



SEVENTY SIX

DECEMBER 1966

❁ (A NEW YEAR) ❁

Traditionally, the end of the year is a time for reflecting on the past 12 months' accomplishments.

This year I would prefer to take this opportunity not to look back, but to look forward to what we all hope will be another great year of progress for our company.

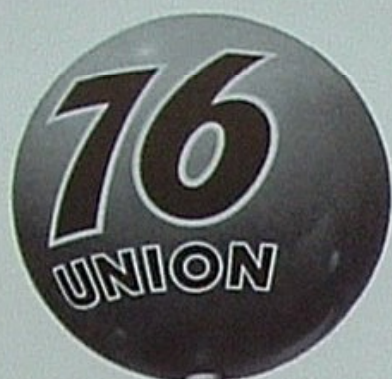
If we must refer to the past year, let's do so as a basis for predicting bigger and better years to come. We are pursuing a course of consistent improvement in every division of what has grown to be one of the largest companies in the nation since its founding 76 years ago.

Union Oil Company is a big company, but companies are people, not impersonal robots. And it is with sincere conviction that I say we have—through our individual efforts—accomplished this necessary growth. Furthermore, if we continue to follow a fair and responsible course of operation, our company cannot help but record another progressive, profitable year of growth in 1967.

My best wishes to all of you during this holiday season and during the years ahead for all of us.

John L. Hatley

President



This 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, Union Oil Center, Los Angeles, California 90017

SEVENTY SIX

UNION OIL COMPANY OF CALIFORNIA

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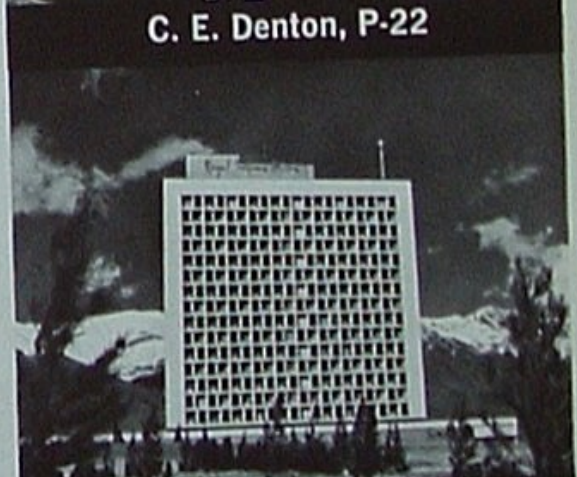
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A black and white photograph of a large barge on a river lock. The barge is positioned in the center, moving through a narrow channel between concrete walls. The background features a dense forest on a hillside. The text 'BIG OL' SWEET BOAT' is overlaid in the lower portion of the image.

**BIG OL'
SWEET
BOAT**

Photos by Herbert K. Barnett

Along the rivers where Tom Sawyer and Huck Finn became legends, modern towboats are moving billions of tons of cargo

ALONG THE MISSISSIPPI, Tennessee, Ohio and Allegheny Rivers, everyone knows her: She comes up-river once a month, pushing her barges loaded with enough petroleum products to fill a string of railroad tank cars three miles long. On the records of the Pure Oil Division, she's listed as the Motor Vessel *L. W. Sweet*. But along the rivers she's known as that "big ol' *Sweet Boat*."

Surprisingly, in this space-age era of supersonic speeds and intercontinental highways and railroads, there is still an awesome amount of cargo transported on our inland waterways. This year, an estimated 260 billion tons will be shipped in river barges at an average speed of seven miles an hour.

From a distance, the *L. W. Sweet* and her barges look something like one of Union Oil Company's supertankers. It's longer! Closer examination, however, shows the boat to be pushing four separate barges, all lashed together with steel cables. The boat itself is actually hardly larger than a tug boat, measuring 118 feet from stem to stern. Ahead of her, the four barges stretch for 1,010 feet, about a city block long.

Three of the barges are unitized, made to fit into an easily managed package. The fourth, a special, large barge, will be dropped off at the Cincinnati Terminal. On the big barge's deck, 650 tons of drums and assorted dry cargo are carried on pallets ready for fast unloading. Another 10,500 barrels of bulk lubes are stored in the big belly of the barge.

The *Sweet* is one of two towboats Pure Oil Division operates on the nation's inland waterways. Each boat has two crews, who alternate trips. The *Sweet's* route is from Smiths Bluff Refinery in Texas to the Cabin Creek, West Virginia, Terminal with stops at Cincinnati and other ports along the way. A round trip takes from 25-30 days.

Despite the fact that the boats literally push the barges, they are called towboats. A barge or combination of barges is the "tow."

Ask Captain John Able, master of the *Sweet*, why they call it a towboat instead of a pushboat, and he'll say, "That's just river talk." Able has been captain of the *Sweet* since 1958, but he looks more like a small town hardware store owner than a ship's captain. An open necked flannel shirt and slacks are the unnautical uniform of this man who has been working on the river for more than 30 years.

Able guides the towboat for six hours at a time. Even while talking or drinking the strong, delicious coffee brought

continued



At Cincinnati Terminal, barge is unloaded two pallets at a time.



Carl Crutchfield, pilot of the *Sweet*, enjoys a cigar during watch.



The *Sweet* fills the lock at Markland, Kentucky, on the Ohio River.

SWEET BOAT

continued



Splicing a hawser is the job of Herbert Rogers, *Sweet* tankerman.



Unique inclined railway speeds barge unloading at Cincinnati.

up from the galley, he never takes his eyes from the river for more than a second at a time.

"It takes about a half a mile to stop the tow," he said, "and that's with both engines in full reverse." His biggest problems on the river are fog and small pleasure boats.

His relief man is Captain Carl Crutchfield, pilot of the *Sweet*, who according to Able knows every foot of navigable water in the country. "Crutch" has spent 33 years on the rivers, the last 15 of it with Pure.

Speaking about the increase in river traffic during the last two decades, Crutch says, "You wouldn't be far from wrong if you said there were a hundred barges now for every one that was afloat before World War II." Crutch is a burly, gray-haired man who likes good cigars and operates a small cattle spread in Tennessee. He is typical of the man who works the river in our modern times.

"There was a time," he grins, "when riverboatmen were wild and wooley, but today most of them are married and rearing kids, buying cars and the like. Guess the good old days belong in the history books or Mark Twain's writings."

America's rivers have spawned legends, such as the villainous Mike Fink, who has been recently resurrected by the Davey Crockett movies. Fink, so the legend goes, could shoot the spots off a deck of cards tossed into the air. He also liked plinking cups of whiskey off his friend's heads. Should he harbor a grudge he sometimes missed and planted a rifle ball between the "friend's" eyes.

The rivers also were the highways of exploration for the first white men who penetrated west of the original colonies. The French voyagers named many of the ports along the

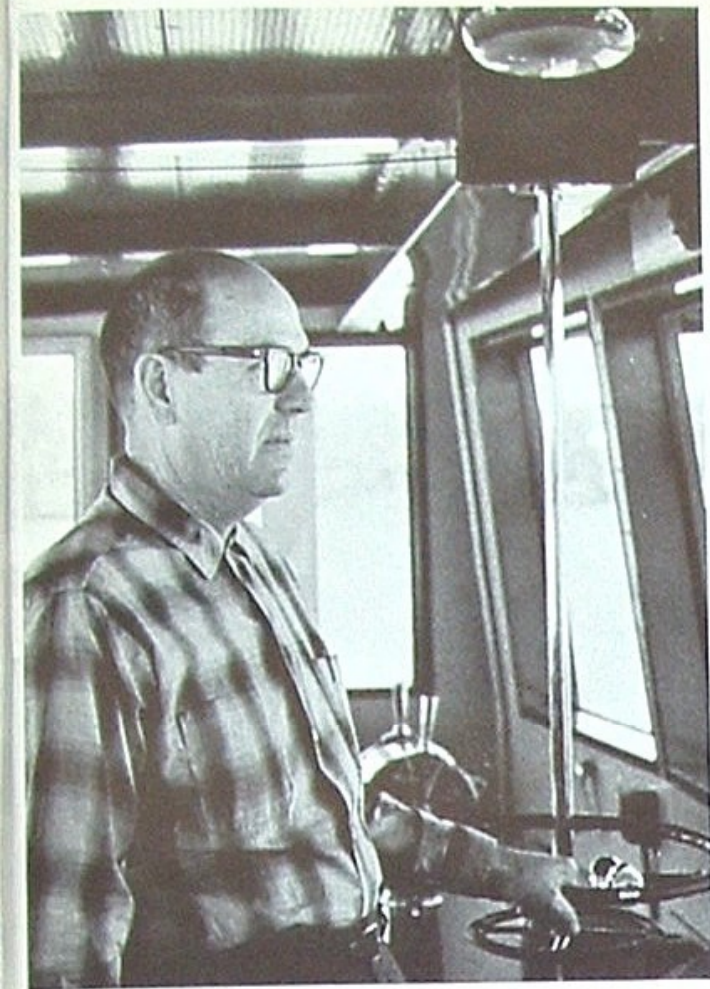
rivers. They started from an overgrown trading post where buffalo hunters and Indians swapped bullets, beads and booze along the shores of Lake Michigan. This later became Chicago. Traveling south they stopped long enough to name St. Louis and continued on to New Orleans.

Our early armies traveled the rivers to the plains campaigns. One notable passenger was an ex-general named Custer, who led the 7th Cavalry into a gory day of history after poling up the Missouri River. About the same time, Samuel Clemens, a young pilot of the rivers who called himself Mark Twain, gave the world of literature Tom Sawyer and Huck Finn.

From the bridge of the *Sweet*, the green and gold shores of the river are a background for a living mural. Neat little villages are pinned into pockets of green woods by sparkling spires of white shingled churches, or nestled next to soft rolling fields of hay or vegetables. Many of these quaint communities look the same as they did when Tom Sawyer was talking his friends into whitewashing his aunt's fence.

"Things get better along the rivers each year," according to Crutch. "More locks going in and dams being built make the river deeper and easier to navigate." As he talks, his hands work almost imperceptibly, moving the handles of the hydraulic steering system. "You have to sort of skid around the bends," he explains. "That tow is about a fifth of a mile long, and sometimes you're a little short of maneuvering room."

Neither Crutch nor Able enjoys the harbor areas adjacent to larger cities on the river. "Some nut will come water skiing and cut right across us," Crutch complains. "If he



Captain John Able, Master of the Sweet.



Mary Lou Quinn, cook aboard the Sweet.



Superintendent Dale Colby.

knew how long it takes to stop this thing, he'd think twice about taking a chance of it running over him."

But, for the most part, travel on the river is one long succession of six on and six off for the boatmen. "Mostly you eat a lot," says Captain Able, "and the galley's open 24 hours a day."

To the casual observer riding the boat for the first time, snacking seems incredible. Mary Lou Quinn, cook on the *Sweet*, serves a dinner that would founder a grizzly bear. Mountains of salad, heaps of French fries and beef steaks the size of catcher's mitts are normal fare for dinner. In all probability the crew needs a month off between trips to trim their waistlines back to normal.

At Cincinnati, the big barge is cut loose from the tow and shoved into position by a tug boat. Pat Murphy, who handles this job, treats the big barge with much respect. "You let that thing get swinging," he says, "and she'll put *you* ashore instead."

The Cincinnati Terminal landing is unique among river ports. It has an inclined railroad running from the warehouse at the top of the river bank to the floating dock where a crane unloads the barge. Drums are loaded four to a pallet at Smiths Bluff. The crane picks up each unit and sets it on the specially built rail cars. It takes approximately five-and-a-half hours to unload the deck cargo and another three hours to pump the bulk products into terminal tanks.

At the terminal, Dale Colby, superintendent, says river transportation is considerably less expensive than any other method. "You can deliver products for a fraction of other transportation costs," he says. "There's another pretty obvi-

ous advantage, too. Did you ever try to change your mind in the middle of a pipeline?"

Colby is a heavy-set ex-infantryman, who knows every employee at the 18 acre facility. He believes in spending as much time as possible in the working areas of the bustling terminal. He started as a laborer here 25 years ago. "I've held about every job in the place," he says, "so I can appreciate most people's problems."

By the time Colby and his crews have the big barge unloaded, the *Sweet* is well on its way up the Ohio River. In the northern parts of the stream there are older locks, which cannot accommodate the entire tow. "In this case we untie two of the barges and put them through, then bring the boat and the other barge through," explains Captain Able.

Once the barges reach Cabin Creek and are unloaded, the long trip back begins. The *Sweet* travels up-river at about six miles an hour. On the return trip, with her barges riding seven feet out of the water, she turns a respectable 12 m.p.h. "It's faster going back empty and with the current," Pilot Crutchfield says, "but a lot trickier when you go past something like a boat club or private dock. If we don't slow down, the bow wave will wash those little pleasure craft up on the beach."

He punctuates the statement with a tug on the cord that blows the big bass air horn. Moments later he fires up the ship's radio and tells oncoming traffic he's heading around the bend. As he puts away the microphone a voice crackles from the speaker, "We hear you *Sweet Boat*." For several minutes radio messages fly along the river, "Look out, here come's the big ol' *Sweet Boat* again."



Monterey has history, soldiers, golf, beautiful cypress trees. Stan Silverstone and Harry Zundell, the mainstays of Monterey.

STAN SILVERSTONE:

Fast-stepping consignee on Monterey Bay

MONTEREY, CALIFORNIA
STATISTICALLY your chances of visiting Monterey next year are about one in 65; at least three million persons will flock to this seaside resort to soak up the weather, play golf, watch sports car races or steep themselves in history.

As a tourist center, Monterey outdraws such spectacles as the Grand Canyon, and the climate here can be described only as delicious. While visiting Monterey, tourists will admire the beautiful, wide-swept Monterey Cypress trees, tour Carmel Mission, founded six years before the Declaration of Independence, or visit Point Lobos and the Big Sur. Others are drawn by the 11 golf courses, basis for Monterey's claim as golf capital of the world. Motorists look forward to the famed 17 Mile Drive in an exclusive residential barony called Del Monte Forest where they can gape at million dollar homes.

By contrast Monterey also has Cannery Row made famous by novelist John Steinbeck — where antique shops are taking over from the declining sardine canners. If you are a sports car buff, you'll surely want to visit Monterey at least once a year to see the races at one of the world's most beautiful tracks, Laguna Seca. And if history is your dish of tea, Monterey boasts of its old Customs House, where California became a state, and the former home of writer Robert Louis Stevenson.

Monterey Bay was discovered in 1542 by explorer Juan Cabrillo who sailed to the New World just 50 years after Columbus's first voyage to America. Until the middle of the 19th century, Monterey was California's liveliest and most important settlement. It began that century as the Spanish capital of Alta (Upper) California. It became the Mexican capital in 1822, the American capital in 1846.

After the discovery of gold in 1848, San Francisco took the spotlight as California's first city and Monterey crept to the side. Owing partly to its military past, soldiers remain part of the economy. The Presidio of Monterey, founded by the Spanish in 1770, is the home of the Defense Language Institute. Monterey is the site of the U.S. Naval Postgraduate School — the Annapolis of the West. Ft. Ord is the Army's western training center. And the U.S. Coast Guard cutter *Ewing* makes its home base in adjoining Pacific Grove.

Juan Cabrillo, a sailor, discovered Monterey Bay in 1542. Stan Silverstone, an avid golfer and Union Oil consignee, discovered the bay in 1946 — just 404 years later. Today the consignee from Watsonville seems to be trying to catch up for lost time. To him the tourist attractions are part of the landscape; more important is the task of keeping the supply of petro-

leum products flowing smoothly so these people can come and go without hindrance.

Take the Monterey freeway as an example. The citizens of Monterey and surrounding vistas have their own ideas about such subjects as roads and trees. Many objected to the idea of a freeway because it would "create a scar" through their city. Not so, according to Silverstone.

"With landscaping," he says, "it will soon look prettier than ever. Besides we simply have to do something to ease the flow of traffic in this town."

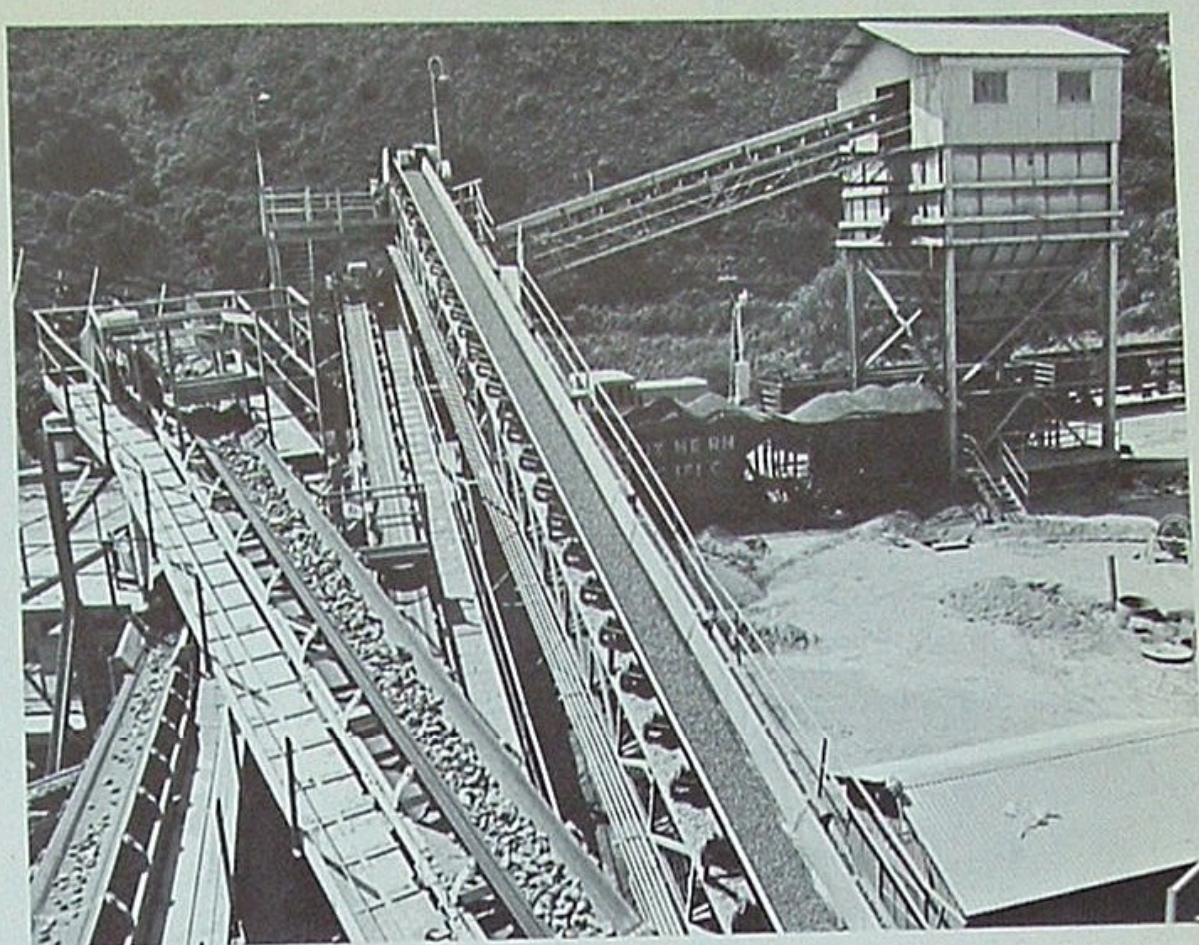
We encountered Silverstone at his Monterey bulk plant on Del Monte road where you can look up at huge sand dunes separating his office from the bay. "They are putting the freeway on top of that dune," Silverstone said. "When it's completed we will have seven-and-a-half miles of smooth road to bypass the narrow streets of Monterey."

Silverstone changed into working clothes and jumped into a tank truck loaded with diesel fuel. "One of my drivers has a family emergency and Harry Zundell, the day man, has put in a heavy shift," he said over the noise of the engine. "I've got to make the deliveries to Granite Construction Company, the freeway contractor."

That was at 5:30 in the evening. Silverstone's task was to find 35 pieces of heavy road construction equipment strung out over seven-and-a-half miles of right-of-way, fill the big tractors, road scrapers and dump trucks with fuel, then try to catch some sleep before the next day's business.

After 19 years in business for himself (for 15 years before that he was a Union Oil employee), Silverstone might be expected to take things easy. But, as he explained, there are always unexpected emergencies, illnesses. "You expect a certain amount of this kind of thing," he says philosophically. "But with those road rigs costing the contractor up to \$50 an hour to operate, we can't let 'em down."

Silverstone finished fueling the rigs at 3:30 a.m. and decided to catch forty winks before dawn, when Harry



Consignee Silverstone played detective at Granite Rock, solved a fuel problem.

Zundell would come on duty for another busy day. A typical day's route for Zundell could include a stop at the Monterey city and county agencies where he would restock gasoline for the official vehicles and school buses. He might then drive over to the U.S. Coast Guard station to pump a load of fuel aboard the Army's special service boats from Ft. Ord, and make one of several deliveries of diesel fuel to the Coast Guard Cutter *Ewing*. On his way back to the bulk plant, he might drop off a barrel of Unoba grease at Hovden Food Processing Company, the only remaining sardine canner on Cannery Row.

"Harry's the mainstay of Monterey," Silverstone says. "He keeps stepping."

Silverstone took over operations in Monterey four and a half years ago. That's when the company consolidated three smaller consignee territories along Monterey Bay. Silverstone bought out the other two.

"Since then," he says, "I've been busy." He has been so busy, in fact, that he was forced to give up his nine-year-long tenure on the City Council at Watsonville, his home base 35 miles north of Monterey. To keep de-

liveries on schedule, Silverstone operates bulk plants at Monterey, Watsonville and Santa Cruz. He has four tank trucks and employs four driver-salesmen to deliver up to three million units of refined products a year. (In petroleum parlance, a "unit" is a gallon of gasoline or lube oil or a pound of grease.)

Even with several drivers to make deliveries, Silverstone keeps hopping. After making the night delivery to Granite Construction, he caught a short nap, then drove 50 miles around Monterey Bay to the resort town of Santa Cruz where he solved a minor problem at a car wash. Meanwhile, his driver at Watsonville, Sid Nystrom, was making the rounds at about four dozen farm accounts, because this was the harvest season in an area famous for lettuce and tomato crops. He had no sooner finished this chore than Pacific Fruit Express ordered diesel fuel for a dozen "reefer" cars.

Pacific Fruit Express is the world's largest operator of railway refrigerator cars. Each reefer is powered by a refrigerator system that requires 400 gallons of diesel fuel. "During the peak of harvest season," Silverstone says, "they will run up to 25 reefer

continued

STAIN

continued

cars a day through Watsonville." Driver Nystrom's next call could be at PFE's co-owner, Southern Pacific Railroad, where he would deliver gasoline, locomotive diesel fuel and special Triton R.R. lubricating oil.

To be a successful consignee, you have to be something of a detective. Silverstone told of the kind of incident that often keeps him away from the golf courses of Monterey. After returning to Watsonville, one of his longest-treasured accounts came up with a complaint: "Dirt in the diesel fuel," said Granite Rock Company (no kin to Granite Construction). The statement nearly floored Silverstone who well knows the care and skill our employees put into refining Unifuel.

"Granite Rock operates one of the largest quarries west of the Mississippi," Silverstone said. "This demanded action—fast." He called in William L. Thomson, Union's commercial sales supervisor for the area, and together they visited Granite

Rock to survey the situation.

As it turned out, the fuel storage tank was located in the quarry, far below ground level. In years past the delivery truck had filled the tank from above through a six-inch pipeline. Although the pipeline had long been abandoned (indeed, everyone had forgotten about it), no one had ever disconnected it from the tank. Over the years, the line had built up scale and collected debris; when an unusually large blast was touched off to loosen quarry rock, it dislodged the debris in the pipeline, sending it scooting into the diesel storage tank.

"We discovered the offending line," Silverstone said, "and now everything is back in good order." And good order he keeps the account in, too, for operations manager Elmer Neyens is a close friend.

"When I came here eight years ago," Neyens said, "we had 35 or 40 different lubricants. Now, with Union Oil products, we need only a fraction of that number. This has lowered our lube inventory and raised our efficiency." Neyens opinion is valuable because in 30 years in the quarry business he has set up rock plants in Europe, Africa and the Orient. He's

one of the experts.

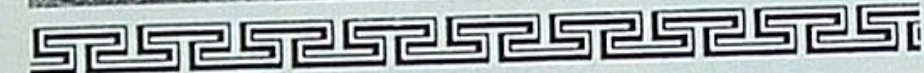
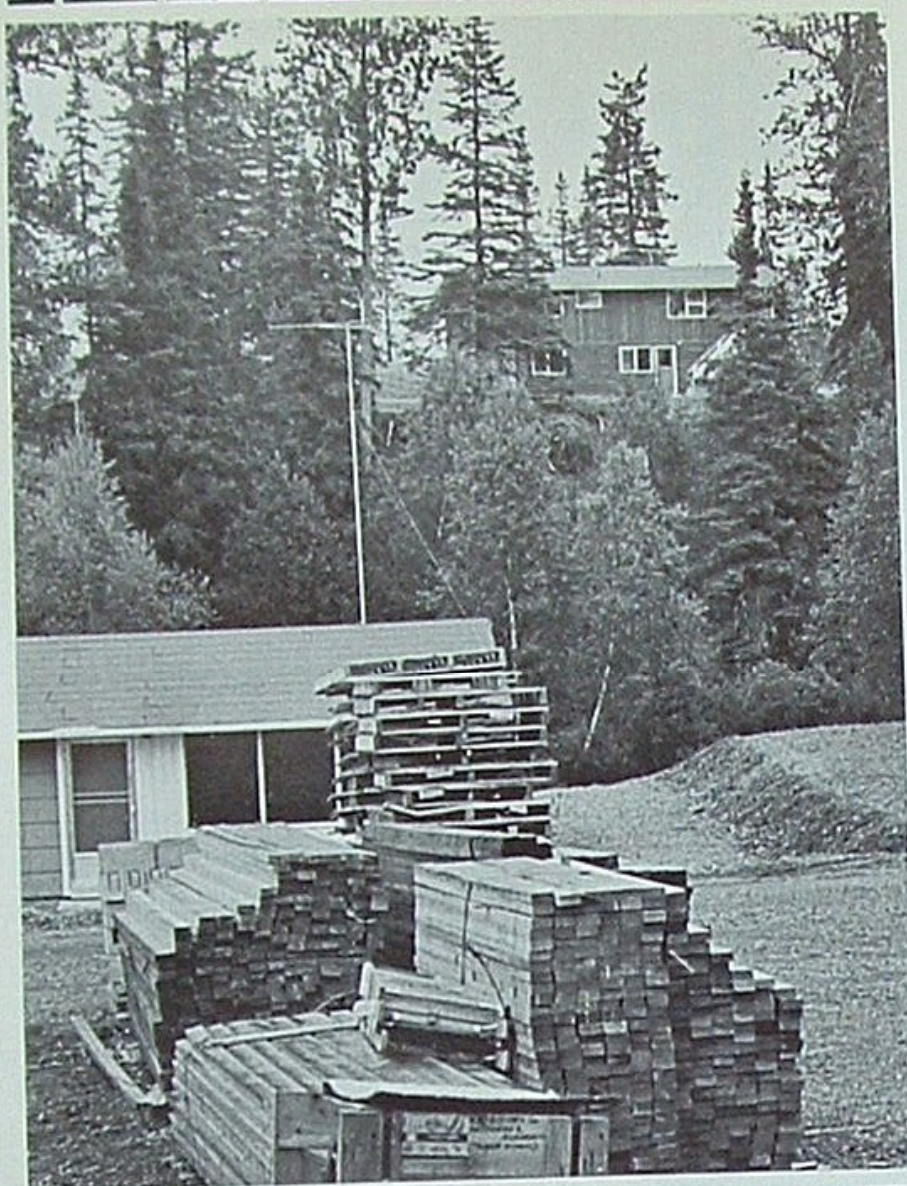
Despite the pace of business, Silverstone is interested in good citizenship. Although he had to give up his city council seat, he still makes time for work in the Kiwanis Club (he's a former president) and local fund-raising activities. Only last month he was named Santa Cruz County chairman for the American Cancer Society, an activity he approaches with as much enthusiasm as he does selling oil.

As for his long relationship with Union Oil Company, Silverstone says, "Just think. Next year I'll be a 35 year man." He started as a file clerk in San Francisco in 1932 and by 1946 had worked up to resident sales manager in Watsonville. "They offered me a promotion to a desk job in 1946, about the same time the company got into the consignee business. I chose the latter and never regretted it a day in my life."

Asked if he has much time for golf these days, Silverstone grinned and replied, "I'd sure love to; that's one of the reasons I live on Monterey Bay. But right now, if you'll excuse me, I've got to see about a new account at a 300-acre lettuce ranch." 76



A Pacific Fruit Express refrigerator car uses up to 400 gallons of diesel fuel.



Indians at Tyonek Village use Union Oil products exclusively.

THE RICH TYONEKS BATTEN DOWN

Alaskan Indians Benefit from Oil

CONTRARY TO THE cliché endings of the late shows, the Indians do win occasionally — perhaps not militarily — but certainly monetarily. At least the 300 Moquawkie Indians of Tyonek Village, Alaska, have a winning combination of money and management calculated to keep them solvent for several generations.

When President Woodrow Wilson designated a 24,000-acre swamp as a reservation for the Moquawkies, it was considered just another bad deal for the red man. The marshy reservation was on the west side of Cook Inlet in an almost inaccessible area.

During the great gold rush, the Tyoneks had fared no better. They were shabby, hungry. Then the oil hunters

followed the gold panners and the situation changed dramatically. Those 24,000-acres of muskeg (marsh) were found to be covering a huge deposit of hydrocarbons.

For 25 years Anchorage lawyer Stanley J. McCutcheon has represented the Tyonek villagers, guarding their rights. As one result the Tyoneks are now stewarding a \$12.5 million pot of gold from oil lease sales, with more to come from royalty payments from producing wells. All this for a village of 300!

Oil-based affluence and a strong sense of responsible self control has had a remarkable effect on the people. Unlike their Great Plains counterparts, who wasted oil riches on drinking sprees and spending binges, the Tyoneks have profited from their money.

The general health of children and adults has improved. The 55 resident families of the village live in frame houses with four or five bedrooms, where once they huddled in tiny huts.

By contemporary American standards, wealthy Alaskan Indians are a rarity. The average native — Eskimo, Indian or Aleut — lives in relative poverty. But by Indian standards, the Moquawkies are prosperous — living in houses with picture windows, indoor bathrooms, TV sets and freezers filled with moose meat, caribou and salmon.

The Tyoneks are husbanding their resources carefully. The first tribal decision was to rule out a per capita split of the windfall. From experience, the leaders knew many of their tribesmen might waste their money on luxuries. A Tyonek family advisory committee was formed and it followed a tough line. Requests for color TV sets were firmly declined. Likewise refused were wall-to-wall carpeting and fancy cars. On the other hand, requests for Jeeps, pick-up trucks, warm clothing, furniture and outboard motors generally were approved.

Oil wealth showed its greatest impact on the children. Families were able to provide their youngsters with fresh vegetables, milk, eggs. But the tribal leaders put the brakes on too much consumer spending. Rather, the tribe invested its surplus capital, and today the Tyonek portfolio leans heavily toward Anchorage real estate and local utilities companies.

For education the tribe built a \$750,000 school and set aside \$200,000 for scholarships. It also has put \$350,000 into a credit lending program.

Another move to protect the Tyonek treasury was to close the village airstrip to all but invited guests. Inasmuch as the village can be reached conveniently only by chartered plane from Anchorage, the Indians are now secure on their leases. This act was necessary to stem the flow of investment brokers, insurance salesmen, book peddlers, and many less scrupulous "salesmen," who came prospecting for Tyonek gold.

Says one Tyonek village elder, "We plan to use our money wisely." One way they are employing their funds wisely is in the use of petroleum products. The Tyoneks use Union Oil products exclusively. "After all," says the elder, "it's the finest value."

The story of DIGI-SUE

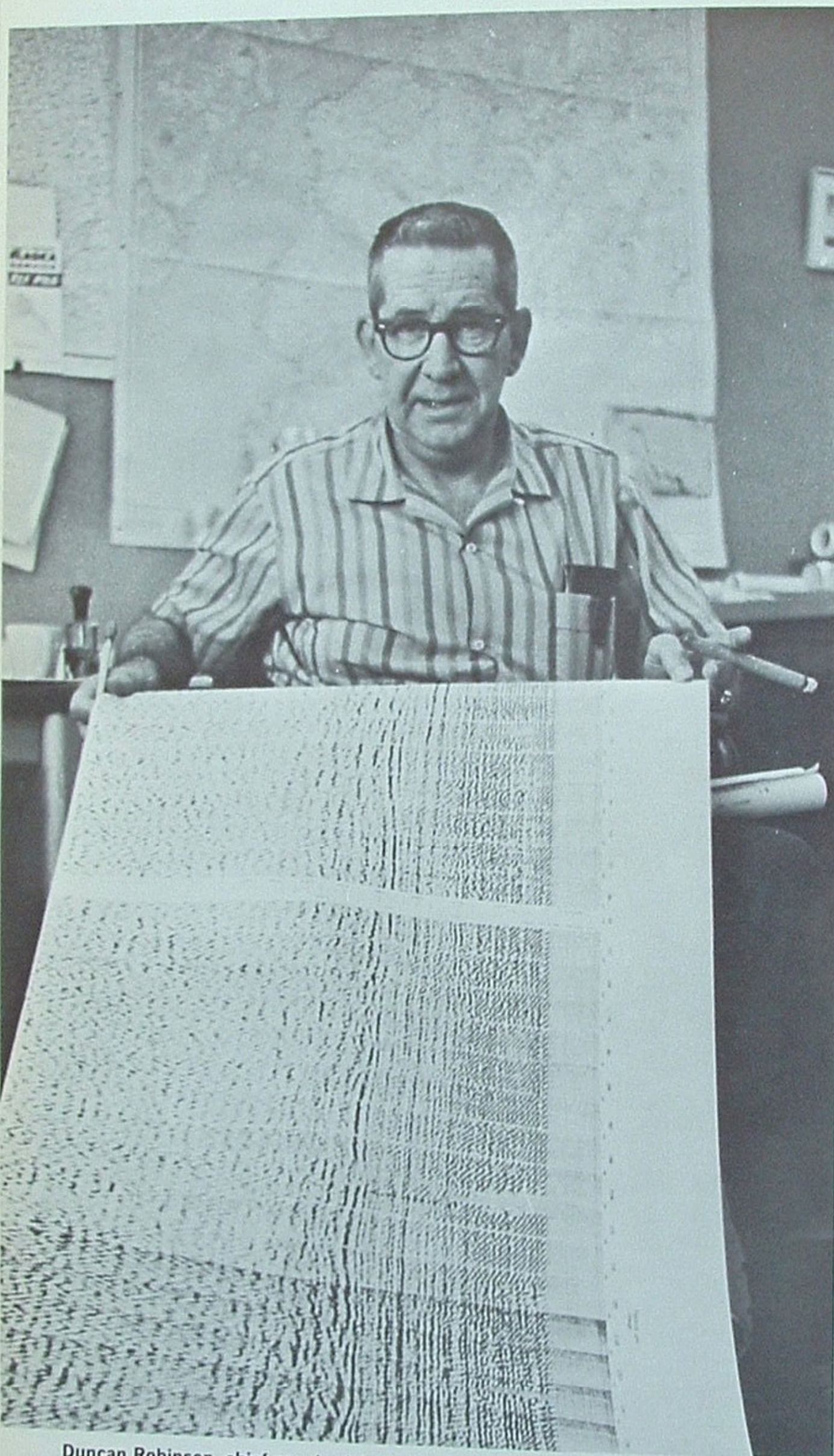
Marriage of propane exploder and digital computer may revolutionize offshore seismic work

BRISTOL BAY, ALASKA

IN ALASKA, geophysicists and seismic experts have married a propane exploder to a digital computer and the union has been blessed with seismic success. As a result, a space age technique called Digi-SUE has completed a seismic survey of the vast and choppy waters of Bristol Bay six weeks ahead of schedule.

Digi-SUE is the name of a system employing a digital computer to record and process sub-surface echos made by a propane gas exploder called a Seismic Underwater Exploder—or SUE for short. Digi-SUE's work in Bristol Bay has proved to be fast, economical, accurate and—best of all to the people in Alaska—compatible with the sockeye salmon. The new technique also holds promise for revolutionizing offshore geophysical work around the world.

The objection to seismic techniques in the past was the disproven but still widely held belief that underwater dynamite explosions could kill large numbers of fish. As a result, offshore seismic work in Alaska was banned during the fishing season, which lasts until late June or early July. Since Alaska's weather prevents seismic work in the winter, the summer fishing ban carved out 40 per cent or more from the already limited shooting season. The problem threatened to set back oil exploration efforts signifi-



Duncan Robinson, chief geophysicist in Alaska from 1958 to 1966, describes Digi-Sue.

cantly because the search for oil in Alaska is largely dependent on seismic work.

Duncan Robinson, Union Oil's chief geophysicist in Alaska from 1958 to 1966, traced the steps that led to use of the computer-oriented Digi-SUE system.

With conventional underwater seismic techniques, at least two boats were required: a shooting boat that drops off small charges of dynamite to explode in the water, and a recording boat that uses hydrophones to record the echos of the explosions as they reflect off sedimentary layers of underground rock formations. In Alaska, a third boat was necessary—for a fish and game inspector to survey the water for possible fish kills.

The new Digi-SUE system, and a similar technique employing a system called Dynoseis, required only one boat which combines the shooting and echo-recording functions. The gas exploder uses propane and oxygen as a substitute for the dynamite charges. The mild propane pops offer no threat to the sockeye salmon, and as a result the inspector's boat is no longer needed.

"The first propane exploder was brought to Alaska in 1959," Robinson said. "We wanted to use it for offshore exploratory work during the fishing season." The propane devices won approval from the fishing officials, and earned limited endorsement from the seismic experts. "We were getting good information down to about 3,000 feet," Robinson explained. "We were pleased with what we got, but we didn't get the depth we needed." In short, they needed more bang for their buck. In Alaska, as in many places, the potential oil structures were hidden at the 10,000 to 12,000 foot levels—almost two miles below the depth the propane exploder could penetrate.

A year later a larger gas device was brought up. It had a bigger pop than

earlier models, but the deep-level echos were still too faint to trace onto the charts that geophysicists are accustomed to reading. For a while it looked like the seismic teams would have to go back to dynamite.

In fact, they did revert briefly to conventional techniques, and there found the key to success. While they had been experimenting with propane devices, other engineers had worked out a method of removing noise and reverberation inherent in conventional seismic reports. The answer to that problem had been found in the digital computer, which employs a deconvolution process to filter out noise.

"Why not," the seismic men asked, "use a digital computer to stack up and magnify a lot of little propane shots? Then maybe we can get the deep-level information we need."

Geophysical Services Incorporated, owner of the SUE boat operating then in the Cook Inlet, worked out the engineering and tried a pilot test of the digital system off the coast of California. Results were deemed successful, but at first no one seemed willing to try it on a large-scale seismic survey.

The ball got rolling in 1966. Last Spring, Union Oil Company was named operator for a large, 20-company joint seismic survey of Bristol Bay, a large body of open water between the Aleutian Islands and the Alaska mainland. Bristol Bay is the home of millions of sockeye salmon and is visited by hundreds of purse seine fishing boats each summer. Robinson, who was to be chief coordinator for the 20-company survey, argued that by using the propane exploder they could operate during fishing season without harming the salmon. By employing a digital computer to gang up the mild propane explosions and magnify the echos, the results should be as good as with conventional methods.

"With dynamite," Robinson explained, "one shot is set off every 1,200 feet. With the gas exploder, you have a mild pop every 75 feet. So you can see the volume of data we get. With the computer, we can stack 24 small echos and have the computer plot them as a single shot."

The proposal was accepted. Digi-SUE steamed into Bristol Bay and began shooting some 4,000 miles of seismic lines. The propane echos were recorded on tape and sent to GSI's playback center in Inglewood, California, where a "seis editor" did the stacking, filtered out the noise and reverberation, and presented the information in conventional analog form.

Since dynamite can represent up to 20 per cent of the cost of a seismic survey, and because Digi-SUE could fire its charges and record the echos without stopping each time, the Bristol Bay survey came in well under budget. They also beat the deadline by six weeks.

"With conventional equipment," Robinson said, "the best we could have hoped for was to shoot 2,000 miles of line in the limited time available after fishing season. With Digi-SUE, we finished 4,400 miles of line with six weeks to spare. At the rate they were going, there would have been time to shoot 6,000 miles."

What has this done for the oil industry?

"Digi-SUE," Robinson replied, "is fast, economical, accurate, and the system is more compatible with marine life."

One of our geologists in Alaska put it another way. "I'm not sure I understand all about those exotic filters and stacked shots," he admitted. "It's a little wild. But I can tell you this. In Alaska we depend on seismic work to get our information on oil structures, and we are getting that information today. You can say it was a good marriage." 76

You can save yourself

Even a mechanical heart cannot cure the problem... it takes self discipline

LOS ANGELES, CALIFORNIA

HEART DISEASE is the number one killer in today's world. In industry in general and Union Oil specifically, cardiovascular troubles account for 65 to 70 per cent of all chronic disabilities and deaths among employees. The tragic part of this grim statistic is that individuals figuratively dig their own graves by ignoring expert advice.

Dr. Richard Call, Union Oil medical director, has spent years studying the problem of heart disease in industry. Consequently he speaks with considerable knowledge and authority on the subject. He told SEVENTY-SIX magazine that most people could save their lives, or at least lengthen them considerably, if they would follow the rules.

"The last ten years have seen some very dramatic changes in heart disease treatment and detection techniques," Dr. Call says. "It has opened up a whole, bright new era for the heart sufferer."

According to Dr. Call, there are three major types of heart problems: First, the rheumatic heart, caused by rheumatic fever as a child and resulting in scarred or deformed valves in the heart in later life. This type of problem has greatly diminished in the last decade because of the effects



of antibiotics for treating the basic disease. He says, "Moreover, new surgical techniques allow us to replace the faulty valve with a Dacron or plastic valve that can be most successfully implanted in the heart."

Secondly, there is hypertension, or high blood pressure. This is often a misleading term for laymen, who associate it with tension, or nervousness. "It simply means high blood pressure," Dr. Call explained, "a situation that causes excess stress and strain on all of the arteries and can cause eventual enlargement of the heart." Again, in the last ten years the medical profession has been given drugs that can successfully bring the patient's pressure down and relieve the abnormal strain on the arteries and heart.

"Third, and deadliest of all heart problems, is coronary

artery disease, or hardening of the arteries. This illness usually strikes in the middle age years, and accounts for 65 to 70 per cent of all heart disease. It probably is the most puzzling as well as the deadliest type of heart problem," the medical director said. "We really do not know a single cause for it, and I personally believe it is caused by many factors rather than just one."

Dr. Call listed heredity as one known factor. "When both the mother and father have a history of heart trouble, the incidence of heart trouble in their children goes up dramatically," he said.



He also listed a certain physical body build as being more prone to heart disease than others. "You take the heavy-set, muscular male, sometimes referred to as the 'mesomorph'. He is far more susceptible to heart trouble than the tall, thin man — the 'ectomorph'."

According to Dr. Call, just being a male makes one more susceptible to heart disease than his mate. "Females are protected by the flow of estrogen, or female hormones, that seems to keep their circulatory system free of excess fats," he explained. "This marvelous protection lasts until after menopause."

Looking at causes of heart disease, Dr. Call blames our affluent society for a great deal of the problem. "The individual in the western world has a high intake of animal fats and dairy products, because he can afford them," he said. "This leads to obesity, and high levels of fat and cholesterol in the blood stream — both closely related to heart disease!"

Another facet of society that is doing us no physical good is the ease of travel and working methods. There is a lack of exercise we can attribute to automation and advanced technology. Dr. Call states, "For the most part, from the time we leave high school or college, many of us do not use our body a fraction as much as we should." This lack of exercise and disuse of the body also tends to make the individual prone to heart problems.

Apparently Sir Walter Rawleigh did the western world no favor when he brought tobacco to England and started the smoking fad. "We have facts in this area," says Dr. Call, "that prove a dramatically high incidence of death and disability between smokers and non-smokers. There is as much

from heart disease

as a 250 per cent higher incidence of heart disease between smokers and non-smokers. And there is 500 per cent more sudden death in patients who smoke as compared to those who do not."

Dr. Call feels the treatment for heart disease is as much up to the individual as it is the medical profession. It calls for self discipline in diet, exercise and smoking.

"There is a lot of common misconception about exercise," he says, "and I personally feel the only beneficial type of activity is the endurance exercise, such as walking for an hour, running a mile or swimming for a half to three-quarters-of-an-hour each day. These are endurance exercises that actually develop the arterial system. Arteries literally become larger to handle the increased demands of exercise and, in fact, nature will open new arteries or circulatory channels to make the possibility of blockage even more remote.

"There are those who feel the 'daily dozen' or fast five minutes of exercise in the morning is beneficial. Perhaps it is, for building muscle tone and making a man feel better, but it doesn't do much of anything for his heart. Another problem in this area is the 'weekend athlete' who participates in a sudden violent burst of activity. He could be committing suicide."

Dr. Call explained that heart disease incidence in physically active people is 60 per cent less than in sedentary types. "There is another advantage to the endurance exercise," he said, "in that it allows the individual a perfect opportunity to work off his aggressions and tensions. It has the effect of a natural tranquilizer."



Perhaps of most interest to many readers is the fate of the individual approaching middle age. Can a man, who has neglected his body until age 35 or 40 years expect to save himself from heart disease, or is the die cast? "The die is not cast!" Dr. Call declares emphatically. "A man who has reached 35, 40, 50 or even 60 can still add several years to his life by following a few simple rules. All it takes is self discipline. Nevertheless, I personally feel it is very difficult to change an individual's personal habits after he reaches 35 or 40. It is the difficult matter of cutting down on weight and intake of animal fats and dairy foods, giving up cigarettes and taking daily exercise. It sounds simple," he grins,

"but unfortunately it is easier to talk about than to carry out."

When asked about the future of the war between medicine and heart disease, Dr. Call feels the big advances in the next ten years will be in the area of artificial replacement parts for worn out or damaged hearts. "Dr. Michael DeBakey in Houston, Texas, is doing some great work in this area, but while it is dramatic and helpful, it is not going to solve the problem," he says. "It will still be up to the individual. Even if the whole heart was replaced by a mechanical pump that would last forever, it still does not cure the disease that affects the entire arterial system, which can be miles long in a middle-aged man."



Speaking of present detection and treatment techniques, Dr. Call said, "We can detect heart disease even before symptoms appear to the patient, and oftentimes head off the disease before the individual is really ill. This is an exciting fact, but unless the patient can change his motivation, his habit patterns, our treatment can't be too effective."

Commenting on the common belief that today's executive is under stresses and strains that lead to the increased incidence of heart disease, Dr. Call says, "I don't really believe that is so. I'm not convinced today's executive has any more tension-producing responsibilities than he did 25, 50 or 100 years ago. But he does drive a car to go a block-and-a-half to lunch, where he eats that good, rich food that he couldn't afford in past decades. He doesn't walk anywhere; he smokes much more; he eats too much. That, in my opinion, is more deadly than his responsibility load."

When asked if cigarettes, as known health deterrents, should be banned, Dr. Call said, "No. In a free society everyone should have the right to make his own decisions on this matter, but the medical profession should make a supreme effort to lay the facts in front of the people."

Perhaps the cure lies in the future. "Frankly," Dr. Call says, "I don't think this generation is going to change much. Our great hope lies in the youth. If we can incorporate these facts into their daily lives, like they learn to brush their teeth, then when it becomes a way of life we will make really dramatic advances against the disease."

We are printing this article in the belief that there is hope for the middle aged, too.

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COAST TO COAST



HONORED. A. C. Rubel, retired Union Oil chairman of the board, has received the API's highest award: the Gold Medal for Distinguished Achievement for this year.



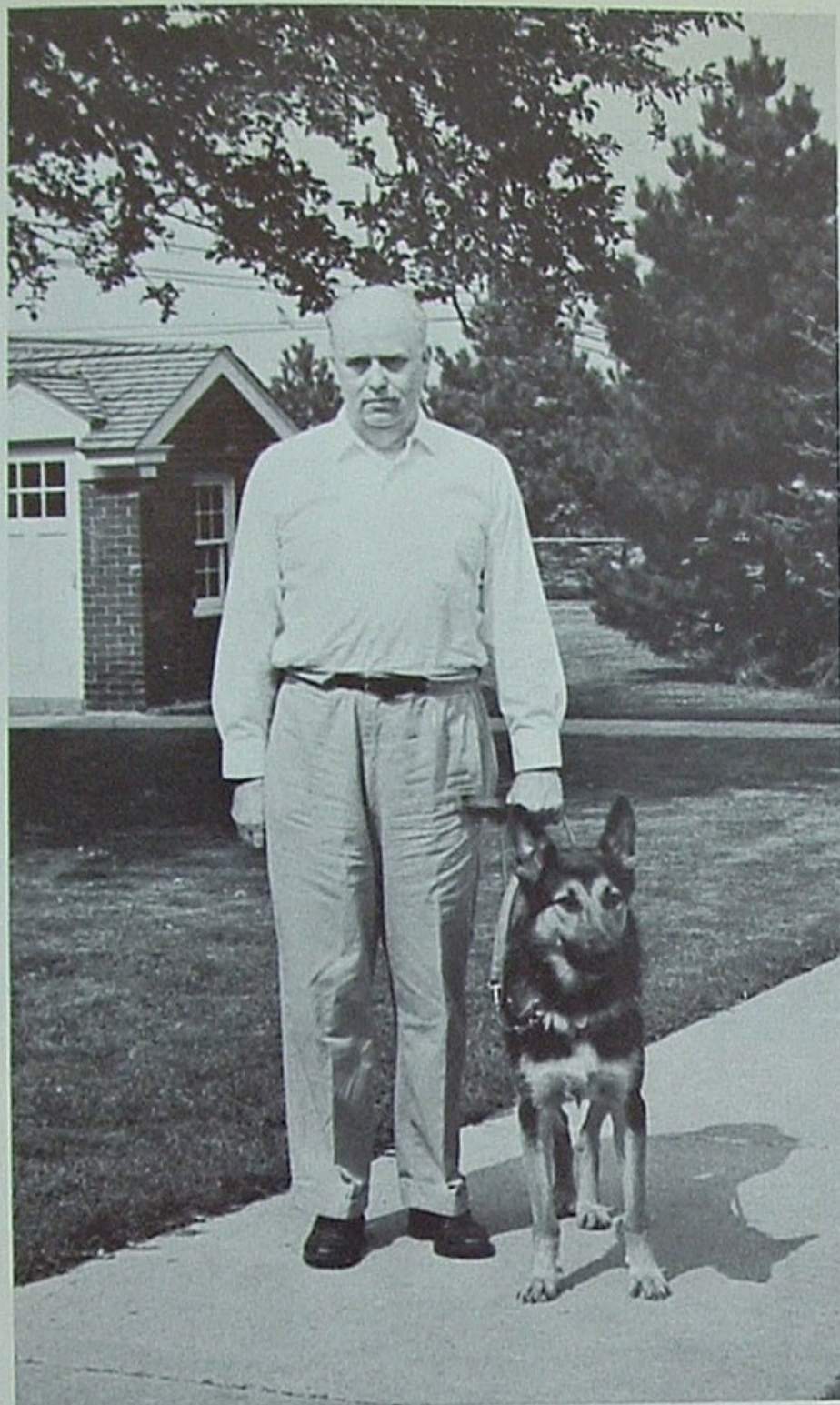
\$16 MILLION HOLE. Pima Mining Company of Tucson, Arizona, will spend a projected \$16.6 million to expand its operations. The pit is presently 600 feet deep. Plans call for it to be deepened to 1,200 feet. The expansion is forecast to increase the output of copper ore to some 30,000 tons per day. Union Oil owns 25 per cent of Pima Mining.



WINNER. Phil Hewitt, Union Oiler in Kansas City, Kansas, accepts trophy from Msgr. John Murphy after golf match between Catholic priests and shriners.



SWEEPSTAKES AWARD. American Mineral Spirits Company Western, South Gate, California, recently won the Greater Los Angeles chapter of the National Safety Council's junior sweepstakes trophy for safe driving practices. L. A. chapter representative Max Zelden (at left) presents the safety trophy to AMSCO Western's R. G. Snowden.



FURRY FRIEND. Al Stradtman, retired Pure Oiler in Pontiac, Michigan, and "Hobo," his newly acquired seeing eye dog, are shown together after returning from four weeks of training at the Leader Dogs For The Blind Institute in Rochester, Michigan.



DOWN UNDER CHAMPS. Union Oil's Brisbane, Australia, Petroleum League bowling team displays championship trophy. From left: Don Olson, Bob Dealtry, Frank Herrmann, Trevor Wallis, George Kurash, Bob Jeffries, Bennie McKee, Herman Burrough.



DOUBLES IN BRASS. Union Oil tax man William C. Weldon (right) recently spent a tour of active duty as an admissions counselor for the U. S. Air Force Academy, Colorado Springs, Colorado; Cadet James Davies III assisted the colonel during his brief stay.



NEW AID AIDE. Harold C. Zanzot, Union Oil Center, newly appointed AID chairman (left), admires plaque presented to past chairman H. H. Hansen by Los Angeles chapter representative Whitney Walterhouse. Hansen has held the position for 14 years.

Shoot for



There may be an American man-on-the-moon sooner than you think

HUNTSVILLE, ALABAMA
THE SPACE AGE DAWNED under the glimmer of the world's first artificial moon, Sputnik I. On that fateful day—October 4, 1957—America was caught sleeping-in. As the Russian satellite beeped its way through orbit, it heralded man's greatest technological challenge, the daring quest to expand his influence and knowledge beyond the confines of planet earth.

It was also the opening gun in the race to the moon, first step in the exploration of space. The United States started a bad second. It wasn't a new role for this nation, nor did it take long to change the situation from stunned realization to aggressive action.

On November 7, 1957, a month after Sputnik's launching, President

Dwight D. Eisenhower announced the appointment of a White House scientific advisor, Dr. James R. Killian, president of the Massachusetts Institute of Technology. At the same time, Congress went into high gear to investigate our space status. A joint committee, headed by a veteran Texas senator, Lyndon B. Johnson, took on the project.

With surprising swiftness, the various committees submitted a combined report within 60 days. It called for the establishment of an independent space agency and the reorganization of missile and space activities of the Department of Defense. In April, 1958, President Eisenhower presented Congress with a bill to create the National Aeronautics and Space Administration (NASA). Using this as a nucleus, Congress drafted the National Aeronautics and Space Act, signed into law July 29, 1958.

NASA actually came into being on October 1 that year. It was an entirely new agency, utilizing the best of previous organizations in the general categories of flight and science. One of these was the National Advisory Com-

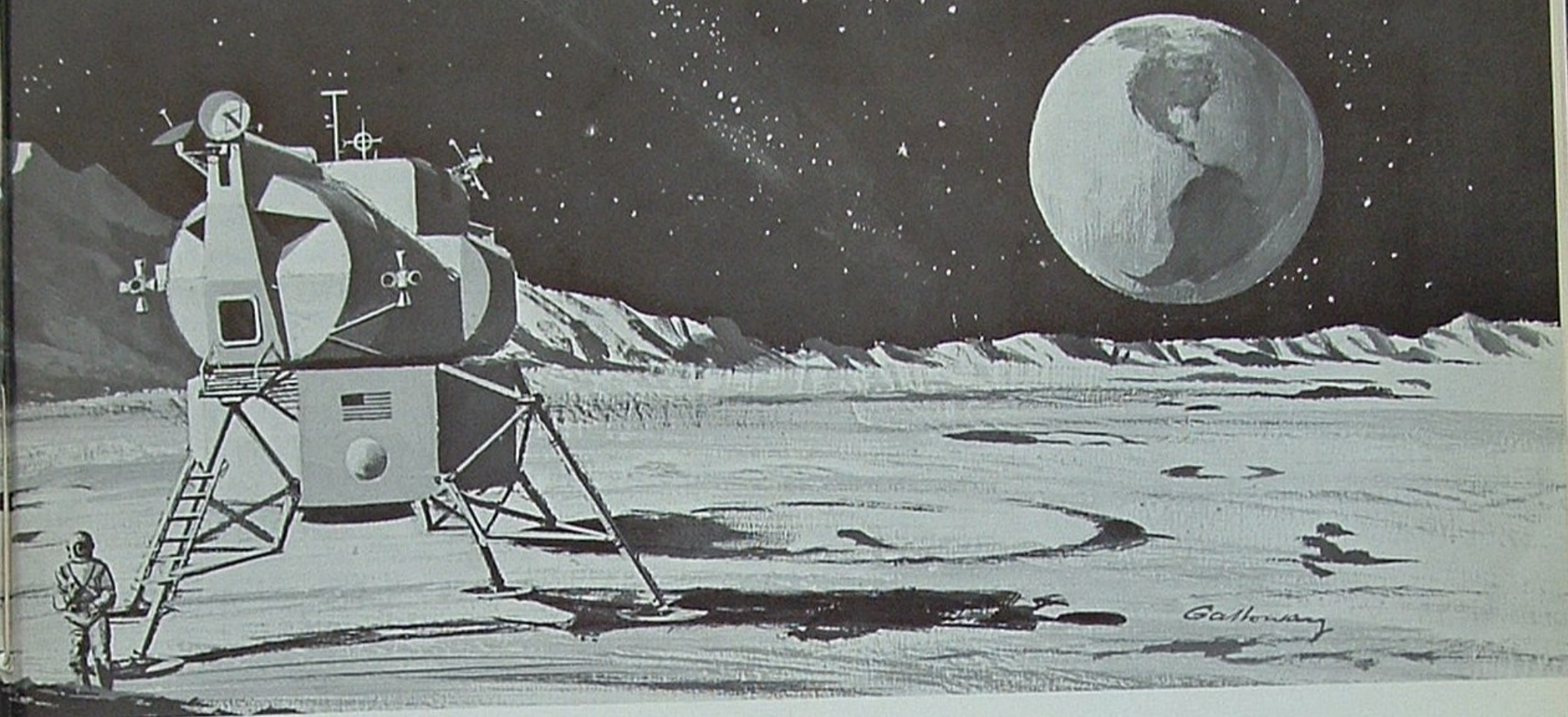
mittee for Aeronautics (NACA), organized prior to World War I, which during its existence was staffed by such distinguished citizens as Orville Wright and Major General Henry H. "Hap" Arnold.

From the beginning, NASA tackled what one official has described as "the greatest single job in history since the building of the pyramids." To handle the job, a whole new industry was born, sometimes called the Moon Industry. Currently, there are at least 20,000 companies in 47 states working to put a man on the moon. In addition, there are some 315,000 employees for the program backed by \$20 billion.

Initially, NASA officials announced they would have an astronaut on the moon before December 31, 1969, three years from this month. Recent reports hint this most ambitious adventure in the history of mankind may be realized a full year before that date. This is a spectacular tribute to American technological and industrial capability, and the dedication of its scientific community.

NASA's largest industrial complex

The Moon



is the Marshall Space Flight Center (MSFC) here at Huntsville, Alabama, situated in the rolling farm country of northern Alabama near the Tennessee border. Occupying 1,800 acres—nearly three square miles—the center appears as a space-age jumble of 270 buildings and structures. Here more than 7,000 regular civil service employees plus several thousand contract workers are applying their skills to providing the muscle for the Saturn-Apollo program—the giant rocket propulsion system that will launch the eight-component spacecraft into initial orbit. (Meanwhile the Apollo's "brain"—the command and service module—is the province of the NASA Manned Spacecraft Center at Houston, Texas.)

Among the independent contractors here serving this colossus of the space industry is the Horton Oil Company, a Pure Oil jobber, which supplies Management Services Inc. The latter company is a government contractor responsible for the operation and maintenance of every NASA vehicle on the sprawling base.

"Anytime you see one of those white

trucks or cars," says Jim Horton, "you know its using Pure products."

The Space Flight Center here at Huntsville contributes about \$80 million annually to the local economy and is changing this cotton and sweet potato farming area into one of the latest space age communities. Nearly every major aerospace company in the United States has an office in Huntsville, and as a result of the frantic activity the population of this community has shot up from 17,000 in 1946 to 170,000 today. Now, Huntsville is building from scratch one of the world's largest airports. The runways will be three miles long, large enough to accommodate the latest supersonic transport (SST) jets, and Horton Oil also has a part in that project.

"Horton Oil and Pure products will have a major hand in building that airplane pasture, too," Horton said with a happy grin.

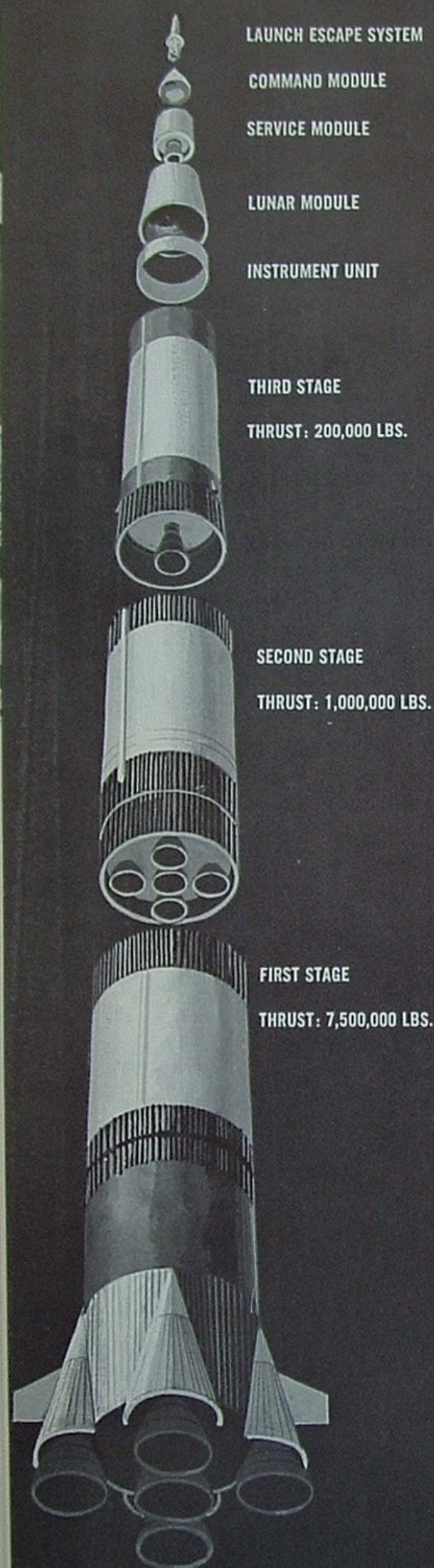
Horton switched from a competitive oil company to become our jobber just eight months before the July 16, 1965, merger of Pure Oil into Union Oil. "As it turned out it was the smartest move I'd made in a long time," he

said, "but at the time there was a little worry along with it."

Like many independent businessmen Horton wasn't sure how things would go after the merger. Today, he has nothing but praise for Union Oil and its Pure Division. Since the merger much of his bulk plant has been refurbished or rebuilt entirely. Now his plant is keeping pace with the fast-moving space complex. In 1950, Horton met Dr. Wernher von Braun, who is the director of MSFC. In fact, the oil man taught the scientist's children in Sunday School classes.

"That was when the town was pretty small," Horton says. "Dr. von Braun has been an awful busy man since then." Under von Braun's direction the center provided the rocket muscle that launched the first U.S. astronauts into space, Alan Shepard, Virgil "Gus" Grissom and John Glenn. The center's accomplishments also include 10 successful launchings of the free world's biggest rocket, the Saturn I. In addition, Explorer I, our earth orbiting satellite, and Pioneer IV, which orbited the sun, were also MSFC triumphs.

continued



APOLLO SATURN V

Currently the center is responsible for the launch vehicles that will carry our moon exploration team. These are the Apollo vehicles, Saturn IB and the big one, Saturn V. The IB will be used in preliminary missions to test components of the final vehicle that will be powered by the Saturn V. This spacecraft will be a composite of eight components. (See illustration.)

Saturn IB will begin manned test flights next month. This series of orbits around the earth will be aimed at checking out three-man Apollo space vehicles similar to those slated for the moon trip.

Because the IB is not powerful enough, the entire spacecraft will not be launched. Instead, the various command and service "modules" will be orbited individually. The command module is the cone-shaped living quarters for the three astronauts who will make this perilous journey; attached to it is the cylindrical service module housing the electrical power system, control engines and propulsion rocket.

Next in the sequence of modules is the bug-like lunar vehicle, also encased in a cylinder for launching. This four-legged conglomeration will carry two of the explorers to the surface of the moon and back to the command module. Once all the small "hardware" is in earth orbit, astronauts will be launched on practice docking missions, linking the respective modules together in space and testing man's ability to change horses in mid-orbit by crawling in and out of the modules.

While these "dry runs" are being conducted, the huge Saturn V will be tested. When completed, this spacecraft will stand an impressive 364 feet tall. Its first stage will develop a mighty 7.5 million pounds of thrust to hurl the craft free of earth's gravity pull.

Observers feel one of the first tests of the Apollo spacecraft will be to send it 10,000 miles into space, then turn it around and fire its rockets, ramming the six-million-pound vehicle back into the earth's atmosphere at

speeds comparable to the re-entry velocity of the return trip from the moon. This will be the first real test of the Apollo re-entry system, and will undoubtedly be unmanned.

Once space engineers are satisfied with the unmanned tests of Saturn-Apollo, they will pronounce the project "man rated." This will be the go-ahead for the first manned flight of the craft in earth orbit. If all goes well, this flight could take place late next year.

"All I can see for 1967," says Joseph Shea, manager for the Apollo program at NASA's Manned Spacecraft Center in Houston, Texas, "is a whole smear of missions." Reports indicate that if the first manned flights of the entire Saturn-Apollo go right, the NASA officials will "play it by ear" on deciding when to shoot for the moon.

Most observers feel at least four to eight earth-orbit dress rehearsals will be necessary before the spacemen will be given the go-ahead. This would make the earliest possible scheduled voyage to the moon somewhere in late 1968, a year ahead of the original target date and only about 24 months from now.

Much of the gained time in recent space experiments is due to an accelerated testing system for launch and command vehicles. Prior to this, each engine and separate component was carefully checked out before final assembly. Using what NASA planners call the "all up" technique, spacemen now test as many components as can be practically assembled, launched and tested at the same time. Thus, the first launching of the Saturn V next year will include all three stages of the launch rocket as well as an unmanned Apollo space vehicle.

Because of this new approach, the upcoming Apollo flights are termed "open ended." This means the three astronauts do not know exactly how long they will stay up on each flight. Manager Shea says, "We'll let them run until we either have problems or run out of consumables (water, fuel and air)." This leaves the length of the flight to fate. An unexpected prob-

lem could bring the spacemen down in the second orbit. On the other hand, a good flight could last ten days.

Even the real flight to the moon will be open ended. The first crucial decision in this flight will be made within four-and-a-half hours after launch from Complex 39, at Merritt Island, Florida, part of the Kennedy Space Center. After the first and second stage boosters have been dropped, the third stage will propel the craft into an earth orbit. Astronauts will then have a maximum of four-and-a-half hours to check out their spaceship.

If the decision is "go," the third

trio when they are making the long turn around the far side of the moon, out of sight of the earth. They must decide whether to go into a lunar orbit, about 80 miles above the moon, or return to earth.

If conditions are right, small braking rockets will be fired to achieve the orbit. The Apollo mission will make at least three orbits of the moon before deciding whether to attempt a landing. If all goes well, two of the three astronauts will crawl into the four-legged lunar vehicle, leaving the third crewman to fly the command module in a "parking orbit."

blast off from the moon.

After rendezvous with the Apollo spaceship, astronauts will resume their places in the contour couches of the command module, jettison the useless lunar vehicle and begin the three-day return journey to earth that will end with the heat-scorching command module swinging beneath three brightly colored parachutes splashing to safety. The modules are built also to land on dry land, but this is not considered likely.

Once the moon is reached, no one knows what future exploration of the solar system will unfold during this



Dr. von Braun (center) at Saturn I launching, Cape Kennedy, Fla.



Pure Oil salesman Howard Aldridge (left) and Jim Horton, jobber.

stage will be fired, aimed at the moon. During the first part of their trip to the moon, the voyagers will accomplish one of their trickiest maneuvers. They will separate the command and service modules from the third stage booster and the lunar module cylinder. Blasting ahead of the other components, the astronauts will turn the two lead modules around and return to contact with the lunar module. This will put the nose of the command cone against the lunar service vehicle, so that the crew may crawl into the excursion vehicle directly from their quarters.

For three days the Apollo spacecraft will drift toward the moon. During this time, course corrections will be made manually by the astronauts. Another crucial decision will face the

The trip down to the moon's surface should take a little more than an hour. After half-an-hour on the surface, during which the explorers secure their landing craft, one of them will become the first American to set foot on the moon. He will step out, walk around and take a few pictures. This entire operation will be televised live to the earth, but whether or not for home reception has not been decided.

After 30 minutes, the astronauts will change places, the second explorer taking his turn at moon walking. He will make an hour-long excursion, conducting experiments and collecting rock and soil samples. After this, the moon men will eat and then sleep for six hours. A final three-hour excursion will complete their stay. After a little more than 18 hours, the explorer will

most exciting era in the history of mankind. Hopefully, the United States will be first in this crucial dash to the stars. Certainly the entire nation is deeply involved in this dramatic project from the individual taxpayer to the great industries that have again proven the might of know-how and determination that characterizes our type of free enterprise system.

Just how soon a team of American astronauts blast off for the moon is a matter of conjecture, although the prospects for beating the original deadline are good. In any event, when the kerosene and oxygen-powered rockets leave their gleaming white trail across the sky, the fate of the free world and future generations of free men will be riding on the fiery shoulders of Saturn-Apollo. ⁽⁷⁶⁾

RATH IS UNOCO PRESIDENT

Robert H. Rath, division sales manager for Hawaii, has been elected president of Unoco Limited, Union Oil's Hong Kong-based overseas marketing subsidiary.

Rath succeeds F. K. "Kem" Cadwell, who will retire on February 1 for reasons of health. Until then Cad-



Rath



Cadwell



Browne

well will serve as consultant to Rath to help achieve an orderly transition in management.

Succeeding Rath in Honolulu was S. A. Browne, who formerly was manager of commercial merchandising at Union Oil Center.

SOWELL NAMED AD MANAGER

Robert F. Sowell has been named manager of advertising and sales promotion for the 76 R&M Division of Union Oil.

Sowell, formerly vice president of Smock, Debnam and Waddell advertising agency, succeeds Jerry Lubov-



Sowell



Luboviski

ski, who was named director of corporate communications in September following the resignation of Granger F. Kenly.

Sowell has been associated with Union Oil's advertising program since 1959, both at Smock, Debnam and Waddell and before that at Young & Rubicam.

BUSINESS HIGHLIGHTS

AMSCO MOVES TO PALATINE

The American Mineral Spirits Company, a division of Union Oil, will transfer its general headquarters next year from Murray Hill, New Jersey, to Palatine, Illinois.

AMSCO President Edward M. Toby said the transfer of the headquarters staff would be completed by February 1. He said the move would permit closer communications with the Pure Oil Division, which furnishes computer, accounting, legal, tax and other staff services to AMSCO from Palatine. AMSCO is a national marketer of solvents, chemicals, petrochemicals, waxes and polymer emulsions in the United States, and through AMSCO International to markets in 49 foreign countries.

AMSCO BUYS POLYMER PLANT

American Mineral Spirits Company has purchased a recently completed polymer emulsions plant at Charlotte, North Carolina.

The new plant has modern reactors, a pilot plant, a large warehouse, laboratories, and administrative and research offices. It will enable AMSCO to serve the coatings, textile, adhesives and paper industries in a wider area. For 40 years AMSCO has served these industries with chemicals, solvents, petrochemicals and waxes.

Situated on a 54-acre plot near U.S. I-85, the polymer plant was designed and built by Calvin McGowan, who will join AMSCO as plant manager.

PURE SPONSORS BLACK HAWKS

The Pure Oil Division will sponsor television coverage of the Chicago Black Hawk hockey team games this season including 34 road performances.

The TV viewing audience in the Chicago area numbers in the millions, and Black Hawk spectators are as loyal as any you'll find anywhere. Men have been known to leave work early, cancel their wives' dinner plans, and zoom through expressway traffic to get home in time to see the Hawks in one of their always-rough-and-tumble National Hockey League contests.

Getting a ticket to a Black Hawk game is about as easy as getting a puck past Glenn Hall — who because of his stingy guarding at the net is known as "Mr. Goalie." Becoming a TV sponsor of Black Hawk games was just about as difficult, according to an advertising official at Palatine. But it's worth it. Not only does the sponsor have a guaranteed body of loyal fans, he also gains prime evening time normally allotted

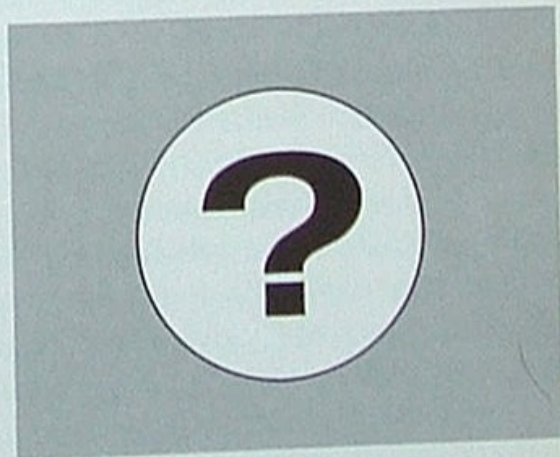
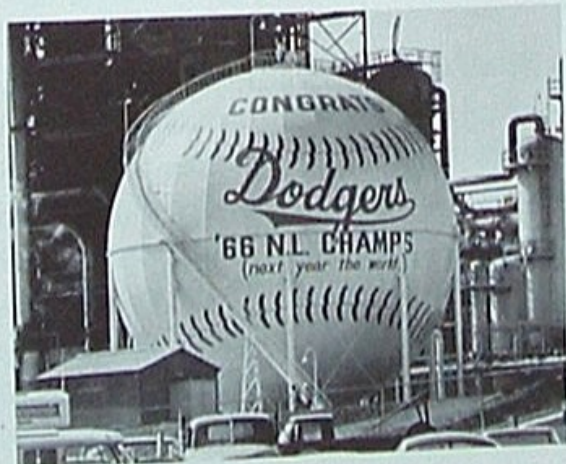
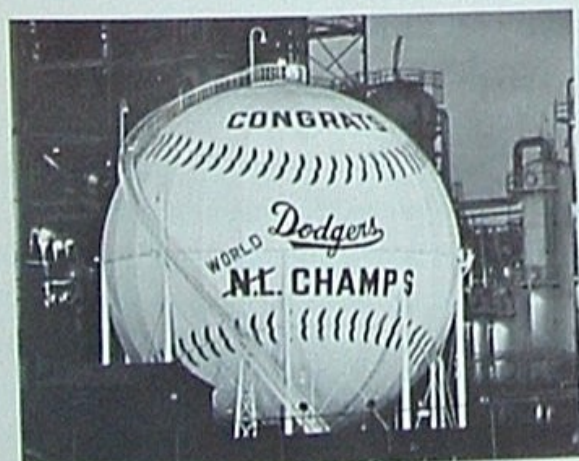
to national network shows.

The Black Hawks have been in the Stanley Cup playoffs for the league championship every season since 1963, and for the past three seasons have

been the top-scoring team in the league. The Black Hawks last won the Stanley Cup in 1961, but by early November this year were off to a whirlwind start to lead the league.



RARE SCENE. Detroit scores past outstretched hand of Glenn Hall of Black Hawks.



NEXT YEAR? Last year, when the L. A. Dodgers won the World Series, sponsor Union Oil Company turned a 66-foot high storage tank at Los Angeles Refinery into the world's largest baseball (left). This year the painters got out brushes for a repeat per-

formance, only to find they didn't need to touch up the sign (center). Since they had paint cans open, however, the artists predicted next year's results. Now that Sandy Koufax has retired from baseball, our own prediction for 1967 stands at right.



Checking the morning mail with secretary Harriet Appel, C. E. Denton starts another busy day in his Rockefeller Center offices.

For 10 years, this westerner has been holding his own in the wilds of New York City

NEW YORK CITY

LOCATED IN THE FINANCIAL and trade center of the world, C. E. "Charlie" Denton is THE Union Oil Company of California to New Yorkers, foreign visitors and East Coast businessmen. Tall, lean and soft spoken, Denton has never lost the western twang that makes his "mighty fine" in Rockefeller Center sound fresh as an Arizona morning.

Denton's official title is executive representative and assistant secretary. While his duties can at times affect just about any phase of company operations, his responsibilities relate to foreign and domestic trade, corporate relations, public relations, press relations and financial relations in Greater New York. About one fifth of the world's financial analysts are located here, and among these shrewd observers, Charlie Denton is a highly respected source of information.

"I just tell them the facts," he says, "reflecting toward our management team and corporate image."

Denton has a westerner's way of using humorous stories to get a point across. One of his favorites, when faced with a particularly hard-nosed visitor, concerns a man brought before a judge for hitting his neighbor with a club. When

asked the reason, the man said, "Your Honor, he called me a red-headed skunk."

"Well, that's not so bad," the judge opined.

"Not bad?" the man yelped. "How would you like to be called a red-headed skunk?"

Smiling, the judge said, "It wouldn't bother me a bit. You see, I'm not red-headed."

"Well!" jeered the man, "Suppose he called you the kind of skunk you really are?"

A good sense of humor helps to keep up the hundreds of contacts necessary to his job. Hosting visiting dignitaries, representing the company at special meetings and attending to the reams of correspondence that pass through the New York headquarters make for a very full day for Denton and his secretary, Harriet Appel.

Denton says western work habits help out here. "Normally," he says, "New Yorkers get to work around 9 or 9:30 in the morning. Some of them take an extended lunch hour and then make the 5 o'clock train home. I just keep my old hours and manage to stay on top of things." He usually reaches his office in the French Building at 610 Fifth Avenue around 7 or 7:30 a.m., and leaves when the work's done after 5.

"I like a little time alone in the mornings," he smiles. "Gives me a chance to get everything headed in the right direction. Besides, mornings are the best part of the day here in Rockefeller Center."

Nancy

From ice skating list. He any part He also and care town are just

There arrives with Ha Merrill. Carbon tary, Na is a spar at home

Dent analysts munity investm taries (sador f interest pany a are spe work l

The

5TH AVENUE



Nancy Janos completes Denton's secretarial team.



Vice President Nick Ugrin (L), Denton and investment expert H. E. Bower.

From his office on the sixth floor, he can see the famed ice skating rink of Rockefeller Plaza, a must on any tourist list. He is also centrally located and can reach just about any part of downtown New York within a reasonable time. He also keeps a handy supply of New York City street maps, and carefully explains their use to visitors from such small-town areas as Los Angeles and Chicago. "These little maps are just about a necessity in this town," he says.

There is no such thing as a typical day for Denton. He arrives early, lines up his calls and checks the appointments with Harriet. "When it's possible I have coffee with Chuck Merrill." Merrill is the regional sales manager for Collier Carbon and Chemical Corporation. He and another secretary, Nancy Janos, also have offices in the same suite. There is a spare office where visiting firemen can make themselves at home.

Denton's day can include several meetings with security analysts, the issuing of press releases for the financial community, conferences with representatives of mutual fund investment companies, perhaps lunch with foreign dignitaries (he recently hosted the finance minister and ambassador from Dahomey, where Union Oil has exploration interests). The day could also include representing the company at a world trade meeting. The late afternoon hours are spent with correspondence and lining up tomorrow's work load.

The New York office always had two or more men until

Denton took over. As liaison for the company and all subsidiaries, he has established literally hundreds of contacts in the world trade and financial community. There are so many, in fact, that he keeps a large book of names, addresses and telephone numbers.

Much of his day is spent answering the questions of security analysts, representatives of the large investment houses such as mutual funds, insurance companies, pension funds, the trust departments of banks and the research departments of brokerage firms. The recommendations of these security analysts, such as Harry E. Bower, pictured above, assistant vice president of Investors Management Company, often determines whether a large investor buys, holds or sells large blocks of the company's stock. To them, Denton is a personal source of information — much closer to Wall Street than is Union Oil Center, 3,000 miles away. When these analysts are doing their homework, they can call on Denton for specific information—and they frequently do. Usually he knows the answer, but if he doesn't he knows where to get it quickly. Denton feels that to the financial community in New York the company's reputation is better than ever.

"I never tire of pointing out that a company is what its management is," he says. "We've got an aggressive, profit-oriented company, headed by a young, aggressive, profit-oriented management. That's the image I work to perpetuate." (70)



Jeanette, Naomi and Roland Naquin pose in front of their new brick home in Houma, La.



This demolished trailer house was the remains of Naquin home after Hurricane Betsy.

HAPPY BIRTHDAY UNION OILERS from Jeanette Naquin

HOUMA, LOUISIANA
SHORTLY AFTER LUNCH on Monday, October 17, receptionist Pat Turner in our Houma District Office was surprised to see a florist's delivery truck stop at the office door. Out stepped a young man carrying a spray of red and white carnations.

"Is this the Union Oil Company?" he asked.

"Yes, it is," Miss Turner said. "What are the flowers for?"

"There's a card attached that should explain it," he replied. The card said, "Happy birthday and congratulations on your 76th birthday. From Mrs. Roland Naquin, wife of an employee."

Miss Turner brought the card to Tyler Brinker, district operations superintendent, who telephoned Jeanette Naquin to thank her for the thoughtful gesture. Here is what Ty Brinker learned:

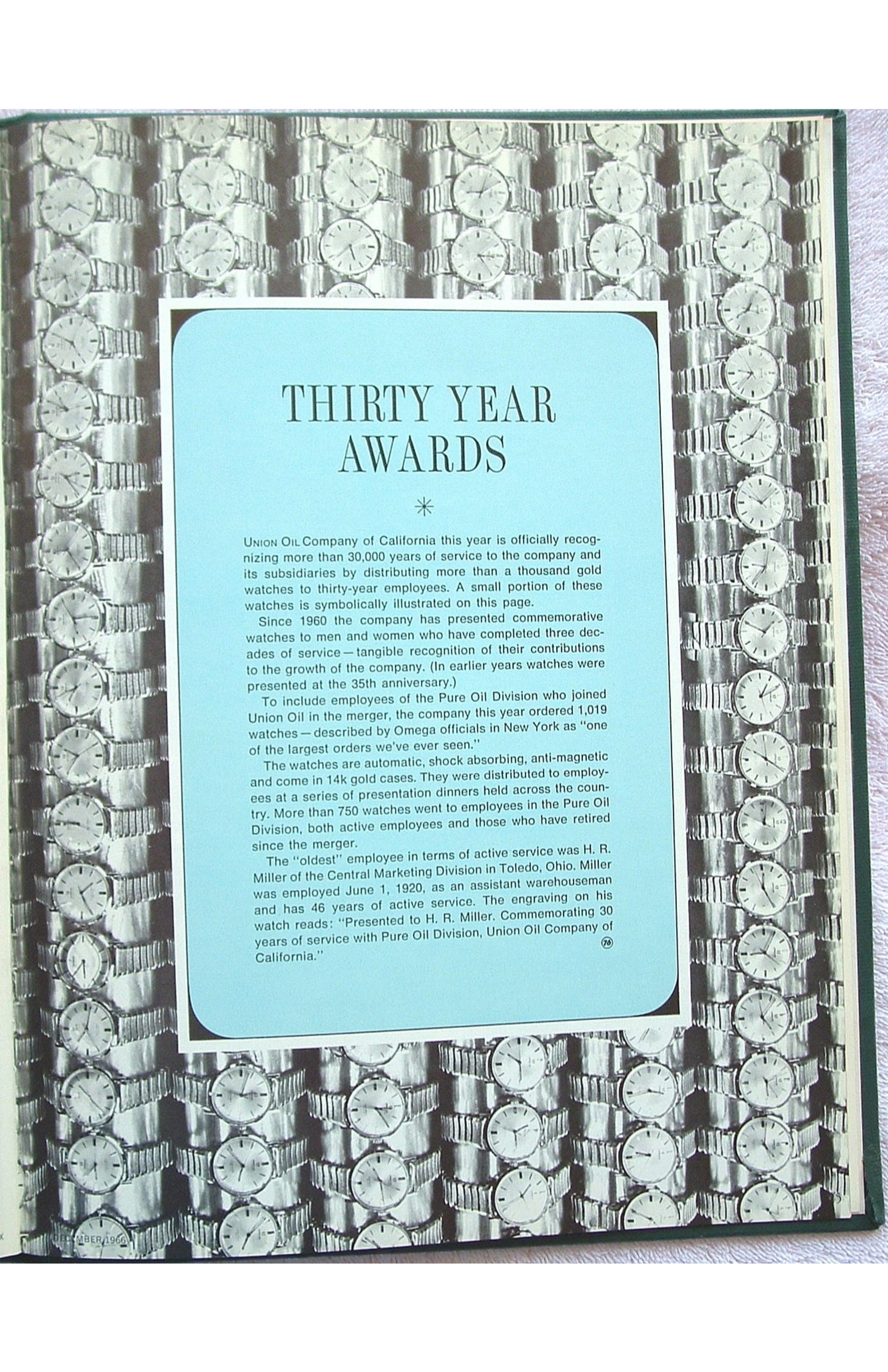
Last year, when Hurricane Betsy slashed through Southern Louisiana, Roland A. Naquin, utility man at our Ship Shoal Block 208 platform in the Gulf of Mexico, was living with his wife, Jeanette, and their daughter, Naomi, in a trailer house situated on a lot he owns in the countryside near Houma. The hurricane demolished the trailer.

Naquin, who works a seven-day-on and seven-day-off schedule, spent his spare time building a new house. He hired carpenters, plumbers and electricians to handle part of the work, but did much of the work himself. Today the Naquins live in a handsome brick home on the same lot near Houma.

On the weekend of October 15-16, Roland was working at the Ship Shoal Block 208 platform 80 miles out in the Gulf. To amuse Naomi, who is still in kindergarten, Jeanette began reading passages from "The 76 Bonanza," the recently published Union Oil history which had arrived in the mail a few weeks earlier.

"I came to the part where Union Oil Company was founded on October 17, 1890," she said, "and noticed the birthday anniversary was coming up. I felt we wouldn't have been able to build our new house if my husband wasn't working for Union Oil so I decided to send some flowers."

To which we add editorially: That's just about the nicest birthday present any company could ask for. Ⓜ



THIRTY YEAR AWARDS



UNION OIL Company of California this year is officially recognizing more than 30,000 years of service to the company and its subsidiaries by distributing more than a thousand gold watches to thirty-year employees. A small portion of these watches is symbolically illustrated on this page.

Since 1960 the company has presented commemorative watches to men and women who have completed three decades of service — tangible recognition of their contributions to the growth of the company. (In earlier years watches were presented at the 35th anniversary.)

To include employees of the Pure Oil Division who joined Union Oil in the merger, the company this year ordered 1,019 watches — described by Omega officials in New York as "one of the largest orders we've ever seen."

The watches are automatic, shock absorbing, anti-magnetic and come in 14k gold cases. They were distributed to employees at a series of presentation dinners held across the country. More than 750 watches went to employees in the Pure Oil Division, both active employees and those who have retired since the merger.

The "oldest" employee in terms of active service was H. R. Miller of the Central Marketing Division in Toledo, Ohio. Miller was employed June 1, 1920, as an assistant warehouseman and has 46 years of active service. The engraving on his watch reads: "Presented to H. R. Miller. Commemorating 30 years of service with Pure Oil Division, Union Oil Company of California." [®]

This track saved a town and became the Mecca of stock car racing

DARLINGTON, SOUTH CAROLINA
ACCORDING TO federal officials in Washington, the community of Darlington, South Carolina, was a depressed area in 1950 following the closing of its one industry, a cotton mill. Then an enterprising group of stock car racing promoters headed by Robert E. Colvin decided to build a race track here. Surrounded by dried out cotton fields, tobacco patches and acres of sweet potatoes, the mile-and-three-eighths asphalt oval proved to be the economic salvation of a town doomed to destitution.

The first race at the new Darlington International Raceway was scheduled for Labor Day, 1950, and was to be a 500-mile-long race for stock cars. The name chosen was the "Southern 500." A concrete grandstand capable of seating 9,000 spectators was completed in time for the race.

There was apprehension on all sides. The citizens of Darlington were certain that no race track could replace the cotton mill as an industry. Drivers and car owners, too, were worried. Never before had stock automobiles been asked to race for 500 miles. There were doubts the race would finish, but the National Association for Stock Car Auto Racing (NASCAR) agreed to sanction the run and a purse was set at \$25,000. The track owners made arrangements for a crowd of 10,000.

The only blunder was lack of arrangements. People came by the thousands, creating a massive traffic jam. Some 30,000 enthusiastic spectators crammed every inch of the infield and grandstand to see a Plymouth win at an average speed of 76.26 m.p.h. Not only was the event a smashing success, stock car racing had developed its World Series. The Southern 500 quickly became the stock car's answer to the Indianapolis 500.

Promoter Colvin and his fellow entrepreneurs had risked \$50,000 to build the Darlington track. Within two years they were out of debt, only to go right back on the hook again to enlarge the track. As fast as they could expand, they were swamped with more devotees of the growing sport. By 1955 the crush of humanity was so great that fences went down and a foot bridge to the infield collapsed. Seating was enlarged to 32,000 for the 1956 Southern 500 only to see the crowd swell to 75,000. Since then seating has been increased to 40,000 in the grandstand with accommodations for another 40,000 in the infield. The rush to the race each year is so great that a special airline schedule is laid on for American servicemen overseas.

Financially, Darlington Speedway has paid itself out of debt three times. The tax value is in excess of a million dollars and stock dividends have averaged 10 per cent annually since the course was built in 1950.

As the track grows richer, so does the pageantry associated with the race. The Miss Southern 500 beauty contest has grown to be the second largest beauty pageant in the United States. A Southern Festival established by the Dar-

lington Chamber of Commerce draws up to 125,000 persons. Festivities start the Wednesday before Labor Day and are filled with parties, dances, auto shows and ante-bellum costume balls.

The purse at the Southern 500 has risen until now it tops \$100,000. The two-hour, pre-race activities rival any Broadway production. Blimps, jets — even military aircraft — put on an aerial show, and celebrities from New York to Hollywood eagerly vie for the mass public exposure that can come only from the largest sporting event of *any* kind in the Southeast.

With this record of success, it was only natural that other speedways would be built. The first, in 1959, was a huge, two-and-a-half mile super-speedway at Daytona Beach, Florida, which soon developed speeds in excess of those registered at Indianapolis. Other major tracks sprang up at Charlotte, North Carolina, and Atlanta, Georgia.

In 1951, a year after Darlington opened its gates, The Pure Oil Company became the official petroleum supplier for the South Carolina track. When the other race courses opened, Pure Oil was there and soon the big blue and white

DARLINGTON:

The World Series of Racing

Pure signs were in evidence around the infields. Quickly the name Pure was solidly linked with what was to become the second largest spectator sport in America. Today more stock car races are run on Pure Oil products than any other.

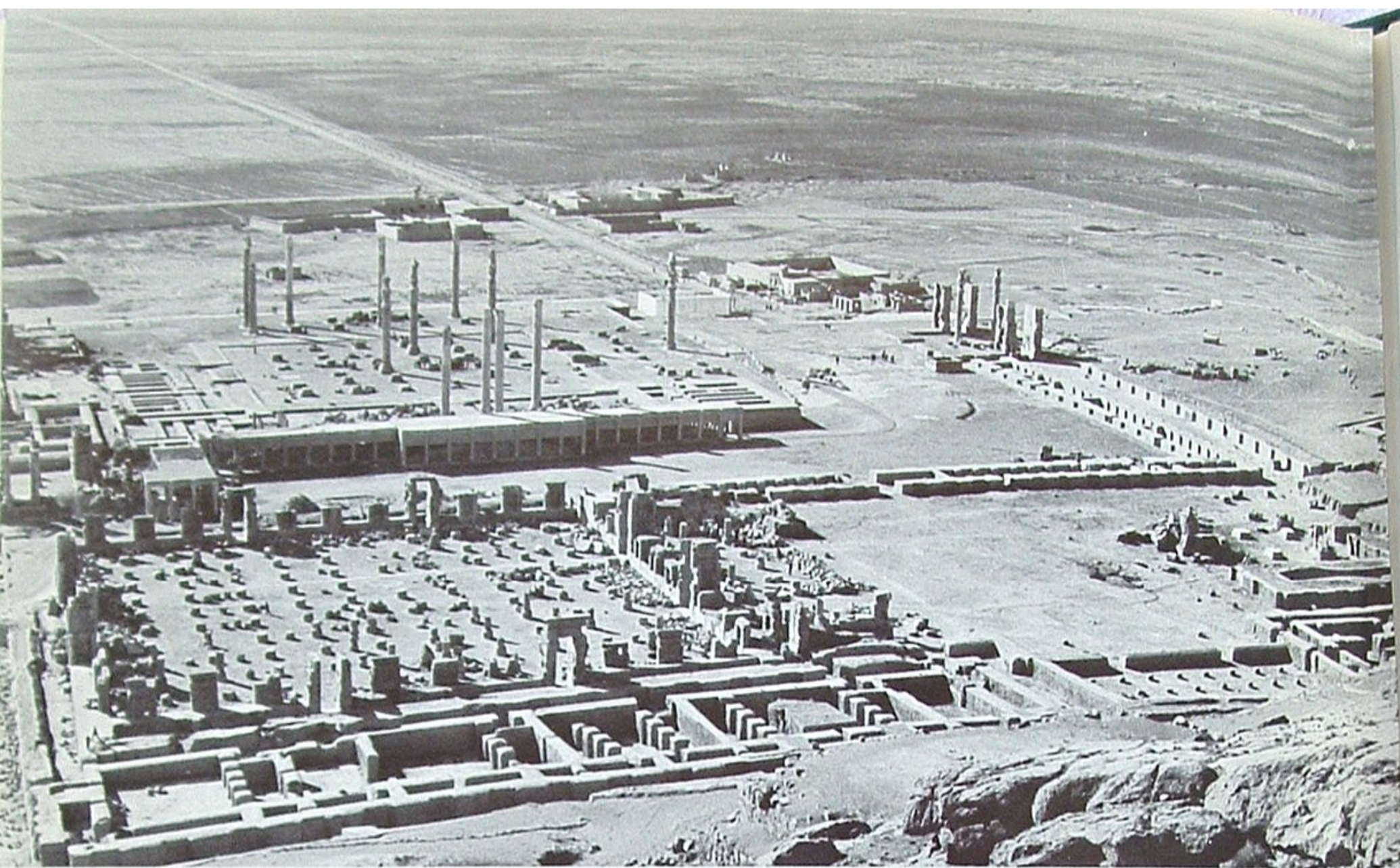
One of the most exclusive clubs in the world is the Pure-Darlington Record Club, an organization composed of champion race drivers and limited to one new member a year. The club's annual dinners have become a national sports writers' highlight and are attended by prominent drivers and writers from all over the country.

No one is sure how it happened but just down the road from Darlington Raceway is a huge vacant lot where the largest automobile auctions in the world are held at irregular intervals. Car buyers from every state in the nation travel to this converted cotton patch to bargain for thousands of slightly used cars.

All of this adds up to a solid foundation for Darlington's economy. Bankers near this sleepy town can figure on new deposits in excess of \$6 million following the race week classics each Spring and Autumn. Nearby Columbia and Myrtle Beach businessmen count on a corresponding financial boost from the nearly 100,000 devotees of stock car racing who flood the motels and hotels each season.

"It means a lot of money to the folks around here," says Darlington President Colvin. "It also means a lot of fun for about 100,000 people." 79





Above and below, the past and the present, a striking contrast, yet a definite similarity. Pictured above are the ruins of Persepolis,

once the center of the world's greatest empire. Below are the stacks of the Abadan refinery, during World War II the world's largest.



The New Look of Iran

IF YOU ASK for a camel in Tehran, chances are they'll hand you a cigaret. True, the dromedary is still the king of the dunes in the eastern deserts of Iran, but as highways are built the Jeep and Land Rover are challenging that traditional role.

Another thing: The women don't wear veils in Iran. M'Lady might choose to wear a shawl, but her purpose is to find shade from the sun in a country where the climate is similar to Arizona or New Mexico. Night clubs have found a place in Iranian social life and one of Tehran's favorite gathering places for five o'clock potables is the Persian Room of the Tehran Hilton.

Authority for these statements is Bahman Bozorgmehr, a spokesman for the National Iranian Oil Company who recently spent two weeks in Los

the edge to Perry Mason, followed by *The Fugitive* and—of all things—*Shindig*. The latter is aired in English. Hitchcock, too, claims favor with Tehran audiences, says Bozorgmehr.

In addition to offering the latest in TV fare, Tehran boasts 10 newspapers (two in English and one in French), several weekly papers and magazines and 10 monthly magazines similar in content to the *Saturday Evening Post*.

Iran also has a dozen film studios. "Our studios prefer stories from Persian literature," Bozorgmehr says, "but Italian and American films are favorites with the audiences in Tehran. Italian movies are easy to dub. They use their hands to express themselves, much like we do. Their problems of family life are easy for Iranians to comprehend."

To the thinking of many people in the world, Iran is one of the cradles of civilization that was overlooked by the industrial age. Bozorgmehr declares Iran is catching up and he gives credit

small-scale irrigation projects, road construction and farm cooperatives.

Besides strictly economic programs, Bozorgmehr says the government is stressing health and education and social reforms. In 1963 Iran saw its first election where women went to the ballot box side-by-side with men. One result: Two of Iran's 60 senators and six of the 200 members of the lower house are women. Women in Iran also can own property and initiate divorce proceedings.

The age-old pattern of absentee land ownership is being changed, too. "Until 1959, when the land reform program went into effect," he said, "80 per cent of our farm acreage was held by large absentee landowners or was in the public domain." The first step in the program, he indicated, was to break up state-owned land holdings by selling plots to farmers on easy credit terms. The second step extended the program to large private holdings. Landlords are being compensated in

sowing the petroleum

Angeles studying American public relations techniques. While working with Union Oil Company's Corporate Communications Department, SEVENTY-SIX magazine interviewed the Iranian visitor on his homeland.

Bozorgmehr (Bo-zorg-mehr), whose hobby is sports cars, said water skiing is rapidly becoming the "in" sport for the growing middle class of Tehran, and nearly all the Ramblers, Jeeps, Fiats, Mercedes-Benz and Volkswagen cars that help create Tehran's traffic tie-ups bear the "made-in-Iran" stamp.

And listen to this: The most popular TV show in Tehran is *Bonanza*. The Cartwrights speak Farsi (Persian) on the local commercial TV station, but the flick of a channel will put them on in English. Near Tehran is a U.S. Armed Forces Radio and TV Service (AFRTS) station offering the popular western show in its customary "well-I'll-be-doggone" fashion. After *Bonanza*, the local Nielsen ratings give

for this to oil revenues. The phrase "sowing the petroleum" is in frequent use in the Middle East and it refers to plowing back oil profits into the country's economy.

"For example," Bozorgmehr said, "in 1965 the National Iranian Oil Company received \$513 million in oil revenues. Of this, \$385 million was turned over to the government's Five-Year Plan Organization and the remaining \$128 million was put into the Iranian Treasury."

This money is buying a new social and economic order, bridging a gap over the centuries. According to Bozorgmehr, the funds NIOC turned over to the government are helping complete the third Five-Year Development Plan (1962-1967) under which more than \$2.6 billion is scheduled for public investment. In addition to building large, multi-purpose dams, half of the money is being channeled into rural areas with emphasis on programs that bring quicker results:

cash, in government bonds and shares in state-owned enterprises, while the farmer-owners receive 25 year mortgages to pay for their lands.

"By early last year," Bozorgmehr said, "about one fifth of our crop lands had been turned over to new owners, doubling the land cultivated by small farmers." Progress in the past has been slow, he admitted, owing not only to bureaucratic red tape but also to landlord resistance—both of which seem to be universal human traits.

Another stumbling block to progress is lack of know-how in a world of ever-increasing technology. About 70 per cent of Iran's rural population is still illiterate and ill-prepared to cope with such modern agricultural techniques as crop planning, fertilizers, irrigation, farm credit and marketing.

To alleviate the long-range problems of ignorance, a Persian Literacy Corps has been organized to recruit high school graduates in a manner similar to the U.S. Peace Corps. Liter-

SOWING continued

acy Corpsemen go into the countryside for 14 months to teach reading, writing and hygiene to rural youngsters.

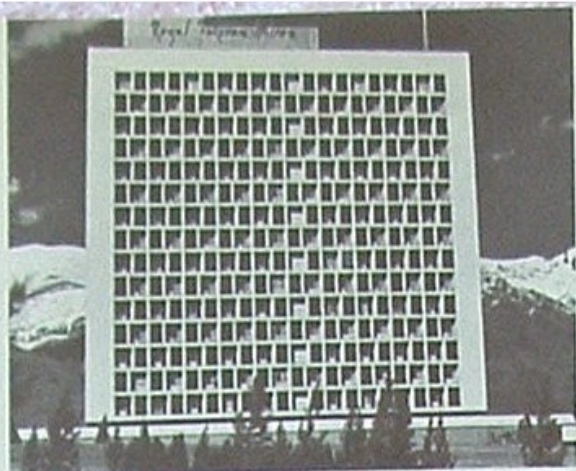
The Literacy Corps, Bozorgmehr said, is part of Iran's *White Revolution*, a government-sponsored multi-purpose social program touching on land reform, forest protection, women's suffrage and a profit-sharing program for industrial employees.

The NIOC also is contributing directly to Iran's progress. In addition to employing 43,000 persons, it operates a Technical Institute to train oil workers, and the government-owned company has recently formed a petrochemical subsidiary to utilize Iran's vast reserves of natural gas — which until now have been flared for lack of market. Soon ammonia, urea, plastics and synthetic rubber will be among NIOC's products.

These investments in education, agriculture and industry are transforming Iran to a modern nation, but Bozorgmehr admits that the catching up process has often been an uneven one. "Progress of any kind — especially in education — gives rise to popular expectations which, in turn, create impatience with the status quo," he admits. At the same time, he points to government reforms which are working to resolve the problems.

"There are many jobs available and many things to do," he says. "Our problem is to find people qualified to do them." In Iran, he said, labor laws call for an eight-hour day, overtime pay, and employees of large companies have group life insurance, sick pay, retirement at 65, disability pay and medical plans. "Another point," he says. "Every employee receives a pint of milk during his shift at work."

Sowing the petroleum, it seems, is like any kind of farming. You plant the seed of oil revenues. Next you must fertilize with education, and cultivate with social and economic reform. Finally, there comes the harvest, when the farmer can reap the rewards of his labor. In Iran they are rigging up the harvester now. 76



The Royal Tehran Hilton in winter time.



Villas on the slopes of Alburz Mountains.



Construction workers on Lavan Island.



Downtown Tehran, looking due north.



Oil workers at Kharg Island wharf. 76

OIL & IRAN

BEFORE World War I, when Winston S. Churchill, as First Lord of the Admiralty, decided to convert British naval vessels from coal to oil, it touched off a petroleum boom in the Middle East. The first middle eastern country to come up with oil production was Iran, and the results were so phenomenal that by World War II the world's largest refinery was at Abadan.

In a relatively few years, revenues from oil brought to a desert people standards of living that normally represent centuries of progress. By "sowing the petroleum" or plowing back petroleum revenues into public works — Iran hopes to equalize the imbalance of an oil economy. A series of five-year plans has created railroads, highways, factories, irrigation, reservoirs, communications facilities, education and public health facilities.

Not all has been rosy. Owing to inexperience and mismanagement, Iran's first economic plan bogged down, but by 1957, Dr. Manoutchehr Eghbal had become prime minister and affairs began to be straightened out. He encouraged free speech, free press, a two-party political system and worked to improve the economic situation. Today Eghbal is chairman of the National Iranian Oil Company.

Union Oil Company has interests in Iran today through its participation in the Lavan Petroleum Company which has discovered a large reserve at the Sassan field in the Gulf.

Iran today faces many of the problems of an industrializing nation. Tehran, the capital, has doubled in population in the last decade and its 2.3 million residents are beginning to complain about smog — caused by the heavy automobile traffic. In the same decade the University of Tehran, one of about 20 colleges in Iran, has almost tripled its student body to nearly 15,000 students. Meanwhile, three-fourths of Iran's school teachers live in the large cities, while the government is trying to lure them to rural villages to reduce illiteracy.

Looking ahead, Iran's leaders project a bright future. The country has only 23 million citizens living in an area nearly as large as the United States east of the Mississippi. There are wind-swept deserts in the East, but much of the West boasts snow-capped mountain ranges. With proven oil reserves of 40 billion barrels, Iran's petroleum industry is one of the world's largest, and is providing revenues that are catapulting Iran into the 20th century. 76



SERVICE EMBLEM AWARDS



CORPORATE STAFF

DECEMBER 1966

35 YEARS

PAUL R. SCHOEPE Union Oil Center

30 YEARS

THOMAS M. RAGLAND Union Oil Center

15 YEARS

OMER D. JOHNSON Research Center
WAYLAND R. MINKS Research Center
CHARLES C. WHEELER Union Oil Center

10 YEARS

HERBERT W. KLAWITTER Palatine

EXPLORATION & PRODUCTION

DECEMBER 1966

40 YEARS

HARLEY L. JOHNSON Oklahoma City, Okla.

30 YEARS

WILLIAM G. BLAIKIE Santa Fe Springs, Calif.

FRANK A. NICHOLSON Lompoc, Calif.
ALLAN SEIGLER Oklahoma City, Okla.

25 YEARS

S. B. CLEVENGER Santa Maria, Calif.

20 YEARS

DEWIS R. BRAWNER Houston, Tex.
HEDLEY R. EACOCK Cutbank, Mont.
ARDELL L. EAVES Taft, Calif.

15 YEARS

GROSVENOR BROWN Oklahoma City, Okla.
WILLIAM J. EKLUND Santa Fe Springs, Calif.
ETHEL J. KAPPER Olney, Ill.
MARVIN R. MACE Denver, Colo.
FLOYD A. MARTIN Casper, Wyo.
FRANCIS L. PETTY Midland, Tex.
ARTHUR J. ROBNETT Houston, Tex.
LEO H. SPARKS Torrey, Calif.
RAYMOND O. TAYLOR Midland, Tex.

10 YEARS

ROBERT P. DOUGHERTY Union Oil Center
WILLIAM N. FREGO Palatine
KATHRYN A. KELM Union Oil Center
CARL J. LeMAIRE Abbeville, La.

76 REFINING & MARKETING DIVISION

DECEMBER 1966

40 YEARS

THEODORE R. FREE Portland
EARL R. McCLOUD Union Oil Center
E. G. McLAUGHLIN Phoenix

35 YEARS

HERMAN H. ISHEIM Fresno, Calif.
DALE E. WELLS Long Beach, Calif.
JAMES R. YOUNG Union Oil Center

25 YEARS

LAURETTE V. LUCE San Francisco
WALTER G. PERRY Hilo, Hawaii
MASATOKI TANOUYE Hilo, Hawaii

20 YEARS

HERBERT W. MEYER Honolulu
ROBERT L. PETERSEN Santa Fe Springs, Calif.
ROBERT J. ROST Los Angeles

15 YEARS

MANUEL F. ARRUDA Oleum Refinery
MARJORIE J. BAKER San Francisco
FLOYD L. ENTERLINE McKittrick Stn., Calif.
WILLIAM LAW Oleum Refinery
ALICE LOSKUTOFF San Francisco
JAMES G. MacLEAN Santa Paula, Calif.
WILFORD R. MORRIS Oleum Refinery
DONALD L. PIERCE Los Angeles Refinery
ROLLAND J. WERNER Edmonds, Wash.

10 YEARS

D. R. BOTTEMILLER San Jose, Calif.
RICHARD L. HODGKISS Avenal, Calif.

PURE OIL COMPANY DIVISION

DECEMBER 1966

40 YEARS

MARY M. FITZPATRICK Newark, Ohio

35 YEARS

CHARLES A. LeMASTER Heath Refinery
HOWARD D. SANDERSON Smiths Bluff Refinery

30 YEARS

MARVIN C. BRESSLER Heath, Ohio
STANLEY J. BUDZINSKI Romulus, Mich.
GEORGE H. FREEHAUF Lemont Refinery
FRANK HOLLIS Wilmington, N. C.
EDWIN C. McCORRY Toledo Refinery
JOHN A. WILSON Palatine

25 YEARS

JAMES E. BAUM Toledo Refinery
CLEO R. BEAL Olney, Ill.
HARRY L. BEGNAUD Smiths Bluff Refinery
JESSE C. BRYANT Smiths Bluff Refinery
ROBERT L. CAMPBELL Toledo Refinery
RICHARD L. COOK Smiths Bluff Refinery
HOWARD W. FERGUSON Toledo Refinery
ROBERT R. HILGOE Palatine
WILSON C. OVERSTREET Smiths Bluff Refinery
JOHN T. PRESHAW Smiths Bluff Refinery
STEPHEN D. ROWE JR. Smiths Bluff Refinery
HERBERT O. RUECKHARDT Palatine
SILVEN L. STALLARD Olney, Ill.
CHESTER L. STEVENS Smiths Bluff Refinery
FRED WHITE Smiths Bluff Refinery
JAMES A. WISE Smiths Bluff Refinery
ROBERT C. WRIGHT Smiths Bluff Refinery

AWARDS

continued

20 YEARS

ROY F. ALEXANDER Belmont, N.C.
 GORDON F. BARBER Memphis, Tenn.
 JOHN V. BELL Columbus, Ohio
 HAROLD M. BUMSTEAD Smiths Bluff Refinery
 DOUGLAS C. CANNON JR. Palatine
 ROBERT C. ELLIS, Amsco Murray Hill, N.J.
 LEON H. FRAZIER Smiths Bluff Refinery
 ROBERT T. GRISSOM Nederland, Tex.
 OLE P. GUNDERSON Minneapolis, Minn.
 CHARLES F. HINGER Heath Refinery
 T. J. HOOKS Smiths Bluff Refinery
 KENNETH B. HOPPER Palatine
 ARTHUR L. JOHNSTON Smiths Bluff Refinery
 HOWARD W. LEWIS Smiths Bluff Refinery
 TRAVIS W. MATHIS Jacksonville, Fla.
 CHARLES T. WARREN JR. Smiths Bluff Refinery
 WILLIAM R. WISHMEIER Palatine
 LEONARD C. ZITNIK Palatine

15 YEARS

SARAH H. ASBURY Motor Vessel L. W. Sweet
 DONALD L. BARNES Clarksburg, W. Va.
 THOMAS M. EARLY Norfolk, Va.
 JAMES N. GILBERT Atlanta, Ga.
 CURTIS B. HALL Tallmadge, Ohio
 ROBERT H. HARRISON Atlanta
 ANDREW M. JONES JR. Richmond, Va.
 LAWRENCE A. PETERSON Lemont Refinery
 MARVIN J. SEVERSON Miami, Fla.
 WILLIAM STRICKLAND Belton, S. C.
 NORMAN E. WYKOFF Dayton, Ohio

10 YEARS

CLARECE S. ALLRED Smiths Bluff Refinery
 HAROLD D. ANDERSON Superior, Wis.
 GLORIA C. COLLEY Smiths Bluff Refinery
 JAMES H. HATHCOCK Belmont, N. C.
 MILDRED A. ROONEY, Amsco ... Murray Hill, N. J.
 ROBERT W. VASQUEZ, Amsco Tucker, Ga.

PURE JOBBERS & DISTRIBUTORS

DECEMBER 1966

30 YEARS

STADIUM OIL CO. Williamsburg, Va.

25 YEARS

THOMPSON OIL COMPANY. Brainerd, Minn.

20 YEARS

D. E. JAMES Pennsboro, West Va.

10 YEARS

JOHN D. BANKSON Summerville, Ga.

76 CONSIGNEES & DISTRIBUTORS

APRIL 1966

40 YEARS

GEORGE COLLINS Salinas, Calif.

JUNE 1966

40 YEARS

E. J. MANGINI Concord, Calif.

35 YEARS

W. K. CLARK Centerville, Calif.

OCTOBER 1966

20 YEARS

RAYMOND S. BURNS Hoopa, Calif.

DECEMBER 1966

30 YEARS

ROBERT PARSLEY Delano, Calif.

20 YEARS

ROBERT T. MORRASY McKittrick, Calif.

RETIREMENTS

AUGUST 1966

KARL F. JONES, Pure Refining
 Newark, Ohio September 10, 1925

SEPTEMBER 1966

JOHN H. HOLMAN, Pure Refining
 Newark, Ohio May 6, 1929

OCTOBER 1966

WALTER C. BLASING, Pure Refining
 Lemont, Ill. January 28, 1940
 HELEN M. KURZHALS, Super Par Oil
 South Bend, Ind. January 21, 1952

NOVEMBER 1966

ERWIN W. ALVERSON, 76 Refining
 Gardena, Calif. June 10, 1942
 HUBBARD B. ANDERSON, 76 Marketing
 Lafayette, Calif. September 11, 1926
 LEO F. ANDERSON, 76 Refining
 Bakersfield, Calif. August 4, 1927
 PAUL S. BARTHOLOMEW, 76 Refining
 Gardena, Calif. July 24, 1944
 CHARLES D. BRADLEY, 76 Refining
 Laguna Hills, Calif. October 26, 1934
 WILLIAM J. CALVERT, 76 Marketing
 Los Angeles, Calif. March 7, 1927
 WILLARD L. CLARK, 76 Refining
 Shell Beach, Calif. July 12, 1926
 RALPH W. COBINE, E&P
 Lynwood, Calif. April 13, 1934

WILLIAM U. FLORENCE, 76 Marketing
 Arcadia, Calif. February 24, 1932
 CLARK C. FRY, 76 Marketing
 Garden Grove, Calif. March 29, 1932
 MEL B. GRANVILLE, 76 Marketing
 Inglewood, Calif. July 29, 1937
 JAMES W. HASTINGS, 76 Marketing
 Edmonds, Wash. January 16, 1931
 FRANK HOLLIS, Pure Marketing
 Wilmington, N. C. December 16, 1936
 GLENN W. KEISER, 76 Marketing
 Burbank, Calif. June 7, 1936
 LOUIS E. LAUGHERY, 76 Marketing
 Sunnyside, Calif. May 27, 1943
 LINNEUS E. OLINGER, 76 Marketing
 Ontario, Calif. January 23, 1924
 JOHN E. O'NEILL, 76 Refining
 Torrance, Calif. May 31, 1930
 MARVIN S. PUTNAM, 76 Marine
 La Crescenta, Calif. November 18, 1922
 JAMES R. SALVAGE, E&P
 Granada Hills, Calif. September 2, 1944
 AMOS J. SCHONEMAN, 76 Marketing
 Escondido, Calif. October 29, 1928
 HARRY S. SCOTT, 76 Marketing
 Redlands, Calif. June 25, 1926
 GEORGE W. SELLMAN, 76 Marketing
 Colusa, Calif. October 12, 1942
 PAUL E. TYCHSEN, 76 Marketing
 Seattle, Wash. May 13, 1918
 ROLLAND R. WEIDE, E&P
 Santa Maria, Calif. August 25, 1928

DECEMBER 1966

HENRY E. BORN, Pure Marketing
 Pensacola, Fla. March 1, 1938
 VERNON M. EDMINSTON, E&P
 Olney, Ill. May 31, 1925
 WILLIAM A. GIPSON, Pure Marketing
 Pensacola, Fla. February 7, 1948
 ALMA L. MCGEE, Pure Marketing
 Pensacola, Fla. April 15, 1943
 LONNIE W. PITTMAN, Pure Marketing
 Miami, Fla. November 1, 1930

IN MEMORIAM

Employees

GEORGE L. BROWNFIELD, Pure Marketing
 Centerburg, Ohio. November 30, 1966
 MASON STEWART, Pure Marketing
 Hattiesburg, Miss. October 18, 1966

Retirees

JOHN HOPPING, Arapahoe Pipeline
 Sterling, Kan. October 26, 1966
 CHARLES O'BRIEN, E&P
 Santa Fe Springs, Calif. September 30, 1966
 WILLIAM H. O'CONNOR, E&P
 Santa Fe Springs, Calif. November 5, 1966
 H. W. PATTERSON, Pure Refining
 Beaumont, Tex. November 3, 1966
 DAVID H. RITTER, Pure Refining
 Carthage, Tex. November 3, 1966
 NORMAN H. ROTHWELL, 76 Marketing
 Seattle, Wash. November 22, 1966
 RUDOLPH E. RUOFF, E&P
 Huntington Park, Calif. August 27, 1966
 CARL J. SAMUELSON, 76 Marketing
 Portland, Ore. November 22, 1966
 HILTON T. STALEY, E&P
 Terre Haute, Ind. November 17, 1966
 RONALD G. WATKINS, 76 Marketing
 Upland, Calif. October 17, 1966



Young Man on the Way Up

ROSEBURG, OREGON
PRESTON LEE, our consignee in Roseburg, Oregon, says his favorite success story concerns Frank Kinnan, a 32-year-old Oregonian who at 17 turned down an appointment to Annapolis to go into business.

Kinnan is a big-timer in almost any league. He grosses more than \$2 million annually and has another \$1 million plus invested in 100 pieces of construction equipment—trucks, road graders, and 22 "cats."

All this in 15 years...

Kinnan, as the son of a U.S. Navy officer, could have had an appointment to the Naval Academy. Instead, in 1951, he founded the Kinnan Logging Company.

Today, despite the firm name, logging is a sideline. His principal activity is cable-plowing—laying underground coaxial cable for the telephone company. He also contracts road work and general construction and in the winter is called upon frequently to clear the Oregon highways of snow.

While there is nothing new about cable-plowing, there is something revolutionary about Kinnan's method. He has perfected a \$125,000 machine that cuts a yard-deep trench,

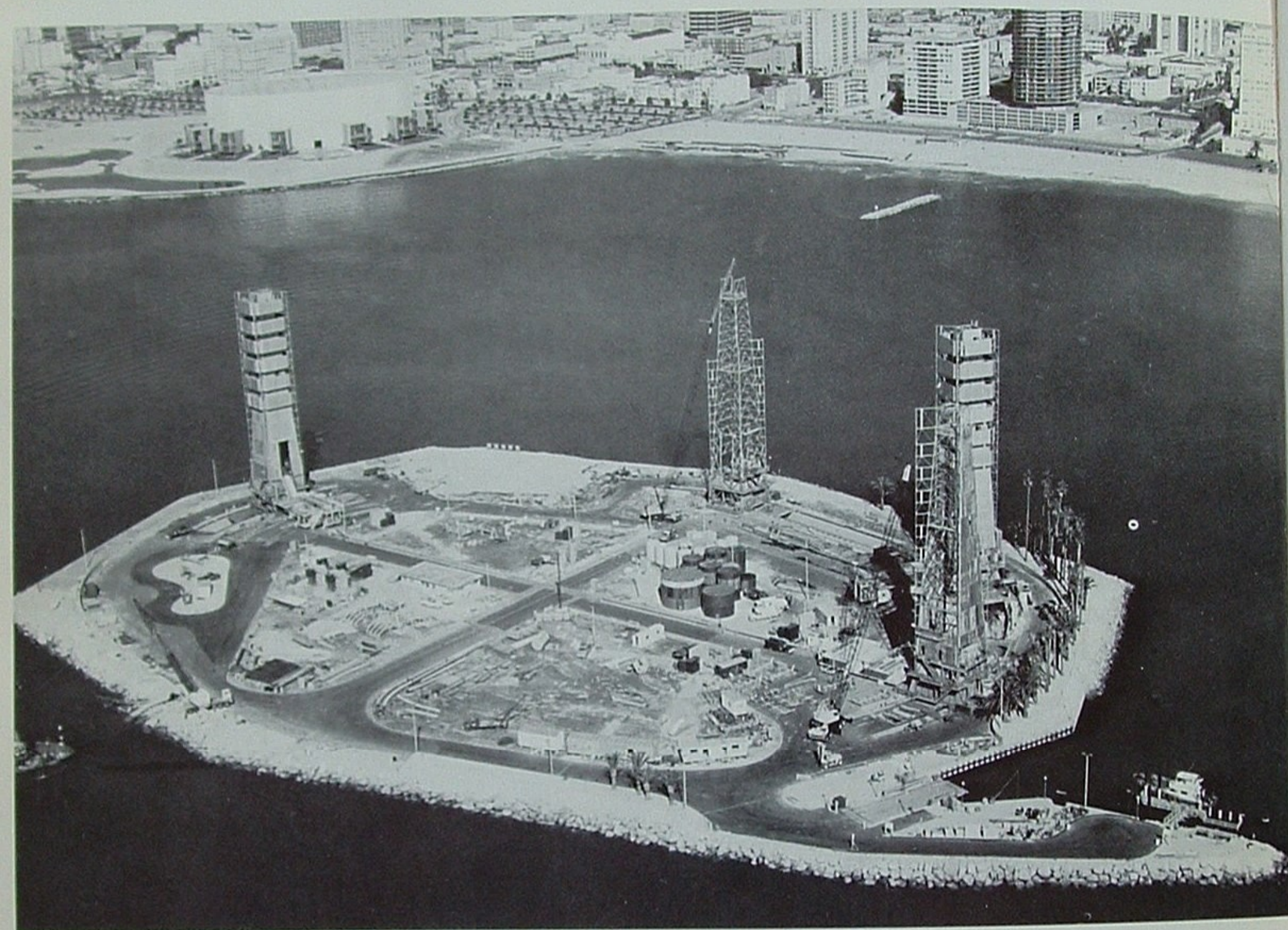
tosses small rocks out of the way, steers around boulders, lays the cable, backfills and packs—all in a single operation. It is the only cable-laying machine that can be used on highway shoulders.

Today Kinnan spends most of his time at job sites—a bridge in California, a highway in Washington, a cable job in Oregon, an access road to a microwave tower on a high peak, even a mountaintop location for an airport guidance system. Lately he has taken to building microwave towers, too.

Kinnan commutes to job sites by auto and airplane. He admits he doesn't have much time for hobbies; about 90 per cent of his business is done at home on the telephone, between 7 and 9 at night. Kinnan's success has been little short of phenomenal, and his business has doubled every year for the last half dozen.

Consignee Lee says Kinnan has come a long way in 15 years, and he attributes Kinnan's success to the fact that he has done quality work and stands behind it.

Naturally Kinnan uses quality products too, Lee said, as he loaded a tank truck of Union diesel fuel for Kinnan Logging.



UNION ON THE GO

A YEAR AGO we told of plans to construct four 10-acre islands—Little Catalinas—in Long Beach harbor from which to drill 900 oil wells to develop the East Wilmington field's billion barrels of estimated reserves.

The builder, THUMS Long Beach Company, is a group formed by Texaco, Humble, Union, Mobil and Shell to act as field contractor to the City of Long Beach. This pictorial progress report shows Island A nearing completion. To make the islands attractive, drilling derricks are designed as structures that simulate futuristic skyscrapers. Shrubs, ground cover, palm trees and illuminated waterfalls will add further luster to the Little Catalinas. Already the first wells are drilling and production from

Island A began late in November. While the Little Catalinas are being constructed, drilling continues from nearby Pier J, a man-made extension of a Long Beach pier. Production from the Pier J area now exceeds 35,000 barrels a day, but when the Little Catalinas are completely drilled—probably in the early 1970's—the figure will rise to nearly 200,000 barrels a day. Meanwhile, office workers in downtown Long Beach are getting a first-hand view of island-building activities by THUMS. ⁷⁰