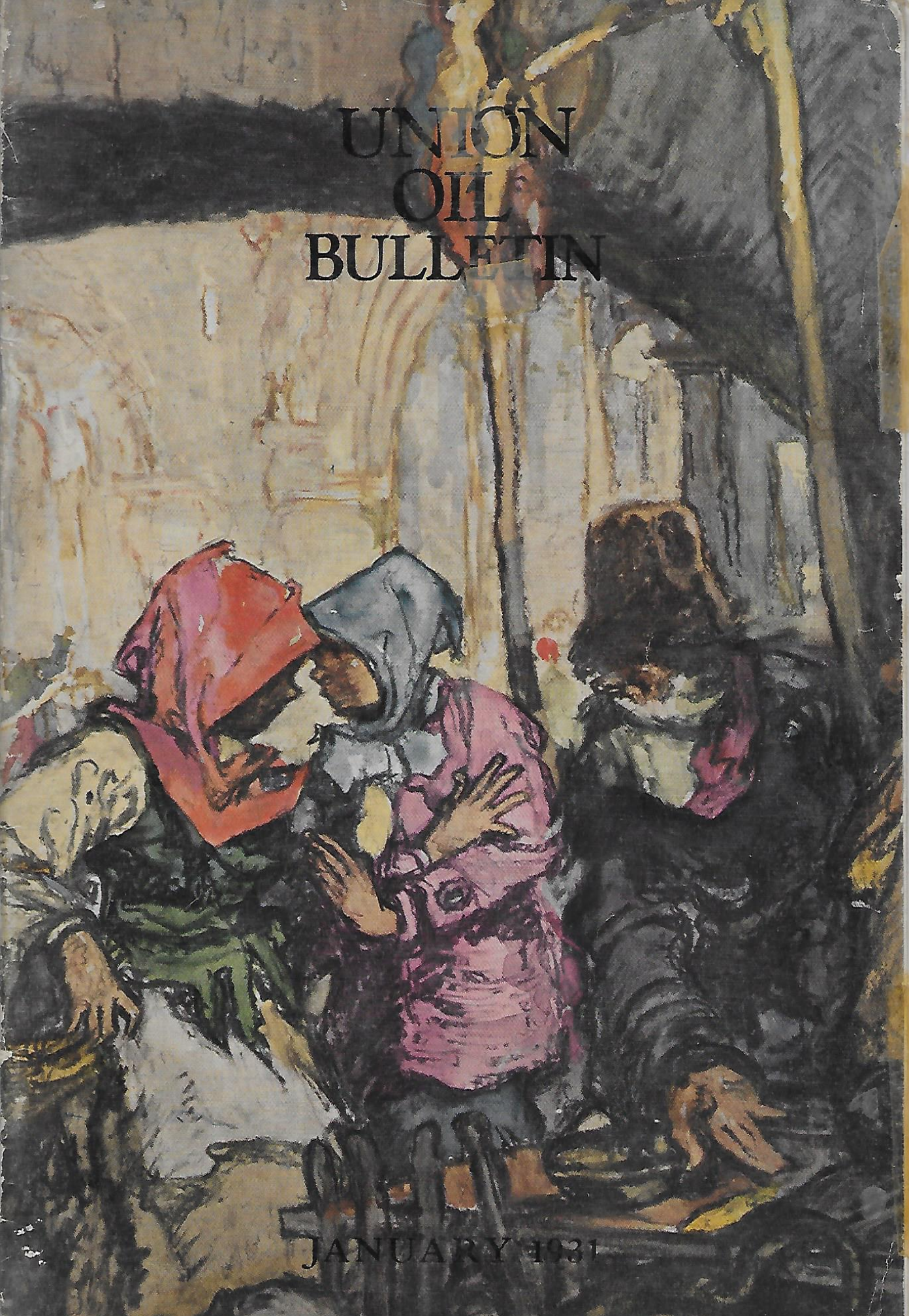
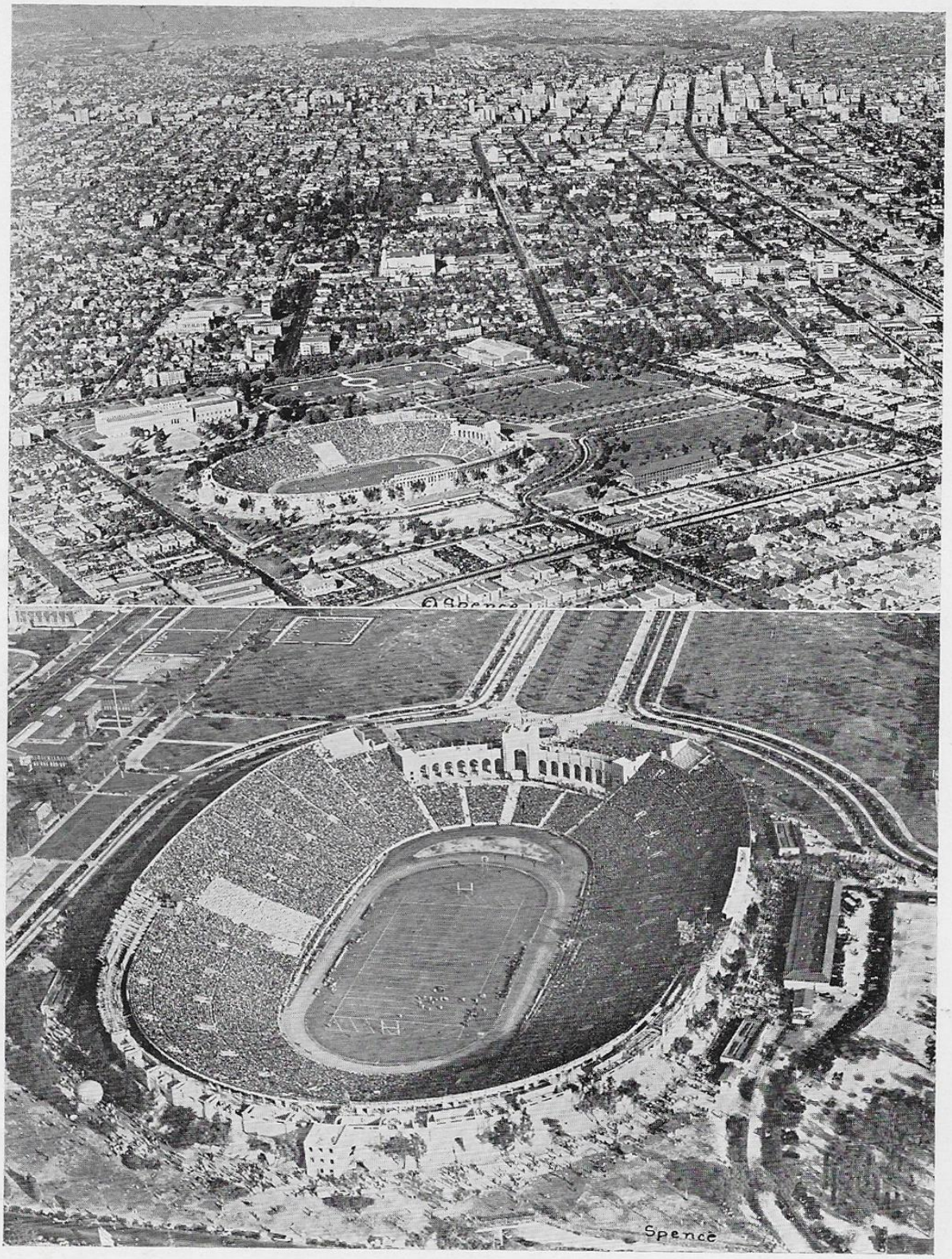


UNION OIL BULLETIN

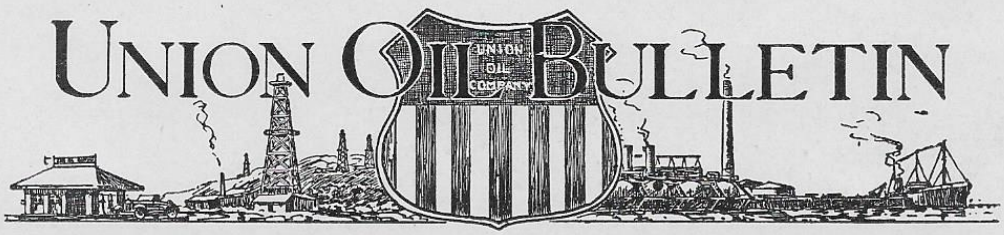
JANUARY 1931



When the "Irish" Beat the Trojans

Two interesting views of the Los Angeles Coliseum, where the 1932 *Olympic Games will be held, are shown in the above photographs, taken during the Notre Dame-Southern California football game when the stadium was packed with* 92,000 *persons. The upper photograph shows the coliseum with relation to downtown Los Angeles, while the lower one shows the crowd and the partially completed upper tier of seats being added to the structure. When completed the stadium will seat* 105,000.

UNION OIL BULLETIN



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Volume XII JANUARY Bulletin No. 1

Curtailment For 1931

TO BRING the oil industry in California into an economic balance by the close of 1931, it is necessary that the operators of the state immediately curtail crude oil production at the well to the daily allowable output of 500,000 barrels, fixed by the General Curtailment Committee December 17, last, following the presentation of a detailed report on production conditions in the state by the Special Committee of Eleven and the Fact Finding Committee. This report discloses that on November 30, the stocks of oils on hand in California totaled 180,310,770 barrels, less than four million barrels below the record storage of November, 1929, and that the daily production was far in excess of the seasonal demand and had been for some time. Failure of operators during recent months to approach within sixty to seventy-five thousand barrels a day the curtailment figures established last September, when the marked decline of consumption below estimated requirements became apparent, has made it impossible to make appreciable inroads on the excessive stocks of oils now taxing the capacity of the state's storage facilities. As a result drastic cuts must now be made in production, if a balance is to be struck between storage, supply and demand by the end of 1931.

That the operators cannot hope for a natural falling off of production in the state is immediately apparent when one observes the potential production of California fields on November 30 stood at 1,167,500 barrels a day, an increase of more than 100,000 barrels a day over the potential of a year ago. Intensive drilling of the new Playa Del Rey field, new developments in Kettleman Hills, the discovery of deep, high gravity production in Belridge similar to Kettleman Hills, and the possibility that the same sand has been uncovered in Lost Hills, is likely to increase the state's potential production still further before the end of the year. With such an outlook only

Latest view of Playa Del Rey oil field which presents one of the major curtailment problems because of town-lot drilling. The northwest corner of the company's big "Del Rey" lease is shown in the right foreground.

rigid observance of the curtailment program can keep the industry on an even keel. The fact that there is overproduction nationally and internationally offers no hope of relief through the wider distribution of the state's production. The possibility that the consumption of petroleum will increase sufficiently to permit an increase in production over the fixed quota is also too remote to consider in light of present economic conditions.

Up to the present time the burden of overproduction has fallen heaviest upon the purchasers of crude oil, most of whom are also producers. Not only have these companies been shutting in their own production, in compliance with the various curtailment programs, but have been taking oil in excess of the amount that strict compliance with the curtailment quotas by all operators would have forced upon them, principally because they were the only media through which the oil could be disposed of. As a result they are now compelled to seek immediate relief from this burden. In view of present conditions many purchasing companies have reached a point where they are unquestionably confronted with prorating their purchases in relation to their storage facilities, whether there is curtailment or not.

The success or failure of the present curtailment program is entirely within the hands of the operators. Partial curtailment will only prolong the condition which now exists, which if permitted to continue will eventually bring disaster to the oil industry and all of its allied industries.

California operators are not alone being called upon to curtail production. The operators in every other field in the country are being asked to shut in the output of their wells in compliance with a national program that has as its aim the stabilization of the industry nationally as well as in each of the major producing areas.

California's quota of the national production is 23.9 per cent; Oklahoma's is the same; Texas, 32.1 per cent, and the remaining producing areas 20.1 per cent. The quota allotments of each has been based on the potential production of its fields, with relation to the estimated crude oil requirements.

California Proration Schedule Dec. 18, 1930

	December Potential B/D	Per Cent Curtailment	New Allotment B/D	November Production B/D
Belridge	7,200	57.15	3,085	5,622
Brea-Olinda	22,450	52.83	10,590	10,785
Capitan	1,100	98.18	20	.....
Coalinga	34,000	73.53	9,000	8,444
Dominguez	15,220	34.95	9,900	10,082
East Coyote	3,730	57.10	1,600	1,718
Elk Hills	29,820	54.24	13,645	17,501
Elwood	121,000	76.04	29,000	35,864
Fruitvale	9,295	73.11	2,500	2,453
Huntington Beach	44,420	54.25	20,325	27,855
Inglewood	22,565	29.10	16,000	15,668
Kern Front	20,480	54.08	9,400	9,395
Kern River	11,000	75.46	2,700	2,331
Kettleman Hills	68,000	66.92	22,500	25,300
Lawndale	250	.....	250	292
Los Angeles	1,500	.....	1,500	1,359
Long Beach	201,000	54.24	91,980	99,643
Lost Hills	6,500	95.00	320	308
Maricopa Flat	12,425	54.35	5,685	7,902
McKittrick	4,605	21.83	3,600	3,690
Midway-Sunset	92,175	45.78	50,000	51,418
Montebello	9,280	22.42	7,200	7,338
Mount Poso	22,700	62.56	8,500	8,502
Newport	30	.....	.....	30
Playa Del Rey	45,145	54.22	20,660	40,080
Potrero	1,800	54.23	825	1,622
Richfield	14,930	54.25	6,830	8,908
Rincon	2,300	54.24	1,050	2,595
Rosecrans	9,020	54.24	4,130	6,664
Round Mountain	13,200	100.	.....	3,156
Santa Barbara	1,100	100.	.....	100
Santa Fe Springs	142,000	54.24	64,980	94,100
Santa Maria	12,000	66.24	2,550	2,558
Seal Beach	35,585	54.24	16,285	17,995
Summerland	300	.....	300	255
Torrance	12,455	54.23	5,700	10,717
Ventura Avenue	97,250	54.24	44,500	47,111
Ventura-Newhall	5,600	54.25	2,550	4,632
Watsonville	60	.....	.....	60
West Coyote	11,835	28.18	8,500	8,658
Wheeler Ridge	590	.....	590	596
Whittier	1,450	13.78	1,250	1,389
Others	135	100.	.....	54
TOTAL	1,167,500	57.17	500,000	604,750

This proration schedule has been prepared to meet the emergency now confronting the industry because of the inability of the crude oil market to continue to absorb the mounting overproduction of the state under the 540,000 *D/D quota. Excesses over the* 540,000 *B/D quota since September have made necessary the* 500,000 *B/D quota here presented.*

The allotment given individual fields must be strictly met as there is no provision whatever for excess production in any field.—**ADVISORY COMMITTEE.**

Ancient Logs of Union Wells

Editor's Note: The photographs appearing with this story were taken last month when Chester W. Brown, Director of Exploration and Production, retraced his steps over leases on which he drilled more than forty years ago. Some of the places visited he had not seen since his drilling days.

AMONG the guarded and prized possessions in the office of Chester W. Brown, director of exploration and production, is a frayed-edged master log book, the pages of which carry the records of the wells drilled by Union Oil Company and its predecessor, the Hardison and Stewart Oil Company, between 1883 and 1900. Data on only a few of the first wells drilled by Lyman Stewart and W. L. Hardison in Pico Canyon are missing.

The entries were made from the original logs of the wells, and in instances where these logs were not available at the time the entries were made, it is apparent, from notations in the book, that the memories of the

Chester Brown, director of exploration and production, holding master log book in which appear records of wells drilled forty-seven years ago. Mr. Brown's name is listed among the drilling crews as far back as 1888.

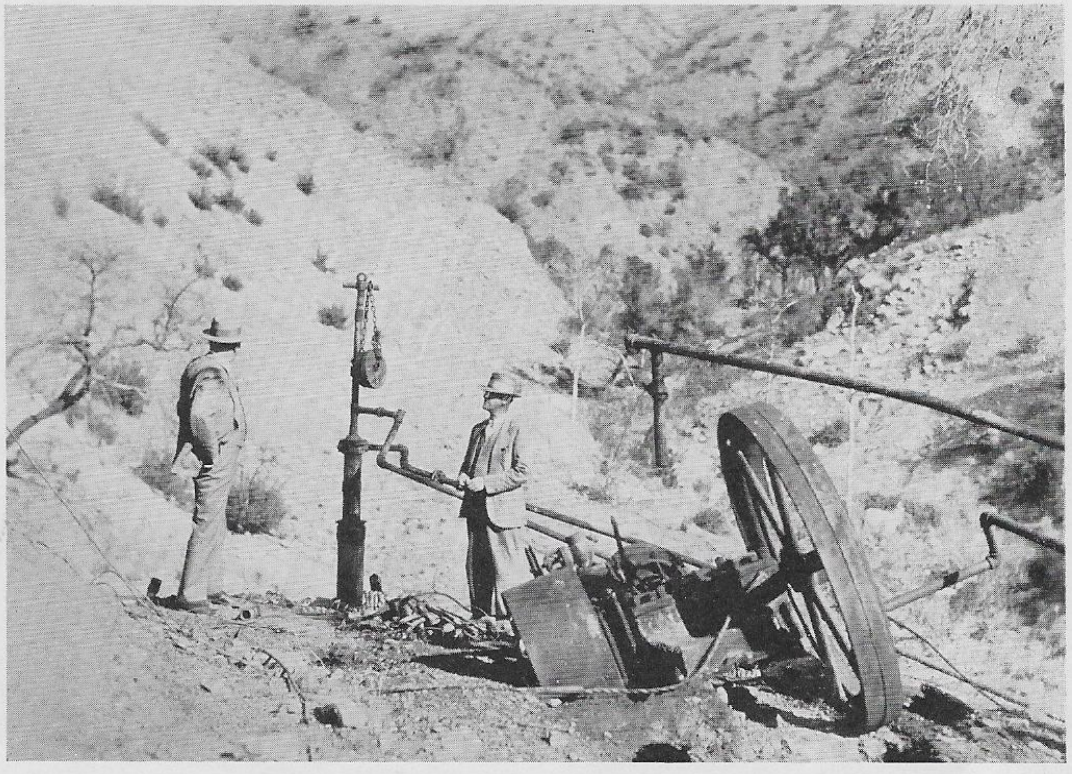
Ojai No. 6, drilled in 1865, the sixth well to be drilled in the state. It is located in Ojai canyon, five or six miles above Santa Paula. The derrick is gone, but a barrel as so of heavy oil a week oozes from the one-time well and trickles down the slope fifty yards or so before thickening into asphalt. Along the base of the hill on which Ojai No. 6 was drilled, Lewis Hardison drilled a series of 100-foot wells with a portable rig. These wells were being pumped by a single jack line when Chester Brown was assigned, in September, 1889, as a member of the crew drilling on the Astarta lease located in the canyon adjoining Ojai No. 6. In the above photograph George Gosline, superintendent at Santa Paula, is marking the old Ojai well while Mr. Brown is exploring its depths.

drillers or crew members were relied on to complete the records. Along with the logs of the wells are listed the names of the men who drilled them, many of whom later became prominent in the oil industry in California.

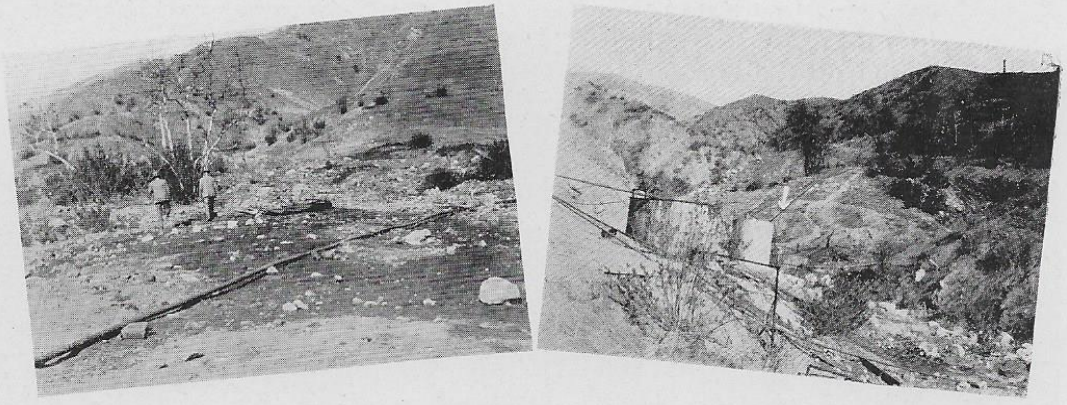
These old records offer an interesting comparison between the drilling operations of thirty and forty years ago and today, particularly as to the depths and costs of the wells, then and now. During the period covered by the log book the deepest well was drilled to 2745 feet; a real accomplishment with the tools and facilities available at the time. The average depth was less than a thousand feet, while many were completed at two and three hundred feet.

The labor cost, which was approximately one-third the total drilling cost on each well, including the building of the rig, is shown on the logs of several wells, giving an insight into the drilling costs of forty years ago. For instance, in connection with the drilling of Robertson No. 1 in the Bardsdale area to a depth of 1100 feet in 1891 the labor cost is listed as $1314.50. Robertson No. 2, drilled the same year, was completed at 700 feet with a labor cost of $549.25. No. 3, completed at 800 feet, cost $571.75 for labor, and No. 5, drilled to approximately the same depth, cost only $475.12. The labor cost on Grimes No. 4, drilled in 1892 in the Bardsdale district, and completed at less than 500 feet, was $309. In 1893, a report signed by "Chester Brown, foreman," shows the labor cost on Fairview No. 1, also at Bardsdale,

This photograph with Ojai No. 6 in the foreground, and the canyon in which the Astarta wells were drilled, in the background, shows how these historic oil holdings looked approximately forty years ago.



Here's Astarta No. 1, drilled 41 years ago, gas and oil flow lines still intact, though it has long since ceased to be a producer. Chester Brown served as tool dresser on the well. Strange as it may seem the engine boilers were still being fired with wood in the Ojai when this well was drilled, due to the fact that the oil produced there up to that time had been too heavy to burn in the boilers. While Astarta No. 1 was being drilled it started to flow and the crew trapped sufficient oil while it was flowing to fire the boilers until it was completed and put on production. It was drilled to a depth of 960 feet, and produced from ten to thirty barrels a day for considerable time.



Looking along the seepage at the foot of the mountain where Ojai No. 6 and other Ojai wells were drilled. Some of the seepages in this area are still active. In the immediate foreground is a 45-year-old oil line. Some of the oil run through this line from the Ojai wells was so heavy that it would not flow until the sun had heated the pipe, and right, another view of the Astarta lease with its abandoned tanks and tangled mass of pipe lines. Mr. Brown drilled his first well on this lease, having up to that time served in the capacity of a tool dresser. Last month as he tramped over the lease, which he had not visited for more than forty years, he recalled many of the incidents of the early days. To the right of the trail, shown in the center of the photograph, is the flow head of one of the old Astarta wells. At a depth of about forty feet on this well a boulder was encountered which it was found impossible to penetrate with a drill. A shaft was sunk to reach the boulder and E. E Chamberlain, the driller, went down to light the fuse to a charge of dynamite to break up the boulder. Mr. Brown remained on the surface to man the bull-wheel to pull Chamberlain out of the hole. "Chamberlain never could climb a rope hand over hand," Mr. Brown said in recalling the incident, "but when he heard the fuse begin to sputter after he had lighted it, I had time to make just one turn of the wheel when he shot up out of the shaft, climbing the rope faster than any jungle monkey I ever saw in action."

drilled to a depth of 600 feet, to have been $368.87.

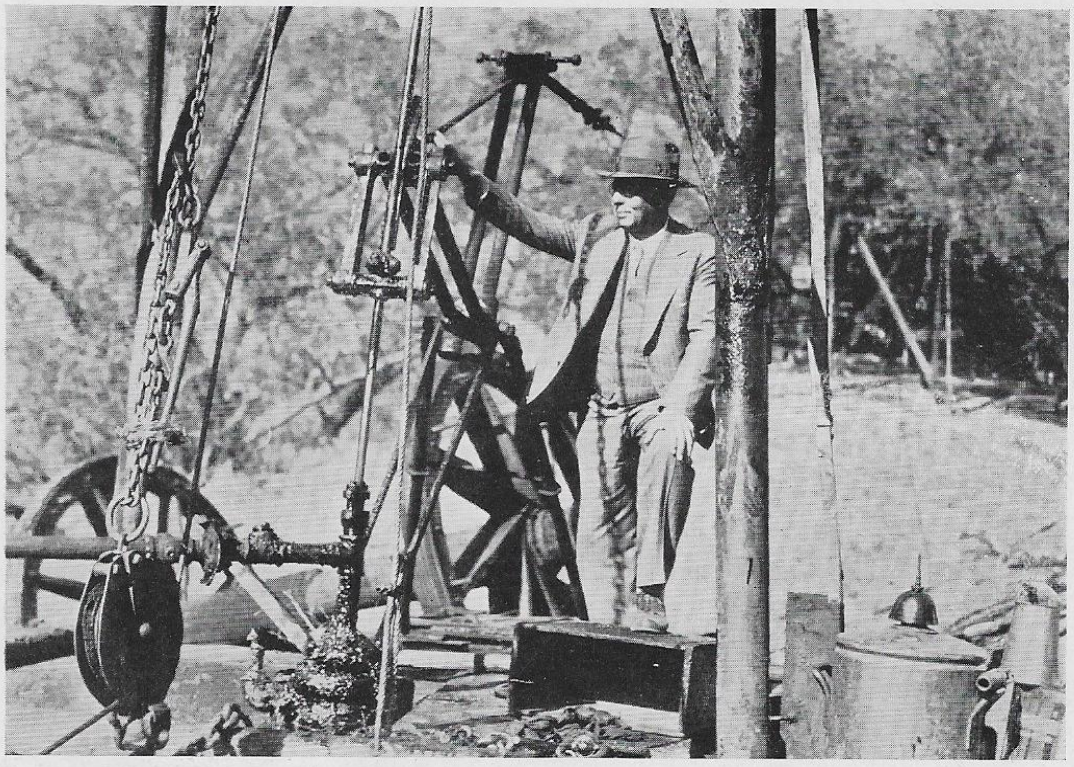
An itemized report of the drilling operations of the Union Oil Company for the year ending Sept. 30, 1898, discloses that the cost of drilling 41 wells on the Torrey, Bardsdale, Ex-Mission, Sespe, Four Forks, Thirty Sixes, Kentuck, Star, Tar Creek, Old Keystone Oil Company, Guiberson, Astarta, Callegaus and La Habra leases, and the deepening of five wells on the Torrey leases, was only $153,348.01, or $3.42 per foot for 44,782 feet drilled. Of the total, $51,146.20 was paid in wages to the drilling crews.

Many of the 8000-foot wells drilled in the past eighteen months at Santa Fe Springs have cost in the neighborhood of $200,000, and in a few instances considerably more than that.

The first entry made in the log book concerns the drilling of Smith Farm No. 1, spudded in on July 20, 1883. It was drilled to a depth of 1338 feet, pretty deep for that time, where it obtained, according to the books, "lots of water and about a barrel and a half of heavy oil a day." The tubing was pulled and the well deepened to 1520 feet. Caving sides caught the drill tools in the hole and the hemp rope (that was before the advent of wire cable) broke, leaving the tools in the hole. "We fished for three weeks," says the report, which was signed by John Irwin, superintendent, "and abandoned the well Dec. 31, 1883." The members of the drilling crew were David Schwartz, George W. Fleischer, William Essner and David Brown. Smith Farm No. 2 was drilled to 480 feet, where a bad cave-in caused its abandonment, the crew moving to Ojai.

At this point there is a notation in the log book that the old Ojai No. 6, drilled to a depth of only 64 feet in 1865, was pumped by hand as late as May, 1884, and produced from five to ten barrels of oil a day. It was one of the first wells drilled in California.

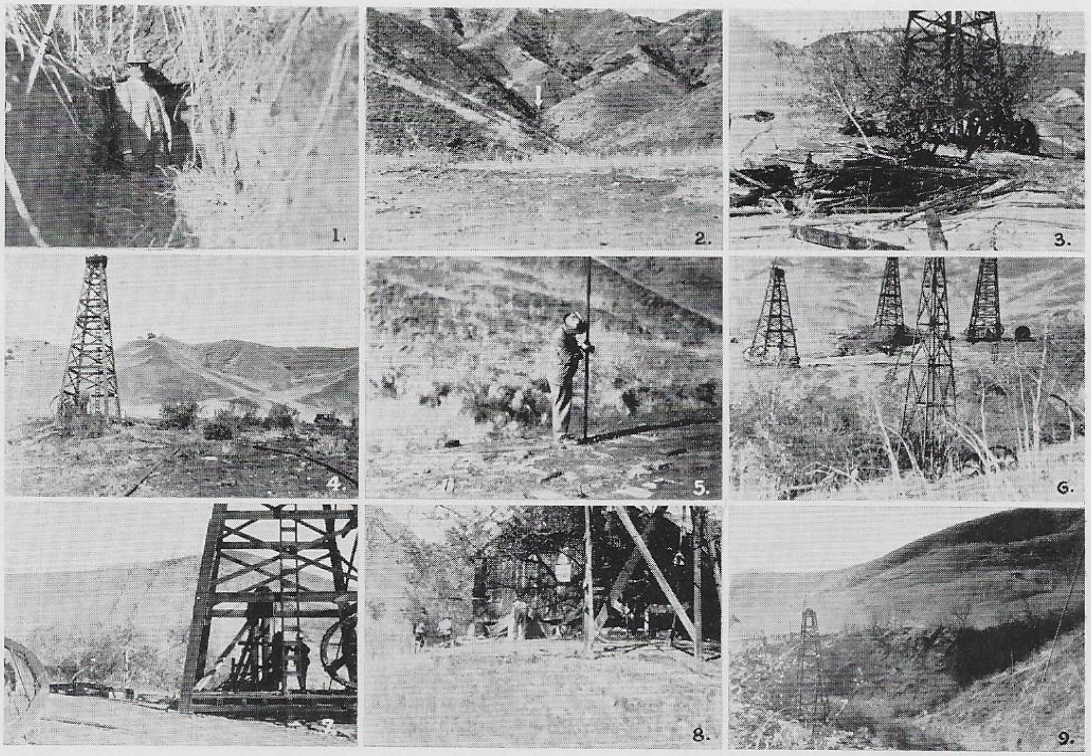
The first well drilled by Hardison



Mr. Brown pays a visit to "Wild Bill," Ex-Mission (Adams) No. 8, drilled in Adams Canyon in June, 1886. *"Wild Bill," looking now very much like a tame iron horse, was the first and only well pumped in California by Mr. Brown. It was one of the best of the Ex-Mission wells, starting off with a production of* 200 *barrels a day. It pumped* 130 *barrels a day for fifteen months after the first* 30 *days, and is now producing about a barrel and a half a day. The well got its name from a member of the crew, whose nickname was "Wild Bill." The rig shown in the picture is a portable one built within the past year.*

and Stewart at Ojai, Dull No. 1, was put down by Lewis Hardison to a depth of 100 feet with a "little portable rig." It got a small quantity of tar. Dull No. 2, according to the report, was also drilled by Lewis Hardison early in 1884, near the old Ojai No. 6, with the same portable rig with which he had drilled the first well. At a depth of 100 feet he got a well that "pumped nicely, i.e., five to ten barrels per diem." In May and June, 1884, John Irwin moved his "big rig" from Smith Farm and drilled Dull No. 3 to a depth of 361 feet. "It was cased," states the report, "with 108 feet of 8⅝-inch casing and 348 feet of 7⅝-inch casing with a turned down collar. Being unable to obtain more casing the well had to be abandoned."

The company's Adams Canyon wells on the Ex-Mission property were among its biggest early producers. At the start of the drilling on this lease Lewis Hardison and his small portable rig made their appearance. The first well on the lease, named in the log book, "Old Adams," was drilled a little below 100 feet and was pumped by hand. While the log book designates these wells as Adams No. 1, 2, etc., they have since been given the name of Ex-Mission. Adams No. 1, drilled to 275 feet by Lewis Hardison with his portable outfit in August, 1884, was abandoned without a show of oil. Adams No. 2 was started in October, 1884, shut down on order of Hardison and Stewart, according to the report, after being drilled 68 feet. It was drilled again in August, 1885, and struck oil at 70 feet, but was never made a producing well. No. 3, drilled in August, 1884, to a depth of 136 feet by Lewis Hardison with his trusty little rig, was brought in with a daily



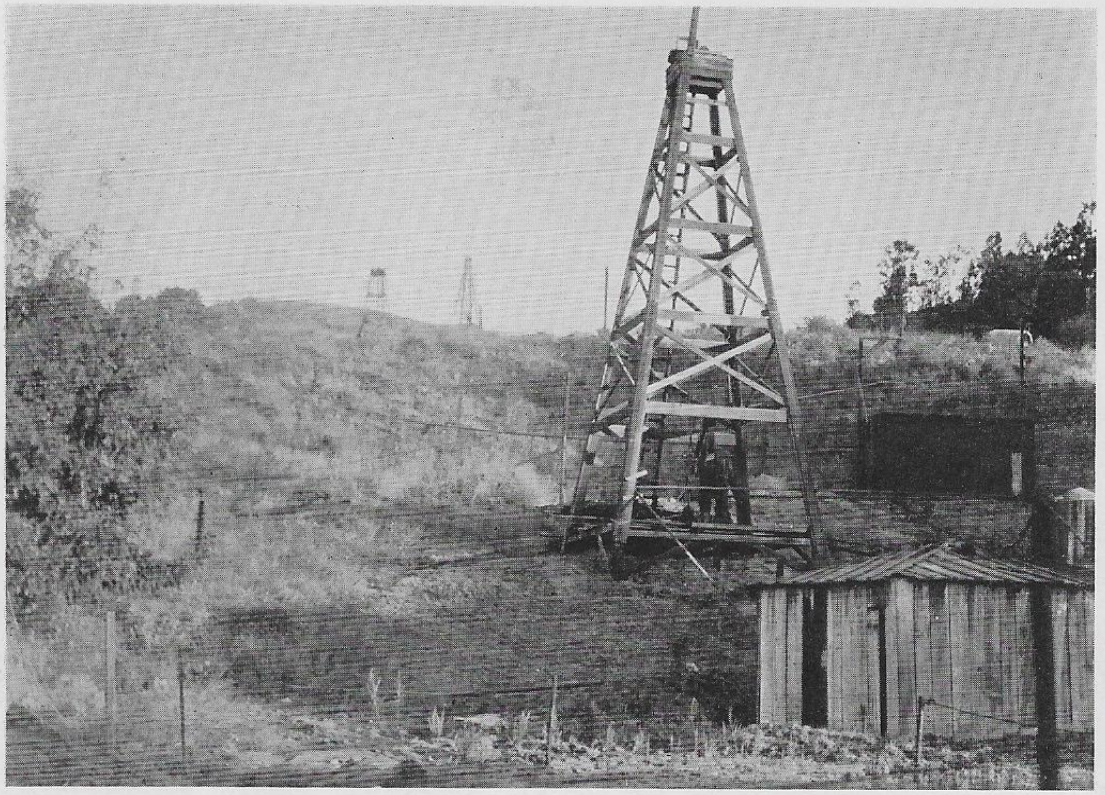
Present Day Views from the Ex-Mission Holdings

No. 1—George Gosline standing at the entrance to the "Boarding House" tunnel, now closed, in which Harvey Hardison and two others were killed in an explosion forty years ago. This was one of several tunnels bored into the mountains in that region for oil. No. 2—The "Green Oil" tunnel as viewed from the site of the old Adams Canyon wells. A little oil, green in color, still flows from the tunnel and is collected in a small storage tank. Its gasoline content is virtually nil, but it possesses exceptional lubricating qualities. No. 3—Tangle of wooden sucker rods with which wells were first pumped. No. 4—Looking along the oil seepages in Adams Canyon. No. 5—Mr. Gosline testing wooden sucker rod left in an open casing of one of the abandoned wells. No. 6—"Wild Bill" and three of the best producers remaining on the Ex-Mission property. These wells are across the ridge from the area shown in No. 4. No. 7—Showing jack line with which distant wells are pumped. No. 8—The pump house with its snorting engine and darting jack line arms is remindful of the ogres of ancient Greek mythology. No. 9—One of the old Ex-Mission wells, nearly lost in the growth in the dry wash, that is still being pumped by jack line, a distance of more than a half mile.

production of 25 barrels. The succeeding wells were drilled to various depths ranging between 300 feet and 2745 feet. The production varied from five to 300 barrels a day, with a few dry holes thrown in.

The log book carries frequent notations as to the water trouble (that was before Frank Hill, now manager of field operations, had introduced oil well cementing to the industry) encountered in the deeper wells, and makes many references to crooked holes and the attempts made to straighten them.

Chester Brown's name appears frequently among the drilling crews and is listed for the first time in connection with the drilling of Wheeler No. 4, June, 1888, although actually he started to work for Hardison and Stewart nearly a year previously in the Sespe district and dressed tools in Adams Canyon before going to the Wheeler lease. Wheeler No. 4 was drilled to 1237 feet without getting production.



Robertson No. 1, the first well drilled on the Bardsdale structure. Chester Brown helped build the redwood tank house, shown in the lower right hand corner of the photograph. It houses a wooden tank into which the well still pumps.

The members of the crew, besides Mr. Brown, were Fred Haskell, Thomas Griffin and John McGee. The following month Mr. Brown went to the Aliso lease with E. E. Chamberlin, W. H. Hennage, H. German and F. J. Haskell, where several shallow wells were drilled without getting satisfactory production. From then on Mr. Brown's name appears often as drilling foreman, at the Astarta lease, Adams Canyon, Grimes, Robertson, Fairview and Santa Susanna.

The last entry made in the log book appears under the date of August, 1900, in connection with the drilling of Torrey No. 46. This well was drilled to a depth of 1550 feet after passing up gas and oil showings at higher levels and was put on production with an initial flow of 200 barrels. Thomas Murry, Joe Burns, Dan Hass Heider and George McDonald comprised the crew.

FRED J. BROWN

Brother of Chester W. Brown and a member of the early drilling crews mentioned in this story, who is now residing in Santa Paula. He was drilling foreman for a time in Torrey Canyon and also at Brea.

In the book also are the partial records of the boring of Tapo Tunnel No. 1 and Adams Tunnel No. 3. The records of the former carry it to 1140 feet and the latter to 916 feet.

In connection with the drilling of Sansinena No. 11, recently suspended after being drilled to a depth of 5200 feet, and obtaining a small quantity of oil, it is interesting to note that the first wells on this 1300-acre tract, to which

The old log book shows that the Grimes and Fairview wells in the Bardsdale area, some of which are shown in this photograph, were among the cheapest wells drilled in the early days, excluding those drilled on seepages to a hundred feet or less. The labor costs on several ranged between $300 *and* $400. *Most of these wells are still producing. The first were drilled in* 1892 *under the supervision of Chester Brown, then drilling foreman.*

the Union Oil Company holds the fee mineral rights, were drilled on the property in 1896.

L. A. McCray, who now lives at 9950 Toluca Lake avenue, North Hollywood, is listed as one of the drillers of these early Sansinena wells. Among others whose names appear frequently throughout the book are E. I., M. L. and Bert McCray, brothers of L. A. McCray, Ed Hardison, William Loftus and S. C. Graham (the Graham and Loftus of the Union's big "G. and L." lease in the Brea-Olinda area), Thomas Griffin, M. M. Good and F. E. Good, George Fleischer, Dave Swartz, Fred Haskell, Howard Slocum, Fred Brown, brother of Chester Brown, Harry Gallagher, James Buchanan, Ralph Irwin, Ed. B. Scholl and Ben Scott.

The Employees' Benefit Fund

An Employee-Managed Organization

FOR MORE than fifteen years employees of the Union Oil Company have enjoyed the benefits of a plan for prepaying by small monthly deductions from their earnings, the cost of medical and hospital care arising out of illness or from injuries not covered by Workmen's Compensation

laws. At its inception, the cost of this "medical insurance" was met by a deduction of one dollar each month from the pay of each participating employee. Later, the company added life insurance, under the group plan, to the benefits and paid the difference each year between the deductions and the actual cost of the medical service and insurance. Early in 1930 it was decided to separate the medical service from the insurance plan, the company assuming the entire cost of the insurance ($500 to $2000 policies, depending on length of service) and turning over to the employees the management of the Employees' Benefit Fund, which now covers only the cost of medical care and hospitalization.

Under the original plan, with its cost to the employee of one dollar per month, a limit of $250 was established for any one case, but with the general increase in prices after the World War this limit was found to be inadequate to cover the major cases. By a vote of the participating employees and the Board of Directors of the company, the rules of the fund were revised in 1930 to permit deductions of two dollars per month from each member, with a corresponding increase in the maximum benefit to $500 for any one case.

At the same time, the actual management of the Fund was assumed by a Board of Administrators, nominated and elected by its members, made up of J. B. Arthur, manager of fuel oil and asphalt sales; G. G. Blue, manager of insurance and personnel; G. F. Prussing, safety engineer; J. D. Rearden, traffic manager and A. C. Rubel, assistant manager of field operations. At its first meeting, the Board elected Mr. Rubel, chairman; Mr. Blue, vice chairman and C. M. Nelson, claims adjuster, department of insurance and personnel, secretary. H. C. Ferry, of the company's legal staff, acts as advisor to the Administrators.

A representative of the Bulletin sitting in at the last monthly meeting of the board was interested to learn that the first ten months' operation under the new plan has yielded a small surplus, demonstrating that under normal operation the increase in benefits has been more than met by the increase in dues. Since the fund does not now have the resources of the company to draw on, the board has decided to continue the present dues for the time being, allowing the surplus to accumulate until sufficient to tide it over any unforeseen emergency, such as the influenza epidemic of 1918. That point will probably be reached toward the end of this year, at which time dues may either be reduced or benefits correspondingly increased.

It was also decided at the last meeting to have the accounts of the fund audited by a firm of certified public accountants and the result of the audit published in the Bulletin for the information of the members.

One of the duties prescribed for the Board by the by-laws is "to hear and determine controversies respecting the benefits and obligations of participating employees". It was interesting to note how few such cases have come up for settlement. Apparently the routine administration of the fund by the Department of Insurance and Personnel, involving as it does the handling of literally thousands of cases each year in hundreds of separate localities on the Pacific Coast, has been highly satisfactory to the employees. It is the expressed wish of the Board that members of the fund should feel free to make constructive criticisms or suggestions for improvement of the service.

Twenty-Five Years in Hawaii

JOINING forces with the Union Oil Company in Honolulu in 1905, three years after the first Union products were marketed in the Islands through licensed agencies, H. B. Weller, now manager of sales in the district, has witnessed a development in the territory comparable with that maintained in the States, and has himself been largely responsible for that growth.

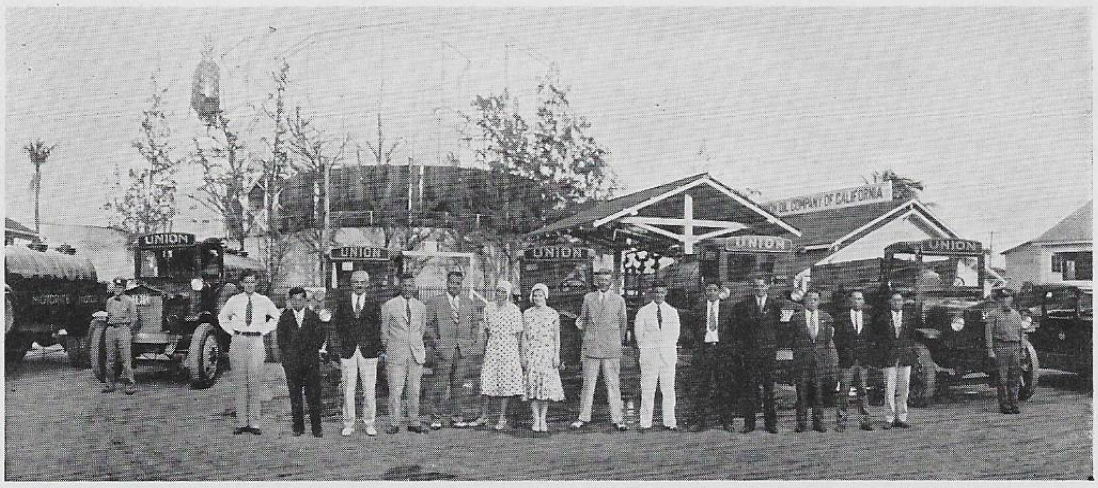
H. B. Weller

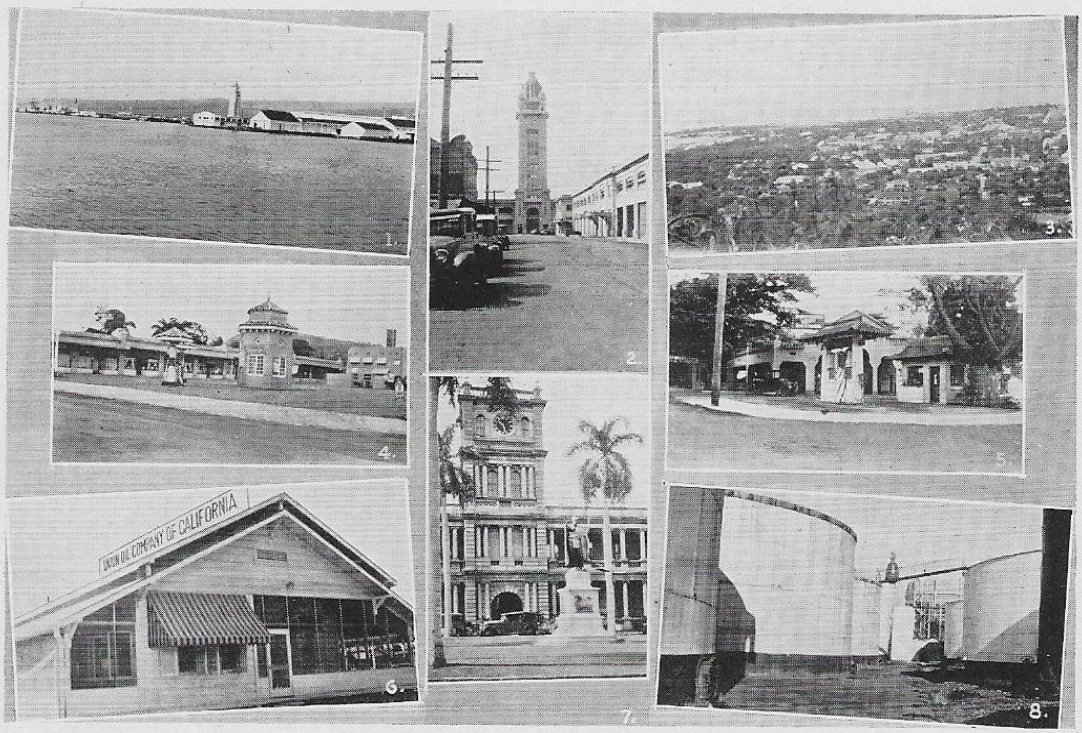
Previous to Mr. Weller's affiliation with the company, contracts for the distribution of fuel oil were signed with F. F. Dillingham and Company, while contracts for the distribution of white oils were signed with Hackfeld and Company. The original agreement with the Dillingham Company was twice renewed for five years, finally expiring in 1917.

After serving seven years in Maui, Mr. Weller was transferred to Honolulu to represent the company in Hackfeld and Company, and when all contracts with agencies expired in 1917 and the company established it own marketing facilities, he was appointed manager of the district.

The original marketing station consisted of fuel oil storage tanks and a small office building, erected on leased land. Gasoline and lubricating oils were shipped down in barrels. A steady increase in business soon led the company to purchase property and construct a large plant, with storage tanks for fuel oil, diesol, gasoline, and kerosene. The new plant was completed in 1923, and has since been supplemented with storage for Ethyl gasoline.

With the construction of four service stations in 1923, all of which were located in Honolulu, the company became the first and incidentally the only organization within the territory to own and operate petroleum reseller units. During the past seven years, four additional stations have been erected in Honolulu, and one was completed two months ago at Kamehameha Highway and Haleiwa Road, Waialua. Union products have enjoyed popularity since first marketed in the territory, and Union resellers are obtaining a substantial share of the potential business in the area, sales for the district registering a 25 per cent increase during the first nine months of the current year over the corresponding period for 1929.





Union stations are popular in Honolulu as this company was first to provide the motorists of the island with these convenient facilities.

Scenes from Honolulu

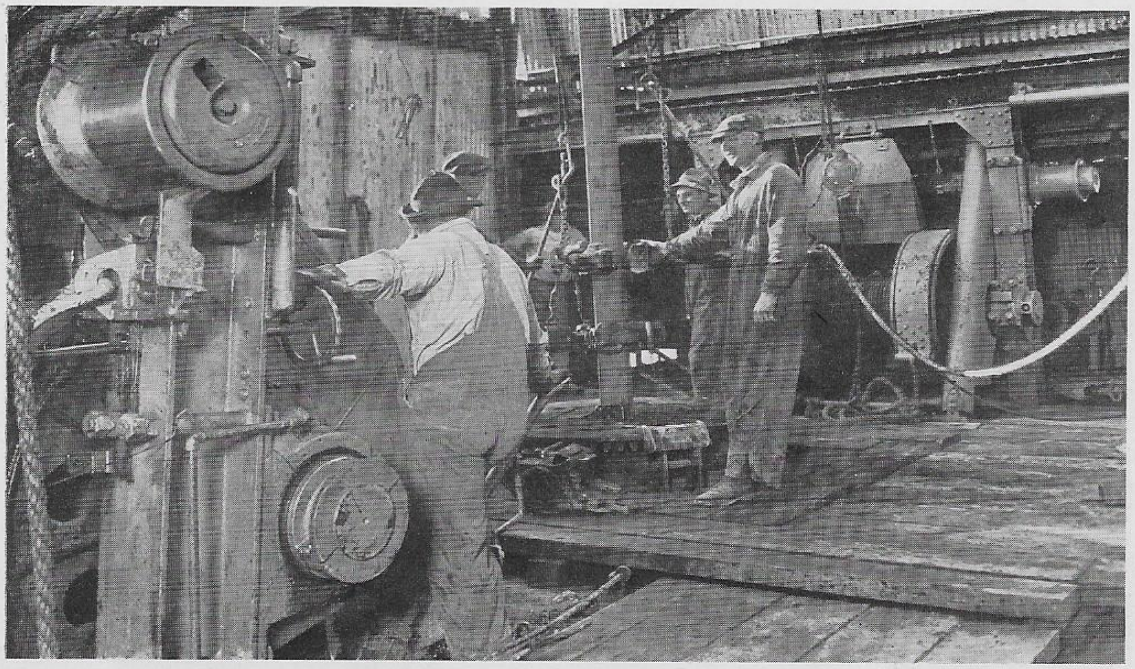
No. 1—General view of Honolulu harbor. No. 2—Aloha Tower at the foot of Fort street. No. 3—View of the city. No. 4—One of the company's newest stations at Pensacola and Young streets. No. 5—Station No. 667 at Newanu and Panoa. No. 6—Honolulu plant office. No. 7—Kamehameha statue in front of Judiciary building, and No. 8—View of the Honolulu plant tank yard.

The Driller

In the oil industry, more so than in most industries, there are men in key positions down in the rank and file of workers on whose skill and judgment the successful completion of the multitude of undertakings within the industry is dependent. Most of us know little of the work of these men. That we may become better acquainted with their activities The Bulletin will run a series of articles covering the key positions.

We will take at the start the driller. We do it because the oil industry started with the driller. He was the man who first bored into the earth to bring oil to the surface, and in so doing laid the foundation for the biggest of all modern industries. His tools in the beginning were crude. The first driller "kicked" his hole down with a spring pole device. He could do this because the oil he sought in those early Pennsylvania fields was found at shallow depths, one and two hundred feet. As the search for oil widened and the depths of the oil sands increased, the necessity for better drilling tools brought forth improved equipment.

The increase in the drilling depths increased the responsibility of the driller. The equipment with which he first worked cost only a few hundred dollars. The standard rig, which replaced the spring pole equipment, represented an investment of only a few thousand dollars. With the advent of the rotary rig, the investment in the equipment for each well jumped high into the thousands, advancing as the depths of the wells grew greater. In the past two years, with the discovery of hith-



The Driller and His Crew

Above is a typical scene on the floor of a drilling rig. The driller with his hands on the throttle and brake lever and his foot on the clutch pedal, is running a string of drill pipe in the hole while his helpers stand ready to operate the slips and couple the joints of pipe. A blunder on the part of the driller can destroy a well or cost the lives of members of his crew for whose safety he is responsible.

erto unknown producing sands at Santa Fe Springs and Kettleman Hills, at depths ranging from seven to eight thousand feet and below, the equipment investment for a single well, including drilling machinery, 138-foot steel derrick, drill pipe and casing, reached approximately $250,000, a greater amount by nearly $100,000 than was expended by the Union Oil Company for its drilling operations in any one year prior to 1900.

Going Down Deep

The massiveness of the equipment and tools with which the driller and his crew must work in drilling the deep high pressure wells of today is graphically shown in the above photograph.

As in the days of the "spring pole", however, the driller is still responsible for the successful drilling of his well, even the deep, high pressure wells, the potential values of which run from a half million to more than a million dollars. Quite a responsibility for one man, particularly when one stops to consider that a blunder on his part could result in the loss of the well.

It is doubtful if there is any other position in the oil industry, or in any industry, in which a single individual has greater responsibility or during the course of his work encounters a wider range of problems. From the time the bit first buries itself in the earth the driller is working in the dark, but he must never lose a mental picture of the bit as it carves its way through formation after formation. He has instruments which aid him in his deductions: a weight indicator, a revolution counter and a pressure gauge. They are like the instruments on the panel of an airplane in which the pilot is flying blind, they give him essential facts, but they are facts which he must interpret in conjunction with the laboring of the pumps, the feel of the drill and those subtle sounds which above the din and clatter of the rig strike on trained ears with telegraphic clearness. From these he must reconstruct the picture of what is taking place a few hundred feet, or a mile and a half below the floor of the rig, depending on the point at which he is drilling. In the event of a failure in the drill pipe, resulting in a twist off of a portion of the pipe in the hole, he must be able to visualize what has happened, "see" the lost pipe in the hole and take immediate steps to recover it. Fishing, as it is called, taxes the ingenuity and skill of the driller. The massive tools with which he works require almost a surgical deftness in handling. A wrong approach, the lack of proper care, the selection of the wrong fishing tool,

may result in more serious complications.

To appreciate the skill of the driller in putting down one of the deep wells, it should be kept in mind that in addition to its great length, the string of drill pipe with which he is working weighs in excess of 80,000 pounds. Only perfection of mechanical equipment, of course, makes possible the handling of this great weight, but even as excellent as this equipment is, it can not rectify a blunder on the driller's part. Even greater weights are handled in the landing of casing to shut off the lower water sands in the deep wells. A 6000-foot string of nine-inch casing, for instance, will weigh approximately 300,000 pounds. It is virtually impossible to move this great weight of pipe once it has been landed, which means the driller must know within inches where this more than a mile of pipe is to be set in the hole: an operation as delicate as it is ponderous.

Besides the purely mechanical features there are mighty forces of nature with which the driller must cope. He must be prepared at all times, while drilling in high pressure gas formations, to curb a volcanic force that once turned loose would destroy the rig and the well. In combating the great gas pressures it is necessary at times that the driller have cold-steel courage. Under the unwritten law of the field the driller is last to quit his post in time of danger. It takes courage of a high order, as well as loyalty to the job, to man the drawworks levers when the mud pumps are pounding to hold back a relentless, surging power threatening momentarily to break its bonds, with the pressure gauge throbbing higher and higher above 2000 pounds, and the massive machinery and rig quivering as though every minute it would give 'way under the strain. Scores of wells have been saved at Santa Fe Springs by the drillers who have stuck to their posts and won what seemed hopeless battles.

In addition to the dangers encountered in tapping the high pressure gas and oil formations, the handling of the heavy equipment within the rig, even with the safeguards which modern safety engineers have devised, involves considerable risk. The safety of the crew of four men working under the driller is dependent to a large extent on the care and skill with which he operates and directs the operation of the equipment under his supervision.

Three or four decades ago the belief was general that there was some sort of necromancy employed by the oil well driller. Even in the industry, a man to be a driller had to show credentials from Titusville, or a baptismal certificate from one of the early Pennsylvania oil pools. Modern machinery has replaced the magic art, and the Pennsylvania fetish has passed. The driller of today, while he does not have to be a mechanical engineer, must have a practical engineering knowledge and be a skilled mechanic. He must be adaptable, capable of drilling with standard or rotary rig, with steam or electric power. The training period for his job is vigorous. He starts as a roustabout on the floor of a rig. After a period of a year or so, if he shows the ability, he is advanced to derrick man. In that position, eighty feet up in the rig, on a narrow platform, racking the great stands of pipe, suspended at times by his safety belt, he demonstrates his coolness under fire and the steady nerve and courage required of a driller. In the course of a year or two, if he possesses other necessary qualifications, he is given an opportunity to try his hand at drilling. Few men become drillers before five years and in many cases the training period is longer.

PLAY SAFE WITH YOUR CHECK

Don't endorse your paycheck until you have escorted it safely to the bank! That warning would seem to be on a par with the one to "stop, look and listen" before you cross a railroad track. But rail crossing deaths continue unabated and not infrequently the cashier's office receives a frantic call from some employee that he has lost his endorsed paycheck. Few endorsed checks find their way back to their owners. To be on the safe side, keep your signature off the back of your paycheck until you reach the bank.

Service Emblem Awards

Complete 20 Years of Service

J. J. Thomas

For 12 years Thomas has kept the boilers at the power house at Oleum clean and in good working condition. He has been at Oleum for 20 years.

Mike Avila

Since 1924 Avila has been fireman at the Dudley pump station, and for 14 years previous to that worked in the Port San Luis and Avila refineries.

D. W. Ross

Producers Pipe Line pumps stations, particularly the Kern unit where he has been senior engineer for the past 12 years, are all familiar to Ross.

F. C. Werling

He knows the Producers Pipe Line system from the Santa Margarita pump station to McKittrick, where he is at present senior engineer.

Wm. Flaegel

As foreman of the drum and barrel cleaning and repair department at the Oleum, he is responsible for the condition of every drum and barrel that comes to and leaves the refinery.

FIFTEEN YEARS

Kansagrad, Paul M., Oleum Refinery.
La Graffe, Floyd, Southern Div. Field.
McGrath, Martin, Oleum Refinery.
Schatzman, Estella F., Ins. & Personnel.
Stockert, William, Purchasing Dept.
Thompson, Alexander, Oleum Refinery.

TEN YEARS

Cassel, Walter P., Los Angeles Sales.
Gard, Clare D., So. Division Field.
Gibson, Arthur W., Santa Paula Ref'y.
Gibson, Clinton R., Southern Div. Field.
Gonzales, Francisco, Los Angeles Ref'y.
Harwood, Dale S., Portland, Sales.
Hill, James E., Los Angeles Refinery.
Lamb, Fred, Southern Div. Field.
Lee, Will T., Phoenix Sales.
McKinstry, Paul R., Oleum Refinery.
Perry, Wm. C., Southern Div. Field.
Rugg, Belle W., Comptroller's Dept.
Roberts, Charles W., Sacramento Sales.
Swearingen, Ivan R., Los Angeles Ref'y.
Sullivan, Lola, San Francisco Sales.
Stopper, Lawrence, Portland Sales.
Taylor, Edwin A., Southern Div. Field.
Timblador, Francisco, Los Angeles Ref'y.
Williams, Earl A., Southern Div. Field.

NEWS OF THE MONTH

ANOTHER GROESBECK COVER

The Bulletin has been fortunate in obtaining another of Don Sayre Groesbeck's paintings for reproduction on this month's cover. If anything it is more colorful and dramatic in its appeal than his Chinese junk scene reproduced last August. He has here one of his favorite subjects—a Russian market place—pictured in true Groesbeckian style. His service with the Allied forces in Siberia during the World War brought him in intimate contact with the Slavic types which he has since portrayed so vividly on innumerable canvases. The original paintings for this month's cover was obtained from the Stendahl Art Galleries. Copies of the cover without the Bulletin overprint can be obtained without cost by writing the editor of the Bulletin. There are still a few prints of Groesbeck's August cover also available.

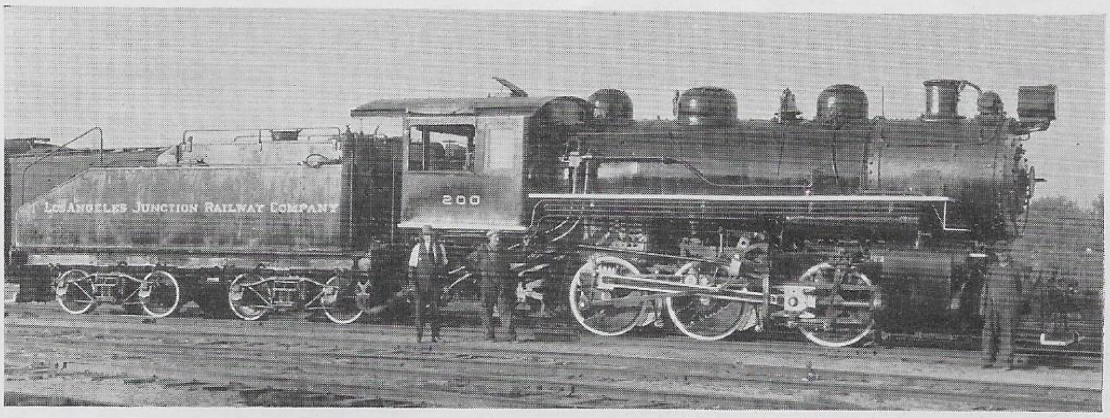
MESSINGER WINS AGAIN

L. I. Messinger for the second consecutive year won the Union Oil Company golf championship when he defeated G. H. Gregory, representing the Transportation department, 2 and 1 in the final 36 hole match played at the Flintridge Country club last month.

The tournament, which was the most successful ever staged within the ranks of the company, was featured by closely contested matches between all of the 32 entries. In the semi-finals, Messinger got a scare when J. R. Henderson after shooting a 38 on the first nine, and leading him 3 down with 5 to go, finally lost the match.

The endurance match between G. H. Gregory and R. H. Hornidge, after being abandoned at the 23 hole with the score all square, was later resumed for another 18 holes with Gregory finally winning 1 up.

152,000 Miles On Union Lubricants



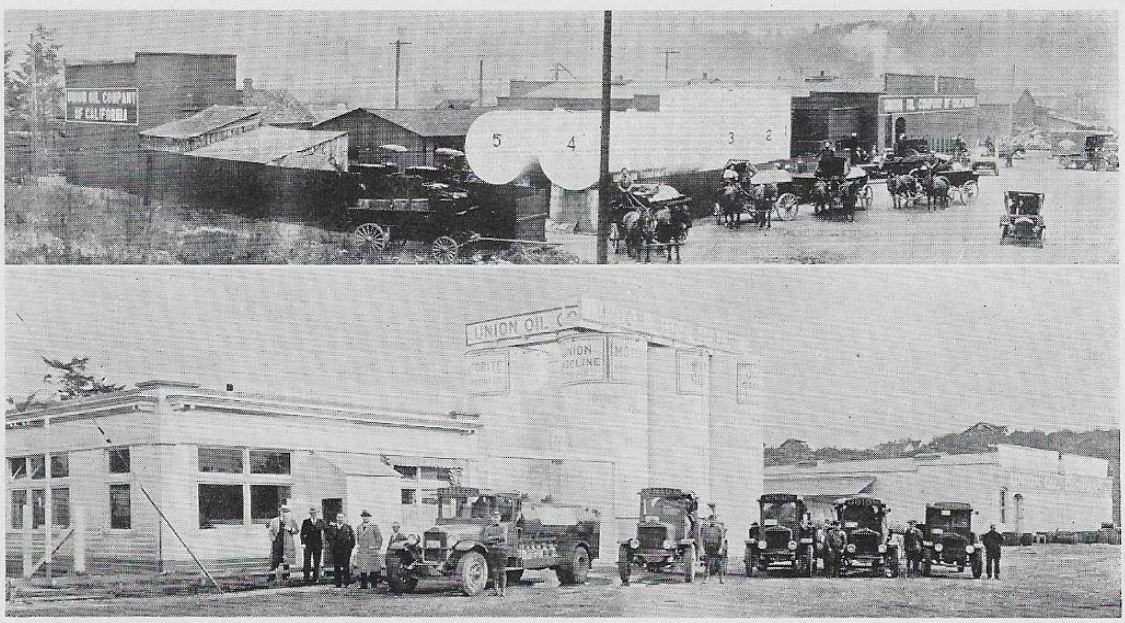
Number 200, the largest switch engine in Los Angeles, a 90-ton, 6-wheel, standard type built by the American Locomotive Works and placed in the service of the Los Angeles Junction Railway Company, September, 1926, last month was temporarily withdrawn from duty for a complete overhaul, after having run through 157,000 miles of switching operations in the Los Angeles industrial district.

During the overhauling, packing in the 21x26 inch steam cylinders, which for 152,000 miles of the engine's service has been lubricated with Pacific Steam cylinder oil, an Union Oil Company product, was inspected and found to be in exceptionally good condition. It was not deemed necessary to rebore the cylinders, despite the long service, and L. E. Hall, under whose supervision the repair and replacement work was performed, stated that the packing was removed only because it would be several years before the engine was again inspected.

The locomotive also was lubricated with Union Locomotive engine oil, which product, Mr. Hall stated, has proven as good as its companion, Pacific Steam cylinder oil.

When placed on the neutral belt line's work after the overhaul, No. 200 turned in an efficiency record higher than any other locomotive operated by the Los Angeles Junction Railway Company.

Sixteen Years Can Make a Difference



From an old file in his office, E. C. Wilson, special agent of the Union Oil Company at Tacoma, Washington, recently brought forth the photograph at the top, taken in 1914, two years after the company had purchased the site and equipment from the Paragon Oil Company. It is apparent from the picture that even as late as 1914 horses were still dominating the trucking business. Several of the individuals in the photograph are still with the company. Mr. Myer, present city salesman in Tacoma, is driving the tank wagon nearest the gate. V. H. Kelly, Manager Domestic Distribution, is standing in the office doorway, and Mr. Adams, now chief clerk at Tacoma, is third to his left.

The lower photograph shows the same site as it appears today. While it reveals the truck delivery facilities, it does not include the marine plant which makes possible the receipt of bulk stocks by barge or tank car. Those in the photograph from left to right are Clyde Mallory, lubricating sales engineer, E. C. Wilson, Mr. Myer, Walt Cooper, industrial salesman, and Mr. Adams.

Anti-Knock Value of Union-Ethyl Raised

In keeping pace with the continued improvement made in automotive engine designs within the past year, the Union Oil Company, January 1, raised the anti-knock value of its Ethyl gasoline, and as a result, the regular grade of Union Ethyl will now be "pingless" in cars of the highest compression ratios. The increase in the anti-knock value of the gasoline will also give added power and performance to cars of lower compression ratios.

Since first marketing Ethyl gasoline more than four years ago, the company has on three different occasions raised this premium fuel's original anti-knock rating. The development of Ethyl gasoline in the beginning was made necessary by the trend toward high compression engines, a trend that has been continuous. At the outset the compression ratios were between 4½ to 1 and 5 to 1, whereas, at present, there are cars with compression ratios as high as 7 to 1, and compression pressures above 120 pounds. It has been the development of automobile engines of the latter class that has made the latest increase in the anti-knock value of Union Ethyl advisable.

Creates Sales Gridiron

"Running around left end Stanford's All-Coast lub-back slipped and was thrown for a ten-gallon loss, paving the way for his opponent's first score of the game and his team's only defeat of the season."

Above is one of the descriptive lines taken from a play-by-play report of the game between Stanford University, represented by a team headed by C. A. Wood, industrial salesman, and the University of Idaho, in H. W. Warne's sales gridiron classic in the Seattle District.

At the outset of the football season Mr. Warne devised the plan of injecting the great college game into routine sales and during the past few months staged a series of encounters which kept the entire Seattle sales force on its toes.

Under the program worked out by Mr. Warne, salesmen or groups of salesmen, dependent upon the type of trade contacted and the respective strength of the individuals, were placed into groups representing various Pacific Coast Conference teams. Their sales represented performance on the gridiron.

In carrying on the games between the respective teams four playing fields were drawn up, and the names of the playing teams posted at each end of the gridiron. One-yard lines were drawn instead of the customary five-yard markers. On Monday of each week the game started with two miniature footballs placed on the 50-yard line, each carrying the name of its team. The balls were advanced back and forth across the field according to the sales made, and the final score was determined on Saturday at the close of the week's business. Scoring was made on the following basis:

One order for 500 gallons lubricating oil—6 points—touchdown.

One order for 500 pounds grease—6 points—touchdown.

One order for 250 pounds grease—3 points—field goal.

One order for 250 gallons lubricating oil—3 points—field goal.

One order for 100 gallons lubricating oil—1 point—try for point.

One order for 100 pounds grease—1 point—try for point.

One order for 10 gallons lubricating oil—1 yard.

One order for 10 pounds grease—1 yard.

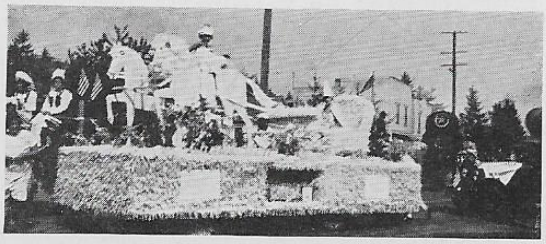
Sales less ten gallons—5 yard penalty.

No sales during day—15 yard penalty.

Naturally the result of the sale of three barrels of oil (150 gallons) could be easily offset by a member of the team turning in no sales, where a fifteen-yard penalty was incurred. In a number of instances, it was optional whether the sale made of say 100 gallons would be accepted as one point or 10 yards gained (which may later result in a touchdown) or six points, providing, of course, no penalties were inflicted.

Interest was intense throughout the campaign, and obviously woe beset the member losing ground for his team through lack of sales.

Dealers' Float Wins



First prize in a parade held during a recent celebration in Bremerton, Washington, in connection with the launching of the new cruiser Louisville and the laying of the keel for another cruiser at the government Navy Yard, was won by the above float designed and decorated by Avis Webster and F. J. Kelly, operators of the Union Service Station No. 606, assisted by Mrs. Webster. Several thousand persons were in Bremerton for the occasion. In addition to winning first prize from the judges, the float was highly praised by those who witnessed the parade, many persons taking the trouble later to call the company's office in Bremerton to compliment its designers.

New Guatemala Highways

Above are two views of prominent thoroughfares in Guatemala City paved with Warrenite-Bitulithic as part of a 95,000 square yard contract being consummated by Warren Brothers Company in which Union asphalt played a prominent part.

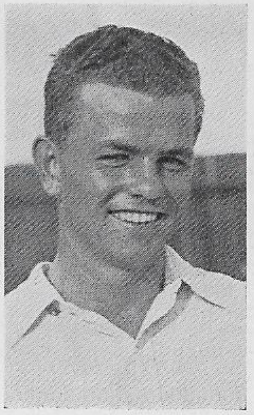
Union Products Exhibited at Fairs

Upper Left—Booth of Union Oil Company at Western Washington Fair, Puyallup. Upper Right—Attractive exhibit of Portland District at Pacific International Live Stock Exposition held at Portland. Motorite was made the feature of an exhibit at the Maui County Fair, Hawaii, shown in the lower left photograph. Lower Right—Booth of the Los Angeles District at the Los Angeles County Fair held at Pomona.

COURT CHAMPS CROWNED

Union Oil Company tennis champions were decided in both singles and doubles December 14 when R. A. Nevens won over C. M. Nelson 6-3, 6-4 to survive the men's singles. Miss Alice Vestal, in beating Miss S. Seitz 6-1, 6-3, retained the women's title, and the team of C. M. Nelson and R. Nelson copped the men's double championship by downing M. Lorimore and R. A. Nevens after a hard-fought match, 6-3, 5-7, 6-4.

This year's tournament, under the management of C. M. Nelson, had 32 entries, all of whom displayed a high competitive spirit as well as improved play.



R. A. Nevens

Alice Vestal

Sky Writing, a la Hollywood

Strange as it may seem this futuristic pattern of lights and shadows, traced across the sky by two powerful searchlights at the opening of the new McCarthy service station at Seventeenth and Broadway, Santa Ana, Calif., was not seen by those attending the opening. They witnessed only the darting of single shafts of light into the firmament, but the aperture of the camera, held open during a time exposure, recorded each move of the beacon on a sensitive photographic plate reproduced above.

Our Own Dairies Using Union Lubricants

Our Own Dairies, operating some fifty pieces of motor equipment in the delivery of its products in the Los Angeles metropolitan and Long Beach areas, recently became a 100 *per cent user of Union Oil Company's oils and greases. Union Gearlube heavy and Ballroll grease have been made standard lubricants for all the company's trucks. Our Own Dairies was established about four years ago.*

SAFETY *IN THE* UNION

New Instincts of Caution

Why does anyone require instruction in safety? Are the old instincts of self interest and self preservation dead within us that we need a lot of ballyhoo and propaganda to keep us alive?

We have often wondered just where the safety movement fitted into the philosophical scheme of things but it was only by chance that we got a clue to it. A little pup not much bigger than a pint of apple beverage wanted to cross the street. The stream of cars tearing along in both directions augured ill for his expectancy. But he walked along the curb to the corner where there was a controlled pedestrian crossing and there, first looking to the left and then to the right, he crossed in safety.

That pup's ancestors undoubtedly were saved many a time from their natural enemies by their instincts of self preservation, instincts which they in turn undoubtedly handed down to our friend the pup. But of what use were they against a stream of automobiles? Of what good are our senses as safeguards, when they are constantly subjected to a roar of sound, a flood of light, smells and tastes a hundred fold greater than even our immediate ancestors knew? Not much. We have to learn as did the pup that certain things are safe and others are unsafe,—arbitrarily, by taboo. Like table salt and cyanide of potassium, the middle of the block or the corner with its signals.

The reason for safety propaganda is economic. The dead and mutilated are full of knowledge by experience but they are not good for much more than examples. It is cheaper to teach new instincts of caution. It is cheaper to spend money on engineering talent than learn by fire and failure. It is cheaper to instruct and insist on the right way as the only way, than to let each man try to learn by his own mistakes.

The Greatest Single Achievement for 1930

A rather significant thing happened the other day. In one of the Southern California oil fields it was decided to deepen a well which had been producing oil from a relatively shallow zone. The producing crew got its paraphernalia out of the way, the construction crew set the rotary equipment and got the boiler plant ready, the drilling foreman checked over the rig and its equipment to see if everything was ready for his men to start work. And then the significant thing happened. The drilling foreman sent word to the superintendent that he could not let his men go to work *because the mechanical guards were not according to the rules.*

The first stage of the safety campaign is over when operating men take enough interest in accident prevention to *insist* that conditions be safe. Sometimes that stage is reached immediately and sometimes not for years.

Union Oil Company of California has just closed one of the best years in its recent history, in regard to accident prevention. Not a single industrial fatality was charged against it. But the greatest achievement in safety was the successful campaign of the Field Department.

REFINED AND CRUDE

By R. SNEDDON

Well, friends, we are standing on the door-mat of 1931, and are about to begin a new series of trials and tribulations, so we must naturally speed up to the maximum r.p.m. (resolutions per minute).

* * *

Of this fact we were somewhat painfully reminded yesterday, when one of our hind legs became entangled in a revolving door over at the bank.

* * *

We were further reminded of the necessity for a new set of resolutions, when we inquired as to the dimensions of our bank balance, if any, and endeavored to determine to what extent said bank balance, if any, had been ravaged by the demands of the late lamented festive season.

* * *

It took a lot of pluck to examine the little white slip—oh, so white—that the young lady handed over, but we finally summoned the courage and sneaked one furtive look. Imagine our embarrassment!

* * *

The nice little nest egg that had bid fair to provide for a rapidly approaching old age, was shrivelled to the semblance of a badly undernourished protozoa. (Stifled sobs from the co-sufferers.)

* * *

We had the great misfortune on Christmas Eve to approach the electric fan altogether too closely with our Santa Claus whiskers, so if you add to the above shocking discovery, the discomfort of a badly corrugated Adam's apple, you have a picture of our pitiable plight.

* * *

Science tells us that the latest subdivisions of the atom are the smallest things extant, and if they are any smaller than a bank balance on the day after Christmas, we have no argument with science. However, that's all over and done with, so let us, with good grace, take the little that remains, and so conserve it that we may be assured of a happy and preposterous New Year.

* * *

And now, you electricians, attention, please, while we dilate on current events.

* * *

First, we hear nothing but glowing accounts of the accomplishments of our new products—Union Auto Polish, and Union Furniture Polish.

Did you know, by the way, that the index of Union Oil Company products is now so extensive, that it has been necessary to supplement the list with a glossary describing the two polishes?

* * *

Also, we ask you to note that since our wife has taken to using Union Furniture Polish around the house, we have been obliged to equip the entire family with smoked glasses.

* * *

It is reported that several prisoners escaped from San Quentin a short time ago, and it is strongly suspected that they were in some manner supplied with Super Union gasoline, on account of the quick get-away.

* * *

So far we have been unable to verify the rumor that the Bugs Moran gang is operating in and around Los Angeles, but we know definitely that Union Cleaning Solvent has frequently been put on the spot.

* * *

And the Pipe Line gang is still going strong.

* * *

Speaking of these gangsters, we have never ceased to admire the strategy of the Chicago boy, who fooled the police by continuing to fire, after he had run out of ammunition.

* * *

On the same subject, you know, of course, that an infernal machine is the one that ambles along the middle of the road in front of you at about ten miles an hour.

* * *

At this juncture, apropos of nothing at all, did the significant fact ever strike you that the stork is a bird with an exceptionally long bill?

* * *

We conclude with one of ancient vintage, that is, however, really worth reviving: A certain family man, striving to shake an indolent alarm clock into action, dislodged from its interior a defunct cockroach, whereupon his infant prodigy piped up: "No wonder it wouldn't go, dad. The engineer is dead."

* * *

As the chick said when the egg began to crack, "That let's me out."

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