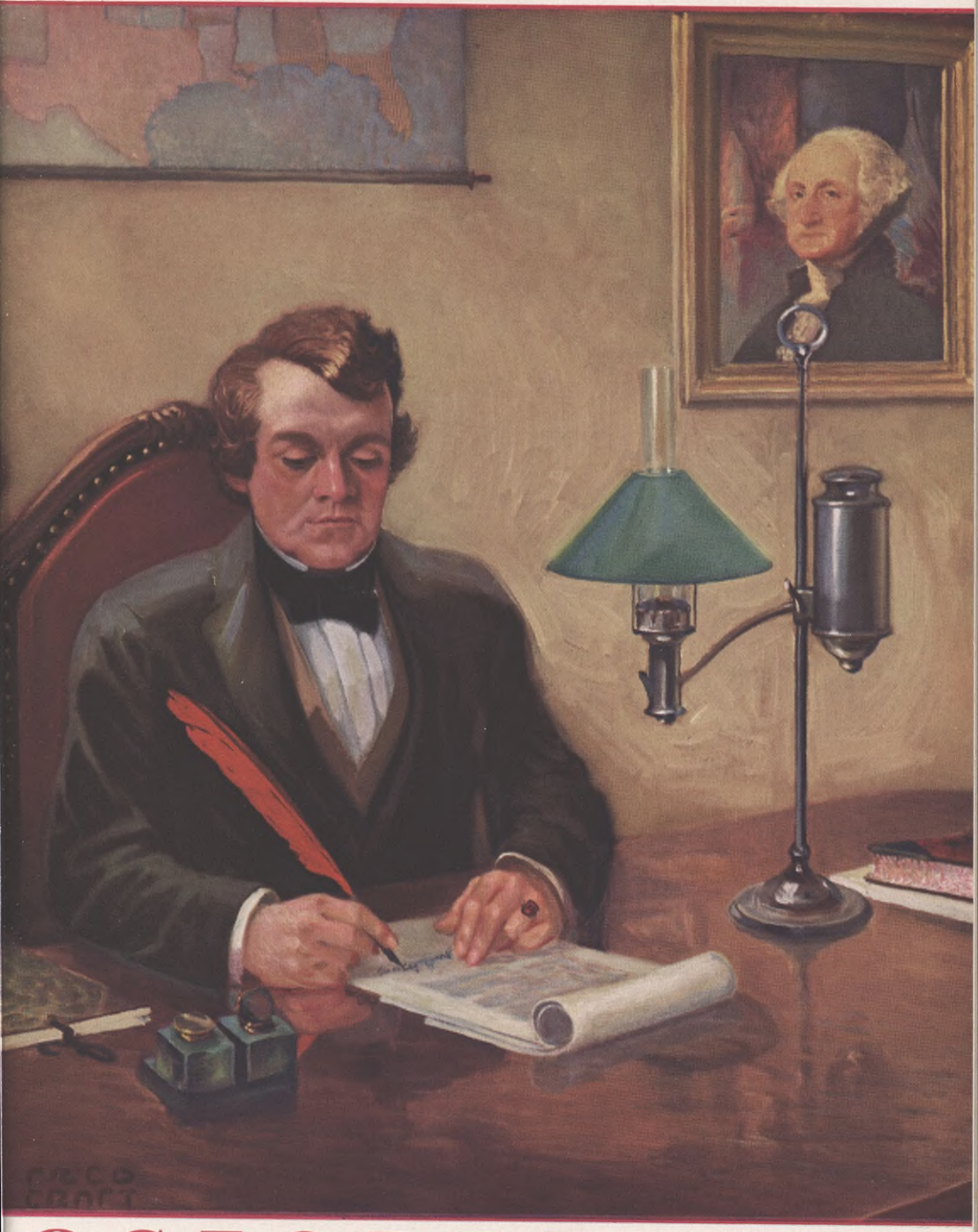
The TEXACO STAR



OCTOBER 1931

Making Progress a Matter of Law

TEAMSTERS in the early oil fields of the United States who made their livelihood by carting crude oil from producing wells to refineries enjoyed a booming business for more than two years after the drilling of the first well expressly for petroleum. Then came disquieting rumors of experiments with things called "pipe lines," through which oil was to be forced from wells to distant points.

Four thousand teamsters managed to stave off progress for a time by organized brute force. Early pipe lines were torn up; their owners and operators threatened. But on February 26, 1862, an act of the Pennsylvania Legislature granting 10 men the right to form a company "for the purpose of conveying oil through pipes or tubes" became a law. Governor Andrew Gregg Curtin signed the bill which brought the Oil Creek Transportation Company into being.

One of the organizers of the new company was George H. Bissel who, with several associates in New Haven, Connecticut, had formed the company which employed Edwin L. Drake to drill America's first oil well. By this time, the Pennsylvania countryside was dotted with derricks and the oil business had begun.

On October 10, 1865, 81 barrels of crude were pumped through a pipe 32,000 feet long. The system was estimated to be capable of doing the work of 300 teams working 10 hours a day. Other successful pipe lines followed, but oil teamsters did not disappear until pipe line supremacy had been thoroughly proved.

Pennsylvania's popular Civil War governor was his state's chief executive for six years, and later was twice re-elected to Congress. Today pipe lines extend for 100,000 miles throughout the United States and are in themselves an industry employing some 25,000 workers.

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THE COVER ILLUSTRATION ON THIS ISSUE OF THE TEXACO STAR, SHOWING GOVERNOR CURTIN OF PENNSYLVANIA SIGNING THE BILL WHICH CREATED THE OIL CREEK TRANSPORTATION COMPANY, IS THE SIXTH OF A SERIES OF ORIGINAL PAINTINGS, BASED ON AUTHENTIC DATA, DRAMATIZING OUTSTANDING INCIDENTS IN THE DEVELOPMENT OF THE AMERICAN PETROLEUM INDUSTRY. REPRODUCTIONS, SUITABLE FOR FRAMING, ARE AVAILABLE TO READERS.

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The TEXACO STAR

VOLUME XVIII
NUMBER 8

★

OCTOBER 1931

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IN THIS ISSUE

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Cover by Fred Craft

A PUBLICATION OF
THE TEXAS COMPANY

Published monthly for distribution to employes and stockholders

DIRECT ALL COMMUNICATIONS TO THE EDITOR OF THE TEXACO STAR
135 EAST 42ND STREET NEW YORK CITY

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BRIEF

★ A large part of the California citrus fruit crop was saved this year by burning Diesel oil in the orchards during cold nights. About 63,500 acres of oranges and lemons are protected by oil burners in this manner, and it is estimated that each Winter 260,000 barrels of oil are burned. Oil companies coöperate by having the oil available on short notice.

AND

★ Estimates place the total fire insurance of the United States at $201,000,000,000, or $1,665 per capita.

TO

★ Earthquakes in Mexico were the cause of marked increases in the production of oil wells nearby. Gas pressure was increased and some wells reported a 15 per cent increase in their flow. It is assumed that the earthquakes opened up underground fractures and thereby increased the gas pressure.

THE

★ Since its opening in 1927, more than 40,000,000 vehicles have passed through the Holland Tunnel between New York City and Jersey City, New Jersey.

POINT

★ The American Red Cross is seeking, by instruction in first aid, to reduce the 100,000 deaths and the several million injuries which occur yearly in the United States from accidental causes. Every person may help support this organization by joining the Red Cross when the annual Roll Call begins November 11.

★

★ Roof-top landing stations are planned in England in anticipation of future travel in airplanes of the autogiro type.

★

★ To avoid annoying the public and to save money, trenches for pipe lines are now being bored under highways and railroads by a newly developed machine. The old method of digging up the roadbed and laying the pipe in a ditch was costly and delayed traffic.

★

★ Thomas Jefferson is said to have made the first pair of long trousers and the first swivel chair.

STAR DUST

★

Scenic Highways and Sales

By coöperating to help keep the highways scenic by refraining from purchasing billboard space, The Texas Company has created much good will, and that same good will has had an appreciable effect upon sales. Many persons who sympathize with the movement to keep billboards from disfiguring roadsides patronize Texaco service stations.

One person who has noticed this is Richard W. Westwood, chief of the editorial staff of the American Nature Association, Washington, D. C.

"You may be interested to know," writes Mr. Westwood, "that The Texas Company's gasoline station here in the District of Columbia from which I purchase all of my gasoline and oil, and which does all my oiling and greasing, has a clientele including quite a number of persons who patronize it for the main reason that The Texas Company does not use rural billboards. The station manager told me the other day that he had two or three customers who live over in Virginia who come a bit out of their way to come to his station."

Texaco Agent Arthur Ray, of Bridgeport, Connecticut, also has several persons opposed to billboards among his customers.

"While serving the public as your agent," says Mr. Ray, "I have recently discovered that many are patronizing Texaco stations because The Texas Company does no billboard advertising. Since there are large groups of influential citizens in every community strongly opposed to this form of advertising, the thought occurs to me that they should all know that The Texas Company is thus assisting them to preserve the natural beauty of our highways."

Homes of the Presidents

Travel is inextricably associated with history. Scarcely any point of scenic interest exists which does not have connected with it an incident that is part of the mosaic of events making up a country's store of traditions.

No longer does the explorer have to carry a compass to guide him through uncharted territory. Today's exploring may be done in an automobile with a road map showing every bend and turn of the road ahead. Maps have been used for ages, and many, such as those made by bold brigands and swashbuckling pirates, have pointed the way to hidden treasures.

In order that the motorist may discover points of historic interest along his route, The Texas Company has prepared a map entitled "Homes of the Presidents—A Historical Tour With Texaco," so that the traveler through the State of Virginia, mother of so many chief executives of the United States, may have aid to uncover caches of historic tradition in the territory between Washington, District of Columbia, and Yorktown, where Lord Cornwallis surrendered to General Washington October 19, 1781.

Printed in colors on heavy paper, this map has been designed so that after applying undiluted orange shellac with a soft brush it will present a vellum-like, antique appearance and may be framed or mounted on cardboard. The mapper, Barksdale Rogers, has drawn pictures of the Capitol, the present White House and the White House of the Confederacy at Richmond; Mount Vernon, Monticello, Pohick, and Bruton Churches as well as historic buildings in Staunton, Alexandria, and Fredericksburg on the map's surface. Scattered among them are Continental and British soldiers, cotton pickers, stage coaches, post riders, and gentlefolk of the old South. The principal auto routes between places of interest also have been indicated, and beneath the map are brief descriptions of notable sites of history.

On the reverse is a complete road map of the northeastern United States, maps of the best streets through towns shown on the obverse, and a catalog of especially interesting places to visit in Washington, District of Columbia.

The map, "Homes of the Presidents," may be obtained without cost by writing to The Texas Company, Road Map Division, 135 East Forty-second Street, New York City.

★ Mr. R. C. Holmes, President of The Texas Company, was asked recently of which achievement of the Company he felt most proud.

"The one thing on the record of The Texas Corporation in which I feel the greatest pride," he answered, "is that no one in its employ ever has been asked or permitted to do an unfair act."

★

EAST TEXAS

☆

Bad Boy of the Oil Industry

By F. C. SEALEY
Asst. Division Mgr., South Texas Div.

and J. C. MILLER
Geological Div., Producing Dept.

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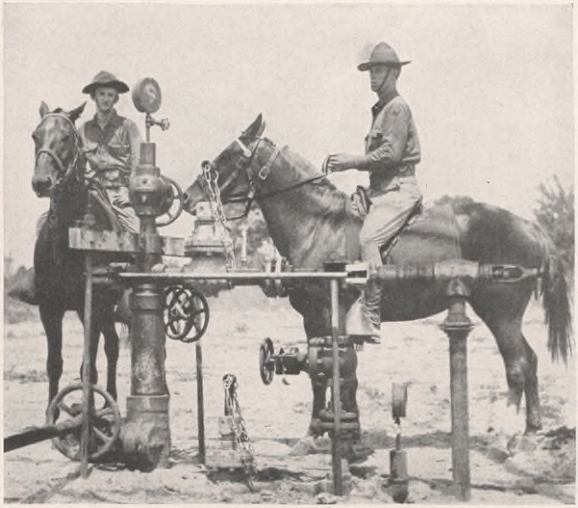


WIDE WORLD

Texas Troops on Guard Duty at an East Texas Well

VISUALIZE an oil field approximately 32 miles long, with an average width of more than three miles. If this is difficult, let us approach the picture from another angle: Add together the areas of each of the following major oil fields of the United States: Kettleman Hills Field, California; Hendricks Pool, Texas; Yates Pool, Texas; Oklahoma City Pool, Oklahoma; Seminole Pool, Oklahoma; and Hobbs Field, New Mexico. In the various odd spaces left over, if you place Mexia, Powell, and the remainder of the fault line fields of Texas, you now have a composite picture that begins to equal the East Texas Field in extent.

This field, lying relatively unmolested by the wildcatter's drill for many years, was discovered by Joiner, *et al*, in their Bradford No. 3, Rusk County, Texas, on October 3, 1930. Had the discovery well been located five hundred feet farther east, it is probable no production would have been developed, since the huge sand body which acts as the reservoir terminates rather abruptly along the eastern edge of the pool.

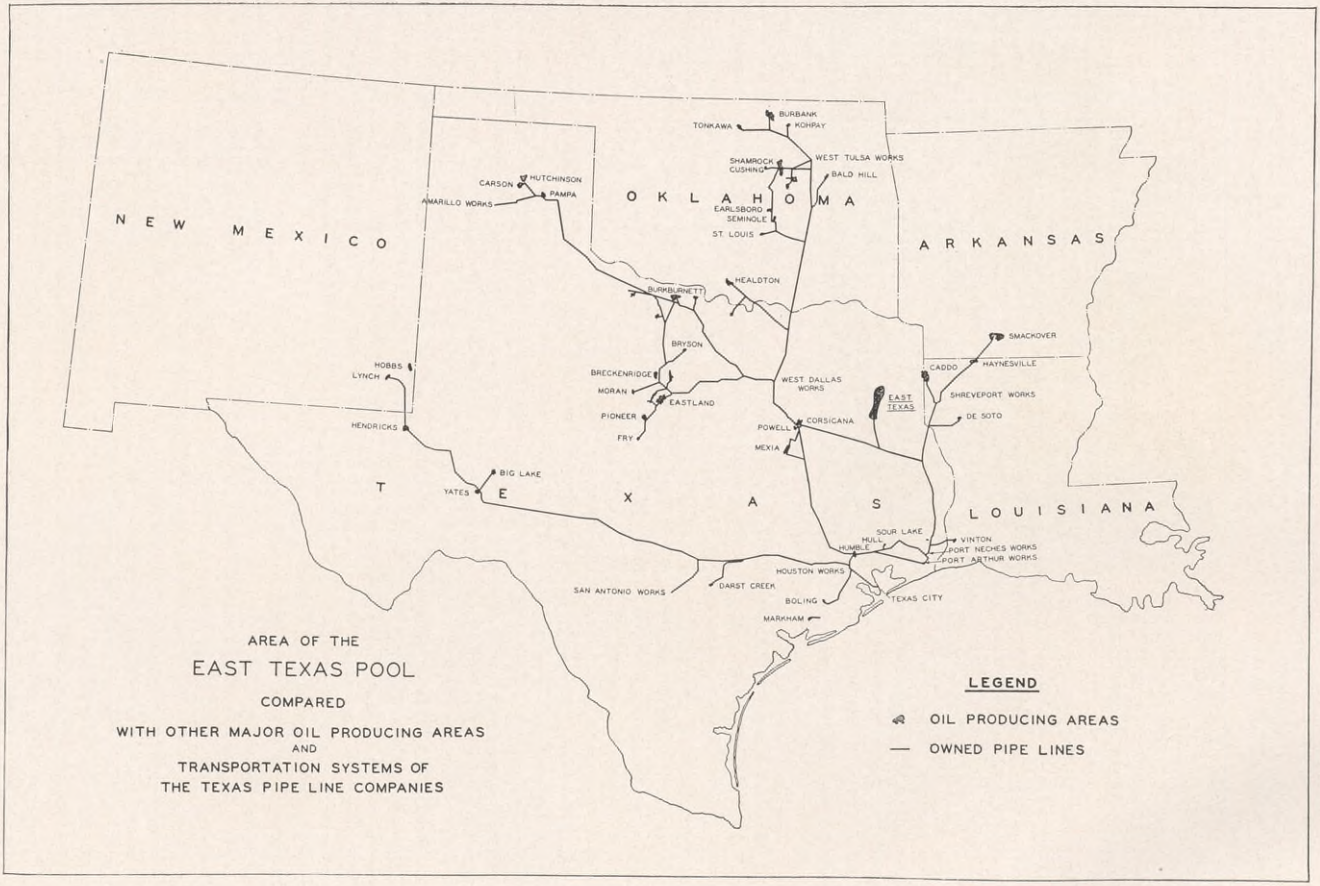
Three other wells may be termed "primary extensions," although their significance is sufficient to class them as discoveries. These are: Bateman, Crim No. 1, Rusk-Gregg County line, approximately 12 miles north of the Joiner-Bradford well, completed December 28, 1930, for an initial production of 3,000 barrels per day from a sand at a depth of approximately 3,600 feet; Lide Young No. 1, Rusk County, a westward extension of the Joiner area, completed February 1, 1931, for an initial production of 8,000 barrels per day; and Montcrief-Farrell, *et al*, No. 1, Gregg County, completed February 26, 1931, for an initial flow of 12,000 barrels per day. This well is situated approximately 20 miles north of the Joiner-Bradford discovery well.

The industry as a whole was somewhat dubious that a major field would result from the discovery made by Joiner, *et al*, but with each subsequent completion there dawned the realization that the largest pool the oil industry had ever known was in the process of development. In the eight months which followed the field yielded more than 51,000,000 barrels of crude.

Geologically the East Texas Field lies on the west flank of what is known as the "Sabine Uplift," a great, up-warped structural area occupying a portion of eastern Texas and the northwestern portion of Louisiana. Many of the producing areas in northwestern Louisiana are associated with structural features which are a part of, or are due to this uplift. Surface geology has played a small part in the discovery of the East Texas Field, although there are minor data of some significance present throughout the area.

Truly one may say that the development up to the present time has been the process of mapping an old, buried shore line of a sea which covered that area long ages ago.

The peculiar shape and character of the reservoir horizon of the East Texas Field is due entirely to the influence of the geologic forces that produced


NEW MEXICO
OKLAHOMA
ARKANSAS
LOUISIANA
TEXAS
BURBANK
TONKAWA
KOHPAY
SHAMROCK
CUSHING
WEST TULSA WORKS
BALD HILL
CARSON
HUTCHINSON
PAMPA
AMARILLO WORKS
EARLSBORO
SEMINOLE
ST. LOUIS
HEALDTON
BURKBURNETT
BRYSON
SMACKOVER
HAYNESVILLE
CADDO
HOBBS
LYNCH
BRECKENRIDGE
MORAN
EASTLAND
WEST DALLAS WORKS
EAST TEXAS
SHREVEPORT WORKS
DE SOTO
PIONEER
FRY
CORSICANA
POWELL
MEXIA
HENDRICKS
BIG LAKE
YATES
SOUR LAKE
HULL
HUMBLE
VINTON
PORT NECHES WORKS
PORT ARTHUR WORKS
HOUSTON WORKS
DARST CREEK
SAN ANTONIO WORKS
BOLING
TEXAS CITY
MARKHAM
AREA OF THE
EAST TEXAS POOL
COMPARED
WITH OTHER MAJOR OIL PRODUCING AREAS
AND
TRANSPORTATION SYSTEMS OF
THE TEXAS PIPE LINE COMPANIES
LEGEND
OIL PRODUCING AREAS
OWNED PIPE LINES

and controlled the "Sabine Uplift."

Careful estimates indicate that the field will have more than one hundred thousand acres of productive territory. If we assume an average ultimate recovery of 15,000 barrels of oil per acre (a conservative estimate) we may expect ultimately to recover one billion five hundred million barrels of oil from the area. Of course the production of this amount of recoverable oil will be stretched out over the economic life of the field, which life depends upon the rate of removal of oil from this vast reservoir of rather porous sandstone. At the present rate of consumption of crude oil in the United States this field could supply that entire demand for about two years. The Texas Company is fortified with substantial acreage holdings throughout the East Texas Field.

COURTESY THE LUFKIN LINE

Balky Mules Are a Part of the Day's Work in East Texas

Early attempts to prorate the area met with rather indifferent success. Numerous injunction suits, filed by some 20-odd operators, resulted in the field reaching a production of nearly one million barrels of oil daily prior to August 17, 1931. On that day Governor Ross Sterling of Texas took the situation in hand and invoked martial law in the area. As a result, the field was entirely shut down, except for drilling operations, from August 18 to September 4 inclusive. This drastic action was taken to prevent further waste in the field and to give the Texas Railroad Commission reasonable time to promulgate proration orders in compliance with the new conservation law, passed by the Texas Legislature August 12.

COURTESY THE LUFKIN LINE

Traffic is Heavy on Main Street, Kilgore

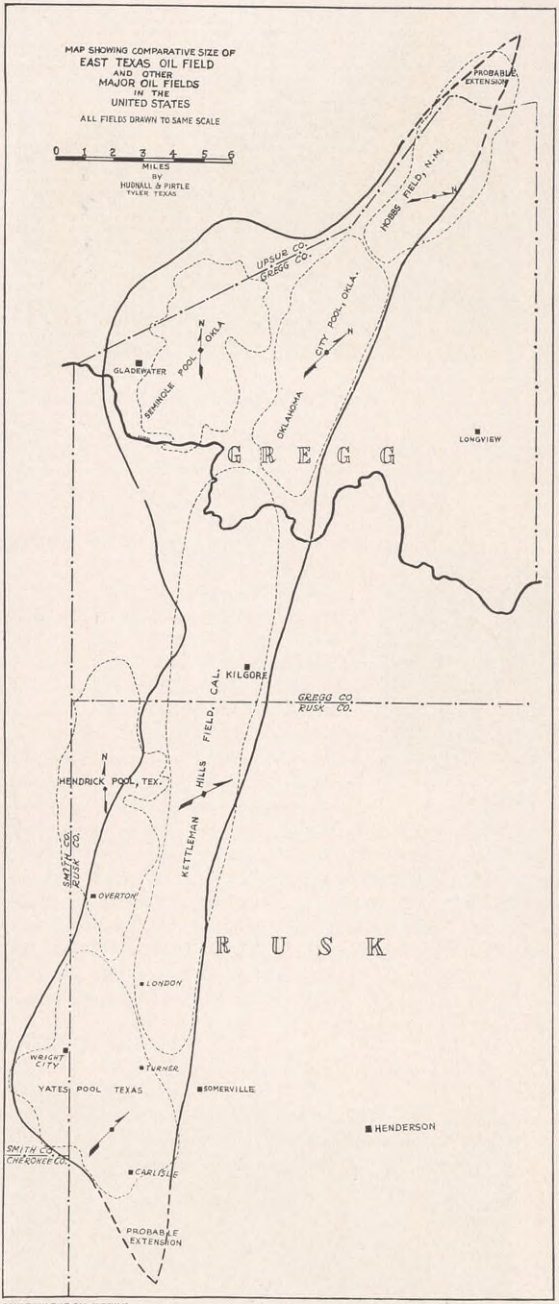
The new conservation law expressly withholds from the Railroad Commission power to limit the production of oil to market demand or to prevent economic waste, but it vests the commission with the power to prevent actual physical waste.

Under the Railroad Commission's latest proration order, the East Texas Field will be allowed to produce not more than 185 barrels of crude per well per day. With approximately 1,800 wells on production in the early part of September, the field now has an allowable of more than 300,000 barrels daily.

The latest proration order also provides that wells must be drilled at least 330 feet from a property line and that they must be at least 660 feet apart. It also provides that not more than one well can be drilled to each 20 acres of surface ownership, such 20-acre tracts to be known as units. The limitation of one well to each 20-acre unit or fractional unit does not apply to units where more than one well has already been begun or where there are offset wells already begun or completed. The latest proration regulations have had the effect of stimulating drilling activities with the result that there were a total of 679 drilling operations under way on September 10, of which 383 were active tests, 226 were derricks and rigs, and 70 were locations. An analysis of leasehold own-

Friar's Switch, the Busiest Switching Point in East Texas

COURTESY THE LUFKIN LINE



COURTESY THE OIL WEEKLY

This Map Gives Some Idea of the Great Area of the East Texas Pool

ership throughout the field reveals that 16 of the largest leaseholders, owning from 1,000 to 17,000 acres each, hold approximately 60 per cent of the total acreage. The remaining 40 per cent is held by some 225 miscellaneous leaseholders.

When drilled to an average density of one well to each 10 acres, a total of more than ten thousand wells will have been drilled. At an average cost of $20,000 per well for drilling and $5,000 per well for lease and pumping equipment, we arrive at the sum of two hundred and fifty million dollars to be expended for developing this huge field. The ultimate cost of bringing all the recoverable oil to the surface and transporting it to consumption centers will probably total almost a billion dollars in addition to the development costs given before.

There is the eventual salt water problem to be handled in connection with any oil field. In one of major proportions such as this, the problem calls for considerable thought. Handling the volume of water which will be produced along with the oil during the later two-thirds of the life of this field presents a serious threat. It is reasonable to expect that at least 10 barrels of water will be brought to the ground with each barrel of oil in the later stages of this area, and if production of the area finally dwindles down to an average of 10 barrels of oil per well per day we may expect from the ten thousand or more wells a total of more than one million barrels of water per day. How this is to be handled at its inland location is the problem which must be solved in an economical and efficient manner by the engineers of the industry.

★

Texaco Asphalt Paving Is Used on Many Private Estates as well as on National and State Highways and City Streets

From the Sales Point of View

By JAMES TANHAM

WHEN you look at a painting, if you would see it truly, it is essential that you view it from a proper distance. If you are too close you miss much of the effect produced by the artist. In other words, you must have the right perspective.

Perhaps it is a long jump from an oil painting to an oil selling organization; nevertheless they have this in common: that if you would see either truly you must have the proper perspective. If you are too close to an organization you cannot see it uniformly. There will be distortion and over-emphasis.

In casting about for the right spot from which to view the Texaco sales organization, I have selected an imaginary point thousands of feet above Kansas at the geographic center of the United States. Here is a corps of planes, each carrying a Texaco aviation representative who calls at airports to promote Texaco aviation products, aviation gasoline, airplane oils and greases. Suppose we get into one of these and cruise around up there. We shall need telescopes for our close-ups, but for much of our survey the large units we are to examine will be visible without eye-pieces. Up we go—up—up—and up.

Well, here we are—Yes, it is cool. But what a day! Look over here. Yes, that's California. Now take your glass. You see those large buildings below us? Those house the University of Kansas. Yes, that's the spot, right in front of that large building, where 13 different makes of automobiles lined up for inspection before starting on different routes to 13 other universities in distant parts of the United States. Those cars were employed in the famous university test. They tested the new Texaco Crackproof Golden Motor Oil under the supervision of university scientists so that The Texas Company could have the independent judgment of those keen minds before a drop of the oil was sold to the public.

Now just turn around. See that big peak over there in the East? That's the tower of the Chrysler Building in New York City, housing the general offices of The Texas Company. Sales headquarters are there. It's the home of sales policies, sales plans, advertising campaigns.

Here's something! The whole country looks like a checker board. See those bands of asphalt and, in some spots, concrete running from the Atlantic clear across to the Pacific? Then those others running north and south from Mexico in the West, and from Louisiana, Alabama, Mississippi, and Florida in the East, clear up to Canada? They look like a grill laid over the country. We call them Texaco trails, not only because there is Texaco Asphalt on many of them, but because you can drive the full length of almost any one of them and never be far from a

Texaco pump. You can start at New York, Atlantic City, or any other Atlantic Coast town, and find Texaco gasoline and motor oil right on the highway clear through to Hollywood, San Francisco, Seattle, or any other town on the Pacific. But while we call them Texaco trails we left the label off purposely. We don't believe in billboards to boost our products but ruin your view.

Of course this does not mean that you are not reminded of Texaco as you drive along. For instance, you cannot fail to see the circular sign bearing the familiar Red Star with the Green T ahead, a gentle reminder that you may need gasoline or that the oil should be checked, and that you are coming to a Texaco service station or dealer. The sign marks the spot where you should stop and in its unobtrusive way reminds you of Texaco and the fact that cars run better when they are properly lubricated and otherwise cared for.

Occasionally you will overtake a Texaco truck. When you spy a red gasoline truck in the distance, if it is spic and span, you are pretty safe in betting your last dollar it is Texaco. Give him a toot and watch him pull over to let you by in comfort. You are bound to read *Texaco* in big letters on the truck in that side glance of thanks as you go by.

Thousands of Texaco trucks are on the highways every day. They haul gasoline to Texaco pumps from more than 1,700 bulk distributing stations in every state. Yes, all 48 states and don't forget the Capital. There are some beautiful Texaco stations conveniently spaced on the main arteries all through the District of Columbia.

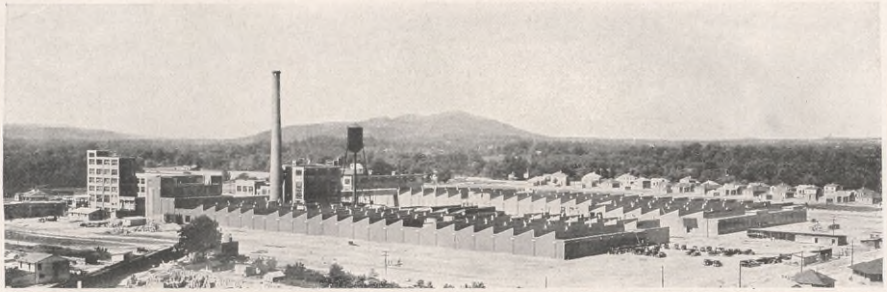
When it comes to selling Texaco my hat is off to the man at the pump. To the customer he is The Texas Company. He is the contact. Back of him are all the resources in crude, in refining skill and equipment, in ships, tank cars, and all other functions of distribution. His contact is the culmination of all advertising plans, sales campaigns, managerial policies. As he stands by his Texaco pump he personifies the Company.

As we look around up here it's a big country. But let us look at it as we would at a picture puzzle; all broken into pieces that fit together after you try them in all possible ways. Let us take first the section up in the Northeast, the New England States, one of the great Summer vacation lands of the world. If you have never motored through New England—well that's just one more big treat coming to you. It's Nature's paradise. Woods, lakes, sky, sea, sun, and air all blend to woo the traveler. You'll love its rockbound shores, its piney woods and alluring lakes, its bracing mountain air, lovely landscapes, and after a day of driving, fishing, or hunting, its pink, promising sunsets.

This first section of our picture puzzle; the six states, Maine, New Hampshire, Vermont, Rhode Island, Massachusetts, and Connecticut, comprise a Sales District under the general supervision of a District Manager. These states are again divided geographically into "zones," the size of a zone depending upon density of population.

Perhaps we ought to use our telescopes for a close-up of the zone. It may be a large area when you travel it but from our observation plane our eyes need a little help. Tell me where your eye rests and I'll tell you about that particular zone. All the others will be quite similar. I see you are following that river, the Connecticut. We'll follow it up to that large city. There now, that's Hartford, one of the most beautiful cities in New England. This will do for our purpose. Hartford is part of the zone embracing Hartford, New Britain, New London, Putnam, Westerly, and Willimantic. In each of these cities you will find a bulk station identified by the familiar Red Star with the Green T. And from each radiate those red Texaco trucks dis-

Texaco Service Stations are Found in 48 States of the Union. This Attractive Structure is in Washington, D. C.



Tubize Chatillon Company, Rome, Georgia, One of the Many Large Industrial Plants Which Use Texaco Roofing

tributing Texaco New and Better Gasoline, Texaco-Ethyl, Texaco Crack-proof Golden Motor Oil, and other Texaco products, for miles around. Often these trucks go 35 or 40 miles to serve a customer.

And when you say customer, you cover a lot of territory. Oil is everybody's business. It fuels and lubricates the mighty ocean liner; there's a Texaco marine representative in practically every important world port. Over the world's highways oil speeds the millions of motor cars, trucks, and buses. The farmer's tractor, the airplane, even the sewing machine in the home, the typewriter in your office—all use oil in one form or another. So you see Texaco customers include a large variety of users. Even your evening newspaper would be impossible without the cooling, smoothing effect of lubricating oil.

Well, let's see how the organization is built. First, the man at the Texaco pump, then the man who drives the red Texaco truck. Next the Agent at the bulk station. Then the Salesman, the Engineer, the Representative, the District Manager. That covers one section of our picture puzzle. If we put a number of these sections together we would have a sales territory presided over by a Territorial Sales Manager, each section or district organized as is the New England section. There are the Northern Territory, the Southern Territory, and the Pacific Coast Territory, each made up of a number of Districts and all tied into one great sales area covering the whole of the United States with general headquarters at New York.

Big, you say? Yes, but mere size, like noise, means nothing. Organization and coördination are the hall marks of efficiency and of effort effectively directed.

Now we have our puzzle all pieced together. The sun is starting down. It's growing cooler. But take your eye-piece once more. See that column of steam and those shining rails? That's the Chicago and Northwestern Railway to Yellowstone Park. See this one over here east—the Norfolk and Western. Up north is the New York, New Haven and Hartford. All are using Texaco lubricants. Texaco lubricates more miles of railroad than does any other oil. An efficient special department, the Railway Sales Division, looks after that. And railroads must have dependable oils or they have trouble.

Here's something else you may wish to know when you go driving. Texaco Asphalt is all over the country. For instance, long stretches of the Lincoln Highway, the Old Spanish Trail, miles of streets in cities large and small owe their quiet and low cost of upkeep to Texaco Asphalt. There's Lindbergh Boulevard at Buffalo, Linwood Drive, Kansas City, and up at West Point Military Academy the drives are Texaco Asphalt—to mention a few.

All that asphalt is sold by the Asphalt Sales Department with headquarters at New York and division offices in principal cities throughout the country.

Take a look at the city

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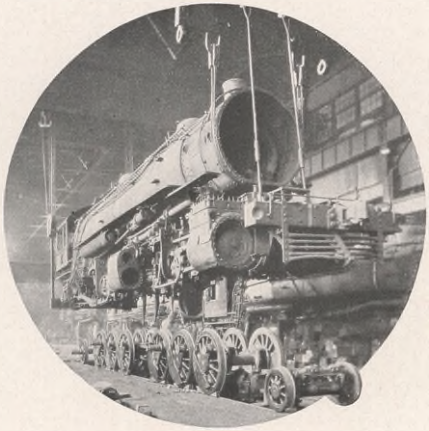

Texaco Lubricants Are Used in Thousands of Industrial Plants and on a Substantial Proportion of the United States Railroads

A Lamp of Bronze Used in Ancient Egyptian Times

The Egyptians Had a Use for It

But the Midnight Oil They Burned Was Not Petroleum

APOLLONIUS, treasurer-general for the great Ptolemy Philadelphus, raised the sheet of papyrus so that he might read without squinting in the brilliant Egyptian sunlight streaming through the unglazed window. As the representative of a ruler who has been called "the Louis XIV of Egypt," Apollonius always scrutinized carefully the accounts of his servants.

"Whence this added amount of lamp oil for your office on Apellaeus 25?" he asked the recorder, Demetrius. "What caused the scribes to sit during that night with a hand lamp?"

"As you know, master," the clerk replied, "the months of Apellaeus and Audnaeus were busy ones. You yourself were in Philadelphia superintending cultivation of the crops, and on the night of Apellaeus 25 it was necessary that my scribes, aided by others borrowed from Dioscurides, work late estimating the probable yield of the planted lands. The oil burned that night was obtained in the usual manner and entered on the account sheet you now hold."

The treasurer-general grunted in understanding and passed on to the next item on his list.

Just as the mummified bodies of many of the Ptolemaean rulers of Egypt have survived the years, the document scanned by Apollonius, a "daybook of the *kiki* (castor oil) for the assignment day by day" on his gift estate, has been preserved and is now the property of Cornell University. Its entries cover two full months and itemize the apportionment of lamp oil on an Egyptian estate in a manner that gives interesting sidelights on customs just 2,214 years ago.

Kiki and linseed oil were commonly used in Egypt for lighting and cooking purposes at that time. Sesame oil, another vegetable extract, was higher in price and quality. Hand lamps and torches are mentioned in the daybook as the means of illumination, and the entries on the record show that oil was doled out to three accounting offices, two secretarial offices, a bakery, a safety deposit room for silverware, a steward's storeroom, two separate stable managers, a bath master, and various Greek grandees in the entourage of Apollonius as they came to the estate to stay over night or to worship in the temples in the evening.

The temples of Serapis and Heracles were lighted by oil torches, and it is supposed that the priests and dignitaries there used hand lamps, for one item in the account reads "To Helenus for hand lamp and torch lamp in the Heracleum, 9 *kotylai*." This amounted to about four and one-quarter pints. An unusually large amount of

BROWN BROS. PHOTOS

Some Egyptian Lamps Were Made from Terra Cotta

oil was dispensed on the days of the festival of Isis, not only for the illumination of the temples of worship, but for lighting purposes in the bakery, where work was being done at night, and for other men who were cooking sacrificial food.

It was not "all work and no play" for the scribes who sometimes had to work at night, just as employes sometimes do in a modern age of business. On the days of the Isis festival no oil was apportioned to the secretarial offices and, in the opinion of

Other Types of Old Egyptian Lamps

W. L. Westermann, who translated the document, these days were holidays for them. Oil appears to have been one of the necessaries of life at the time, for it constituted part of a clerk's wages. His monthly salary was three copper drachmas, a quantity of wheat, and two *kotylai* of oil, probably sesame oil, with an extra allowance for clothing.

A translation of one entry in the account book reads "To Heraclides, stable man, for hand lamp for the horses because they were being sent out to graze, one-eighth *kotyle*." Another was written "And that given for hand lamp to the laborers sent away into Syria by Nicanor, one-quarter *kotyle*."

In present-day liquid measurement, a *kotyle* would be about a half-pint. During two months the estate of Apollonius used 436 and one-eighth *kotylai*, or about 32 and seven-tenths gallons of oil, valued at 123 and four-fifths copper drachmas or 111 and one-half silver drachmas. The value of the drachma was variable.

The Egyptian ruler seems to have held the oil producing industry of his country in the palm of his hand. Published "Revenue Laws of Ptolemy Philadelphus," says Mr. Westermann, show that there was a government monopoly in the production of oil, in the planting of *kiki*, and in the matter of selling and price-fixing. A strict prohibition against the manufacture of oil in other than government-controlled factories existed, although persons who, like Apollonius, held villages and lands in gift might be exempted from many of the intricacies of the oil monopoly laws. They could plant oil-producing crops and extract the oil under government supervision, but were allowed to retain only enough seed for the next year's sowing.

Thus a simple record kept by a Greek scribe in Egypt, far away from his own Hellenic shores, depicts the uses of oil more than 2,000 years before petroleum was discovered in great commercial quantities, and almost as many years before American colonists, huddled together in villages on the shores of this country, lighted their homes in much the same manner with "betty lamps" containing the oil of the sperm whale. —W. B. T.

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Let's Go to the Mountains

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By HERBERT OTIS WARREN

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Lariat Trail Coils Around 65 Miles of Scenery

IT IS the Summer of '58. A burly miner holds a smoking revolver in his hand and defies a group of claim-jumpers who face him across Cherry Creek. The reason is—gold. Rivalry had sprung up . . . factions clashed . . . and two frontier towns were born amid hectic hostilities—Denver, on the eastern bank of the creek, and Auroria on the west side.

Since 1858 Denver, the "mile-high city" in the Colorado Rockies, has smiled down on the world, has bidden motorists the country over to partake of her hospitality. Here is the land of "Buffalo Bill" and valiant Lieutenant Z. M. Pike, discoverer of Pike's Peak.

"Five flags to statehood" is the Colorado toast to patriotism, for it was not until the flags of four other nations, Spain, France, the Republic of Texas, and Mexico, had been unfurled and lowered again that the Stars and Stripes floated in victory.

East Coast motorists bent on viewing the snow-veiled heights where rushing waters, mysterious lakes, virgin forests and unique drives vie with one another, will find the National Old Trails and the Victory Highway quick routes to Colorado. From the South and Southwest, one may take the Dixie Overland Highway from Savannah, or the Dixie Highway from Atlanta to St. Louis. Western motorists may take the Victory, Midland or Lincoln Highways from Los Angeles, the Pike's Peak Ocean to Ocean Highway or the National Old Trails.

One of the largest camping grounds in the world, Overland Park, is but a 15-minute drive from downtown Denver, and here one may find every convenience.

Denver's mountain parks attract thousands of visitors each year—yet who can see all there is to view in such an enormous territory of 900 square miles? Some tourists drive to the glacier region, where eight mammoth sheets of ice and snow cling to the Continental Divide, 60 miles from Denver. Others choose shorter trips into the South Platte Canyon, a delightful spot where trout streams tax the skill of the fisherman.

But let's be off on the Circle Tour to Rocky Mountain National Park and back to Denver: about five hours of delightful driving brings us to the edge of the little village of Estes Park, within 10 miles of the Continental Divide. An array of peaks, some majestic, some dwarfed, seem to beckon in the distance; an invitation to explore further.

Longs Peak is king of the mountain parks, rising a sheer 14,255 feet. Once within the confines of the park, one may find comfortable hotels or he may

camp out and sleep beneath the bright Western stars.

Up the valley of Fall River the road follows past Sheep Lake, rendezvous of big horn. Mummy Range is seen to the north, where Hagues Peak shelters Hallett Glacier, a small body of perpetual ice. Stunted and wind-blown trees mark the timberline on the way up the range.

Twelve thousand feet high on the crest, the loftiest point on the road is reached. Below are streams, valleys, forested slopes, and civilization—while surrounding are the lofty, silent mountains, scarred by the marks of age-old glaciers, and frowning from their heights. Far to the west lies Medicine Bow Range, called by the Indians, "Never Summer" Range.

It is with a mingled feeling of awe and regret that one leaves this scene as the road leads down. Paradoxically, one goes *down* to cross the Continental Divide to reach the headwaters of the Colorado River on the Pacific Slope.

Grand Lake, a sapphire gem on the western edge of the park, does not belie its name. More than 8,000 feet in altitude, the lake boasts of the highest yacht club in America. The annual regatta here is a noteworthy event. About the lake huge 12,000-feet-high peaks stand guard.

At Berthoud Pass, a beautifully timbered section, the watershed between the two great oceans is again crossed. Approaching Wildcat Point, after leaving the Valley of Clear Lake, Denver stands like a painted canvas—only 14 miles away.

Another trip into the cloud-swept skyline out of Denver is the Scenic Lariat, a 65-mile drive through Denver's mountain parks. A road leads to Golden on the way up Lookout Mountain where "Buffalo Bill" rests.

Pahaska Tepee nearby houses the personal relics of the famous scout. The tepee has been converted into a memorial museum and is open to visitors. Hosa Lodge contains an exhibit of World War relics of the American Legion.

This interesting drive includes Fillius and Bergen Parks, ideal camping grounds, and continues through Bear Creek Canyon, returning by way of Morrison. The entire trip takes about five hours and leads past the Municipal Game Preserve and the mountain golf course at Evergreen.

Returning from Evergreen, Turkey Creek Canyon may be followed to Morrison, and from there over the Dinosaur Trail into Golden, thence to Denver.

Over the Dinosaur Trail, and at Big Thompson River Canyon, there are traces of fossils of grotesque monsters of the cretaceous period. The thigh bone of the largest animal known to the scientific world was unearthed at Dinosaur Park.

Colorado, the mountain state, contains 46 of the 59 highest mountain peaks in the United States, all more than 14,000 feet high. Hunting and fishing are here, or one may hike, swim, golf, ride, ski, ice skate —or just loaf. And all these diversions are found within a short radius. In this land of giant mountains is it any wonder that Denver citizens tell visitors: "You sing 'America'—why not see it?"

There's always something new to see just over the hill in the Colorado Rockies—always a new attraction that holds the interest. Cordial hospitality awaits—whether in a secluded motor camping grounds or within the walls of a luxurious hotel or inn.

Such a drive through the famous mountain region of America has few equals anywhere in the world.

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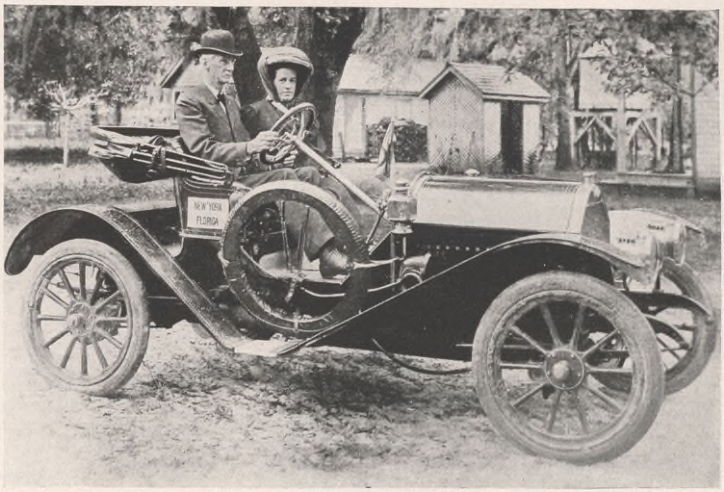
Berthoud Pass, Where the Victory Highway Crosses the Rockies



Mr. and Mrs. Smith in Their "Uncovered Wagon" with Florida Far Ahead

"Florida or Bust!"

Mr. Smith Nearly Did Just That —But He Finally Got There

THE ROAD was very bad, hilly and dangerous, and our brakes became so hot that they sizzled when the auto plunged through streams over which we could find no bridge. We had no road maps nor were there any guide posts to point the way. For hours at a time we were lost. At intervals we were obliged to cut off stumps in our path or to fill holes in the road with brush. Saws, axes, spades, and ropes helped to put the miles behind us. We crossed the Altamaha River on a railroad bridge, bumping along over the ties."

This is the odyssey of Coe D. Smith of Smithtown, Long Island, and his description is not of an automobile trip through the Himalayas but down the eastern seaboard of the United States 23 years ago. Mr. Smith, now 86 years old, made a pioneer trip from New York to Florida in a motor car with his wife in 1908. Other drivers had tried and failed. Three weeks elapsed from the time they set out in their Hudson "uncovered wagon" until they arrived in Tampa, Florida. Last year Mr. Smith drove from Crescent City, Florida, to his New York State home, a distance of 1,289 miles, in three days.

Hardships encountered on the 1908 trek down the coast were a night spent in a lumber camp, river crossings on flat-boats that were poled across the stream, and jolting journeys over swampland on corduroy roads of tilting, rolling logs. The nuisances of the trip included paying frequent toll on the highways—they halted 19 times in one stretch of 100 miles and paid five cents at each stop—and buying new license plates in every state they entered. The car displayed nine license plates when Mr. and Mrs. Smith arrived in Tampa.

Mr. Smith took the "tiller" of his first car, a Crescott Steamer, in 1900. No license plates were required then; nothing more than the owner's initials painted on the high back of the auto. Instead of a horn, a bell served to warn of the approach of the steam-driven chariot. Ferryboats were particular about accepting a horseless carriage for a fare, and the tourist of the early 1900's was obliged to put out the fire beneath his boiler, drain off the gasoline, and push the car on and off the boat.

This veteran motorist, a descendant of the original Smiths of Smithtown, shows a marked preference for Texaco products. He has owned and driven "cars of all makes from two to 12 cylinders," and after his trip from Crescent City last year he issued a challenge to all drivers of his age.

"What Lubricant Shall I Use?"

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By **J. J. STATZ**
Technical Division, Refining Department

UP TO within recent years the average automobile owner, although he did not fully realize why his car required certain lubricants, was guided to a great extent by the manufacturer's instruction manual. In it he found such statements as this: "We recommend the use of Blank Oil Company's Motor Oil Z for the engine, Blank Oil Company's Cup Grease No. 3 for the grease cups," and so on.

Gradually automobile companies began to realize that this practice was a form of advertising a particular refiner's products in preference to all others. Lack of a unified nomenclature for grades of oils and greases, however, compelled manufacturers to make these specific recommendations.

With the present-day standardization of automobile lubricants and because of the fact that all automobiles use oils of the same characteristics, with the possible exception of body, most automobile manufacturers have ceased specifying lubricants by brand names. Instead they now use a numerical system which is based on what are known as "S. A. E. numbers." These numbers correspond to certain grades of oil and were established by the Society of Automotive Engineers.

S. A. E. numbers will now be found on packages and charts of leading oil companies and in manufacturers' instruction booklets. Thus a motorist may drive to his favorite service station, ask for an oil of the S. A. E. number recommended by the manufacturer, and get the proper grade for his car.

In the industrial field, on the other hand, conditions are much more complicated and the lack of standardization makes the selection of the proper lubricant something of a problem. The various devices used in our diversified industrial plants require specialized lubricants. Consequently the operator needs some guidance on machines which are new to him.

The manufacturer usually anticipates the operator's query, "What lubricant shall I use?" by specifying the type of product to be used for each part requiring lubrication. More often, however, the manufacturer specifically mentions the brand names of the lubricants with which he has had experience, has tested, and knows will do the job. As a result, each important industrial machine is accompanied by definite lubrication instructions. As stated above, most of these are instructions to use a certain refiner's oils or greases.

Methods of instructing operators vary considerably: Some companies mention lubricants of one or more refiners in their operating manuals. Some attach brass plates to the equipment, recommending the use of a specific oil, while others send lists of approved oils and greases with each shipment. Still others enforce the use of certain oils during guarantee periods.

As mentioned previously, these approved lubricants are selected on the basis of tests. The Texas Company has a plan of coöperation with manufacturers whereby Texaco products are tested at their plants and approved when tests show them to be satisfactory. The result of many such tests is that Texaco products are exclusively recommended for certain devices.

An example is a certain electric light unit used by farms, boats and in sections where electricity is not available. The manufacturer recommends, in preference to all other products, Texaco Motor Oil F for its efficient lubrication.

And so on, in considerable number manufacturers in the United States and abroad recommend Texaco products. Each of these recommendations is based on tests resulting from close coöperation between the engineering staffs of The Texas Company and of the manufacturers. Obviously, for a manufacturer to recommend a lubricant which he has not tested would be quite hazardous and would be harmful in effect for both the oil company and the equipment maker.

On the other hand, correct recommendations perform a mutual service. The manufacturer is assured that when the operator uses the chosen lubricant he will get the most satisfactory results from the equipment, thus reacting to the manufacturer in the way of repeat orders. The oil company benefits by virtue of its products being specified as most suitable, which results in increased sales.

NOT ALL
LEAD TO

A Volcano Helps Make a Highway: An Old Lava Bed Near Puebla, Mexico, Yields Material for Hard-Surfacing Near by Roads

(Above) Two Out of Three United States Cities of More than 25,000 Population Use Texaco Asphalt

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Building a Spanish Main (Right) but This Highway Will Carry Spain's Rising Auto Traffic; Not Pirates

Roads Are nce Hand on the of Shikoku

L ROADS
TO ROME

re ...ced Out by
the ...eer Hillsides
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A Modernized Persia Meets the Demand for Better Highways Where There Are Already Several Thousand Miles of Automobile Roads

A Spade Is a Spade in India (Above) but it Takes Two to Make a Shovelful: Road Building in Kashmir

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(Left) This Trans-Alpine Road Is Being Built to Take Care of Italy's Rapidly Growing Auto Traffic

G GA...Y PHOTOS

The Bar Harbor Express, a Crack Train of the Maine Central Railroad

All Aboard for Bar Harbor

This Texaco-Lubricated Train Makes Traveling a Pleasure in the Pine Tree State

PRINCIPAL cities north of Washington, D.C., on the eastern seaboard of the United States have almost at their doorsteps an all-year playground, Maine, with a tidal coastline which, if extended in a straight line, would reach 2,486 miles, or half the length of the country's entire tidal waterfront. Railways from all of these cities connect with the Maine Central Railroad, and on its carefully appointed coaches one may traverse a state containing 1,300 wooded islands, 5,131 rivers and streams and 2,486 lakes, identified by a singular mixture of Colonial, Indian and French names.

One of the crack trains of the Maine Central, the Texaco-lubricated "Bar Harbor Express," leaves Portland, Maine, six days a week for Bar Harbor. With the White Mountains of New Hampshire visible 65 miles in the distance as the train pulls out, one is whisked from Portland, birthplace of Henry Wadsworth Longfellow, to Maine's capital of Bangor, on the site of the ancient settlement Norumbega, where French explorers built a fort in 1656.

As the humming of the rails beneath the fast-moving wheels of the express reaches a lower note, Mount Desert Ferry comes into sight, and a Maine Central steamer is waiting to bridge the eight miles across Frenchman's Bay to Mount Desert Island, the 90,000-acre "isle of enchantment" on which Bar Harbor is situated.

Nearly circular in shape, Mount Desert Island is deeply halved by Somes Sound, the only fiord or glacial estuary east of the North Pacific coast and south of Newfoundland. On this island is Acadia National Park, the first national park established east of the Mississippi River.

Bar Harbor is as well known in European capitals as Newport and Palm Beach, and in Summer the territory near by is the meeting place of American and European capitalist, foreign diplomat, tourist and sportsman. Somes Sound is a safe anchoring place for many a yachtsman's pride, and vessels of the United States Navy's North Atlantic Squadron frequently salute ships flying the flags of other countries on its calm surface. A village of scattered wooden shacks in 1865, Bar Harbor passed through many stages to attain its present prominence.

For those less inclined to social life, Bar Harbor is the distributing point for the other resorts of the island, Northeast, Southwest, Seal and Bass Harbors, Manset, Tremont and Somesville. And when Spring fishing, Summer boating, Fall hunting, or Winter sports are over, the convenient Maine Central takes the visitor back to his home with pleasant memories.

Editor's Note: This is the third of a series of articles concerning important railroads which are lubricated by Texaco products.

Eternal Vigilance—The Price of Safety

IT GETS pretty cold about five o'clock in the morning down in Gray County, Texas; altogether too cold to be standing around watching a drilling line go up and down in an oil well. The driller walked about and beat his hands together. Why hadn't he picked out a business with a little excitement to it? This drilling business was pretty dull, he thought.

Up and down, up and down, went the drilling line; back and forth, back and forth across the derrick floor paced the driller. Suddenly he stopped and listened.

Two thousand feet beneath him there was a vague rumbling which in a split second had become a mighty roar as twenty million cubic feet of natural gas tried to push its way out of the hole. Too late to pull the drilling tools from the hole, the driller did the next best thing; he ran to the generator and shut off the power, plunging the rig into darkness.

In the Oil Fields there is Not So Much a Fear of Fire as a Grim Determination to Prevent it

With a terrifying hiss and a boom the gas burst from the hole. Great rocks popped like champagne corks high into the air, striking a shower of sparks as they banged against the steel frame of the derrick. Gas fumes filled the air. One of the sparks ignited the gas and gaunt flames were soon licking hungrily at the wooden portions of the drilling rig.

The driller, his boredom forgotten, was making tracks for a good, safe place. The tool dresser, his assistant, was already at a nearby telephone and news of the fire soon spread over the entire field.

Half an hour later all available roustabouts, "gang pushers" and farm bosses were either at the blazing well or on their way to it. The intense heat had proved too much for the towering steel derrick; it glowed red hot for a time and slowly began to crumple, portions of it melting like butter. Orders were given to turn water into the cellar of the rig and to get rid of the derrick. Part of the gang started to clean up the debris and others began laying additional water lines.

It was terribly hot; roustabouts, clad in asbestos suits, dragged winch lines up to the cellar and hooked them around timbers, pieces of steel or bits of smouldering wreckage. A few minutes of this work was enough for the strongest of them, but they kept at it in relays, for the roaring monster must be tamed.

In an incredibly short time streams of water were pouring in around the top of the hole and within a few hours the wreckage had been completely cleared away. Under a steady barrage of water workmen erected tall masts on each side of the blazing well and between them a cable was stretched. Then the fire was turned over to Bill, the "shooter."

By this time the crowd was scattering to the hills. The shooter, a tall, laconic individual, slipped a large nitroglycerine bomb on the cable, attached a line to it and, walking to the opposite side of the well, began to pull the bomb slowly toward the flaming torch. Breathlessly the crowd watched as the bomb came nearer and nearer to the fire. When it was directly over the blazing well the shooter started to run, while his partner, some distance away, closed an electric switch that touched off the bomb. There was a blinding flash, a mighty roar . . . and the fire was out.

The driller scratched his head, picked up his lunch basket and started for home. He hoped it would be nice and quiet at home.

* * *

Fire, when controlled, is one of mankind's greatest benefactions; uncontrolled it is his deadliest

enemy. Thanks to effective training and present-day efficiency, fires in the oil fields which could have been prevented are almost unheard of. Oil companies have realized that the best fire fighting equipment in the world is a trained personnel and to a man the personnel of the Producing Department of The Texas Company is schooled thoroughly not only in fighting fire, but in that vastly more important science, preventing it.

No phase of operating discipline comes in for more attention, from Division Manager to roustabout, than the rule against smoking on the drilling or producing properties. *No Smoking* signs are everywhere; the field employe will not smoke, nor will he permit others to smoke.

Naturally any petroleum producing or refining activity is dangerous, but with proper fire fighting equipment and a personnel schooled in safety methods it may reasonably be assumed that the hazards are considerably less than is generally supposed.

As an example of how effectively fire may be prevented, even in crowded drilling areas, where the hazards are admittedly greater, we cite the recent development of Alamitos Heights, Signal Hill, and Santa Fé Springs, California. All the wells drilled in these fields were deep and of high gas pressure, but the Company's drilling organization observed to the letter all principles of fire prevention. Without exception all connections were tight, equipment was kept clean and every precaution regarding boiler fires was observed. Three major drilling campaigns were thus completed without a serious fire originating on the Company's property.

Foremost among the safety rules observed in all producing divisions of the Company is the proper installation of producing machinery and equipment. Where the probable life of a unit justifies it, concrete foundations and floors are installed in the engine house and on the derrick. Provision is made for drains to prevent dangerous accumulations of waste oil.

One excellent drainage method has been installed on our W. T. Hittson Well No. 2 in the West Texas-New Mexico Division. Into the concrete derrick floor is fitted a removable steel grating and under it is a shallow box into which waste oil from the pulling rods and the tubing falls. Leading from the box is a four-inch pipe, running into a concrete pit some distance away. After the day's work is completed, the waste oil is pumped back into the stock tanks.

Exhaust pipes are fitted with water drip connections to keep them cool and to extinguish any sparks, while the pipes themselves are carefully insulated from contact with wooden structures. All points where excessive friction might develop are eliminated.

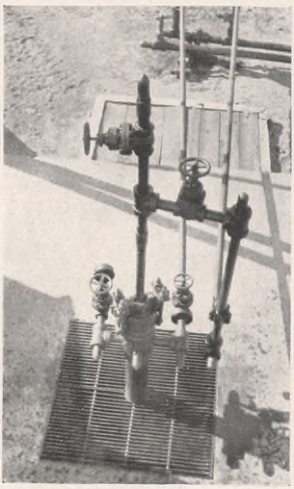
A Sight No Oil Man Likes to See

A simple, effective device invented by H. H. Brannon, of our West Texas-New Mexico Division is an excellent fire preventive: By an ingenious system the gasoline supply to the engine will be instantly cut off if the belt slips or breaks, if the drilling rods part or if the engine tries to "run away."

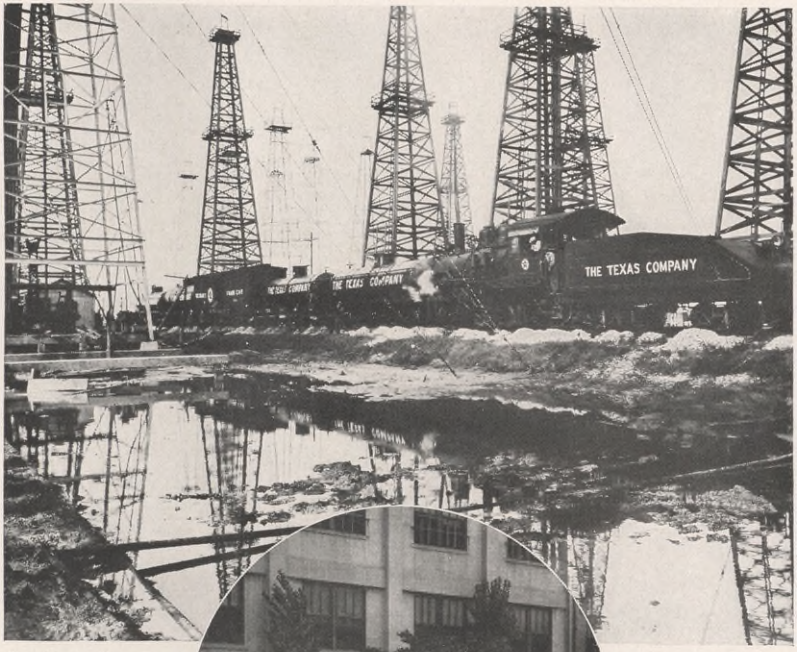
Throwing up dikes of dirt around storage tanks in the field is also an important precaution.

Once the equipment is installed, proper maintenance is the next consideration. Cleanliness is essential; the engines are wiped free of waste oil and oily rags are disposed of at a safe distance. Rubbish is never allowed to accumulate and the derrick floor is periodically scraped. Once a well is brought in, the structure housing the drilling equipment is made independent of the derrick and all connections are tight.

Warning signs are liberally displayed near wells, tanks, and plants; smoking is strictly prohibited near any unit. In areas where a large amount of equipment is concentrated, such as at



A Drainage System Such as This Reduces Fire Hazards



Our Scarlet Foamite Train On the Job at Spindletop, Texas

One of the Regular Fire Drills at Our Port Arthur Works

warehouses, camps, machine shops, and repair shops, fire extinguishers are kept within easy reach and extinguishers of larger capacity, mounted on wheels, are kept in readiness.

Every oil man knows that fire consumes the oxygen in the air and therefore that where there is no air there can be no fire. As a result, when a trained oil worker sees a small fire he smothers it immediately. Sometimes a quick move in covering a small fire with a coat or old blanket will prevent serious damage or even loss of life.

One of the most effective means of combating a large oil fire is foamite, a substance which, when introduced into water, produces a foam with a volume approximately eight times that of the water. This foam spreads over the surface of the blazing oil, forming a blanket which smothers the flames by excluding the oxygen.

Another method of controlling oil well fires consists of drilling an inclined tunnel down to the casing of the burning well and tapping it below the surface.

A typical example of company equipment for fire prevention and control is that located at an electrical unit in the Burkburnett District, North Texas Division. Here, ready to hand, are 13 fire plugs with direct connections to a duplex steam pump in the boiler house with a capacity of 200 pounds pressure. Three hundred feet of hose on two reels are located in the fire house nearby and in addition there are two 40-gallon chemical extinguishers, two two-and-one-half-gallon Foamite extinguishers, and 13 one-quart Pyrene extinguishers.

Eternal vigilance is the price of safety in the oil fields. Throughout the organization there is not so much a fear of fire as a grim determination to avoid it, for fire means to the oil man not only the possibility of lost-time injuries but loss also of Company property entrusted to his care which, quite properly, he feels is a part of him.

Glass Makers of Ancient Thebes

GLASS

An Age-Old Industry Becomes Modernized

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ALTHOUGH the Chinese, in their ancient age of culture, are said to have invented many of the articles in common use today, a historian of the glass industry says that "even the Chinese did not possess glass at any very early time." The first glass-blowers are thought to have been Egyptian artisans who, during the rule of the Ptolemies, fashioned flasks out of the same sort of mosaic glass they had used in beads for more than 2,000 years.

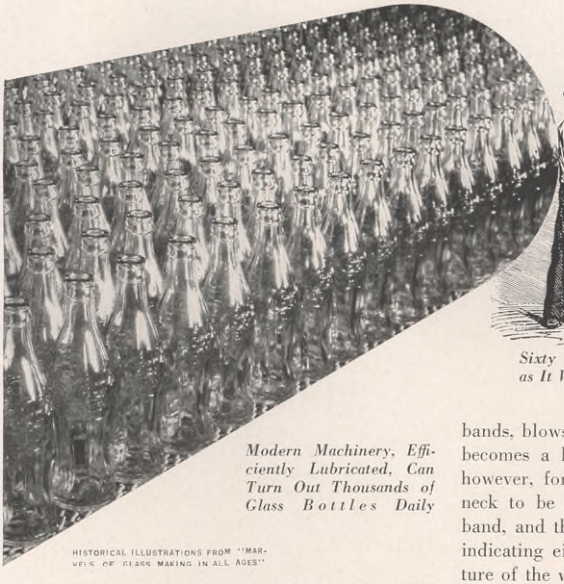
Glass was common in Roman times and was even used in a rudimentary way for optical instruments. A writer of the time described the use of a glass sphere filled with water to enlarge minutely-written letters. Hollow, colored glass balls have been found in which Roman women kept their cosmetics, which they spread on their faces with a twisted glass wand. Roman glass was made for about 400 years and in every country the Romans penetrated. Theodosius II, Emperor of Rome 408-450 A. D., encouraged glass trade by exempting glass-makers from all personal taxes. The use of glass in windows was checked by the coming of the Huns.

In spite of China's lateness in taking up glass manufacturing, early scientists in that country and other Eastern nations antedated Benjamin Franklin's experiments with electricity by placing lumps of glass on the tops of buildings to avert lightning.

In 1279 Venetian glass-workers formed a guild, and in 1402 Timur the Lame, or Tamerlane, a descendant of Ghengis Khan, carried off from Damascus to Samarcand "weavers of silk, men who made bows, glass and earthenware, so that of these articles Samarcand produces the best in the world." It was not until the end of the Fifteenth Century or the beginning of the Sixteenth that glass works became so numerous in France that leathern bottles were replaced by glass ones.

The Seventeenth Century in America was almost a glassless age although several attempts were made to establish the glass-blowing industry. The first, at Jamestown, Virginia, in 1609, was a failure. A second attempt, when Venetian workers were brought over in 1621 to make beads for trade with the Indians, may be called America's first mint, but it, too, was short-lived. A glass factory built at Salem, Massachusetts, in 1641, made a variety of articles for three or four years and then closed its doors.

The first instance of a centralized glass industry in America seems to have been in the settlement of New Amsterdam, on Manhattan Island. The street of New York's financial district now called William Street was known to the Dutch settlers as Glass



Modern Machinery, Efficiently Lubricated, Can Turn Out Thousands of Glass Bottles Daily

HISTORICAL ILLUSTRATIONS FROM "MARVELS OF GLASS MAKING IN ALL AGES"

Sixty Years Ago Glass Was Made Much as It Was When the Pyramids Were New

Makers' Street. Glass seems to have been made in New Amsterdam as early as 1645. Recent subway excavations have brought to light some of the bottles made in the New Netherland colony.

The principal and essential constituents of glass are silica and an alkali. According to a writer on glass, "silica exists everywhere. Rock crystal, sandstone, flint, are composed of silica; it is also found in the ashes of plants, volcanic streams, and mineral springs. Sugar resembles glass, and this likeness is not deceptive. Melt the ashes of the sugar-cane and you have glass; for with the silica they contain both potash and lime."

Glass factories have changed so radically in a half-century that the processes of 60 years ago and today seem scarcely related. The blowing of bottles and the fashioning of them by hand was practiced then in a manner not far different from that used by the ancient Egyptians. A contemporary description of bottle-making shortly after the middle of the Nineteenth Century is as follows:

"Although the blower and boy are sufficient for the manufacture of sheet glass, two more workmen are required for bottles. The gatherer takes some glass from the pot and passes the blowing iron thus laden to an assistant, who, after having added a fresh quantity of glass, gives it a rotary movement, by which means the glass ball becomes lengthened. The blower then takes the pipe, places the glass ball in an earthen mould surrounded with iron bands, blows, and this mass, just now so shapeless, becomes a bottle. The bottle is not yet finished, however, for the bottom has to be completed, the neck to be decorated with the usual small glass band, and the bottle to be marked with the stamp indicating either the glass manufactory or the nature of the wine."

The bottle-making machinery of today, which has reached its present perfection with the aid of good lubrication, evolved from an invention of Michael J. Owens. His appliance so enlarged the outlook of the industry that many bottle-making firms were established to take advantage of it. The Chattanooga Bottle and Glass Company at Chattanooga, Tennessee, opened in 1901. This plant, equipped with up-to-date machinery, is now one of the foremost manufactories of commercial glass bottles, with an output of 163,688 bottles daily.

Sand from southern Georgia, containing about 99 per cent pure silica, is used in the Chattanooga factory. With this is mixed, in meticulously weighed quantities, soda ash and lime for alkali; decolorizing compounds such as arsenic, cobalt oxide, or iron oxide, according to the class or color of glass desired; borax, to give luster to the finished product, and a proportion of "cullet" or broken glass. This, melted in ovens heated to more than 2,000 degrees Fahrenheit, becomes the "batch."

A forming machine with six blanks and six moulds takes the place of the iron-bound mould of former days, and jets of compressed air instead of blasts from the lungs of a workman blow the molten glass into the shape of the blank form and then into its final shape. A slow cooling process, known as annealing, gives modern bottles great strength, enabling them to withstand rigid temperature and pressure tests. (*Continued on Last Page*)

The Dry Land Front of the "Two-Faced" Texaco Station at Beaufort, North Carolina

Back to the Front

This Texaco Station Will Get You Coming or Going

THOSE who run a Texaco service station down in Beaufort, North Carolina, have difficulty in keeping their directions straight, for this is one station that has no back yard.

"Joe," says the station operator to his attendant, whose name isn't Joe, except in this illustration of the station's peculiarity—"Joe, Mr. Spivvins is out in front and wants 10 gallons of gasoline and two quarts of oil."

Joe dives for the door to give the service desired, but is back in an instant, heading for the rear door.

"You shouldn't say 'out in front' when you mean 'down in front'," Joe chides his employer gently. "Mr. Spivvins is here with his boat and not with his auto. I'll fix him up."

The Beaufort station has two front doors, one facing the land and one the water. Servicing both boats and automobiles keeps Joe and the station operator busy. Before either one of them has had an opportunity to remain on land long enough to lose the "sea legs" acquired by holding a hose in the gasoline tank of a rocking boat, he is back again filling another vessel's tanks. And as if having two fronts wasn't confusing enough, the automobile service station is on Front Street in front of the marine service station.

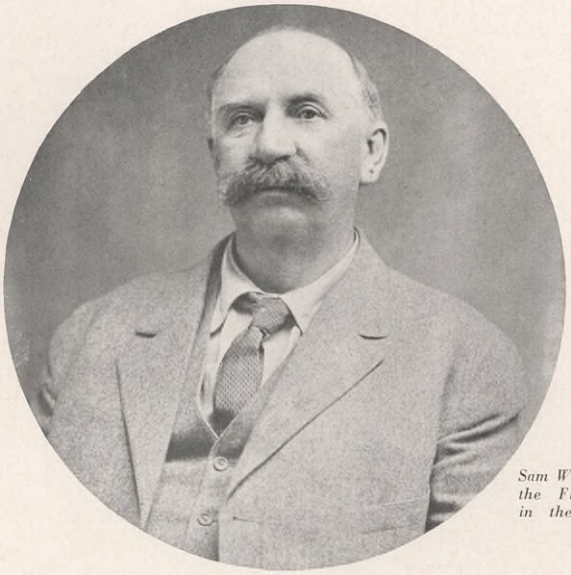
A good share of this station's business comes from the fishermen around Beaufort; fishing is the town's principal industry and most of its 3,000 inhabitants are connected with it in one way or another. More than 200 years ago the little settlement on the coast of Carteret County was called Fish Town, but the name was later changed in honor of the Duke of Beaufort.

Sir Walter Raleigh's colonists, sent out in 1584 under authority of Queen Elizabeth, are said to have looked upon the shores of Carteret County as their first view of the New World, and early settlers fought a battle with Indians near the outskirts of Beaufort some years later. In the middle of the Eighteenth Century Spanish pirates, looting the North Carolina coast, took possession of the town but were soon routed by the inhabitants.

A number of factories in Beaufort manufacture fertilizer and oil from a species of shad called Menhaden, caught by the thousands of tons every year just off the coast. Soft crabs, clams, oysters, scallops and shrimps are also sought by fishermen. The climate and soil of the fertile Beaufort region enable truck gardeners to grow two and sometimes three crops in a year. Cattle and poultry raising flourishes on a small scale. As the terminus of an inland waterway, Beaufort has excellent shipping facilities for its products.

The Texaco automobile and marine service station has a dock 100 feet long in 12 feet of water. Its storage capacity for gasoline and oil is large, and it is said to have the best facilities for handling boat trade in Carteret County. Texaco service by land or by sea is all one with Joe and his employer, and those who stop in front generally come back.

The Rear Door Fronts on the Water



Sam Weaver, Who Drilled the First Wildcat Well in the Indian Territory

WILDCAT

By GUSTA B. WEAVER

THE Twentieth Century tourist, speeding over the smooth, white ribbon of Highway 66, the "Main Street of America," is generally astonished when he comes upon the white skyscrapers of Tulsa, Oklahoma. Then he pays the "Oil Capital of the World" the compliments it deserves, enjoys the comforts of its modern hotels and probably drives on with little or no thought of the early history of the bleak prairies or of the pioneers who built the foundation of Oklahoma's comfort and culture.

Sam Weaver, one of those pioneers, was known in the 'Nineties as a "wildcatter" of note. By that term were designated the men who drilled test wells in unproven territory. Weaver, who got his first introduction to oil on the banks of Oil Creek in the hectic discovery days of Oil City, Pennsylvania; who followed its lure into the Bowling Green, Ohio, field; whose last grand gesture was capping a blazing "wildcat" in Mexico, drilled the first wildcat test well in the old Indian Territory.

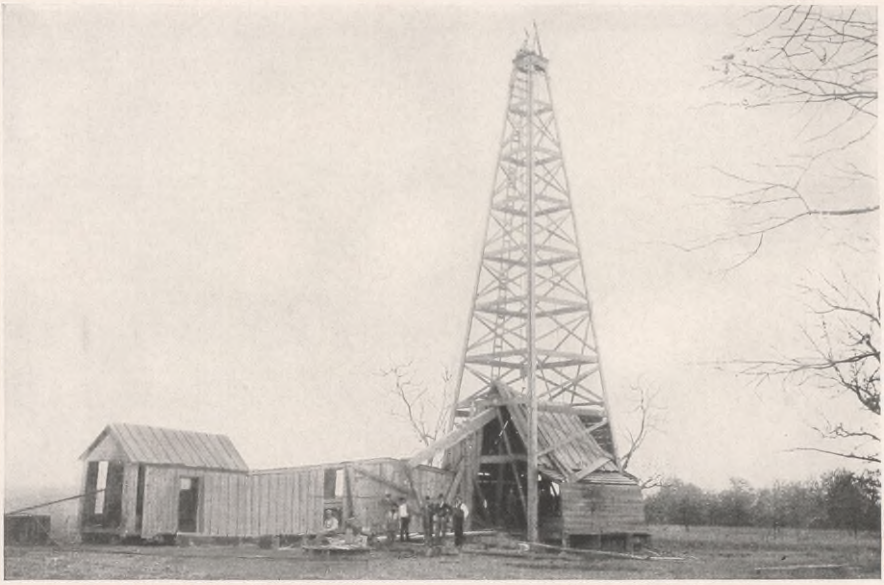
In the center of the Eliza Tiger Allotment, in Tulsa County, there stands today a lonely stub of 10-inch casing, the only visible remains of that first wildcat. It stands as a monument to the futile hopes and dreams of Sam Weaver when he made his westward trek in 1894, in search of new fields.

All trace of that early well had been lost, during the years. Only the story of its drilling remained. In order to find the original location, it was necessary to find someone who could locate and identify the abandoned location.

Joseph Bruner, a full-blooded Creek Indian, Representative in "The House of Warriors" of the Creek Nation, rode over the Western prairies in 1895 to view the strange wigwam of the Eastern tenderfoot. Thirty-six years later, with the unerring instinct of the Indian, he went straight across the fields, across the dry creek bed, and to the center of the Tiger Allotment, where he pointed out the casing.

It was in 1894 that Amos Steelsmith, brother-in-law of Sam Weaver, came West to run down the trail of a phantom story of oil on top of the ground, way out in the "wild and wooly West." He found that the report covered surface oil discovered in the Osage Nation, which, at that time, was so tied up under reservation rulings that it was impossible to secure a lease on any of the land.

His next stop was in Redfork, at that time a bustling little cattle town on the recently completed Atlantic and Pacific Railroad. After scouting over the surrounding prairies and blackjack-clad hills,



Sam Weaver's Wildcat Well, Which Was Spudded in in 1895 and Produced Only Disappointment

he finally secured a blanket lease on about 5,000 acres and hurried back to Bowling Green. He and Sam Weaver loaded a string of tools in a car and shipped them to Redfork. Sam came ahead of them in order to be on the ground when they arrived.

Word of the contemplated well spread over the prairies and the arrival of the carload of tools met a warm reception from cowboys in chaps and cattle men in 10-gallon hats, who stared in wide-eyed amazement at the heavy drilling tools.

Steelsmith had made only one request before Weaver left Bowling Green. That was that the first location be drilled in the middle of an allotment. An inveterate gambler, as all old-timers in the oil game were, he had a hunch that a middle location would be lucky. But as so many hunches go—it proved the reverse, for five years later, within sight of the original wildcat, Clinton & Bland brought in the discovery well of the Redfork field.

Because of the difficulty in moving the heavy tools, Sam finally decided to drill in the middle of the Eliza Tiger Allotment, which was about a quarter of a mile north of the railroad, across the narrow, shallow bed of Nickle Creek. As soon as the rig was completed the tools were moved down the track from Redfork and unloaded beside the shaky roadbed. From here they were hauled by man and mule power across the creek bed.

Even today, 36 years after the well was drilled, it is not difficult to imagine the hardships Sam encountered. No tool supply houses nearer than the Ohio fields . . . no log to guide him . . . nothing but the hope of finding a new pool to sustain him, as the bit pounded slowly down through the sands. The drilling of that well continued over a period of more than a year.

During that time Sam made two trips back East to visit his family, leaving an Eastern driller, John Wicks, in charge during his absence. It was on one of those trips East that Sam told of his introduction to the "Injuns."

Mindful of the admonitions of his friends before he left the East, Sam admitted that at times he had felt a tingle of fear as he sat late at night on the lazy bench, listening to the dull thud of the bit as it bore through the sands. Late in the autumn of 1895, he told his friends, he had been dozing one night when Wicks punched him roughly in the ribs.

"Listen to that noise, Sam," he said, as a thin, weird sound became noticeable above the boom of the bit.

Sam listened tensely. Again it came through the chill night air. Sam sprang to his feet and darted to an opening in the side of the rig where he peered out into the darkness. The weird cries, sounding clearly on the night air, were drawing nearer. Indians! Although Sam had never heard a war whoop in his life, he was positive of the fact.

Five miles from the nearest settlement—alone beside a creek bottom—night! He shivered as he realized that at last the "Injuns" were coming and turning hastily toward Wicks he ordered the steam shut off, leaving the tools hanging idly in the hole. He reached for his revolver and motioned for Wicks to do the same. Together they retreated hurriedly through a small opening into the belt house, where they stood with drawn guns, scarcely breathing as they awaited the attack.

A kerosene torch lit the derrick inside. The hissing of steam was all they heard for a few minutes, then came the sharp sound of horses' hoofs outside on the hard ground; another minute and they heard the soft patter of moccasined feet, as the Indians came up the board walk running from the rig to the boiler house. Cautiously they tried the latch outside the door leading into the boarded derrick. It opened easily. They filed inside.

There were six of them . . . tall, wiry, copper hued young bucks. Sam felt his throat tighten as he watched them in the dim light. An excited jabber of gutteral words meant nothing to him at first. Then, as he watched them prowling slowly around the derrick floor, sticking their fingers curiously at the cable hanging taut in the hole, touching the forgey handle and the big bull wheel respectfully, excitedly pointing out this and that object to each other, he suddenly realized what their words were—words as simple as those of a child.

He whispered to Wicks that he thought the Indians were merely paying them a friendly visit, but Wicks was not convinced. They stood with guns ready, as an inquisitive young buck slowly drew near their retreat. He saw them! Whirling, he yelled a warning to the others who rushed to the door opening outside. They were unable to work the latch from the inside and they turned to face Sam and Wicks.

Then one of the little band stepped forward with upraised hand, trying in mute Indian fashion to convey their fear and respect for the white man. The placating smile on his face was understandable to Sam, even though his words were not, and he too raised his right hand, letting the revolver swing beside him in his left.

There wasn't going to be any war—that was now evident to Sam. As the young buck advanced he tried to make known the reason for their visit, which, as clearly as Sam could make out, was to find out what was inside this funny looking wigwam that had sprung up on the banks of Nickle Creek, whence came the smoke that was not from burning wood. Sam tried to explain the "steam smoke" and the Indian nodded understandingly.

Sam was an inveterate "stogie" smoker, and had brought a plentiful supply from the East. Reaching under the lazy bench he brought out a box and passed them out to the bucks, who stood silently while their leader pow-wowed with the pale tenderfoot. They accepted the stogies and Sam lit them. As the smoke curled upward in the dimly lit wildcat rig Sam recalled that other "pipe of peace" smoked so many years before by the white man and the red man.

The wildcat, spudded in early in 1895, was abandoned and plugged at an approximate depth of 1,290 feet. Between 175 feet and 222 feet Weaver got a slight showing of oil. That was all. Sam was discour-

(*Cont'd on Last Page*)

Joseph Bruner, a Creek Indian, at the Site of Weaver's Wildcat Well

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Globe-Trotting with Texaco

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XXIII

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Native Market in Lagos, Nigeria

NIGERIA

By W. C. MUNDT

Construction Engineer, Export Department

NIGERIA consists of the British colony of Southern Nigeria and the protectorate of Northern Nigeria, together with the adjacent portion of the Cameroons under British mandate. The coast line extends 500 miles along the Gulf of Guinea from two degrees to eight degrees in about eight degrees north latitude. Nigeria is bounded on the west by Dahomey, on the east by the French Cameroons, and extends about 600 miles north to the French military territory of Tawarek at the edge of the Sahara.

The coast is for the most part low and swampy but the country rises gradually to the north. The forest belt extends from 50 to 100 miles inland and is gradually succeeded by park-like land. The forest thins out and becomes more open until the dry steppes bordering the Sahara are reached.

Large parts of the country north of Zaria (11 degrees north) are covered with heavy, loose sand and rocky hills. Nigeria lies entirely in the tropics but while the climate of the southern portion is typical of the tropics, that in the north resembles the climate of Egypt and should be called semi-tropical. Along the coast the temperature varies between 70 and 100 degrees and averages 80 degrees. The air is both hot and humid; the rainy season sometimes lasts from six to 10 months. The rainfall in the Niger delta is from 100 to 140 inches a year while at Lagos it is 77 inches, with an average humidity of 90 percent.

Malaria is very prevalent in these southern regions and the climate is not considered healthful for Europeans. Although in the north the temperature reaches a maximum of 115 degrees, the nights are generally cool and the air is dry for 10 months of the year.

The seat of government is at Lagos and the administrator is a governor, appointed by the Crown. He is aided by executive and legislative councils with district commissioners.

The area of Nigeria is 367,918 square miles. The census of 1928 showed a population of about 20,000,000, of which 5,200 were Europeans and the remainder Negroes.

There are more than 1,700 miles of railway open to traffic. The Public Works Department maintains more than 3,000 miles of all-year motor roads and there are several thousand miles of other roads fit for driving in the dry season.

The prevailing religion is Mohammedan. Education is for the most part in the hands of Christian mission schools with some Mohammedan secondary schools. In addition the government maintains elementary and technical schools and Kings College at Lagos.

The Texaco Trademark Catches the Eye of Anyone Entering Lagos Over the Iddo Bridge

In the southwest the Yorubas are the chief tribe. In the delta district and forest zone are the Benins, Jekri, Ijos, Ibos, and Efiks. All speak different languages. These tribes are all fetish worshippers although Christian and Mohammedan missionaries have converted many. There are more than 100 tribes in the province of Nigeria speaking many different dialects and having their own individualities. In the north there is an infusion of Arab, Fula, and Berber blood but the majority are Negroes.

A large proportion of the people are town dwellers. The principal towns are Lagos, 120,000, a protected port receiving ships at modern docks; Ibadan, 240,000; Abeokuta, 100,000; Kano, 50,000.

An interesting sight in any of these towns is the market. As in Gold Coast all the trading is done by women, who either have little booths or simply set up shop with a basket or tray of produce. They sell everything imaginable in the way of food, small merchandise, and clothing.

Lagos was first occupied in 1861 by the British who were determined to check the slave trade. The city is 14 days by weekly mail steamer from Liverpool and is in communication with every place of importance in the Niger delta by light-draft steamers. The new docks and railroad terminals are on the mainland at Apapa, connected with Lagos by ferry and motor road.

If one wishes to visit the interior he can travel from Lagos to Kano, 600 miles inland, on a well-equipped train with a restaurant and sleeping cars. For the first 100 miles the country is heavily timbered. As the country rises the bush begins to thin out and after crossing the Niger, it becomes a thorny scrub.

Kano is the starting point for camel caravans to the Sahara and is the emporium of trade for the central Sudan. Here the Tuaregs and Arabs bring their produce on camels and donkeys to trade with the merchants from the southern region. The walled city of Kano dates from the Ninth Century. Although the mud wall and the outer dry moat are no longer kept in repair, the flat-roofed houses, narrow streets, and mosques remain unchanged. Kano is the center of manufacture for native cloth made from cotton grown in the country and woven on hand looms. Leprosy is common and beggars abound.

The principal exports are tin, in which Nigeria ranks sixth in the world's production, palm oil, kernels, rubber, hides, nuts, ivory, live stock, drugs, tobacco, cocoa, cotton, coal, and lumber. All sylvan and farming work is done by native owners. The average holding is three or four acres and the farmer's main object is to produce food for himself and his family. If he sells his produce at all it is in order to purchase some luxury. No fertilizers are used and much of the land has been exhausted by overplanting. All land is held in trust for the natives; Europeans are not allowed the right of freehold tenure but may take leases only.

The West African Gangplank—a "Mammy Chair"

In Nigeria, as in Gold Coast, kerosene and petrol are sold in cases and lubricating oils are generally distributed in drums. Here also Texaco products are retailed by Compagnie Française de l'Afrique Occidentale as general agents.

In January, 1931, The Texas Company completed two case-oil warehouses at Apapa harbor, across the lagoon from the island of Lagos. At this point railway and highway facilities are provided and cargoes from Port Arthur, Texas, are landed by lighters. When the new government dock is completed it will give access to deep-water shipping.

At Apapa Texaco products are stored for reshipment to distributing points. In addition to shipment by railroad and truck a large portion is moved out in lighters and canoes on the network of lagoons and creeks which extend for many miles.

The policy of the British Colonial Service has brought peace and prosperity to West Africa. Human sacrifice and slavery are things of the past, and the sale of "trade gin" to the natives is prohibited. The total trade of Nigeria alone increased from $22,000,000 in 1900 to $165,000,000 in 1930.

A large share of Nigeria's prosperity came about through promotion of trade in the interior by British travelers and merchants early in the Nineteenth Century. From the beginning of the century until Lagos was occupied by those anxious to stamp out the slave trade, exploration opened up one part of the interior after another. A British consulate was established at Lokoja to meet the growing demands of trade. The interior was held by powerful Mohammedan rulers, and certain companies, by treaties with some of these in the latter part of the past century, expanded the sphere of trade influence.

When one considers that only 30 years ago most of the country was bush, impenetrable except on foot, the transformation seems more remarkable. Now one sees paved roads in the larger towns, crowded with cars and trucks. Native policemen control motor traffic. Nigeria may never be colonized by Europeans to the same extent as South Africa but with progress in education there are possibilities of a great future.

GOOD LUCK BY THE CAN

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Captain Wanderwell Hitched His Motorcycle to a Star

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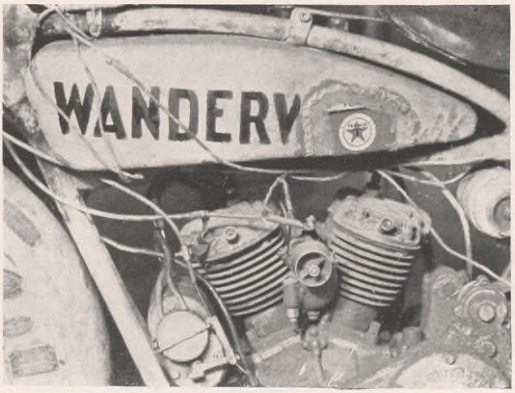


A MOTORCYCLE'S gasoline tank ordinarily is a prosaic thing. Couched in the vehicle's frame it seems less important than the moving parts that transform the fuel into motive force. But when a punctured gasoline tank becomes a matter of life or death in the desert, this humble carrier assumes a new rôle.

Not long ago Captain and Aloha Wanderwell, crossing the desert near Cairo, Egypt, on a motorcycle, encountered a violent sandstorm. They were thrown from their seats and the motorcycle fell upon a jagged rock, which pierced the gasoline tank.

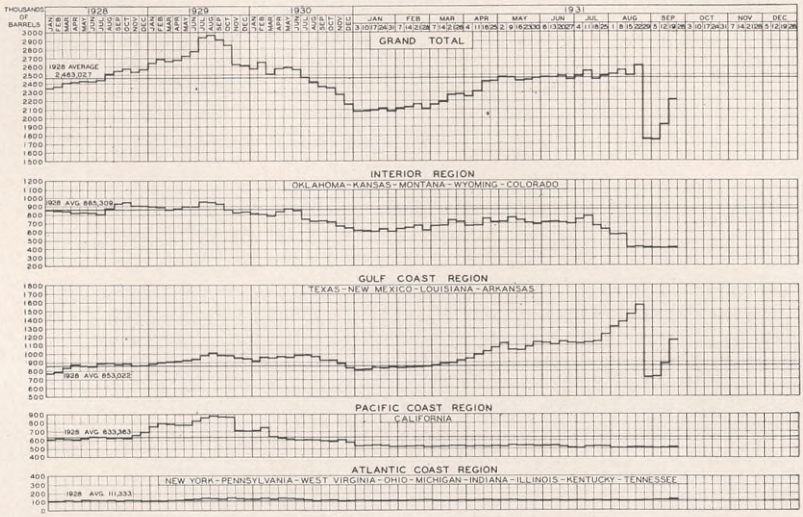
Faced with the prospect of resuming their journey on foot, they drained what gasoline remained into a canteen and started out across the hot sands.

Pausing to refresh themselves at an oasis, they came upon an empty Texaco one-gallon lithographed can. The journey back to the disabled machine was made in double-quick time and Captain Wanderwell got busy with his soldering iron. Part of the can, with the Texaco trade mark showing, became a patch for the punctured tank, and Captain Wanderwell and his wife reached Cairo with high praise for the widespread distribution of Texaco products which had so much to do with their good fortune.

DAILY AVERAGE CRUDE OIL PRODUCTION

TOTAL UNITED STATES

Up to and including September 19



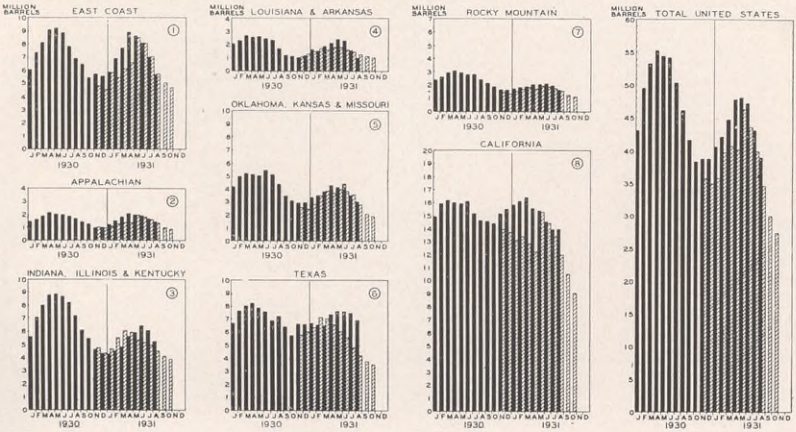
GASOLINE STOCKS FIRST OF EACH MONTH

IN UNITED STATES

As of August 1

ACTUAL VS. A.P.I. RECOMMENDATIONS
SHOWN BY DISTRICTS IN 42 GALLON BARRELS

ACTUAL STOCKS — A.P.I. RECOMMENDATIONS



OUR WHO'S WHO

AUGUSTA B. WEAVER, who wrote the article "Wildcat" which appears in this issue of THE TEXACO STAR, is the daughter of a Pennsylvania Dutch oil driller and was born in Bowling Green, Ohio. She was reared and educated in the Western oil fields and her home and her work are there today. One of her ambitions, she says, is to write a novel about oil country folks—"one that will go deeper into their lives and their surroundings than the oil sands themselves and be of and for the oil people."

JAMES TANHAM, whose article, "From the Sales Point of View," is included in this issue, was born in Brooklyn and educated in New York City. He entered business life as an office boy with a wholesale optical company, and entered the service of The Texas Company on May 26, 1919, as a stenographer. At the present time he is Assistant to Vice-President W. S. S. Rodgers.

JOSEPH J. STATZ, author of "What Lubricant Shall I Use?" in this issue of THE STAR, is a native of western Massachusetts. After graduation from high and normal schools he secured a position as a teacher in a business college. In July, 1926, he entered the employ of The Texas Company in the Treasury Department and in November, 1927, was transferred to the Technical Division, Refining Department, where he at present is employed as a clerk.

For several years he has been studying at New York University and has rounded out his academic activities with a practical training course in the Company's Bayonne Laboratory. His hobby is golf.

UR of the Chaldees, biblical city of Nebuchadnezzar's time, was laid out on a gridiron plan, just as city-planning engineers are mapping out many present-day cities.

FROM THE SALES POINT OF VIEW

(Continued from page 9)

market down South at Houston, Texas. Look over here at this village of hundreds of homes erected by American Chatillon Corporation (now Tubize Chatillon Company) at Rome, Georgia, to house its army of employes. Just two illustrations of what can be done with Texaco roll roofing and Texaco slate covered shingles. Oh, yes, if a roofing is made with asphalt, and it's a rapidly growing market, the Texaco asphalt and roofing plant at Port Neches, Texas, can probably supply it.

Getting cool? Well, we are just about through. Suppose we go down. Now we're dropping. The sun is dropping, too. It's setting here but somewhere else it's rising. We could follow that sun and find it always shining somewhere on the Texaco Red Star with the Green T. Texaco goes around the world. You'll find it in Sweden, England, Brazil, India, Japan, Argentine, Australia, Haiti, and scores of other countries. Somewhere the sun is always shining on the Texaco Star.

GLASS

(Continued from page 23)

Compressed air and direct power from electric motors run bottle-making machinery, and high temperatures are encountered throughout a bottle plant. The lubrication of bottle-making machinery is no doubt the worst problem that confronts the glass engineer, according to the Lubrication Engineers' Association. The Chattanooga Bottle and Glass Company gives the effectiveness of Texaco lubricants a share of the credit for its efficiency. Texaco serves important functions not only in this plant, where particularly troublesome problems concerning the forming machine hinges were solved by the use of Texaco Nabob Oil, but in many other glass- and bottle-making plants.

Editor's Note: Information concerning the Chattanooga Bottle and Glass Company was secured by J. H. Moran, Texaco Lubricating Engineer, Nashville, Tennessee.

WILDCAT

(Continued from page 27)

aged. The drilling had consumed so much time and money that it did not seem wise to continue. Today, within sight of that location, stands the equipment of major companies, pumping the oil from sands below the depth of the wildcat. Today, within the sight of that location, stand the stately buildings built on the foundation of that liquid gold that other, more fortunate, wildcats brought to the surface. Today, riding along the highway, a few feet from the lonely 10-inch casing, speed high-powered cars carrying well-dressed, well-educated Indians . . . forgotten it stands alone . . . an unlucky wildcat.

TANKERS AWAY

By N. J. BROWN

Superintendent, Port Arthur Terminal

THE steamship *Cities Service Petrol*, Captain Sears, master, recently pulled anchor at Sabine Pass, Texas, and headed toward Port Arthur for a cargo of crude oil and a brief shore leave for captain and crew. The sun was still far from the horizon when she headed back toward the Gulf of Mexico with her tanks full. On the bridge stood a ship's master who was surprised and impressed by the speedy loading facilities at The Texas Company's Port Arthur Terminal.

The *Cities Service Petrol* came alongside the Company's terminal and finished mooring operations at 8:15 a. m. Scarcely was the gangplank down and made fast before husky dockmen were connecting the eight-inch loading hose. Texaco representatives and licensed inspectors examined her and 20 minutes later the hose stiffened as the first of four and one-quarter million gallons of crude oil began surging into the tanks. Delivery was completed shortly after noon and the vessel sailed at two p. m.

The crude was pumped into the ship at the rate of 20,000 barrels an hour, the vessel settling into the water one inch every minute. At one p. m. members of the crew began returning to the vessel and at 1:32 delivery slackened to permit "topping off" of the cargo.

Three men were missing when the hose was disconnected. At two o'clock, when the gangplank was raised, they were still missing, but a moment later they came rushing up to the stringpiece and managed to get aboard in a boatswain's chair suspended from the ship's boom. They, too, were impressed by the speedy loading facilities at The Texas Company's Port Arthur Terminal.

The Texas Railroad Commission, at the same time that it ordered reduced rail rates in intrastate shipments of petroleum products, ordered an investigation of existing rates and the correctness of the present system of classifying these products. This investigation covers gasoline, natural gasoline, liquefied petroleum gas, tops, residuum, cracking distillates and blending distillates in car load lots.

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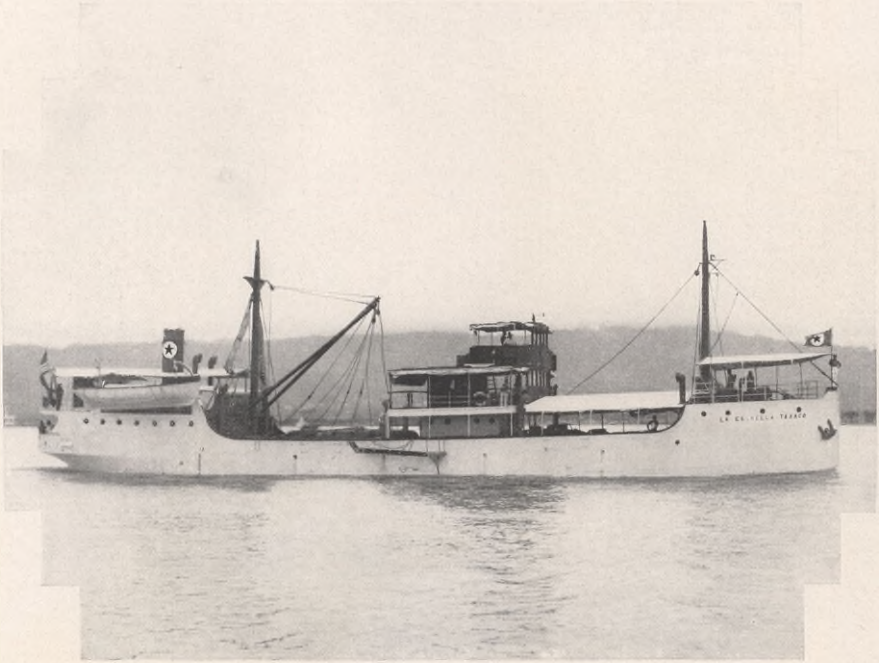

"La Estrella Texaco" (The Texaco Star), Dry Cargo Vessel of 480 Tons Deadweight, Recently Completed and Put into Service Carrying Texaco Packaged Products from Cebu, Philippine Islands, to Points in the Visayan Provinces; a 5,300-Mile Route She Will Cover at Least Once Every Two Months

★

"it *Pays* . . .

DRAIN - FILL *then* LISTEN"

Because Texaco Service Men know what is best for your engine they say—drain summer oil today and refill with winter Texaco, the crack-proof oil that flows at zero. Summer oil thickens like molasses at the first sign of frost and will not flow through the narrow lubrication channels of your engine. Result—unnecessary friction and costly wear. • **Today**—before any damage is done, stop at your neighborhood Texaco Station. Drain—Fill with winter grade Texaco, then Listen to the smoother, quieter hum of your engine. Ten minutes at most and you will be on your way ready today for tomorrow.

THE TEXAS COMPANY • *Texaco Petroleum Products*

TEXACO

THE NEW

TEXACO MOTOR OIL

"CRACK-PROOF"..LASTS LONGER