A painting of a man wearing a large, wide-brimmed sombrero, leading a pack animal (possibly a mule or horse) through a street in a village. The animal is carrying a large, rectangular pack. The background shows several buildings with textured, earthy walls in shades of yellow, orange, and green. The scene is set in a dusty, outdoor environment. The overall style is impressionistic with visible brushstrokes and a rich color palette.

UNION
OIL
BULLETIN

APRIL 1928

Baron Kilpatrick 1926

» » » » *A new era has dawned*
in Motoring!

HIGH-COMPRESSION Engines (formerly used in racing cars and airplanes only, and now standard equipment in many 1928 passenger car models) demand a fuel containing anti-knock qualities not found in the ordinary run of gasoline.

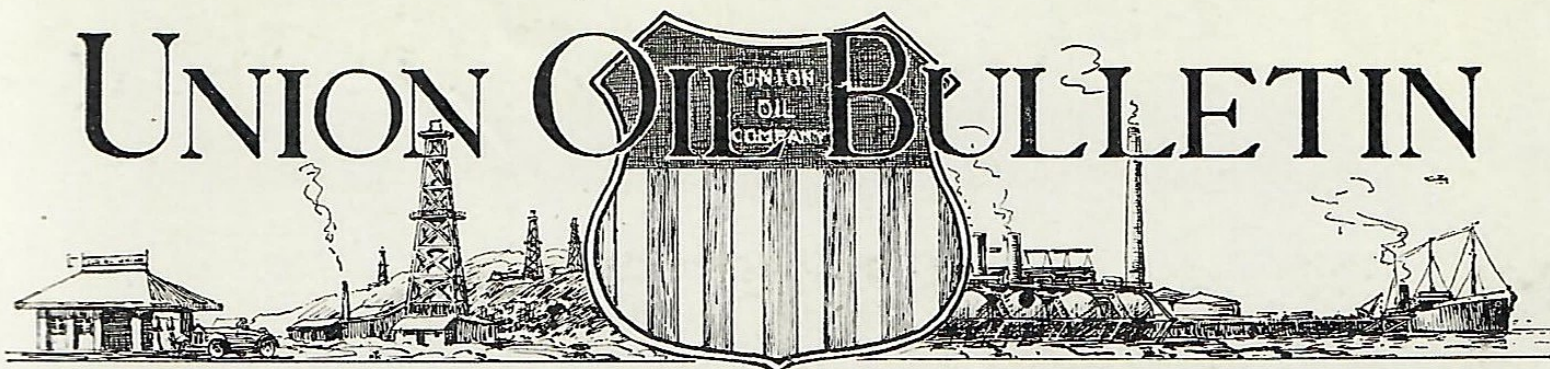
ETHYL is the only motor fuel that successfully meets this requirement.

On the Pacific Coast ETHYL fluid has been added to Union's famous non-detonating gasoline. The result is UNION-ETHYL. Thousands are now enjoying this super motor fuel. New users are being added by the hundreds every day. No matter what the model or type of your car, try ten gallons of UNION-ETHYL and see for yourself the marked improvement that it makes.

**UNION
ETHYL**
UNION OIL COMPANY



UNION OIL BULLETIN



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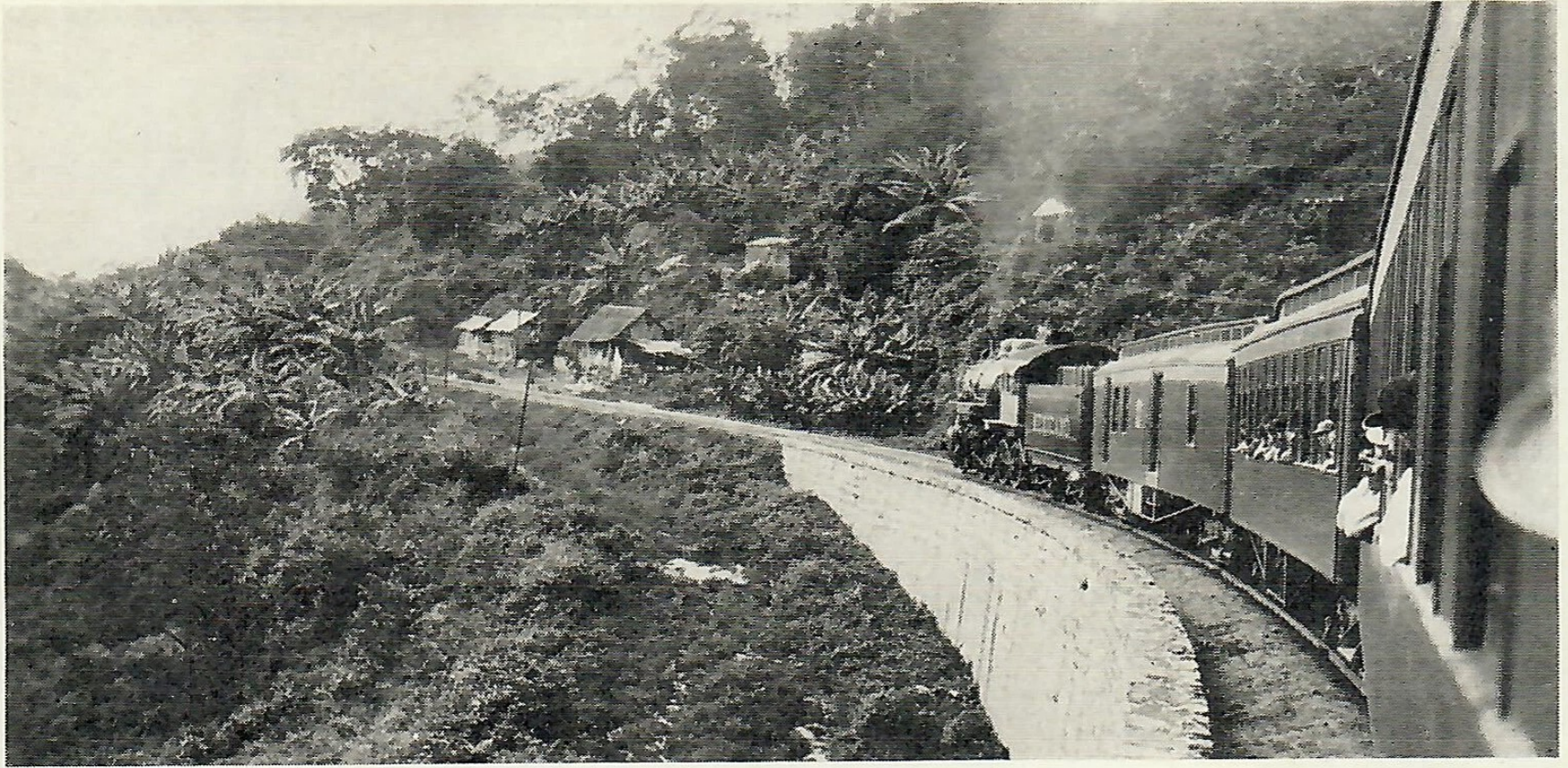
BULLETIN No. 2

Cooperation

CALIFORNIA will point the way to conservation of gas and oil resources through cooperative effort. Governor Young opened the door and the ready response of oil operators indicates their willingness to work together toward a common good. This effort will meet the present situation.

Cooperation within the industry will effect economies all along the line—in development and production, a better balancing of supply to demand, when and where the oil is needed. Cooperation within the industry is recommended in both research and action, in discovering the best practice and in adopting it. Field cooperation between neighboring operators in preserving back pressure and reducing the gas factor is an example of practical conservation, or if it is too late to do this, field cooperation can take the form of building up pressure by artificial means. United and coordinated effort is the method recommended.

—E. W. CLARK.



Tropical vegetation on the canyon walls of the Orizaba River Valley descending from the Valley of Mexico to Vera Cruz.

A Journey Through Mexico

By J. A. HENDRICKS
Geological Department

LAST summer, during July, August and September, Roderick Burnham and Earl Noble, accompanied by the author, went to Mexico to investigate the company's properties there.



J. A. HENDRICKS

to break down our sales resistance for some trifle. Hands reached up from steaming pots or from fruit baskets, with tamales, fried chicken, pork, oranges, mangoes, aguacates, and numberless other things for

sale. Blind guitar players played La Paloma, and señoritas in their best came to meet the train at every stop.

A few days were spent in Mexico City inhaling the rare atmosphere, and Burnham and Noble joined the Mexican Aviation Corps long enough to fly over the beautiful Valley of Mexico situated over 8,000 feet above the sea and surrounded by snow-capped mountains. One of the peaks, the far-famed Popocatepetl, is 17,876 feet high and is a dormant volcano. The name means "Smoking Mountain," in the Aztec language. Burnham and Noble also attempted to solve the riddle of the Aztec calendar stone and both conjectured freely as to the identity of the contractor who built the pyramids of the Sun and the Moon in the Valley of Mexico.

A few days were spent in Vera Cruz, once the chief seaport of Mexico on the Gulf of Mexico, but now replaced in importance by Tampico because of the oil industry. The trip from Mexico City down to Vera



The writer properly escorted on the Aguila Railway from Tuxpam to Furbero on the road to Miahuapam.

Cruz is one of the most beautiful in the world. The road runs through the sun-bathed Valley of Mexico between the towering summits of Popocatepetl and Iztaccihuatl, whose snowy peaks gleam white against the blue mountain slopes covered with pine and fir. The descent from the Valley of Mexico down the winding canyon walls of the Orizaba River valley into the tropical jungles of Vera Cruz is a wonderful journey; and the villages of adobe dwellings with tiled roofs set in the brilliant luxury of tropical vegetation is a picture long to be remembered among the many adventures that hold their charm in the mind of the explorer as he journeys from land to land.

After Vera Cruz came Jalapa, the capital city of the State of Vera Cruz, agreeably situated in the mountains in the midst of the jungle. Here the Governor received us and hospitably offered the keys of the city and presented us with military passes for our protection in our journey through the oil fields of Tampico, not that this was

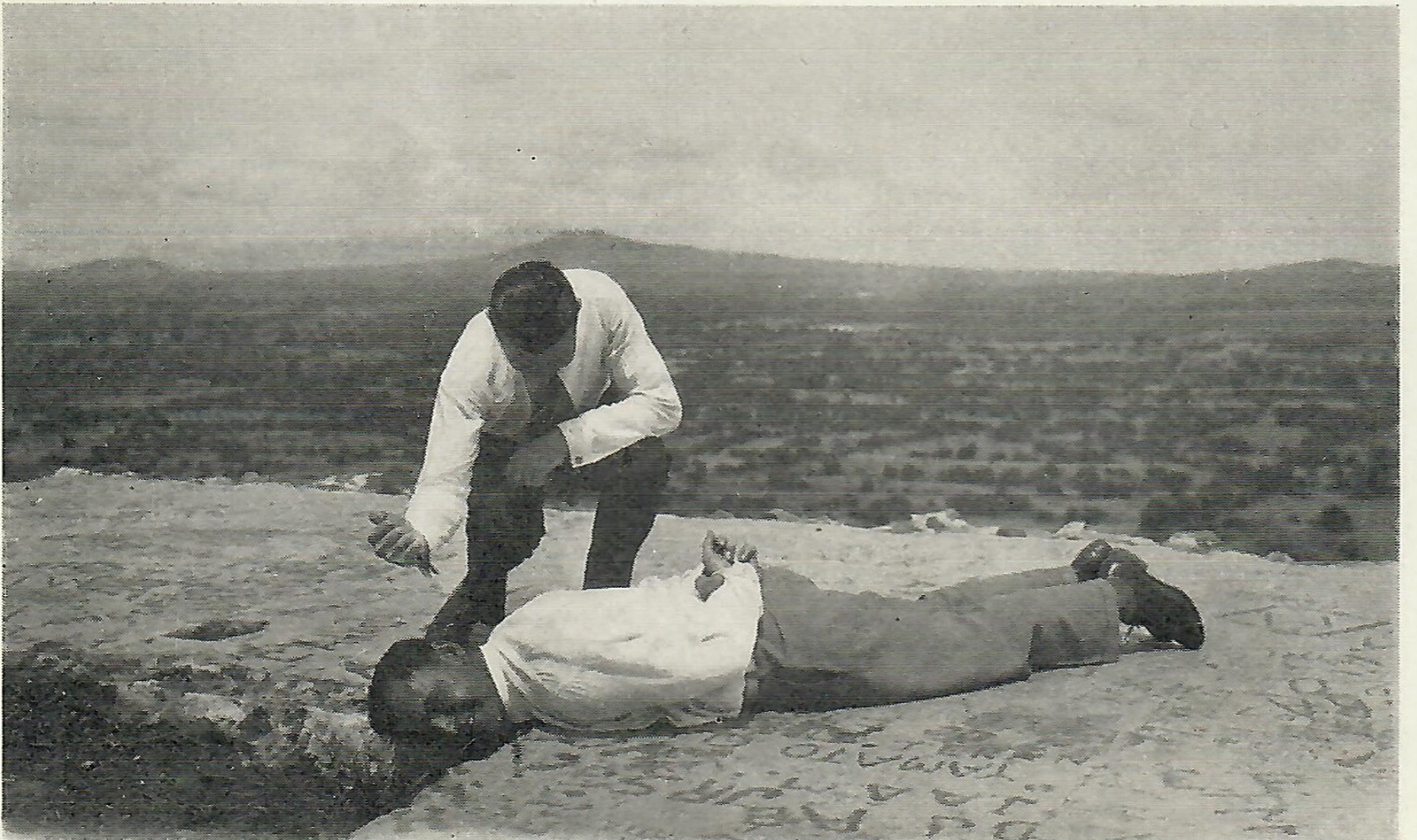
necessary but more as a courtesy than otherwise. The Governor also offered to improve Noble's game of tennis.

Tampico, the greatest oil port in the world, was finally reached, where Fred Steinkruger, the company's representative, took us in tow and showed us the sights of the town and the surrounding oil fields. Tampico is now a city of more than 100,000 people, with modern office buildings and hotels rising in the midst of Old Spain. In the old days the ships from Spain used to pass on up the Panuco River to Panuco some 30 miles farther on. Tampico was then but a few lowly dwellings of fishermen where dogs would bark at the passing ships; and the Indians came to call it Dogtown, "Tam" meaning town and "pico" meaning dog in their language.

From Tampico Mr. Steinkruger took us to the Hacienda Miahuapam, which is located some 120 miles south of Tampico and reached after all types and methods of transportation, ancient and modern, have been utilized and proved successful. First



The Pyramid of the Sun, where 400 years ago, Cortez, the Spanish conqueror of Mexico, found the Indians making human sacrifices according to their religious beliefs. The custom was to cut out the heart of the victim with a knife made of obsidian, which is glass of volcanic origin.



A human sacrifice on top of the Pyramid of the Sun. Burnham acting as the victim and Juan Fiorintini holding the knife. Not exactly after the fashion of the Aztecs.

a taxi or flotinga, as the natives call them, leaving the hotel at the break of dawn. Then the ferry across the Panuco River and a Ford for forty miles down the peninsula over the Huasteca Highway to San Jeronimo on the Tamiahua Lagoon. At San Jeronimo a gasoline launch carries the mail and a few passengers for 50 miles along the inland waterway and up the Tuxpam River to Tuxpam for the night. From Tuxpam the trail for 35 miles is over the narrow-gauge railway of the Aguila Company, who so kindly gave permission for us to travel that way. Their train consisted of two cars on their own power, one a Dodge motor mounted on car wheels, and one a Ford motor. It was a delightful way to go sailing through the jungle. At Kilometer 57 Srs. Fiorintini and Tremauri of Papantla, and owners of Miahuapam, met us with mules and hunting dogs, and also came Juanita, who was to cook for us and who had previously acted as regimental cook for the Revolutionaries during the Carvanza revolution. Juanita was in her glory as she led the long procession

through the jungle, singing songs of the revolution and urging the mules to greater speed with words well known to mules.

The trail followed across jungle lowlands. It was raining and the mules carefully sought foothold in the mud and seemed to know instinctively how to avoid mudholes and boggy places along the way. At the Cazonas and Totolapa Rivers all mules had to be unpacked and swum across while the saddles and camp supplies were carried over in dugout canoes. Juanita did most of the directing. At both rivers we were delayed by high water from the recent rains, but that soon subsided and the caravan was able to cross.

The road from the lowland was up steep slopes to the mesa or tableland of San Miguel de Mecatepec. Here we spent the night at the ranch house where we were most agreeably entertained by Don Domingo de la Pena. Descending from the Mesa the next morning we passed the Aguila well Mecatepec No. 4, which has since been brought in as a probable producer estimated at 30,000 barrels per day.



Swimming the horses across the Cazonas River in flood.

From Mecatepec No. 4 the way is northward along the structure to Miahuapam, about six miles distant. The trail followed over and around many hills and through the dense growth of the jungle whose overhanging branches gave welcome shade during the heat of the day.

A very interesting and busy week was spent on Miahuapam where evidence was found indicating excellent possibilities for the development of a new oil field, the probable continuation northwestward of the Mecatepec No. 4 structure.

Mexico has produced 1,440,000,000 barrels of oil in the last 28 years. The producing oil fields are situated, (1) in the Panuco district, 30 miles southwest of Tampico, and, (2) in the Dos Bocas Alamo region 47 miles south of Tampico. The latter is sometimes called the "Golden Lane," but as often called the "Knife Edge" because of the prolific quantities of oil which have been produced from a narrow belt about a mile wide extending southward for forty miles from Dos Bocas on the Tamiahua Lagoon to Alamo on the Tuxpam River.

The outstanding feature of the Mexican oil fields has been the magnitude of production of individual wells. For several years three wells on the Golden Lane produced



The Aztec Flower Goddess with her hands in position to receive flower offerings from worshippers.

10,000,000 barrels each per year. In the Panuco district the greatest production from a single well was obtained from Zurita No. 3 which, flowing under its own pressure from January 1914 to July 1924, inclusive, produced 21,464,170 barrels of oil. This well was not flowed for its total capacity during a large part of its history.



The ranch house of Don Domingo de la Pena on the Mesa de Mecatepec.



Burnham and Hendricks waiting to catch the Tuxpam Mail Boat on the fly.

Other famous wells in Mexico such as Cerro Azul No. 4, Protrero del Llano No. 4 and Juan Casiano No. 7, could duplicate or better the record of Zurita No. 3.

These wells produced oil under great pressure, often as high as 2000 lbs. to the square inch closed-in and from 800 to 1200 lbs. per square inch flowing. In the early days, before it was understood how to handle this high pressure, a well at the north end of the Golden Lane called Dos



The crater of Dos Bocas, formed by a Mexican oil gusher which broke loose July 4, 1911. Hot salt water is still flowing from this crater to the sea nearby.

Bocas broke loose and caught fire and, after spouting for fifty-eight days an amount estimated at the time to be between 400,000 and 800,000 barrels daily, began to discharge hot salt water, yielding 1,500,000 barrels a day. This well was brought in in 1911 and the salt water continues to flow to the present day from a crater about one-half mile in diameter. Hot salt water still boils to the surface and flows out to the sea nearby. The reflection of the fire from this burning well could be seen at sea as far east as Cuba across the Gulf of Mexico.

The oil in Mexico accumulates underground very differently from that in California or Texas. In California and Texas the oil is found in the small spaces between the grains of sand, that is in oil sands, while in Mexico it has accumulated in underground caves and cracks in limestone. This gives rise to large pools of oil and the prolific production of one gusher well in Mexico will equal that of a whole forest of oil rigs from an entire field in the United States. In Mexico all oil wells flow under their own gas pressure, no pumps are used to lift the oil from the oil sands as in California and Texas.

From Bullets to Billet-doux

By PHILLIP G. JOHNSON*

For a long time the aviation branches of our military forces have been important. Large corporations have developed at different points throughout the United States to supply equipment for military flying. The recent rebirth of interest in air travel indicates that a development of peaceful commercial flying is imminent, which will far overshadow the military aviation in this country.

The Boeing Airplane Company of Seattle is an organization which heretofore has built only military airplanes, but which has seen the light and assured their entry into the commercial phase by contracting to carry the Air Mail from San Diego to Seattle and from San Francisco to Chicago. These air routes are in reality a tremendous laboratory wherein the Boeing company are measuring, weighing, and evaluating the characteristics of airplanes which must be found in the successful commercial airplanes of the future.

The reputation which the Boeing Airplane Company have made, both with their military and Air Mail planes, is particularly gratifying to Westerners because they are a western company and are attacking a big problem with a true western spirit.

BOEING AIR TRANSPORT, INC., was organized in 1927 by W. E. Boeing of Seattle. After his bid for the San Francisco-Chicago contract was accepted by the Post Office Department, the Boeing Air-



PHILLIP G. JOHNSON

plane Company of Seattle, parent organization, immediately set about the task of producing twenty-four special air mail, express and passenger planes for operation on the route. The planes were completed on schedule and flown in advance to terminal and divi-

sion points to go into operation.

On the morning of July 1, 1927, at seven o'clock, the first scheduled Boeing Air Transport plane took off from Crissy Field in the Presidio of San Francisco, and headed eastward with a cargo of mail. No passengers were carried. The same evening at 7:50 another Boeing plane left the eastern terminus at Maywood Field, Chicago, with mail bound for the Golden Gate.

Up to the present writing, Boeing Air

*President, Boeing Airplane Company, Seattle, Boeing Air Transport, Inc., San Francisco-Chicago, and Pacific Air Transport, Seattle-Los Angeles.

Transport planes have flown more than one million miles, with only two serious accidents, and those just as the millionth mile was passed. The twenty-four planes and staff of twenty-five pilots fly about 28,000 miles a week—more than the distance around the globe. Air mail carried since the beginning of operations totals about 381,000 pounds. In addition to this about 10,000 pounds of air express were carried under contract with the American Railway Express Company. Nearly 800 passengers have been carried, many of them flying the entire route without stop, and the others averaging 500 to 1000 miles between intermediate and terminal stations. The 800 passengers were carried a total of 525,000 miles.

The Boeing Air Transport route, 1918 miles from San Francisco Bay to Chicago, is the longest single air mail operating unit in the world. For the best results from planes and pilots, the route is operated in five divisions, averaging about 385 miles each. Intermediate termini of these divisions are Reno, Salt Lake City, Cheyenne, and Omaha. The divisions are flown in relays; planes and pilots change at each division point. Of the twenty-four planes on the route, only ten fly each day—five planes eastbound and five westbound. Thus under normal conditions, fourteen of the



A Boeing Air Transport mail plane leaving Oakland Municipal Airport with air mail Christmas greetings and gifts from the Golden Gate to the East. On December 21, 559 pounds of mail were aboard the eastbound, not including express shipments carried under contract with the American Railway Express Company.

planes are being groomed in the hangars to be ready for the next day's work. Except in cases of delay due to bad weather, individual planes are not used two days in succession, each plane having every other day off, so that a reserve pilot may be kept on call at each operating point.

The Boeing planes in operation on this route were among the first to be built in this country for combined mail, express, and passenger service. The entire fleet was built on the same jig in the Seattle factory of the Boeing Airplane Company. Motor equipment is the Pratt and Whitney *Wasp* of 425 horse-power, and the *Hornet*, of 525 horse-power for the mountain divisions. Cruising speed is 100 miles per hour, and the rate of climb is 70 feet per minute. Carrying 1600 pounds of cargo and passengers, with 100 gallons of gasoline, the

plane weighs 5700 pounds. Brakes operated separately by hand from the pilot's cockpit are standard equipment. They serve to bring the machine to a quick stop after landing and to aid in steering on the ground by holding one wheel or the other.

The cabin is electrically lighted, heated, and ventilated. Sliding glass windows, adjustable by the passengers, afford a good view of the ground. The cost of constructing these planes was approximately \$25,000 each.

Several of the officers of the Boeing Airplane Company of Seattle are also serving with Boeing Air Transport. W. E. Boeing is chairman of the Board of Directors. Philip G. Johnson, president of the Boeing Airplane Company, is also president of Boeing Air Transport. O. W. Tupper is secretary, and C. L. Egtvedt is treasurer,

serving the same capacities with both organizations. Acting exclusively with the transport organization are three vice-presidents. Edward Hubbard, formerly with the Boeing plant as chief test pilot and later owner of the Seattle-Victoria Air Mail route, is vice-president in charge of operations, with headquarters in Salt Lake City. W. G. Herron, formerly of Seattle, is vice-president in charge of traffic, with offices in San Francisco. George P. Tidmarsh, of Seattle, is vice-president and eastern representative at Washington, D. C. City traffic offices are maintained at San Francisco and Chicago. Superintendents are on duty at Oakland Airport, and at the airports of Sacramento, Reno, Elko, Salt Lake City, Rock Springs, Cheyenne, North Platte, Omaha, Des Moines, Iowa City, and Chicago. Executive offices are in Seattle.

On January first this year Boeing Air Transport acquired a controlling interest in the Pacific Air Transport, Seattle-Los Angeles and all coast cities air mail routes. This route is 1099 miles long, with intermediate airports at Tacoma, Portland, Medford, San Francisco, Oakland, Fresno and Bakersfield. Traffic offices are in San Francisco and operations headquarters, under the general managership of vice-president A. K. Humphries, are at Oakland Municipal Airport. Executive officers of the Boeing Air Transport are serving in the same capacities with Pacific Air Transport.

Flying equipment on the Pacific Air Transport route consists of air mail, express, and passenger planes, built on practically the same plans that were followed in the construction of the twenty-four planes on the transcontinental route. The chief difference is that the rear mail pit is removed and the passenger cabin lengthened to carry four comfortably, instead of two. The Seattle-Los Angeles route is flown on a 14-hour schedule.

Lighting for night flying on the transcontinental route will be completed this summer when beacons are installed between Salt Lake City and the Golden Gate. With night flying possible on this section of the route, planes will leave San Francisco late in the evening, probably about 10 o'clock, thus making the transcontinental schedule cover two nights and a day instead of two days and a night as it does now. The new schedule will effect transit of mail and passengers from ocean to ocean with loss of but one business day. Large tri-motored twelve-passenger planes are under construction for the Bay-Chicago Line.

Air mail poundage is important in present and immediate future development of air transportation. When the Government established the new air mail regulations, making the service easy and simple for society and business to use, the way was opened for millions to share in man's victory over the air.



Oil Sprays for Insect Pest Control

By GEORGE E. WOODHAMS
*Senior Horticultural Inspector,
Los Angeles County*

IN the past few years there has been quite an interest taken by the horticultural industry in the use of oil sprays as insecticides, since these materials are being used on both deciduous and citrus trees. The entomological magazines are publishing many articles relative to the problem of oil sprays. In the citrus industry there has been a tremendous interest shown recently in the newer highly refined, quick-breaking type of oil sprays. This particular type has been used commercially since about 1924, and has been an important factor in the control of some of the "resistant" scale insects that are found in our citrus groves. In the citrus industry the main pest control problems are aimed at the scale insects. However, red spider, thrips, aphids, and mealy bugs come in for their share of the growers' attention. Mealy bugs are now adequately controlled by beneficial insects (biological control).

The scale insects that must be controlled in citrus groves include such well known species as black scale, red scale, purple scale and citricola (gray) scale. Not all of these scales infest any one particular orchard, but probably the majority of Southern California orchardists are familiar with one or two of them. These scales had formerly been partially controlled by fumigation with hydrocyanic acid gas since the introduction of this form of pest control in 1888. This method, with quite a few later improvements and variations, had been considered adequate until a few years ago. It was then found that in some areas the black scale was not being controlled by fumigation, and later the red scale, red spider and thrips gave evidence of resistance to fumigation.

In about 1881 the light, or kerosene, emulsions were introduced, but they were found to be ineffective against many insects. Then came the distillate emulsions which were found to be very damaging to citrus trees because of the methods of mixing the sprays as well as the type of soap emulsifiers that were used at that time. Nothing further was accomplished in the radical improvement of the oil sprays until recent years. The rather unsatisfactory kills obtained with fumigation in some sections were the primary cause for the introduction of the present refined oil sprays. A white, highly refined oil spray of the quick-breaking type was placed on the market about 1924, and there was a decided stimulus given the use of sprays to control the "hard-boiled" scale insects. This material also was found to be especially effective on the red spider, a pest gaining prominence in the insect control program. It was found that the oil sprays not only controlled the adults of this insect, but also killed the eggs. Since the first introduction of this material, many of the highly refined oil sprays have been placed on the market, and now petroleum companies are taking an active interest in refining oils for spray materials.

In 1915 George Gray discovered the important relationship that existed between the refining of petroleum oils by the use of sulphuric acid and the tolerance of plants to oils. This led to the adoption of the "sulphonation" test for oils which are to be used in the sprays. The test is based on the percentage of the oil that will combine with sulphuric acid by agitation. Distillate oils are treated with sulphuric acid or liquid sulphur-dioxide in order to remove

the impurities or damaging factors such as sulphur, resins, and unsaturated and aromatic hydrocarbons. According to Professor De Ong of the University of California "the oils which by refinery process contain the smallest amounts of unsaturated hydrocarbons are, so far as we know, the safest for use in spraying trees." The remaining residue that will not combine with sulphuric acid is called "unsulphonable" material. After the oil is treated in this manner it is washed with a solution of caustic soda to remove the unchanged petroleum acids and phenols as well as the sulphoacids and sulphuric acid remaining in the oil.

The viscosity of the oil used in sprays has been found to have an important bearing on the insecticidal value of the oil sprays. The lighter oils do not have quite as good a kill on the scale insects as is found in the case of the heavier oils. However, the real heavy oils have been accused of causing an interference with the proper functioning of the plants, especially if they are used late in the year. For this reason there is a tendency to use the medium oil sprays when the growers "choose to spray." The Saybolt scale of measuring is used, and the viscosities are generally stated as being measured by the Saybolt method.

By experimental work it has been found that the light, refined, volatile oils may be expelled from the breathing system of an insect although the oil may penetrate these breathing tubes very readily. However, if the volatile oils have not been highly refined and contain the unsaturated hydrocarbons the oil will dissolve the interior parts of the body—but the plants are acutely injured as well.

In the case of the heavy, highly refined oils it has been found that they do not penetrate quite as far into the main tracheal trunks of the insect, but this type of oil is not expelled and seems to kill the insect by suffocation. The killing effect of these oils is greatly increased by the content of the

damaging hydrocarbons, but so are the plants injured by these products. For this reason toxicity of oils has had to be sacrificed for safety to plants, and the standard types of oil sprays to date have had to depend on suffocation of the insects instead of killing them more effectively with materials that would damage the trees. It must be remembered that in any kind of pest control there is such a small margin of safety between the point of injury to the plant life and the point where a material will kill insect life that extreme care must be practiced in the use of pest control measures.

The red scale and the purple scale are known as "armoured scales" and the investigators have found that the oil in the sprays acts as a wax solvent, and tends to penetrate the hard wax material, then killing the insects by suffocation. De Ong feels that this action of the sprays is confined more exclusively to the quick-breaking type of oil sprays, where the free oil is given a chance to dissolve the wax of the scale covering and lodge in the breathing tubes of the scale insects.

The type of oil sprays that are used at present are called the "oil-in-water" sprays. Water is the carrying agent for the expensive oil material which acts as the insecticide. However, it is necessary to use an intermediate agent or emulsifier to disperse the small drops of oil through the water. Due to the development of the oil emulsions of the quick-breaking type the water is allowed to separate out as soon as the spray hits the object sprayed and a film of pure oil is left on the sprayed surface or on the insects to be killed. Thus the mixture must be just unstable enough to permit the oil and water to separate when the insecticide hits the object sprayed. If this were not the case, and the emulsion was extremely stable, then the oil insecticide would run off with the water and the spray would be ineffective.



Ramona Pageant

WITH the promise of hills gayly carpeted with spring flowers and orchards in full bloom, thousands of Southland visitors and residents are planning a delightful motor trip to Hemet for the annual presentation of the Ramona Pageant, picturesque outdoor spectacle to be presented for the sixth time this year, on three successive week-ends, Saturday and Sunday, April 21 and 22, April 28 and 29, and May 5 and 6.

Against the background of towering old Mt. San Jacinto, the famous play immortalizing the romance of old California will again be staged by the townsfolk of Hemet and San Jacinto, with the huge Ramona Bowl as the theatre. This year, for the first time, the colorful pageant will be presented by the newly organized Ramona Pageant Association, which takes the place of the Chambers of Commerce of Hemet and San Jacinto. It remains, however, a strictly non-profit community enterprise.

Garnet Holme, who adapted Helen Hunt Jackson's famous novel for presentation as

a colorful outdoor drama and has directed the spectacle since its inception in 1923, will direct it this year. Plans more elaborate than ever before are being made by Edward Poorman, president and general manager of the new association, who managed the drama last year and has played an important role in all the performances to date.

The role of Ramona, beautiful Indian maiden, will be played by Dorise Schukow for the fifth time. Wires have already been dispatched asking Victor Jory, who has been the Alessandro of the story for the past three years, to again come from Denver to enact the role of Ramona's unfortunate lover. The people of the district in the shadow of Mt. San Jacinto and Mt. Tahquitz will again play the parts that their ancestors played in real life when the white men first came to California.

Originally discovered accidentally by two hunting parties on opposite sides of the huge pocket, the extraordinary acoustics of the spot are responsible for the staging

(Continued on Page 19)

Thrift

By GERALD G. BLUE

Manager Insurance & Personnel

THERE is going to be an old man dependent upon you some day. No, he is not a relative—he is yourself!

We who are young and those of us in middle life, absorbed in the pleasures and individual achievements of the present, underestimate, or minimize, at least, the ever attendant contingencies of impaired health, old age, and the consequential decrease of earning power which follows. True, if we are at all observant, we surely must see the resulting tragedies thereby occasioned, yet we carry on giving comparatively little thought to the matter of making provision for the future.

There are two roads of life which we may follow. One is Extravagance, and leads to poverty and all the misery that accompanies that condition. The other is Thrift and shows us the way to future consolation and happiness. This latter road, however, is more difficult to travel, demanding continual self-discipline and perseverance while the road which you should turn from is easily accessible.

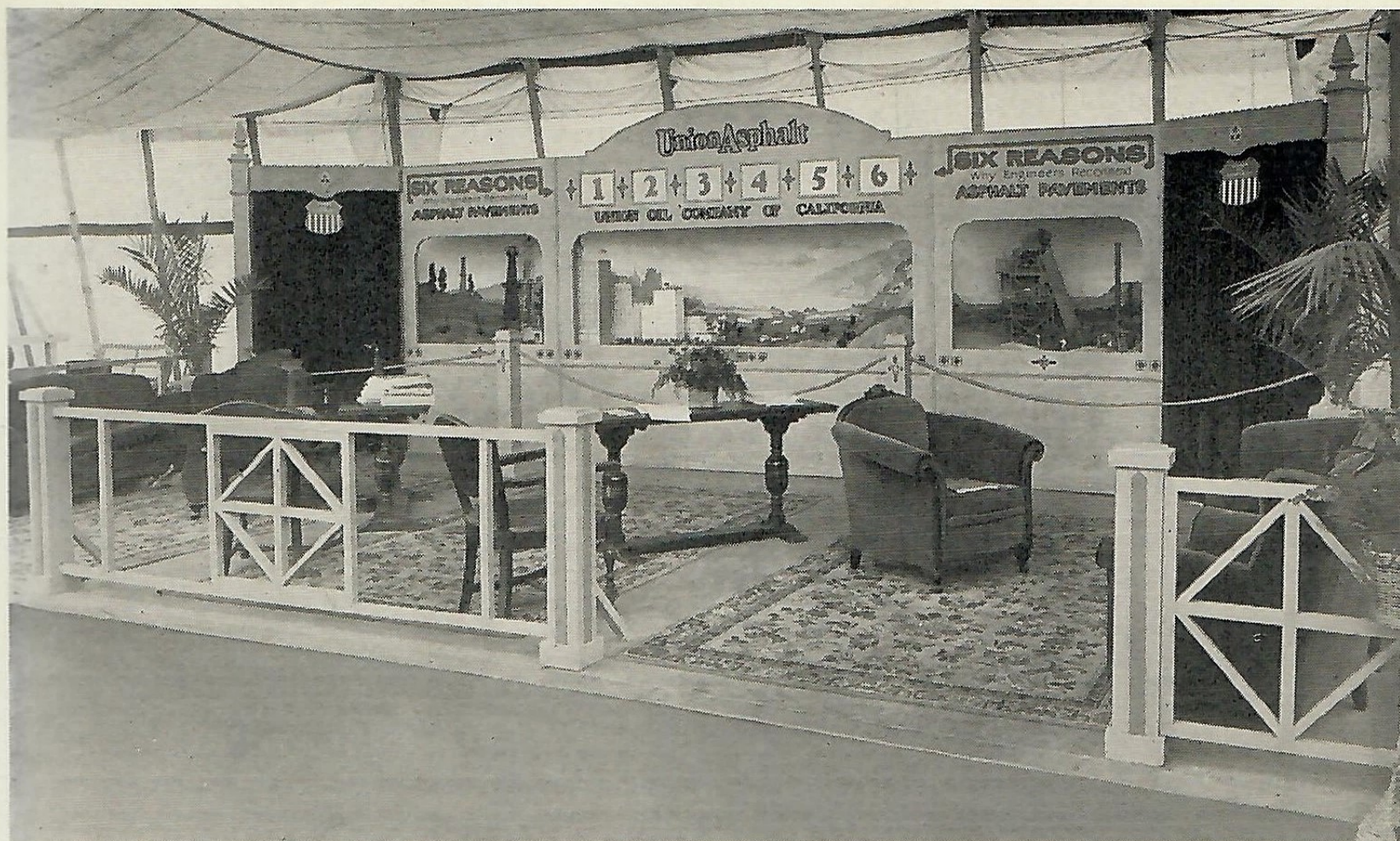
Experience has shown that most of us fail to include Thrift as a certain part of our daily program. We are inclined to live in the happy optimism of Youth or the satisfying successes of middle life. In the indulgence of present opportunities for expenditure, we forget the necessity of making provision for the future. There is only one way we can travel the road of our choice, and that is by maintaining a schedule of systematic thrift during our productive years.

It has been proven that one's ability to save is not a matter of income, but the will to follow a program which insures our future. To maintain a program of thrift today is not child's play—it necessitates

vigorous functioning of the will. If, when we are tempted to engage in some form of extravagance, we would pause and give but a moment in thought to the enjoyment and satisfaction we shall obtain in the future through financial independence, our task would be less difficult. We would find that it is just as possible for us to train ourselves to resist the temptation of gratifying unnecessary desires and to save something each week and each month as it is to develop ourselves to earn the funds with which the desires and whims may be satisfied.

The starting point on the road to future independence, and upon which your success depends is "Spending Less than you Earn." When one begins to earn a little more than is actually needed for current living expenses there usually follows the desire for many things which were formerly not considered necessary for one's happiness. This characteristic is fostered today by various plans of part payment or installment buying, which with a few exceptions constitute an unsound practice so far as the buyer is concerned, and are in direct contrast to the basic principles of thrift. They first create a desire for things out of one's financial reach and then make it possible for one to acquire those things. Such articles usually cost from 10% to 25% more than their cash value. They are a three-fold menace to thrift. First, they create a desire for articles we could get along without; second, they decrease the purchasing value of one's dollars, and third, they result in worry, and weaken one's will to save. The elimination of unnecessary purchase is one of the first principles of thrift. Repeated exercise of the will in so doing, and in the assurance that you are fortifying yourself

(Continued on Page 19)



Union Oil Company's exhibit at the recent Western Road and Equipment Exposition, Los Angeles

Western Road Show

WHEN "Doc" Weddleton, Grounds Superintendent and showman extraordinary, drew the final curtain on the Western Road and Equipment Exposition on the evening of March 11th after a five-day display of over \$3,000,000 worth of machinery and equipment by nearly 200 exhibitors, he officially closed the third and in many ways the greatest of all Western road shows.

Contractors, engineers, material men, equipment representatives and public officials unanimously voted the Los Angeles exposition to be the most profitable and enjoyable session of its kind they had ever attended.

And all of the many thousands who visited the diversified exhibits, met the men in charge and discussed with them the products they represented, came away from the huge tents with one fact firmly entrenched in their minds: "It is possible to build better highways at a greater saving of time, labor and expense."

This, in short, was the keynote of the whole exposition, and to effectively demonstrate the truism from the standpoint of road material, F. P. Smith of the Asphalt Department, Union Oil Company, installed the display pictured above.

The display proper consisted of a large center panel supported by a smaller wing at each end. The center panel depicted a miniature road crew, fully equipped, in the act of resurfacing an old pavement with asphaltic concrete. This scene received much favorable comment from contractors who enthused over the accuracy of detail. The left and right panels were an oil field scene and an asphalt paving plant in operation respectively. Surmounting the whole were the numbers one to six inclusive, each on an individual glass panel. These represented the six reasons why engineers recommend asphalt pavements. The reasons themselves appeared successively with the number by which each was designated, an intermittent flasher system with powerful

(Continued on Page 19)



Who now holds the Major F. R. Burnham trophy? See page 20.

What are the two principal methods of insect pest extermination in the citrus industry? See page 12.

Who wrote the novel "Ramona"? See page 13.

How did Tampico derive its name? See page 3.

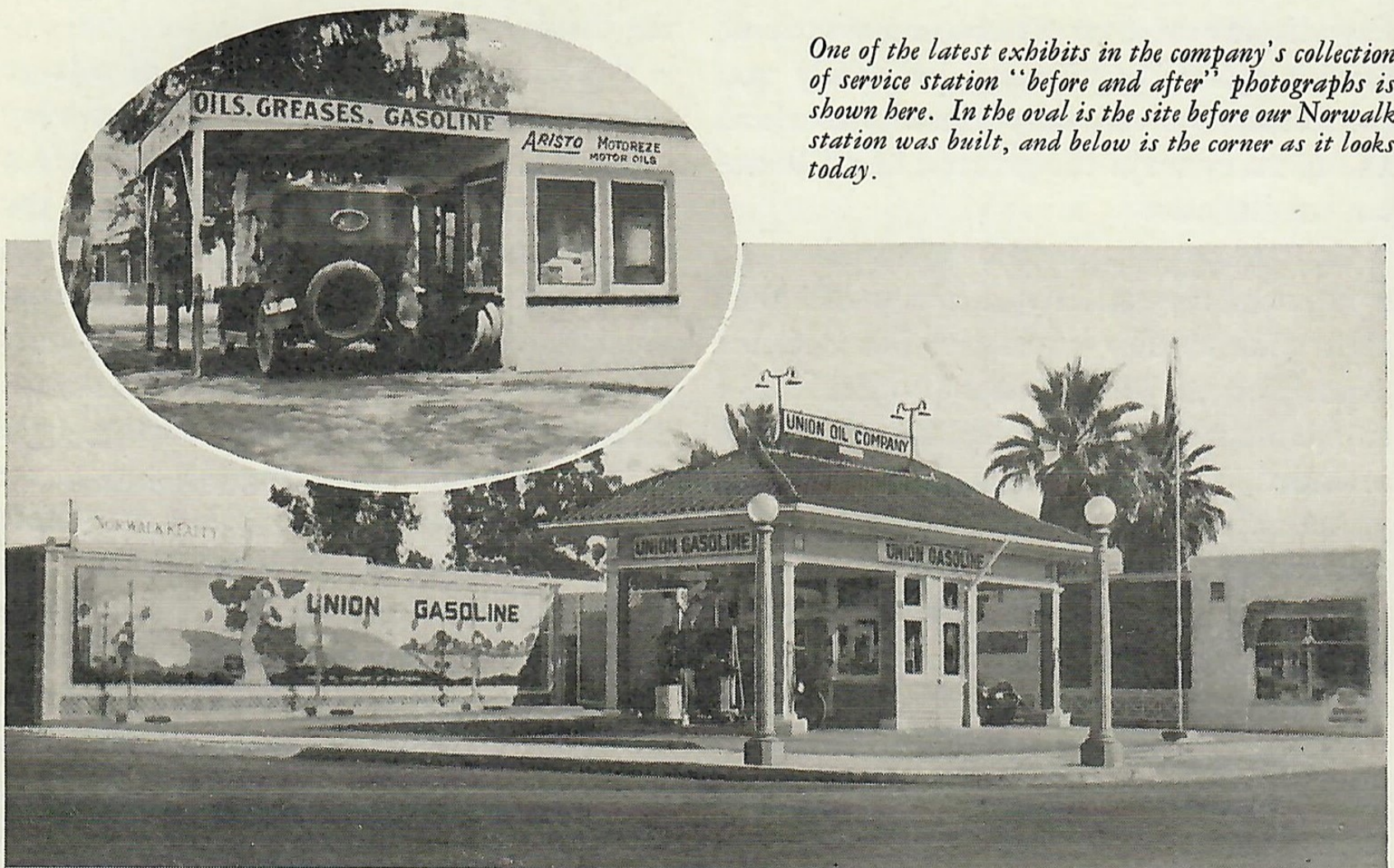
What are two of the latest additions to the West's aerial transportation system? See page 18.

How do the oil structures of Mexico differ from those of California? See page 7.

How do spray oils kill insects? See page 12.

Is the annual Ramona Pageant staged for profit? See page 13.

Contrast



One of the latest exhibits in the company's collection of service station "before and after" photographs is shown here. In the oval is the site before our Norwalk station was built, and below is the corner as it looks today.

NEWS OF THE MONTH



ST. FRANCIS DAM

Early in the morning, Tuesday March 13th last, owing to the failure of the St. Francis dam, a deluge of water flowed through the Santa Clara Valley causing considerable loss of life and damage to property. The flooded area extended about forty miles from the dam site and has long been associated with the history of Union Oil, as the company's activities were all centered in this area some thirty years ago. The disaster brings to the hearts of our organization the warmest sympathy for those who have suffered.

The company's loss was insignificant and such pipe lines as were damaged were promptly repaired. The work of rehabilitating the damaged area generally is being conducted under the coordinated efforts of committees representing residents of the Valley and the City of Los Angeles. P. N. Boggs of our company has been rendering aid in this work from whom we learn that efficient progress is being made in the restoration work.

NEW DRILLING OPERATIONS

Among the new wells spudded in by the company during March are McLeod No. 14, Purisima No. 19, Naranjal No. 13, Morse No. 8 and Callender No. 23. The location of Purisima No. 19 marks the first activity on this property since 1923.

ORGANIZATION CHANGE IN STORES DIVISION

Effective March 1st, George Leonard was appointed Storekeeper at Santa Fe Springs, California, to succeed J. D. MacClocklin, who has been transferred to the Field Department as assistant to R. G. Hilsinger, Truck Dispatcher.

SUBSIDIARIES DISSOLVED

The Mission Transportation and Refining Company and Union Transportation Company, both wholly owned companies, have been voluntarily dissolved under a decree of the Los Angeles Superior Court. The properties of both companies have been transferred to Union Oil Company of California.

A RECORD FOR DIESEL LUBRICATION

Word was recently received from R. G. Chester, Chief Engineer of the Elko Lemoille Power Company at Elko, Nevada, that a remarkably long run of 142 days without a shut-down has been chalked up by their Busch-Sulzer, 365 H.P. full Diesel engine. During a period of eight months, including the 142-day run, the unit was shut down only 32 hours. A photograph of this installation appeared in last month's Bulletin.

The lubricants used in the unit are Union Diesel Engine Heavy for crank shaft and cylinder lubrication, Union Compressor Oil for compressor cylinder lubrication and Shasta E. D. & T. for generator and exciter bearings.

This is further evidence of the superiority of Union Oil Company products under the most exacting conditions—where faulty lubrication would cause disastrous results. Mr. Chester is directly responsible for the engine's efficient operation and we greatly appreciate the operating data which he has furnished us.

WASTE DISPOSAL COMPANY INCORPORATED

Articles of incorporation and by-laws of the Santa Fe Springs Waste Water Disposal Company were signed and directors and officers elected March 19th. The officers are: C. C. Scharpenberg, Standard Oil Company, President; H. C. Ferry, Union Oil Company, Vice-President; H. L. Emerson, General Petroleum Corporation, Secretary; J. E. Elliott, Elliott Petroleum Corporation, Assistant Secretary; H. B. Haney, Associated Oil Company, Treasurer.

Mr. Ferry recently returned from an inspection of the proposed waste water disposal system in the Santa Maria Field, which is to be a Union Oil Company project exclusively.

NEW PIPE LINE IN KERN COUNTY

Construction of a 7,000-foot pipe line to receive oil production from the Fruitvale oil field west of Bakersfield has been completed by the company. While no drilling is contemplated in the Fruitvale area, crude oil will be purchased and transported to the Bakersfield Refinery via the new line.

GENERAL SALES ORGANIZATION CHANGES

H. H. Brown, formerly Assistant District Sales Manager at Portland, has been appointed second Assistant District Sales Manager, Seattle. F. W. Tucker, formerly Jobbing Oil Sales Representative, was appointed Assistant District Sales Manager at Portland, succeeding Mr. Brown. C. C. Clementson, formerly second Assistant District Sales Manager, Seattle, replaced Mr. Tucker as Jobbing Oil Sales Representative.

G. Matheson, formerly Special Agent at Woodland, California, was appointed Special Agent at Reno, Nevada, succeeding D. E. Ericson, resigned. Percy C. Weston, formerly Agent at Lodi, replaced Mr. Matheson as Special Agent at Woodland.

CHANGES IN LUBRICATING SALES ORGANIZATION

Increased lubricating oil sales and general competitive conditions have prompted a number of changes in the lubricating sales organization. W. L. Standard, Manager Lubricating Oil Sales, announces the following territorial transfers of Lubricating Sales Engineers: E. W. Hutton, from Portland to Los Angeles; S. W. Dubbins, from Seattle to Sacramento; D. A. Cain, from Los Angeles to San Diego; M. C. French, from Sacramento to the office of Manager Lubricating Oil Sales.

Effective April 1st, Walter Davis, Lubricating Sales Engineer, Oakland, has been appointed Railroad Lubrication Engineer, reporting direct to Mr. Standard. Mr. Davis will assume active charge of an intensive sales campaign now being conducted in the railroad lubrication field.

Four new Lubricating Sales Engineers have been added to the staff. They are: B. E. Hannon, Los Angeles; A. L. Harmon, Oakland; H. W. Warne, Seattle; J. R. Newgent and Otis A. Katfa, Portland.

NEVADA GOVERNOR ENTERTAINED

Governor F. B. Balzar of Nevada visited the Western Road & Equipment Exposition in Los Angeles last month as a guest of Asphalt Representatives G. E. Acheson and S. I. Harris.

While in Los Angeles, Governor Balzar was entertained by E. W. Clark. The two have maintained a friendship since boyhood, although this was the first meeting in 36 years.

ERRATA

A. E. Fowks, author of the article "A Petroleum Industry of the Sixteenth Century" published in the March Bulletin, is Assistant to Director of Exploration and Production instead of Assistant Manager Field Operations as stated at the head of the article.

THIS MONTH'S COVER

"In Old Mexico," by Aaron Kilpatrick, is the painting reproduced on this month's cover. It depicts a scene in the quaint and colorful village of Cuernavaca, Mexico.

Mr. Kilpatrick, while new to the Bulletin, is an old favorite among art lovers of the west, and is one of that group of artists whose canvases are making the history of the Fine Arts of their time in California. The Bulletin hopes to have the privilege of reproducing more of his work in the future.

Single reprints of this cover suitable for framing may be had from G. G. Blue, Manager Insurance and Personnel, for fifty cents.

NEW AIRLINERS IN OPERATION

Two new passenger and freight lines have recently been added to the West's rapidly growing aerial network.

The West Coast Air Transport Company of Portland, Oregon, began operation on the San Francisco-Portland airline on March 5th, handling passengers and freight. This company is operating ten-passenger, tri-motored Bach Air Yachts fully equipped with all conveniences for the comfort of passengers, on a regular daily schedule. This line will be extended to Seattle and Los Angeles. Additional orders have been placed for twenty-two-passenger cabin ships with the Bach Aircraft Company of Venice, California. Charles V. Eakin is General Manager of the West Coast Air Transport Company.

The Scenic Airways, Inc., of Grand Canyon, Arizona, J. Parker Van Zandt, President, will begin a regular daily schedule about April 1st of scenic trips over the Grand Canyon, through Northern Arizona to Phoenix. This company will use ten-passenger tri-motored Ford all-metal planes.

MARINE NOTES

Tanker La Brea made deliveries at Honolulu and Kaanapali, T. H., March 15 and 16, this being the first trip to the Islands for a number of years.

Tanker Radiant underwent her semi-annual dry-docking, boiler cleaning, and annual Government inspection at San Francisco early last month. Tanker Deroche underwent similar repairs at Los Angeles during March.

Tanker Warwick struck a submerged object in the Columbia River a short time ago, but was allowed to proceed to San Francisco where she was drydocked. Two new propeller blades were installed and the tail-shaft drawn.

OLEUM REFINERY FOREMEN BANQUETED

The second annual banquet of the Oleum Refinery Foremen's Association was held in Pinole, March 17th. There were forty foremen and assistant foremen in attendance and not one experienced a dull moment all evening.

Judge D. J. Parker, District Engineer of the U. S. Bureau of Mines acted as toastmaster assisted by E. W. Smith, President of the Association as master of Ceremonies. The speaker of the evening was B. G. Piutti, secretary of the California Management Association who spoke on "The Relation of the Foreman to Management." The committee in charge of details included S. V. Sharpe, chairman, O. N. Nichols, and M. Boxell.

The entertainment left nothing to be desired, while the eats including the limburger sandwiches were sunk without a trace. The next get-together of the Association will be in the form of a barbecue to be held in the near future.

NEW REFINERY FOREMAN AT BAKERSFIELD

B. L. Johnston, formerly in charge of the laboratory at Bakersfield Refinery, has been appointed General Foreman replacing B. G. Bragg, transferred to General Service Department, Los Angeles Refinery.

FRESNO ORGANIZES EDUCATIONAL CLUB

A club known as the Aristo Educational Club has recently been organized in the Fresno district. The club has been organized with three distinct divisions—Social, Educational and Recreational, and is designed to meet the requirements of all of the members in any of these activities.

The officers consist of the following: A. B. Simpson, President; H. S. Hamilton, Vice-President, Social Activities; C. S. Aubrey, Vice-President, Educational Activities; P. W. Wilcox, Vice-President, Recreational Activities; B. W. Harrison, Secretary, and Mrs. S. L. Rinchart, Treasurer.

ALAN I. OPENSHAW

Alan I. Openshaw, Gas Inspector at Maricopa, was instantly killed and F. M. Penter, Superintendent Northern Gas Division, fractured his left collar bone in an automobile accident March 25th, 1928. Both men were on duty for the company at the time of the accident, which occurred ten miles east of Santa Maria on the Cuyama Road. While traveling up a winding ascent the car lost traction and steering-way and after coming to a stop, slid across the road and down a steep embankment. As it struck the bottom it overturned, crushing both men to the ground.

A formal investigation was made by a board of inquiry consisting of E. C. Critchlow, Superintendent Coast Division, R. W. Garman, Manager Gas Department, W. S. Grant, Assistant Manager Insurance & Personnel, and Geo. F. Prussing, Secretary Safety Board. As a result of this investigation, Mr. Penter, who was driving at the time of the accident, was absolved of any negligence.

Mr. Openshaw was employed in 1922. He leaves a widow and six children. Two brothers, R. G. and Ralph Openshaw, are employed by the Gas Department at Fort Collins, Colorado, and Santa Fe Springs, respectively.

Thrift

(Continued from Page 14)

with a reserve against adversity and old age, soon brings one to a point where being thrifty is a pleasure.

There are two other elements of thrift that must not be overlooked and are second in importance only to "Spending Less than you Earn." They are: First, the "Investment of your Savings" and second, the "Re-investment of your Interest." You are laughing at your toil and your success in saving if you buy bubbles or gamble with your savings. The chances of becoming independent through gambles or spectacular financial ventures are about one in a thousand. On the other hand, the chances of becoming well-to-do as a result of hard work, thrift, and sane investments are about a thousand to one.

The indications of a good investment are security of principal and stability of income. First, and most important of the

two, is the safety of the principal, or your savings. As to the income, or interest, the thing to be given first consideration is its stability and not the rate. Always satisfy yourself as to the safety of the principal, never letting go of your savings until you are certain you cannot lose. The exercise of the same care in the re-investment, or the investment of your interest, means that you obtain compound interest, and therein lies the greatest power towards the realization of your goal.

Life is strenuous. The productive period is short. During that time the tax upon the system is great. We cannot expect to possess the productive capacity in old age that we now have, even though we may be fortunate enough to escape some kind of disability through illness. It therefore behooves us to presently govern ourselves so as to insure the blessings of life at a time when they will certainly be most highly cherished. The means to this happy end is —THRIFT!

Ramona Pageant

(Continued from Page 13)

of the pageant in what is now called the Ramona Bowl. The faintest whisper on the stage is heard distinctly by those occupying the seats on the highest part of the rim. In 1923 the 3000 persons who saw the first performance sat upon rocks; since that time the natural amphitheatre has been transformed into a big concrete bowl without, however, destroying any of the beauty of the spot.

The triple appeal of the outdoor drama, its picturesque setting, and the scenic drives that lead to Hemet have made the Ramona Pageant the outstanding outdoor production of all California, and have brought more and more people every year. From the 3,000 who witnessed the play in 1923, the attendance has increased to 18,000 last year, and from the reservations now being received the total will be increased thousands more this year.

Western Road Show

(Continued from Page 15)

illumination having been employed to give this effect. The reasons enumerated were: (1) Economically laid and maintained; (2) Smooth surface and no joints—low tractive resistance; (3) Easily and quickly replaced; (4) Absorbs impact of heavy or fast traffic; (5) Waterproof, noiseless, dustless, easily cleaned; (6) Satisfactory for resurfacing.

The booth was in charge of Mr. Smith, assisted by Asphalt Representatives G. E. Acheson, S. I. Harris, R. R. Resseman, T. J. Bailey, T. F. Thompson and Wm. Weir, who had the pleasure of acting as hosts to many prominent road engineers.

As an exhibitor, Union Oil Company is proud of the complete success of the Third Annual Western Road and Equipment Exposition, and congratulations are extended Dan Brown, President, Western Construction Equipment Distributors, Inc., and his staff on their achievement.

S P O R T S



DOMINGUEZ WINS BURNHAM TROPHY

The annual play-off for the company bowling championship for the season 1927-1928 took place on Thursday evening, March 8th, and as a result the Dominguez district team grabbed off the honors and possession of the handsome Major F. R. Burnham trophy for the coming year. In addition, George Berry of the Dominguez team rose to great heights in shooting the high three game total of 656 to annex E. W. Clark's special prize, a bowling ball.

In taking the honors from Phoenix, last year's winners, the Dominguez stalwarts had a real fight on their hands and were forced to topple 2,779 pins into the pit to pull out on top. Their next-door neighbors, Orange district, and the Spokane boys were right on their heels from the time the first ball crashed down the alleys and the slightest let-up on the part of the winners would have very quickly ousted them from the top. Spokane in particular rolled a beautiful series of 888, 952 and 924 for a grand total of 2,764 pins, and had it not been for Berry's sensational 256 in the second game for Dominguez the story might easily have been different. However, all the Dominguez boys rolled in top form and there was no fluke about their victory.

Most of those in last year's competition were on hand again, San Francisco being the only team who did not again enter. We hope to see them in again next year. Colorado entered but unfortunately had to withdraw at the last minute through some of their best men being unable to show up.

A new team in the play-off this year was the Fresno district, and while they did not cop the honors in their first attempt, they showed the proper spirit and we look to see them improve their standing greatly next year.

The competition was again a great success and it is hoped that many more teams will get into the play-off next year. From all reports, Dominguez is going to have to do even better if they wish to retain the proud title of champions.

The complete scores of the play-off follow:

	1	2	3	Total
Dominguez District	916	971	892	2,779
Spokane	888	952	924	2,764
Orange District	908	858	888	2,654
Phoenix	862	855	865	2,582
L. A. Ref'y Wilmington	812	842	887	2,541
Los Angeles	872	805	802	2,479
Oleum Refinery	788	880	730	2,398
San Jose	737	752	719	2,208
Fresno	642	676	627	1,945

THEY SERVED ROLLS

On Tuesday evening, March 13th, more than eighty employees from the Los Angeles district attended the annual banquet of the district bowling league held at the Moulin Rouge Cafe, Los Angeles. A business meeting was called at the close of festivities during which A. E. Morrison and C. L. McLaughlin were elected chairman and secretary-treasurer respectively for the ensuing 1928-29 season.

L. A. CAGERS DEFEAT SAN DIEGO

The advantage of more experience on the part of the Los Angeles District basketball team proved too much for the plucky San Diego quintet, and the northern boys emerged victors in their recent tilt by a score of 41 to 26.

Christianson and Tony Medak starred for the winners, being credited with 16 points and 14 points respectively. Hostetter and Kunzel played stellar roles for the San Diego squad.

The game, which was played in San Diego, was witnessed by a large crowd of rooters including a goodly sprinkling from the northern camp. A great deal of enthusiasm and friendly rivalry was shown by both sides, and it is hoped that the game will be made an annual event.

INDOOR LEAGUE FORMED

An indoor baseball league comprising eight teams recruited from the various departments of head office and the Los Angeles branch has been organized and play is scheduled to begin about April 3rd.

Games will be played Tuesday and Thursday evenings at the Polytechnic High School and Belmont High School.

GIRLS WANT GAMES

The newly organized basketball team made up of girls in the Geological and Land Department and the Field Department in head office wish to challenge all other departments in the Los Angeles district having a similar organization. Games will be played at Belmont High School gymnasium. The team is being managed by Charlotte Rickenbacker and Consuelo Willard is captain.

WE DON'T VOUGH FOR THIS

One evening recently the Richfield Gas bowlers were hosts to the Dominguez "gang" at a party held at the home of Mr. and Mrs. Harold Keans. While the ladies remained at home the men gathered at the Fullerton Bowling Alleys. We don't have complete details as to what ensued, but it is reported that Richfield rolled some exceptionally high scores and took home everything but the pin boys.

SAFETY IN THE UNION



LOS ANGELES SAFETY MEETINGS

More than forty members of the Engineering Department construction staff in the Los Angeles basin have been attending the weekly sessions of the Chamber of Commerce safety school. The program for the construction men is sponsored by the Southern California Chapter of the General Contractors of America and extends over a period of four consecutive Wednesday evenings. Following the precedent established in 1926, K. M. Douglas, Assistant Engineer of Construction, entertained his men with dinner prior to the meetings.

Paralleling the construction programs, the petroleum section of the National Safety Council has sponsored weekly meetings of oil men interested in the safety aspects of the operating phases of the industry. On March 14th, F. F. Hill, Manager of Field Operations was host at dinner to more than thirty superintendents and foremen, who later attended a program on "Safety in drilling and producing operations." On the following Wednesday evening, J. C. Rector, Superintendent of the Southern Division, Department of Gas Operations, entertained his staff at dinner. Later they listened to a discussion of their safety problems put on by the California Natural Gas Association. The third meeting was devoted to the refining end of the business, with L. G. Metcalf, Assistant Manager of Refineries, furnishing half the program in his usual vigorous fashion.

As the Bulletin goes to press the last of the meetings is yet to be held. This will cover the hazards at bulk marketing and service stations. On the same evening, W. W. Hay, Superintendent of the Los Angeles Pipe Line, will entertain his maintenance foremen at a joint dinner with the construction forces, and later attend the last program of the General Contractors.

SALES ACCIDENTS

Spokane and Seattle Districts of the Sales Department have active safety committees at their respective main stations. With respect to their own local problem these committees have done good work. There still is much that can be done, however. The hazards that beset sales employees are peculiarly personal. The machinery hazard is practically limited to the dangers that every automobile and truck driver knows. It is in the proper handling of barreled and package goods, in the avoidance of falls and strains that safety lies.

February was a bad month. The lost-time accidents in the Sales Department are given below:

Service Station Salesmen: Washing windshield; car owner slammed door on his hand. One day lost time. Taking grease cap off tank, caught hand between spare tire. Six days lost time. Lifted 15-gallon container from box to floor. Two days lost time. Cleaning ceiling lights with soap and water which ran onto rungs of ladder; he slipped and fell to ground. Estimated twenty-eight days lost time.

Tank Truck Salesmen: Climbing ladder to fill tank, foot slipped and he fell to ground. Estimated thirty-two days lost time. Cranking truck; crank slipped out of place. Twenty-six days lost time. Making

delivery gasoline, struck by runaway car. Estimated twelve days lost time. Lifting barrel of oil. Two days lost time. Lifted bucket of oil from truck, slipped on pavement and fell heavily. Ten days lost time. Loading barrel onto truck; barrel struck him. Estimated thirty days lost time. Lifting barrel from ground to platform. Seven days lost time.

Truck Salesmen: Trying to fasten barrel carrier on truck, dropped it. Eight days lost time. Unloading cans from trucks, scratched hand. Ten days lost time.

Warehousemen: Stepped from loading rack to truck, slipped and fell. Two days lost time. Descending ladder after gauging tanks; missed footing and fell. Time lost "Unknown."

Engineer on Barge: Lifting 6-inch hose from barge to dock, slipped and dropped it. Nine days lost time.

Yard Man: Taking temperature test; slipped on top of tank car. Estimated forty-two days lost time.

Operator Oil Barge: Moving drums of oil. Estimated twenty days lost time.

CLEANING TANKS

There are a number of very dirty and prosaic routine operations performed by oil men that are fraught with considerable danger. One of these, requiring more than ordinary care, is the cleaning of tanks. The general public, that buys its petroleum products as water-white gasoline or kerosene, as clear lubricating oil or even black fuel oil, free of water and dirt, little knows the labor involved in achieving these refined products. Not so the men in the refineries, or out in the producing fields or on the pipe lines that carry the oil to market. They know by daily contact the sand, mud and water which comes from the well and which must be settled-out in tanks or separated by elaborated treatment with heat and high-voltage electric current. They have slithered around on the bottoms of steel tanks and reservoirs, knee-deep in the liver-like mass that must, every so often, be cleaned out and disposed of. They know too, that where there is oil there are bound to be nauseating fumes and a constant danger of fire.

There is nothing new in all this, to the experienced oil man. It is part of his technique, his craftsmanship. He knows that men have been overcome by fumes and occasionally a tank has taken fire while being cleaned, with tragic consequences. And not infrequently he develops a fatalistic attitude toward these familiar dangers and dismisses them from his mind. He may someday "get his" but he refuses to worry about it.

The foreman or superintendent, charged with the safety of his men and the security of his company's investment in costly equipment, has a different viewpoint. He searches out the reasons for accidents and tries to profit by the experience of others. A man may gamble with his own life but no one willingly risks the lives of men entrusted to his care.

Recently the men who direct the work of cleaning tanks for this company compiled what they consider the *minimum* safe practice rules to be observed when tanks are to be cleaned or repaired. Special precautions must depend on local conditions, but it was felt

to be valuable to set down on paper the few essential requirements that experience dictates. These rules have now been approved by the managers of all operating departments. They follow very closely the rules adopted last year by the marine departments of the major California oil companies and recommended to the American Petroleum Institute for general adoption on all American tank ships.

SAFE PRACTICE RULES TO BE OBSERVED WHEN OIL TANKS ARE BEING CLEANED OR REPAIRED.

1. Before men are allowed to enter a tank which has contained petroleum or its products, two openings such as manholes or door sheets shall be provided and the tank thoroughly ventilated.

2. No repair work involving use of fire or spark producing tools shall be undertaken in such a tank until:

(a) all lines leading to it shall have been disconnected or slip-blanked and the oil remaining in tank nipples has been swabbed out and

(b) the tank has been passed as "gas-free" by a competent person using approved gas testing apparatus.

3. No iron or steel tools, buckets, brushes or other implements shall be used in cleaning tanks that have contained gasoline, distillate, naphtha or crude oil so long as gas or oil are present.

4. Two or more 2½ gallon hand extinguishers shall be kept close at hand by men doing tank repair work.

5. Where door sheets or portions of roof are removed for purpose of ventilation, all repair work shall be completed before such openings are closed.

6. Where it is necessary because of an emergency, for a man to enter a tank that has no door sheet opening or that is not gas-free, he shall be equipped with a fresh air mask, safety belt and rope, and at least two attendants shall be at hand, one to work the blower of the fresh air mask, the other to handle the life line.

THE SAFETY MAN

The safety man should not wait for others to suggest the various methods or ideas by which accidents may be prevented. He should always be on the alert for any improvement which is practical and will be of a benefit to all. He should study the various operations, etc., performed in his plant, become familiar with them and thus be able to determine what is needed for the protection of the men.

The safety man must realize that while a foreman may be held responsible for any accidents which occur in his shop it is only by close cooperation with such men that he can be successful in his endeavors. There is no body of men who can do so much to help the safety man in his activities as the foremen. They are in constant contact with their men, they know the operations performed in their shops and no safety man who is alert and progressive will fail to cooperate with them to the fullest extent. Often the safety man can be of service to the foreman by suggesting a change that will improve a certain operation and still not be a safety measure. Foremen appreciate the suggestion of ideas other than those dealing with safety. When the safety man demonstrates to the foreman that he is interested in other plant endeavors besides his own, he is making a friend who will often render him unexpected help in his safety work.

In his dealings with the men, a real safety man will prove to them by his actions that he understands their problems. He will not always be ready to say the

accident was caused by the carelessness or indifference of the injured person. In his contact with the men he should be friendly. When a safety man shows the men that he is one of them, that he talks their language and understands the things they are doing, he is in a much better position to secure their cooperation in the elimination of unnecessary accidents. The men will not fail to do their part. They will help him by suggesting improvements he may not know about and which are easily made. They will cooperate with him by doing whatever they can to avoid accidents. The safety man who has the men of the plant behind him in his endeavors to advance the interest of safety cannot fail to secure results which spell success for him. —From a forthcoming publication of the National Safety Council.

AN ENGLISH COMPANY'S EXPERIENCE IN ACCIDENT PREVENTION

"We had a remarkable experience in regard to this matter soon after 1914, when so many of our co-partners joined the Colours. In a comparatively short time our accidents more than doubled. Now this was not due to a badly designed or inefficient plant, but to the greater carelessness of our temporary employees. It has taken a long time to get straight again, but I am glad to say we are now down below pre-war figures.

"The most potent factor in bringing about this reduction has undoubtedly been the holding of inquiries into all accidents which necessitate absence from work, as well as such others as may have had serious characteristics. Juries of twelve workmen, provided in rota from a panel in which various departments are represented, examine witnesses, discuss in private, and return verdicts and make recommendations. The system has worked admirably for a great many years, and if generally adopted would, in my opinion, achieve more useful results than could possibly be obtained even by a large army of inspectors under an Act of Parliament.

"Theoretically it should be possible to eliminate all accidents; in practice it is impossible. One has only to compare the number of street accidents with factory accidents to realize how true it is that individual carelessness claims most victims."

—From an address by Charles Carpenter, President, South Metropolitan Gas Co., London, Eng., quoted in "The Economist."

VALLEY DIVISION

Trying to rival the really remarkable record of the Coast Division, which, under the direction of Superintendent E. C. Critchlow, has practically eliminated accidents, the Valley Division of the Department of Exploration and Production has gone nearly six months without a single lost-time accident. When visiting Maricopa office a few days ago, we asked the reason but all we got was an "Alphonse and Gaston" act with Superintendent Charlie Woods and "Safety First" Ed Gluyas as the actors. Charlie says Ed is responsible and Ed says his boss has done it. It is our private opinion that they are both right and probably both wrong. True enough, Ed finds the conditions that may lead to accidents and also does a good deal of preaching and Charlie backs him up and finds the money for making equipment safe, but it is the men out on the job who have shown their appreciation by keeping safety in mind all the time. It's a pretty good combination, as the last six months have demonstrated.

California Oil Statistics, February, 1928

PRODUCTION
(Figures of production and stocks are barrels of 42 Gals.)

DISTRICT	BARRELS PER MONTH		DAILY AVERAGE	
	Feb., 1928	Jan., 1927	Jan., 1927	Feb., 1927
Kern River	788,112	27,176	25,079	13,744
Mount Poso	3,106	107	94	207
Round Mountain	2,742	95	39	—
McKittrick	140,383	4,841	4,786	5,146
Midway-Sunset	2,338,172	80,627	79,721	89,584
Elk Hills	707,492	24,396	24,053	34,215
Lost Hills-Belridge	127,780	4,406	4,157	4,704
Coalinga	566,728	19,542	19,568	19,868
Wheeler Ridge	27,650	953	934	1,041
Watsonville	1,667	57	58	58
Santa Maria	189,452	6,533	6,147	4,958
Summerland	3,640	126	125	130
Goleta	9,414	325	302	47
Rincon	12,198	421	437	—
Ventura Avenue	1,547,097	53,348	52,173	50,738
Ventura-Newhall	175,623	6,056	6,307	6,052
Los Angeles-Salt Lake	46,501	1,603	1,518	1,832
Whittier	49,940	1,722	1,664	1,806
Fullerton (Brea Olinda)	495,776	17,096	15,016	24,566
Coyote	401,143	13,833	13,960	14,838
Santa Fe Springs	1,099,255	37,905	38,730	44,381
Montebello	378,022	13,035	12,772	16,590
Richfield	578,484	19,948	21,139	21,147
Huntington Beach	1,680,565	57,951	58,625	83,875
Long Beach	3,436,098	118,486	113,077	93,109
Torrance	567,244	19,560	19,694	25,085
Dominguez	368,066	12,692	12,956	18,558
Rosecrans	217,179	7,489	7,913	11,762
Inglewood	890,527	30,708	31,213	38,234
Newport	638	22	15	48
Seal Beach	1,187,765	40,957	41,545	15,866
TOTAL	18,038,459	622,016	613,814	642,240
January	19,028,228	613,814		
Increase	989,769*	8,202		

*Decrease

STOCKS

	Feb. 29, 1928	Jan. 31, 1927	Feb. Stock Increases	Feb. 28, 1927
Heavy Crude, heavier than 20° A. P. I., including all grades of fuel	96,239,379	95,621,539	617,840	90,301,202
Refinable Crude, 20° A. P. I., and lighter	20,676,318	20,784,053	*107,735	29,913,353
Gasoline	13,267,767	12,919,356	348,411	14,017,263
Naphtha Distillates	1,845,109	1,820,900	24,209	4,033,824
All Other Stocks	9,187,790	9,251,941	*64,151	10,495,741
TOTAL ALL STOCKS	141,216,363	140,397,789	818,574	148,761,383

*Decrease

DEVELOPMENT

	DEVELOPMENT			Daily Initial Output	Active Producing	Abandoned Wells	
	New Rigs Up	Active Drilling	Completed			Drillers	Producers
Kern River	19	18	21	4,005	1,400	..	..
Mount Poso	..	..	..	..	3	..	..
Round Mountain	1	9	..	..	2	..	..
McKittrick	1	..	1	80	295	..	..
Midway-Sunset	5	7	5	1,086	2,839	1	1
Elk Hills	..	..	..	..	226	..	..
Lost Hills-Belridge	..	1	1	60	309	..	..
Coalinga	..	2	2	206	993	..	1
Wheeler Ridge	1	1	..	..	31	..	..
Watsonville	..	..	..	..	6	..	..
Santa Maria	1	4	1	400	226	..	..
Summerland	..	1	..	..	91	..	..
Goleta	1	1	..	..	2	1	4
Rincon	2	14	..	..	3	..	..
Ventura Avenue	2	29	8	15,101	112	1	..
Ventura-Newhall	2	17	2	70	500	4	1
Los Angeles-Salt Lake	..	..	..	..	336	..	..
Whittier	..	..	..	..	179	..	1
Fullerton	2	5	1	4,623	381	..	..
Coyote	..	2	1	50	210	..	1
Santa Fe Springs	..	1	..	..	302	1	..
Montebello	..	2	1	180	177	..	..
Richfield	2	10	..	..	257	..	2
Huntington Beach	4	12	17	3,397	581	..	..
Long Beach	33	163	6	10,344	638	1	5
Torrance	1	1	..	..	650	..	..
Dominguez	1	2	..	..	72	..	..
Rosecrans	..	2	..	..	112	..	3
Inglewood	..	3	1	400	223	..	..
Newport	..	1	..	..	6	..	..
Seal Beach	..	2	2	331	137	..	2
Potrero	..	2	..	..	..	..	..
Miscellaneous Drilling	9	146	..	..	..	3	..
February	87	458	70	40,333	11,299	12	22
January	113	446	43	18,410	11,281	21	37
Increase	26*	12	27	21,923	18	9*	15*
Average for year 1927	97	404	75	39,992	11,276	23	21
Average for year 1926	95	422	76	32,635	11,288	24	17
Average for year 1925	105	417	79	42,247	11,393	28	12
Average for year 1924	103	510	103	42,412	10,903	28	21
Average for year 1923	111	759	82	114,690	8,928		24

*Decrease

REFINED AND CRUDE



Standardization, like a mustard plaster, will only yield satisfactory results, when it is properly applied.

* * *

Thus, a general policy of standardization, without due regard to local and unusual conditions, is bound to be about as efficacious as an extremely blunt pick.

* * *

While, on the other hand, the adoption of tested and interchangeable equipment, wherever practicable, is unquestionably economical, and therefore in the words of the bard "a consummation devoutly to be wished."

* * *

But, be that as it may, Union Oil Company in its recent appointment of a new Engineer of Standards, has furnished one more irrefutable proof of the fact that talent shall never go unrewarded.

* * *

It is believed that cracking was discovered by a still-man, who banked his fires and went to sleep on the job. When he awoke, he found the gravity of the stream considerably higher.

* * *

If a still-man fell asleep on the job today, he would wake up a long way from the stills, and the gravity of the stream wouldn't interest him one-half as much as the gravity of his predicament.

* * *

When subjected to fractional distillation, it is to be noted that the Swedish crudes yield a high percentage of olefines.

* * *

Astonishing as it may seem, there are still a few stray individuals laboring under the archaic impression that detonation is a sort of psychological devil of destruction, conjured in the highly imaginative minds of a group of dreaming automotive engineers, and having no real existence.

* * *

To these poor misguided ones, we would point out the fact that our laboratories can now use the phenomenon to determine with a high degree of accuracy, not only the presence, but the actual amount of anti-knock agents in certain motor fuels.

* * *

And, since these anti-knock constituents are often present in quantities so small as to render their determination by chemical analysis extremely exacting, it must at once be conceded that detonation is decidedly not a dream.

* * *

Sparks of any kind have ever been a source of great danger in the oil business, and yet the hazards of sea life have been to a large extent eliminated by the introduction of Sparks aboard ship.

The conquest of the air has barely been accomplished, but already the joy of flying is within the reach of all.

* * *

For the small sum of forty-five thousand dollars, it is now possible to purchase a Ford tri-motor plane.

* * *

And then, of course, the buyer may expect a liberal allowance on his 1921 Fordor Sedan.

* * *

On the same subject: it sounds paradoxical, but it is nevertheless true, that to make a flier happy, you must first make him soar.

* * *

The tremendous amount of discussion that has lately taken place regarding the hazard of flying seems somewhat superfluous. Any little fellow will tell you there is safety in flight.

* * *

The function of Ethyl in the automobile engine is to control combustion—not prolong it.

* * *

Under conditions that would induce detonation in a high compression motor, Ethyl controls flame propagation, and thus enables the fuel to burn at the normal rate.

* * *

The contention that Ethyl develops abnormal heat is therefore obviously without foundation.

* * *

The natural antipathy of the safety engineer for hazards seems to be completely overcome immediately he arrives on the golf course.

* * *

However, one such gentleman has been heard to remark disgustedly that his game is getting bunker and bunker.

* * *

There may have been a time when all a salesman needed to ply his trade was a bunch of order blanks and the conviction that he was handling high class goods.

* * *

But that time is gone. In these competitive days every salesman must be armed with a full knowledge of the products which he has to offer, and when he tells a customer his oil or his grease excels, he must be prepared to prove it.


* * *

He is now talking to a man who is a specialist in his line, and who has taken pains to inform himself on the technical aspects of his business.

* * *

And, if he can't talk to this fellow in his own language, he is not a salesman in the modern sense of the word.

ORDER

HAT comfort, what strength, what economy there is in *order*—material order, intellectual order, moral order. To know where one is going and what one wishes—this is order; to keep one's word and one's engagements—again order; to have everything ready under one's hand, to be able to dispose of all one's forces, and to have all one's means of whatever kind under command — still order; to discipline one's habits, one's effort, one's wishes; to organize one's life, to distribute one's time, to take the measure of one's duties and make one's rights respected; to employ one's capital and resources, one's talent and one's chances profitably — all this belongs to and is included in the word order. Order means light and peace, inward liberty and free command over one's self; order is power. Aesthetic and moral beauty consist, the first in a true perception of order, and the second in submission to it, and in the realization of it by, in, and around one's self. Order is man's greatest need and his true well being.

From the Journal Intime of Henri Amiel, 1855

