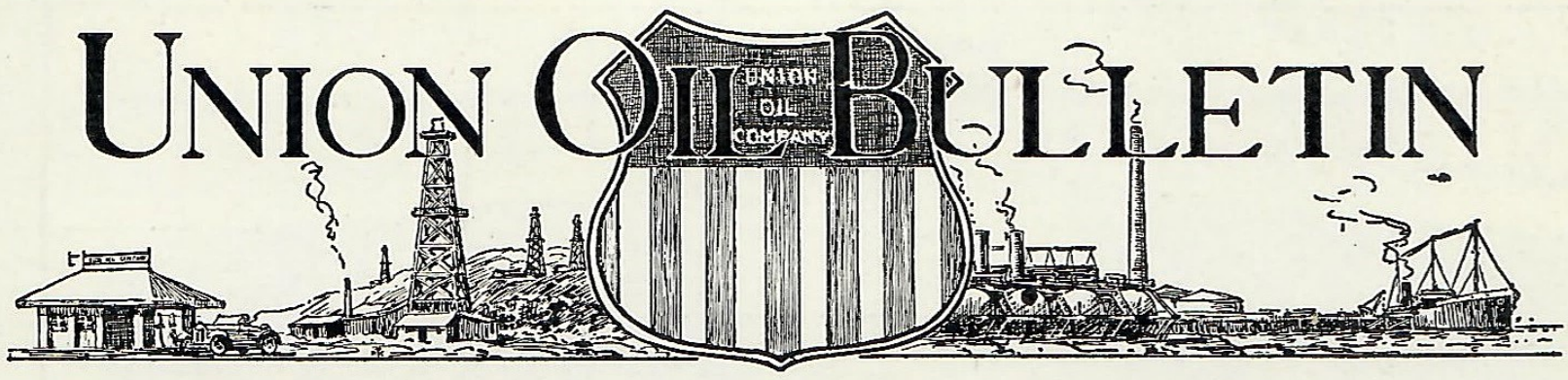

UNION
OIL
BULLETIN
DECEMBER 1929

Aerial Approach To Company's Wilmington Marine Terminal

The strategic location of the company's loading dock in the inner harbor is disclosed in this series of excellent aerial photographs. Top—Looking up the main channel with Union's refinery looming up in distance on left and loading dock dead ahead. Center—Half way up main channel, and at the bottom, the terminal with tanker at the dock and a scene of activity at the neighboring steamship piers.

UNION OIL BULLETIN



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VOLUME X DECEMBER BULLETIN No. 12

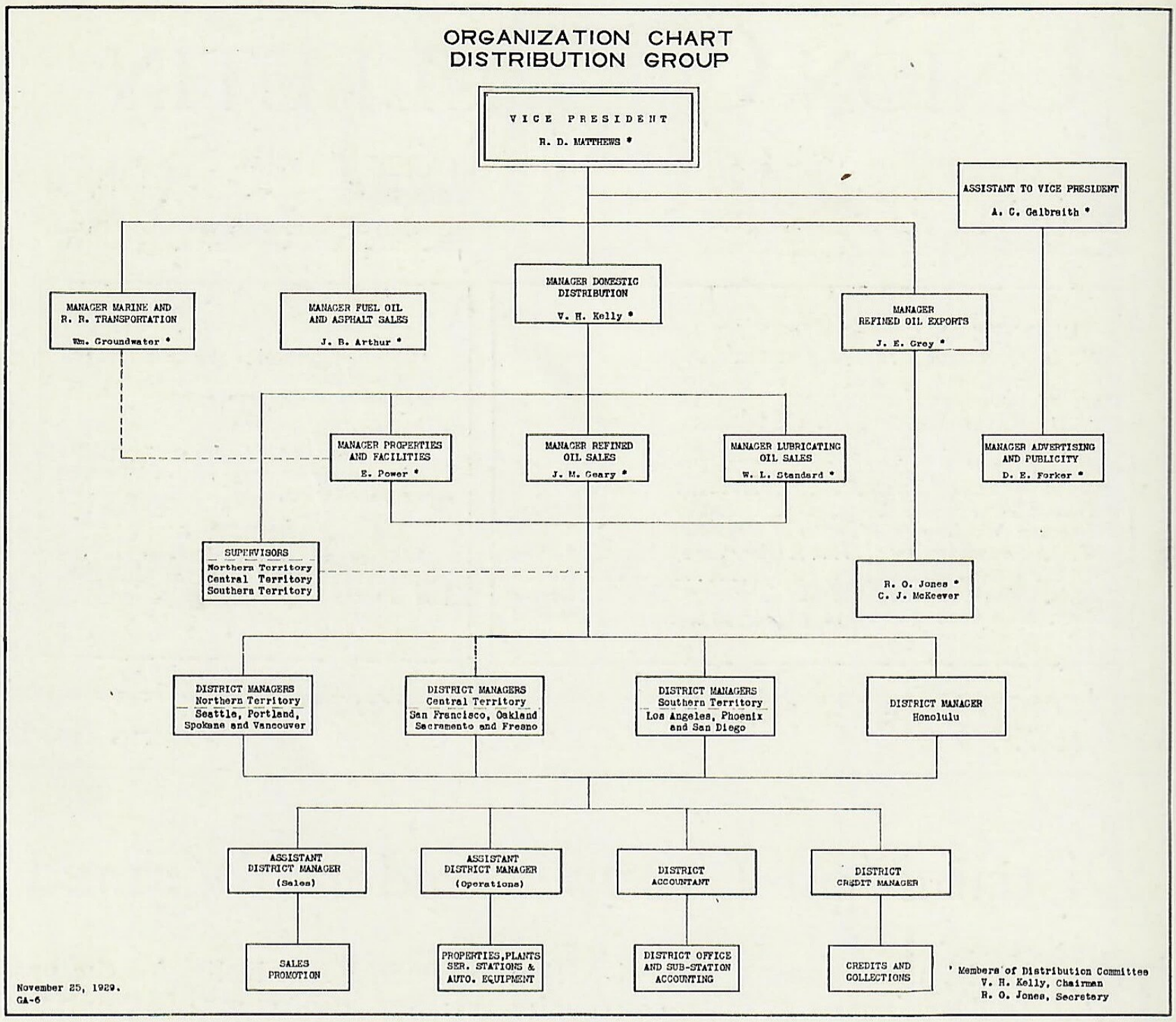
Distribution Group Leaders Named

TO PLACE the company in position to keep pace with its constantly expanding domestic and foreign markets, R. D. Matthews, vice president in charge of distribution, last month completed the selection of the key men who will be associated with him in directing the sale and marketing of the company's products, and the revamping of the general plan under which the Distribution Group will operate. While basically the organization is the same as it has been in the past, there has been in some instances a realignment of personnel to meet changed marketing conditions, a general increase in individual responsibility, creation of new avenues of authority and a strengthening of the export phase of the company's operations.

For most part the men selected for the key posts by Mr. Matthews retain the same positions held for the past few years. One of the primary changes, however, involves the creation of the position of manager domestic distribution to which V. H. Kelly, for the past nine months chairman of the Sales Committee, has been assigned. In this capacity Mr. Kelly now has supervision over the company's refined oil and lubricating oil sales in the United States and reports directly to Mr. Matthews. He also retains the chairmanship of the "Distribution Committee," formerly designated as the Sales Committee.

Mr. Kelly brings to his new position sixteen years' experience in the sales organization of the Union Oil Company, having started as a salesman in Tacoma, Wash., in 1913 and progressed through a special agency in Seattle, the office of manager of the Portland District, and the office of manager of the Northern Division. Last January he was transferred to Los Angeles to take the chairmanship of the Sales Committee.

A. C. Galbraith, who has been engaged in sales promotion work for the company for the past two years, has



been assigned by Mr. Matthews to the important post of assistant to vice president, with special supervision over advertising and publicity. Mr. Galbraith returned from Australia last month, following the completion of special work in the Antipodes, to take up his new duties. He has been identified with the company for fifteen years, starting in the comptroller's department as auditor of the sales department. When the advertising department was formed seven years ago he was placed at its head, and following several years in the department was assigned to sales promotion work.

In preparing to broaden the scope of the company's export activities, Mr. Matthews selected as manager refined oil exports, J. E. Grey, who for the past two and one-half years has been managing director of the Atlantic Union Oil Co., Ltd., the distributing subsidiary in Australia and New Zealand owned jointly by the Atlantic Refining Company and the Union Oil Company of California. Prior to identifying himself with the Atlantic Union Oil Company, Ltd., Mr. Grey had organized and operated oil marketing companies in Brazil, Central America, Spain, Portugal, West and South Africa.

In his new position, which he assumed Nov. 18, Mr. Grey will be stationed at the head office in Los Angeles and will handle all refined oil and lubricating oil exports, and in addition will be responsible directly to Mr. Matthews for the Australian business of the company.

R. O. Jones, appointed secretary of the Distribution Committee, and C. J.

Key Men in Distribution Organization

V. H. KELLY
Manager Domestic Distribution

A. C. GALBRAITH
Assistant to Vice President

J. E. GREY
Mgr. Refined Oil Exports

J. B. ARTHUR
Mgr. Fuel & Asphalt Sales

Wm. GROUNDWATER
Mgr. Marine & R. R. Transp.

W. L. STANDARD
Mgr. Lubricating Oil Sales

J. M. GEARY
Manager Refined Oil Sales

E. POWER
Mgr Properties & Facilities

D. E. FORKER
Mgr. Advertising & Publicity

McKeever, who has been handling the company's case goods export business in San Francisco, will report directly to Mr. Grey.

J. M. Geary, who has been one of the directing heads of the company's sales organization since 1918, under the new arrangement, becomes manager refined oil sales. W. L. Standard, who for the past seventeen years has directed the lubricating oil sales of the company, retains the title of manager lubricating oil sales. Both report to Mr. Kelly, except in the case of lubricating cargo export business when Mr. Standard will report directly to Mr. Matthews.

E. Power, manager properties and facilities for the past three years, retains that title, reporting to Mr. Kelly. C. F. Lienesch, as special representative, will also report to Mr. Kelly.

J. B. Arthur retains the position of manager fuel oil and asphalt sales which he has held for the past ten years. He will also have jurisdiction over the sale of crude, gas, road and diesol oils sales. He reports directly to Mr. Matthews, as does William Groundwater, manager marine and railroad transportation. Mr. Groundwater has been head of the transportation department for the past six years.

D. E. Forker, who came to the Union Oil Company a year ago last September from Lord and Thomas & Logan to direct the company's publicity activities, becomes manager advertising and publicity, and will report to Mr. Galbraith.

The Distribution Committee, which displaces the Sales Committee, is headed by Mr. Kelly, with R. O. Jones as secretary. The other members of the committee are Messrs. Geary, Standard, Power, Arthur, Forker, Grey, Galbraith and Matthews.

Under the new organization plan the title of "supervisor" has been substituted for that of "division manager," and the divisions redesignated as territories. Many of the administrative details with which the division managers were formerly burdened have been lifted from their shoulders, permitting them to give more attention to the sales activities in their respective areas.

The district sales managers have been redesignated as district managers and their assistants as "assistant district manager sales," and "assistant district manager operations." Greater authority and responsibility has also been given the district managers.

Except in the case of the assignment of S. D. Herkner to the Seattle District, W. F. Lewis to the Los Angeles District and W. A. Newhoff to the San Francisco District as managers, the territorial and district executive personnel remains unchanged.

Following are the territorial and district organizations announced by Mr. Kelly:

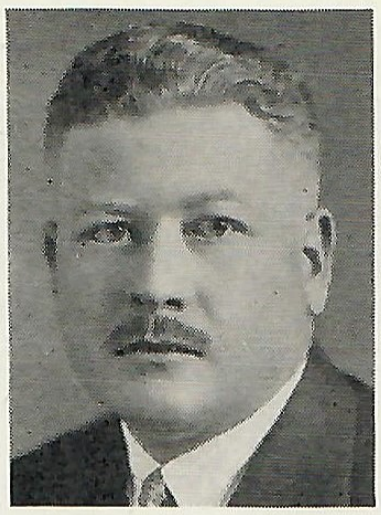
Northern Territory—M. W. McAfee, supervisor. Vancouver District, R. J. Kenmuir, manager; A. P. Bennett, assistant district manager sales; C. T. Lawrey, assistant district manager operations. Seattle District, S. D. Herkner, manager; J. Federspiel, assistant manager sales; W. E. Davenport, assistant district manager operations. Spokane District, C. C. Ireland, manager; S. L. Gain, assistant district manager sales; E. C. King, assistant district manager operations. Portland District, C. L. Tostevin, manager; H. H. Brown, assistant district manager sales; L. F. Davis, assistant district manager sales; H. L. Blevans, assistant district manager operations.

Central Territory—J. H. Dasteel, supervisor. San Francisco District, W. A. Newhoff, manager; R. E. Parker, assistant district manager sales; F. H. Hamlin, assistant district manager operations. Oakland District, F. W. Nevitt, manager; J. E. Schmidt, assistant district manager sales. Sacramento District, F. W. Pemberton, manager; H. H. Ramsay, assistant district manager sales; C. S. Myer, assistant district manager operations. Fresno District, G. W. Schattner, manager; W. G. Talbot, assistant district manager sales; C. K. Howard, assistant district manager operations.

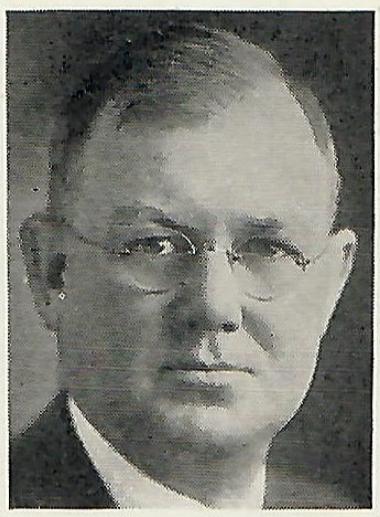
Southern Territory—J. B. Williams,

District Managers and Supervisors

J. H. DASTEEL
Supervisor Central Territory



J. B. WILLIAMS
Supervisor Southern Territory



M. W. McAFEE
Supervisor Northern Territory

C. C. IRELAND
Manager Spokane District

F W. NEVITT
Manager Oakland District

F. W. PEMBERTON
Manager Sacramento District

W. F. LEWIS
Manager Los Angeles District

G. W. SCHATTNER
Manager Fresno District

E. W. BREWSTER
Manager Phoenix District

W. A. NEWHOFF
Manager San Francisco District

S. D. HERKNER
Manager Seattle District

J. D. NESBITT
Manager San Diego District

C. L. TOSTEVIN
Manager Portland District

R. J. KENMUIR
Manager Vancouver District

supervisor. Los Angeles District, W. F. Lewis, manager; E. J. Munn, assistant district manager sales; A. L. Harmon, assistant district manager sales; R. J. Linden, assistant district manager operations. San Diego District, J. D. Nesbitt, manager; R. J. Wood, assistant district manager sales; H. E. Golden, assistant district manager operations. Phoenix District, E. W. Brewster, manager; J. P. Osborne, assistant district manager operations.

Honolulu Territory—H. B. Weller, district manager.

One of the striking things about the leaders of the Distribution Group is the fact that while they are all comparatively young men their service with the company averages approximately fifteen years. Mr. Forker, manager advertising and publicity, is the only one of the group with less than six years' service.

New Union Aero Oils Placed on Market

THE Union Oil Company's new Union Aero Motor Oils, developed to meet the highly exacting and drastic new government specifications, were placed on the market on the Pacific Coast late last month and won the instant approval of aircraft motor experts.

D. A. Cain, aviation lubrication engineer of the company, has just returned to Los Angeles from a trip up the coast during which he introduced the new aero oils to principal operators in Northern California, Oregon, Washington and British Columbia. He reports that the new aircraft power plant lubricants are being very favorably received and anticipates an unusual demand for them.

The West Coast Air Transport, which maintains passenger and mail service between Oakland and Seattle, has adopted the oils for the Pratt-Whitney motors that power its trimotored Fokkers. The Mamer Transport Service, plying between Portland and Spokane, the Curtiss-Wright Flying Service, operating charter planes and two flying schools in California, the Yukon Airways, and a large number of independent operators scattered along the coast from San Francisco to Vancouver, B. C., have also placed the new oils on their approved lists. The Yukon Airways, which operates Ryan cabin planes, powered with Wright J-6 motors, is proving the quality of the new oils under adverse flying conditions. The planes of this company go as far north as White Horse and must fly a great deal of the time in sub-zero weather. The Yukon Airways in addition to using the new oil are boosters for Union aviation gasoline.

In placing the new aero oils on the market the Union Oil Company has filled the requirements of airplane motor manufacturers for an oil that will hold its viscosity, or body, under the varying temperatures and changing flying conditions encountered by airplanes in cross-country flights.

The new aero motor oils have been requisitioned for and are now in stock at all points in the company's system between Vancouver and Mexico.

American Petroleum Institute Honors Union Oil Executive

L. P. ST. CLAIR
Executive Vice President Union Oil Company

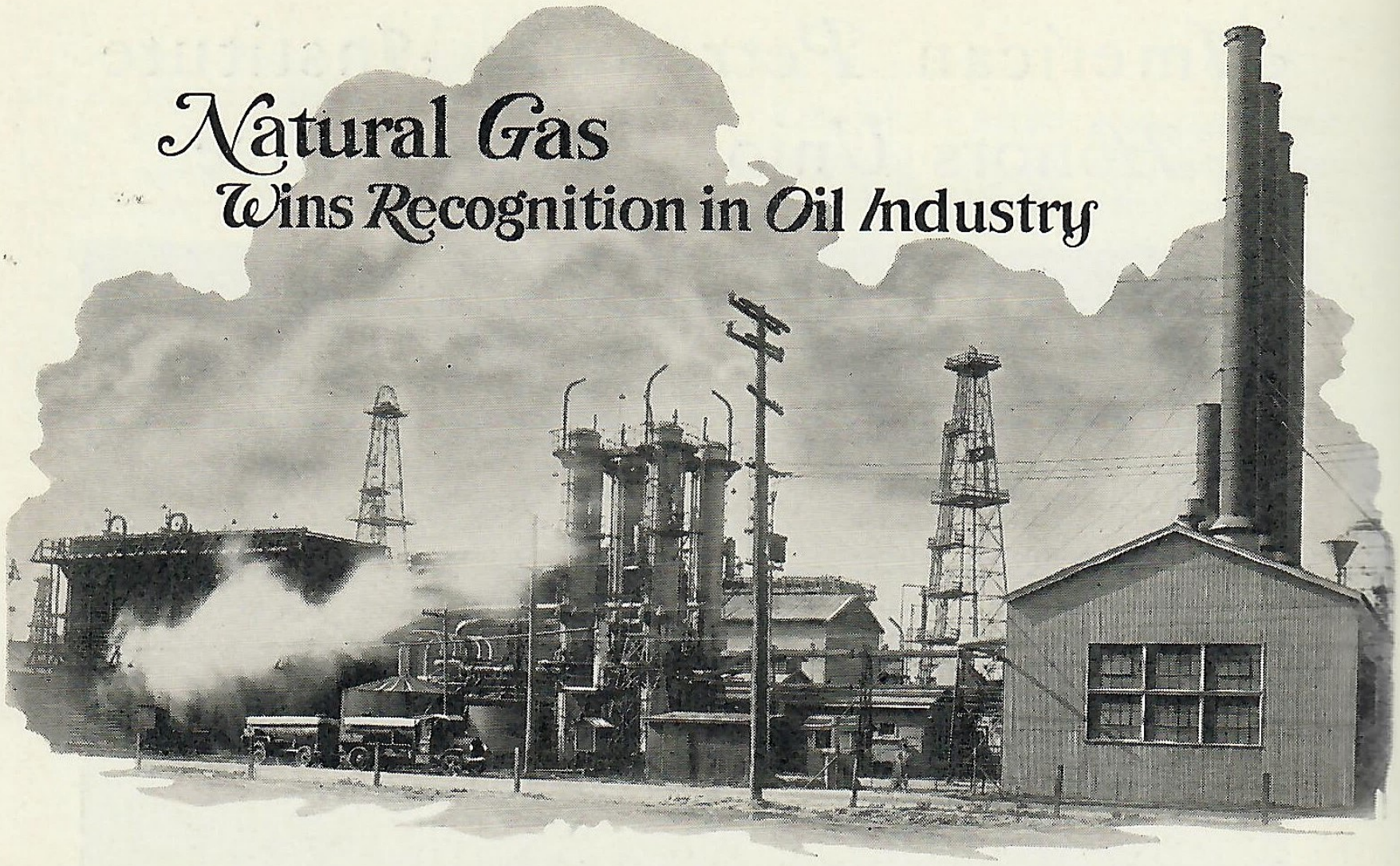
L. P. St. Clair, executive vice president of the Union Oil Company and for the past ten years a director of the American Petroleum Institute, was elected vice-president-at-large at the annual meeting of the Institute held in Chicago, Dec. 2 to 5, inclusive. His election to this high position comes in recognition of his outstanding achievements in the interest of oil and gas conservation. He has long advocated an aggressive program to curb the wastage of petroleum resources and during the past year played a major part in bringing about a curtailment of production in the flush fields of Southern California.

He is credited in the industry with being the father of the California gas law, the first attempt by any state to compel operators and landowners to prevent wastage of natural resources. While most of the major oil companies have endorsed the law and swung into line behind it, its enforcement to date has been delayed by a recourse to legal actions on the part of a minority group of operators.

Mr. St. Clair has been affiliated with the oil industry for nearly a quarter century, and has been active in the American Petroleum Institute since 1920, when he was elected to the board of directors.

E. W. Clark, who retired last June as executive vice-president of the Union Oil Company and served for two years as president of the A.P.I., continues to play an important part in Institute affairs as a member of its executive committee.

Natural Gas Wins Recognition in Oil Industry



By R. W. GARMAN

Manager Natural Gasoline and Gas Operations

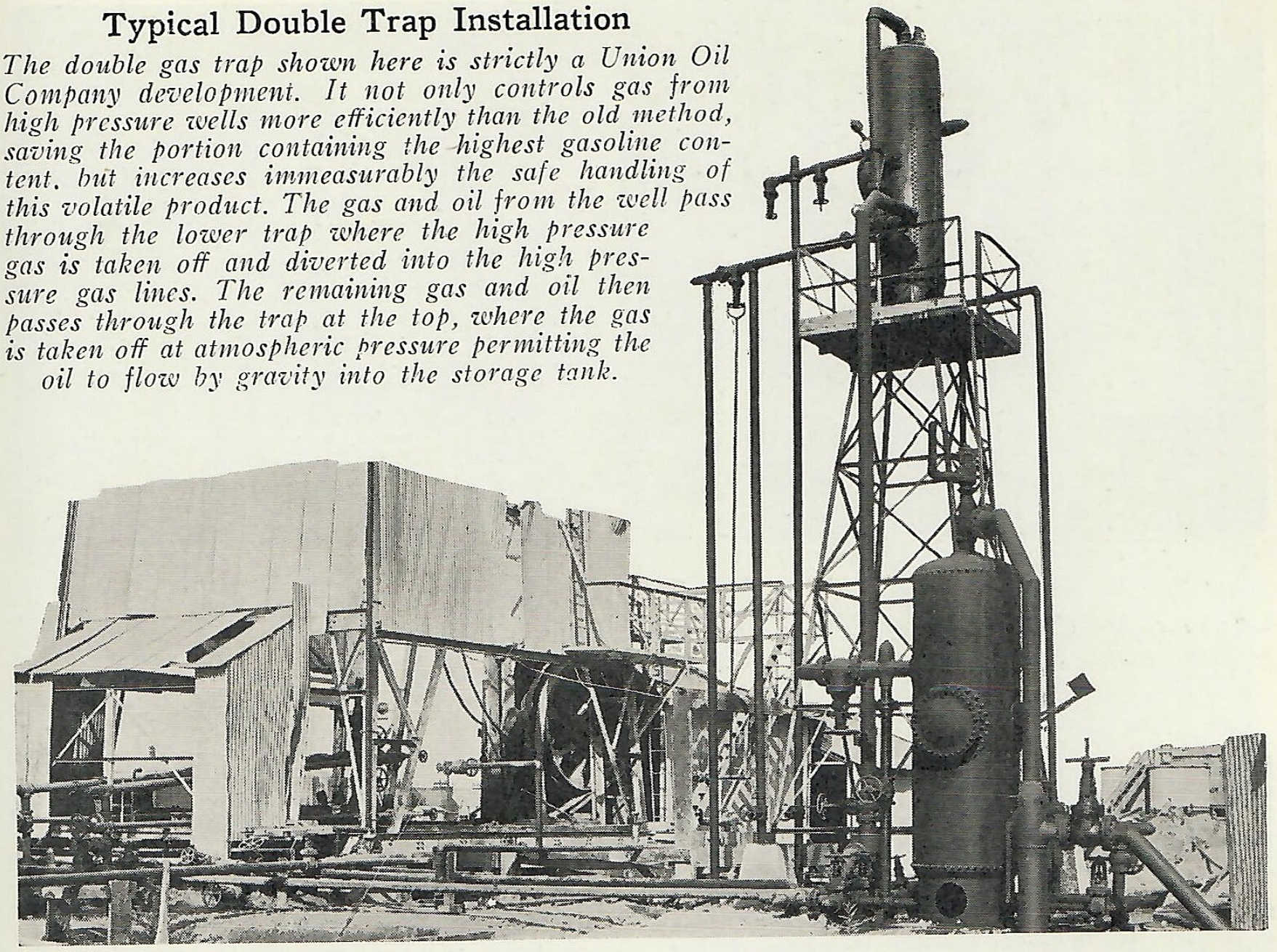
Editor's Note:—Eleven years ago the Union Oil Company established the first Gas Division on the coast. Since that time it has not only pioneered the way in the utilization of the gas itself, but in the utilization of the power contained in gas by virtue of its natural pressure. In this article Mr. Garman, who has grown up with the Gas Division and has been directly responsible for many of its outstanding developments, pictures to the reader the modern way in which gas, a decade ago considered a waste product, is handled.

DISCUSSION of modern methods of handling natural gas in the oil fields may prove particularly interesting in view of the recent steps taken to promote the conservation of natural gas. That its first function is to move oil through the underlying structures to the immediate vicinity of the various wells is now generally conceded. Its second function may be stated to be the lifting of oil to the surface wherever and whenever possible, although other means may be used, such as gas lift or ordinary pumping, when the gas supply becomes insufficient. Either of these means likewise tends to produce an area of low pressure at the bottom of the well. The remaining gas pressure in the structure and the fluidity of the oil, due to the presence of dissolved gas, cause oil to move to the well. Neither of these methods of lifting oil to the surface is effective when gas in the structure is depleted to the point where it no longer moves oil to the vicinity of the well, unless encroaching water and gravity combine to perform such service, although a high percentage of the original oil contained in the structure may still be there. At such a time natural gas may be forced down to the structure through picked wells and thereby more or less duplicate the original underground conditions by

R. W. GARMAN

Typical Double Trap Installation

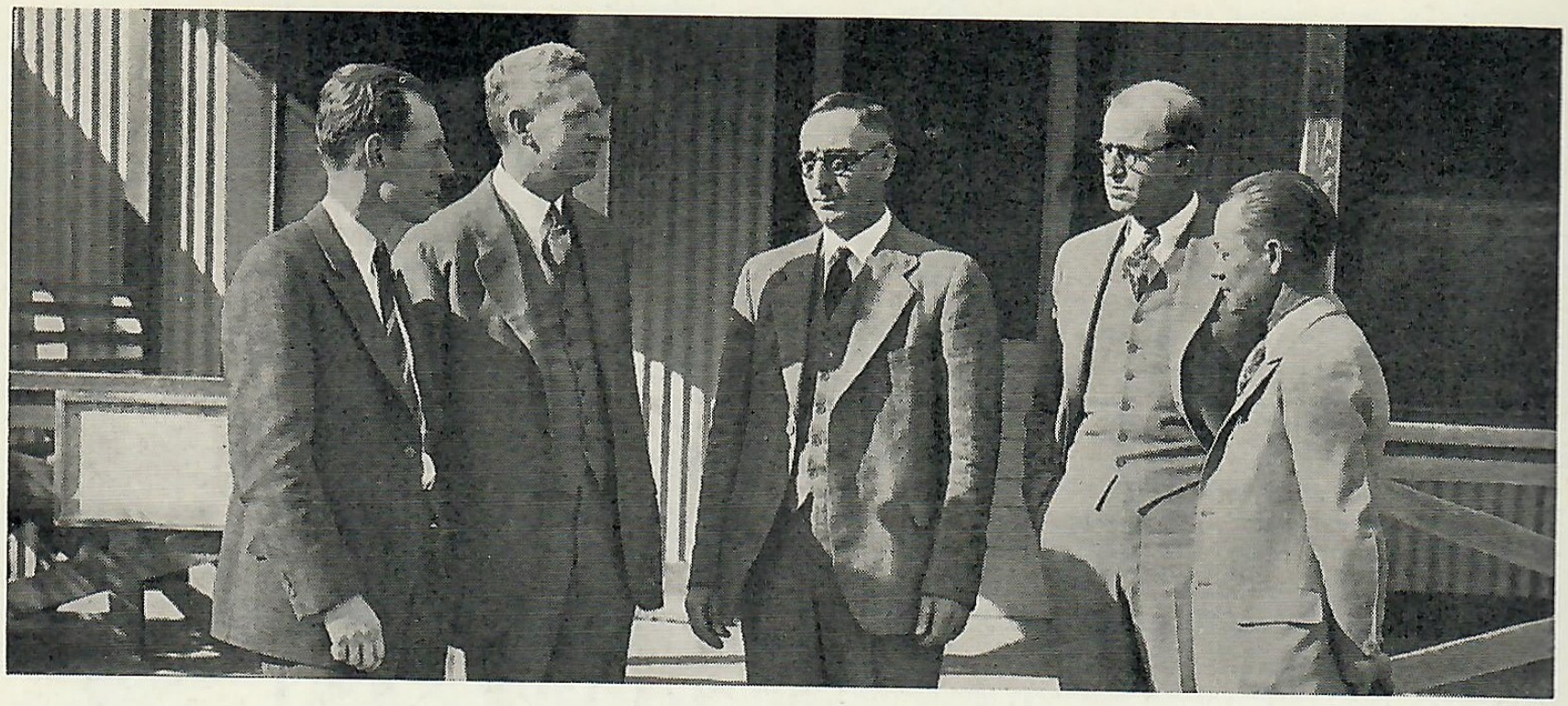
The double gas trap shown here is strictly a Union Oil Company development. It not only controls gas from high pressure wells more efficiently than the old method, saving the portion containing the highest gasoline content, but increases immeasurably the safe handling of this volatile product. The gas and oil from the well pass through the lower trap where the high pressure gas is taken off and diverted into the high pressure gas lines. The remaining gas and oil then passes through the trap at the top, where the gas is taken off at atmospheric pressure permitting the oil to flow by gravity into the storage tank.



creating a gas pressure which in turn increases oil fluidity. Possibly the chief difficulty attendant to this method is the necessity for unit operation of the pool, or by a satisfactory agreement between the various operators to increase or decrease structural pressures uniformly.

Now either of the above mentioned methods, other than natural flow, is expensive and it seems logical that the condition of natural flow should be prolonged as long as possible by producing as small a volume of gas as possible per barrel of oil produced. All the foregoing shows the need of engineering supervision in production work, and is really of an introductory nature in this article to show the necessity for close co-operation between the group responsible for production and the group responsible for the handling of gas after it is separated from the oil at the surface, as well as to trace for the reader the flow of gas as far as oil company operations are concerned. The management of the Union Oil Company of California fully realizes the need of such close co-ordination between the departments handling production and gas, and that each must be a specialist in its work. In describing the method now employed by the Gas Department of the Union Oil Company the writer will confine himself generally to the operations at Santa Fe Springs.

A flow control of new wells is usually essential and throttling on the flow lines near the well by the so-called "bean" has been ordinary practice. Since, at this point of throttling, oil and gas occur together, it is self-evident that high-pressure exists on the oil and gas on the well side of the bean and low-pressure exists on the other side, unless an additional throttling effect is given by holding back pressure on the downstream side. Moreover, a fixed "bean" is not altogether satisfactory in controlling the actions of an erratically producing well since the degree of throttling depends on the rate of flow. Actually the

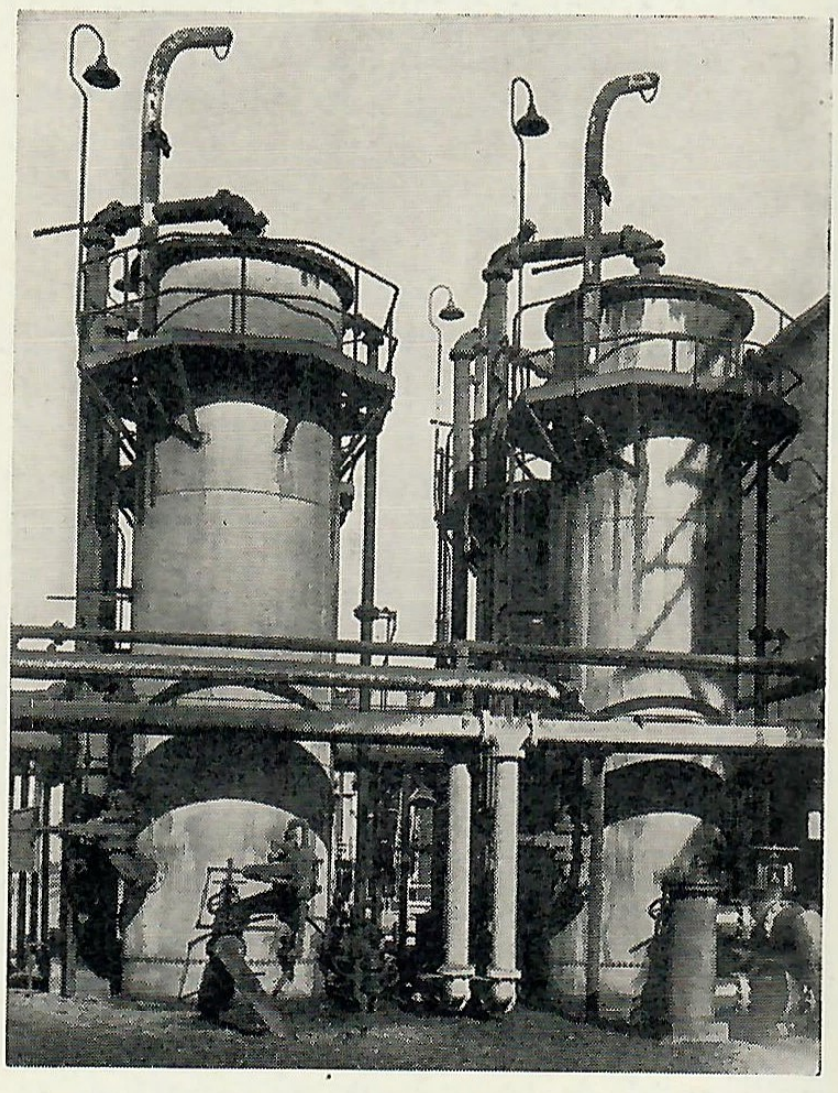


Gas Specialists

Left to right—C. D. Gard, office engineer; H. C. Marshall, office engineer; J. C. Rector, gas superintendent, Santa Fe Springs; C. C. Taylor, asst. gas superintendent; T. T. Rissinger, master mechanic.

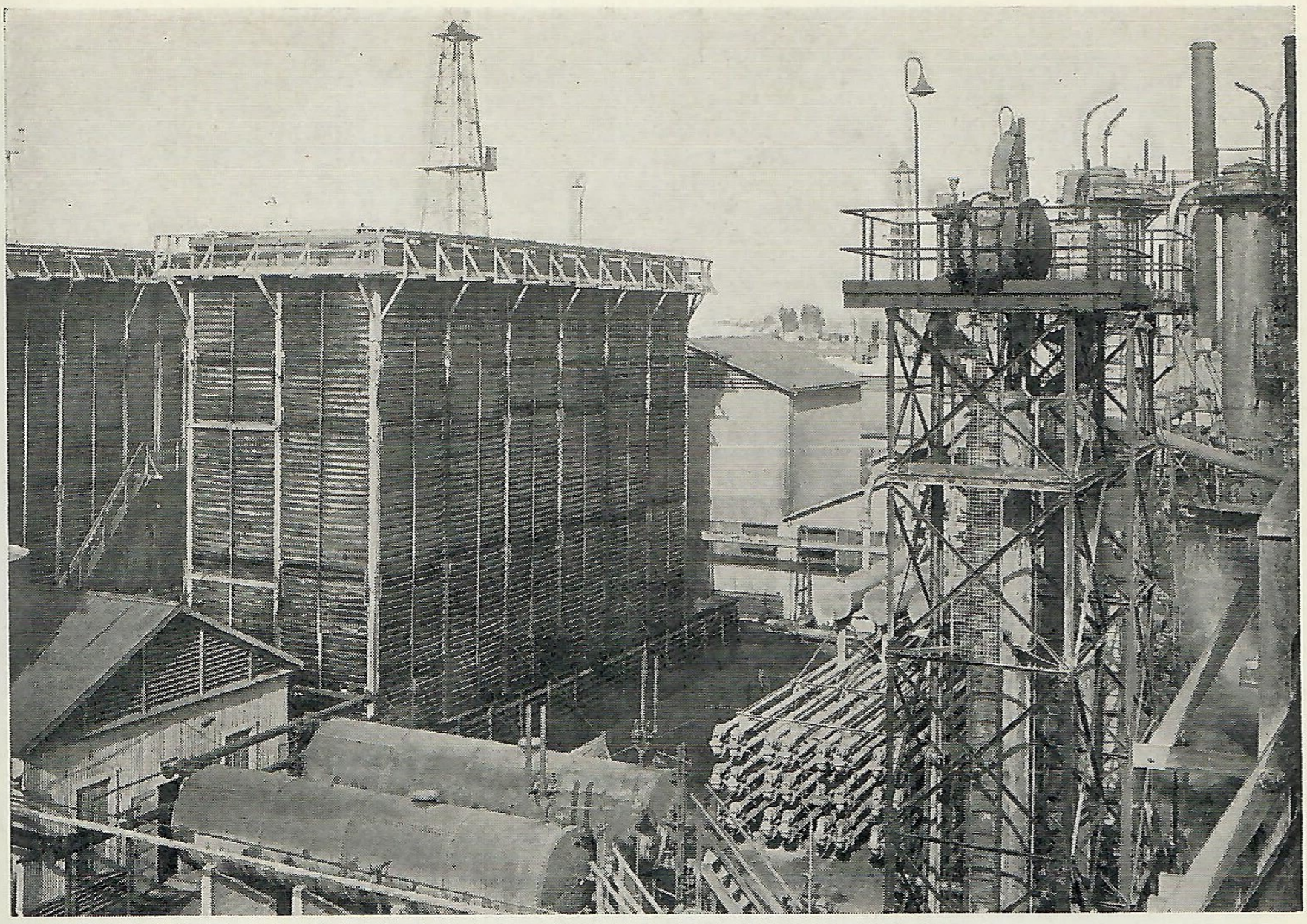
newer wells at Santa Fe Springs have been provided with high-pressure gas and oil separating traps, the gas lines discharging from these traps held at comparatively high back-pressures and the oil discharge being governed by float control in the trap. The two-fold result has been that varying degrees of uniform throttling of wells have been secured by such traps and that a considerable volume of gas has become available at high-pressure instead of being available at the old customary low-pressure. The "bean" is still ordinarily used, but its size is calculated with due regard to the trap-pressure so that the desired control on the well is secured. As the well pressure decreases it is necessary to increase the size of the flow nipple until it finally becomes necessary to decrease the back-pressure exerted by the trap. Four steps in pressure are available at this field, 325 pounds, 160 pounds, 50 pounds, and zero pounds, all gauge pressures.

The oil discharged from a high-pressure trap has last been in contact with gas at high-pressure and it will contain a certain volume of gas which is bound to remain in solution at the high-pressure but which will escape from the oil at the oil tank. This dissolved gas plus some entrained free gas contains a relatively high proportion of gasoline vapors, so that it is necessary to flow the oil from the high-pressure trap, whether it is held at 325, 160 or 50 pounds, through a low-pressure trap whose gas discharge line is maintained at practically atmospheric



Absorber Unit

Above is part of the absorber installation where gasoline is absorbed from the gas by washing the gas with special refinery oil.



Interior of Absorption Plant Yard

This interesting view of the absorption plant shows the cooling towers on the left, and the new stabilizers in the right foreground and stills in the right background. At the bottom center are the heat interchangers (series of coils) and rundown tanks where the "wild" gasoline is collected before being sent through stabilizers.

pressure. However, it takes pressure to transport the oil from this low-pressure trap to the tanks and these traps are therefore elevated sufficiently to secure gravity flow. Both the high-pressure and low-pressure traps are erected at their respective wells and not at the tanks as has been the old practice. When finally it is necessary on individual wells to reduce the back-pressure to a minimum, the use of the high-pressure trap, which was placed at ground level, is discontinued and the original low-pressure trap becomes the permanent trap. It is then in the proper location to minimize back-pressure on the well, particularly if the well is operated by gas lift.

It has been necessary to install four separate systems of gas gathering lines, but portions of these systems may be interchanged as pressure conditions at the wells change. The establishing of four different pressures was more or less arbitrary. However, it happens that 300 pounds is a customary main compressor plant pressure to supply gas lift pressure and that 250 pounds is a customary transmission line pressure for the gas companies. (It should be noted that allowance must always be made for line pressure loss). Union Oil Company has therefore been in a position to supply gas lift pressure to the weaker wells from the high-pressure wells and largely eliminate the expensive compression usually necessary for this purpose. For certain wells where higher than 300 pounds pressure was necessary for gas lift, a number of steam engine compressors already owned by the company were installed next to a battery of boilers which had been used for drilling and pressures up to 800

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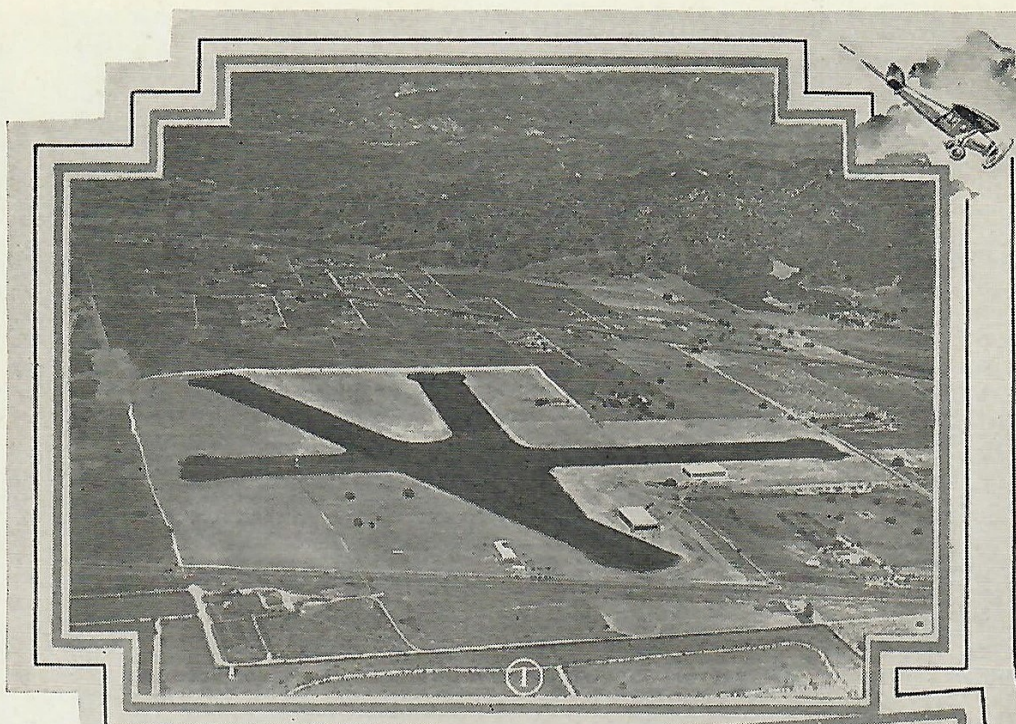
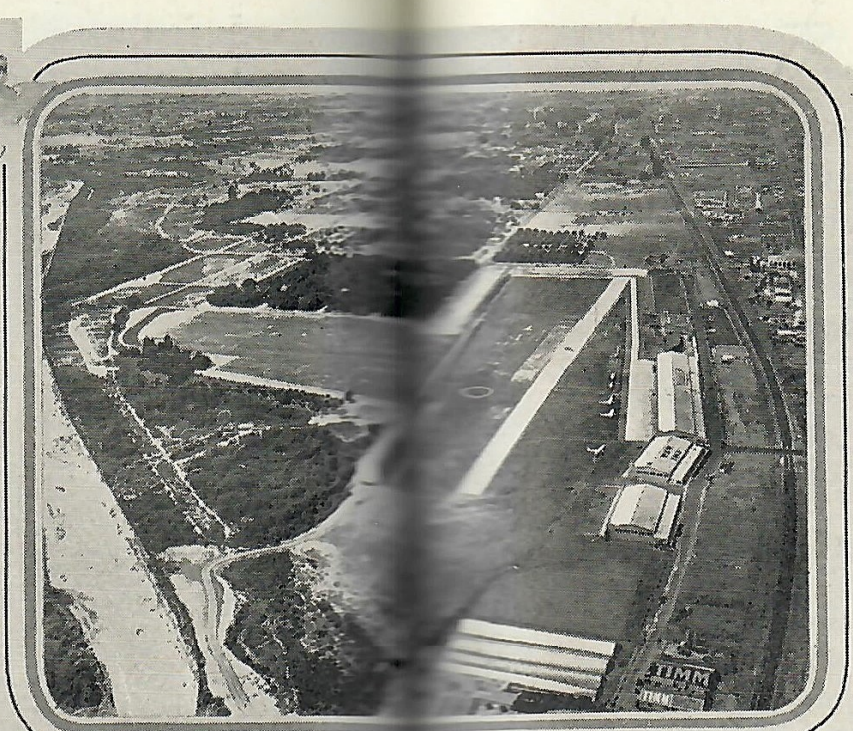
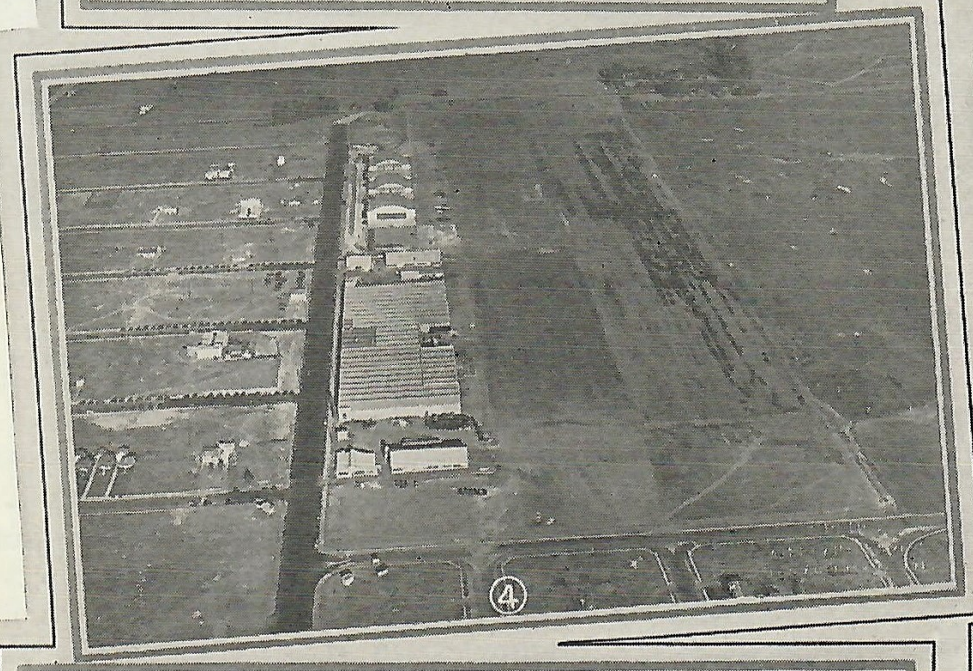
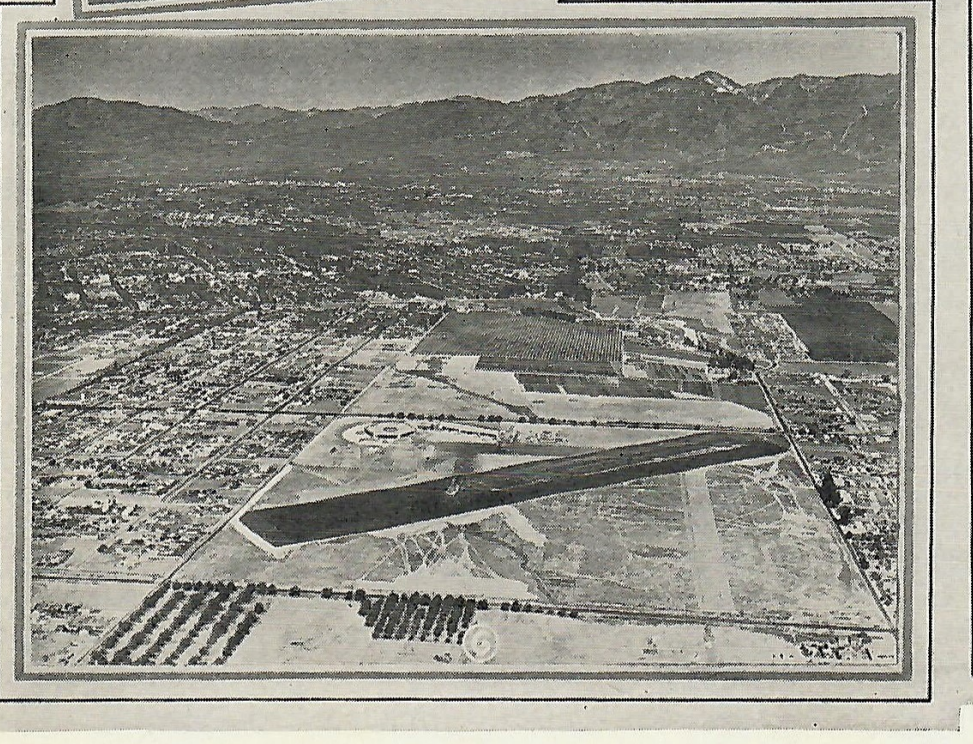


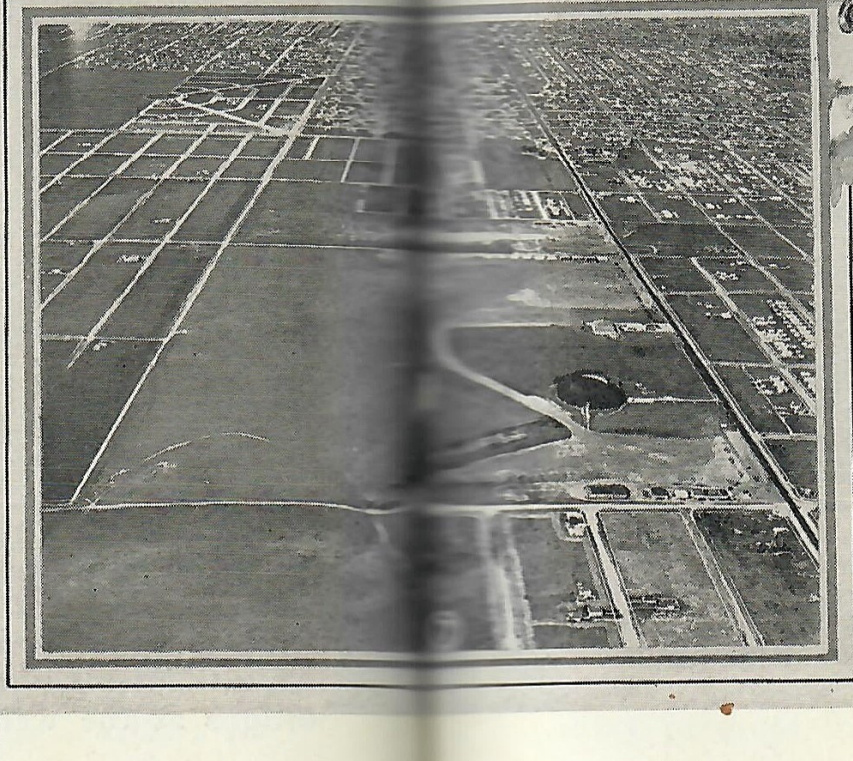


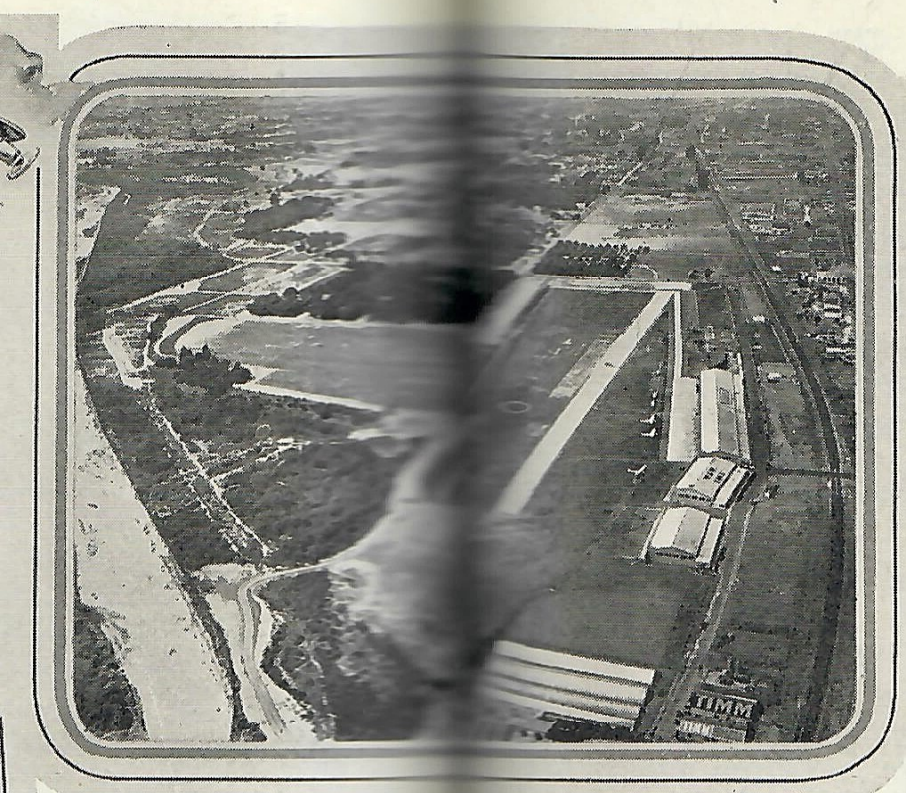


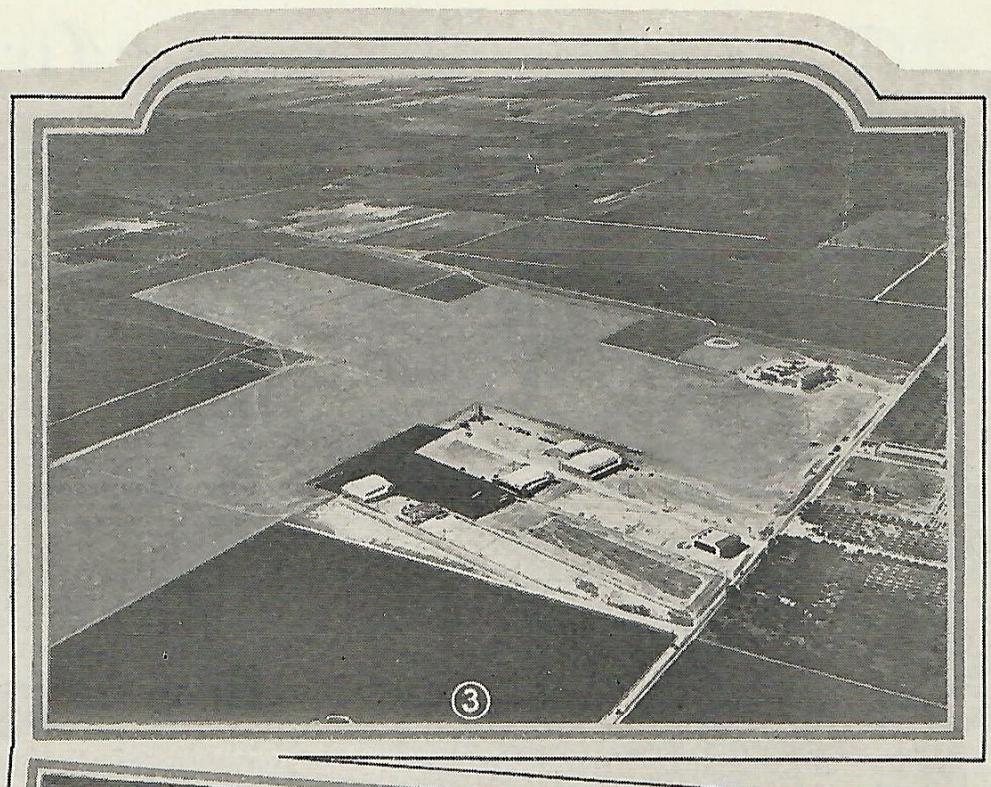
Airports in T[illegible] of Los Angeles

The progress made i[illegible]elopment in Los Angeles County is graphically [illegible] group of Spence airplane photographs. T[illegible] airports shown on this page, United Airport [illegible] Burbank, Western Air Express Airport (No[illegible]mbra, and Los Angeles Municipal Airport, M[illegible] No. 8), have been developed during the past y[illegible]rtiss-Grand Central Airport (No. 2) at Gle[illegible] taken over by Curtiss Airports, is the home [illegible] and many other major transport lines. (No. [illegible]an Airport, Van Nuys. (No. 4)—Clover Fie[illegible]nica, one of Southern California's oldest fly[illegible] No. 5)—Long Beach Airport. (No. 7)—Aero [illegible]'s Airport, Los Angeles.









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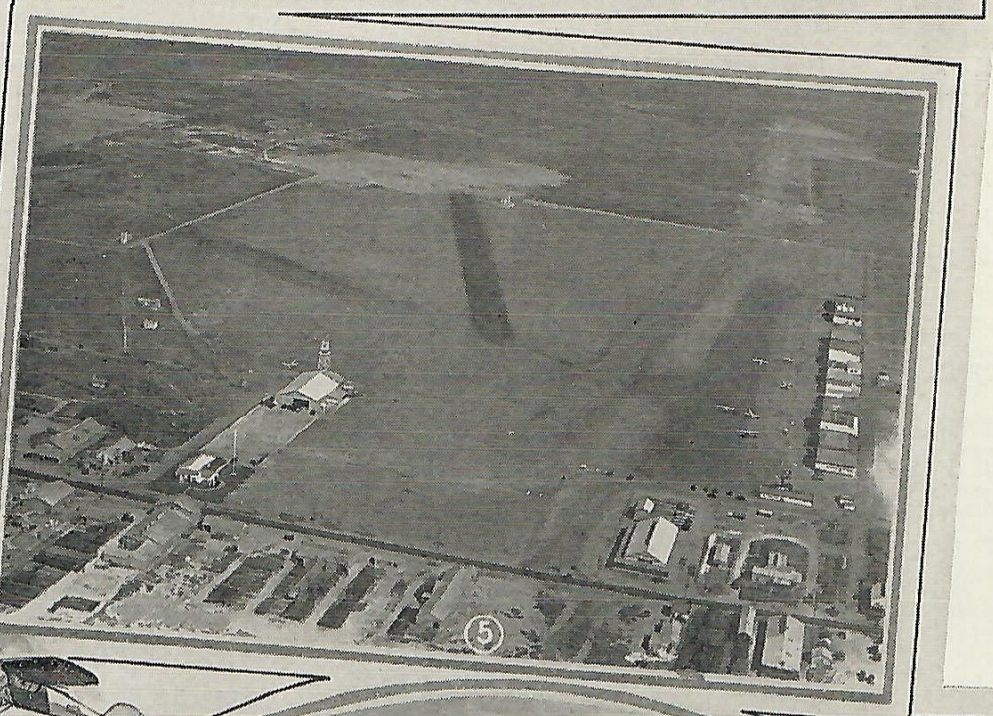
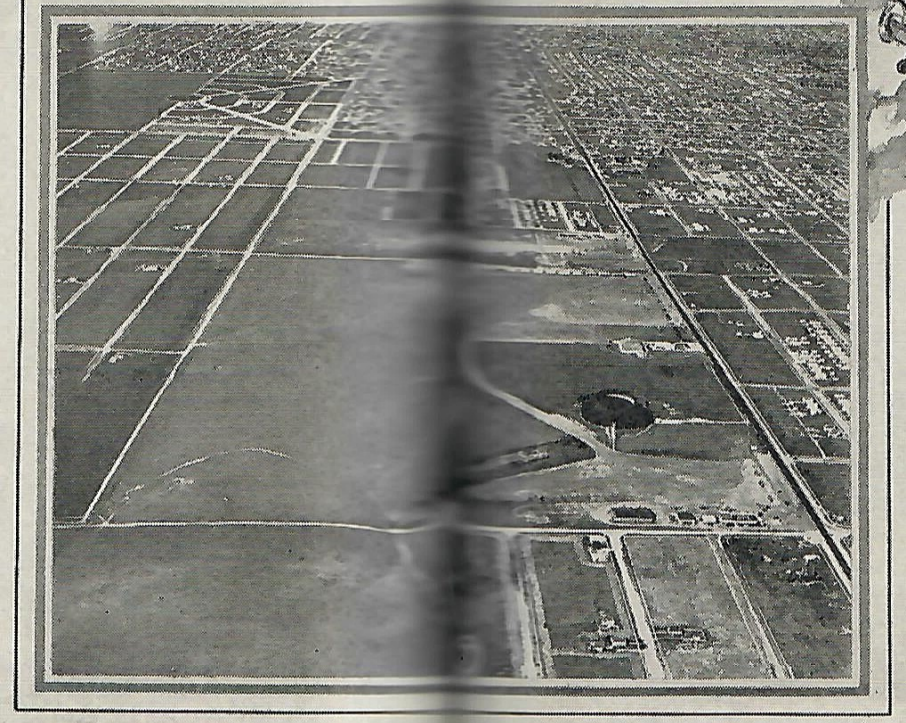
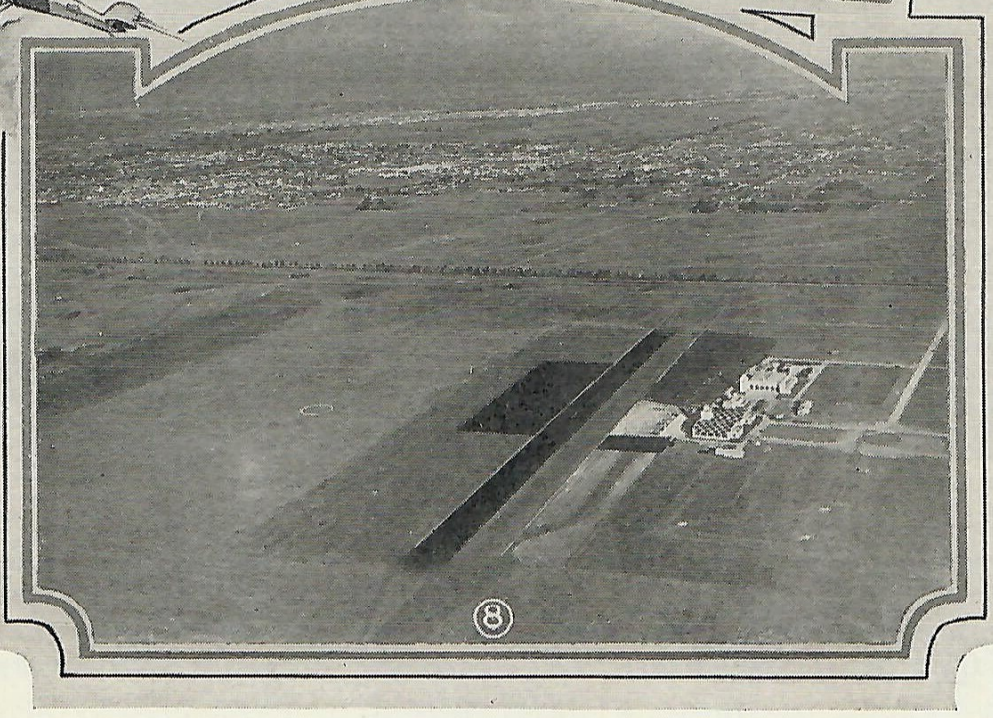






First All-California Air Tour

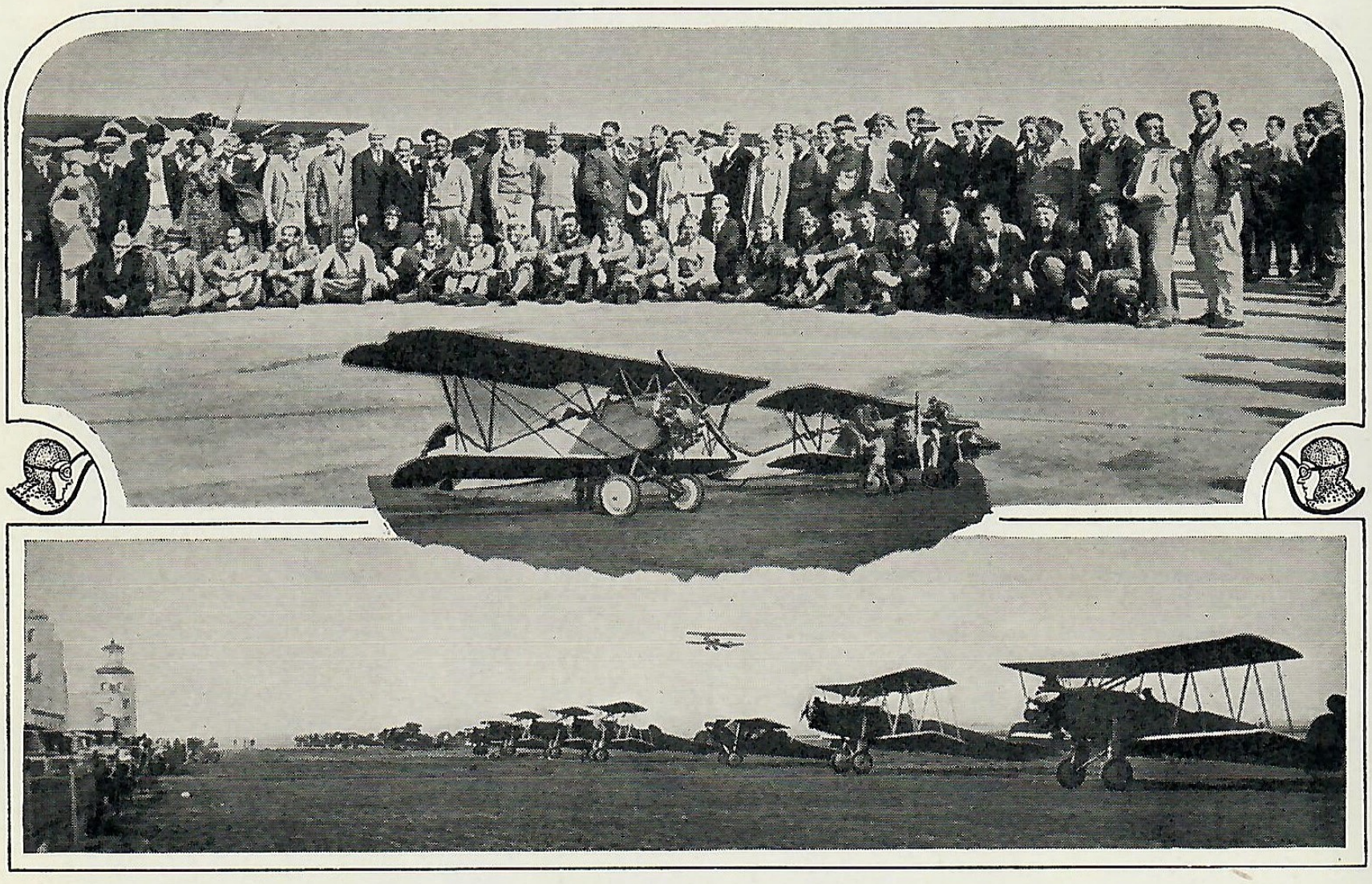
AIRPORT facilities even in the smaller California cities are keeping pace with the development of air travel in the state, the participants in the first annual All-California Goodwill Air Tour, conducted last month under the auspices of the aviation committee of the Junior Chamber of Commerce of Los Angeles. In not one of the communities visited was an airport encountered which would not permit the landing of at least fifty planes at half-minute intervals, or the taking off of the same number of planes at a greater rate.

The tour was held in conjunction with and as an adjunct to the Western Aircraft Exposition staged by the California Aircraft Exposition Corporation. Both the tour and the aircraft exposition were the culmination of plans laid by W. L. Stewart, Jr., director of manufacturing of the Union Oil Company, while he was serving as chairman of the aviation committee of the Los Angeles Junior Chamber of Commerce last spring.

Forty-one planes, representing both commercial and private interests, participated in the four-day excursion, hopping off from Metropolitan Airport on Nov. 4. The aggregate distance flown by the planes on the tour was 53,000 miles.

The flight, the first of such magnitude ever attempted on the Pacific Coast, was designed primarily to create greater interest in aerial transportation, test the efficiency and capacity of various airports for handling group movements, and stimulate more interest in private plane ownership.

C. F. Lienesch, special representative of Union Oil Company, piloting a Travel Air, J-6, commanded the flight. The planes participating in the flight



Start and Finish of First All-California Air Tour

In the upper picture is shown personnel of goodwill air tour just prior to take-off from Metropolitan Airport, Van Nuys, November 4. In the insert are two Union Oil planes which participated in the tour, waiting on the line for the start. Below, the planes at rest at Mines Field, Los Angeles, after completing a four-day trip, during which many of the principal cities and airports of California were visited.

were divided into three groups, the division being based on the cruising speed of the planes. Group A, composed of planes capable of maintaining a speed of between 75 and 100 miles per hour, was commanded by W. E. Carey, aviation representative of Union Oil Company, flying one of the company's planes, a Travel Air J-5. Group B comprised planes of an 100-mile an hour speed and was commanded by B. M. Doolin, who piloted a Boeing. The third and fastest group was under the leadership of Tommy Fowler, who sat at the controls of a trimotored Fokker. In dispatching the planes from one city to another, the slower planes were sent into the air a set time in advance of the other two groups so that all would arrive at the scheduled stops simultaneously. Leaders and assistant leaders patroled each group, the leaders setting the pace and maintaining the course. The assistants lagged in the rear to prevent straggling and render assistance in the event of a forced landing.

From Los Angeles, the tour hopped to Santa Maria, utilizing the Hancock Foundation School field for landing. Due to the varying speeds of the three groups, the slower flight proceeded directly to Oakland and was joined there by the other two after they had made a short stop at Salinas. The second morning the entire three groups flew to Sacramento, two of the flights going by way of San Francisco. From there the slower group flew to Fresno, the other two making short stops at Stockton. The tour next hopped to San Bernardino and El Centro, via Visalia and Bakersfield, proceeding to Long Beach the morning of the fourth day. The group B flight made an unscheduled trip to San Diego, joining the other two at Long Beach, from where the entire flight hopped for Los Angeles, passing over the city in one large group before winding up the tour with a landing at Mines Field. At each of the stops, luncheons and entertainments were given in honor of the flyers, and dinners and dances were in order for the overnight stops.

The tour was considered a success both in group movement and from the safety standpoint by the aeronautical fraternity, and created a great amount of interest among the people in cities which were visited.

Natural Gas Wins Recognition

(Continued from Page 11)

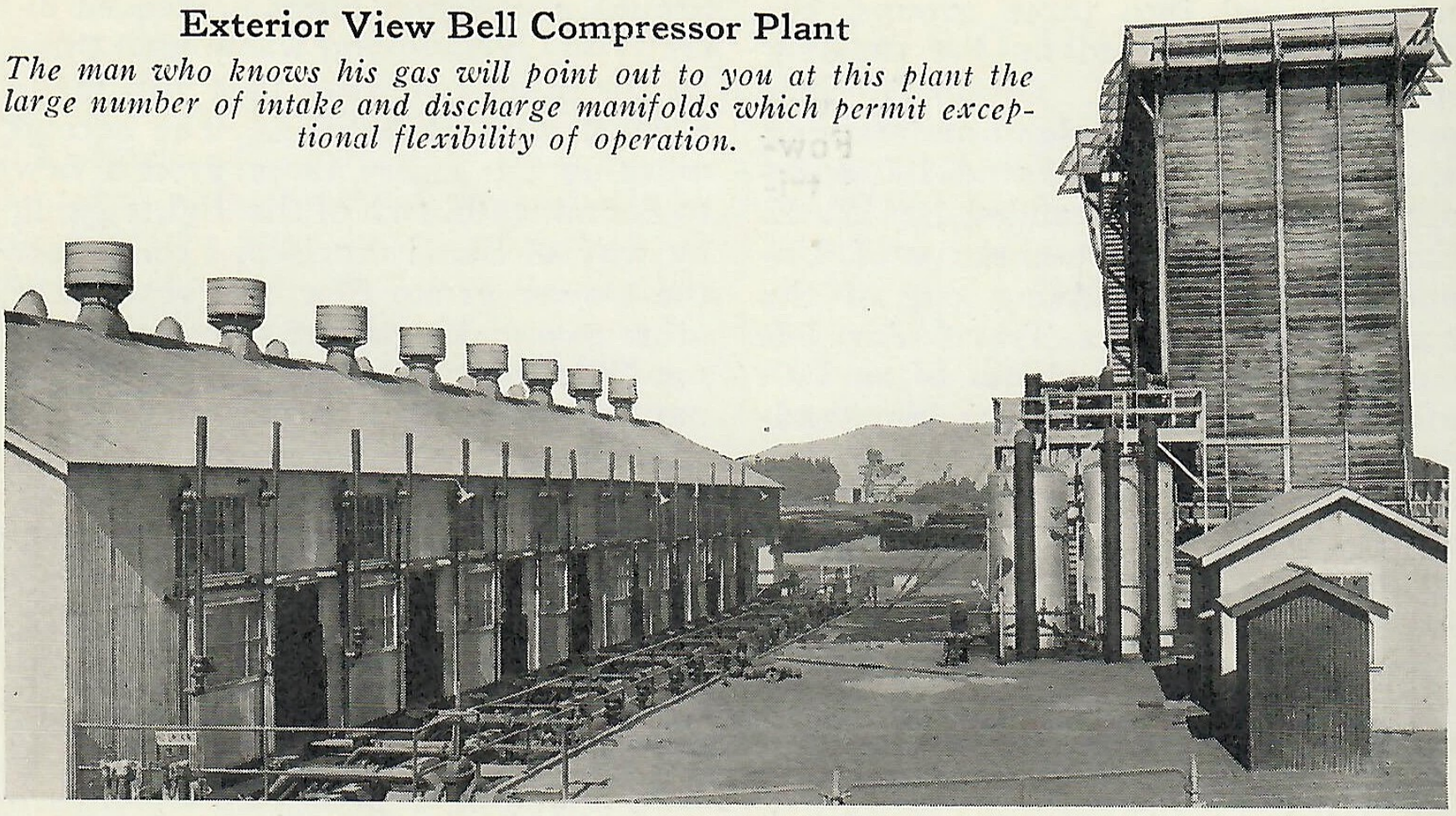
pounds were made available with but little cash outlay.

The 325-pound trap pressures on some of the wells has also been advantageous to deliver more gas for sale to the gas companies than they could have handled if it had been necessary for them to compress it to transmission line pressure. The next lower pressure, 160 pounds, is advantageous in that a number of the absorbers at the Bell absorption plant were built for a maximum pressure of 140 pounds, and that a further pressure loss through these absorbers and their discharge lines brings the pressure to about 125 pounds. This is a customary pressure for gas companies for the intake to their second-stage compressors. Only the second stage is necessary to compress this gas to 250 or 300 pounds and the capacity of compressors is more than doubled over that available when it is necessary to handle 20-pound gas, providing proper cylinders are used.

The 50-pound gathering system delivers gas directly to the conventional 30-pound absorbers at the Bell Absorption Plant. The atmospheric pressure gas gathering system collects gas from the low-pressure traps of the newer wells and from the single traps of the old wells. These lines transport gas to a low-pressure compressor plant where it is necessary to maintain an intake pressure of about four

Exterior View Bell Compressor Plant

The man who knows his gas will point out to you at this plant the large number of intake and discharge manifolds which permit exceptional flexibility of operation.



pounds less than atmospheric pressure to overcome line pressure loss and to maintain a discharge pressure of 35 pounds to deliver the gas to the absorption plant for gasoline extraction. The low-pressure gathering system consists of much larger pipe lines than those of the other systems in order to reduce line pressure loss to a minimum. At some time during the life of the field it will probably be the only system in use. The other systems will then be interconnected with it to supplement its capacity.

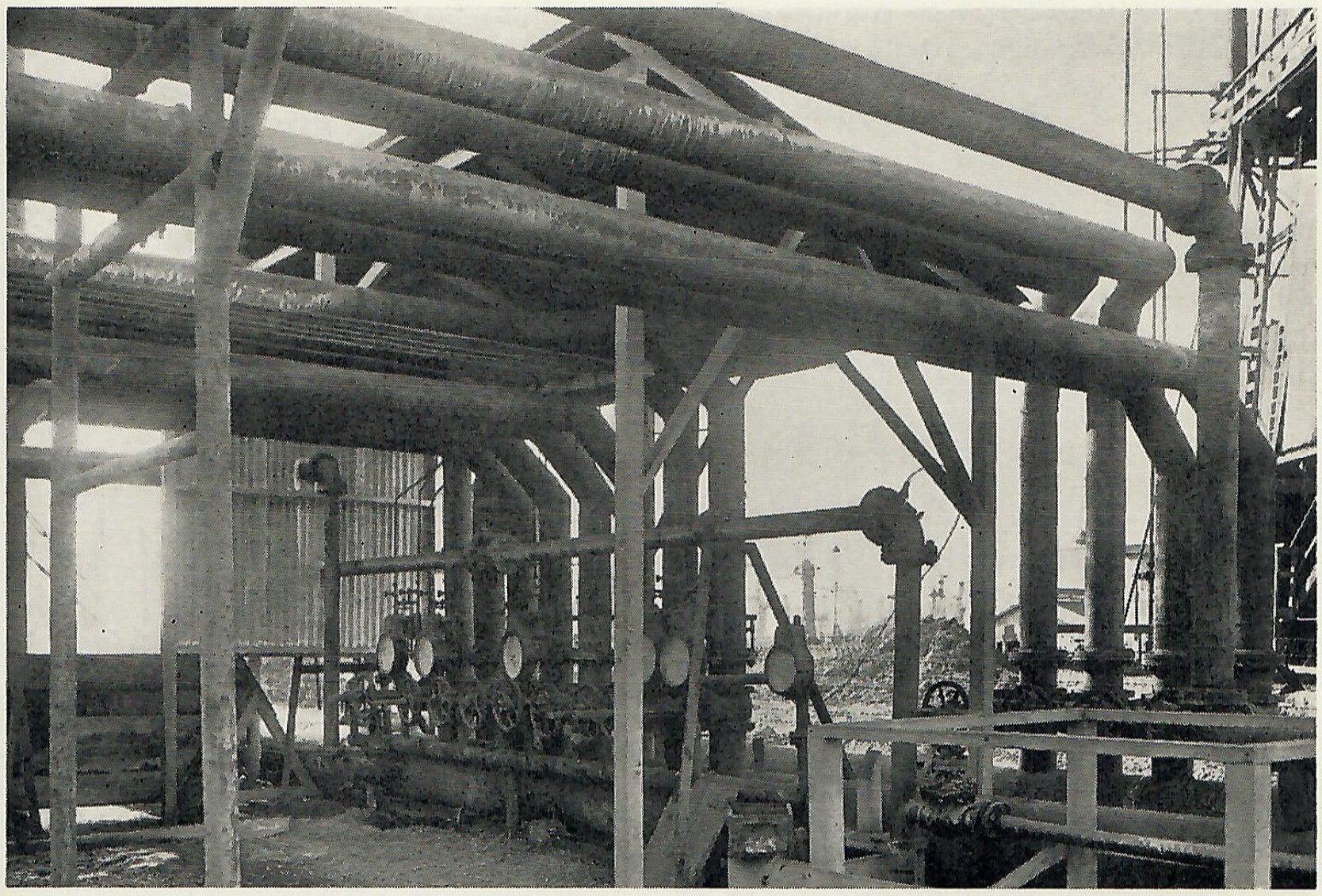
At the present time about two-thirds of the gas volume is treated at 140 pounds and the remainder at 30 pounds at the Bell plant, but only about 4,000,000 cubic feet of gas of that volume is compressed from a slight vacuum to 30 pounds. The 325 pound gas is practically all used for gas lift on weaker wells, some of them against 50 pounds back-pressure. The formation gas-oil ratio is usually materially decreased in such wells, thereby working towards the goal mentioned in the introductory remarks.

The Bell Compressor Plant has been constructed for operation flexibility. Any compressor unit can be very quickly and cheaply changed to work at any range from about 5 pounds below atmospheric pressure to about 35 pounds; from about 25 pounds to about 135 pounds, and from about 125 pounds to 300 pounds, it being possible to use either treated or untreated gas in either of the last two services. This compressor plant consists of only eight 200-horsepower gas-engine driven compressors, but under the present curtailment program and the methods already described it is possible to dispose of all gas and prevent gas wastage. However, if all the gas from the wells were reduced to atmospheric pressure and then compressed to pressures equal to those now available by the above described methods, the daily cost of such compression would be well over $1,000 daily even during the present curtailment when the gas production is only about half the production existing before curtailment. In order to visualize the difference in another manner, the compressor plant would contain about 36 more 200-horsepower compressor units in order to regain pressure on the volume of present gas production.

The Bell Absorption Plant was designed to extract 100,000 gallons of natural gasoline daily from about 50,000,000 cubic feet of gas. During peak gas production, however, it has handled double that volume of gas and

produced a daily maximum over 160,000 gallons, although extraction efficiency suffered somewhat by such overload. At the present time the load is almost normal. The natural gasoline produced at this plant has an average gravity of about 84 degrees A.P.I., and an Engler distillation recovery of about 93 per cent. All of the company's gas production is transported under its own pressure or by means of low pressure compressors, as already described, to the Bell Absorption Plant for the purpose of removing gasoline vapors from the natural gas.

Various methods exist for extracting gasoline from gas, such as high-pressure compression, refrigeration, charcoal adsorption, and oil absorption. The latter is by far the most prevalent and it is the scheme used at Santa Fe Springs. Incoming gas is connected to the lower portion of vertical cylindrical metal shells and passed upward in steps, in this case through perforated metal plates, while a special oil provided by the refineries is connected to the upper portion of the cylindrical shell and passed downward in steps, flooding the perforated plates and spilling over through specially constructed down-pipes into the next lower section without passing through the perforations. High turbulence results in the space immediately over each perforated plate and the gas and oil have intimate contact with each other. Well-known laws of physics form the basis for studying the oil's absorption of gasoline vapors out of the natural gas. As the gas leaves the absorbers it leaves the gasoline plant and it is evident that close operating supervision is necessary in order to extract from the gas as much of the desirable gasoline fractions as possible during the brief time that any given cubic foot of gas is passing through an absorber. In popular lan-



Intake and Discharge Manifolds

Millions of cubic feet of gas pass through this series of pipes each day. The gas coming into the absorption plant passes through the pipes on the right, and the gas from which the gasoline content has been removed goes through the metered pipes on the left.

guage the operations just shown might be described as washing the gas with a special oil.

When this enriched special oil leaves the lower part of the absorbers it is passed through one side of a set of heat interchangers to a preheater, high pressure steam usually being used, and then to the stills, where the gasoline and some of the oil are vaporized, the same difficulty of separation being experienced as was noticeable at the traps and at the absorbers. However, at the Bell plant the stills are of the fractionating distillation type and consist of the ordinary vertical cylindrical shells. In ordinary language the base of the still is maintained at a constant high temperature and the top at a much lower temperature, the entire still being held at as near a given pressure as is possible. The result is a sort of washing action in the upper part of the still, the heavier hydrocarbons finding it difficult to get out the top of the still in vapor form and the lighter hydrocarbons, which vaporize more readily, finding it difficult to remain in the still in liquid form. In most gasoline plants the still pressure is about 35 pounds and some low-pressure steam is injected directly into the still to promote distillation. The gasoline vapors and the agitation steam leave the top and the denuded oil leaves the bottom of the still. This oil then passes through the other side of the heat interchangers, heating the enriched oil somewhat on its way to the still and cooling itself to a certain extent, and then passes to coolers where water is used as a medium.

At the Bell plant this cooling is effected in pipe coils placed in cooling towers where water is sprayed upon them from considerable height. The oil then is passed again to the absorbers, completing its cycle. A small amount of oil may be lost either in the absorbers with the outgoing gas or in the outgoing vapors in the still, but the latter particularly is minimized at Santa Fe Springs. Usually there are two oil pumps in the cycle, ordinarily one in the enriched oil stream and the other in the denuded oil stream. The five pumps at the Bell plant are of the electric motor-driven centrifugal type, and circulate about 100,000 gallons per hour. If this plant were considered as a refinery, its normal throughput could be said to be practically 60,000 barrels per day, although only about 30,000 gallons of oil are in the oil circuit.

The gasoline vapors leaving the still pass through a first-stage cooling tower from which some of the gasoline condensed is pumped back to the top of the stills to secure the cooler temperature required for fractionating purposes. It can be seen that this operation adds a heat load to the still and that fractionation could not be used indiscriminately. Practically all agitation steam is condensed in the first-stage cooling tower and removed. The gasoline and remaining vapors are then passed to the final condensers and then to the so-called rundown tanks, which are held at sufficient pressure to allow any uncondensed vapors to pass back to the absorbers and enter them in the incoming gas stream. The gasoline in the rundown tanks is "wild," that is, it contains considerable quantities of propane, ethane, and even some methane. It is therefore pumped to high-pressure stabilizers, which are really fractionators, heat being maintained in the base and cooling being effected at the top by means of water circulation through pipe coils within the shell. In this case the vapors leaving the top are ordinarily passed back to the dry-gas system of the field, but, since it consists rather largely of propane, additional fractionation to exclude methane and ethane would prepare it for the liquid gas market. The gasoline leaving the bottom of the stabilizers is comparatively stable and it is immediately delivered by pipe line to Brea and Los Angeles refineries where it is stored temporarily and used as needed, ordinarily being blended in various proportions with refinery-run gasoline to meet the specifications required for the various grades of motor fuel.

The gas discharged from the absorption towers of the gasoline plant is

available for field fuel, for gas lift, for gas repressuring or storage, and for sale to gas companies. Any surplus above such needs must be wasted to the air. Disposal as fuel or as sales remove the gas permanently whereas gas lift merely creates a cycle transmitting power from the engine of a compressor or from higher pressure wells to the lifting of oil in the low pressure wells. Repressuring more or less creates the same cycle and storage in an oil structure is only still further delayed action along the same line. Whereas part of a compressor plant may be used to transport gas from low-pressure wells to the gasoline plant, the remainder may be used to furnish pressure for gas lift, repressuring, storage, or sales.

The complexity of gas accounting in the oil fields can easily be recognized and it has been increased by the use of natural pressures and diverting of gas for the sake of its pressure from the old established channel of trap to low pressure compressor, then to gasoline plant, and finally to fuel or sales. Property distribution must be carefully watched both as to gas and to gasoline and, since the gas from the different wells contains different relative quantities of gasoline, a rather elaborate system of measuring gas and its gasoline content is necessary. Measurements are made by means of the orifice meter which consists of a metal plate placed in the gas line, a small circular hole in the plate, and a gauge which records the difference in pressure on the two sides of the plate. Twenty-four hour charts are then calculated at the field offices to obtain the daily volume of gas through each meter. Tests for gasoline content are now ordinarily made by the charcoal method. A small metal tube filled with charcoal is connected in the field to the gas to be tested and saturated to a point where a certain temperature rise is noted and the tube is then taken to the laboratory where the gasoline is driven from the charcoal by heat and then condensed and measured, reference being made to the gas volume passed through the tube in the field.

TO TEST SANSINENA TRACT

The Union Oil Company is preparing to sink a test well on the Sansinena tract, known as the La Habra Rancho, the mineral rights of which are owned in fee by the company. The tract, comprising 3761 acres, lies almost entirely on the south flank of the Puente Hills between Brea Canyon and the productive Union Oil Company Stearns lease on the east and the Whittier oil field on the west.

The well is located on the west side of the tract considerably removed from the area that is being developed residentially.

Mineral rights on the Sansinena property have been held by the company for many years. The test is being made to explore what is considered by the company to be a favorable structure lying wholly within the Sansinena tract. Should oil in commercial quantities be discovered no attempt will be made to develop production until needed.

A. P. I. SELECTS METCALF

Appointment of L. G. Metcalf, assistant manager refineries, to three general committees, Oil Pollution, Fire Prevention and Corrosion, was announced recently by the engineering division of the American Petroleum Institute. Mr. Metcalf fills the vacancies created by the resignation of Ralph J. Reed, who recently retired from the Union Oil Company as chief engineer.

L. G. METCALF

Mr. Metcalf's appointment to the three A.P.I. committees comes in recognition of work done along these lines during his service with the company.

Company Sets Winter Gasoline Sales Record

THAT the new super Union gasoline and Union Ethyl, which has as its base this superior winter fuel, are daily winning new users is evident from the coastwide report of sales which show a substantial increase over last year during a period in which the consumption of gasoline is expected normally to start on a seasonal decline. The sales for November set an all-time winter gasoline sales record for the company and were almost equal to the peak record of August.

Not since the Union Oil Company pioneered the way in giving the public on the coast Ethyl gasoline has a motor fuel won the instant approval of automobile drivers as has the new super Union. Attracted by the company's intensive advertising campaign, thousands of motorists who have not been habitual users of Union gasoline are driving into Union stations to try the new fuel. And the fact they are finding that the new super Union actually starts quicker on cold mornings than other gasolines they have been using, accelerates better in traffic and on the straightaways, and has added power and pick up on the grades, is inducing them to become regular Union customers.

Resellers from one end of the coast to the other are singing the praises of the new fuel. The sales reports show that there is not a single district in which increased sales have not been recorded. The increase in the various districts ranges from fifteen to thirty per cent, with the general average well above twenty.

Union Oil Tennis Cups in New Hands

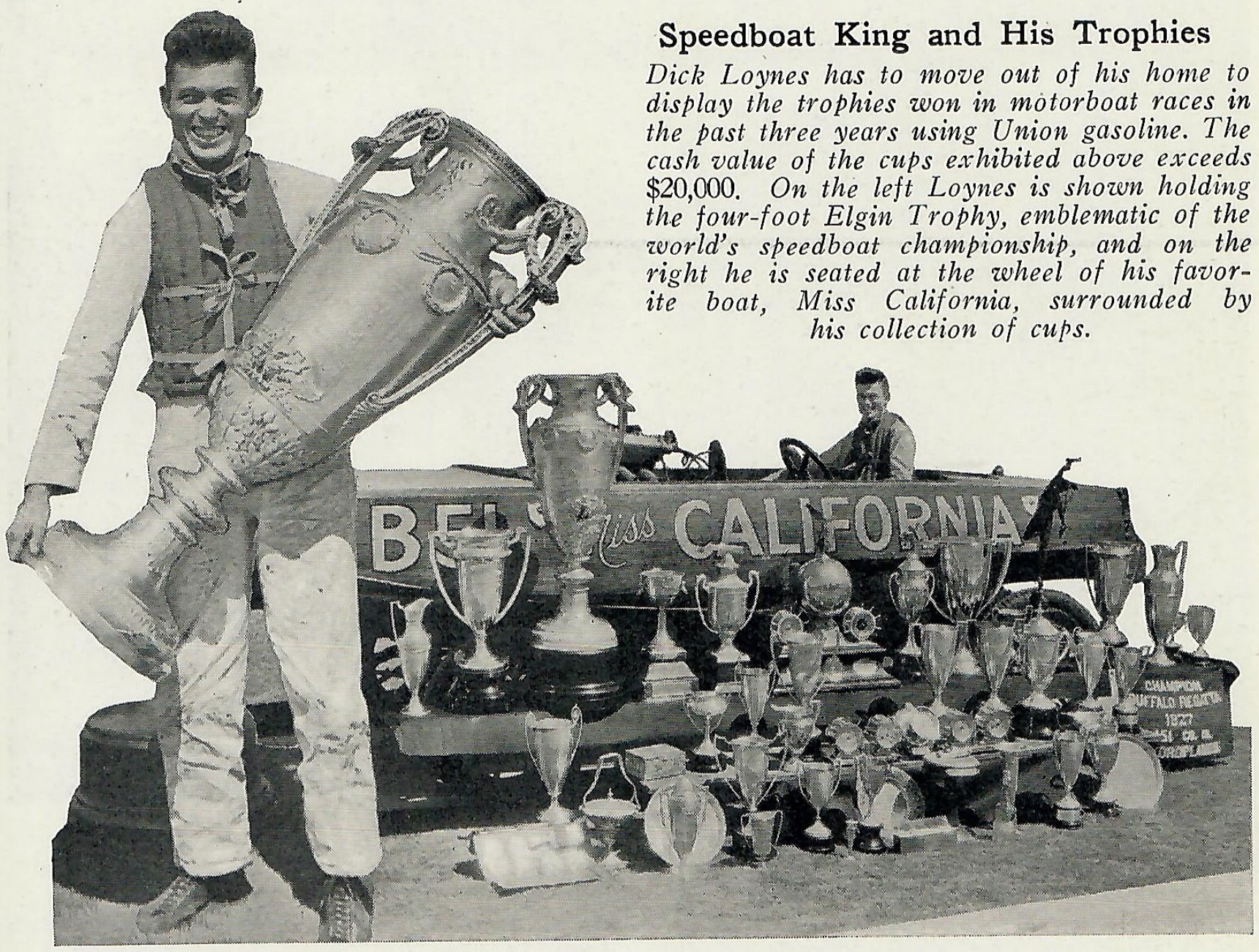
The Union Oil tennis cups are reposing in new trophy cases as a result of the championship matches held at the Los Angeles Tennis Club Nov. 9.

R. H. Hornidge, head of station accounts and a veteran of many court battles in the past, defeated K. Atkinson, Northern California champion, 6-4, 6-1, to win the President's Cup.

Hornidge, paired with J. M. Hannay, assistant comptroller, took the measure of their younger opponents, C. M. Nelson and R. Nevens, by the score of 6-3, 4-6, 7-5, in the final doubles match, to win the Vice President's Cup.

In the woman's singles Miss Alice Vestal of the Los Angeles Refinery defeated Miss Sietz of the Head Office in a three-set match to win the Geological and Land Department Cup.

Dick Loynes Breaks Speedboat Marks



Speedboat King and His Trophies

Dick Loynes has to move out of his home to display the trophies won in motorboat races in the past three years using Union gasoline. The cash value of the cups exhibited above exceeds $20,000. *On the left Loynes is shown holding the four-foot Elgin Trophy, emblematic of the world's speedboat championship, and on the right he is seated at the wheel of his favorite boat, Miss California, surrounded by his collection of cups.*

Dick Loynes, Long Beach speedboat king, drove his Miss California to a new American Power Boat Association record of 54.729 miles per hour in the 151 class, limited, time trials over a one-mile straightaway course at Newport Beach, California, Dec. 4, after having made a clean sweep of first places in two preliminary and the final heats in races at the Southern California Midwinter Regatta held at Alamitos Bay, Long Beach, Nov. 30 and Dec. 1.

In setting the new record, Loynes cracked his own former mark of 51.342 miles per hour made last October over the same one-mile course. Just before setting his new record in the 151 class, limited, Loynes temporarily deserted the ranks of inboard racers and piloted the Fresno Flyer, a displacement runabout outboard motorboat, over the six laps of the course for a new class E, division I, record of 33.799 miles per hour. Both these records were set with Union Ethyl gasoline.

Due to a curved course, no speed records were broken either in the 151 class or outboard races held at Alamitos Bay. Loynes' best time during the two-day program was made in the final heat Dec. 1, when he averaged 45.57 miles per hour over the six-mile course. Loynes' nearest competitor was Frank Robertson of Houston, Texas, who drove his "It" to second place in the second and final heats of the races. In the final heat, Smiling Dan IV, another of Loynes' boats, piloted by Gus Walker, battled Loynes for first place for two laps, only to develop engine trouble and lag the field to finish fourth. All entries in the 151 class races fueled their boats with Union Ethyl gasoline.

In the Union Oil Trophy race for girls, Loretta Turnbull, driving the Apache Kid, finished first in both heats to win high points for the day and establish herself as a favorite candidate for the cup.

HAYES ON TRIP TO PANAMA

T. A. Hayes, assistant to the executive vice president, and Mrs. Hayes, accompanied by J. J. Zook, vice president and general manager of Montgomery Ward, and Mrs. Zook, sailed December 1 on the Union Oil tanker La Placentia for Panama. Mr. Hayes is expected to return to Los Angeles in five or six weeks. It is his first trip to the Canal Zone and he is combining business with pleasure.

Lubricating Engineers Attend Logging Congress

Union Oil Representatives at Seattle Meeting

In order that first hand information might be obtained on new developments in the lumber industry, especially those in which plant and machinery lubrication played an important part, a number of lubrication engineers of the Union Oil Company attended the Pacific Logging Congress, held in Seattle, October 23-26. Inspection tours were made to the various plants in the vicinity. The above shows Union representatives grouped in front of a complete variable speed tree skidder unit, manufactured by the Washington Iron Works, the largest builders of gas, diesel, and steam logging equipment in Seattle. From left to right—standing: Marshall MacGinnitie, Washington Iron Works, and the following Union Oil men: George Stack; W. J. Lloyd, Union Oil Company of Canada; Dale S. Harwood, Portland district; William Parrish, special representative, Los Angeles; G. Baker, Seattle district; T. W. Dickerson, Seattle district; E. J. Erickson, Spokane district. Front row: J. W. Graham, engineer, Vancouver, B. C.; C. B. Mallory, Seattle district; J. R. Newgent, Portland district; R. A. Brand, Seattle office; O. A. Kapsa, Portland district; M. C. French, head office lubricating sales, and Charles Taylor, Sacramento district.

UNION MEN AT A.P.I. MEET

The Union Oil Company was represented at the tenth annual meeting of the American Petroleum Institute, held at the Stevens Hotel, Chicago, December 2, 3, 4, and 5, by Vice Presidents L. P. St. Clair and P. N. Boggs; W. L. Stewart, Jr., director manufacturing group; E. W. Clark, president of the A.P.I. during 1927 and 1928; F. F. Hill, manager field department; F. W. Lake, production manager southern division; William Groundwater, manager transportation, and L. G. Metcalf and R. E. Haylett of the manufacturing group.

The annual meeting of the Institute constitutes the largest gathering of executives and departmental heads in the oil industry. During the four-day convention, problems pertaining to every phase of the industry were brought up for discussion.

A paper on the "Gas-locking tendencies of aviation gasoline in airplane fuel lines and feed pumps," prepared by C. C. Moore and M. S. Reynolds, was presented at a discussion on refinery technology.

SAFETY *IN THE* UNION

BASIC CAUSES

One of the most interesting contributions made in recent years to the literature of accident prevention has been the work of the Travelers Insurance Company in analyzing some seventy-five thousand industrial accidents. Out of this work have come a number of articles by H. W. Heinrich, on the Origin of Accidents and other pertinent subjects. Only 10 per cent of these many accidents says Heinrich, can be attributed to purely physical or mechanical causes. Eighty-eight per cent have supervisory causes, or to put the constructive thought foremost, eighty-eight per cent could only have been prevented through better supervision on the part of superintendents and foremen. The two per cent not classified are not necessarily the "unpreventables" but for lack of data they are out of the picture.

Going a step further, Heinrich lists seven common supervisory faults:

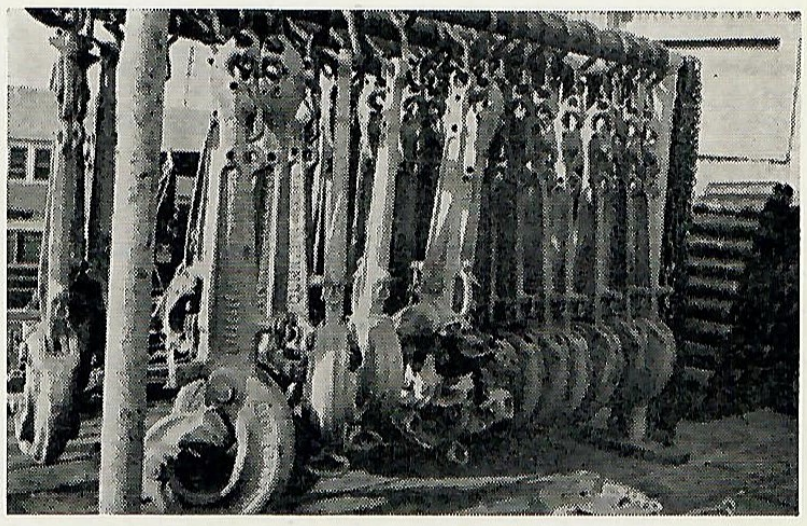
Faulty instruction.
Inability of employee.
Poor discipline.
Lack of concentration.
Unsafe practice.
Mentally unfit.
Physically unfit.

Similar analysis is made of the purely mechanical causes of accidents, so that when set together, the result is an analytical chart by which accidents may be classified as to their basic causes.

The first use of this data for the purpose of accident prevention was by Kyle J. Lutz, Safety Supervisor at Oleum Refinery more than a year ago. Hanging an enlarged copy of the Heinrich chart before the monthly meeting of the Oleum Foremen's Association, Lutz called on the men present to classify accidents which they themselves had reported during the preceding month. It was apparent almost at once that the typical accident report was merely a statement of an injury with little or no data as to the basic cause of the accident. The memory of the foremen was drawn on to supply the missing details and after much discussion each accident report was amended to include the basic cause.

Because of the success of this method of accident analysis at Oleum, the same plan was adopted in the Los Angeles Basin and has been used for the past two months in the meetings held in Field, Gas and Pipe Line departments. The interest that is aroused by a logical judgment on the causes of accidents is amazing. Instead of saying of an accident, "the man was careless" one hears foremen admit that they failed to give specific or detailed instruction in work which they knew was hazardous to the uninitiated. No attempt is made to fix blame, the interest is purely from the standpoint of prevention of repetition. Ultimately, this method of analysis will result not only in accident reports that are accurate, but also in a trained supervisory staff that will see the accident before it has happened and take steps to prevent it.

Where do old rotary chains go? Here is one excellent use; an anchor for tong safety line that will not cut the line in two.



Good housekeeping on the tool rack. Cal. must have got this idea from the butcher shop.

RAY JUDY SPEAKS UP

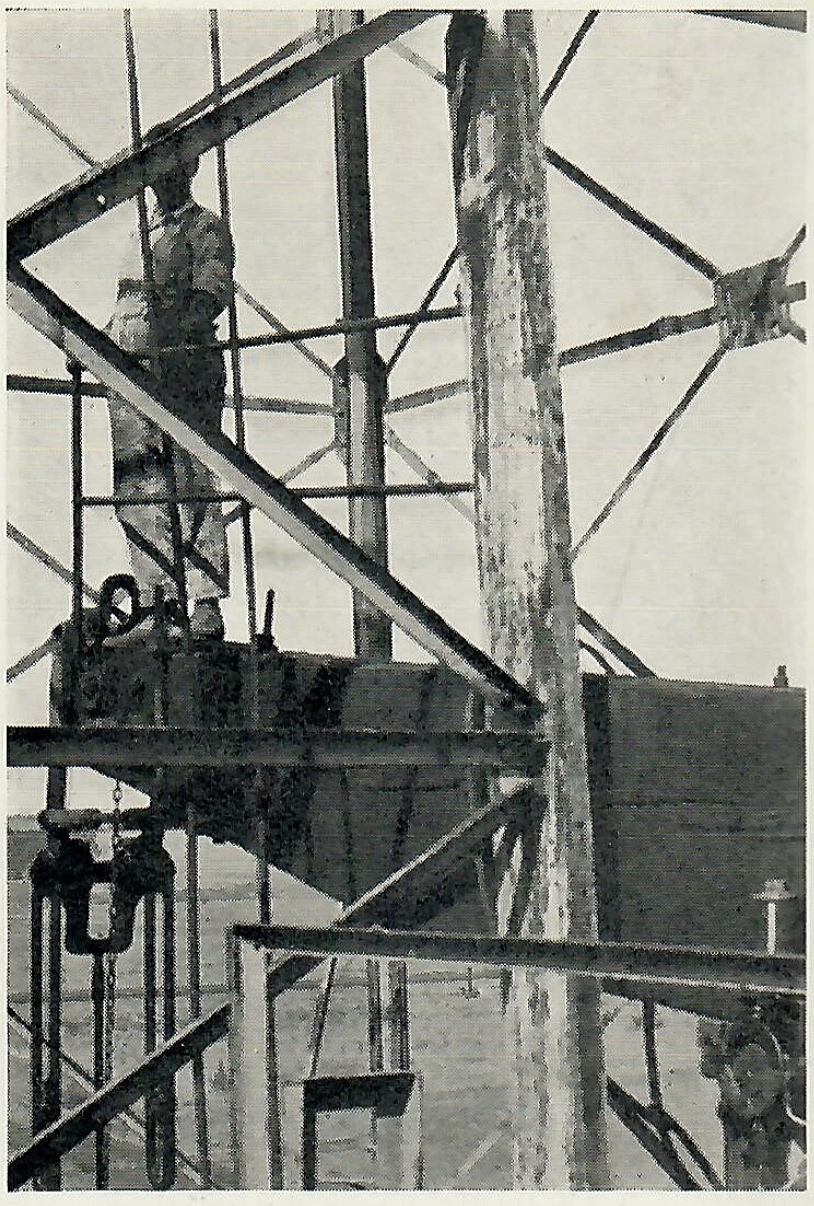
During the past month all divisions of the Field Department in the Southern Division have undertaken a definite system of holding foremen's monthly safety meetings. The gratifying result already evident is the spirit of helpfulness and co-operation on the part of all concerned to improve or eliminate practices that cause injuries. Sustained interest and co-operation will do much to solve this important operating problem. Ray Judy, recently appointed Safety Supervisor, says:

"After compiling the records for the month there is no doubt but that these meetings are extremely beneficial, not only to the Company but to the men in the field. There has been more safety talk around the field, more interest shown among the foremen and their men than at any other time since the safety work was started. This is bound to show a decided and continued reduction in the number of lost time accidents and at the same time in the minor ones.

"There are many old heads who have worked here for years and these men, working with the foremen, should not have much trouble in taking care of the new men as they come, instructing them in the jobs they are assigned to, being sure to bring out all the dangerous points of the work, and how to avoid these dangers. That is the main idea of this new activity—to get the men to talk safety, to take an active interest in accident prevention, suggesting ideas to eliminate unsafe practices.

"During the month we have had a number of lost time accidents, some of which were pretty severe, while others did less damage. All could have been eliminated with a little more care on the part of the injured or instruction by the foreman or driller. One man stepped on a nail. This was pure negligence on the part of some workman in not turning down the nail before he discarded the board. Explicit orders have been given for all nails to be disposed of in this way. This may have been a new workman who did not realize the danger of having boards around with nails sticking up

The prevention of fire in the oil field is the result of eternal vigilance Ed. Gluyas of Maricopa beside one of the new fire signs.



Rudy Hartman says this guard on the walking beam is the real thing. It can be collapsed when the beam is set back.

in them. If this was the case, then the foreman must be responsible for not giving this man the 'low-down' when he first came on the job.

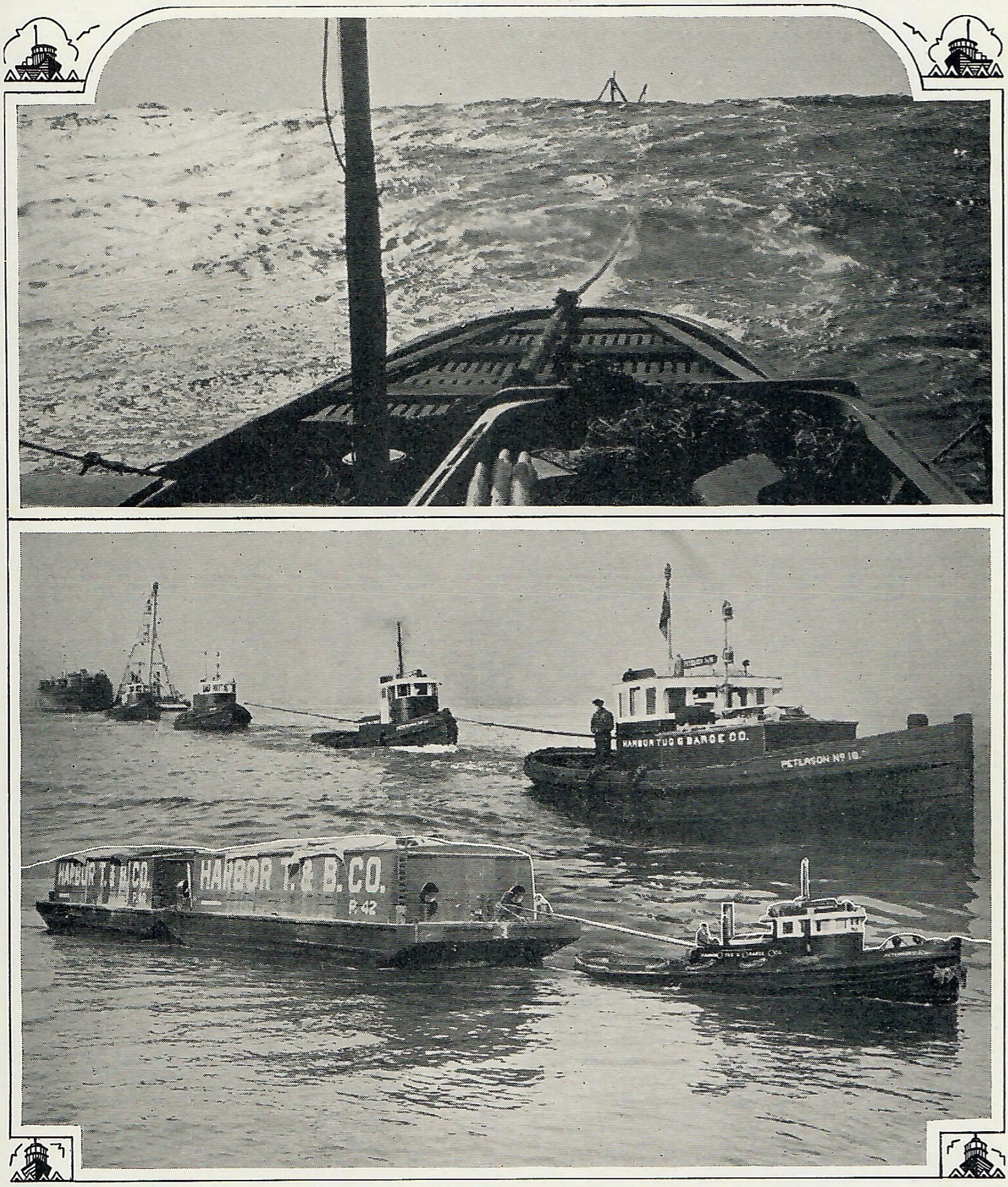
"Another man had a timber dropped on his toes due to inattention of some fellow-workman. Men should get the habit of always looking down before dropping any object, as someone may be below.

"Another man rubbed his eye with his glove, after working with cleaning solvent. He knew better, but thoughtlessness caused this man to have a very sore eye and to lay off of a good job for a number of days.

"Another man, carrying a joint of 2-inch pipe, let the pipe throw him off balance, causing him to stumble over a board; result, one sprained ankle. This was either a case of a man carrying too great a load for his strength, poor housekeeping, or else letting his work become mechanical and not keeping his mind at all times on the danger even in carrying a joint of 2-inch pipe.

"The other accidents resulted in strains. Over-lifting or sudden jerking on account of the other fellow dropping his end of the load without warning, were the usual causes. This is one of our most common injuries. There is not a foreman in the field who would ask his men to lift more than they should, but only a few take the trouble to instruct their men how to lift a load."

Bay City Has Biggest Tug Fleet



The black, squat-hulled tugs that ply our busy harbors are not things of beauty but they play a titan role in moving the water-borne commerce in the port areas. The casual observer may draw unfavorable comparisons between the majestic lines of the ocean-going liners and the bulging and battered sides of these throbbing little "water tractors" as they lug their huge burdens through harbor traffic, but he will never cease to admire their utility or power..

The largest fleets of tugs on the Pacific Coast is operated by the Harbor Tug and Barge Company of California, which has for a number of years been an exclusive user of Union products, including fuel oil, diesol, gasoline and lubricating oils. In carrying on its activities in San Francisco Bay and up the Sacramento and San Joaquin rivers this company operates fifty lighters and barges and thirty-three towboats and launches.

Occasionally in rendering its widespread service to shipping the company is compelled to send its tugs into the open sea, and it is then that the sturdiness of the crafts and the skill of the crews are given their severest test.

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