

UNION  
OIL  
COMPANY  
OF  
CALIFORNIA

BULLETIN NO. 11  
JANUARY 1922

WILSON, MENAHESS



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Fuel Oil (Acting).....	J. B. Arthur
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Sea Keeler - Room 8287

# Union Oil Company of California

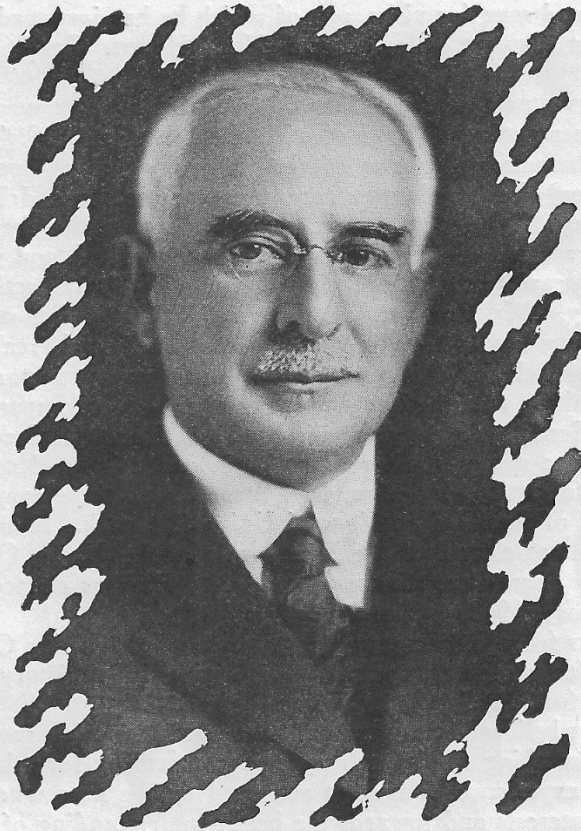
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Union Oil Bldg., Los Angeles, Calif.

VOLUME 1

JANUARY, 1922

BULLETIN NO. 11



*William P. Beach*



## WILLIAM R. STAATS



THOUGH actively interested in it for twenty years, oil alone is not the dominant feature of the business life of Mr. William R. Staats, present member of the Board of Directors. No one business is. Mr. Staats is striking not alone as a bond dealer and broker, an oil man, a founder of the great Southern California Edison Company, a banker or an extensive real estate operator, all of which must be included in the roll of his achievements. Two things—more personal characteristics than results of commercial training—impress one most about him. He has foresight and vision. Thirty-five years ago he saw California as it is today. Then nothing could destroy his faith in what he had envisioned; now he has the same unimpaired confidence in the greater future.

This keen insight had its inception in 1886, when as a boy of 19 he came to Pasadena on the chance of recovering from a serious illness which had threatened lung trouble and had caused him to forsake the prospect of a college education, after having completed his academic studies at Wilbraham, Mass. Once in California, the germ of commercial development so seized upon him that even with the vigorous health he readily regained, the University aspirations did not return; and save for visits, one of which he has just made, his old home and birthplace at Orange, a suburb of New Haven, Conn., has not again claimed him.

Petroleum as a part of the Staats faith in this country was actively manifested late in the nineties. Together with the late Mr. J. S. Torrance (who afterwards also became a Director of the Company and at one time held the office of Treasurer), he leased some acreage and commenced drilling operations in the Brea Valley. It was at the time of this venture that he chanced across Mr. Lyman Stewart, with whom he was already acquainted, and whose advice he had sought with regard to the possibilities for success in his first active participation in the oil industry. Mr. Stewart was not very optimistic, but suggested that if Mr. Staats was anxious to become actually connected with real oil operations he could further his belief in this commodity as an important factor in California's development by taking over the interests in the Union Oil Company of California held by the late Senator Bard, and which were in his (Mr. Stewart's) opinion well worth trying to secure. After thorough investigation and acting in accordance with Mr. Stewart's proposition, Mr. Staats, with three associates, acquired the major portion of the Bard holdings of Union Oil stock. Shortly afterwards, early in 1902, he was elected to the Directorate of the Union Oil Company of California, and has served continuously to date. He was elected Second Vice-President in January, 1913, serving until April, 1914.

While always fully realizing the great future of the Union Oil Company of California, Mr. Staats feels that at no previous time in its history has there been so much in store for our Company as at present.

He is a great believer in service and the results accruing from the spirit of everyone doing something for himself by doing something for others. From his wide commercial experience he is most attracted by the man who works wholeheartedly in the interests and towards the better understanding of his employers; who looks not so eagerly at the immediate personal advancement as at the growth of the work entrusted to him and the development he has made towards a comprehensive knowledge of the particular line of endeavor in which he is engaged.

Mr. Staats is a resident of Pasadena, the city he first came to in California and in the expansion of which from the small country town of 1886 to the nationally known city of today, he has figured so prominently. Personally he is an enthusiast—for sports, the outdoor life and hard work; for California and what it holds for those who are loyal; and for the Union Oil Company of California.



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# Union Oil Company of Canada, Limited



THE above is the name of our latest subsidiary, entitled to such by the issuance of a charter by the Canadian Government. We will commence activities in Western Canada, with headquarters at Vancouver, B. C., early in 1922.

The company has acquired the refinery and equipment of the British Columbia Refining Company, Ltd., at Port Moody, B. C. Our Manufacturing Department has assigned Mr. C. G. Brownlee, formerly of the Los Angeles Refinery, as Acting Superintendent at the Vancouver Refinery, Port Moody.

A brief reference to the development of this new branch of our business, we believe, will doubtless be of interest to the members of our organization. During the early days of the Union Oil Company of California, and on account of its increasing output of fuel oil, it was necessary to seek additional markets. In April, 1911, we entered the Canadian field in the sale of fuel oil. We were pioneers in this field, and after negotiations covering a number of months were successful in contracting with one of the transcontinental railroad lines for the use of fuel oil. The motive power of this railroad company, so far as Western Canada was concerned, was rapidly converted from the use of coal to oil. A number of steamers operated by them were also changed to oil burners. Sufficient tankage and the necessary wharves were installed by our company on the water-front at Vancouver, B. C., to insure the railroad of ample supplies of fuel. The Union Oil Company of California has continued to serve this railroad since the date of the first contract.

During the past two years, through the vigorous and untiring efforts on the part of Mr. Fred Ruddock, Agent at Vancouver, a splendid lubricating gallowage has been built up with the local and marine trade. Thus in extending our operations in Western Canada we are not entering a new field, but one in which the company is already favorably known.

In continually extending its activities it is quite natural that the Union Oil Company of California should look on the Ca-

nadian market as a desirable one. After a thorough survey of the probable business that could be secured, and our ability to continuously serve the trade in this market, it was concluded to enter the field with a complete line of refined and lubricating oils, and in order to handle the proposition along the most economical and satisfactory lines, that the company should refine in Canada.

For a number of years past we have supplied the British Columbia Refining Company, Ltd., operating a refinery at Port Moody, B. C., with its supply of crude oil for refining purposes. An arrangement was recently concluded whereby our company acquired this plant and equipment. The necessary supply of crude oil will be transported by our tank steamers from California points to the refinery at Port Moody. We have acquired suitable distributing station sites at Vancouver, Victoria and New Westminster, and in addition thereto we will operate our own service stations in the three cities mentioned. Construction work is now under way, and, considering the unfavorable weather conditions, good progress has been made.

Vancouver is one of the most important seacoast cities in the Dominion of Canada. It is the terminus of several transcontinental railroad lines and the home port of a large number of passenger and freight steamers that trade with the Orient, Australia, New Zealand, Philippine Islands, etc. Canada is one of the largest wheat producers in the world. Farming is rapidly increasing, and the large number of tractors in that field require a constant supply of petroleum products. The coal, copper mining, wood pulp and paper industries are expanding rapidly, as well as sawmills, fish canneries and other large and important manufacturing projects. These industries are all large consumers of petroleum products.

As business develops, our marketing facilities will be increased. Western Canada is largely visited by American tourists. The Government records show that during the past summer 250,000 American cars crossed the international boundary at Blaine, en





F. RUDDOCK  
MGR. FUEL OIL SALES



CHAS. M. PAYNE  
CASHIER



KENNETH ARCHIBALD  
WATER FRONT SALESMAN



R. C. SWEATT  
CITY SALESMAN



R. J. KENMUIR, SPECIAL AGT.



H. B. BEASLEY  
AGT. VICTORIA, B.C.



H. A. SPEIRS  
SALESMAN

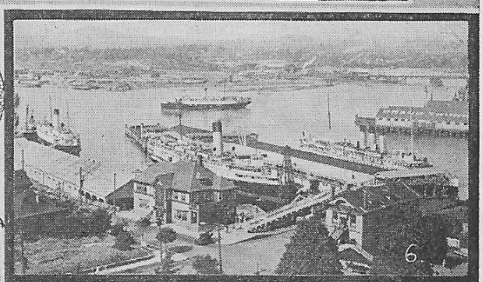
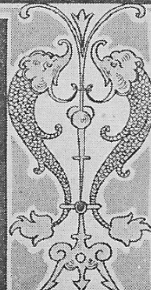
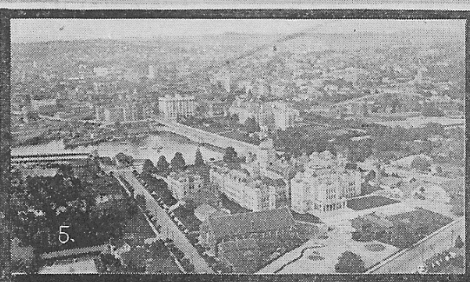
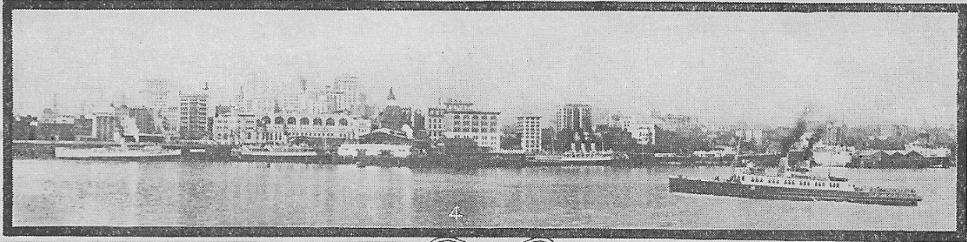
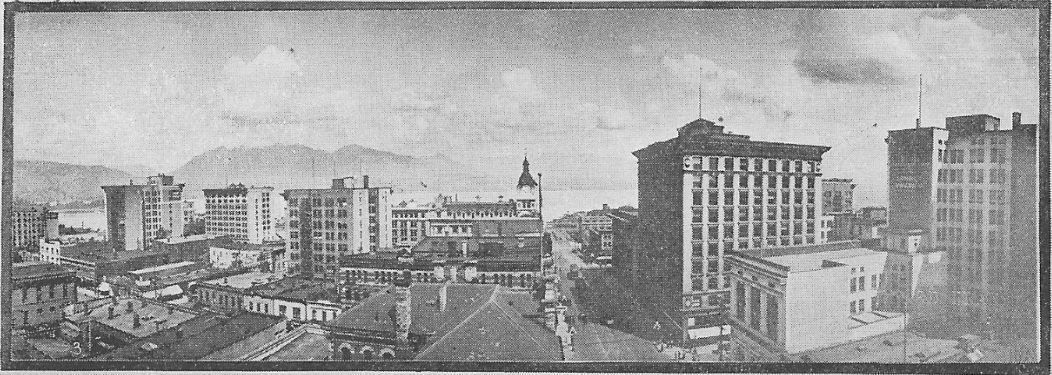
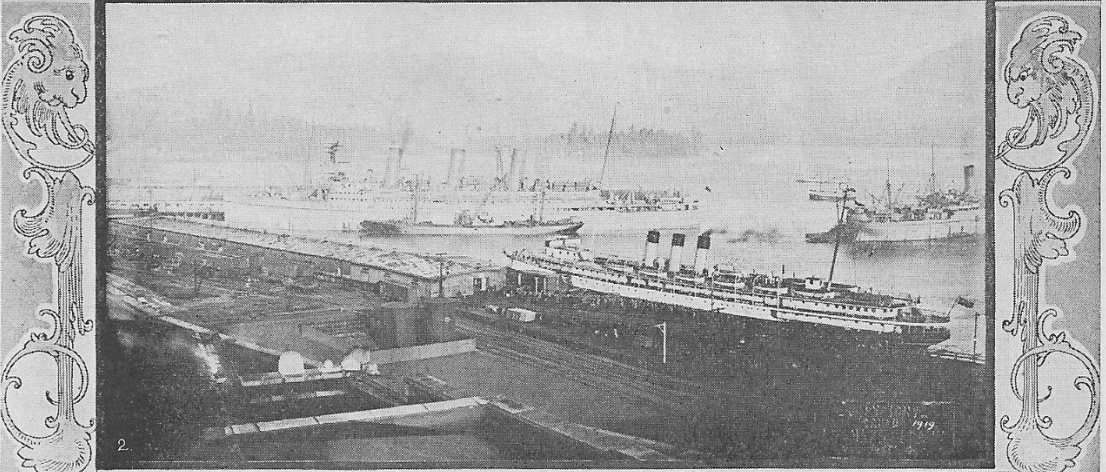
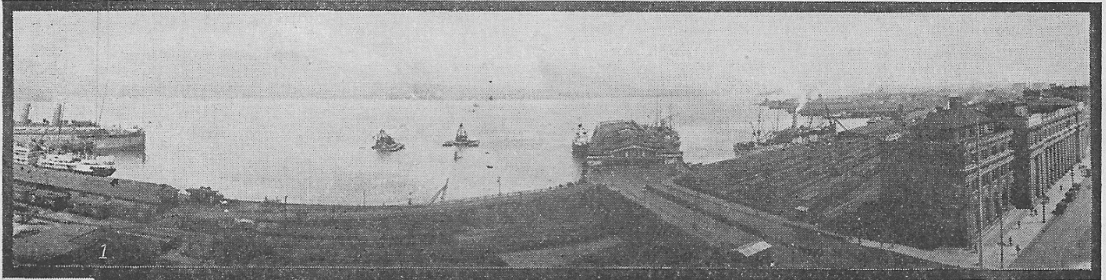


T. H. MCGOWAN  
AGT. NEW WESTMINSTER, B.C.



A. D. RICHARDSON  
CREDIT MAN





1. Waterfront Vancouver, with Canadian Pacific Terminals. 2. Waterfront Vancouver, showing C. P. Docks, with the "Empress of Russia" coaling and C. P. Coastal steamer taking on passengers. 3. Portion of Vancouver business district. 4. Vancouver waterfront. 5. View of Victoria with Provincial Parliament buildings in foreground. 6. Victoria waterfront showing Canadian Pacific Docks.



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route to the City of Vancouver and other Western Canadian points.

The City of Victoria is located on Vancouver Island, and is the capital of the Province of British Columbia. Some of the largest coal mines in the world are located on this island.

Our Canadian Sales Organization will be supervised by Mr. W. J. Condlon, District Sales Manager, Seattle. The organization is as follows:

R. J. KENMUIR, Special Agent, Vancouver, B. C., has been a resident of Canada for the past twelve years. He was employed for eleven years of this time by the British Columbia Refining Company, Ltd., occupying the position of Secretary. He is well and favorably known by the Canadian trade, and with the assistance of our organization there is no question but that he will give a good account of himself.

FRED RUDDOCK, Manager Fuel Oil Sales, will also supervise and be responsible for the Vancouver Fuel Oil Plant. He has been in the employ of the Union Oil Company of California since 1912. He commenced as a pumpman at the Vancouver Plant, and in 1918 was appointed Agent at Vancouver. There is no member of our

organization who is more responsible for the company having concluded to enlarge its activities in Western Canada. Mr. Ruddock never ceases to boost Union Oil, and his continuous efforts to induce the company to extend its activities is an indication that "success comes to he who rustles while he waits."

Space does not permit more than a brief mention of the other members of the organization, but in Messrs. Archibald, Sweet and Spiers we have a selling force that will render an excellent account of itself. Mr. Chas. M. Payne will handle the Cashier's duties, while credits will be in charge of Mr. A. D. Richardson. Mr. H. B. Beasley has been appointed Agent at Victoria, and Mr. Thos. H. McGowan will occupy a similar position at New Westminster.

To our Canadian Organization we extend the Compliments of the Season, and trust that yours will be a Happy and Prosperous New Year. We welcome you most heartily to the ranks of the Union Oil family, and we are confident in the statement that your American friends will have to step along rapidly to break even with the results which you will secure during the year 1922.

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### VISION

*The practical man sees a small wooden box  
Strung tight with the gut of a cat,  
On which you can scrape with the tail of  
a horse;  
There's nothing more to it than that;  
Or so he declares, and it's perfectly true,  
That's all that a violin seems  
Unless you have vision which leads you to  
see  
A casket of loveliest dreams.*

*The practical man knows a tree is a tree.  
He figures its height and its girth;  
How many board feet it would yield to the  
saw,  
And just what the boards would be  
worth.  
And yet to the man who has vision, it  
stands  
A miracle sprung from the sod,  
A green living glory that ever proclaims  
The spirit and purpose of God.*

*The practical man sees a practical world  
And runs it in practical style,  
He's safe and he's sane as an everyday  
guide,  
But still, every once in a while,  
Though practical people make living run  
smooth,  
Let's yield to the magical thrall  
Of dreamers whose beautiful visions supply  
The reason for living at all!*



# The Oil Shales of Colorado

BY R. BURNHAM

IN THE following article I have endeavored in a brief way to give an outline of the characteristics and future possibilities of the oil shales of Parachute Creek, in Garfield County, Colorado, not from a technical standpoint, but rather the everyday experiences as they occurred to us in the work of examining, sampling and obtaining the lands which we now have.



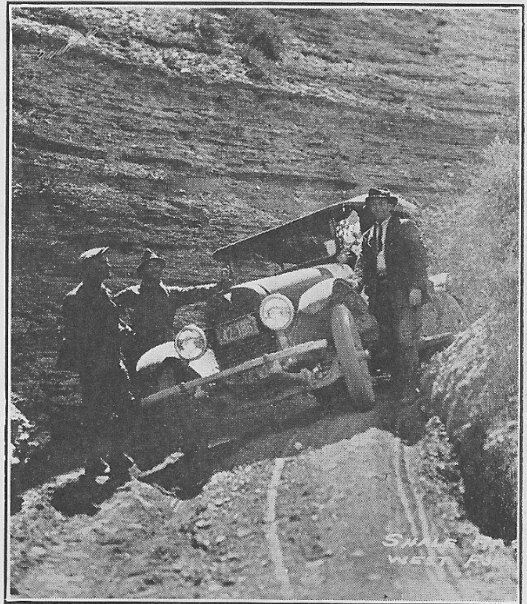
An oil company can only exist in the intense competition of modern business by constantly looking ahead to the future when the present proven liquid oil fields will have become exhausted and new territory must be at hand. It was on this very policy that the Executives of the Union Oil Company of California determined to investigate the possibilities of the vast oil shale deposits of Colorado, Utah and Wyoming and after a year's intensive work in the fields with geologists, chemists, engineers and attorneys the company decided to concentrate on certain large holdings at the Forks of Parachute Creek, in Garfield County, Colorado.

The work was intensely interesting to all those connected with it, one of the chief reasons being its uncertainty and utter lack of previous detailed study by competent engineers and chemists. There were no text books on costs of mining, retorting or refining, nor, in fact, any assurance that a suitable oil could be obtained from the shales at anything like a reasonable cost. The mere fact that the work was so new made it all the more interesting and kept everyone on his toes, for each man felt like a pioneer expecting something new around every turn or over the next hill. Many laughable things occurred, mixed in with lots of plain, old-fashioned hard work and a few close calls and near serious accidents in fighting snow and ice and falling rocks, which tended to keep up the morale of the bunch in spite of the cold and exposure.

Mr. Crossfield, of the Manufacturing Department, and myself outfitted a car in Denver in the early part of September, 1920, which was destined to cover considerable territory and a good many miles of mountain mud and snow before we finished; in fact, "Peggy," as she was familiarly called, logged a trifle over 16,000 miles, and if approached could probably write a very decent little book about her experiences. Suffice it to say that she came through like a heroine and deserves a Croix de Guerre with two palm leaves for distinguished service on the field of battle.

Peggy was a Hudson Super-Six, of rather ancient vintage, but sound of heart and limb, and after getting her a new set of shoes and having the back of the front seat arranged to lay down and make a berth inside the car, we took her into the organization for better or for worse.

Mr. Crossfield had his retorts and chem-



A HIGHWAY IN THE SHALE FIELDS

ical apparatus made so as to fasten to the running boards of the car and so, with blankets and grub, we represented a fairly complete "Combat Patrol." When you consider that the average family in the



mountain country usually numbers from four to seven and lives in a one-room cabin, you can see the advantage of having a place to sleep of your own; a meal, or, in fact, several meals, can easily be postponed without much discomfort if you have a good dry place to sleep, so in that respect we were very fortunate.

We expected to be part of the land forces, but did not anticipate having to join the navy as well. However, we were forced to enlist for a cruise on the Green River, which is the main West Fork of the Colorado and runs through the shale fields of Northeastern Utah. The river has cut a gorge through the shale forming cliffs several hundred feet in height and being almost vertical it made sampling from above rather difficult, so we decided to try it down the river. There was supposed to be a new ferry operating just above the territory we were interested in and so we hiked over there—Mr. Crossfield, Mr. Starr, our engineer, and a famous character

named Hank Stewart (a rare old bird in fact as well as name), who was to show us the way. When we arrived, the ferry boat was built but the cable was not strung, and a shepherd with a band of 2,000 sheep was impatiently waiting to get across, so we rowed across in the one and only little boat and had a pow-wow with the builder of the ferry. He was a citizen of a well-known maritime nation by the name of Ole Olson. He couldn't lend us the little boat because it was the only one he had that was seaworthy, but he had an old steel rowboat that he might be persuaded to let us use if we would help string the cable and put the sheep across. It was one of those cases where "an ounce of honey is worth a gallon of gall," and although a storm was brewing and time was fleeting we decided to string the cable. If you have ever tried to stretch taut a 1¼-inch cable full of kinks and have it hang about 4 feet above the river for a 400-foot span you can get an inkling of what was coming.



SHOWING THE TWENTY-TWO FOOT "PAY STREAK" ON PARACHUTE CREEK



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Always steaming at top speed, stopping only for a few hours to load or discharge the cargo and for necessary repairs; for the interest charges on a big tanker which she must earn, besides her operating expenses, run into hundreds of dollars a day. Of such *STEAMSHIPS* and other *MARINE EQUIPMENT*, the Company owns \$8,000,000 worth, with four new vessels under construction, which will increase this amount by half.

At an oil refinery one misses the thunderous clamour of the steel mill, but with this difference, they are strangely alike. The same agent, heat, is used for the purification of the mineral, oil, and the mineral, iron. Stills correspond to blast furnaces and agitators to Bessemer converters. The same knowledge of the chemistry and physics of matter is needed, the same control is exercised by constant laboratory tests to insure uniformity and appropriateness of product. It is difficult, as one watches a cargo, of possibly fifty thousand barrels of gasoline discharging from a tank steamer, to realize that such a quantity can be accumulated by the collection of almost invisible dew-like drops, condensed from an unseen vapor.

There are many parts to a refinery besides the stills, where the oil is distilled and the vapors collected; and the agitators, where it is purified by treatment with chemicals. There are boiler houses, pumps, water mains, railroad tracks, wharves, many tanks for storage, dormitories, warehouses, and plants for packaging the product in containers of tin or wood or steel.

As the oil comes from the ground, in the well it is often accompanied by natural gas, sometimes in enormous quantities. This natural gas contains a considerable portion of gasoline, which can be extracted and accumulated by processes of compression and cooling. The plants where this is done are called Compressor Plants. In *REFINERIES AND COMPRESSOR PLANTS* the Company has invested almost \$10,000,000.

As you drive your automobile along the smooth highways of California's splendid system of roads and pass a trim service station, painted in the Company's colors, you have seen the last outpost in the long chain of the production and distribution of oil. The means of communication with this farthestmost link is the red and yellow truck

you turn out to pass on the road. Its load discharged, the truck hurries back to the base headquarters, what we call a Marketing Station, for another supply. There are one hundred and fifty stations in every town and city of importance in the Pacific Coast States. At each one, tanks and warehouses, storage places for the trucks, garages at the larger stations; at coast stations facilities for loading the oil into tank cars for shipment to inland stations; automobiles for the Managers, Salesmen and Collectors, and the machinery for keeping and collecting accounts. In *MARKETING STATIONS* and equipment the Company has invested over \$10,000,000.

In the course of time the strongest metal will corrode and disappear; so the pipes in the ground and in the oil wells rust away and have to be replaced; tanks become unserviceable; steamships outlive their usefulness and new ones have to be built; buildings deteriorate; refinery machinery becomes obsolete through the discovery of new processes; automobiles and trucks wear out; the oil beneath the ground we have bought or leased becomes exhausted and new tracts must be acquired. To provide for the replacement of all these things, the Company lays aside out of its earnings each year, sums of money, and so arise the *RESERVES FOR DEPRECIATION AND DEPLETION*, which amount to \$23,000,000 at the present time.

In the course of its business the Company, from time to time, has seen fit to acquire substantial interests in other Companies; this for one of two reasons: either because the subsidiary company offered prospects of profit, as for example in oil production, or to assure ourselves of a supply of material or services necessary for the conduct of the business. Of the latter class of allied companies are manufacturers of oil well machinery, water and townsite companies, a towage concern and the like. The investment in these Companies may consist of ownership of their stock, purchases of their bonds, or advances of money to them for working capital. If the stock ownership is more than a majority, the Company is classed as a *CONTROLLED COMPANY*; if less than a majority, as an *AFFILIATED COMPANY*. On December 31st the investment in the former was nearly \$2,500,000, and in the latter, \$1,500,000.



under cliffs that we could have sworn were not there on the way down, and in the big slack pools the beavers would come up and slap their tails on the water and laugh at our blistered hands and aching backs, and about every half mile we had to land and dump the water out of "Amy Lou." She would insist on trying to get full, but it's a long lane that has no turning, and as the proverbial gray dawn began to streak the sky we pulled into the ferry, very tired, exceedingly wet and rather quiet, but with a feeling that it was a good day's work well done and nothing to do till tomorrow. Did I say home and mother and crackling fires and piles of food? Well, more fantasies—but there was nice dry sand and a pile of Ole's blankets, so we resigned from the navy and in five minutes were dead to the world.

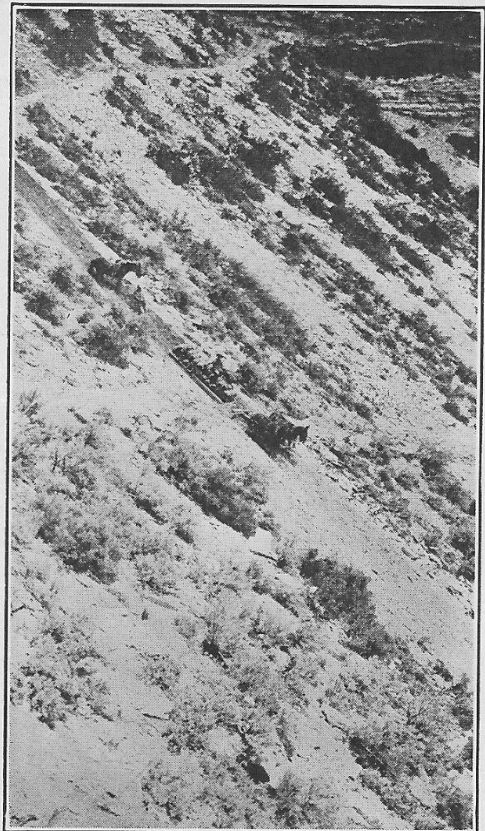
Our days were pretty busy and each one brought a new set of experiences and we were covering a lot of territory, sampling as we went. Having our retorts with us we could eliminate the areas very fast and the upshot was that we decided to concentrate on the Forks of Parachute Creek in Grand Valley, Colorado.

We moved over there and built quarters for the winter and started in to detail our preliminary work which checked out very well with the original sampling we had done.

The shale ground is practically all held under placer mining claims of 160 acres each, and as the Government requires the names of eight different locators on each and every claim, you can imagine the job of getting them all whipped into shape to agree on prices and terms, and as many of them had been located by several different sets of locators and on top of these came homesteaders claiming agricultural rights, it looked like quite some undertaking; but with Mr. Hawley on the job in Denver, backed by the Legal Department in Los Angeles and the help of Mr. Potter and Mr. Russell, both familiar with the Colorado shales, we gradually got under way. Aside from the legal phase of the situation it was also necessary to do \$500.00 worth of work on each 160 acres, consisting of five separate holes excavated from rock in place and measuring  $33\frac{1}{3}$  cubic yards and this work to be done as soon as possible so

as to be able to apply for patent. From the accompanying photos you can see the precipitous nature of the cliffs which rise from 2000 to 2500 feet above the valley floor and when covered with snow and ice and in weather down around zero you have to be rather "catty" on your feet or you are due for a long drop, and although we worked between forty and fifty men during the rush of assessment work before December 31st, none of them took the aforementioned drop, though there were some rather close calls.

The "Pay Streak," as we called the richest part of the beds, lies about 1500 feet above the valley floor and at the top of the long talus slopes, and the taking of a car-load sample of 40 tons required some fancy "mule skinning" to get it down to the bottom, but by using a saddle horse and rope fastened to the rear end of the sled to act



SKIDDING THE SAMPLE DOWN HILL

as a drag and two mules in front to guide it, the work was accomplished O. K. The steepness of the slope can be seen in the photo. The horizontal beds in the upper

(CONTINUED ON PAGE 20)



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## The Comptroller's Department

THE Comptroller, Mr. R. D. Matthews, who is now in Washington at the request of the Secretary of the Treasury, to confer with officials there regarding the regulations for the administration of the new revenue act, was featured in the September issue, but we propose to devote a little space here to his immediate assistants.

Mr. Mill received his early business training in Great Britain and her Dominions and the foundation laid in the Old World was staunch enough to materially aid him in reaching the responsible position he now holds.

To those who know him and have heard him talk enthusiastically, Mr. Mill's nativity never has been a secret. He was born in Morayshire, in the Highlands of Scotland, in 1878, and received his preliminary schooling at the Nairn Academy, after which Mr. Mill went through the regular course at Gordon's College in Aberdeen.

A period of sound training and general commercial experience in his father's office at Nairn was interrupted by the British Government's appeal for volunteers to combat the Boers in the South African campaign of 1899-1901. His boyhood acquaintance with rifle and horse stood him in good stead in the fighting in which he engaged while serving with the forces. At the conclusion of hostilities he accepted a position with a large firm of importers in Port Elizabeth. Interruption came again, in the form of failing health—the result of long periods of exposure in the guerilla warfare. It was necessary to give up the position in Port Elizabeth and to spend several months in hospital. For the time of convalescence there was no place like home, so he returned for a while to the rugged but health-bestowing Highlands.

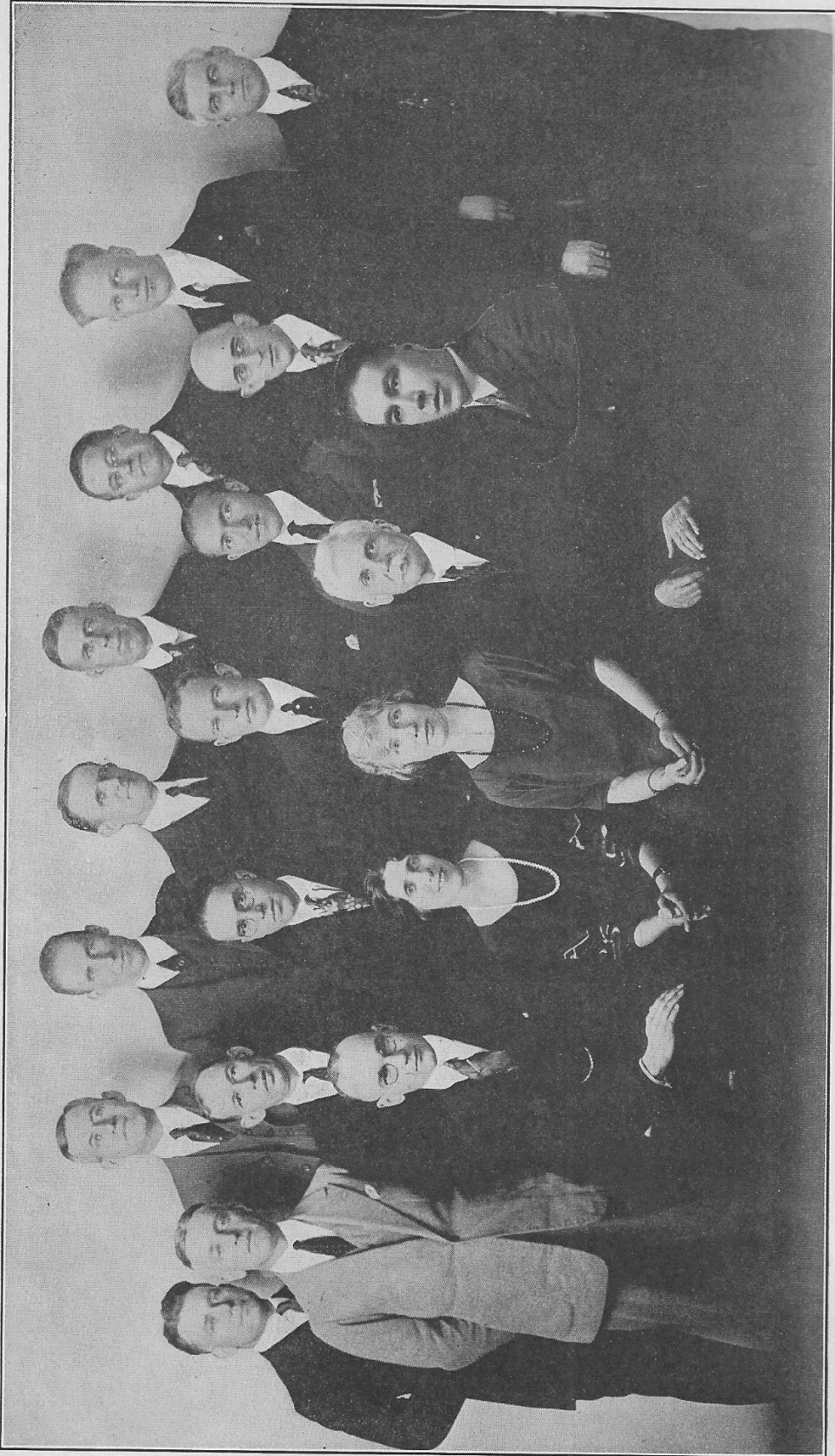


R. S. MILL

On completely recovering his strength he joined the staff of one of the large London brokerage houses, with the object of ultimately acquiring an interest in the firm. This particular business, however, lost its appeal a few years later, and in 1911 he too decided to obey an impulse that had been almost insistent and came West—direct to Los Angeles.

For over a year he worked as a Public Accountant and with Price-Waterhouse & Company, coming from the latter concern in June, 1912, to the Union Oil Company of California. His first assignment was in





**DIVISION CHIEFS, COMPTROLLER'S DEPARTMENT**

BACK ROW, left to right: J. R. Hearle, Taxation; R. H. Hornidge, General Accounts and Statistician; W. H. Gosline, Field and Auxiliary Accounts; J. M. Hannay, Chief Accountant; E. E. Tubbs, Traveling Auditor (Warehouses); A. H. Hand, Authority for Expenditures and Property Accounts. MIDDLE ROW: B. L. Britton, Office Supply Division; A. C. Galbraith, Traveling Auditor (Sales); W. H. Gray, Stationery Warehouse Division; W. E. Whitaker, Disbursements Division; G. G. Blue, Insurance Division; A. Pollock, Crude Oil Division; H. B. Kueny, Refinery Cost Accounts; M. G. Kerr, Traveling Auditor (Field). SEATED: H. H. Hannah, Tabulating Division; L. Keeler, Chief Telephone Operator; L. Farran, Refined Oil Division; L. B. Moore, Drum and Barrel Division; A. B. Mason, Station Accounts Division.



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the Disbursements Division, and later special work in connection with the reorganization of the department. In June, 1914, he was elected Assistant Comptroller.

Mr. Mill has a pleasing personality and

an unfailing courtesy and understanding of human nature. In the management of a large staff those attributes have been invaluable and have secured for him a large number of friends throughout the Company.

**M**R. G. H. Forster's business career shows a continuity of endeavor along definite lines; and although this may have at times entailed a temporary sacrifice, his present position indicates the wisdom of his policy.

Born at Evanston, Illinois, Mr. Forster received his education in the public schools of that town. He received the gold medal of the high school alumni association for highest scholarship throughout the course, and was salutatorian of his class.

These accomplishments, however, did not enhance his value to his first employers—a wholesale dry goods specialty house in Chicago, from whom he drew the princely emolument of \$6.00 per week. His progress was rapid, and at the age of 22 he became Office Manager with charge of credits and collections for the firm.

The concern was destroyed by fire, and business was resumed on a much reduced scale. Realizing in this a limiting of his opportunities, Mr. Forster resigned and made his first move westward, his destination being Denver, Colorado. Having in mind future prospects, his first application for a position was made to the Colorado Fuel and Iron Company, at that time one of the largest enterprises in the Rocky Mountain region.

No opening being at hand, he was obliged to content himself with the promise of future consideration when a vacancy occurred. In the meantime he took a posi-



GEO. H. FORSTER

tion as bookkeeper and cashier for a retail hardware store in Colorado Springs. A year and a half later the Colorado Springs Fuel Company was organized as an affiliated company of the Colorado Fuel and Iron Company, and reminding them of their early promise, he secured a position as the entire office force of the new concern, being at once bookkeeper, cashier, credit man and collector. The business grew rapidly, and presently Mr. Forster was made Auditor and Assistant Secretary. Several subsidiary companies were organized from time to time, and he was given an official position with each. These concerns, while of con-



siderable local importance, were small as compared with corporations of larger scope, and feeling once more that he had exhausted the possibilities of this connection, he resigned to come farther West to the Golden State. His first sight of California had been in 1904, when he made a trip to the Coast for the purpose of visiting his parents, who still reside here, as a result of which he had felt a keen desire to permanently settle in the Southwest. It took him nine years to accomplish this, but in 1913 he arrived in Los Angeles for the second time. Still looking for big things, he started on a

round of the large corporations on the Coast, but never got beyond the first application, which was, as it happened, made to the Union Oil Company of California. An accountant was needed, and he was given the opportunity. Shortly after the department was reorganized, he was appointed Chief Accountant, and June, 1920, saw his election to his present position of Assistant Comptroller.

Mr. Forster is a keen analytical accountant with a rapid thinking mind, and these qualities have brought their own recognition.

## THE OLEUM RIFLE CLUB

**T**HE OLEUM RIFLE CLUB was organized in March, 1916, mainly through the activities of S. P. Briggs, with the assistance of former Superintendent G. F. Olsen and A. D. Hinton. This club has always been affiliated with the National Rifle Association, an organization fostered by the War Department to promote the knowledge of small arms throughout the country, and through such affiliation has been enabled to obtain its supplies of arms and ammunition.

From its inception the Rifle Club has been one of the strongest social organizations at the refinery, and has always had a large list of members, who have been active on the range and socially. The first activities of the Club were confined to inter-club shoots, picnics and barbecues, and stories are still told of the big times at the Rifle Club barbecues of 1916 and 1917. During 1918 and 1919 the effects of the World War dulled interest in the Club to some extent, but in 1920 it was practically reorganized with a membership of well over ninety, and principally of new material. Superintendent L. G. Metcalf was elected President, and his personal interest, love of sports and ability to furnish keen competition were largely responsible for the awakened interest and consequent healthy growth. The year's activities were confined to departmental competition, which brought various teams and many members on the range, and after a series of evening shoots the Storerroom Office team was crowned the champion.

The rifles used had been Krags, but in 1921 the regular army Springfield rifle was obtained as standard equipment, and prac-

tice was started in earnest. About this time the National Rifle Association announced that the regular army insignia would be awarded to members qualifying as expert rifleman, sharpshooter or marksman on the new Army "A" course, and this announcement furnished a needed incentive. Practice was confined to this course, with the effect of standardizing efforts and developing a number of good shots, from whom a competitive team of five men was chosen, with five alternates, as follows:

TEAM		ALTERNATES
A. A. Smith	Captain	J. N. Holden
O. N. Nichols		C. F. Adam, Jr.
H. L. Ambrosier		W. A. Raine
S. P. Briggs	Coach	C. S. Ambrosier
L. G. Metcalf		W. E. Lancaster

The members of the team have all qualified over the regular army course as expert riflemen, and the alternatives have been crowding them hard for their positions. Competitive shoots have been held with the Alameda Rifle Club and the Standard Oil Rifle Club of Richmond, both of whom were defeated, and the team has shot over the State Range at Leona Heights, Oakland, California, with other civilian clubs, a number of times, resulting in considerable credit to itself.

The Oleum range has developed from a single target with communication by means of the voice to a well-equipped three-target butt with telephones to each shooting position and a maximum range of 500 yards. The little range is now second to none in convenience, and while small, can accommodate all who care to shoot. A standing invitation is extended to all interested visitors to try their skill.





**GROUP OF THE MOST ACTIVE MEMBERS**

STANDING LEFT TO RIGHT

V. J. POWELSON, W. A. RAINE,  
S. P. BRIGGS, L. G. METCALF,  
H. AMBROSIER, H. J. WILLIAMS,  
J. L. WISE

KNEELING LEFT TO RIGHT

A. A. SMITH, C. F. ADAM, JR.,  
O. N. NICHOLS, J. N. HOLDEN



**TEAM**

STANDING LEFT TO RIGHT

H. AMBROSIER  
S. P. BRIGGS, L. G. METCALF.

KNEELING LEFT TO RIGHT

A. A. SMITH, O. N. NICHOLS



LEFT TO RIGHT

S. P. BRIGGS, W. A. RAINE,  
J. L. WISE

(OFF HAND POSITION)

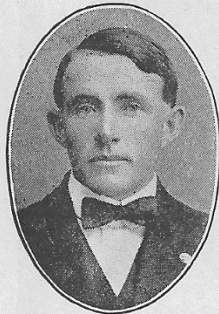
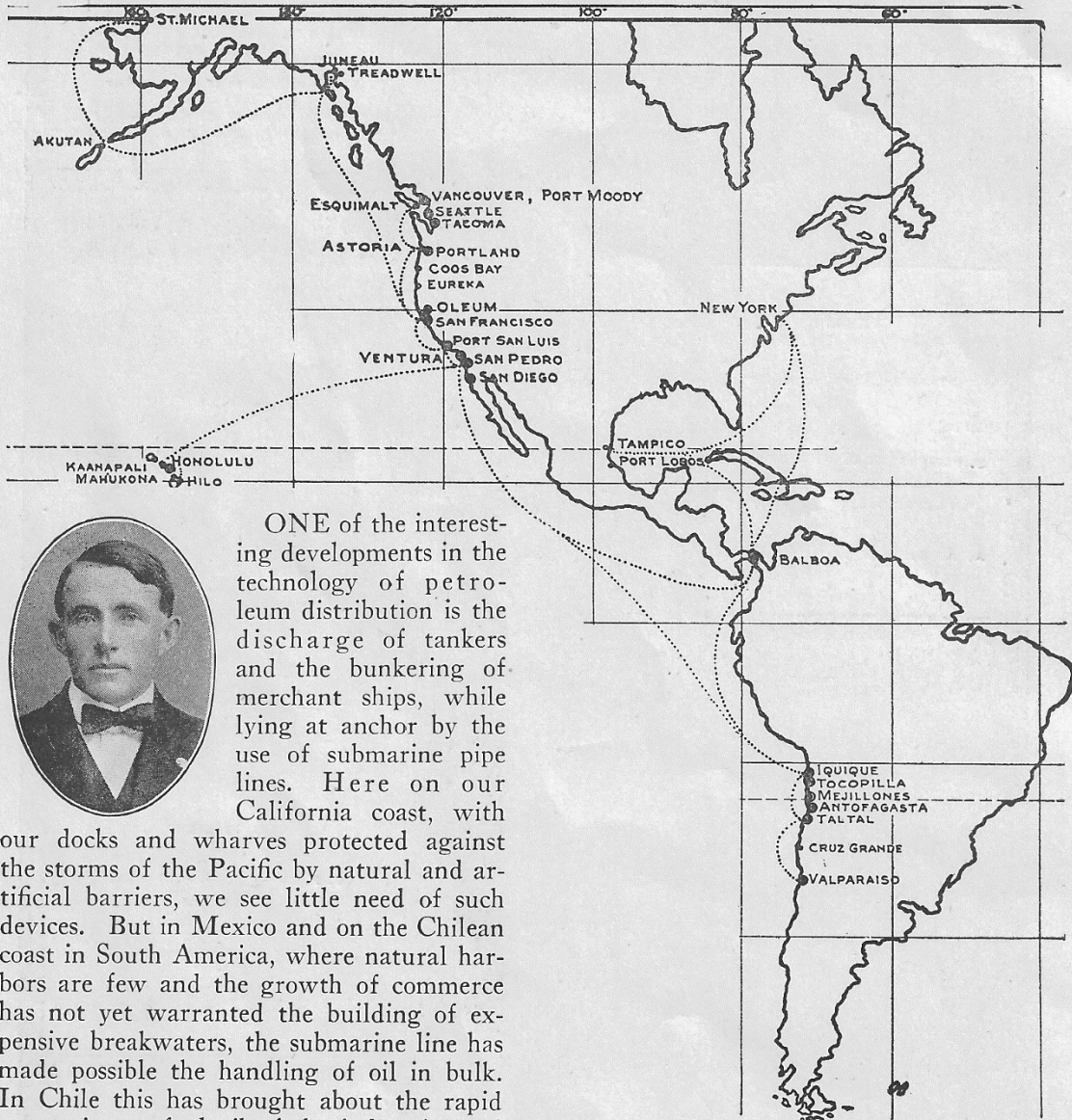


TARGETS TAKEN FROM 200  
YARD FIRING LINE



# Submarine Lines at South American Ports

FROM LETTERS AND NOTES OF J. C. KEEFFE, RESIDENT ENGINEER



ONE of the interesting developments in the technology of petroleum distribution is the discharge of tankers and the bunkering of merchant ships, while lying at anchor by the use of submarine pipe lines. Here on our California coast, with

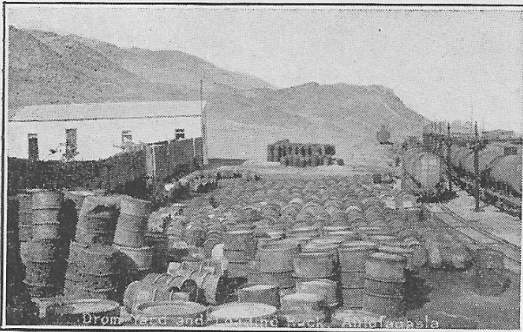
our docks and wharves protected against the storms of the Pacific by natural and artificial barriers, we see little need of such devices. But in Mexico and on the Chilean coast in South America, where natural harbors are few and the growth of commerce has not yet warranted the building of expensive breakwaters, the submarine line has made possible the handling of oil in bulk. In Chile this has brought about the rapid conversion to fuel oil of the industries and railroads and has opened one more market for our enterprising Sales Department.

Mining for nitrate and the metals is one of the principal industries of Chile, the metal mines being located at considerable elevation and at some distance from the coast. Transportation of fuel for this industry especially has, therefore, been a large element in its cost. This was particularly

true of coal, the first fuel used in any of the modern developments. Since that time there have been two distinct steps taken to reduce the cost of power at the mines. The first of these was the conversion of steam plants to the use of fuel oil, with its inherent advantages over coal in ease of handling and greater heat value per ton; the second was the generation of electrical power at



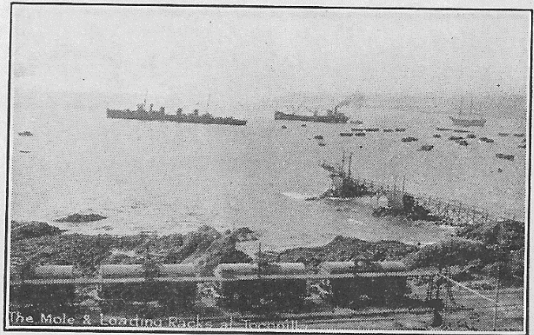
tide water by means of oil-fired steam plants and the transmission of this power over high-voltage lines to the interior. The mines, the nitrate plants and the railroads are now large users of fuel oil in times of prosperity. In addition, there is a growing market for Diesol for use in small isolated power plants, as well as for refined oils of all sorts. The lubricating and light oils are still handled in small containers, but fuel oil and Diesol are pumped directly from ship to tank by means of the ship's pumps and through the medium of the insulated submarine line. Through these same lines are served the company's customers applying for fuel to replenish their bunkers, the oil in this case being pumped from the shore tanks by means of engine driven pumps.



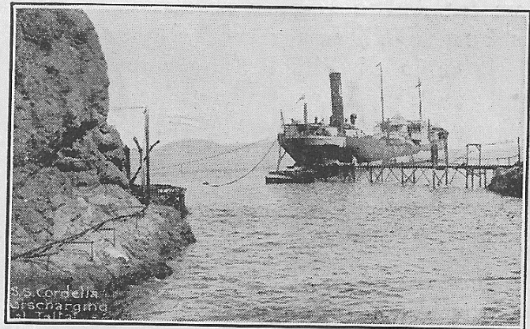
The Union Oil Company's South American distributing stations are all located on the coast of Chile. At this date six such stations are in operation, under the care of Duncan, Fox & Co., our general agents, with headquarters at Valparaiso. Located in Iquique, in the north, and extending to Valparaiso in the south, taking in Tocopilla, Mejillones, Antofagasta and Taltal on the way, these plants differ somewhat in size and capacity, but in general consist of storage tanks for fuel oil and Diesol, with pumping facilities for bunkering. Drum filling appliances and car-loading racks are of the usual type. Refined oils are received in drums and reloaded into "tins" for local distribution. All stations have housing facilities of some sort for the agents and often for others, such as pumpmen and divers, who must be constantly on hand to serve ships seeking fuel.

At Taltal and Tocopilla deep water is found close to a rocky shore, and at both

points moles have been built extending to within striking distance of safe anchorage. But the storms for which the Chilean coast is famous have time and again swept away



these slender structures, and they have had to be supplemented by pipe-lines supported on log or barrel pontoons and connected by lengths of heavily reinforced rubber hose. Eventually these will be replaced by permanent pipe-lines laid along the floor of the sea, such as are now in use at the four other stations. One of the illustrations shows the S. S. "Cordelia" discharging a cargo at Taltal. This picture was taken in October, 1919. Since this date storms have twice carried away the mole supporting the pipe-lines.



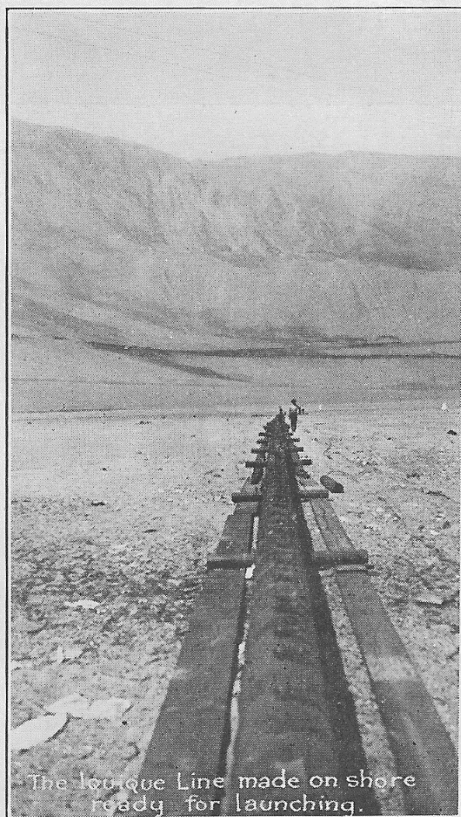
The ordinary procedure for discharging a cargo at the stations where submarine lines are used is relatively simple. Permanent anchorage is provided by concession from the Chilean government and indicated by buoys carrying the heavy anchor chains. To these and its own anchors the ship is made fast, so as to place its stern hard by the end of the pipe-line, its head pointing out to sea. In this position the ship is ready to drop lines and steam seaward in case of sudden storm.

A barge or lighter has previously been anchored over the end of the pipe line. On it is the necessary hose for connecting the ship to the submarine line, and from it a diver descends to make the connection. The ship's pumps then discharge the tanker's cargo at the rate of 400 to 2,500 barrels per hour to the shore tanks, the rate varying largely with the character of the commodity.

To the layman oil is oil, but it is obvious that gasoline may be pumped more easily than asphalt, and while as a matter of fact neither of these is so handled in the South American trade, they may serve as extreme examples of the variation in viscosities that is met with. Diesel, for instance, will flow quite readily at any temperature, while Port Lobos crude, direct from Mexico via the Canal, or Avila residuum, taken on at Port San Luis, resemble molasses in January and must be heated before they will flow, except under extreme pressure. Such pressures are not possible in discharging a ship. On our local pipe lines we may carry pressures ranging as high as 800 pounds per square inch, but even the best rubber hose connecting a fixed pipe at a depth of eight fathoms, with a ship tossing at anchor in a rough sea, cannot be trusted to carry more than 150 pounds, and 85 pounds is often the limit. Because of these conditions and the loss entailed in keeping an expensive vessel at anchor, all our recently built tankers were equipped with heating coils, and the older vessels are being modernized as opportunity offers. Heating the oil in the ship's tanks reduces its viscosity, and sea lines, insulated against the cooling effect of the water through which they pass, retain most of the heat thus imparted to the oil until it reaches the tanks.

The use of insulated submarine lines is a recent innovation for this company, and one for which the Engineering Department can take credit. For the successful laying of the lines, Mr. Joseph P. Keeffe, resident engineer, is largely responsible. Mr. Keeffe has spent much of his time during the past five years in building and improving the company's Chilean stations, and to him we are indebted for the illustrations that accompany this article and the data on which it is based. Earlier installations of bare iron pipe demonstrated several inherent weaknesses. Aside from the cooling of the

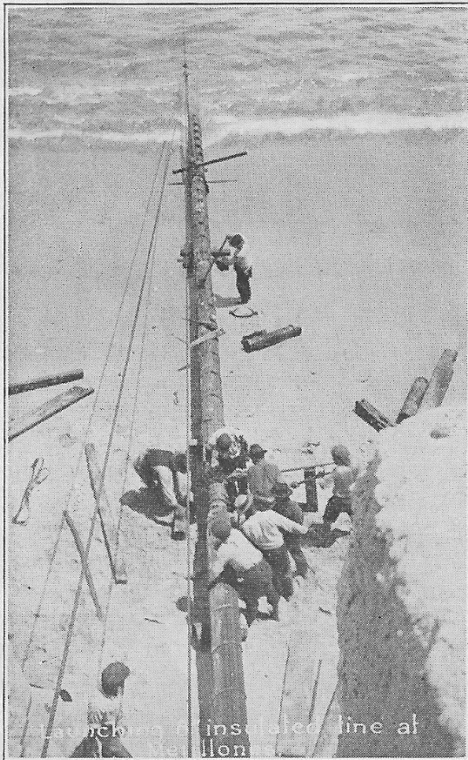
oil as it was pumped ashore and the consequently slow discharge, these lines were constantly subject to the corrosive action of salt water and the marine growths peculiar to that region. These latter are especially virulent. A certain low form of life, somewhat resembling the common barnacle, attaches itself to the pipe at its joints and, apparently by the solvent action of its secretions, causes failure of the pipe. Marine animals are known that actually enter into metal pipes, though whether their attack is mechanical or really chemical in its nature is still problematic. Economically and practically the result is the same as though they used drills, for the pipe becomes so weakened that its life is extremely short. To counteract these destructive influences, experiments were conducted at Los Angeles Refinery early in 1920 and a type of pipe covering developed which has since been used in protecting the new lines at Mejillones, Iquique and Antofagasta. It consists of a heavy layer of spongefelt laid on with hot asphalt and wrapped securely with burlap, which again receives another coating of hot asphalt. Over this first course, which





is principally for heat insulation, is laid creosoted wood, so formed as to resemble woodstave pipe. This lagging, as it is called, is again coated with asphalt, to make it water proof and to discourage marine growths, and is held in place by steel rods, frequently spaced and fastened, to make a tight wooden shell. Two of our illustrations show this lagging being applied.

Needless to say, the launching and anchoring of such a bulky and buoyant tube, hundreds of feet in length, through surf and undertow, is a job to try the patience of a martyr and the ingenuity of an Irishman.



In one of the pictures is shown a line made up for its entire length on shore, ready to be dragged out on an improvised cableway over a board track laid on the beach. But at Mejillones, where the beach is narrow and the bluff prevented such tactics, the line had to be insulated section by section and connected as it was dragged into position. A lighter, anchored securely at the point in the bay where the end of the line would eventually lie, supported one end of a wire rope cable, an "A" frame on shore supporting the other end. To this "messenger cable" was attached the

pipe-line by means of carrier clamps and snatch blocks; the line being sealed and blown full of air to prevent ingress of water through any leaks that might develop, was then hauled out through the surf by windlasses and tackle operated by main strength of manual labor. When finally in position—and that "finally" often meant days on end of heartbreaking labor against surf and undertow—the line was pumped full of water, to reduce its buoyancy, and was anchored into position by huge iron castings known as "river-clamps." On sandy beaches the lines soon bury themselves in the sand, and thus develop their own resistance to lateral movement. Where the shore is rocky, there is constant tendency for the new wood-covered lines to move, and the heavy anchorage of the river-clamp must often be used at every joint where the line crosses the surf to hold it in position.

That the new lines are an improvement over the earlier installations is obvious, though the actual measure of their superiority cannot be determined at this early stage of their life. They have proven their complete success in so far as their heat-insulating qualities go, and their workmanship has been highly satisfactory. Not a leak of any consequence developed in any of the three installations of this type of line, and the rate of discharge has been increased by their use as much as was expected. Only their resistance to corrosion must be left to time to measure, and of this we have a fairly safe criterion in the tests made with creosoted lumber under the trying conditions of San Pablo Bay at Oleum. The cost per year of life is the only cost that really counts, and that promises to be sufficiently low to warrant the Engineering Department's recommendation.



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No description of construction work in Chile would be complete without some reference to the difficulties entailed. Some mention has been made of physical difficulties, but these are met with everywhere and are the common heritage of all construction engineers. To these in acute form are added on all Chilean work the troubles that dealing in a foreign country involves. Concessions are needed before construction can commence—concessions for property, in the nature of leaseholds, concessions for anchorages, for the locating of pipes, tanks, moles, etc., etc. All construction materials must be imported and passed from ship to lighter, from lighter to customs house, from customs to railway or back to lighter. At each handling there is loss of time and danger

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of theft or damage. The company's tankers would hardly be serviceable for ordinary freight but they proved invaluable in delivering to the various job sites the materials used in construction and maintenance. The ordinary coaster, touching all along the way, makes the trip south in 40 to 50 days. Our own vessels have made it in eighteen days, due to better speed and no stops. Some materials can, of course, be bought in the larger cities but so many of the items going into engineering construction are special, that no substitution for lost material can be made locally. To replace the lines at two stations, to build one new station and line and to extend another, with many incidental small jobs sandwiched in between, such has been the progress during the past year and a half.

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## THE OIL SHALES OF COLORADO

(CONTINUED FROM PAGE 10)

right hand corner give a comparison of the grade.

The "Pay Streak" will average about 22 feet in thickness and will run about one barrel of oil to the ton, thus making a total of 50,000 barrels to the acre of shale. You can see the far-sightedness of the company in obtaining this vast future reserve to fall back on when the time for operation arrives. This will probably occur when the curve of the world's consumption of petroleum approaches that of production.

The art of distilling the oil from shales has been practiced on a large commercial scale in Scotland for over 70 years, and it is safe to say that when the time arrives American ingenuity can do the same for us, for although our labor costs will be higher the shale is nearly twice as rich in oil content.

The oil shales of Colorado occur in the Green River formation of Eocene age and were deposited in a large inland sea of that name. It might be well to state that the oil does not occur in these shales in the form of petroleum but rather in the form of the separated constituents of it and when heat is applied in a closed retort they run together in the form of gas which is condensed into crude petroleum. In a rough way it may be compared to concrete. You

have, for instance, a pile of sand and a pile of gravel and a pile of cement. These in themselves do not constitute concrete, but when mixed together with water they do. Similarly the hydrocarbons, or "kerogen," as they are called, do not in themselves constitute petroleum, but when heat is applied and the resultant gases condensed they form crude oil, which can be refined into the different products of commerce.

The source of the carbonaceous material, or "kerogene," comes from billions upon billions of small plants and animal remains which were deposited in the mud at the bottom of the sea. The lateral variations of the oil content is explained by the fact that the richest deposits occurred in areas of quiet water, where currents had little or no effect on their deposition.

This point is very important, for the same beds, deposited at the same time, will vary greatly in oil content at points only a few miles apart, although to the eye they look the same. It therefore becomes of prime importance to study these areas of quiet water deposition very carefully. This work cannot be done in a few days, and careful sampling and study are necessary, but when the time for operation arrives the preliminary work will be paid for many times over.





SALES MEETING  
San Francisco, Dec. 16, 1924  
L. G. METCALF, DISTRICT MANAGER

Sales enthusiasm found adequate outlet at the banquet given in San Francisco on December 16th by the northern city's Union Oil selling force. Eighty agents and salesmen and the District Sales Managers of the Central District comprised the gathering, the main object of which was to hold an informal round table discussion of marketing problems. After supper a short program of music and motion pictures was enjoyed. The meeting which followed was presided over by Mr. A. R. Atwood, and was featured by talks of interest from local and visiting speakers. Mr. W. L. Standard, Assistant Manager of Stations, outlined some of the future plans of the Sales Department; L. G. Metcalf and T. F. Ott of the Oleum Refinery answered numerous questions, and everyone joined in the ensuing discussions.

# California Oil Statistics for the Month of November, 1921

District—	Gross Barrels	Nov.	Oct.	Daily Average		1918	1917
				1920	1919		
Kern River.....	450,256	15,008	6,598	20,377	20,907	22,083	23,543
McKittrick.....	129,980	4,333	752	7,106	7,773	8,385	8,974
Midway-Sunset.....	2,229,475	74,316	37,565	83,788	88,908	95,429	101,628
Elk Hills.....	1,168,944	38,965	39,409	19,853	77	.....	.....
Lost Hills-Belridge.....	179,096	5,970	1,240	11,362	12,770	14,967	17,423
Coalinga.....	799,592	26,653	15,781	42,888	44,956	44,823	43,559
Santa Maria.....	431,018	14,367	15,017	15,869	16,665	19,747	16,393
Ventura-Newhall.....	172,729	5,758	5,816	5,601	4,858	3,827	3,115
Los Angeles-Salt Lake.....	101,452	3,382	3,458	3,608	3,625	3,691	3,981
Whittier.....	53,654	1,788	1,989	2,300	2,744	2,866	3,127
Fullerton.....	471,721	15,724	15,715	14,309	12,017	11,943	12,411
Coyote.....	584,205	19,474	19,650	23,859	27,952	34,563	31,393
Santa Fe Springs.....	68,112	2,270	248	.....	.....	.....	.....
Montebello.....	717,324	23,911	24,196	30,395	33,153	18,735	2,200
Richfield.....	817,283	27,243	27,441	7,009	2,646	8	.....
Huntington-Newport.....	405,241	13,508	12,440	104	.....	.....	.....
Long Beach.....	23,886	796	405	.....	.....	.....	.....
Summerland.....	4,500	150	145	148	148	148	148
<b>Total.....</b>	<b>8,808,468</b>	<b>293,616</b>	<b>227,865</b>	<b>288,576</b>	<b>279,199</b>	<b>281,215</b>	<b>267,895</b>
October.....	7,063,807	227,865	.....	.....	.....	.....	.....
November.....	.....	.....	.....	293,616	293,616	293,616	293,616
Difference.....	1,744,661	65,751	.....	5,040	14,417	12,401	25,721

## SHIPMENTS AND STOCKS

Stocks November 1st, 1921.....	30,031,070
November Production.....	8,808,468
<b>Total.....</b>	<b>38,839,538</b>
November Shipments.....	8,893,287
Stocks, December 1, 1921.....	29,946,251
Stocks, Decrease November.....	84,819
Stocks, January 1, 1921.....	19,618,846
Total 1921 Surplus.....	10,327,405
Daily Average.....	30,920

## DAILY AVERAGE

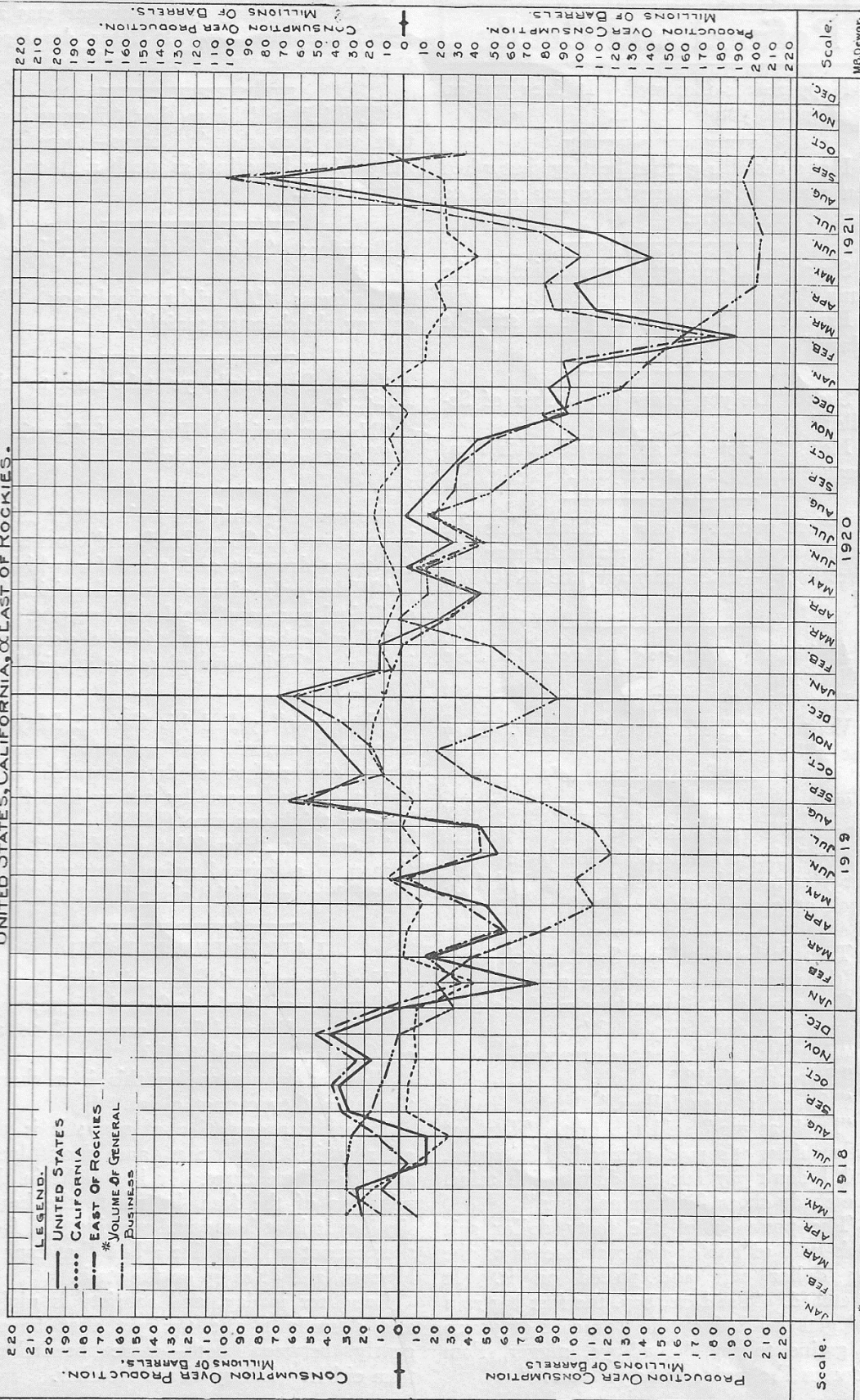
Daily—	Nov.	Oct.	1920	1919	1918	1917
Production.....	293,616	227,865	288,576	279,199	281,215	267,895
Shipments.....	296,443	247,677	310,941	282,873	290,836	297,986
Shortage.....	2,827	19,812	22,365	3,674	9,621	30,091

## SUMMARY OF FIELD OPERATIONS FOR NOVEMBER

District—	New Rigs Up	Active Drilling	Completed	Active Producing	Abandoned
Kern River.....	6	11	4	1,796	..
McKittrick.....	5	8	..	270	3
Midway-Sunset.....	7	53	6	2,434	1
Elk Hills.....	5	27	13	130	..
Lost Hills-Belridge.....	..	19	..	557	..
Coalinga.....	2	27	2	1,069	1
Santa Maria.....	..	14	..	438	..
Ventura-Newhall.....	..	36	..	559	6
Los Angeles-Salt Lake.....	..	6	..	666	..
Whittier-Fullerton.....	5	110	10	1,111	2
Santa Fe Springs.....	19	9	1	3	..
Summerland.....	..	..	..	142	..
Huntington-Newport.....	15	96	12	60	..
Long Beach.....	6	35	2	5	1
Miscellaneous Drilling.....	5	68	..	.....	1
November.....	75	519	50	9,240	15
October.....	54	448	41	5,715	12
Difference.....	21	71	9	3,525	3
Average, 1920.....	77	403	49	9,299	13
Average, 1919.....	58	340	47	8,774	18
Average, 1918.....	50	362	50	8,210	13
Average, 1917.....	65	361	63	7,398	14



ANNUAL RATE OF EXCESS OF CONSUMPTION OR PRODUCTION OF PETROLEUM,  
UNITED STATES, CALIFORNIA, & EAST OF ROCKIES.



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## Refined and Crude

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Happiness is like seed. It does you no good unless you scatter it.

Hot air is all right for heating; but when you want to get somewhere you need to turn it into steam.

She: "Did you get a commission in the army?"

Private: "No, I just got a straight salary."

She: "Do you know the Barber of Seville?"

He: "I am not acquainted with him, because I always shave myself."

Before marriage, a girl thinks that she can never do enough to make the man she loves happy—after marriage, she KNOWS it!

Ambitious Author: "Hurrah! Five dollars for my test story!"

Fast Friend: "Who from?"

Writer: "The Express Company. They lost it."

"You see, every time you are a bad boy papa gets a gray hair."

Boy (after a moment's reflection): "Oh, but you must have been a very bad boy. Look at grandpa!"

Two darkey boys in a Southern city met on the street, each wearing a new suit.

One asked: "Nigger, how much do they set you back for dem clo's?"

"Fo'ty dollahs," was the response.

"Fo'ty dollahs?"

"Yes, sah; fo'ty dollahs."

"Look at me," said the first. "I'se got on a suit w'at's mos' perzactly like yourn, and I don't pay but ten dollahs fuh mine. Somebody shore flimflammed you."

The possessor of the forty dollar suit took hold of one of the coat sleeves of the ten dollar suit and pulled on it. It stretched. "See here, boy, the fust big rain yo' gets ketched out in dat coat of yourn is gwine to say, 'Good-bye, nigger, f'om now on I'se gwine to be yo' vest!'"

A Chicago telegraph messenger was arrested for speeding. It later developed that he was insane. We thought so.

"Willie," said his mother, "I must insist that you stop shooting craps—those poor little things have just as much right to live as you have."

Boarder: "How is the corn this evening?"

Waitress: "All right, thank you. I've got my old shoes on tonight."

"Aw, Pa, won't ye take me to the movies?"

"No, not tonight. I've got indigestion."

"Can't ye take it along?"

A stranger got off the train at our neighboring town of Coon Creek and went up to the town druggist and asked for whiskey.

"We're only allowed to sell spirits for medicinal purposes," said the druggist.

"That's what I want it for," the stranger insisted. "This town gives me a pain."

"Say, you," yelled his Satanic Majesty as a newly arrived soul sauntered casually across the redhot cinders towards him, "what do you mean by acting like that? Do you think you own Hell?"

"I ought to," replied the addressed gentleman in a grieved voice, "my wife was giving it to me right along."

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### LAUGHTER IS DAY!

Nothing on earth can smile but man.

Gems may flash reflected light; but what is a diamond-flash compared to an eye-flash and a mirth-flash?

Flowers cannot smile; this is a charm that even they cannot claim.

It is the prerogative of man; it is the color which love wears, and cheerfulness and joy—these three. It is a light in the windows of the face, by which the heart signifies it is at home and waiting. A face that cannot smile is like a bud that cannot blossom, and dries up on the stalk.

Laughter is day, and sobriety is night, and a smile is the twilight that hovers gently between both—more bewitching than either.—Henry Ward Beecher.



# Manufacturing Department

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## VANCOUVER REFINERY

Port Moody, B. C. C. G. Brownlee, Acting Superintendent

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## SALES DEPARTMENT

### VAUCOUVER, B. C.

R. J. Kenmuir.....Special Agent  
Fred Ruddock.....Manager Fuel Oil Sales  
Chas. M. Payne.....Cashier

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### VICTORIA, B. C.

H. B. Beasley.....Agent

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### NEW WESTMINSTER, B. C.

Thos. H. McGowan.....Agent  
DIVISION CHIEFS, COMPT



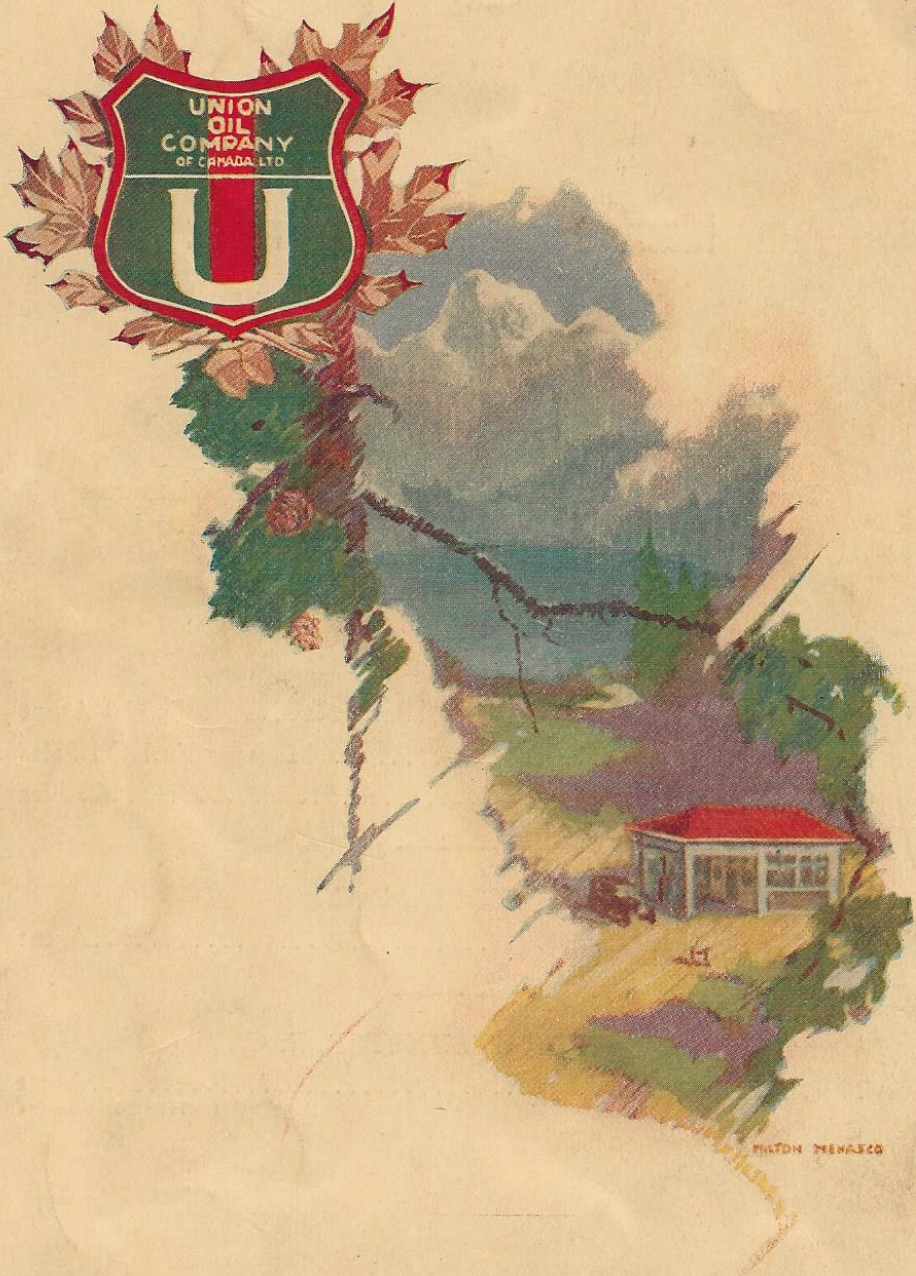
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MILTON MENASCOR