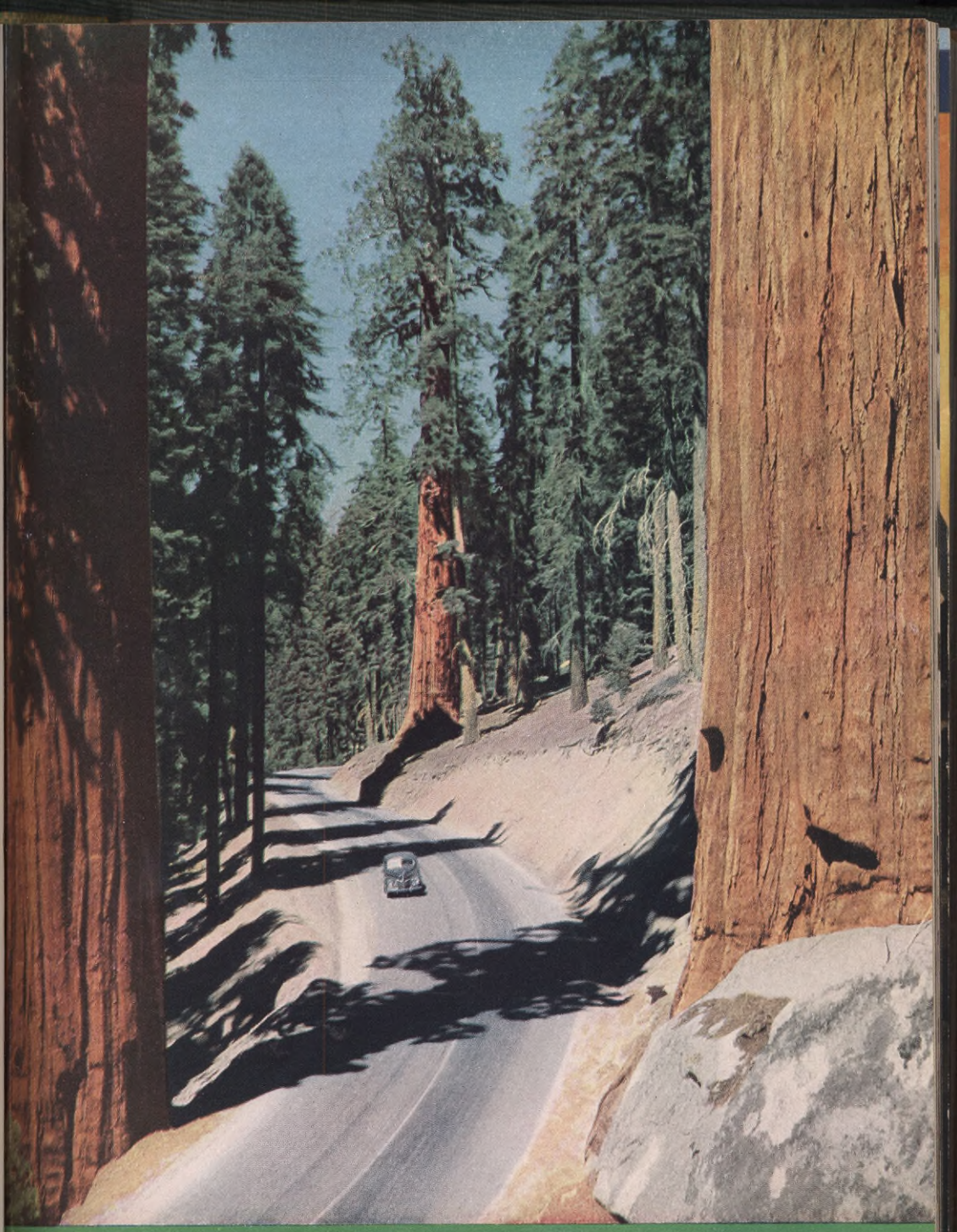
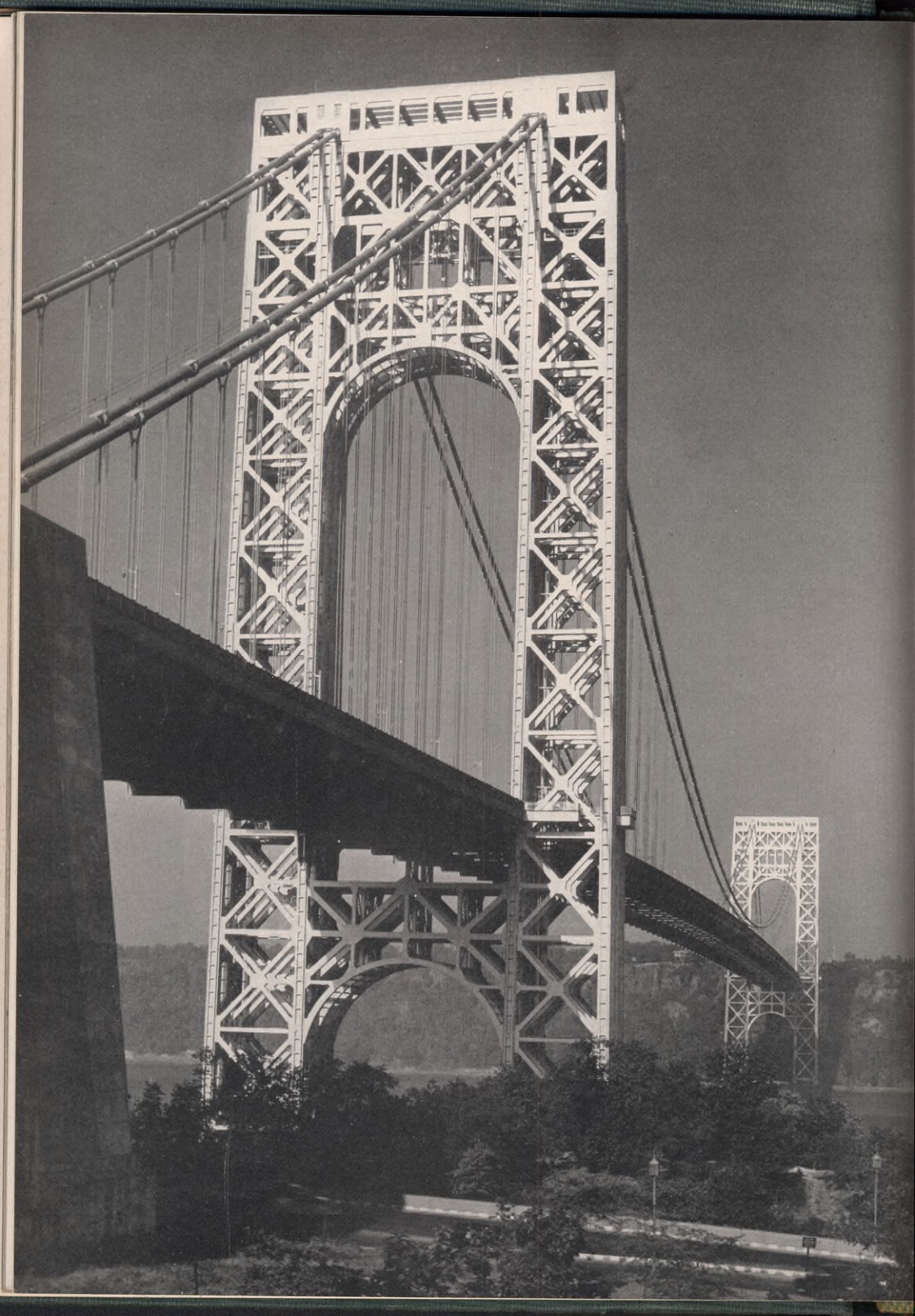


THE TEXACO STAR

SUMMER 1947



THE TEXACO STAR

Summer, 1947

VOLUME XXXIV NUMBER 3

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A PUBLICATION OF THE TEXAS COMPANY

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Brief AND TO THE POINT

★Despite the present shortage of tubular goods, drilling operations this year are expected to show a substantial increase over 1946. Twenty-five of the 48 states produce petroleum, but six of them—Texas, California, Louisiana, Oklahoma, Kansas, and Illinois—account for 88 per cent of total current crude oil production.

★Of the more than 2,420,000 patents issued to date by the United States Patent Office, 10 per cent relate to the petroleum industry in some way.

★Eighty-seven per cent of the employes granted military leaves of absence by The Texas Company have returned to Company service. In addition, 3,900 veterans of World War II not previously hired by the Company are in its employ. The two groups of veterans constitute 26 per cent of the Company's work force.

★Pipe lines to be built by the industry during the next two years will make the Big Inch and Little Inch lines seem modest undertakings by comparison. These war-built lines totaled only 2,810 miles. The 6,000 miles of new lines to be built will cost something like $300,000,000. At the present time, about 70,000 miles of trunk lines transport oil and its products to market, and more than 45,000 miles of pipe gather oil in the producing fields of the United States.

★Between 1920 and 1946 the quality of regular-grade gasoline in the United States rose from about 50-octane to more than 78-octane. During the same period the price, exclusive of taxes, declined to half, and the motorist became accustomed to a "service bonus" which includes windshield wiping and a check of tires, oil, and water.

★Nearly half of America's sales are made in towns and villages of less than 5,000 inhabitants, and more than half of the nation's stores are in these towns, says a publication of MacDonald-Cook Company.

★About 52 per cent of dividends are paid to persons with annual incomes of less than $5,000, according to an editorial in *The Indianapolis Star*.

★The average American family spends about $10 out of every $100 earned on passenger automobiles, according to an estimate. Recent surveys also show that seven out of 10 workers in the nation go to and from their jobs by motor car.

THE COVERS

★The front cover of this issue is from a color photograph taken in California's famous Sequoia National Park. According to Indian legend, one giant sequoia pulled the southern half of the Sierra Nevada Mountains out of the Pacific Ocean.

★Completed in 1931, the George Washington Bridge (pictured on the inside front cover) is still growing in importance as a vehicular link between New York and New Jersey. In the Summer, thousands of motorists cross the bridge en route to nearby and distant vacationlands. Like other great aerial roadways in the country, the George Washington Bridge has made it easier for people to go places by car.

Vacationland U. S. A.

"No one in the United States is more than two days' easy drive from an interesting National Park or Monument!"

By STUART C. HAWLEY

Director, Texaco Touring Service

TO THOSE who plan for them, vacation days are especially precious. Each day of vacation—in terms of daylight hours, weather, travel distances, and so on—counts for more than an ordinary day. For those who like to take motor trips on their vacations, our national parks and monuments provide a vacationland closer to home than most of us are aware.

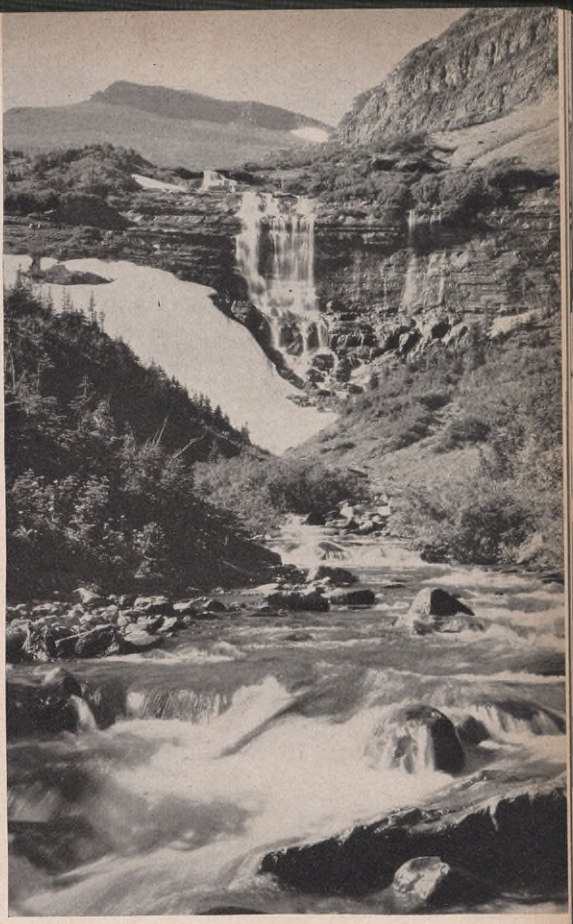
No one in the United States is more than two days' easy drive from an interesting National Park or Monument!

If you live on the Pacific Coast you can choose from half a dozen parks and even more monuments within a day's drive. Within the 48 states there are 25 national parks, four national historical parks, 11 national military parks, seven national battlefield sites, one national battlefield park, 19 national historic sites and memorials, 10 national cemeteries, three national parkways, one national capital park, and 85 national monuments.

You may be nearer than you think to a national monument. (Below) Cacti, Saguaro National Monument, Ariz.

Which parks, for instance, are recommended as the most interesting objectives for a vacation? The answer depends upon where you live, how much time you have, whether you prefer to travel at the highest safe speed from park to park (merely driving through each park and then proceeding to the next one), or if you plan to travel to the nearest park and spend the greater part of your vacation time enjoying its attractions.

Natural phenomena, such as caves, chasms, mountains, and even deserts, are not a novelty to many of us. But have you ever visited Carlsbad Caverns, for



This Summer, the Great Smokies (top, left), Grand Canyon (above, left), Glacier National Park (above, right), and other national parks are expected to attract a record number of vacationists

instance, in New Mexico? Although caves are one of the most common of all natural phenomena and are to be found in nearly all states, Carlsbad Caverns are said to be more extensive than all others combined. There you can see a stalagmite so huge that its age is beyond all comprehension.

It was because of such awe-inspiring examples of Nature's handiwork that Carlsbad Caverns was made a national park in 1930. This has been the general thought governing the establishment of national parks: to preserve areas that are either unique in their attractions or whose features are the most stupendous of their kind.

Big trees are to be seen in many places. Monster fir, cedar, white pine, redwood, cypress, live oak, and ponderosa pine trees are familiar in the western, southwestern, and many of the southeastern states; but in Sequoia National Park, in California, there is one tree—the General Grant—which is believed to be the largest and oldest living thing in the world!

Over the ages, rivers have cut many canyons in our country. Noted for their beauty are the canyons of the Yellowstone, the Royal Gorge of the Arkansas, the Black Canyon of the Gunnison, the several canyons of the Columbia, the Snake River canyon, the many rapids of the Tennessee and its tributaries, also the innumerable gorges and falls of the New England states' rivers. The Grand Canyon of the Colorado, however, is incomparable in size and magnificence.

Then, there are numerous high mountains in our United States. Along the East Coast are many mountains about as high above the general elevation of the surrounding country as the Rockies are above their high plateaus. But only in the neighborhood of Mt. Rainier, Washington, when you stand at tide water, can you see a crest 14,408 feet high!

Deserts and vistas of bare sand are not uncommon, either. North of Rock Springs in Wyoming are

Little Walking Bear and his Hopi elders delight paleface tourists who visit the southern rim of the Grand Canyon

some of the largest sand dunes in the world outside the Sahara. Near Alamogordo, in New Mexico, is the White Sands National Monument, a part of a huge wishbone-shaped deposit some 35 miles long.

If you plan a vacation trip by car to a national park, here are some pointers that may make your journey easier and more enjoyable:

Too frequently, parents take their children on too long a drive. There is considerable merit in planning for one parent to take the youngsters on the train to the park, where they will be met by the other parent and go on by car. Two or three days and nights on a train, even in coaches, are not so fatiguing to children as traveling several thousand miles cooped up in a car with the attendant late stops, early starts, and hit-or-miss meals. When the park has been toured by car, the children are again taken on the train for the homeward trip.

Which sort of accommodation is best suited for your park vacation is purely a matter of preference. You'll find tourist camps and trailer parking areas both in and adjoining all parks. There are cabins for sleeping, and restaurants and cafeterias where moderately-priced meals may be obtained; also, more expensive, pretentious lodges and inns.

If you carry your own tents and equipment, you will find well-kept camping grounds set aside for campers, as well as commissaries where staple food for cooking may be purchased. But, unless you have ample time for a leisurely trip and can plan to stay several days at each stop, camping isn't too desirable because it takes about two hours to set up camp each evening and another two hours to tear down and clean up each morning.

As taxpayers, we all pay something toward the cost of maintaining our national parks. We should, therefore, make an effort to visit and enjoy as many of them as we can. But doesn't it seem smart to familiarize ourselves first with those parks nearest our homes, so we'll have something to brag about when we meet up with strangers as we travel?

Texaco Touring Service Bureaus in Chicago, Houston, Los Angeles, New York serve Texaco dealers' customers

Camping out is fun, but it reduces travel time. When you have finished cooking, be sure to put out the fire

It's Worth Your Life

IT'S SUMMER. You'll probably be going on a vacation—taking a motor trip of anywhere from 100 to several thousand miles. Or you'll be going swimming, golfing, or visiting within easy driving distance of home. At any rate, you'll be driving more.

Hadn't you better ask yourself some questions? Is your car as good as it once was? (If you're the average American, driving a pre-war automobile, it isn't, obviously.) Are *you* as good and careful a driver as you used to be when you had a string of continuous war-free years of driving experience behind you? Or has the release-from-discipline feeling that came after the wartime years of forced careful driving blunted your driving sense?

Another important question: Maybe you and your car are top-notch in efficiency, but what about the other fellow driving an old car for the first Summer at high speeds on good tires? Are you risking an accident to depend on his knowing and using the proper signals for turning and stopping, or on his car's being in safe mechanical condition?

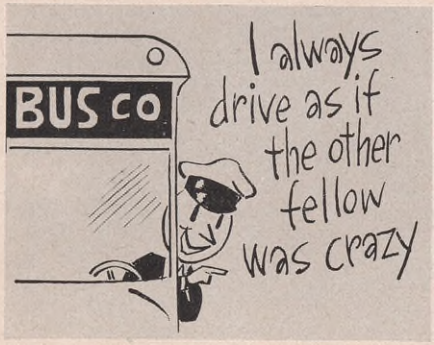
It's worth your life to think of the answers to these questions.

The importance of driving carefully cannot be over-emphasized. The best life insurance when you're driving is the constant vigilance you practice. One bus driver with a long record of accident-free driving had a good idea when he said, "I always drive like the other fellow was crazy." An excellent rule to observe, if you wish to live to a ripe old age.

You may be the best driver in the world—but the man at the wheel of the car ahead of you . . . or behind you . . . or coming toward you from the opposite direction . . . may be the worst.

Why are traffic accidents increasing? The following quotation from *Mass Transportation* may suggest the answer: "There is a blind ego in all of us. All our campaigns have not reached the consciences of all people, because the majority of drivers feel *they* are excellent drivers, and that all this ballyhoo on safety is not for them, but for the other fellow. The traffic toll will decrease when drivers will admit that they are the other fellows."

From the standpoint of safety, any driving is a serious undertaking, whether it be on business or pleasure, on a short trip or a long trip. Your life, the lives of your passengers, and the lives of innocent pedestrians and occupants of other cars are at stake. An accident can happen in as little time as it takes momentarily to "rubber-neck," to fall asleep



at the wheel, or to relax your concentration on driving in any of the countless ways that are possible when you're occupying the left front seat.

Here are just a few examples of the potential forces of destruction that start rolling when you step on the starter, warm up the engine, shift into gear, let out the clutch and release the brake, and pull out into traffic:

If you hit an obstruction at 40 miles an hour, the force of the impact will be *four times as great* as at 20 miles an hour.

If you are an average driver, it will take you three-quarters of a second to jam on the brakes in an emergency. Then, if you're only traveling at 10 miles an hour, this three-quarters of a second plus braking time will carry you 17 feet before you stop; at 50 miles an hour, you'll travel 172 feet if you don't hit something first.

If you have good eyesight and your car has average headlights, you can probably see the road clearly at night for only 100 feet ahead. Don't forget, though, that it takes 172 feet to stop your car at 50 miles an hour.

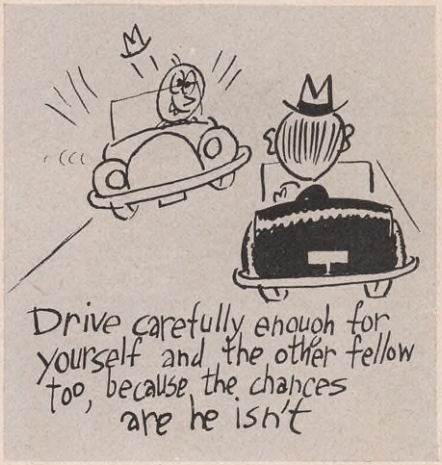
If you are traveling 30 miles an hour and hit another car traveling toward you at the same speed, the resulting impact is equivalent to plunging your car down a cliff the height of a nine-story building.

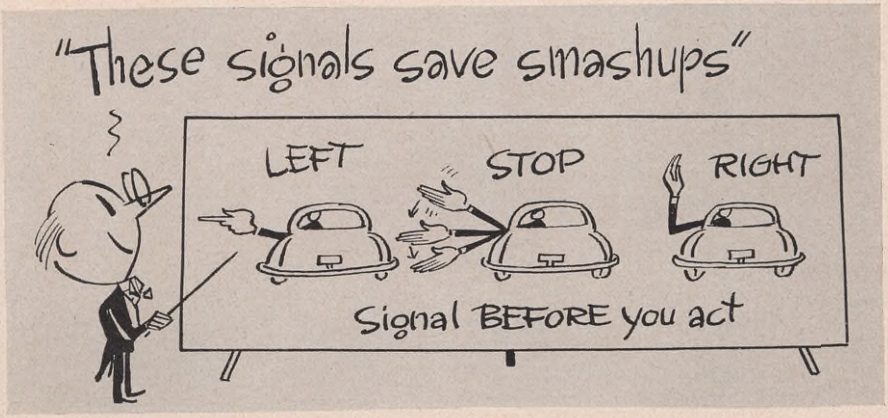
Auto accidents can happen in an infinite variety of ways, but certain types are more common than others. The commonest type of fatal accident is caused by an auto hitting a pedestrian, yet pedestrians figure in only two out of five traffic deaths and in only one out of four non-fatal injuries. You are in more danger as the occupant of an accident-bound automobile than you are afoot as an automobile target.

Last year, 34,000 men, women, and children were killed in traffic accidents in the United States. Many times this number were injured and maimed. To this toll of death and human misery are added the cost in dollars: millions for medical and surgical treatment, hospitalization, loss of income, and debt.

The rising curve of traffic accidents is alarming. Millions of cars on the road today are over-age. Many are defective and actually unsafe to drive. Faulty cars and reckless drivers are the two leading causes of road mishaps.

The National Safety Council has forecast an increase in drunken and reckless driving this Summer resulting from the heavy seasonal increase in motoring. Ted V. Rodgers, president of the American Trucking Association, recently said: "Never before has the picture been so black. Old vehicles driven by men and women from whom the discipline of gas





rationing or the discipline of military service has been lifted are jamming our highways, jockeying for position, taking chances, and depending on defective mechanism."

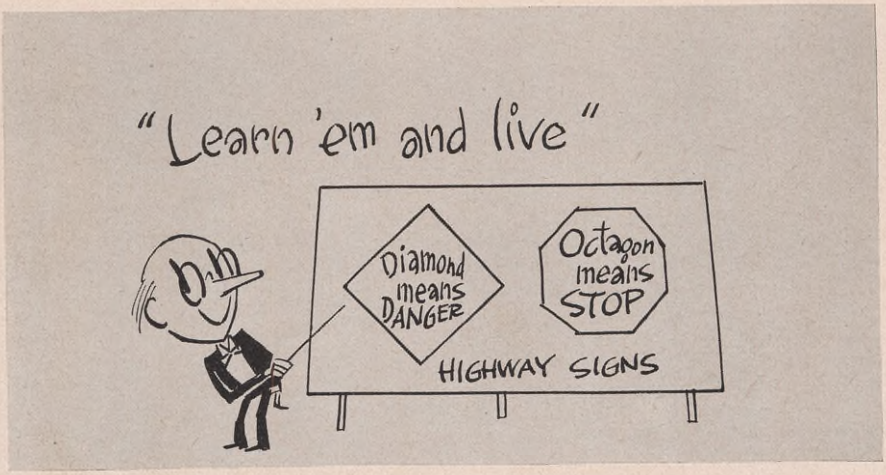
You can't personally do anything about the reckless and irresponsible driver in the other car, except to try your best to keep out of his way. But you can help prevent yourself from being the cause of accidents by taking extra care to be safety minded about driving and car maintenance.

Faulty brakes, tires, lights, exhaust system, or steering gear—the primary car defects that cause accidents—can endanger the life of the best driver in the world. These vital points, as well as all others that require oil, grease, servicing, or replacement, should be checked and cared for periodically for safety.

Vacation time is here, the time to fill up the tank with gasoline, pack the family in the car, and hit the asphalt trail. And the urge will be there to step on the "gas" hard, to get to the mountains or seashore as fast as possible.

Yes, vacation time is here, and with it comes the season of hair-raising misses, punctuated by death and injury to untold thousands of American motorists. But while we're on our way to and from these vacationlands, let's do some serious forgetting. Let's forget that sitting behind the wheel of an automobile is commonplace. Life is also a routine matter, but it is precious.

Let's take it easy on the road this year and every year. Vacations are great fun—but you have to be alive to enjoy them.



EAGLE POINT

Texaco's new East Coast refinery will have a historical setting in the Philadelphia-Camden area

IN A REGION famous since the early days of American history The Texas Company will erect its first major East Coast refinery. It will be built on a 1,368-acre site at Eagle Point on the south bank of the Delaware River in West Deptford Township, Gloucester County, New Jersey. Dredging operations as well as clearing of portions of the site are now under way. The new refinery, which is a key project in Texaco's post-war expansion program, will be designed to handle foreign as well as domestic crudes.

During the past half-century, portions of the tract have been used for farming, for an amusement park, for the location of a powder-bag filling plant during World War I (nearby, on Hog Island, much of America's "bridge of ships" was built), and, during the recent war, as an air raid defense site.

Dutch and Swedish settlements had been established in this area years before the three barks carrying William Penn's colonists to America cast anchor in the Delaware. After the fall of New Amsterdam in 1664, the English took possession of the settlements on the Delaware. In that year, Lord John Berkley and Sir George Carteret of England received from the Duke of York a patent or deed to land to be called Nova Caesaria, or New Jersey, in honor of Carteret, who had been governor of the Island of Jersey.

Forts Mercer and Mifflin, on opposite sides of the Delaware near Eagle Point, were held by American forces during the Revolutionary War to blockade the river against British shipping. The only battle at Fort Mercer on Eagle Point's side of the Delaware was fought on the afternoon of October 22, 1777, when Colonel von Donop and his Hessian regiments tried to take the fort by storm.

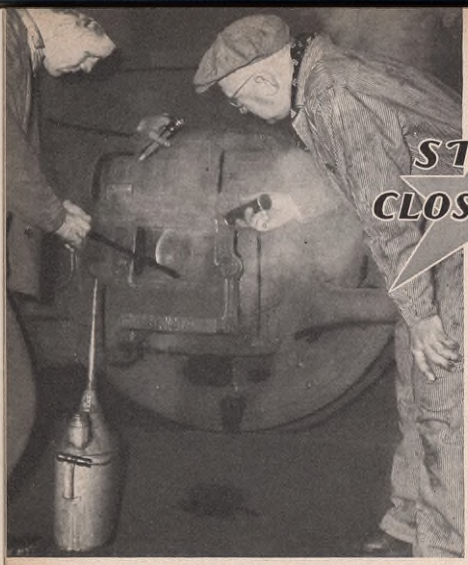
The Hessians were defeated at Fort Mercer with enormous loss of life. Those remaining were pursued by the American troops. It is extremely doubtful, however, if any of this action actually took place on the Eagle Point site. Today, there is a monument at Fort Mercer commemorating this battle, and visitors can also see the fort's original trenches, cannon, and defenses built to prevent passage of British ships.

After the Revolution, many important developments in the commerce and industry of the infant nation were initiated in the Philadelphia-Camden

Texaco's key post-war expansion project will rise on the 1,368-acre site outlined in white on this aerial photograph

area. In 1794, a 62-mile turnpike extending from Philadelphia to Lancaster, Pennsylvania, was opened. It was the marvel of its age. Water transportation was improved: in 1808 the *Phoenix*, first steamship to navigate the Atlantic, docked at the "City of Brotherly Love"; two years later the first steam ferry started operating between Camden and Philadelphia. The first railroad track in America was laid in Philadelphia in 1809, in the yard of the Bull's Head Tavern.

The Texas Company's decision to build an ultra-modern oil refinery at Eagle Point signifies new progress for Texaco and further industrial development for New Jersey. In the future, the historic waters of the Delaware will float still greater tonnage of oil, as well as innumerable tons of coal, grain, cattle, lumber, merchandise, and countless products of present-day industry—a far cry from the paltry cargoes of the Indians' canoes and the Europeans' sailing ships of more than 300 years ago.



STAR CLOSE-UPS

WORKING WITH THE RAILROADS

Texaco's career in railroad lubrication is a colorful record of keeping pace with the needs of America's carriers

A Texaco lubrication engineer (right) checks oil in journal box of steam locomotive

TRAINS and tracks—the familiar externals of railroading—are a taken-for-granted part of our lives. Not so familiar to most of us, however, is the railroads' tremendous and never-ceasing task of maintaining its equipment in efficient operating condition.

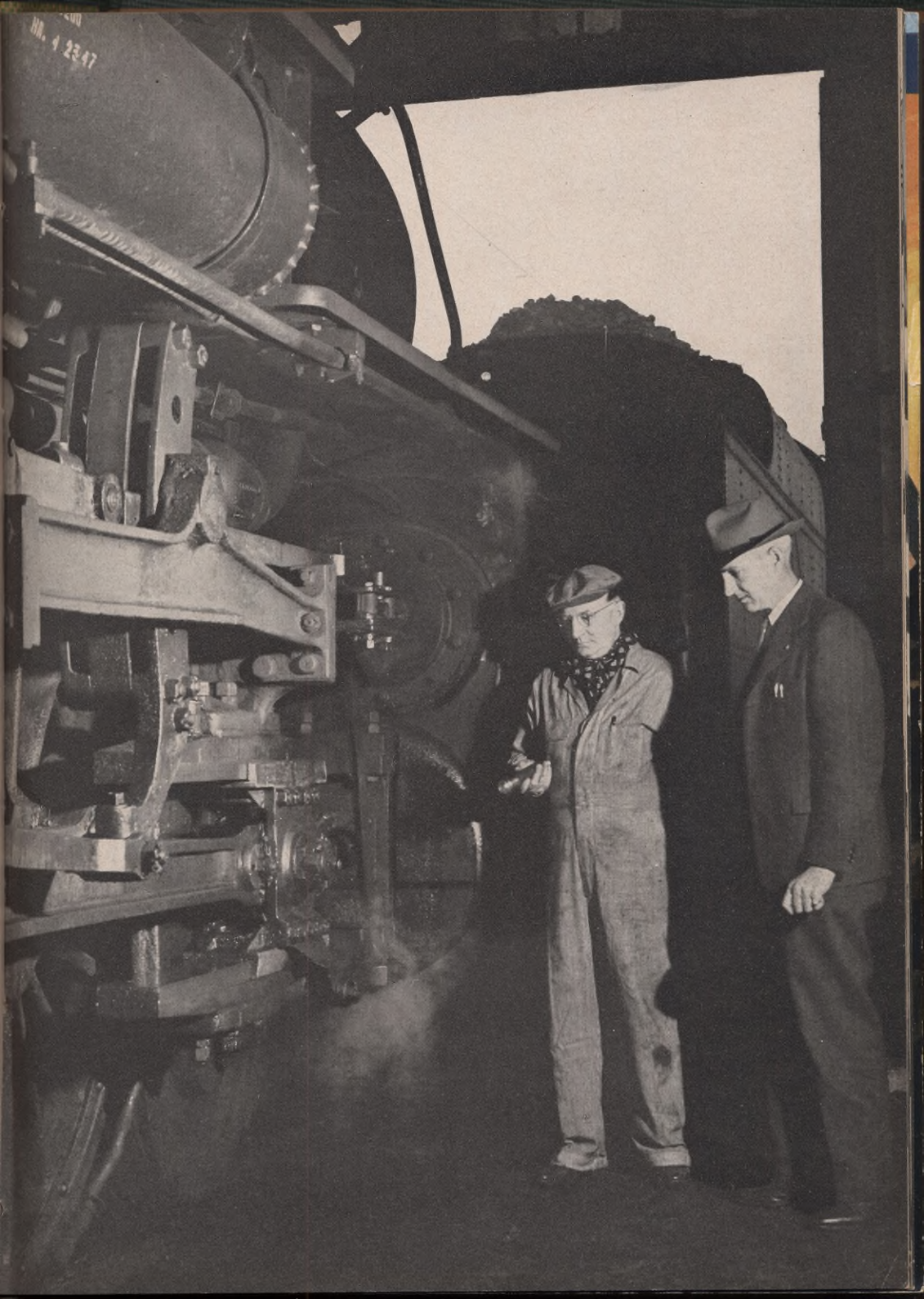
As might be expected, lubrication plays a vital rôle in this less well-known phase of railroading. A locomotive, for instance, is a highly concentrated powerhouse on wheels. It has to operate efficiently in unbelievable extremes of temperature and weather. For nearly 40 years, The Texas Company has served America's railroads by helping them solve difficult lubrication problems, not only on locomotives but on cars and other railroad equipment.

Throughout its existence, the Company's Railway Sales Division has furnished experienced lubrication engineers to help the railroads in the efficient application and use of lubricants. As the railroads progressed to heavier and heavier locomotives, then to Diesel locomotives and high-speed, streamlined trains, and in their maintenance-of-way departments from laborers to machines, Texaco has kept pace with improved petroleum products and with men trained in the latest developments in railroad engineering.

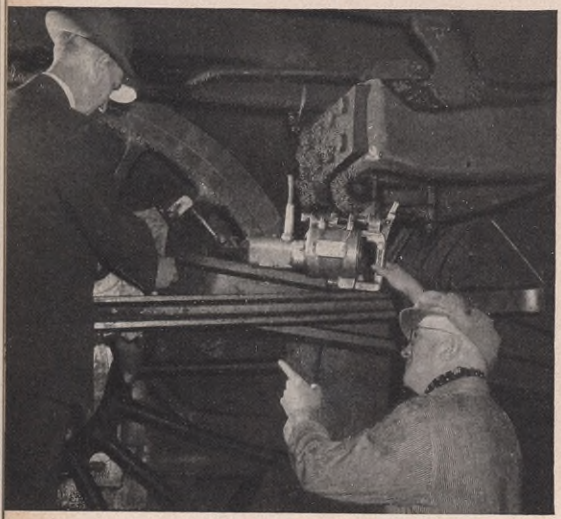
The Railway Sales Division's beginnings were modest. In the Summer of 1908, the Company (then in its sixth year) established a fuel oil department. To head this new sales activity, Texaco brought in

(Continued on Page 14)

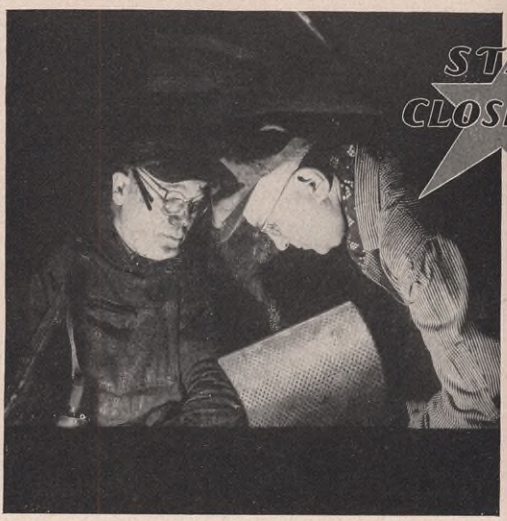
Lubrication is the subject under discussion by this group of railroad operating officials and Texaco men alongside a Diesel locomotive just in from a run. Texaco Lubrication Engineer J. F. Kane (left) explains a point to the railroad's general superintendent of motive power and rolling stock, F. K. Mitchell (right), and J. L. Lavallee (second from right), Manager of Texaco's Railway Traffic and Sales Department and at one time a railroad superintendent of motive power himself. (Right) Systematic lubrication engineering service brings expert Kane periodically to railway shops



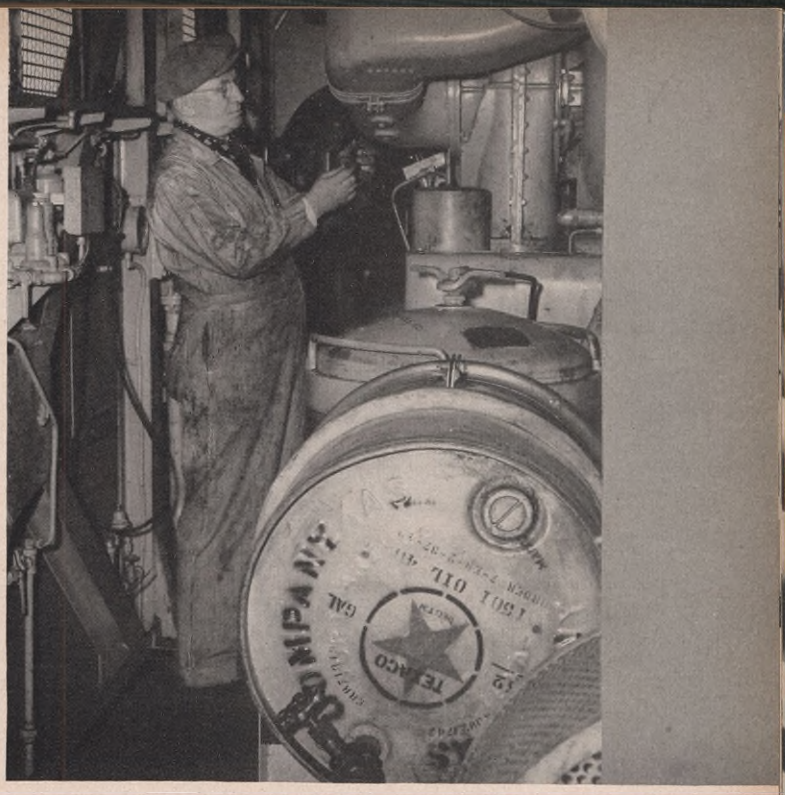
Main source of motive power on American railroads, steam locomotives need special lubricants. More railway steam and Diesel horsepower is lubricated with Texaco than with any other brand



Correct application of lubricants is checked on shop visits. Texaco Rod Cup Grease is "shot" into main rod



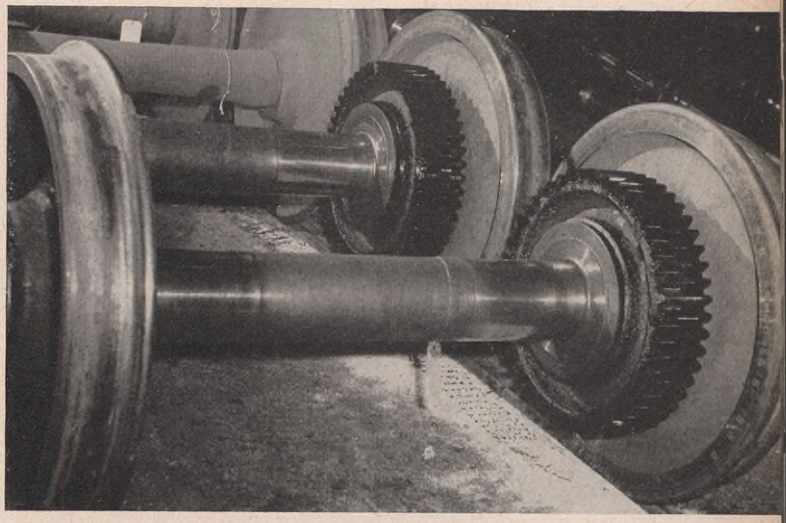
Service work takes a Texaco lubrication engineer down in an engine pit to inspect driving journal compound



Reserve drum of Texaco Ursa Oil rides with this Texaco-lubricated Diesel locomotive. A Company lubrication engineer (above) keeps careful tab on viscosity of Texaco oils in use

WORKING WITH THE RAILROADS

Donning overalls, lubrication engineers of Texaco's Railway Sales Division work directly with railroad personnel to see that Texaco products are used economically and efficiently



Traction gears of electric motors are part of axle and wheel assemblies. Gears glisten with coating of Texaco Crater in above picture of reconditioned units in an electric shop

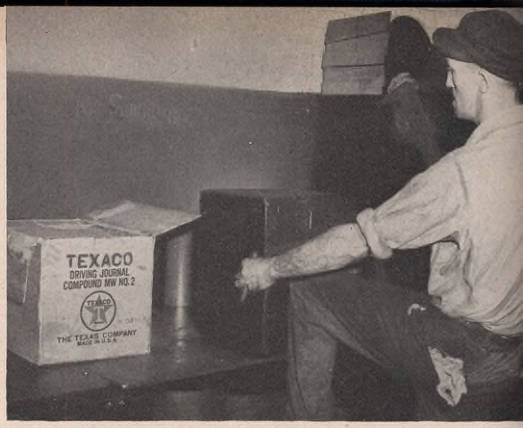
STAR CLOSE-UPS

WORKING WITH THE RAILROADS

(*Continued from Page 10*)

G. L. Noble from the International Great Northern Railroad, where he had been assistant general manager. He was the first of Texaco's keen-minded railroaders who knew the needs and character of the whopping railroad market at first hand. Railway sales became a separate department in 1919 and, in 1921, was merged with the Traffic Department to form the present Railway Traffic and Sales Department.

Early in 1909, the Railway Sales Division made its first sale—two barrels of "black oil." It had picked a tough market. At the time, one supplier claimed all but two per cent of the railway business. Today, competing with more than two dozen other oil companies, Texaco has better than 25 per cent of the total lubricating business of railroads in the United States.



Texaco Driving Journal Compound has dual utility as rod cup grease. It is easily divided into pieces with a wire

Presently heading the Railway Traffic and Sales Department is J. L. Lavallee, who came with Texaco 25 years ago after many years of railroading. He administers the work of a large staff which, in the Railway Sales Division, includes 19 lubrication engineers.

By working with the railroads to help them solve their lubrication and other maintenance problems, Texaco's railroad specialists have established an outstanding record.

Typical of Texaco's lubrication engineers who offer helpful service to railroads from coast to coast, J. F. Kane (center) confers with master mechanic (left) and general foreman

CONSUMERS' CHOICE

Traditionally, Americans have placed their confidence in branded products. It's a trust that has aided the growth of all successful American business enterprise

Given the brand name Sky Chief in 1939, Texaco's premium-grade gasoline has won wide acceptance among motorists

WE'RE a sentimental people about such seemingly little things as getting our favorite brands when we go shopping. We've come to take brand names for granted. Through the years they have become a comfortable gauge for intelligent shopping. And, there's a good reason behind our preference for brand names. It's that we have learned to expect uniform quality in branded products.

How did this preference develop among us? Part of it at least derives from our native trading instinct. Another part of it was just natural growth. We can take a backward glance in our own industry and discover the roots of our confidence in brand names.

During the early days of motoring the pioneers of the open (and muddy) road went to the blacksmith for their motor oil and gasoline. Gasoline was peddled to blacksmith shops and general stores in milk cans and similar makeshift containers. Oil came in an unpredictable miscellany of cans and barrels. Both products were poor relatives of kerosine, which was the big seller of the time.

After World War I, gasoline and motor oil began to take on identity as the petroleum industry grew and competition increased. Brand names of gasoline came to the fore. In the early Thirties motor oil began to be marketed in neat, colorful one- and five-quart cans.

What happened? Well, in the case of Texaco, motorists were learning an important lesson during this period of change. They were learning that Texaco products were of uniform quality—that The Texas Company backed up every product with scrupulous control in manufacturing. As time passed they learned further that the Texaco trade marks represented the latest achievements in petroleum research—new and better products.

Nowadays motorists drive into sparkling Texaco service stations and order their favorite petroleum products and service by name: Sky Chief and Fire-Chief Gasolines, New and Improved Havoline Motor Oil, Texaco Motor Oil, Marfak Lubrication. Consumers other than motorists likewise place their confidence in the more than 700 Texaco products which they know by brand names.

This story is not peculiar to us alone. Consumers' confidence in brand names has aided greatly in the growth of The Texas Company and all successful American business enterprise.

Nationally advertised, Sky Chief and Fire-Chief Gasolines, Havoline and Texaco Motor Oils, and Marfak Lubrication are brand names that spell "quality" to car, bus, and truck operators

Not to be confused with the smaller *Constellations*, the Navy's mammoth Lockheed *Constitution* (above) is undergoing tests using special lubricants newly developed by Texaco

WINGS FOR "OLD IRONSIDES"

By H. A. MURRAY

Technical and Research Division, The Texas Company

Namesake of a famous frigate, the Navy's modern *Constitution* marks new progress in the air

ONE hundred and fifty years ago a mighty Navy frigate was launched and christened *Constitution*. Her name paid tribute to the document which formed the governmental structure of the new republic. Her victories and exploits in actions against the Barbary pirates and in the War of 1812 earned for her the affectionate nickname, "Old Ironsides."

Another great Navy "ship" that bears the historic name, *Constitution*, made its initial test flight eight months ago. Designed and constructed by Lockheed Aircraft Corporation of Burbank, California, as a secret Navy project, the mammoth airplane was planned to be a strong and dependable namesake of the nation's charter as well as the Navy's old fighter.

During the design and early construction stages, Lockheed called upon The Texas Company to review the plans and to provide lubricants for the entire ship. Since its first take-off last November, the *Constitution* has successfully completed many additional test flights lubricated with Texaco products.

Planning for the huge plane began late in 1942 when the Navy, realizing the importance of air transportation for high-priority personnel and cargo,

sought to build up its fleet of transport planes. The *Constitution* was designed to fly Navy personnel and cargo quickly and efficiently to any point in the world. A 92-ton giant, the plane is able to carry 180 persons, plus cargo, at high speeds and high altitudes. Its range is more than 6,000 miles.

The physical dimensions of the sky giant are equally impressive: wing span—189 feet; over-all length—156 feet; a tail that towers 50 feet above the ground—as high as a five-story building. Four Pratt and Whitney engines give it the power of 12,000 horses. Its propellers are 19 feet in diameter. Fuel tanks take 10,000 gallons of gasoline, the same amount a large railroad tank car carries.

The space within the fuselage is equivalent to that of the largest Pullman car ever built, plus the biggest railroad box car, plus the largest flat car, and with the volume of a passenger bus left over. If operated between New York and Los Angeles, the *Constitution* could, in the time it takes to cross the continent by rail, carry as many passengers as three or four trains of sleeping cars. In addition, a freight car load of jeeps could be transported.

The *Constitution*, however, is more than just another big airplane. It has many unusual features that contribute to safety and ease of maintenance: for example, the design of engine nacelles permits changing an engine in 30 minutes. Virtually any point in the airplane is accessible in flight. The control system, hydraulic system, and landing gear can be readily checked from one end to the other. Passageways through the wings afford accessibility to the rear of each engine.

For added safety, the hydraulic booster system on the controls has two standby systems. Landing gear and flap operations have standby systems in the event of failure of the main system. For fire protection, the ship is provided with an automatic fire detection system with master controls in the engineer's compartment for each engine. In the event of fire in one of the engines, the flight engineer pulls one control which instantly cuts off ignition, fuel, oil, and hydraulic fluid to that engine.

In working with Lockheed to design a lubrication system for an airplane of the *Constitution's* size and purpose, Texaco's engineers had these objectives: to improve reliability, reduce maintenance, and simplify service requirements. The results have been gratifying. Although the *Constitution* is the largest transport plane ever built, it is possible—through good design and development of superior types of aircraft lubricants—to service this ship with approximately the same number of oils and greases needed for an average car.

Because the *Constitution* is designed to fly great distances, extremes of temperature may be encountered. For example, the temperature of some parts of the plane may reach 175 degrees when the plane is parked at a tropical airport and may drop to as low as minus 65 or 70 degrees when the plane is in flight at altitudes exceeding five and a half miles.

Since both extremes of temperature may be encountered during a single flight, it would be impossible to lubricate the control system with one kind of grease for Winter and another kind for Summer operation. A Texaco low-temperature grease—one of the results of the Company's intensive wartime research into aviation lubrication—was found to be the grease best suited to operate over long periods of time under these widely-varying temperature conditions.

Other interesting features of the *Constitution*, designed to simplify servicing, are the centralized lubricating systems. Three of these systems supply the lubricant for the landing gear assemblies. Two other centralized systems lubricate the flap drive assemblies. A general purpose aircraft grease developed by Texaco has worked very well in these systems under all extremes of temperature encountered.

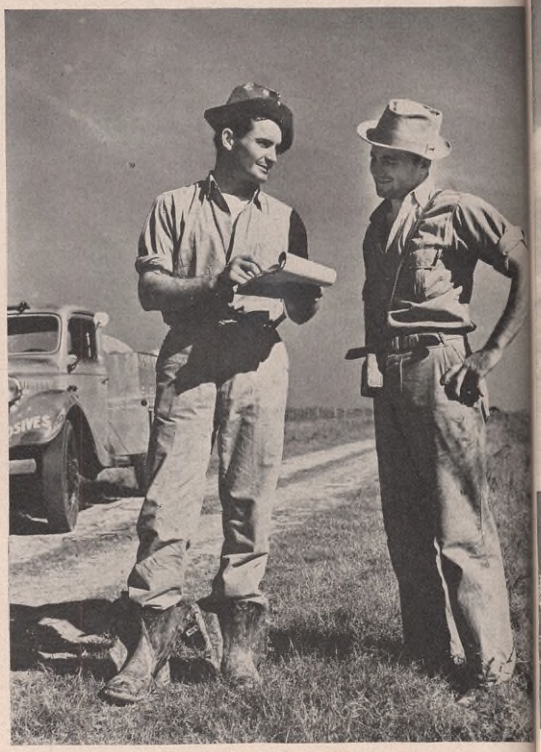
Two *Constitutions* will be delivered to the Navy when the test program now in progress has been completed. The first ship has already passed more than 23 flight tests, and the second is scheduled to be flown this Summer. "Old Ironsides" has successfully acquired wings and the ability to fly.

A centralized lubricating system for the *Constitution's* landing gear cuts lubrication time from hours to minutes

PRODUCING TAKES A LOT OF PATIENCE

Modern explorers in search of oil, a seismic crew nears a field site where studies may reveal oil-bearing structure

Finding oil is becoming more difficult. Nowadays, a producer needs the patience of Job to locate economical production



Scores of facts and figures are gathered and studied to determine whether the risk of drilling is worth taking

You wouldn't know it to look at him, but the man engaged in the producing end of the petroleum business has a lot of the industry's worries pushed into his lap. He has to find and provide the raw material that makes the rest of the industry operate, and these days, particularly, the refining folks are yelling for more of it.

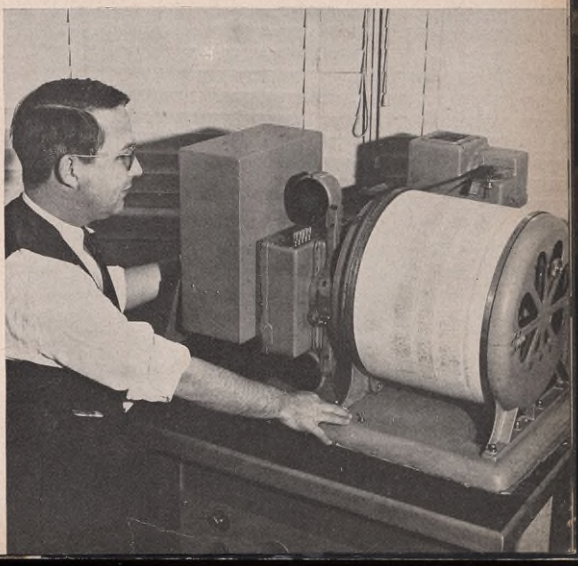
But the producer has the patience of Job. His task is long and painstaking. Drilling wells deeper and deeper to tap economical production, going farther and farther afield to areas where oil production was once unprofitable, he cannot let haste or anxiety or even enthusiasm substitute for good judgment based on objective facts. It costs too much to be haphazard.

Hardly any major oil prospector sets up a derrick in a new area picked by hunch, on a lease figuratively no larger than a handkerchief, runs his drill down a little way, and comes into flowing riches overnight. That's the way it sometimes happened in the early days of shallow wells, but those days are far in the past.

The producer must employ vision—distant vision of the country's oil-bearing structures and close-up vision through a microscope at tiny fossils that were old thousands of years ago. He must compare scores of figures, plot graphs on drafting boards, consult with dozens of associated experts, pore over maps of structures and leases and pipe lines—all this to know whether the risk is worth the taking in certain spots, whether he can amass the necessary acreage to protect his interests if he discovers a new pool, and whether he can get his oil profitably to market when his drill reaches it. He may have to drill exploratory wells, take seismic soundings, employ delicate electronic instruments, put core samples through extensive laboratory tests, and do a score of other things before he even satisfactorily locates likely production.

Data are compiled and recorded all along the line in the operations of Texaco's Producing Department: out in the field (right); at drafting tables in division offices (center); in the Geophysical Laboratory near Houston

This earth may yield clues that will help scientists estimate whether or not oil may be found beneath its surface



Much of this may have to be done secretively, so his actions do not make his plans too obvious to jealous competitors. A poker face is as useful to an oil man as to a poker player.

Land and lease men, without betraying too much concern, must negotiate with taciturn hermits, wise realtors, open-minded home owners, astute bankers, and cautious college presidents. Hold-out blocks of land in what looks to be a good lease may leave the prospector biting his nails, but he's still patient. He has to be. His investment has already mounted, and his costs can go far into six figures before he reaches the pay sand.

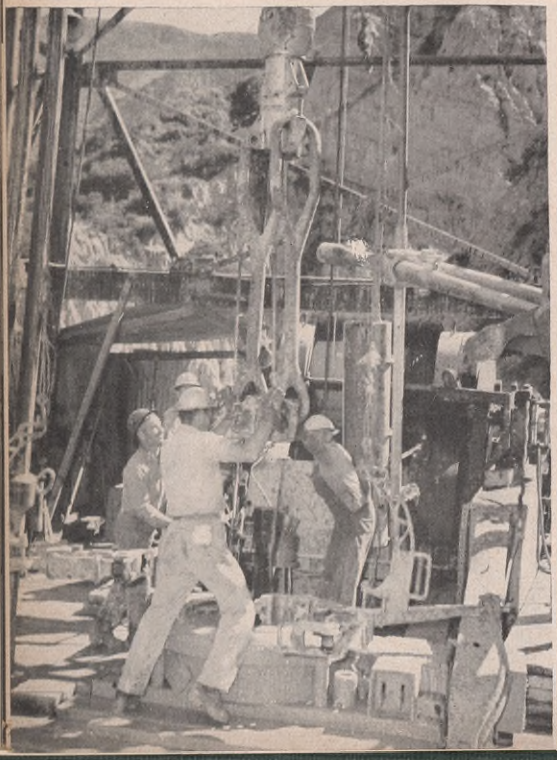
When finally a well is "spudded in," the five-man drilling crew starts making hole at a rate that may

vary from one foot to 200 feet an hour. Patience is the watchword again. If hard rock is encountered, the many-toothed rock bit will have to be pulled up and replaced each time it becomes dull. To the crew—driller, motorman, derrickman, and two roughnecks—this means the tedious process of "making a trip." Three 30-foot lengths at a time, the "string" of drill pipe has to be hoisted, unscrewed, and stacked on the derrick floor. When a sharp bit has replaced the dull one, each "thrible" of drill pipe is "stabbed" into the next joint, screwed in, lowered for connecting the next section, and clamped by the tongs—over and over until the new bit rests on the bottom. The whole string may weigh as much as 600 tons in a deep hole.

The driller's steady and expert pressure on the control lever keeps a heavy, rotating string of tools from coming to grief. A trifle too much pressure, the result of impatience, may cause the bit to "freeze" in the hole and may snap the drill pipe anywhere along its length.

If the well is successful—if it opens a new pool or extends the structure of an old one—all the care and waiting has been well rewarded. There's still plenty of time and work and care to be spent, however, in watching the operation of the well, in keeping its production within legal or economical limits, in keeping tubing and gathering lines open for free flow, and in building and maintaining roads that make the well easy of access.

Producing takes a lot of patience, but producers take the task in stride.



Producing takes care and ingenuity, especially when the side of a mountain has been selected for drilling a well and a road has to be constructed so trucks may bring in materials and supplies (above, left). Pulling pipe (below) tests the skill and patience of drilling crews at any well

HELPING THE MAN AT THE PUMP

TEXACO SERVICE STATIONS, and there are more than 42,000 of them, are familiar landmarks to the public. What is not known so generally is that practically all of them are owned or operated by Texaco dealers who are independent business men and who run their own businesses in their own way.

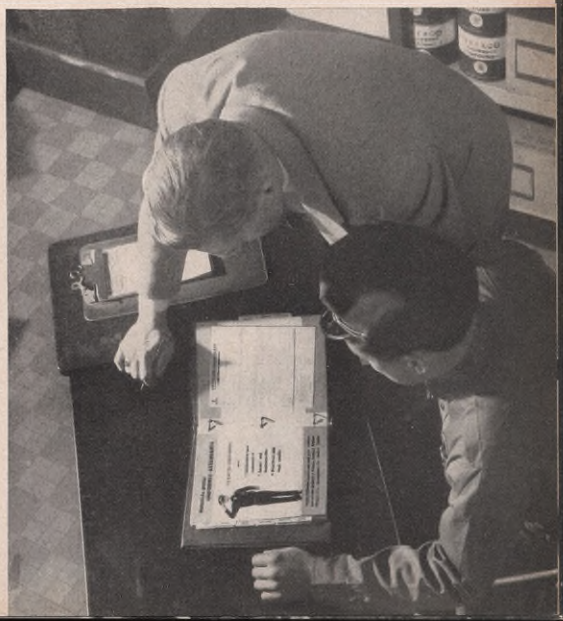
However, through a carefully coördinated sales promotion program of dealer education, the Company presents them with tried and tested operating and selling methods that will help to make them better dealers and more successful business men. This material is offered at Dealer Training Conferences, through the pages of *The Texaco Dealer* magazine, at dealer meetings, and in other ways. Dealers are urged to give Circle Service, pledge themselves to maintain clean rest rooms in line with the Registered Rest Room Plan, and wear the recommended uniform.

Now, a new service for Texaco dealers is in operation. It is called the Texaco Dealer Service Plan. A dealer who requests Dealer Service receives at no cost to him a complete analysis of his business. A trained representative calls at his station in a white Dealer Service car. Together, they examine ways to increase the dealer's profits through the proper merchandising of products and services, the efficient use of sales promotion material, and the correct use of uniforms. The importance of maintaining clean, orderly stations and rest rooms, and ways to improve the location's physical facilities are thoroughly reviewed.

By improving station operation, this plan means better service for the public and increased prestige and profits for Texaco dealers and the Company, alike.

The traveling public, as well as Texaco dealers and the Company, benefit under Texaco's new Dealer Service Plan

The importance of cleanliness, particularly in rest rooms, is stressed by Texaco's Dealer Service representatives



Personal appearance is being discussed with this dealer at a station where the Texaco Dealer Service Plan is in effect

JET TAKE-OFFS IN THE MAKING

Trailing plumes of Jato exhaust, a Navy PB2Y long-range patrol aircraft is boosted into the air after a short run by the rocket action of "jet-assisted take-off" units

The right combination of asphalt and light oil, plus an oxidant, gives Jato its rocket-like oomph

DURING World War II it became necessary for aircraft engineers to devise a technique for getting large, multi-engined Army and Navy aircraft into the air with capacity and more-than-capacity loads. It had been demonstrated that, once in the air, the large military aircraft could fly successfully while carrying loads of greater-than-normal capacity. However, they often needed more power than their engines provided to get them airborne.

A similar need arose in situations where area limitations precluded the long land, or water, runs characteristic of the larger types of airplanes in taking off.

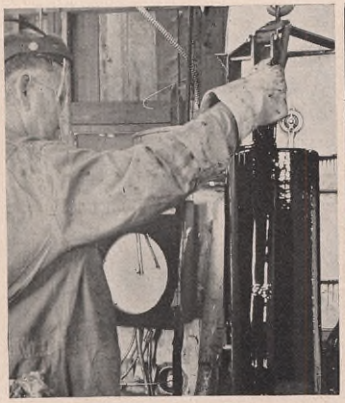
The answer to these problems was Jato—the short, familiar name of the war-developed technique of "jet-assisted take-offs." In this technique, or system, extra propulsive power comes from the rapid, but carefully controlled, burning of a solid asphaltic-type fuel inside a torpedo-like metal container. This fuel contains its own oxygen. Pressure of about 1,000 pounds per square inch is developed during combustion. Containers can be mounted under the wings or fuselage of the aircraft in any desired number. They can be discarded after the take-off and, if recovered in good condition, they can be re-used. The exhaust from the combustion of the jet fuel escapes through a nozzle in the rear of the container, or "bottle," as it is often called, and trails like smoke behind the airplane in its ascent.

The Texas Company has been furnishing the

Special Texaco asphalt, a component of Jato solid fuel, is stripped of wrapping

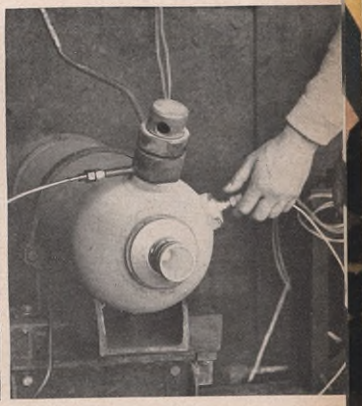
A light Texaco motor oil is measured before mixing with asphalt and an oxidant

Once mixed, Jato fuel is put into mold to harden



Hardened cylinder of Jato fuel is dipped in hot asphalt and is then encased

Suspended from conveyor belt, units are painted en route to shipping department



Regular firing tests are made on each fuel batch

Aerojet Engineering Corporation with special asphalt for the production of Jato units. Texaco, having access to a wide variety of asphalt sources, and with the processing "know-how," was able to develop the special asphalt used in Jato. Further, Texaco had the manufacturing facilities to supply the once urgently needed special asphalt. In the manufacture of the Jato fuel, the Texaco asphalt is mixed with a light oil and a chemical oxidizing agent to form a solid fuel with self-contained oxygen.

The rocket-like action of Jato gave a new oomph to overburdened take-offs. In effect, Jato has given flying a much-needed elevator to get giant craft into the sky after a short run.

Compounded exclusively with Texaco asphalt and oil, the Jato units are readied for take-off tests on Army P-80

A Matter Of Opinion

HOW MANY oil companies do you think there are in the United States? Ten? About a hundred? Several hundred?

Actually, the oil business is made up of more than 34,000 separate companies—producers, refiners, transporters, and marketers. But if you didn't know the right answer, it isn't surprising. A recent national opinion survey sponsored by the American Petroleum Institute revealed that most people have scant knowledge of the petroleum industry, that what the public *does* think of oil companies too often is based on surmise and inaccurate information.

Despite a widespread lack of knowledge, 82 per cent of the people believe that, on the whole, the oil business tries to serve the best interests of the public. Seventy-nine per cent think the price of gasoline is reasonable.

Many findings weren't so encouraging. For example, more than 40 per cent of the people think the oil industry is slow to adopt new developments. Possibly this thought has occurred to you. But does it seem to be retarding progress when 10,000 persons are employed and $50,000,000 is spent annually by oil companies in this country solely for research in their never-ending quest for new and improved products? To date, progress in petroleum has created 5,400 different products from crude oil, and new developments are continually being made. Synthetic fuels and lubricants from natural gas, coal, and oil shale can be produced whenever necessary.

"Opinion Vacuum" Exists

According to the survey, only 39 per cent of those polled think the oil business isn't a monopoly. Actually, the oil industry is probably the most competitive of all major businesses. Were the 61 per cent who represent the skeptics aware of the facts, conceptions of "monopoly" would surely be dispelled.

When it came to how prices of products are established, interviewers found that the public believes—in an almost 2-to-1 ratio—that oil companies get together and *fix* prices. They don't understand that prices are set through competition—competition that has also brought about improvements in products.

When a large number of people have no definite opinion about an industry, an "opinion vacuum" exists. This vacuum is usually filled by the first plausible idea that comes along. Just as there is an opinion vacuum on the number of companies in the oil industry, there are other false impressions. For example, you may be one of the many persons who believes that the industry is owned by a few large investors. The fact is that the 20 largest companies have nearly 1,000,000 individual stockholders. Some companies actually have more investors than employes. The entire petroleum industry is owned by approximately 2,000,000 persons.

Few industries, if any, operate with more complete exposure to the public than does petroleum. It does business in every state of the union. Every one of the millions of car owners in this country is a customer. Practically every home buys oil products. Oil companies pay taxes to the Federal Government, to every state government, to every municipal government. They do business with an endless list of other businesses. They have 1,250,000 employes. There are few individuals in America who do not come in touch with an oil company directly or indirectly.

It is readily apparent that both those who have capital invested in the oil industry and those who earn their livelihood as employes of oil companies have a direct interest in helping to increase knowledge of the industry among others. Abraham Lincoln was right when he said, "Public sentiment is everything. With public sentiment, nothing can fail. Without it, nothing can succeed." We know that petroleum promotes progress. Let's make sure others share the same opinion.

OUR WHO'S WHO

STUART C. HAWLEY, author of *Vacationland, U.S.A.*, has had a by-line in THE TEXACO STAR on several occasions in the past. A flier early in his career, "Stu" has found travel by car more to his liking. He holds 19 of the 21 existing elapsed-time driving records. It was in the middle Twenties when Stu formulated a plan for providing centralized touring service for motorists. He has been with The Texas Company since 1929 as Director of Texaco Touring Service.

H. A. MURRAY, author of *Wings for "Old Ironsides,"* is an aeronautical engineering graduate of Massachusetts Institute of Technology. Working with the aircraft industry on developmental problems has brought him in close contact with many special projects. In the early stages of designing the *Constitution*, he was called in by Lockheed Aircraft Corporation to advise on the ship's entire lubrication. Mr. Murray has been with Texaco since 1934.

(Right) This rock bit is one of several varieties that furnish needed chipping and crushing action to penetrate hard strata. When especially hard formations are struck, bits may need to be replaced every foot or so

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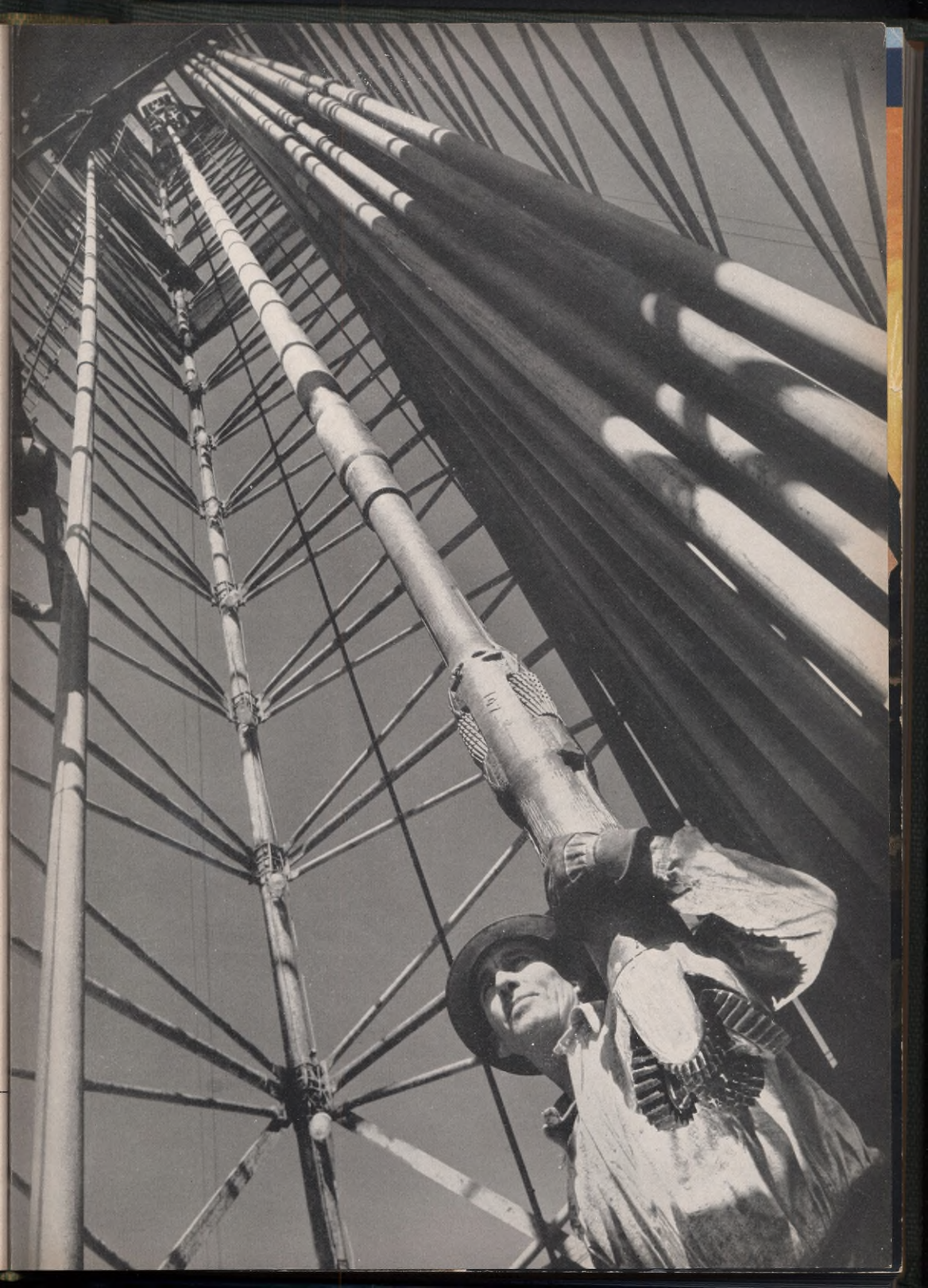
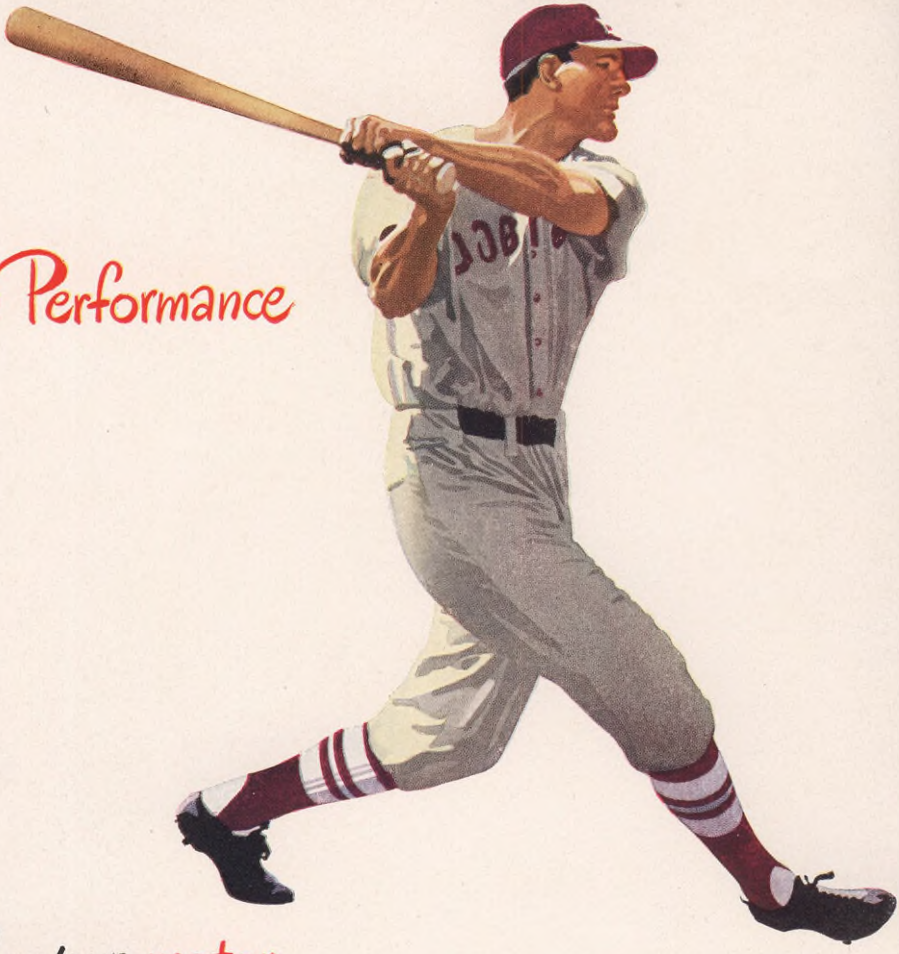


Top Performance



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...CLEANS as it lubricates

THE TEXAS COMPANY

TEXACO DEALERS IN ALL 48 STATES

Tune in: TEXACO STAR THEATER presents the TONY MARTIN show every Sunday night. See newspaper for time and station.