The TEXACO STAR

OCTOBER - 1929

THE TRANSCONTINENTAL FLIGHT OF THE TEXAS COMPANY'S TEXACO FIVE, AS PICTURED BY CLAYTON KNIGHT, FAMOUS AVIATOR-ARTIST, ENLARGED COPIES OF WHICH ARE AVAILABLE AT THE NEW YORK OFFICES OF THE COMPANY

Brief and to the Point

★ A generator and engine from our West Dallas Works, discarded when arrangements were made to supplant it with power from an outside source, have been turned over to the engineering school of Southern Methodist University for experimental purposes. The equipment was placed in service at once, and is said by the dean of the school to be one of the best pieces of apparatus in the engineering laboratory.

★ What is known as the "Grand Central District" of New York City is challenging the supremacy of the time-honored sky-line of lower Broadway. During the past two years more than two hundred buildings of various sizes have been completed or are in course of construction in the Grand Central area. Forty-six of these are office structures, the tallest of which is the Chrysler Building which, upon completion early next year, will house the New York Offices of The Texas Company. Twenty years ago, aside from a few warehouses and the "depot" of the New York Central railroad, only private dwellings and tenement houses occupied this area, which stretches north and south from 50th Street to 38th Street, and for three blocks east and west of Grand Central Terminal. Directly west lies New York's great theater and shopping district, while to the east the antiquated tenement houses are fast disappearing, to be replaced by modern office buildings, hotels and apartment houses.

★ Four-wheel brakes, more responsive motors and balloon tires are among the features of modern automobile construction which make for maximum safety, according to the National Automobile Chamber of Commerce. This organization points out that the number of motor fatalities per one hundred thousand of registration has decreased materially in the past ten years.

★ The proximity of the Wall Street Division of New York University to the headquarters of The Texas Company in the Whitehall Building has made it convenient for several employes in the New York Offices to register for courses relating to petroleum. Two are offered there under the direction of Dr. Ernest R. Lilley, associate professor of geology: the first is an elementary course of study of the entire industry, the second, designed for oil company executives, takes up the economic phases of the business.

The courses have proved popular with members of The Texas Company for some years. Dr. Lilley, author of a number of books on petroleum, is an occasional contributor to THE STAR.

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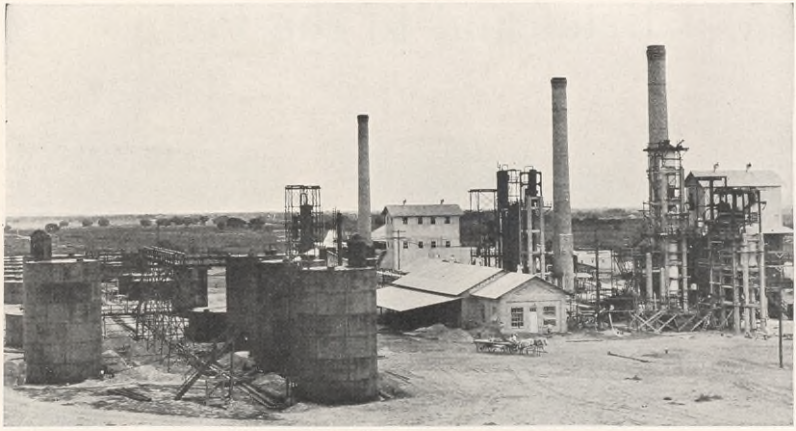
★ A few years ago a kitten aboard one of the Company's tankers was playing with the wires attached to the ship's wireless apparatus. It accidentally brushed against one of them and was so badly shocked that paralysis resulted. The steward, in his spare time, massaged its ailing limbs and after a few months it was able to frisk about as well as ever.

The shock, however, checked the cat's growth. Although it is now several years old, it is no larger than when the accident occurred during the days of its early kittendom.

★ Forward-looking communities are beginning to realize that the abandoned automobile is something of a public nuisance. There is hardly a city or town in the United States which does not possess one of these rapidly growing piles of ancient and rusty motor cars, a spectacle which contributes little to the beauty of the surrounding terrain. One of the first public officials to make an issue of this problem is Borough President George U. Harvey, of Queens, New York. He has called upon automobile manufacturers throughout the country to give their earnest consideration to the question of disposing of the abandoned auto in an efficient and economical manner.

★ The United States uses 297,483,000 barrels of gasoline annually, or 76.2 per cent of the world's total consumption. Europe's consumption is slightly more than 14 per cent. The domestic consumption of the United States, plus gasoline exports, accounts for 87.5 per cent of the world consumption.



View of El Paso Works Nearing Completion

Open House at El Paso

A New Refinery In The Texas Company's Home State Makes Its Début

A GOOD old-fashioned house warming recently marked the formal opening of The Texas Company's new refinery at El Paso, Texas. Some two thousand of the local population, including the mayor, prominent city and county officials, and representatives from various civic associations joined in the inauguration of the plant. A cordial welcome was extended to visitors upon entering the refinery and refreshments were served, after which they were shown through the works.

The escorts conducting the various parties through the refinery, being thoroughly familiar with all equipment and its operation, were in a position to answer questions put by the visitors, who, upon leaving the plant, expressed their appreciation of the opportunity to inspect the refinery, as well as to familiarize themselves to some extent with the means employed in manufacturing crude oil into merchantable products.

The new plant is the seventh refinery of The Texas Company to be erected in the state of Texas. The site comprises 102 acres located in what is known as the Ascarate Grant. The plant has a rated crude throughput of 1500 barrels per day.

The equipment consists in the main of a pipe still for processing the crude, a standard battery of Holmes-Manley cracking stills, treating equipment, together with pump houses, boiler plant and necessary tankage to round out a complete refining unit. A constant supply of water is insured by a water well 700 feet deep.

Dr. T. J. McCamant, county health officer, Dr. George Turner and Lieutenant George Shadle, chemical warfare expert, were among the visitors to the plant and expressed complete satisfaction with the safety and health arrangements.

The El Paso Works was designed primarily to supply our southwestern markets with The Texas Company's "new and better gasoline," which will move to bulk distributing stations in West Texas, New Mexico and Arizona. Products manufactured at this point are confined to gasoline and fuel oil. A tank car loading rack on the property will facilitate shipping. Trackage on the ground totals 5600 feet and makes direct connections with the Texas & Pacific and Southern Pacific Railroads.

The Works receives its crude supply from the West Texas fields by pipe line.

R. G. Collins, superintendent of the refinery, has been in the employ of The Texas Company since 1907. He was first associated with the Pipe Line Company and later transferred to the Refining Department. With R. C. Powell, chief engineer of the Refining Department, he worked out the plans for the El Paso plant and supervised its construction. His staff includes S. B. Ewing, assistant superintendent, B. D. Oliviera, chief clerk, and A. S. Howren, plant engineer.

TEXACO Across the Sky

The Flight of the Spokane Sun God

By LIEUT. N. B. (NICK) MAMER

On August 20, Lieutenant N. B. Mamer and Art Walker landed their Buhl sesquiplane, the Spokane Sun God, at Felt's Field, Spokane, after a successful coast-to-coast and return non-stop flight. They covered a linear distance of 7200 miles, establishing a new mileage record for heavier-than-air machines, and exceeded the longest non-stop trip of the Graf Zeppelin, Friederichshafen to Tokio. The Sun God was refueled with TEXACO *aviation gasoline and lubricated with* TEXACO *airplane oil, as were the refueling planes of five different types which replenished its supplies.*

In the following article, written expressly for readers of THE STAR, *Lieutenant Mamer tells some of the more interesting details of the flight.*

Lieutenant Mamer (Right) with his Co-Pilot, Art Walker

THE purpose of the recent coast-to-coast and return flight of the Spokane Sun God was two-fold: to observe the behavior of a plane on an endurance flight which actually covered territory and, more important, to test the practicability of refueling in the air from various points along the route. This experiment, inaugurated by The Texas Company, is one which may prove the forerunner of the aerial filling station.

The journey which Art Walker, my co-pilot, and I took covered 7200 miles in 115 and three quarters hours without once touching wheels to the ground. It broke all existing mileage records for non-stop flights and established conclusively that in the future many hours can be clipped from long-distance aerial travel by refueling in the air. The planes which aided Jackson and O'Brine in their flight at St. Louis were obtained for our use by The Texas Company and were a great factor in the successful accomplishment of our purpose.

It is my opinion that the time is not far distant when each airport will have a refueling plane. Transcontinental air liners will radio ahead for refueling appointments at fixed hours. Then, without losing speed or wasting a minute, they will take on fuel, oil or food for passengers as they pass over the airport.

At the start of our flight, both Walker and myself were, as the prize-fighters express it, "confident of success." This despite the fact that we were taking off with two and a half tons of weight from a higher altitude than any other endurance plane. We were equipped with a two hundred gallon tank in the fuselage with auxiliary tanks of 120 gallons capacity in the wings. The motor was a Wright Whirlwind.

Practically the entire population of Spokane was on Felt's Field the afternoon of August 15 as we taxied away, and they sent us off with a roar which nearly drowned out that of the motor, the latter

One of the Refueling Ships Takes on a Load of TEXACO *Aviation Gasoline*

Refueling Plane at Roosevelt Field, New York

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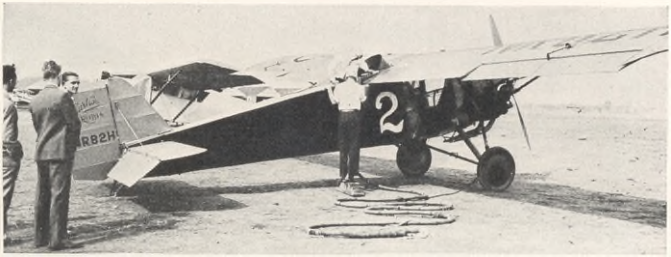
(Below) Lowering the Hose for a Contact



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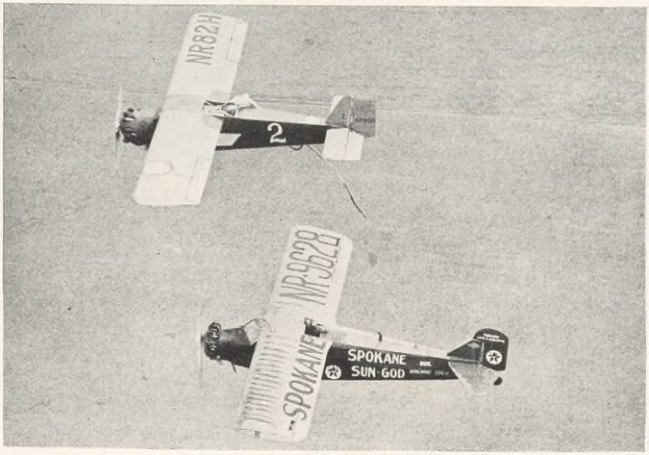


noise being one that we were going to hear quite a bit of during the next few days. We zipped along the ground for nearly four thousand feet and then began the long climb to the ceiling.

The motor had no trouble in taking us to an altitude of a thousand feet as we passed over the city of Spokane. The plane was perfectly balanced despite the handicap of her tremendous load and rode the light Western air like a limousine. Our speed crept up to around a hundred miles an hour and we turned her nose toward San Francisco.

Far below, the thickly wooded hills of the Northwest sailed smoothly along. A few miles from Spokane we ran into a terrific forest fire and for several minutes had to fly blind. Thick smoke lay in dense clouds beneath us, pierced now and then with red tongues of flame. We could see the tall pines go crashing to the earth as the fire hungrily leaped at them; a beautiful sight but one which was not conducive to keeping us on the course.

As night drew on, Walker lay on the cot we had aboard, trying to work the radio. Through a rift in the haze, we could see the peaks of Mount Adams and Mount Ranier silhouetted against the sky. We climbed a little higher, cleared the forest fire area and as darkness fell, a large, jolly-looking moon rose to the east and flooded the ground with pale, white light. We both put on our parachutes. As we entered a gorge, our motor, which up to this time had been running sweetly, got a fit of coughing that for a few minutes gave us visions of emulating the aforementioned tall pines. She caught her second wind and from that time on we had no trouble.

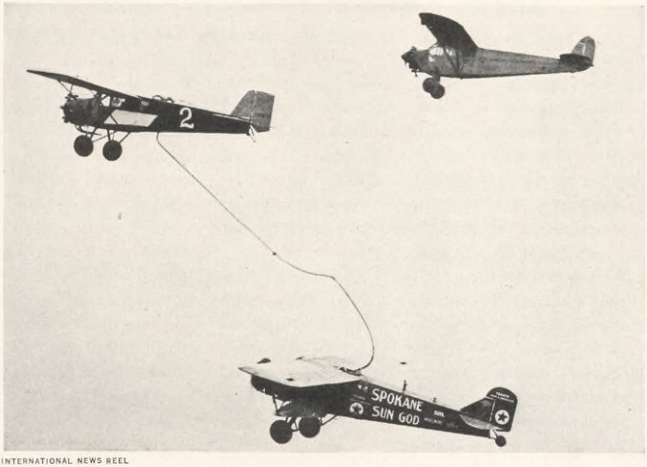
As we crossed the Siskiyou mountains, Portland, decked out with about a million lights, flashed up ahead. Mount Shasta was barely visible to us, hidden by a thick fog to one side. At 1:15, when changing controls, we got stuck in the narrow pas-

The Refueling Crew at Cheyenne

The Sun God, Ready for the Take-off at Spokane

★

(Below) Refueling Contact over New York



INTERNATIONAL NEWS REEL

sageway between the gas tanks and the side of the ship and thought we were goners. By removing our parachutes, we found we could navigate more comfortably within the cabin.

We reached San Francisco at 3 A.M., the bay gleaming with lights, a wonderful sight. We circled about Mills Field until daylight, waiting for the first refueling plane.

Dawn eventually rolled around and with it came the first drink for our busy little motor. We asked for three contacts, taking in 180 gallons of gas. It was our first experience with the aerial filling station, and it was no easy job. Consider two planes traveling along at eighty or ninety miles an hour and trying to drop a fifty-foot hose from one to the other, especially when the slack of the hose is in constant danger of being cut to pieces by the propeller, and you will have some idea of the task.

Lieut. Mamer Supervises Tuning-up

We had planned to go on to Cheyenne for our next refueling, but as we neared Elko, Nevada, we had to yell for another dose of gas. R. N. Wilson hopped off from Cheyenne and at Rock Springs, Wyoming, we made a contact which brought in three hundred gallons.

We were hours behind schedule now, but knew that once we had really taken on a good load of gas we could make better time. Cheyenne was the next point in order, and we headed for it, arriving about nine the next morning, where we circled the airport for two hours. Only seventy gallons of gas and eight gallons of oil were taken on; Bookwalter, the refueling pilot, explaining that the thin air prevented him from taking up more than fifty gallons at a time. We tried to lead him over to North Platte, some two thousand feet lower, but he didn't seem to understand.

When we finally did get to North Platte, we found the supply ship awaiting us. This time we

The Sun God's Crew at the End of the Long Grind

made a beautiful contact, having perfected our technique through practice, and we took one hundred gallons aboard in twenty minutes. Three more contacts were made and we succeeded for the first time in the flight in taking on a full load of four hundred gallons. This heartened us a lot, for our experience over Wyoming had made us pretty discouraged, and off we sailed for Cleveland.

We reached the big town in Ohio on the morning of the eighteenth, having made the flight from North Platte in total darkness. Refueling here was not hard. Before we left Cleveland, we got some water, which was welcome, and then, taking on two hundred gallons of gas, we zoomed into the east again.

Pennsylvania's mountains supplied some bumpy air that nearly wore us both out. We were both tired and hungry and the temptation to end the flight at New York was great. Our long vigil in the air had made us look more like a couple of railroad firemen than aviators, but we knew that we had to come through. On to New York!

At Armonk, New York, a plane took off and guided us across Westchester County and Long Island Sound to Roosevelt Field. We were amazed to find a crowd of about ten thousand people there and again were tempted to come down. We contented ourselves with dropping a letter from San Francisco's mayor to the mayor of New York and then turned our attention to The Texas Company

(*Continued on last page*)

INTERNATIONAL NEWS REEL

The fastest plane available is what Col. Charles A. Lindbergh sought, when, at Roosevelt Field, N. Y., last month, he announced his intention to join in the search for the missing air transport plane, "City of San Francisco." Capt. Frank M. Hawks, of The Texas Company, immediately put the famous record-breaker, "TEXACO V" at the Colonel's disposal.

Col. Lindbergh is shown with Capt. Hawks before the take-off.

Approach to Eastern Entrance of Moffat Tunnel

Under the Great Divide

It Took Courage and Skill to Make the Moffat Tunnel a Reality

By JOHN H. McGINNIS

The opening of the Moffat Tunnel marked the completion of one of the greatest achievements of TEXACO *products. The tunnel drilling and electric shoveling machinery, lubricated throughout with* TEXACO *Algol Oil and* TEXACO *Crater Compound, was subjected to tremendous strain as the workers battled their way heroically beneath the Colorado peaks. Mr. McGinnis, of our Craig Works, tells in this article of the then fantastic dream of David Moffat and of the glamorous interlude that preceded its fulfillment.*

IN the early summer of 1858, a party of prospectors, lured by reports that rich mineral deposits were to be found in the western hills, wandered into the territory now known as Colorado. Settling on the west bank of Cherry Creek, a tributary of the Platte River, they threw up a cluster of rude log cabins and called it Denver, in honor of the then hale and hearty governor of Kansas Territory.

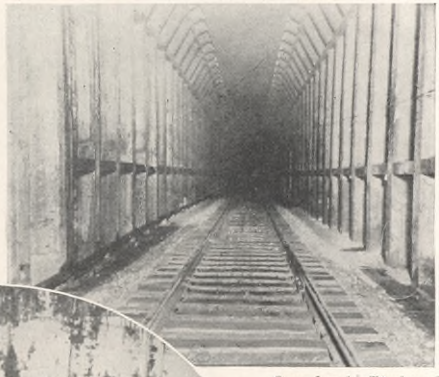
Although chambers of commerce were, at that day and age, a non-existent factor in civic life, the ensuing five years witnessed the rapid growth of this straggling hamlet into an up-and-coming town.

Faced with the problem of providing adequate rail transportation for their neighborhood products, some of the more enterprising inhabitants made surveys and attempted to induce the Union Pacific Railroad, then on its triumphant march west, to build through Denver. Congress, growing impatient at the progress of the road, had set a time limit for its completion, and since certain public lands in southern Wyoming were offered in the form of government grants, the Union Pacific spurned the Denver offer and crossed the Great Divide through Bridger Pass, several hundred miles to the North.

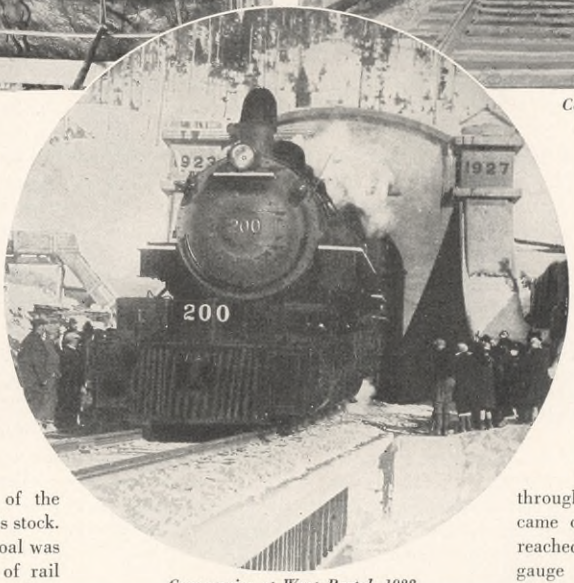
Denver was not to be denied. The Coloradans, defeated in this initial attempt at a bigger and better city, determined to place Denver on a direct transcontinental line if they had to build the line themselves. Armed with their surveys of the proposed right-of-way and with local sentiment backing them, two of the most influential citizens set about doing

Western Portal of Tunnel (Left) and Eastern Entrance under Continental Divide

Portable Cantilever Girder



Completed Timbered Section



Ceremonies at West Portal, 1928

that very thing. The result was the formation of the Denver, Northwestern and Pacific Railroad, under the vigorous leadership of William G. Evans, president of the Denver Tramway Company, and David H. Moffat, who owned half of the tramway company's stock. Their immediate goal was the establishment of rail connections between Denver and Salt Lake City and they began at once.

The first rail was laid at the Denver terminus in the spring of 1902 and construction proceeded apace until it reached the foothills of the Divide. There the combined summits of James Peak, the neighboring Mount Eva and Parry's Peak presented barriers too formidable even for Moffat's skillful engineers.

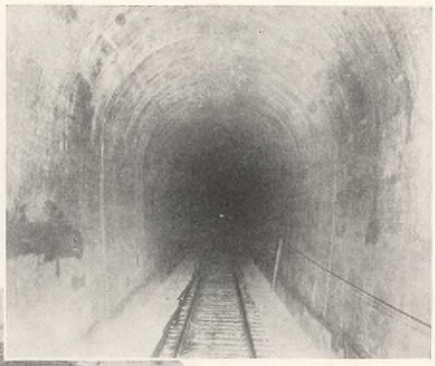
Early explorers in this region had recorded the existence of a pass somewhere between James Peak and Mount Eva, which crossed the Divide at an elevation of twelve thousand feet. Discovered by the Ute Indians, it was for centuries known only to those nomadic tribes and was used by the Cheyennes on their trips to the eastern plains for buffalo and by the Arapahoes to reach their hunting grounds in the highlands.

A long and arduous search ensued which in time led to the rediscovery of the pass, later known as Rollins Pass. Its natural formation obviated blasting a foundation for the rails and the engineers were justly jubilant. Track was laid and the route through Rollins Pass became one of the highest reached by any standard gauge railroad in the world.

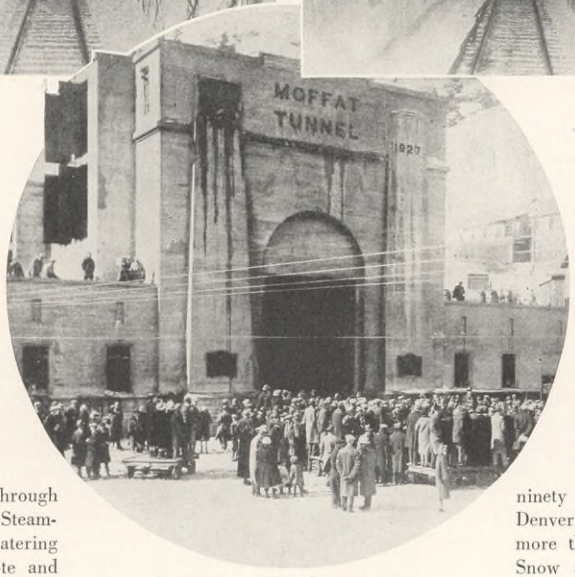
The paramount problem had been crossing the Divide, and with this difficulty out of the way, the rail head descended the western slopes toward Hot Sulphur Springs. The mineral waters of this locality had long since attained popular favor and their curative powers had attracted ailing pilgrims from near and far. On the other hand, their location necessitated an overland journey of several days which, while scenically interesting, was undeniably tiresome. Moffat's new railroad offered safer and considerably more rapid transportation and the public was not slow to avail itself of it.

Construction was now temporarily suspended at Yarmony, 130 miles from Denver and between Hot Sulphur Springs and Kremmling. The resources of the company were practically exhausted, and Moffat, who had steadily poured his personal fortune into the enterprise and refinanced the project

Completed Rock Section



Finished Concrete Section



Ceremonies at East Entrance, 1928

so many times that he must have been not a little tired of it all, had almost decided to abandon the whole undertaking. Financial assistance from an outside source unexpectedly came to his aid and the road was able to proceed through Gore Canyon to Steamboat Springs, a watering place of some note and popularity in the territory.

Moffat never lived to see his dream reach its completed form. He died in the spring of 1911 while in New York to arrange the financing of an extension to Craig. Two years later, through the efforts of his surviving partners, the rail head finally reached the western terminus of the road at Craig.

Between Denver and Craig, along the route that Moffat's genius and enterprise had made possible, ninety tunnels of varying lengths had been bored through the solid granite of the Rockies. The engine changing shed at Corona, the eastern end of Rollins Pass, was made two miles long to permit operation during the winter months, but despite these efforts to minimize the snow hazard, it was estimated that 41 per cent of the operating expenses of the road went toward fighting the blizzards which howled through the pass into Corona.

Here, during the winter months, five heavy-duty engines were required to haul a twenty-four car train through the pass. The junction was a network of switchbacks and four per cent grades and the ninety mile trip from Denver to Tabernash took more than fifteen hours. Snow avalanches frequently submerged the entire area and for months traffic was at a standstill.

The writer once attempted to step out of the engine changing shed at Corona to record with a camera the suddenness and violence with which the winter storms tear through the pass. He was almost blown from his feet by the force of the wind and driving snow and prudently withdrew, with the impression recorded only upon his mind.

Such conditions obviously could not go on forever. The solution seemed to be the construction of a tunnel under the pass and the first public action in this direction took definite form in 1913. The people of Denver, demonstrating that the blood of the pioneers still flowed in their veins, amended the city charter to create a Moffat Tunnel Commission and the long legal fight was on. The first bond issue of $3,000,000 was declared invalid by the state supreme court. In 1922 the subject was revived and

brought before the legislature in special session. It passed without protest and a bond issue of $6,720,000 was authorized. Opposing interests did their best to heave a spanner into the works, but this time the case was fought until it was brought before the United States Supreme Court, which body affirmed it in the early part of 1923. All that now remained was the building of the tunnel.

Preliminary probings under the pass revealed that there was an alternate rocky and soft earth formation, easily penetrable by tools, and drilling of the pioneer, or water bore, eight feet square, was begun. Within a few months section gangs were underground at both east and west entrances of the tunnel. The water bore was connected to the transportation tunnel, 75 feet away, by cross-cuts at intervals. The excavated portion of the main tunnel was removed by means of these cross-cuts to the water bore and thence conveyed to wherever they put the dirt that comes out of tunnels. The inevitable statistician has figured that the material thus unearthed would fill 1600 forty-car freight trains to capacity, but no one took the trouble to confirm it.

Crest of the Continental Divide (Above) and Snow Plow Driving its Way through Embankments

Several costly experiments with ventilation eventually resulted in the installation of a dual-control system at the east portal. A two-unit power plant, equipped with automatic dampers, alternately pumps in and draws out air from the tunnel in order that trains may face a current of fresh air whether east or west bound. The first unit, of five hundred horse power, forces 350,000 cubic feet of air per minute through the tunnel at eight miles an hour, while the second unit, boasting 750 horse power, supplies 450,000 cubic feet of air per minute at a speed of 14 miles per hour.

The tunnel is 6.09 miles long, the longest railway tunnel in the Western Hemisphere. Some years ago, The Texas Company undertook the development of oil fields in this area. Production has now been obtained in Moffat and Routt Counties, while in Mesa County, oil shale and gilsonite deposits have been found. The Moffat Tunnel is a monument to the western pioneer spirit and is an achievement which is destined to play no small part in the progress of the inland empire.

Moffat Road near Corona, Two Miles Above Sea Level (Left) and View of the Great Divide

"The Irma," Buffalo Bill's Hotel in the Rockies

Buffalo Bill—My Grandfather

The Intimate Biography of One of America's Greatest Pioneers

By JANE CODY GARLOW

Miss Jane Cody Garlow, first woman employe of The Texas Company at its works in Cody, Wyoming, is one of the few living descendants of Colonel William F. Cody, one of the most picturesque figures in American history. She is fortunate in being able to recall many incidents of his life which have hitherto never been published. These events she relates in the following story, written exclusively for THE STAR.

Colonel William F. Cody, "Buffalo Bill"

THE figure of William Frederick Cody will never grow dim to me. This would be as true, I think, if I were not, by a succession of events quite beyond my control, his granddaughter. The memory of Buffalo Bill is vivid in the recollections of thousands of young men and women who, as boys and girls in the early part of this century, knew the thrills of the one and only Wild West Show.

It is unfortunate, perhaps, that he should be remembered by the present generation merely as a showman, for his greatest deeds were enacted in the glorious pioneer days of the great West. No one could possibly tell of those deeds better than Buffalo Bill himself.

I recall him as a towering individual with flowing white hair, a long, straight nose, neatly trimmed moustache and goatee and intense black eyes. His great, deep voice had in it the power of taking me back into the days when physical strength and fearlessness were essential to longevity. Truly he was the personification of the dauntless and restless spirit which met with the Wild West on its own ground and fought it unafraid.

Some of the incidents of his life have been supplied me by his daughter, Irma, my mother.

BROWN BROS

Buffalo Bill Museum at Cody, Wyoming

Many of them I had the privilege of hearing first hand from the chief of scouts himself. Together they form the story of an ardent, strenuous and clean life.

He was born on February 26, 1845, in the back-woods of Scott County, Iowa. When he was five his family moved to Le Clair, 15 miles north of Davenport. Little Will attended school irregularly, having early manifested that spirit which was not to be contained within four walls. In the spring of 1852 his father contributed to this tendency by moving his family to Kansas, shortly after the passage of the Enabling Act. He established a trading post in Salt Creek Valley near the Kickapoo Indian reservation.

Jane Cody Garlow

The question of whether Kansas was to be admitted to the Union as a free or slave state was being fought out with rifle and torch. The elder Cody, although not an abolitionist, had strong ideas on keeping Kansas a "white" state. As a result he was persecuted for a period of several years by bands of pro-slavery men, and was finally stabbed by one of them, which later was the cause of his death. For months at a time he was forced into hiding and my grandfather used to recall one occasion in particular when a gang of these ruffians called at the Cody homestead.

Mr. Cody was away and his brother was the only man in the house. A party of blood-thirsty villains galloped into the yard, and began to call in no uncertain tones for the man they hated.

"He isn't here," replied Mrs. Cody, "but there is a party of soldiers inside and unless you clear out they will fire on you."

BROWN BROS.

The Chief in Hunting Costume

Cody's brother, taking the cue, began to call out various names, as if ordering a squad of men about. The children replied by stamping upon the floor to imitate the sound of tramping feet. The would-be murderers beat a hasty retreat, assisted in their flight by a goodly charge of buckshot from a rifle in the hands of the intrepid Mrs. Cody.

After the death of the elder Cody, the pro-slavery men put in a claim against the Cody estate for $1000. In view of the fact that the family's financial resources were of the slenderest, they could not fight the claim. Will, from the age of seven, was an expert rider and a skilled marksman, and so, at the age of eleven he signed up with Russell, Waddell and Majors as an extra on one of their wagon trains in order to get money to fight this claim.

Wills, the chief wagon boss, befriended the lad and agreed to take him on a short trip with the wagon train. They had not gone far when they were attacked by a band of Indians and retreated from them, creeping along a small stream, keeping the high bank between them and the redskins. Will had dropped to the rear when a slight noise at the top of the bank caused him to look up. A gigantic Indian was peering down at him.

Colonel and Mrs. Cody, Shortly Before the Former's Death

Will was not interested in conversing with the noble savage. He threw his rifle to his shoulder and fired. There was an agonized yell and six feet of redskinned corpse fell at the lad's feet.

This first trip having been such a success, young Cody signed on as assistant wagon master for Russell, Waddell and Majors and engaged in the task of supplying food and ammunition across the plains to the army of General Johnston, who was doing his best to wipe out the Mormons. One of these excursions resulted in the capture of the wagon train by Joe Smith, notorious leader of the

Mormon tribe, known as Danites.

In 1858 he quit the employ of this concern and became a trapper. This enterprise lasted two months and he returned home to attend school for two and a half months. Later in the same year he journeyed with a party of prospectors to the newly discovered gold fields in Nevada and followed this experience with two months as the youngest rider for the pony express. He covered a route of 45 miles in three hours, schedule time, and then hearing that his mother was ill, returned home to be near her, and resumed his activities as a trapper and trader.

Memorial Statue at Cody

On one of these expeditions he broke his leg and was left alone in a small dugout while his partner went back to get a team of oxen. In this helpless state and in the middle of winter, he awoke one morning to find himself surrounded by a party of Indians who had the quite logical intention of ending his career then and there. Their chief strolled up to witness the dispatching of another white man to the happy hunting grounds and was recognized by the youngster as Rain-in-the-Face, later to win lasting note as the slayer of Custer. Because of his extreme youth, the chief prevailed upon his braves to spare Cody's life and they left, after devouring most of his provisions. For 29 days he lay there helpless, subsisting on snow and a small quantity of frozen meat, until finally rescued by his partner.

BROWN BROS.

Buffalo Bill as Manager of the Wild West Show

The pony express again called him and he was assigned to a mail route. During this period he covered a round trip of 322 miles, the longest pony express ride in history. The Indians became troublesome to a greater degree than usual and the pony express was discontinued for the time being. Will went back to the relatively tame sport of trapping bears.

He used to tell of one adventure which demonstrates his talent for getting out of tight situations. He had left his horse by the side of a creek and was looking for his traps when he stumbled upon a party of white men whom he recognized as a gang of horse thieves. Realizing that he was in none too favorable a position, he asked permission to go back for his horse. It was granted, but two of the gentlemen went with him. Cody regained his mount and, as if by accident, dropped something from the saddle. One of the robbers bent to pick it up. Cody rewarded him with a blow over the head with his revolver and when the other one turned to see what the trouble was, shot him dead in his tracks.

The Civil War broke out when he was 16 and, despondent over the death of his mother which had just occurred, he enlisted in the Seventh Kansas regiment. In the spring of 1864 he was sent into Tennessee to serve against the Confederates, and subsequently became a non-commissioned officer and a scout. At the close of the war he was sent to St. Louis on detached service and there met a young woman named Louisa Frederici, to whom he became engaged. After a brief career as a stage driver, he married and took his bride for a honeymoon trip up the Missouri River. He had promised my grandmother that he would "settle down," which he proceeded to do by renting a small house in Salt Creek Valley and running it for a time as a hotel.

Civilized life began to pall. Again he hit the trail, this time for Salina, Kansas, where, for a time, he was guide to General Custer. After a disastrous experience in trying to found a railroad "boom" town, Cody turned again to hunting.

BROWN BROS.

Colonel Cody on a Favorite Mount

Nearly every-

BROWN BROS.

Recent Photograph of Main Business Street of Cody, Wyoming

body knows of my grandfather's prowess as a buffalo hunter and that this talent earned for him his popular title of "Buffalo Bill." He always used to say that but for Brigham and Lucretia Borgia, he would never have been a success at it. This is how he used to tell of them:

"Brigham was one of the fastest horses I ever rode, and Lucretia Borgia was my high-powered, breech-loading Springfield rifle. Brigham's practice was to gallop into a herd of buffalo and chase one until he had come abreast of it. He would then canter alongside until I had dropped it, but would give me only two shots. If I failed to kill it with two loadings of Lucretia, Brigham would snort with disgust and pass to another buffalo as if to say, 'Let's see what you can do with this one.'"

The Cody-Yellowstone Highway

The Messrs. Goddard Brothers, under contract to feed employes of the Kansas and Pacific Railroad, then building, heard of his skill, and hired him at $500 a month to provide fresh buffalo meat for the camps. In 18 months, he killed 4280 buffaloes and at one time dropped 48 of them in 15 minutes. As he told of this, his eyes would flash, and with a chuckle he would say "Old Lucretia became so hot after I had scored thirty of them that she blistered the palms of my hands and I was obliged to wrap her in my buckskin shirt."

Eventually Buffalo Bill came to conquer the footlights as he had humbled the buffalo and the redskin. He turned showman and opened his first Wild West Show on May 17, 1883. From the start it was a success, so much so that he decided to take it to England, where he was commanded to give a performance before Queen Victoria. This was followed by appearances all over the world and his fame became international.

My mother has said that in his younger days, Buffalo Bill was strikingly handsome, with jet-black hair and flashing eyes. His profanity was of a strange variety. The strongest epithets I ever heard from him were "blame my skeets" and "dog-gone."

His death in 1917 is familiar to most of us. At his funeral those who could find their voices sang his favorite song, "Tenting on the Old Camp Ground." He now lies on Lookout Mountain, overlooking Denver.

Cody, Wyoming, where a refinery of The Texas Company is located, was named for him, but no town can be called Buffalo Bill's home town. He belonged to the West, as inseparably as the West belonged to him.

Shoshone Reservoir and Dam, Shoshone Canyon

TEXACO and the Iron Horse

A Few Notes Concerning Our Railway Sales Activities

By J. A. BROWNELL

THE average traveler, lodged snugly in his berth or lolling back in comparative comfort to survey the passing landscape from the platform of an observation car, has little conception of the extent to which good lubricants are contributing to his well-being and prompt arrival.

Not many years have passed since that same traveler's contemplation of the scenery would have been rudely and periodically interrupted by the sight of thick, yellow smoke issuing from beneath the car, accompanied by a sickening smell of burned oil. The train would grind to a stop; various members of the crew would assemble on the adjacent roadbed and the traveler would hear the phrase "hot box," coupled with others of an uncomplimentary nature.

TEXACO railroad lubricants are playing a considerable part in eliminating this source of irritation to travelers and expense to the railroads. In addition they are providing perfectly-lubricated valves and cylinders, resulting in fewer hot driving pins and driving journal boxes, and greater mileage per pint and pound of the products consumed.

The successful lubrication of railroad locomotives and cars is dependent on oils and greases of the highest quality. Other necessary factors are intelligent lubricating engineers to supervise their application and to coöperate with the railroad mechanical forces in the use of the products.

TEXACO TO THE RESCUE

One of the most recent illustrations of the performance of TEXACO, both in average use and in emergencies, comes to mind. On a certain railroad in the North, the engineer of a passenger train found, in the course of oiling his engine at a station stop, that the truck cellar, a small box which, filled with lubricant-soaked waste, fits over the hub of the front wheel, was missing, having dropped off since the last stop. No spare engine was available and it looked like a bad delay. Eleven miles down the road was a freight train and the dispatcher wired for an exchange of engines, but the question was how to get the passenger engine along those eleven miles without a cellar on the journal. The engineer was not without ingenuity and a knowledge of the strong adhesive qualities of TEXACO Crater Compound. He applied this product liberally to the hub and journal of the front truck, and thus was able to make the eleven mile run without developing any further heat on the journal.

The freight engineer, left with an apparently disabled engine, also began to use his head. Going to a nearby sawmill, he cut a piece of board to fit the opening left by the missing cellar, packed rags and cotton-waste, soaked with Crater Compound, under the journal, fastened the board to the journal with wire and ran the engine and train 51 miles to its next station. A new cellar was fitted and the engine went out that day on its regular run. Both engineers were recommended for merit marks by the road foreman.

More than two hundred railroads throughout the United States are users of TEXACO products. On large roads and small, through bleak New England snows and across torrid Arizona deserts, over mountain passes and along the seacoast, thousands of trains are traveling swiftly and smoothly with the aid of TEXACO lubricants.

RAILROADING AND AVIATION

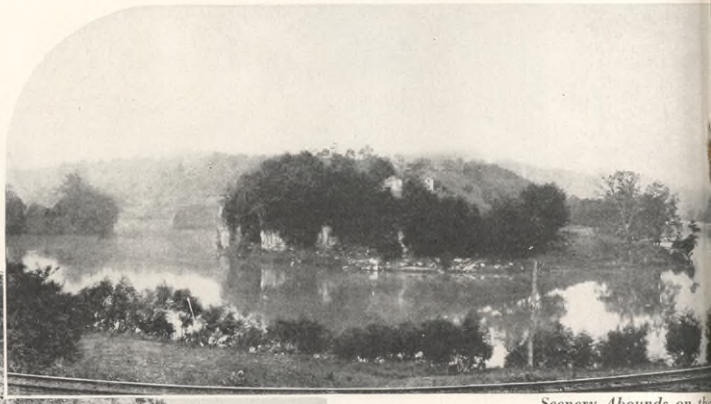
Many people seem to believe that the airplane will, in a few years supplant the railroad as a means of transportation. Aviation is a virile, progressive industry, but that day, in my opinion, is still far distant. Radio did not supplant the ordinary telephone or telegraph, but simply filled in gaps which the older forms of communication could not bridge. It created, in addition, a new field for itself.

In like manner, it may be argued that even when transcontinental air liners whiz over our heads in countless numbers and dirigibles land on every roof, the old familiar railroads will still be leaving and arriving on time.

Railroading is in a state far from senile. Bigger and better locomotives and cars are being built which dwarf by comparison even those built five years ago. Trains now are being equipped with barber shops, stock tickers, shower baths and other items of material comfort. A new twenty-hour service on two of the larger lines has been inaugurated within the past month between New York and Chicago.

Aviation and railroading will move forward together, neither supplanting the other and both dedicated equally to swift, efficient and economical transportation.

TEXACO SMOO



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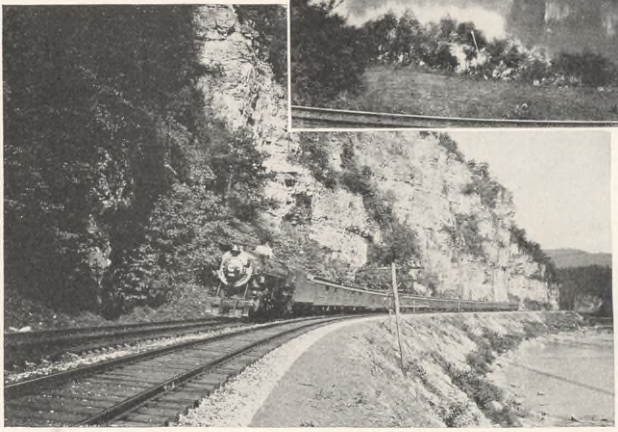
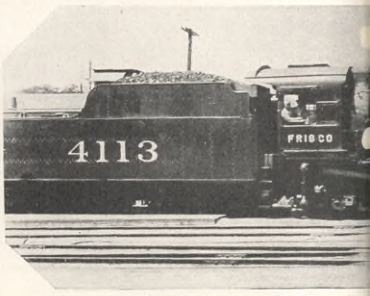


Fast Passenger Train on the Norfolk and Western



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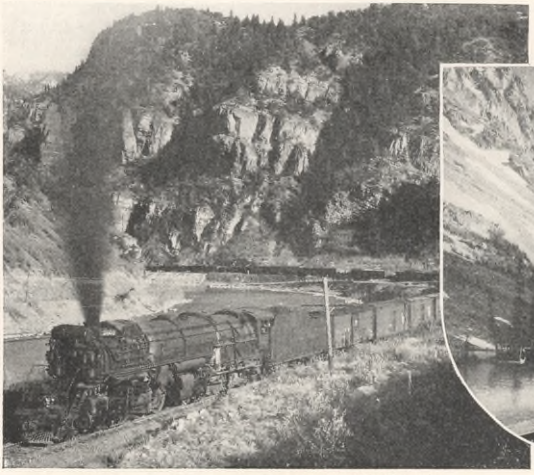

Hauling Freight on the Denver and Rio Grande

The Northern Pacific's "North Coast Limited."

THS THE WAY

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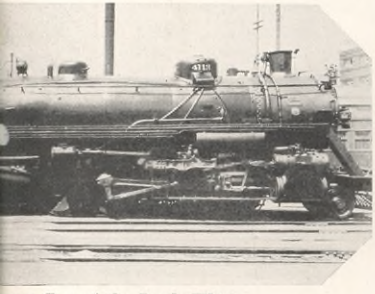

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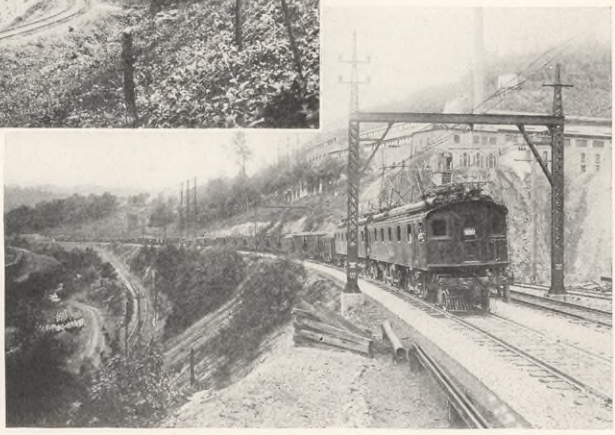
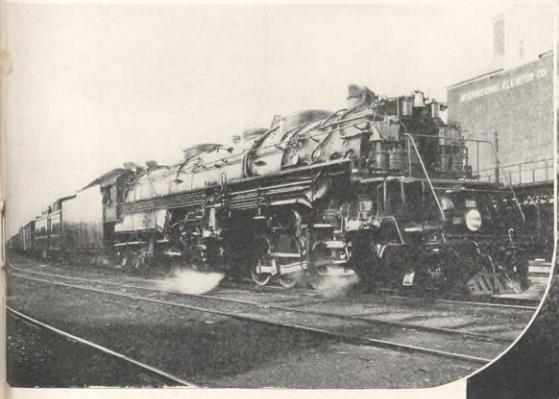
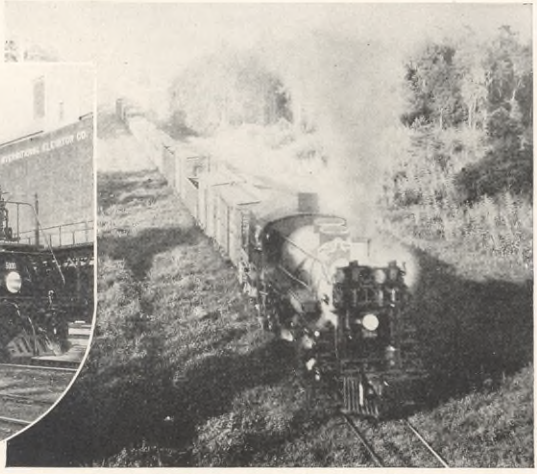


Electrified Section of the Norfolk and Western



Mammoth New Engine of the Northern Pacific



Southbound on the Seaboard Air Line

The **TEXACO STAR**

Printed monthly for distribution to employes and stockholders

Published under the direction of R. B. Newcomb Jr.
Supervisor of Company Publications

Address: The Texaco Star, The Texas Company
17 Battery Place New York City

Clayton Knight

The picture of the Texaco V on our inside front cover this month is the work of a man to whom the World War meant something more than a soul-searing nightmare. Clayton Knight, American, was granted the God-given power of seeing the horror of battle through the eyes of an artist.

Years before the United States entered the conflict, this young man was distinguishing himself as a member of the Royal Flying Corps, having closed his New York studio and enlisted shortly after the outbreak of hostilities.

Today, whenever flight is to be depicted on canvas, with all its glamor of power, its startling reality of speed or in some terrible aspect of combat, Clayton Knight is called upon to do it. Entirely recovered from his wounds, incurred when he was shot down in flames by Auffahrt, famous German ace, he spends his time in depicting, for those of us who were not there, the thrills of aerial warfare.

In the words of Floyd Gibbons, noted war correspondent, "he is of that Knighthood of the Blue whose lives were almost as fleeting as the stabs of flame that spouted from their machine guns. He dealt in death and it came close to him, but even then, the artist and the humanist in him made it possible to carry through it all the keenness of eye, the delicacy of touch, the 'feel' of speed which, together with his startling mental album of impressions, distinguish his work from all others and make him the greatest artist of the air."

The Sun God

Whatever startling airplane flights will be made in the future, those which will be remembered are the ones which reached their objective. Among these must be listed the recent transcontinental nonstop and return flight of the Texaco fueled and lubricated plane, Spokane Sun God.

As Lieutenant Mamer points out in his article in the current Star, the important thing was not that a record was broken, but that the practicability of refueling in the air at points hundreds of miles apart was demonstrated so successfully.

The initial steps toward the establishment of aerial filling stations have been taken, and they have been taken by The Texas Company. Aviation has taken such phenomenal strides in the past few years that the conjectures of even our most optimistic prophets have come true before their appointed time.

Publicity

Modern industry is dealing with a new public; a public that is educated, enlightened, travelled. It is not only a consuming but an investing public, with an investing stake in industry and an investor's right to know what is being done with his money. To see that industry and the public understand each other, to provide the average man with authentic information concerning industry is the function of the public relations counsel.

This, in brief, is the theme of an address by Victor H. Scales, assistant director of the Division of Public Relations of the American Petroleum Institute, delivered recently at the annual meeting of the National Petroleum Association. Mr. Scales goes on to say that not only does the public have a right to know about industry, but industry has a right to be heard with respect and confidence.

There can be no doubt as to the truth of these statements. Present-day industry cannot hope to win the goodwill of the buying and the investing public through the medium of propaganda, unauthenticated information or the wilful perversion or suppression of facts. Neither can it gain public esteem by the dissemination of windy rhetoric.

The policy of The Texas Company has ever been that of placing full information concerning the Company at the disposal of its stockholders and the public. This is accomplished through the medium of conservative advertising, letters to stockholders, the annual report of the President and articles in newspapers and Company publications which have as their main object the exposition of some new, true and interesting occurrence. The intelligent public strongly disapproves of propaganda and ballyhoo. It would be well for intelligent industry to appreciate that fact.

Guarding Investors

A vigorous campaign against unscrupulous stock-selling companies, who yearly victimize thousands of insurance beneficiaries, is being conducted by the National Better Business Bureau. This organization, whose work is concerned with stamping out unethical practices in business, charges that high-pressure salesmen, in the pay of these companies, select their "prospects" from survivors of deceased persons, as reported in newspaper obituary notices.

In these days of unprecedented stock investment on the part of persons who, up to a few years ago, would have been content to let their surplus funds lie in a savings bank, it behooves every responsible corporation to warn its employes against these get-rich-quick schemes. In particular, present holders of securities in well-established industries should be made aware of the danger of switching to less stable enterprises on the chance of reaping fast profits.

The Texas Company is glad to assist in every way possible to safeguard its stockholders and employes. The Better Business Bureau's posters, depicting some of the principal swindling operations, are prominently displayed in the various units of the Company.

Our Front Cover

Few visitors to Ireland miss the opportunity of journeying to the Island of Ross, in County Kerry, on which stands one of the most picturesque of the ancient Irish fortresses, Ross Castle, a painting of which is shown on our front cover.

Ross, one-time stronghold of the mighty O'Donoghue family, was a broth of a place in its time. But now it is no more than a gaunt pile of broken masonry. Green vines, unchallenged, impudently climb the battlements once so stoutly defended by O'Donoghue and his men against invaders. Moisture now trickles down the walls which once rained hot lead upon the enemy.

On a moonlight evening, and the wind whipping up the waters of Lough Leane which lap its sides, old Ross, tumble-down ruin as it is, must have a lot to think about.

Felicitations

The Chicago and New Orleans Sales Districts of The Texas Company deserve hearty congratulations on having won the Class A and Class B trophies of the Marketing Division in the recent safety contest sponsored by the National Safety Council. The trophies evidence the success of these two divisions in preventing accidents during the first six months of 1929.

Announcement and presentation of the awards was made on October 2, during the course of the eighteenth annual safety congress of the Council, held at Chicago from September 30 to October 4.

The Author at the Controls

From the Ground Up

Airy Recollections of The Texas Company's Flying Stenographer

By DORRIS E. WILLIAMS

Stenography and aviation have little in common, according to Dorris E. Williams of the Producing Department at Wichita Falls, Texas. Miss Williams has recently completed her first solo flight at Kell Field there and is now seeking new laurels. As the first aviatrix of The Texas Company, Miss Williams has written this interesting account of her aeronautical trials and tribulations expressly for readers of THE STAR.

YOU don't have to be an expert in any line to realize that running a typewriter and flying an airplane, although both are governed by the "touch" system, are two decidedly different matters. Furthermore, you need be only an average person to come to the conclusion that while flying is one of the world's greatest thrills, learning to fly isn't all peaches and cream.

Despite the many disappointments and the seemingly insurmountable difficulties facing the fledgling, there is in this laboriously acquired art something deeper than mere sport; some elemental quality that is comparable only to the making of a

Taking on a Load of TEXACO *Aviation Gas (Left) and the Author with her Instruction Plane Ready for a Solo Hop*

great discovery. It is a sensation which the "ground hog" or even the occasional passenger will never experience.

My first encounter with a plane was eight years ago in my home town, Wichita Falls. One of the local citizenry had become air-minded to the extent of purchasing an old type Curtiss "Canuck" plane and in course of time invited me to ride with him.

GALLOWAY

Pilot and Instructor in Dual-Control Plane

The ride didn't cause any particular tremor in my heart action, even when the pilot flew over a cemetery, cut off the motor and laughingly pointed downward. From that height the cemetery looked rather pretty.

A few years later while working in Dallas, I met several aviators and paid frequent visits to the airport there. I became acquainted with most of the pilots in that neighborhood and at length was invited to go as a passenger with a group of ships into Oklahoma to attend an air frolic sponsored by the American Legion.

That trip is memorable for the fact that I got every sensation usually accompanying cross-country air journeys, including that most unpleasant phenomenon, "air-sickness." We landed with no further casualties and since then I have never experienced air-sickness. I am just as well pleased.

The air bug had bitten me badly, and although I still considered flying the other fellow's game, the virus continued active and finally broke out in a firm resolution on my part to master the art of aerial navigation.

The first steps were easy, compared with what was to follow. I filled out an application for a student pilot's permit, giving the usual data concerning age, residence, and education. Then I was ready for the required physical examination.

There is no exact physical standard for civilian flyers. The requirements have so far been taken entirely from military and naval data. As a matter of fact a pilot does not have to be a Hercules or even a Venus. Safe flying is far more dependent on natural vigilance and ordinary common sense than on bulging biceps and a bullet-proof torso. The important thing is to have brain and muscle in perfect coördination, which is not as easy as it sounds.

GALLOWAY

Learning to Swing the Propeller Correctly

I was first tested for that vital qualification—good eyesight. This included not only the usual reading tests, but a careful check for color-blindness and a close study of the muscles and nerves surrounding the eyes. Vision, if slightly defective, can be corrected by special lenses set into the goggles.

Hearing is second in importance, for on the rhythmic hum of the motor a great deal depends, and the pilot must be able to discern and diagnose

a foreign sound the very minute that he hears it.

Other tests included the pulling of a stick as nearly parallel as possible to a stationary stick some twenty feet away, to determine ability to judge distance. Equilibrium, respiration and heart action were subjected to careful observation and the ultimate conclusions being satisfactory, I was given a letter of authority to fly with an instructor for thirty days until the government could act upon my application.

Armed with this letter, I felt that I was half an aviatrix already. How little I realized the extent of the task in front of me! I tripped merrily to the airport, fully expecting to hop right into a plane and buzz away. Instead I was given several pounds of books on aviation subjects, newspaper articles and magazines and told to digest them thoroughly.

This is by far the greatest drudgery of flying. First I had to become familiar with the theory of flight, known as aerodynamics. This includes such technicalities as why and to what angle the wings must be tilted to allow the rush of air over them to form a vacuum at the top, thus keeping the plane in the air. The names of the various parts of a plane, the elevators, ailerons, rudder, stick and landing gear, had to be learned by heart and the function of each thoroughly committed to memory—a considerable task.

Next came the motor itself, the very vitals of the plane. I learned the functions of the propeller and in a most definite and complete fashion the working of each and every part of the motor itself; the cylinders, the cooling system, and the fuel supply. I began to despair of ever really flying, and for a time thought that they were trying to make a first-class mechanic out of me.

GALLOWAY

Conveying Instructions by Speaking Tube

GALLOWAY

A Working Knowledge of Motors Is Essential

Several weeks of this ground school work followed, under the careful supervision and constant interrogation of my instructor, I finally came to the field to begin the really interesting part of the instruction. Seated in the ship, which was not destined to leave the ground with me for some days still, I was taught to put my book knowledge to work. My instructor, Burton L. Walker, was in the forward cockpit and he initiated me into the secrets of the instrument board, secrets which seemed a bit complicated at first, but which after a short time became familiar almost to the point of cordiality.

There is the tachometer, which shows the number of revolutions per minute which the motor is making. There is the oil gauge, the water temperature gauge and the altimeter, showing the height in feet from the original take-off. Directly under these appliances is the gas throttle, a most important

article to know the use of, and in the cockpit itself are the "stick" and the rudder controls.

The success of the mechanics of flying lies in the complete mastery of the stick and the rudder. The former, resembling nothing so much as the gear shift lever on an automobile, moves in two directions, forward and back and from left to right. In the first named direction the stick moves the elevators, or flippers at the tail of the fuselage, or body, of the ship, whose function it is to raise or lower the nose of the plane in flight. Moved to the right or left the stick actuates the ailerons, or movable parts of the wings, for lifting or lowering the wings in the air. The rudder is controlled by foot pedals and guides the ship's general direction.

It may seem odd that the student flyer's first job, once he has learned his ground work, is not to learn take-offs or landings, but to familiarize himself with the conduct of the plane in flight. Although all movements of the stick and rudder are natural, it is difficult to determine, except after considerable practice, just how much to move each. This once mastered, the pilot is conscious of the "feel" of his ship.

The art in learning to fly is to watch two things. —the nose of your ship and the horizon. In straight flying the nose of the plane must be kept about level with the horizon. In making a turn with the wind, with underpowered aircraft the nose must be slightly dipped below the horizon and when turning against or into the wind the nose is leveled again. After these details are assimilated, the air work becomes a routine of circling and judging to what extent the rudder or stick should be used in "banking" the plane for a turn.

Once sure of my ability to maneuver a plane in the air, the instructor began to show me how to glide down for a landing. This process consists of throttling the motor down at various altitudes and gliding toward the field. The instructor always took the controls, fortunately, when we were still about one hundred feet above the ground. When I had made sure of the point where I was supposed to cut the speed and nose the ship down for the glide, I was abruptly switched to learning how to take off.

Again it is purely a matter of feeling to know when the tail of the plane is lifted as it gathers speed, that the stick must be pulled back ever so slightly until one feels that peculiar sensation of lightness which indicates that the ship is ready to hop. Another gentle backward pull on the stick and we soar into the air. I had some trouble learning to keep a straight course on the take-off, allowing for wind drift and the like, but difficult as this is, it is child's play compared to landing.

"Flying is a Thrill"

Having previously learned to glide the ship toward the field, I had become sensitive to the exact timing to level the plane for the landing itself. When about twenty feet from the ground, the nose of the ship is lifted slightly to lessen the forward speed and when not more than two or three feet lie between you and mother earth, the nose is raised again so that the plane is in the same position it would be on the ground. Holding the tail of the ship on the ground once you have landed is the very essence of a successful arrival. The tail skid serves as a brake and when the two wheels and tail skid hit the ground simultaneously, you have made a perfect "three point" landing.

There came a day when I went to the airport with a feeling of perfect assurance. The air seemed charged with something electrical and to me it meant one thing: I was ready for my first solo flight. After a few take-offs and landings with my instructor, there came a breathless moment on the field when that gentleman calmly climbed out of the cockpit.

I didn't want to make a trite remark upon so moving an occasion, for the situation called for something really original. And the most brilliant thing I could conjure up to say was, "Is there plenty of gas?"

The take-off was easy. Once in the air, I made the regular routine turn of the field and turned back into the wind before starting the downward glide. I suddenly realized that I had failed to throttle the motor back. I did it in a hurry!

Deliberately the plane made a slow, easy glide toward the field. I remembered to lift the nose, increasing this lift as we neared the ground. The earth spun and raced under me; the stick was back as far as I could pull it. There was a gentle bump, and I had made a "three point" landing.

Now I understand that, after all, I am really just beginning to fly. I must learn to take care of emergencies and there are many, many things yet to be mastered. Safety in flying comes only when the pilot learns to handle out-of-the-ordinary situations. But how delicious it is to be able to say with elaborate nonchalance, "Oh, yes, I fly alone now!"

A Skyscraper Reaches Skyward

Photographic Impressions of The Texas Company's New Headquarters in the Chrysler Building, New York City

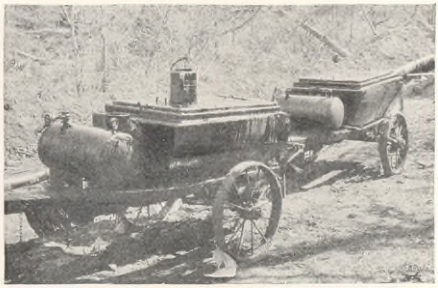
Site of the New Chrysler Building, February 20, 1929

The Foundation Work Completed, April 9, 1929

July 20, 1929

View from Lexington Avenue, June 14, 1929

September 18, 1929



Applying Asphalt and Saturated Felt (Left) and Asphalt Kettles

Our New West Texas Pipe Line

II. Carrying the Project to Completion

By A. S. BAILEY

Vice President, The Texas Pipe Line Company

THE combined area of the six major and five minor oil fields now producing in the Permian Basin of West Texas comprises some 135 square miles, or less than one per cent of the area generally recognized by geologists as favorable to the production of crude oil in paying quantities. Producing wells in the developed portion of the area at present average 395,000 barrels of crude daily and are served by pipe lines having an estimated daily capacity of 425,000 barrels. The aggregate storage capacity of oil tanks in the area is 52,000,000 barrels, 40,000,000 barrels of which were in storage on July first of the present year.

As a measure of conservation, production in two of the major fields in the Permian Basin for the past two years has been restricted under a proration agreement. On July fifteenth, the daily potential production of the Hendricks Pool in Winkler County measured 660,317 barrels from 582 wells, while actual production, in accordance with terms of the agreement, was limited to 150,000 barrels. The Yates Pool in Pecos County produced 130,000 barrels under the curtailment order on the same day, although the potential daily production of the field was estimated at 2,339,387 barrels from 303 wells.

Pipe Bend in the Ditch

The original plan underlying the design of the West Texas line called for a capacity of 35,000 barrels per day from the location of the Crane field in Upton County to the eastern terminus of the line at Houston. Preliminary studies showed this requirement to be satisfied by pipe having nominal twelve inch inside diameter and by one electrically powered centrifugal station at Crane, together with three Diesel-powered reciprocating relays at Iraan, Junction and Rosanky, augmented by one low pressure centrifugal unit near Sonora to compensate for the effect of the control point 13.8 miles west of Junction Station, where the elevation is 2,445 feet.

However, prospective oil movements and other considerations, led to the decision, in December, 1928, to increase the capacity of the line to 55,000 barrels per day. Negotiations with several of the public utilities companies operating in Texas resulted in a decision to electrify the remaining relay stations and

Loaded Ditch Between Crane and Sonora (Left) and Ditching Machine "Grubber" Removing Loose Rock After Dynamiting

contracts accordingly were entered into with those companies which were able to extend their transmission lines to our locations.

Evaporation, constantly extracting its toll from oil in tankage, is minimized by providing all working tanks with floating roofs. These tanks of 40,000 and 10,000 barrel capacity for the Diesel and motor stations respectively are of standard A. P. I. construction.

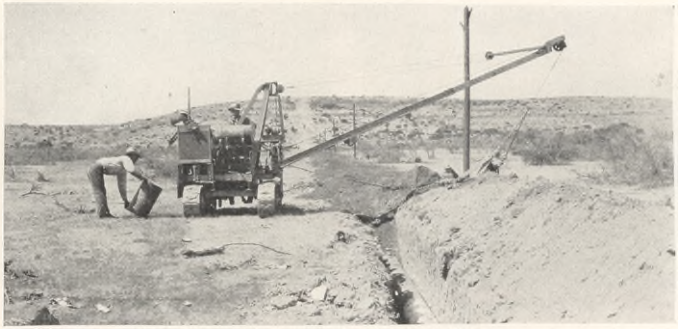
Many words and much ink have been spilled with respect to the relative economic efficiency of Diesel versus motor driven pipe line stations. The modern Diesel engine, as is well known, is the most efficient machine for converting the heat of fuel into useful work, and most of its early ailments have been overcome through refinement of design and better metallurgy. With its dependable operation and pronounced flexibility, due to speed control, it makes a very desirable prime mover. But the final choice of operating equipment solely cannot be governed by mechanical considerations alone, for in the final analysis the relationship between investment costs and horsepower hours of useful work done accurately must be gauged. This fundamental financial question in our case is satisfied best by the combination of engine and motor stations which has been worked out.

Full coöperation of the power companies, and reasonable energy rates were, of course, essential in bringing about this decision. Comparison of the various types of pumps led to the selection of centrifugal pumps operating at 1750 r. p. m. and direct driven by 400 horsepower induction motors. It may be of interest to know that preliminary performance tests of this pump and motor have shown efficiencies greater than anticipated and are certain to produce very satisfactory operating costs. The pumps at the various stations were designed to meet the particular individual conditions imposed, and care was taken that the expected operating points came within the high part of the efficiency curve. This is of utmost importance in minimizing power costs.

Adverse criticism has often been leveled against centrifugal installations for not being able to take full advantage of line capacity variation between summer and winter temperatures. This is due to its inherent design, and while comparing unfavorably with the flexibility of the Diesel unit, can be compensated by means of a low pressure variable speed pump connected in series with the main pumps. Space, however, does not permit a full discussion of this unique feature, by the use of which it may be shown that Diesel station flexibility is approximated.

Setting Off Charge of Dynamite

The entire electrical control apparatus is housed in a separate room and is so arranged that each control panel becomes part of a continuous switchboard, containing necessary circuit breakers, compensators, and other instruments for the operation of the pumps. This switchboard is semi-automatic in that a simple push button will start the pumping units.



Fueling the "Backfiller" with TEXACO *Gasoline Hauled 75 Miles*

Station buildings are constructed of reinforced concrete foundations and floors, structural steel superstructure covered with asbestos board, steel window frames and sash with ventilating panels, and present a neat and attractive appearance. Cottages for station employes are of five room frame construction with TEXACO shingle roofs, wired for electric lights and contain all conveniences, including fully equipped bath. Grounds are graded, sodded, and planted with shrubbery best suited to each local climatic condition.

The ten and twelve inch sections of the line are constructed of basic open hearth steel lapweld line pipe of eight to fifteen point carbon. The ultimate tensile strength of the steel varies between 48,000 to 50,000 pounds per square inch. A type of bell and spigot joint suitable for electric welding, which later indicated several constructional advantages, was selected as being best fitted for this purpose.

The laying of the pipe line itself has, of course, been the most difficult and careful undertaking. A total of ten construction gangs has been engaged at various times on the main line and on the branch to San Antonio. Pipe, having been ordered during June, 1928, began arriving at destinations along the line early in October and continued to be received at the rate of from three to five miles per day until completed early in February.

Shortly after the first pipe was received some of the construction crews swung into action, but it was not until about the first of the year that all crews were in the line, with the result that the entire project was completed and ready to start moving oil from Jal to Houston on July 1, 1929. The section of ten inch line between Humble and Port Arthur, however, had been completed and put into complete operation on April 30.

The principal operations incident to laying a pipe line in approximate order, after the right-of-way has been secured and cleared, are: stringing, lining-up, welding, ditching, laying and tying-in, bending, doping or patching protective coating, lowering, backfilling and cleaning up. There are

Putting Bend in Pipe (Left) and View of Fredericksburg Station

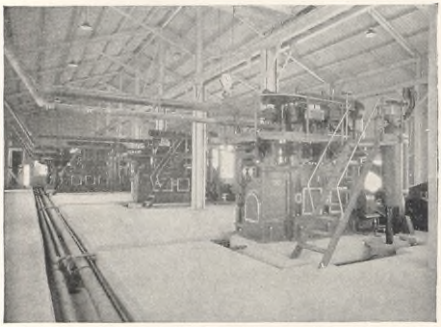
Looking East along Completed Line near Iraan Station

other things to do such as building roads and bridges, taking down and repairing fences, swabbing the inside of the individual joints, scaling and cleaning bells and welded connections, casing all highway and railroad crossings, installing river crossings, maintaining telephone and telegraph communications, maintaining truck and auto service for handling supplies and hauling gang men to and from camps, and, in fact, everything must be provided to maintain gangs aggregating 500 to 750 men in the field at remote places and to insure the continuity of the operations. Here is a job to search a man's soul, in addition to which his intestinal tract must be well organized and of no mean proportions.

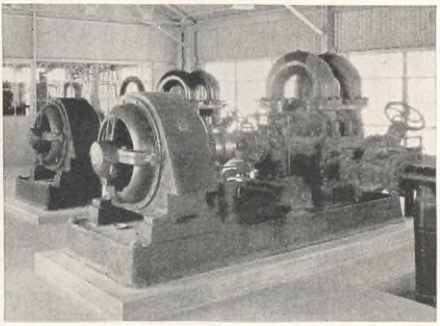
West Texas, possessing almost everything under the sun except railroads, presents hauling problems second to none. Hauls of from fifty to eighty miles were the order of the day at all points west of Fredericksburg, and when it is remembered that each mile of twelve inch pipe weighs 271,920 pounds, or more than 130 tons, some idea may be had of the tonnage moved. A few of the major items transported by roads and trails, through swamps and over mountains, let down declivities by windlass and line, and snatched ahead by tractors or six, eight and more mule teams are:

More than 80,000 tons of six, ten and twelve inch pipe; asphalt, 5000 tons; more than 2000 tons each of machinery and of gasoline and oil; 2000 tons of saturated felt paper; 180 tons of welding rods and 250 tons of dynamite.

As has been indicated, the line is electrically welded throughout. The welding crew is preceded by the lining-up gang whose duty it is to line up the pipe in sections from 200 to 500 feet or more in length. These sections, which must be absolutely straight and true to line, are blocked on skids in such a manner that the whole section may be rolled on its longitudinal axis in order that the welder may be always on top of his work. The weld is made in two operations, the first bead being scaled and cleaned thoroughly before the final bead is applied. Portable gasoline driven electric genera-



Engine Station at Junction (Left) and Line Crossing Old Spanish Trail



Manifold at Iraan Station (Left) and Interior of Crane Station

tors of several standard makes have been used very successfully, their motive power being caterpillar tractors or teams, depending to some extent upon the topography of the locality. On twelve inch pipe the welder uses about 2.8 pounds of welding rod per weld.

These sections are welded at the edge of the right-of-way in order not to interfere with the ditching crew which comes next. In "easy going" the ditch is cut completely by a ditching machine in the ordinary manner, while in "hard going", where blasting is necessary, the ditching machine is preceded by a drilling gang using air-operated jack hammers to drill holes about two feet apart for placing the shots. The amount of dynamite used indicates that out of 724 miles, nearly 200 miles of ditch had to be blasted out of solid rock. The ditch, where crossing cultivated or pasture lands, is dug to an average width of 24 inches and depth of 30 inches. In rock the dimensions are 24 inches wide by 21 inches deep. About three quarters of a million cubic yards of earth and rock were moved in excavating the ditch, only to be moved again in backfilling, bringing the total handled to one and one half million cubic yards, an amount almost defying imagination.

Having the ditch prepared, the "tie-in" crew proceeds to line-up the already welded sections on skids over it, making bends where necessary to conform the finished pipe line to the actual contour of the ground. This is a very important operation since the ability of the line to absorb contraction and expansion strains depends upon the manner in which the line "fits the ditch". The aid of the pipe liner's god is invoked continually at this stage to an accompaniment of raucous sounds from all the caterpillars and lesser equipment on the job. Bends having been made, the section is welded to the end of the ever-lengthening pipe line after which the doping gang gets in its dirty work of smearing the joints with an asphalt protective coating and wrapping with saturated felt, at the same time patching damaged spots in the coating which previously has been applied to the pipe at the pipe mills before shipment.

The pipe, now ready to be lowered into the ditch, is consigned to its grave with appropriate ceremony, given a final cussing and is backfilled. On lowering

(Continued on last page)

The Texas Company's Shepherd Well No. 1, Lee County, New Mexico

Globe-Trotting With TEXACO

IV IRELAND

By ALEX J. SINGLETON
MANAGING DIRECTOR
The Texas Company (of Ireland) Ltd.

O'Connell Bridge and Street, Dublin I. T. A.

THE name Ireland brings to the mind of the average American a series of images quite foreign to the modern aspect of the Free State. Peat, jaunting cars and the Blarney Stone, while still to be found, now form only a faint background for the steadily moving panorama of twentieth century progress.

This advancement is particularly noticeable in the field of motor transportation. Up to a very few years ago, the number of motor cars in Ireland per head of population was less than that of any other civilized country. It is still possible in the course of a hundred mile trip in any direction from Dublin, to see many odd little horse-drawn vehicles. Once in a while one may even see a tiny donkey bearing panniers of turf, while amidships sits a maid or barelegged boy carrying an ash plant.

A note or two concerning the country itself, one of the latest additions to TEXACO markets, may prove interesting to readers.

Most of us are familiar with the simple geographical fact that Ireland is an island with a total area of approximately 32,500 square miles, lying due west of Great Britain. It is divided territorially into four provinces: Ulster, Leinster, Connaught and Munster, which in turn comprise 32 counties, the largest of which is County Cork.

The average elevation of the island is about four hundred feet but the distribution of this height is unequal. A series of small, isolated clusters of mountains reaches from the coast to about seventy miles inland. The center of Ireland is a great plain which seldom exceeds a height of 250 feet.

This central plain and its offshoots are drained by rivers which run east and west. The main rivers have a mountain source and the principal ones are the Shannon, the Slaney and the Erne.

The climate of Ireland is more equable than that of England or Scotland, both as regards temperature and rainfall. The mean temperature in January rarely falls below forty degrees, and 62 is the highest temperature of the summer.

I. T. A.

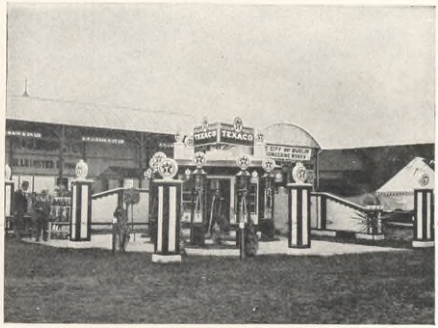
Market Day in Galway (Above) and Glendalough, County Wicklow

Economically, England and Ireland are very closely knit. Ireland is mainly a farming country, and England is her best customer.

On the other hand, the smaller nation is an excellent market for the manufactured products of Great Britain. Ireland's industries, outside of agriculture, are textile making, mining, ship-building and the manufacture of liquors and biscuits.

The Texas Company established itself in January of the present year in the Irish Free State.

TEXACO products, principally gasoline and kerosene, are received in the Irish Free State at our Dublin terminal. From there they are shipped by tank car to the seven bulk dis-



TEXACO *Exhibit at Royal Dublin Spring Show, 1929 (Left) and Another View of Exhibit*

tributing stations, located at strategic points: Carlow, Waterford, Limerick, Athlone, Cork, Dundalk and Galway.

Tank trucks convey the products from the bulk stations to the retail points which, from Dublin as a center, radiate in all directions. Along the highways of the Free State, a number of the familiar red pumps appear; a challenge to supremacy and an invitation to the motorist of discernment.

Other stations are found at accessory shops, general stores and garages. In some cases one will find a gleaming new TEXACO pump in front of a little thatched cottage at the side of the road; a striking illustration of the past and the present.

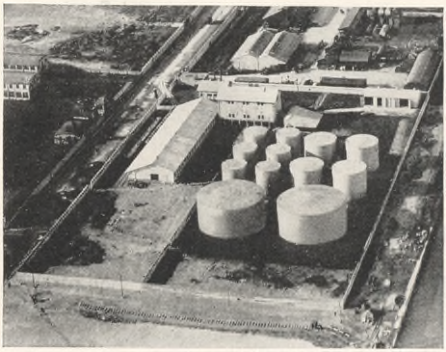
Blarney Castle, Cork I. T. A.

Practically the entire country is now traversed by fleets of buses, a fact which demonstrates vividly the increase in motor travel. The population is less than four million, but new cars are coming in at the rate of ten thousand a year.

A second-hand car in Ireland has a much more lingering career than in the United States. Traditional Irish thrift and a consuming desire for a "swap" approximated nowhere else in the world, save New England, make the life of a car from the factory to the scrap-heap a journey of many years. Cars are trafficked from one person to another as long as there is one more gasp left in the engine.

The writer recently had the painful experience, in the course of a few days' fishing holiday in Donegal, of traveling to and from the fishing grounds in a car of such prehistoric vintage that its make could be established only with great difficulty. The doors were fastened by bits of string to projections in the body. Long wires supported the mudguards to the windshield, or windscreen, as it is called, and the back seat was innocent of springs. The passenger in the tonneau got the sensation of sitting directly on the differential. But the motor was a beauty. At 35 miles an hour, and Heaven only knows how she did it, the noise was as if all the tin cans of Ireland were trailing along behind.

Next to dealing in second-hand cars, the native Irishman looks upon the breeding and raising of horses as one of the most important occupations of a gentleman. Ireland is famous for its horse-flesh and many of the big races in England and America are run and won by Irish bred horses. The annual horse show of the Royal Dublin Society has come to be regarded as an event of international importance and is at-



Aerial View of The Texas Company's Dublin Terminal

TEXACO *Bulk Distributing Station at Waterford (Left) and View of Bulk Station at Athlone*

tended by buyers from all over the world.

Irishmen are enthusiastic sportsmen and make a serious business of their racing. During the course of the civil war between Sinn Feiners and Republicans some years ago, the belligerents on both sides are reported to have suspended hostilities for the time being to attend a popular race.

From Ireland to the United States is a "far say", but only in a sense. Irishmen have been notable immigrants to these shores, the first great movement of population taking its impetus from the potato famine of 1846. This loss was mainly from the rural districts of Ireland. The urban population has for some years shown a tendency to increase, while rural areas have lost.

I. T. A.

At Gashel, Tipperary

On the whole, the soil of Ireland is naturally fertile and easily cultivated. Probably the most productive section of the country is the so-called Golden Vein, in Munster. Even in the mountainous districts, which are unsuitable for tillage, there is often sufficient soil to yield abundant and good pasture. In wet seasons the excessive moisture is hostile to cereal crops, but improved drainage has done considerable to mitigate this evil.

At an early period Ireland enjoyed a high reputation for woolen manufactures and flax was cultivated years before the time of Henry VIII. The manufacture of cotton and silk has been going on since the eighteenth century.

The mineral products of the country are, as stated above, limited. Coal fields are found in all the provinces. Iron ore is worked in County Antrim as is alum clay or bauxite, from which aluminum is produced. Various kinds of clays are obtained in several sections and there are quarries of marble, slate, granite, limestone and sandstone, the output of which is considerable.

The Irish Free State now comprises 26 of the 32 counties of Ireland. The six excluded are in the North and Northeast of the country, where the inhabitants, descendants of British settlers, decline to identify themselves with their neighbors.

Ireland's political history has been a stormy one, but the year 1920 saw her enter upon a new phase.

Thanks to an advantageous settlement with England, Ireland is not burdened with a heavy national debt. The government is in the hands of an enthusiastic band of administrators and is well supported by the people. The informed opinion is that Ireland's economic future is very promising.

LAWRENCE PHOTOS, DUBLIN

Royal St. George Yacht Club at Kingstown

OUR WHO'S WHO

JOHN H. McGINNIS, author of the article on the Moffat Tunnel which appears in this issue of THE STAR, was born in Trego County, Kansas, June 25, 1893. He was educated in the public schools of Southeastern Kansas and began work as a stenographer in the service of the Santa Fé Railway in 1913. He was transferred to a similar position at Needles, California, in 1915 and resigned in 1917 to homestead in Wyoming. In 1922 he entered the service of The Texas Company at its Casper Works as a stenographer. Was successively stock clerk, head stock clerk and storekeeper and eventually was transferred to the Craig Works in 1928 as Chief Clerk. He is married and has four children. Fishing, hunting and TEXACO products are his hobbies.

★

ACROSS THE SKY

(Continued from page 6)

refueling plane, piloted by C. Ray Wassall and P. V. Chaffee, who had provisioned the St. Louis Robin. They were skillful in handling the hose and contact was quickly made. In all, the Sun God succeeded in taking on two hundred gallons of gasoline and thirteen gallons of oil. Our oil consumption was very low.

The plane having been taken care of, we set up a howl for a little personal refueling, consisting of apple pie, fried chicken, tomatoes, ice cream, cantaloupes and ice water. We broke all records in getting outside of this, and with Captain Frank Hawks, Superintendent of The Texas Company's aviation activities, flying ahead to guide us as far as Bellefonte, Pennsylvania, we started the long grind home.

Hawks proved to be a good guide, but after he left us, about thirty miles west of Bellefonte, we got the toughest break of the trip, running smack into a terrific electrical storm.

Nothing is quite comparable to the thrill of literally winging your way on top of the thunderbolts in a frail device of fabric and metal, while the lightning surrounds you with streaks of white-hot flame. But thrills didn't compensate for the fact that we lost our bearings. We tried to turn back to Bellefonte and at a point which we guessed was somewhere near it, dropped a message asking directions to Cleveland. Before we could get these, the lightning began to play around uncomfortably close and we had to push along.

Of course neither one of us slept a wink that night, as we dodged, climbed and spun in an effort to get outside of that storm. At dawn it broke, and we made a bee-line for Cleveland, where we refueled quickly with a good bit of gas but no oil. A hot breakfast made us feel like new men, and we headed for St. Paul.

As if to compensate for the rough treatment of the night before, a good tail wind pushed us into the Twin Cities hours ahead of schedule. Here we took in two hundred and fifty gallons of gas, ten gallons of oil and two chicken dinners. At Aberdeen, South Dakota, we made two more contacts, netting seventy-five gallons of gas and at Missoula, Montana, made the last refueling of the trip.

The forest fires which had bothered us at the start of the flight had not abated. In fact, they seemed to have increased. From our perch in the clouds, it looked as if all of northern Idaho and Montana, as well as eastern Washington, was one mass of smoke and flame. Visibility was very poor but our motor was still humming like a big cat, and both of us felt in superb shape.

In brief, one hundred and fifteen hours, forty-five minutes and ten seconds after our take-off, on Tuesday, August 20, at 1:43 P. M., we reached Felt's Field. We dropped notes and asked if we might stay aloft to continue the jaunt, but Victor Dessert, vice president of the National Air Derby Association, sponsor of the flight, told us that we had proved our point and might come down to walk as other human beings, with two legs on the ground. At 5:59 P. M. our dirty and oil-spattered Sun God touched her wheels to the earth and for the first time in five days her motor droned away into silence.

★

TEXAS PIPE LINE

(Continued from page 28)

the pipe into the ditch the prime requisite is to provide plenty of "slack." This simply means that the pipe is laid as loosely as is possible by meandering back and forth across the ditch to insure freedom of movement incident to temperature stresses.

At intermediate points, where convenient to rivers and creeks, portable pumping equipment is set up to test the line with water to a pressure of 800 pounds per square inch. These tests throughout the entire length of the line indicated less than half a dozen leaks due to defective workmanship, which is felt to be a record for performance.

Welding inspectors as well as the inspectors for all phases of the work were men taken mainly from within The Texas Company's organization and we feel that their effort has been untiring to the end that the best possible workmanship was secured. At the same time we feel that our contractors, one and all, have striven with them to accomplish the desired results.

THE END

JOSEPH C. McCUE

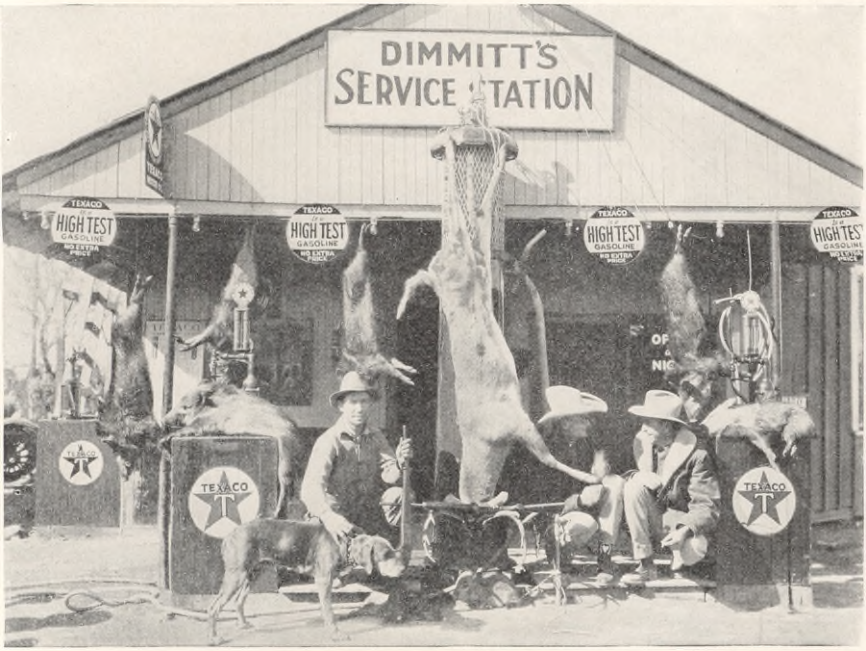
JOSEPH C. McCUE, pioneer oil man and former Assistant Manager Producing Department, died at 11:40 A. M., August 19, 1929, in Houston, Texas. "God's finger touched him, and he slept"—it was hard for those who knew him to realize that his kindly presence was no more. The memory of his manly spirit and true worth will be an inspiration to all who knew him. Our sympathy goes out to his bereaved family; feeble and futile, however, are any words which attempt to lift the mantle of grief from sorrowing hearts.

Mr. McCue was born in Rymersburg, Clarion County, Pennsylvania, August 2nd, 1865. He entered the oil business in his early manhood, working first for the Mellon Pipe Line Company and then in the Land Department of the Eastern Oil Company. In 1901 he came to South Texas from West Virginia, entering the service of the J. M. Guffy Petroleum Company. After that he was with the Parrafin Oil Company until he joined the Producers Oil Company under J. S. Cullinan and the late Walter Sharp in 1903, as general superintendent in Louisiana.

For a short time he was associated with Benedum & Trees in developing the Trees City holdings. He was also one of the pioneer producers at Spindletop, Moonshine Hill, and Humble. In 1911 he returned to The Texas Company as General Superintendent of Producing Department in Louisiana, and eleven years afterward removed to Houston, Texas, as Assistant Manager Producing Department, retiring in October, 1928, because of ill health.

He is survived by his wife, Mrs. Lotta Whittlesly McCue; two sisters, Mrs. Mary Gribbon of Youngstown, Ohio, and Sister M. Regina of Canton, Ohio; two brothers, Dr. J. E. McCue, Floriston, California, and S. E. McCue, Youngstown; two nephews, D. J. Gribbon, Kingsmill, Texas, and Frank Gribbon, Youngstown.

Joseph C. McCue was a man of deep sympathies, brave, true-hearted. Quiet and reserved, his is the record of sturdy character achieving success in spite of tremendous difficulties. Perhaps his most remarkable quality was a retention of the human touch and kindly spirit. He was endeared to all his associates, and we shall miss his genial presence in the days ahead.



TEXACO SERVICE STATION AT CRYSTAL CITY, TEXAS, A MEETING PLACE FOR MOTORIST-SPORTSMEN IN THE HEART OF ONE OF THE STATE'S GREATEST HUNTING SECTIONS

Wet wood will burn *certainly*

So will wet gasoline *but...*

for a quick hot fire there is nothing like *dry* wood. And for a quick response to the spark there is nothing like *dry* gasoline.

Such a gasoline is the *new* and *better* Texaco. It forms a completely vaporized mixture of gasoline and air, a *dry* gas, which ignites instantly and burns completely. It releases all the power designed into the engine of your car, yet costs no more than ordinary wet gasoline. *It's better because it's dry!*

THE TEXAS COMPANY, *TEXACO PETROLEUM PRODUCTS*

1. A wet gas is an atomized mixture of gasoline vapor in which are suspended drops of raw gasoline.

2. These drops of raw gasoline form an uneven mixture which resists the action of the spark.

3. Result: Destructive crankcase dilution, difficult starts, slow acceleration — a sluggish motor.

1. The *new* and *better* Texaco vaporizes so readily that it forms a dry gas—an active mixture of gasoline and air.

2. This pure, dry gas responds instantly to the action of the spark.

3. Result: Lightning starts, rapid acceleration, smooth action—power!

The **NEW** *and* **BETTER**

TEXACO GASOLINE