SHELL NEWS

JULY 1953

TCP

Several Years Of Teamwork
Went Into This Shell
Premium Gasoline Additive—
The Biggest Motor Fuel
Development in 31 Years

. . . a story of product development

In research, a beginning is made by talking things over. Every branch of the Wood River Research Laboratory was represented in conferences aimed at eliminating spark plug fouling.

TCP, which is an easy way of saying a long chemical name, stands for a new Shell gasoline additive which can eliminate a major cause of engine trouble in automobiles and some airplanes. This major cause of engine roughness and power loss is spark plug "fouling," which occurs when metallic lead from conventional leaded gasolines is deposited on a spark plug. As the deposit accumulates, the metallic lead short circuits the plug and it misfires. TCP, a clear liquid blended into the gasoline, reduces the ability of the deposit to conduct an electric current and thus stops short circuiting. Because it keeps plugs operating at top efficiency, it gives the average car up to 15 per cent more power, and more gasoline mileage. What's more, TCP works on deposits in a car's combustion chamber, too. This minimizes pre-ignition, the most severe type of engine knock.

When TCP was recently introduced to the motoring public as a new additive in Shell Premium Gasoline, it was described as "the biggest development in motor fuel since the introduction of tetraethyl lead 31 years ago." From Shell's standpoint, the development of such an important fuel improvement has come as a result of cooperative research within Shell, centering on the Wood River Research Laboratory. It was there that the first studies aimed at finding a remedy for spark plug fouling began. Since its discovery TCP has been taken into the field by the Products Application Department for practical experiments in automobiles and in military and commercial aircraft, including helicopters. Meanwhile, Shell Development Company's Emeryville Research Center joined the project with studies of the effects of TCP in other aspects of engine operation.

The pictures on these pages show some of the stages of TCP's cooperative development.

SHELL NEWS

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

Employee Publications Department
New York, N. Y.

contents

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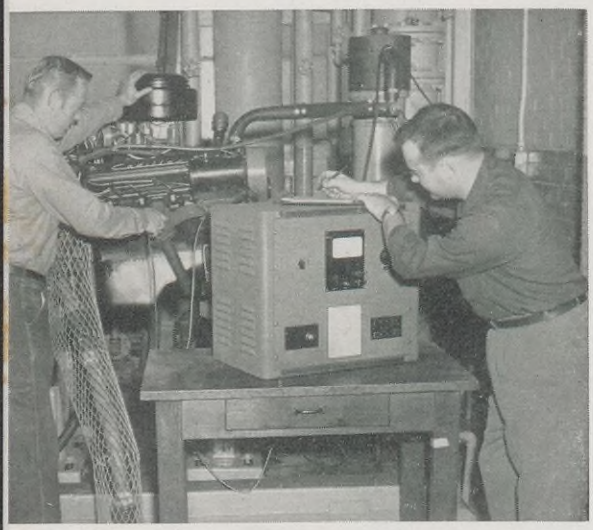
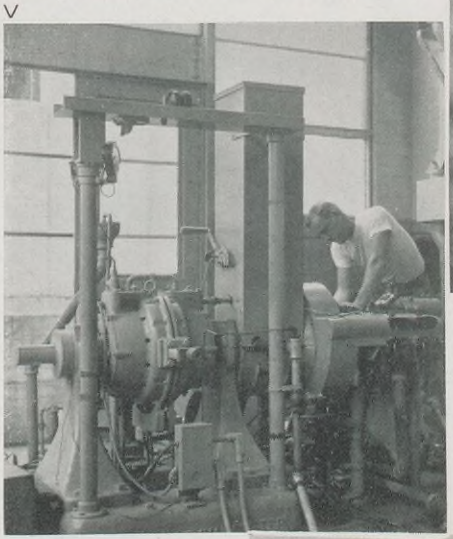
INDIAN LORE

The era of the Indian is one of the most fascinating chapters in American history. Most of us must go to a museum when we wish to study or enjoy examples of Indian culture, but Marc Seale of the Portland Marketing Division has an Indian museum of his own. Seale, who has studied and collected Western Indian relics for over 40 years, is shown in full regalia on the cover of this month's SHELL NEWS. Today, he is recognized as one of the foremost amateur archaeologists in the Pacific Northwest and his collection of Indian relics now numbers more than 6,000. The story of his collection begins on page 22.



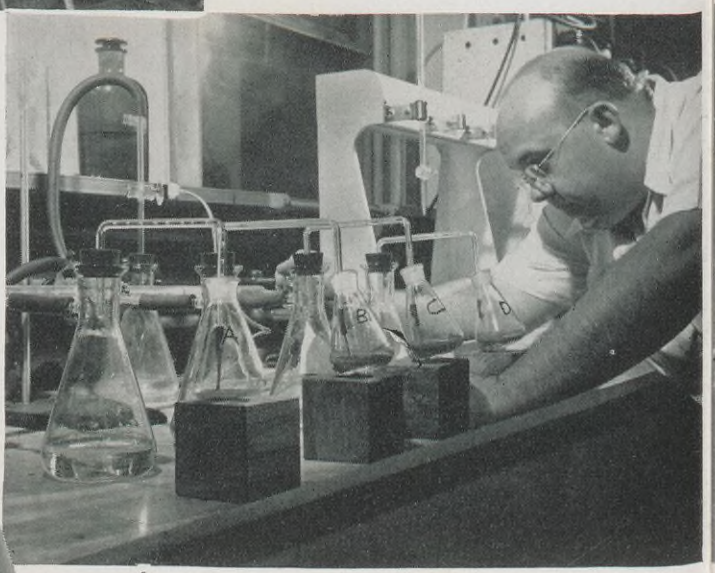
1. A laboratory test procedure was developed to investigate the fouling problem which has been a headache since gasoline engines were invented. The engines selected for the preliminary fouling tests were actual automobile engines like the one shown on the test block, above, and a four-cylinder aircraft engine, right.

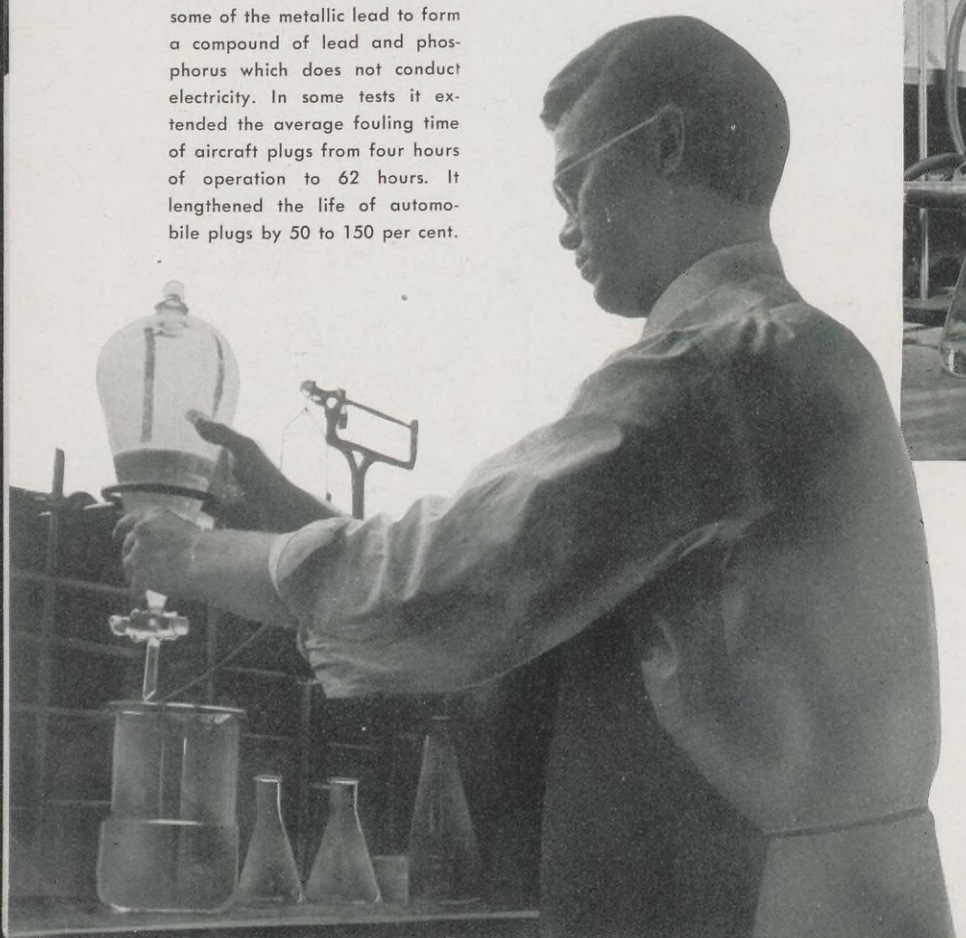
2. An adjustment is made on the aircraft engine, below. The device between the columns corresponds to a propellor and places different loads on the engine to imitate take-off, cruising and landing. Tests in this engine revealed that spark plug fouling occurred in four hours when standard leaded aviation gasoline was used, causing severe engine misfiring and backfiring.



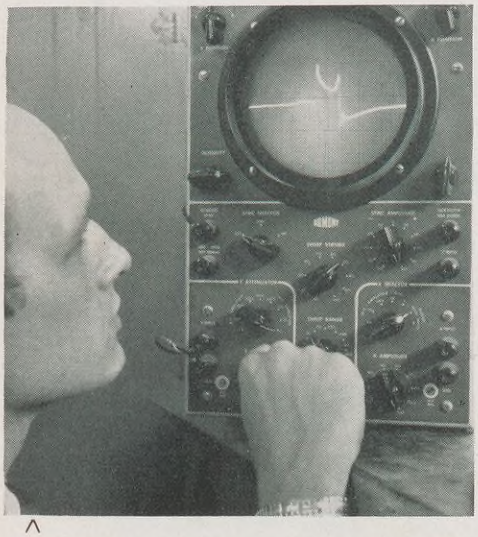
3. To supplement the tests at Wood River, Shell arranged further tests at the laboratories of aircraft engine and automobile manufacturers. Deposits on fouled and unfouled plugs were collected, above, for study at Wood River. It was established that the major constituent of deposits on all plugs was lead oxybromide.

7. Hundreds of additives were compounded and tested at Wood River and TCP was found to be extremely effective. Tests showed that TCP is able to combine with some of the metallic lead to form a compound of lead and phosphorus which does not conduct electricity. In some tests it extended the average fouling time of aircraft plugs from four hours of operation to 62 hours. It lengthened the life of automobile plugs by 50 to 150 per cent.

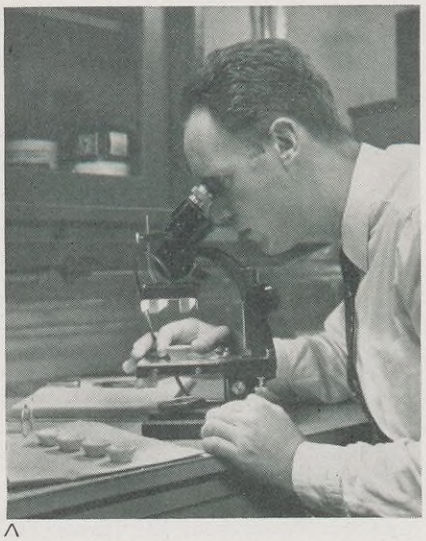




8. Road tests revealed that, on the second tankful, gasoline containing TCP promotes full spark plug efficiency. Fouled plugs are put in top working condition again, and future fouling is stymied. TCP also minimizes pre-ignition, the most severe form of engine knock, because it also modifies lead deposits in the combustion chamber. Though road tests gave substantial proof of TCP's ability, laboratory studies continued, as in the wet chemical test, shown above.

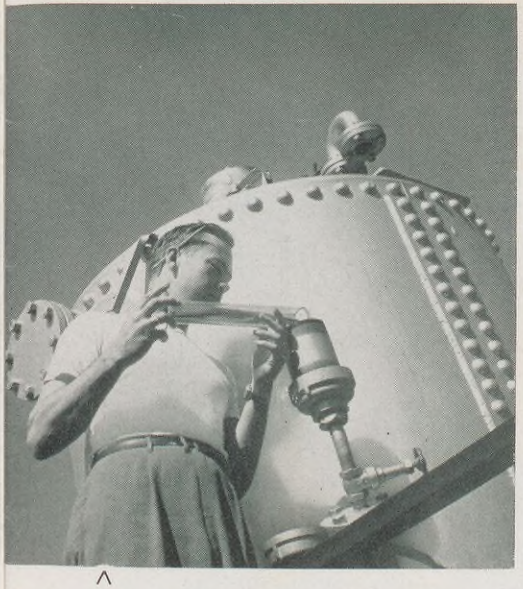


4. Lead oxybromide, however, was often present on plugs that were not fouled, hence was not directly responsible for spark plug failure. Further analyses by special chemical and physical techniques, as in the oscillograph, above, showed that the presence of metallic lead was coincident with plug fouling. Metallic lead was identified as the culprit.



5. Metallic lead on spark plugs is frequently in the form of small beads easily visible under a magnifying glass. When plug deposits are ground up in small mortars, the metallic lead streaks can be studied under a microscope, above. Deposits from plugs fouled in road and flight tests confirmed the metallic lead theory.

6. The X-ray spectrometer, above, which had already played a big part in identifying lead oxybromide in spark plug deposits, was used in further studies of metallic lead. Meanwhile other laboratory physical and chemical tests were run. With the cause of plug failures established, the project turned to finding a cure.



9. The thousands of gallons of gasolines used in the laboratory tests at Wood River were stored in a miniature tank farm. Experimental additives were blended in varying strengths for individual tests. Above, a laboratory assistant pours a beaker of TCP into a 1,000-gallon tank. Meanwhile other Shell technicians were busy designing special equipment for blending the additive into Shell Premium Gasoline.

10. Final proof that TCP is the answer to spark plug fouling came through actual tests in automobiles and aircraft. The Products Application Department set up cooperative studies in military and naval aircraft and with five commercial air lines. Road tests were also made in Shell's own test cars and by the Southwest Research Institute in Texas. Above, a laboratory researcher runs a road test near the Wood River Refinery. At right, a PAD representative, in white shirt, looks at spark plugs from a B-36 bomber with personnel of Carswell Air Force Base, Fort Worth, Texas. TCP gives planes greater range. For the average car, TCP gives more power when needed and greater gasoline mileage by keeping spark plugs operating at top efficiency.

Shell People

J. A. Horner

J. A. HORNER has been elected Secretary of Shell Oil Company, succeeding F. W. Woods who retired on June 30, 1953. Mr. Horner, who received his A.B. and LL.B. degrees from Oklahoma University, joined Shell in 1936 at Tulsa, Oklahoma. After serving in various legal capacities in Illinois and Oklahoma he was named an Attorney in the Legal Department in Head Office in 1941. Four years later, Mr. Horner was appointed an Administrative Assistant in the President's Office. In 1951 Mr. Horner went to an assignment in London from which he returned to Head Office in October, 1952.

R. K. Burns

R. K. BURNS has been appointed Assistant Manager of the Head Office Treasury Department of Shell Chemical Corporation. Mr. Burns joined Shell Oil Company in 1930 at the Wood River Refinery. After holding various clerical positions, he became Chief Accountant in 1946. Mr. Burns was appointed Treasury Manager at the Wood River Refinery in 1948 and in 1949 was transferred to Head Office as Senior Auditor. In 1950 he became Assistant Manager of the Refinery Accounting Department, remaining in that post until his recent appointment.

P. T. Vockel

P. T. VOCKEL has been made Assistant Manager of Shell Oil Company's Head Office Refinery Accounting Department. Mr. Vockel joined Shell in 1929 at San Francisco, California. After serving in various positions in California, in 1942 he was made Chief Accountant of Shell Chemical's Plant at Houston, Texas. Two years later he became Treasury Manager of Shell Chemical's Eastern Division in New York. In 1947 he was transferred to Shell Chemical's Head Office Treasury Department and two years later became Chief Accountant in that Department.

W. Q. Mooney

W. Q. MOONEY has been appointed Manager of the newly established Employee Development Department of Shell Chemical Corporation. Mr. Mooney joined Shell Oil Company in 1929 at Long Island City, New York. After advancing through various operating positions in New York, he was made an Area Sales Manager at Fall River, Massachusetts in 1939. The following year Mr. Mooney was named Marketing Service Manager at Boston, Massachusetts and in 1941 was transferred to Head Office where he was made Assistant Sales Service Manager. In 1946 Mr. Mooney was appointed Marketing Service Manager in the Eastern Division of Shell Chemical Corporation, which post he held until his recent assignment.

In The News

Exploration and Production Changes

C. P. Bristol

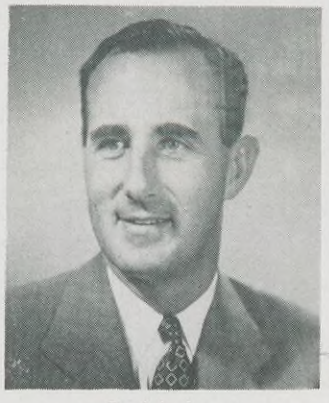
C. P. BRISTOL has been appointed Manager of the Tulsa Exploration and Production Area to take effect about August 1st of this year. A graduate of the University of Oklahoma where he majored in petroleum engineering, Mr. Bristol joined Shell in 1931 at Kilgore, Texas. He served in various Production positions in Texas and Louisiana in succeeding years prior to becoming Chief Exploitation Engineer for the Houston Area in 1947. In 1950 Mr. Bristol was named Production Manager of the Houston Area and the following year moved to Tulsa in the same capacity. He remained in this position until his recent assignment.

Additional staff changes have been announced by A. J. Galloway, Vice President—Exploration and Production.

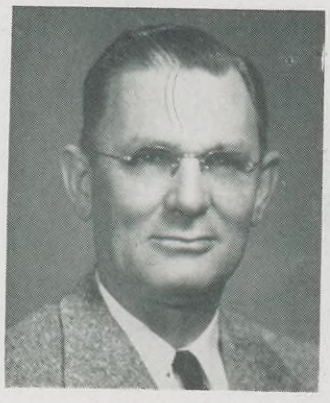
J. W. Inkster

Name	New Position	Former Position
J. W. Inkster	Exploration Manager, Tulsa Area	Area Geologist, Houston Area
A. H. Vineyard	Personnel & Industrial Relations Manager, Tulsa Area	Personnel & Industrial Relations Manager, Midland Area
R. M. Lee	Personnel & Industrial Relations Manager, Midland Area	Personnel & Industrial Relations Manager, Rocky Mountain Division
A. C. Wright	Crude Oil Representative, Denver Area	Division Gauger, Pacific Coast Area
W. E. Martin	Public Relations Representative, Tulsa Area	Public Relations Representative, Los Angeles Office

A. H. Vineyard



R. M. Lee



A. C. Wright

W. E. Martin

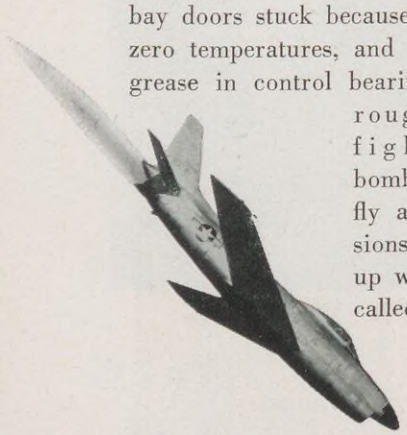
Breaking The Grease

MODERN aircraft design has advanced more in the last decade than in all the years since the Wright brothers first made their shaky flight at Kitty Hawk.

With aircraft flying faster than sound and going to altitudes undreamed of just a few years ago, special aeronautical problems were bound to present themselves—lubrication, for instance.

When a guided missile travels 1,700 miles an hour at an altitude of 30,000 feet, the air surrounding the craft is sub-zero. But this cold air doesn't cool the missile. The only air that the craft "feels" is the intensely hot—500° F. above zero—air caused by friction. On the other hand, if this same missile climbs to 70,000 feet and slows down to a mere 300 miles per hour, the temperature felt by the craft, because of the drastic reduction in friction, is lowered to 60° F. below zero. Obviously a lubricant with amazing qualities is required for the craft.

The great need for specialized lubricants for aircraft was born during World War II. The Air Force discovered that conventional greases were inadequate at high altitudes. Bomb bay doors stuck because of the sub-zero temperatures, and stiffening of grease in control bearings made it rough for the fighter and bomber pilots to fly accurate missions. Shell came up with a grease called "Strat-O-Lube A," a grease incorporating a novel anti-freeze approach and a light mineral oil base. This lubricant was good for temperatures as low as 75° F. below zero.



From that time on, Shell has led the field in meeting stringent specifications that modern aircraft designers require. Scientists at Shell Development Company's Emeryville Research Center, Shell Oil Company's Martinez Research Laboratory and Products Application Department pooled their knowledge and research and the result was the complete list of Aero Shell lubricants so widely used today.

After the war, when aircraft design began to advance at an accelerated rate, the demand for even better greases was increased. Various lubricants were needed—each for a different purpose. A grease was required for example, that would stand high temperatures. Aero Shell Grease 5 was the answer. This product was found to stand temperatures up to 300° F. and still do the job. Next, a general purpose aircraft grease was called for, a grease that would function at both high and low temperatures. Modern high speed aircraft and guided missiles require such lubricating extremes. Shell came up with a product that has an operating temperature range from 67° F. below zero to 250° F.

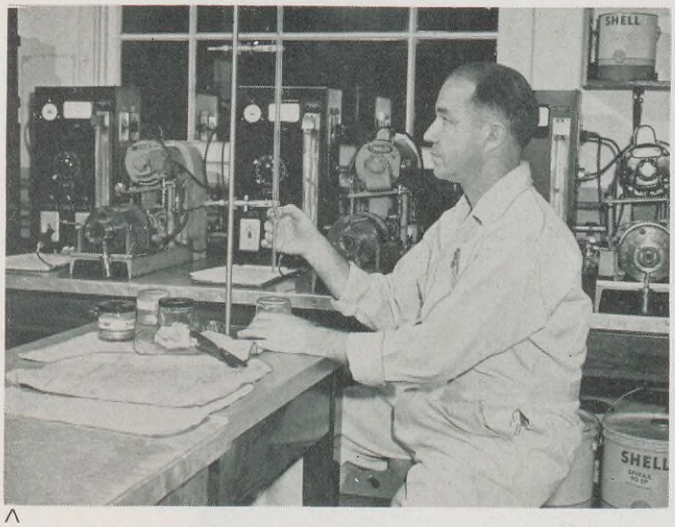
Even tougher specific requirements were met. Shell formulated a grease especially for aircraft gears and power screws, and another grease for hinges, cables, chains and other sliding surfaces.

The newest Aero Shell product, still unnamed, is a superior anti-corrosion grease. For years, both civilian and military aircraft operators have been asking for a lubricant that would prevent corrosion of bearings where water is present. Stored planes are particularly vulnerable to corrosion, as are planes operating in severe weather conditions, on aircraft carriers and in areas where there is heavy rain or a high moisture content in the atmosphere, such as is usually found in coastal regions.

The development of such a lubricant had been hampered by the lack of a laboratory test sufficiently severe to duplicate corrosion of the type encountered in actual use. In 1951, the Fuels and Lubricants Engineering Department at the Emeryville

Barrier

Shell Scientists Solve Some of Aviation's Knottiest Lubricant Problems

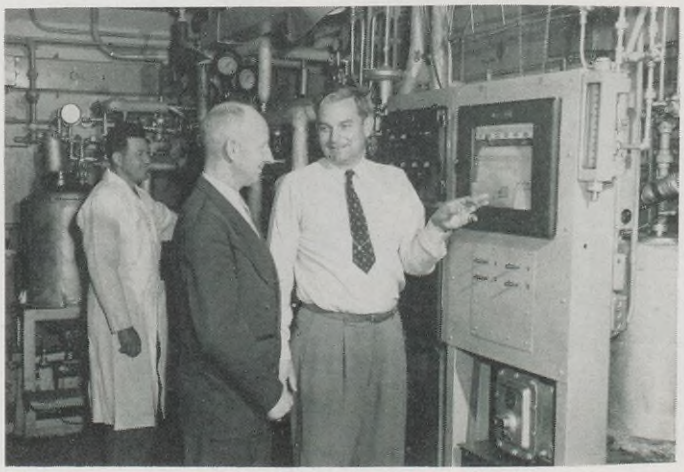


Senior Engine Operator, L. F. Glass, of Shell Development's Emeryville Research Center, starts a sample on the glass jar corrosion test. Water is added to test the grease's protective efficiency.

Discussing the uses of Aero Shell lubricants by commercial air lines at the San Francisco Airport are A. J. Sundell, (l.) Southwest Airways and F. L. Ellsworth, San Francisco Div. Aviation Manager.

Products Application Dept. specialists, D. N. Harris (l.) and F. R. Watson (r.) thrash out a lubrication problem of a TV-2 Lockheed jet with Lt. Comdr. F. N. Nutt at the Alameda Naval Air Station.

Aero Shell greases flow into containers untouched by human hands as they come off the Martinez Refinery's continuous grease-making machine. Ernest Oliver, left, Joseph Marin and John Santos each handle a different operation.

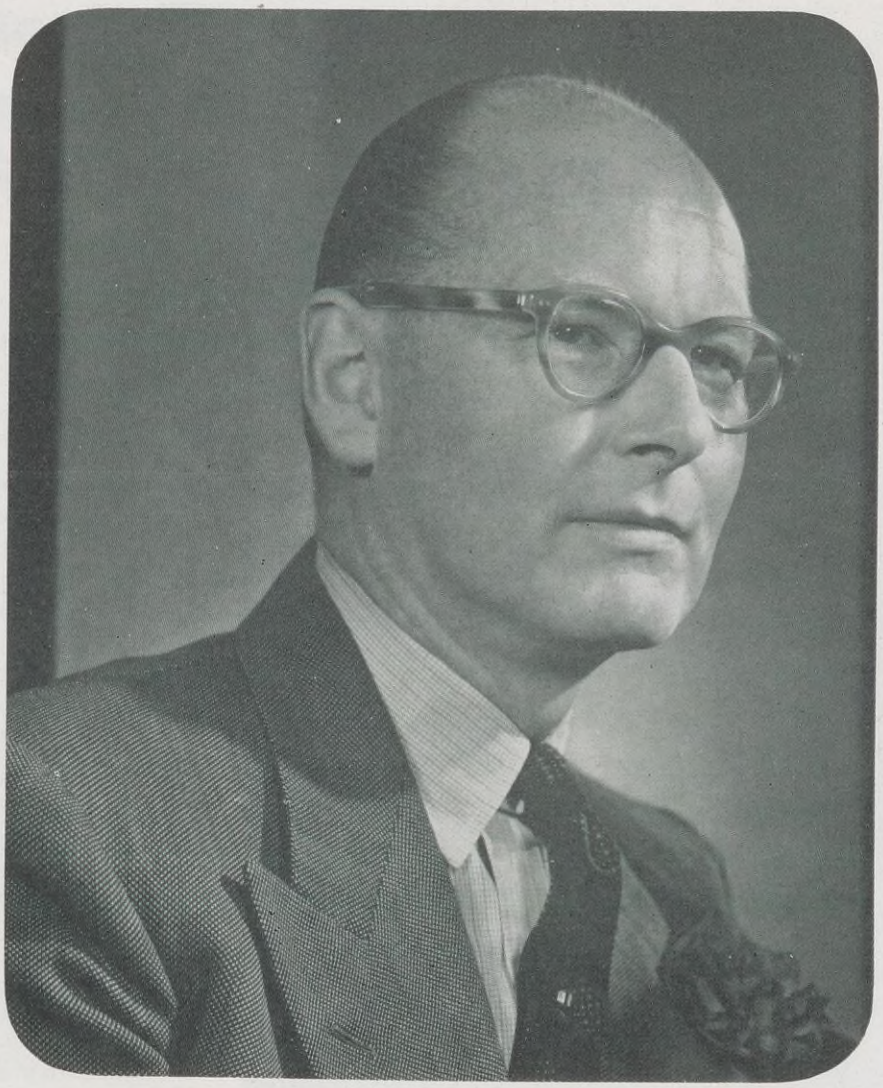


A miniature grease-making machine has been built at the Martinez Research Laboratory. Chester Bartolomei, (l.) H. A. Woods and Loren Bollinger discuss the temperature recorder.

Research Center developed a test that met all requirements. Unofficially it is known as the "glass jar" test. Equipped with the test findings, the Martinez Research Laboratory formulated an effective anti-corrosion lubricant. After being field tested for a year and a half, this new grease was found to be just what the aircraft manufacturers and operators had been waiting for.

These advances in the lubricants field are not restricted to aviation. The hard-earned knowledge in aviation lubricants has been applied to a wide range of industrial lubricants. Recently, a cannery turned to Shell for a grease that would eliminate excessive rust caused by fruit juices on precisely fitted sealing machines. Shell's Martinez Research Laboratory dipped into its aircraft lubricant knowledge and in less than a month came up with a grease that was far better than anything previously used.

On Boeing Aircraft's flight line in Seattle are (l. to r.) R. N. Page of Boeing; Frederick Zeller, Seattle Division, Aviation Manager; and Products Application Department Engineers D. N. Harris and F. R. Watson.



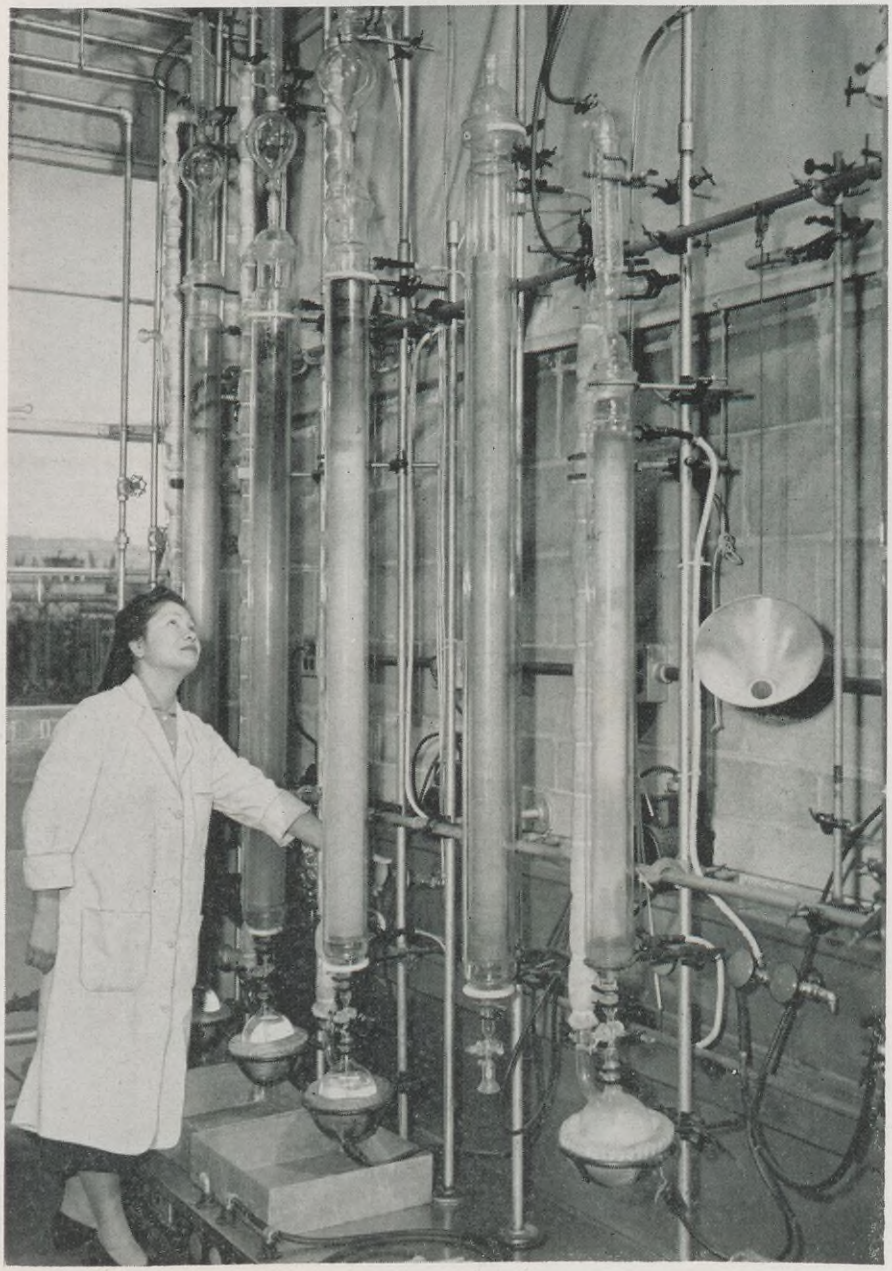
Photograph by Karsh

FRANCIS HOPWOOD, Chairman of the Board of Directors of Shell Oil Company, was knighted recently by Her Majesty Queen Elizabeth II of England. The public announcement of this honor was made in the Queen's Coronation Honors List.

Sir Francis has had wide experience in the operations of the Royal Dutch Shell Group, both in the United States and abroad. He joined Shell in 1919 in connection with the Group's operations in North and South America and later became Manager of the Venezuelan Department. In 1936 Sir Francis went to Colombia to form the Group's first Colombian company and, in 1942, came to New York as President of Asiatic Petroleum Corporation. While in the United States he became a Member of the Board of Directors of Shell Union Oil Corporation. In 1945 Sir Francis returned to London to become Manager of the Production Department there. He was appointed a Director of The "Shell" Transport and Trading Company, Ltd. in 1946 and a Managing Director in 1951. He has been a Managing Director of the major operating companies of the Group since 1946.

"building 89"

A Group of Research Scientists at the Emeryville Research Center Devote All Their Time to Learning All They Can about Paraffin Wax



A CAKE of paraffin wax seems to be an uncomplicated item. It is white, fairly soft, melts easily and sheds water. It can be used in making candles, wax paper and cartons, and for sealing jelly glasses. What more is there to learn about it? A small group of research scientists at Shell Development's Emeryville Research Center thinks there is a lot more to learn about it. For that reason they devote their entire time and efforts in experimental work in a concrete block structure known as "Building 89" at the Research Center.

On a closer look, wax isn't so simple after all. The refinery technologist, who has to remove it from his lubricating oil stocks, would be the last to claim that he knows all about wax. At the Houston Refinery, the Wax Plant finds problems enough in refining oily, impure slack waxes into the many grades of clean, snow-white to pale yellow commercial wax. Shell's products application and technical services groups have to consider the many uses of wax; over 500 have been listed, ranging from acid bottles and adhesives to water-proofing and wrapping. Finally, the research group in "Building 89" finds there is still a great deal to learn about the fundamental nature of wax itself — what

In "Building 89," at the Emeryville Research Center, Laboratory Assistant Eda Yee checks the operation of a chromatographic column used to separate waxes from non-wax impurities.

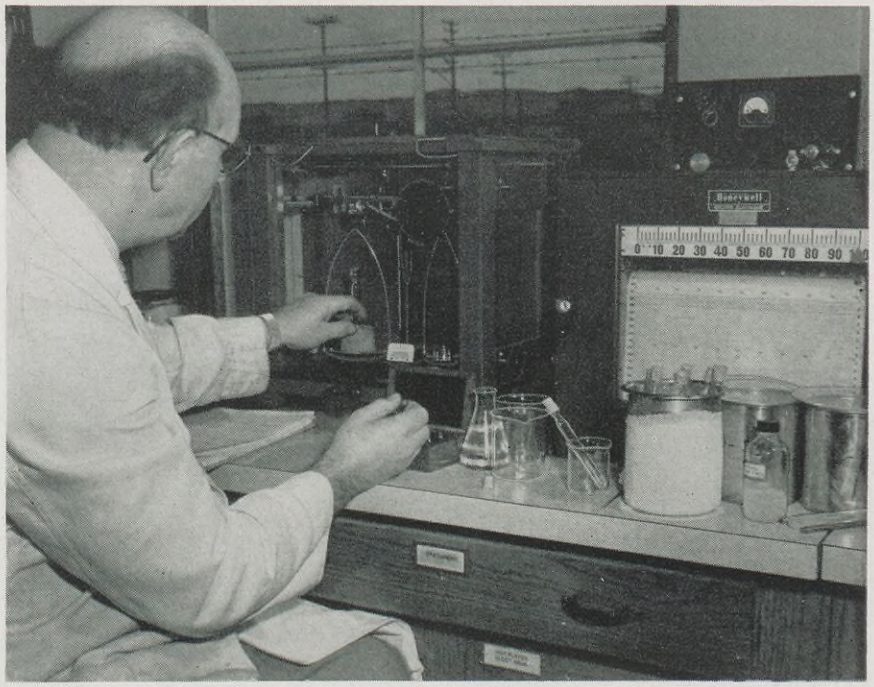
kinds of molecules paraffin waxes actually contain and how they behave and why—in short, why wax is wax.

It might seem more to the point to ask the researchers to forget about wax molecules, which nobody has ever seen anyway, and study something "practical"—how to make better wax paper, for example, since two-thirds of all wax produced goes to the paper industry. To do this the researcher might round up twenty different batches of wax, make samples with each one, and see which paper turned out best. But when he was finished, he would be just about where he started. He might know that "Wax No. 11," for instance, was the best of the twenty, but he wouldn't have much idea why.

Fundamental Research

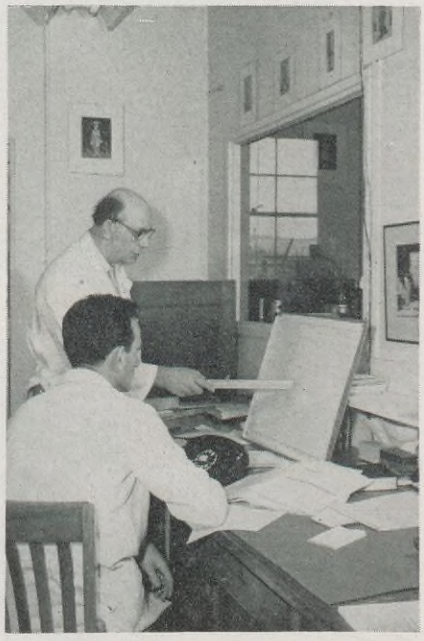
As science has proved in the past, it is necessary to get down to fundamentals sooner or later. Often the fundamentals come first. A new scientific discovery is made and, perhaps years later, a practical application based on this discovery is found. In this class are radio, television, radar, x-rays, aluminum and atomic energy. In other cases, practical uses are first developed for a product or invention and it then becomes necessary to dig into the fundamentals in order to bring the idea to its highest possible development. Airplanes, automobiles, gasolines and lubricating oils are in this class. While they existed in more or less primitive forms at the turn of the century, a tremendous amount of fundamental study has been necessary to develop their modern counterparts —and the end is not yet in sight. But regardless of which comes first—the discovery or the application—there is no doubt today about the importance of fundamental research, which has been aptly called the "seedbed" of our future progress.

With a background of centuries of experience with animal and vegetable waxes, it didn't take man very long to find uses for petroleum wax. Now, however, these have been pretty well explored and it is necessary to dig deeper. Researchers want to find the answers to such questions as why one wax makes good wax paper and another does not, or how to go about making a special wax that will have exactly the properties a customer needs for a specific purpose. Once the



This equipment, in "Building 89," is used by Chemist Schaerer as he prepares mixtures of highly purified wax fractions and solvents to determine their critical solution temperatures.

In preparing pure waxes, one of the standard techniques is to crystallize the wax from solution and filter off the crystals. Above, Eda Yee gives a wax testing sample a solvent wash.



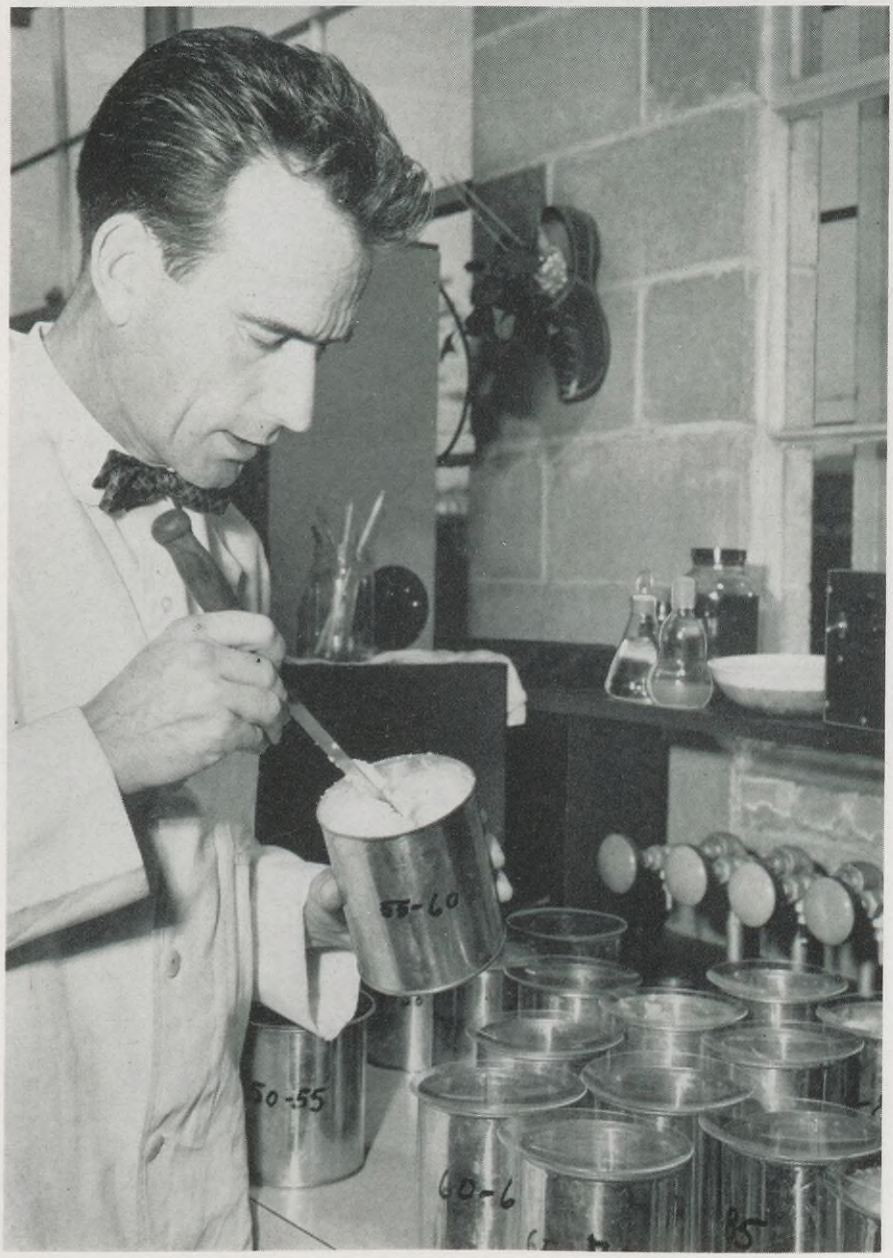
Chemists August Schaerer (standing) and Charles Busso discuss a petroleum wax melting point index chart which provides the laboratory with valuable information about the wax molecules.

"why" is understood, the "what" and the "how" are much easier to answer.

Better understanding of the "whys" of wax may lead into completely new fields. New types of waxes superior to any existing today may be discovered and perhaps a whole new family of useful chemicals made with wax as the starting material.

Some of the fundamental facts about wax are already well-known to the researchers. Unlike animal and vegetable waxes, petroleum waxes contain no oxygen. They are made up of long chains of carbon atoms with hydrogen atoms sprinkled along the chain. The more carbon atoms in the chain, the higher the melting point of that wax. Other waxes are constituted differently and result in a soft product with a low melting point. A skilled wax chemist can glance at the structural formula of a wax and tell its melting point as well as many other facts about its behavior.

Chemist Charles Busso carefully examines a sample batch of chemically pure hydrocarbon wax which has just been isolated from commercial paraffin after detailed laborious processing.



The temperature at which a particular wax melts is not only one of its fundamental properties, it is of great practical importance and commercial grades of wax are established primarily on this basis. Here is where the researchers in "Building 89" again come into the picture. While it is easy to measure the melting point of any particular cake of wax, it is not so easy to find out why it melts at that particular temperature. This is a difficult matter. It is necessary for the researcher to "take apart" the commercial waxes and separate them into their pure components. To perform this feat, every trick in the book is used—vacuum distillation, chromatography and fractional crystallization and others. Finally, they might—just might—be able to isolate a few ounces of the pure fractions and these are then studied in detail.

As an unexpected dividend, the findings of the fundamental researchers sometimes give an immediate solution to a practical problem. One of these, which puzzled and annoyed early users of wax, was the difficulty encountered with wax paper in hot weather. A roll of wax paper might become sticky and merge into a solid mass of wax which, of course, would represent a complete loss. This would often happen even though the temperature stayed well below the melting point for the wax. Nobody knew why some waxes were more sticky than others or, for that matter, why they developed stickiness at all. The scientific reason for this behavior has been thoroughly worked out in "Building 89" and the knowledge has spared practical wax workers many headaches.

The wax researchers are gratified when some immediate practical use is made of their findings even though the most important principal behind fundamental research is that the knowledge sought is a goal in itself. Given the added knowledge, uses for it will surely follow.

Jim Lowe was one of the 400,000 people who toured the Exposition. This aerial view shows the full scope of the show.

Greatest Oil Show On Earth

The International Petroleum Exposition Held in Tulsa During May was the Largest Oil Show Ever Held in the World

JIM LOWE, a Mechanical Engineer in Shell's Tulsa Exploration and Production Area, was one of the 400,000 visitors who surged through the gates of the International Petroleum Exposition held in Tulsa, Oklahoma, in May. Jim, typical of thousands of young oil men in the industry today, had the opportunity to see the tremendous advances made by the industry since the last Exposition was held five years ago. Development within the oil industry has been so rapid since then that 5,000 exhibits were needed in this year's Exposition to depict industry progress.

In addition to exhibits showing the newest developments in exploration, drilling, refining and pipe lines, others were on display to show how the industry has affected other fields—electronics, atomic radiation, plastics, metals—just to name a few.

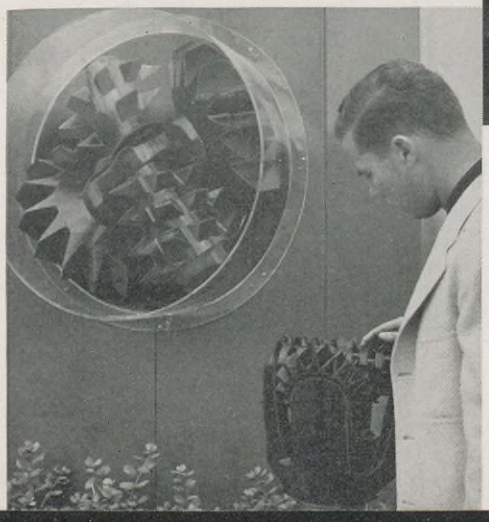
One of the most outstanding educational features of the Exposition was the "Hall of Science," a permanent structure, recognized as the world's foremost museum of science and industry devoted exclusively to petroleum and its products.

Jim Lowe came across another mechanical engineer, F. E. Moore from Shell's office in Wichita, Kansas. Here they get a close-up view of the exhibit showing in detail how propane gas is stored underground.

An exhibit with a special place of honor was a model of the Drake Well.

Trucks of all shapes and sizes play an important role in various oil industry operations and many were on display at the Tulsa Exposition.

Over some of the "streets" of the Tulsa Exposition hung arches which were formed by the strategic placement of large field pumping units.



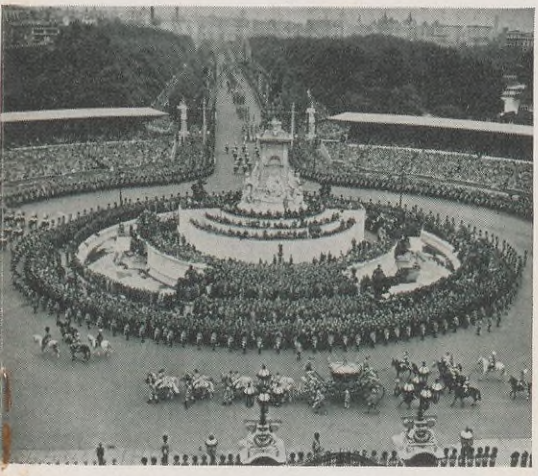
A display of various types of drilling bits was of particular interest to Exposition visitors. Here, Jim Lowe inspects a rock bit.

The Exposition has grown from a modest county fair, held on a roped-off street in Tulsa's business district, into the biggest industrial show in the world. The cost of this year's show, including the value of the exhibits, exceeded 100 million dollars.

For five years the people of Tulsa and representatives of the oil industry have been planning for this event. Preparing the grounds and planning the exhibits started months before the gates opened.

To accommodate the 400,000 visitors to the Exposition, every available hotel room was put into service; home owners rented out rooms; and some of the cooperative citizens of Tulsa even took early vacations to enable their homes to be used for additional housing.

To get a graphic picture coverage of the Exposition, a Shell photographer followed Jim Lowe during his tour of the Fair Grounds.



In this picture the coach is shown passing spectators surrounding the Queen Victoria Memorial

Prince Charles, the Queen's son, watches the proceedings as he stands between Queen Mother Elizabeth and Princess Margaret.

Crown Copyright Reserved

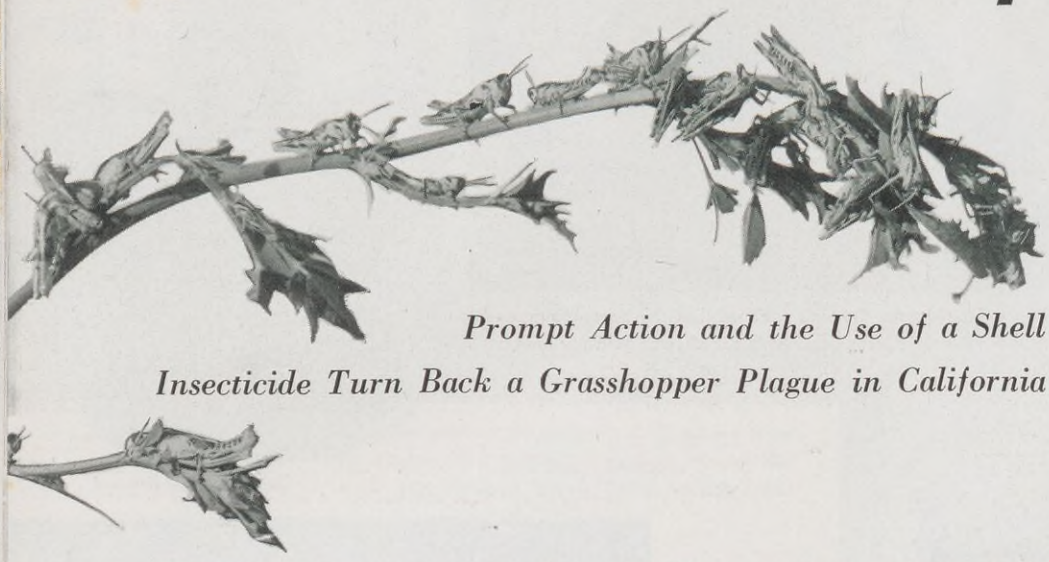
^
Eight horses, escorted by mounted Postillions and Walking Grooms, draw the Royal Coach, a vehicle originally constructed for George IV.

>
In the climax to the Coronation, the Archbishop of Canterbury places St. Edward's Crown on the head of Elizabeth II.

^ The young Queen, accompanied by members of her family, waves from Buckingham Palace.

Wearing the Imperial State Crown, Elizabeth II poses with her husband, the Duke of Edinburgh. >

War in the Valley



Prompt Action and the Use of a Shell Insecticide Turn Back a Grasshopper Plague in California

WHEN conquerors are on the march, they eventually drive for the "breadbasket," or food-producing areas of the land they are invading. Here, in regions of bountiful crops, is food in plenty for the invaders and their followers. And here the inhabitants, given sufficient warning, put up stiff resistance to oncoming hordes.

Such an engagement took place last May in one of America's most famous breadbaskets, the lush San Joaquin Valley in California. Bounded by the Coast Range and the Sierra Nevada, the great bowl runs from the Golden Gate area south to the Tehachapi Mountains. The waters of the San Joaquin River and its tributaries, along with an intensive man-made irrigation system, have turned the valley into an agricultural paradise. Local inhabitants speak in understandable superlatives of their oranges, grapes, olives, cotton, alfalfa and potatoes.

A portion of this rich area was placed under attack on May 11, by a grasshopper armada numbered in millions. Individually, each invader appeared harmless enough—an ordinary, run-of-the-mill grasshopper. But in mass formations, the insects became a voracious foe devouring all the vegetation in their path.

Advancing from pastureland, the grasshoppers attacked in a 50-mile-long arc, three to five miles in depth, and moved toward the fertile irrigated farm lands. Directly in their path lay multi-million dollar crops.

The quickly-organized defense plan was a community affair led by local ranchers and businessmen with the help of county, state and federal agriculture authorities. The counter-weapon was Shell Chemical Corporation's Aldrin, chosen because its effectiveness as an insecticide against locust plagues had been proven in other lands as well as on U. S. range lands.

When plans had been made events moved rapidly. A war chest of $60,000 was raised. More than 35,000 pounds of Aldrin were shipped in from the Midwest. Thirteen oil companies—including Shell—contributed 150,000 gallons of diesel oil to mix with the insecticide for spraying purposes. Trucking firms provided tank trucks to haul the oil, plus standby tanks at airstrips to hold insecticide. Crop spraying companies made 10 aircraft available.

For three and one-half days, the airplanes hedge-hopped over the infested areas from dawn to dusk. Within hours after the first application, the first wave of 'hoppers was

Local farmers joined with agriculture experts to work around the clock making up lethal spray by mixing diesel oil with Aldrin.

E. F. Bashor, in charge of the program for Shell Chemical Corporation's Julius Hyman Division, scoops up dead grasshoppers a few hours after Aldrin spray had been laid down. The insects ate their own dead as they advanced through the pastureland.

destroyed and the farm land was safe. Spraying continued, however, over the pastures and foothills which were the insects' breeding grounds. In all, a total of 120,000 acres were sprayed. Individual farmers also sprayed some 20,000 acres of crop land with Dieldrin, a companion insecticide of Aldrin, but with longer-lasting effectiveness.

Fast action and the right weapons saved the day in the nick of time. Authorities estimated that if the grasshoppers had been permitted to advance one mile into the crop lands, the crop loss would have totaled $25 million.

Three and one-half flying days enabled pilots to spray 120,000 acres in the San Joaquin Valley. Insecticide was loaded into airplanes at strategically-located airstrips, each plane carrying from 150 to 200 gallons of spray material.

Drums of Aldrin were rushed in from the Midwest to help stem the advancing tide of grasshoppers, called "flying stomachs" by local farmers.

Excavating For Indian Relics Has Been The

Lifelong Hobby of a Portland Marketing Man

Digging into the past

FROM a childhood reading of the tales of James Fenimore Cooper to becoming a recognized authority on Indian culture is quite a jump, but Marc Seale of Shell's Portland Marketing Division has done just that. For more than 40 years Seale's hobby has been Western Indian lore. Today, he is considered one of the foremost amateur Indian archaeologists in the Pacific Northwest.

His collection of Indian relics now numbers exactly 6,538 specimens. He knows, because each piece is carefully numbered, described, indexed and in many cases photographed. His notebooks and card files make an impressive library and his reference books on Indian history, culture and art are quite rare since most of them are now out of print.

Before Marc Seale joined Shell Oil Company, he worked with the U. S. Forest Service. While with the Forest Service he met many of the northwest's Umatilla and Warm Springs Indians on their annual treks for salmon and huckleberries. From them he learned about their customs and

Marc Seale is his own curator. Above, he is registering in his files a new addition to his Indian collection. It is the skull of a Tututunne Indian which Seale is measuring to complete his scientific data. Extreme care is always used when excavation is in progress. Seale works very carefully with a trowel and a whisk broom to prevent damage which might seriously hinder the accumulation of correct historical data.

also acquired relics representative of their culture. About this same time he added to his collection many arrowheads, beads and bone pieces from the upper McKenzie River Indian tribes.

After Seale joined Shell in 1927, he found ample opportunity to further his hobby. First, he was located in Montana—in the midst of some of the nation's most famous Indian battlegrounds. Then, in 1930, he was transferred to North Bend on the Oregon coast. It was here that his hobby became a lifetime quest. Many Indian village sites and burial grounds in southwestern Oregon had never been examined. Seale, recognizing the opportunity of a lifetime, carefully began a scientific program of study and field work. Detailed excavations and specific measurement records became routine procedure. Some of the Indian relics he acquired and preserved are are highly valued museum pieces.

Mrs. Alice Seale shares her husband's enthusiasm for Indian lore. During excavation work Mrs. Seale screens the finely powdered dust for beads, bones and other tiny relics. She has set up camp hundreds of times in many of the remote sections of the West. The Seales' last three vacation trips were typical: Arizona, New Mexico and Colorado. They studied cliff dwellings, Pueblo ruins and southwest Indian archaeology.

Seale's reputation as an authority brings many invitations to speak before various groups. For scientific gatherings, he usually displays his more valuable relics. When he lectures to Boy Scouts and school children he appears in the full regalia of a Chief of the Flathead Tribe. When the young listeners answer quiz questions correctly at the end of his talk, Marc presents souvenir arrowheads for the best answers.

He has already planned his retirement. He and Mrs. Seale will devote all their time to research. They plan to branch out from the North American Indian and take trips to Mexico and Central America to see the Aztec and Mayan ruins. His major project will be that of preparing an illustrated catalogue of his first love—examples of northwest Indian relics. This, in itself, will take a little traveling, for Indian relics are displayed in museums from Alaska to Mexico.

A small portion of the Seale Indian Collection is displayed on shelves in the family den. Here, he holds an Indian "Slave Killer" which is one of the more valuable pieces in the collection because of its rarity and its perfectly preserved condition.

For the fun of it, Mr. and Mrs. Seale sometimes dress in full tribal regalia. At right, Mrs. Seale wears the costume of a Flathead Indian squaw of Montana while Marc wears the soft buckskin shirt and heavily beaded cape of the Flathead chieftain.

They Have Retired

F. W. Woods

F. W. WOODS, Secretary of Shell Oil Company, retired June 30th after 33 years of service with the Company.

Mr. Woods, a native of Georgia, joined Shell in 1920 in Tulsa, Oklahoma. After serving in various treasury and accounting capacities in St. Louis, Missouri and Tulsa, Oklahoma, he was made Office Manager in Houston, Texas, in 1932. Two years later Mr. Woods was transferred to Head Office as Assistant to the Secretary-Treasurer. In 1940 he was elected Secretary, which post he held at the time of his retirement.

R. H. ARMSTRONG
Wilmington Refy.
Engineering

O. E. BOSLAR
San Francisco Div.
Treasury

L. I. BREAW
Pacific Coast Area
Treasury

A. D. BUDD
Portland Div.
Operations

G. BYERS
Houston Office
Administrative

C. C. DOWNING
Tulsa Area
Administrative

W. S. DUFF
Portland Div.
Operations

H. V. EKBERG
Wilmington Refy.
Engineering

S. C. ELAND
Portland Div.
Operations

J. R. GARNER
Products Pipe Line
Zionsville, Ind.

A. H. GARRETTY
Martinez Refy.
Engineering

R. J. GEEAR
Shell Chemical Corp.
Torrance Plant

A. P. GENTRY
Pacific Coast Area
Production

V. T. HAMMOND
San Francisco Div.
Marketing Service

J. H. HESTERLY
New Orleans Area
Land

H. JEWELL
Seattle Division
Operations

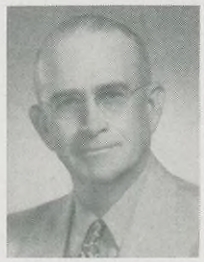
T. JOHNSON
Seattle Division
Operations

G. S. LAMBERT
Tech. Services Div.
Geological

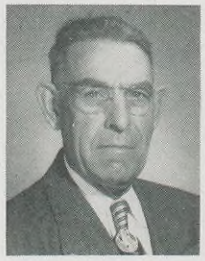
C. D. LANE
Shell Chemical Corp.
Dominguez Plant

D. J. LEONARD
New Orleans Area
Production

D. W. LEWIS
Martinez Refy.
Dispatching



J. P. MAYERLE
Pacific Coast Area
Operations



G. W. McCLAIN
Wilmington Refy.
Engineering

D. W. MONTEITH
Los Angeles Div.
Operations

J. A. MONTGOMERY
San Francisco Office
Marketing

J. H. MUGGLI
Wilmington Refy.
Engineering

R. MULGREW
Shell Chemical Corp.
Dominguez Plant

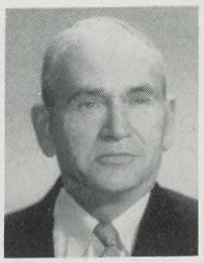
S. NELSON
Shell Chemical Corp.
Shell Point Plant

L. C. NEW
San Francisco Office
Transp. & Supplies

G. W. NORDER
Wood River Refy.
Compounding

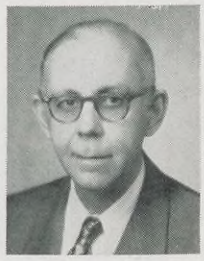
O. OWENS
Wood River Refy.
Utilities

H. J. PERSSON
San Francisco Div.
Operations



B. PETRIK
Sewaren Plant
Compounding

E. W. RETTIG
Sacramento Div.
Operations

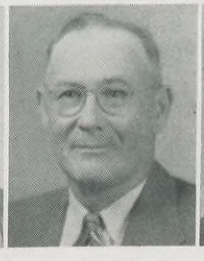


H. E. ROSE
Chicago Div.
Marketing Service

C. SAIZAN
Norco Refinery
Engineering

E. W. SCOTT
Wilmington Refy.
Engineering

R. S. TULIN
Pacific Coast Area
Production



G. E. WADE
Chicago Div.
Operations

L. F. WIEGANDT
Atlanta Div.
Operations

A. WILLIAMS
Chicago Div.
Operations

W. N. WOOD
Baltimore Div.
Sales

A. F. YOUNGBERG
Chicago Div.
Operations

coast to coast

Mike Toomey (far left), son of D. F. Toomey, Pacific Coast Exploration and Production Area, celebrated his second birthday recently with a Shell cake baked by his mother, Mrs. D. F. Toomey (at right). The cake was in the form of a miniature train, five feet long, and included two Shell tank cars. The tracks were made of licorice bars and the ties of chewing gum. The icing on the cake repeated the Shell colors—yellow and red.

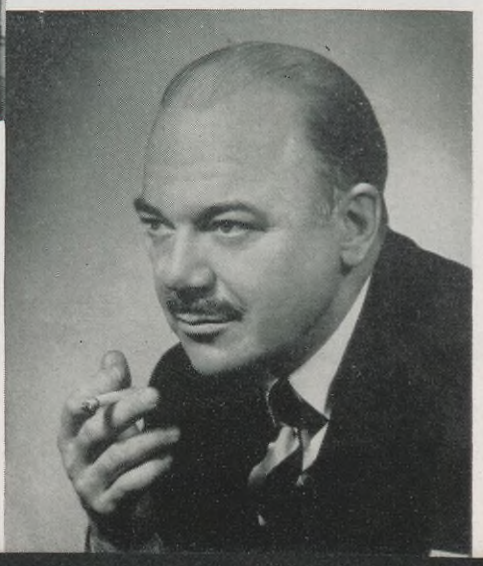
L. E. Hatfield, of Shell's Willbridge Terminal, Oregon, is Commandant of Cadets, Civil Air Patrol, Portland Training Squadron, with the rank of First Lieutenant.

An officer of the Gun Club of the Shell Development Recreational Association at Emeryville, Wesley Lim, center, coaches Russell Knaus, front, and Alfred Irikura, rear, at one of the club's recent rifle shoots in Wild Cat Canyon, Cal.

The Shell Oilers, the baseball team of the Norco Refinery, posed for their official picture recently. They are: (standing l. to r.) Nicholas Digirolamo, E. A. Clement, Larry St. Amant, C. H. Baham, L. R. Vasterling and Percy Bourgeois (manager); (middle row, l. to r.) Warren Bergeron, M. A. Smith, Lloyd Landry, J. H. Ross and A. J. Babineaux; (front row, l. to r.) J. J. Barraco, D. E. Keen, Buddy Bourgeois (manager's son—bat boy), R. J. Roussel and F. J. Babineaux.

Exploration and Production employees in the Rocky Mountain Division have been making top skiing news. Pat Burgess, left, recently won the Wyoming State Championship in the Women's Senior Division and Howard Bronsdon won the state title in the Men's Senior Division.

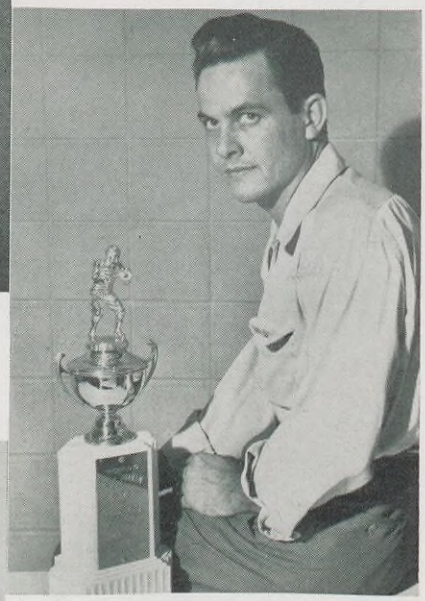
Beryl Girling, Julius Hyman & Company, is shown receiving her certificate of license to practice before the Interstate Commerce Commission from Dorman Norton, the Company's Treasury Manager. She is one of the few women in the United States who have been certified to act as practitioners before the Interstate Commerce Commission on traffic or transportation cases.

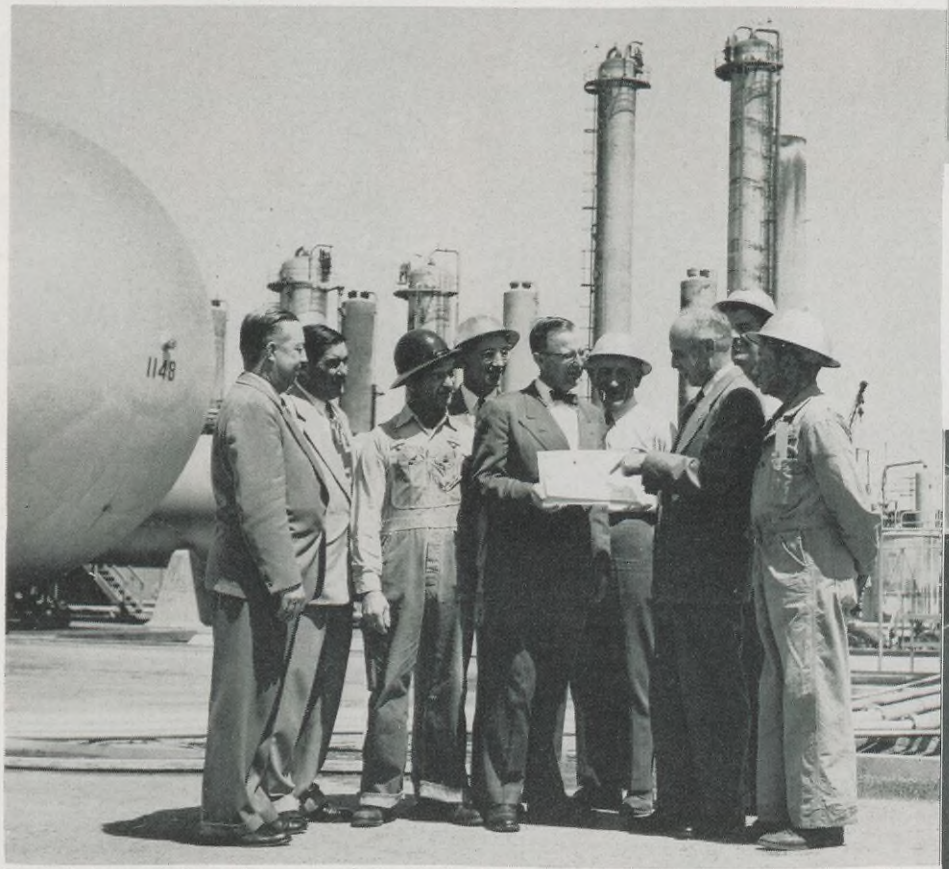


J. E. Davis, editor of "Shell Progress," the magazine published for all those engaged in marketing Shell products, has been elected Pres. of the Internat. Council of Industrial Editors for the current year.

Shell members of the New York Desk & Derrick Club were recently the guests of Worthington Corporation in Harrison, New Jersey. The members took a tour of the Worthington Plant which manufactures important equipment used in the oil industry. They are (left to right) Florence Miller, Sheila Gorman, Tora Tillstrom (Shell Oil Company); Jean Walker (Asiatic Petroleum Corp.); Virginia Seinsoth (Shell Oil Company); Clara Jones and Kathleen Bannister (Shell Chemical Corporation).

Billy Amason, Houston Refinery, won this year's trophy as the outstanding amateur baseball player of the city of Houston. The trophy was presented by the Houston Professional Baseball Players Association at its annual banquet.



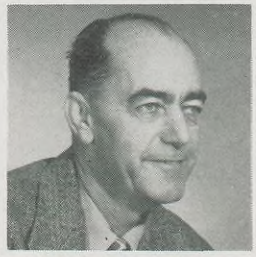


The Wilmington Refinery has received the National Safety Council's "Award of Achievement." Admiral F. D. Higbee, Vice President of the Greater Los Angeles Chapter of the Council, presented the award to R. W. McOmie, Refinery Manager. Present were: (l. to r.) G. C. Montgomery, S. J. Meisenburg, Everett Fore, G. F. Mayse, McOmie, L. N. Booher, Higbee, C. F. Selby and R. F. Lea.

Elsie E. Horton, Seattle Marketing Division, recently won two women's bowling awards —the Seattle Women's Petroleum League trophy and the Seattle Orthopedic Hospital Guild trophy. Below, W. M. Harris, Treasury Manager of the Seattle Division, is shown presenting the Petroleum League's trophy.

Service Birthdays

Thirty-Five Years



C. L. JOHNSTON
Wilmington Refinery
Stores

Thirty Years

H. M. BAILEY
Albany Div.
Manager

J. H. BRISTOW
Pacific Coast Area
Production

W. D. CLOSE
San Francisco Office
Pers. & Ind. Rel.

P. E. CONDRAY
Wood River Refy.
Gas

P. D. CONNORS
Los Angeles Div.
Operations

J. D. DUKES
Pacific Coast Area
Production

J. C. EMERY
Wood River Refy.
Engineering

J. J. GIBBS
Shell Chemical Corp.
Martinez Plant

J. C. GROENEWEGEN
Shell Chemical Corp.
Torrance Plant

L. E. GROSH
Wood River Refy.
Stores

L. A. GUEST
Head Office
Marketing

D. B. HARDCASTLE
Pacific Coast Area
Production

J. HODSON
Pacific Coast Area
Production

O. W. JINKS
Pacific Coast Area
Production

J. C. KENNICK
Pacific Coast Area
Treasury

R. J. KETTENBURG
Pacific Coast Area
Production

Z. LAWSON
Tulsa Area
Production

J. F. LONGSHORE
Wood River Refy.
Engineering

R. J. C. McARTHUR
Shell Development Co.
Emeryville

G. E. MINTURN
Products Pipe Line
Harristown, Ill.

J. J. NUGENT
Wilmington Refy.
Engineering

P. H. PEHRSSON
Minneapolis Div.
Marketing Service

R. E. PORTER
Tulsa Area
Production

C. N. RIESE
Martinez Refy.
Stores

E. L. ROUGNY
Los Angeles Div.
Operations

S. L. SANFORD
Pacific Coast Area
Production

W. J. SMITH
Pacific Coast Area
Production

W. C. SMYTHE
Sacramento Div.
Sales

A. B. TAYLOR
Pacific Coast Area
Production

J. G. TIEMANN
Head Office
Purchasing-Stores

J. H. UNRUH
Sacramento Div.
Operations

H. C. WAGER
Wilmington Refy.
Engineering

H. J. WALKER
Norco Refy.
Cracking

W. WARD
Shell Pipe Line Corp.
Mid-Continent Area

J. A. WILLHITE
Pacific Coast Area
Production

Twenty-Five Years

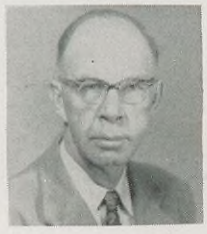
R. L. ADAMS
Shell Pipe Line Corp.
West Texas Area

A. M. BAKER
Sacramento Div.
Operations

L. E. BARTON
Wood River Refy.
Engineering

K. C. BLOCHER
Head Office
Financial

R. B. BOYD
Wood River Refy.
Cracking



C. D. COLLINS
Tulsa Area
Production

G. C. CORBETT
Shell Chemical Corp.
Head Office

E. B. DAVIS
Pacific Coast Area
Production

G. DICKINSON
Technical Services Div.
Exploitation

J. EULA
Wilmington Refy.
Engineering

L. D. FANSLER
Wilmington Refy.
Dispatching

F. E. FITZGERALD
Shell Pipe Line Corp.
Mid-Continent Area

H. H. FORTNER
Tulsa Area
Production

D. H. GARDNER
Wood River Refy.
Engineering

W. E. HALL
Shell Development Co.
Denver

W. L. HARTSOCK
Wood River Refy.
Engineering

F. HEGDALE
Pacific Coast Area
Production

A. W. HEINZMANN
St. Louis Div.
Operations

J. L. LAMBERSON
Houston Area
Production

L. LeBLANC
New Orleans Area
Production

H. J. LOVE
Seattle Div.
Operations

H. E. LYNN
Shell Pipe Line Corp.
Texas-Gulf Area

R. G. MAKOWSKI
Products Pipe Line
East Chicago, Ind.

H. G. MARTING
St. Louis Div.
Operations

F. P. McINTYRE
New Orleans Area
Production

C. McREYNOLDS
Wood River Refy.
Engineering

L. C. MENESTRENA
Head Office
Manufacturing

E. J. MICHALSKI
Wilmington Refy.
Stores

L. L. POUNCEY
Midland Area
Production

Twenty-Five Years (cont'd)

T. H. QUINN
Pacific Coast Area
Production

C. R. ROGERS
New Orleans Area
Production

S. F. RUBY
Pacific Coast Area
Production

E. M. RUMBLE
Shell Chemical Corp.
Dominguez Plant

H. W. SCHULTE
Wood River Refy.
Engineering

C. L. STEVENS
Pacific Coast Area
Production

W. E. THOMPSON
Shell Pipe Line Corp.
Mid-Continent Area

E. G. TRAVIS
Head Office
Manufacturing

H. J. UNDERWOOD
Chicago Div.
Manager

J. R. VAN ARSDALE
New Orleans Area
Production

S. WALKER
Midland Area
Treasury

M. P. WARREN
Sacramento Div.
Sales

G. F. WATTS
Wood River Refy.
Engineering

H. E. WILLIAMS
New Orleans Area
Production

G. P. WILLS
Wood River Refy.
Cracking

E. M. ZITZMAN
Wood River Refy.
Engineering

SHELL OIL COMPANY

Head Office

20 Years

M. W. Boz ..... Financial
G. C. Ford II ..... Transp. & Supplies
E. A. Hugill, Jr. ..... Legal
Lucinda M. Ramsey ... Personnel & Indus. Rel.
A. J. Schommer ..... Transp. & Supplies
J. D. Watkins ..... Legal
C. B. Wheeler ..... Marketing

15 Years

E. D. Maxfield ..... Marketing
B. Van Dyke ..... Exploration & Production
G. W. Waters ..... Manufacturing

10 Years

H. W. Fick ..... Manufacturing
Rosemary F. Goodrich .... Gen'l Exec. Office
T. Renison ..... Marketing

San Francisco Office

20 Years

P. Collett ..... Marketing

10 Years

J. R. Hurley, Jr. ..... Transp. & Supplies

Los Angeles Office

10 Years

C. C. Burres ..... Transp. & Supplies

Exploration and Production

CALGARY AREA

15 Years

J. C. Drager ..... Land

HOUSTON AREA

20 Years

W. A. Eberle ..... Exploration
J. D. Hendrickson ..... Automotive
W. F. Lewis ..... Production

15 Years

H. E. Arnold ..... Production
B. King ..... Production
B. Stevens ..... Legal

10 Years

R. L. Bunch ..... Exploration
V. M. Casida ..... Production
T. M. Griffin ..... Production
C. M. Holloway ..... Production
Z. R. Horton ..... Production
W. H. Overton ..... Production
A. D. Rogers, Jr. ..... Crude Oil

MIDLAND AREA

20 Years

F. T. Northous ..... Automotive

10 Years

H. W. Bishop ..... Production

NEW ORLEANS AREA

20 Years

J. Q. Adams ..... Production
H. E. Bogie ..... Production
J. O. Giovanni ..... Production
B. H. Hinchee ..... Production
C. McGee ..... Production
B. T. Melendy ..... Production

15 Years

L. G. Irwin ..... Production
L. J. Ramogost ..... Production

10 Years

E. Derouen ..... Production
A. Simon ..... Production

PACIFIC COAST AREA

20 Years

R. J. Barry ..... Treasury
N. W. Black ..... Production
G. W. Bowman ..... Production
E. J. Clark ..... Production
J. T. Doyle ..... Production
A. C. Ellis ..... Production
E. L. McDowd ..... Exploration
R. L. Page ..... Production
J. Payton ..... Production

15 Years

E. L. Dearing ..... Production
D. C. Nellis ..... Production

10 Years

L. Bowers ..... Production
J. T. Brown ..... Production
W. S. Callister ..... Exploration
T. T. Cutshall ..... Production
J. S. Hightower ..... Production
Marjorie A. Mulick ..... Production
Lois P. Pohnke ..... Production
F. E. Rice ..... Production
O. L. Rice ..... Production
H. W. Shuck ..... Production
R. W. Spalding ..... Exploration
C. W. Wilson ..... Production

TULSA AREA

20 Years

W. F. Adams ..... Gas
R. C. King ..... Production
R. J. Pearce ..... Production
A. T. Smith ..... Personnel & Indus. Rel.

15 Years

L. D. Corkins ..... Gas
R. Floyd ..... Land
J. D. Walton ..... Exploration

10 Years

H. A. Bodle ..... Production
C. E. Davis ..... Gas
J. T. Jackson ..... Production
V. L. Northcutt ..... Production
W. K. Robinson ..... Production
J. S. Taylor ..... Exploration
F. E. Widick ..... Production

Manufacturing

HOUSTON REFINERY

10 Years

H. F. Cowart ..... Engineering
N. H. Goodman ..... Research Laboratory
A. P. Jackson ..... Engineering
J. R. Lamb, Jr. ..... Treasury
W. L. Machala ..... Stores

J. S. Rodgers.....Automotive
J. J. Templet.....Engineering
S. D. Terry.....Engineering
C. F. Williams.....Engineering

MARTINEZ REFINERY

20 Years

G. J. Lund.....Distilling
A. B. McGlade.....Engineering

15 Years

L. E. Menesini.....Research Laboratory
W. Wallace.....Distilling

10 Years

O. T. Bishop.....Cracking
B. K. Harris, Jr.....Research Laboratory
B. E. Ravizza.....Engineering
Alice N. Small.....Control Laboratory

NORCO REFINERY

10 Years

E. C. Baudoin.....Dispatching
A. J. Benoit.....Engineering
M. J. Benoit.....Engineering
D. D. Dufour, Jr.....Engineering
H. R. Falgout.....Engineering
U. Guillot, Jr.....Engineering
F. L. Jacob.....Distilling
S. P. Lirette, Jr.....Engineering
L. M. Nicholas.....Engineering
W. G. Powe, Jr.....Personnel & Indus. Rel.
F. J. Robert.....Engineering

WILMINGTON REFINERY

15 Years

V. H. Monk.....Dispatching

10 Years

P. G. Bischoff.....Cracking
J. B. Davidson.....Dispatching
H. E. Worsley.....Marine Loading

WOOD RIVER REFINERY

20 Years

W. M. Arth.....Engineering
A. J. Beanblossom.....Engineering
C. B. Beck.....Engineering
R. C. Byron.....Experimental Laboratory
B. W. DeLong.....Research Laboratory
O. L. Drennan.....Cracking
E. H. Fiegenbaum.....Gas
M. L. Hall.....Gas
W. E. Helmantoler.....Gas
R. W. Hotto.....Personnel & Indus. Rel.
C. H. Jestes.....Compounding
C. J. Keshner.....Control Laboratory
J. Kurant.....Engineering
C. H. Marcus.....Engineering
G. E. McCoy.....Cracking
C. A. Moore.....Stores
A. W. Pardieck.....Engineering
C. H. Puckett.....Engineering
W. F. Wiegand.....Gas
F. E. Williams.....Engineering
J. M. Witherow.....Engineering

15 Years

C. R. Benefiel, Jr.....Control Laboratory
E. Bradley.....Compounding
F. H. Burroughs.....Engineering
C. H. Denny.....Personnel & Indus. Rel.
R. F. Little.....Treating
L. E. McGrew.....Engineering
L. W. Morgan.....Experimental Laboratory
E. N. Piazzi.....Engineering
R. O. Schoeneweis.....Gas
B. R. Shannon.....Engineering
A. J. Wood.....Gas

10 Years

D. M. Coburn.....Engineering
J. J. Dallas.....Lubricating Oils
E. J. Duerr.....Engineering
J. W. Fallon.....Engineering
D. L. James.....Alkylation
T. F. Leeds.....Alkylation
R. J. Mellies.....Technological
M. A. Middlecoff.....Treasury
H. M. Smith.....Engineering
E. L. Sparks.....Engineering
R. J. Stoddard.....Utilities
R. Wright.....Engineering

Marketing

MARKETING DIVISIONS

20 Years

A. Silverwood.....Albany, Operations
H. F. G. Groenlund.....Atlanta, Operations
H. W. Parker.....Baltimore, Operations
C. N. Warren.....Baltimore, Sales
A. M. Cichorczyk.....Chicago, Treasury
I. J. Ilett.....Cleveland, Operations
H. P. Reese.....Cleveland, Sales
R. E. Clark.....Indianapolis, Treasury
J. D. LaBrie, Jr.....Los Angeles, Sales
E. F. Swinney.....Los Angeles Mktg. Serv.
J. H. King.....New York, Sales
S. H. Douglas.....Sacramento, Sales
J. S. Linley.....Sacramento, Adm.
G. H. Peterson.....San Francisco, Sales
P. R. Wing.....San Francisco, Sales
J. R. Lynden, Jr.....Seattle, Sales

15 Years

A. H. Campion.....Boston, Operations
J. S. Hoppock.....Sacramento, Sales
N. P. Kusalo.....Sacramento, Treasury

10 Years

M. McElreath.....Atlanta, Treasury
H. T. Schmus.....Baltimore, Operations
M. A. DuBall.....Chicago, Treasury
Ella Jackisch.....Chicago, Operations
E. E. Sayre.....Los Angeles, Operations
J. J. Kurz.....New York, Operations
H. A. Ebeling.....Portland, Treasury
G. J. Foerst.....St. Louis, Treasury
J. A. Ryel.....San Francisco, Treasury

SEWAREN PLANT

10 Years

L. M. Lacanic.....Engineering & Maintenance

Products Pipe Line

20 Years

F. L. Leeper.....Barnett, Ill.

15 Years

J. Guy.....Litchfield, Ill.
J. H. Harvey, Jr.....Springfield, Ohio
C. L. Lohman.....Zionsville, Ind.
A. L. Stum.....Zionsville, Ind.
E. J. Ward.....Zionsville, Ind.

10 Years

W. G. Lanford.....Spartanburg, S. C.
L. L. Leftwich.....Birmingham, Ala.

SHELL CHEMICAL CORPORATION

20 Years

J. P. Okie.....Head Office
H. E. Blanchard.....Shell Point
M. J. Douglas.....Shell Point
R. J. Erickson.....Shell Point
E. J. Fuller.....Shell Point
H. P. Schmidt.....Shell Point

15 Years

R. H. Hemmerich.....Head Office
D. B. Luckenbill.....Head Office
C. MacHenry.....Head Office

10 Years

R. L. Haneline.....Dominguez
C. W. DeLong.....Head Office
J. W. Harbes.....Houston
Chloe L. Harlow.....Houston
J. R. Nelson.....Houston
H. R. Smith.....Houston
O. M. Bastian.....Shell Point
F. Lombardo, Jr.....Shell Point
J. I. Massey.....Shell Point
S. J. Vipperman.....Shell Point

JULIUS HYMAN & COMPANY

15 Years

R. M. Stager, Jr.....Denver

10 Years

F. A. Folckemer.....Denver

SHELL DEVELOPMENT COMPANY

15 Years

F. C. Chance.....Emeryville
H. A. Cheney.....Emeryville
C. L. Estabrook.....Emeryville
R. J. Shreve.....Emeryville
S. S. Sorem.....Emeryville
H. K. Sutherland.....Head Office
R. S. Treseder.....Emeryville

10 Years

F. E. Condo.....Emeryville
D. L. Cook.....Emeryville
Edna F. Dean.....Emeryville
F. T. Eggertsen.....Emeryville
C. M. Gable.....Emeryville
W. R. J. Harp.....Emeryville
J. C. Illman.....Emeryville
J. C. Rapean.....Emeryville
J. N. Wilson.....Emeryville

SHELL PIPE LINE CORPORATION

20 Years

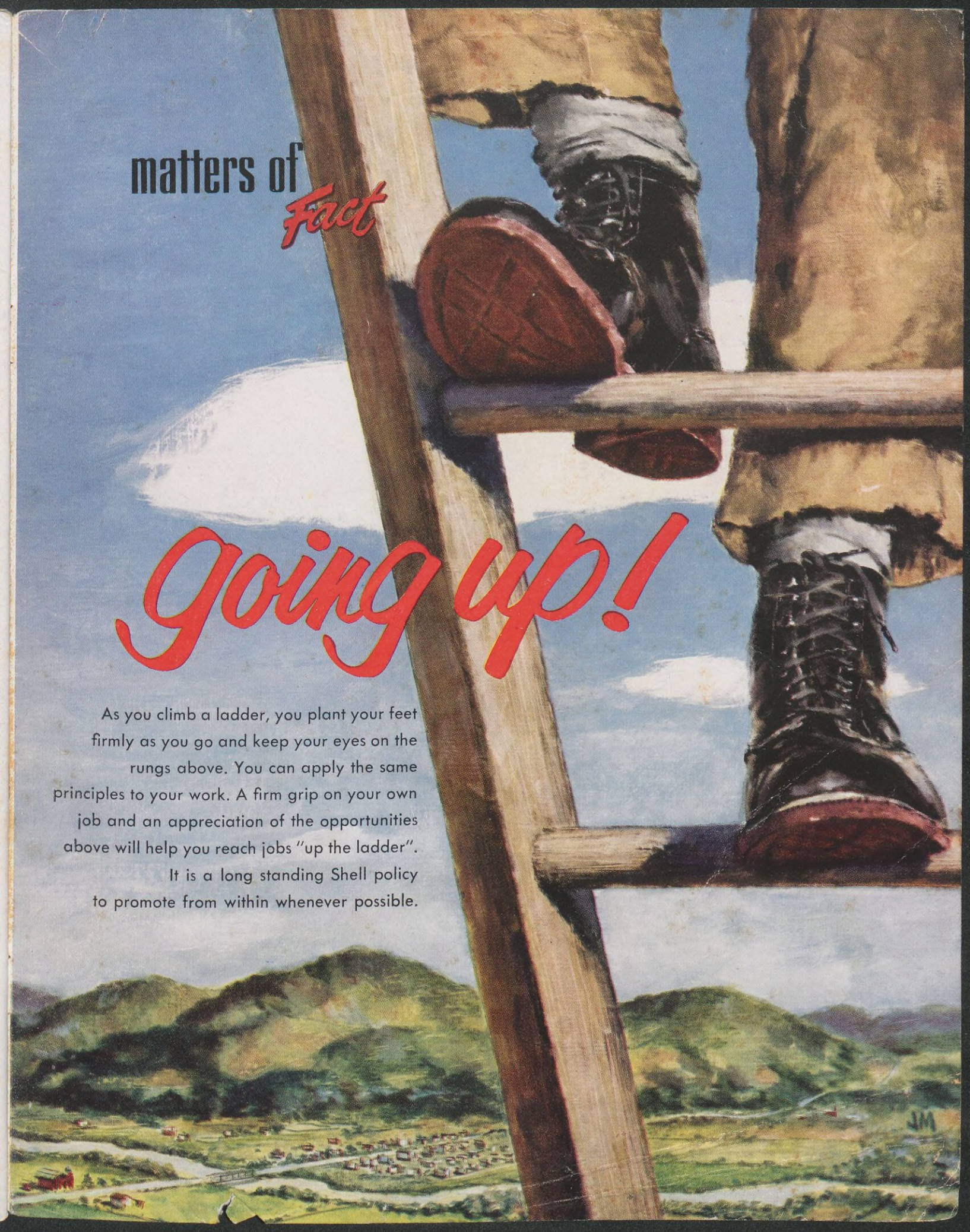
L. C. Dodd.....Mid-Continent Area
H. O. Ferrell.....West Texas Area
E. E. Free.....Mid-Continent Area
B. W. Gay.....Mid-Continent Area
L. B. Nelson.....Mid-Continent Area
E. F. Oakes.....Mid-Continent Area
J. L. Seifert.....Mid-Continent Area
O. J. Wood.....Mid-Continent Area
C. S. Wright.....Mid-Continent Area

15 Years

W. R. Gaither.....Mid-Continent Area
R. R. Hayes.....Mid-Continent Area

10 Years

A. D. Barry.....West Texas Area
S. Z. Davis.....West Texas Area
H. R. Good.....West Texas Area
J. T. Hall.....West Texas Area
R. W. Huwieler.....Bayou System
E. M. Smith.....Head Office



matters of *Fact*

going up!

As you climb a ladder, you plant your feet firmly as you go and keep your eyes on the rungs above. You can apply the same principles to your work. A firm grip on your own job and an appreciation of the opportunities above will help you reach jobs "up the ladder". It is a long standing Shell policy to promote from within whenever possible.

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6510 Brookside
Houston, Tex.

SCC

SHELL *around the Nation*

Salty sports of every description flourish in the year-round semi-tropical climate that makes Long Beach one of Southern California's favorite playgrounds. When vacationers weary of the resort's surf and sand—or its other local attractions—nearby mountain and desert areas offer contrasting climates and entertainment.

Shell's discovery of neighboring, fabulous Signal Hill oil field in 1921 gave Long Beach its industrial start. Oil stimulated the city's commerce, too, and led to the development of its ultra-modern port, site of the world's largest pier.

With resort and industry as twin spurs, the city's population has soared from 564 in 1890 to today's 300,000.

Shell Oil products for Long Beach and the surrounding area are handled by the Los Angeles Marketing Division's Wilmington District.

Nearby Wilmington Refinery provides most of these products for the District's 126 retail outlets while Dominguez Chemical Plant satisfies the chemical needs of Shell customers in the vicinity.

LONG BEACH