SEVENTY SIX

UNION OIL COMPANY OF CALIFORNIA

FEBRUARY-MARCH 1965

NEW LOOK IN STATIONS

R. P. Bradley: He Knows His Customers

HOLBROOK, ARIZONA

SALESMEN today are wont to talk about customer orientation, the philosophy of looking at a situation from a customer's point of view and offering to supply the customer's wants.

A smiling example of a customer-oriented salesman is R. P. Bradley, our consignee in Holbrook, Arizona. Holbrook is a cattle, railroad and tourist town that also enjoys brisk sales to the nearby Navajo Indians, one of the more affluent tribes in the nation thanks to royalties from Four Corners oil and gas production.

Brad's experience with Union Oil dates back 30 years, but it was in 1941—when he became consignee—that he found his niche in life. At that time the concept of the Indian-and-his-pony was giving way to the more modern picture of the Indian-and-his-pickup. Today the petroleum-powered pony prevails, but in 1941 pickups were scarce enough that the Navajos had to drive 50 to 75 miles to Holbrook to buy gasoline – usually in 50 gallon drums.

Being customer oriented, Bradley began delivering gasoline to the trading posts on the Navajo reservation. For years it was a kidney-jolting experience jockeying a 2,000 gallon tank truck 60 miles each way over deeply rutted roads to deliver a few hundred gallons of gasoline. But the Navajos offered one advantage over the tourists: they bought gasoline every month of the year.

Today the reservation roads are mostly paved, and a drive over any of the 17,000 square miles of Northeast Arizona that the reservation comprises brings a pleasant surprise or two. Bradley's business has so mushroomed that the big orange target sign is usually your first hint that a trading post is ahead: Bita Hochee, White Cone, Dikon, Castle Butte, Leupp, Canyon Diablo, Shongopove, Polacca, Pinon and Keams Canyon all boast a prominent Sign of the 76. Not until you get back on the main tourist highway will you find even a hint of a competitor's product.

If you are a Union Oiler and happen to drive through Holbrook on vacation, look up R. P. Bradley. He'll be glad to show you Navajo-land, and fill you up with a tankful of Royal 76 too.

This sign is a symbol of
Union Oil Company of California.
The trademark, 76, also symbolizes the
American freedoms won in 1776
that make possible this nation's industrial
development and abundance. SEVENTY-SIX magazine
mirrors industrial freedom through the thoughts,
skills, accomplishments and appreciations of
Union Oil people. We invite your
participation in an exchange of ideas and
information. Address: Editor, Seventy-Six,
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SEVENTY SIX

UNION OIL COMPANY OF CALIFORNIA

VOLUME 9 NUMBER 2 FEBRUARY-MARCH 1965

Our Cover: The Union Oil service station shown on our front cover is a 300-R model at Thousand Oaks, Calif., operated by H. S. Teasdale and B. C. Roberts. Story on page 2.

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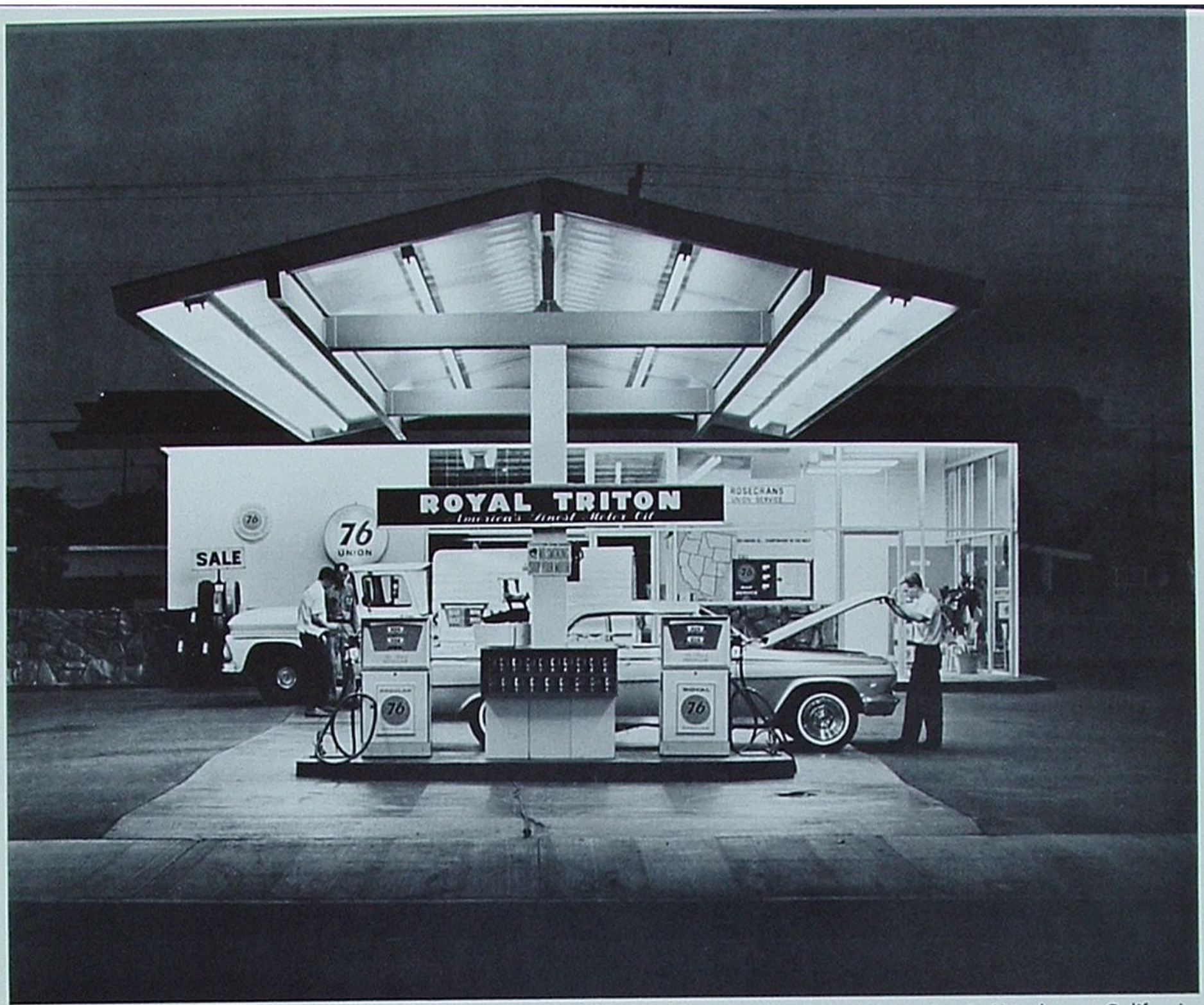


Union Oil Company's new type 300-Residential model in western setting; this is Sam Berouty's station in Hawthorne, California.

New Look in Stations

If you like the picture of the handsome service station on our cover, you'll surely enjoy reading this article. We'll tell you how America's *finest* service stations are becoming even more flexible and customer appealing.

The story began in 1960 when our marketing people began thinking about new concepts in merchandising. The then-contemporary stations—called the Type 140 and their twin-canopy cousins, the 240—had long been regarded as the most beautiful service stations in America. The design, with its long, smooth-flowing lines, had been adopted in 1954, but the changing tastes and marketing concepts in the 'sixties suggested modifications, as we'll see in a moment.

Thinking was converted into action when a conference was called to discuss station design. Asked to set down their problems and suggestions were marketing men, merchandisers, advertising specialists, distribution experts, tire, battery and accessory (TBA) specialists, engineers, architects, contractors—in fact, anyone who had something to contribute. The composition of this meeting, and a dozen that followed, was probably unique in station design history.

Like grapes, suggestions came in bunches. "Could we improve the lighting?" one sales veteran asked.

A second voice asked, "Couldn't we move the lube room door to the back of the station?"

Another man, concerned with acquiring land for new stations, voiced his feelings: "I could find dozens of lots," he said, "but many of them are of unusual configuration. We can't always fit our 140 or 240 stations onto pie-shaped lots. We need a more flexible design—maybe detached canopies."

A TBA man said, "We know a customer is twice as likely to buy a new tire, battery or accessory item if he gets out of his car. Can't we find some way to entice the motorist into the station?"

Pitched roof, showcase sales room, rock veneer wall and aluminum sash storefront grace this 300-R station at La Jolla, California.

Entrance to lube room is situated at rear of Paul Lindberg's station in El Modena, Calif. Storeroom is eliminated; accessories are displayed on open shelves in lube room.

Another suggestion, "The dealer is a businessman. He has to worry about purchasing, supply, storage, accounting, payrolls, social security, taxes, personnel, advertising and a score of other details. In the future, why not give him an office where he can keep his business in order?"

Another conference member came up with this idea: "We have studies," he said, "showing that motorists get out of their cars for one of three reasons: to get a drink, to use the 'phone or to use the rest room. If we want to entice the customers out of their cars, let's put these studies to use."

"How?" someone demanded.

"Let's build a salesroom," he replied. "Make it a showcase for Union Oil products. To get the customer inside, let's put the telephone, water fountain, soft drink machine and rest room doors inside the sales room. When people come in for a drink of water, they will be greeted by an inviting display of TBA items." *continued*

New Look in Stations

continued

After half a dozen such meetings, suggestions were summarized and made the basis for a set of specifications. An architectural firm was asked to come up with drawings. Our Marketing Engineering people adapted these renderings to a workable set of floor plans, and a prototype model was built in Orange, California. It was a beauty.

Officially labeled the Type 300 model, the station was white with orange and blue trim. The station was neat, clean and it had detached canopies. To give prominence to the handsome, glassed-in sales room, the lube room doors had been shifted to the side of the structure. Best of all, the module design was so flexible you could almost fit it into a shoebox. Yes, the station could be built on a pie-shaped corner lot.

There was a big fin sign atop the station, spelling out UNION, but it didn't last. A New York consulting firm reported on a study of Union Oil Company's marketing image, and discovered a striking fact. Although an unusually high percentage of our customers recognized and looked for the "sign of the 76," many of them didn't associate the name Union with "76" gasoline. They kept looking for the "76" sign, which was missing.

The Century 21 Exposition at the Seattle World's Fair helped solve that one. Our advertising people had installed a number of orange spheres with a "76" painted on them to decorate a company-sponsored skyride at the fair. The skyride was a hit and the spheres were highly regarded, so someone suggested adapting the "76" sphere to our new station layout. After that date the "76" sphere, illustrated on our cover, replaced the boxy Union fin sign.

The 300 station itself was a success—a modern complement to our network of 140 and 240 stations so highly regarded everywhere. So popular was the 300 that it soon was greeted by its own cousin, the 300-R. In many communities throughout the West, city planners asked for a station design that would blend with the local architecture.

The 300-R—the *R* stands for residential—is so closely related to the 300 that we'll point out the similarities and differences for you. For one thing, the floor plans are identical. Both stations employ the same module design that provides flexibility. Like the 300, the 300-R has detached canopies. Like the 300, the 300-R has a handsome salesroom dominating the vista.

In addition, the 300-R has added features that have won the hearts of city planners and landowners in residential areas. To blend with the modern informality of the West, the roof of the 300-R is pitched. Exterior walls are painted a warm, western white. Fascias (horizontal members) are burnt orange, and the trim and beams are buccaneer brown.

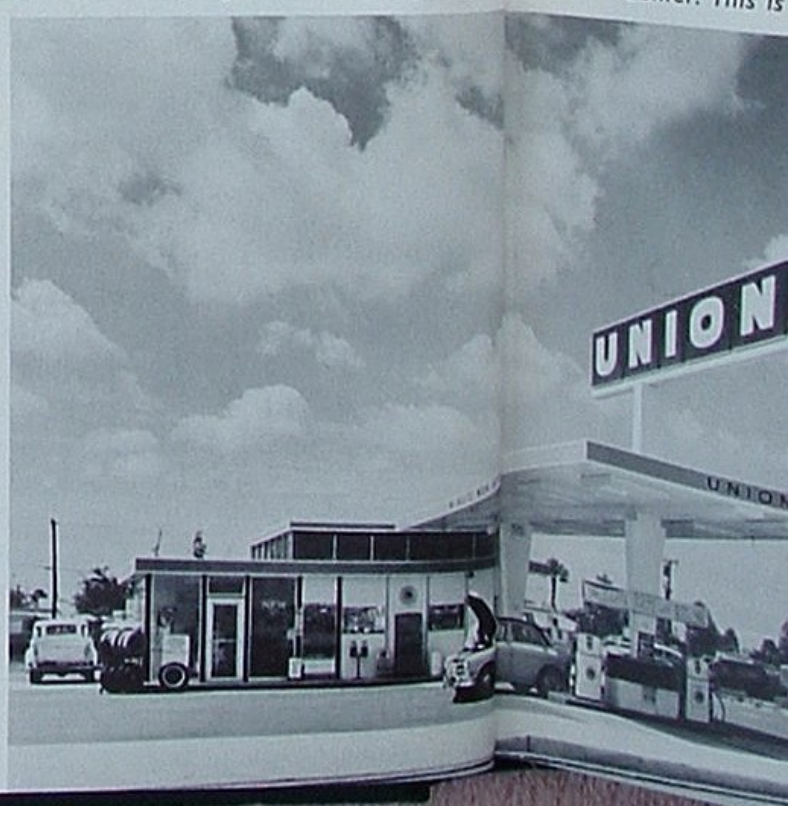
Interiors are every bit as attractive. Walls of the sales room and rest rooms continue in the same soft, western white, and the floors are of ceramic tile mosaic.

The 300-R comes in a variety of finishes that will blend with any community. The pitched roof may have aluminum shingles or shakes, wooden shakes, tile or rock. The stone veneering on the walls and planters, a feature responsible for the warm, inviting look, comes in adobe slump stone (as shown on our cover), Bouquet Canyon rock, Echo Mountain rock, or Pluma stone.

The outlook seems bright for the 300 series of service stations. Not long ago, Union Oil built a 300-R model at the corner of Rosecrans and Ocean Gate streets in Hawthorne, California. (See picture on page 2.) City planners were elated with the station. The civic affairs committee of the Hawthorne Chamber of Commerce was so impressed it had a special plaque cast and presented to the company. The award cites Union Oil for "improving and beautifying the commercial area of Hawthorne." Says dealer Sam Berouty, "It's the *finest*."

Left: Typical of Union Oil's thousands of smooth-flowing Type 140 designs is this handsome station at Rawlins, Wyo. Still a beauty.

Center: This is



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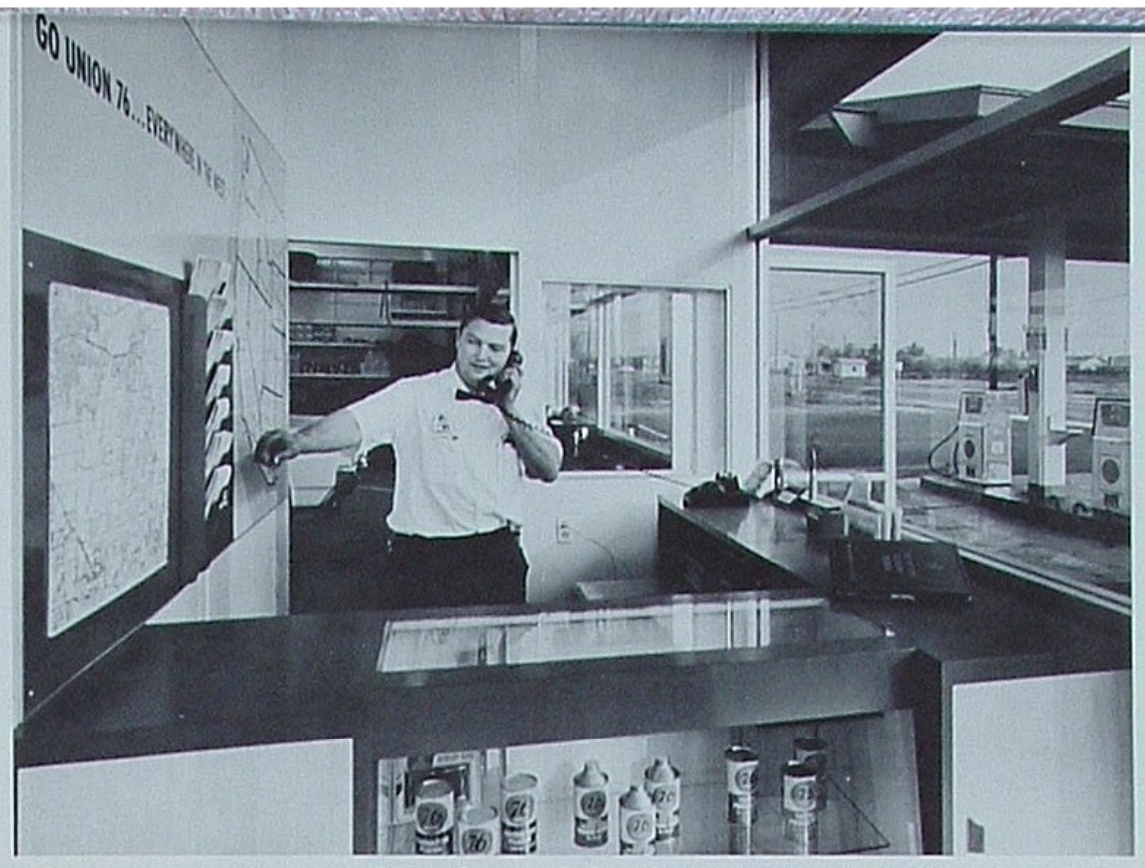
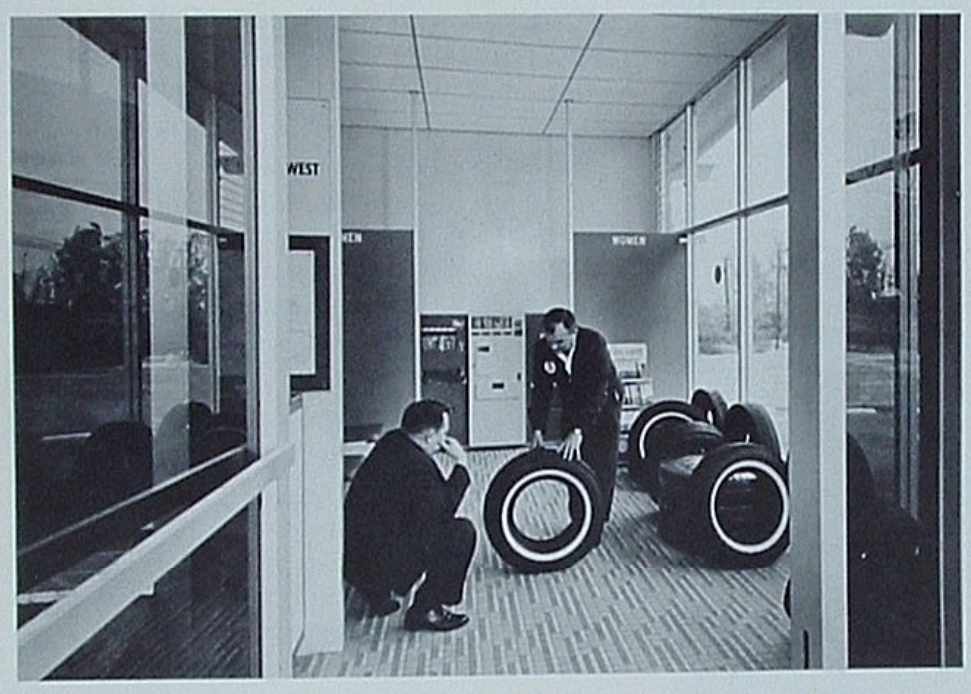


John A. Batok in Orange, Calif., makes a call from his dealer office in 300-R station.



Manager Henry Phelps displays a Minute Man tire for a prospective customer in sales room of a 300-R station in El Modena, Calif. Note ceramic tile floors, soft drink and candy machine, and access to rest rooms from sales room.

Center: This is a 300 model at Parker, Ariz. Right: The residential cousin, a 300-R, pictured at twilight in Santa Monica, Calif.

Rawlins, Wyo. Still a beauty.

the Salton 500

A Test of Endurance

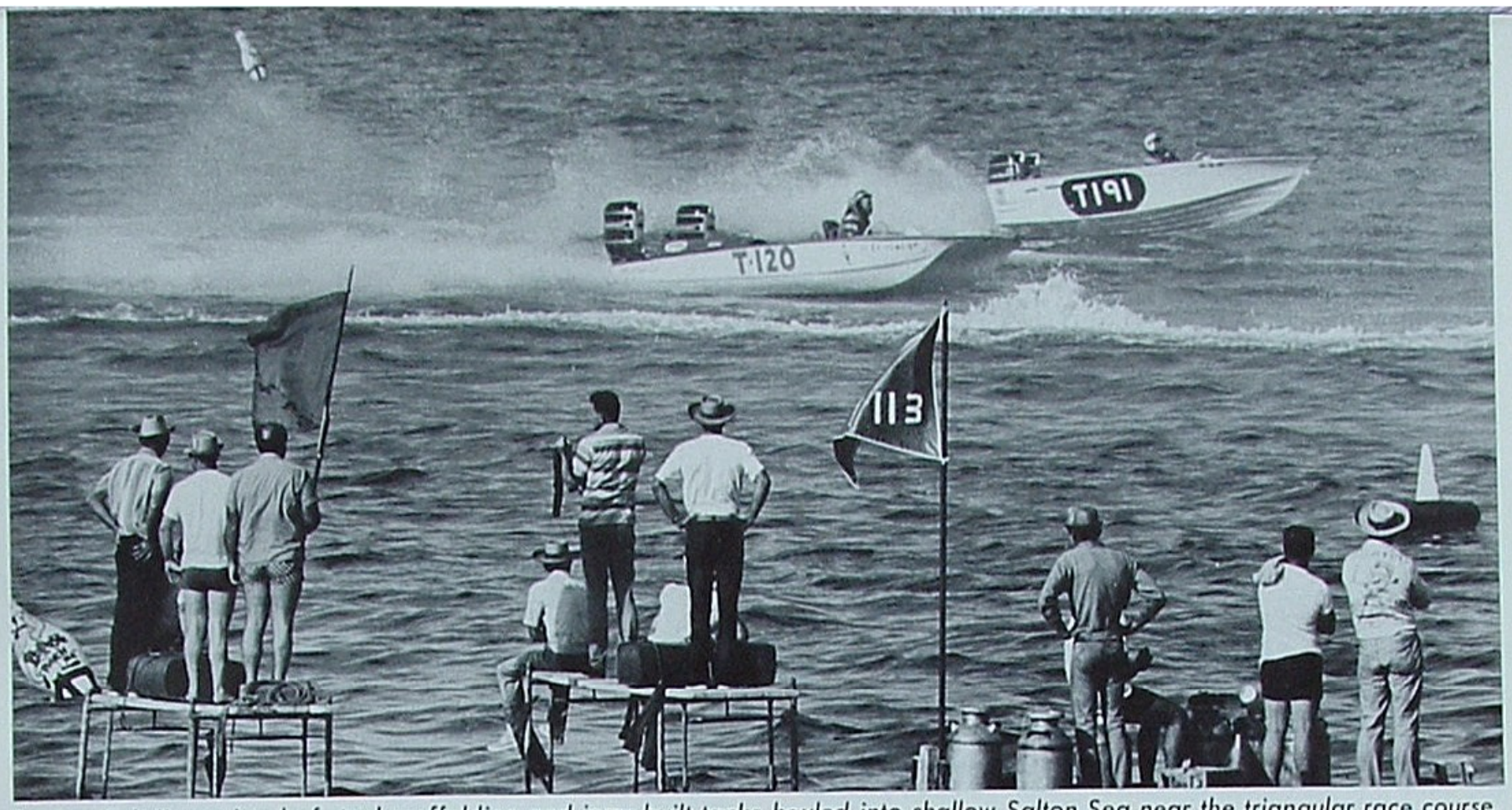
SALTON CITY, CALIF.

ONCE A YEAR, in the Imperial Valley of Southern California, the otherwise empty expanse at Salton Sea suddenly explodes into a bedlam of cars, trailers, sightseers, dune buggies and powerful speedboats.

For five days each fall, Salton City plays host to the Salton 500, the world's richest marathon powerboat race. In the most recent running last November, 60,000 cars jammed Highway 86 to witness the three-day qualifying rounds and the two-day-long main event. Eighty of the 190 entrants, including such well-known names as Rudy Ramos, Mickey Thompson and astronaut Gordon Cooper, qualified for the grueling finals.

The Salton 500 is the world's richest, most grueling boat race.

Union Oil was well represented by consignee John Dickman of Coachella.

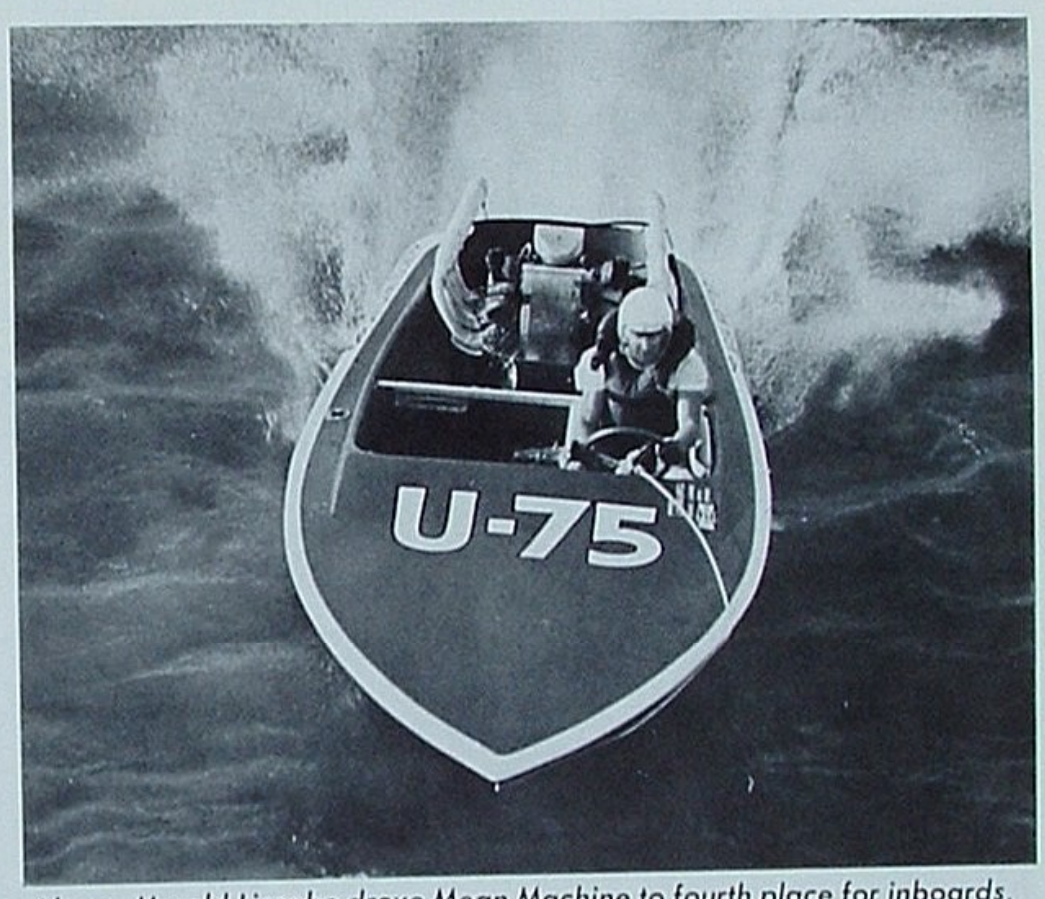


Racing "pits" consisted of steel scaffolding and jerry-built tanks hauled into shallow Salton Sea near the triangular race course.

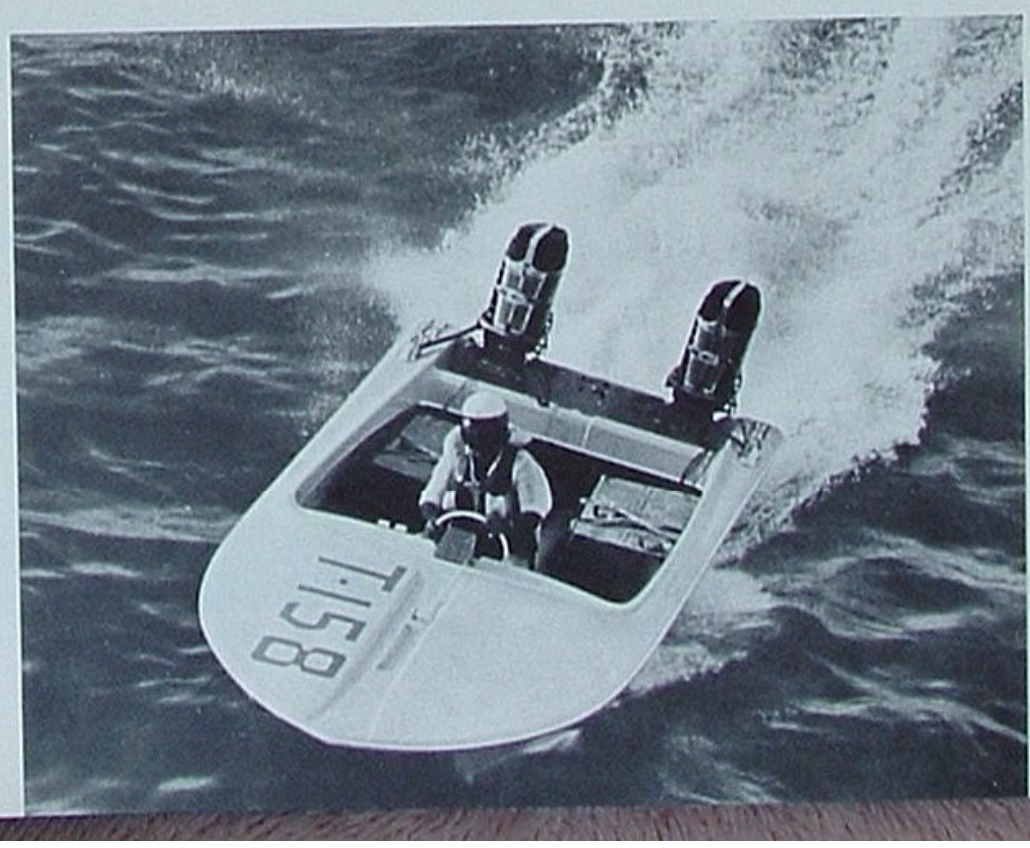
Unlike speed races, the Salton 500 is a hard-fought endurance run, for it pits engine, boat and driver against time, water, salt-spray and a broiling sun during a two-day race covering 125 laps around a triangular course. In the November race, Rudy Ramos' *Phfft-Cream Puff*, powered by a 750-horsepower engine, took top honors and won $5,750 of the $28,000 in prize money. (Cooper, whose engine broke down, couldn't finish.)

Union Oil Company was well represented at the Salton 500. Ron James, tank truck salesman for John Dickman, our consignee at Coachella, said he sold 3,000 gallons of Regular 76 gasoline. Moreover, many racers picked up their own fuel in barrels, including one enthusiast who took a truckload of aviation gasoline for his own special racing mix.

The popularity of endurance racing is on the upswing. In February, at Parker, Arizona, boat racing buffs again converged—this time for the nine-hour third annual Colorado River Enduro. When that race came,our consignee, Gil Cox of Parker, was on hand to provide energy for the event. (76)



Above: *Harold Lisonbe drove Mean Machine to fourth place for inboards.*



Right: Bob Baker came from San Angelo, Texas, to enter twin-Mercury powered Miss Hustler.

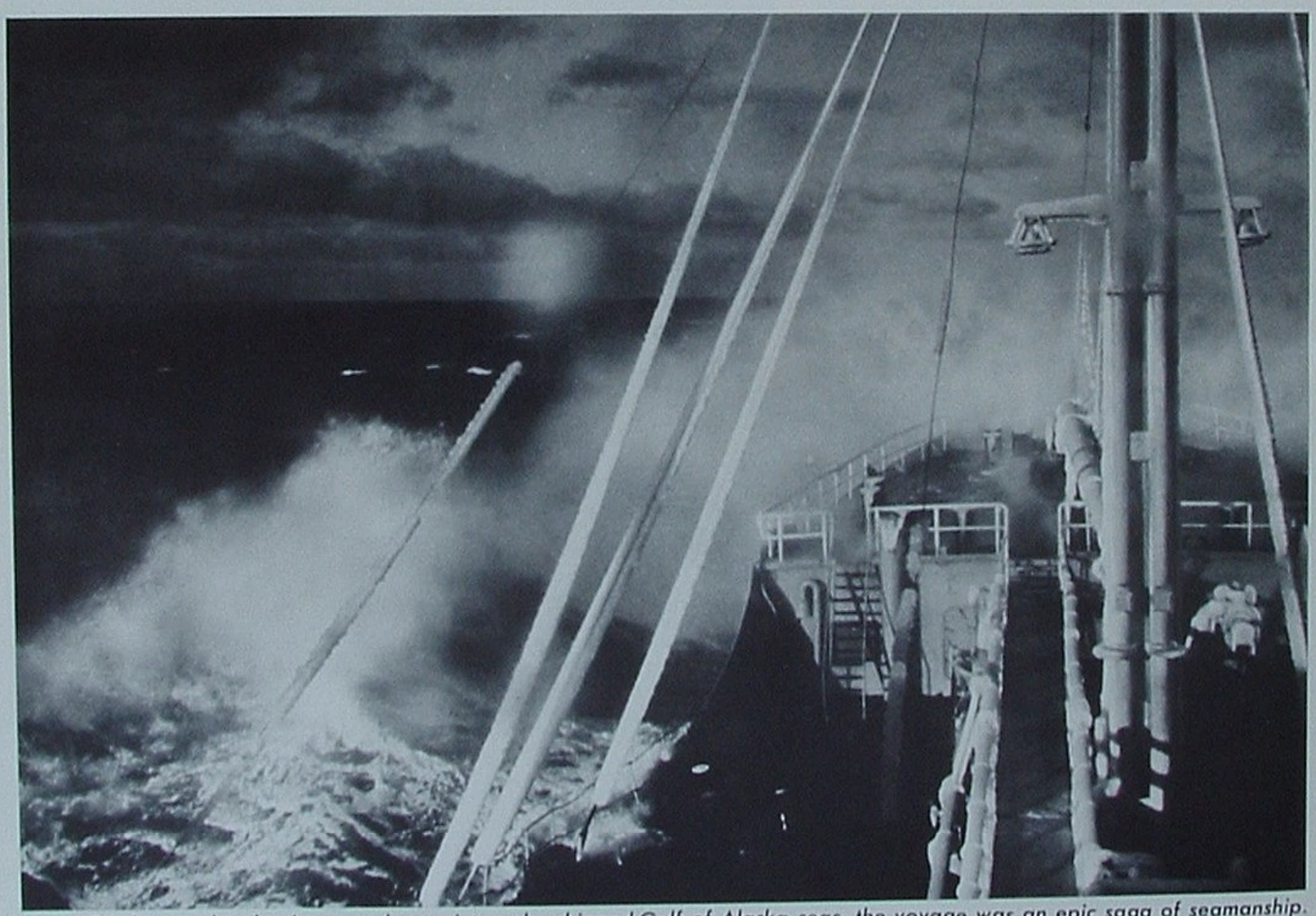
Saga of the LOMPOC

'Even the planets conspired against this plucky tanker'

Drilling and refining win the banners in the oil business. But business relies on sales, and you can't sell your product until you bring it to the customer. Here is the story of how a tanker overcame incredible odds to deliver a cargo of petroleum products to our customers in Alaska.

IT WAS SATURDAY, December 12. In the Gulf of Alaska, whole gale winds, threatening to reach hurricane intensity, whipped the seas into 35-foot high, white-capped waves. The tanker *Lompoc*, under charter to Union Oil Company, wallowed in waters that threatened to swallow her. Six inches of ice shrouded the rigging and catwalks of the vessel. The temperature had plunged to zero.

Capt. Willie Bodden, master of the 16,580-ton tanker, adjusted his parka and ordered the vessel to maintain "slow ahead" speed. He wrote out a wireless message asking for instructions. As he contemplated the wording, he noted that the 42-degree ocean waters—warm in comparison to the zero temperature of the air—gave off steam



Union Oil chartered tanker Lompoc plunges into gale-whipped Gulf of Alaska seas; the voyage was an epic saga of seamanship.

vapors like a Yellowstone sulfur spring.

The *Lompoc* was seven days out of Oleum Refinery enroute to Anchorage with 123,800 badly needed barrels of gasoline, diesel and stove oil—heat, energy and transportation for our customers in Alaska. One point stood out sharply in Capt. Bodden's mind: If the *Lompoc* failed to make it to Anchorage, Union Oil Company would almost surely run out of products in Alaska this winter. No tanker could get through again until April 15, when the channel was cleared.

The prospects were not encouraging. The Cook inlet was filled with churning pack ice, lethal to the unwary mariner. Aboard the *Lompoc*, steam-powered winches were freezing up from encrusted ice and the deck equipment had to be kept running. Fresh water lines were freezing. One line-coupling had broken and the ship had lost a considerable amount of fresh water. The *Lompoc*, being a converted T-2 tanker of World War II vintage, had no fresh-water evaporators to supply the ship's boilers. They must soon find port or become a helpless victim of the angry seas.

While waiting for a reply to his wireless message, Capt. Bodden reflected on the turn of events that brought him into the unseasonably early Alaskan storm. It all began on Good Friday in March, when Alaska was devastated by the most powerful earthquake ever to strike North America. Union's terminals at Whittier and Valdez had been destroyed in the temblor and the fire that followed. True, a new terminal had been built at Anchorage, but it wasn't ready to take on stocks of petroleum until late September.

The tanker *Santa Maria* had been dispatched to Anchorage to fill the terminal tanks, but on the second of four voyages the *Santa Maria* was involved in a collision that crippled her. While she was being towed to Seattle for repairs, the *Lompoc* was sent to Oleum Refinery near Oakland, California, to load with products for the Alaska run. The *Lompoc* was on her second and final trip when she ran into a storm—the first of a series of wintry blasts that later struck Oregon and Northern California with arctic fury.

After returning, Phillip Uebbing and Capt. Willie Bodden recount the Alaskan adventure in the safety of Union Oil Center.

CAPT. BODDEN, a veteran mariner in the service of Union Oil Company, well knew the dangers that lurked in Cook inlet. The 150-mile-long body of water develops some of the world's highest tides; the combination of astronomical and geographic conditions give rise to tides 30 feet above low-water level. In turn, these moon-triggered tidal movements produce currents in the Cook inlet up to 6 knots, making the body of water an unfriendly place to navigate even in the best of circumstances. Winter storms make conditions nearly hopeless.

Ice was another problem. The Cook inlet is fed by fresh water from countless Alaskan rivers and streams. In the wintertime, the fresh water freezes over, forming pan ice —so named because it builds up a sheet of ice over the bay up to four feet thick.

The inlet's tidal currents often rupture this pan ice, forming pack ice. "As the tides come and go," Capt. Bodden said, "the tidal currents carry the pack ice, roller coaster fashion, up and down the inlet—threatening the safety of any ship and crew that dares to venture into the inlet between December 1 and April 15." *continued*

LOMPOC *continued*

Other dangers threatened too. At one point in the inlet, there is an underwater shoal—called Fire Island shoal—hidden 12 feet below low-tide level. Because a tanker loaded like the *Lompoc* draws 30 feet of water, it is prudent to pass Fire Island shoal only during the 30-foot high tide when a relatively high 42 feet of water brings a margin of safety. Scheduling a ship's timely arrival over Fire Island shoal while navigating in pack ice, wind, waves and tricky tidal currents is a challenge to seamanship.

As a further challenge on this voyage, all buoys and aids to navigation had been removed from Cook inlet on November 1—else they would be carried away by the ranging pack ice. If fog came, even the lighthouses would be useless.

ON SUNDAY a reply arrived to Capt. Bodden's wireless message. It directed him to sail for Kodiak for fresh water and repairs. The *Lompoc* arrived at Kodiak on Monday and while there crewmen turned steam hoses on the heavy accumulation of ice that had formed on the rigging, catwalks, windlass and deck equipment. A second wireless message ordered the *Lompoc* to steam to Nikiski for bunker fuel, and there to await orders on whether or not to brave the dangers of Cook inlet.

Back in Los Angeles, things were happening fast. Because of the potential danger to the *Lompoc* and the urgent operational necessity of getting the cargo to Anchorage, Capt. D. L. Povey, manager of our Marine Department, ordered Phillip Uebbing of Marine Operations to fly to Alaska and take personal command of the situation.

Uebbing had cut his teeth on ice, so to speak. He began his career as a seaman on the ice-bound Great Lakes, worked his way up to chief mate and transferred to the Union Oil fleet. He has served as first mate on the tankers *Paul M. Gregg*, *Santa Paula*, *Santa Maria* and *Lompoc*.

Before Uebbing departed, Capt. Povey gave him this advice: "If we don't get those terminal tanks filled at Anchorage, Phil, Union Oil Company might run out of products before winter ends. If the *Lompoc* doesn't make it, the company may have to send the cargo up to Alaska by rail and barge through the inland waterways, and that could cost a quarter of a million dollars."

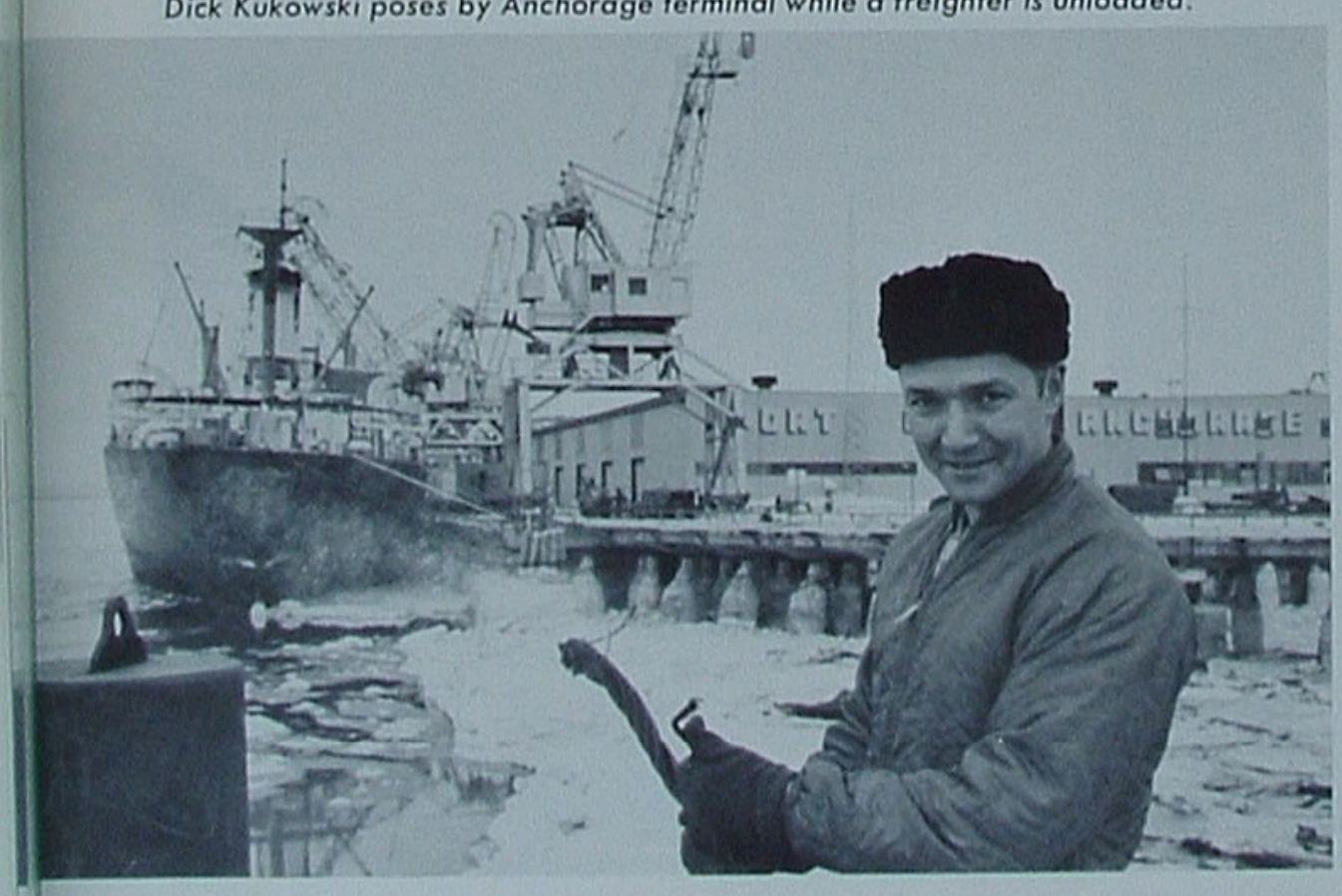
Uebbing, mindful of his dilemma, arrived in Anchorage at 10 p.m. Tuesday, December 15. The weather was 10 below zero and the *Lompoc* was enroute to Nikiski. The next morning it began snowing, halting all sea traffic for 48 hours.

On Thursday, December 17, the weather cleared and the *Lompoc* steamed out of Nikiski on the last and most dangerous leg of its voyage. Ahead lay 100 miles of churning ice pack, vicious tidal currents and the hidden dangers of Fire Island shoal.

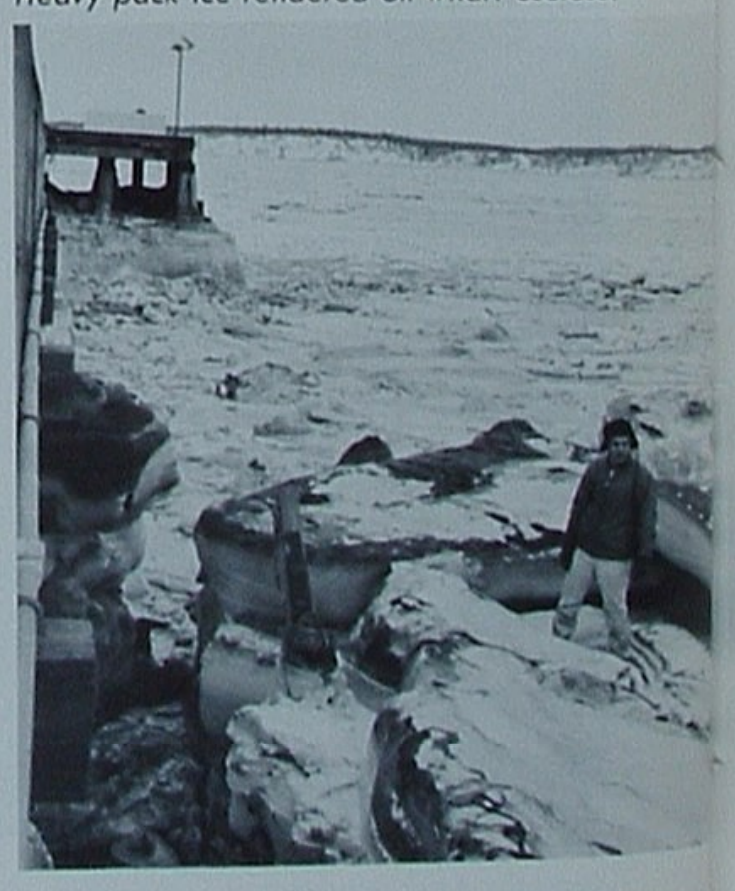
Aboard the *Lompoc*, Capt. Bodden heard further bad news. The oil wharf at Anchorage had been severely damaged by pack ice; the only place to discharge was at the freight wharf, which has only a single pipeline. In view of the weather and tides, discharging would be a tricky business at best.

There were more immediate problems. Tide-driven pack ice crunched into the tanker's hull. In places the *Lompoc* was forced to ram the pan like an icebreaker. Fire Island shoal lay ahead and it was necessary to schedule the passage at high tide—any delay could be catastrophic. This was the point of no return.

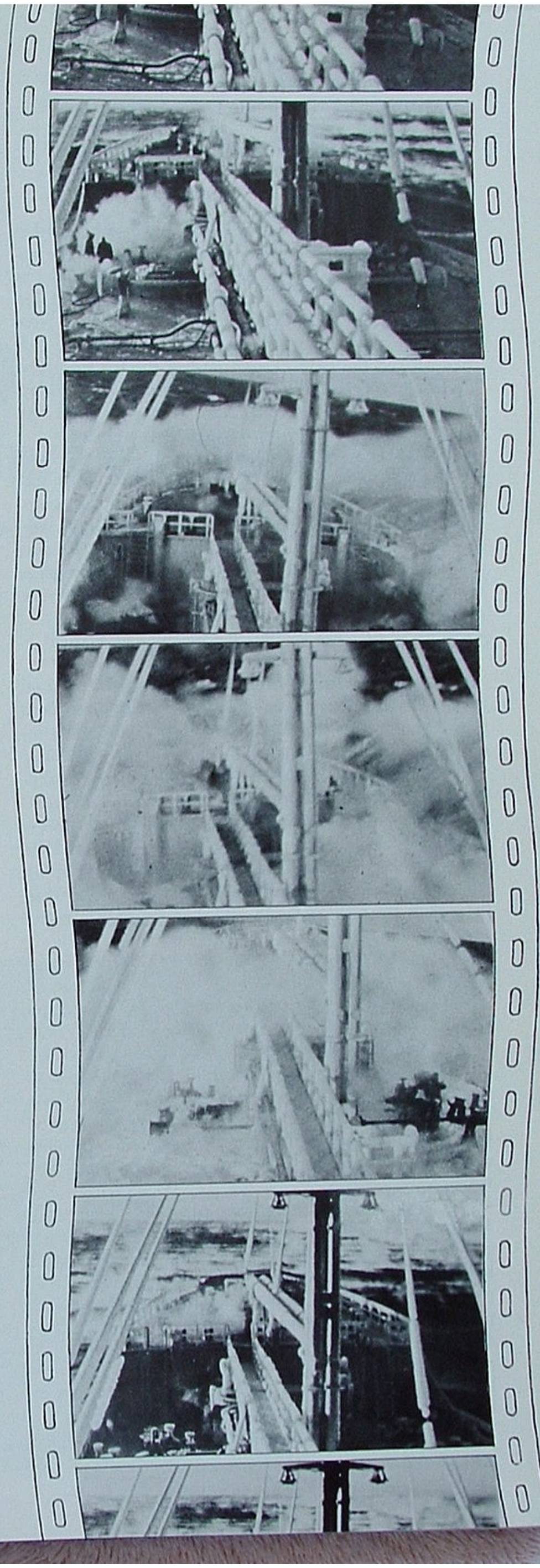
Dick Kukowski poses by Anchorage terminal while a freighter is unloaded.



Heavy pack ice rendered oil wharf useless.



At right is a sequence taken from an 8-mm. Kodachrome movie. It shows tanker Lompoc as it plunges into heavy Gulf of Alaska seas. Note the thick accumulation of ice on rigging and catwalks.



EACH TURN OF the *Lompoc's* screw brought them closer to danger. It was 4 a.m. Friday, nearly dark, but a bright moon grinned down on the scene to lend a dim view of the dangerous mud flats on either side. The lack of fog horns and buoys in the channel forced them to rely on radar.

Suddenly, the temperature changed and ice fog enveloped the *Lompoc*, only minutes before reaching the shoal. Under the circumstances, there was no choice but to sail ahead. Turning back was impossible for the channel was too narrow. High tide, needed to clear Fire Island shoal, would last only a couple of hours. Capt. Bodden ordered the ship to maintain steady course into the tunnel of terrors.

The *Lompoc* steamed ahead slowly. Each time the heavy ice pack crunched into the tanker's hull, crewmen visualized the hidden shoal. Each time it was ice, and darkness, and the vessel continued its journey. There was silence, save for the soft crunch of the pack ice.

By 6 a.m. the miracle of radar and a steel-nerved hand on the helm saw the *Lompoc* push its way through fog and ice to reach the relative safety of Anchorage harbor. Until the fog cleared, however, the *Lompoc* couldn't berth, so the starboard anchor was dropped. Capt. Bodden stepped into the galley for a cup of coffee; perhaps he could relax for a moment. The ordeal of Cook inlet was over.

Then it happened.

CAPT. BODDEN'S cup tipped over and coffee spilled onto the table; the ship began moving. Bodden rushed to the bridge and saw a sheet of pack ice as big as a football field had crunched into the ship. He needed no explanation to tell him the anchor chain had parted. Was there no end to nature's churlish pranks, he wondered?

After maneuvering to a new position, the *Lompoc* dropped her other anchor, but pack ice continued to shove the tanker around like a cork. It soon became obvious the second anchor was not holding, so it was hove in. One fluke had broken off, leaving the *Lompoc* without a mooring.

For two grueling hours, Capt. Bodden maneuvered by radar in the ice fog, fighting tidal currents and pack ice and holding the ship clear of mud flats near the shoreline. When the sun came up at 9:30 a.m., the ice fog cleared. "We decided to berth," Bodden said.

continued

LOMPOC *continued*

Berthing in a harbor of pack ice proved to be another challenge. Tugboats were out of the question; the only ice-breaker in Anchorage was stuck fast—frozen in pack ice. Finally, six mooring lines were put across to the wharf, but the thick accumulation of harbor ice prevented them from pulling the ship alongside the pier. Only after the tide changed and the swift current pushed the ice away was it possible to bring in the *Lompoc*. It was 3 p.m. Friday, December 18, and hot coffee was waiting on shore. An eager terminal crew turned to on the discharge hoses.

The *Lompoc* had battled her way through a severe Arctic storm, and fought her way through 150 miles of ice-strewn passageway—all without aid of navigational equipment that is ordinarily regarded as vital. During the voyage, she lost water lines, a lifeboat and one anchor. Finally, she had been berthed at Anchorage and could discharge her cargo. The battle had been won—or so everyone thought.

THE WINTRY ARCTIC elements still had a few unused tricks. Bitter cold hampered operations. A task that would take 45 minutes to accomplish in sunny Los Angeles required four hours of bone-chilling torture in the bitter Alaskan air. Unloading began with the tanker crew pumping Regular 76 gasoline from the stern tanks. As the *Lompoc's* load became lighter, the vessel grew bow heavy, threatening to lodge the nose in the soft mud below. The crew switched the discharge line and began pumping stove oil from the forward tank. Keeping the *Lompoc* in balance in the shallow berth was shaping up into a see-saw operation.

Then nature unleashed its next attack. When the crewmen tried to pump stove oil from the bow tank, the oil wouldn't move. Dick Kukowski, terminal superintendent at Anchorage, discovered the underground pipeline running from the wharf to the Union Oil terminal three-quarters of a mile south was frozen solid. He got a crew to steam the line open, but several hours of steaming met with failure. Frustrated in their efforts, everyone agreed their only recourse was to build a temporary pipeline above ground. In bitter Alaskan weather that might take two or three days.

By this time, it was 10 a.m. Saturday, December 19. A welding crew arrived and began work on the diverting pipeline. The relief of knowing the situation was in good hands permitted Phil Uebbing and Willie Bodden a moment's relaxation, and they stepped into the *Lompoc's* pilot house to enjoy a cup of coffee. They never got to drink it.

MEN WHO FOLLOW the sea often have a sense of impending danger, and fortunately this sense was working that morning of December 19. As the two men were chatting, one glanced at the tide table. Suddenly, both men set down their coffee and fixed their eyes on the Sunday tide chart. It couldn't happen, they thought, but it would.

At 1 a.m. Sunday, December 20—barely 15 hours away—there was an eclipse tide, an unusually low tide triggered by an eclipse of the moon.

"You couldn't get the planets lined up for a worse possible situation," Uebbing groaned. "The combined gravity of sun, moon and earth being lined up in space would bring a minus 4.1 tide—the lowest of the year, meaning that Sunday's tide would be more than four feet below the usual low tide level."

The *Lompoc* was in imminent danger. "We had barely 12 hours to discharge our cargo or risk losing the ship," Uebbing said. "At that low level, the ship might be grounded if she weren't empty."

Uebbing ran down the ship's ladder to the wharf and outlined the problem to the pipeline crew. The welders looked at the hulk of the *Lompoc* and then turned to their work.

There followed a battle against the clock, a struggle handicapped by ice, frozen steel, hunger, biting winds and frost-stiffened fingers. Every frustration hampered the pipeline crew. Measurements made while a pipe or flange was hot from the welder's torch proved useless; as soon as the metal cooled in the freezing air, it shrank making the connection short. When they allowed for shrinkage, the joint often turned out to be too long.

Time passed slowly, ticked off by the muffled clunk of frozen steel. Crewmen aboard the *Lompoc* watched helplessly in the realization that pack ice prevented them from steaming into the safety of the harbor.

The sun dipped below the southwest horizon at 3:30 p.m., casting an incongruous warm glow over the chilled band of men and the imprisoned ship. At 9:30 a full moon peeked over the horizon, a grinning reminder of the eclipse tide that was to come. After what seemed an eternity, there came a long-awaited shout: "It works."

Cold-stiffened terminal crewmen, who had been beating their arms against their chests to maintain circulation, ran to the *Lompoc's* side. Minutes later the vessel was discharging. Pack ice in the harbor began drifting south, further evidence the eclipse tide was coming.

THE MOON GRINNED its astronomical challenge, and men fought to keep pumps going at full speed. It wasn't apparent, even to the sharpest eye, but as the tide gradually dropped the *Lompoc* began floating higher in the water. As the heavy load of gasoline and oil departed through the pumps, the vessel kept a precarious margin of safety between keel and the mud below.

"By 1 a.m. we were high in the water," Uebbing grinned. "The *Lompoc* was almost empty and we had defeated every challenge nature had thrown at us. After what we'd been through in the past week, the trip back to California would be a picnic. What's more, our Alaska customers have plenty of fuel for the winter." 76

TEXACO HUMBLE UNION MOBIL SHELL

THUMS UP for East Wilmington

Group wins 80 per cent of vast California reserve

Union Oil Company, in partnership with Texaco, Humble, Mobil and Shell, was the winning bidder on the most unusual oil reserve ever offered for development: the East Wilmington (California) field—the world's largest undeveloped but proved oil reserve.

The THUMS group (an acronym constituted from the first letter of each company in the group) was awarded an 80 per cent share in the field's total production; THUMS will be the operator. Bids were opened on February 9 in the Long Beach City Council hearing room before a standing-room-only crowd of more than 200. Several hundred others viewed the proceedings on closed-circuit television a block away.

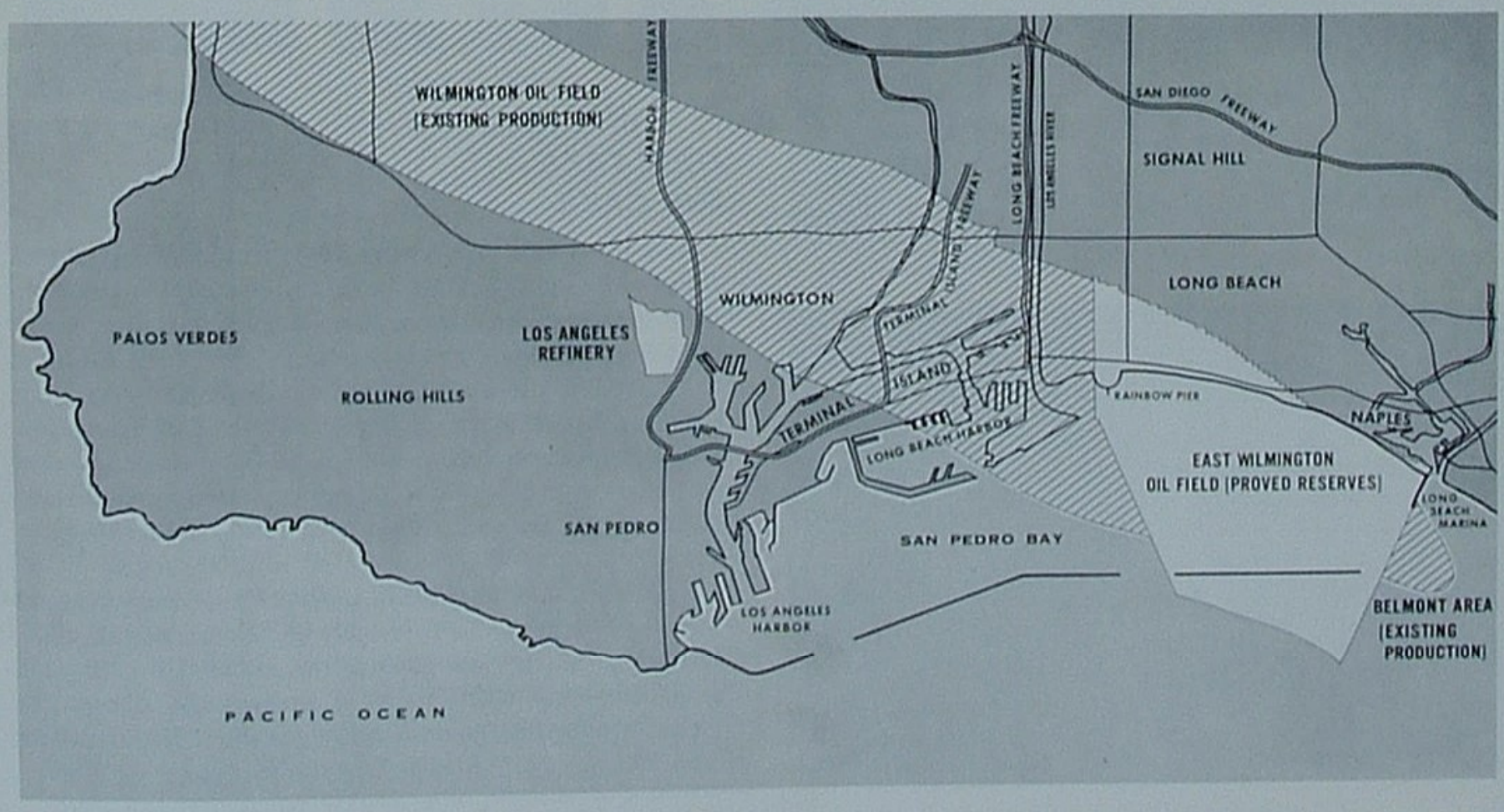
The successful THUMS bid called for returning to the state of California and the city of Long Beach 95.56 per cent of the profit from their share of production—as opposed to 94.47 per cent offered by the next highest bidder. In this case, the word *profit* can be misleading. The special circumstances that surround East Wilmington make it unique in oil industry history.

First of all, there are no wildcatting uncertainties. The field is completely defined on all sides; its known reserves are estimated at more than a billion barrels—all waiting for the drill to make hole. Second, there is no financial risk. The operator—the THUMS group—will be reimbursed for every dollar of investment and operating cost, plus a three per cent management fee.

Third, the oil is handy—particularly in Union's case. As can readily be seen from the map below, the East Wilmington field is within a few miles of our Los Angeles Refinery—a refinery specifically designed to process crude oil of the type that will be produced at East Wilmington. Any profit from refining and marketing will accrue directly to the company. Finally, California is an oil-deficient state. The ability to control a large supply of quality crude oil conveniently situated is obviously a significant factor for the future of the company.

Organization of this development program is still in the planning stage; however, it will be a joint effort of the five companies involved. Following the formal award by the city of Long Beach on February 23, and ratification by the California Lands Commission on March 2, planning work has begun on the actual development of the field. First production, probably this summer, will be from a new pier now being constructed in Long Beach Harbor. Later this year construction will begin on four 10-acre drilling islands.

Development is expected to take approximately five years with production at the end of that time averaging somewhere between 150,000 and 200,000 barrels per day. This will increase production from the *total* Wilmington Field to something in the neighborhood of 300,000 barrels a day. The Wilmington field produced its billionth barrel of oil last August and has increased in production steadily since 1959, following a water injection program started in 1958 to halt subsidence in the harbor area. (78)



Joanne Dockwiller

Vickie Howe

FROM 'ROYAL' PARENTS, TWO QUEENS

The California Maid of Cotton for 1965 is Joanne Dockwiller, daughter of Joe Dockwiller, drilling foreman in the Pacific Coast offshore group. Joanne won fame earlier as homecoming queen at Cal Poly.

Miss Lomita-Harbor City Queen for 1965 is Vickie Howe, daughter of Wallace W. Howe, warehouseman at Los Angeles Refinery. Vickie, a student at Harbor College, had no intention of entering the contest until her mother suggested it. Incidentally, the runnerup in this same competition was another Union Oil daughter, Terri Hamilton, whose father, Wayne E. Hamilton, also works at Los Angeles Refinery.

Les Scroggins, Frank E. Smith and Walt Jameson

IN FOCUS

THEY TAKE THE CAKE

As a festive gesture during 1965—Union Oil's 75th year—the company is "baking" beautifully decorated Diamond Anniversary cakes. Among the first to enjoy the special treat were employee groups of the San Francisco Bay area:

At an Oleum Refinery retirement dinner on January 8th, honoring Frank E. Smith for his 40 years of service, refinery men sampled the *finest* dessert. The were so pleased that the Supervisors' Association requested generous second helpings for their officer installation dinner on January 15.

The word spread quickly to San Francisco where, on January 16th at the Sir Francis Drake Hotel, 76 girls of the California North Coastal Division gathered for their annual luncheon—with Diamond Anniversary cake on the menu. Appropriately, on hand to cut the cake was retiree Alice O'Dea—(pst) exactly 76 years young.

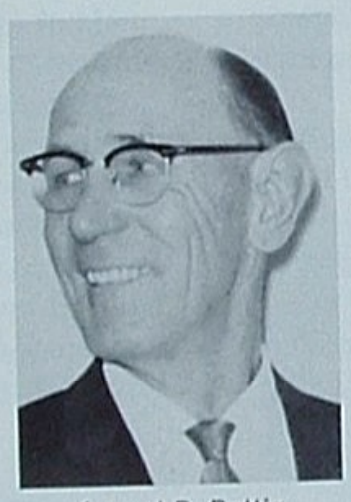
Edward T. Shedlock and N. T. Ugrin

MORE AID DOLLARS FOR 1965

With 80 per cent of the company employees in Southern California contributing to AID chapters–nearly half pledging ½ of 1 per cent of their earnings–a sum of $98,542 was raised during the recent charity drive. This generosity qualified the employee groups in this area for the annual AID award. Edward T. Shedlock, president of AID-United Givers, presented the award to N. T. Ugrin, vice president for Industrial Relations. Similarly fine responses were reported from practically all other Union Oil operating areas.

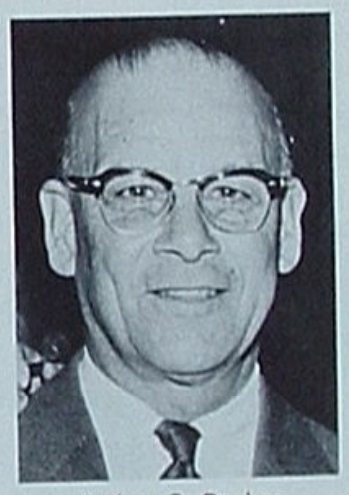
As President Fred L. Hartley states it: "I should like to add my 'thank you' to the tens of thousands of unspoken words of appreciation Union Oil employees will receive–unspoken because they come in the form of healthier bodies and happier lives for those your dollars will help."

Jere Collins



August R. Rettig

Keith D. Wall



Arthur G. Parker

Otis B. Allred

HONORED FOR DISTINGUISHED SERVICE

When the day's work is done, many Union Oil people are turning their talents and extra energies toward worthwhile community projects. As examples:

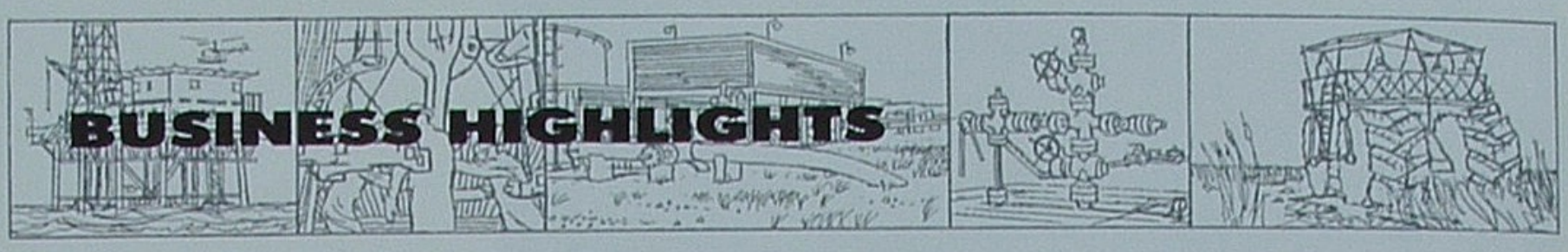
Jere Collins, son and business partner of Consignee George A. Collins at Salinas, California, has been named "Key Man of 1964" by the Junior Chamber of Commerce in his city. The honor came to him for outstanding leadership in promoting community election interest, programs for youth and underprivileged children, athletic contests and social functions, public safety, and countless other activities vital to the community.

Consignee August R. Rettig of Livermore, California, has promoted high standards of play and sportsmanship in his neighborhood high school and, for the past 20 years, has been chairman of the Foresters' football award program. Following a recent presentation of plaques to the most valuable players, Rettig was surprised to see a special one inscribed in his honor. It was presented to him by the Livermore high school coaches and players, both past and present, for 20 years of enthusiastic support.

Keith D. Wall, coordinator, LPG Production and Sales, received the annual award for meritorious service from California Natural Gasoline Association at their October meeting in the Disneyland Hotel. He was cited for excellent committee work and outstanding leadership.

Arthur G. Parker, commercial salesman in Portland, was president of the Active and Old Timers Baseball Association of Oregon in 1964. What's more, he put on a second baseman's glove and helped the Portland Old Timers beat the Seattle Old Timers 4 to 2. Art, a pro with the Beavers, Chicago Cubs and Los Angeles Angels in the late 1920's, has continued his activity in baseball as a scout for the big leagues during his *moonlighting* hours away from the Union Oil job.

Otis B. Allred, geologist at Midland, Texas, was elected treasurer for 1965 of the Southwestern Federation of Geological Societies at their annual meeting, January 27 to 29, in Austin. The societies embrace Texas and New Mexico.



1964 RECORD EARNINGS

In 1964, Union Oil Company earnings set a new high as they increased for the sixth successive year.

Preliminary 1964 earnings were $67 million as compared with $55.2 million for 1963, on revenues of $689 million and $611 million, respectively.

Included in these earnings were after-tax profits from sales of lands and other assets of $4.7 million for 1964 and $3.2 million for 1963.

Preliminary 1964 earnings amount to $2.24 per share compared with $1.96 per share in 1963. The per share data is based on 29.9 million common shares outstanding at the end of 1964 and 28.2 million at the end of 1963.

Total earnings increased 21 per cent over 1963 and per share earnings 14 per cent. The latter reflects an increase of outstanding shares at year end, due principally to the issuance of 1.1 million additional shares as a result of $21.6 million of debentures having been converted—largely in the fourth quarter.

CARNEGIE BRONZE MEDAL

Ray A. Burke has been awarded a Carnegie bronze medal for his part in the dramatic December 21, 1963, rescue of crewmen from the burning wreckage of a company plane at Midland-Odessa, Texas, airport.

Sharing the honor with Burke was Sgt. Billy P. Smith of the Texas Highway Patrol, who in addition was awarded $750.

Burke, vice president for exploration and production and a Navy pilot in World War II, was flying back to Los Angeles from Huston, with a stopover at Midland. During the landing, the twin-engine, jet-prop airplane crashed and burned. Burke, joined by Sgt. Smith, was instrumental in getting pilot Donald McKee and co-pilot Jack Holder free of the burning craft.

The Carnegie Awards Commission, in presenting the bronze medals, said in a citation: "Burke climbed from an escape hatch as flames rose 10 feet above the other side of the craft.

"(He) helped Holder open windows in the cockpit area by forcing the outer window from its frame and helped Holder from the plane.

"Burke, although injured, ran back to the cockpit and tried to reach McKee but could not. Going to a fire truck which had just arrived, he obtained an ax and tried, without success, to break another cockpit pane.

"Smith then tried to break into the cockpit with an ax but could not.

"McKee, then partly revived, lunged part way through the window, which had been forced open for Holder's escape. Smith pulled him from the plane."

MORE COKE AT OLEUM

Construction is underway at Oleum Refinery to provide processing capacity for an additional 3,000 barrels a day of crude oil.

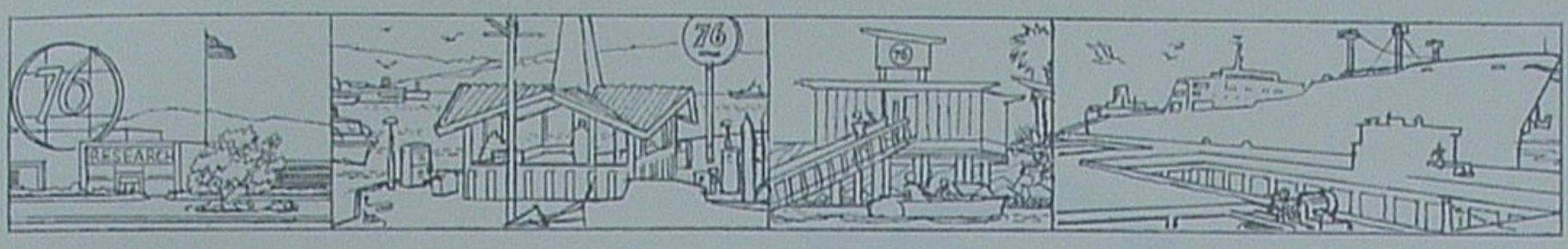
Coke production will be increased by about 15 per cent. New equipment will include a coking furnace. Extensive revisions are being made to the coke drum cooling and gas oil production systems.

BASEBALL CLINIC

On Oahu recently, Union Oil dealers and the Hawaii Islanders baseball team jointly sponsored an annual baseball clinic at Honolulu Stadium.

About 950 of the 1,100 persons who turned out were of Little League age. Islander team stars demonstrated the finer points of the game under direction of manager Bob Lemon and Los Angeles Angels' batting coach and scout Joe Gordon. Afterwards, 30 Union Oil dealers donated baseball hats and balls for a drawing.

BASEBALL CLINIC: *Hawaii Islanders baseball players Herb Plews (L) and Paul Schaal (R) demonstrate the finer points of being a second baseman for Oahu Little Leaguers.*



AFRICAN CONCESSION

Union Oil Company and the Republic of Dahomey in West Africa have signed a convention whereby the company will conduct onshore and offshore exploratory drilling on blocks of land totalling 3,742,000 acres.

If commercial production is obtained, Union Oil will handle development and production operations. Exploratory work is expected to get underway during the first quarter of this year.

RAILROAD GAP EXTENSION

Union Oil has made an important extension of the Railroad Gap field on the west side of the San Joaquin valley in California.

The extension well, Lowell Fee No. 18-8, is situated on 240 acres of fee land and has a productive interval of more than 500 feet. Production testing was in progress from several zones in January.

Late last month, a second well on the fee block, McKittrick Fee No. 78X-8, was drilling.

A LOOK AT THE FUTURE

What will service stations look like in 1975? To predict this, we have to know what motorists want, why they buy where they do, what types of advertising and sales promotion appeal to them.

In today's ever more competitive market, it is vital that we know as much as possible about our customers—today's and tomorrow's. In the Planning Department of our Refining and Marketing Division, there is a marketing research group seeking answers to these questions.

Marketing research covers an astonishing array of subjects, for it deals with our future success. For instance, our marketing research group has evaluated our 1964 advertising program, helped plan the 1965 service station building program, and evaluated the effectiveness of our lube, oil, tire, battery and accessory programs. Today the marketing researchers are evaluating our direct mail, Christmas merchandising program. At the same time they are trying to forecast what a service station might look like in 1975. It is this kind of marketing research that will help us attract—and keep—the customers that are so essential to our company's future.

CONCESSION IN IRAN

The National Iranian Oil Company has accepted bids by a four-company group covering exploration rights on three offshore blocks in Iran.

The four-company group consists of Union Oil, Atlantic Refining Company, Sun Oil Company and the Murphy Oil Corporation.

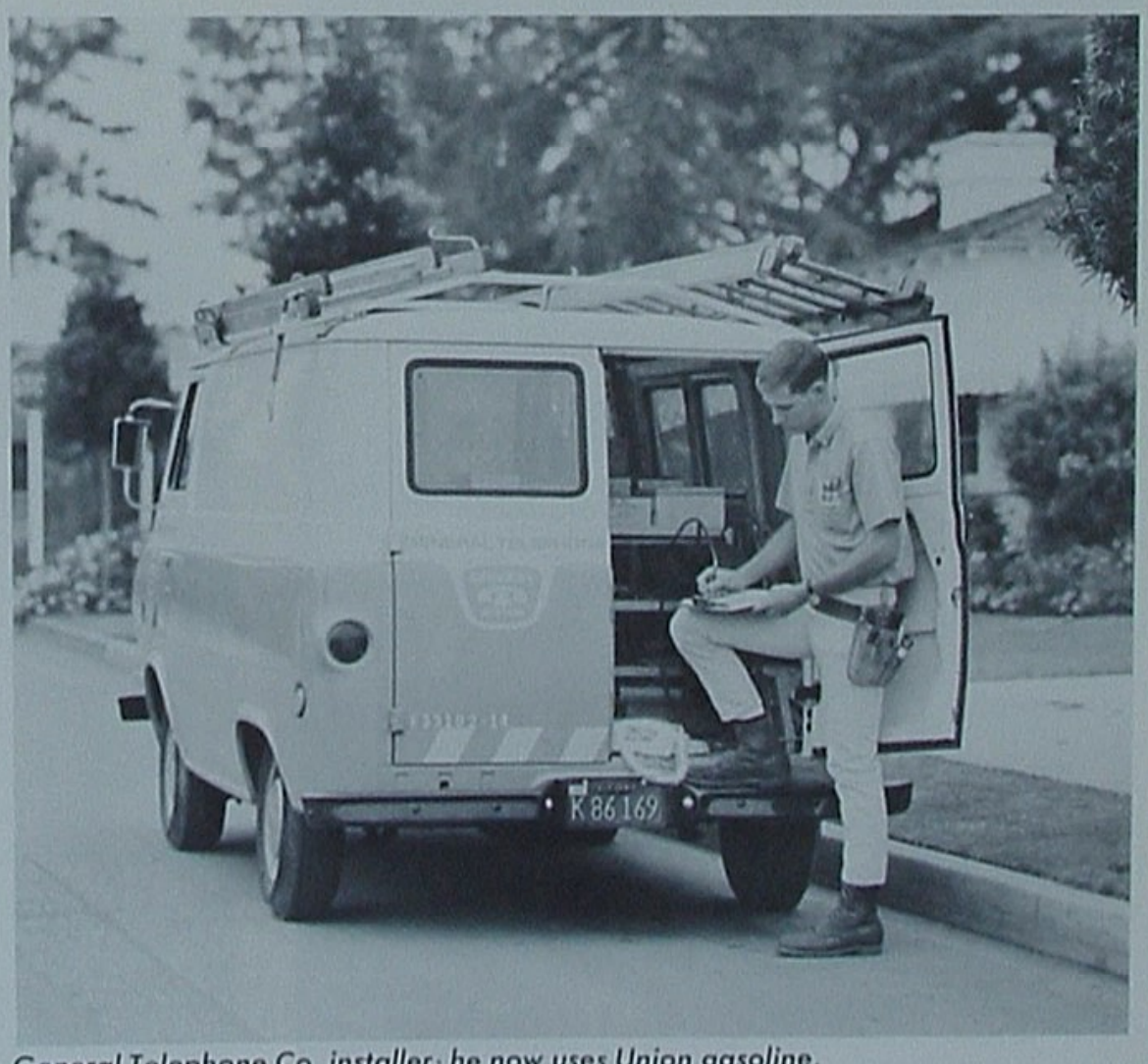
The two million acre concession is in the southeast central part of the Iranian area of the gulf.

VOICE WITH A SMILE

On January 1, Union Oil Company began supplying the petroleum requirements of the General Telephone Company of California.

This account, acquired by bid, will use upwards of 1.9 million gallons of Regular 76 gasoline and 20,000 gallons of lubricants during the year.

Deliveries will be made at 25 locations in our California Central, California Mid-Coastal, California South-Coastal and the Southwest-Mountain Divisions. 76

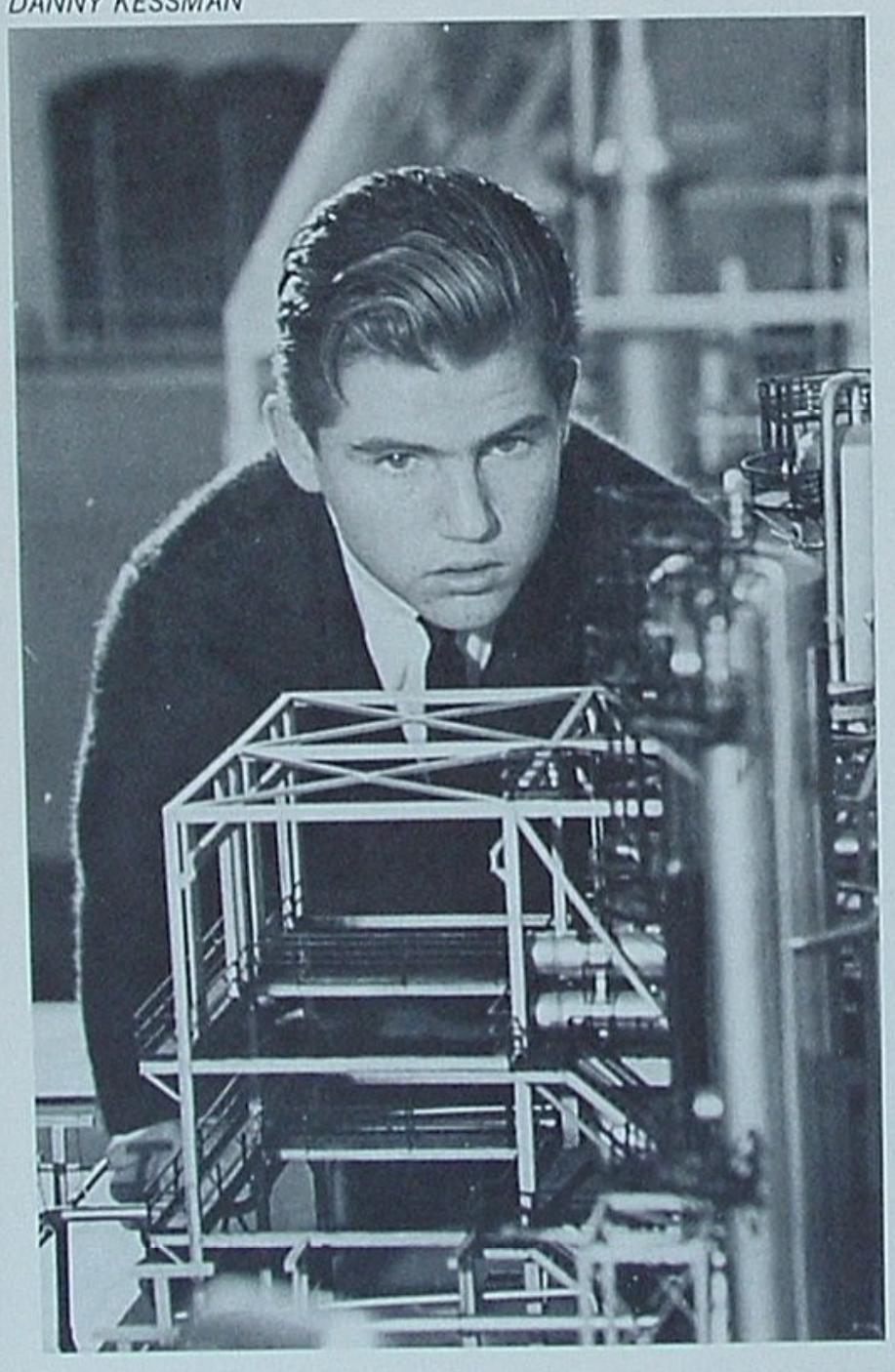


General Telephone Co. installer; he now uses Union gasoline.

THEY WANT TO KNOW

Explorer Scouts at Los Angeles Refinery Probe the Future

DANNY KESSMAN



LOS ANGELES REFINERY

THE SUPERVISORS Association at Los Angeles Refinery is sponsoring a Boy Scout Science Explorer's group, one of the first such groups ever formed and the first in the West specializing in petroleum science.

During their first year, some 40 science-minded Explorer Scouts from local high schools will put the oil industry under a microscope—probing subjects ranging from drilling, supertankers and cat crackers to engineering, IBM machines and service stations. The Scouts meet twice monthly and will make a dozen field trips for first-hand inspections of oil country equipment.

To learn what topics these young men are interested in, the Supervisors Association invited the Explorer Scouts to ask any questions they would like to have answered. SEVENTY-SIX magazine selected a sampling for publication. Here are six Scouts, their questions, and the answers.

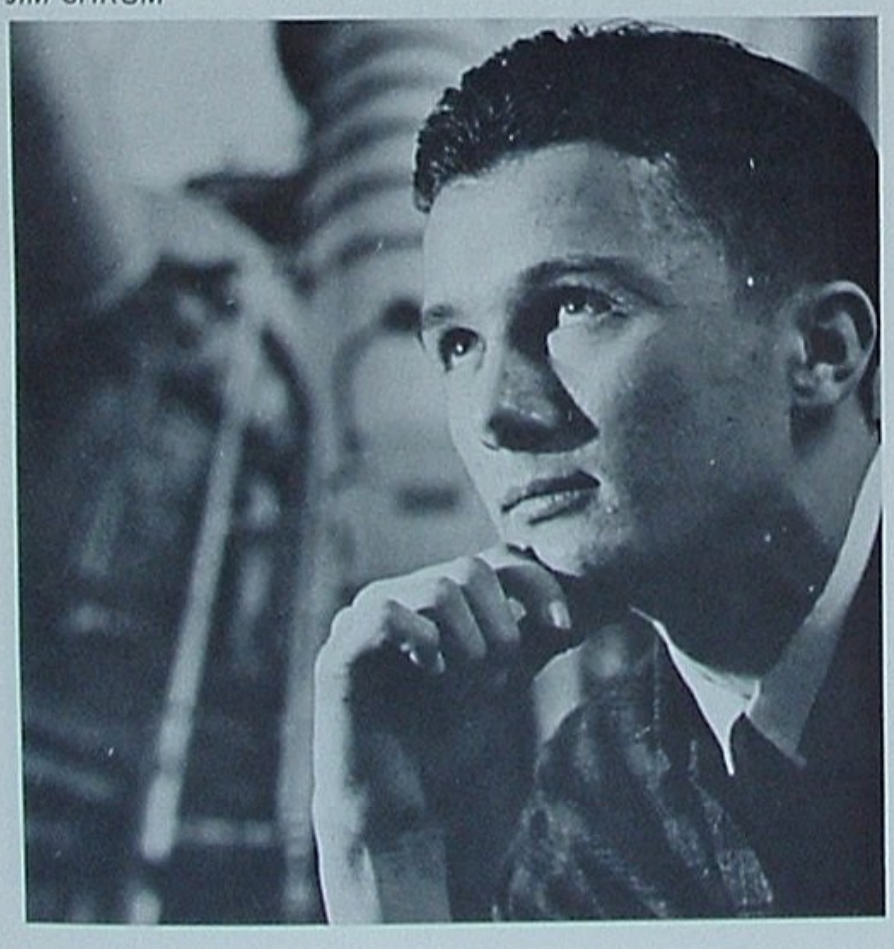
DANNY KESSMAN, 17, a senior at Banning High School in Wilmington, California, is interested in electronics. He asks, "How soon will our natural resources run out and what will we do when they do?"

Speaking only for the oil industry, Danny, we can't pin down your answer. The best bet, however, is that our petroleum resources will outlast everyone who is living today. Since the early days of the industry, and despite ever-increasing production, known crude-oil reserves in this country have increased almost constantly. For instance, in 1925 our proved crude oil reserves were estimated at 8.5 billion barrels. Despite the production of nearly 60 billion barrels since then, our proved crude-oil reserves today stand at 32 billion barrels—or more than three and one-half times the 1925 estimate. How many more billion barrels

we will discover is anybody's guess, but some experts say half the world's oil is yet to be discovered. The ways we are husbanding our present reserves is signficant, too, and deserving of comment. For instance, modern refining techniques permit us to get twice as much gasoline out of a barrel of crude oil today as we did 40 years ago. This means that for a given amount of gasoline, we need process fewer barrels of crude oil. Moreover, our research people are making giant strides in the field of increasing the ultimate recovery of oil from a given field. Where we might have gotten 25 or 40 per cent of the oil from a field under conditions 30 years ago, today we can look forward to recovery of 50 and even 75 per cent of the oil trapped below ground. Finally, should we ever approach that day when crude oil does run out, there are rich deposits of oil shales to rely on. In Colorado alone, there are oil shale reserves equal to about one trillion barrels of crude oil.

JIM SHRUM is a 15-year old sophomore from Banning High School in Wilmington who asks, "How many different products do we get from crude oil?"

JIM SHRUM



That's a tough question, Jim, because we don't know where to stop counting. It's almost impossible to draw a line between the products of a refinery and what you would call a consumer product. A refinery might produce gasoline, jet turbine fuel, kerosene, diesel fuel, light fuel oils, residual fuel oils, motor oils and engine lubricants, greases, paraffin waxes, asphalt, petroleum coke, liquified petroleum gases (butane, propane), and petroleum-derived petrochemicals. Now I'm sure you'll agree that gasoline is a consumer product, but what about the petrochemicals? About two per cent of our crude oil and natural gas is used in production of petrochemicals, but the products that result are innumerable. Some folks say they go into 2,500 products, others claim 4,000. That's a moot question, but we do know that this two per cent petrochemical production accounts for more than 30 per cent of the organic chemicals manufactured in the United States. A few of these petrochemicals include acetic acid, acetone, acrylate plastics, aerosols, alcohols, dyes, ethylene glycol, hydrogen, ketones, polyethylene, and vinyl resins. These building blocks of the petrochemical industry find their way into thousands of consumer products such as laundry detergents, food containers, cleaning fluids, fungicides, insecticides, weed killers, synthetic fibers, floor wax, furniture polish, disinfectants, shampoos, cold cream, lipstick, nail polishes, anesthetics, drugs and many others.

LARRY GEILENFELDT, a 17-year old senior at Carson High in Wilmington, wants to be a design engineer. He says, "Explain the different stages it takes to break crude oil down into petroleum products?"

Crude oil is a mixture of thousands of different hydrocarbon compounds, Larry. The processes by which most petroleum products are made is known as refining. In refining, crude oil is broken up into its component parts, or fractions, which are then manufactured into finished products. There are three major processes: separation, conversion and treating. Each is based on a physical or chemical principle or combination of both. The most common *separation* process is distillation, in which light petroleum gases and liquids that boil at relatively low temperatures are separated from heavier oils by boiling and condensation. Thus, the crude oil is broken up or separated into its component fractions: gasoline, diesel, kerosene, oil and

continued

THEY WANT TO KNOW

continued

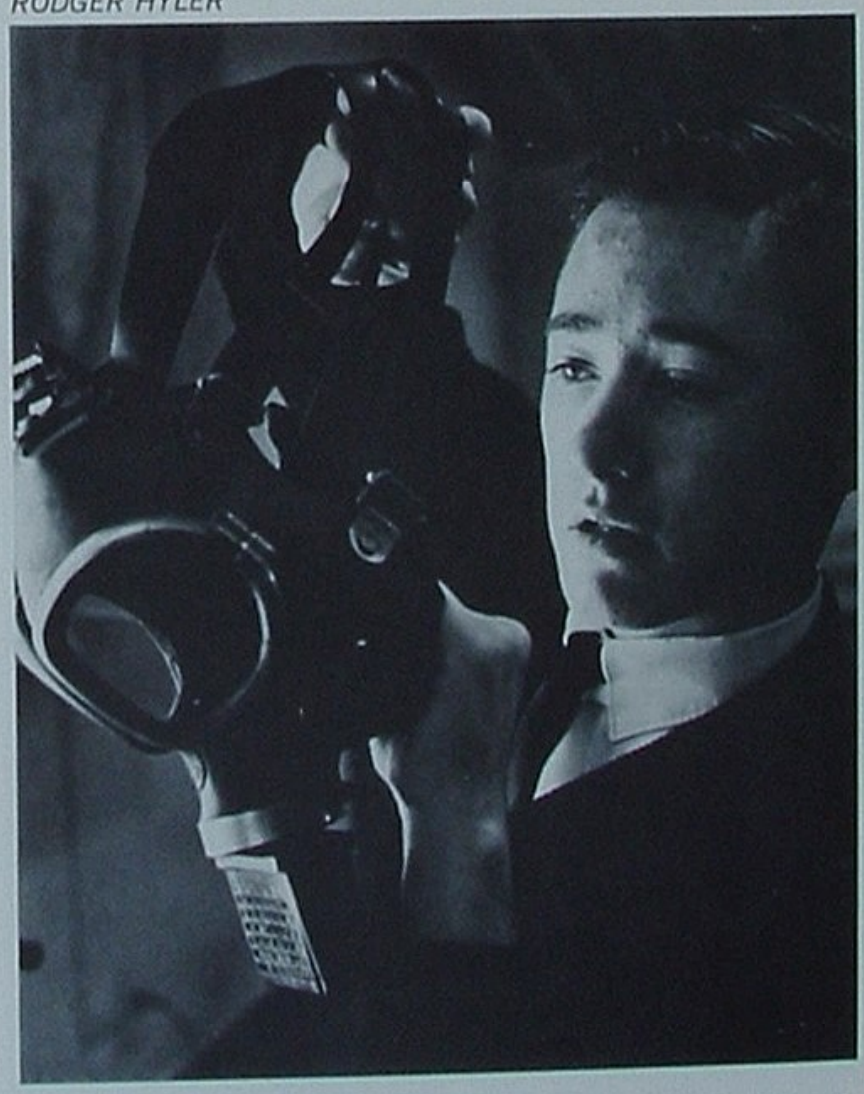
such. The most common *conversion* process is called cracking. By subjecting heavy oils to high temperatures under high pressures (often with a catalyst to promote the process), large hydrocarbon molecules are broken or cracked, resulting in smaller molecules, especially those that make gasoline. *Treating* processes convert or remove harmful impurities in petroleum products. They may eliminate or change corrosive, odorous impurities into harmless, odorless products. Other processes improve color and resistance to deterioration. For gasoline, the next step is blending. For petrochemicals, the next step may be the first in a chain of processes that will result in your mother's new nylons, your girl friend's hand lotion, antifreeze for your father's car, or a tough polyethylene line for your fishing rod.

RODGER HYLER wants to be a lawyer. At 16, he is a junior at Banning High and calls baseball, football and fishing his hobbies. Rodger asks, "How is oil produced at such low cost? There are so many stages it seems there could be no profit."

There are a lot of oil men who might agree with you, Rodger. Any recipe for success—profitable operations—needs one part management, mixed with a healthy dose of scientific talent, a shot of practical economics, lard heavily with capital, steep in a broad spectrum of employee skills, then bake in the oven of hot competition. If that's a little abstract, let's review a few facts. Nearly one person in 50 in the United States works in the oil business. In terms of assets, the oil business is the third largest in the country—after agriculture and the combined utilities. Investment in fixed assets is more than $60 billion, and in the last 15 years the industry has pumped $85 billion into new production, refining, transportation and marketing. As for competition, there are 42,000 companies in the oil industry; you will find no such thing as a Big Three or Big Five as you see in autos, steel, aluminum or electrical equipment. Admittedly, profit levels are small, but when management, capi-

LARRY GEILENFELDT

RODGER HYLER



tal, labor, economic theory and scientific talent are properly organized the petroleum industry can make a profit. These profits are often calculated in tenths of a cent a gallon, but this amount multiplied by millions of gallons a year does the job.

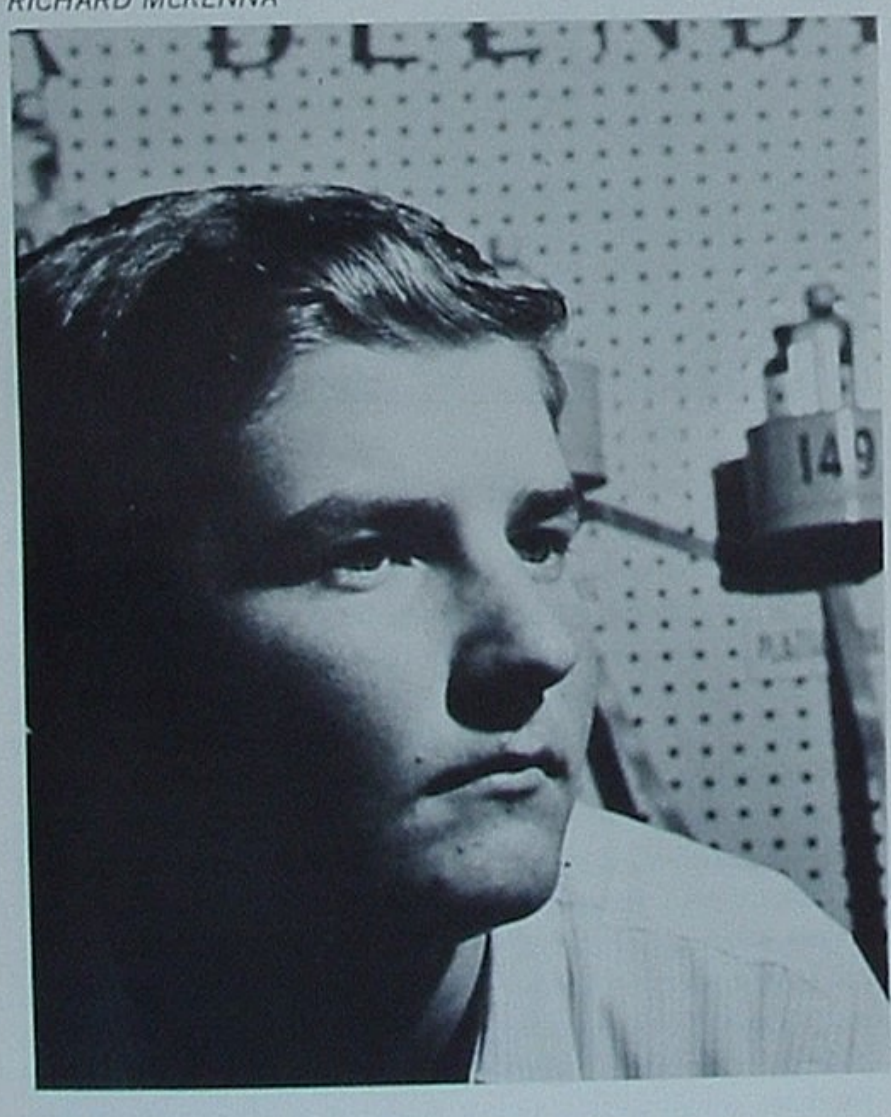
RICHARD McKENNA, 16, is a junior at Banning High. His hobbies are football, baseball and model car building. Richard is not sure what career he wants to pursue, so he asks, "What are some fields in the oil industry that need college graduates?"

If you think this answer will help you narrow down your choice, you are wrong. The list runs from A to Z. The petroleum industry employs accountants, advertising men, analytical chemists, auditors, budget experts, business administrators, business machine programmers, chemical engineers, chemists, civil engineers, credit specialists, doctors, economists, electrical and electronic engineers. Also financial experts, geologists, geophysicists, insurance specialists, lawyers, liberal arts majors, librarians, market researchers, mathematicians, mechanical engineers, mining engineers, paleontologists, patent counsels, personnel specialists, petroleum engineers, physicists, pilots, pipeline engineers, planners, public relations men, purchasing agents, real estate men, safety experts, salesmen, secretaries, shipping specialists, systems engineers, tax specialists, transportation men—in fact, zealous people of all backgrounds and skills who are willing to work.

STEVEN STUDLEY, a senior at Narbonne High School in Harbor City, is 16 and interested in a career in electrical engineering. Steven asks, "What opportunities will there be in the petroleum industry of the future?"

Opportunity is born in challenge, Steven, and the oil industry is grounded in challenge. We are engaged in handling and moving a heavy, bulky, rather low-priced commodity. We search for it in the bowels of the earth. We lift it out of the ground, put it in tanks, pump it out of the tanks and through a pipeline to a refinery. There, in order to make gasoline, we lift it again, process it, put it on a ship (or in a tank car or a truck or another pipeline), move it again to a storage terminal, unload it, reload it, take it to a service station, put it in another tank, pump it out once more into the customer's automobile, wipe his windshield, give him free air and water, and for all this we receive three-and-one-half cents a pound (ex tax). What other product that requires all this human skill and energy in its handling can be bought for anywhere near that price? Keeping this productive cycle rolling in the face of rising costs and competitive prices is the challenge of the future; the rewards will go to those who meet this challenge. (76)

RICHARD McKENNA



STEVEN STUDLEY

STAN WISSLER

Dean of the Micro-Paleontologists

UNION OIL CENTER

AT NEW YORK'S Columbia University in 1923, Professor J. J. Galloway hesitantly opened the school's – and possibly history's – first class in micro-paleontology.

The name of the course, still a mystery to lay minds, means the geologic study of the earth's crust through fossils of tiny organisms called *foraminifera*. These shell-covered creatures, so small they can be examined and classified only under a microscope, were inhabitants of the seas whose sediments eventually became sedimentary rock layers and sources of most oil deposits. Since various species of *foraminifera*—micro-fossils called *forams* or *bugs* by the paleontologists – lived, thrived and died out within specific and well-known geologic periods and were replaced by new species, it is possible today to classify sedimentary rock layers by identifying the micro-fossils they contain.

Only four students registered for Professor Galloway's new class. One of them was Stanley G. Wissler, a graduate of Indiana's Earlham College, who had earned his master's and was working toward his doctorate degree at Columbia. There were no texts on the new subject, so the students and their teacher had to prepare their own. There were no micro-paleontologists, either, which soon resulted in quite a recruiting drive for the quartet's services.

About this same time, America's petroleum engineers – including Cy Rubel (now chairman of the board) and Bill Eggleston (chief petroleum engineer, now retired) – were having some difficult experiences while drilling oil wells. One of their main problems was poor *correlation;* that is, they could not accurately identify some of the rock layers they were drilling through or correlate the rock sequences of one well or field with those of another. Every method they tried had proved unreliable.

"We were in the gambling stage of drilling," is the way Bill Eggleston describes this era of 40 years ago.

When a hint of the Columbia University study was dropped at an oil industry conference in 1924, two chief

STANLEY G. WISSLER

geologists immediately seized the bait. One, a Standard Oil recruiter looking for new talent, arrived at the university a few months too early, for he found young Wissler assisting Dr. Galloway in writing a *foraminifera* text book, and unwilling to take any other job until the task was finished. The other, a chief geologist for Union Oil, was equally early, but had an attractive proposal to offer. Since Wissler's study and text were vital to the company's needs also, Union would give him a small part-time salary until the study was completed. The student was grateful and impressed.

On coming to work after graduation in 1925, the young micro-paleontologist discovered, however, that his recruiter had been over-enthusiastic. Union actually had no immediate opening for such a scientist in the Geology De-

partment. In fact, so many of our petroleum engineers, including Eggleston, had been bilked by so many correlation schemes, they doubted everything, and were frankly scornful of *foraminifera*. As Bill puts it, "In those good old days, technically trained men like Rubel and Wissler were being hired and then ignored, or at best tolerated."

So Wissler, who had majored in chemistry as well as geology, found himself employed as a research supervisor in our Research Department then at Wilmington. But one of his first assignments was labeled Investigation No. 60—a loophole, it developed, for his eventual proposal of a *foraminifera* laboratory.

The names of these little fossils (*plectofrondecularia Californica*, for example) were enough to discourage the most eager engineer. But time and experience gradually won both geologists and engineers over to micro-paleontology. The *bugs* were as important to drillers as fingerprints are to detectives; they soon became of priceless value in making well correlations. Today, part of a petroleum engineer's training takes place in the *bug* lab.

The turning point from distrust to acceptance came during the early drilling of our Dominguez field. Bad faulting deep in the subsurface had men such as Rubel and Eggleston constantly worried about what they were drilling through and where they would drill next.

Storming into Wissler's laboratory one day, Eggleston bellowed, "If you guys could correlate a well, we could do something!"

Wissler yelled back, "If you guys would take core samples where we want 'em, we could correlate!"

Out of that frank exchange came cooperative effort — and great progress in mapping complicated structures and drilling them scientifically.

As Bill Eggleston describes it: "When Stan Wissler appeared on the scene, superstition and ignorance were in great measure replaced by science and skill. As soon as he was hired he began to collect samples, develop methods of separation of the forams, and then study and classify them. Within a relatively short time he was able to correlate the formations from well to well within a field and to trace producing horizons into other fields. A new day was upon us. A new and valuable technique had been perfected to solve many of our problems. Stan had solved the problem of correlation before electric logging was thought of."

Dominguez field proved the worth of micro-paleontology. It also became the home of Union Oil's paleo laboratory, one of the foremost facilities of its kind for the systematic analysis and cataloging of oil and industry core samples. Probably nowhere in the world is there a more complete collection of *foraminifera* and the various oilfield sediments they identify.

The founding and orderly development of micro-paleontology as a petroleum science rests on an unpretentious man in Stan Wissler's case. He'll talk endlessly about his contemporaries and the many prospective oil fields they have developed. But he weighs his personal accomplishments very lightly.

It was one of his associates, Bill Moran, manager of our subsidiary Minerals Exploration Co., who described Dr. Wissler as the "dean" of micro-paleontologists. When we mentioned the compliment and its source to Stan, he replied, "Moran did the exploratory work that got us into Australia."

From other quarters we heard of Wissler's many papers, lectures and charts now serving almost as a library of paleontology. Seeing the stacks of printed material in his office, we asked to see some of his personal writings. He gestured hopelessly toward the clutter and smiled apologetically. The only books he showed us were several scientific and popular works on the American Indians written by his father, Clark Wissler, former curator of anthropology for the American Museum of Natural History and professor of anthropology at Yale.

Asked for his most interesting experience during more than 40 years as a Union Oiler, the "dean" replied: "There were too many. But I'll never forget the time an engineer representing another company brought some Wilmington field core samples to Dominguez for identification. When he returned for the report that afternoon, I told him one of the cores had been tagged at the wrong end—up-side down. We knew because the older *bugs* appeared at the top instead of the bottom of this core. He went back to the well, reexamined the core, talked to the driller, and found that I was right. The core had been tagged upside down, but how we knew remained a mystery to him. The story spread all through the oil fields.

"Another incident I remember concerned a pressure bomb. There was a certain type of shale we had trouble in dissolving or breaking down so as to remove the *bugs* intact. So we invented the bomb. As pressure was released from this vessel, it boomed out like a cannon. Since we were working across the court from quiet research men and stenographers, you can imagine how they reacted when hell broke loose about every 15 minutes. To keep the company's research staff, we finally had to vent the bomb into the sewer system. This reduced the noise, but caused geysers to jump from sink drains every time the device popped off.

"Dinty Moore (former research supervisor, now retired) was one of our chief complainers at the time. The sink in my own lab never backfired like others — especially Dinty's — clear to the ceiling. But one day, shortly after a heavy blast, my sink backed up and deposited sewage all over the floor. It wasn't a momentary geyser but a steady flow. We always suspected Dinty of installing a pump to push his message across. But I didn't say a word—just put a plug in the pipe and had the sink removed."

The foregoing sketch may give you some introduction to a man you should know — Stan Wissler — dean of the micro-paleontologists — author of the oil industry's and California's first correlation charts and of the first accurate Los Angeles basin subsurface maps — Union Oil's senior geologist. His retirement on March 31, 1965 will round out more than 40 years of extraordinary service. (76)

QUALITY CONTROL

The Automatic Way

LOS ANGELES REFINERY

THOUSANDS OF dollars have been lost each year by oil companies for lack of timely information on how smoothly and correctly the refinery process is going. If this information were available quickly enough, costly mistakes could be eliminated.

Gasoline blending is a case in point. In the past, finished gasolines were mixed in batches. Several tanks at the refinery were filled with blending stocks; by using a precise formula, refinery men mixed up a batch of gasoline in a blending tank, then ran samples to the lab for testing. If the gasoline was "up to spec," it was pumped to storage tanks where the Marketing Department took over. If the batch was below grade, the refinery men had to analyze the deficiences and add ingredients that would bring the gasoline up to specification.

Considering the state of the art in the past, this was — throughout the industry — the best and most efficient way to blend gasoline. True, mistakes were made, but they could be corrected before releasing the gasoline to the customer.

About a decade ago, the batch system began going the way of the buggy whip. Progress in the art of automatic control made possible the continuous blending of gasoline from the refinery. Rising costs and competition on the market front dictated adopting these more-efficient methods. In 1955, Union Oil installed a $1 million, continuous, in-line blender at Oleum Refinery. It was the first of its kind on the West Coast, and it employed the most sophisticated electric, pneumatic and mechanical control equipment then available.

Bulk operations shift foreman Tom Kelly reads chart on octane comparator; he will make any necessary adjustments to maintain quality.

Continued rising costs and increased competition stimulated researchers to make greater advances in control systems, and five years ago an all-electronic, in-line blender was installed at Los Angeles Refinery. It was the first of its kind anywhere, and it served as a prototype for installations everywhere. The electronic blender — which had a console like a pipe organ — could blend as many as 24 gasoline and midbarrel stocks and additives into a wide spectrum of aviation gasolines, turbine and jet fuels, motor gasolines and automotive, locomotive and marine diesels. With the electronic blender, Los Angeles Refinery became the only major refinery in the world to produce all its distillate fuels through precise, in-line blending techniques.

The use of all this gee-whiz electronic apparatus, however, made mistakes even more costly. With the blender, refinery people could mix finished gasolines in the twinkling of an eye. But they still had to test the product, and this was where the loss in time and money occured — losses that threatened to erode our competitive advantage. A shift of analytical instruments from the lab to the blending plant looked like the answer.

To speed up things, engineers first installed two monitoring devices in the blending plant. One was a continuous vapor-pressure recorder; the other was an end-point recorder. Both monitor important qualities of a gasoline — qualities that tell how well a gasoline will perform in your car.

The recorders solved two of three information problems; what was still needed was a rapid and, if possible, continuous analysis of octane rating. To test for octane number, refinery men still had to run a sample of the gasoline to the lab for analysis — a procedure that often took two hours. The result was that, if they were inadvertantly mixing off-grade gasoline while "running blind," the error wouldn't be spotted for two hours; in that case, special reblending would be required. Obviously, this was incompatible with in-line blending.

A new instrument was needed. Since there was no such apparatus, it would have to be invented. And that is just what happened. In 1960, Union Oil engineers outlined the basis for what was later to be called a "continuous octane comparator," a device (pictured at left) that could constantly monitor the octane rating of a gasoline as it was being mixed in the in-line blender. Two years ago, Union Oil asked the E. I. du Pont Nemours & Co. to develop the hardware. The machine has now been built and is on-stream at Los Angeles Refinery.

The important thing about the comparator is that it continuously monitors knock rating — octane number — of gasolines as they are blended. It can detect variations with more sensitivity than any motorist — indeed, within one-tenth of an octane number. This not only eliminates the blending bottleneck but also helps our operators to blend the *finest* gasolines — meeting our exacting octane requirements. (76)

SERVICE EMBLEM AWARDS

CORPORATE

February 1965

40 YEARS

MAX LORIMORE ..... Union Oil Center
E. F. SCHINNERER ..... Union Oil Center

25 YEARS

RAYMOND A. ROGERS ..... Research Center

15 YEARS

WALTER F. ROTH ..... Research Center

10 YEARS

ANNA BUKSHPAN ..... Union Oil Center
NATALIE P. MEAD ..... Union Oil Center

REFINING & MARKETING

February 1965

40 YEARS

GOVE R. WILDER ..... Los Angeles

35 YEARS

LEO W. LUND ..... Seattle

30 YEARS

FORREST M. SCHLEGEL ..... Sacramento

25 YEARS

WILLIAM D. CRESSWELL ... Los Angeles Refinery
EVERETT A. HOWARD ..... Los Angeles Refinery
FRANK N. LAMMERMAN ..... Oleum Refinery
FLOYD C. MONROE ..... Los Angeles Refinery
CHARLES O. MUNSON .... Los Angeles Refinery

20 YEARS

ONA D. DAVENPORT ..... Los Angeles Refinery
CORRINNE H. FALLON ..... Union Oil Center
FLOYD A. HARRISON ..... Los Angeles Refinery
SIM HODGE, JR. ..... Oleum Refinery
EUGENE C. JACOBSON ..... Chico, California
MARGUERITE KAMPFER ..... Portland

15 YEARS

AUTHULA F. ARKLEY ..... Union Oil Center
LELAND W. LOGAN ..... Seattle
WILLIAM T. SHERAR ..... San Diego

10 YEARS

DONALD V. ABEL ..... Santa Maria Refinery
HERMAN W. ABELOE, JR. .. Santa Maria Refinery
HUGO E. ANDERSEN ..... Cut Bank Refinery
ARTHUR A. BARRETT ..... Junction Stn., Calif.
C. D. BARTHOLOMAUS ..... Portland
H. C. BAUMGARDNER ..... Santa Maria Refinery
RAYMOND F. BILLBURG ..... San Diego
RICHARD T. BURGESS .... Los Angeles Refinery
EARL D. CHILDERS ..... Santa Maria Refinery
ROBERT L. COTTLE ..... Santa Maria Refinery
JAMES J. DAVIS ..... Avenal Dist., Calif.
D. E. EISENHART ..... Redwood City, Calif.
JOSEPH W. FONDRY ..... Los Angeles Refinery
ELTON L. GOODWIN ..... Santa Maria Refinery
GEORGE F. HOPKINS ..... Santa Maria Refinery
JOHN R. KIRKLAND ..... Seattle
ROBERT J. KNOTTS ..... Santa Maria Refinery
CLARENCE J. MILLER ..... Spokane
WILLIAM B. MYRES ..... Santa Maria Refinery
ARTHUR J. NELSON ..... Santa Maria Refinery
LUCILLE M. O'BRIEN ..... San Francisco
KENNETH SKEELS ..... Portland
ROY L. STREETMAN ..... Santa Maria Refinery

EXPLORATION & PRODUCTION

February 1965

40 YEARS

EDGAR L. GOOLEY ..... Dominguez, Calif.

15 YEARS

SAMUEL HOOVER ..... Union Oil Center
MAURICE SKLAR ..... Union Oil Center
ROBERT H. WILSON ..... Del Valle, Calif.

10 YEARS

RONALD J. CERNIK ..... Houma, La.
BILLY J. EMERSON ..... Brea, Calif.
JEANNE J. HAIN ..... Union Oil Center
J. C. SATTERFIELD, JR. ..... Midland, Tex.

DEALERS

Feburary 1965

30 YEARS

L. C. GUSTIN ..... Manson, Wash.
J. L. PECK ..... Manson, Wash.

20 YEARS

MRS. L. P. DURAND ..... Cherry Grove, Ore.
GILBERT LUQUE ..... San Diego, Calif.
JACK SCHWENK ..... Missoula, Mont.
SELL-RITE STORE ..... Haines, Ore.
R. G. STEINMAN ..... Anacortes, Wash.

15 YEARS

PAUL DANFORD ..... Tacoma, Wash.
JOE DIONNE ..... North Hollywood, Calif.
GUY SHIPP ..... Monitor, Oreg.

10 YEARS

J. E. ATKINSON ..... Glendora, Calif.
CARL E. FORK ..... Willow Creek, Calif.
GEORGE A. GREENE ..... Santa Rosa, California
W. S. SHIELDS ..... Tulare, Calif.
LYLE M. STOTTS ..... Billings, Mont.
T. & H. SERVICE LIMITED ... Lihue, Kauai, Hawaii
F. M. LOMBARDI & JOHN P. POYER
dba POYER ENTERPRISES INC. .... Los Angeles

5 YEARS

CHARLES P. ABOUNADER ..... Phoenix
CLARENCE CARLSON ..... Snohomish, Wash.
FIRESTONE STORE #7929 ..... Yuma, Ariz.
LEWIS M. FORCE ..... Arvin, Calif.
MIKE FUENTES ..... San Francisco
TED HENKEL ..... Portland
F. R. KIRK ..... Junction City, Oreg.
JOHN LENZ ..... Modesto, Calif.
BOB MOULTHROUP ..... Selma, Calif.
JOHN RULON ..... Montebello, Calif.
ELLA H. SCOVILLE ..... Toledo, Oreg.
J. F. SECOR ..... Whitewater, Calif.
WILLIAM SINCOCK ..... Highland, Calif.
LEVI O. SMITH ..... Hesperia, Calif.
R. P. TIHISTA ..... Phoenix
BOB WRIGHT ..... Grand Junction, Colo.

CONSIGNEES & DISTRIBUTORS

February 1965

30 YEARS

PAULINE THOMPSON ..... Republic, Wash.

20 YEARS

JOHN A. DICKMAN ..... Coachella, Calif.

15 YEARS

TAKU OIL SALES ..... Juneau, Alaska

10 YEARS

VERNON HOLAND ..... Westport, Washington
ROYAL OIL OF DETROIT ..... Detroit, Mich.
TREMONT AUTO SUPPLY ..... Lawrence, Mass.

5 YEARS

SOLOMON GUTHRIE ..... Metlakatla, Alaska
ROBERT G. MORRISON .... Placerville, California

RETIREMENTS

FRANK M. ADAMS
Orcutt, Calif. ..... September, 3, 1923
HERMAN W. ASHER
Los Angeles Refinery ..... April 8, 1946
GEORGE W. CABRAL
Oleum Refinery ..... July 3, 1929
LUTHER M. CARIKER
Fullerton, Calif. ..... October 2, 1917
CHARLINE D. CUNNINGHAM
Union Oil Center ..... August 30, 1943
CECIL J. GOAD
Los Angeles Refinery ..... December 19, 1944
HUGH E. LILLQUIST
Seattle, Oreg. ..... July 9, 1928
ALFRED E. MARSH
Orcutt, Calif. ..... January 1, 1934
HARRY C. PIATT
Los Angeles Refinery ..... December 7, 1943
CECIL C. REYNOLDS
Piedmont, Calif. ..... September 2, 1922
JOHN ROSE
Oleum Refinery ..... August 11, 1925
T. L. ROSS
Oleum Refinery ..... February 21, 1945
HAMPTON R. STOCKTON
Oleum Refinery ..... February 28, 1943
FRANK E. SMITH
Oleum Refinery ..... June 8, 1925
ROSCOE JAMES SUIT
Seattle, Wash. ..... February 24, 1932
MARION L. WANLASS
Oleum Refinery ..... September 11, 1925

PERCY F. PETROSS, Los Angeles Refinery, listed as retiring in Nov. 1964 is still on the active list.

IN MEMORIAM

Employees:

RADCLIFFE H. BECKWITH
Houston, Tex. ..... December 28, 1964
FRED GIRARD
Rodeo, Calif. ..... December 12, 1964
ERNEST MILLER, JR.
Diamond Bar, Calif. ..... December 18, 1964
T. R. McGILLIARD
Seattle, Wash. ..... December 19, 1964

Retirees:

HUGH E. O'SHAUGHNESSY
Phoenix, ... September 27, 1964
ARCHIE C. OWSLEY
Grover City, Calif. ..... December 10, 1964
GEORGE ALFRED TRIMBLE
Oceanside, Calif. ..... December 25, 1964
FRED WESTBERG
Long Beach, Calif. ..... November 13, 1964

UNION OIL COMPANY OF CALIFORNIA
P. O. Box 7600
Los Angeles, California 90054

Where We Work...

Our Marketing Department's products terminals are a major point of contact between the Refining and Marketing Departments of our company. Lube oil blending stocks, gasolines, heating oils and diesel are delivered from refineries to our terminals, where they are blended and packaged—if necessary—and quickly dispatched to dealers, consignees and distributors throughout the land. One of the key men at the terminal—actually a dispatching czar—is the senior gauger. Working from a control tower that commands a view of the entire terminal, a gauger like John Lee (above) of our Richmond Terminal could well be unloading a barge, a string of tank cars or a ship, or he could be preparing to receive a load of Royal 76 gasoline from an Oleum Refinery pipeline. In days past, the gauger climbed on top of tanks to gauge the products, then ran back to the office to telephone instructions to the refinery. Today the legwork is eliminated; with a touch of the switch at his console or a word into his mike he can direct operations anywhere within his realm.