 1949 have warranted authorization for construction by Shell of a gasoline plant there capable of handling 100 million cubic feet of gas a day. If unitization of operators' and royalty owners' interests is achieved, facilities for cycling, repressuring and crude stabilization may be added, with other operators given the opportunity to share in the ownership of

As the program of outstep drilling rapidly expanded operations in the Elk City Field, the discovery well (right) was reconditioned.

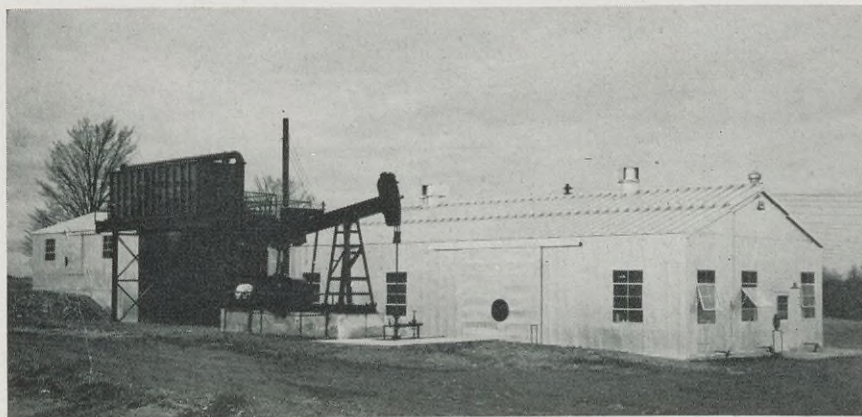
the plant; the total cost would then be on the order of \$6,000,000. The potentialities of the Weeks Island, Louisiana, Field are also being studied with a view to possible construction of a gas processing plant there.

Meanwhile, Shell's Exploration and Production Research Laboratory at Houston made continued progress in its program to develop improved techniques and apparatus for locating and producing oil. Several measuring instruments to determine the properties of the rocks and fluids in a



One new development: The Marine Rig No. 10 (above), built on a converted LST, can be towed out to a specific location and then sunk on the shallow bottom. It can drill to a depth of 15,000 feet.

The filter building pictured at the right is a part of the waterflooding project at Benton, Illinois, which is expected to increase the ultimate production in that section by as much as fifty per cent.



bore hole were operated experimentally in oil wells and will soon be available for operational use. New developments in seismic instruments are nearing the stage where they, too, can be applied to operations.

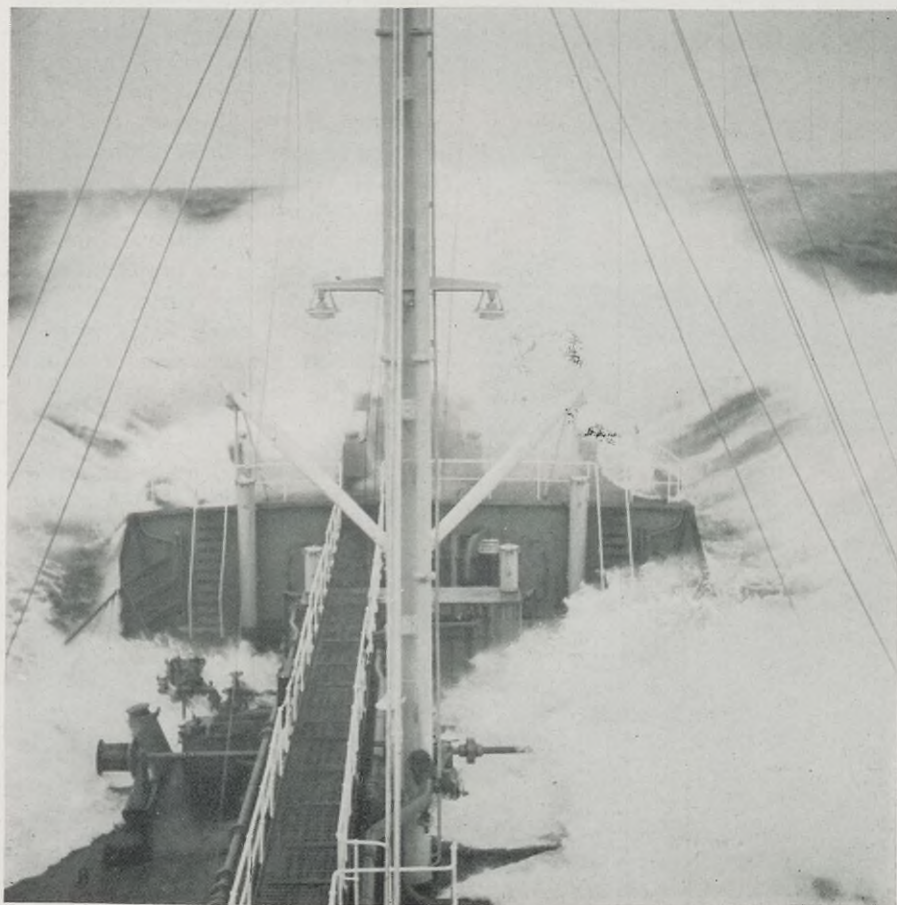
Of more importance than the instrumental developments is the progress made in long range studies fundamental to the discovery and production of oil—such as studies of the flow of reservoir fluids in porous rocks, studies of sediments and their relation to the occurrence and migration of oil, and in the propagation of elastic waves in the earth. The current results in these fields provide encouraging background for future progress in exploration and production.

Transportation and Supplies

THE year 1949 saw the culmination of a series of important readjustments that followed the end of the war. The long period of so-called "shortages" had passed; throughout the year, crude oil and refined products were available in abundance, and at times even in surplus supply.

The unexpected increase in requirements for petroleum products immediately after the war caused a scarcity of both supplies and transportation. While all demands were met, this was done only by using every conceivable means, regardless of cost, to squeeze out the last drop of product from existing facilities, and by using unusual and expensive means of trans-

portation and distribution. This situation set in motion an industry-wide program of expansion in production, refining, and transportation facilities. The effort to increase crude production was highly successful, and by 1949 most of the new refining and transportation facilities were completed. At the same time, the rate of increase in demand began to slow down. This was aggravated by the extremely warm weather experienced in the winter of 1948-1949 with its consequent reduction in requirements for heating oils. Supply out-stripped demand and the resulting unbalanced position in the spring of 1949 necessitated the curtailment of production



and refining activities over the nation.

This situation was not peculiar to the United States. Production was expanding in South America and the Middle East while European nations were erecting new refining facilities outside the United States. This resulted in a reduction of export demand while foreign sources of supply sought outlets for crude oil and residual fuel oil in this country.

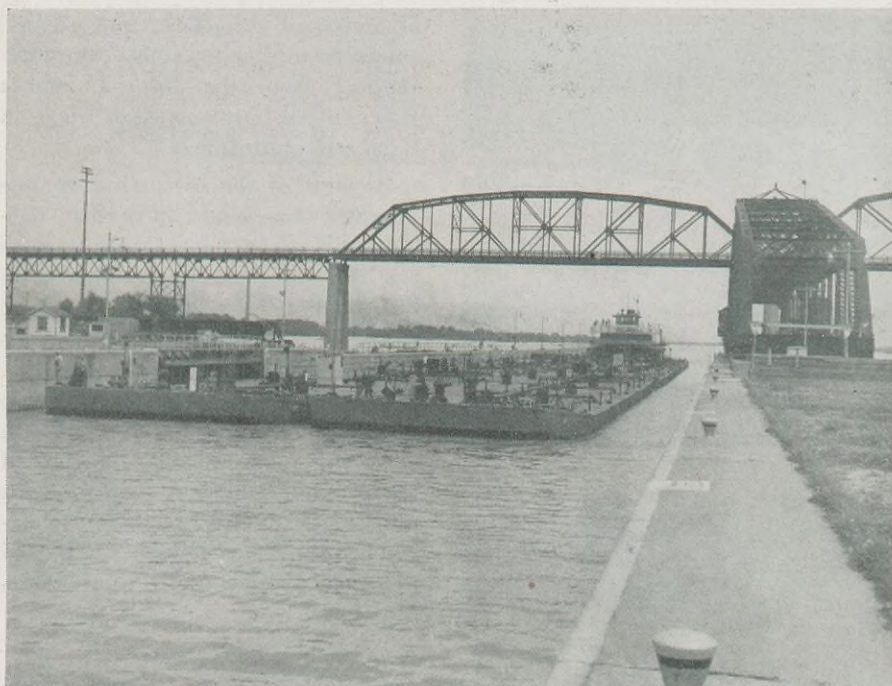
Until the middle of 1949, there was a substantial surplus of heavy residual oil in the East of Rockies area. By that time, however, industrial use of this product began to increase so substantially that the demand could no longer be met from East of Rockies sources and this material began to move from South American refineries into Atlantic Coast ports in increasing quantities. Pacific Coast stocks of residual fuel oil had been increasing since the end of the war and, with low tanker rates prevailing, a substantial movement was also started through the Panama Canal to the East Coast.

The increase in available supply of products put considerable pressure on bulk market prices and there was keen competition for business. Prices for heating oils were depressed because of the high inventories which resulted from the unusually warm weather that prevailed during the winter of 1948-49. Gasoline stocks began to increase rapidly during the last months of 1949 and there was some reduction in prices for this product.

Crude Shipments by Rail Eliminated

Shell's supply situation paralleled that of industry. During the year important new facilities were completed which greatly improved Shell's supply and transportation position. During the early part of 1949 an extensive rail movement of crude oil from Wichita Falls, Texas, to Wood River, Illinois, had been necessary as well as substantial barge movements of refined oils up the Mississippi River.

The SS. *Rincon Hills*, at left battling heavy seas off Cape Hatteras, North Carolina, was one of the many tankers transporting crude oil and finished products for Shell in 1949.



Barges (such as the one shown at left going through the lock at Alton, Illinois, on the Mississippi River) transported more than 50 million barrels of crude and products in 1949.

increased requirements, the quantities provided for under Shell's long-term contracts of affreightment were raised at mid-year by approximately three and one-half million barrels, with some fourteen tankers of the T-2 type now operating under these contracts. One development of interest during the year was the initiation of combined shipments by tanker of clean and black products to the Hawaiian Islands under contracts of affreightment. Prior to this time, Shell had been dependent upon competitors for this transportation. During the last quarter of the year, a movement of heavy fuel oil was begun from California to the Atlantic Coast with twenty-five voyages scheduled over the winter season.

Barging continued at a high rate during the year with more than fifty million barrels of oil transported by this means. This included crude and finished products moved in the Gulf Coast area, on the Mississippi River, the Great Lakes, the inland and coast-

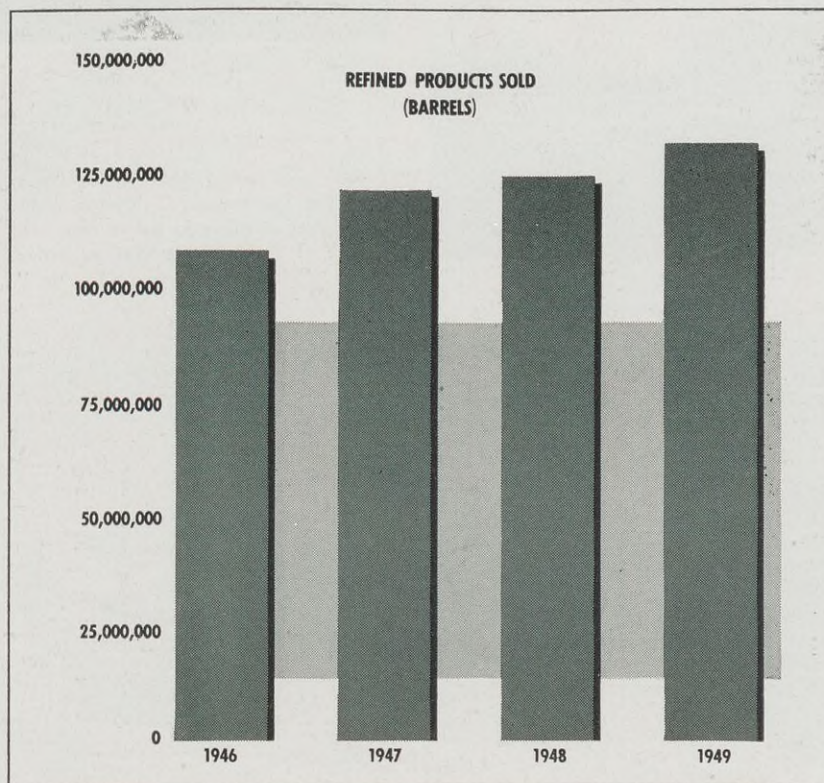
Major pipe line construction was rushed to completion to obviate the need for this rail movement. Thus the flow of crude through the new Basin and Ozark Pipe Line Systems extending from West Texas to Illinois, together with increased throughput at Wood River, provided a more economic supply for petroleum products in the Mid-Continent territory. Completion of a pipe line from the new Elk City field to Cushing, Oklahoma, eliminated tank car movement of this crude and, at the present time, all of Shell's crude is delivered to its refineries either by pipe line or by water transportation.

California Lines Heavily Laden

In California, the crude oil and natural gasoline pipe line systems operated at high load factors throughout 1949. The Ventura-Wilmington crude oil line averaged 56,000 barrels per day while the San Joaquin Valley lines moved another 57,000 barrels per day. Throughput in the Ventura-Wilmington natural gasoline pipe line amounted to some 172,000 gallons daily.

Transportation of oil in tankers was greater than ever before with almost 63,000,000 barrels moved between various ports on the Atlantic and Pacific Coasts. In view of these

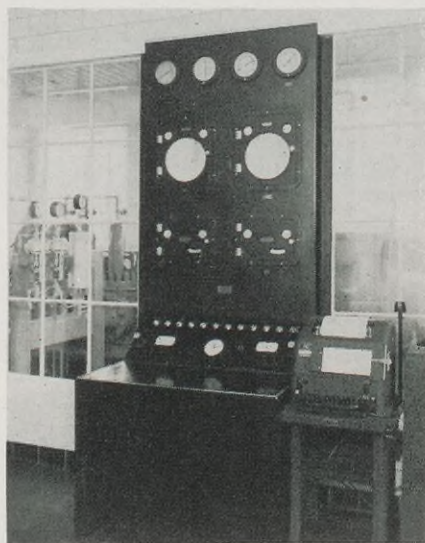
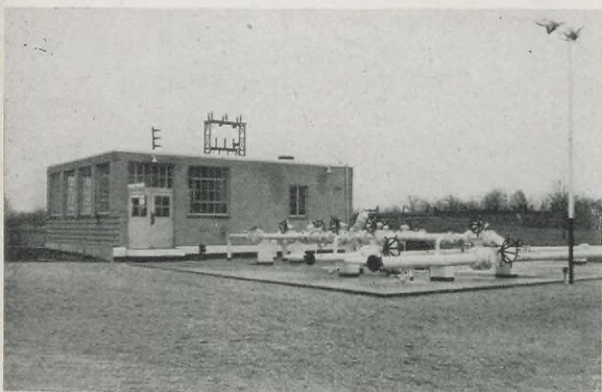
Shell's supply and transportation facilities have had to be expanded to keep up with a steady increase in sales of refined products, depicted in the chart below.



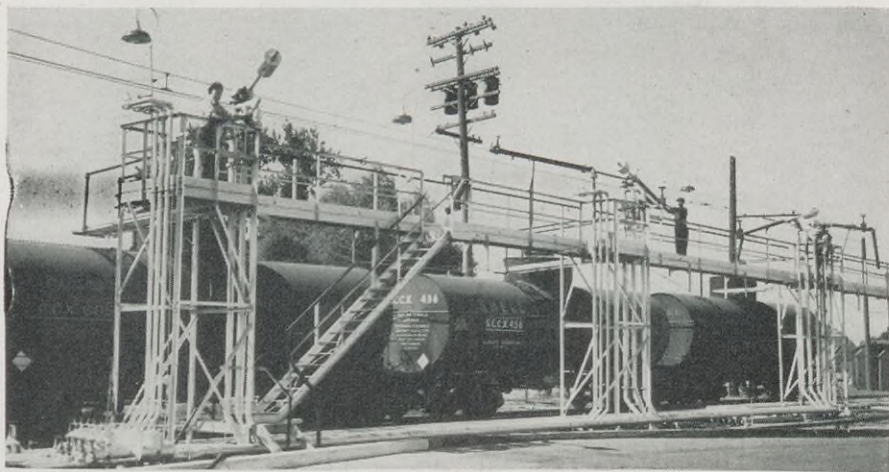


Equipment like this 6,000 gallon truck loading at Sewaren Terminal (above) is indispensable to Shell's network of petroleum transportation.

Additional products pipe line capacity was provided on the East Line by the installation of new and larger electrically operated pumps at stations such as Carbon, Ind. (below), with the control panel shown at right.



Tank cars such as those shown below at the Sacramento, California, loading rack continue to be an important part of Shell's transportation system.



al waters of the East, and refined products to Pacific Coast terminals ranging from the Upper-Columbia River in Washington to San Diego in Southern California.

In view of the expanding volume of water movements, more than one-half million barrels of new tankage was added at marine terminals. Of this amount, some 200,000 barrels of storage was added at five terminals East of the Rockies and more than 300,000 barrels of tankage at three Pacific Coast marine terminals. In addition, some 160,000 barrels of tankage was added at four products pipe line terminals to handle expanded market demand in the territories of the East, Massachusetts, and Plantation lines.

Products Line Expanded

A products pipe line expansion program was completed early in 1949 on the North Line between the Wood River Refinery and Chicago, and on the East Line between Wood River and Ohio points. As a result the products lines, East of the Rockies, transported over two million barrels more finished products than during the previous year. Construction of booster pump stations on the East Line was started near the end of the year and will provide still further capacity. The North, East, and Plantation Systems operated at maximum rates during the entire year. On the Pacific Coast, a products pipe line from Wilmington Refinery to Los Angeles was put in operation during the year. This four-inch line is now carrying gasoline to the Los Angeles area at the rate of about six million gallons per month.

In summary, the year 1949 was a turning point in the postwar transition from scarcity to abundance. The production race was over, but with the momentum of this effort supply overran the new high level of demand and Shell with the rest of the industry is experiencing the keen competition which characterizes a buyer's market. In the face of this challenge, the progress achieved by Shell in 1949 forms a strong foundation for the future.

Shell Pipe Line Corporation

THE year 1949 was one of fulfillment for Shell Pipe Line Corporation, with the large Basin-Ozark Pipe Line Systems and the new Elk City-Cushing line in operation. With their completion, Shell Pipe Line had at the end of the year a total of 6,036 miles of trunk and gathering lines and was delivering an average of 284,700

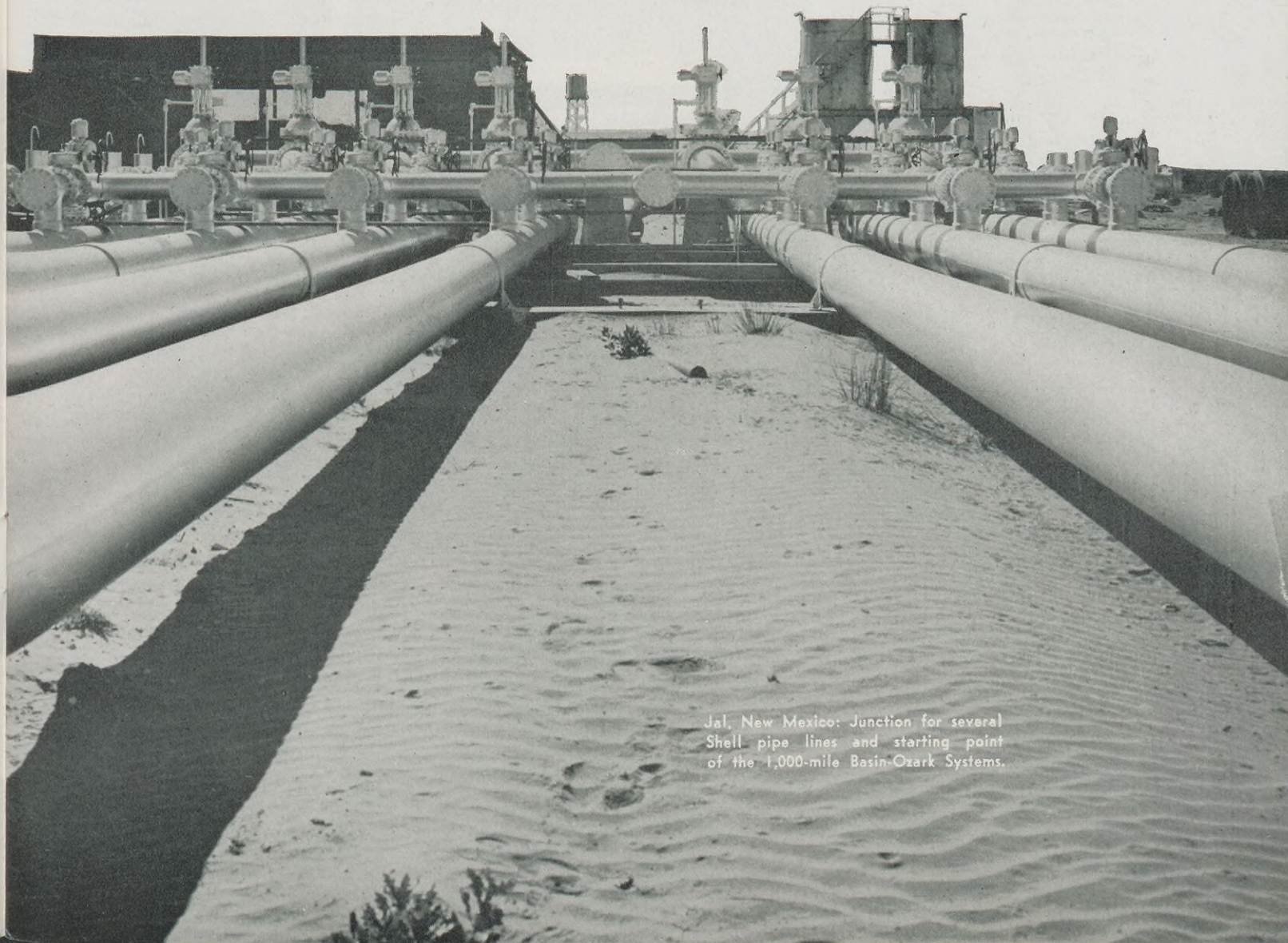
barrels of crude oil and products daily.

Shell Pipe Line now wholly owns 4,783 miles of trunk and gathering lines and has an undivided interest in three systems with lines totaling 1,253 miles. With total deliveries for the year close to the 104-million-barrel mark, its crude oil trunk lines de-

livered 88,054,000 barrels of crude and unfinished products, and its refined products lines delivered 5,322,000 barrels. In addition, 10,618,000 barrels were gathered and delivered locally.

Handling movements for ten shippers and purchasers, Shell Pipe Line's trunk line service in 1949 totaled nearly 44 billion barrel-miles.

A year and a half had been spent on the Basin-Ozark Systems to create two of the most modern crude oil pipe lines in existence. The two big lines of 20, 22 and 24-inch diameter pipe link the oil producing areas in the Permian Basin of West Texas and New Mexico with several middle western refineries. Jointly owned by Shell Pipe Line and three other common carrier



Jal, New Mexico: Junction for several Shell pipe lines and starting point of the 1,000-mile Basin-Ozark Systems.

companies, the Basin System is 515 miles long from Jal, New Mexico, to Cushing, Oklahoma. Its throughput capacity into Cushing is 241,000 barrels daily, of which Shell's share is 82,000 barrels. The Ozark System extends 433 miles from Cushing to Wood River, Illinois. From there a 54-mile line extends to Patoka, Illinois. The Ozark System is jointly owned by Shell Pipe Line and the Texas Pipe Line Company, and is operated by Shell Pipe Line. Daily throughput capacity is 207,000 barrels, of which Shell's share into Wood River is 114,000 barrels.

Following completion of the Ozark System, Shell retired a 10-inch line from Cushing to Wood River built in

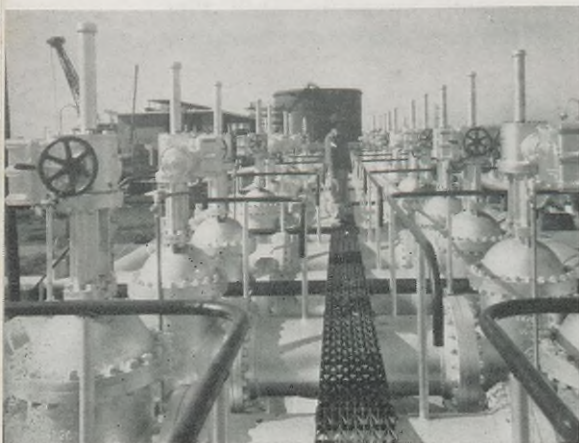
line. This latter project, started and completed during the last quarter of 1949, furnishes an outlet for Shell's rapidly developing production in the Elk City Field. Previously Elk City crude was delivered to Cushing by rail tank car. With only the Elk City station available at the outset, the new pipe line will deliver 24,000 barrels daily into Cushing. Addition of three other pump stations as the field develops will increase the line's daily capacity to 50,000 barrels.

Line Laid in Permian Basin

Although the spotlight was focused on the Mid-Continent Area, considerable work was done in the Permian Basin. The Wasson Station in West

Field, gathering lines and pumping stations were substantially expanded and a 30,000-barrel tank was built at Upton Station.

In East Texas two gathering systems already in operation in the Cleveland and North Cleveland fields were purchased outright. In South Central Texas construction began on new pipe lines to handle gas, distillates and crude oil in the Hope, Englehart and Provident City fields of Lavaca and Colorado Counties. The lines will supply Shell's new Provident City Gas Plant with gas and distillate, and will transport distillate and refined products to Sheridan, Texas. Here propane will be delivered to a tank car loading rack



Three stations on the route to Wood River: Wichita Falls on the Basin line (above, left), Cushing Station (center) on the Ozark line and the old Richland, Mo., Station (right) on the 10-inch line paralleling the Ozark System.

1916-17, and re-equipped another 10-inch line (built in 1927-28) so it can deliver 23,000 barrels of crude daily by using new electric pumps located in five of the Ozark stations. Five of the line's original pump stations are being kept in service to augment its capacity by 15,000 barrels a day. Thus, Shell Pipe Line's present total capacity from Cushing to Wood River is 152,000 barrels daily.

Line Serves Elk City Field

When the 33-year-old Cushing-Wood River line was retired, part of its pipe was taken up and reconditioned for use in the Elk City-Cushing

Texas and the Hobbs Station in New Mexico were newly equipped, and 73 miles of new 12 and 14-inch trunk line was laid parallel to an older line from Wasson via Hobbs to Jal.

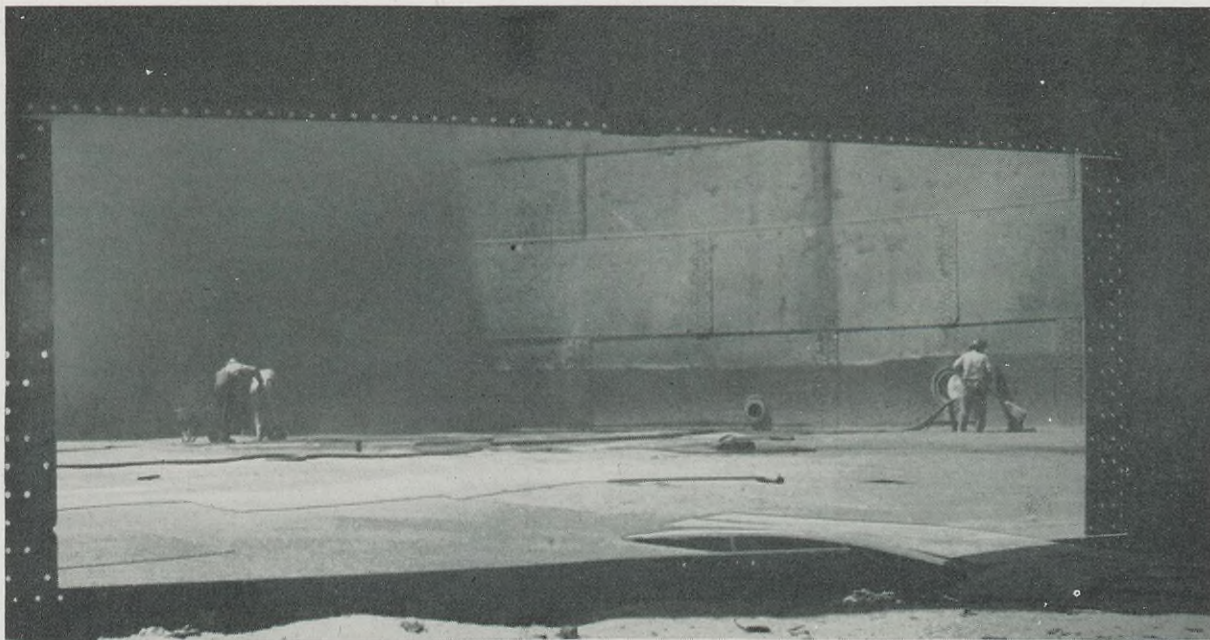
An extensive overhauling program at the McCamey and Hendrick tank farms in West Texas was also completed in 1949. New tanks were erected and others were reconditioned and provided with floating roofs. On numerous tanks indicating gauge equipment was installed to permit hourly gauge reading from the ground level. Painting, floodlighting and road improvement completed the project.

To keep pace with increasing production in the West Texas Benedum

and other oils will move on to Houston by way of Shell Pipe Line's 6-inch products line.

Operating Methods Improved

Along with expansion and improvement of facilities, Shell Pipe Line continued improvement in operating methods in 1949. Oil losses, an ever-present problem for pipe lines, were reduced to the lowest percentage in the Company's history. On-the-job accidents also were at a record low during the year, with only eight disabling injuries and no fatalities. In the National Safety Council's safety competition running from July 1948 to June 1949, the Company won sec-



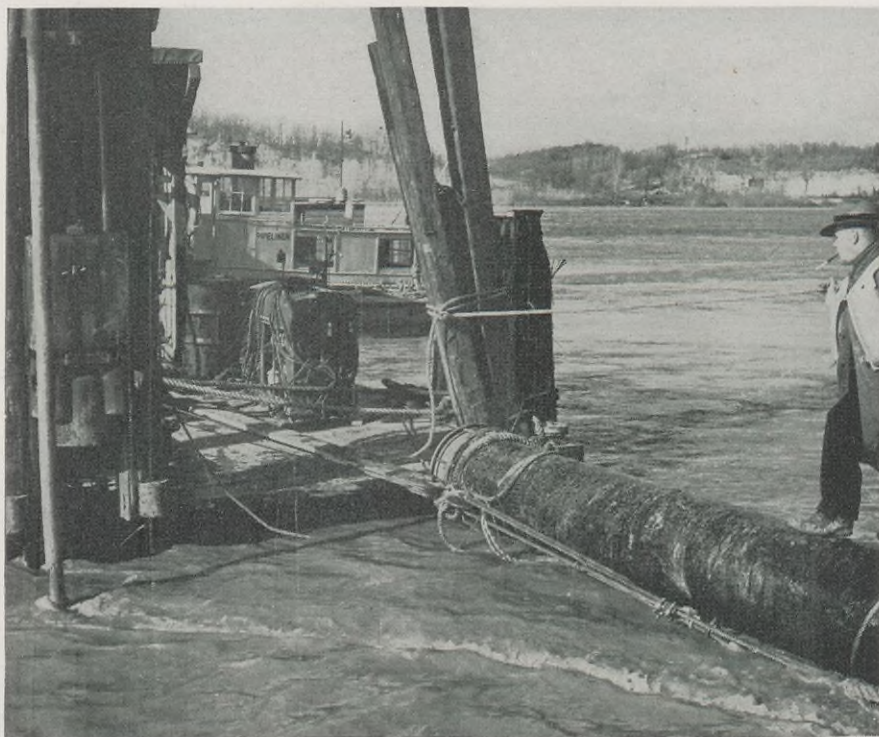
^

Tank reconditioning like that at McCamey, Texas, and the improvement of pump stations were part of the general modernization and expansion program during the year.

Production in the Elk City Field necessitated a new pipe line. Part of an old 10" line serving Wood River was taken up, reconditioned and used in the Elk City-Cushing line. >



< On the Ozark line (at left) a corrosion engineer uses electric metering equipment to test pipe coating before the pipe is lowered into the ditch and the fill is made. This test insures that the coating has no weak spots and will prevent any external deterioration.

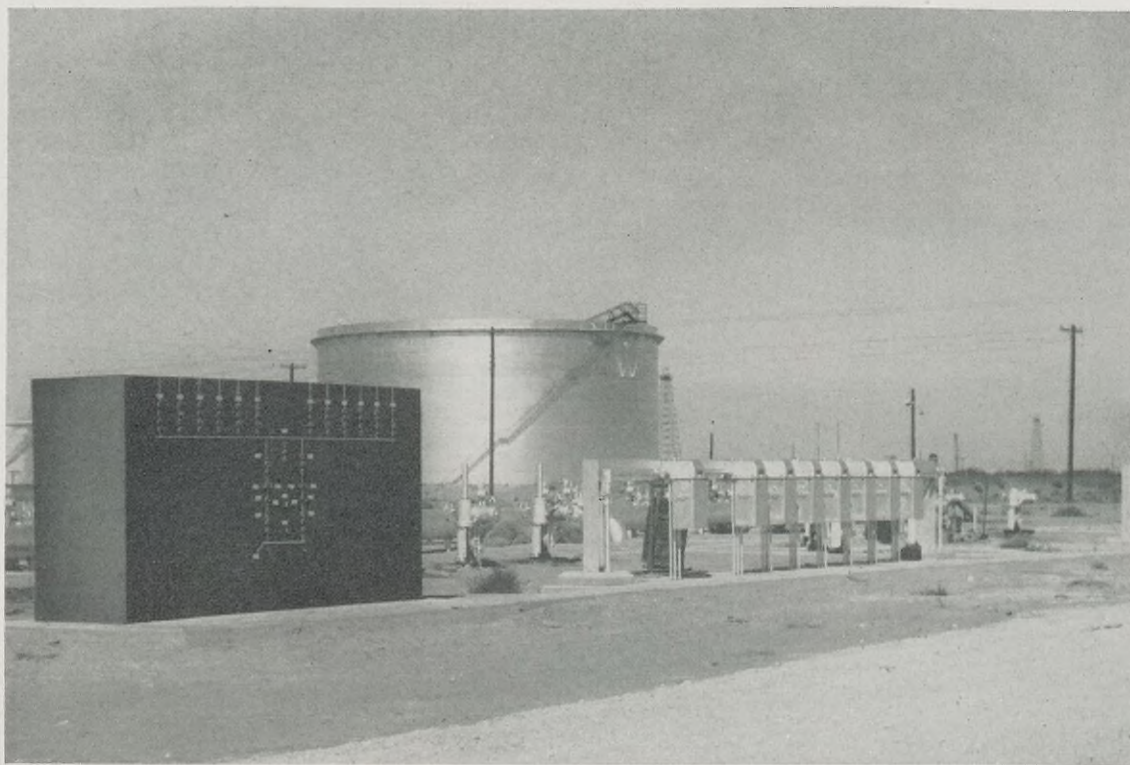


Pipe line construction is rugged business. The Basin and Ozark Systems covered terrain ranging all the way from arid wasteland to steep mountain slopes. The river crossing shown above on the Missouri was one of several the pipeliners made.

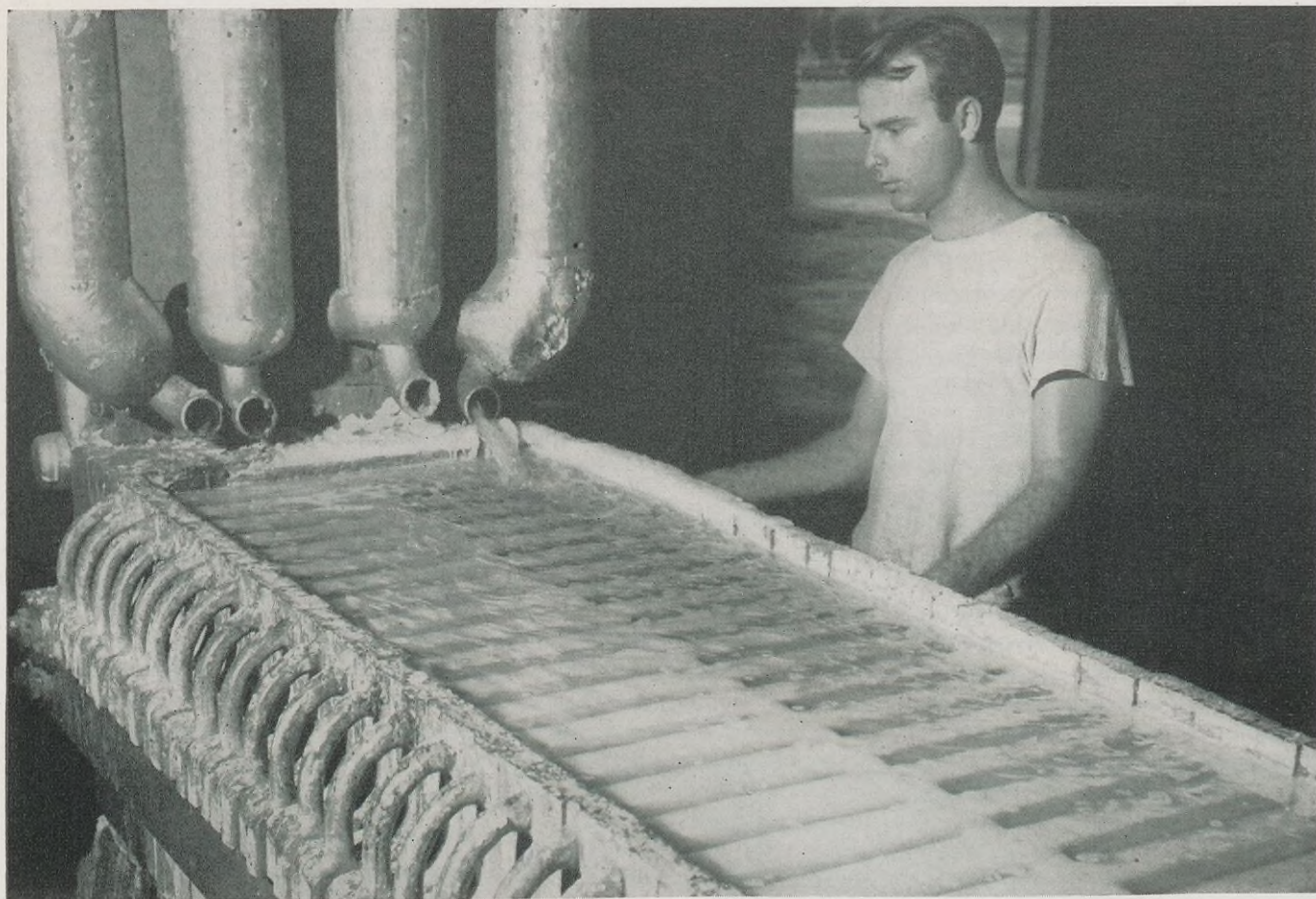
ond place in the Class A Oil & Gas Pipe Lines division. When the contest period was changed to January-December 1949, the Company won first place. Further recognition was accorded by the Joseph A. Holmes Safety Association, which presented certificates of honor to Healdton Division (Mid-Continent Area), Wasson-Hobbs Division (West Texas Area) and all three Divisions in the Texas-Gulf Area for working periods of several years without a lost time accident.

Sixth Lifesaving Medal Awarded

George W. Barnett, station engineer at Kilgore, became the sixth Shell Pipe Line employee to receive the National Safety Council's President's Medal for saving life by the Schaefer Method of artificial respiration. Barnett rescued and resuscitated a woman who had apparently drowned when her boat overturned in a nearby lake. He had learned the Schaefer Method in the Company first aid classes.



This outdoor panel board and the electric controls to its right make a push-button tank farm out of Wasson Station facilities. When operating, the panel monitors the flow of crude, and the controls start and stop booster pumps.



Manufacturing

AT a time when the average crude oil runs to refineries of the entire oil industry were down 4.8 per cent from the year before, Shell's increased by 5.4 per cent in 1949, setting an all-time high for the Company and continuing an expansion trend of long standing. Crude oil intakes at all five Shell refineries amounted to over 122,000,000 barrels during the year.

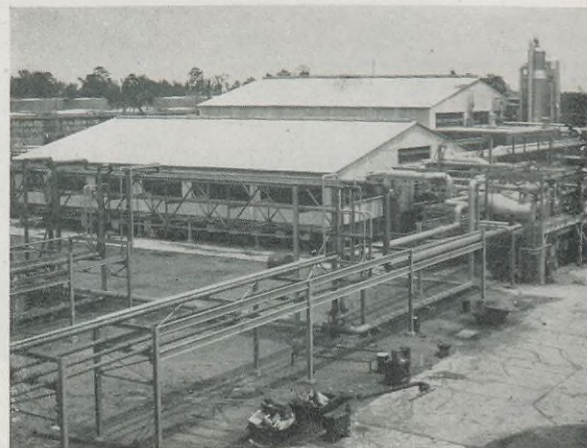
Even higher throughputs were anticipated, but did not materialize because of the unusually warm weather during the winter months that appreciably reduced demands for middle distillates. But by adjusting throughput and exchanging stocks between refineries, Manufacturing was able to supply other demands, thus con-

tradicting a general industry trend toward smaller throughputs. As an example, with the shipment of the first tanker load of 4,500,000 gallons of solvent-extracted high viscosity index lubricating oil stocks from Houston to Martinez in April, the new lubricants plant at Houston Refinery became the source of high viscosity lubricants for the Pacific Coast.

Having passed the peak of postwar rehabilitation and expansion, Manufacturing's construction program was somewhat lower in 1949 than in the year before. Nevertheless, a number of completed units went on stream and added to refining capacities.

Houston's new wax plant (right) operated at near design capacity by year's end. Liquid wax solidifies in molds (above).

Among the largest to go into operation were a wax manufacturing unit at Houston and a picramate solutizer plant for sweetening gasoline at Wilmington Refinery.



The wax plant opened in May and by the end of the year was operating at near design capacity of 40,000 tons per year. Raw material for the plant is a crude wax extracted during the manufacture of lubricating oils. Processing this into finished waxes involves two basic steps: solvent refining and purification. In the first, the crude waxes are subjected to successive treatments with a chemical solvent that separate the last traces of oil from the wax. In the second stage, the wax passes through several processes that improve and stabilize color and odor. The finished waxes are shipped either as a solid, in 10-pound cakes, or as a liquid in insulated tank cars.

In conjunction with the new plant, a complete wax laboratory was installed at the Houston Research Laboratory. The facilities include instruments and test equipment for determining the physical properties of Shell waxes and their performance in various applications. Because about 70 per cent of the refined wax is sold to the paper industry, a paper waxing machine on which experi-

ments are conducted is included in the laboratory equipment.

The picramate solutizer plant at Wilmington went on stream in January, 1949. It was evolved from extensive pilot plant studies aimed at devising a replacement process for the old doctor treating method of sweetening gasoline. The new process comprises four essential steps: extraction, regeneration, solution washing and solution purification. Combined, they improve sour gasoline by removing mercaptans (malodorous organic compounds containing sulphur).

Gasoline Yield Increased

During the past year substantial expenditures were made for revisions of the topping, thermal and catalytic cracking sections of refineries to provide greater catalytic cracker feed intakes. This improved Shell's competitive position in the marketing of premium and house brand gasolines, and reduced the percentage yield of fuel oil per barrel of crude.

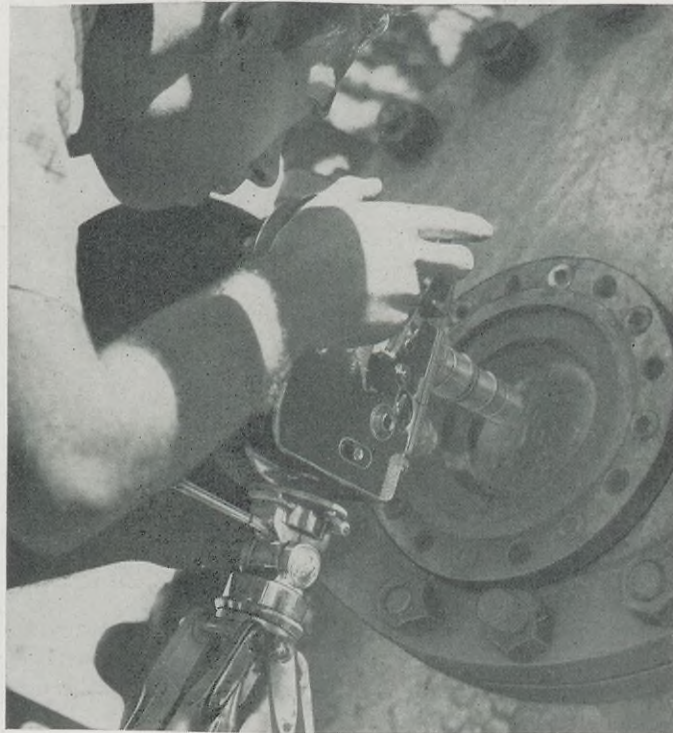
A major project completed at Houston Refinery involved new build-

ings and facilities to handle maintenance and minor construction work. The main shop building houses 14 crafts, with necessary tools and mechanical equipment, and is supplemented by a cleaning building and a field office for the administrative staff. The new construction replaces many widely scattered shops in the refinery area and centralizes and integrates maintenance activities. At Wood River Refinery construction was completed on a large tank farm to provide for entire refinery crude storage needs. The farm consists of 21 tanks with an aggregate capacity of approximately 2,500,000 barrels. In addition to replacing old tanks beyond repair, the farm provides storage for increased deliveries to Wood River through the Ozark Pipe Line. All refineries have conducted studies and made various equipment changes and additions to further improve the quality of effluent and waste disposal.

In 1949 Manufacturing assisted in design and construction of extensions of a refinery at Montreal on behalf of Shell Oil Company of Canada, Ltd. These extensions will approximately



Revisions of equipment design, as in the fractionating tower at Houston (above), helped to raise Shell's daily average for refinery intakes by 5.4 per cent over that of the previous twelve months.

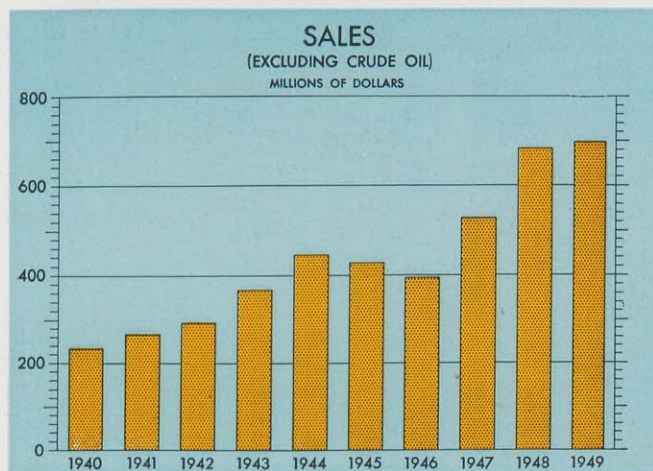


Above is seen one of several viewing ports in the full scale experimental fractionating column at Houston Refinery where the efficiency of various bubble tray designs was studied by Shell's researchers.

The Company's Financial Position

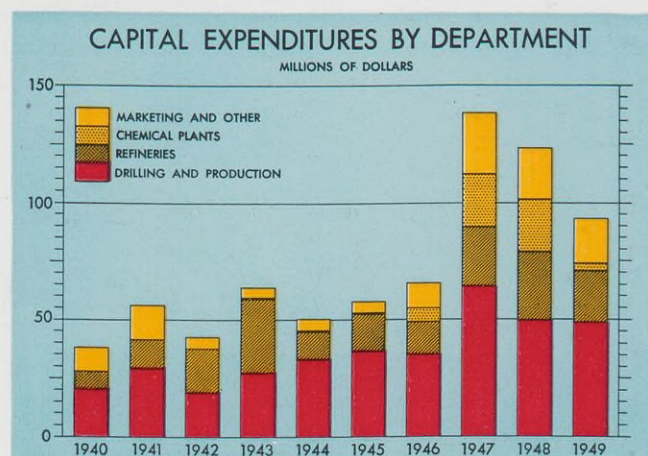
THE operations of your Company resulted in earnings of \$76,423,000 after all charges, including Federal taxes on income, a considerable decline from the earnings of the preceding year. Attention was drawn in the 1948 report to the possibility of a severe impact upon net income of a decline in product prices, and as it turned out this actually took place. Nevertheless, your Directors consider the results for the year 1949 are gratifying and are reassuring as to the ability of your Company to withstand a comparatively severe reversal in market trend and still show earnings exceeding by a substantial margin those of any previous year in its history, with the single exception of the peak year 1948. Dividends totaled \$3.00 per share, the same as paid in 1948. It is noteworthy that although high levels of earnings were attained in the past three years, the percentage distributed to shareholders was the lowest in the Company's history, because of the need to employ a substantial portion of the earnings in the business for capital improvements.

At the end of the year, cash and government securities amounted to \$73,056,000, a decline of \$15,856,000 since December 31, 1948. This reduction is mainly attributable to the high level of capital expenditure and the increased inventories of crude oil and refined products.



In order to maintain your Company's reserves of crude oil, the search for new oil-bearing properties must continue without interruption, and each year a substantial portion of the cash resources must be devoted to this purpose. It will be noted from the chart of capital expenditures by department for the past ten years, appearing below, that in most years the amount expended on drilling and production has been more than half of the total budget.









The capital needs of departments other than Exploration and Production are influenced generally by the supply and demand situation or technological improvements. Large expenditures for manufacturing facilities — 1941



through 1945 — arose principally because of the greater demand for aviation gasoline and other specialized products by the armed forces during the war. In the postwar period, expenditures were required principally for the realignment and modernization of refinery facilities, and construction of new chemical plants essential to maintain your Company's competitive position in the industry. With the completion of the lubricating oil, wax, glycerine, ethyl alcohol and ethyl chloride plants at Houston in 1948 and 1949, the major portion of your Company's needs for new plant facilities was met."

BALANCE SHEET AT

We own

CURRENT ASSETS	Money in offices and banks		48 million
	U. S. Government Securities		25 million
	Due from customers and affiliated companies		70 million
	Inventories (<i>Crude Oil, Refined Products, Materials and Supplies</i>)		113 million
		Total current assets	
FIXED ASSETS	Drilling and Production		507 million
	Refineries		282 million
	Chemical Plants		68 million
	Marketing and Other		198 million
		Total fixed assets	
	Less depreciation, depletion and amortization		711 million
	Total net fixed assets		344 million
OTHER ASSETS			44 million
	TOTAL ASSETS		644 million

DECEMBER 31, 1949

We owe

CURRENT LIABILITIES

Owed to suppliers and others



74 million

Owed for taxes



35 million

Total current liabilities

109 million

BONDHOLDERS' INVESTMENT

121 million

TOTAL LIABILITIES

230 million

SHAREHOLDERS' INVESTMENT

Capital

216 million

Earnings Employed in the Business

198 million

Total

414 million

TOTAL LIABILITIES AND
SHAREHOLDERS' INVESTMENT

644 million

INCOME STATEMENT

WHAT CAME IN

From customers and others



824 million

WHAT WENT OUT

To suppliers for goods and services



459 million

To more than 30,000 Shell Employees for wages, salaries, and benefits



157 million

Towards replacement of plants, equipment and crude oil underground



78 million

Direct taxes — Federal, State and Local



51 million

To bondholders for interest



3 million

WHAT WAS LEFT

Profits from the year's business



76 million

DIVIDED AS FOLLOWS

Dividends to the more than 17,700 Shareholders who invested their money in the Company



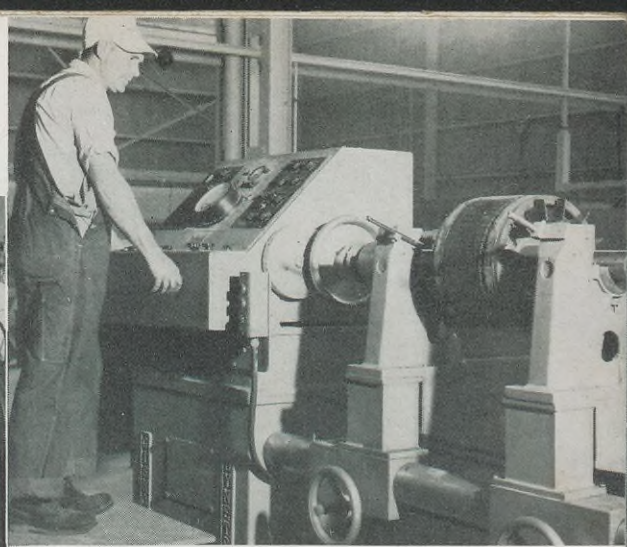
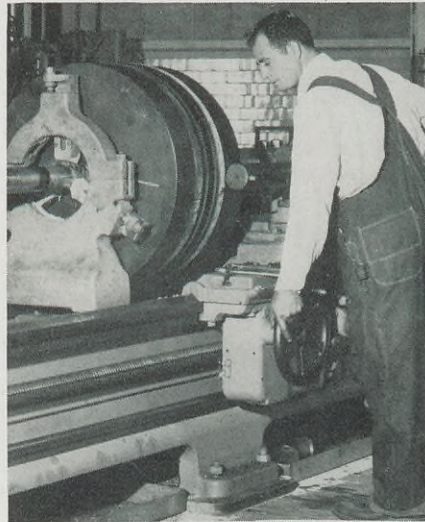
40 million

Retained earnings employed in the business



36 million

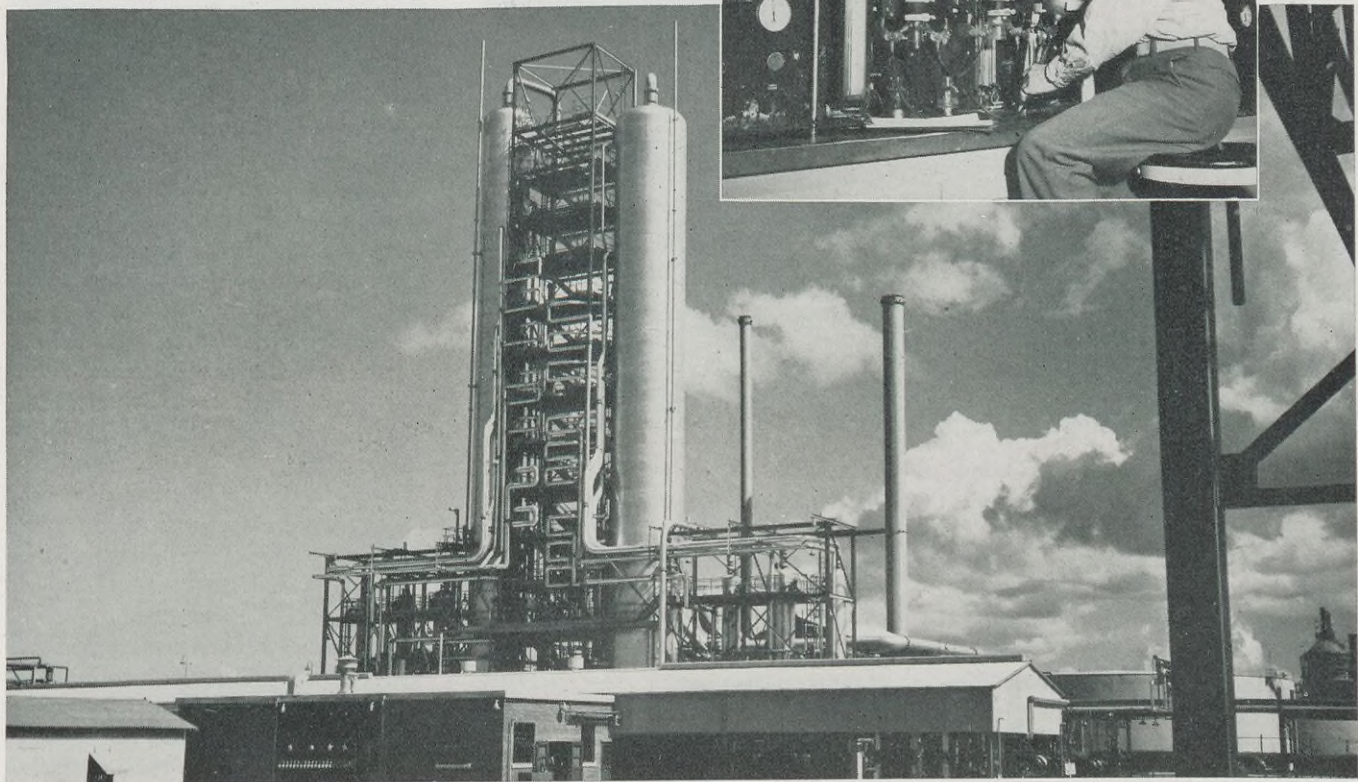
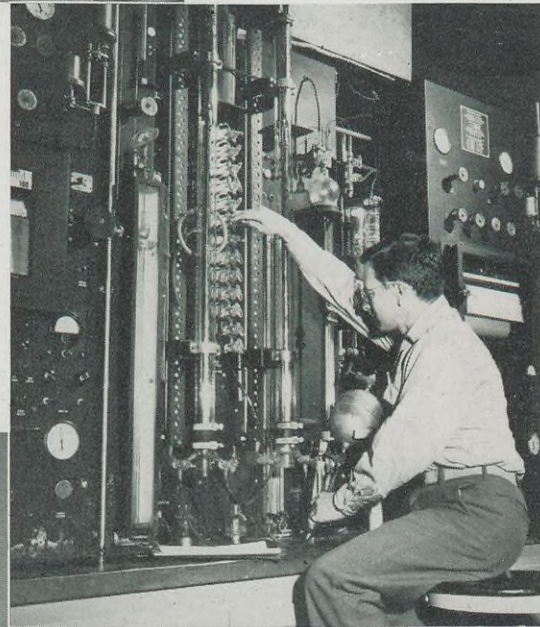
double that refinery's throughput and, through installation of a 10,000-barrel-per-day catalytic cracking unit, will enable the refinery to manufacture gasoline with an octane number competitive with other Canadian refiners. Major new equipment in addition to the cat cracker are a vacuum flashing unit for feed preparation and an absorption and product recovery section to handle catalytic products and thermal cracked gases. Crude distillation, thermal cracking and polymerization units are also being revised and expanded and new boiler capacity has been added. Approximately 750,000 barrels in new tankage are being added to handle

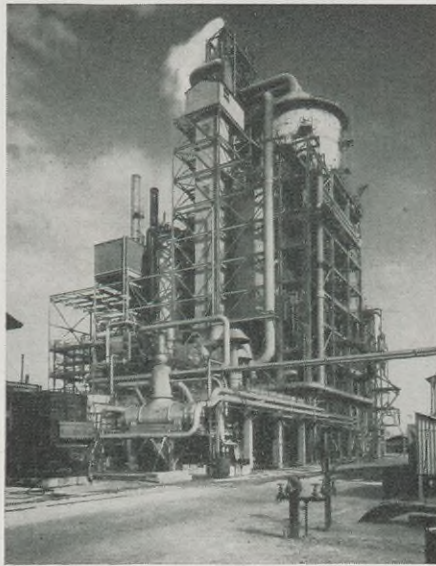


The lathe (left) and machine for testing electric motors (above) are in the big, new maintenance shop completed during 1949 at Houston.

The Podbielniak column in the control laboratory at Houston (right) simulates conditions in a full scale fractionating column. Careful control of quality and refining conditions helps to maintain existing high standards and develop new products.

The new Houston lubricants plant, a portion of which is shown below, serves mid-western and East Coast markets. It is also a source of high viscosity lubricating stocks for the Company's growing operations in this field on the Pacific Coast.

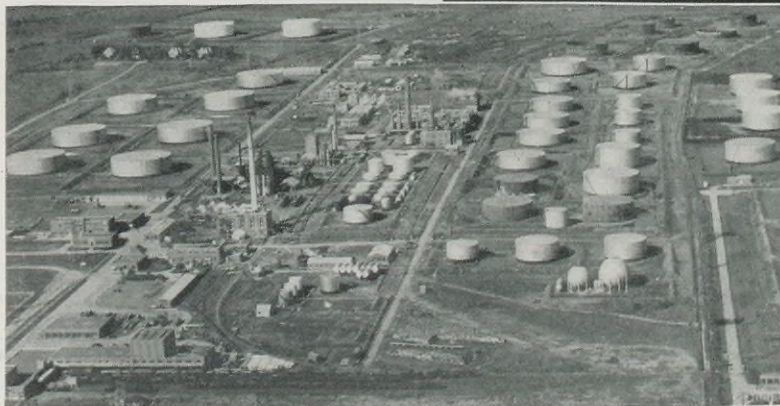




This catalytic cracking unit at Wilmington (left), along with thermal cracking units, was revised during 1949 to improve efficiency and provide greater feed intakes.

Packaged lubricants (at right) are palletized in the Martinez compounding house for delivery to West Coast marketing outlets.

Manufacturing gave technical and advisory assistance in the construction of new facilities at the Montreal Refinery (below).



greater volumes of refined products.

The year was no exception in Shell's continuing product development and improvement. New high quality standards were attained in many major products and several outstanding new products were developed to fit new industrial requirements. They were made possible through extensive product studies in Shell research laboratories, improved

manufacturing techniques, and experimental field application work.

Improvements in motor and aviation gasolines were among important developments in major products. Both Shell and Shell Premium gasolines were improved in octane number and general performance characteristics to support their outstanding public acceptance. Aviation gasolines supplied East of the Rockies were im-

proved by incorporating more high octane components in the base stocks, thus requiring less tetraethyl lead to meet specification levels. This change is expected to increase engine life and reduce maintenance costs in certain critical airline and military aircraft.

A new fuel oil additive, FOA-5X, previously developed by Shell and given large scale field tests in 1948, was incorporated into domestic furnace oil sold to the general public. The additive virtually eliminates clogging of domestic oil burner screens, thus solving a long-standing problem in the furnace manufacturing and fuel oil industries.

In the field of industrial lubricants a steel rolling oil, aluminum rolling oil and rust preventive soluble oil are representative of new products released in 1949. Several others were added to the line of rust preventive and preservative oils and compounds, including a steel pipe preservative, sheet steel preservatives and two types of engine preservative oils. Also new are a lubricant for sintered-metal bearings, a grease for rail car roller bearings, and a special oil for use in the newly developed electrical precipitron, an instrument for removal of dust particles from air. In addition, the U. S. Navy adopted Shell Cassis Fluid and the cleaning procedure developed by Shell for the reactivation of turbines and diesel engines in naval vessels.

As a companion product to the multi-purpose grease, Retinax "A", introduced in 1948, a new lithium-type multi-purpose grease, Alvania, was introduced in 1949 to cover a wide range of industrial applications. In many large plants this product has simplified lubrication by replacing numerous specialized greases previously required.

In the asphalt field Shell pioneered development of a revolutionary pre-fabricated lining for canals. These linings prevent seepage loss in irrigation canals. Manufacturing remained active in 1949 in formulating, improving and producing several major asphalt products, such as roof coating, special emulsions, industrial cements and sealing compounds.



Warm weather cut down fuel oil sales, but Shell increased sales of both Shellane and Premium gasoline in face of competition.



Marketing

THE return of keen price competition in 1949 brought about a transition from the unusual postwar seller's market in our economy to a more normal one favoring the buyer. The backlog of postponed wartime demands had been largely satisfied and many industries were readjusting their operations to meet customary competitive conditions. The petroleum industry was no exception. Active price competition required the application of significant operating economies and the initiation of vigorous selling campaigns.

Gasoline price wars, noticeably absent during the early postwar years, reappeared locally. In such instances, accelerated service station building programs and the presence of adequate gasoline supplies combined to encourage sellers to accept reduced gross unit profit margins in order to increase their sales of products.

During this return to normal competition, Shell's increase in total sales of automotive gasoline for 1949 was greater than the increase for the rest of the industry. This resulted from careful selection and development of reseller outlets, from intensive merchandising activities and from a timely advertising campaign. The latter, featuring Shell Premium Gasoline—"The most powerful gasoline your car can use"—brought about a considerable increase in Shell's share of the market for Premium gasoline.

Unseasonably warm weather during the first and fourth quarters of 1949 had an adverse effect on fuel oil sales for the entire petroleum industry. Meanwhile, the oil burner industry had its second best year in 1949, with sales showing a 25% increase over the preceding year. This improvement in the face of accelerating competition from natural gas in



The advertising campaign to promote "Activated" Shell Premium Gasoline was biggest merchandising activity of the year. The campaign featured cartoons and the slogan: "The Most Powerful Gasoline Your Car Can Use."



the home heating field indicates that there is ample room for expansion in sales of home heating fuels.

A noteworthy contribution to the improvement of domestic heating fuels was made by Shell in the last quarter of 1949, when a new fuel oil containing FOA-5X was introduced. This new additive type product virtually eliminates the clogging of filter screens, the most common cause of oil burner shutdown.

In 1949, due to rapid rehabilitation of the nation's vehicle fleet, the total sales of automotive lub-

ricants changed very little from 1948. Sensing a trend toward lower average automotive lubricants consumption per car, Shell developed a new motor oil—"X-100"—to improve its competitive position. The new product was introduced with an advertising campaign which continued in 1949 and active dealer merchandising programs which substantially improved Shell's ratio of Premium motor oil to total motor oil sales.

Shellane sales increased in response to continued growth in the markets for bottled gas, although there was

a shortage of cylinders during most of the year. Bulk propane sales also increased substantially. Shell began to market high purity wax for milk cartons, bread wrappers, candles, cosmetics and many other products. Other new products, particularly industrial lubricants, were also introduced.

During the year a number of major projects were undertaken to increase the effectiveness of the marketing organization, with special emphasis on the reduction of distribution costs. Increased field authority was delegated to the seventeen Division Managers. At District levels within Divisions, local territories were re-aligned and consolidated to form larger and more effective operating units.

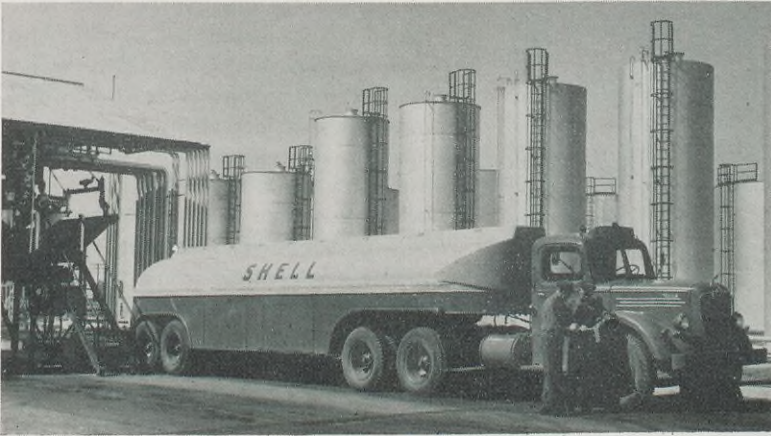
Continued studies were made of Divisions for the purpose of re-aligning duties and responsibilities of each Division Office and field organization to assure maximum productive effort. In the Cleveland Division a special committee completed a study of distribution costs of depot and delivery operations. Methods and procedures developed from this survey relative to handling and delivery expenses of all products are now being used in similar investigations at pilot plants in other Divisions.

The practice of conducting specialized training schools for marketing personnel was continued in 1949. Real Estate and Marketing Operations Schools were again held in Asbury Park, N. J., as well as on the West Coast, and the program of Division Sales Conferences was repeated.

The postwar construction program was continued in 1949, closely allied with marketing plans for increasing sales volumes. The new Milwaukee, Wisconsin, terminal was formally opened in June. At Tacoma, Washington, a new terminal was completed in November—another important step in the Company's Pacific Coast expansion program. Also added were new depot facilities at Dayton, Ohio, and New Orleans, Louisiana, and work was completed on the reconstruction of the bulk depot at Bettendorf, Iowa. Important modernizations and improvements of existing



Productivity in distribution, such as drumming operations at Sewaren (left), was investigated during the year in a move to reduce unit costs and improve efficiency and rapidity of operating techniques at all facilities.



Operating economies were effected during the year through surveys at depots (like the one above) and by consolidation of all marketing territories under one management. Below is a scene from the Hawaiian Division, included in the change.

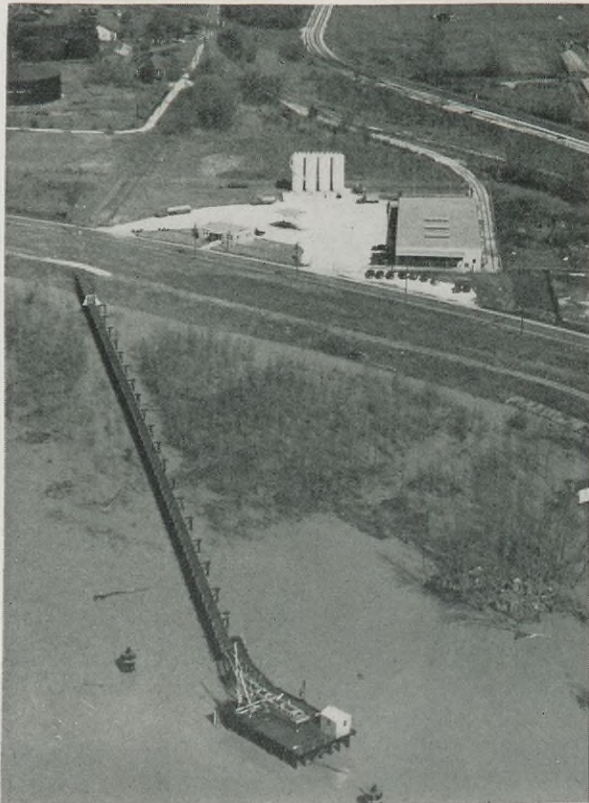
Canning of Shell X-100 Motor Oil started at Willbridge Terminal at Portland, Ore., in 1949 (right and below). The terminal was one of several Marketing distribution facilities modernized last year as sales continued to climb.





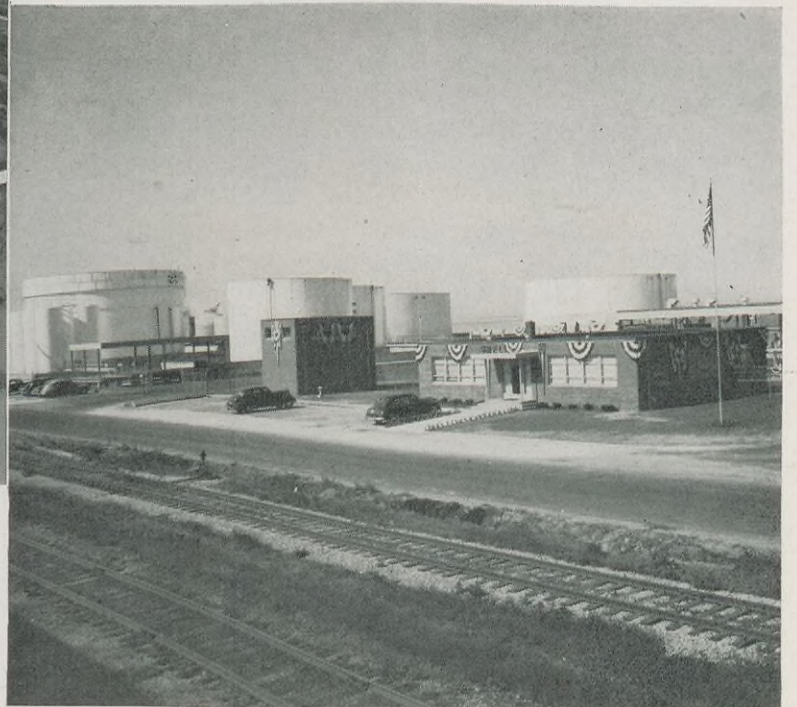
facilities were completed at Harbor Island, Washington; Willbridge (Portland), Ore.; San Francisco and San Diego, Calif.; Newtown Creek and Mt. Vernon, N. Y., and Sewaren, New Jersey.

Near the end of the year, the first in a series of long-range sales programs called "Marketing Five-Year Plans" was initiated. The initial program was confined to long-range projections of automotive gasoline sales but it is anticipated that similar plans will be developed for other major products to provide a series of working sales objectives and a flexible guide to operations in every local area in which the Company markets. This is another step in the process of insuring that Shell's marketing activities will be adequately prepared to meet the challenge of increasing competition at all levels of distribution.



Shell's new bayside aviation terminal at San Francisco's International Airport (above) was completed in May. It, like other terminals and depots recently constructed or expanded, was designed for cutting distribution costs.

Expanded facilities were completed at New Orleans (left); Bettendorf, Ia.; Dayton, O.; San Diego and San Francisco, Calif.; Harbor Island and Tacoma, Wash.; Portland, Ore.; Milwaukee, Wisc. (below); Newtown Creek and Mt. Vernon, N. Y.; Sewaren, N. J.



The new marine terminal at Milwaukee (right), Marketing's biggest postwar construction project, opened in June.

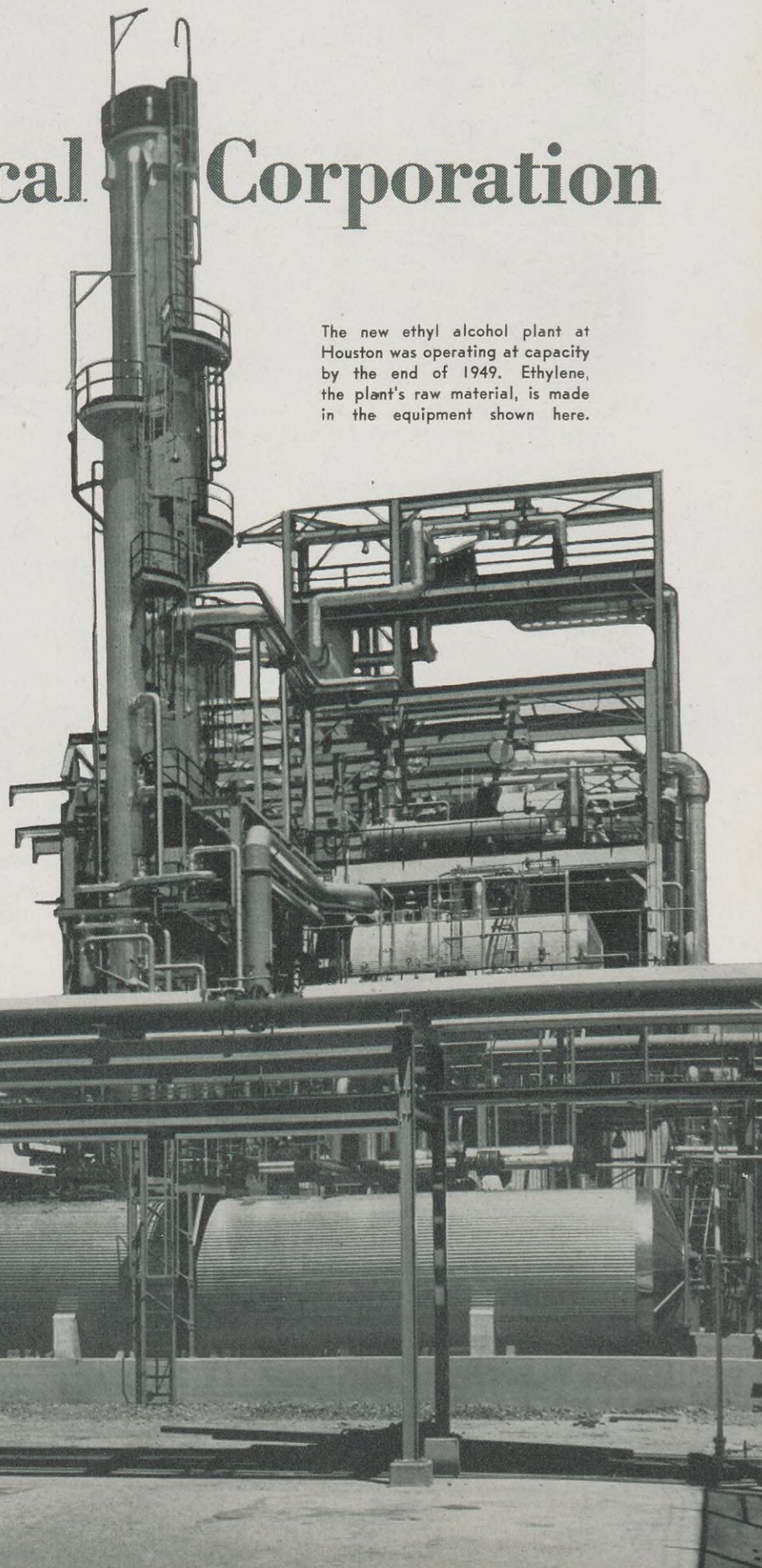
Shell Chemical Corporation

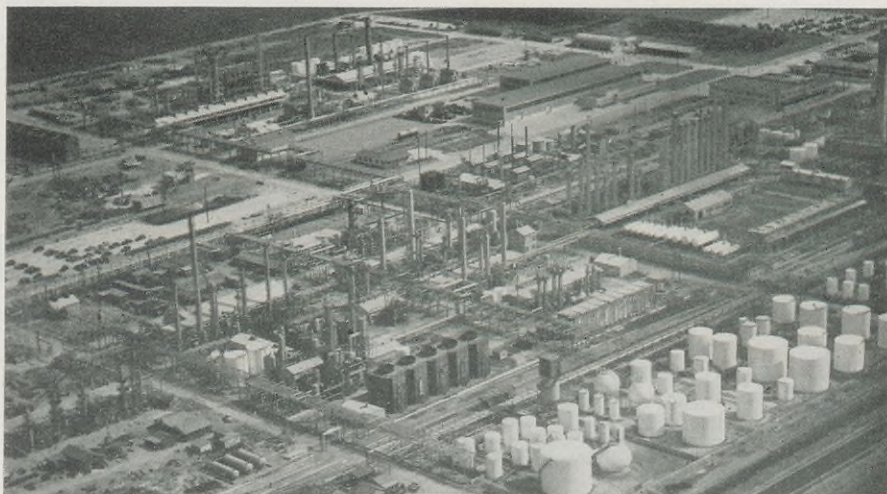
FOR Shell Chemical Corporation, 1949 was a year of stabilization and adjustment. Manufacturing, with its multi-million-dollar plant expansion completed the year before, settled down to a steady stride in its new facilities and set the pace of expanded production. At the same time, technical service activities accelerated and distribution was expanded and improved. In all, these operational improvements put the Company in a better position to handle the general 1949 trend into a buyers' market.

In the plant and production phases of the Company's operations, the glycerine and ethyl alcohol plants at Houston completed their first year of commercial operation. In both plants production climbed steadily and capacity operation was attained. Manufacturing facilities for anhydrous ammonia and ammonium sulphate were increased at Shell Point and maximum production of these products continued most of the year. The increased demand for ammonia was in part due to a broadening of the market by introducing this nitrogen fertilizer to the Pacific Northwest.

In line with the rapid expansion of Shell

The new ethyl alcohol plant at Houston was operating at capacity by the end of 1949. Ethylene, the plant's raw material, is made in the equipment shown here.





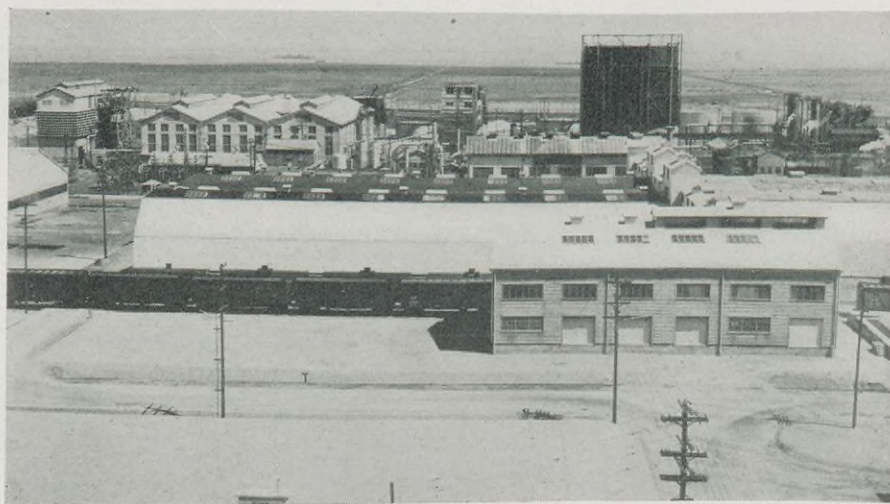
At the Houston Chemical Plant, pictured above, the new synthetic glycerine and ethyl alcohol plants completed their first year of operation as Shell manufacturing units.



Ammonium sulphate fertilizer (shown above), long a basic agricultural product, is being sacked at the Shell Point Plant.



Improved bulk handling reduced unit costs of product distribution. Here, a tanker takes aboard bulk chemicals at Houston.



Production of anhydrous ammonia and ammonium sulphate at Shell Point (above) increased as nitrogen fertilizers were put on the Pacific Northwest markets.

Chemical during the past few years, a major organizational change was effected in 1949 with the transfer of marketing of agricultural products from Shell Oil to Shell Chemical. Among the chief objectives of the transition were improved customer service and greater specialization. By eliminating parallel marketing effort, a more comprehensive sales program was made possible.

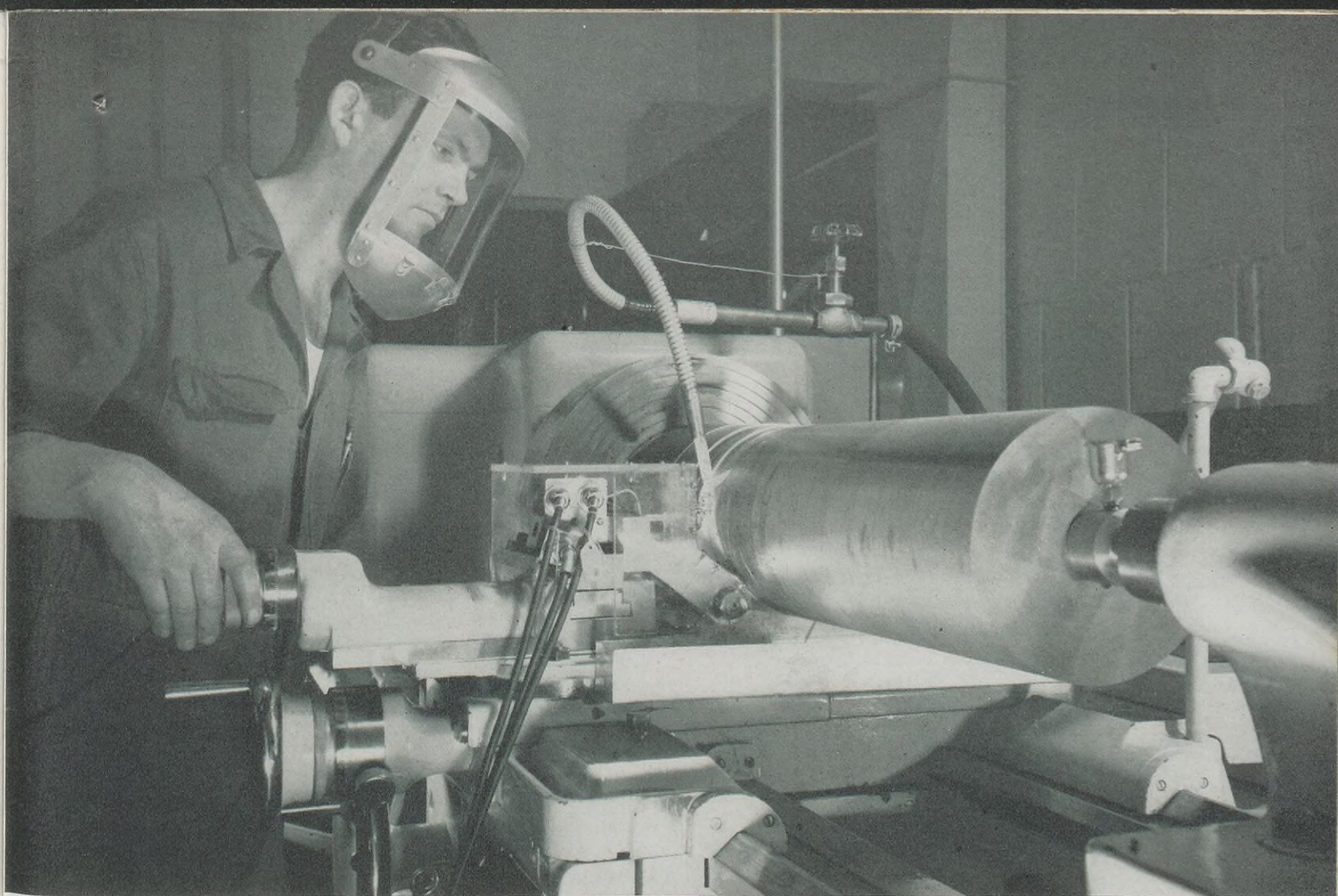
At the same time Shell Chemical created separate product distribution departments for its Eastern and Western Divisions. More warehouses, improved bulk handling and increased facilities for truck shipments were among the 1949 manifestations of this realignment. Its aim is to reduce the unit cost of distributing Shell Chemical products.

At Chicago construction began in the latter part of the year on the first Shell Chemical barge terminal. Other improvements of the year included packaging streamlining, lowered freight costs and better services for affiliates and customers.

New Laboratory Opened

While research on product and process improvement was continued at Martinez, California, the technical service activities at this location were transferred to a new laboratory at Union, New Jersey, to augment increased marketing efforts in the Eastern states. The new Technical Service Laboratory building at Union is equipped with extensive modern facilities for examination and evaluation of petroleum-derived chemicals in their many industrial uses. Special emphasis, however, is being placed on the surface coating applications of these chemicals, particularly as they apply to use in lacquers and synthetic enamels. Other fields of work will include research in brake fluids and antifreezes. Investigations will also be conducted on customer problems involving use of the Company's products.

Further research in product and process improvement and in the profitable utilization of plant by-products is now being carried out by a new research group organized at Shell Chemical's Houston Plant.



Shell Development Company

IN the war years, and those immediately following, a large number of new products were developed in both the petroleum and chemical fields. The processes and plants for making them were greatly expanded and improved. These developments drew heavily on accumulated basic knowledge, while the increased demands of the times upon the laboratories left insufficient opportunity for broadening research in fundamentals and for devising new research tools. Accordingly, in 1949, Shell Development Company placed emphasis on rebuilding its fund of basic information and laying the groundwork for an intensified attack on crucial problems of the oil industry. At the same time, Development people worked

with the technical staffs of Shell operating companies to improve processes and products in their several recently completed plants.

One major problem which received fundamental study is the growing accumulation of residual oil stocks, a result of decreased offtakes of heavy fuel oils coupled with increased demands for gasoline, diesel and other light fuels. A main approach to the problem was to learn more about the chemical nature of heavy oils and its

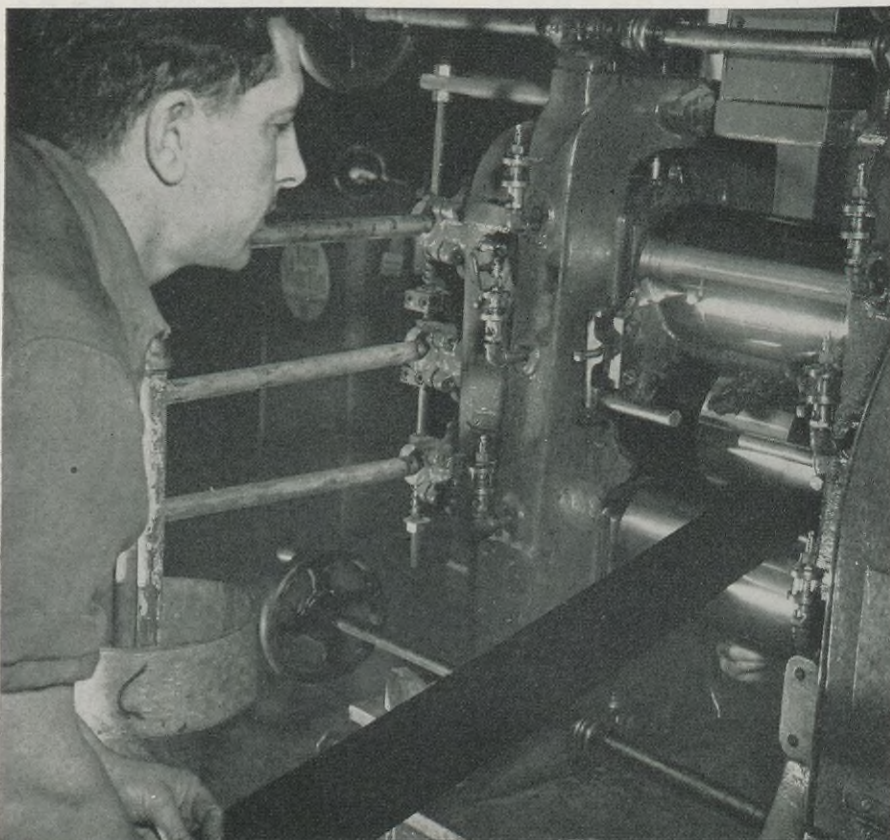
Equipped with delicate gauges for studying the action of cutting oils, the lathe shown at the top of the page typifies the specialized equipment used in the research work at Shell's Emeryville Laboratories.

bearing on their conversion into light oils by catalytic cracking and other processes. Because the molecules in heavy oils are so complex, it is almost impossible to learn much about them by the older tools of research and the most modern physical and chemical techniques have been called upon. These include molecular distillation, selective adsorption on solids, various kinds of spectroscopy, extractive crystallization and others. Experience gained in earlier fundamental research on the nature of asphalt aided these studies.

Among commercial developments that have resulted in 1949 from research were substantial economies in refinery operations through more efficient arrangement of feedstocks



The machine above kneads pigment, filler and plastic base together in the preparation of diallyl phthalate molding powder. Below, the press reveals characteristics of a rubber blend in the development of Dutrex plasticizers.



and processing conditions. These savings were made possible by Emeryville Laboratory studies of the behavior of typical hydrocarbons in catalytic cracking, and the development at Houston of analytical techniques that revealed more clearly the composition of various refinery streams and enabled the Emeryville research results to be translated in terms of performance. Successful investigations were also made for improving the efficiency of new Shell Chemical plants.

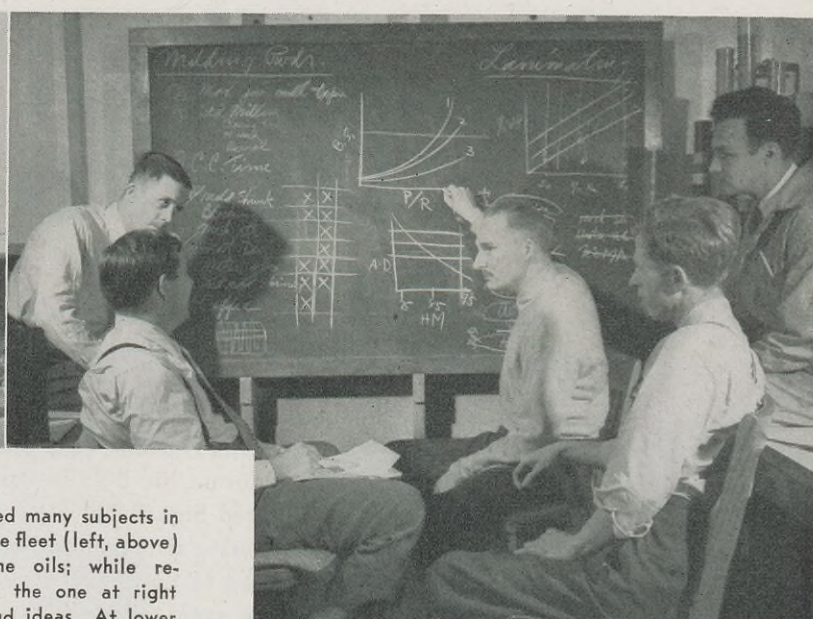
Applications Explored

New fields of application of the Dutrex compounds which improve flexibility and softness in rubber and flexible plastic products were explored. Thus Dutrex 6 was shown to be valuable in the new "cold" synthetic rubber for tire treads. Full scale demonstrations of the superior properties of diallyl phthalate, a petroleum-derived chemical, have been made on commercial processing machinery installed in the Emeryville plastics application laboratory. These have given strong encouragement to manufacturers considering the use of diallyl phthalate in plastic laminates, overlays and molding powders. Shell Development's detergent research came forth with a material which is considered excellent by some of the largest manufacturers of household detergents. Commercial production of the material is being undertaken.

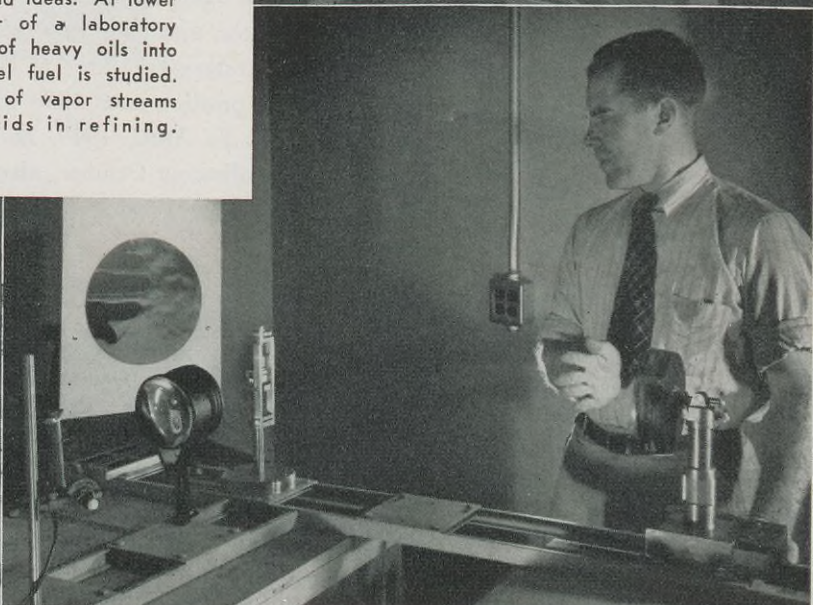
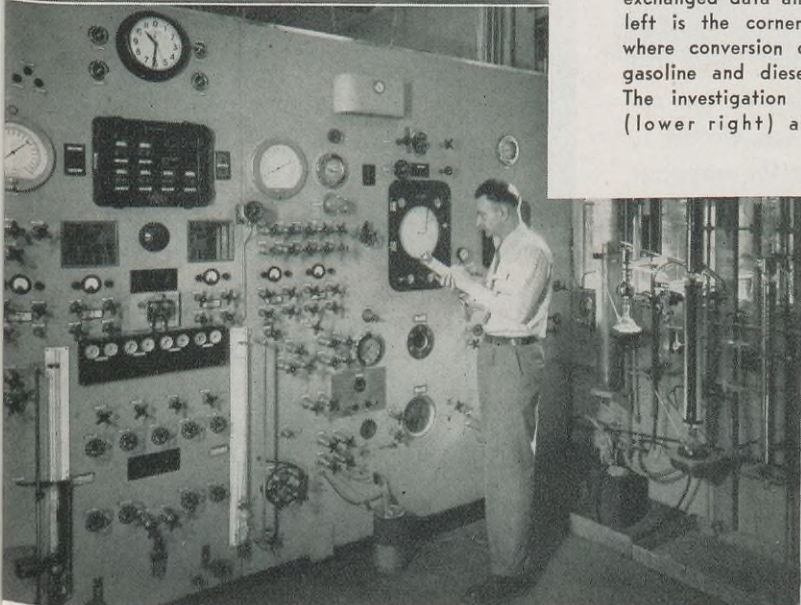
Promising new developments approaching the commercial production stage include a new soil fungicide-fumigant, developed cooperatively by Emeryville and the Shell Agricultural Laboratory at Modesto. Extensive field trials are being made, following promising preliminary results.

Investigation of the behavior of engine and industrial lubricants continued in 1949. For example, cutting oils were being studied in a new laboratory unit. Automotive fuels were examined with the aid of an automatic electronic dynamometer that can imitate in the laboratory the loads imposed by stop-and-go or any other type of driving.

The Engineering Department, a



Development probed many subjects in 1949. An automotive fleet (left, above) field tested engine oils; while research groups like the one at right exchanged data and ideas. At lower left is the corner of a laboratory where conversion of heavy oils into gasoline and diesel fuel is studied. The investigation of vapor streams (lower right) aids in refining.



primary function of which is the study and measurement of fundamental physical phenomena, broadened its operations to include exploratory work which was not possible in recent years. To speed replenishment of the Department's fund of knowledge, three interrelated groups were set up, called Unit Principles, Unit Processes and Unit Operations. In 1949 these groups made available to Shell a distilling tray based on new concepts, several mechanical liquid extraction systems, a radically designed furnace, and a new design for a cyclone separator, a device for removing suspended dust from gas streams.

The Applied Engineering Laboratory conducted performance tests of new commercial process controllers and developed specialized instrument techniques. Mechanical engineering studies by this group were also directed toward obtaining basic data on furnaces, burners and problems of vibration and pulsation in compressors and pipelines.

Typical of new developments in the field of instrument design were automatic devices to measure and record the viscosity of a flowing oil stream and the colors of lubricating oil and light distillate streams. The instruments have proved valuable in maintaining close operating con-

trol in certain of the refinery units.

The scientific knowledge, experience and facilities available in the various laboratories have also made it possible for Shell Development to undertake several research projects under Government contract in the field of national defense. Just as this scientific know-how brought Shell Development national recognition in 1948 in the form of the Chemical Engineering Award, further recognition, this time for individual achievement, was given a Shell Development chemical engineer in 1949 when Dr. Mott Souders received the Professional Progress Award of the American Institute of Chemical Engineers.

They Have Retired

S. W. DUHIG, Vice President and Director of Shell Oil Company, retired April 1, 1950, after more than 44 years of accredited service with the Company. Mr. Duhig began his career in the oil industry in 1905 as a Clerk with Balfour, Guthrie and Company in San Francisco, who were then managers of California Oilfields, Ltd. After extensive experience in the oil fields of California, in 1921 he opened the Company's office at the newly discovered Signal Hill Field in the Los Angeles Basin. In 1923, the year following the organization of Shell Union Oil Corporation, he was transferred to Los Angeles as coordinator of Treasury Department work. He was again transferred in 1928, this time to San Francisco as General Auditor, and two years later he moved to New York in the position of Secretary-Treasurer of Shell Union Oil Corporation. He remained in this position until 1938 when he was appointed Vice President-Treasurer. In April, 1949, he was elected to the Board of Directors, and the following October, after the corporate reorganization, he continued as Vice President of the consolidated company.



FRANK BAKER
St. Louis Division
Operations



T. A. BARKER
Houston Refinery
Cracking



C. J. CAVALLITO
Sewaren Plant
Compounding



OLE EID
Sacramento Division
Operations



ADDALIN GARY
New Orleans Area
Production



W. S. HASSENMILLER
Shell Chemical Corp.
Head Office



F. A. HURST
Tulsa Area
Production



J. L. MADDEN
Sewaren Plant
Depot



MORRIS PETERSEN
Tulsa Area
Production



W. J. RHYMES
Houston Refinery
Treating



J. S. SANDERS
Los Angeles Basin Div.
Production



E. M. SCRIBNER
Head Office
Administration



Service Birthdays



Thirty-Five Years



L. M. DURHAM
Los Angeles Basin Division
Production

Thirty Years



J. COTTON
Norco Refinery
Personnel & Ind. Relations

Thirty Years



H. R. DECKER
Martinez Refinery
Distilling

Thirty Years



H. E. HARVICK
Wood River Refinery
Engineering



H. HOCKINGHOMER
Wood River Refinery
Engineering



E. J. LORIO
Norco Refinery
Engineering



D. T. MATHERS
San Francisco Division
Operations



J. L. MILLER
Houston Refinery
Administration



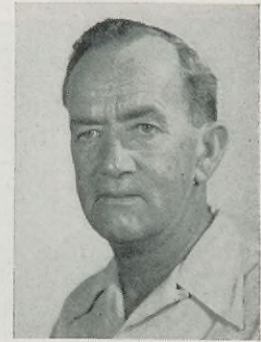
A. P. RUETHER
Head Office
Transp. & Supplies



J. M. TROXLER
Norco Refinery
Engineering



O. J. TROXLER
Norco Refinery
Engineering



L. N. WRIGHT
Los Angeles Basin Div.
Production

Twenty-Five Years



W. B. ANDREWS
Tulsa Area
Production



C. W. ARNOLD
Chicago Division
Operations



I. L. BIGLER
San Francisco Office
Treasury



C. S. BLANKENSHIP
Wood River Refinery
Engineering



J. C. BLOEMEKE
Wood River Refinery
Compounding



O. F. BREGGER
Wood River Refinery
Compounding



F. S. BUCK
Seattle Division
Treasury



J. R. CAMERON
Los Angeles Office
Production



A. A. CATES
Houston Area
Production



E. H. CHANNELL
Los Angeles Office
Production



M. R. CHURCH
Houston Regional Office
Production



O. R. COX
Wood River Refinery
Engineering



C. R. DAVIS
Head Office
Marketing



G. S. DEALY
Coastal Division
Production



L. A. DODSON
Wood River Refinery
Lubricating Oils



G. H. DUNN
San Francisco Div.
Operations



M. N. ESPERANZA
San Francisco Div.
Operations



S. R. GASKILL
San Francisco Office
Marketing



H. B. GRIST
Tulsa Area
Production



H. L. HARRISON
Portland Division
Operations



G. HOLFORD
Wood River Refinery
Engineering



F. M. JONES
Tulsa Area
Production



C. A. JORDAN
Indianapolis Div.
Sales



J. A. LaBARGE
Tulsa Area
Pers. & Ind. Relations



O. C. LACKEY
Tulsa Area
Production



G. W. LANGSTON
Wilmington Refinery
Engineering



G. W. LEHR
Wilmington Ref'y
Marine Loading



W. A. LEONHARDT
San Francisco Office
Marketing



R. L. LUCAS
Houston Ref'y
Treasury



D. E. MAHONEY
San Francisco Div.
Sales



K. McFARLAND
Wood River Ref'y
Lubricating Oils



C. W. MYERS
Wood River Ref'y
Stores



J. I. NICHOL
San Francisco Office
Marketing



L. A. OSBURN
Wilmington Ref'y
Engineering



J. J. PHILLIPS
Wood River Ref'y
Dispatching



R. E. POND
Sacramento Div.
Operations



B. L. TANNER
Wood River Ref'y
Lubricating Oils



A. R. TAYLOR
Wood River Ref'y
Lubricating Oils



G. H. THOMPSON
Tulsa Area
Gas



J. B. THOMPSON
Shell Pipe Line Corp.
Head Office



T. C. VIETH
St. Louis Division
Operations



J. F. WEBBER
Wood River Ref'y
Engineering



V. P. WHITE
Tulsa Area
Production



C. M. WILSON
Houston Ref'y
Engineering



A. T. WINGFIELD
Los Angeles Div.
Marketing Service



H. V. WOLFE
Wood River Ref'y
Dispatching



B. L. WOLVERTON
Wood River Ref'y
Engineering

SHELL OIL COMPANY

Head Office

20 Years

Catherine F. Holten.....*Treasury*
Irene L. McCormack.....*Legal*
J. B. Peistrup.....*Treasury*

15 Years

S. V. Lewis.....*Marketing*
Ella M. Soeller.....*Transp. & Supplies*

10 Years

J. A. Mawhinney, Jr.....*Personnel*

San Francisco Office

20 Years

G. Blair.....*Treasury*
R. T. McEnery.....*Treasury*
C. E. Wilson.....*Treasury*

15 Years

I. E. Cafarelli.....*Marketing*

Exploration and Production

HOUSTON REGIONAL OFFICE

20 Years

T. R. Grieve.....*Administration*

HOUSTON AREA

20 Years

E. A. Avant.....*Production*

15 Years

H. C. McCorkle.....*Production*
J. H. Written.....*Exploration*

10 Years

G. E. Crist.....*Treasury*
Mary Patten.....*Personnel & Ind. Relations*

MIDLAND AREA

20 Years

S. M. Sisley.....*Gas*

NEW ORLEANS AREA

20 Years

C. J. Ward.....*Production*

15 Years

W. S. Fruge.....*Production*
P. J. Gauthreaux.....*Production*
J. A. Moore.....*Land*

10 Years

E. D. Hall.....*Administration*
E. Harrison.....*Production*
O. J. Landry.....*Production*
H. J. LeBlanc.....*Production*
G. J. Oufnac.....*Production*

TULSA AREA

20 Years

U. H. Capron.....*Exploration*
P. T. Tullis.....*Production*

15 Years

L. W. Elderkin.....*Production*

A. L. Snyder.....Production
M. C. Woodson.....Production

10 Years

L. F. Irwin.....Production

COASTAL DIVISION

20 Years

B. D. Ferguson.....Production
V. W. Finch.....Exploration

15 Years

E. W. Downie.....Production
D. K. Weed.....Production

LOS ANGELES BASIN DIVISION

15 Years

F. E. Anderson.....Exploration
R. Beer.....Production

ROCKY MOUNTAIN DIVISION

15 Years

T. R. Barnes.....Exploration

SAN JOAQUIN DIVISION

15 Years

T. J. Ahlf.....Production
W. O. McKelvy.....Production
W. J. Murphy.....Production

EXPLORATION & PRODUCTION RESEARCH

15 Years

F. K. Kazetsky.....Physical

Manufacturing

HOUSTON REFINERY

20 Years

T. T. McClellan.....Treating
J. L. Mustin.....Distilling
C. F. Spraggins.....Control Laboratory
J. E. Watts.....Gas

15 Years

M. O. Baker.....Research Laboratory
T. B. Harris.....Lubricating Oils
O. O. Hawkins.....Engineering

10 Years

A. L. Baker.....Automotive
L. R. Grounds, Jr.....Gas

MARTINEZ REFINERY

15 Years

A. B. Ricci.....Engineering

NORCO REFINERY

10 Years

L. J. Cambre.....Personnel & Ind. Relations

WILMINGTON REFINERY

15 Years

C. J. Manson.....Engineering
E. W. Owen.....Dispatching
S. B. Thomas.....Technological

WOOD RIVER REFINERY

20 Years

W. A. Compton.....Engineering
W. E. Davis.....Compounding

G. L. Grant.....Engineering
H. A. Heigert.....Utilities
L. A. Lohman.....Administration
E. F. McNely.....Lubricating Oils
W. A. Nichols.....Gas
L. C. Schmidt.....Engineering
M. U. Young.....Gas

15 Years

J. R. Foote.....Control Laboratory
H. A. Jansen.....Engineering
C. K. Johnson.....Engineering
A. P. Lasserre.....Engineering
W. M. Schumacher.....Gas
J. M. Sheraka.....Experimental Laboratory
G. M. Stuck.....Control Laboratory

10 Years

E. J. Arth.....Engineering
M. T. Baker.....Engineering
C. L. Bartels.....Engineering
F. C. Been.....Dispatching
J. R. Britton.....Engineering
C. J. Bryan.....Engineering
M. M. Emery.....Gas
G. C. Haynes.....Engineering
C. M. Immer.....Engineering
R. R. Lakin.....Lubricating Oils
L. R. LaRose.....Engineering
H. F. Laycock.....Dispatching
H. H. Lemmon.....Control Laboratory
W. A. Light.....Engineering
W. J. More.....Treating
R. C. Niepert.....Gas
E. J. Riva.....Engineering
R. R. Shaffer.....Treating
C. R. Shearburn.....Engineering
M. G. Slocumb.....Control Laboratory
R. C. Spitze.....Engineering

Marketing Divisions

20 Years

H. E. Martinet.....Albany, Sales
T. L. Bettis.....Atlanta, Operations
W. B. Faucette.....Baltimore, Operations
J. F. Halligan.....Boston, Sales
J. J. Manning.....Boston, Operations
J. F. Woods.....Boston, Operations
F. C. Cody.....Chicago, Operations
H. L. Cummins.....Cleveland, Operations
C. L. DeLassus.....Cleveland, Treasury
R. L. DeSpain.....Cleveland, Operations
H. E. Greenfield.....Cleveland, Operations
R. A. Matson.....Cleveland, Sales
C. S. McKenney.....Cleveland, Operations
S. S. Rigby.....Cleveland, Operations
S. J. Zimmerman.....Detroit, Sales
R. W. Halouska.....Honolulu, Operations
D. C. Stewart.....Los Angeles, Operations
E. J. Holst.....Minneapolis, Operations
R. L. Tobias.....Minneapolis, Operations
T. J. Flaherty.....New York, Operations
J. J. O'Keefe.....New York, Operations
G. H. Stemmler.....New York, Operations
Gertrude E. Goke.....Portland, Treasury
A. W. Carroll.....St. Louis, Sales
L. P. Kraft.....St. Louis, Sales
C. W. Kuhlman.....St. Louis, Sales
C. R. Nelsen.....Seattle, Sales
L. S. Taylor.....Seattle, Operations

15 Years

E. E. Fitch.....Albany, Operations
R. W. Sykes.....Baltimore, Operations
J. Davidge.....Boston, Sales
J. K. Reynolds.....Boston, Operations
T. F. Glombeck.....Chicago, Operations
Ann Grodsky.....Chicago, Treasury
C. Klima.....Cleveland, Marketing Service

P. P. Schafer.....Detroit, Operations
R. S. Pope.....Los Angeles, Sales
G. O. Williams, Jr., Los Angeles, Operations
O. L. Korte.....Minneapolis, Sales
T. C. Sarchet.....Portland, Operations
C. A. Loker.....Sacramento, Operations
E. W. Eldredge.....Seattle, Sales

10 Years

C. F. Gregory.....Boston, Operations
E. C. Andresen.....Chicago, Sales
G. H. Schonfeld.....Detroit, Operations
R. A. High.....Los Angeles, Operations
E. O. Schuster.....Los Angeles, Sales
G. E. Crites.....Minneapolis, Operations
C. E. Brown.....New York, Sales
J. H. Eldridge.....Portland, Operations
H. P. Robinson.....Portland, Operations
Ruth K. Mulchay, San Francisco, Market. Serv.
E. Hildahl.....Seattle, Operations

Products Pipe Line

20 Years

W. E. Austin.....Terre Haute, Ind.

Sewaren Plant

10 Years

W. P. Cleary.....Compounding
D. P. Miller.....Terminal

SHELL CHEMICAL CORPORATION

15 Years

R. F. Hefley.....Houston
F. A. Horsley.....Martinez
W. B. McCord.....Houston
M. W. J. Oudegeest.....Eastern Division
D. Shelton.....Houston
B. R. Valls.....Houston
C. G. Hollingsworth.....Houston

10 Years

F. H. Dixon.....Martinez
K. W. Harvey.....Shell Point
A. E. Peterson.....Shell Point

SHELL DEVELOPMENT COMPANY

20 Years

L. H. Whittaker.....Emeryville

15 Years

D. A. Scott.....Emeryville

10 Years

A. M. Droke.....Emeryville

SHELL PIPE LINE CORPORATION

20 Years

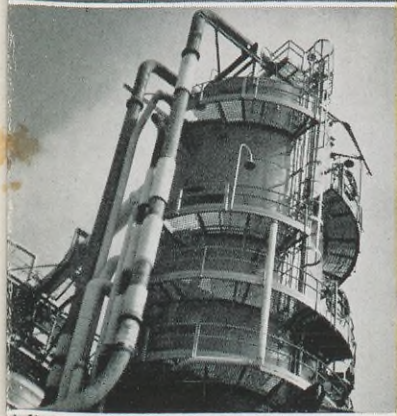
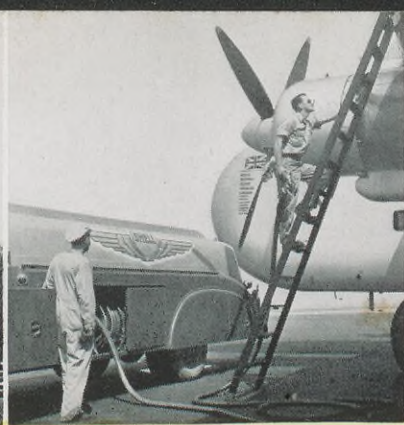
D. F. Cooledge.....West Texas Area
C. W. Kluge.....Mid-Continent Area
M. R. McKey.....Mid-Continent Area
L. Terhune.....Mid-Continent Area

15 Years

R. J. Clontz.....Texas-Gulf Area
J. A. Gunn.....West Texas Area
R. P. Harvey.....West Texas Area
R. B. Hext.....Texas-Gulf Area
H. E. White.....Mid-Continent Area

10 Years

J. L. Whitaker.....Texas-Gulf Area



matters of *Fact*

Concluding paragraph from
the Shell Annual Report to shareholders:

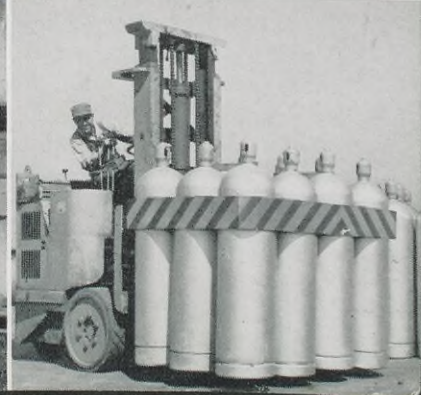
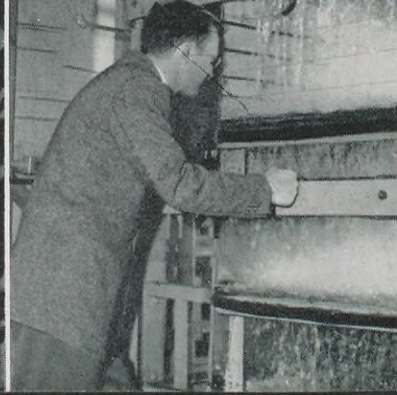
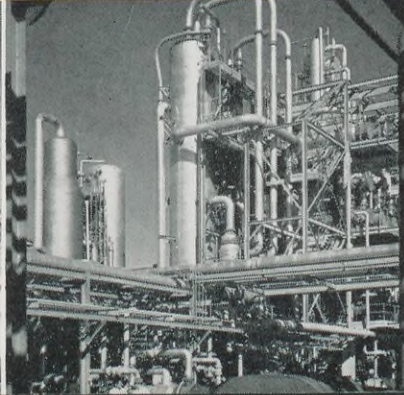
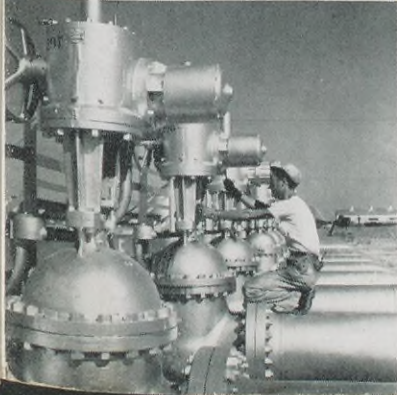
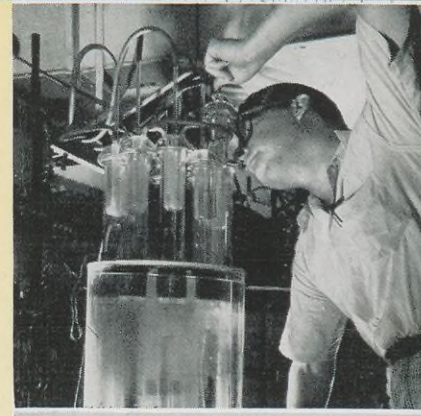
"The year 1949 saw considerable readjustment in the economic picture and a resurgence of the strong competitive spirit which has always characterized the oil industry. These conditions and developments were met successfully through the concerted efforts of the whole organization, for which your Directors again take pleasure in expressing their great appreciation."

For the Board of Directors

GEORGE LEGH-JONES
Chairman

ALEXANDER FRASER
Chairman, Executive Committee

H. S. M. BURNS
President





"Activated" Shell Premium is the most powerful gasoline your car can use!

During 1949 sales of Shell Premium gasoline topped all previous records.

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Olympia, Wash.

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