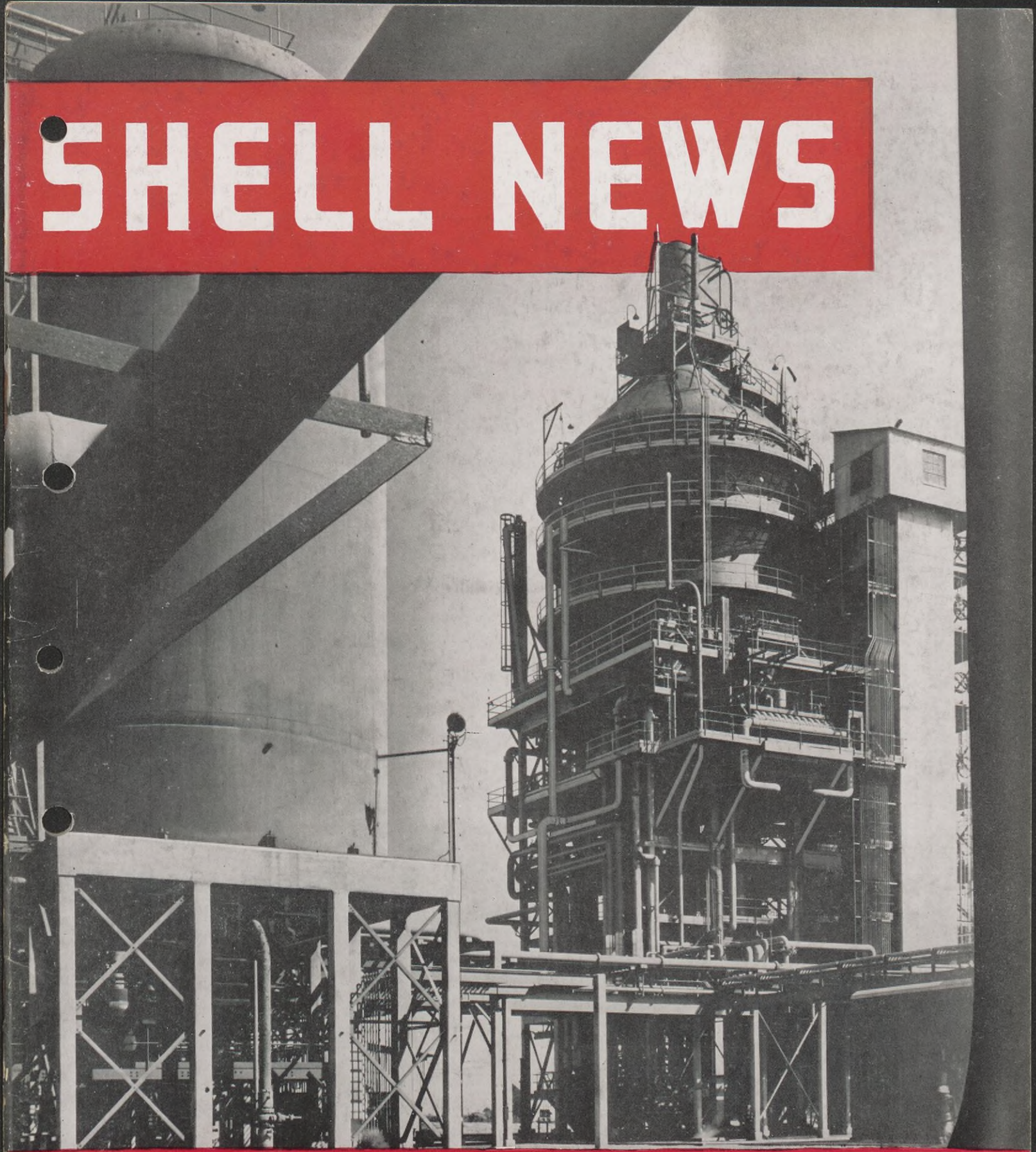
SHELL NEWS



NOVEMBER · 1946

THANKSGIVING

TO a great many of us, Thanksgiving means a day off from work, a feast, especially a family feast on turkey, cranberry sauce, pumpkin pie, and other dishes familiar to the holiday and, perhaps a football game.

The first Thanksgiving, however, was a day set aside for giving a deeply felt and genuine thanks for very moderate blessings. The Pilgrims who celebrated it on the shores of Massachusetts Bay had faced a rigorous first winter in a wild, new land to which a love of freedom had driven them. During that first winter, they had lost nearly half their number in death. But they endured until spring; planted their seeds; cultivated their crops; and, before another winter set in, reaped a harvest ample for their immediate needs. In simple piety, they felt grateful to God; and to show their gratitude they prepared a community feast and invited the friendly Narragansett Indians to attend and share their bounty.

Today, on the second Thanksgiving after the tragedy of a world war, we might look to the Pilgrims for a good example. For one brief day, we might forget the storms and stresses of the immediate past, and perhaps forget any forebodings of the future, and feel grateful for what we now have.

We can be grateful that the war so recently concluded was won by the armies which fought for human freedom, for the dignity and worth of the individual.

We can be grateful that most of the youth who fought that war are now safely home and able to resume their peaceful occupations.

We can be grateful that the Bill of Rights still remains our common heritage, protecting the freedoms which are worth more than life itself.

We can be grateful for the freedom of our agriculture, industry, and commerce which permits us to produce and create material riches unknown to other parts of the world.

We can be grateful for the opportunity to share those riches with other peoples who exist in despair among the rubble and ruin of an ended war.

We can be grateful that an international organization is now functioning and striving to perpetuate the peace. We can be grateful that after the Second World War, Americans are united on the need for such an organization.

We can be grateful for having our families; for being able to afford them advantages and material things which make for a standard of living without parallel in the world; and for the many developments of science and technology which have added to the protection and comfort of our individual lives.

Once we start looking for things to be grateful for, we find that in this free country the list is long.

SHELL NEWS

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

NOVEMBER • 1946

PAUL CASSIDY, *EDITOR*

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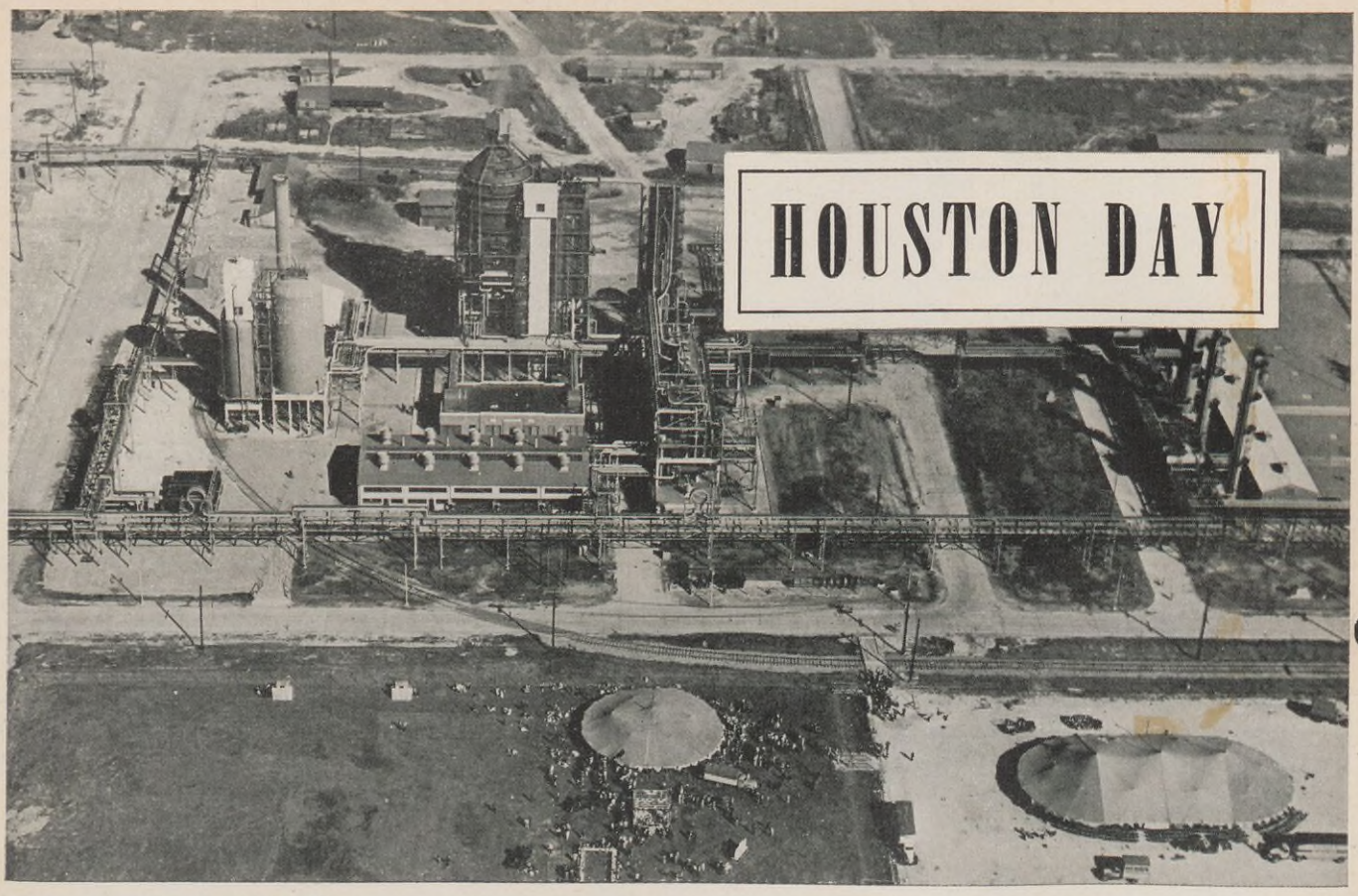
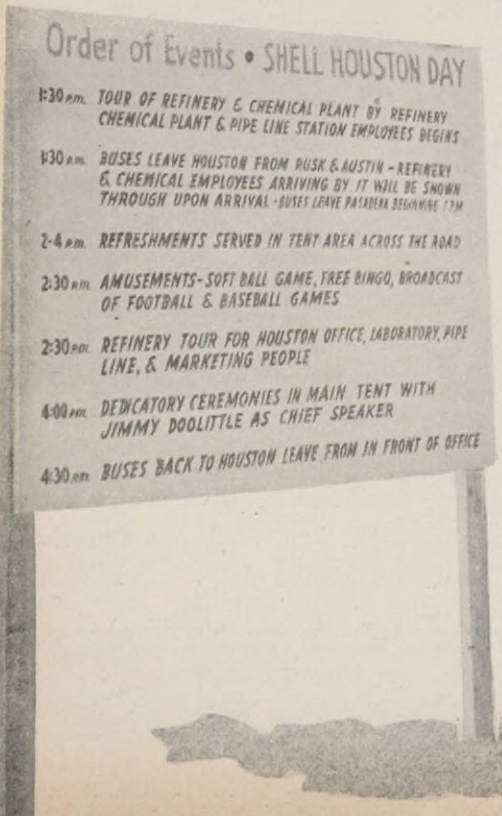


HOUSTON DAY

The crowd starts to arrive for the Houston Day festivities.

Shell thousands turned out on Columbus Day to dedicate a new cat-cracker and to salute the nation's fastest growing city.



MORE than 3,400 Shell employees and their friends gathered on Saturday, October 12th, to dedicate the Houston Refinery's huge new catalytic cracker. Tours through the plants, refreshments galore, and even a ball game went along with the dedication festivities. It was more than just a good time though—for from it all, Shell men and women were again reminded of how large a part of the Shell family makes its home in and around Houston, Texas.

The new Houston Refinery catalytic cracking unit that C. E. Davis, Vice President, Manufacturing and other Shell executives dedicated at the colorful affair is some forty feet shorter than previous ones of similar design. But it is by no means tiny —it towers 16 stories above ground and processes in the neighborhood of 22,000 barrels of petroleum products a day. It will also supply Shell Chemical's nearby plant with increased quantities of raw materials. These materials are vital to Shell Chemical's huge expansion program in Houston which is expected to turn the Deer Park chemical plant into one of the largest of its kind in the country.

Separating compounds naturally found in crude oil into saleable products such as gasoline, kerosene and fuel oil, has long been the daily task of all refineries. This operation was originally taken care of by simple distillation, and then, later and more effectively by subjecting the crude to intense heat in conjunction with high pressure. This "thermal cracking" was introduced in the early "20's" and Shell did much of the pioneer work. "Cat-cracking" is the most recent and most effective variation of this heat treatment. Here an outside element—such as a compound

of aluminum and silica—called a catalyst, is introduced into the thermal cracking process.

Houston's new unit is Shell's newest catalytic-cracker and is the first of its kind in the world to employ the recently perfected micro-spheroidal catalyst. The new catalyst, developed by Shell, is easier to handle than catalysts normally used, and because of the spheroidal shape of its particles does not disintegrate as rapidly as the old style, irregularly-shaped ones. Consequently, the catalyst has a longer life and catalyst losses are minimized.

It was in the spring of 1945 that Shell started to build this unit which was originally intended to serve as a part of the Company's wartime aviation gasoline program. The sprawling project of nearly 75 acres includes a number of auxiliary plants as well as the cracker proper. Gas recovery, fractionating, and treating units, a feed preparation plant and a vast amount of tankage are adjoining products of the labor of the 1,500 men employed in the building activity.

Some idea of the plant's size is revealed by the fact that its electrical requirements are equal to the consumption of a city of 25,000 and its cooling water system has a pumping capacity large enough for a city six times larger. Awesome as it is in size, the plant is streamlined in form. Ease of maintenance, convenience of operation and comfort of employees were an important consideration of the designing engineers. Automatic control devices are used in every possible place. Control rooms are completely airconditioned and have tinted tile walls and terrazzo floors that would amaze refinery men of 20 or even 10 years ago. The elaborate color scheme was devised by color engineers to make the surroundings pleasant and to limit eye strain and fatigue. Air conditioning, indirect lighting and sound proofing are other features of this latest in refinery control rooms.

Big as it is, the new cracking plant is only one more in the series of developments that have marked the growth of the Houston Refinery from the day in 1929 that it was first completed and placed in operation. The refinery has grown rapidly in daily throughput and in physical facilities. Thus the original 30,000 barrels daily have now become 81,000 and physical facilities have expanded until today they cover almost two square miles. And the refinery is still growing.

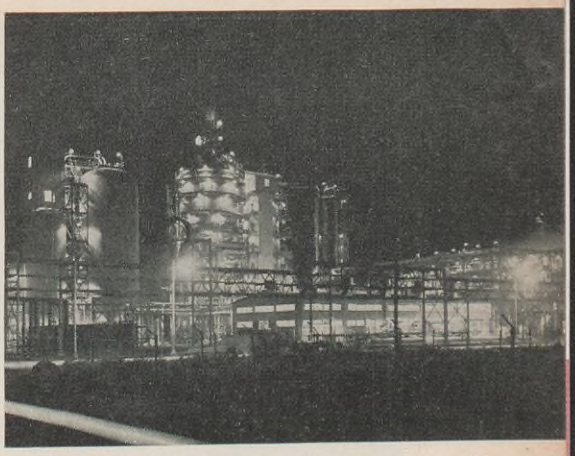
Houston Refinery is more than just another refinery, more than just another war plant. J. H. "Jimmy" Doolittle summed it up from the speakers' stand when he described it as America's "cradle of defense" Long before a desperate need or market for it existed, the refinery was producing components of 100-octane aviation gasoline. It was back in 1934 that the Company first delivered 100-octane to the U. S. Army Air Corps. In the following years new means and new plants were developed at Houston to perfect the products that made American aviation gasoline second to none when finally the war test came.

It was much the same story with butadiene. Months before Pearl Harbor and the subsequent loss of the world's rubber centers, the refinery was producing butadiene on a commercial basis for the country's rubber manufacturers. The volume was not large but the "know-how" and experience gained proved invaluable later to the nation's synthetic rubber program.

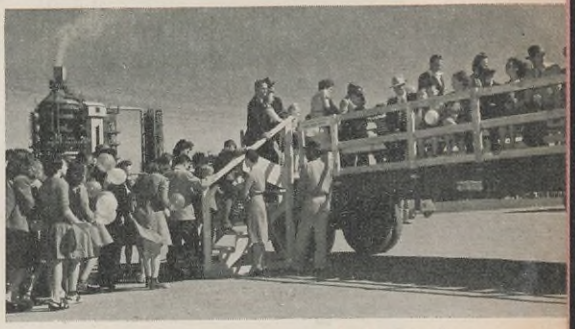
Back in 1940, Shell put into operation its number one toluene plant at Houston. It was the first full scale commercial plant in America for the manufacture of nitration grade toluene from petroleum. Shell Development Company evolved this successful extraction process which made available more easily and more economically than by previously existing processes, sufficient quantities of this material so necessary in the manufacture of explosives. Here again, Shell "know-how" gained at this refinery helped break the production bottleneck of an essential product.

Tremendous is the only word ade-

(Right) Red and yellow balloons made a hit with the young in heart.



The cat-cracker never sleeps, operates 24 hours a day.



Over 2,000 visitors enjoyed the 50-minute tour of the Refinery and Chemical Plant.

The softball game was another feature of the afternoon.

(Left) The heating unit at Houston. Furnace in foreground heats the stock being charged to the cat-cracker.

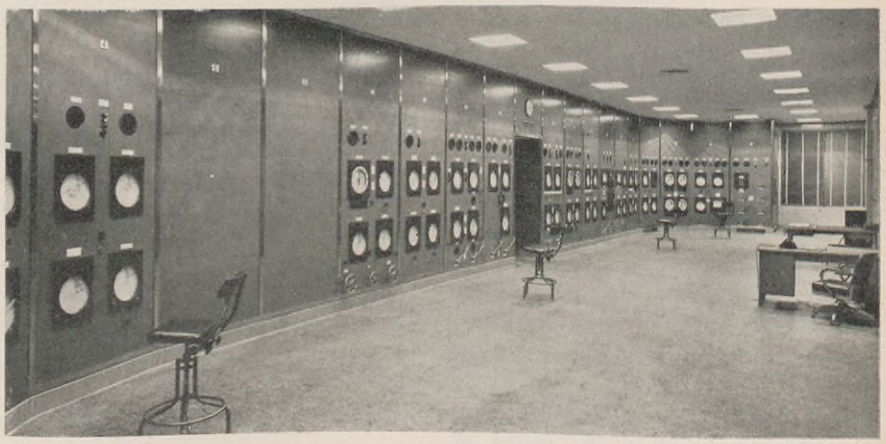
quate to describe the current demand for gasoline and fuel oil and Houston Refinery's part in satisfying it. The 1,530,900 gallons of gasoline that the Refinery produces every day would run an automobile more than 1,200 times around the world. And not only is the prospective demand for gasoline and oil greater, but future years will no doubt see many more things produced from petroleum by chemistry. Even now waste gases from refining processes, which in former days would have been burned in flares, are piped into the nearby plant of Shell Chemical Corporation where they are converted into increasingly important petroleum by-products.

Saturday's festivities started at about 1:30 in the afternoon. Employees from all sections of Houston's big Shell family — refinery, chemical plant, pipeline, exploration, production, marketing, research—came with their wives and children for a tour of the refinery. Many came from Houston, La Porte and Pasadena on special buses provided for the occasion.

A tour of the Refinery was the first part of the program. Over thirty flat-top trailer trucks fitted with benches and guard rails transported the tourists around the plant. Each bus accommodated approximately fifty sight-seers. At various points of interest technologists were stationed fully equipped with microphones and a loud speaker system. Each in turn gave a short two minute talk explaining the interesting aspects and functions of installations in the vicinity. Guides with megaphones boarded the trucks as they entered the Chemical Plant gates. A special tour on foot was conducted through the new cat-cracker. Information tours like these have a reputation for being dull. That the visitors thoroughly enjoyed these tours of the Refinery and Chemical Plant is a tribute to the careful and effective preparations which preceded them.

Refreshments by the truck load served to sustain the busy watchers. Hot dogs, ice cream, cold drinks and potato chips waited in ample quan-

THIS MONTH'S COVER: The catalyst regenerator of the new cat cracker. To the left is the catalyst storage bin. Shaft to the right houses a 15-story elevator.



(Above) The modern air-conditioned control room, specially tinted to limit eye strain.

tities in the refreshment tents. Two bingo games kept going at a constant clip, with free prizes of candy for the women and cartons of cigarettes for the men stimulating heavy participation. Young Pete Mustin, a local High School football player, came out fifty dollars richer on the day. The 16-year-old son of the Topping Department's John Mustin, a Shell veteran of nearly sixteen years service, was the lucky winner of the door prize.

P. E. Foster, Manager of the Refinery, started the official dedication ceremonies at four o'clock by welcoming all the guests. It was no easy task either because pervading the entire area was the constant roar of the "cracker." Like any indulgent father, Foster explained away the noise of his "new baby" and promised to soothe the shattered air in the near future.

After welcoming the assemblage, Foster introduced the guest speakers. Mr. C. E. Davis spoke briefly on the catalytic cracker itself, on how it differed from those that Shell and other oil companies had constructed previously, on its uses, etc. T. E. Swigart, President of Shell Pipe Line Corporation, pointed out that for Shell, Houston is one of the most important locations in the country. The over 6,000 Shell employees whose headquarters are in Houston represent every major department of Shell and comprise a full third of the Company's East of the Rockies family. W. P. Gage, Vice-President of Shell Chemical Corporation, San Francisco, spoke of his Company's expansion program in the Houston area and mentioned, in particular, products which the Shell Chemical Plant will be able to make from by-product gases of the new catalytic cracker. Jimmy Doolittle, Vice-President of Shell Union Oil Corporation, gave the dedicatory address. The famous war hero congratulated the refinery on its excellent war and peace time record, and went on to a discussion of aviation gasoline of the future and the prospects for a jet-propelled aircraft.

Houston, which houses so much of Shell, has a proud tradition of growth and progress during its 110th-year existence. In the last twenty-five years alone its population has mushroomed from 138,000 to a present-day total of 675,000 and it has been estimated that in the next thirty years this figure will approach the three million mark. Though located fifty miles from the seacoast it ranks as the world's largest oil port, thanks to a ship channel which was cut through the bayous prior to the first world war. With diversified interests which include oil, sulphur, gas, cattle, lumber, and cotton, Houston looks to a future marked by further expansion and continued prosperity. Shell hopes and plans to share that future.

One of the most popular spots for the younger generation.

P. E. Foster, Refinery Manager, presents door prize to young Pete Mustin.

(Above) Jimmy Doolittle, flanked by other speakers of the day, gives the dedicatory address.

Doolittle autographs a program for a pilot of tomorrow.

MEDAL FOR MERIT

AT an honor award dinner held in Tulsa, Oklahoma, on October 7th, the United States Government gave official recognition to the outstanding contribution made to the war effort by S. S. Smith, Manager of Shell's Products Pipe Line Department.

The full measure of this contribution is still being evaluated more than a year after the war's end. To gain a true perspective of it we must go back to the years immediately preceding the war when Hitler was well embarked on his relentless march to power.

Foreseeing, like many others, the inevitable outbreak of hostilities and eventually, the entry of the United States into the conflict, Smith turned to the problem of supplying our forces with petroleum products. The now almost forgotten army manoeuvers at Plattsburg, New York, in 1938 had proved conclusively that petroleum would present the number one problem in army logistics.

CITATION TO ACCOMPANY THE AWARD OF

THE MEDAL FOR MERIT

TO

SIDNEY S. SMITH

SIDNEY S. SMITH, for exceptionally meritorious conduct in the performance of outstanding services to the United States. Mr. Smith, following the outbreak of World War II, foresaw the entry of our country into the conflict and started to promote portable military pipe lines to keep mobile armies supplied with petroleum products. Actuated by high patriotic motives he unstintingly gave his time and his experience in assisting the government in designing, perfecting and proving such equipment. He conceived and developed the ingenious automatic controls vital to the proper operation of pipe line systems and permitted the government to use them on a royalty-free basis. His was an outstanding contribution to the victorious conclusion of the war by the Allies.

Harry S. Truman

Smith's field was in pipe lines in which he had already established a name for himself through his work in the development of Shell's East Products Pipe Line built in 1936. That line constituted a long step forward in pipe line technique because it successfully demonstrated that thousands of barrels of many different petroleum products could be passed successively through a line with the utmost dispatch and without detriment to the products through contamination. One of the chief factors in the successful operation of the East Line is its metering system which was designed by Smith.

Prior to World War II oil pipe lines had never been used in tactical warfare because of what were then considered insuperable difficulties. The laying of a line consumed a great amount of time, effort, and heavy equipment so that, in many situations, the fighting would have passed on before the line could have been put into operation. Pipe lines were fixed installations and, therefore, vulnerable to hostile air attacks. The installation and operation of lines was not possible without large numbers of skilled craftsmen who must always be available.

Nobody was more aware of these problems than Smith and he realized early that what was needed was a new type of line that could overcome these objections. His solution was a portable line which could be laid with great speed by unskilled labor and, if necessary, quickly picked up and transplanted.

The transition from theory to fact was fraught with difficulties but Smith received the enthusiastic cooperation of Shell and the several companies who were asked to build the necessary equipment. In essence,

what they came up with was something entirely different from anything ever seen before in the pipe line field. The new line was in separate twenty-foot sections with special light weight pipe and the pumping sections were so mounted that they could easily be hauled by trucks. The completed line had a capacity of 6,000 to 12,000 barrels a day, the diameter of the line could be either four or six inches. The pipe could be laid at the rate of from ten to thirty miles a day by unskilled labor or by regular Army personnel; it could be operated under the supervision of a few trained operators.

Shell provided the necessary funds and manpower for the erection of an experimental line at East Chicago, Indiana early in 1942. There the line was demonstrated to Army engineers who were quick to see its possibilities.

Meantime the problem of getting lend lease supplies into China over the Burma Road had become a subject of general discussion in the United States press. The problem was particularly acute with reference to petroleum supplies. Smith got in touch with the Chinese Ambassador in Washington to acquaint him with the possibilities of constructing a portable pipe line over the Road. He received an enthusiastic response. Shell arranged to send J. H. Hall, Superintendent of the East Products Pipe Line, to China to survey the terrain which was about as rugged as one could find anywhere. Hall reported that the job could be done but the Japs got there first so that the point was never proved.

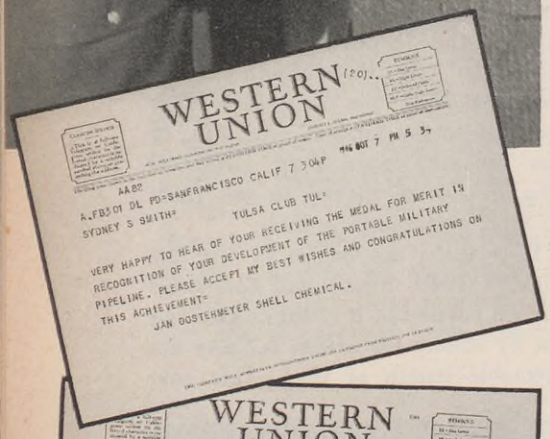
Smith and his associates in the equipment companies continued to work closely with the Army engineers to perfect the portable line technique against the day when the Allied forces would invade the beaches. That day was in November 1943, when the American landing in North Africa was staged.

By coincidence, it was another Shell man who directed the initial combat use of the portable pipe lines in the North African, Sicilian and Italian Campaigns. B. C. Astrup, Assistant Sales Manager for Shell in New York, was then Petroleum Officer for Theater Headquarters and a Lieutenant Colonel. Astrup recalled that in North Africa they started to land equipment for oil tanks and a portable line on D day + 1. By D day + 8 they had erected a 5,000 and a 10,000 barrel tank a short distance inland and had constructed a line from the beach through which to supply them. As the American forces moved eastward and consolidated their positions, air fields were constructed inland away from the coastline so as not to be too exposed to enemy aircraft coming in from the Mediterranean Sea. Pipe lines were constructed in a matter of days to supply these fields.

But that was only the beginning. By January 1, 1945, more than 5,000 miles of portable lines were either operating or under construction in the Mediterranean Theater alone. In one three-month period 1,200,000 long tons of gasoline were moved into the tactical area and, of this amount, more than 1,000,000 long tons were moved to the front through portable pipe lines.

In arguing the merits of his line back in 1940, Smith had contended that no portion of it could be knocked out by enemy air action for any appreciable length of time. This con-

The men responsible for the development and production of the portable pipe line. Left to right: D. E. Buchanan, J. H. Boyle, Smith, E. I. Hanlon, M. F. Waters and Colonel C. H. Chorpening.



WESTERN UNION

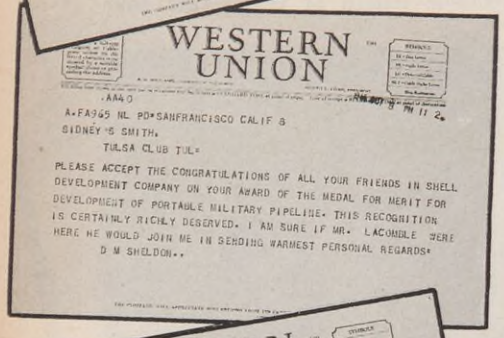
AA80

A.FB301 DL PD=SANFRANCISCO CALIF 7 304P

SYDNEY S SMITH= TULSA CLUB TUL=

VERY HAPPY TO HEAR OF YOUR RECEIVING THE MEDAL FOR MERIT IN RECOGNITION OF YOUR DEVELOPMENT OF THE PORTABLE MILITARY PIPELINE. PLEASE ACCEPT MY BEST WISHES AND CONGRATULATIONS ON THIS ACHIEVEMENT=

JAN OOSTERMEYER SHELL CHEMICAL.



WESTERN UNION

AA40

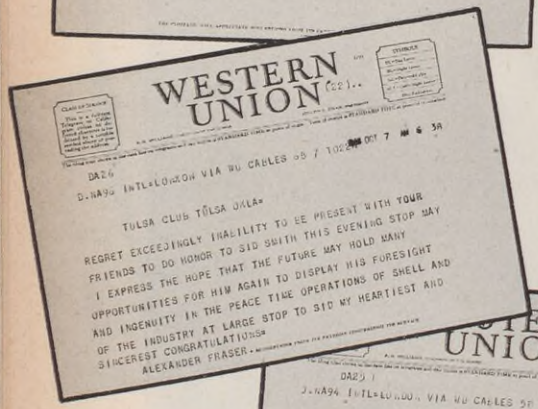
A.FA965 NL PD=SANFRANCISCO CALIF 8

SIDNEY S SMITH.

TULSA CLUB TUL=

PLEASE ACCEPT THE CONGRATULATIONS OF ALL YOUR FRIENDS IN SHELL DEVELOPMENT COMPANY ON YOUR AWARD OF THE MEDAL FOR MERIT FOR DEVELOPMENT OF PORTABLE MILITARY PIPELINE. THIS RECOGNITION IS CERTAINLY RICHLY DESERVED. I AM SURE IF MR. LACOMBLE WERE HERE HE WOULD JOIN ME IN SENDING WARMEST PERSONAL REGARDS=

D M SHELDON..



WESTERN UNION

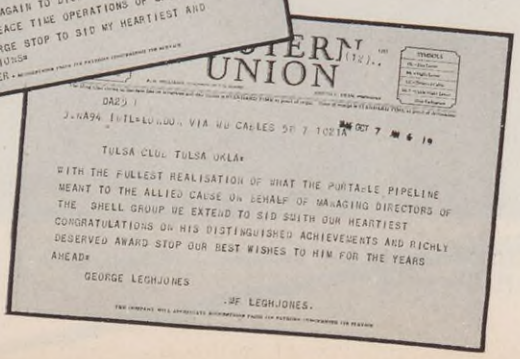
DA26

D.NA94 INTL=LONDON VIA RU CABLES 58 7 1021A

TULSA CLUB TULSA OKLA=

REGRET EXCEEDINGLY INABILITY TO BE PRESENT WITH YOUR FRIENDS TO DO HONOR TO SID SMITH THIS EVENING STOP MAY I EXPRESS THE HOPE THAT THE FUTURE MAY HOLD MANY OPPORTUNITIES FOR HIM AGAIN TO DISPLAY HIS FORESIGHT AND INGENUITY IN THE PEACE TIME OPERATIONS OF SHELL AND OF THE INDUSTRY AT LARGE STOP TO SID MY HEARTIEST AND SINCEREST CONGRATULATIONS=

ALEXANDER FRASER.



UNION

DA29

D.NA94 INTL=LONDON VIA RU CABLES 58 7 1021A

TULSA CLUB TULSA OKLA=

WITH THE FULLEST REALISATION OF WHAT THE PORTABLE PIPELINE MEANT TO THE ALLIED CAUSE ON BEHALF OF MANAGING DIRECTORS OF THE SHELL GROUP WE EXTEND TO SID SMITH OUR HEARTIEST CONGRATULATIONS ON HIS DISTINGUISHED ACHIEVEMENTS AND RICHLY DESERVED AWARD STOP OUR BEST WISHES TO HIM FOR THE YEARS AHEAD=

GEORGE LEGHJONES

=GF LEGHJONES.

tention was borne out on many occasions. In May, 1944, French troops were preparing for the invasion of the island of Elba. They were to be backed up by American planes based on Corsica. On the eve of the invasion the Germans, well aware of what was afoot, made a heavy bombing raid on the American airbases and the 100-mile pipe line which served them. When the raid ended at 3:20 A. M. there were 28 breaks in a five-mile stretch of the line. By 7:30 A. M., only four hours later, the line was back in operation.

The portable pipe line played a very important part in the Italian Campaign. On the east coast 560 miles of lines were laid from Taranto to Foggia. They supplied two and a half million gallons of gasoline daily to the 15th Air Force as well as considerable supplies to other Allied Forces. On the west coast a line was built from Naples to a point 100 miles north of Rome.

The importance of this second line can best be illustrated by the situation at Cassino. It was there that our forces were bogged down for months while fighting under extreme hardships. It had been figured that they would need 426 trucks, each of 2,000 gallons capacity, operating twenty-four hours a day to supply our troops at Cassino. There were only 40 trucks available and these could not stay in continuous operation on the single second-class road which served the front. That road was jammed with trucks bringing up food and ammunition. So they threw down a portable line under the fire of the German batteries and, in spite of everything the Germans could do, it stayed in operation and met all the gasoline requirements.

Colonel C. H. Chorpening, United States Army, presents S. S. Smith with the Medal of Merit, the nation's highest civilian award.

In estimating the miles of pipe line which could be laid in a day Smith had set the figure at 30. Upon occasion the Germans, the weather and the terrain teamed up to reduce this figure to 2½. Upon other occasions, however, as many as 65 miles per day were installed when conditions were especially favorable.

When the American Seventh Army went into Southern France they took portable pipe lines with them. The refinery center of Etainge du Berre was captured and used as a jumping off place for the main line which followed the Seventh Army as it advanced up the Rhone Valley. When contact was made with Patton's Third Army the line took on the added task of supplementing their gasoline supply.

Meantime the portable pipe line was playing an important part in the activities of the main invasion forces coming in from Normandy. When Cherbourg was captured in July, 1944, four main lines were laid from there which followed the American Army across the heart of France to Paris. In all, over 1,200 miles of line were laid in support of the main invasion forces. Even now it is impossible to evaluate the part that the portable line played in the main thrust across Northern France. At that time the famed "Red Ball Highway" was the main supply line for both troops and materiel, stretching from Utah and Omaha Beaches and Cherbourg to Paris. The bumper-to-bumper congestion and constantly teeming traffic of this artery are well known and but for the portable pipe line the highway would have been entirely inadequate.

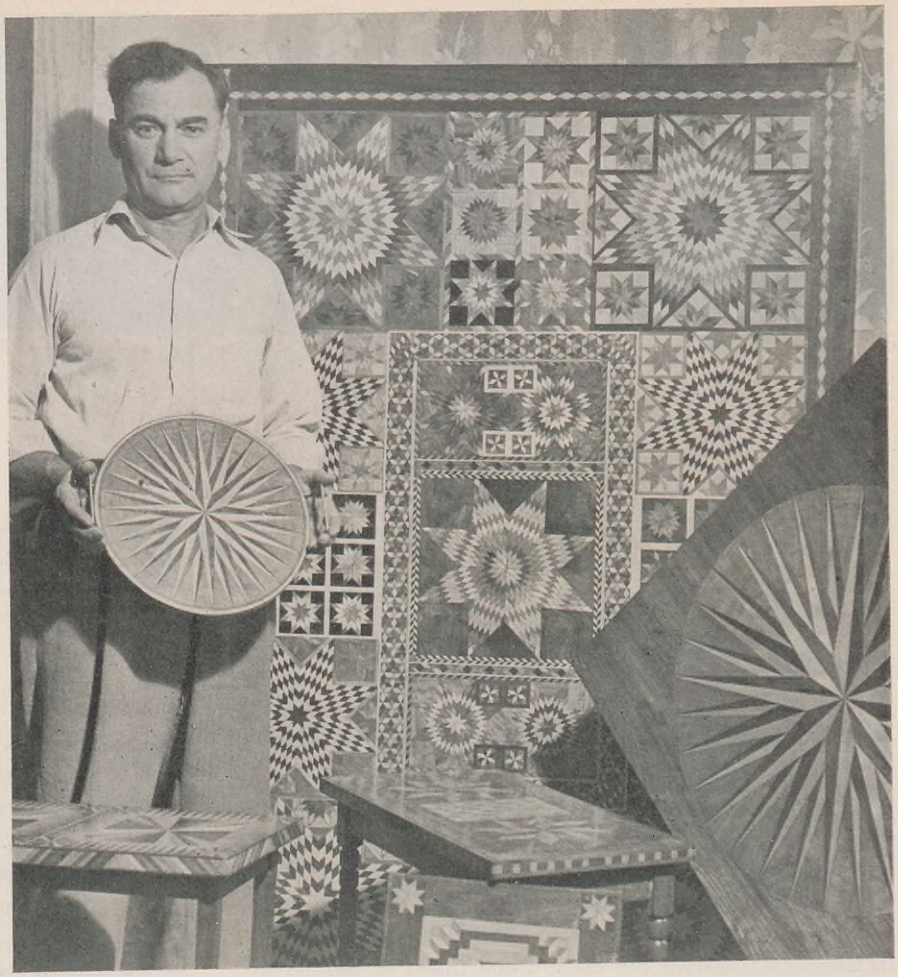
A modified version of the line was used to great advantage in the China-Burma Theater. In fact, our forces took the portable pipe line with them everywhere they went except in the Pacific where island-hopping precluded its use.

No wonder then that there was a tinge of quiet pride in the air when Syd Smith's friends gathered around him in Tulsa to witness the award. There were present at the gathering men (both in and out of uniform)

who had played major roles in the development and production of the portable lines. M. F. Waters, E. T. Hanlon and L. J. Griffey, all formerly of Hanlon - Waters, Incorporated, which constructed the line units; Frank Wheatley, President of the Wheatley Pump and Valve Company, which furnished the gate and check valves; King Dickason, President of Dickason-Goodman Company, which crated thousands of pipe line units; W. D. Moorer, President of the Moorlane Company, which handled manfold; Colonel C. H. Chorpening, who made the presentation and who was in charge of the Army development section, which approved the line and Major E. L. Knutson, representing the Army Engineers. Here, indeed, was gathered a small group of men who, representing American Industry and the American Army, had worked tirelessly together to apply American ingenuity to a problem which our enemies were unable to solve.

There was one person who sat through the presentation exhibiting perhaps just a little more pride than the others. Mrs. Smith retained her composure throughout but no unprejudiced observer would claim that she didn't blink once or twice.

Pumping station of the portable pipe line as actually set up for use in the field. The one here depicted was installed at Camp Claiborne, Louisiana, for the training of soldiers in the Petroleum Supply Section.



Wood Color and Design

TO Elmer W. Johnson, a Shell employee since 1922, goes credit for one of the most unusual of hobbies. Long an admirer of various wood hues, Johnson, who is a welder at the Wood River Refinery, began in 1936 to collect pieces of different colored wood from various types of trees. These he made into cups, vases, and bowls with the aid of his wood working lathe. Later he began to cut wood of various colors into small pieces which he inlaid in complicated and colorful geometric schemes, on table tops, serving trays, and various other articles.

In the accompanying picture, Johnson is shown with some of the articles which his craftsmanship has produced. All of the objects shown, plus the many others that he has created, depend primarily on the original tone of the wood used to accent their various designs. The large table top in the rear of the picture which is 5½ feet long and 3½ feet wide, took over three years to complete. The all star pattern required the cutting and fitting together of over 10,000 separate pieces of wood from fifteen different kinds of trees. The end tables in the foreground feature an inverted cross design. The other articles shown, while not as large, nevertheless represent the same type of painstaking effort. Both the designs on the serving tray which Johnson is holding and the card-table at the extreme right represent the mariner's compass, but regardless of design, all are collector's items as well as being articles of practical value.

H. S. M. Burns

Norman J. McGraw

William A. Baker

William F. Kenney

SHELL PEOPLE

H. S. M. BURNS has been appointed Senior Vice President in the East of the Rockies territory. A graduate of Aberdeen and Cambridge Universities, he has been associated with the Shell Group for more than twenty-one years, joining the Shell Oil Company in California as a Geophysicist in the Exploration Department. Subsequently, he was in the Manufacturing and Marketing Departments in California and in the latter Department he served as a Division Manager, and later as General Sales Manager. Since 1935, he has served the Shell Group abroad, spending most of his time in Colombia, where he organized and directed the Group's Exploration and Production activities.

* * *

NORMAN J. McGAW was recently appointed General Vice President of the Company's Pacific Coast territory. A graduate of Glasgow University in Scotland, he was first employed by the Shell Company of California in 1925 as a Cost and Statistical Clerk at San Francisco. In 1933 he was transferred to Shell Petroleum Corporation at St. Louis as Assistant Department Manager in the President's Office. After a 2-year period of service with Anglo Saxon Petroleum Corporation, Ltd., Mr. McGaw returned to Shell Petroleum Corporation in 1938 as Manager of Transportation and Supplies and the following year became Vice President in charge of this Department. In January of 1946 he was appointed a general Vice President in the East of the Rockies territory, which position he held until his assignment on the Coast.

WILLIAM A. BAKER was recently named Vice President and Treasurer of Shell Pipe Line Corporation. Mr. Baker has seen many years of service with Shell. He held various positions of an administrative nature in Accounting and Auditing in California until he was transferred, in 1933, to Shell Petroleum Corporation in St. Louis as Assistant Comptroller. In 1937 he became Comptroller and in 1940 he was appointed Assistant Treasurer, Texas-Gulf Exploration and Production Area, at Houston where he remained until his present appointment.

* * *

WILLIAM F. KENNEY has been appointed Manager of the Legal Department, in Head Office, New York, to replace Joe T. Dickerson who has been transferred to Houston as General Attorney on the regional staff of the Vice President—Exploration and Production. Kenney, a graduate of the University of Michigan Law School, came to Shell in 1937 as a member of the Legal Department of Shell Petroleum Corporation at St. Louis. From 1941 to 1945 he was with the Legal Department at Houston and for the past year he has been attached to the Legal Department in Head Office, New York. Mr. Kenney is a member of the bar of the States of Missouri, Illinois, New York and Texas.

* * *

ELMER R. MUELLER has been appointed Treasury Representative on the Exploration and Production Department Regional Staff at Houston. Mr. Mueller was first employed in 1923 as a clerk in the St. Louis Office of the Roxana Petroleum Company, later Shell Petroleum Corporation. Following several moves in accounting and

Elmer H. Mueller

Reuben F. Gray

Edward H. Mueller

IN THE NEWS

office service work in 1933 he was promoted to Division Accountant in the Mid-Continent Exploration and Production Area at Tulsa, later becoming Assistant Office Manager and Chief Accountant. In 1942 he was assigned to Head Office, Treasury and in 1943 he became Assistant Manager, Financial Tax Department in Head Office, a position he held until his recent promotion.

* * *

REUBEN F. GRAY has been named Office Manager of the newly-created New Orleans Exploration and Production Area. Mr. Gray came to Shell in 1920 as Office Manager of the Norco Refinery, then a part of the old New Orleans Refining Company. In 1930 he was transferred to St. Louis as Accountant in the Refinery Accounting Department. During the following eight years he held various accounting positions and in 1938 he was made Department Supervisor of General Accounting. In 1940 he was placed in charge of Production and Refining Accounting in Head Office Treasury.

* * *

EDWARD H. MUELLER has been named Office Manager of the newly-created Houston Exploration and Production Area. Mueller started with the Comar Oil Company, a Shell affiliate, in 1923 as a Voucher Clerk at St. Louis. Subsequently he held various positions with Shell Petroleum Corporation in Production Accounting at Dallas, St. Louis and Houston, where he was made Chief Accountant in 1934. In 1938 he became Office Manager at Houston and, in 1940 was transferred to Shell Pipe Line Corporation as Treasurer, the position he held at the time of his latest appointment.

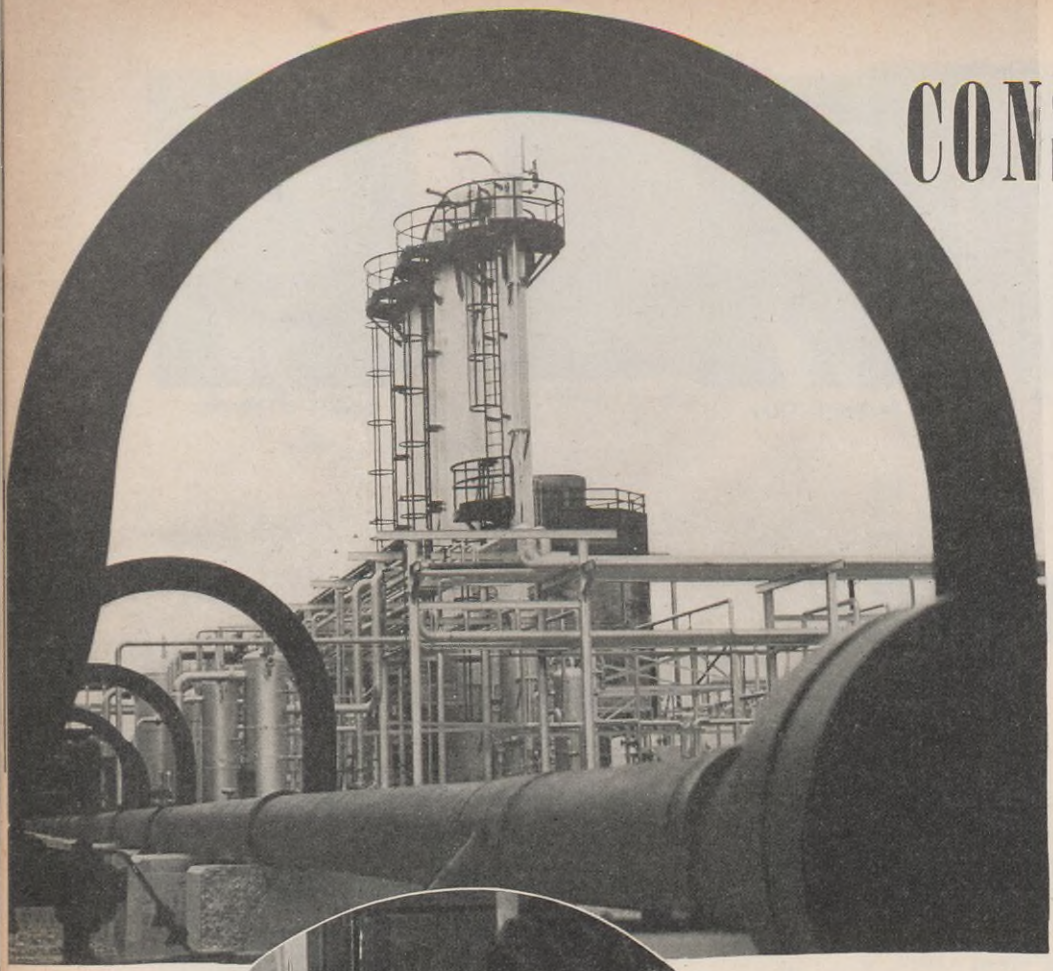
Raymond R. Griffin

RAYMOND R. GRIFFIN, who retired recently as Vice President in charge of Marine Transportation, died Tuesday, October 22nd, in Berkeley, California.

A graduate of Stanford University, Griffin began his business career as a clerk in the Shell Company of California in 1921. During his early years of service with Shell he progressed rapidly through various positions of responsibility and in 1930 became Assistant to the Vice President—Manufacturing. The following year he was transferred to Shell Union Oil Corporation in New York, and placed in charge of Transportation and later also of Supplies. In 1936 he was made Vice President of Shell Union. He was appointed Vice President of Marine Transportation of Shell Oil Company, in 1940, which position he held until August 1, 1946, when he retired. During the war he was a valued member of the industry-organized Committee on Supplies and Distribution.

His many friends mourn his passing and members of the Shell organization join in extending their sympathy to his wife and children.

CONSERVATION IN

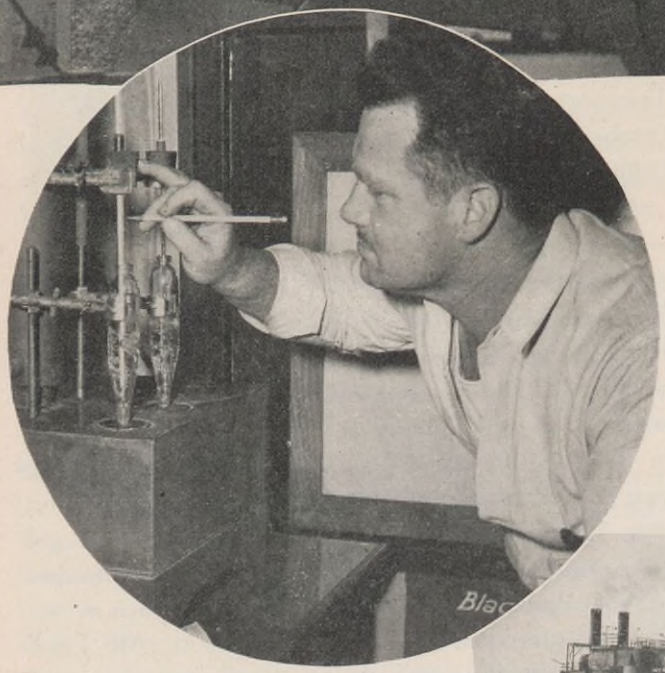


THE meat packers of this country have a slogan which says that they use everything but the pigs squeal. The petroleum industry could well claim that it utilizes every fraction of crude oil, including its smell, for one of the prime aims of the industry wide conservation program, since its inception, has been to get the most finished products from every barrel of oil produced.

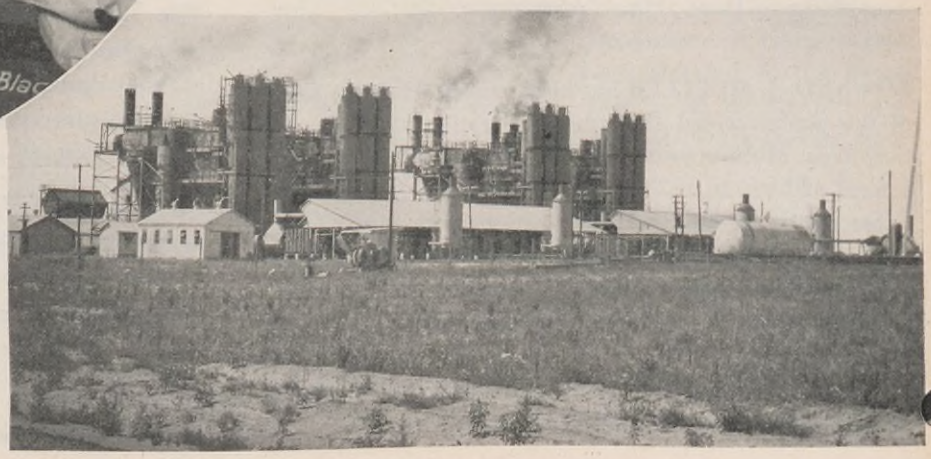
When grandpa was a boy, crude oil was utilized largely for the production of kerosene and axle grease. Today, over 1,000 products are made from petroleum, and there are infinite new possibilities. Products formerly made from coal or coal tar are now more easily made from petroleum. This is due to the fact that both are mixtures of valuable chemical materials and in petroleum they are in a form more easily processed and separated than is the case with coal and coal tars. Goaded on by the needs of our increasingly complex economy, scientific research has consistently advanced the technological improvements and methods of greater efficiency which have been responsible for today's refinery process diversification.

The function of the refinery is an interesting one. Crude oil may be de-

Above: Distillation unit towers at Shell's Sheridan Cycling Plant viewed through an expansion bend in gas piping.



Left: R. B. Howell, Stillman at Shell's Houston Refinery, checks the purity of isopentane, a component of high octane gasoline.

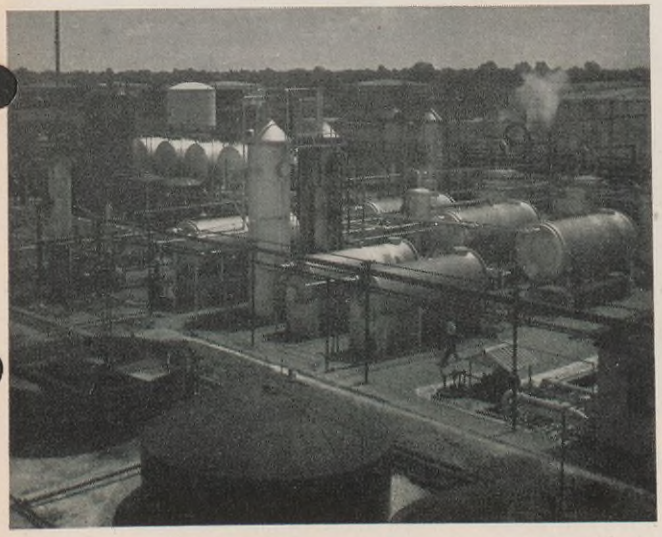


Right: A carbon black plant in Texas. Here a special grade of carbon black is produced for use in the synthetic rubber industry.

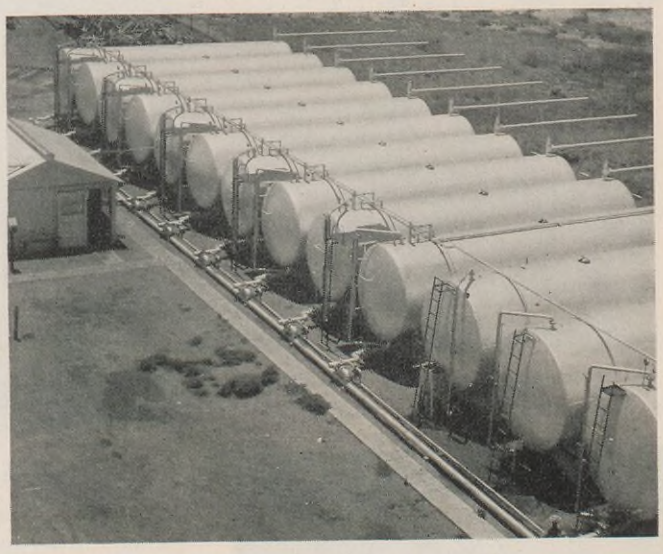
PETROLEUM REFINING

The 2nd in a series of articles discussing the various phases of the Petroleum Industry's Conservation Program.

fined as a mixture of hydrocarbons; compounds of hydrogen and carbon, together with varying amounts of oxygen, nitrogen, and sulfur. The minute units, or molecules, that make up this liquid vary in relative size, or as the scientist would say, they have different "molecular weights." The job of the refiner is to sort out the various groups of constituents or "fractions" of crude oil, polish them up, and deliver them to the consumer under the names of gasoline, gas oil, lubricating oil, fuel oil, gas, asphalt, etc.



Treating units like these at the Norco Refinery are adjuncts to most major refinery processes.



Pressure storage tanks for natural gasoline in Texas.

It is with this process of refining that we are concerned, for it is here that the conservation practices which are bringing more oil from the ground are continued in the production of new and vastly improved products, which permit the greatest utilization of each barrel of crude "run" through the refinery.

In the early days of the industry the petroleum refiner found that the market did not absorb the constituents of oil, or any grouping of them, in the same proportion that they occur in the various crude oils. Starting in about 1912, a method was found by which oil could be "cracked" by means of intense heat and high pressure, which split the petroleum molecules into smaller ones, just as a hammer crushes rock. It permitted larger percentages of selected fractions to be produced from the crude than was formerly possible through straight run (separating) refining. This method with various innovations was used right up until 1940, when the new Catalytic Cracking process came into commercial prominence. This improved process, which changes the structure of heavy hydrocarbons and promotes the formation of relatively greater amounts of gasoline and light fuel oil, employs a variety of chemicals known as catalysts, rather than the high heat and pressure of the established thermal cracking processes. During the war period, this process was the predominant contributor to the nation's aviation gasoline production. Since the war it has been mainly devoted to the production of motor gasoline, light gases, and heating oils. The advantages of "cat cracking" from a conservation viewpoint are many:

The yield of useful products from a barrel of oil that is catalytically cracked is higher than from a barrel of thermally cracked oil,

The catalytic process obtains its required heat by burning the coke (decomposed oil reduced to a solid residue) produced in the cracking step, thus reducing the need for special fuel,

The yield and performance characteristics of motor and aviation gasolines may be varied over wide limits, by varying the conditions of cracking, the catalyist employed and the nature of the feed stock used. This is of the greatest importance to an industry which is plagued with highly seasonal demand, since it enables the refiner to juggle his schedules to meet this demand without wasting any part of his raw product,

Higher octane number gasoline can be produced by the catalytic process, plus increased yields of domestic furnace oil.

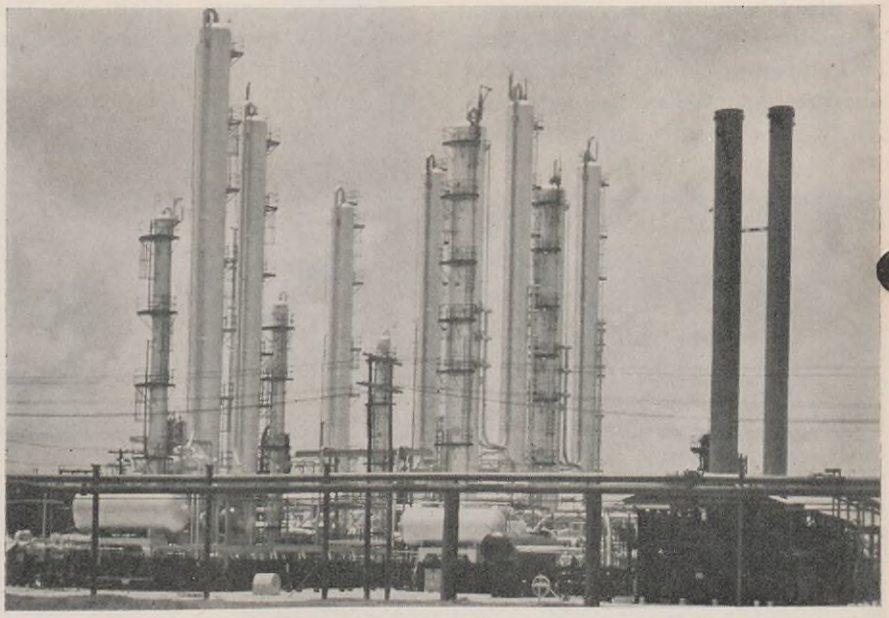
Catalytic cracking alone, however, is but one improvement in a long series of operations. Cracking does not produce a finished line of products. For each product marketed there are different and individualized processes which pick up where the cracking operation left off, or substitute for it.

Demand like necessity, is the mother of invention. When the automobile became so predominant there was need of more and better roads. Roads meant asphalt, and the industry had to supply it. Thus, the vacuum distillation process which was used to prepare feed stock for catalytic cracking plants was also used to produce the necessary large volume of asphalt from the heaviest fractions in crude oil which hitherto had not been fully utilized. There were new processes such as alkylation and polymerization which made use of the lighter hydrocarbons and resulted in increasing quantities of high octane components for use in motor gasolines.

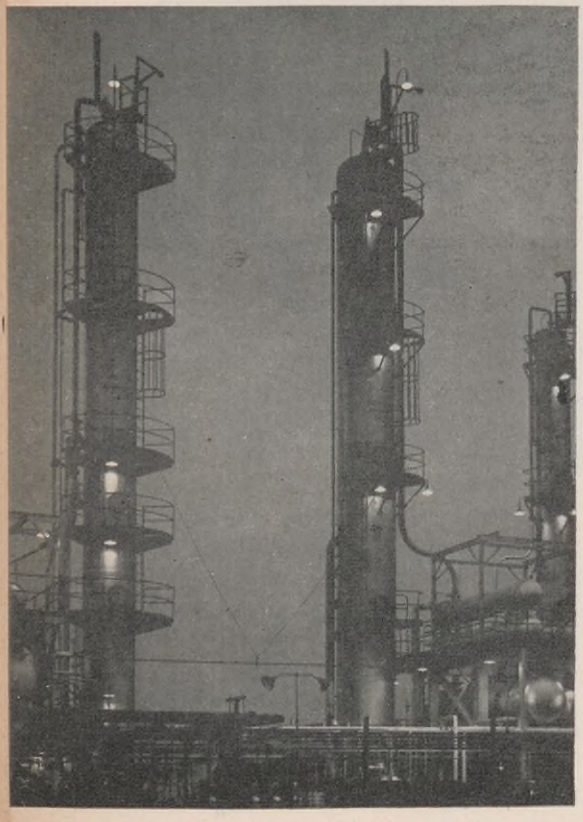
The growth of the automobile and increased mechanization also boosted the demand for lubricating oils to the extent that great lubricating oil plants are now in use. These plants utilize petroleum hydrocarbons which were previously thermally cracked to produce gasoline. In the manufacture of such lubricating oils it was found necessary to remove wax and other undesirable compounds. The wax, which has very little value as a lubricant and which would cause solidification of the oil at winter temperatures, is removed and sold as a finished product rather than being used for cracking unit fuel. Other undesirable compounds removed by solvent extraction are today sold as fillers for synthetic rubber in such articles as rubber overshoes.

Today with a highly varied demand, petroleum refiners can find a ready need for most of the by-products that were formerly wasted or diverted to refinery fuel. Contaminated sulphuric acid is sold to manufacturers of phosphate fertilizer, a soil enricher widely used throughout the world. Phenolic materials are removed from gasoline and recovered for sale as crude alkyl phenols, more commonly known as cresylic acid, and used in the making of disinfectants. Another undesirable component of gasoline is now being recovered in relatively high purity and sold as crude mixed mercaptan, used as a safety factor to odorize domestic fuel gas. At the Houston plant of Shell Chemical Company methyl ethyl ketone is being manufactured for use as a solvent in lacquers, lacquer thinners, in the manufacture of molded plastics, artificial leather and airplane dope, and in printing and lithographing industries. These are but a few of the new uses found for petroleum derivatives.

For years natural gas was wasted because its market value was too insignificant to justify the laying of the necessary pipe lines to get it market. Today an entirely new industry has been developed using for raw material the components of natural gas. Technological innovations have made this possible by establishing potentially higher values for gas as a raw material.



Houston's Refinery's Toluene Plant makes a grade of toluene for use in paints, varnishes and gasoline.

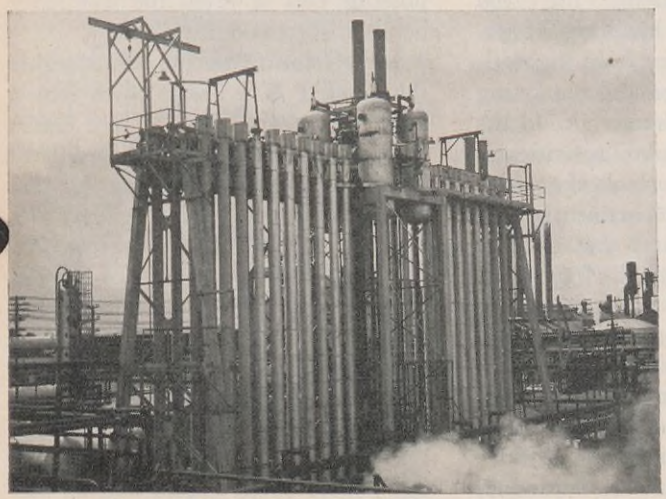


Left: Three straight run distillation columns at the Houston Refinery, where propane and butane are separated from the crude oil.

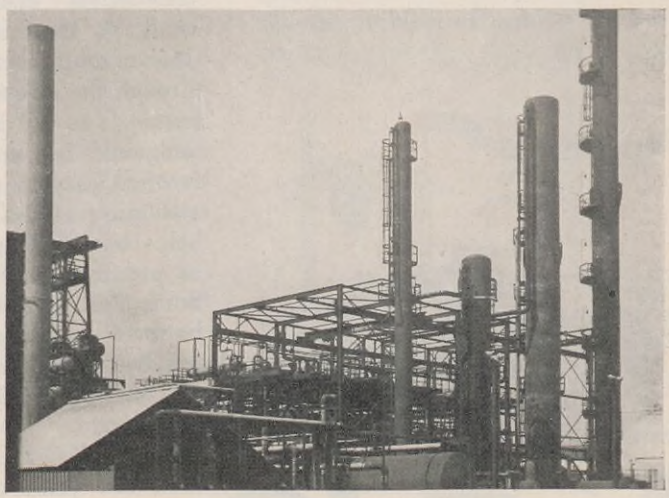
The uses for natural gas now are many and varied. The chemical field is becoming a big customer. The industry is also experimenting with the use of a combination of natural gas, air and water to produce high grade ammonium nitrate fertilizer. Such commercially valuable chemicals as ammonia, methanol, and nitric acid can also be obtained by similar synthesis.

past, large volumes of these gases were used as refinery fuel. Because of the new marketability of this gas, and its by-products, a great number of cycling plants have been built in the condensate gas fields of the nation. A prime example is Shell's Sheridan Cycling Plant (Shell News, June, 1946) which removes desirable hydrocarbons from gas drawn from the wells located in that area. The

temperature and vapor evaporation. Tanks are provided with various devices to reduce evaporation. Some have roofs that float on the surface of the oil. The roof moves up and down depending on the amount of product in the tank. This prevents vapor space which would cause product losses through evaporation. Separate "breather" tanks are installed near certain types of storage facilities into



A polymerization unit at Shell's Norco Refinery.



A modern alkylation unit at the Shell Refinery at Wood River.

A more recent development of an entirely different nature is the conversion of natural gas into motor gasoline and other liquid fuels through an adaptation of the Fisher-Tropsch process. The use of this and other methods for the conversion of methane, the primary fraction of natural gas, would serve almost to double our present known liquid fuel reserves.

Residue gas from natural gas plants is being utilized to make carbon black. The expanding carbon black industry burns this residue gas to produce special grade carbon black for the synthetic rubber industry which also uses other hydrocarbons from natural gas and petroleum as raw materials.

In addition to natural gas, new emphasis is being placed on the manufacture and sale of liquefied petroleum gases which are being used ever more widely in rural areas for domestic cooking and heating. In the

untreated or "wet" gas is piped directly from the wells to the plant where daily 6,700 barrels of commercially pure propane, isobutane, butane, and isopentane, as well as natural gas and distillate, are extracted. Butane is used in motor gasoline, and isobutane in the making of alkylate (a major component of high octane aviation gasoline), while propane is the finished household commodity we call liquefied petroleum gas.

The history of improved storage facilities might well be a story in its own right, but its importance as a conservation factor makes its inclusion here mandatory. In the early days, open pits and roofless wooden tanks were used to store production. Even the heaviest crude oils give off a certain amount of vapor, and in the case of more volatile products, the losses were high and fires were frequent. Modern storage facilities combat the chief loss factors; namely, uneven

which excess vapor is funnelled off and conserved, to be returned as the volume storage in the tank decreases. Tanks are constructed to withstand the pressure of the products they contain, and in the case of liquefied gas special sperical tanks may be used.

The elimination of waste is the prime objective of any conservation program. As stated above, many of the valuable by-products today recovered for commercial use were formerly either discarded or at best used as refinery fuel. The demand for these products, coupled with the efficiency and improved technology which made their production possible, has greatly enhanced their value. In some cases coal is being used as fuel in refineries to permit marketing of valuable products, which formerly were consumed in the burners. Thus the refiner contributes his share to the industry's effort toward maximum utilization of our petroleum resources.

THEY DELIVER THE GOODS•

LIKE every healthy growing body Shell has a robust circulatory system. Keeping that system in good shape is the Department of Transportation and Supplies.

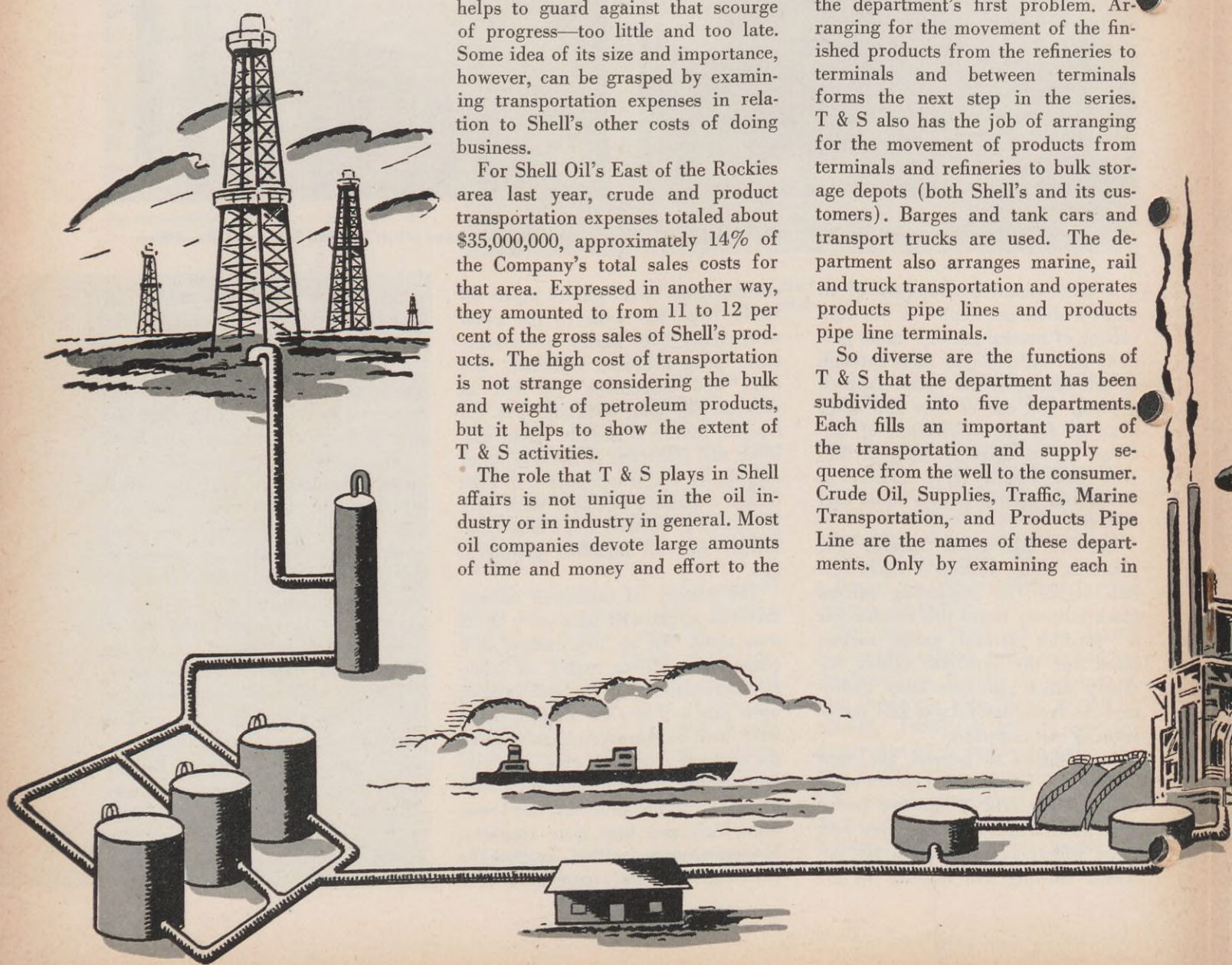
Countless operations, big and small, go into the handling of petroleum on its journey from the wells through the refineries and marketing terminals to the consumer. Amid the integrated but complex activities it is often easy to overlook the scope and range of this department which helps to guard against that scourge of progress—too little and too late. Some idea of its size and importance, however, can be grasped by examining transportation expenses in relation to Shell's other costs of doing business.

For Shell Oil's East of the Rockies area last year, crude and product transportation expenses totaled about $35,000,000, approximately 14% of the Company's total sales costs for that area. Expressed in another way, they amounted to from 11 to 12 per cent of the gross sales of Shell's products. The high cost of transportation is not strange considering the bulk and weight of petroleum products, but it helps to show the extent of T & S activities.

The role that T & S plays in Shell affairs is not unique in the oil industry or in industry in general. Most oil companies devote large amounts of time and money and effort to the task of balancing to their best advantage the available supply of products with the ever changing demand. Getting the right product in the right place at the right time at the lowest possible cost is often the difference between success and failure.

In skeleton form, the innumerable duties of T & S break down into a logical sequence. Thus, T & S enters the picture as soon as oil is produced from the wells. Arranging for the supply of crude to the refineries is the department's first problem. Arranging for the movement of the finished products from the refineries to terminals and between terminals forms the next step in the series. T & S also has the job of arranging for the movement of products from terminals and refineries to bulk storage depots (both Shell's and its customers). Barges and tank cars and transport trucks are used. The department also arranges marine, rail and truck transportation and operates products pipe lines and products pipe line terminals.

So diverse are the functions of T & S that the department has been subdivided into five departments. Each fills an important part of the transportation and supply sequence from the well to the consumer. Crude Oil, Supplies, Traffic, Marine Transportation, and Products Pipe Line are the names of these departments. Only by examining each in



The first of two articles on Shell's Transportation and Supplies Department, an organization which must solve the basic problems of supply and demand, time and space, in operations which extend from well to consumer.

detail can we really see and understand the workings of all T & S.

Crude Oil

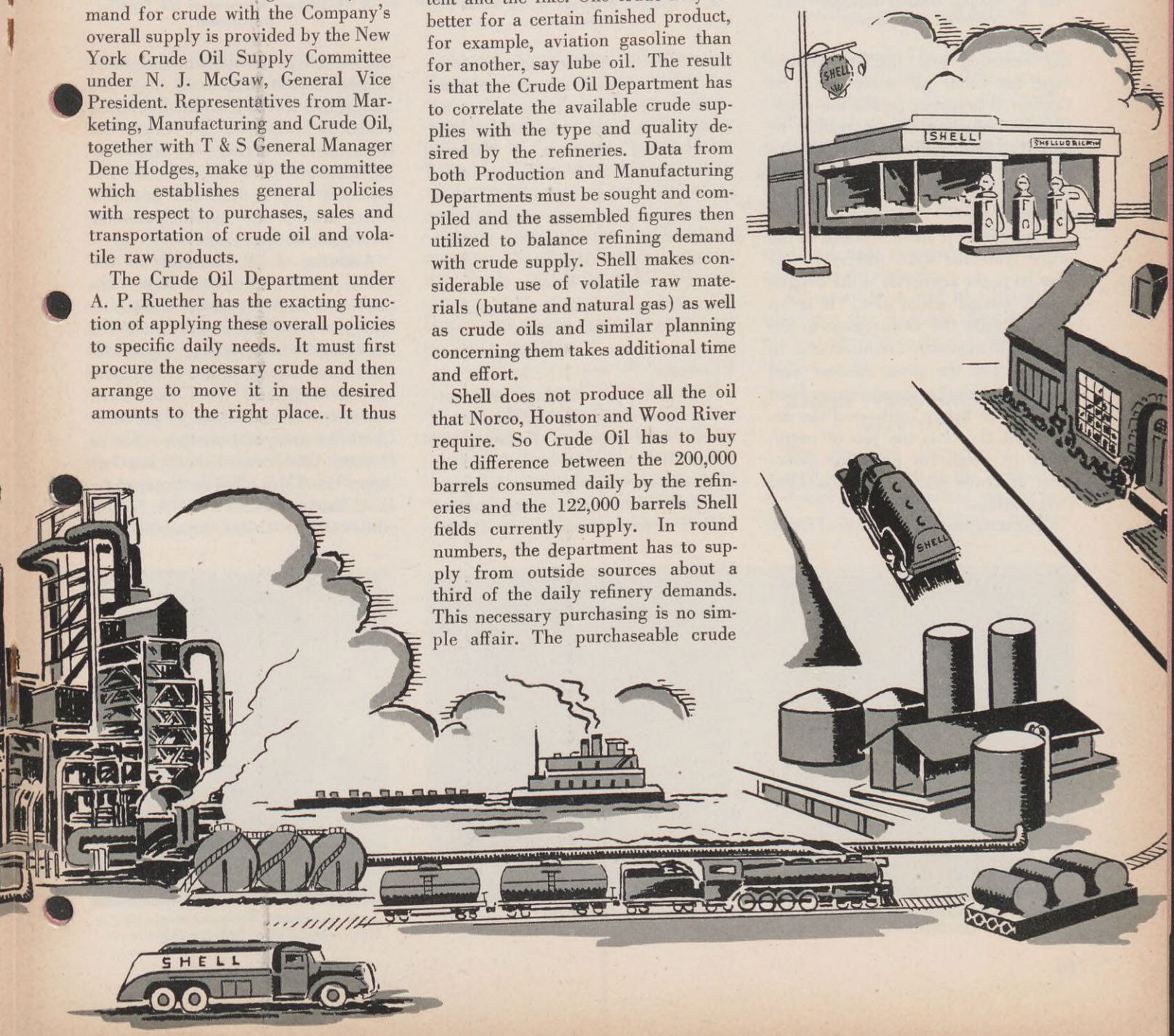
Every day over 200,000 barrels of crude are processed at Shell's three East of the Rockies refineries. Coordination of this huge refinery demand for crude with the Company's overall supply is provided by the New York Crude Oil Supply Committee under N. J. McGaw, General Vice President. Representatives from Marketing, Manufacturing and Crude Oil, together with T & S General Manager Dene Hodges, make up the committee which establishes general policies with respect to purchases, sales and transportation of crude oil and volatile raw products.

The Crude Oil Department under A. P. Ruether has the exacting function of applying these overall policies to specific daily needs. It must first procure the necessary crude and then arrange to move it in the desired amounts to the right place. It thus really has two jobs—and both are big.

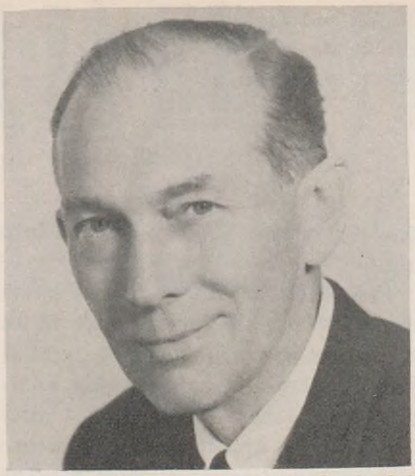
Procuring 200,000 barrels of crude would be a hard enough job if all crude oils were of the same type. But different crudes have varying characteristics—they vary as to hydrocarbon make-up, sulfur, paraffin content and the like. One crude may be better for a certain finished product, for example, aviation gasoline than for another, say lube oil. The result is that the Crude Oil Department has to correlate the available crude supplies with the type and quality desired by the refineries. Data from both Production and Manufacturing Departments must be sought and compiled and the assembled figures then utilized to balance refining demand with crude supply. Shell makes considerable use of volatile raw materials (butane and natural gas) as well as crude oils and similar planning concerning them takes additional time and effort.

Shell does not produce all the oil that Norco, Houston and Wood River require. So Crude Oil has to buy the difference between the 200,000 barrels consumed daily by the refineries and the 122,000 barrels Shell fields currently supply. In round numbers, the department has to supply from outside sources about a third of the daily refinery demands. This necessary purchasing is no simple affair. The purchaseable crude naturally varies in type and in amount, the oil fields involved are widely scattered, and transport difficulties further complicate the matter.

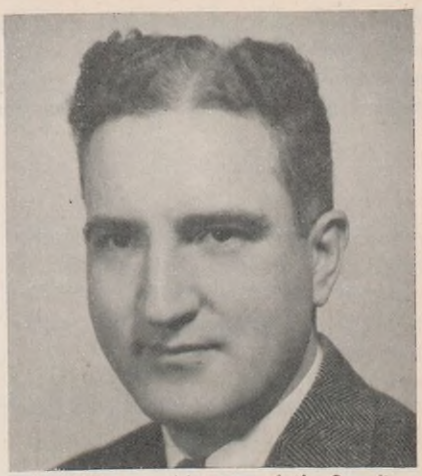
Some of the purchasing really amounts to an exchange of crude between Shell and other companies. Thus, for a number of Shell producing areas the existing means of transportation available to Shell are either inadequate or too expensive to use to move the crude to Shell's refining centers. The Crude Oil Department has the problem of making the best use of the oil thus produced. A sim-



Dene B. Hodges, *General Manager, Transportation and Supplies*



A. P. Ruether, *Manager of the Crude Oil Department*



R. N. Duncan, *Manager of the Supplies Department*

ilar situation and similar problem exist for other oil companies. So Crude Oil arranges to sell the crude in areas where it cannot readily be moved to Shell refineries and to make purchases from other companies whose fields lie within Shell transportation areas.

Arranging for the movement of the crude from the wells wherever they may be to the refineries is the department's second major task. It is up to the Crude Oil Department to examine all available facilities and to arrange for the most efficient and most economical transportation. Pipe lines do the heavy work—and the department thus has the job of correlating its needs for pipe line movement of crude with Shell Pipe Line Corporation.

Operating over 5,300 miles of crude lines, Shell Pipe Line Corporation is one of the country's larger common carriers. Crude lines connect the west Texas fields with both Houston and Wood River refineries. A 450-mile line runs from Shell's main source of supply, New Mexico and West Texas, to Houston. That same supply source is connected by pipe line through Oklahoma and Missouri to Wood River. Crude from Kansas and Oklahoma enters this line at Cushing, Oklahoma while still another line carries crude from East Texas down to Houston.

The quantities involved are enormous. In 1945, 53,000,000 barrels of oil were piped to Houston and Wood River alone by Shell Pipe Line Corporation, in addition to deliveries to Shell intermediate storage points.

Barges play an important if secondary role in transporting the crude. Nearly 28,000 barrels a day are barged into Norco from the Louisiana fields. It is up to T & S Crude Oil Department to arrange for this barging through the T & S Marine Department. And in those rare instances where tankers are required similiar arrangements are made.

Assisting A. P. Ruether in the Crude Oil Department at New York office are E. W. Parsons and G. J. Marro. Operations of the Crude Oil Department, however, are largely decentralized and there are two important field offices. One, located in Tulsa, covers operations in the Mid-Continent area, and another office in Houston takes care of the Texas-Gulf Area. The Tulsa office is managed by E. A. Bacon, assisted by C. A. Nyhof, while O. D. Crites supervises the

O. D. Crites, *Manager of the Houston Crude Oil Department*

E. A. Bacon, *Manager of the Tulsa Crude Oil Department*

J. M. Longinotti, *Manager of the Mid-Continent Division, Supplies Department*

Barging oil up the Mississippi

W. B. Case, *Assistant to the General Manager, Transportation and Supplies*

Houston office with E. L. Blinn as his assistant. These two offices handle most of the department's actual operations, including arrangements with Shell Pipe Line Corporation for pipe line transportation, arrangements with barge operators to handle large movements, and negotiations with potential buyers and sellers of crudes.

From these field offices, regular reports on inventory, new supply available, and other pertinent operations go to Ruether in New York where consolidated supply versus demand balances are worked out. Once each month the Crude Oil Department issues a report indicating the crude and volatile supplies available for the following month compared with requirements at Shell's three East of the Rockies refineries. Long range supply balances are also worked out periodically by Ruether's department showing the supply picture for as much as a year in advance. Both short term and long range reports are presented to the Crude Supply Committee for appropriate action if such is required because of an unbalanced position.

Shell's price postings in all crude areas are the direct responsibility of the Crude Oil Department. Where changes are necessary, the Crude Oil Department makes necessary revisions to Shell's postings.

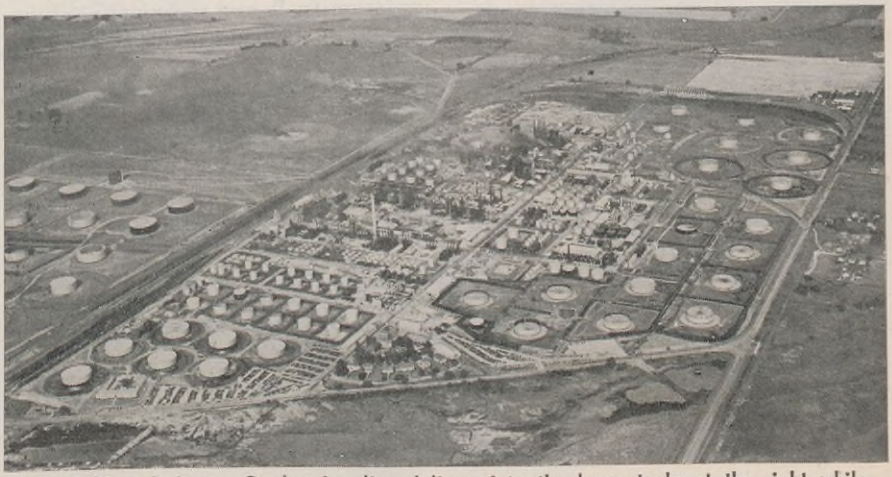
Compiling the "profitability analysis" on each type of crude that passes through Shell's hands is another responsibility of this department. This is simply a comparison between the product revenue derived from each barrel of a given crude, and the costs involved in procuring and processing that same barrel. The resulting figure is the "profitability" for the type of crude concerned. From the profitability analysis Shell can then decide whether or not it would be practical to substitute any other crude for the crude scheduled to be delivered to Shell refineries. In similar fashion, the "profitability" of volatiles (butane and natural gasoline) is developed and appraised.

All in all it would be difficult to overvalue the role that Ruether and his department play on the Shell team.

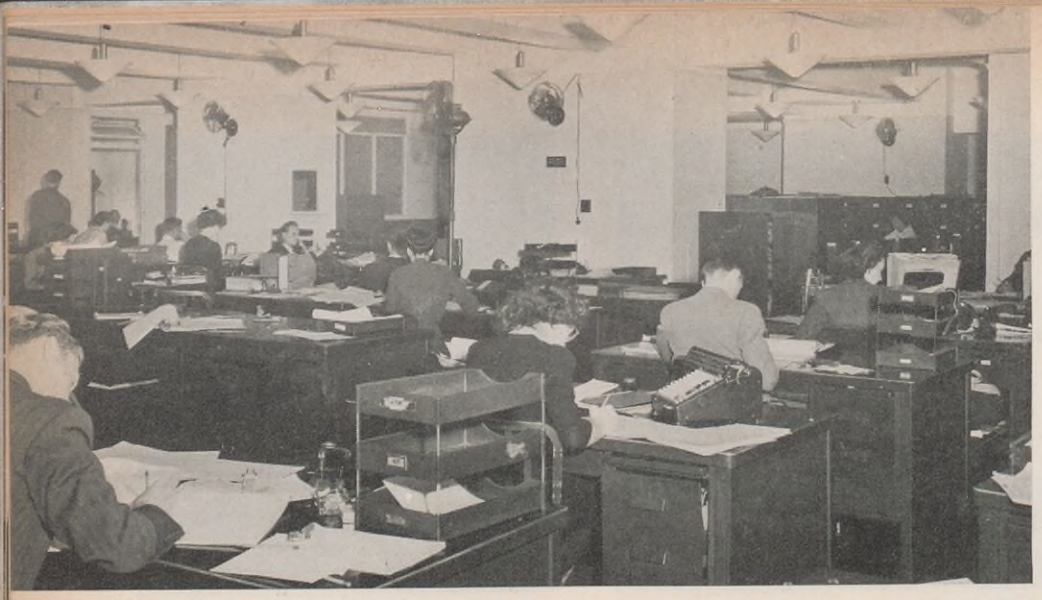
Refined Products—Supplies Department

The Supplies Department takes over T & S duties at the refineries, and once again balance of supply and demand is the principal concern.

W. F. Schoenthaler, *Manager of the Gulf-Atlantic Coast Division*



Wood River Refinery. Crude pipe line delivers into the large tanks at the right while at the left is shown a portion of the finished products tankage.



The Supplies Office in action

R. N. Duncan, Manager, and his assistants are charged with distributing the manufactured products from the refineries so that all Shell areas are adequately supplied.

Correlating overall supply with the demand for refined products, the Supply Committee under the chairmanship of Dene Hodges, decides on general supply policies. Comprised of representatives from Manufacturing, Marketing, and Supplies, the Committee considers the overall supply balance and plans its policies on the basis of figures compiled by the Supplies Department from Manufacturing and Marketing estimates.

Translating the supply policies into effective action and maintaining supply continuity at all marketing points are the major functions of the Supplies Department. Thus, it is responsible for preparing for the refineries an estimate of the prospective demand that each refinery must fulfill. These estimates have to be detailed in terms of all the products and simultaneously as to means of transportation. The desired quantities of liquefied petroleum gases, motor and aviation gasolines, kerosene, light heating oils, residual fuel, asphalt, lubricant oils, etc., must all be figured. Notice of these demands is given the Manufacturing Department month by month, twelve months in advance.

Although Supplies breaks down the estimates as to type of transportation, it does not do the actual scheduling, which is in the hands of ship operators and the Products Pipe Line Department. Rather, the department provides the overall coordination necessary to see that the schedules can be met at the loading origin and supplies maintained at the receiving points. It does what it can to relieve congested storage on one hand and shortages on the other.

Duncan's Supplies Department is divided into two major groups—the Mid-Continent under direction of J. M. Longinotti and the Gulf-Atlantic Coast under W. F. Schoenthaler. These two divisions coordinate the output of the Houston, Norco, and Wood River Refineries. Schoenthaler's division arranges for the flow to market of major refinery products including aviation fuels and technical naphthas in its geographical area. The Mid-Continent division makes similar arrangements for its own area and in addition, handles the lube oils and liquefied petroleum gases for both divisions.

Fred Deaver assists Longinotti in running the Mid-Continent section along with Bill deGroot, Ed Alt and Don Pereau as section heads. In the Gulf-Atlantic Coast division, Schoenthaler is assisted by Sid Kieselhorst who supervises two sections under H. E. McNorton and E. J. McCracken.

These are the men who help decide "what to get, when to get it, where it is to go and how it gets there." They plan the necessary purchase exchange and ordering of products. In conjunction with operating departments they plan the all important products movement and purchase schedules, schedules that have to be practically perfect to keep Shell's depots and distributors supplied with their customers' needs. They are the men responsible for preparing the necessary estimates, economic analyses and statistics that form the basis for long range Company supply policies.

A lot of exacting paper work is involved in the establishment and supervision of shipping procedures and in the preparation of statistical controls. But when emergency supply problems arise as they inevitably do, the Supplies Department must escape detailed routine and provide the solution. Whether the disruption of supplies is due to transport difficulties, unseasonable weather or to other causes, Supplies is there to see that Shell products get through.

Laying one of the crude lines of the Shell Pipe Line Corporation

VETERANS WHO HAVE RETURNED

Head Office

K. H. NONWEILER

Texas-Gulf Exploration and Production Area

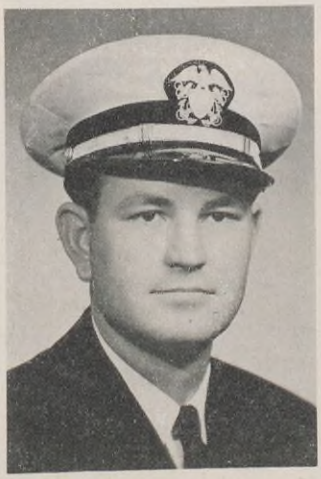
W. W. PORTER

D. H. TRAHAN

O. H. HITCHCOCK

Sewaren Terminal

E. M. MOONEY



J. M. FOUTS, JR.

Below: D. D. HEDGES

R. JEMISON, JR.

Flying the Pipe Line

The keen-eyed hedge-hopping pilots of the Pipe Line Patrol average more than 15,000 miles monthly in routine inspection flights

WHEN you are flying along three or four hundred feet above the pipe line, you don't have any trouble spotting the black stain of any crude oil that has leaked from the pipe. At least, that is what Shell Pilots Ben A. Funk and Don Joseph claim, and they ought to know. They have flown thousands of miles along the crude lines of Shell Pipe Line Corporation during the past five years. It is a hazardous and difficult job, but they have conquered the hazards by flying skill and have turned the job into a routine one.

Patrolling pipe lines is a job that goes back as far as pipe lines themselves. The brutal beating that pipe lines take both from nature and from man makes leaks inevitable—and line operators learned very quickly the cost and danger of the undetected leak. Pipe line walkers covered regular beats as they scanned the lines, detecting and reporting leakages. This was but a part of their duties. They also reported exposed pipe washouts, broken telephone insulators and tie wires, thus assisting in preventive maintenance.

They did a good job, too, but their walking range was comparatively short and they finally yielded to progress.

Before World War II broke out in 1939, Shell completely revamped its line patrol system. Airplanes replaced the old "shanks mare" by "walking on air." The pilots covered more ground in an hour than the land-bound walkers did in a week. Five to six hundred miles a day were patrolled by the two tiny yellow monoplanes that skimmed the tree tops looking for leaks. The same weekly inspection of trunk lines continued in force, but with outstanding savings in manpower and money. The saving in manpower proved to be of particular value when the war came along.

The tiny patrol planes average 90 miles an hour

Chief Pilot Ed Wagner heads Shell's Patrol group. Ed was the man who proved the idea of air patrol would work and then trained others in the art of the job. Pilot Don R. Joseph who also started in 1939, and Ben A. Funk who came in 1941 are the others in the patrol crew. The skilled mechanics at Tulsa, S. W. Millard and W. H. Rainey, are also important members of the staff. The patrol is supervised by F. W. Littell, Superintendent of Transportation and Communications, for administrative purposes although routine contacts with patrol pilots are made by Shell Pipe Line's three area dispatching staffs.

Over 3,750 miles of right-of-way are involved in the Shell system and six months are required for a pilot to become thoroughly familiar with it. Having served for five or more years, all of Shell's patrol pilots are well acquainted with every foot of the system.

Flying at low levels is particularly perilous along some portion of the pipe line route where tree tops offer the only possible landing field. But Shell pilots are old barnstormers. They all have instrument ratings and have had from 6 to 8 years' experience flying small, light planes at the low level of 200 feet above ground which they are permitted to do by special CAA authorization.

Every possible precaution is taken to insure that only planes in top shape ever carry the Shell patrol men out on their assignments. Each plane is checked thoroughly before every trip by the mechanics. The pilot, too, makes a personal checkup every morning before he starts the day's flight. Fuel goes into the tanks through a special chamois strainer to insure against impurities. The safety record is outstanding. In the 13,400 hours that the monoplanes have been in the air in regular patrol service only two minor accidents have occurred. On both occasions the pilot had to land on a one strip airport in a heavy cross wind and some minor damage resulted to the landing struts.

Much of the credit for the fine safety record must go to the staunch light airplanes that Shell has used for its patrol from the beginning. These rugged little ships are powered by 90 h.p. engines, average 90 to 100 miles per hour, and ordinarily burn 80-octane gasoline. Blind flying equipment and a two-way radio for communications with airports and weather stations are standard equipment for the planes and cabin heaters guard against the icy chills of the winter air.

Of the 3 planes in the inspection squadron two are in regular service about 25 hours per week and the third serves as a spare. One of the planes is based at Big Springs, Texas, to cover the trunk lines in New Mexico and Texas while the other regular plane is based at Tulsa, to cover the trunk lines in Illinois, Kansas, and Oklahoma. Tulsa houses the third ship as well as the repair and overhaul shop which takes care of two personnel transport planes along with the patrol ships. The three patrol planes have flown well over 1,200,000 miles since the inception of the air patrol system. The present monthly average of 15,500 miles assures weekly inspection to the 3,750 miles of crude oil trunk pipe lines under observation.

Flying weather over the entire route has to be good before any flights are started. Fortunately in this region good weather is the rule even in winter. In some ways winter flying even has advantages. The snow on the ground covers all the old leak stains and the oil from any new leak soaks through the snow to make a distinctive contrast.

Government observation stations aren't the only sources used for weather reports. All along the line men at the pumping stations have been trained to supply weather information, which helps a lot particularly in some sections of Texas remote from official stations. For that purpose, an unusual code system has been developed for communication between pumping stations and the

The repair shop at Tulsa—Wagner and Aircraft Mechanics W. T. Rainey and S. W. Millard

Don Joseph and Ed Wagner started their patrol work for Shell back in 1939

Right: Patrol ship over Osage Station in Oklahoma

planes. Large orange fabric panels 18 inches by 8 feet are laid out in the station yard in various geometric patterns. Each pattern conveys a certain message. One might mean for example "continue patrol," another "return to base," etc. When no panel is displayed and the pilot needs or wants information he drops a note in a weighted canvas bag down to the field and then circles the station until some communication is received from the station crew. The sand-bag method is also used by the pilots when reporting the location of leaks.

Flights are run on schedules that are always carefully checked. Each pumping station in turn reports by telephone to the plane dispatcher the time that the plane passes overhead.

The air patrol also has an excellent performance record. Recent figures indicate that approximately 43 per cent of all crude oil leaks in Shell's pipe lines were found by the patrol pilots on their weekly trips. This percentage included an abnormal number of breaks in a badly corroded section of line that was patrolled only once a week. The section has recently been replaced and if its defects were not included in the computation, approximately 60 per cent of all crude oil leaks were found by the pilots.

Especially notable has been the pilots' adeptness at spotting leaks from lines crossing rivers or creeks where the oil in many cases appears some distance downstream from the point of the leak.

Shell Pipe Line planes began patrol of Shell Oil's Products Pipe Lines from Wood River, Illinois, to Columbus, Ohio, and to East Chicago, Indiana, on a contract basis in 1939. In 1944, however, this service was discontinued because the overall results obtained were unsatisfactory. Crude oil leaks show up with surprising distinctness even though quite small. Often, too, they make a conspicuous area of dead vegetation. But products leaks are difficult to spot as they do not create the distinctive surface discolorations characteristic of the crude oil leaks. Of the 26 leaks that occurred over a 53-month period in the products line covered, only 2 were reported by the patrol pilots. On a number of other occasions leaks were reported which didn't exist. It was found, also, that gasoline leaks can cause considerable danger to planes flying overhead at low levels as the vapor constitutes a serious fire hazard. As a result, the regular patrol of these products lines and those of the Bayou Pipe Line System (which is operated by Shell Pipe Line Corporation) was terminated and such air patrol as exists on those lines today is limited to occasional general inspection flights carrying maintenance supervisors.

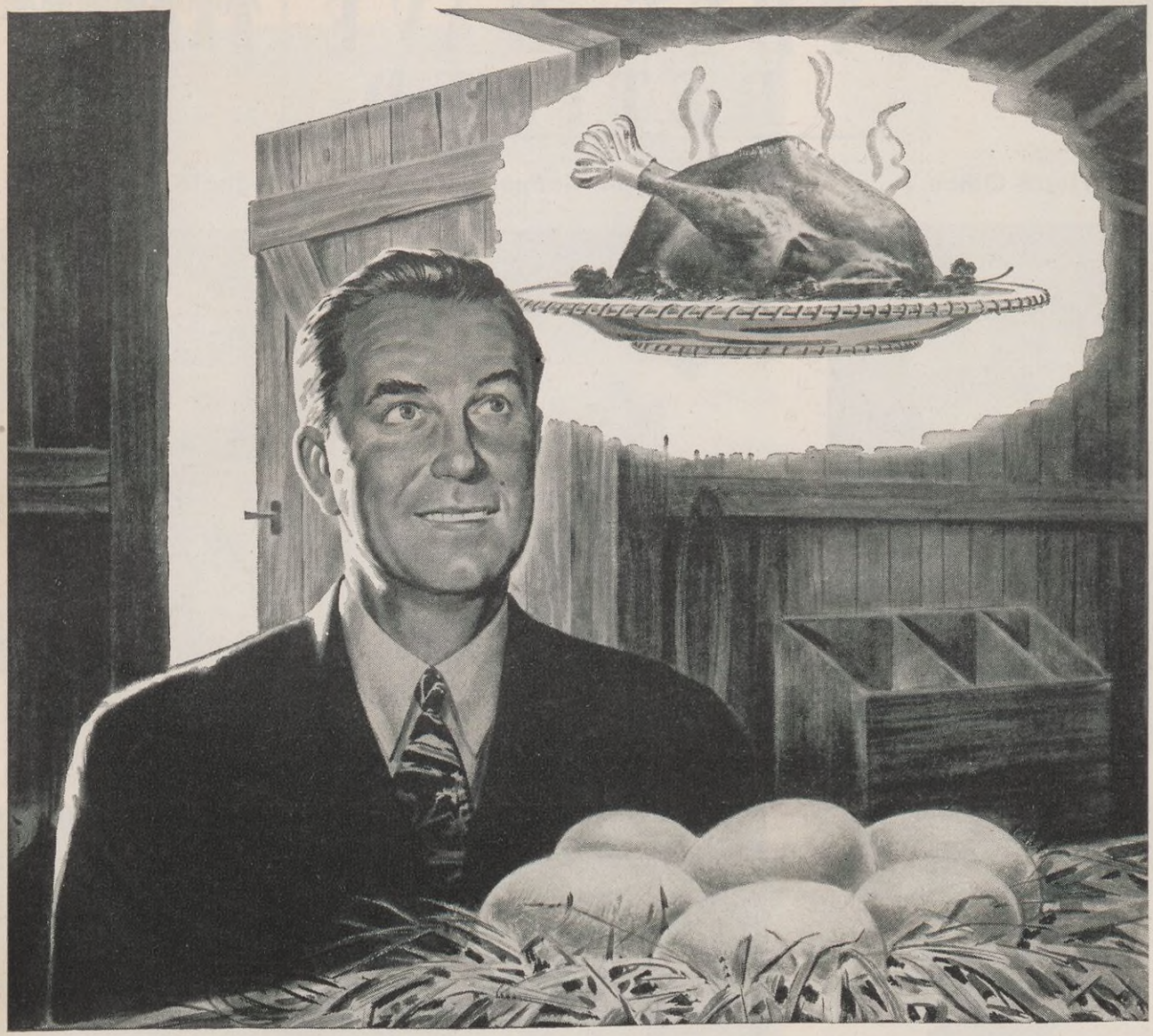
Pilots study the maps carefully before taking off

No attempt has been made to patrol the crude gathering lines by plane, and regular line-walked service there as yet has no effective competition.

The impact of war on all phases of private flying is nowhere more notable than on the oil industry. Oil companies everywhere have seen the value of plane service for transporting personnel, aerial mapping, checking of construction progress, and pipe-line patrol. With its pre-war knowledge and experience, Shell Pipe Line Corporation has given considerable information to many others on air patrol operations. Other pipe line companies as well as many individual patrol contractors have benefited from the information.

Flying along at low levels and low speeds has other attractions besides the job. Wild game of all sorts, for example, is easily spotted from the air and Shell pilots know some of the best hunting spots in Missouri, Oklahoma and Texas. Because the pilot's face is visible through the cabin window from the ground, he is kept busy dipping his wings in answer to greetings from people who have learned to watch for his regular appearance once or twice a week. Men, women and children wave to the pilots and the pilots count them all friends.

Chief Pilot Ed Wagner with patrol plane



Sometimes you can break a good rule!

It's usually a wise rule not to plan a chicken dinner before the eggs are hatched.

But not always!

If the "chicken dinner" represents your future, and the "eggs" are financial nest eggs—go ahead and plan!

Especially if your *nest eggs* are U. S. Bonds—all the War Bonds you have bought—all the Savings Bonds you *are buying*. For your government *guarantees* that these will hatch out in just 10 years.

Millions of Americans have found them the safest, surest way to save money . . . and they've proved that buying Bonds on the Payroll Savings Plan is the easiest way to pile up dollars that anyone ever thought of.

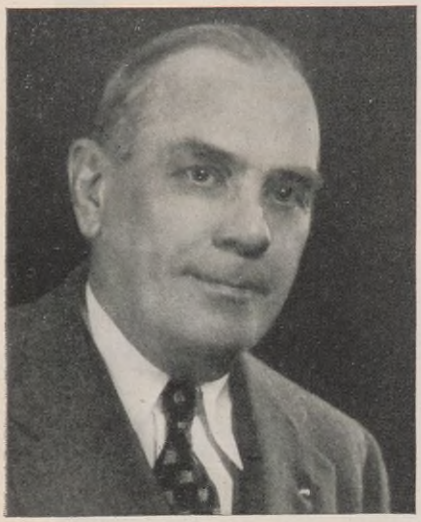
So keep on buying Savings Bonds. Buy them at banks, post offices, or on the Payroll Plan. You'll be building real financial security for yourself, your family, and your business.

Best of all, you *can* count your chickens before they're hatched . . . plan exactly the kind of future you want, *and get it!*

SAVE THE EASY WAY... BUY YOUR BONDS THROUGH PAYROLL SAVINGS

THEY HAVE RETIRED

Head Office



John F. Reardon, Purchasing and Stores

Houston Refinery

John A. Riley, Engineering

Products Pipe Line

Edward Grant, East Chicago Terminal

Mid-Continent Exploration and Production Area

Benton E. Stewart, Production

Lorrin L. Leland, Production (center)

Wood River Refinery

Below: John J. Dunn, Engineering, (with straw hat) who retired earlier in the year

Wood River Refinery (cont.)

Clarence R. Stauffer, Engineering, who retired recently, poses with farewell gifts and friends

Frederick C. Hack
Engineering

C. V. Nord, Engineering (center) receives retirement gift from fellow workers

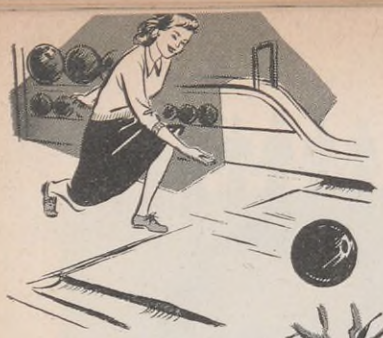
Above: Samuel L. Morehead
Car Department

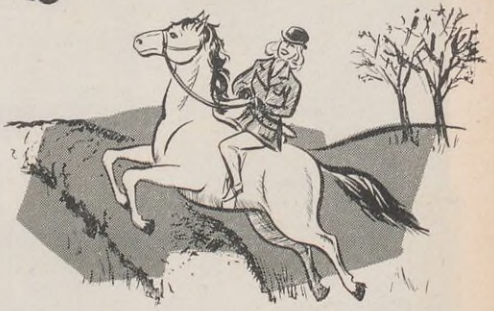
Left: W. Louis Sehnert, Car (center foreground) retires after more than 26 years with Shell

Below: Magnus R. Steiner, Engineering (right center), retired in September after 24 years of service with Shell

Below: Gilbert K. Swain, Engineering (center), who retired earlier in the year, receives a gift from fellow workers

AFTER HOURS





Above: These employees made up two teams which represented the East Chicago Terminal of Products Pipe Line in the Calumet Industrial Golf League. Team No. 1 finished in first place in the league which boasts some of the outstanding amateur golfers in the Mid-West.

Left: 1946-47 Officers of the "Shell Southerners," employees' organization of the Atlanta Marketing Division Office. Seated: Samuel S. Tomlin, Jr., President; Standing: Frances Bowers, Secretary; Forrest Bryant, Executive Committee; Sarah Black, Vice President; William Bettess, Executive Committee; Frances Jenkins, Treasurer.

Employees of the Minneapolis Marketing Division warm up prior to the start of the Division's monthly golf tournament at the Meadowbrook Golf Course.

325 Shell Pipe Line employees, their families and friends turned out for the Cushing Safety Chapter's annual barbecue at the Cushing Country Club. Part of the crowd is shown above lined up at the food tables while at the right the cooking brigade poses for the camera-man.

Left: Employees of the Atlanta Marketing Division and guests gather at a fish fry and "juke-box" dance, sponsored by the "Shell Southerners."

Right: Ralph Brown, runner-up, and "Hub" Turley, winner, in the Wood River Refinery's Championship Golf Tourney. The white-capped Turley is also Alton city golf champ.

SERVICE BIRTHDAYS

30 YEARS

J. H. HILL
Mid-Continent Area
Production

P. J. WILLIAMS
Shell Pipe Line Corp.
Texas-Gulf Area

TWENTY-FIVE YEARS

C. B. GRAY
Texas-Gulf Area
Gas-Gasoline

N. A. HARRISON
Mid-Continent Area
Production

P. H. SWINCHATT
Shell Union Oil Corp.

TWENTY YEARS

E. A. ACREE
Mid-Continent Area
Production

G. N. ALDERSON
Shell Pipe Line Corp.
Mid-Continent Area

N. R. ALLISON
Head Office
Production

C. H. BATT
Mid-Continent Area
Production

D. M. BOREN
Wood River Refinery
Toluene

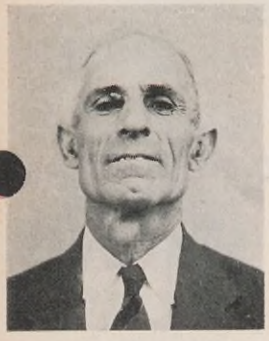
J. L. BOYD
Mid-Continent Area
Production

R. L. COX
Products Pipe Line
East Chicago Terminal

G. A. DAUGHERTY
Mid-Continent Area
Production

H. L. DAY, Jr.
Wood River Refinery
Yield

C. F. de RIDDER
Houston Refinery
Technological



H. I. DUGAS
Norco Refinery
Car

G. F. FORD
Texas-Gulf Area
Production

L. L. FOSTER
Products Pipe Line
East Chicago Terminal

L. D. FOX
Mid-Continent Area
Treasury

A. GYOKER
East Chicago Terminal
Products Pipe Line

E. HAGEN
Wood River Refinery
Dispatching

A. HOCK
Wood River Refinery
Dispatching

J. W. HOPPLE
Products Pipe Line
East Chicago Terminal

J. J. JACKMAN
Mid-Continent Area
Production

T. J. JACKSON
Wood River Refinery
Cracking

R. H. KNEER
Shell Pipe Line Corp.
West Texas Area

G. W. LYNCH
Texas-Gulf Area
Treasury

P. S. McCLENDON
Products Pipe Line
East Chicago, Ind.

H. P. MITCHELL
Mid-Continent Area
Production

R. C. MUELLER
St. Louis Division
Sales

R. A. NEUHAUS
Wood River Refinery
Cracking

M. E. OVERMAN
Head Office
Trans. & Supplies

L. A. PATRY
Mid-Continent Area
Production

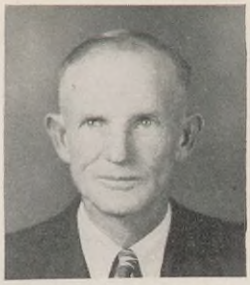
W. G. RINGERING
Wood River Refinery
Engineering

H. G. RODEMAN
Shell Pipe Line Corp.
Texas-Gulf Area

F. A. SNYDER
Products Pipe Line
East Chicago Terminal

H. W. THIEL
Products Pipe Line
Sibley, Ill., Station

W. J. WATSON
Wood River Refinery
Engineering



L. C. WELCH
Shell Pipe Line Corp.
Texas-Gulf Area

C. E. WHISTON
Products Pipe Line
East Chicago Terminal

Head Office

15 Years

Marie T. Bremerich.....*Tax & Claims*
J. C. Hopkins.....*Marketing*
F. T. McDonnell.....*Marketing*

10 Years

E. J. Gamewell.....*Purchasing*

Shell Pipe Line Corporation

15 Years

R. E. Brisco.....*Bayou Pipe Line System*
E. H. Lindesmith.....*Head Office*

10 Years

R. R. Crump.....*Texas-Gulf Area*

Products Pipe Line

10 Years

T. A. Fountain.....*Lima, Ohio*
T. O. Pistorius.....*Clinton, Ill.*

Mid-Continent Exploration and Production Area

15 Years

J. Crisp.....*Production*

10 Years

F. C. Buckwalter.....*Production*
F. M. Carroll.....*Production*
R. R. Scott.....*Production*

Texas-Gulf Exploration and Production Area

15 Years

A. R. Eidt.....*Production*
G. S. White.....*Exploration*

10 Years

R. Alvey.....*Production*
T. R. Goebel.....*Gas-Gasoline*
A. H. Harwell.....*Production*
D. D. Hedges.....*Land*
R. J. Pillow.....*Administrative*
W. B. Platt.....*Exploration*
J. J. Rodman.....*Production*
E. T. Southard.....*Treasury*
L. J. Witherwax.....*Production*

Houston Refinery

15 Years

L. W. Pearsey.....*Control Laboratory*

10 Years

M. D. Burgin.....*Cracking*
B. R. Cole.....*Engineering*
O. M. Gindratt.....*Engineering*
A. J. King.....*Cracking*
G. W. Matthews.....*Dispatching*
C. R. Shenton.....*Engineering*
J. M. Thompson.....*Engineering*
J. S. Walker.....*Loading & Unloading*

Norco Refinery

15 Years

J. Laurent.....*Engineering*

10 Years

O. L. Brady.....*Topping*

Wood River Refinery

15 Years

W. H. Chandler.....*Research Laboratory*
H. W. Gustine.....*Cracking*
V. Vitatoe.....*Boiler House*

10 Years

R. K. Bush.....*Alkylation*
D. N. Claflin.....*By-Products*
J. J. Malley.....*Engineering*
R. E. Tjaden.....*Engineering*
A. M. Weiss.....*Lube Treating Heavy Oils*

Marketing Divisions

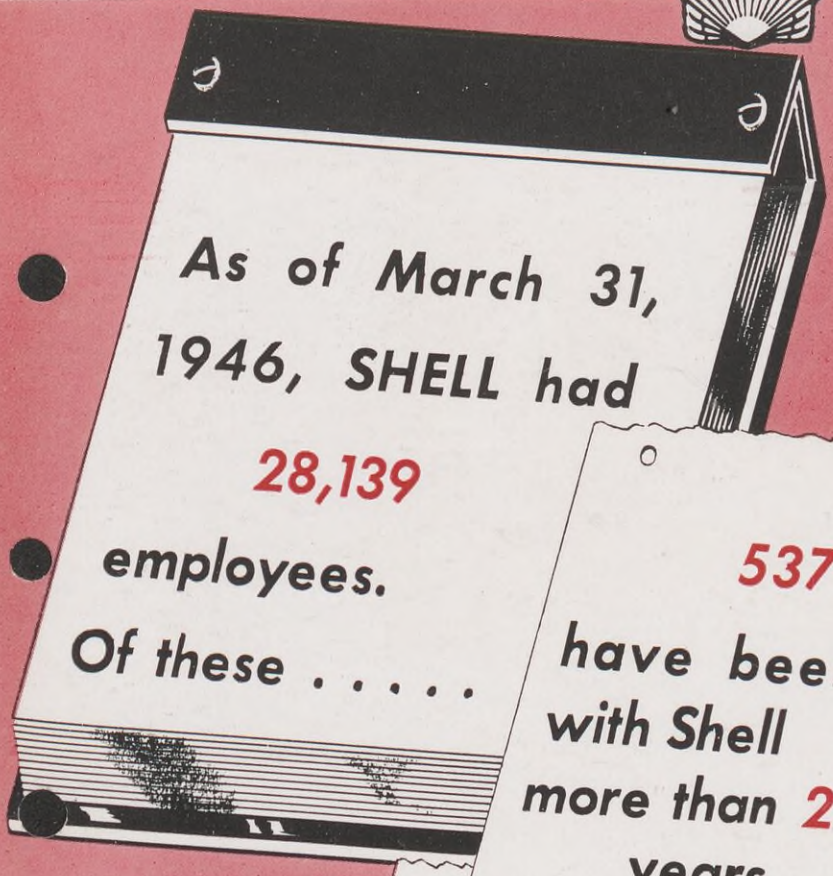
15 Years

C. A. Christiance.....*Albany, Operations*
H. T. Williams.....*Albany, Sales*
H. W. Nelson, Jr.....*Atlanta, Treasury*
J. S. Zamemski.....*Baltimore, Operations*
W. B. Geary.....*Boston, Operations*
L. A. Rasey.....*Cleveland, Treasury*
C. R. Whitson.....*Cleveland, Sales*
F. J. Kern.....*St. Louis, Operations*

10 Years

E. S. Mathes.....*Atlanta, Marketing*
D. J. Hendryx.....*Baltimore, Operations*
E. T. Morrissey.....*Boston, Operations*
S. E. Pickering.....*Boston, Operations*
W. B. Howser.....*Cleveland, Operations*
T. G. Keeling.....*Cleveland, Operations*
H. Rojem.....*Detroit, Operations*
H. M. Lundeen.....*Minneapolis, Operations*
G. S. Maxson.....*New York, Marketing*

matters of *Fact*



As of March 31, 1946, SHELL had

28,139

employees.

Of these . . . . .

537

have been with Shell more than **25** years.

2,343

have been employed from **20** to **25** years.

4,107

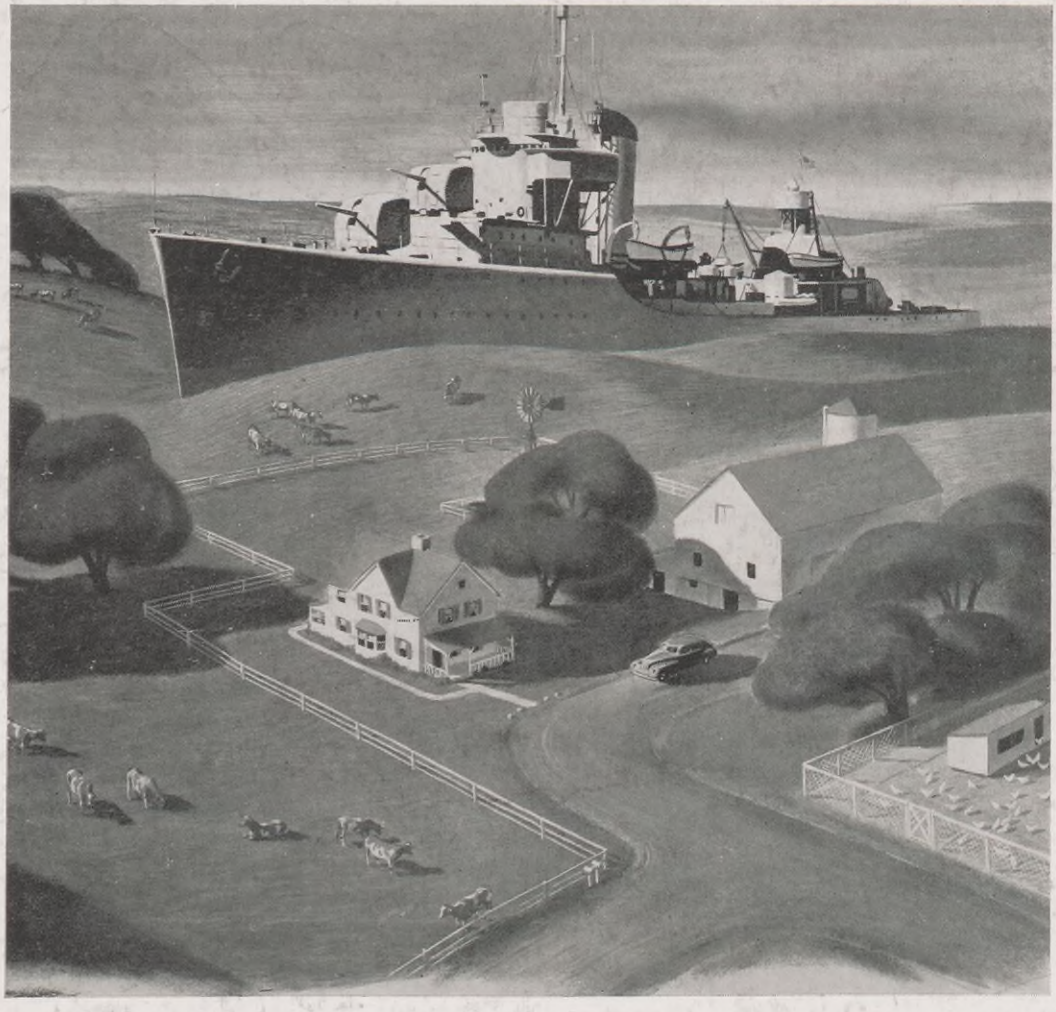
have worked with Shell from **10** to **15** years.

3,860

started work between **15** and **20** years ago.

One of a Series of Charts Showing Interesting Facts, for and about Shell and its employees.

SHELL OIL COMPANY
INCORPORATED
50 West 50th Street
NEW YORK, N. Y.



THE SHIP'S IN THE MEADOW

HARD-PRESSED farm machinery today enjoys the same protection against rust which Shell Research developed for the pounding turbines of Allied fighting ships.

The anti-rust factor in Shell Turbo Oil has now been turned into a weapon for the farmer against one of his deadliest enemies . . . RUST.

Shell's rust preventive for the farm, sprayed or brushed on the farmer's expensive equipment, gives it months of protection—in the toolshed or even in "outdoor storage."

The anti-rust ingredient welds itself to the surface in a coating which is virtually a part of the metal. So the proving ground of Naval action has been extended . . . "the ship's in the meadow."

Shell Ensis products today rustproof steel plates, pistons and other machine parts during shipment or storage.

Such research adds to the continuing benefits which come as petroleum is made to serve mankind in more and better ways.

SHELL

Horizons widen through Shell Research

Advertisement in Saturday Evening Post, Collier's and Life