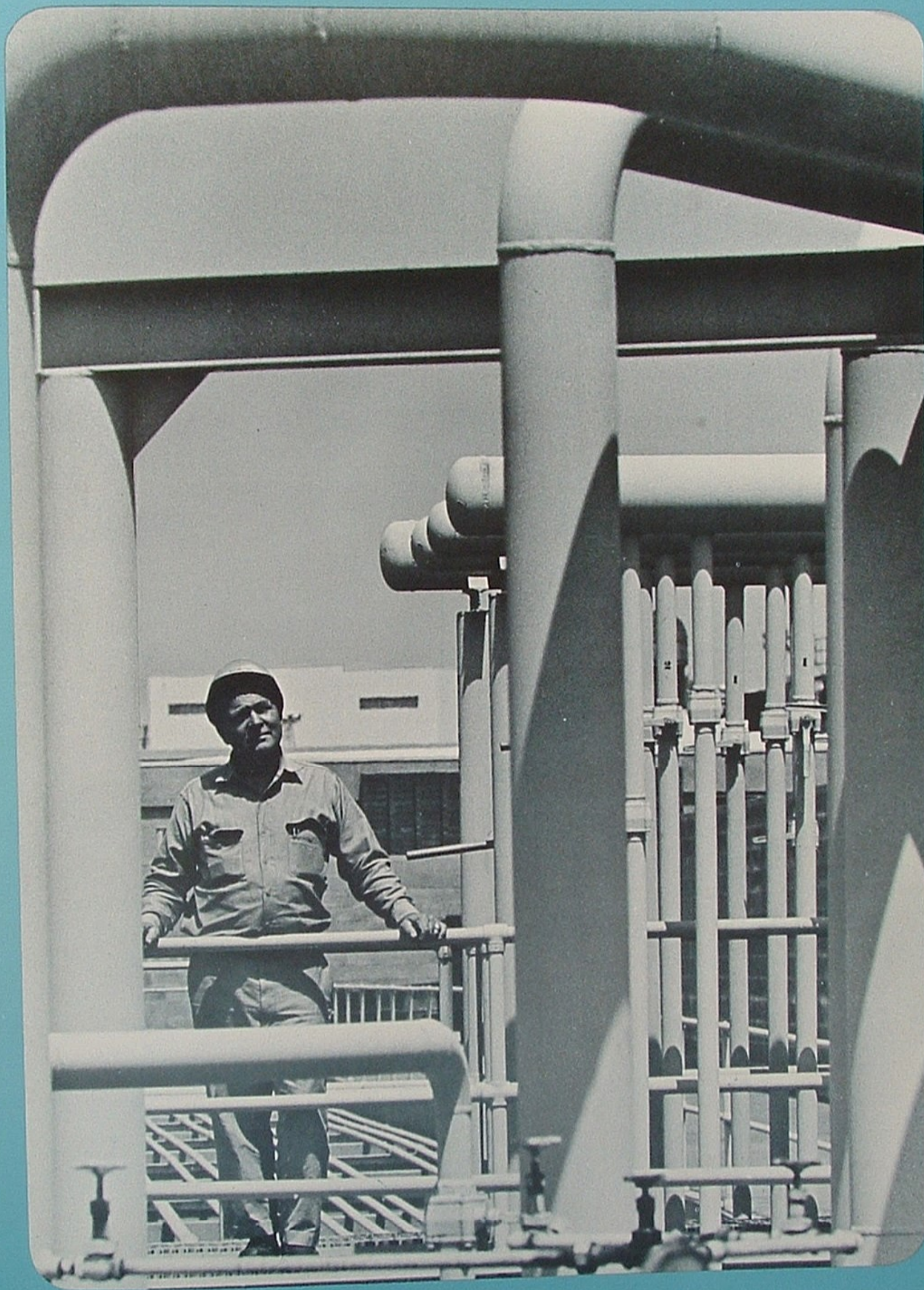


JANUARY 1964



SEVENTY SIX 
UNION OIL COMPANY OF CALIFORNIA

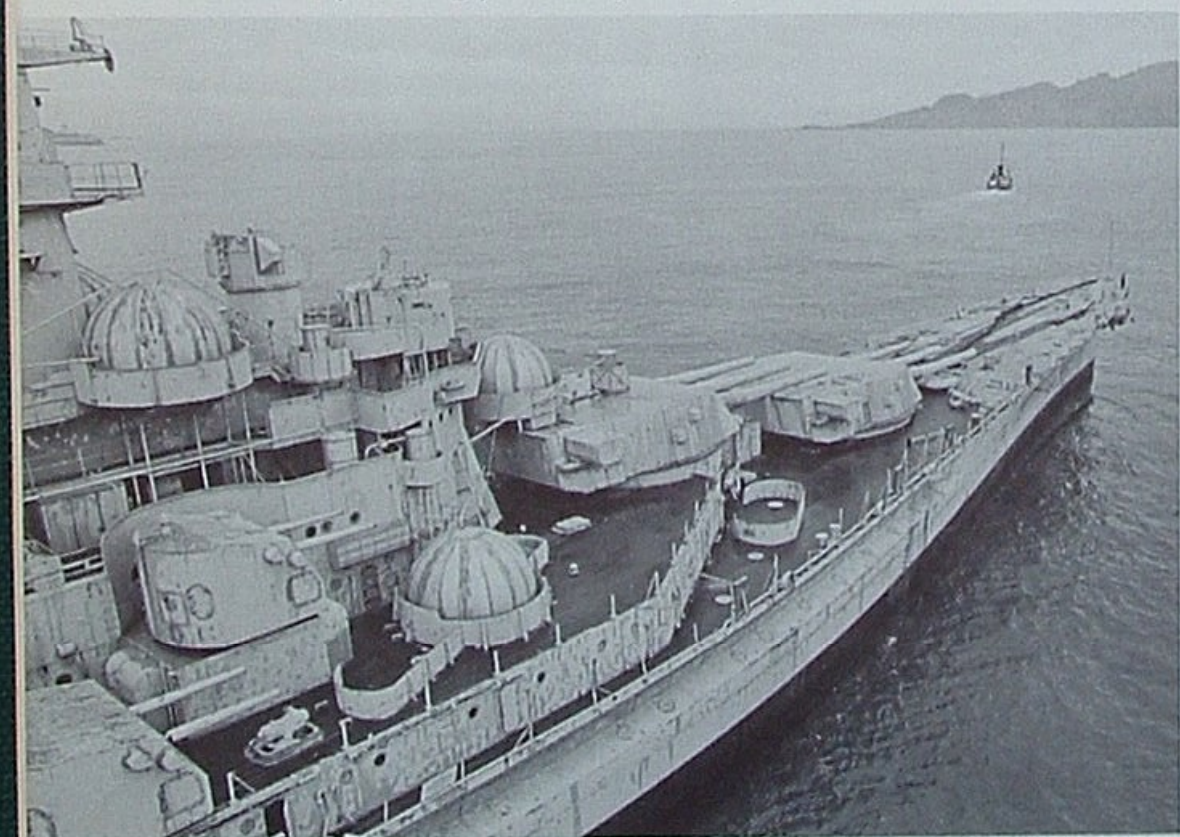


Triumphant after an 800-mile ocean voyage through storms, the oceangoing tug Capt. Lew S. Russell Jr. pulled slowly under the Golden Gate Bridge. Because the battleship *Indiana* had no stopping power, they entered San Francisco bay at extreme slow speed. (Below) Looking like a mouse towing an elephant, the 150-foot tug departed Puget Sound Navy Yard, Bremerton, Washington, late in October with the 35,000 ton battleship in tow. The job was made more difficult by a 15-year growth of barnacles on the *Indiana*'s hull, plus drag from her four 22-foot propellers.

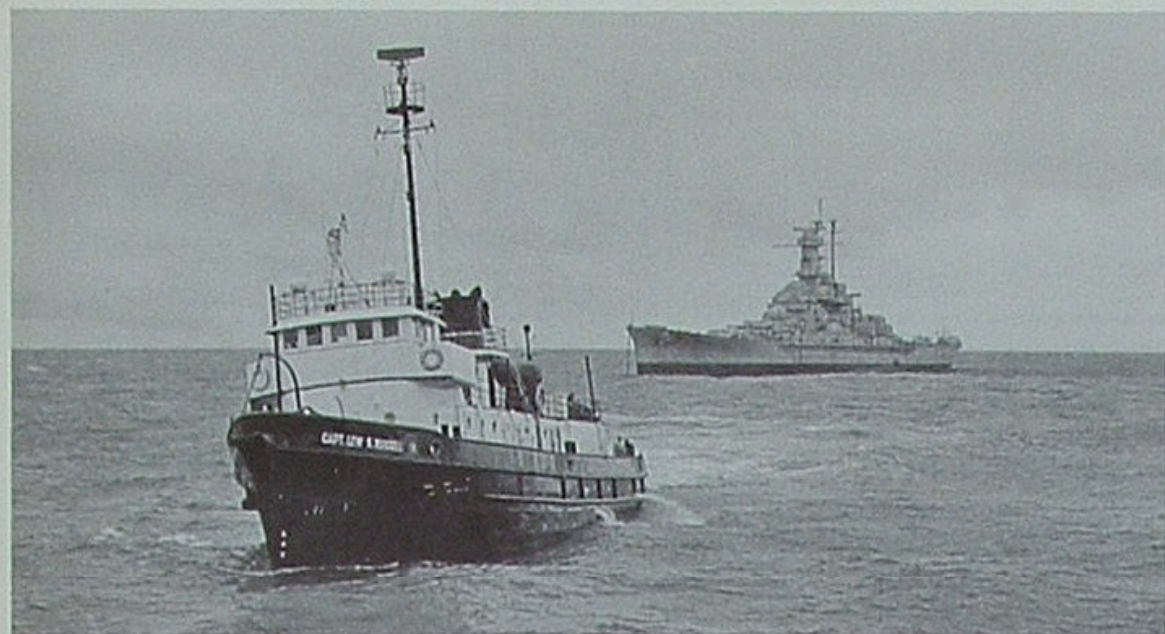
Mighty Mite

SMALL BUT MIGHTY is how folks in Portland, Oregon, are describing the 150-foot oceangoing tug *Capt. Lew S. Russell Jr.* When the obsolete battleship *Indiana* was to be towed from Puget Sound Navy Yard, Bremerton, Washington, to Richmond, California, for scrapping, only one West Coast tug could handle the job alone.

That was the tug *Russell*, a former U.S. Army vessel converted to diesel power for civilian use. Her modifications included a pair of ten-foot propellers for ocean towing and a unique strain gauge that permits the Mighty Mite to travel 25 per cent faster at sea than ships not so equipped.



PHOTOS BY DON JONES



Pearl Harbor had made battleships obsolete. The battleship *Indiana*, built in 1942, had spent 15 years in mothballs. Here the once-proud "Hoosier Houseboat" makes her last voyage—to a Richmond, California, scrap yard. The oceangoing tug, Capt. Lew S. Russell Jr., was the only tug on the West Coast that could handle the job alone.

Capt. Lew S. Russell Jr., president of Tidewater Barge Lines of Portland, Oregon, appears worried as he hears of storms on the coast. All was smiles, however, when he learned his namesake ship had arrived safely in San Francisco harbor.



"With the strain gauge," says Capt. Lew Russell Jr., president of Tidewater Barge Lines of Portland, "the skipper knows within a few tons how much he is pulling, and can adjust engine speed accordingly."

Even so, the 35,000 ton *Indiana* presented challenges in the form of sheer bulk, a 15-year growth of barnacles, and the drag of four 22-foot propellers. Despite storms off the Oregon coast with 70-mile an hour winds, they made the 800-mile voyage safely, crossing under the Golden Gate Bridge in eight-and-a-half days.

"And that included one day of waiting outside San Francisco Bay for the sea to calm down," said Captain Russell.

Another Mighty Mite feat was a recent 14,000 mile ocean voyage that made tug-boat history of sorts. When Tidewater Barge Lines converted an old Liberty ship to a grain barge, the *Capt. Lew S. Russell Jr.* sailed through the Panama Canal to Jacksonville, Florida, towed the Liberty barge back through the canal to Hawaii and returned to Portland.

"As always, the trip was made with one basic fueling," said Captain Russell. "This Mighty Mite holds 200,000 gallons of fuel at one filling, and she's never had anything but blonde Unifuel and Union lubricants aboard since the day she was converted to diesel."

As we say, it's the *Finest*. THE END

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is a Union Oil Company of California trademark. It also symbolizes the American freedoms won in 1776, which made possible this nation's industrial development and abundance. Our SEVENTY-SIX magazine, published monthly, mirrors industrial freedom through the thoughts, skills, accomplishments and appreciations of Union Oil people. We invite readers to participate with us in an exchange of ideas and information. Address correspondence to The Editor, SEVENTY-SIX, Union Oil Center, L.A. 17, Calif.

COVER: "Shorty" Holmgren operates two oil fields, 3½ miles apart, in the center of the West's largest city. For details, see page 2. Cover picture by Tom Carroll

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HE WORKS IN...

2 places at once

F. L. "SHORTY" HOLMGREN hardly deserves his nickname. He's nearer medium height. He isn't short of intellect, energy or vision either. He must have gotten the moniker early in life, at an age when some boys hesitate in the growing process while their classmates are rising like beanpoles.

To the contrary, in one way at least, "Shorty" is a giant of a man. He can stand at 4848 West Pico in Los Angeles and see exactly what is happening at 2126 West Adams, three-and-one-half miles away. Also, if what is happening on West Adams shouldn't be happening, he usually can reach across the city and do something about it.

You see, these are the addresses of a new Union oil field, the Las Cienegas field. Production men refer to the Pico location as the "PE site" because it's on Pacific Electric Railway property, and the Adams location as the "Murphy site" because it's on part of the Murphy estate. But President A. C. Rubel, who once observed that oil fields are generally found in the most remote places, smiles about these two exceptions. He refers to them as perhaps the only oil fields in the world with city street numbers.

As the No. 1 Operator, "Shorty" is responsible for producing oil from both properties, a job that requires being in two places at once. But, before telling you how he does this, we'd better review a little drilling history:

Petroleum interest in the areas was revived when our geologists reviewed some data and core samples dating back to the time when this western part of Los Angeles was principally a hay field. In the light of more recent knowledge about oil deposits in the basin, they recommended exploratory drilling here.

Leasing of the former hay fields, now divided into city lots and almost totally covered with housing, was a tremendous task itself. Over 20,000 individual property owners had to be contacted, "sold," and signed as lessors. Quite an educational program was necessary to assure each owner that he would share fairly in royalty payments if oil were found anywhere under the drilling district containing his property.

The drilling (SEVENTY-SIX, August, 1960) was done with camouflaged, soundproofed rigs. Thousands of city people,

living in the area or driving through it daily, were hardly aware that nineteen wells on Adams and nine on Pico were defining oil fields thousands of feet down and slanting out a half mile or so around the drill sites.

With drilling completed, Union Oil proceeded to give the production sites eye appeal and urban manners. Well heads with their valvular *Christmas trees* were recessed in trenches and covered with a latticework of steel. The piping, gas traps and treating facilities were designed to be so inconspicuous they could be—and have been—mistaken for commercial laundry equipment.

Today it would take uncommon curiosity and a tall step-ladder even to see this equipment from the street side. Around each site is a high wall, handsome enough to hide a celebrity's estate. The glassed entrance addressed 4848 on West Pico could grace the headquarters of a suburban law firm. Few people would guess there's an oil field inside.

The innovation that "Shorty" relies on to keep all 28 wells in both fields under split-second control is an electronic panel equipped with nearly a hundred translucent message windows. Each tell-tale window is connected by copper tubing, containing compressed air, with the well or facility it represents. When a light behind one of the win-

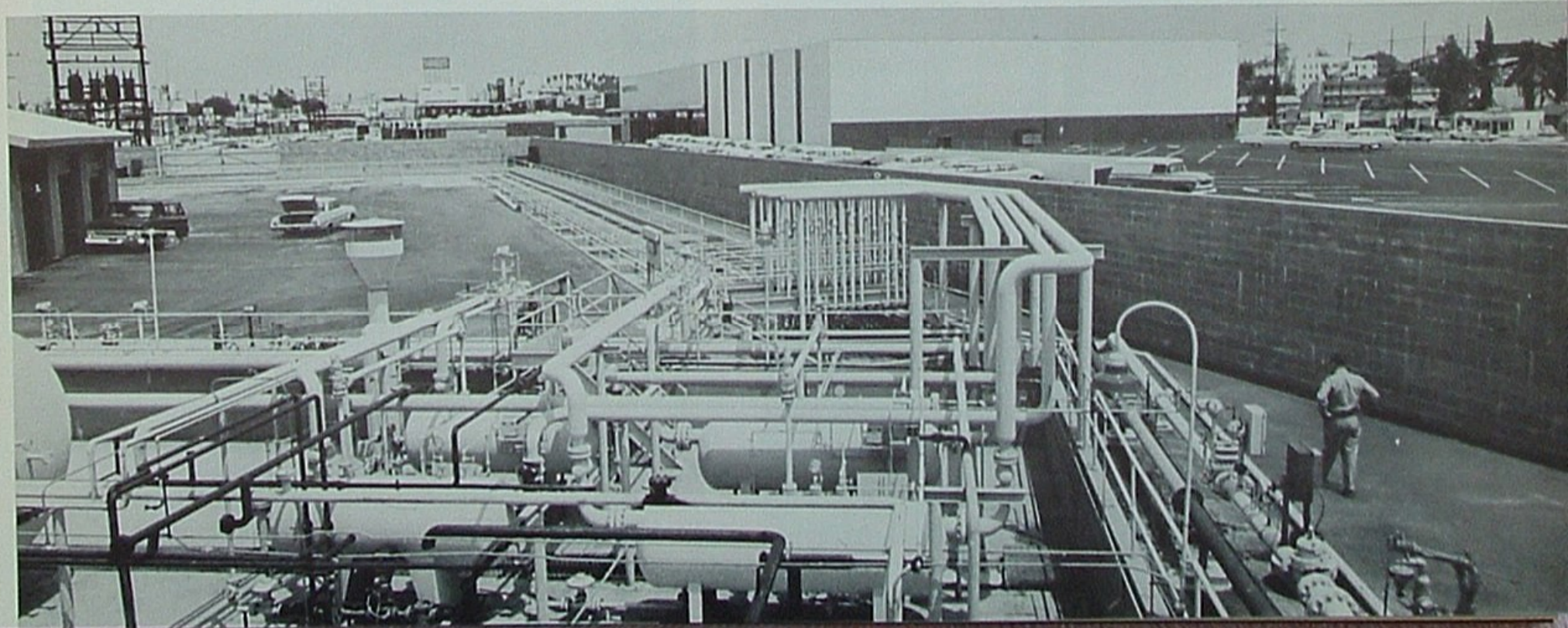
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PHOTOS BY RUSS HALFORD

"Shorty" Holmgren, at left, is changing the "bean" on one of 28 oil wells he operates within the city limits of Los Angeles. The oil fields, seen below, are so urban-mannered that few of the neighbors know what goes on behind our landscaped walls.



2 places *continued*

dows flashes on and the warning alarm sounds, "Shorty" knows precisely where to look for trouble.

The warnings tolerate a minimum of procrastination. If they are ignored, then the whole oil field methodically begins to shut itself down. As the production men put it, everything here is designed to "fail safe."

"But," according to "Shorty," "we rarely if ever let the fields shut down. If a light warns of a Murphy shutdown while I'm at the PE site, I just push the acknowledgement button and pick up the receiver of our direct telephone linking the two sites. Usually the No. 2 Operator can reach the trouble spot and make adjustments before the horn starts to blow. If there's any chance he needs help, I jump in the pickup truck and hurry across town. While I'm at Murphy, there's a duplicate control board to warn us of any trouble here on the PE site.

"Believe me, you can't fool around very long after one of those messages lights up. If the trouble is a hundred yards away, our operator has to get there on the double. Otherwise he'll have not one unit but all of them to get started again."

We asked "Shorty" for his frank opinion of automation compared with the conventional oil field operating methods he has practiced throughout most of his Union Oil career.

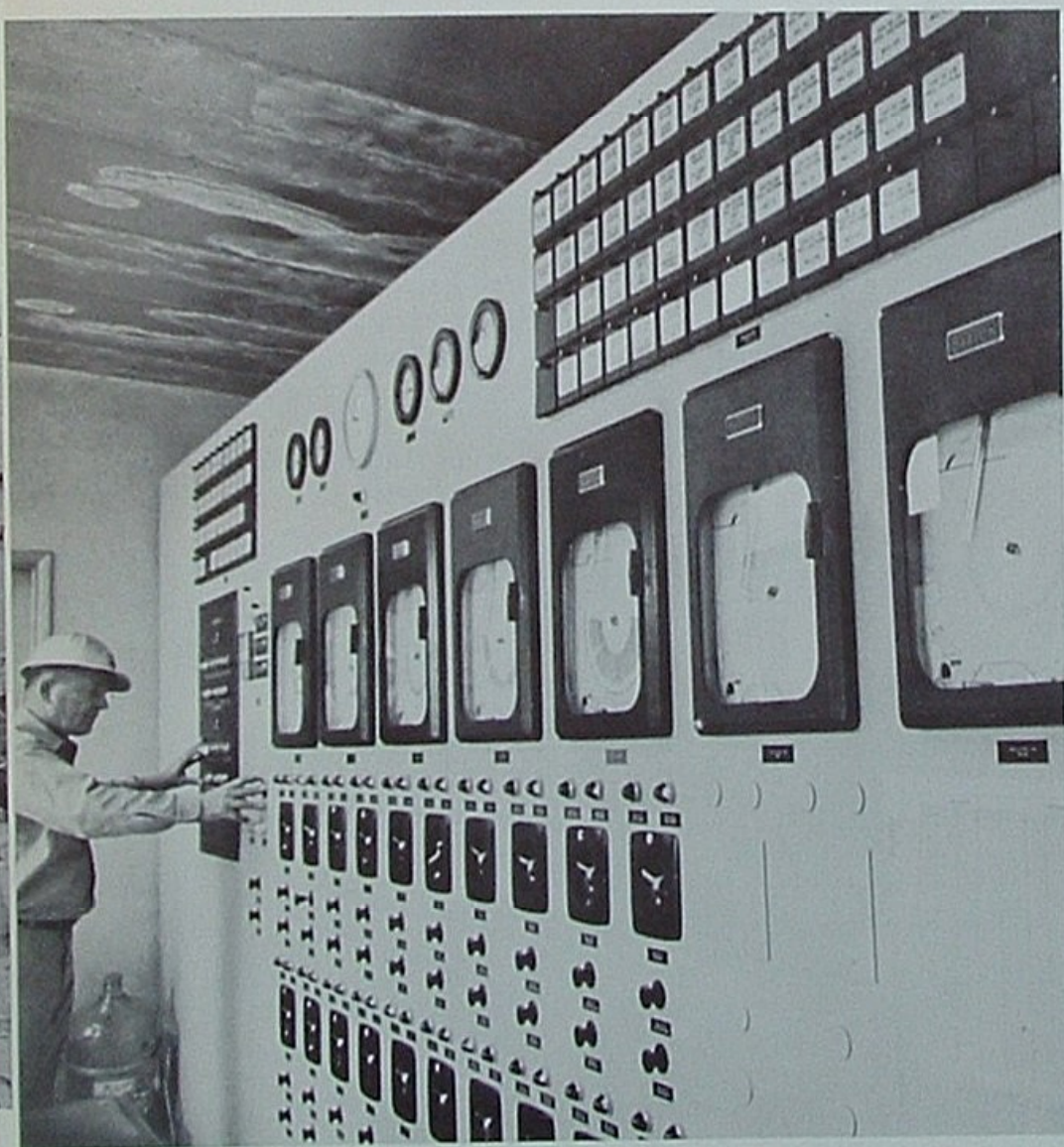
He replied: "Most of this equipment scared me to death the first time I looked at it. But once everything was explained or figured out, it all seemed quite simple—and highly necessary for this neighborhood.

"I'd say that the big difference between this operation and the older method is that we now spend most of our time checking instruments and reports rather than making a constant tour of the oil fields. Actually the whole operation of both the Murphy and PE sites is concentrated right there on the control board. It's like having 28 wells at your fingertips and being in two places at once."

Our attention again was turned to the hundred miniature windows and their printed messages. All except one were formal and businesslike. The exception carried a warning written manually with a wax pencil; it read, "Look busy, the boss is coming."

Shorty laughed, "Even instruments have to have their fun."

THE END



The Operator No. 1 and Field Foreman "Pat" Crain hold an office conference each morning before issuing daily report.

At "Shorty's" fingertips are recording instruments and controls that enable him to handle emergencies in two places at once.

How to take the door out of a casino

AT RENO, it can get pretty cold in winter—or hot during the summer.

But that fact hasn't deterred such famous casinos as the Horseshoe Club and Harrah's from cutting out the entire fronts of their entertainment palaces and doing away with windows and doors.

That is, you don't see the windows or doors. What takes their place is a modern invention called the "air door" or "air curtain." It is actually a moving current of oil-heated or cooled air flowing both downward and upward through gratings in the floor and ceiling. It is so effective that customers playing the slot machines just inside the air door bask in perfect comfort while pedestrians, only five feet away, oftentimes either shiver or swelter.

An interesting fact about these windowless, doorless openings is that they need constant cleaning—with oil. Yessir, the air currents flow through an immense filter somewhat similar to the oil-bath air cleaner installed over the carburetor of your car. The oil-saturated filter strains all dust particles from the air, assuring a steady flow of the *Finest* air current available.

But it took quite a bit of doing to perfect exactly the right kind of oil to do this job. The product had to be efficient, trouble-free and odorless.

Union Oil people at Reno came up with the suggestion that our Soluble Oil ought to just about meet the requirements. Soluble Oil mixed with water is generally used as a lubricant and coolant for tools employed in machining and drilling metals. Being soluble in water, it would permit the periodic washing of air-door filters to remove their accumulation of dirt.

The only difficulty was that our established Soluble Oil contained an additive that, under certain conditions, might evaporate and slightly taint the air. So we arranged for the manufacture of a special soluble oil, Unicut S Modified, which is washable as well as odorless. The casino people are delighted.

Incidentally, the slot machines in these casinos also have to be oiled quite regularly. Another Union product, CP Oil, developed originally as a lubricant for cotton-picking machines, is considered ideal for the slots.

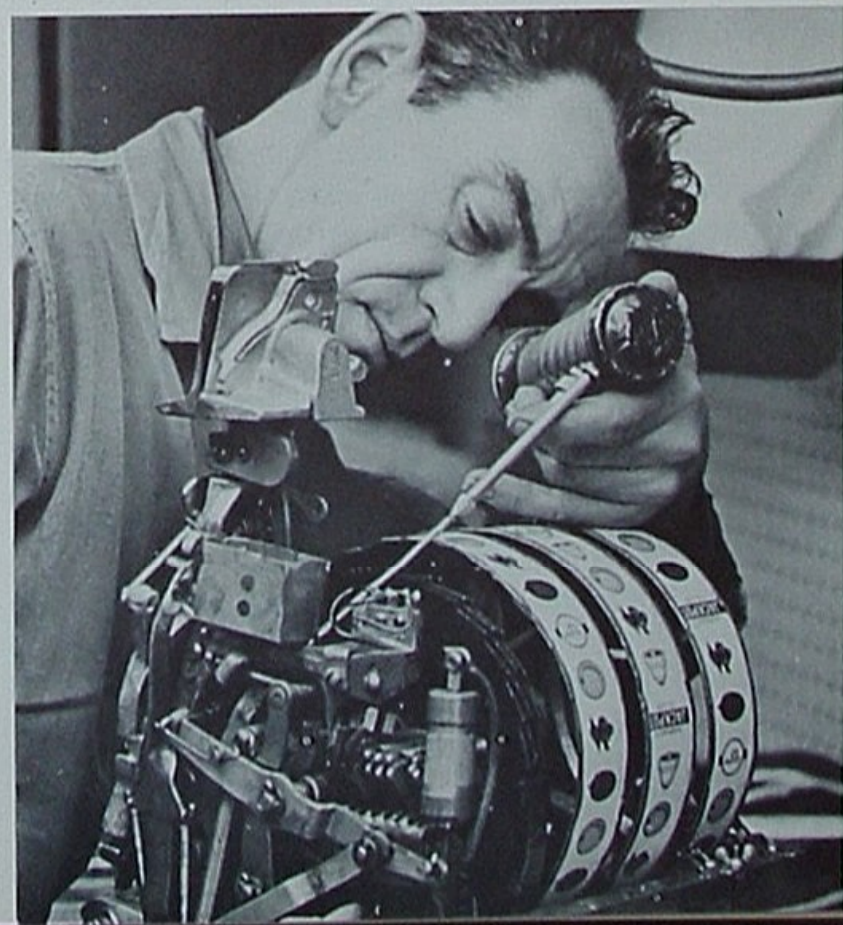
You won't believe this, but it's true: Our photographer, Tom Carroll, who shot these pictures, played one of the CP oiled machines for 10 minutes and hit two jackpots. Talk about *cotton-pickin'* luck!

THE END



This pretty miss at the Horseshoe Club in Reno is walking through a door—an invisible door. The "air door" is a moving curtain of oil-heated (or cooled) air flowing both upward and downward through gratings. Union Oil developed a modified lubricant for filtering the air used on these casino doorways.

Reno mechanic Dave Pellegrino repairs a slot machine at Harrah's Club, using Union CP oil, developed originally as a lubricant for cotton picking machines. It is regarded as ideal for the slots, as Seventy-Six photographer Tom Carroll later learned.



PHOTOS BY TOM CARROLL

College students are...

INSURANCE FOR THE FUTURE

WHEN USC chemical engineering student George Mallan looked up at the two aging distillation towers, he took off his hard hat and frowned.

"Well, I asked for it," he said. "I told them I wasn't looking for flunky work." Half an hour earlier, in the Process Engineering Department at Los Angeles Refinery, Mallan's boss had described the solvent redistillation unit. It makes blending stocks for JP-5 jet fuel and cleaning solvent.

"The unit has a capacity of 6,000 barrels a day," said Don Chaffee. "We need a design that will make it turn out 7,500 barrels a day. Oh, and one more thing, George. There's no money to replace the distillation columns. Find another way."

Before Mallan returned to USC in September to work on a master's degree, he had evaluated the equipment, identified the bottlenecks, and laid down a basis for re-designing the unit. There's a good chance George will always remember that summer's work; it was his first refinery engineering job.

George Mallan was one of about 75 university students hired by Union Oil last June to gain practical experience while going to school. There was more to it, however, than paying 75 young men to learn the petroleum business. During the summer, the student and the company have a chance to look one another over—sort of size each other up. Some of them will be offered permanent jobs. It's part of a long term program to keep Union Oil in the forefront in technical and scientific manpower.

"This is vital to our future," says Nick Ugrin. As vice president in charge of Industrial Relations, Ugrin is deeply concerned with this future. "One of the major tasks facing us today," he continues, "is to find the next generation of engineers, chemists, scientists, economists and managers who will succeed our generation."

So important is this belief that it has been translated into a highly organized recruiting program. Vern Frederickson, manager of employment services and chief professional

talent recruiter for Union Oil, says engineers, geologists, chemists and other technically trained men are high on the priority list. In effect, the company reaches right into the college campus to select the men who will explore for new oil fields and design the refineries of tomorrow. From a management viewpoint, these students are our insurance for the future. Employees, customers and stockholders all have a share in this insurance policy.

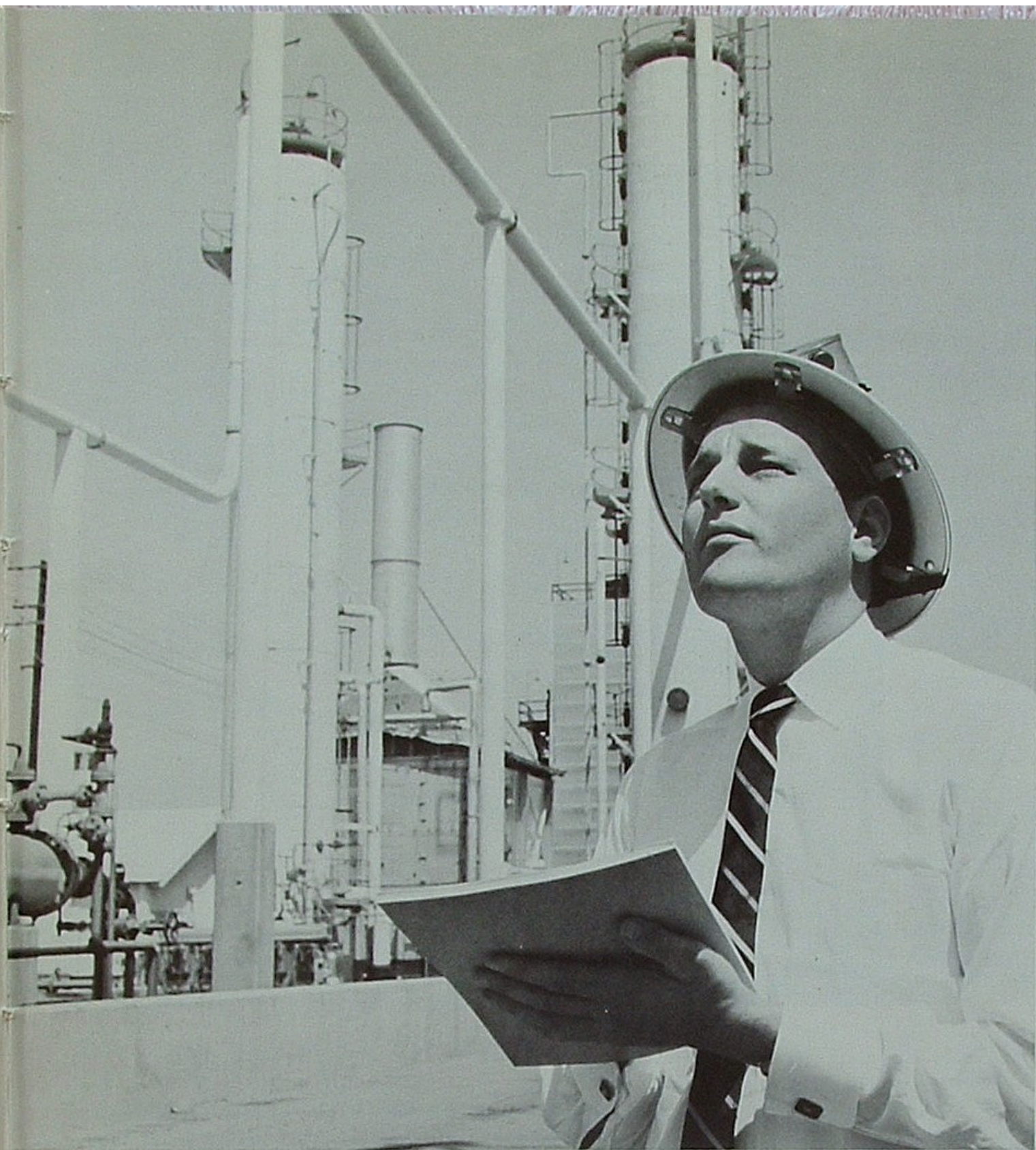
Fortunately, because Union Oil has won a reputation for ideas, challenges, and opportunity, many of the brightest minds on the campus are being attracted to our ranks. Tery Barr, 25, a husky chemist working on his Ph.D. at UCLA, is an example of the scientific manpower the company seeks.

"Tery's working in molecular spectroscopy," said Doug McCawley, industrial relations supervisor at Union Research Center, where Barr works. McCawley was describing Tery's year-long holiday from classes to work on catalyst research. Oil refineries in this country use thousands of tons of catalysts every year to upgrade crude oil into gasoline, jet fuel and other products. Despite this, we have a lot to learn about how catalysts work.

"To see how they work," says George Lake, supervisor of the Analytical Group at Research Center, "we try to peer into the world of molecules by using electronic eyes. One of the most discerning of these new eyes is the electron spin resonance spectrometer—ESR for short. Tery is using the ESR to try to unlock some of the secrets of catalysts so we can make better ones."

Catalysts and distillation columns are challenging, but Union's recruiting efforts aren't limited to the fields of research and refining. The company also wants economists, business majors, engineers, geologists; it takes a lot of talent to run an oil company.

Rick Kingelin, a petroleum engineering student at the University of Oklahoma, is one example. He has spent three summers working in the Gulf Division at Houston.



George Mallan, USC chemical engineering student, wasn't looking for flunky work. He received a summer engineering job at Los Angeles Refinery.

The Reservoir Engineering Department at Houston has long recognized the need for a means of shortening the lengthy calculations used in making predictions on water-drive gas reservoirs. Kingelin, who worked in the Reservoir Department the previous summer, was familiar with energy balance calculations, and was then taking courses in engineering computer programming at Oklahoma. Last summer Don Clark, chief reservoir engineer in Houston, assigned Rick to spend the summer developing a computer program that would meet conditions needed for studies of Gulf Coast water-drive, gas reservoirs.

"When you don't have all the information," Clark said, "this becomes quite a job on a desk calculator. It's a trial and error task, one of fitting good data to interpreted missing data."

The problem, as Kingelin saw it, was that an engineer might spend three to five hours working on one set of calculations. The program he designed, once basic factors were set, could be compressed into a casual 15 minute

stint on a computer.

Not every summer employee spent his time at a computer or looking into ESR spectrometers. Usually the exotic jobs went to students with bachelor's degrees, men who were working on advanced degrees. For most of the 75 students that Union hired, the summer was a chance to put some newly learned theory to practice.

"Even then," said Gulf Division Production Manager Ed Sands, "many of them needed familiarization with production equipment, oil field terms, and safe working practices." This familiarization applies as much to marketing as it does to production. Mike Niven is a marketing research specialist with a B.A. from Trinity College who has spent two terms working toward his M.B.A. at Stanford. He is now on a year's leave from classroom studies to work in the Market Research Department at Union Oil Center. Before that he spent a year as a salesman at a Minute Man station.

"The background was invaluable," Mike said, "Knowing

continued



Charles G. Meigs, UCLA engineering student, gained practical experience at Union's Dominguez Field.

At Los Angeles Refinery last summer, Tom Lyda took a fresh look at some chemical and physical relationships, and came up with a new refining process.



INSURANCE *continued*

the terminology and daily routine at a station is vital in this work. For instance, my work today involves statistical analysis. When I analyze data on groups of stations, I can compare the mathematical results with my own experience at the station."

But there's more to it than being able to translate columns of figures into man-hours of work. "When I go back to school," Mike said, "I'll know how a 'return on investment' computation affects a business decision—a decision such as whether or not to build a station at a given location."

One student who was gaining his preliminary field experience last summer was Ronald Morris, a 20-year old junior in mechanical engineering at Long Beach State. Morris spent the summer working at Dominguez Field. His first month was with well pulling crews, doing well maintenance. Then he was summoned into the field office

to inventory equipment on the 138 wells at Dominguez. This involved listing size and condition of motors, pumps, sucker rods and other field hardware. A new task followed.

"Outline the optimum equipment for each well," said Cecil Ford, a production foreman at Dominguez. This was a pretty fair task for any college junior, made more so by the fact that Dominguez was being converted to a water-flood project. Where a well was producing ten barrels a day, waterflooding might increase output to a thousand barrels.

At first it looked like a job involving 138 computations, a complete engineering outline for each well. Thinking it over, Morris found a short cut. Analyzing his data, he concluded that with the equipment being used there were forty possible ways of hooking up the bottom-hole pumps, pumping units and sucker rods. He made up tables corresponding to these forty conditions.

"Now," said Ford, "we have only to refer to these tables."

These are some of the challenges and ideas. What about the opportunities?

"They've never been better," said Vice President Ugrin. "Every year the company is expanding. This creates new professional openings all the time."

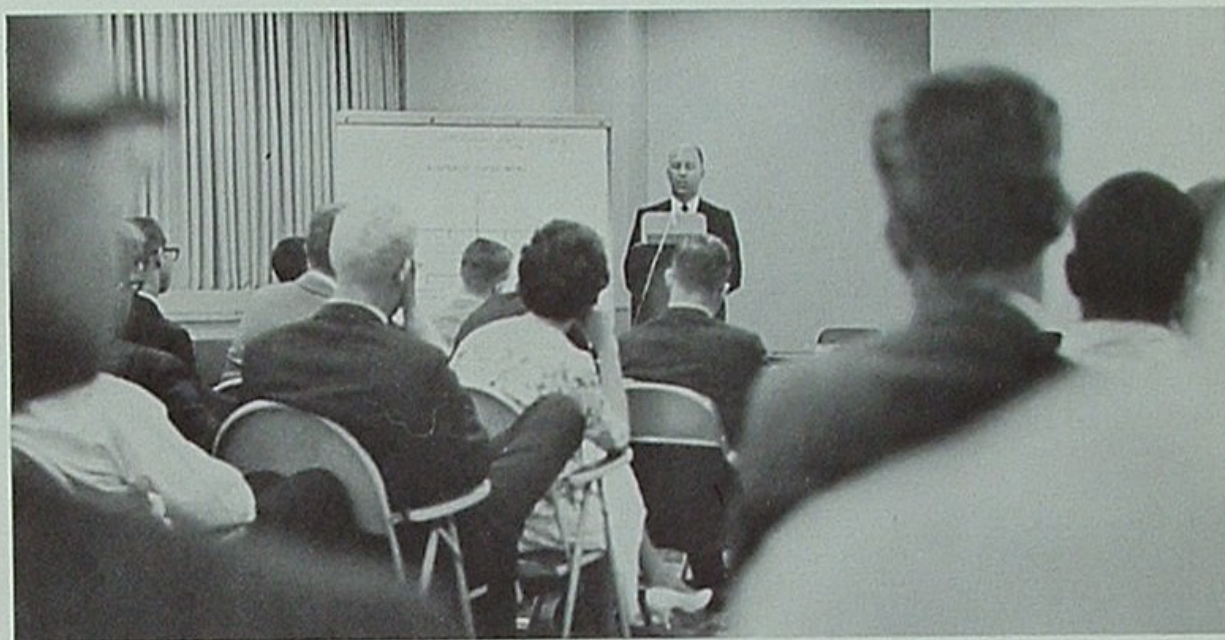
Then, too, Union Oilers have gone on to head up sub-



Rick Kingelin (left), working with fellow student Van Robinson, spent the summer at Union's Gulf Division headquarters in Houston solving reservoir engineering problems.



Ronald Morris, 20, a junior in mechanical engineering at Long Beach State, found a short cut in engineering paperwork.



Once every year, summer employees get together to meet one another, to make a report on an assigned project, and to enjoy a barbecue picnic dinner. Above, part of a day-long seminar for West Coast employees at Union Research Center. Below, Lee A. Jordan, on a picnic for Gulf Division employees at Caillou Island learned that you have to be a fast man with a reel in barracuda infested waters.

sidiaries spun off by the parent company. The management at Global Marine Exploration is evidence of this. Four of the top six officers are former Union Oilers, and all are engineers."

It takes more than a degree, however, to qualify a man for a management job. First he needs experience, plenty of it. While a young man is gathering this experience, the door to professional attainment is open. Tom Lyda, a quiet-spoken, 23-year old chemical engineer-mathematician who spent last summer at Los Angeles Refinery, was one who walked through that door. Within six weeks after joining the Process Engineering Department, Tom was deeply involved in the development of a new refining process—so new it may be patentable.

Lyda today is back at the University of Texas, studying for an advanced chemical engineering degree. Like him, most of the other 75 summer employees have returned to their studies. Some will be back with Union on a permanent basis one of these days.

"It is men such as these," says Ugrin, "men like George Mallan, Tery Barr, Rick Kingelin, Mike Niven, Ronald Morris and Tom Lyda who may one day succeed our generation. It is to them that we must entrust the company. They are our insurance for the future." THE END.



THE WHEEL TURNS

*Oil for the lamps of China;
fuel for luxury jet liners;
the Edeleanu Plant made them both*

YOU'RE AT 35,000 feet over Lake Tahoe. You're lounging in a Seattle-bound Western Airlines 720B fan jet while the California-Nevada border slips under you at 600 miles an hour.

You look out the window. Right there off the wingtip is the Wright brothers' cloth-and-matchstick biplane cruising along beside you. The goggled aviator waves. And suddenly you wish you hadn't had that last glass of champagne.

Impossible? No more impossible than what's happened to the plant in the photograph at the right.

Those immense belt-driven wheels are in the Edeleanu Plant, the oldest treating plant at Los Angeles Refinery. It was built in 1930 to purify kerosene for export to the Orient. At that time, it was the biggest kerosene plant in the United States.

Even then, 33 years ago, the process wasn't new. Union Oil had been running a small Edeleanu Plant at Oleum Refinery for seven years. A Roumanian named Dr. L. Edeleanu had invented the process not too long after the Wrights took to the air over Kittyhawk in 1903. His invention: a method for producing a clean-burning fuel by treating raw kerosene with liquid sulphur dioxide.

The old Edeleanu Plant came over from Europe in a basket. Every nut, bolt, tank, piece of pipe, and pump—775 tons of it—was prefabricated, marked, and shipped to the refinery from Germany. A German engineer, Konstantin Stolpe, came along with the pieces to supervise construction.

During the years after the plant was built, scientists learned more about the petroleum molecule than they did in all the years before.

Tens of millions of dollars were spent on improvements as Los Angeles Refinery evolved into one of the most modern refining complexes in the oil industry.

But while everything around it changed, the Edeleanu Plant just sat there spinning its wheels.

Kerosene, its principal reason for being, was no longer of such great importance. The plant was allowed to stand only because it turned out kerosene and solvents of remarkable purity at the right price.

Then came the jets.

Jet fuel is a cousin of kerosene. It, too, must be treated if it's to burn clean. What better way to purify it than with the Edeleanu process?

Built to make "oil for the lamps of China," using a process invented in the dark ages of petroleum technology, today the old Edeleanu Plant is back on top of the heap—as important to Union Oil as it was 33 years ago. It provides a key step in the manufacture of 76 Turbine Fuel for air liners and of JP-5 fuel for military jets.

So if you do see the man in the goggles and the antique 'plane, don't blame it on the champagne. Relax and wave back at him. The way the wheel turns, anything can happen!

THE END



PHOTO BY GEORGE STROCK

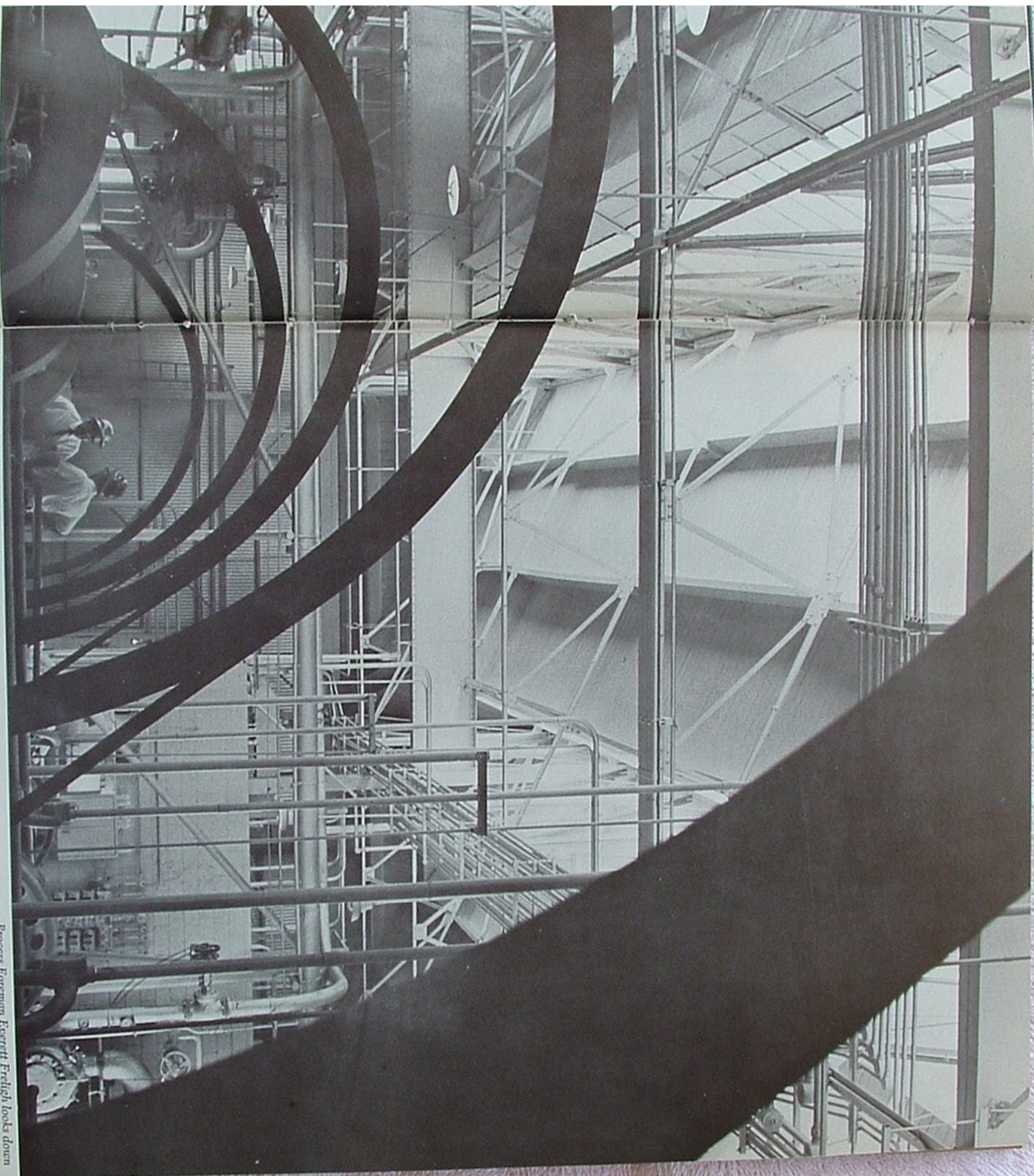
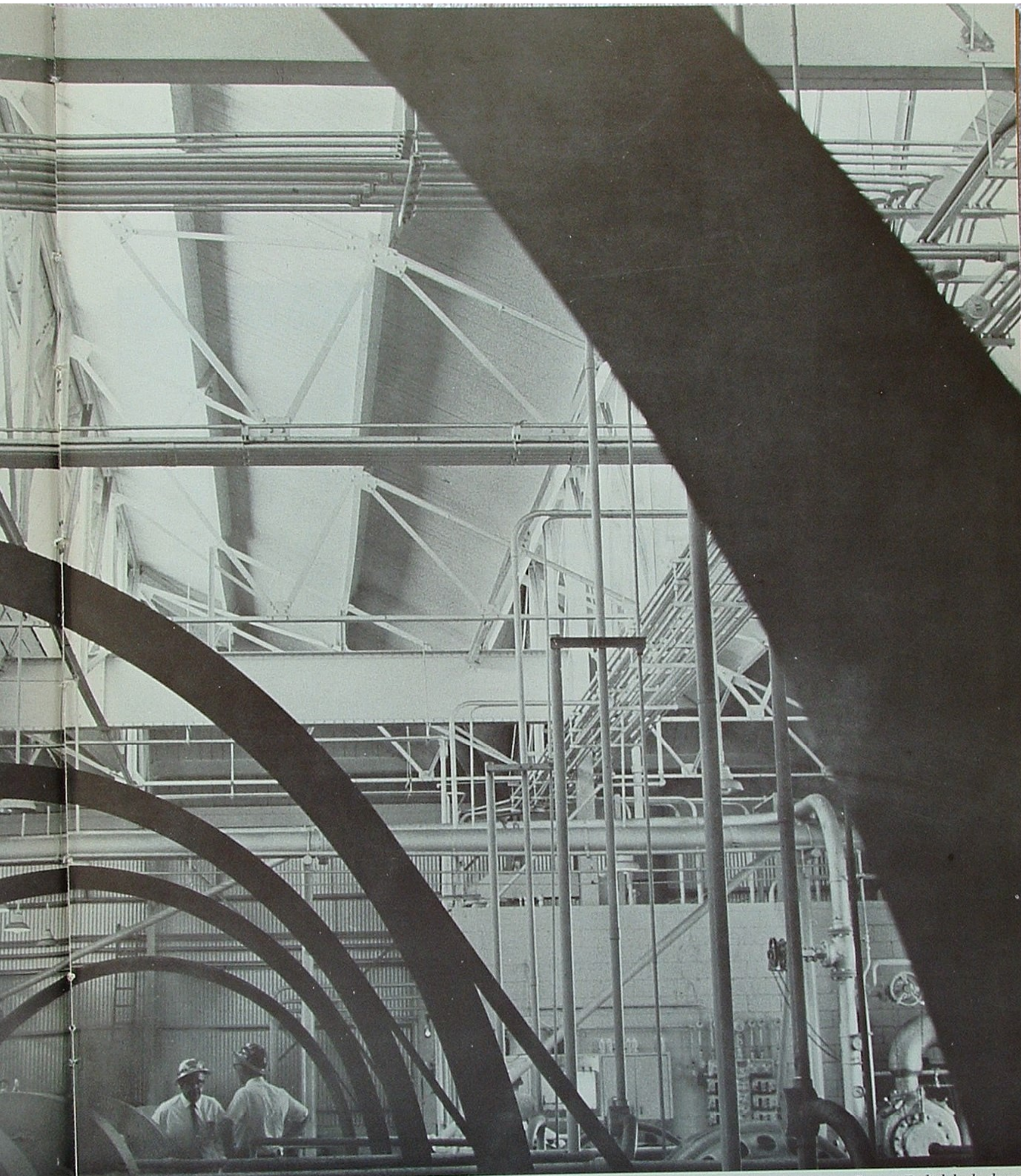


PHOTO BY GEORGE STRUCK

Process Foreman Everett Freligh looks down the tunnel made by a pattern of drive shafts at Los Angeles Refinery's Edelmann Plant.



STROCK

Process Foreman Everett Freligh looks down the tunnel made by a pattern of drive wheels at Los Angeles Refinery's Edeleanu Plant.

FRED L. HARTLEY

ELECTED EXECUTIVE VICE PRESIDENT

At the November 25 meeting of the board of directors, Fred L. Hartley was elected executive vice president of Union Oil Company. Hartley was senior vice president for refining and marketing.

President A. C. Rubel, who made the announcement, said Hartley would assume responsibility for the company's operating divisions, subsidiaries and related services. Grouped under the executive vice president's office in the reorganization were the following: Exploration and Production Division, Refining and Marketing Division, Corporate Services, Research, Subsidiaries, Collier Carbon and Chemical Corporation, and Unoco Limited.

"As president and chief executive officer," said Rubel, "I will continue to be responsible for the general affairs of the company and will specifically direct the company's long-range planning, legal, and financial affairs."

Following graduation from the University of British Columbia as a chemical engineer, Hartley joined Union Oil in 1939 as a technical trainee assigned to the Oleum Refinery maintenance gang as a laborer. From 1940 to 1949 he supervised the process engineering, design and initial operation of many refining units. In 1950 he was appointed general superintendent of operations at Los Angeles Refinery. Three years later he was transferred to Union Research Center, and in 1955 became its general manager. A year later he was elected vice president for



Fred L. Hartley

research. In 1960 Hartley was elected senior vice president for marketing and a director in the company. Two years later he was made responsible for refining and marketing.

JOHN W. TOWLER HEADS

REFINING AND MARKETING

John W. Towler, former vice president for refining, assumed responsibility for the Refining and Marketing Division on November 25.

Towler joined Union Oil in 1933 as a laborer following graduation from California Institute of Technology as a mechanical engineer. He rose to managership of both the Los Angeles and Oleum Refineries, became director of manufacturing in 1956, four years later was elected a vice president.

John W. Towler



REED O. HUNT AND HENRY T. MUDD ARE NEW DIRECTORS

Two new directors have been added to the Union Oil Company board of directors. They are Reed O. Hunt of San Francisco and Henry T. Mudd of Los Angeles. Their elections to directorships came at the monthly board meeting on November 25, 1963. Both men are active in many organizations.



Reed O. Hunt

Reed O. Hunt is chairman and chief executive officer of Crown Zellerbach Corporation with headquarters in San Francisco. He is a director of the Crocker-Citizens National Bank, Pacific National Bank, Canadian Imperial Bank, and General Reinsurance Corporation. He is also a regent of the University of San Francisco and a trustee of Pacific University. He has been with Crown Zellerbach since 1927, starting as a stockroom clerk.

Henry T. Mudd is president and chief executive officer of Cyprus Mines Corporation and Pima Mining Company. He is a director of United California Bank, North American Aviation, Southern Pacific Company, Southern California Edison Company, and Pacific Mutual Life Insurance Company. He is also chairman of the board of Harvey Mudd College and a director of Claremont Men's College and the Thacher School. Henry Mudd is the son of Harvey Mudd, for whom the college is named.



Henry T. Mudd

YOUR MISSING MONEY: No. 6

The dollars deducted from your paycheck

for the Life Insurance Plan

will grow into future protection for your family.

WHEN WE STARTED this series about your payroll deduction and what the missing money buys you, we separated your benefit plans into four groups:

Those that protect you against medical expense: the Employees Medical Plan and the Insured Medical Plan;

A savings plan: the Incentive Plan;

Income continuance plans: Sick Pay Plan, Disability Income Plan;

Family protection plans: the insurance plans, the Retirement Plan, and Social Security.

You can argue about the separation if you want to. As we said months ago, the plans really form a continuous umbrella of protection. However, this month under the heading "family protection plans" we'll cover the Life Insurance Plan. Then, next month, we'll conclude the series with the Retirement Plan and Social Security.

You could call these "income continuance plans." The only justification for calling them "family protection plans" is this:

The Life Insurance Plan, the Retirement Plan, and Social Security are designed to assure you or your family an income when you are no longer able to do so because of disability, retirement or death.

"Life Insurance Plan" is a new term among Union Oil's benefit plans. The Life Insurance Plan became effective January 1, replacing the old Group Life Insurance Plan. The new plan comes in two sections:

- (1) Non-contributory life insurance for you;
- (2) Contributory insurance: a voluntary program of life and accidental death and dismemberment insurance for you...and life insurance for each member of your family.

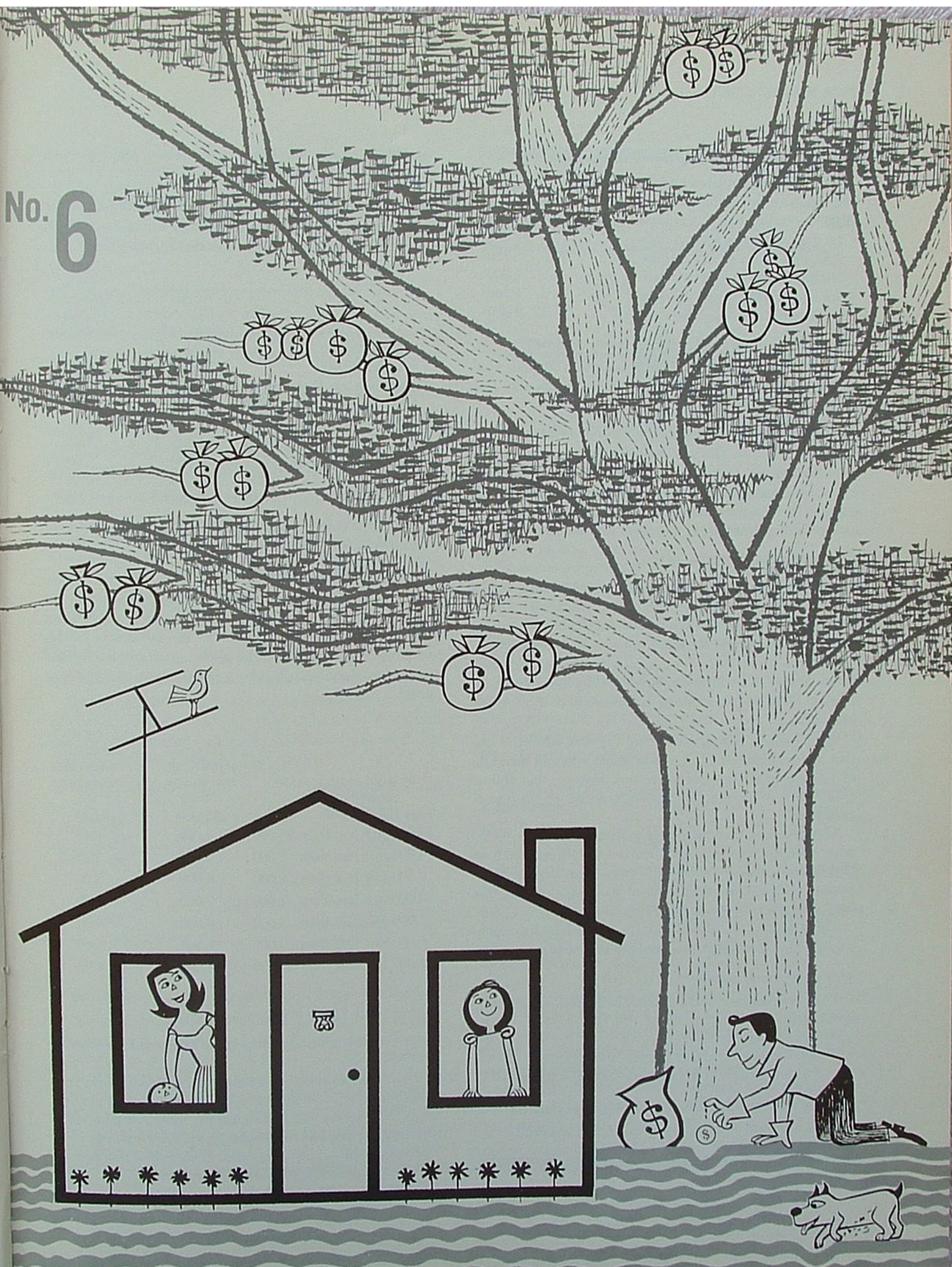
With no more ado, let's take a look at the plan. We can touch only the high points. If you want more detail, either read the booklet or talk with your personnel representative.

NON-CONTRIBUTORY LIFE INSURANCE

There is, of course, no payroll deduction for this part of the plan. It's free.

continued

No. 6



YOUR MISSING MONEY *continued*

When do I become eligible for non-contributory insurance?

After you've completed one year of accumulated service. The value of the life insurance increases to a maximum of \$2,000 according to this schedule:

1st anniversary of service date	\$ 500
2nd anniversary of service date	750
3rd anniversary of service date	1,000
4th anniversary of service date	1,500
5th anniversary of service date	2,000

What happens to the insurance if I'm totally disabled?

If you're totally disabled before you reach 60, your non-contributory insurance will continue up to the day you retire.

Do I carry my non-contributory insurance into retirement?

Technically, no. The non-contributory insurance stops with retirement. However, a feature of the Retirement Plan takes over. That plan pays your beneficiary an amount equal to the non-contributory insurance you were carrying on the date you retired.

CONTRIBUTORY INSURANCE

Group life insurance, a common benefit today, was a strange new phenomenon when Union Oil offered a plan to its employees in 1915. Union Oil's was the first plan of its kind in the West, and the third in the entire country.

Over the years, there have been a number of improvements in the life insurance program. The latest came on January 1 when the present Life Insurance Plan went into effect.

In this article, we consider only the new plan, the one that applies today. If you chose to retain your old schedule of insurance, all the questions and answers that follow apply to you—except for the dollar value of the insurance itself.

The new Life Insurance Plan is designed so that insurance coverage for men—and for women with husbands or dependent children—is slightly more than double their annual earnings. In the event of accidental death, the insurance pays *four* times annual earnings.

There is also a special insurance schedule for single women and the provisions for family coverage.

What about family coverage?

Your Life Insurance Plan includes the following family coverage:

- \$1,000 for your spouse;
- 500 for each child 6 months to 19 years old;
- 100 for each child from 14 days to 6 months old.

When do I become eligible for contributory life insurance?

As a full-time employee, you're eligible to enroll in the plan the first of any month after three months service. Unless you enroll within 31 days after you first become

eligible, you can enroll only if you pass a physical examination—at your own expense.

What is the amount of my insurance and what does it cost me?

For men and for women employees who are married *or* who have dependent children under 23 years old:

IF YOUR ANNUAL BASE EARNINGS ARE:	YOUR AMOUNT OF INSURANCE IS:	YOUR MONTHLY PAYROLL DEDUCTION IS:
Less than \$3,000	\$6,000	\$3.60
\$3,000 but less than \$4,000	8,000	4.80
4,000 but less than 5,000	10,000	6.00
5,000 but less than 6,000	12,000	7.20
6,000 but less than 7,000	14,000	8.40
7,000 but less than 8,000	16,000	9.60
8,000 but less than 9,000	18,000	10.80
9,000 but less than 10,000	20,000	12.00

Add \$2,000 worth of insurance and \$1.20 more deduction for each \$1,000 increase in earnings.

There's a schedule for single women?

If you're a single woman, there's a special schedule for you. Experience shows most single women aren't interested in carrying a great deal of life insurance; so this schedule gives you coverage about equal to your annual salary—or double that salary in the event of accidental death.

IF YOUR ANNUAL BASE EARNINGS ARE:	YOUR AMOUNT OF INSURANCE IS:	YOUR MONTHLY PAYROLL DEDUCTION IS:
Less than \$3,000	\$3,000	\$1.80
\$3,000 but less than \$4,000	4,000	2.40
4,000 but less than 5,000	5,000	3.00
5,000 but less than 6,000	6,000	3.60
6,000 but less than 7,000	7,000	4.20
7,000 but less than 8,000	8,000	4.80
8,000 but less than 9,000	9,000	5.40
9,000 but less than 10,000	10,000	6.00

Add \$1,000 worth of insurance and 60 cents more deduction for each \$1,000 increase in earnings.

What happens to my insurance if I'm totally and permanently disabled?

If you're totally and permanently disabled before your 60th birthday, one-half of your insurance (but not less than the amount you had under the total and permanent disability provisions of the old plan) will remain in force until you're 65—at no cost to you. At 65, half of *this* amount will be continued—again, at no cost to you.

If you die within one year from the date you were declared totally disabled, the full face value of your policy will be paid to your beneficiary.

If you are totally and permanently disabled after you are 60, you can continue one-half of your insurance until you are 65 years old by paying the regular employee-rate premiums.

What about accidental death or dismemberment?

In case of your accidental death, your beneficiary receives an amount double the face value of your contributory life insurance policies plus the face value of your non-contributory insurance.

In case of the loss of an eye, or a limb, or some unpleasant combination of the two, you will receive lump sums ranging from one-half to full face value of your policies.

(In both cases—death or dismemberment must occur as a result of the accident and within 90 days of it.)

How is my insurance paid if I die?

Normally, the insurance is paid to your beneficiary in a lump sum. However, there are a number of different ways in which payment can be handled. For a complete answer to this question, talk to your personnel representative.

Whom may I name my beneficiary?

Anyone. And you can change your beneficiary at any time.

May I continue my contributory life insurance into retirement?

Yes, up to half the amount you are entitled to under the new schedule at the time you retire. (The accidental death and dismemberment and family coverage features do not apply to retirees, however.) Your cost is:

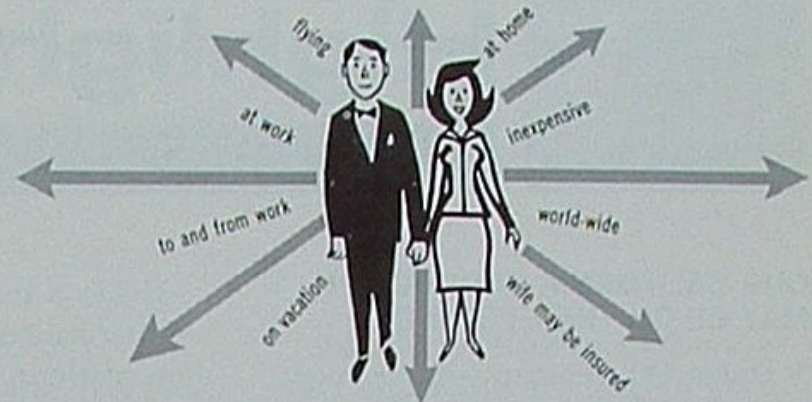
AGE AT RETIREMENT	PREMIUM PER \$1,000
55	\$1.50
56	1.56
57	1.65
58	1.73
59	1.82
60	1.92
61	2.02
62	2.13
63	2.25
64	2.37
65	2.50

You may convert any portion of the remainder of your insurance without a physical examination, at the premium applicable to your age.

Next month, we'll describe the other family protection plan, the Retirement Plan. You'll find that—as with the Life Insurance Plan and all the other plans in the Union Oil "benefit package"—every penny of your payroll deduction dollars spent for the Retirement Plan is working hard to buy you a full measure of protection. **THE END**

A. D. D. T. D. I.

These are the initials of a special accident insurance plan for those who want additional protection.



The collection of initials, "A. D. D. T. D. I.," stand for Accidental Death, Dismemberment, and Total Disability Insurance. This is an accident insurance plan originally devised for employees who travel a lot. However, it is available to all employees.

The annual premium is 84 cents per thousand dollars of coverage. Group purchasing power makes this policy much more inexpensive than similar policies bought on an individual basis.

A. D. D. T. D. I. provides world-wide, 24-hour coverage against death, dismemberment, or total and permanent disability resulting from an accident.

It covers accidents at home, at work, traveling to and from work, on vacation, in recreation activities, or flying as a passenger in any previously tried, tested, and approved aircraft.

The amount of insurance you may carry depends on your earnings. Here's an earnings, coverage, cost chart:

Annual Earnings	Amount of Insurance	Monthly Payroll Deduction*
Under \$8,000	\$10,000 to \$20,000	\$.70 to \$ 1.40
\$8,000 but less than \$10,000	\$10,000 to \$40,000	\$.70 to \$ 2.80
\$10,000 and over	\$10,000 to \$250,000	\$.70 to \$17.50

*You can pay the premium by monthly payroll deduction or an annual premium can be paid in cash.

A man may insure his wife under the plan. The wife may be insured for any amount between \$10,000 and the amount the husband is carrying. (You can't divide that minimum—\$5,000 for each. The minimum is \$10,000 per person.) Other dependents are not eligible. Wives, however, may not insure their husbands.

You can carry this insurance into retirement, but at a higher rate. After you're 65 years and 6 months old, the premium rate changes based on age.

Business



Highlights



OUR CALIFORNIA PRODUCTION MAY BE ON THE UPSWING

Union Oil Company, in common with the industry, has for a number of years been faced with declining crude oil production and reserves in California. Discoveries have been few and far between. As we go into 1964, however, there is reason to believe that this trend will be reversed—the result of several new developments.

During 1963, discoveries or important extensions to producing fields were made on our offshore Huntington Beach parcel, the Las Cienegas Field in Los Angeles, and our Simi property in Ventura County.

In Japan, the Maruzen Oil Company celebrated its 30th anniversary in business on November 8, 1963. On hand in Maruzen's Osaka headquarters to take part in a birthday party was F. K. (Kem) Cadwell, president of Unoco Limited, our foreign marketing subsidiary. Shown left to right in the photo below are G. Korekawa, director; K. Shimizu, executive vice president (shaking hands with Cadwell); H. Mori, president; Cadwell, and S. Tasaka, senior vice president. Last May, Union Oil acquired 32.9 per cent of Maruzen's stock.



Here's a rundown:

—A permanent drilling and production platform is under construction for the development of our 100 per cent, 2,100 acre block, offshore Huntington Beach (Parcel 14), acquired in July, 1963. The first well we drilled successfully extended the old Huntington Beach Field.

—Two new production areas were discovered as a result of core hole drilling adjacent to the Las Cienegas Field in Los Angeles, and both will be developed by drilling during 1964. The company has a 60 per cent interest in this operation.

(For a look at our Las Cienegas operation, see this month's article,

"He Works in Two Places at Once.")

—What may well prove to be a significant discovery has been made on our 28,000-acre Simi mineral fee property on the south side of the Santa Clara Valley in Ventura County. The well, situated about half a mile from the South Tapo Field, was completed flowing 350 barrels a day of 38.5° gravity crude oil, with strong flowing pressures. Further drilling may prove up substantial additions to our crude oil reserves. If so, the Simi discoveries will be called the Santa Susana Field.

—Although commercial production has not yet been established on our large holdings offshore from Point Conception, exploratory wells drilled already have furnished encouragement that commercial oil does exist on our lease and evaluation drilling is being continued.

All in all, we are entering 1964 with high hopes of increasing our California production and reserves.

A MONTANA TRAVELOGUE ON GLACIER NATIONAL PARK

To promote tourism in Montana, Union Oil and Glacier Park, Inc., are co-sponsoring a 20-minute travelogue movie on Glacier Park.

The film, in sound and color, is tentatively titled "Crown of the Continent" and is scheduled for release later this year.

Members of the Montana State College film and television department have completed location filming of tourist activity and pictorial scenes in Glacier Park.

ECONOMIC LAWS DICTATE CLOSING ORCUTT REFINERY

Modern facilities for producing paving asphalts, road oils, and emulsified asphalts are being built at the Santa Maria Refinery near Arroyo Grande, California. Estimated cost of new facilities is \$700,000. Completion is scheduled for April 1, 1964. Somewhat ahead of this date, the Orcutt Refinery will be closed.

Shutdown of the Orcutt Refinery

will bring to an end an operating history of 24 years. The plant was originally built in 1939 by Mid-Coast Oil Company. Two years later, Bel Air Oil Company bought it. Union purchased the refinery in December, 1954, from the third owner, Sunray Oil Company, as part of a package that also included long-term contracts for Union to buy considerable California crude from Sunray.

At the time Union acquired the refinery, finished gasoline and some mid-barrel products were produced and marketed along with the principle product, asphalt. As the quality requirements for gasoline and mid-barrel increased, it became necessary to supply these products from Los Angeles and Oleum Refineries.

For a number of years now, Orcutt Refinery has been used strictly as an asphalt processing facility—and a good one it has been. Even so, time, technology and economics have caught up. Today, to meet competition profitably, the laws of economics dictate a consolidation of Orcutt facilities with the Santa Maria Refinery.

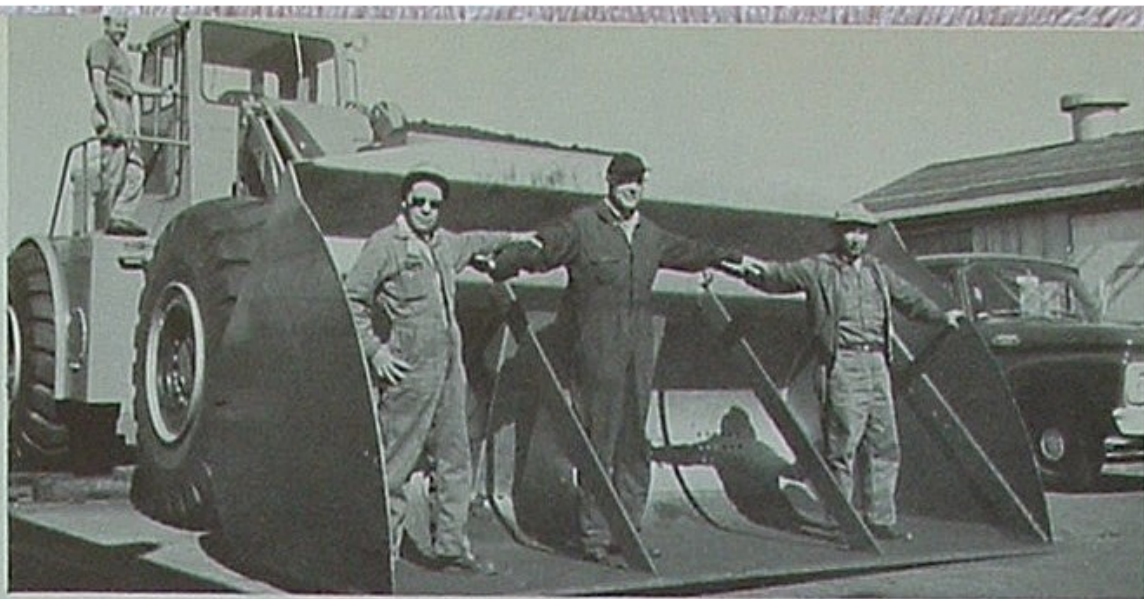
LEMOORE NAVAL AIR STATION SELLS '76' GASOLINES AT PX

On October 1, we acquired a 12-month contract to supply retail gasoline requirements at Lemoore Naval Air Station, north of Hanford, California. It is anticipated that monthly sales will exceed 120,000 gallons of Royal 76 and Regular 76 gasolines. Based on initial reports, credit card sales at this location are establishing new records.

76 OUTBOARD MOTOR FUELS ARE WINNING MANY FRIENDS

Every so often we receive a letter from a customer that is more meaningful than any advertising message. One such letter came recently from George Yale Jr. of Las Vegas, Nevada, who says he has been a satisfied Union Oil customer since 1928.

"I believe your new Pre-Mix Outboard Fuel is the *Finest* outboard



It takes a 320 horsepower diesel engine to power this huge Scoopmobile that recently went to work on the coke pile at Oleum Refinery. Its big maw can lift up to 12 cubic yards of petroleum coke in one snoutful, amply filling a ten ton truck. Truck dispatcher Clarence Pieterick is standing near the cab door. Trying the scoop out for size are (L-R) driver Arthur Owens, mechanic John Kooreny, and driver C.A. Lewis.

fuel on the market today," he said.

"It is my belief, however, that this fine product should be more widely distributed. In the Lake Mead, Lake Mohave, Colorado River areas, you have only three places to buy your pre-mix. With all the outboards in this area, you should do better.

"The recent trend in boating has drifted toward inboard-outboard equipment. This is much more expensive to buy, much more expensive to maintain, and much harder to moor or trailer... Most outboarders have always had trouble buying the right fuel, even when you mixed it yourself, and one bad tankful was all it took to put varnish in your cylinders; you lost performance and faced an expensive repair job.

"Your products and service I have always found to be top quality and in all these years I have never had one reason to complain."

MARKETING MOVIE SERIES WILL TOUR UNION OFFICES

We're making movies about Union Oil Company, and they're all designed for you.

Production is underway on 16 films, all in color, and each to run about five minutes. As the films are finished, they will be "premiered" in the lobby at Union Oil Center. From there, the movie shorts will be sent to branch and field offices throughout Union Oil Company. Release is scheduled for late spring.

Subjects for the first six films are wax, automotive services, 76 Certified Car Condition Service, asphalt, gasoline transportation, and credit cards. Each film is designed to explain a particular operation as it relates to Union Oil Company.

THOMSON IS NAMED AS DIRECTOR OF REFINING

M. S. Thomson, former manager of the Planning and Development Department, was named on November 25 to succeed John W. Towler as director of refining.

Towler became vice president for refining and marketing. (See page 12)

Thomson joined the company in 1940 as a laborer following graduation from Purdue University as a chemical engineer.

He was manager of the Oleum Refinery from 1956 to 1959 when he was named manager of the Los Angeles Refinery. In 1962, Thomson was appointed manager of Planning & Development Department.

M. S. Thomson





**IN
FOCUS**



Obviously, you're prepared for a fish story, so we'll give you one. Jack Mutchler (left), general clerk at Portland Terminal, fished this healthy eight-pound salmon from the Columbia river recently, and proud he was too. But Jack was even prouder of being named to the United Good Neighbors committee for the terminal. When Jack handed out pledge cards, he announced that for each card returned by Friday noon, there would be a chance on a drawing for the salmon—being held in his freezer. Gauger C. H. (Zeke) Turner won. Envious spectators include (L-R) M. R. (Red) Fulton, Lyle Bruhn, Dick Leinan.



Just before the Union Oil Center and Research Center A.I.D. fund-raising campaigns got underway, members of the A.I.D. team under H. H. (Bob) Hansen and Doug McCawley toured Rancho Los Amigos, one of six hospitals operated by Los Angeles County. In this photo, A.I.D. staffers watch a staff nurse giving a therapy treatment to a patient who suffered a fractured hip.



Seattle motorists driving along Second Ave. toward Seward Street encounter this fine view of business cooperation: the Finest fuel powering the finest airplanes. Not only is good visibility in that area guaranteed, the 77 by 108 foot sign commands attention from the Space Needle, focal point of the former World's Fair.

When the California State Division of Bay Toll Crossings decided to revamp the Oakland-Bay Bridge, resident engineer William B. Baker contacted Union Oil Company in San Francisco about using the tower atop the office building as a traffic observation post. As can be seen from this photo, the tower view is a choice vantage point. Pictured are (L-R) engineer Baker, Bill Josselyn, Union maintenance supervisor; and Louis G. Weiss, assistant resident engineer.





The bayou country in deep south Louisiana is the land of the Cajuns, where people are friendly, crayfish is a delicacy, and coffee drinking is a way of life. Long ago these ground rules were laid down for "dark roast" coffee:

Noir comme le Diable.....Black as the Devil
 Chaud comme L'enfer.....Hot as hades
 Pur comme un ange.....Pure as an angel
 Doux comme L'amour.....Sweet as love

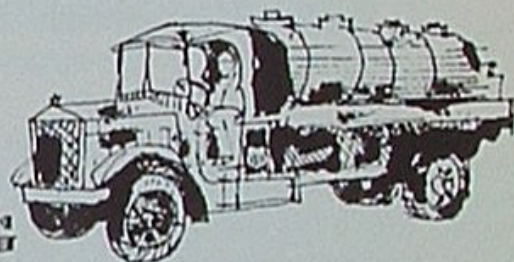
At Union's East White Lake Field south of Abbeville Louisiana, a Columbia Drilling Co. crew was waiting on cement when Union Engineer Guion Kleinpeter arrived. Chatting with Kleinpeter (left) during coffee break were J. E. Leavins, E. J. LeBlanc, Andrew Ware, and driller C. A. Loupe. As you can see, they like their "dark roast" in tiny cups.



Seven years without a chargeable accident is the enviable record earned by transport drivers at the Portland, Oregon, Marketing Terminal. During this period, seven drivers put 1,616,827 miles on the company's two gasoline tankers. Posing during safe driving award ceremonies were Ralph L. Cairney, terminal superintendent; drivers William I. Graham, William F. Clafin, Marvin D. Johnson, John E. Aikins, Joe L. Stephens, and Ernest S. Allen, and Oregon Division Sales Manager Joseph T. Raabe. Driver Robert L. Waine was not present.



Dealer Tracy Otto of Pateros, Washington, takes his work seriously: He was a three-time winner of this year's Sparkle Corps program. Moreover, his Sparkle Girls bowling team has for several years been in the Brewster, Washington, Women's Bowling League. Pictured, below, are Evie Lovaas, Hattie Otto, Electa Darlington, Jean Copple, and Marg Evertsbusch.



TURNING BACK THE PAGES

40 YEARS AGO: January 1924

Last year, Union Oil completed more wells in California than any other operating company. We drilled and placed on production 84 wells, as against 80 for our nearest competitor.

(For a report on our latest achievements in California, see the Business Highlights section.)

20 YEARS AGO: January 1944

Union Oil employees, participating in the Fourth War Loan Drive, are being asked to pledge a total of \$300,000 in War Bonds to underwrite the cost of a B-17 Flying Fortress. The name will be "Spirit of 76."

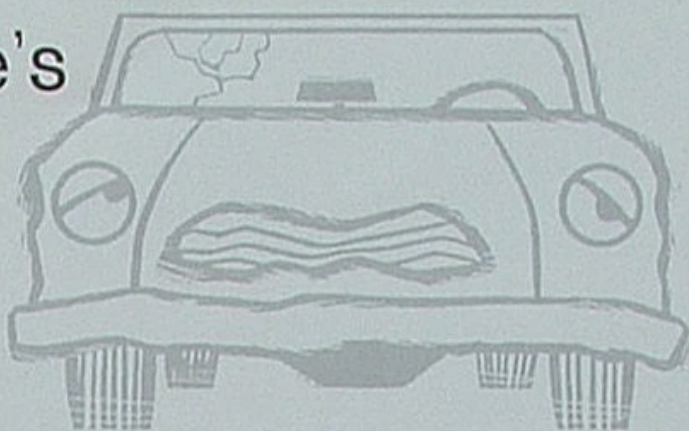
10 YEARS AGO: January 1954

Our entry in the 1954 Tournament of Roses in Pasadena was the first float in tournament history to win a Judges' Special Trophy. The float, titled "Uncle Wiggily," depicted the character of child-book fame fleeing the bad wolf.

(Sequel: Our entry in the 1964 Rose Parade was the famed drummers and fife player of the American Revolutionary War era. It was titled "Spirit of 76.")

Warning to motor cars: Beware! Your driver can wreck you. Don't be sent to the junk heap in the prime of life. Choose your driver with care. For more detailed information read:

Low Gear Charlie's



DRIVERWATCHER'S MANUAL

LOOK AT ME. In the V-12 world of autodom, I was half man and half alligator. They say I'm a descendent of the Dusenbergs family. Dad claims I'm a scion of the Pierce-Arrows. Mom once told me there was a bit of Stutz Bearcat in my oil lines. What more could you ask of a four-year old Chevvie?

Mind you now, I'm not complaining. I had the best of everything. A tankful of Royal 76 every weekend, and Royal Triton 10-30 to keep my engine purring. I cut a pretty figure in my salad days. Actually I'd still be good for another 50,000 miles before I need a ring job—if I weren't a cripple in this junk yard. Even Royal Triton can't keep you going if you had the drivers I had. If I had it to do all over again, I'd never have gotten out of low gear.

Just one look and you know it's too late to do anything for me. But if you have plans for being Frank Nitty's get-away car in "The Untouchables" of 1990, heed my words. Be a driverwatcher. Take care when you choose an owner. It can put years on your life.

Consider my drivers, for example. I had nine before being sold for scrap. Here they are:

GUY GOGGLE-EYES

Guy was my first owner, a bachelor. He bought me spanking new from the dealer. Guy had the biggest set of banjo eyes you ever saw. Trouble was, he spent all his time looking at women's nylons and not at the road. That's how I got my smashed grill.

SALLY GAWK-BEAK

Sally...she was Guy's girl friend. Sometimes he used to let her drive me. Sally was addicted to mirrors. Always looking into them to check her makeup. That accounts for my crumpled left front fender. Sally was checking her lipstick...looking into my rear view mirror...when we collided with a pickup. After that, Guy didn't let Sally drive anymore.

ONE-HANDED HENRY

Guy sold me to One-Handed Henry. Henry really had two hands, but he never used them to signal. So all us cars got to calling him One-Handed Henry. He wrecked my second fender. Henry was making a left turn one night, and he refused to signal. My blinker lights were working fine, but as I said, Charlie refused to use them. Result: crumpled metal. After he lost his license, Henry sold me to One-for-the Road Jack.

ONE-FOR-THE-ROAD JACK

Jack's in jail now. He got arrested for driving home from an office Christmas party. Christmas parties are bad enough, but this one was in July. Guess the policeman didn't think that was so funny. Specially since we almost ran him off the road. Jack used to keep a bottle in my glove compartment. He doesn't drink now that he's in jail.

HARVEY HEAVY-TOE

Jack sold me to Harvey. Oh, how I rue the day when Harvey bought me. I suffered continually from sore throttle and aching brake drums. Harvey's favorite trick was to get on the freeway and open it up. He was a teenager, and he loved to drive at 75—usually with a load of girls. A real speed demon, and reckless as they come. My smashed left door is a memento of Harvey. Seems Harvey and the neighbor boy were playing chicken on the highway—only neither of them had sense enough to turn.

FREDDIE FOLLOW-CLOSE

My next owner was Freddie, a slipstream rider. He enjoyed getting on the freeway and following another car about 15 feet behind while doing 65 or 70. Said riding the vacuum of the slipstream saved gas. He saved a few pennies on gas, maybe, but it cost quite a few dollars fixing that other fellow's trunk. If you'll take a close look at my front bumper, you'll see the red paint of that car we hit on the San Diego freeway. Freddie got a broken neck. He sold me to pay the hospital bill.

LANCE LANE-CHANGER

You see the two doors on my right? All smashed in. Lance was the kind of guy who loved to zip back and forth across lanes on the freeways—usually without looking back. In the three months Lance owned me, my rear view mirror caught only dust. It never caught his glance. Lance never looked back before changing lanes—even the day he turned into a passing truck.

RALPH RIGHT-OF-WAY

I really thought I'd had it when Ralph Right-of-Way got me. We were coming out of the car dealer's when Ralph pulls ahead of an oncoming car. At the intersection he turns left—against oncoming traffic. Next corner, Ralph barges right through...demanding the right of way. Of course, by the time Ralph got me I already had quite a few battle scars. One of Ralph's favorite tricks was to find a shiny new car and demand his right of way. The new car owner would see us coming and hit the brakes. I was glad the day that new neighbor moved in down the street. If possible, he was worse than Ralph. Faked Ralph out so badly he had a heart attack and had to sell me.

DICK DISCOURTESY

Dick was the kind of guy you could hear before you saw him. His language would make an oil field roustabout blush. Dick was the sort who did just about everything all my other drivers had done: Refused to let the other guy enter the freeway on-ramp ahead of him. He loved to pass on the right, or beat someone out of a parking spot. Dick was my last owner. He's dead now, and I'm in the junk heap. Happened one Friday night when Dick tried to pass a Mack truck at a railway crossing.

So there you have it, fellow autos. If you want to be around to collect Social Security in your senior citizen years, choose your drivers with care. If one of the types I've described ever turns up at the sales lot, refuse to start. Grind your gears. Backfire. Drip oil. Make strange noises. Whatever you do, don't let this guy buy you. It's your life; preserve it.

• • •

By a strange coincidence, Low-Gear Charlie's "Driver-watcher's Manual" lists what police statistics say are the eight most frequent causes of accidents. In descending order of frequency, here are the reasons why traffic accidents happen:

1. Lack of driving courtesy.
2. Failure to yield right-of-way.
3. Unsafe lane changes.*
4. Following too closely.*
5. Speeding and reckless driving.
6. Driving under the influence of alcohol.
7. Failure to use signal lights.
8. Inattention to traffic.

*Specially hazardous on freeways.



Guy Goggle-Eyes



Harvey Heavy-Toe



Lance Lane-Changer



One-for-the-Road Jack



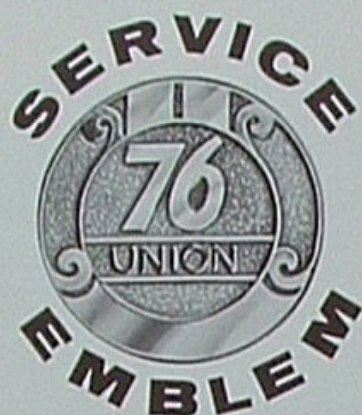
One-Handed Henry



Ralph Right-of-Way



Freddie Follow-Close



AWARDS

CORPORATE DIVISION

January 1964

35 YEARS

CHAUNCEY C. WALTERS Research Center

20 YEARS

ELIZABETH A. HAFNER Research Center

15 YEARS

LEON J. PETR Union Oil Center

10 YEARS

MARY A. CARDOZO Union Oil Center
 LOUIS M. DVORACEK Research Center
 FREDERICK A. HURST Research Center
 DONALD E. SMEDLEY Union Oil Center

EXPLORATION & PRODUCTION

January 1964

30 YEARS

DONALD J. ANDERSEN Dominguez, California
 ALFRED E. MARSH Orcutt, California

25 YEARS

MILTON J. BROWNE Union Oil Center
 NORMAN E. DAVIS Santa Paula, California

20 YEARS

URES C. ALLEN Cat Canyon, California
 NORMAN B. CLARK, JR. Union Oil Center

ELEA DESORMEAUX Vinton, Louisiana
 BENJAMIN C. IKE Orcutt, California
 AUGUSTE J. VAUGHAN Forked Island Term., La.

15 YEARS

MARGARET J. BENNETT Midland, Texas
 JOSEPH L. GARIBALDI Dominguez, California
 JOHN E. GUINN Richfield, California
 F. J. KEARNS, JR. Santa Fe Springs, California
 ROBERT A. LAMB Union Oil Center
 WILLIAM D. OWENS Union Oil Center

10 YEARS

LARRY M. LANSDOWNE ... Montebello, California

REFINING & MARKETING

January 1964

40 YEARS

A. LESLIE HEGGIE Union Oil Center
 LINNEUS E. OLINGER Colton, California

35 YEARS

F. B. BREMER, JR. Union Oil Center
 VIVIEN E. COOK Oleum Refinery
 W. R. GRIFFITHS Union Oil Center
 LESTER C. JOHNSON San Luis Obispo, California
 RUSSELL K. PACE Los Angeles
 LAWRENCE J. RAY Oleum Refinery

30 YEARS

JAMES H. BROOKS Oleum Refinery
 MARTIN F. TURCANIK Oleum Refinery
 RANDLE K. WHITE Colton, California

25 YEARS

R. M. ARMSTRONG Phoenix
 HOWARD J. GREGG Los Angeles Refinery

20 YEARS

CHARLES L. DURHAM Los Angeles Refinery
 HENRY EVANS Los Angeles Refinery
 JOHN F. HARRIS Los Angeles Refinery
 SIDNEY V. HORTON Los Angeles Refinery
 K. BYRON LJUNG Oleum Refinery
 WILBUR S. NAYLOR Los Angeles
 JOHN F. O'TOOLE, JR. Los Angeles Refinery
 EDISON E. RIGGLE Junction Sta., California
 ERIK N. TRUELSON Los Angeles Refinery
 ODELL WINTER Oleum Refinery

15 YEARS

ARTHUR D. CASE Dominguez Dist., California
 ROBERT D. DANIELS Union Oil Center
 JAMES G. PUGH Avenal Dist., California
 MARIUS C. SOULES Eugene, Oregon
 RICHARD H. TERRELL Los Angeles

10 YEARS

L. C. CASTAGNA Colton, California
 MARVIN L. HASELTINE. Stewart Dist., California
 FERN S. HEISERMAN Union Oil Center
 MILTON M. HIRSCH San Diego, California
 EDGAR F. HYLTON Los Angeles Refinery
 EARL G. MORTLOCK Phoenix
 JAY G. NASH Los Angeles Refinery
 WILLIAM A. NEVILL Los Angeles Refinery
 EDGAR J. NININGER Oleum Refinery
 ERNEST R. PARKER Oleum Refinery
 WILLIAM PETERSON Oleum Refinery
 JOHN C. RECTOR Santa Maria Refinery
 FRANK X. SOLIS Union Oil Center
 FRED W. STEBBINS San Francisco
 J. KENNETH TAYLOR Portland
 WARREN D. THOMPSON Los Angeles Refinery
 J. L. BUD VOTAW Los Angeles Refinery

DEALERS

January 1964

35 YEARS

CHARLES K. IWAI, dba CHARLEY IWAI SERV.
Honolulu, Hawaii
D. KRIDLER & J. PHILLIPS .. Pomona, California

30 YEARS

J. P. BOWEN North Hollywood, California
ELMER CASTNER Napa, California
R. E. ROBERTS Inglewood, California
TOM TORGESON Poulsbo, Washington

15 YEARS

LEO FADDA San Leandro, California
JOE FREY Great Falls, Montana
JOE GERARDIN Sanger, California
WALT C. HENSLEY Havre, Montana
OBIE FLYING SERVICE Chinook, Montana
HERBERT POLSLEY Wheatland, California
BERNARD SAUBER Gold Creek, Montana
H. K. WAYLETT Libby, Montana

10 YEARS

BENNY BEASLEY Fort Dick, California
R. R. BEAUCHEMIN North Bend, Oregon
DEWEY AVENUE GARAGE Los Angeles
GLENN DODGE Orange, California
H. M. DODSON Independence, Oregon
CLARENCE M. SMITH Hollister, California

5 YEARS

OWEN BELCHER San Leandro, California
ROY CLINE Fresno, California
PETE CUTHBERT Marblemount, Washington
EMERSON E. ELLIOTT Laytonville, California
EDWARD A. ERICKSON San Diego, California
FLOYD K. FORK Willow Creek, California
H. J. GROTH Mill Valley, California
SIDNEY LASITER Los Angeles
MAKIKI UNION SERVICE INC. Honolulu, Hawaii
MRS. BETTY K. MARUYA, dba
MUTUAL AUTO SERVICE Honolulu, Hawaii
CARL McBRAYER East Sound, Washington
CARLETON SMITH Los Angeles
JACK TABBYTOSAVIT Bakersfield, California
BOB TAKAYAMA Redwood City, California
JOE WILCZYNISKI Sacramento, California
RICHARD WILDER Malibu, California
RICHARD WILEY Los Angeles
FRANCIS WILLIAMS, dba WILLIAM'S
UNION SERVICE Honolulu, Hawaii

CONSIGNEES

January 1964

30 YEARS

W. R. TONKIN Lewiston, Idaho

15 YEARS

V. A. PELTIER Eureka, Montana
H. E. WEYDT Red Lodge, Montana

10 YEARS

C. F. ANDERSON Craig, Alaska
T. A. BRANCH Cut Bank, Montana
V. R. SORENSON Alturas, California

DISTRIBUTORS

January 1964

25 YEARS

RYAN OIL COMPANY Bisbee, Arizona

15 YEARS

WINNINGHOFF MOTORS .. Philipsberg, Montana

10 YEARS

TAYLOR-LOWENSTEIN AND COMPANY
Mobile, Alabama

DEALERS

December 1963

30 YEARS

FIRESTONE STORE #7926 Phoenix, Arizona

20 YEARS

J. C. BANNERMAN Carmel, California
MRS. FAYE RICE Yuba City, California

15 YEARS

EASTON AUTO COMPANY .. Easton, Washington
ROBERT A. KOLLING Beverly Hills, California
CHING MAH LEONG Hanalei, Kauai
W. S. MATTHEWS Los Angeles

10 YEARS

D. I. CHADWICK Placerville, California
BRUCE D. DIXON Newberg, Oregon
LEROY HUNTER Bakersfield, California
JACK M. CARR Norwalk, California
KARREN OIL CO. Logan, Utah
EARL SANDAGER Newberg, Oregon
MANUEL TORTOSA Winters, California

5 YEARS

ALEX BENDER Sanger, California
FRANCIS M. FOGARD McMinnville, Oregon
RICHARD GIBSON .. North Hollywood, California
C. J. HARB Oakland, California
DOUGLAS JONES Oakland, California
WILLIAM KEATING Tacoma, Washington
JESS LEES Milton Freewater, Oregon
DALE LeMASTER Arcadia, California

JOHN N. MIDKIFF Los Angeles, California
WILLIAM M. SMITH Eureka, California
ROY TONG San Francisco, California
LESLIE M. TRENTHAM Gresham, Oregon
KINICHI WATASE Los Angeles, California
R. A. WILSON Troutlake, Oregon

CONSIGNEES

December 1963

15 YEARS

W. R. MORRIS Butte, Montana

5 YEARS

ROBERT F. JOHNSON Winlock, Washington

RETIREMENTS

December 1, 1963

THOMAS J. BENNETT
Oildale, California August 15, 1929
SEVERIN L. BROUSSARD
Kaplan, Louisiana May 12, 1947
GEORGE D. FOSTER
Newhall, California April 27, 1947
VELMA JONES
Huntington Park, California ... March 16, 1937
MABEL L. RANDALL
Long Beach, California October 16, 1945
LENARD VEAZEY
Abbeville, Louisiana November 1, 1943

IN MEMORIAM

Employees:

GERALD M. ALSAGER
Cut Bank, Montana October 23, 1963
KENNETH I. COBB
Compton, California October 26, 1963

Retirees:

CHESTER H. ANDERSON
Fullerton, California October 22, 1963
EMMA W. BARKER
Portland, Oregon November 6, 1963
HENRY C. BOEDE
San Pablo, California November 4, 1963
McCLELLAN HAMILTON
Sawtelle, California September 22, 1963
ELWOOD L. HIATT
Glendale, California November 17, 1963
NELLIE RICE
Los Angeles, California October 21, 1963
WILLIAM R. SKINNER
Bakersfield, California October 31, 1963

UNION OIL COMPANY OF CALIFORNIA
P. O. Box 7600
Los Angeles 54, California



Where We Work...

Asphalt is one of man's oldest building materials. Among other things, it has been used to preserve mummies and waterproof sailing ships. Today asphalt is more versatile than ever. Many of our California crudes contain asphalt, which is carefully refined for making paving tar, battery cases, tires, undercoatings, linoleum, and bases for inks, paints and lacquers. In this picture, taken at Los Angeles Refinery, operator Bill Calohan is closing the air supply to an asphalt still. He has blown hot asphalt with forced air to oxidize it, making it suitable for use in roofing materials.