The TEXACO STAR

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FUTURE NEW YORK HEADQUARTERS OF THE TEXAS COMPANY

Architect's drawing of the new Chrysler Building as it will appear on completion about May 1, 1930.

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Code of Ethics

Last December a Code of Ethics was drawn up in Chicago by representatives of the petroleum industry, giving working definitions for the marketing of petroleum products. It lists evil practices of competition and declares them outlawed. The draft of the Code of Ethics received the unanimous approval of the Board of Directors of the American Petroleum Institute. The draft was then submitted to the Federal Trade Commission and to the Department of Justice.

In St. Louis, on February 11, 1929, a trade conference was held by the Federal Trade Commission. There were two hundred and ninety-four members of the industry present, including representatives of numerous independent marketers' associations. At this conference some slight changes in the original draft were made and the Code was adopted. Until it is approved by the Federal Trade Commission, the Code cannot become effective. It is thought that the Commission will act upon it within the next sixty to ninety days.

If and when the Federal Trade Commission approves the Code, it will be published in *The Texaco Star*.

Gratitude

Hard Luck But Good Spirits

There is a tourist camp and filling station near Shamrock, Texas, run by an ex-employe named Richard E. Newton, who, until less than a year ago, was water switcher for The Texas Pipe Line Company. While oiling around a small gear driven pump at the Panhandle water station the sleeve of his heavy sheepskin coat caught in the gears, causing the loss of his arm at the shoulder. After his accident Newton walked and crawled almost five hundred feet to get to a telephone a half mile away. Later he was found by oil field workers and rushed to a hospital at Electra. After three weeks in the Wichita General Hospital, in Wichita Falls, Newton returned to work. During his period of incapacity, he had had the skin grafted from both legs onto his body at the shoulder to aid the healing.

Although Newton could still do his work as a linewalker or rider, he realized, that, with his handicap, it would be difficult to advance in the Company, and that with a family of four children it would be better to find something else to do. So he arranged for a leave of absence and looked around.

Just prior to the expiration of his leave, he wrote to his superior officer, saying: "I have located in Shamrock, Texas. I will not return for service on December 24. This is my resignation. I will say that I like to work for you. You have treated me nicely and I enjoyed working in your District.

"I am running the Sixty-Six Service Station and Cottage Camp here and have a nice

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The New Spirit in the Oil Industry

By R. C. HOLMES, President of The Texas Company

Reprinted from a recent issue of *O'Shaughnessy's South American Oil Reports*

The gradual change in the general attitude of the Government towards industry, and of executives of business institutions toward the Government and the public, and towards each other, is perceptible since the World War. It is probably true of all industry, at least in the United States, and is a more friendly and intelligent consideration of the interests of others.

Most of us can remember when those starting new activities in refining, piping, or marketing petroleum, whether individual or corporate, were looked upon as pirates in the business and treated accordingly by those long established in the industry. Those days are passing and it is recognized now that whoever may have the capital, the experience and other requirements to enter into any line of business, is free to do so, is protected by better laws and the courts, and is recognized as being entitled to whatever place he can legitimately make for himself.

In the general change from the individual and limited stock ownership to corporate ownership of industry, with wide distribution of shares, there has been a better recognition of shareholders' rights, and a freer and more impartial dissemination of information regardless of the amount of shareholders' interest, or representation in the affairs of the corporation. Also a friendlier, more democratic, and a more liberal disposition towards labor, evidenced by voluntary increases in wages generally, when the business permits, and in the many employes' benefits plans put into effect by corporations and individual interests.

The marked change in the attitude of the Federal Trade Commission towards industry, the interest and support by the Department of Commerce, and the sympathetic support, or aid, and understanding of the National Conservation Board, are all responsible, in a large degree, for the growing tendency and freedom of units in the petroleum industry to coöperate with each other in the interest of the industry as a whole. These efforts bring executives of different units together for a common purpose; and better acquaintance has, as usual, resulted in better feeling and more intelligent action.

The unanimous adoption recently by the Board of Directors of the American Petroleum Institute of the National Code of Practices for Marketing Refined Petroleum Products, is a convincing indication of the willingness of all to do something helpful and constructive in the interest of the entire industry. Forty-four industries have, with the sanction of the Federal Trade Commission and the Department of Justice, adopted codes of similar character.

Further evidence of the changing spirit is seen in the formation of the Export Petroleum Association which we believe, without question, is in the interest of the American petroleum industry and probably of the world industry.

Those responsible for the organization of the American Petroleum Institute are beginning to see the realization of their visions.

Sincere efforts are being made by practically all oil producing interests to formulate some constructive plan for the restriction of crude oil production to the requirement of the trade. In other words, the industry recognizes its ills, which are very largely in the economic problems arising from overproduction, and is making substantial progress in remedying the unsatisfactory conditions, and it is being done in a manner which gives confidence that we can hope to have the support of the National and State Governments.

This movement should result in benefits to the industry and to the nation and the public, in prolonging the life of petroleum products and securing more economical production, manufacture and distribution of this natural asset. If carried far enough, this effort can be of great value and importance to the coal industry, which has suffered immeasurably by the overproduction of petroleum and the displacement of coal by oil where coal is the natural fuel.

If the importance of the conservation of our crude oil supply is put before the public in a frank, clear and convincing way, it should be willing to assume any burden that might, of necessity, be imposed; whereas it should not be willing to run an unnecessary and unwarranted risk of doing without in later years.

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The Hole in the Ground

Excavation on site of the new Chrysler Building which will house The Texas Company's New York Offices on its completion, a year from this Spring. This photograph was taken from a window of a bedroom in the Commodore Hotel, across the street from the excavation.

Future New York Offices of The Texas Company

The building to which The Texas Company will remove its New York Offices on or about May 1, 1930, will be known as the Chrysler Building. It will stand at the corner of Lexington Avenue and Manhattan's most famous cross town thoroughfare—Forty-Second Street, upon land owned by The Cooper Union for the Advancement of Science and Art. Forty years ago this site was a play ground, and many years before its eastern boundary was the center of the old Boston Post Road, a thoroughfare running from New York City towards Boston, which was laid out as early as the 17th century. The building is being erected by the Chrysler Building Corporation, which is a recent personal enterprise of Walter P. Chrysler and has no connection with Chrysler Motors.

Demolition of the old buildings which occupied this site began on October 15, 1928, and the work was completed in the record time of 21 calendar days. On November 11 excavation was started and to date has progressed to a point about forty feet below the street. Shortly after March 1, the blasting and other excavation work will give way to the laying of concrete and steel foundations. The cost of the building alone is estimated at $15,000,000. The leases on the land are for 67 years.

The building will be 808 feet and four inches in height, making it the highest building in the world, overtopping the 792 feet of the

world famous Woolworth Building in lower New York City. The only other structure in the world which is higher than the projected building is the Eifel Tower of Paris, which is 300 meters, or approximately 975 feet high.

An interesting engineering aspect of the development of high buildings is that at the present time the height of a building depends on elevator development. A few years ago it would have been impossible to construct a building as high as the Chrysler Building, with elevators traveling the entire height, i. e., from bottom to top. The elevators have been designed so that they can run not only high, but as rapidly as 1000 feet per minute. In other words, the express elevators, if run on a non-stop schedule, would make the entire distance in less than a minute.

It is estimated by the architects that 11,000 people can be comfortably housed in the Building's offices. There will be 3,750 windows to be cleaned; about 900,000 square feet of floor space to be scrubbed by 150 scrub women. Dust is to be removed by an extensive vacuum cleaner system. The total staff of the Building will run between 350 and 500 people—150 to handle traffic alone. The total volume of the Building will be 13,500,000 cubic feet, with one square foot of rental area to every fourteen and one-half cubic feet in this total. This includes the basements containing the boiler rooms, and forty feet below street level. The foundations are on solid rock of Manhattan Island, each foundation pillar weighing 75 tons. The total area of the plot is 37,555 square feet, laid out as follows: 167 feet two inches on Forty-Second Street; 210 feet ten inches on Lexington Avenue; and 205 feet on Forty-Third Street. Under the zoning laws of New York City the setback ratio of the Building was fixed at one to four. First of all, there are sixteen stories measuring 182 feet without any setback. The first setback is eighteen feet on the next seventeen stories. Properly speaking the main volume of the Building, tower included, is fifty-six stories, while the dome which tops the structure is of twelve stories. Starting in octagonal form, the dome continues in a square shape and finally recedes to the summit in proper dome formation. There will be flood lights on each of the four corners of the terrace on the fifty-sixth floor, and another flood light at the top of the dome to light the pinnacle of the Building. The spire top of the skyscraper is in the form of a star with thirty points, set up on end. The spire itself will be made of cast aluminum, mounted by a sculptured figure sixteen feet high.

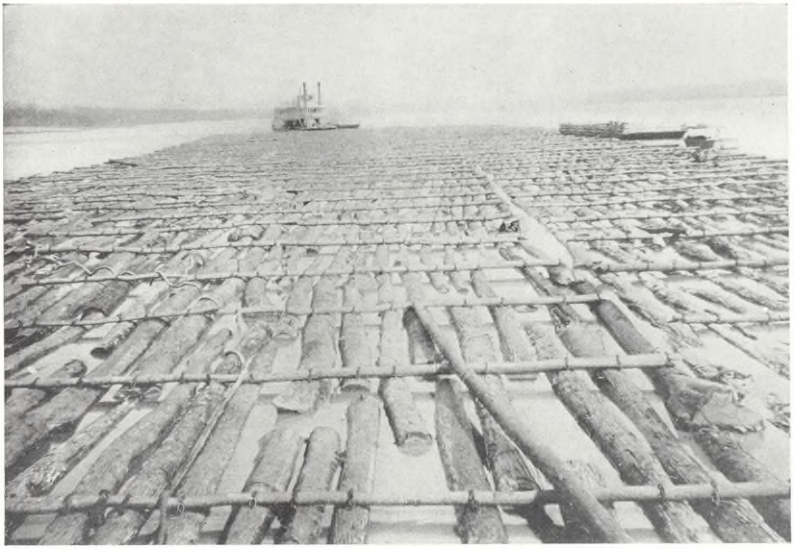
The great hall of the Building, on the street level, will run parallel to Lexington Avenue, or almost north and south. The entrance to it will be twenty feet wide and three stories, or forty feet, in height. This great hall will be one hundred feet long, thirty-two feet wide, and twenty-six feet to the cornice, crowned in its center by a dome thirty-eight feet high. Four elevator lobbies are located off the grand hall. There will be tunnel connections under Lexington Avenue running to a point opposite the ticket offices on the East Side subway. This tunnel will also guide the stream of workers and visitors to the underground entrance of the Grand Central Station. Special subway entrances will be built on Forty-Second Street at the southeast corner of the Building, and on the northeast or Forty-Third Street corner. There will be two inside stairways leading up to the subways through an arcade which will be lined with shops, restaurants, *etc.* Tower visitors will change elevators at the sixty-fifth floor. There will probably be a charge of fifty cents for permission to visit the tower. Based on the experience of other buildings, it is estimated that the sale of admissions to the tower will give a large annual revenue.

The face of the Building will be constructed of blocks of imported Norwegian granite known as Shastone granite. Georgia marble will be used as high as the fifth floor; and from that point to the sixteenth floor and its cornice, there will be a basket weave pattern of Georgia marble and white-face brick. From that point to the top of the building, the construction will be of brick with a design picked out in grays and blacks, the blacks being used to accentuate the horizontal lines of the general design. White mortar will be used throughout. All copings and finials will be of cast aluminum, a new material in skyscraper construction. Spandrels between windows from the 19th to the 22nd floor will be cast aluminum, which will accentuate the vertical lines.

A unique feature of the Chrysler Building will be the pipe galleries constructed horizontally across the building every so many stories. This construction is necessary on account of the immense water pressure which would otherwise exist. By vertical division of the pipes this pressure is reduced.

No wood or other inflammable material will be used. All of the room floors will be of cement, and the hall floors of marble terrazzo.

Airplane view of site of the building which will house The Texas Company's New York Offices. Demolition and excavation are proceeding in the space diagonally across Lexington Avenue from the new Chanin Building, the outstanding white structure in the foreground. Directly across the Avenue from the site of the excavation is the Commodore Hotel.



Tow of timber on way to sawmill

The Morgan City Shook Mill

By G. R. MOON, Superintendent

Over the office building of one of The Texas Company's plants, there is a large sign with a black background and gold leafed letters which is seen daily by hundreds of persons traveling on Southern Pacific trains, and touring over the Old Spanish Trail. The sign reads:

THE TEXAS COMPANY
MORGAN CITY—SHOOK MILL

It is surprising to know how few people know what the plant manufactures. The name "shook" is likely as not to be associated with a cornstalk or something equally as foreign to its meaning. Those who are curious enough to inquire, or take occasion to visit the plant, are very much surprised to find that a shook is two sides, two ends, a top and a bottom of a wooden box, or case, before it is assembled.

The Morgan City Shook Mill is a branch of the Case & Package Division at Port Arthur, Texas, where upwards of 50,000 five-gallon cans are manufactured daily. These cans are filled with "Texaco" gasoline or kerosene and packed in what is termed a 2/5 case. Each case holds two five-gallon cans. To manufacture the cases for this quantity of cans, at least 25,000 shooks a day are needed. The major portion of shooks required are manufactured at the Morgan City Shook Mill from a wood known as Tupelo Gum.

The Morgan City Shook Mill was built in 1916 on a site two miles east of the city of Morgan City, Louisiana. Morgan City is located on "Tiger Island"—a name which suggests an island in Asia or South Africa. It is bounded on the west by the Atchafalaya River, south and east by Bayou Boeuf, and on the north by Lake Palourde.

The location is advantageous from several

standpoints. It is in the heart of the Louisiana Swamps where Tupelo Gum timber is found in abundance. A network of navigable bayous and rivers makes the timber accessible to the sawmills in and adjacent to Morgan City, and it is from these mills that the major portion of our lumber supply is obtained. The plant is located on Bayou Boeuf, the proposed route of the Intracoastal Canal. Shooks can be shipped to Port Arthur by water, as well as by rail. Skilled labor familiar with operations in the woodworking industry is easily obtained as Morgan City has been a lumbering center for over 75 years, and the chief occupation of the inhabitants has been along this line.

To trace a case bearing The Texas Company trademark to the wilds of some foreign country would be very interesting, but it is equally as interesting to trace the shook, from which the case is made, from the swamps of Louisiana to the point of assembling.

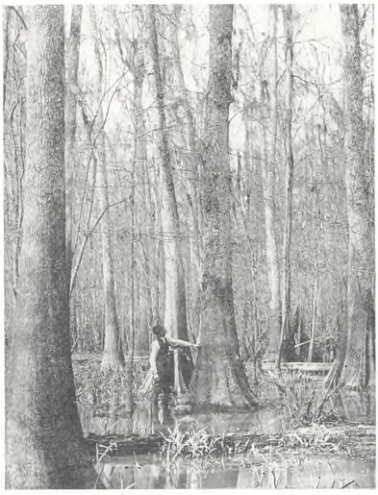
The swamps in which Tupelo trees grow are very dense and have an appearance similar to that of the African jungles. They generally lie between rivers and bayous, and range from one-half of a mile to eight miles in width. Because of continued overflows for the past centuries, the banks of the rivers and bayous have been built up, and are now from two to four feet higher than the swamps lying between the waterways. This condition naturally forms a basin, and water covers the swamps the year round to a depth of from ankle to waist deep.

The logging of swamp timber chiefly consists of felling the tree, cutting off the top and moving the stick of timber to the nearest bayou, or river, where it can be rafted for towing to a sawmill. There are several methods used in logging swamp timber.

In the early days, before steam driven logging equipment was available, the loggers depended on high water to float timber from the swamps to the bayous. A rise in the Mississippi River flooded the swamps, and as soon as the water became of sufficient height to permit floating, the timber was felled and pushed to the desired location by men wading in the water. When the water became too deep for the men to wade, they carried on their logging operations from a pirogue. A pirogue is a small boat hewn from a solid tree, and resembles a canoe. However, it is shorter, narrower, and much more difficult to ride.

In the early eighties, a piece of equipment known as a pull boat was designed and put into use. A pull boat is a floating barge on which is mounted a steam boiler, two steam engines, and two large cable drums. The drums are geared to and are rotated by steam engines. Pull boats are anchored in a bayou, or canal, adjoining the swamp from which the timber is to be pulled. A large sheave is attached to a tree in the swamp approximately

Dredging a canal for timber operations



Swamp scene showing stand of Tupelo timber. The Tupelo tree grows very straight, and is practically free of knots and large limbs up to a height of from 50 to 80 feet.

Another Swamp Scene

Tupelo tree felled and topped ready to be conveyed to bayou.

3,000 feet from the pull boat. A wire rope is passed from one drum through the sheave in the swamp to the other drum. The logs are attached to the wire rope by means of a chain and pins. When the drums are rotated, the logs are pulled through the swamps to a bayou. In wide swamps, it is often necessary to dredge canals in which the pull boats can operate in order to reach the back line timber.

Another method used in logging timber is that of skidding overhead. A railroad track is laid in the swamps over which a locomotive and logging cars can travel from point of skidding to the bayou where the logs are dumped for rafting. The railroad is built by felling small trees for ties over which the rails are laid. The skidder consists of a steam boiler, engine, gears and drums mounted on a railroad car. A set of blocks and sheaves is attached to the top of a tree near the location of the skidder, and another set to a tree back in the swamps. Between these two blocks, a wire cable is stretched on which a bicycle travels carrying wire rope, which is connected to the drums on the skidder. A set of tongs is attached to the end of the main pull line, and by hooking these into the end of a log and rotating the drums, the log is lifted into the air and pulled to the skidder where it is dropped on a logging car.

The fourth method of logging is that of conveying logs to bayous by means of wagons and oxen, or wagons and tractors. This method is used when the swamps are narrow and are bounded on the front and back by high ridges.

The crews working in the swamps are provided with ample food and comfortable beds, and live on what might appropriately be termed the fat of the land, as the country abounds in wild game. In season, venison, bear, squirrel, duck and goose form a part of their menu.

After the timber has been placed in the bayou and rafted, it is towed to the sawmills by stern-wheel steamboats. These boats tow as much as 750,000 feet of logs at one time.

After the logs have been delivered to the sawmills, they are sawed into boards one inch thick, commonly known as 4/4 lumber. The widths of the boards vary from 4″ to 30″, and their lengths from 4′ to 20′. After passing through the various stages of manufacture in the sawmills, the lumber is sorted and sent to the lumber yards for stacking and drying.

After remaining in the lumber company's yard for five or six months, the time required for drying, it is delivered to our plant. Some of it is received by rail, and some is delivered by trucks from a lumber company adjacent to our plant.

Our shook mill consumes approximately 150,000 board feet of 1" thick rough Tupelo Gum lumber daily in manufacturing approximately 23,500 shooks. Thirty-five percent of this quantity is used in the manufacture of ends, which is an entirely different operation from that of manufacturing sides, tops and bottoms, where sixty-five percent of the lumber is consumed.

As sides, tops and bottoms are thinner than the ends, all 1" lumber used in manufacturing them is sent to band re-saws, which split the boards in the center, making two pieces approximately ½" thick. After re-sawing, the lumber is planed by running it through high speed surfacers. It is then cut to the specified length for sides, tops and bottoms on automatic cut-off saws, and ripped to the proper width, with a least possible waste, on hand-feed rip saws.

The ends for the shooks, when finished, are ⅞ of an inch thick. It is not necessary to re-saw the lumber used in their manufacture. The rough 1" lumber is cut to length, ripped to width, after which it is fed through large automatic machines, which produce a dove-tail tongue and groove. In this machine two boards, comprising one end, are so securely joined together that they have the appearance of a solid piece of wood. After this operation, both sides are surfaced and both ends trimmed to make them absolutely square. Two corrugated fasteners are driven in each joint to give additional strength. Great care is exercised in the manufacture of ends, as they are the foundation of the case, and a very rigid inspection of all shook parts is maintained to insure a first-class product when it reaches its destination.

After the shook parts have passed through the various stages of manufacture in the mill, they are bundled, twenty and twenty-five to a bundle, securely fastened with wire and trucked to box cars where they are loaded for shipment to Port Arthur.

The power for driving machines in the mill is obtained through a 550 h.p. steam engine. Refuse from the mill, such as sawdust, shavings, and edgings, is used as fuel for generating steam.

There are 160 persons employed in the plant. The employes have access to a well-equipped First Aid Room, attended by a full-time nurse. This service is also available to the employes' families. The majority of the employes live in Morgan City and are furnished free transportation to and from work by means of a large truck and trailer having a capacity of 160 persons.

(*Continued from page 1*)

business and it is getting better every day. I think I will do better or just as good. I hate to leave The Texas Company. I have been with them until the name seems like home to me. I will speak well of the Company and the Company's men always."

(*Continued from page 2*)

Probably no industry in the United States is more highly competitive than the oil business. In addition to the many thousand producers, there are upwards of 3,000 jobbers and marketers of petroleum products and, according to Government Reports, between 450 and 500 companies refining petroleum, which should be ample assurance to the consuming public that these constructive efforts being made to better stabilize the industry and avoid the disastrous fluctuations which have heretofore characterized the industry cannot result in excessive retail prices.

Possibly the new spirit in industry is largely due to movements of the younger generations, such as the boy scouts, and the demand in schools and colleges by the students themselves, for fair play and cleaner sports, and the lack of respect for those who gain in play or in business through special privileges or unfair methods.

The administrators of justice are more and more disposed to take into account what is in the public interest rather than the literal interpretation of the laws, and we can have no doubt that the time is here when those who violate the principles of fair play, whether they specifically violate the law or not, will be called to account, if not by the courts, then by the industry itself and by the public.

Four Centuries in Petroleum

Sketch of the Industry from Middle Ages to Early American Development

By JAMES TERRY DUCE, Consulting Geologist

(This is the second of a series of articles by Mr. Duce on the history of the petroleum industry from the earliest times to the present day.)

Unfortunately for the historians, the records of medieval times are neither full nor accurate. Perhaps the Dark Ages themselves are so called because we do not have written records and not for the reason that conditions were as bad as is sometimes believed.

The history of petroleum from the time of the fall of Rome in Western Europe, and from the fall of Constantinople in Eastern Europe, up to the 19th century is but little known. The few references that we have to it are for the most part very incomplete, and whatever scientific experimentation was done with oil is buried in Arabic tomes or concealed in the cryptograms of the alchemists. We know, however, that petroleum and natural gas were known and used as articles of commerce in both Italy and Germany, and it is probable also that some petroleum was won in Galicia and Roumania throughout medieval times. Of these countries, the one in which we have the most records is Italy. Oil was won from hand-dug wells in Modena, Parma, Piacenza, and in the year 1226, Frederick II, Emperor of the Holy Roman Empire, granted a charter to the town of Salso Maggiore which took for its emblem the Salamander surrounded by flames in allusion to the emanation of inflammable gas found in the neighborhood.

In 1400 the collection of petroleum in Miano di Medesano formed the subject of a concession granted by the Ducal Chamber. Montaigne, in some of his Italian journeys, visited Barigazzo and Pietramala and described the indications of petroleum which he found. The Modena deposit was discovered by a physician of Ferrara, by the name of Aristo, in 1640 and it was for a considerable time largely used in the preparation of varnishes, and for lighting and medicinal purposes. Psilanderhjelm in the year 1736 described the naphtha recovered at Monte Chiaro which he states was superior to that of Modena. At Amiano on the Taro, oil was found which was used for lighting as early as 1802 in the cities of Genoa and Parma; but Sir Boverton Redwood states that the production at the time does not appear to have exceeded two hundred to three hundred kilograms a day.

In the old Kingdom of Naples, oil was recovered from pits. Between Pozzuoli and Baiae occurred the celebrated Balnium Olei Petrolii. The Sicilian industry centered around Agrigentum where oil was obtained from wells. This oil had wide use for medicinal purposes throughout Europe and indeed was an important article of trade as far back as the time of the ancient Carthaginians. No medieval apothecary shop was without its bottle or jar of Sicilian oil.

In Roumania, the first notice we have of petroleum was that of a traveller Riacevich who reported in 1750 that liquid bitumen was used there as a medicinal agent for diseases of cattle, in lighting the courtyard of the Boyars and as an axle grease. The occurrence of oil in springs near Pacureti in the district of Prahova was the center of a small oil trade from earliest times, and, indeed, the name Pacureti is a Walachian word which refers to the numerous pits dug for petroleum, the word Pacuri meaning petroleum in Walachian.

In Germany, the production of the Tegernsee district in Bavaria, was widely employed as a medicinal preparation called St. Quirinus's Oil. Agricola in his *De Re Metallica*, which was translated by Mr. and Mrs. Herbert Hoover, describes at length the production of petroleum from pits in Bavaria.

In England, there are a number of curious references to petroleum prior to the discovery of shale oil. Dr. Plot, in his discourse on the *Sepulchral Lamps of the Ancients*, states that at Pitchford in Shropshire, there is a naphtha or liquid bitumen which issues from the spring there and floats on the water, while Martin

Eele in 1697 wrote that in certain parts of Shropshire, "there is a layer of blackish rock or stone of some thickness which contains great quantities of bituminous matters," and he describes in detail the separation of tar with boiling water. In this he says that you can obtain "an oil which may be used for Oil of Petri or Turpentine" and that this substance has been used "by divers persons in aches or pains." Camden in his *Britannia* in 1772 describes an important seep near Wiggam, while in *Rees's Cyclopedia*, issued in 1819, there is a long article on the subject of bitumen which describes a number of bituminous occurrences in England. As far, however, as we know, no actual production of petroleum, took place in England in the commercial sense until 1849 when James Young began refining oil, which he skimmed from a spring at Alfreton, and when the spring gave out started distilling oil from boghead coal under a patent which he secured in 1850.

In France and Switzerland, we find no mention of oil in government records until 1715, though petroleum was discovered in Pechelbronn in a spring in 1498 and was skimmed from water and used as an illuminant in lamps. In 1735, Dr. Eryn von Erynnis detected an outcrop of oil sand 150 meters from the spring and distilled oil from it in a small cast-iron still; while in 1745 a formal concession was granted by Louis XVI to M. de la Sabolliere to erect a small refinery. Operations were carried on at this site from 1785 to 1870 and the oil sand was mined systematically by shaft and gallery. The production of asphaltic limestone and sandstone at Kleeburg was begun in 1785.

Russia, throughout medieval times, continued to be a source of notes regarding petroleum. Marco Polo passed through Baku at the end of the thirteenth century, and states: "At Baku on the confines toward Georgia, there is a fountain from which oil springs in great abundance inasmuch as hundreds of ship-loads might be taken at one time. This oil is not good for food, but is used for camels that have the mange. People come from far distances to fetch it. There is no other oil in these countries." Olearus states that he saw 30 petroleum springs near Scanachia, in Persia, which is in the present producing district of Baku.

One Jonas Henway, in 1754, gave a complete description of the Temple of fire worshippers at Surakhany. Henway also states that Baku supplies Ghilan and Mazanderan and other countries contiguous, with naphtha. He states: "This oil is unpleasant to smell and is used among the poor Persians and other neighboring people as we use oil and lamps, to boil their victuals, but it communicates a disagreeable taste. They find it burns best with a small admixture of ashes, and as they obtain it in great abundance, every family is well supplied. They keep it at some distance from their houses in small vessels underground to prevent any accident from fire to which it is extremely susceptible." (Probably the first mention of the underground storage tank). He also describes white naphtha, which he says is of much thinner consistency than black naphtha, and continues: "Russians drink it both as a cordial and medicine, but it does not intoxicate. If taken internally it is said to be good for the stone, as also for disorders of the breast, and in venereal cases and sore heads. To both the last, Persians are very subject. Externally applied it is of great use in scorbutic pains, gout and cramps. It penetrates instantly into the blood and is apt for a short time to produce great pain. It also has the property of the spirit of wine. It takes out greasy spots in silks and woolens, but the remedy is worse than the disease for it leaves an abominable odor. They say it is carried into India as a great rarity and being prepared as a *japan* is most beautiful and lasting of any that has yet been found."

The learned Sir Boverton Redwood gives several other references of travellers who mentioned petroleum in this district, and states that Peter the Great, in 1723, was aware of the value of petroleum and made arrangements for its collection and transportation up the Volga River. Petroleum deposits were not systematically worked again, however, until 1826 when a monopoly of production was granted to a merchant by the name of Mirzoeff who held it until 1872.

In Galicia, records indicate that petroleum was obtained in very early medieval times and its use as cart grease there is very old. It was known as earth balsam in 1506 and in local records it is mentioned early in the 17th century. No reference is made to it in the mining laws of 1786, but it is mentioned in the laws of 1810. Between 1810 and 1818 it was first used in a refinery at Kabicza by Hecker and Mitis and the distilled oil used for lighting at Prague. The most famous early field was Slaboda Rungurska near Kolomea where two

wells, which were dug in 1771, have continuously yielded petroleum from that date to the present time

The narratives of the explorations which resulted from the desire to find a route to the Indies after the old route was cut off by the activities of the Seljukian Turks referred frequently to discoveries of petroleum in both the New World and the Far East. In 1535 mention was made of the discovery of asphalt in Cuba by Oviado y Valdes who describes a seep of asphalt in the Province of Puerto Principe. In 1595 Sir Walter Raleigh in his *Discovery of Guiana*, first describes the Trinidad pitch lake; while in 1580, a Spanish Jesuit by the name of Jose Acosta, states in reference to Peru: "As we came sailing from New Spain along the coast of Peru, the pilot showed me the island called Lobos where there is a spring or well of pitch or copé. This pilot, an excellent man in his profession told me he had come navigating here many times, and sometimes so far out at sea that he could not see land but he knew, by the odor of the bitumen, where he was, with as much certainty as if he could see the land, so strong is the odor given off." This district, now the seat of operations of the International Petroleum and the Lobitos Oil Company, was in those days known as the King's Brea Pits and on the ancient records at Lima the various concessionaires are named.

Petroleum was first discovered in North America by a French Franciscan named Joseph de la Roche de Allion who describes, in a letter written in 1632, an oil spring in the State of New York near the town of Olean. This spring is now marked by a monument. In 1748, Peter Kalm, a Russian Nationalist, published a map on which he showed the oil springs at Oil Creek, in New York, while asphalt at Santa Barbara, California, was known as early as 1792.

The notes on petroleum in the Far East are rarer. Boerhaave states in his *Chemistry* that oleum terra of India was, in his time, so scarce as to be kept by the princes of Asia for their own use; and Symes, in his account of *An Embassy to the Court of Ava*, in 1795, gives a very interesting description of the Burma fields where there was at that time a thriving trade in the petroleum that was obtained from the pits of Yenangyaung.

By the beginning of the nineteenth century, therefore, petroleum was known to be widely distributed over the world. True it was regarded as a natural curiosity and was employed for minor uses, the most notable of which were medical, as, up to this time, there had been no serious study of it and it had not been refined for use except in a very crude way. The major changes in human thought and action that marked the Renaissance saw the birth of the scientific spirit of inquiry. Francis Bacon, in England, in his *Novum Organum* and *New Atlantis*, laid down the basis for experimental inquiry into natural processes and substances, and as he himself quaintly says: "Rang the bell that called the wits together." Perhaps his inspiration came from the earlier Roger Bacon, an English monk, who experimented in a vast number of fields at Oxford, and who was finally excommunicated. Following these men we find such men as Galileo, and Sir Isaac Newton laying the foundation of scientific knowledge of natural phenomena, and scientists throughout the world began experimentation with natural materials, and, indeed, some of the first chemical studies made were on oil.

As early as 1694 we find an English patent No. 330 issued to Hancock and Portlock which refers to a process for "distilling pitch, tar and oile out of a stone from Shropshire." The asphalt deposits of Limmer were investigated and discovered by Eyrinis in 1730, and were worked from that time forward for paving asphalt.

In 1777, La Sage, in his *Elements de Mineralogie*, classified liquid bitumen into petroleum, mineral pitch, maltha and asphalt, and regarded them as all originating from petroleum oil. Admiral Faca of Sweden prepared roofing from the Limmer asphalt, while at about the same date the Ceyssel asphalt deposits in France were used for road surfaces and to floor bridges. This same asphalt was also used in London in 1836 for making pavement. In 1837, Boussingault published a treatise on the subject of asphalt called *Memoir sur la Composition des Bitumes*, which is the first scientific treatise on the chemistry of that group of substances.

The first refining of oil that is mentioned in literature is in the works of Johann Lerche, who visited the Caspian district in 1735, and found that to make a satisfactory combustible out of the crude Caucasian oil, it was better to distill it. In 1823, the brothers Dubinin erected a refinery in the village of Mazdok, and it is

further found that in the records of the Russian Government, Prince Woronzoff applied for a subsidy for extending the use of petroleum distillates. In this application it is stated that he had taught the Don Cossacks to change black naphtha into white.

In the United States the oil from near Olean went by the name of Seneca Oil. It was then rather widely used for medicinal purposes. Indeed, in 1806, there was already an oil well in the United States, for a well was drilled by the Brothers Ruffner at Salt Lick to a depth of 58 feet, as salt had yielded from 25 to 50 barrels a day. This oil seems to have been used for medicinal purposes, and was burned to evaporate brine. Some of this oil from the salt wells flowed into the river and gave to the Kanawha its name of "Old Greasy."

In 1814, a salt well in the same district was bored to a depth of 475 feet. It yielded from 30 to 60 gallons of oil a day, while in 1829 a well drilled for salt in Cumberland County, Kentucky, came in as a gusher, the oil continuing to flow in a stream affording many thousands of gallons a day. This oil was sold as American Medicinal Oil at Burkesville, Ky.

The interesting thing about these wells is that though they preceded the Drake Well they did not result in such a widespread excitement as followed Drake's discovery. The explanation of this lies in the fact that these discoveries were prior to the general knowledge that oil could be used for illuminating purposes. Oil was then notable merely as a natural curiosity, and by the salt men in Pennsylvania was regarded as a nuisance.

We might also mention here, one Samuel M. Kier, a druggist of Pittsburgh, Pa., who sold petroleum or Rock Oil, which he refined by distillation, as a medicine widely throughout the Eastern United States.

Somewhat earlier in this article, we have mentioned the work of James Young in Europe. As a result of his work on boghead coal and oil shale, and the fact that he found an illuminating oil could be made by their distillation, there were founded, upon the basis of his patent, between the years 1849 and 1860, a number of coal distillation plants in the United States. The most important of these was the large works of the Downer Kerosene Oil Company which made an illuminating oil from the Albertite from the Albert Mine at Albert, N. B. This plant, which was erected in Boston, cost a half million dollars. Indeed, in 1860, there were no less than 53 coal oil companies in existence in the United States.

These discoveries, and the gradually increasing scientific knowledge which was accumulated from research of chemists and physicists on petroleum or Rock Oil, was further reinforced by the growing scarcity of whale oil for illuminating purposes and the increase in demand for an illuminating oil. The whaling industry, which reached its zenith in America in the first half of the 19th century, could not supply the demand for such oils, particularly in the face of the gradual extinction of the sperm whale in northern seas.

As already pointed out, the discoveries of oil that had been made in wells had been regarded up to this time merely as natural curiosities. James Young's work, in 1846, in England, had shown illuminating oil could be produced from boghead coal and oil shale, and as a result an effort had been made to supply the demand for an illuminating oil by establishing distilleries under Young's patent, and, in 1859, when Drake drilled his famous well in Pennsylvania over 53 rock oil companies were actually engaged in distilling oil from coal in this country.

At this point there took place a celebrated investigation of the uses of petroleum by Professor Silliman of Yale. His attention had been called to the crude oil of Oil Creek in 1833, and in 1855 he experimentally fractionated crude petroleum, and showed that it could be made into an illuminating oil, which could be used as a substitute for whale oil and for the coal oil which was just beginning to be made commercially. The oil which Silliman used for his experiments was obtained from Oil Creek near Titusville, Pennsylvania. Professor Silliman said, in his report on these experiments: "It is understood and represented that this product exists in great abundance on the property; that it can be gathered wherever a well is sunk, over a great number of acres, and that it is unfailing in its yield from year to year. The question naturally arises, of what value is it in the arts and for what uses can it be employed? . . . The Crude Oil was tried as a means of illumination. For this purpose a weighed quantity was decomposed by passing it through a wrought-iron retort filled with carbon and ignited to redness. It produced nearly pure carburetted hydrogen gas, the most highly illuminating of all carbon gases. In fact, the oil may be regarded as

chemically identical with illuminating gas in a liquid form. It burned with an intense flame. . . . The light from the rectified Naphtha is pure and white, without odor, and the rate of consumption less than half that of Camphene or Rosin-Oil. . . . Compared with Gas, the Rock-Oil gave more light than any burner, except the costly Argand, consuming two feet of gas per hour. These photometric experiments have given the Oil a much higher value as an illuminator than I had dared to hope. . . . As this oil does not gum or become acid or rancid by exposure, it possesses in that, as well as in its wonderful resistance to extreme cold, important qualities for a lubricator. . . . It is worthy of note that my experiments prove that nearly the *whole* of the raw product may be manufactured without waste, solely by one of the most simple of all chemical processes."

The time had now arrived when American ingenuity would lay the foundation for the establishment of the modern petroleum industry. Silliman's analysis marked the beginning of a new age and from his stills and beakers at New Haven came the knowledge that made the present industry a possibility.

© *International Newsreel Photo.*

Up in Albany now there is ice on the Hudson. There is so much that near Newburgh three big passenger boats have been hopelessly marooned in mid-river. Their passengers had to walk ashore from the boats after an enforced and tiresome stay aboard. Ice dealers in the Hudson River Valley report a bumper crop this year despite the mild winter. No more do the long freight tows ply their ways up and down. The barges are boxed in by the hundreds in New York and the rivermen now work about harbors and sigh for the quiet, lazy summer days on the Hudson. The Hudson's oil barges have stopped their almost daily trips. On December 12 the last Texaco outfit went to Albany. Until the thaw and spring break-up there will be no more trips. Last year about fifty trips were made from The Texas Company's Bayonne Terminal.

The Clerk's Opportunity

What Alertness and Enterprise can do for the Clerical Worker

By COLONEL ARTHUR H. CARTER, C. P. A. of Haskins & Sells, New York,
Certified Public Accountants

Close professional observation of many large business organizations has convinced me that the average clerical worker has allowed himself to be stifled by routine. The mere physical comfort of a sedentary job, protected from the weather and luxuriously housed, blurs the clerk's vision towards greater success. Comparisons are always invidious, but the superior energy of the outdoor worker is sufficiently well known so that it is not necessary to hide the fact.

The present day successful business organization must function as a composite unit in which the cohesive element is all important. Every step in the series of departmental transactions, reports, statistics and accounts is a vital one. Efficient human effort applied to this aspect of a great organization is always conspicuous when taken as a whole, but far too often the individual clerical worker applying his mind to the routine work becomes pessimistic and loses much of the normal ambition necessary to progress. For this reason it is that one remarks so often that the clerk has less "drive" and advances less rapidly than, let us say, the salesman.

The successful executive possessed of the true quality of leadership gives credit to his office workers for a measure of his own success. He realizes full well that without the intelligent, accurate and orderly assembling of facts and figures relating to the series of operations of his business his task of administration would be impossible. Without a proper coördination of the statistical and accounting elements he cannot intelligently manage a concern of any size. Indeed, modern business, with its complexities and extended field of activities, is necessarily built upon the intimate knowledge of the operations of every department; without efficient functioning of clerical, accounting and statistical forces such knowledge cannot be secured. My own personal experience has convinced me that the average clerical employe in the great business organizations in the United States is possessed of inherent qualities which are not fully exercised. It seems to me that relatively few clerks realize the advantage of their physical situation with respect to the executive and administrative heads above them. The clerical worker is in direct contact with his chiefs, and if he is willing to exercise his mental alertness to its fullest extent he is in the best position of all for contributing constructive thought to the executives. But far too generally one finds a state of stagnation among clerks. I have observed how few bookkeepers responsible for the financial statements used by executives develop any constructive thoughts from the mass of information which goes through their hands. The clerk should endeavor to place himself in the executive's position and seek the sort of information in the records that would be of interest and value to the management if it were set up in intelligent form. The bookkeeper's analysis of costs alone would furnish many constructive suggestions to the management. With the exercise of a little ingenuity a mentally alert accountant is able to produce analyses of many phases of a great business which would be appreciated and rewarded by the heads of the concern. If the functions of the clerical force as a class are at present less appreciated than the functions of other classes of employes it is because the clerks have allowed themselves to slip back into this position.

Fundamentally, conditions in American industries have changed so rapidly within the last few years that it has become practically impossible for the executives to undertake thorough analyses of all of the essential elements of the business for themselves. A complete knowledge of all of the weak spots within an organization can be discovered only through the science of the accountant. Consequently, the executive officer is today more dependent upon proper classifications, coördination and recording of the vital statistics of business than ever before. Naturally, the efficiency with which these facts are gathered depends upon the individual efforts of the

(*Continued on page 30*)

The Log of the Air Express

A Transcontinental Non-Stop Flight

By Capt. FRANK M. HAWKS, Technical Advisor on Aeronautics

Primarily there was no thought of a non-stop flight. It was to be only a mutual service between the Lockheed Aircraft Corporation and myself. They wanted to send their new "Air Express" model equipped with the new N.A.C.A. cowling back East, and I wanted air transportation to New York. They could provide me a quick trip, and I could save delivery expenses on their plane. So, as I have stated, the arrangement at the outset was merely one of mutual accommodation. The thought of a non-stop flight was farthest from my thoughts.

Two days later I was asked if there would be any objection to taking on some 300 gallons of fuel and making a non-stop in daylight to Chicago. I assented to this provided there would be no advance publicity given. Realizing that the time of year offered many uncertainties concerning the weather, I preferred to try the undertaking quietly. If successful, we could let the fact be known. If forced down by the unfavorable weather conditions, I would be merely delivering a new "Air Express" model to Chicago. With this understanding we proceeded with the necessary arrangements.

The next day Byron Phillips of The Texas Company, at Los Angeles, said that it seemed a shame we did not try a coast to coast non-stop in an endeavor to lower the record established by Art. Goebel last August. I was willing to try, and after consultation with Ben Hunter, Vice President and General Manager of the Lockheed Aircraft Corporation, we decided to attempt the Los Angeles to New York flight. I must say here that the Lockheed people are great sports.

Prior to February 4 tests were conducted. Several trips were made to San Diego to test the ship's cruising speed, the gasoline consumption, the performance of the compasses, and motor cooling with the new cowling. On one of these flights we secured the precious barograph from the Navy, who were most generous and coöperated with us heartily in the Navy fashion.

© *Pacific & Atlantic Photo.*

Capt. Hawks' 'plane slowing up immediately after touching Roosevelt Field, L. I. The man running up to greet the pilot is the official timer of the National Aeronautical Association.

© *International Newsreel Photo.*

Capt. Hawks greeting Mrs. Hawks at the moment of his arrival at Roosevelt Field.

© *Photograph from Wide World Photos.*

Capt. Hawks and his mechanic, Oscar E. Grubb, with Mrs. Hawks, standing beside the Lockheed Vega monoplane. Capt. Hawks still wearing his parachute.

In addition to actual test flights, I was securing daily weather reports from sections of the United States over which my course was set. From the Territorial Managers, the districts, zones to individual stations, I received the most wonderful coöperation. In this instance I cannot give any one of our splendid organization particular praise because everybody was keenly interested and made special efforts to facilitate my weather problem. My gratitude and compliments go out to the entire organization of The Texas Company on the efficient help rendered in my behalf.

With daily weather data I could see how the various low and high pressures were acting. These guides aided me in deciding upon Monday, February 4, as the date to hop off on the venture. A final check came from all our good folks by direct telephone calls on the date of take-off. Up to within one-half hour before we roared down the runway, I received advices on the weather conditions. The deciding factor was clear weather over the section where I was to fly at night. A last minute report of bad weather in the vicinity of Oklahoma City prompted me to postpone my take-off hour from 4:00 p.m. to 5:30 p.m. so that another hour-and-a-half of the night part of the trip would fall farther west where weather was clear.

While I was busying myself with the weather picture over the country, Oscar Grubb, Superintendent of Final Assembly of the Lockheed Aircraft Corporation, was attending to the loading of the ship with the fuel. He was most thorough, and not a detail was overlooked. The main tanks were filled with 100 gallons of our Texaco Aviation Gasoline. Then 75 five-gallon tins were carefully packed into the cabin, which gave us a total of 475 gallons of fuel. The oil tanks were filled to their capacity of twelve gallons of Texaco Airplane Oil No. 4, and, in addition, an extra ten gallons of this oil was carried in the cabin in one-gallon cans. There wasn't any more room for five-gallon tins. Two canteens of water, a thermos of coffee, and a few sandwiches were also packed in the cabin. The parachute flares (for forced landings at night) were carefully installed and inspected. Everything was in readiness. Mr. Grubb's part was perfectly played—we were ready.

© *Photograph from Wide World Photos.*

The crowd of newspaper reporters, camera men and spectators, who surrounded the 'plane immediately after it touched ground.

I remained at the tower office of the Los Angeles Metropolitan Airport with an old-time friend, Waldo Waterman, who is the airport manager. He was doing everything in his power to help us. As the field was a little soft, he cleared the apron in front of the hangars which was very solid. This gave me a run of about 4,000 feet directly into the wind.

It was now nearing 5:30 p.m., Pacific time, and the sun was rapidly disappearing over the horizon. The motor was being warmed up by Mr. Soderling, the Pratt & Whitney representative, who had given our 420 h.p. Wasp a thorough check, and given it his official O.K. I left the tower, and Waldo drove me slowly down the runway for a final inspection, and then we returned to the ship whose motor was lazily idling with a steady "tick-a-tock," which spelled reliability and power to me. Really, for the first time, I was thrilled, not so much for the adventure before me, but the thought of all the wonderful coöperation being given both at the airport, by the motor people, the airplane factory, and last but not least my own family, The Texas Company. To think that all these agencies were putting their shoulder to the wheel unselfishly just so two little pigmy men could fly across the United States. It was a thrill of love and affection for everybody connected with the flight, from truck driver to President, from mechanic to technician, and I was grateful to be the recipient.

Mr. Grubb and I now were all bundled up, he in a flying suit, and my lot was a heavy racoon coat. The last precaution to be added were the parachutes. We were prepared to jump if forced to land with our heavy load at night in the mountains or under some blind condition such as fog, sleet or snow.

After stuffing Grubb in the cabin, where his task had now really just begun, I climbed into the open cockpit behind. I "reved" the motor up with blocks under the wheels to make sure it was developing full power. The blocks were then pulled, we waved "good-bye" to all the good friends who believed in us, and the curious public who were wondering if such a flight were possible. Then I opened the throttle and slowly we gathered momentum with our load. At 2,000 feet we were off the ground, and slowly climbing. I kept the ship straight for about a mile and then turned around heading southeast to cover the first leg of the great circle course to New York.

We were not up ten minutes when darkness befell us, and from then on my navigation problem was to be complicated. In about forty-five minutes we passed San Bernardino, California, and drawing near the first moun-

tain-pass over which we must drag our heavily laden plane. By the time we reached Bauning, California, we had 6,500 feet, and were able to go over the top with about 1,500 feet to spare. There were some clouds to bother me, but I weaved around through them, and was able to keep the forward visibility open.

Through the first ridge, all clouds disappeared, and we were facing the desert regions. Clear, beautifully clear, was the atmosphere, and the stars were as big as buckets. Soon we passed about twenty miles north of Tucson, Arizona, and we were flying at an altitude of 12,000 feet and steadily climbing. I had the motor running at about half throttle now.

Another hour and we were supposed to be passing near Clifton, Arizona, where a bonfire was to be burning for guidance. At this point we were flying at 15,000 feet; I never saw any bonfire, and had to guess between several clusters of lights which might be Clifton. My course now was changing on the circle, and we were flying east-northeast or about 70°. The next fire to be picked up was Roswell, New Mexico, and I was able to see it a long distance so I altered my course to about 60°, passing to the north of this point in an endeavor to cut off a corner or two. Here the clouds began to thicken under us and from Roswell on through the night we never saw the ground again. The beacon fires, which were being tended by diligent, faithful friends through the night and early morning, could not be seen. I had to rely upon my two magnetic compasses.

I stayed above the threatening clouds where flying was better, though the navigation problem was becoming more complicated. With no sextant, I was never able to determine our position, and it was necessary to trust the compass and time of flight, a dead reckoning method which is none too certain.

Twelve o'clock—oh gosh! the motor "blooped and sputtered"—out of gas—my heart stood still. The right tank was empty, I switched to the left tank and the motor picked up—only to repeat the same procedure in a few seconds. Good Lord what was wrong! Could there be a leak, were the lines stopped up? I couldn't imagine. "What's the matter with the gas?" I hollered to Grubb and at the same time I switched to both tanks. Once again the motor picked up, and by this time Grubb was busily pumping from the five-gallon tins into the main tanks. The incident only involved about thirty seconds, but much went

Photograph from Wide World Photos.

Capt. Hawks and his mechanic, Oscar E. Grubb, with Acting Mayor McKee. Standing behind Acting Mayor McKee, in the gray coat, is William S. Brock, co-pilot of the Brock-Schlee Detroit to Tokio flight.

through my brain in that short space of time. There wasn't so much the thrill of having to jump as I felt secure on that issue. We were so high that there was plenty of time to get clear of the ship. I was keenly disappointed at thoughts of failure. Leaving a ship to be dashed to bits is something I have never done, and I was sick at heart at the possibilities of this being my first time. Oh well! everything was running all right now, and Grubb never let those main tanks get empty after this little experience. I guess he had a thrill too.

Morning came with all its radiance above these clouds. I came down to 10,000 feet, and then to 8,000 feet, now just skimming the tops of these fleecy white things. All the time I was peering down looking for holes through which I might see land and get a bearing. There were no holes, these clouds were solid. What was below, and where were we? At 8:00 a.m. I made a calculation of approximate average speed, time in the air, and endeavored to determine my position. Conservatively figuring, my estimation would place us about at the southeastern corner of Indiana. Knowing this country was flat, I decided to mush down through these clouds blind, and wherever we came out I would pick a landmark. This formation was about 8,000 feet thick, and we came out below with some 50 feet ceiling. It was snowing heavily, the terrain was rugged and rather wooded. No landmarks were to be seen and my visibility was not in excess of one-quarter of a mile.

Picking a point which was most open, I used

© *Photograph from Wide World Studio.*

Captain Frank M. Hawks

it as a hub, and flew in all directions of the compass, endeavoring to get through and find a landmark to tell me exactly where we were. I was unsuccessful, each time returning to the hub to avoid loading up with ice which threatened our wings when I pushed into the sleet and snow. I was just going around in circles —losing time.

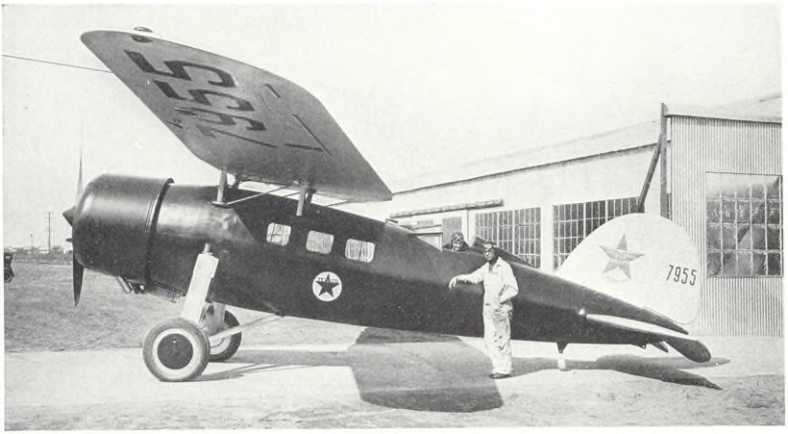
My knowledge of the country made me feel I was either in northern Kentucky or southwestern West Virginia. This calculation proved later to be right, and I was about 100 miles south of my true plotted course.

There was no getting through, there was no safe landing place, so I could see no other alternative but to climb up through the storm and continue on for another hour and try coming down again for bearings. This I did.

We attained an altitude of about 6,000 feet between two layers of clouds. We would encounter blind flying conditions every few minutes with periodic snow and sleet flurries. Riding in and out of these with a compass reading of 30°, which was north-northeast, for an hour now placed us somewhere 150 miles further on I knew, so once again I mushed down through the stormy insides of these clouds, and we came out with a better ceiling, and about a two-mile visibility. We were near the mountains, and then came the problem of getting through as they were covered with low fog clouds, and only valleys and low spots were open to go through. After a couple more hours of zigzagging around, I finally pushed through, coming out slightly northwest of Washington, D. C.

I knew my directions and my approximate

(*Continued on page 26*)



The Men and The Machine
Pilot Hawks and Mechanic Grubb with the Lockheed Vega monoplane which broke the record

When Hawks Swooped Out of the West

By GEORGE W. VOS, Superintendent Advertising Division

Bright noon at Roosevelt Field! Gradually a slight clouding in the West and the February sun becomes a little bleaker. The flat, level field with some standing water from yesterday's rain and the faint, hazy outlines of the spires of Garden City look, to one observer, like a small bit of old Holland, except for the intermittent roar and zoom of airplanes and the group of people standing in the lee of a distinctively American institution, a hot dog stand.

Clustered near this stand, the small groups conversed quietly about sundry matters, but the frequent shifting of glances to the West betrayed where every man's thoughts were.

Occasionally, someone would stop, peer and exclaim "Here he comes now!"

"No."

"Yes."

"No—that's a biplane."

Then again, "This looks like him."

"No, it can't be, they wired that his ship has a red fuselage and aluminum wings."

Several such false starts that made a fine scurrying out of their posts by the photographers and movie newsreel men. Then, as the hands of the clock nearly touched three, there was a little dot in sight—due west—nearer it came, like a homing dove, like a bullet. This must be Hawks. It was!

Past us with a roar. Then over he went, throwing the plane into a vertical bank, a shaft of sun striking the aluminum wings and turning them to silver—around it comes like a joy-maddened creature. Twice in huge, tearing circles around the field, thrilling the group below. This was the real thing!

From then on, all other planes seemed stodgy and dwarfed. This Lockheed had authority. The flash of it around the field seemed to those who knew it as Frank Hawks' aërial signature, the certain verve of it, a flourish like the famous signature of John Hancock on the "Declaration"—unmistakable!

Back he went into the West again and then at a flat slant, the plane came to ground. The official timekeeper snapped his stop watch and the non-stop Coast to Coast record was comfortably broken.

There were cheers and a mad rush to sur-

Loading up with Texaco Aviation Gasoline

Mechanic Oscar Grubb handling the hose, Captain Frank Hawks directing operations, just before the take-off at Los Angeles.

round the trim, beautiful Lockheed. Hardly heeding the yet-whirling propeller the crowd surges out to greet and acclaim Hawks.

Hawks sat nearly immobile in the little, exposed cockpit. Only the flash of his strong white teeth showed his consciousness of victory.

Slowly he pushed up his goggles and stretched his back and neck muscles very like a man who has been slightly stiffened from falling asleep in a pullman chair. He looked about him, recognizing among the small sea of faces those whom he knew, his wife, his Texaco friends, and Bill Brock and some other famous fliers who had journeyed out to Roosevelt Field to welcome and congratulate.

Then up came the heavy artillery, the news photographers, camera men and the reporters. Hawks modestly, graciously obliged.

Meanwhile, the door of the cabin had been opened and fairly stumbling into the arms of some of the spectators emerged the partner of this intrepid flight, Oscar Grubb, able and faithful mechanic.

Small wonder he had no ears for the applause—for eighteen hours he had been confined in the cabin at the non-spectacular, but nevertheless necessary, task of pumping gasoline up into the wing tanks. But soon, the strain of the flight, the numbing effects of the gasoline fumes, dropped from him and he, too, grinned with pride and pleasure as Capt. Hawks grasped his hand, thanking him sincerely for his part, dragging him into the line of cameras so that he, too, could share the glory.

Then, amidst the clamoring of autograph hunters and well-wishers, Hawks doffed the coonskin coat, and, appearing in a light business suit so unlike an aviator, walked into the shack where the reporters were assembled.

In the warmth of this little room, Hawks' hearing, stunned by the eighteen hours exposure to terrific speed, biting cold and the incessant roar of the exhaust, returned, and in a frank, friendly manner he answered the questions of the eager press men—and what a story they were able to put on the wires to greet the breakfast tables of millions of newspaper readers!

Breaking the record, that was not all he did. He showed to the world, almost unconsciously, the triumph of a skilled and gallant pilot over the adverse forces of nature. Snow, fog, sleet and darkness, flying "blind for nearly twelve hours," through the clouds, over the clouds, darting into holes, skimming close to the hills at times and over 14,000 feet up at other times, "I kept my eye on the compass and tried to stay on the course."

"At Roswell, New Mexico, we encountered fog and clouds; the next sight of land we got was after eight this morning."

The story was drawn from him by their apt questions.

How he had found the weather too bad to go over the mountain somewhere in West Virginia.

How he had to lose time by turning back to find a better route.

How he battled rain and snow.

How he recognized a railroad in Pennsylvania and then later small settlements in New Jersey.

Then, when the danger of flying out over the cold gray Atlantic was past, how he opened up the throttle.

We know the rest.

How at better than 200 miles per hour he swung those wild jubilant circles around Roosevelt Field.

Over near the window an official opening the barograph and handling it gingerly so as not to disturb the delicate tracings on the smoked recording cylinder, let out a low whistle of astonishment, for there was the recording of the up-and-down battle through the night, the peaks and valleys of a jagged line that showed graphically how Hawks had been looking for holes through the clouds at elevations sometimes 2½ miles high.

Surrounded by a still curious crowd, the 'plane rested in the afternoon sun. An officer climbed up to measure the gasoline left—over 75 gallons still remained. A sample of the oil was drained and later great satisfaction was expressed at its fine condition.

Hawks was delighted with the performance of the engine. He gave much of the credit to the fuel and lubricant. He said, "My engine functioned perfectly thanks to TEXACO." Of course, he used Texaco Aviation Gasoline and Texaco Airplane Oil.

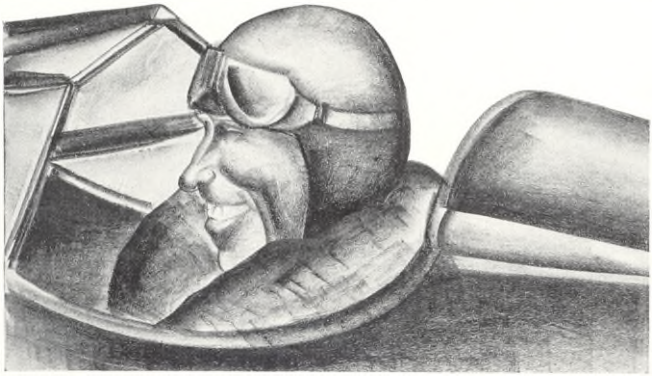
Later, the 'plane was taken to the Aviation Show at Grand Central Palace, New York. Thousands of people viewed it, reading on the fuselage over the TEXACO trademark a sign: "In this 'plane Capt. Frank M. Hawks battled fog, snow and sleet to break the Coast to Coast Non-Stop Record. He used TEXACO Aviation Gasoline and TEXACO Airplane Oil."

Pilots from all over the country expressed surprise that the flight could have been made at all at this time of the year, to say nothing of breaking the record.

Many spectators wondered how Oscar Grubb "the human sardine" as some called him, could have spent the night cramped in among the 75 five-gallon cans of Texaco Aviation Gasoline and Texaco Airplane Oil, not knowing where he was as regards altitude or latitude. Tirelessly working the wobble pump, fighting off fatigue and gasoline fumes to help the gallant Captain to a victory that even now he is dreaming of surpassing.

Grubb says he would be willing to do it all over again—provided Frank Hawks was at the controls.

And, loyal Texaco men all over the country are inspired to show their appreciation by doing their utmost to give Texaco Aviation Gasoline and Texaco Airplane Oils their "place in the air."



Drawing by George W. Vos

Financial News Gathering

The Machinery of Keeping the Investor Informed

By PAUL WILLARD GARRETT, Financial Editor of *The New York Evening Post*

Paul Willard Garrett

At the stroke of ten on any market day thirty ticker boys spring to their stools. Before them on high metal tables are spread huge work sheets containing long rows of symbols and spaces—symbols of stocks listed on the New York Stock Exchange and spaces for figures to be filled in. The gong sounds. The tension starts. Another day begins.

It is not the floor of the Exchange. It is no brokerage office. It is the stock ticker room of an evening newspaper in New York City. Here is the setting to begin preparation of the stock, bond and curb quotations for presentation to afternoon readers. No official records exist. Tens of thousands of price variations occur in any typical 5,000,000 share day. From the Bronx to Los Angeles the public wants to know how these markets shift. It is up to the newspaper to make the record—and make it right.

With fingers deft as a woman's, these highly-trained ticker boys transcribe onto the master sheets before them, from miles of tape that pass through their hands, all the market's transactions of the day. Speedily and accurately they work on. They cannot turn the market off. They must keep up with it until the last trade. This they do and—it is a romance how they do it—within seventeen minutes after the closing gong at three, the printed paper is on the street. Newsboys are calling, "Wall Street Edition, closing prices."

Glancing back through newspaper files of 1801 a New York evening paper carries as a stock market list a brief table of a half dozen securities. But to visualize the expansion in the financial services of newspapers, we do not need to turn back one hundred and twenty-eight years. Let us turn back but ten.

In looking through these old newspaper files it is interesting to note that about ten years ago, say September 19, 1918, the Armistice was still two months off. The new era in finance had not yet started. The day's Stock Exchange quotations occupied a half column.

Stock and bond quotations were still coming over the same ticker. Stock transactions on that day totalled 154,000 shares. With three exceptions the bond list contained no foreign issues. The Curb market was a disorganized affair, doing a business in "cats and dogs" of the security list down on Broad Street without a roof over its head. There was no Curb ticker. A stick of type in the paper was all the notice the Curb got. There was no commodity ticker. Unlisted trading was in its infancy.

In two narrow columns fell all the stock and the bond and the Curb quotations of that day. Six columns on the same page were left for the market lead, gossip paragraphs, news and advertisements. And that was only ten years ago!

Contrast this picture with an issue of the same papers now. Stock Exchange transactions hover around 5,000,000 shares in a busy session. The stock quotations have crowded all other news off the page. They require a

full page unto themselves. The bond market requires a page unto itself. The Curb market another page. Unlisted quotations still another. And opposite each of these quotation pages is a page of news. Each line in the many columns of quotations spread over the four market pages presents an opportunity for error. And not for one but nine different errors —the high for the year, the low, the dividend rate, the name of the stock, the opening price, the high for the day, the low, the close and the net change from the previous close each presents an opportunity for error in each line. And there are many lines on a page.

An insatiable public appetite for securities and mechanical ingenuity have combined to swell the volume of daily transactions and to speed trades. Tickers flash sales instantaneously to Seattle and San Francisco and Miami. The Trans-Lux throws a shadow of the tape on the wall for those who cannot stop to look at the tape. From the floor of the Exchange to the brokers' office in Moose Jaw, Saskatchewan, and to Wichita, Kansas, the machinery is geared to keep orders rolling in and out. These wires pouring into New York from all parts of the country complicate the job of newspapers to report accurately and quickly all the day's transactions.

Financial editing still is a new art. It has not progressed equally in all parts of the country. If a committee were to poll all the financial editors of the country to learn from each his biggest problem the mails would bring back a miscellaneous assortment of troubles. The fight against time, inability to get space enough, the struggle to keep competent staffs, maintenance of an impartial presentation of the news without "bulling" or "bearing" a market, accuracy, mechanical limitations of the ordinary composing room, separating the wheat from the baskets of chaff offered as news and learning how to play a story for what it is worth and for no more and no less —each of these to some financial editor each day presents a problem.

Yet in such a place as New York, where financial reporting has ripened into something of an art, the major problem is none of these. Up from this clutter of day-to-day annoyances, and reaching into the very philosophy of editing, emerges a problem that to financial journalism at its best transcends all the rest. It is the task—and to this controlling motive everything else is subordinated—of maintaining reader confidence. And maintaining it day in and day out with all the odds against you. Nothing shocks the sensitive mind so quickly as the discovery of a misstatement in black and white. And no one is so ready to take offence at what he finds in print as a security holder. Every financial editor of a metropolitan paper knows that leadership can be won only through reader confidence. With that anything is possible. Without it no financial paper can stand.

This effort to ever serve a sophisticated public, whose demands for more quotations and more news and better news multiply with the days that pass, has fattened the financial sections, thrown new burdens on editors and swollen the cost to owners. The time has passed—though some papers in big cities do not yet know it—when a journal can keep its financial readers healthy and strong on a scant spoonful of quotations administered daily. They must nowadays have a good heaping tablespoonful—and something to go with it. Stories, editorial comment, market gossip, company news and investment notes should be interspersed in about equal quantity with the quotations to make a financial section palatable.

The days of Cates and Gould and Harriman and a Northern Pacific corner and a 1907 panic have passed, and with them some colorful days in financial journalism—but a good financial story was never so popular as now. The failure of the Knickerbocker Trust Company on October 22, 1907, culminating in a panic as call money rose to 70 percent on that day, got only a one column head on Page One. The Northern Pacific corner of 1901 got no more.

Nowadays financial stories of great importance regularly make Page One—but stories are not always played on the basis of importance. An alert editor frequently finds romance in an item relatively unimportant. This spring a leading New York morning paper carried in an inconspicuous corner of its financial section ten lines announcing that the J. G. White Engineering Corporation was planning to spend $20,000,000 to raise the banks of Lake Tsana and dam the Blue Nile River. It appeared among the financial notes. That day an evening paper plucked this gem from its hiding place and developed it into a ringing story that made Page One, telling how the mountain trails of Abyssinia, that once echoed to the tramp of the Queen of Sheba's wild Horsemen, soon would resound to the creaking of American motor trucks. The next day all the morn-

ing papers carried the story on the first page under a display head. The remaining evening papers carried it that night.

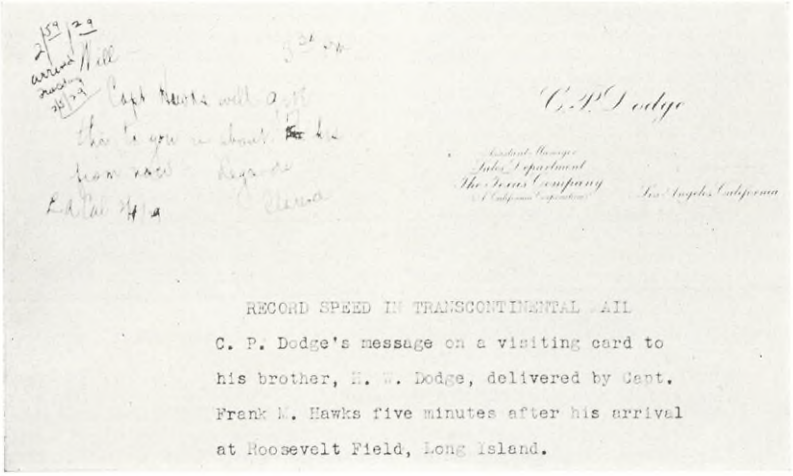
But it takes more than accurate quotations and more than spice in the news to maintain reader confidence—it takes complete coverage. In these days readers should get not only the full list of all active and inactive issues but enough prices on each to give a complete picture of the day's trend. Out-of-town markets, foreign markets and the unlisted markets interested nobody a few years ago. Now their movements provide the bread and butter for many an American investor. Without stinting the regular run of news—and the news always comes first—an effort is made to supply a background of interpretation and editorial comment and investment analysis. These efforts take the nature of such things as a weekly financial supplement, a daily London cable, a daily investment article, a daily column on insurance and even a daily column on advertising news.

News is judged by very definite standards familiar to all newspaper men. If meritorious it stands. If not it falls. The news must be kept clean else the financial pages will not for long hold the confidence of readers.

(*Continued from page 20*)

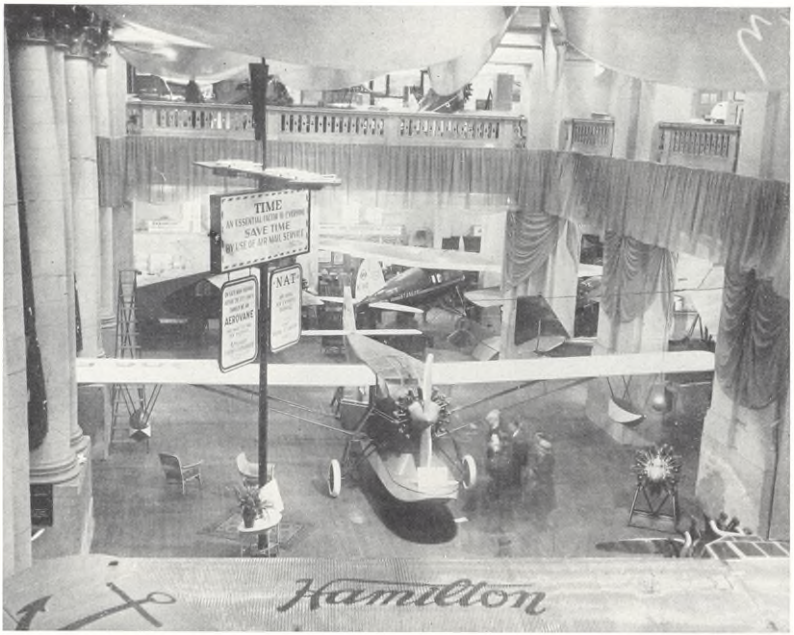
position all this time, and pushed on with the compass with the throttle now wide open to make up some for the lost time in the storms. The weather now was improving, and the continuance of our flight was a simple matter.

Soon New York loomed into view. What a pleasing sight after our night and morning of fighting the elements! Now over 17 Battery Place, up the East River, out over Long Island, and with that sweet-running Wasp running 1960 r.p.m., we were diving for Roosevelt Field making about 200 m.p.h. Grubb and I shook hands silently in reverent appreciation of our success. The bond of friendship was holy, as he gave his best, which was invaluable to the flight's success, and my contribution was likewise appreciated by him for here we were. Grubb's first visit to our nation's greatest city—and I am home.



RECORD SPEED IN TRANSCONTINENTAL MAIL

C. P. Dodge's message on a visiting card to his brother, H. W. Dodge, delivered by Capt. Frank M. Hawks five minutes after his arrival at Roosevelt Field, Long Island.



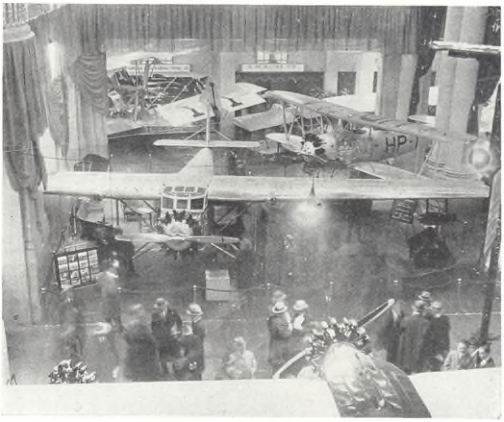
© *Photograph from Wide World Photos.*

General view of a section of the New York Aviation Exposition

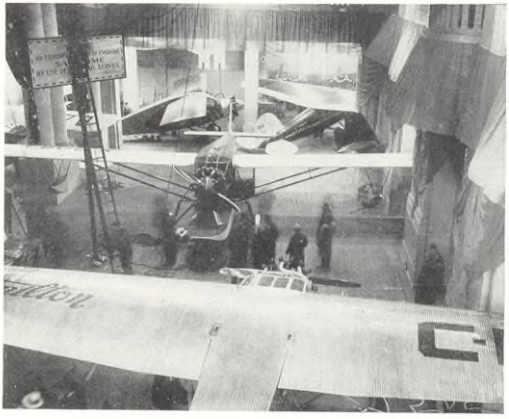
The New York Aviation Show

The first air-show to be held in New York in eight years opened at the Grand Central Palace on February 6. For seven days it was the center of intense public interest, having been attended by about 200,000 persons, mostly school-children. The show was popular in type and aimed at furthering the air education of New Yorkers. It was sponsored by the American Legion, who plan a bigger one next year.

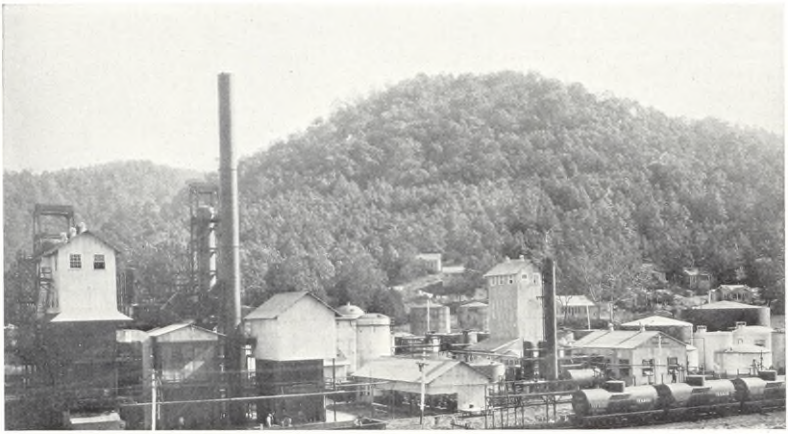
Present on the opening day were the transcontinental flyers, Captain Frank M. Hawks and Oscar E. Grubb, who, with Acting-Mayor McKee of New York City, opened the show and officially opened the United States Air Mail Post Office at the Palace. Outside a proverbially good-natured New York crowd stood waiting in a drizzling rain for the doors to open. About 40,000 people were clocked as having attended the first day. The most famous 'plane shown was the transcontinental Lockheed Vega Air Express which had been speedily dismantled at Roosevelt field after its historic landing and brought to New York. Charles A. Levine exhibited in person his new 600 horse-power monoplane, "Uncle Sam," built at a cost of $250,000, and which can carry enough fuel for a non-stop flight to Europe and back. There were other 'planes of varying sizes, prices, and repute. Few of the better known makes were exhibited at this exposition.



© *Pacific & Atlantic Photo.*
New York's Grand Central Palace filled with airplanes



© *International Newsreel Photo.*
A corner in the Airplane Show



View of Pryse Works

The Pryse Works

By P. T. WILLIAMS, Superintendent

The Pryse Works of The Texas Company are located six miles east of Ravenna, Kentucky, on the Louisville and Nashville Railroad, upon the site formerly occupied by the Oleum and Great Southern Refining Companies, the nearest billing station being Texola, Kentucky.

The Oleum Refining Company was organized in 1916, with local capital, at the time oil was discovered in Estill and adjoining counties. Transportation of the crude oil affected materially the location of the plant, due to the fact that at this time there were no pipe lines in this section of the country and the roads were practically impassable the major portion of the year. As the Kentucky River offered a cheap and sure method of overcoming this difficulty, the plant was located about a quarter of a mile from the river, above flood stage, and the crude oil was transported from the producing fields in barges. The Oleum Company was operated until 1921, at which time it was purchased by a group of capitalists and reorganized under the name of the Great Southern Refining Company. Some new equipment was placed in operation at Pryse Works, pipe lines laid to the oil fields, and a compounding plant was erected at Lexington, Kentucky, for the manufacture of lubricating oils. The properties were operated under this management until September 1926, when they were acquired through purchase by The Texas Company.

The equipment, at the time the purchase was consummated, consisted of some crude stills, some fractionating equipment, tankage of approximately 425,000 barrels capacity, pipe lines for transportation of crude from the producing fields, a compounding plant and some tankage at Lexington, Kentucky.

Our initial construction program provided for the erection of a Holmes-Manley Vertical Crude and Pressure Still Unit with a charging capacity of approximately 60,000 barrels per month, the dismantling and moving of the tankage at Lexington to Pryse Works, increasing the water supply from the river, the erection of a battery of continuous agitators, a fractionating plant, a combined boiler and power house with the necessary grading and

ditching in and around the plant to insure proper drainage. A new office building, two 80,000-barrel tanks, a modernly equipped laboratory, an 18-car garage for employes' cars, and the re-modeling of the Company cottages have been added to the original program.

As the plant is so located in the school district that employes' children would have to go several miles over unimproved roads, which are practically impassable at times during the year, our Company in coöperation with the authorities has worked out a plan whereby a combination school and recreational center may be erected and a teacher employed who is qualified to conduct classes in elementary and high school work.

Tanks at Pryse Works

(*Continued from page 15*)

accounting and clerical forces. If these forces would only take advantage of the opportunities before them they would rise through the organization very much more rapidly, because no employes are in a position to get a more complete picture of a business organization than the men and women who handle the figures. It is true, of course, that many of the most efficient executives have in the past risen through the ranks of the statistical and accounting departments, and have amply proved the value of their training.

I think a word should be said about the career open to women in the clerical line. Many women are devoting their lives to business with intelligent application and observation. It is apparent from the increasing number of women to be found in industry and commerce that they are regarded by employers as extremely suitable for clerical positions which not many years ago would have been filled by men. My own observation of women clerks as compared with men leads me to believe that they are just as efficient, equally dependable and may be expected to function even more satisfactorily than men. I have remarked that many of the men who are satisfied to continue in clerical positions have too many outside attractions and too often manifest only routine interest in the hours devoted to their bread-winning jobs. The accuracy of women bookkeepers and clerks is not excelled by the average male clerks. Women are quite as capable of acquiring a complete and comprehensive grasp of a large business organization. The woman clerk's only disadvantage, in my opinion, is that no matter how excellent her opportunities may be for demonstrating her ability and mental alertness, she is less called upon to occupy large positions because she is not as efficient as a man in the production or sales end of a great many businesses.

From my own contact with office workers, if I were called upon to give them three bits of personal advice I should put them as follows:

1. Exercise more and regularly. Walk at least three miles a day. Your work is necessarily of a sedentary nature, and if you would acquire greater alertness and energy you must exercise.

2. Think. Try to exercise all of the ingenuity of which you are capable towards constructive thought in your work.

3. Do not fall into the worst habit of the clerical worker, especially the clerical worker of the great cities, which is gambling, whether it be on the stock market, horses, or athletic events. I have observed that this evil is very widespread among clerical workers.

Last, but not least, I should say that every ambitious bookkeeper or clerk should belong to one of the leading organizations dealing with his career. The National Association of Cost Accountants suggests itself to me as the finest medium I know of through which a bookkeeper or clerk can, with the least effort on his part, better his position.

Plowing a winter path to the Refinery

Picturesque Craig

By G. O. SHEFSTEAD, Superintendent

As comparatively few members of the Texaco Family may ever have the opportunity to visit Craig Works, the following brief description of the country in which the first of our newer but smaller plants is located may be of interest.

Craig is located in the northwest corner of Colorado and has a popuation of 2,500 people. The Victory Highway passes through Craig and while for many miles each way the scenery is beautiful, some of the passes reaching an altitude of over 11,000 feet where the mountains are clad with spruce and pine trees, it elsewhere traverses desert country, with nothing but desolation, cactus and sagebrush.

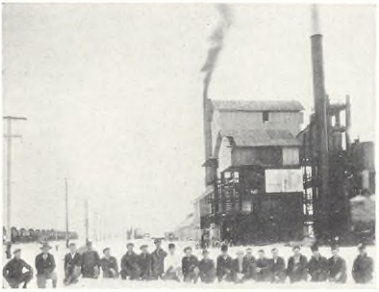
Craig has modern schools, a state armory and auditorium, good water and sewer system, and an efficient municipal organization. Its business section includes two substantial bank buildings, a modern motion picture theatre, and up-to-date drug and clothing stores. Churches are well represented with strong social and civic societies.

Moffat County, of which Craig is the county seat, has an approximate area of 3,000,000 acres, with a population of 7,000 and an assessed value of nearly $8,000,000. It has the distinction of being the largest county in Northwestern Colorado. There are about 1,250,000 acres of this land open for homesteading. Most of the land is classed as grazing or dry land farm country.

The principal industries are mining (mostly coal), agriculture, live stock, oil production and refining. There are coal deposits which are claimed to be larger than any other in the world. Lack of railroad facilities has hindered development of some of these mines.

The agricultural land is watered by the Yampa, Snake and Williams Fork Rivers and this locality has an annual rainfall of 10 to 22 inches. Many thousand tons of hay are cut each year to afford forage for the large number of sheep and cattle which must be fed during the long winter months. The principal crops raised are grain, such as wheat, barley, rye and oats. Truck farming is being developed rapidly, potatoes being the chief crop.

The country from Denver to Craig, a distance of 233 miles, is served by the Moffat Railroad. This railroad is one of the outstanding features of the country in engineering. There are a series of 57 tunnels to pass through



Personnel of the Craig Refinery

before reaching Craig, the longest being the Moffat Tunnel, which is 6.11 miles long. The trip from Denver to Craig affords many thrills and beautiful scenes for the passengers. Undoubtedly the railroad will, in time, be extended west from Craig, its present terminus, to Salt Lake City, Utah, thus affording a direct outlet to the west for the products of this undeveloped empire.

Although often referred to as "The Last Frontier," because of its isolation behind the barrier of the Continental Divide—an isolation which kept away all but a few settlers until the Rockies were penetrated by the Moffat Railroad and the Moffat Tunnel—the country of which Craig is the commercial hub, was visited as early as 1776 by a Spanish exploring party led by two friars, Dominguez and Escalante.

Almost a century passed before there is further record of a visitation by white men. Then the trappers, ever on the alert for virgin territory, came into the fertile valleys, which were alive with game and fur bearing animals. Davy Crockett is said to have built "Fort Misery" in this section in 1839, but no trace of the trading post is now visible.

Jim Bridger, Jim Baker, T. J. Farnham, and Joe Meeker are other historical figures who visited this section before the middle of the 19th century.

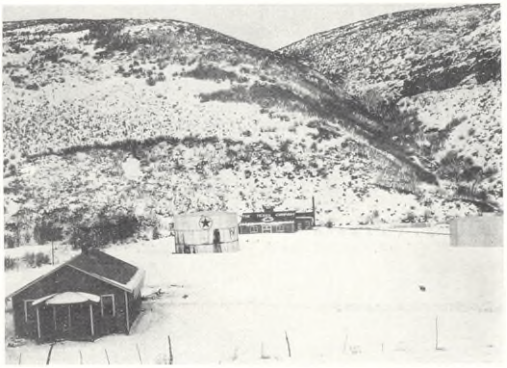
In the late 70s and early 80s the first permanent settlers made their appearance—hardy cattlemen who grazed their herds at will over the millions of acres of "open" land. Log cabins began to make their appearance in the broader valleys and finally a few settlements sprang up.

Three subsequent events marked the metamorphosis of this section—the coming of the homesteader from 1912 until 1917, the discovery of oil in 1923, and the completion of the Moffat Tunnel in 1928.

When the homesteader, intent on free government land, made his appearance, the herds of thousands of cattle were doomed and the occasional sheep and cattle war, with its gun play and bloodshed, was forced from the stage by a new order of economic progress.

The discovery of oil in the Moffat Pool in 1923, with later discoveries at Tow Creek, Iles and Hiawatha, brought in a new type of citizen and with him came the refinements of civilization which pushed "Frontier Days" into the background.

The Texas Company refinery which is located 1.4 miles west of Craig, on the Yampa River in the Yampa Valley, consists of a combination topping and pressure unit. A pipe line 25 miles in length connecting with the Hamilton and Iles fields is also under the supervision of the refinery. The Company's surplus production in these fields is now shipped by rail to its refinery in Casper, Wyoming, but the probabilities are that in a comparatively short time additional refining capacity will be required at Craig to supply the local marketing territory, thus making available the production from both fields.



Solitary hillside pumping station a few miles from Craig

Pay no winter tax

Motorists no longer need pay extra for driving in cold weather. Easy starting, high test gasoline performance is now available to everyone, everywhere, without added cost.

All Texaco Gasoline is high test. Compare this *new* and *better* Texaco with any other you have ever used. See how much finer it is for winter motoring. You get it from convenient Texaco Service Stations throughout the country—in every State—and from every pump displaying the Texaco Red Star with the Green T.

The *new* and *better* Texaco Gasoline is *always* the same true high test, high quality, premium gasoline—at the regular price per gallon. And ask for Texaco Golden Motor Oil, the oil that flows at zero.

THE TEXAS COMPANY
TEXACO PETROLEUM PRODUCTS

This true High Test Gasoline
does these things

1. It saves you money—you pay no premium.
2. It starts easily with less choking.
3. It picks up quickly from a cold start.
4. It actually does give more mileage.
5. It gives better lubrication because it forms a dry gas which minimizes oil dilution.
6. It gives you the same uniformly high quality, high test gasoline wherever you are.

Why pay more?

The NEW *and* BETTER
TEXACO
GASOLINE