



UNION OIL BULLETIN

MARCH 1933



Photo by James N. Doolittle

In the towering masts of the U. S. Frigate Constitution, the photographer has caught the spirit of the former glories of this historic man-of-war. "Old Ironsides," as she looked while visiting Los Angeles harbor, is shown on the front cover of *The Bulletin*, and on the back are replicas of the famous British frigate "Victory" and a French man-of-war, built by a motion picture company to reproduce scenes from the battle of Trafalgar when the British navy defeated the combined Spanish and French fleets.



UNION OIL BULLETIN

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VOLUME XIV

MARCH

BULLETIN No. 2

World's Fastest Four-Cylinder Car

FLASHING through electrically timed traps of the straightaway and circular courses on Muroc Dry Lake at blinding speeds, Harry Hartz's 76-Ethyl Special, alternately driven by Hartz and Fred Frame, clipped 1½ to 31 miles per hour from American and International records for four-cylinder and Class C racing cars, and in two instances lowered marks set by cars in the unlimited class. Five of the new records are strictly American, while nine better existing American and International marks.

The little car, streamlined along aquatic lines, is built to conform to a design perfected by Prof. Elliott Reid, School of Engineering, Stanford University.

In the flying mile, on the straightaway course, Hartz was timed at 152.101 miles an hour, 4.746 miles an hour faster than the former American and International record held by H. W. Stubblefield. In the flying kilometer he lowered the old Ameri-


can and International record by 1½ miles an hour.

Running on a ten-mile track, Hartz and Frame bettered virtually all of the other existing marks for distance from five kilometers up to an including 50 miles. The latter distance was covered at a speed of 144.6276, which is 12.6176 miles faster than any car, regardless of size, had ever previously run 50 miles.

The Miller engine in the car has a piston displacement of 255 cubic inches and a compression ratio of 10.4 to 1. It was fueled with Ethylized 76 gasoline.

Before becoming official the new records must be confirmed by the contest board of the American Automobile Association in Washington where the figures, taken from electrical timing devices, are sent to be checked, and also by the Association Internationale, A.C.R.

(Continued on Page 9)



The New Friction-Proof Gear Oils

By R. Cubicciotti

Lubricating Oil Sales

EXTREME pressure gear oils that are friction-proof, non-corrosive and possess film strength six times that of ordinary gear oils, are now being placed on the market by the Union Oil Company. The new oils meet one of the most urgent lubrication needs of the modern automobile and represent a real advancement in the manufacture of gear lubricants.

To supply the proper background for the story of Union E.P. (Extreme Pressure) Gear Oils, it is necessary to review, in brief, the mechanics of power transmission through gears, and to back-track, over a ten-year period, and observe the progress

in the mechanical design of automobiles.

In the ordinary spur gear, the area of contact between the two teeth meshed can be shown to be a line, theoretically. Practically, due to the "give" of the metal, a real bearing area is formed, but in any case it is quite small, so that tooth pressures, expressed as pounds per square inch, are quite high.

In cars made more than two years ago, the gear pressures were low enough to permit the lubricant to maintain a film on the tooth surfaces during nine-tenths of the operating period.

During periods of extreme stress, such as

sudden starts, climbing steep grades or pulling over obstructions, the pressures developed were so great as to rupture the oil film, allowing metal-to-metal contact. The matter did not cause any great alarm, since the occurrences referred to were infrequent, and the result was a somewhat shorter, but still satisfactory, gear life.

The automotive developments of the last few years have changed the picture completely.

Let us consider the average American car of today and compare it with its predecessor of 1925.

It has 85 per cent more horsepower.

It is 20 miles per hour faster.

It has breath-taking acceleration.

It may have any one (or more than one) of the following refinements:

Worm drive — hypoid drive — dual-ratio — herringbone gears — free-wheeling — synchromesh — constant mesh.

All of these things have added greatly to the owner's satisfaction, but have imposed more and more stress on the gear teeth, until the point has been reached where a straight mineral oil lubricant cannot provide an oil film between the teeth for even a fair proportion of the operating time.

This means that, for a great part of the time, the gear teeth are in actual contact, with nothing between them to prevent wear and noise. Under the circumstances, long gear life is impossible.

The remedy is obvious. A film must be provided, which, even under enormous stress, does not rupture.

Certain compounds have been known for a long time which impart to mineral oils this very desirable high film strength. Unfortunately, they also impart certain undesirable characteristics, such as corrosiveness and lack of stability.

Our Research Department set for itself the task of producing an extreme pressure lubricant which would have no such undesirable characteristics.

Early in the study they acquired a Timken Lubricant and Wear Tester, which is a machine designed to measure the film-strength and wear-resistance of an oil, as well as the friction developed in an oil film under operating conditions.

In this machine a small steel block is pressed against a steel shaft revolving at

known speeds. The pressure between the two parts may be varied by the addition of weights at the end of an arm similar to the arm of a platform scale. The block and shaft are flooded with the lubricant being tested throughout the duration of the run. The lubricant is kept in cylindrical reservoir on top of the machine and its temperature may be changed at will. The friction developed between the block and the shaft is measured by adjusting a sliding weight on a small arm.

At the end of the run, the block is examined. If the oil

film has not been ruptured, the shaft will have worn a smooth line in the block. If, however, the pressure has been sufficient to squeeze out the oil, the surface of the block will appear badly scuffed.

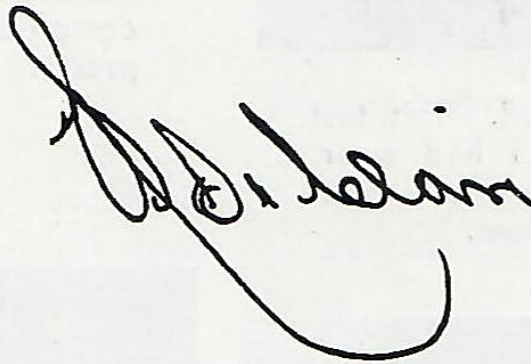
By making successive runs with higher and higher pressures, the point at which the oil film breaks may be accurately determined.

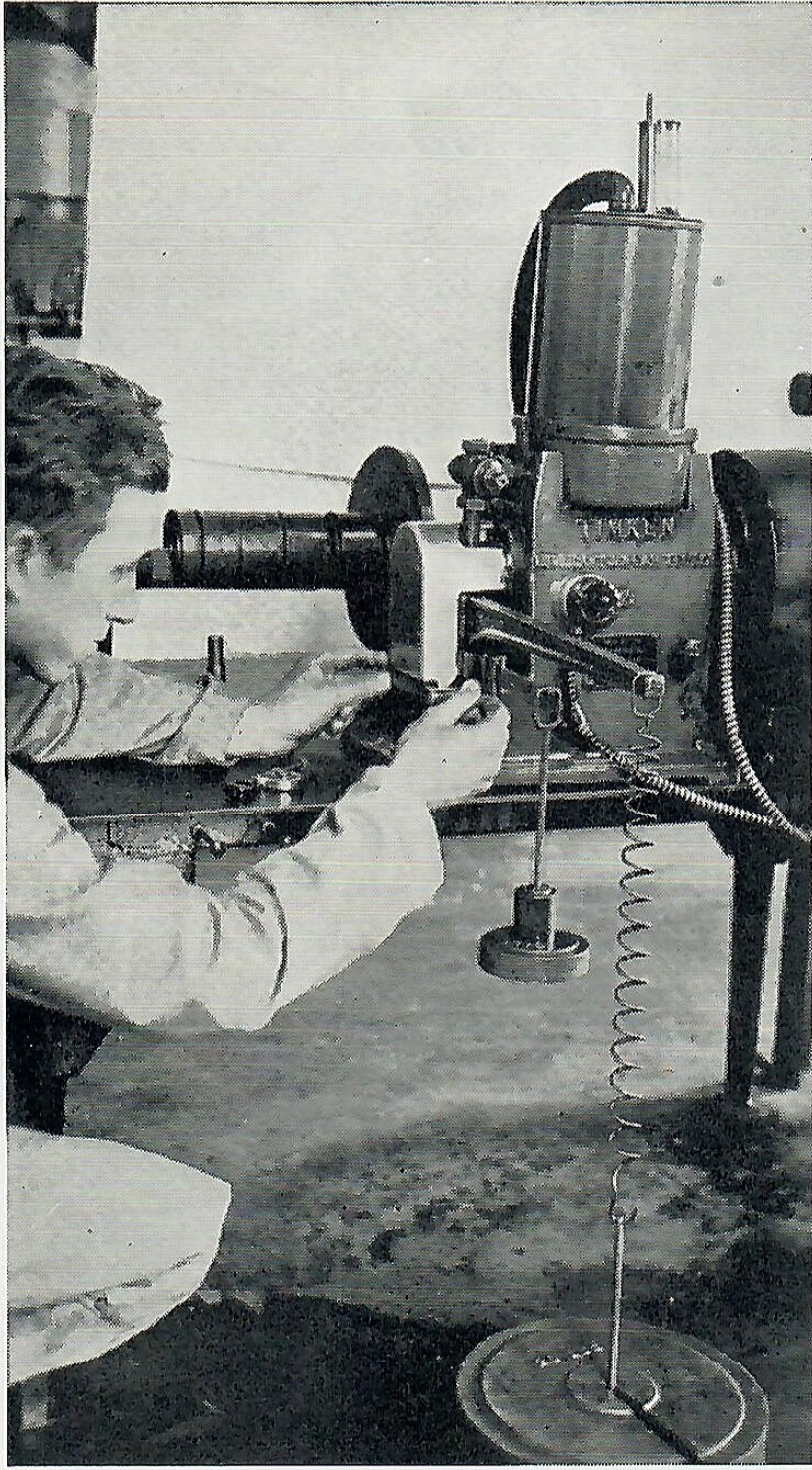
This machine enabled the Research Department to conduct exacting tests in the laboratory and to discover, in a comparatively short time, facts that would ordinarily take thousands of miles of driving to develop. By its use, in combination with other well known tests, every available ex-

IN APPRECIATION

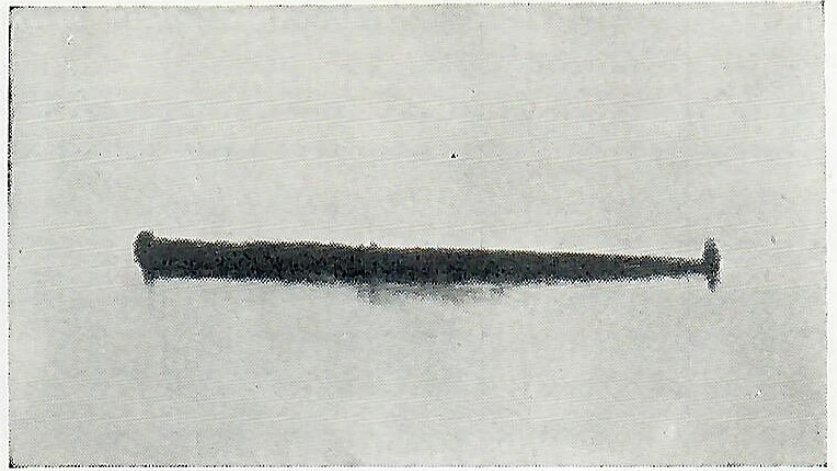
THE management of the Union Oil Company of California desires to express sincere appreciation for the splendid manner in which employees responded to the emergency resulting from the recent earthquake. In all instances the response was emblematic of the finest traditions of the industry, and the prompt service rendered in the protection of company property was outstanding.

Such service, loyalty to duty, and cooperation is beyond monetary value.

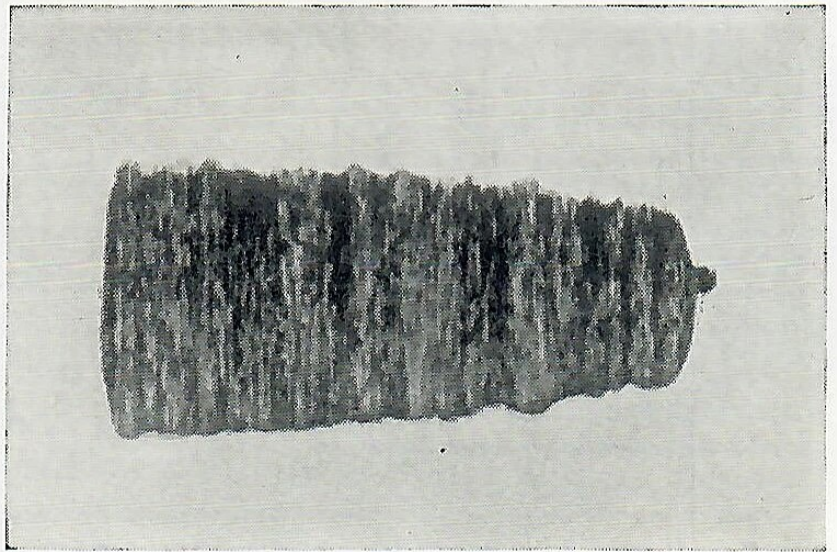




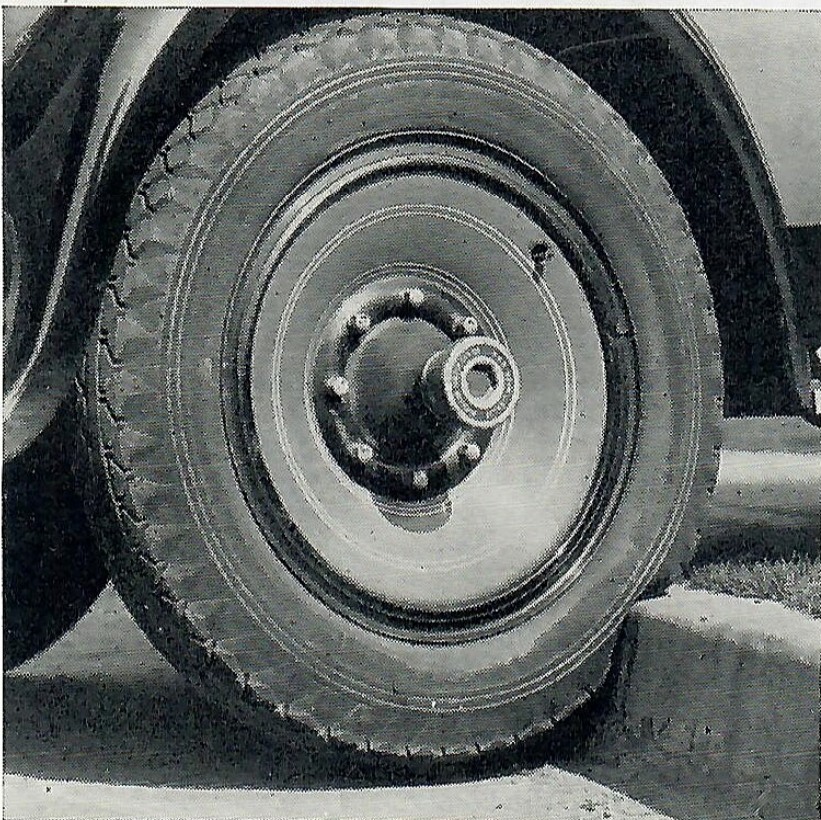
Measuring wear-resistance of oil. This test proved Union E. P. Gear Oil had wear resistance six times that of automobile manufacturers' specifications.



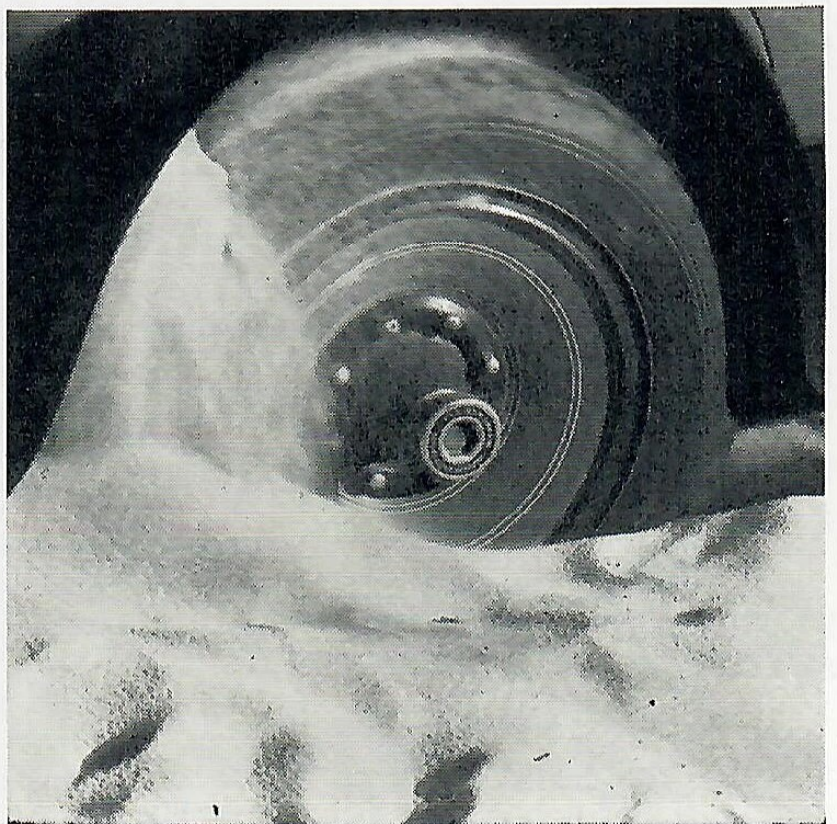
This photograph of steel testing block shows result of testing Union E. P. Gear Oil, 160, at 24,000 pounds per square inch pressure. Smooth wear is shown, but no scoring.



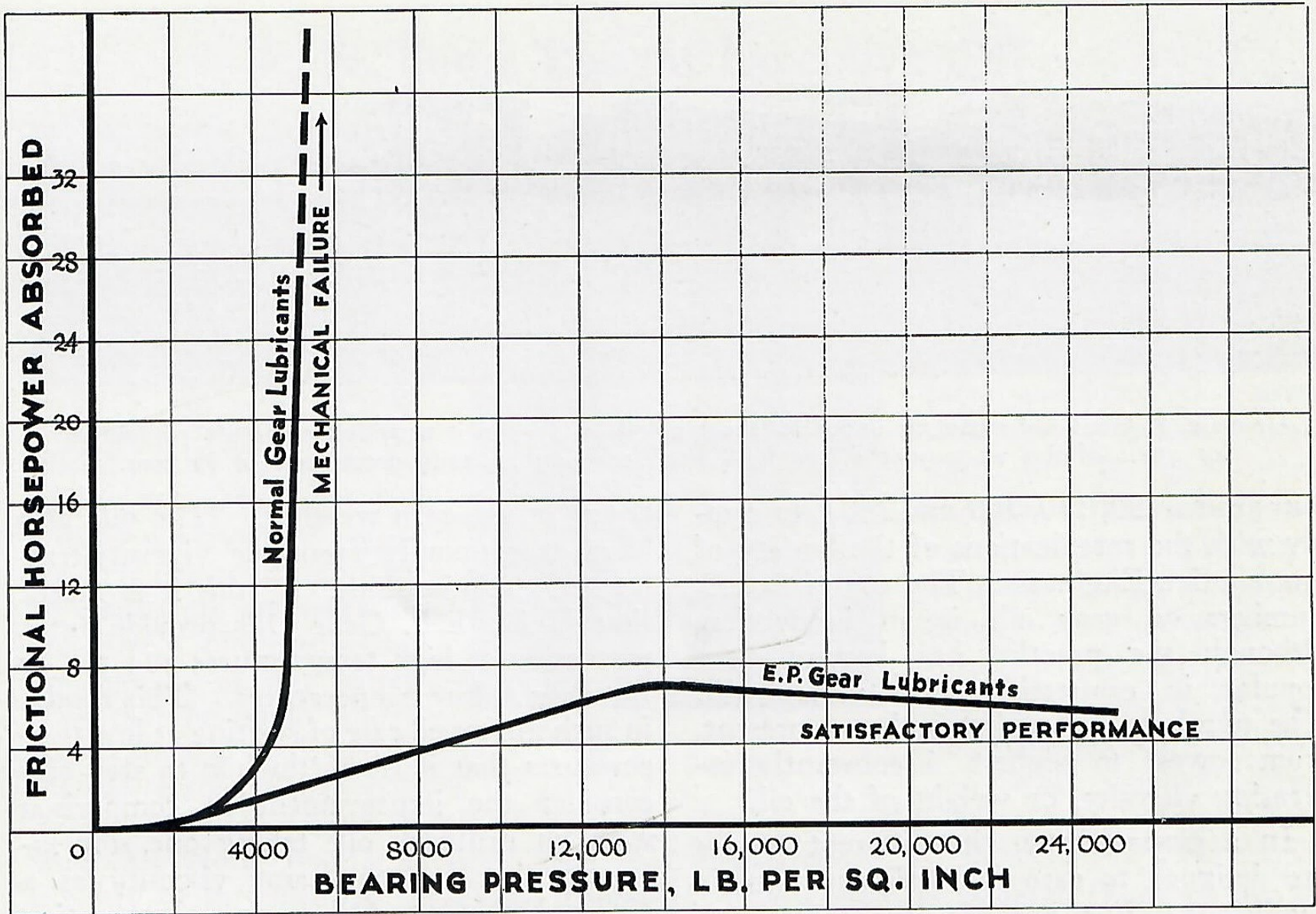
Above photograph of steel block taken from Timken Lubricant and Wear Tester shows complete failure of ordinary gear oil at pressure of 5000 pounds per square inch. The block is badly scored.



Climbing curbs is another form of torture for car gears.



Gears must withstand pressures as high as 20,000 pounds per square inch when car is being driven out of sand.



The above chart shows clearly the superiority of Union E. P. Gear Oils. The normal gear lubricant permits friction to develop rapidly with increased pressures. Friction is dissipated as heat and is a distinct loss. E. P. Gear Oils minimize frictional losses and do not fail under extreme pressures.

treme pressure compound was ruled out on one or more counts.

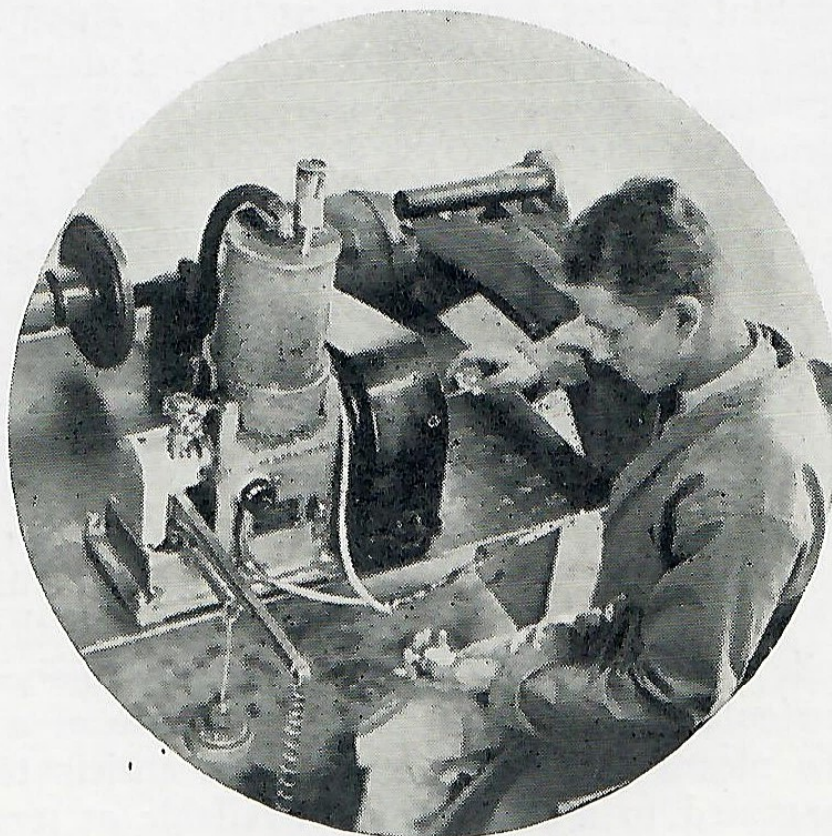
Armed with the knowledge of what to avoid, the Research Department developed several original formulas, all of which were subjected to the most critical testing. One formula stood out as being most promising. Further perfected, it was again "put through the mill." It passed with flying colors.

It was then decided to subject this oil to the severest service test that could be devised. Truck operators, when consulted, agreed that, for sheer punishment of the lubricant, there was one unbeatable combination; a worm-gear driven

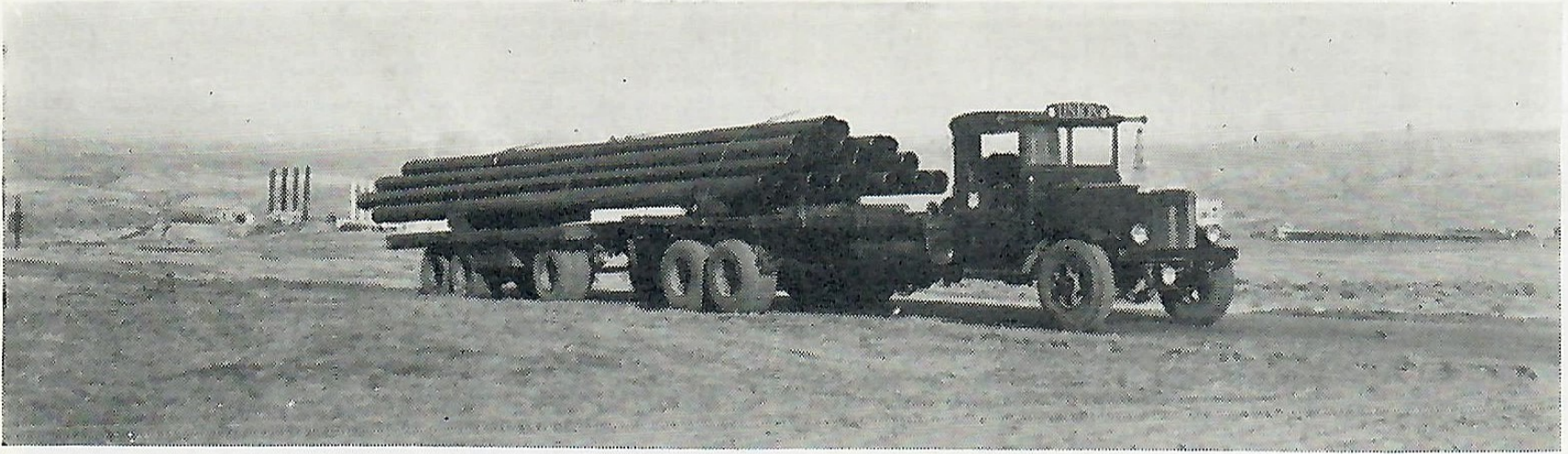
truck, heavily laden, traveling the Ridge Route between Los Angeles and Bakersfield.

A test was arranged on one of our Field Department trucks carrying well casing from Santa Fe Springs to Kettleman Hills, and returning with miscellaneous freight. Union E.P. Gear Oil, 250, was used to lubricate the gears. Fully laden, the gross load was 34 tons. Speeds ranged from one miles per hour on the steepest grades to twenty-five miles per hour on the level stretches. Through four grueling trips Union E.P. Gear Oil, 250, made a perfect score.

Union E.P. Gear Oils are made in



Testing film strength of E. P. gear oil.



Union E. P. Gear Oil stood up under toughest of all tests when it provided complete protection for gears of this worm-gear driven field truck carrying capacity gross load of 34 tons.

four grades (90, 110, 160, and 250), to comply with the specifications of the Society of Automotive Engineers. The use of S.A.E. numbers on gear oils is an innovation, although the practice has become very popular in connection with motor oils. The numbers are arbitrary, but represent, from lowest to highest, a constantly increasing viscosity, or weight of the oil.

In a general way, the different grades are designed to care for different climatic conditions. For instance, for most cars, Union E.P. Gear Oil 160 will be the proper grade for summer, while Union E.P. Gear Oil 110 is recommended for winter. In case of more extreme weather variations, the 90 and 250 grades would be available.

It is interesting to note that car manufacturers are practically all referring to gear oils in terms of these numbers.

An enumeration of the good qualities of Union E.P. Gear Oils is interesting and instructive. By actual measurement, their film strength is six times that possessed by an ordinary oil. This means six times the wear-resistance, with a consequent increase in gear life and a reduction in gear noise. They are absolutely stable under all conditions of storage and use. They are also non-corrosive to metal.

The actual test for this latter quality consists in immersing a polished strip of copper (one of the most easily corroded metals) in some of the lubricant and maintaining it at a temperature of 200 degrees F. for three hours. Every batch of Union E.P. Gear Oil must pass this test.

The pour test of the oils is exceptionally low, a fact that is of particular interest to cold-climate users. This means that the lubricant will not be congealed to a solid mass if a car is left standing for a few

hours in sub-zero weather. The oils also have exceptionally favorable viscosity-temperature relationships. By this it is meant that Union E.P. Gear Oils provide extra protection at high temperatures and yet do not drag at low temperatures. This results in such improved ease of shifting at low temperatures that it is worthwhile to stop and consider the improvement in comparison with an ordinary oil, taking one, for instance, that has the same viscosity as a Union E.P. Gear Oil at normal operating temperatures.

	Ordinary Oil	Union E.P. Gear Oil
Saybolt viscosity at 210 deg. F.	100	150
Saybolt viscosity at 32 deg. F.	1,500,000	120,000

The tremendous difference in viscosity at the lower temperature accounts for the remarkable ease of shifting with Union E.P. Gear Oils, while the higher viscosity at 210 degrees F., insures greater protection at that temperature. It must not be forgotten that drag in the differential is also reduced at the low temperature by E.P. Gear Oils, although this is not so obvious to the driver. The over-all result is increased driver-satisfaction, protection for the gears, and increased gasoline mileage.

While Union E.P. Gear Oils were designed especially for transmissions and differentials, they also meet the peculiar lubrication requirements of free-wheeling units of either the roller or spring type.

Due to the fact the new gear oils assure better car performance and prolong the usefulness and life of a car, a great demand for them is anticipated as soon as they become available at service stations and garages, which will be by the end of March.

P. N. Boggs Resigns Executive Office

SERVICE of eight years with Union Oil Company was terminated last month by P. N. Boggs when he resigned as vice president and a member of the board of directors. In accepting the resignation President L. P. St. Clair declared that Mr. Boggs' retirement from Union's official family was regretted by his associates who had formed a very deep regard for him personally and for his ability as an operating executive. The best wishes for success in any enterprise that he might undertake were also expressed by officials of the company.

The retiring executive plans to continue his close association with the oil industry with which he has been prominently identified since 1902, when he joined the staff of the W. T. McFie Supply Company. Numerous successes marked his years in the oil well supply

business. He rose rapidly through the ranks and was serving in the capacity of president of the Union Tool Company when that concern was purchased by the National Supply Company of Ohio. He was later appointed vice president and general manager of the new company and resigned the office in 1924 to join forces with the Union Oil Company. At the outset he directed the activities of the Sales Department, and approximately three years ago was assigned supervision of the Field, Geological and Land departments.

He served as general chairman of the committee for equitable curtailment of crude production in California during the formative stages of the state-wide curtailment movement.



P. N. Boggs

Sales Department Employees' Council Conference



Second annual conference of the Sales Department Employees' Council was held at Los Angeles, January 18th, 19th and 20th, each district being represented. Two days were spent in discussions and one day was devoted to visiting the oil fields and Wilmington Refinery. The above picture was taken during one of the sessions, and shows, left to right, standing, H. L. Knieper, Spokane; J. E. McManus, San Francisco; H. D. Seeley, secretary, head office; E. Power, manager properties and facilities, head office; J. C. Riggs, Fresno; R. D. Callison, Oakland; N. F. Goodwin, Sacramento, and J. L. Rogers, Phoenix. Seated, left to right, I. E. Totten, Seattle; Scott Van Iorns, Portland; J. J. Gordon, San Diego; J. B. Williams, assistant manager refined oil sales, head office; Miss R. E. Kristjanson, Vancouver and Gerald High, chairman, Los Angeles.

New Executive Post for W. W. Orcutt

THE assignment of W. W. Orcutt to supervision of drilling, production and geological operations, lands and leases, and citrus properties, as announced by R. D. Matthews, executive vice president, brings to this important position the senior ranking company employee from the standpoint of service. On May 1, next, he will have been with the company 35 years without a break, and will be the second employee to have achieved this record, the first having been the late W. L. Stewart.

Thumbing back through the history of the company we find that Mr. Orcutt was three years out of Stanford University, from which institution he graduated as a civil engineer, when he accepted his first job with the company to supervise drilling at Coalinga.

At Coalinga he built one of the most successful pipe lines ever operated. It was a two-inch line, nine miles long, carrying light oil from the Chanslor-Canfield properties to the railroad station at Ora. The revenue from the line paid the total cost of construction the first month and for virtually every month of its operation. Soon after laying the first line a second one was constructed to carry heavy oil. This was a four-inch line and met with the same financial success of the two-inch one.

Though he had graduated as a civil engineer, Mr. Orcutt was well grounded in geology and began applying his knowledge to structures he encountered in his field work. He so impressed the management of the company with the importance of oil

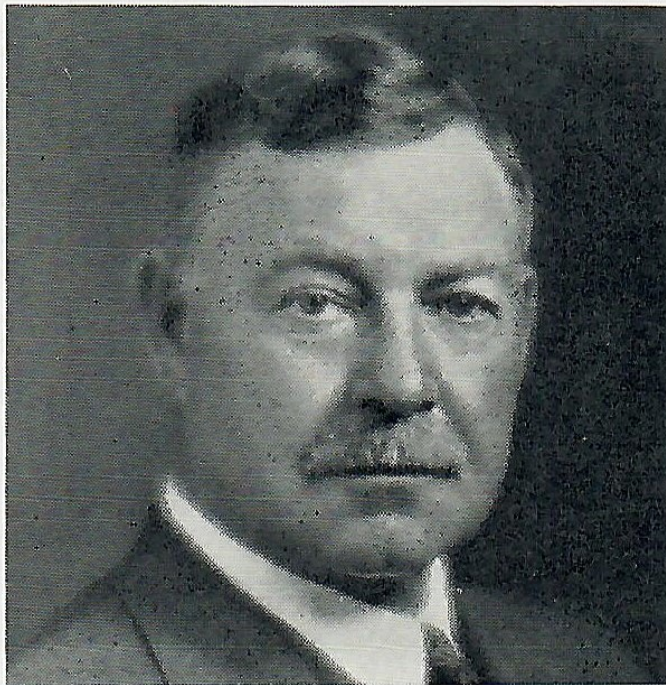
geology that he was commissioned in 1900 to equip and operate the first geological department established by any oil company in the United States. He made the first geological maps of Coalinga, Lompoc and Santa Maria area and is credited with the discovery of the latter two fields, which are among the company's major oil properties today. He also discovered Richfield and Santa Fe Springs, the latter of which is one of the outstanding fields in the United States.

The first commercial wireless message sent to Catalina Island was addressed to Mr. Orcutt calling him back from a vacation as the result of the discovery of oil in Lompoc field, most of the property of which was held in fee by the company on his recommendation.

During the early days of the Santa Maria field many big producers were brought in, among them Hartnell No. 1, in 1904. Its initial flow was 12,000 barrels a day.

Approximately 90 per cent of the company's oil holdings in California, from the standpoint of value, have been acquired on Mr. Orcutt's recommendations, made as the result of personal survey of the properties, or on his endorsement. Among geologists, who look upon him as the dean of their profession on the West Coast, he is regarded as having an almost uncanny memory of topography and geological structures. A memory that also extends to names, faces and events.

He is consulted frequently by persons seeking information about the early oil history of California. He seldom finds it



W. W. Orcutt

necessary to refresh his memory with memoranda.

The now famous La Brea fossil pits, in the western part of Los Angeles, were discovered by Mr. Orcutt in 1901, the year following the establishment of the company's geological department. In 1906 he succeeded in interesting the Paleontological Department of the University of California in the beds from which have been taken scores of complete skeletons of the prehistoric animals of the Pleistocene period.

In 1908 he was appointed manager of the Geological and Land Department and held that position until his promotion to vice president in 1922. Since that date, and until his recent assignment, he has been consulted on geological matters, although during the past three years he has not been directly responsible for them. He has also been a member of the board of directors and executive committee since 1908.

In 1926, in recognition of his many distinguished contributions to geology, particularly his development of the decline curve method of estimating future oil production of properties, he was elected an honorary member of the American Association of Petroleum Geologists, one of the greatest distinctions that can be conferred upon a member of the profession.

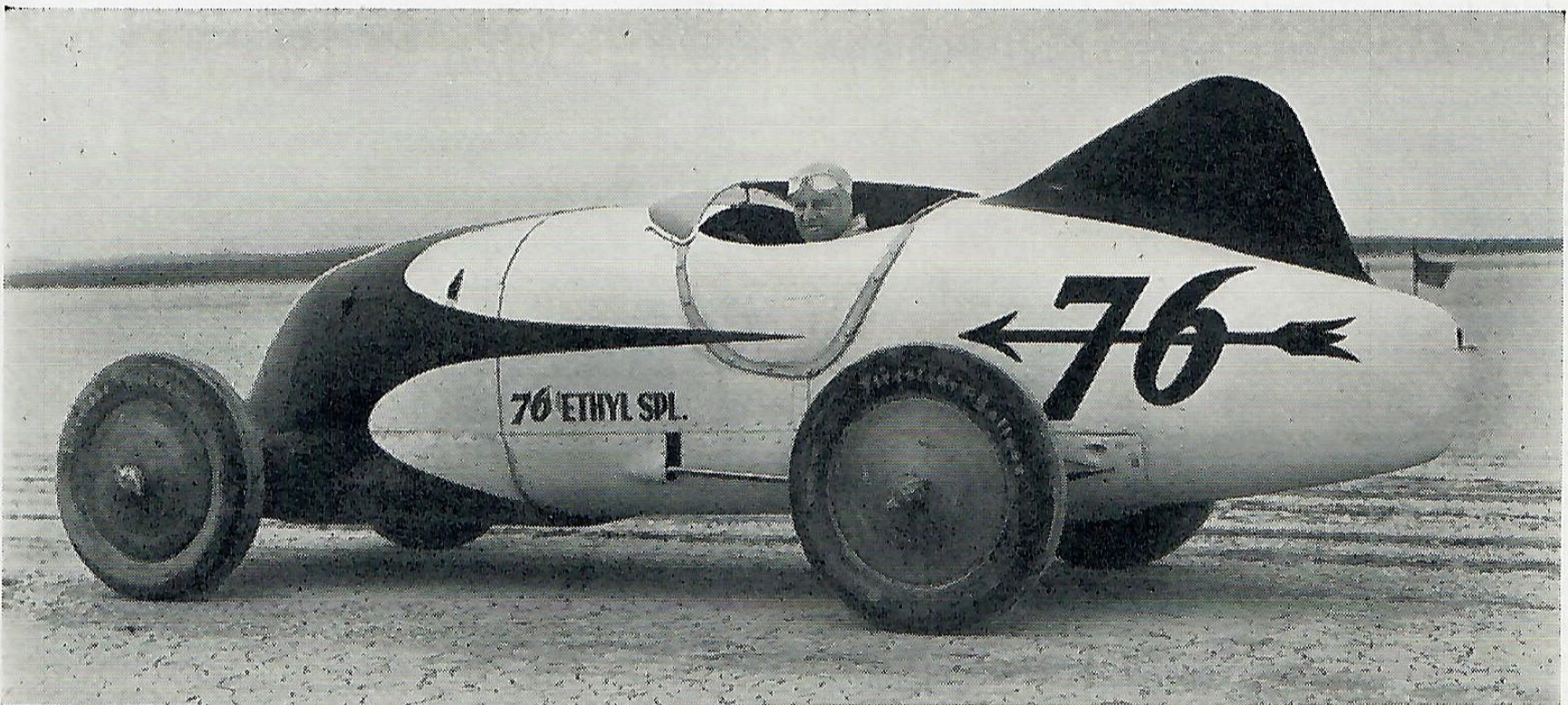
Mr. Orcutt has always led an active outdoor life. He played left guard on the

1895 Stanford football team of which Herbert Hoover was business manager, and at the time he was in college also held the shot-put record. His geological work has kept him a great deal in the open, and as a result he finds his most enjoyable diversion in hunting and fishing.

Anyone who makes a trip with him by automobile, on business or pleasure, can be prepared to start early, 4:30 or 5 a. m. And at night members of the party can expect to be called upon to play "Pedro." Mr. Orcutt some years ago developed a Union Oil version of the game, and it is a well known fact that in the many years various geologists and field department men have played this game in competition with Mr. Orcutt, only one certificate of "Pedrology" has been issued, and that to James Douglas, formerly manager of the company's operations in Venezuela, who graduated "cum laude" in 1926.

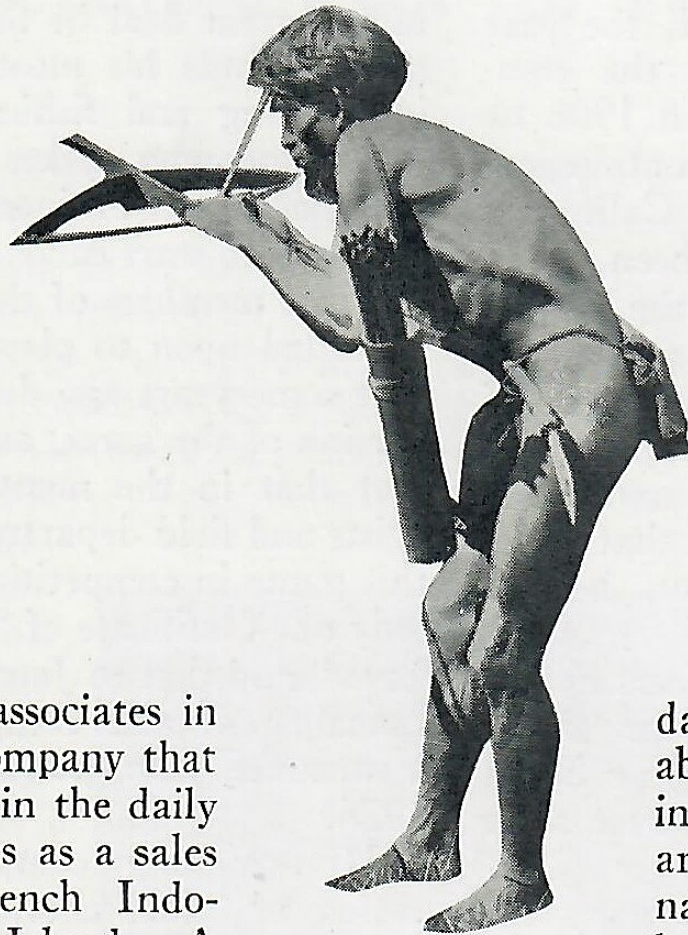
His camping companions vote him a rating of "field chef, 1st class," and will concede him endurance honors either in hiking or horseback riding. Horticulture is one of his hobbies, evidence of which can be found at his Los Angeles home, ranches and citrus groves.

The stranger who meets Mr. Orcutt carries away with him an unforgettable memory of his friendliness, the full scope of which is best appreciated by those fortunate enough to work with him.



Harry Hartz at wheel of world's fastest four-cylinder car fueled with Ethylized 76 during its record runs.

Bagging Game and Orders



I CAN assure my associates in the Union Oil Company that there is no monotony in the daily life of one who serves as a sales representative in French Indo-China and Philippine Islands. A short motor trip out of Saigon, on the macadam-surfaced highway that connects this principal commercial center of Indo-China with the interior, will prove quite diverting in itself. The highway knifes through the jungle that grows with primeval density to the pavement's edge and it is not uncommon to encounter leopards and other wild game within thirty minutes of one's departure from the center of the city. In fact it is not uncommon to kill deer and wild hog without leaving the automobile. One of my first deer was killed in this manner.

There are few places in the world to-

By **W. S. Grant**

Special
Representative
Union Oil
Company
in Indo-China
and
Philippine Islands

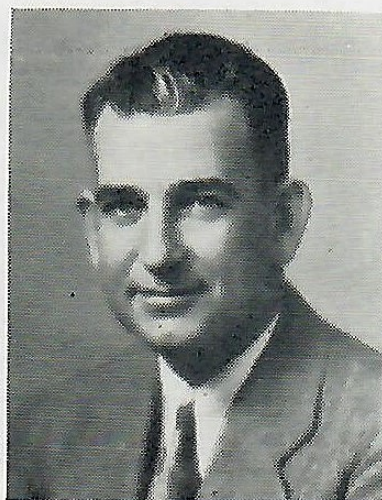
day where game is found in the abundance and variety that exists in Indo-China. Elephants (which are not hunted or killed by the natives or any but the amateur hunters), tigers, leopards, several species of wild buffalo, including the gore which is particularly dangerous because it charges with its head up and eyes open, deer and fowl of every description are found throughout the country. Wild peacocks are the choicest of game birds. Guns are carried by

nearly every one who travels outside of the settlements.

Tiger hunting is one of the popular sports. Some of these animals grow exceptionally large. They are usually stalked at night, as that is the time when they are most alert and most likely to attack.

One of our present agents has a large

W. S. Grant, special representative of the company in the Philippine Islands and Indo-China, who has written the accompanying article, February 13, last, completed twenty years of service with the Union Oil Company. He celebrated this anniversary in Los Angeles, where he has been for the past two months on a furlough which terminates this month.

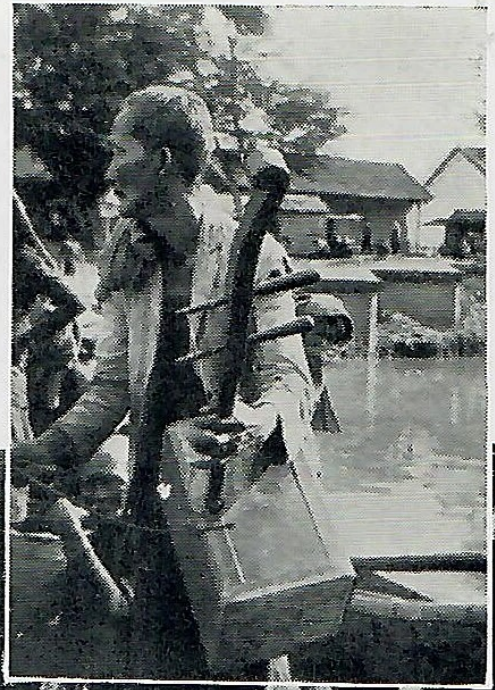


W. S. Grant

He began his service with the Pinal-Dome Oil Company at Santa Maria. When that firm was taken over by the Union Oil Company he was appointed special agent for Santa Maria, Lompoc and Los Olivos, building the first service station in that area. He was later transferred to the accounting division and appointed construction auditor during the time the tankers Montebello, La Placentia and La Purissima were being built at San Pedro. Subsequently he was appointed traveling auditor, operating out of the head office.

In 1927, he was transferred to the Personnel Department as assistant manager, and in January, 1930, was appointed special representative in the Philippines. That it has not been a monotonous assignment is apparent from what he relates here.

On the sales and game trails in Philippines and Indo-China. At right is street beggar in Indo-China wringing wailing tunes from 5-gallon Union kerosene can. Below, in their respective order, are photographs of W. S. Grant, shown on the left, Ralph Jonson and P. M. Bennett, Union Oil Company agent in Manila supervising roasting of wild young pig in Philippines; W. S. Grant and Mr. Guyonnett returning from hunt near Saigon (the wild bore and deer were killed without leaving the car which traveled entire distance on highway paved with Union asphalt); members of road construction party about to start through jungle in oxen-powered cart.



about 10 o'clock in the morning and about 3 o'clock that afternoon the natives were heard making a commotion about 100 yards from the plantation dwellings. We all rushed out to see what was wrong and found a large tiger, which had killed one of the hogs, seated on his haunches surveying with disgust the uninvited audience that was interrupting his noon-day meal. This particular beast was apparently getting too old to capture wild game and was forced to prey on domesticated hogs. Before we were able to obtain guns he became frightened and disappeared in the jungle.

After this experience we all decided that hunting wild peacock, pheasants and other game birds was entirely too tame and decided to hunt tigers that night, instead. So at 8 o'clock two of the native cows were harnessed to a native cart and we set off into the jungle. Our agent stayed behind, sending a guide along with me and my hunting partner, a gentleman who had come to Indo-China especially to hunt. After about two hours' travel, we adjusted our hunting lights to our helmets and numerous eyes began to glare at us. There is a distinct difference between the eyes of a tiger and those of other wild beasts, such as deer and the sev-

rubber plantation approximately 200 miles from Saigon. One Saturday morning he invited me to take a trip with him over the week-end. We arrived at the plantation



Building roads in Indo-China. The section of highway shown above is to be surfaced with Union emulsified asphalt, heavy. The work is being done by native women. A. Guyonett, Union's lubricating oil agent at Saigon, is shown in center. At the left native labor is preparing roadbed through jungle. Union asphalt will be used on this job.

eral species of wild buffalo that inhabit the country. The eyes of the latter, in the reflection of the light, appear to be blue in color, while those of a tiger are bright red. I tried my aim on several deer to start with and found it not so good in the dark.

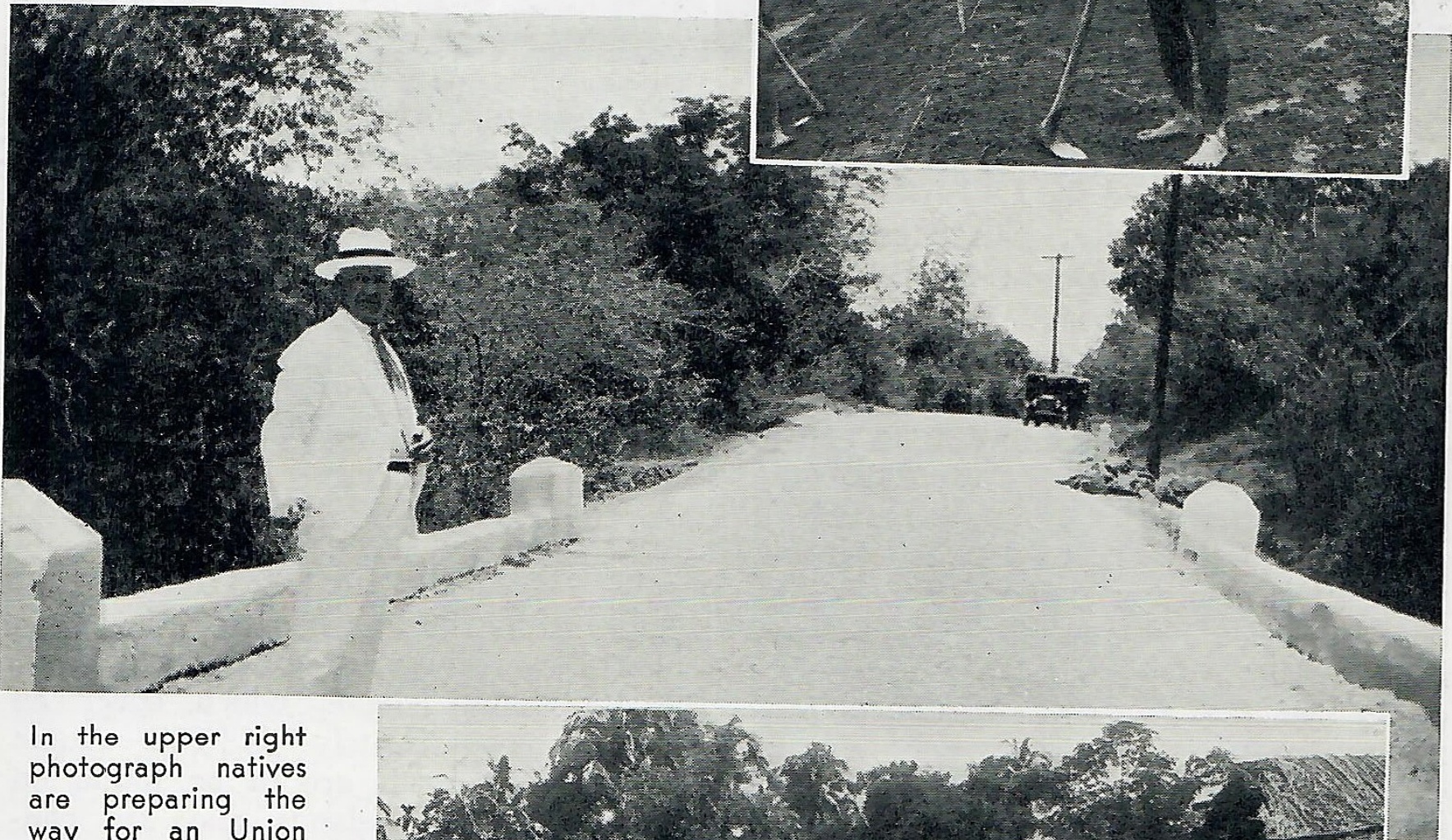
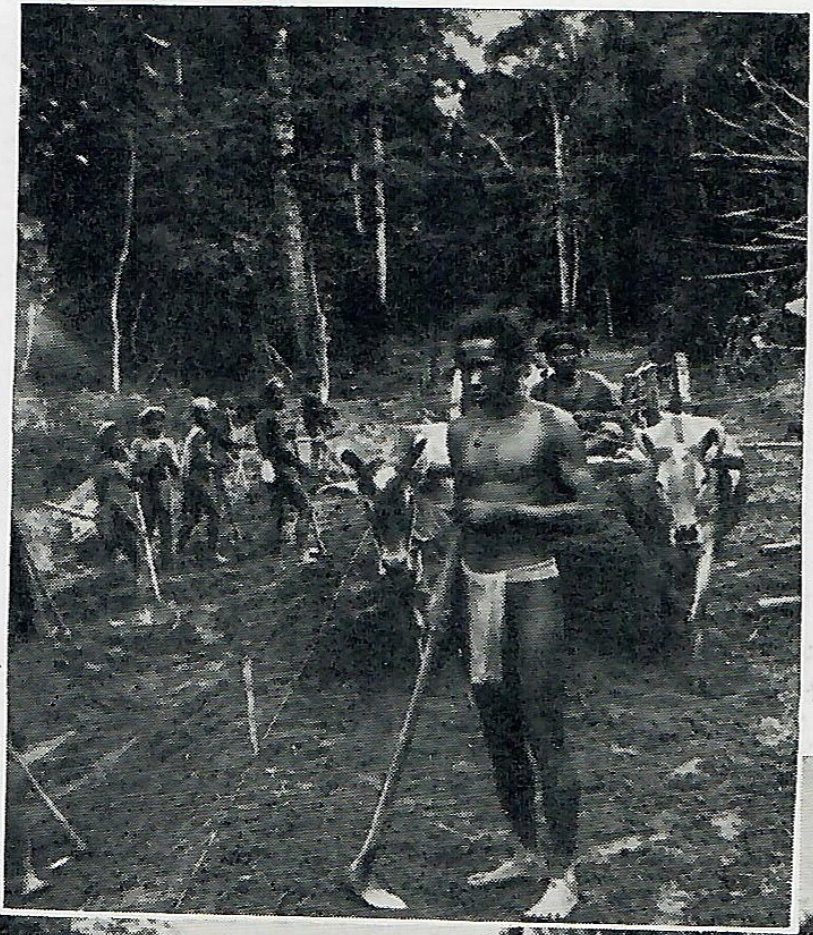
After hunting an hour or so, I suddenly came upon a wild buffalo of enormous size, and at my first shot he fell. He jumped to his feet immediately, however, and started off through the dense jungle and I unwisely left the guide and my partner and attempted to follow him. I came upon him again in about a mile, and fired a second time. Again he dropped only to get up and run, with me in pursuit. On the third shot he stayed down. I was very much enthused until I suddenly realized that my guide and hunting partner were absent. I later discovered that they had also started out on the trail of another buffalo, with the consequence that we were both hopelessly lost. We attempted to get together again by signaling with our rifles. Apparently the echo of the shots, instead of drawing us together, carried us farther apart, with the result that inside of a half hour we were unable to hear each other at all. It started to rain as it only can in the tropical country. In five minutes I was

thoroughly soaked and had no matches with which to build a fire.

There was nothing left for me to do but attempt to find my way out of the jungle. This probably would not have been difficult had I not entered it after dark. It rained constantly all night and I kept moving, afraid to stop because, believe it or not, there were eyes all around and many of them looked red to me. I had been told that if I kept moving the tigers would not attack and I decided to follow the advice. I did not attempt to do any more shooting because I did not know when I might need the few shells that I had left. I really was not only concerned about the tiger and lions that I might encounter, but I was afraid that I would not be able to find a trail that would lead back home. In addition, I was very much afraid that my hunting partner, who was not at all well, would suffer from the deluge of rain.

About four o'clock in the morning I discovered a trail and after following it for some time I was able to locate familiar surroundings. I arrived at the plantation about daylight and after using my two or three words of French, with gestures, was able to make our agent realize that I had lost my hunting partner. He, of course,

was not at all alarmed because he knew the guide would eventually find the way home. However, shortly after daylight we started out to look for them and about five miles from the plantation we found them returning to camp. The guide had become confused and was lost as badly as I had been, but they had come upon a native village where they built a fire and remained until early in the morning. Incidentally there are still as many tigers in that particular part of the jungle as there were when we entered it, though there are a few less buffalo and deer.



In the upper right photograph natives are preparing the way for an Union asphalt paved highway 100 miles from Saigon, Indo-China. In the center, H. L. Fisher, who has assisted in sale of Union products in Philippines is shown at the edge of a Philippine highway surfaced with Union emulsified asphalt, heavy. At the bottom, right, is native hut.



Trips on the native freight boats along the coast, where piracy still flourishes, keep the moments in transit from dragging. On one of the last voyages I made before returning to Los Angeles I was the sole white passenger on the boat which carried hogs and other livestock in addition to merchan-

dise. Inasmuch as not infrequently members of the crew are in league with the pirates, and the captain of the last boat that had preceded ours up the coast had been killed for resisting the pirates, my sleep was not as sound as it might otherwise have been. The trip, however, was without incident.



Ancient ruins at Angkor Vat. There are hundreds of buildings, similar to those shown here, all built of stone. They are believed to have been constructed in 900 A.D., by a people who have disappeared without leaving a trace of what became of them. The ruins are in the heart of a vast forest.

Roads throughout Indo-China are being rapidly developed and the Union Oil Company is supplying a great deal of the asphalt that is being used. Despite the extensive use of the automobile and the building of automobile highways, the natives still cling to oxen for their motive power.

In traveling through the country recently inspecting the roads on which our products had been used, we discovered an old native seated beneath a tree producing weird music from an instrument that had been constructed from a five-gallon Union kerosene can. The spectacle was so interesting that I couldn't resist taking a photograph of him. On the same trip we visited Angkor Vat, the ancient ruins that were discovered in the jungle several years ago. The forest has almost reclaimed this entire city. Not a sound prevails except the chatter of the monkeys and the tropical birds that thrive by the thousands in what was once a flourishing city. There is very little known of the people who constructed it, supposedly several thousand years ago. For some reason they have completely disappeared, leaving no evidence as to their identity. As yet little has been done towards the excavation or the reconstruction of the thousands of buildings that have existed all these years. A number of the buildings are several stories high. Work is under way, however, to clear away the forest, and roads are being constructed to the ruins.

The main products of Indo-China are rice, rubber and tin, but since the market for each of these products is very low at



the present time, the production has greatly diminished during the last few years.

Petroleum products are used throughout the Philippine Islands which cover an area of approximately 114,000 square miles. Good roads are to be found on all of the large islands and are constantly being improved and extended. Each year the Government Bureau of Public Works purchases large quantities of asphalt to be used in re-surfacing old roads and in the construction of new ones. Several grades of Union asphalt have been used extensively. Union Emulsified Asphalt has proven to be of great value due to the easy method of application. The United States army and navy are also users of large quantities of fuel oil, Diesel, kerosene and several grades of gasoline, such as commercial, commercial aviation, aviation fighting, etc. The Union Oil Company has supplied a portion of their requirements.

It might be of interest to know that the Philippine Islands are divided up into 46 different provinces and there are as many dialects or languages as there are provinces; the principal dialects being Tagalog, Llo-

cano, Visayno, Pangasinano, Ibanag and Bicolano. When people from the southern islands travel to the northern provinces they find it very difficult to understand one another. English and Spanish are used as a medium of conversation as a great many of the people speak one or both of these languages.

Tropical fruits of many varieties are found in the Philippine Islands. Bananas, pineapple, mangos, etc., grow wild. Their quality, however, is improved by cultivation. Coconuts are cultivated extensively. Existing plantations cover approximately

350,000 hectares and the yearly production of copra is about 900,000,000 kilos. Some of the other main products of the country are rice, manila hemp, which is known all over the world for its superior quality; and tobacco, the greatest portion of which is exported to the United States, Spain being the next largest market. Mining, gold especially, has been carried on very successfully for the past several years. The islands are very rich in forest resources, producing a great variety of timber ranging from fine cabinet wood to material used extensively for heavy construction work.

U. S. S. I. Managers Complete 20 Years With Company

J. H. DASTEEL and **L. M. Bridgman** were employed within 10 days of each other 20 years ago in the company's offices in San Francisco, and after pursuing varied and diversified paths through the company's sales organization, are now situated across a central office, jointly conducting the affairs of Union Service Stations, Inc., as general manager and assistant general manager, respectively.

The man who now directs the activities of the marketing company obtained employment as a general utility clerk in San Francisco office. Within a year Dasteel was transferred to the newly formed San Jose district, where he remained until 1925, when he was sent to Oakland as district manager. In 1928 he moved to San Francisco as district manager and the year following became manager of the central division. In 1930 he was shifted to Los Angeles as district manager and early in 1931 was promoted to the head office sales staff, the position which he held until being selected as general manager of Union Service Stations, Inc., in December of that year.

L. M. Bridgman's period of service antedates Dasteel's by 10 days. He served in San Francisco three years as foreman of the Potrero plant and trucks, from where he went to Los Angeles and was placed in charge of statistical records. In 1920 he was sent to Seattle as assistant district sales



L. M. Bridgman
Assistant General
Manager

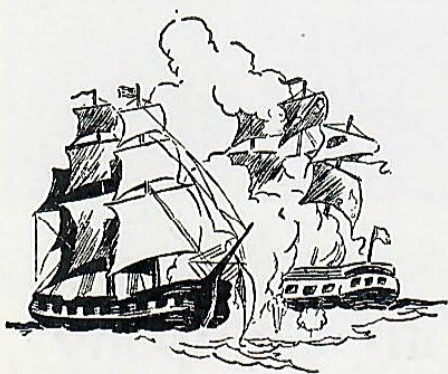


J. H. Dasteel
General Manager

manager, becoming manager two years later. December, 1924, he was promoted to manager refined oil sales, and in 1928 was made sales promotion manager. During three years of travel he visited every sub-station operated by the Union Oil Company, also contacting every service station owned by the company on the Pacific Coast. He became assistant general manager, Union Service Stations, Inc., in December, 1931, when the retail marketing organization was formed.

U. S. Frigate Constitution

AFTER 94 years the U. S. frigate Constitution, "the ship that was a navy," returns to the West Coast, the shoreline of which she guarded as flagship of the Pacific Squadron from 1839 to 1841.



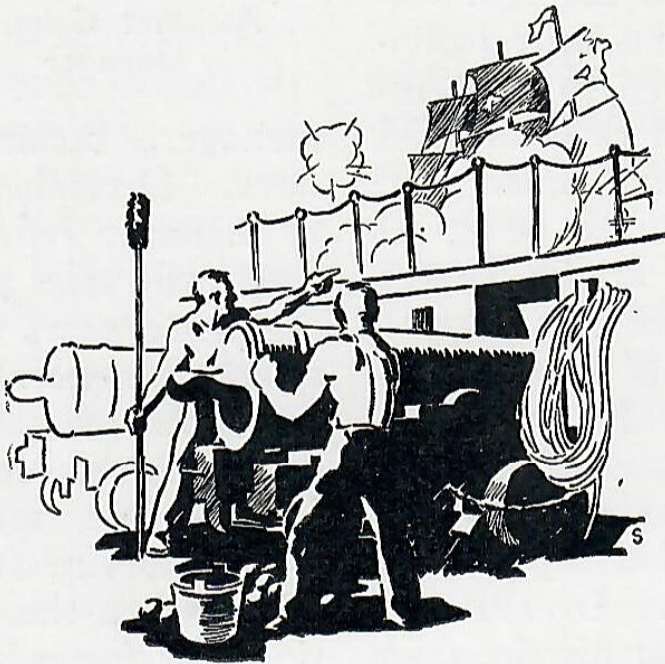
Her sides, which withstood the withering fire of the H. M. S. "Guerriere" and the battering and jostling of the "Java," sleek and clean and black; her masts of solid white pine fully rigged and identical with those which leaned to the breeze when she officially logged $13\frac{1}{2}$ knots during the early days of her service, the gallant old warrior, under full commission, and personneled with regular officers and men of the U. S. Navy, put in at San Diego harbor February 5 for her Pacific Coast visit.

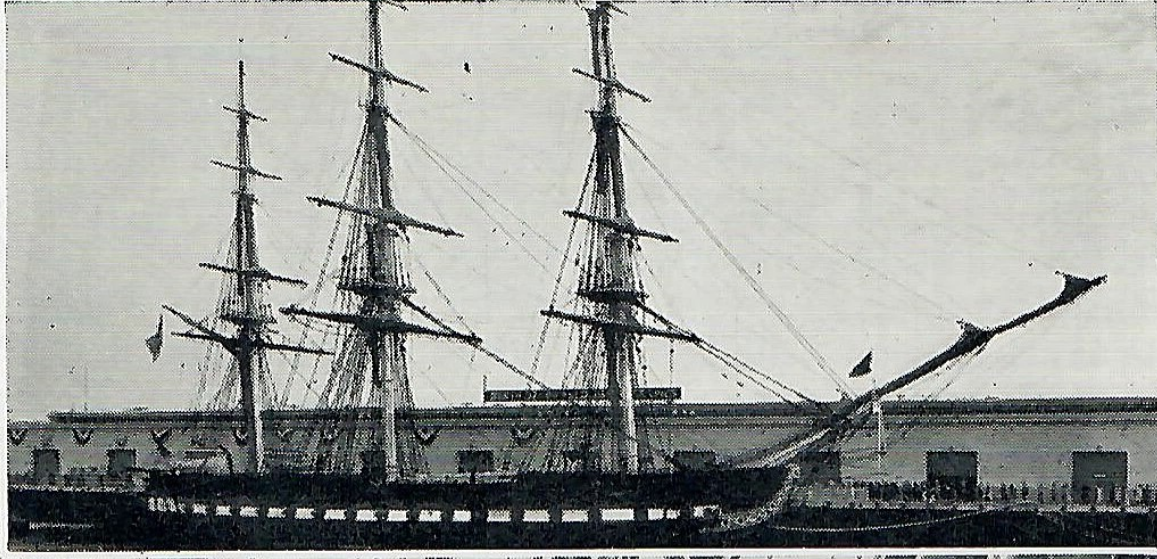
The tour of exhibition for which the Constitution is scheduled on the Pacific Coast will consume five months and extends from San Diego to Bellingham, Wash. She remained in San Diego until Feb. 20, then put into Los Angeles harbor, March 11 going to Long Beach where she will remain until March 20. March 22 she will be towed into San Francisco, where she will remain until April 12, immediately following which she will tie up at Oakland for 14 days. From April 26 to May 2 she will visit Vallejo. Astoria, Ore., will play host from May 5 to 10, and Portland will receive a 12-day call which will terminate May 22. "Old Ironsides" will be guest of Port Angeles May 24 to 29, after

which she will spend 15 days in Seattle, from there going to Tacoma until June 19; Bremerton, June 20 to July 5; Everett, July 6 to July 12; and Bellingham, July 12 to 19. July 22 to 23 she will be in San Francisco enroute to the Atlantic. The old fighter is scheduled to pass through the Panama Canal homeward bound about Sept. 4.

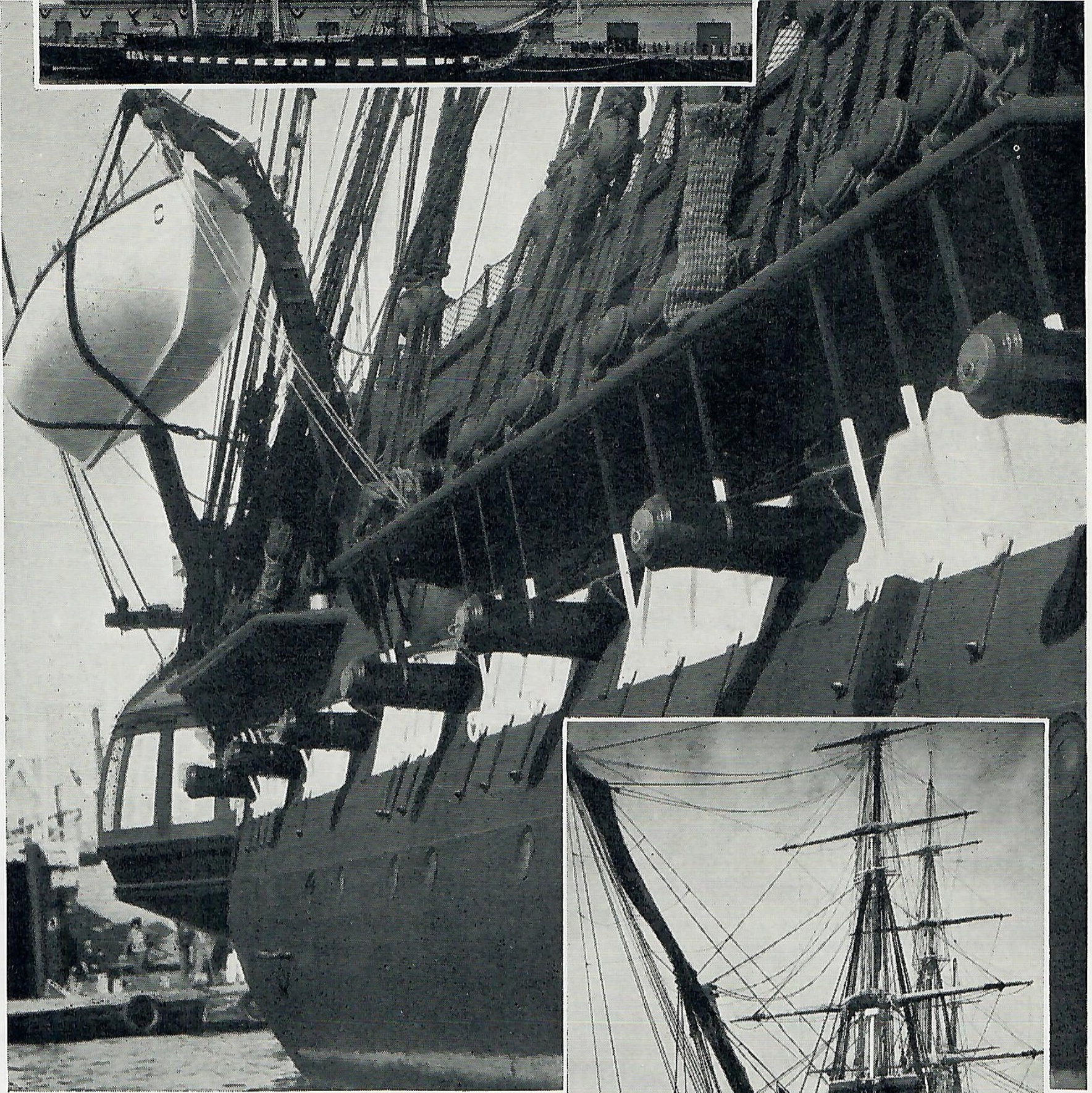
Virtually completely rebuilt between 1927 and 1931 under a special act of Congress, the Constitution today, except for few minor alterations, is an exact duplicate of the grand old frigate which almost single-handedly whipped the the French privateers and eventually broke the Corsair blockade, then went on to win new laurels in the war of 1812 and continued to perform active duty until 1860. Restoration work for a time occupied a prominent position in the national spotlight, due primarily to the fact that while the chief legislative body authorized a complete rebuilding, at government expense, a large portion of the labor and material were paid for by contributions from school children throughout the land. Total restoration cost exceeded \$921,000, of which more than \$650,000 was collected in pennies, nickels, and dimes by a patriotically aroused young America. The difficulties encountered by the rebuilders in finding suitable lumber with which to patch and renew the original hull and superstructures, as well as in locating workmen capable of hand-fashioning joints and other portions of the ship, also focused attention on the work.

Much effort was expended in research to locate construction material duplicating the original woods which went into the ship. More than three years were consumed in the rebuilding. Original plans were ob-





"Old Ironsides" as she looked while tied-up at Berth 57, Los Angeles harbor, where approximately 450,000 persons boarded her.



tained and closely followed. More than 70 tons of American hemp for standing and running rigging, bolt rope for the sails, and straps for blocks were utilized in re-rigging the old frigate.

"Old Ironsides" is now equipped with 52 guns as contrasted to the 44 which she originally carried. There was consider-



able fluctuation in the fighting pieces she carried during her active career, the number and type varying according to the service to which she was put.

Under an act of Congress, dated March 27, 1794, permission was given to build ships to punish the Algerian pirates, six frigates being authorized, one of which was the Constitution. The specifications submitted by Joshua Humphreys of Philadelphia were finally accepted as most suitable after a consultation in which George Washington participated. Humphrey's bid embraced the sales arguments that he could provide larger spread of sail to insure more speed, would use heavy construction to guarantee protection at close quarters and in rough seas, and would use a type of construction which would make the frigate capable of engaging two and three deck ships in heavy weather without disadvantage.

The Constitution was built in Hartt's shipyard, Boston, between 1794 and 1797. Edmund Thayer supplied the original 44 guns. The masts were solid white pine secured from a virgin forest which the government purchased for the specific purpose. Anchors were made by Barstow of Hanover, Mass. Paul Revere, the intrepid night rider, furnished all castings, spikes, and bolts. The flax sails were manufactured in Boston. Capt. Samuel Nicholson, her first commander, followed the Constitution through her various stages of construction as official inspector for the government. The overall length of the Constitution when she slid into her native element, Oct. 21, 1797, was 204 feet. She measured 175 feet on the waterline. Beam was 43.6 feet. Sailing draft was 21 feet fore, 23 feet aft. She first cleared for the open sea July 22, 1798, under Capt. Nicholson to fight French privateers in West Indian waters. In 1799 command was transferred to Commodore Silas Talbot and the Constitution made flagship of the fleet. Outstanding events in her early history included a race with a friendly British frigate with the Constitution leaving her hull down by a wide margin at the end of a day's sail, and the illegal capture of a Spanish prize, an incident which caused some embarrassment at Washington.

Early in 1801 she was dismantled in Boston Navy Yard, but was re-rigged and sailed under Edward Preble as flagship of

the squadron which finally broke the Corsair blockade. She was in virtually continuous action during this time and had as her commanders Stephen Decatur and John Rodgers. From 1807 to 1809 she underwent repairs in New York. The following two years she served as flagship of the home squadron with Rodgers in charge. She undertook special service to England until early in 1812, when she again underwent repairs. War with England was declared June 18, and by June 21 the Constitution was under sail with Capt. Hull in command and Charles Morris, first lieutenant.

Then began a series of daring fights and escapes, flights and running battles which wrote a new and stirring chapter in the history of the American navy. Twice the Constitution escaped from traps laid for her. August 18, 1812 she engaged His Majesty's ship "Guerriere" in a fierce close-quarter fight which has been recorded in American history as one of the most decisive marine victories ever accomplished. The "Guerriere's" masts shattered, decks raked with broadsides, the British within 30 minutes were forced to strike their flag. Four months later in a vicious battle with H. M. S. "Java" the Constitution earned her name "Old Ironsides." Engaging off the South American coast, the two came to close quarters in a struggle which saw the guns of the "Java" rain shot across the decks and into the sides of the Constitution. It was then that the heavy construction, which Joshua Humphreys had specified, proved its worth. Her sides shed the shot, her decks stood firm, the masts steady. Suddenly out of the smoke and powder which enveloped the ships the cry of a British topman rang out: "Look! Her sides are made of iron."

Commodore Richard Bainbridge and his men took up the cry: "Old Ironsides! Hurray for Old Ironsides!" then went on to win a second decisive victory. Under Capt. Stewart she captured the Picton in 1814, and on Feb. 20, 1815, took the Cyane and Levant in a battle remarkable for the seamanship of the Americans and the gallantry of the English. In April she escaped capture by the British and after being laid up in Boston harbor for repairs, filtered through a British blockade formed to keep her inactive.

From 1815 to 1821 she lay in the Navy

Yard, Boston. For the ensuing eight years she served as flagship of the Mediterranean squadron. In 1829 she was inspected by the Navy board and condemned, the order specifying that she be "broken up and sold."

Popular sentiment against the order was crystalized by Oliver Wendell Holmes' poem "Old Ironsides," the last verse of which reads:

Oh, better that her shattered hulk
Should sink beneath the waves!—
Her thunders shook the mighty deep,
And there should be her grave.
Nail to the mast her holy flag,
Set every threadbare sail,
And give her to the gods of storms,
The lightning, and the gale!

So loud became the public protest that the order was rescinded and she was reconditioned at the Navy Yard, Boston, by Joshua Barker.

"Old Ironsides" was again repaired in 1842, 1856, 1874, and 1905. She was found to be in extremely bad condition in 1923 and in 1927 complete restoration was undertaken.

In the presence of a distinguished company and a 21-gun salute, "Old Ironsides" on July 1, 1931 was placed in full commission, with regular naval personnel, and became an integral part of the United States Navy.

Reno Snow Storm



Reno substation and Union Service Stations, Inc., No. 37, Virginia and Court streets, as they looked following storm of January 21 when 16 inches of snow fell.

Sacramento River, died February 8 at the Merritt hospital, Oakland, from injuries received when he was struck by an automobile while walking on the highway between the Oleum refinery and Rodeo on the night of February 6. He had been in the employ of the company for more than ten years, his entire service having been on boats operating on San Francisco Bay and Sacramento River. In addition to being relief captain of the Kern, he was pilot and mate of the motorship Red Line.

Zero Starting Test



Here is a real cold weather starting test as conducted by William Gahlsdorf of Salem, Oregon, who is shown above pointing to radiator cap of his car buried in drift near lodge on Mt. Hood. He reports that his car started immediately he stepped on the starter after it had been excavated from the drift. He was using "76."

Union Ship Captain Killed

Harry T. Jones, relief captain of the motorship Kern, operating on San Francisco Bay and

Barney Barnes



D. L. Lawson



F. M. Higuera

25 Years

Service Emblem Awards



H. G. Iverson



F. T. Shores



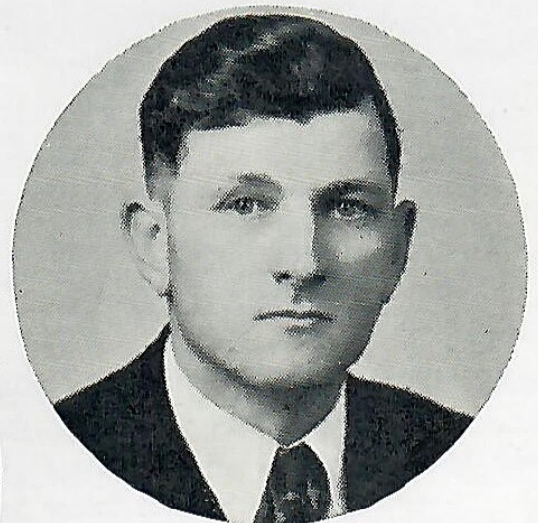
C. W. Root

20 Years

S. M. McKenna



V. L. Lannier



Carl Taylor

THE first two months of 1933 marked milestones in the service of eleven Union Oil Company employees, F. M. Higuera, Barney Barnes and D. L. Lawson completing 25 years of service each, and H. G. Iverson, V. L. Lannier, S. S. McKenna, C. W. Root, F. T. Shores, L. M. Bridgman, W. S. Grant and Carl Taylor each fulfilling twenty years.

Frank Higuera was first employed by the company in 1905, severing his service at the end of a year to work for a powder company. He re-entered the company's service as boilermaker helper in 1907, later transferring to the blacksmith shop. He has been Oleum plant blacksmith since 1909. Only ten asphalt and two crude stills were in operation at Oleum when Higuera first went to work for the company 25 years ago.

Barney Barnes has been an engineer pumper at the Seattle plant since the first tank was installed and the first horses pulled a gasoline loaded wagon over the hills of the city. At the time of his employment, Feb. 1, 1908, two men were handling the Seattle plant, Barnes doing the night shift. He vividly recalls the excitement incident to the first auto truck that was used to haul gasoline and the doubt expressed as to its safety.

David Lawson started as a tooldresser Feb. 1, 1908. From 1918 to 1920 he worked near the Harris pump station and then at the water well at Harris until 1930. For a time he served as fireman and engineer at Buttonwillow and is now engineer at the Bell station.

H. G. Iverson was employed December, 1913, and for a short time worked on asphalt barrels. He was then transferred to the refined oil department as foreman. For the past seven years he has been a crude stillman.

V. L. Lannier's initial service with the company dates from 1901, although his continuous record begins in 1913. He has worked in the Los Angeles pipeline department since his first date of employment, filling the posts of roustabout, line walker, painter, and construction foreman.

Prior to joining forces with the Union Oil Company in 1913, S. S. McKenna gained experience in railroading which has since proven valuable. He entered the company's service in the accounting depart-

ment, soon transferring to the purchasing department, in which he is now employed. For a number of years he has been in charge of forms and other company printing.

C. W. Root's first job with the company was that of teamster in Adams Canyon, near Santa Paula, in 1909. Required to go east for two years, he returned in 1913 and went to work in the production department on the Torrey lease, near Piru. After spending 16 years filling various jobs at this location, he was transferred to Richfield district, where he is now employed.

Fred Shores started to work on the Stearns lease, near Brea, in 1913. He worked through the various field department jobs to the post of driller in 1920, filling that capacity for seven years. He is now derrickman in the southern division field.

Carl Taylor entered the employ of the Union Oil Company, Feb. 8, 1913, at the office on the Fox lease, Orcutt field. Soon afterward he was made well-puller on the same lease. He served in the army during the war, and after his discharge returned to Orcutt. He has since been employed as general utility man in the Santa Maria district.

Fifteen Years—December

Bailey, George N., Mfg., Oleum Refinery.
 Brown, Chas. A., Field, Santa Fe Springs.
 Davis, Bernard H., Field, Santa Fe Springs.
 Gassner, Alores D., Sales, Portland.
 Haines, Joseph B., Mfg., Oleum Refinery.
 Holt, Edward J., Sales, San Diego.
 Lester, Harry O., Mfg., Los Angeles Refinery.
 McConnell, Ray, Field, Santa Fe Springs.
 McGarigle, Matthew J., Sales, Sacramento.
 Mayfield, Isaac, Field, Santa Fe Springs.
 Michel, Max J., Sales, San Francisco.
 Paulson, Yancy, Gas, Santa Fe Springs.
 Reed, George E., Transp., No. Div. Pipe Line.
 Rowland, Walter A., Field, Orcutt.
 Stockstill, Jesse R., Mfg. Oleum Refinery.
 Taylor, Vernon, Mfg., Los Angeles Refinery.

Ten Years—December

Anderson, Marshall C., Field, Santa Fe Spgs.
 Anderson, Soren H., Sales, Oakland.
 Bartella, Francis O., Mfg., Los Angeles Ref.
 Beck, Albert H., Gas, Santa Fe Springs.
 Blevans, Hope L., Sales, San Francisco.
 Boothe, Joseph F., Field, Santa Fe Springs.
 Carl, George W., Field, Santa Fe Springs.
 Chapman, Edward C., Transp., No. Division
 Pipe Line.
 Church, John L., Land, Head Office.
 Clegg, Percy A., Sales, Seattle.

Fletcher, Jesse O., Field, Santa Fe Springs.
 Fowler, Robert, Field, Santa Fe Springs.
 Francis, Fred, Field, Santa Fe Springs.
 Gambetti, Victor, Transp., No. Div. Pipe Line.
 Geithner, Rudolph P., Marine, "De Roche."
 Grinsfelder, Sam, Field, Head Office.
 Grizzle, Martin E., Gas, Santa Fe Springs.
 Hamilton, Harley S., Sales, Fresno.
 Home, Robert A., Mfg., Oleum Refinery.
 Jarvis, Anthony, Mfg., Oleum Refinery.
 Johnson, Frank E., Field, Santa Fe Springs.
 Jones, Percy W., Sales, Fresno.
 Jones, Thomas O. M., Mfg., Los Angeles Ref.
 Kies, Roy E., Field, Santa Fe Springs.
 Kostowal, Henry J., Marine, "Los Angeles."
 Lewis, Bert C., Sales, Fresno.
 Lowrey, Earl W., Mfg., Oleum Refinery.
 McCartney, Edward R., Mfg., Head Office.
 McCullough, Thomas H., Pur. Whse., Head Office.
 Murphy, Ire E., Transp., No. Div. Pipe Line.
 Miracle, Alson C., Field, Santa Fe Springs.
 Offley, Arthur D., Sales, Los Angeles.
 Paull, Russell S., Field, Santa Fe Springs.
 Payne, Earl, Transp., So. Div. Pipe Line.
 Pepper, Carl J., Gas, Santa Fe Springs.
 Ramey, Joe, Transp., No. Div. Pipe Line.
 Reid, Fred J., Sales, Vancouver.
 Ridenour, Jerry L., Field, Santa Fe Springs.
 Slaughter, Leslie B., Field, Santa Fe Springs.
 Stevens, Thomas H., Sales, Vancouver.
 Tavera, Timoteo, Mfg., Los Angeles Refinery.
 Taylor, Robert H., Sales, Los Angeles.
 Thomas, Elmer C., Mfg., Los Angeles Ref.
 Walthall, Clinton B., Transp., So. Div. Pipe L.
 Wood Charles A., Sales, Seattle.

Fifteen Years—January

Albertson, N. B., Field, Santa Fe Springs.
 Burleson, James M., Mfg., Santa Paula Ref.
 Calhoun, John C., Mfg. Avila Refinery.
 Davis, Lawrence A., Transp., No. Div. Pipe L.
 Ely, Carl D., Transp., So. Div. Pipe Line.
 Fisher, Harold H., Sales, Portland.
 Flower, Forest F., Sales, Los Angeles Garage.
 Pedersen, Chas. S., Mfg., Research.
 Pope, Wm. J., Sales, Phoenix.
 Knabb, James E., Sales, Central Div. Garage.
 Wardell, Ernest M., Field, Santa Fe Springs.
 Weber, Carl, Field, Orcutt.

Ten Years—January

Angel, Edgar H., Transp., So. Div. Pipe Line.
 Anthony, Albert, Field, Santa Fe Springs.
 Bath, Clarence P., U. S. S., Inc., Seattle.
 Brooks, Alma P., Compt., Head Office.
 Dean, Don R., Transp., So. Div. Pipe Line.
 Downing, Don G., Field, Santa Fe Springs.
 Eichendorf, John E., Sales, Portland.
 Endicott, Claude W., Sales, Portland.
 Erwin, Ivon C., Sales, Portland.
 Evans, Milton D., U. S. S., Inc., Portland.
 Flynn, Beulah M., Compt., Head Office.
 Frazier, Vernon S., Field, Santa Fe Springs.
 Gross, Chas. R., Sales, Portland.
 Jacobson, Shirley, Mfg., Oleum Refinery.
 Kamp, Wm., Field, Maricopa.
 Lain, Ben, Gas, Santa Fe Springs.
 Longfellow, Clayton F., Transp., No. Div. Pipe Line.
 McKeen, Albert E., Mfg., Oleum Refinery.

Maddux, Lee F., Mfg., Los Angeles Refinery.
 Masonheimer, Wm. H., Field, Santa Fe Spgs.
 Mickel, Geo. A., Transp., So. Div. Pipe Line.
 Moore, Geo. H., Transp., No. Div. Pipe Line.
 Myers, Desaix B., Geo., Head Office.
 Nance, Wilbur, Field, Santa Fe Springs.
 Phillips, Joseph, Mfg., Oleum Refinery.
 Pickrell, Ray D., Field, Santa Fe Springs.
 Reynolds, Alan L., Mfg., Oleum Refinery, Head Office.
 Rogers, Elmer C., Compt., Head Office.
 Sanders, Guy W., Transp., No. Div. Pipe L.
 Smith, Chas. M., Field, Santa Fe Springs.
 Springer, Clement W., Sales, Fresno.
 Taylor, Mabel E., Mfg., Los Angeles Refinery.
 Warner, Gustav, Sales, Seattle.
 Willett, James H., Field, Santa Fe Springs.
 Willis, Wm. S., Field, Santa Fe Springs.
 Yarnell, Arthur B., Field, Santa Fe Springs.

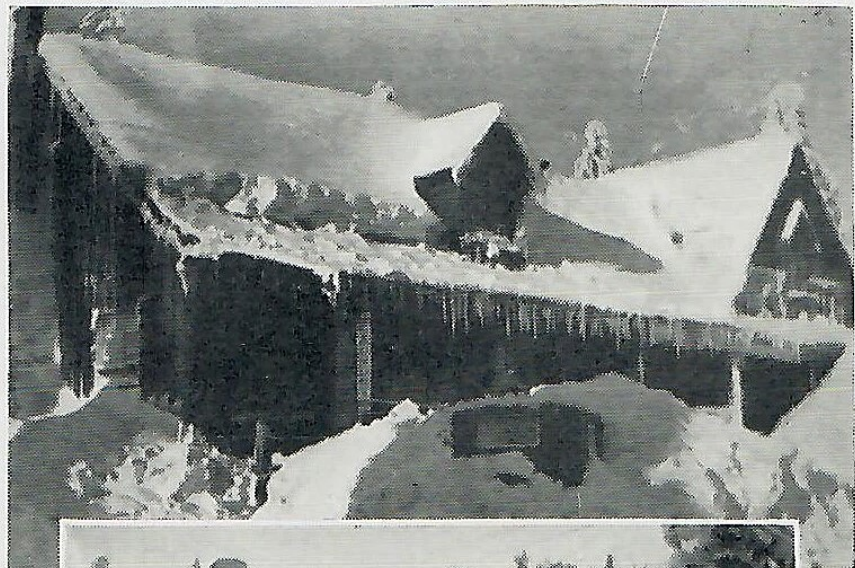
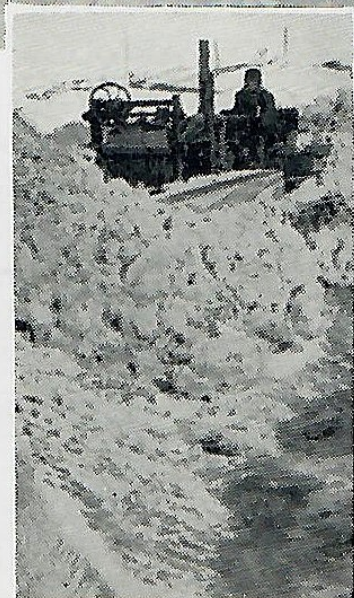
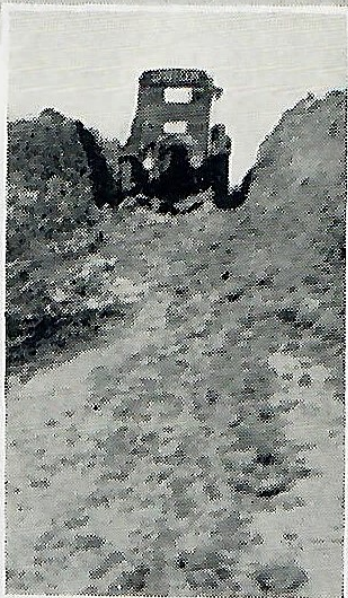
Fifteen Years—February

Bouslog, John G., Field, Santa Fe Springs.
 Cluster, Albert, Telephone, Santa Fe Springs.
 LaRue, Herbert C., Sales, Seattle.
 Olsen, Peter, Marine, S. S. Los Angeles.
 Parry, Ernest B., Pur., Los Angeles Refinery.
 Shuey, Jacob A., Mfg., Los Angeles Refinery.
 Talbert, Robert Lee, Field, Orcutt.

Ten Years—February

Anderson, Nils, Marine, M.S. Redline, Bay Fleet.
 Belt, Floyd W., U. S. S., Inc., Los Angeles.
 Brown, Milton, Field, Santa Fe Springs.
 Ciscar, V. B., Mfg., Oleum Refinery.
 Clark, J. A., Jr., Sales, Seattle.
 Clayton, Leonard B., Gas, Santa Fe Springs.
 Cox, John S., Sales, Los Angeles.
 Creedon, Hugh, Mfg., Oleum Refinery.
 DeGregori, A. J., Sales, Fresno.
 Gesselman, Chas. H., Mfg., Los Angeles Lub.
 Gilmore, Ella, Sales, Portland.
 Griffith, Warren E., Transp., So. Div. L. A. Pipe Line.
 Gussett, David, Sales, Los Angeles Garage.
 Hall, Lee S., Pur., Head Office.
 Heuschkel, Frank E., Sales, Sacramento.
 Holt, Arthur C., Field, Santa Fe Springs.
 Huntsman, Seth, Sales, San Francisco.
 Hyde, Fred, Transp., No. Div. P. P. L.
 Jones, Irving, Mfg., Los Angeles Refinery.
 Lamplugh, Myra, Compt., Head Office.
 Libak, Joseph F., U. S. S., Inc., Portland.
 Lown, Harry D., Const., Northern Sales.
 MacWilliams, J. G., Sales, Seattle.
 Morrow, Noland F., Santa Fe Springs.
 Myers, Rubert, Mfg., Los Angeles Refinery.
 Nehr, Marie R., Sect., Head Office.
 Parker, Arthur W., Mfg., Oleum Refinery.
 Powell, Jerry H., Legal, Head Office.
 Ross, Edward P., Mfg., Oleum Refinery.
 Rubel, A. C., Field, Head Office.
 Sleeth, John A., Transp., So. Div. L. A. P. L.
 Slick, Nelson E., Gas, Santa Fe Springs.
 Smith, Edward R., Transp., No. Div. P. P. L.
 Strickland, Tom L., Transp., So. Div., L. A. Pipe Line.
 Sweet, Howard L., Mfg., Oleum Refinery.
 Williams, John T. C., Sales, Vancouver.
 Wise, John, Geo., Head Office.
 Rutherford, John B., Transp., No. Div. P.P.L.

Compliments of King Winter



Due to deep snows in the Northwest, it was necessary for a time to confine the automotive equipment of the Union Oil Company to the state highways. This resulted in many Union Oil customers being obliged to meet the representative of the Union Oil Company at the state road in order to obtain their requirements of petroleum products.

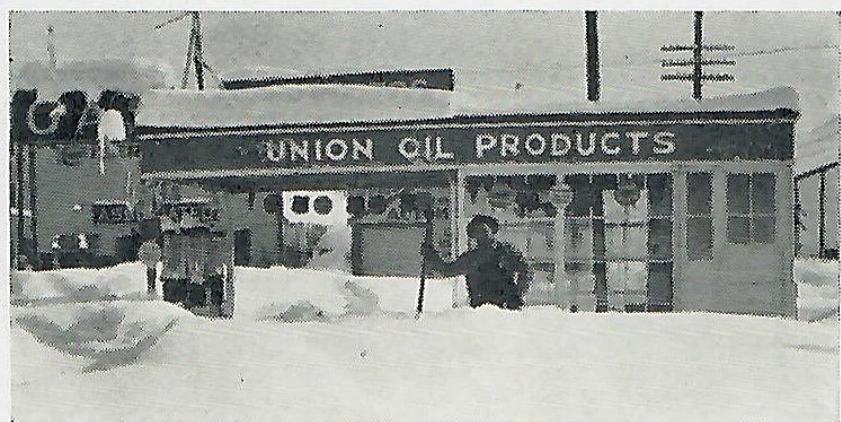
The above photograph was taken at Garfield, Washington, just as a delivery was being made by a company representative to a farmer in that vicinity. Note the use of the sleigh.

The photograph at the left shows one of the company's trucks on the road between Odessa and Ritzville, while on the right one of the state's snow plows is bucking the drifts on the highway in the same area.

A blizzard that swept the San Bernardino mountains January 22 marooned several hundred persons who had visited Lake Arrowhead to attend a Junior Chamber of Commerce sports carnival. The effectiveness of the grip of winter on the cars is illustrated by the two photographs taken at Crestline on the Lake Arrowhead highway. The view at the top is of the general store and postoffice showing one car that was never able to leave the hitching post. The lower one shows a car snowed in at the portable island operated by Mark M. Sinsbaugh. His tow car and "76" gasoline enabled many of the unlucky motorists to get started on their way home after the roads had been cleared by snow plows.



Improvised snow plow being used at Union station at Beaumont, Calif., to clear the driveway.



Digging way out of station No. 541 at Truckee, California, following season's heaviest fall of snow.

UNION'S CRUDE OIL PRICES FOR ITS CURRENT PURCHASES AT THE WELL

Effective 7 A. M., March 5, 1933
 PRICE PER BARREL IN FIELDS INDICATED

(All gravities above those quoted take highest price for that field)

Gravity	Signal Hill	Alamitos Heights	Seal Beach	Huntington Beach	Athens	Rosecrans	Dominguez	Torrance	Santa Fe Springs	*Playa del Rey	East Coyote	Olanda Canyon	Brea Canyon	Richfield	Montebello	Santa Paula	Orcutt	Coalinga	Kettleman Hills	Belridge	Lost Hills	Kern River, Mt. Poso	McKittick, Sunset-Midway	Elk Hills, Buena V. Hills	Gravity
11-13.9°	\$.55																								11-13.9°
14-14.9°	.55																								14-14.9°
15-15.9°	.55																								15-15.9°
16-16.9°	.55																								16-16.9°
17-17.9°	.55																								17-17.9°
18-18.9°	.57																								18-18.9°
19-19.9°	.59																								19-19.9°
20-20.9°	.61																								20-20.9°
21-21.9°	.63																								21-21.9°
22-22.9°	.65																								22-22.9°
23-23.9°	.67																								23-23.9°
24-24.9°	.69																								24-24.9°
25-25.9°	.71																								25-25.9°
26-26.9°	.73																								26-26.9°
27-27.9°	.75																								27-27.9°
28-28.9°	.77																								28-28.9°
29-29.9°	.79																								29-29.9°
30-30.9°	.81																								30-30.9°
31-31.9°																									31-31.9°
32-32.9°																									32-32.9°
33-33.9°																									33-33.9°
34-34.9°																									34-34.9°
35-35.9°																									35-35.9°
36-36.9°																									36-36.9°
37-37.9°																									37-37.9°
38-38.9°																									38-38.9°
39-39.9°																									39-39.9°

* Subject to a gathering charge of 5 cents per barrel.

REFINED AND CRUDE

By RICHARD SNEDDON

A well known bacteriologist has just announced that germs always work in groups, which explains very nicely why you never hear of a measles.

You know nature is really wonderful. Who would ever have thought a million years ago that man would one day be required to wear glasses, yet we are all provided with ears to hang them on.

And now, cheer up, folks, the road hogs are out again trying to get away from their shadows, so it looks like a warm summer.

Incidentally, with the approach of warm weather, it is about time for the heroes who take a cold bath every morning to start taking a cold bath every morning again.

A professor of etymology in one of our better colleges says that Americans in general speak very poor English. Oh yeah?

And having just learned that the life span of a wolf is only ten years, we again dare to assert that prosperity is just around the corner.

The big stock crash of 1929, however, taught us all a valuable lesson—to get out sooner the next time.

After all a pessimist is simply a chap who has financed an optimist.

Physicians, we learn, are now trying to diagnose the disease of which Shakespeare died.. That's pretty quick work for physicians.

And while we feel sorry for the young man who was fined heavily for stealing a car, we can't understand why he didn't simply buy one and not pay for it, like a gentleman.

A visitor on Mount Wilson was intently watching one of the astronomers using the big telescope, and just then a star fell. "By golly," he said, "that guy is sure a crack shot."

Judge: "Did you take any precautionary measures to avoid running down the plaintiff?"

Motorist: "Yes, sir. I tooted my horn and cursed him."

It is true that the people of this country are restless right now, but maybe it's just the winter underwear that's responsible.

In any case things are not nearly so bad as some people would have us believe. Only yesterday the boss offered us a partnership in the business. In fact he stated quite emphatically that if we didn't take a little interest in the business he would have to do something about it.

And this one comes direct from the machine shop at Santa Fe:

"Say. Have you sharpened all these tools?"

"Yeah—all but the saw. I haven't quite got all the gaps out of it yet."

A young man was wandering across the street, when a dog ran between his legs and upset him. Before he could get up an Austin ran over him. Discussing the accident later he remarked: "The dog didn't hurt me so much, but I sure got a nasty smack from the can that was tied to his tail."

Then there was the enthusiastic salesman who indignantly denied the insinuation that there were any b.t.u.s in the fuel oil.

It's nice to have a pocketful of money—providing you're not an Eksimo. Fish hooks are used for money in the Arctic.

Imagine what a time the women of Alaska must have going through their husbands' pockets. That's probably why they have such long nights.

"Are these eggs fresh?" asked the shopper. "Yes, mam," replied the grocer. "Why, the chickens don't know yet that we've taken them away."

In conclusion, remember that it takes a lot of pluck to keep a woman's eyebrows in shape.

And the patrol wagon can always be used in a pinch.

