

THE *Luffkin* LINE

SEPTEMBER-OCTOBER • 1956





One can forever find a delightful beauty
in the fallen leaves of Autumn.
—A. W. KOPKE, Oklahoma City

Published to promote Friendship and Good Will with its customers and friends and to advance the interest of its products by the Lufkin Foundry & Machine Company, Lufkin, Texas.
Virginia R. Allen, Editor

THE *Lufkin* LINE

SEPTEMBER • OCTOBER, 1956

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My Visit to TURKEY...

Land of Contrasts



THIS is the Mosque of Sultan Ahmed, one of more than 400 mosques adorning the city of Istanbul
—Scandinavian Airlines Photo

Left: V. J. "VIC" FAWCETT is West Coast representative for Lufkin Foundry and Machine Company

By V. J. "Vic" Fawcett

ONE DAY the phone rang . . . The buzzer buzzed . . . There was a call waiting on line 3. It was Ferdi Ozmen, Turkish Petroleum's Los Angeles representative, who said, "I have just received a cable from Ankara. When can you leave?"

That was on September 26, 1955. By October 25, all requirements had been met, such as passport, vaccinations, shots, itinerary, etc., and it seemed a little hard to believe that on this particular Monday evening at 5:00 P.M. while boarding Scandinavian Airline's Transpolar plane, "The Royal Viking," that some 22 hours later, this ship would touch the runway at Kastrup Airport, Copenhagen, and with a 9½ hour hop from Copenhagen, we would be in the "Magic City" of Istanbul, Turkey.

Oil was discovered in Southeastern Turkey in 1942, although shallow production was first known in the Western part, around the coastal section of the Sea of Marmara, many years ago. In this instance, however, our objective was Batman, in the Southeastern part, where the Ralph M. Parsons Company of Los Angeles has recently completed a modern, new refinery. Ten or fifteen miles to the South is located the Raman Oilfield. Raman is located in high, mountainous country, situated



MODERN and ancient modes of transportation are seen in Ankara. The horse and wagon are still popular

BELOW: The dotted line shows the route Fawcett took on his jaunt in the land of contrast



THIS IS the busy harbor at Istanbul as seen from the European part of the city looking over the Golden Horn to Asia Minor
—Pan American World Airways Photo



on the north bank of the Tigris River. In the distance on the opposite bank can be seen the old Crusades town of Hasankaeef, scene of bloody battles many centuries ago.

Oil, the finding of it, drilling for it, production, refining, etc., brings together the most interesting people—congenial and resourceful people. Working with both Parsons and Turkish Petroleum personnel was no exception, since it was our pleasure to serve folks like Ferdi Ozmen, Turkish Petroleum Corporation; W. N. "Bill" Van Ness, Project Administrator for Ralph M. Parsons Company; Ted Getzler, Project Engineer; Mel Luginbill, Manager of Purchases for Parsons; and C. N. "Nels" O'Neil, in charge of all foreign purchases for Parsons. Reservoir studies at Raman and consulting for Turkish Petroleum was under the able direction of Nich Van Wingen, South Pasadena, California.

Later on, in a foreign land, there were numerous other oil people, Turkish oil people, and true to tradition as oilmen go, these folks were found to be friendly, hospitable and congenial.

Going to Turkey has become all part of a day's business with many Ralph M. Parsons Company executives, and following recent de-nationalization of Turkey's petroleum resources, a growing number of Americans are busy in Turkey, representing major oil companies like Socony, Esso, Shell, Tide Water, and well known independents like Gilliland Oil of Los Angeles, D. D. Feldman of Dallas, Husky Oil and Refining, to mention a few. Current exploration and concessions interests are focused on Thrace, Western Turkey.



THIS is the Istanbul-Hilton, looking south along the Bosphorus with Asiatic Istanbul in the distance
—A Hilton Hotels Photo

CAPTAIN PETERSEN, the master of our good ship, "The Royal Viking," cranked up each of his four engines and with all 10,000 horses thoroughly groomed and rarin' to go, we tucked in our safety belts, observed the "No Smoking" signal, and with throttles wide open, we were soon off.

Winnipeg, Canada, and Sondrestrom, Greenland, were the only stops on this SAS Transpolar flight, and altitude was maintained from 12,000 to 17,000 feet. Aside from the thrill of having a look at Greenland for the first time, our genial pilot called attention to the great Ice Cap (the world's greatest refrigeration system), and viewing Rjikejavik, Iceland's capital from 17,000 feet at night, is a sight to remember. Brilliant and sparkling, the City shines thru like a sapphire, apparently built on a series of finger-like peninsulas.



ISTANBUL is a city of contrasts where Europe and Asia are separated only by a narrow strait of water
—Scandinavian Airlines Photo

A tour of Copenhagen was sandwiched in between planes. The next leg of this international SAS flight read, destination, "Istanbul," with brief stops at Frankfurt and Vienna. Nine and one-half hours from Copenhagen, and in the fast falling darkness we began to see silhouettes of mosques and minarets. This was Turkey!

Istanbul, also known as the "City of Seven Hills" straddles the Bosphorus, that narrow straight which connects the Black Sea and the Sea of Marmara, the Dardenelles and the Mediterranean. The Bosphorus got its name, as I understand it, from Greek words meaning "Ox Ford," probably because it was so narrow in some places that cattle could easily cross. The blue waters of the Bosphorus swarm with brilliantly-painted fishing boats, and its steeply-wooded banks are lined with palaces, minarets, and ruined castles.

Istanbul is truly an inter-continental city since it is situated partly in Europe and partly in Asia. However, of a total area of some 296,000 square miles, European Turkey occupies only about 10,000 square miles.

In this ancient yet cosmopolitan city by the Golden Horn, the minarets of more than 400 mosques point skyward like slim, gleaming fingers. They mark, in the opinion of experienced travelers, some of the most impressive and beautiful places of worship in the world.

In Istanbul, East and West, contrary to Rudyard Kipling, do meet. Today, modern glass and concrete structures loom on the horizon of mosques and minarets. Cadillacs and camel carts parade past Roman aqueducts on highways smooth as table tops. Jets roar above the peak-sterned fishing boats on the fabled Golden Horn. Sleek new pleasure ships zig-zag back and forth between the European and Asiatic shores of the Bosphorus. Candy-

striped cabanas, open-air cafes and tennis courts line the coast where the old sultans built pink palaces and towering turrets.

I was indeed pleasantly surprised to be greeted and expected by Mr. Orhan Akyavas, resident manager for Ralph M. Parsons Company in Istanbul. Clearing customs was no problem with Mr. Akyavas' willing assistance, and soon, we were bound for the Istanbul-Hilton, some 10 or 12 miles from Yesilkoy Airport.

The Hilton overlooks the Bosphorus on a site where Mehmet II carried his ships overland in 1453 to drop them behind the iron chain blocking the Golden Horn, and thus captured the seat of the eastern Roman Empire for the Ottoman Turks.

Crowds were everywhere, flags displaying the white star and crescent on a red field were flying briskly. Bands were playing and the people were excited and celebrating. This demonstration was totally unexpected.

Orhan Bey quickly calmed my amazement, informing me that it was Republic Day. "This probably compares with your 4th of July. October 29th marks the founding of the new Turkish Republic, and salutes the Republic's first President, Kemal Ataturk," Orhan explained.

But there was no time to enjoy all this fanfare and color, and an overnight stay at the Hilton was hardly adequate to appreciate all the fine facilities which Conrad had provided in this ultra-modern hostelry.

Via Turkish State Lines, it was only an hour and a quarter flight to Ankara. While we flew over the breathtaking panorama of Istanbul, the Bosphorus, the Golden Horn, and a multitude of mosques, we reflected that we had not seen a harem. Along with the veil, fez and the like, these customs have long since been abandoned



IN THE old town of Ankara, marketing is done today as it has been done for many hundreds of years
 —Scandinavian Airlines Photo

and Turkey looks to the West. So, to oilmen everywhere who have asked, "How's the Sultan getting along?" I can only say, "He's had it." The modern Turk will say, "Go ahead and dream; we never had it so good."

ANKARA was nothing but a dusty small town in the middle of the Anatolian Plateau when on October 13, 1923, it was chosen as capital of the Turkish Republic. Now with its asphalted roads, lined by trees, modern buildings, well maintained parks, many cultural institutions, well developed social life, Ankara is the symbol of today's forward-looking Turkey. It is a city of nearly 300,000. The progress accomplished in such a short span of time, emerges more clearly when the new city is compared with the old one which has its own special charm.

During our brief stay in Ankara, we visited the Mausoleum of Ataturk, ancient fortresses, mosques and numerous other landmarks which trace history back to 1,000 B. C. or more. As Ahmet Neyzi, manager of Parson's Ankara office pointed out, research and excavations have proved beyond doubt that the region of Ankara has been inhabited since prehistoric times, preceding such eras as the Hittite Period, Alexandrian Times, The Roman Period, The Byzantine Period, and finally the Ottoman Empire which toppled after World War I.

Dr. Sehap E. Birgi is President and General Manager of Turkish Petroleum Corporation. He talked of the wonderful hunting opportunities that exist in the Ankara region, such as wild boar, wild duck, geese and pheasant. Dr. Birgi was about to take me on a wild boar hunt, and had all but handed me a 30-30, when he inquired about my hunting experience. This taught me a



TURKISH women still fill their jugs at public wells



NOT all of Turkey has been modernized. This is the main street in the primitive little village of Bisira



FERDI OZMEN, Turkish Petr. Corp., Los Angeles, points to Raman oilfield and Lufkin installations as W. E. VAN NESS, Ralph M. Parsons Co., looks on
—Industrial Photo Service Picture



TOPKAPU Palace on the Bosphorus Straits is the home of Turkish Sultans and a tourist attraction
—Pan American World Airways Photo

lesson—never to mention coon hunting with Ed Trout again in the East Texas woods.

I'm still not sure what changed Dr. Birgi's mind, but there are probably fair game laws in Turkey which exclude Trout-tuteled East Texas coon hunters.

Others on Dr. Birgi's staff whom we had the privilege of meeting were Necmettin Danisman, assistant general manager; Sahir Candir, secretary-general; and Ekmil Diriker, Manager of Purchases.

Necmettin Bey expressed a very kind and considerate thought when he said, "Mr. Fawcett, you have traveled many thousands of miles to visit Batman, and we are sure you will be thrilled to see how well some of your children are doing so far from home. We are mighty proud and pleased with the performance of our Lufkin Units."

With swift and efficient handling of military clearance details, Veli Dagginar handed me my permit and waved me a happy "Gulegule," as they say in Turkey, and the Turkish Express was on its way to Batman. According to the railroad schedule, some 30 hours and 250 tunnels later, we would be pulling into the station. This was, I believe, a continuation of the well-known Orient Express, whose terminus on the East is Baghdad, and of course, the city of Paris, France, at the Western terminus.

Many Californians would agree that the Turkish landscape from Ankara to Batman resembles much of the terrain and countryside of our native state of California, and would compare with many of the foothill sections of the San Joaquin Valley.

But after arrival at Batman, and travelling by jeep over 10 or 15 miles of rocky limestone leaseroads to the Raman Oilfield Camp, we were certain that we were definitely outside the city limits of Los Angeles. This is part of old Kurdistan. Raman is about 150 miles equidistant from the borders of Russia, Iraq, and Iran.

CALIFORNIA oilmen will be interested to know something of the development and discovery of this new oil producing region, which embraces three separate areas—Raman, Cargan, and Resan.

Located in southeastern part of Turkey about 100 miles from the Iraq border, this region was discovered in 1942. First commercial production was found after drilling five wells in 1945. Production zone is cretaceous massive limestone. Producing zone is about 330 feet thick and the field is about five miles long and one mile wide.

Average total depth of wells is approximately 4,500 feet. The Raman field is about 3,500 feet above sea level and is located in rugged country. This terrain bears no vegetable life, and there are many prospective unexplored areas. There are 22 producing wells and crude is about 20 degrees gravity API and contains about 4% sulphur, of asphaltic base.

A newer area, called the Garzan Field, is located about 25 air miles northeast of Raman, and was discovered in 1952. At the time of my visit, there were nine wells completed and the field was largely undeveloped. It was reported that the Garzan will be completely developed by January, 1957. Turkish Petroleum Corporation had five drilling rigs in the area.

Garzan wells average about 5,000 feet in depth and production is from the Cretaceous reef limestone. Zone thickness is about 165 feet.

A six-inch pipeline was being constructed leading to the refinery at Batman. Garzan crude is 26 gravity API and has about 2½% sulphur.

Resan lies 60 miles northeast of Raman Oil Field where a wildcat well was being drilled. Seismographic work together with surface geology studies indicated a bright future, according to reports.

Turkish engineering personnel at Raman are American-trained. An interesting array of American universities are represented among the staff members of T.P.A.O., like alumnus Selahaddin Malkoc, who received his Mas-



THIS battery of storage tanks at Batman is part of the Turkish Petroleum Refinery, engineered and constructed by Ralph M. Parsons Co., Los Angeles

ter's at Tulsa University. Hulusi Berilgen claims California as his Alma Mater at Berkeley, BS and MS. Brother Trojan, Salahaddin Ozkan received his MS from South Carolina, having graduated from Utah with a BS.

Melih Genca gets a far-away look when Colorado University is mentioned, having received his bachelor's degree there, and later at Oklahoma, received his Master's.

Following each day's work, we put our feet under the kitchen table at Malkoc's house to enjoy the fun and fellowship of card games. The American games of 5-card draw and 7-card stud are well "understud" in eastern Turkey, and a good deal of my education in values of Turkish lira and kurus may be attributed to these friendly after-dinner games. They were a real fine group of guys.

TO VISIT Turkey for the first time was a most interesting experience. Turkey was full of interests. Mt. Ararat is the spot where Noah's Ark was beached. The home of Santa Claus is located at Demre, and the church still stands where St. Nicholas presided as Bishop from 325 A.D. to 342 A.D. The ancient City of Troy, subject of one of the world's greatest poems, Homer's "Iliad," is located on the Dardenelles on the southern shore of the Hellespont. Mary's Tomb and mosques which are architectural wonders of the world are among places to be visited.

Although steeped in ancient history, this country today is visibly modern in many respects and has made tremendous strides in its 33 years as a young republic.

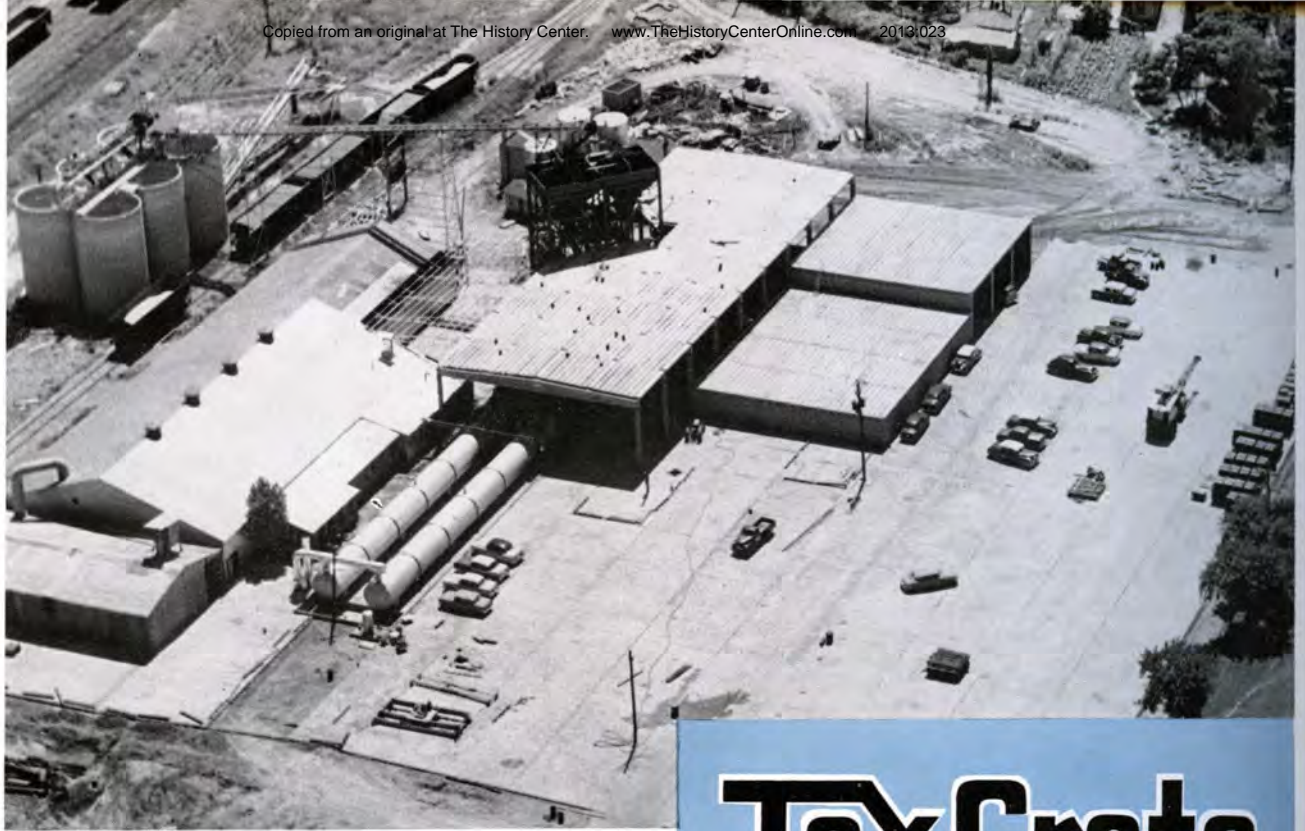
Photos not otherwise credited are by the author.



WHAT might seem to tourists as walking haystacks are village girls bringing home the winter fuel

MODERN American automobiles compete with horse-drawn carts at the Aqueduct of Valens in Istanbul
—Pan American World Airways Photo





SEVENTY-FOOT girders, long pre-cast channel slabs, and concrete silos are unusual features of the new TexCrete plant under construction in Shreveport

WHEN a business that is grossing \$250,000 per year, spirals that figure to more than an annual gross of \$1,500,000 in just a few short years, there is bound to be a combination of a progressive community matched by progressive business management.

This combination describes Shreveport, Louisiana, and the rapidly expanding TexCrete Company of Shreveport whose slogan "paced for progress" expresses the rapid strides made by this unusual manufacturing firm.

The TexCrete Company produces concrete blocks, concrete pipe, Holiday Hill Stone and Perlite. Since the introduction of Holiday Hill Stone in the Shreveport area by this firm, the unusual building material has graced many of the outstanding residential areas of the city in active competition with brick which had a start of many centuries.

The introduction of Holiday Hill Stone, an exclusive product of the parent company, Texas Industries, is but one of the progressive approaches to the bustling building industry by the TexCrete Company. Its products have been featured in almost every new commercial structure in Shreveport, including the famed Beck Building which was the tallest colored aluminum building erected in the South. TexCrete furnished both block and perlite for this structure, with one of the largest

TexCrete COMPANY

*Paced for
Progress*

acoustical ceiling perlite installations in the nation.

The demand for TexCrete products has long taxed the producing capacity of the original plant, and there is now, in the final stages of construction, a huge new plant which will not only increase the production capacity, but will also employ modern methods that insure even greater quality than before.

This new plant will be one of the most complete plants of its kind in the country. The material handling equipment takes over from the time the carload of aggregate comes in. The material is dropped into a series of conveyors that lead up into the storage silos, and then from the silos into the bins over the top of the manufacturing building.

From the bins, the material is dropped down

through a series of automatic scales that will batch four different types of material per mixer. Five mixers will be operated from a control house underneath the material storage section.

Ultra modern electronic meters measure the proper amount of water into the mix design with the same care and precision employed by a modern bakery in its mixing process.

The curing cycle for all the products is equally automatic, with an autoclave that offers a complete cycle for the drying process that will equal 12 years of normal air drying. This insures a quality of product most unusual in the industry.

This new modern plant is geared to a production of between 8,000,000 and 10,000,000 8x8x16 block equivalents per year, and between 45,000 and 50,000 tons of pipe, plus other precast items as well.

The new plant was constructed using seventy foot pre-cast concrete girders, long span pre-cast channel slabs, and concrete silos for aggregate storage. The automatic scale in use is the first of its kind in the industry.

The plant is operated automatically, with electronically controlled mechanism that requires nothing more than the pushing of buttons to generate controlled production.

Lufkin Trailers have played a significant part in the growth of the TexCrete Company of Shreveport. A total of six Lufkin Trailers transport these products throughout the Ark-La-Tex area served by the firm.



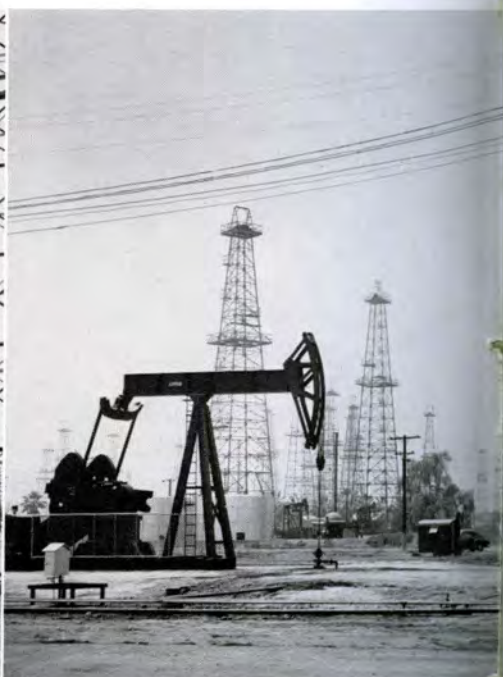
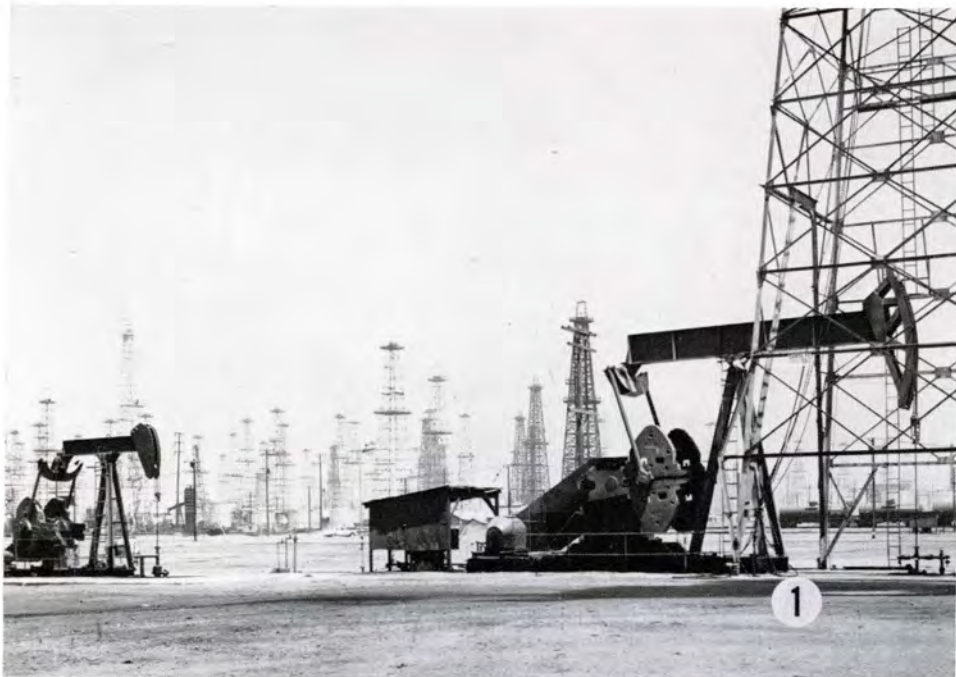
THIS is the newly completed Beck Building, famous as the South's first colored aluminum skyscraper

One of the original designs by Lufkin to serve the needs of TexCrete was a Lufkin Trailer with a special arrangement for loading and unloading of the block, facilitating both loading at the plant, and delivery at the job site.

The TexCrete Company prides itself upon quality of products, and speed of delivery. This new plant will produce the quality, and the TexCrete Company already has the "Lufkin habit" that takes care of the speedy delivery, an unbeatable combination of modern production and modern transportation.

THIS fleet of Lufkin Trailers maintains a fast schedule of deliveries to job sites for TexCrete





Luffkin INSTALLATIONS





1 LUFKIN TC-44DTR-15B Unit, left, and LUFKIN TC-OLBR-640D Unit, right, General Petroleum Corporation, Santa Fe Springs, California.

2 LUFKIN C-640D-144-30 Unit, left, and LUFKIN C-640D-144-30 Unit, Bell Petroleum Company, Santa Fe Springs, California

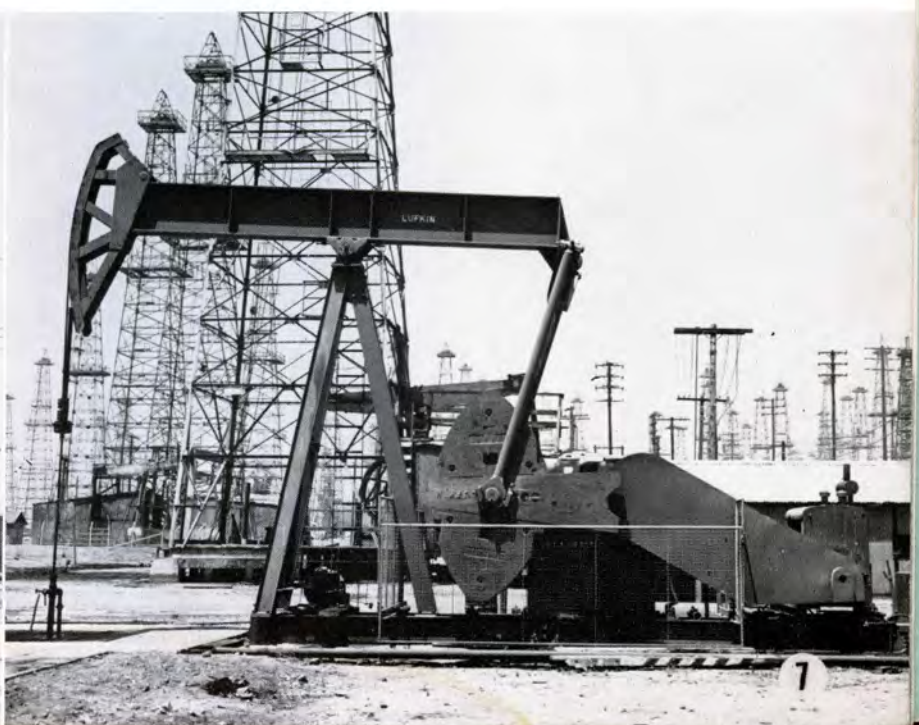
3 LUFKINS, LUFKINS, EVERYWHERE. This picturesque shot was made of Shell Oil Company Leases on South Mountain, Santa Paula, California

4 LUFKIN TC-OLBR-640DB Unit, Turkish Petroleum Corporation, Raman Field, Southeastern Turkey. Some fifteen of Lufkin's largest units are now in service for Turkish Petroleum Corporation in the Eastern Hemisphere

5 LUFKIN TC-1LBR-41D Unit, Turkish Petroleum Corporation, Raman Field, Southeastern Turkey

6 LUFKIN C-320D-84-25 Unit, General Petroleum Corporation, Santa Fe Springs, California

7 LUFKIN C-640D-108-30 Unit, Rothschild Oil Company, Santa Fe Springs, California





LUFKIN TRAILERS

*in land of
Swaying Palms*

STANDING at left, C. W. (Lefty) Alexander and Leroy Greene, Lufkin representatives, meet with Rivers sales group to discuss new distributorship

BILL RIVERS, JR., right, sales manager of Rivers Body Factory, sold first Lufkin trailer in Florida to Barney Copeland, owner of Ploof Transfer Co.



LUFKIN TRAILERS, a division of Lufkin Foundry & Machine Co., Lufkin, Texas, has named Rivers Body Factory as exclusive distributors of Lufkin Trailers in Florida. Rivers has four locations in Florida—Jacksonville, Orlando, Tampa, and Tallahassee. Rivers also will be exclusive dealers of Lufkin Trailers in South Georgia and South Alabama.

Rivers Body Factory has been in the transportation field since 1918, and became active in the trailer business about 20 years ago when they began building bodies for all types of trailer chassis. This experience and the enviable reputation Rivers has built in Florida were factors influencing Lufkin to name this concern as their exclusive dealer in this area of the United States.

At the annual sales meeting of Rivers Body Factory held in Jacksonville this summer, repre-

representatives from Lufkin presented the Lufkin models which the new dealer will handle. C. W. (Lefty) Alexander, sales manager of Lufkin Trailers, and Leroy Greene, regional manager for Lufkin Trailers, discussed the new "frameless" telescopic dump trailer, the refrigerated van trailer, and the new lightweight bulk dirt fruit trailer designed especially for the citrus industry of Florida.

Also at this meeting, Lufkin displayed the models of Lufkin Trailers which Rivers will keep in stock to meet the needs of the Florida transportation industry. These were all-aluminum vans, semi-aluminum vans, refrigerated vans, tandem floats, and low-bed trailer.

In discussing Lufkin's new dump trailer, Lefty Alexander explained that the unit is completely hydraulic and consists of one tremendous telescoping cylinder that operates off the standard tractor fifth wheel. He stated that one point of vital interest to Florida truckers is the fact that 24 tons payload can be hauled legally in the state of Florida under the existing weight law.

Rivers delivered its first Lufkin Trailer to Barney Copeland, owner and operator of Ploof Transfer Company. Bill Rivers, Jr., sales manager of the Rivers company, made the delivery. Copeland purchased a Model TOF-C tandem oilfield float with a drop down front, allowing heavy machinery to be loaded, then the front of the trailer is lifted by winch and the tractor is backed up under the trailer.

It can be used as a standard flat trailer for hauling heavy loads or it can be quickly and easily converted to a tandem pole trailer by knocking out four pins in the tandem subframe, and pulling the entire tandem assembly out, then installing the pole trailer bolsters, coupling pole, and front bolster and fifth wheel plate.

As a pole trailer, it has a 60-foot telescoping pole which makes it possible for Barney Copeland to haul up to 70 and 75-foot solid length beams. There are no other trailers of this type in service in the Florida area.

Carl Baker of Foremost Dairies, Jacksonville, Florida, purchased the first van trailer delivered by Rivers in this area. It was the new type reverse "leak-proof" extruded aluminum floor securely installed with no screw heads showing on top of the floor. This floor features a special interlocking device which, when properly sealed, makes a watertight aluminum floor. This trailer is insulated with six-inch styrofoam in walls, roof, and floor. It is equipped with a Thermo-King refrigeration unit. Foremost can use this trailer for transporting milk



CARL BAKER, right, of Foremost Dairies, Jacksonville, Fla., receives first Lufkin refrigerated van sold by Rivers in Florida from Bill Rivers, Jr., sales manager



A NEW light-weight bulk fruit trailer has been designed to meet the needs of citrus fruit haulers

or ice cream.

Lufkin and Rivers combined their skill and knowledge of the citrus fruit industry's hauling problems and designed a new lightweight bulk fruit trailer in two models. One is a low-cost, all-steel model weighing only 8950 pounds. The other is the semi-aluminum model, weighing 8250 pounds. This model allows a trucker to haul from five to six hundred pounds more payload than most competitive units.

The semi-aluminum model consists of an all steel framework with smooth aluminum lining inside and dry freight type extruded aluminum floor. Both models are exterior post type with sides diagonally braced for additional strength.



THIS is Signal Oil and Gas Company's Tioga, North Dakota, gasoline plant, gathering gas from an area of approximately 40,000 acres

By J. B. TAYLOR
Signal Oil and Gas Co.
Los Angeles, California

(Editor's Note: Vic Fawcett, our West Coast representative, was lunching with J. B. Taylor and Dick Smith of Signal, when Mr. Taylor began a discussion of the very rugged climatic conditions under which the Signal Oil and Gas Plant operates at Tioga, North Dakota. Vic requested permission to reprint this article which is a paper prepared for delivery before the California Natural Gasoline Association.)

mother nature
Influences Design
of gas plant

IT WAS January and the thermometer read 46° below zero. A driving blizzard had piled snow several feet high, obliterating all boundary markers and leaving only rooftops visible in many areas.

This was the situation when Joe Gieck, chief chemist, and Dick Cook, plant supervisor, left the little town of Tioga; their destination was the Signal Oil and Gas plant about one mile away.

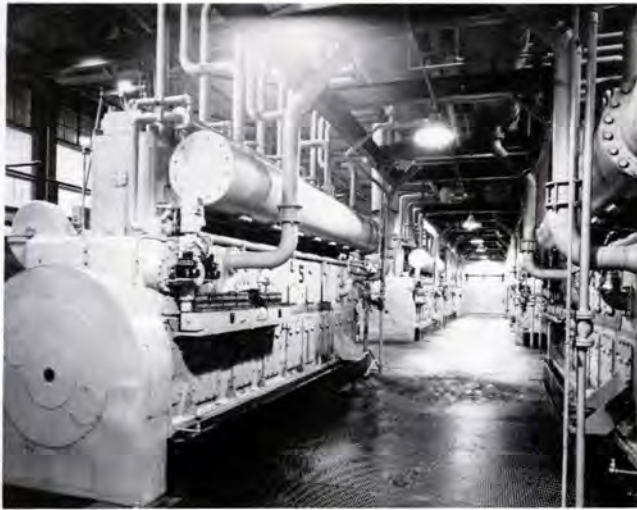
Dick took the wheel of the car, while Joe walked ahead with a long stick, poking his way through the snow to find the road. Every 10 minutes, they changed duties. Four hours later, exhausted and half-frozen, they had conquered the one mile and had arrived at the plant.

This is not an unusual tale, and Signal men have learned to accept this as an every day occurrence during the long winter months. But the weather was a very important factor that had to be reckoned with when plans for the Tioga plant were being made. The following article by J. B. Taylor tells how the compromise with Mother Nature was effected.

LOCAL conditions can sometimes present the biggest challenges in the design of natural gasoline plants. Weather conditions, including humidity, average temperatures, means and extremes of wind and rain, were of particular concern in the plant at Tioga, North Dakota.

Tioga is located approximately 70 miles east of the Montana border and 40 miles south of the Canadian border, where the closest communities of any size are Williston, 50 miles west, and Minot, 85 miles east.

The climate is quite variable and runs to extremes. Temperatures of 30 degrees below are not rare in the wintertime and as high as 100 degrees in the summertime. Actually, the extremes registered at Williston show five months have record temperatures below -30° and an extreme of -50°F. There are also five months with record temperatures above 100 degrees and a maximum of 110°F. The yearly average temperature is 40 degrees, with five months of the year that average below 30°F., or freezing. Winds from the southeast prevail in the summertime and from the northwest during the winter.



INTERIOR of main gas compressor room where 2000 horsepower engines compress gas from five to 750 PSI



SIGNAL'S Tioga plant is located about 70 miles east of Montana border and 40 miles south of Canada

With this background, it was decided that the gas should be dehydrated before absorption, thus making it possible to operate the absorption plant free of freezing materials, or water. As long as the absorption cycle was free of water and water vapor and the plant was operated on a "dry" basis, it was decided to leave all of the process equipment out-of-doors, or at least the pump equipment and tower bases would not have to be housed to protect them from the hazards of "freeze-ups." Also, it was not necessary to steam trace and insulate many of the lines that would otherwise contain water or water vapor. It should be possible under these conditions to permit temperatures of condensers and other equipment to fall below freezing. Too, shutdowns could be made without danger of freeze-ups. In order to maintain this as a dry plant it was, of course, necessary to operate the distillation unit on a strictly dry basis.

The combination of temperature, wind, and moisture is also responsible for storms of varying natures. When blizzards occur here, the snow is whipped by winds so that visibility is reduced to almost zero. Since all of the pumping equipment, regulators and controlling equipment were to be placed out-of-doors, it was necessary to have a control room where all of the operating conditions could be controlled and observed under the worst weather conditions. In addition to actual control equipment and necessary flow rates, many other operating temperatures and pressures were transmitted to the control room, in order to aid the operator in observing plant conditions.

A second factor to be given consideration was the lack of water in sufficient quantity for adequate cooling. Water wells drilled in the area have small production capacity and in addition, the water requires treatment. Because of this condition, aerial units for cooling and condensing are used in all services. The use of water has been restricted to the control of critical services for

only such periods as required to maintain reasonable operations during warmest air conditions.

A third factor also related to weather is the content of the wet gas available to the plant. Since the extremes of temperature at the lease separators materially affect the content of the gas entering the plant, the richness varies over a considerable range in the twelve-month period. The high propane content of the gas, as shown by analysis, made it economical to consider a high percentage extraction of propane. Being also an area of relatively low temperature, it was expected that the marked demand for this product would make it desirable to design for a recovery of 90 percent of the propane.

In order to recover 90 percent of the available propane, which was desired, large volumes of ethane and methane were also absorbed at 750 pounds. Approximately 12 percent of the wet gas entering the absorber was found to be dissolved in the rich oil. Thus, approximately 7000 Mcf of ethane and methane is discarded in the deethanization of the rich oil from the top of the reabsorber for plant fuel use.

With aerial condensing, the degree of deethanization is important during the warmest weather. Inclusion of much ethane in the raw product accumulator would make total condensing difficult during periods when the atmospheric temperature was above 90 degrees. This also precludes the use of vapors or gases for stripping in the distillation unit.

GAS ANALYSIS

Separator Temperature	SUMMER 80 F.		WINTER 30 F.	
	Mol. %	GPM	Mol. %	GPM
Carbon Dioxide.....	1.259	.....	1.347	.....
Nitrogen.....	1.399	.....	1.496	.....
Hydrogen Sulfide.....	2.883	.....	2.962	.....
Methane.....	57.577	.....	61.387	.....
Ethane.....	16.690	.....	17.311	.....
Propane.....	10.405	2.846	9.895	2.707
Iso-Butane.....	1.658	.539	1.292	.420
Normal Butane.....	4.060	1.273	2.838	.890
Iso-Pentane.....	1.213	.441	.587	.213
Normal Pentane.....	1.038	.374	.446	.161
Hexanes.....	1.282	.524	.337	.138
Heptanes Plus.....	.536	.268	.102	.051
Total.....	100.000	6.265	100.000	4.580
Propane at 90 Percent.....	.....	2.561	.....	2.436
Excess Butanes.....	.....	.947	.....	1.007
26 lb. Gasoline.....	.....	2.472	.....	.866
Total.....	.....	5,980	.....	4,309



FORTY Lufkin right angle type VB gears operate aerial coolers in Signal's Tioga gasoline plant

DESIGN conditions for the plant are based on 65 M-Mcf of field gas at plant intake being raised to 750 pounds gage pressure for absorption. Gas is purified of H_2S and CO_2 at the first stage discharge and dehydrated at third stage discharge, before absorption.

Shrinkage through the above units, removing acid gases and condensibles, reduces the amount of wet gas to the 750 pound absorber to approximately 58 M-Mcf. In order to extract a high ratio of propane, and heavier, it was desirable to keep the temperature rise through the absorber at a minimum. For this reason the wet gas to the absorber is commingled with the oil from the 28th (bottom) tray of the absorber and passed through an aerial cooler to remove the heat of absorption of the heavy ends.

During summer temperatures, the lean oil circulation approximates 375 gallons per minute. Under this condition, this so-called "equilibrium tray" at the bottom of the absorber accounts for 4,900,000 BTU per hour in absorbing the heavy hydrocarbons. The combined material is returned to the base of the absorber where the gas is separated to continue through the trays to the top of the absorber.

There are also two intercoolers in the absorber flow design, (one below the 6th tray and the second below the 16th tray) for removing heat of absorption from the contacting oil stream. The upper intercooler is expected to remove approximately 755,000 BTU per hour and the lower intercooler, 930,000 BTU per hour. The removal of this amount of heat during the absorption process makes it possible to maintain maximum absorption capacity with a minimum of oil circulation. Also, effective column capacity is not reduced by internal reflux conditions.

The rich oil from the base of the absorber is further enriched by adding the pressure condensate which has been dehydrated. This rich oil stream is then "flashed" at 300 pounds gage in the rich oil flash tank.

The rich oil rectification is accomplished in two tower sections, one a deethanizer column and the other the reabsorber section. The deethanizer section consists of 20 trays. The rich oil feed to this column includes the

Acknowledgment is given to J. F. Pritchard and Company, of Kansas City for the design and engineering of the Tioga Plant and to Brown & Root of Houston for the construction. Lufkin also wishes to express its appreciation to F. D. Lortscher, manager of purchases, and to Kenny Dale, assistant manager of purchases, for Signal Oil and Gas Company.

rich oil from the high-pressure flash tank and the rich oil stream from the base of the reabsorber. This combined oil stream is preheated by exchange with lean oil before entering the top of the deethanizing column.

The oil arriving at the base of the deethanizing column is picked up by circulating pumps which pump the oil from the base of the column through heat exchange, or reboiler, against the hot lean oil from the still.

The oil and flashed vapors are returned to the base of the column where the vapors rise through the 20 trays against the down-flowing rich oil, to the top of the column. The heat transfer in the reboiling section is designed for 42 million BTU per hour.

The vapor stream from the top of the deethanizing column is joined with the vapors from the 300 pound rich oil flash tank. This combined vapor stream is then joined with the rich oil from the bottom tray (33rd) of the reabsorber. This stream then passes through an aerial cooler or "equilibrium tray" similar to the bottom cooler on the absorber to remove the heat of absorption. It is then returned to the bottom of the reabsorber where the resulting gas and vapors are separated to flow up the reabsorber column. The heat of absorption at the base of the reabsorber approximates 1.5 million BTU per hour. The rich oil leaving the reabsorber is pumped in with the rich oil from the 300 pound rich oil flash tank to the top of the deethanizer column. As mentioned previously, this oil is heated through exchange with the lean oil before entering the top of the deethanizing column. The preheating of this rich oil removes some 12.5 million BTU per hour from the lean oil.

The combination of these two columns is designed to be able to remove ethane and lighter hydrocarbons from the rich oil stream, and to retain all of the propane and heavier hydrocarbons. The propane that leaves in the vapor stream from the deethanizing column is in turn recovered in the reabsorber section and returns with the refluxing oil. A single column operation has actually been divided into two columns.

Sufficient of the lean oil stream is put over the reabsorber to economically prevent loss of propane in the resulting vapor leaving the reabsorber section.

In order to make this reabsorber an efficient column, there are also provided intercoolers for removing the heat of absorption at the 13th and the 23rd trays. The heat removal here is about 1.1 million BTU per hour at each cooling unit. These are actually 7 and 17 trays, respectively, from the top of the reabsorber section. The top 6 trays are a pre-saturating section for the lean oil that is used in the main absorber. At the pre-saturator, the heat of absorption of methane and ethane, which is approximately 2 million BTU per hour, is removed from the oil before it enters the main absorber. Also,



THESE are generator-compressor bldg., first and second stage after-coolers, and third stage gas after-coolers

this absorbed quantity of dry gas is carried to the 750-pound stage and in consequence reduces the amount of gas that is necessary to be used at the 250-pound pressure level.

THE rich oil from the base of the deethanizer column goes directly to the feed tray of the still, which is the 16th tray. Since there is a reduction of pressure here from approximately 250 pounds (deethanizer) to 100 pounds gage on the still, there is some flash at this feed tray.

The down-flowing oil is removed after the 21st tray and circulated through heat exchange transferring 33 million BTU per hour with lean oil from the bottom of the still, to provide a controlled temperature gradient at this point of the column. With a "dry" distillation, still performance is dependent upon the introduction of sufficient heat to remove all gasoline fractions from the oil and to carry them overhead in vapor form, in the same manner as a fractionation column. Heat is introduced at the bottom of the still by circulating the oil from the bottom tray through fired heaters. In order to maintain a low temperature rise of the oil, about three gallons of oil are circulated to the furnace for each gallon of actual lean oil circulation used in the main absorber and reabsorber.

This high circulation makes it possible to introduce a high BTU quantity, partly of latent heat at lower outlet temperatures than would result if the same amount of heat at lower circulation rates were to be used.

Total heat load requirements for distillation from the fired heaters is 50 million BTU per hour. An additional 25 million BTU fired heater is provided for heat requirements in the fractionating section of the plant and other plant heating loads. Hot oil circulation is used to avoid the use of steam.

Since the maximum still loading is encountered during summer periods when the gas is richest with heavy hy-

drocarbon content, the still design was based on this condition.

As a result, future expansion of distillation capacity may be obtained by removing the pressure condensates from the oil stream. This would reduce the hydrocarbon content of the rich oil to the amount of hydrocarbons in the gas entering the absorber only. By stabilizing the pressure condensates separately, the distillation unit is relieved of handling this hydrocarbon content. By removing the pressure condensates and treating them in this manner, the still is able to handle the equivalent hydrocarbon content by treating additional wet gas volumes.

Control of the end point of the hydrocarbon product is made by refluxing back heavy gasoline fractions from the primary condensers. The unit operates totally condensing.

Stabilizing or separation of the final products is straightforward. Propane is produced overhead from the first column, with all butane and heavier as feed to the second column, where butanes are removed overhead and natural gasoline is produced as a kettle product. The heat load, as mentioned previously, is supplied by a hot oil circulation from a fired heater.

SIGNAL men, left to right, are **FRED NORTON**, maintenance superintendent; **DICK COOK**, plant superintendent; and **JOE GIECK**, chief chemist





LES CHATFIELD
The Texas Company
Bakersfield, California

DAN FOSS, left, VIC CLAY
Shell Oil Corporation
Bakersfield, California

CHURCHILL CAMPBELL
Richfield Oil Corporation
Bakersfield, California

JOHN VALLEY
Reserve Oil & Gas Company
Tejon Ranch, California

DON FURTNEY
Honolulu Oil Company
Taft, California



TOM A. ATKINSON, left, Douglass Oil of California, and DON DAWKINS, General Petroleum Corp., discuss an exhibit shown at a meeting of A.I.M.E. held in Los Angeles

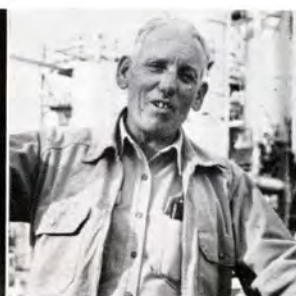
SNAPSHOTS



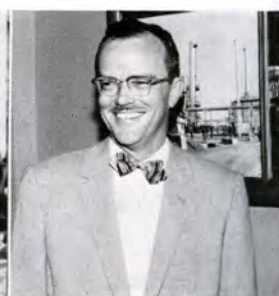
FREMONT (DUTCH) SCHMEIDER, left, REX HENSEL, both with Shell Oil Company, Los Angeles, look over an exhibit displayed at a meeting of A.I.M.E.



W. E. "BILL" VAN NESS
Contract Administrator
The Ralph M. Parsons Company
Los Angeles, California



HERB NOLL
Master Mechanic
The Ralph M. Parsons Company
Batman, Turkey



C. N. "NELS" O'NEIL
Manager of Foreign Purchases
The Ralph M. Parsons Company
Los Angeles, California



GENE GRIFFIN
Union Oil Company
Coalinga, California



GLENN KERSTEN
Western Gulf Oil Company
Bakersfield, California



BOB DEWAR
Honolulu Oil Corporation
Taft, California

BILL RYHERD
Standard Oil Company
Greeley, California

EARL BAKER
The Texas Company
Bakersfield, California

WALLY JACKSON
Honolulu Oil Corporation
Taft, California

GENE NICHOLS
Richfield Oil Corporation
Bakersfield, California

CURTIS STONE
Bell Petroleum Corporation
Santa Fe Springs, California





ROLLY SHULTZ
Monterey Oil Company
Edison, California



STEVE OLMSTEAD
Amerada Petroleum Corporation
Riverdale, California



P. M. HAMANN
Union Pacific Railway
Wilmington, California



T. J. ABSHIER
General Petroleum Corporation
San Ardo, California



MAX EASTMAN
Reserve Oil & Gas Company
San Francisco, California

*with the
Lufkin Cameraman*



THESE MEN are enjoying an annual barbecue given by Union Oil Company at Brea, California. They are, left to right, ERNY HARDCASTLE, JOHN EVANS, JIM WATSON, TOMMY ABSHER, OTTO GILLINGHAM, EDDY MELTON, FRED GEDDES, "SKIV" WASHBOHN, BEN GAGE, CHARLEY ALLAIRE, LARRY BRADFORD, JAY GORDON, RON CERNICK. Photo courtesy BILL WILEY, McCullough Tool Co., Los Angeles



AT A luncheon meeting of A.I.M.E. at Los Angeles, were HAL STANIER, Sunray Oil Corporation, Los Angeles; and HAL BENTSON, H. C. Smith Co., Compton, California



MELIH GENCA, left, manager of materials and stores, SELAHADDIN MALKOC, production engineer, both with Turkish Petroleum Corporation, Raman Field, Southeastern Turkey.



Left to right: TOM FINICAL, Standard Oil of California; LEE TALBOT, Standard Oil of California; W. C. KNUPP, Standard Oil of California; HARRY CAMPBELL, Franco Western Oil Co.; and H. M. VAN CLIEF, Honolulu Oil Corp. This photo taken at an A.P.I. meeting at Stockdale, California



WILLIE POE, left, JAKE BROWN
General Petroleum Company
Taft, California



WES TOGNETTI, left, ED FESKE
Bell Petroleum Corporation
Santa Fe Springs, California



Left to right: MELIH GENCA, Turkish Petroleum Corp., V. J. FAWCETT, Lufkin's West Coast representative, Los Angeles; SELAHADDIN OZKAN and HULUSI BERILGEN who holds 4-year-old HEKMIT MALKOC, both men with Turkish Petroleum Corp., Batman, Turkey

BRUCE MILLER
Intex Oil Company
Bakersfield, California

A. R. OWEN
General Petroleum Corporation
San Ardo, California

FERDI OZMEN, representative
Turkish Petroleum Corporation
Los Angeles, California

CLIFF LANSDALE
The Texas Company
Coalinga, California

DAVE CAMPBELL
Standard Oil Company
Greeley, California





CLAYTON BEST
Monterey Oil Company
Edison, California

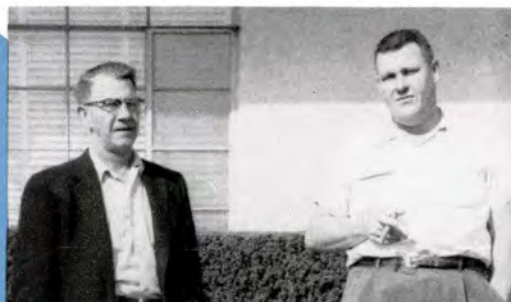
CLYDE KOFAHL
The Texas Company
Coalinga, California

FRED V. MALONEY
The Texas Company
San Ardo, California

JIM KELLEY
General American Oil Company
Taft, California

DON CRAGGS
Union Oil Company
Coalinga, California

more
Snapshots



LES RHOADS, left, **DAVE ROBERTS**, right
Union Pacific Railway
Wilmington, California



VERNON YOUNG, left, Haliburton Oil Co.; **LES CHATFIELD**, The Texas Company; **JOE OLIPHANT**, General Pet. Corp., taken at an A.P.I. meeting in Taft, Calif.



LAUREN HANDLEY
Shell Oil Company
Bakersfield, California



BILL WOODROOF
General Petroleum Corporation
Santa Fe Springs, California



I. M. BAUMGARDNER
Richfield Oil Corporation
Bakersfield, California



RON NOBLE, left, **AUTREY BULL**, center
and **JOHN HOLMAN**, Richfield Corporation
Cuyama Valley, California



L. W. DILLARD
Shell Oil Company
Bakersfield, California



RUSS HARMAN
Shell Oil Company
Coalinga, California



ART JOHNSON, JR.
Standard Oil Company
Taft, California



PHIL BERRY, left, **HARRY CARRICK**, center
BILL CLAUSER, General Petroleum Corporation
Vernon, California

AL ROBERTSON
British American Oil Co.
Edison, California

JOHN CORKERY
Union Pacific Railway
Wilmington, California

JIM CONNERS
Amerada Petroleum Corporation
Riverdale, California

GEORGE FOSTER
Honolulu Oil Corporation
Taft, California

BUD KNICK
Union Oil Company
Taft, California





A young lady, beaming proudly, said to a man sitting next to her on the bus:

"You probably wonder why I am so happy, but I have just been to the doctor, and after seven years of married life, he tells me that I am about to become a mother!"

"Well, how wonderful!" replied the man. "I'm also happy today. You see I am a chicken raiser, and I have just developed a new strain with pink feathers and blue eyes."

"How on earth did you ever do that?"

"I introduced some new stock."

"Well, confidentially," whispered the lady, "so did I."

Blonde: "Do you notice anything different about me this evening?"

Boy Friend: "You've got on a new pair of nylons."

Blonde: "No, that's not it."

BF: "That's a different skirt."

Blonde: "No, that isn't it."

BF: "Must be that sweater. Is it new?"

Blonde: "No, you silly, I've dyed my hair black and I'm wearing glasses."

Young bride: "Please, could you tell me where I could get some silk covering for my settee?"

Floorwalker: "Two aisles down, lady, for the lingerie department."

"He says I don't know how to dress, huh. Tonight I'll wear my low cut dress—and show him a thing or two!"

"Mama, mama, the ice man's here again. Do you have the money or do you want me to run out and play awhile?"

A charming young thing dashed into her doctor's office: "Did I leave my panties here?" she asked.

"Yes," replied the doctor, "here they are."

"Thank goodness!" exclaimed the girl. "I was afraid I'd left them at the dentist's."

Wife in defense of her husband: "Nonsense, my husband wouldn't chase after another woman. He's much too fine, too decent, and—too old."

A recent survey has disclosed, that 90 percent of all breast cancers are caused by men who smoke cigarettes.

The customer had just returned to a restaurant for the first time in a long while and the girls had all been outfitted in new uniforms. Across the left breast pocket on each uniform, the girls' names were embroidered. After pirouetting for the customer's benefit one of the waitresses faced him and said: "How do you like it?" "I like it very much," he replied, "but tell me, what are you going to name the other one?"

The prim little lady entered the pet shop and walked up to the clerk in charge.

"Excuse me, sir, but I have a fine parrot at home. Would you be interested in buying it?"

The clerk asked, "Does it have a nice plummage?"

"Gracious me, I really don't know," she replied. "It's all covered with feathers, you know."

King Arthur: "I hear you have been misbehaving lately."

Knight: "In what manor, sir?"

She was only the radio operator's daughter, but she didn't have the remotest control.

Advice to newlyweds—When you wake up, GET UP.

Some girls are working girls—and some are working men.

The trouble with falsies is a girl doesn't know when to blush, scream, slap or say, "ouch."

Said an Indian chief upon seeing a mermaid for the first time. "How?"

No matter how long a girl's stockings are, the top is always nearest the bottom.

A Harvard scientist has just disproven the old story about the birds and the bees. He put a bird and a bee together—and nothing happened.

First stenog: "Were there a lot of girls looking for husbands on that holiday cruise you took?"

Second stenog: "No, but there were a lot of husbands looking for girls."

"You were away without official leave," his superior barked. "Why?"

"Well, sir," the harassed private began, "my first day in the Army we were issued combs, and that afternoon all my hair was cut off. The next morning they issued us tooth brushes, and that afternoon the dentist pulled six of my teeth. The following day, I was issued an athletic supporter. That's when I went AWOL."

Did you hear about the guy in the park doing push-ups and along came the drunk who took one look at him and asked, "What's the matter fella, did you lose your girl?"

RANDOM THOUGHT: Not knowing what styles will be 25 years from now, it is hard to decide where today's baby girl should be vaccinated.

Two gals went to a party. Said one, "If I'm not in bed by 10 o'clock, I'm going straight home!"

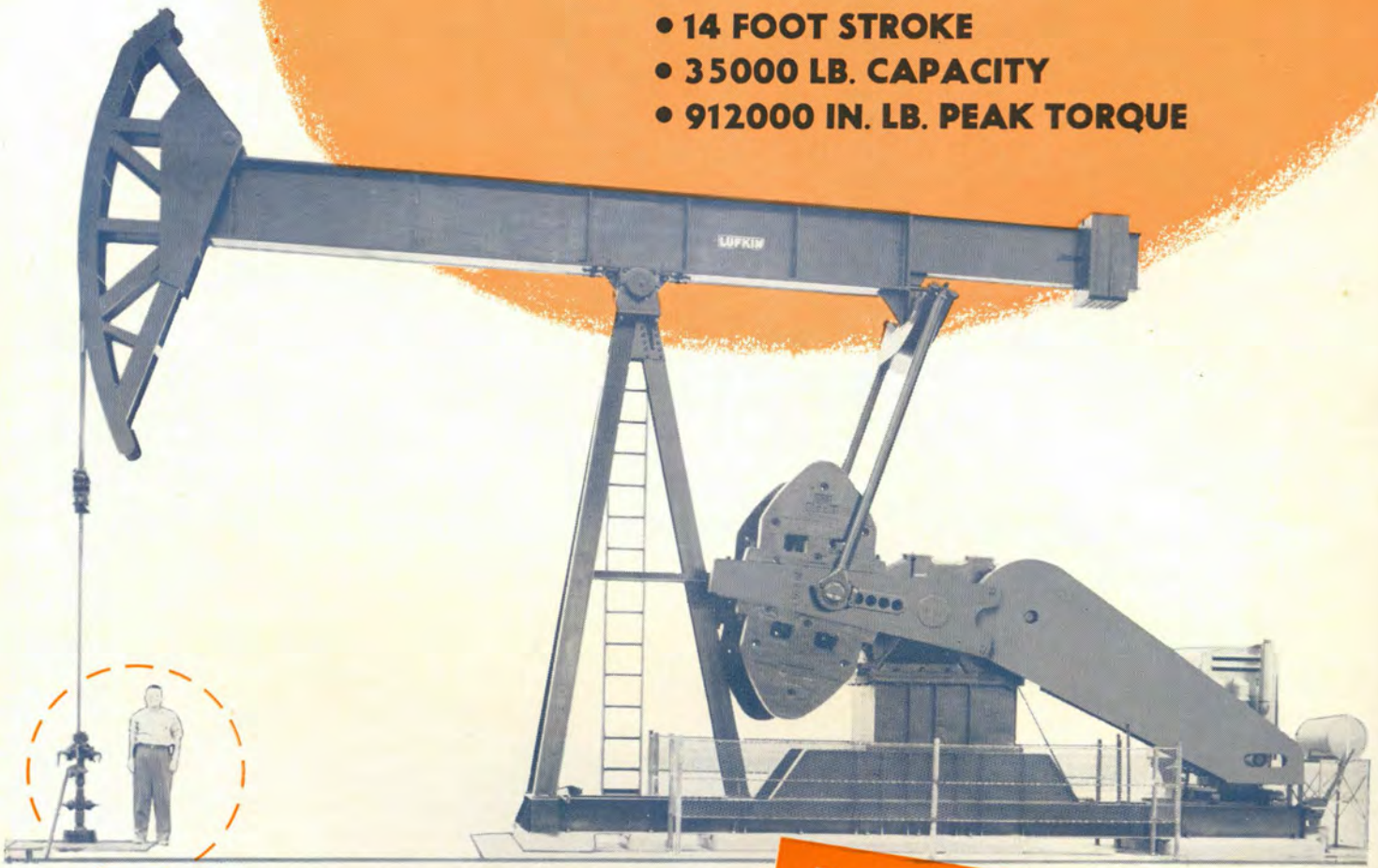
Any woman who ever sat on an antique horsehair sofa understands why grandma wore six petticoats.

the Biggest One Yet!

LUFKIN'S New

CB - 912DA - 168 - 35

- 14 FOOT STROKE
- 35000 LB. CAPACITY
- 912000 IN. LB. PEAK TORQUE



To fulfill the ever growing demand for longer stroke, greater beam capacity, and more effective counterbalance, Lufkin is proud to present this giant new unit which is capable of handling the heaviest pumping jobs in the field today.

The design of this new 14-footer features the same well known **RUGGEDNESS** and **DEPENDABILITY** which has made LUFKIN units the standard of comparison the world over.

Lufkin

FOUNDRY & MACHINE COMPANY
LUFKIN, TEXAS

Branch Sales and Service: Houston • Dallas • New York • Tulsa • Los Angeles • Seminole • Oklahoma City • Corpus Christi • Odessa
Kilgore • Wichita Falls • Casper, Wyoming • Great Bend, Kansas • Effingham, Illinois • Duncan, Oklahoma
Brookhaven, Mississippi • El Dorado, Arkansas

Lufkin equipment in Canada is handled by THE LUFKIN MACHINE CO., LTD., 9950 65th Avenue, Edmonton, Alberta, Canada/
3913 18th Avenue, Regina, Saskatchewan, Canada