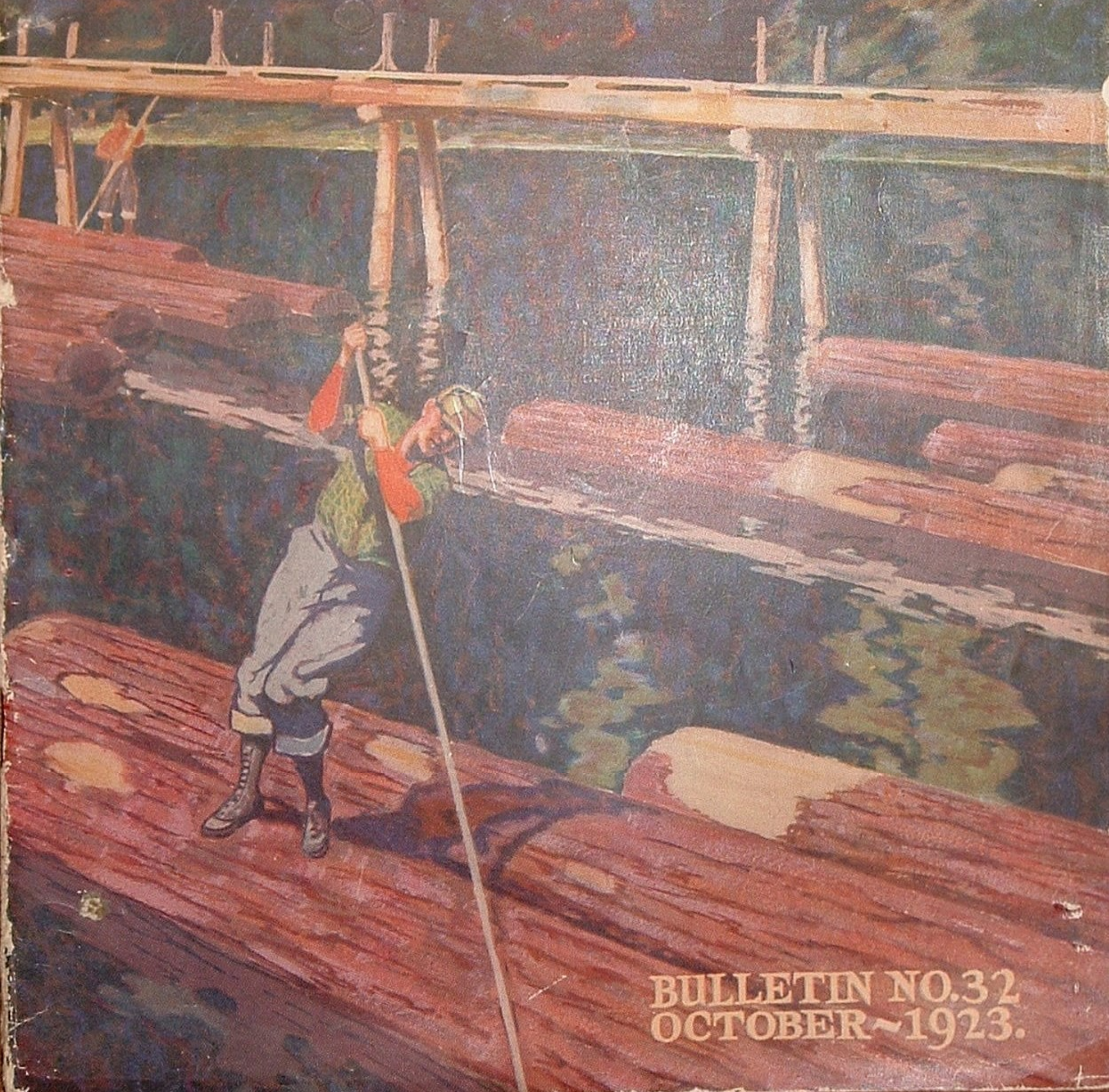


UNION
OIL
COMPANY
OF
CALIFORNIA



BULLETIN NO. 32
OCTOBER ~ 1923.

Duck Weather Is Aristo Weather.

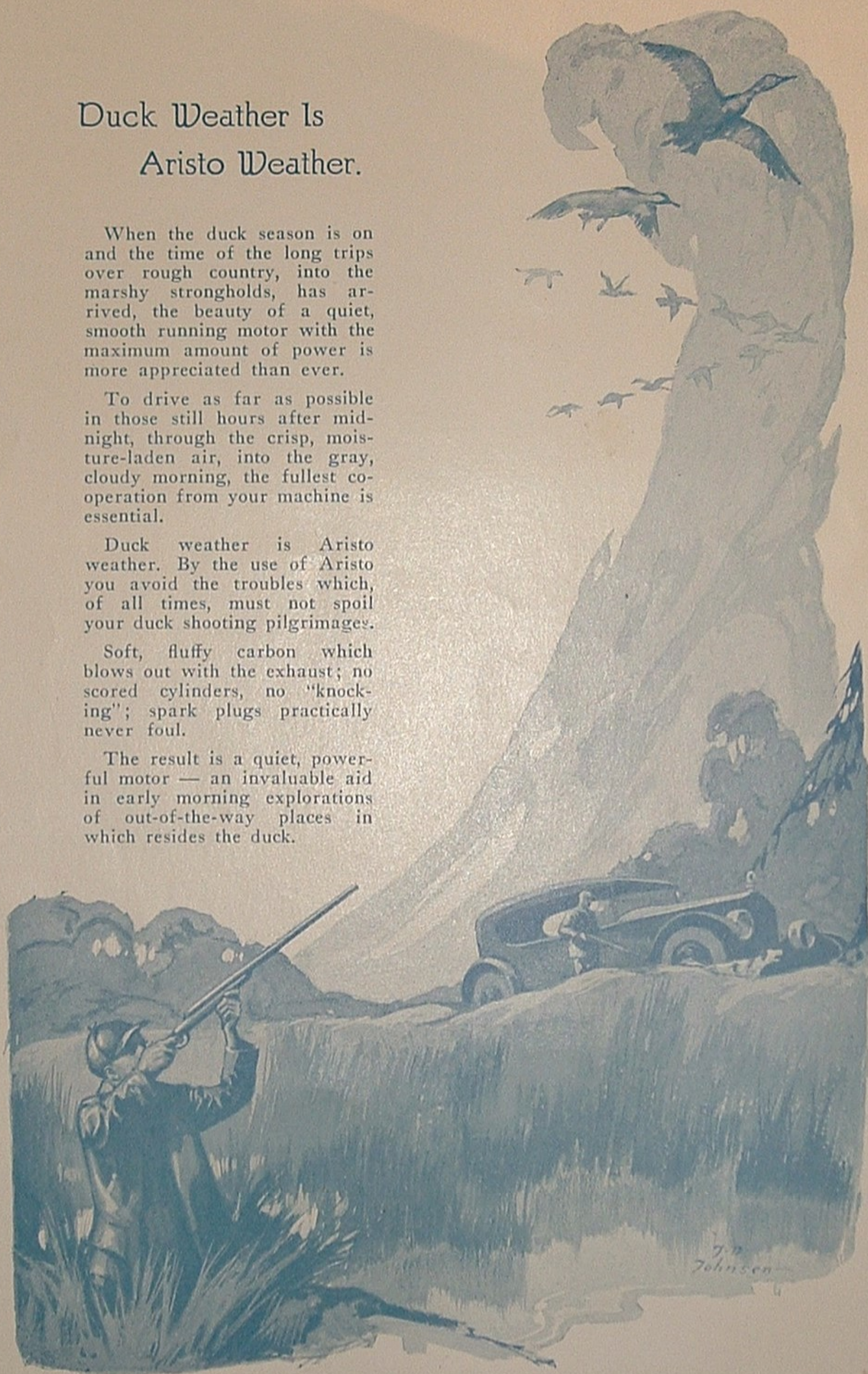
When the duck season is on and the time of the long trips over rough country, into the marshy strongholds, has arrived, the beauty of a quiet, smooth running motor with the maximum amount of power is more appreciated than ever.

To drive as far as possible in those still hours after midnight, through the crisp, moisture-laden air, into the gray, cloudy morning, the fullest co-operation from your machine is essential.

Duck weather is Aristo weather. By the use of Aristo you avoid the troubles which, of all times, must not spoil your duck shooting pilgrimages.

Soft, fluffy carbon which blows out with the exhaust; no scored cylinders, no "knocking"; spark plugs practically never foul.

The result is a quiet, powerful motor — an invaluable aid in early morning explorations of out-of-the-way places in which resides the duck.



Union Oil Company of California



UNLESS MARKED "COPYRIGHT" ARTICLES
IN THIS MAGAZINE MAY BE USED IN ANY
OTHER PUBLICATION

ADDRESS ALL COMMUNICATIONS TO THE
"BULLETIN" 901 UNION OIL BUILDING
LOS ANGELES, CALIF.

W. L. STEWART - - - - - *President*

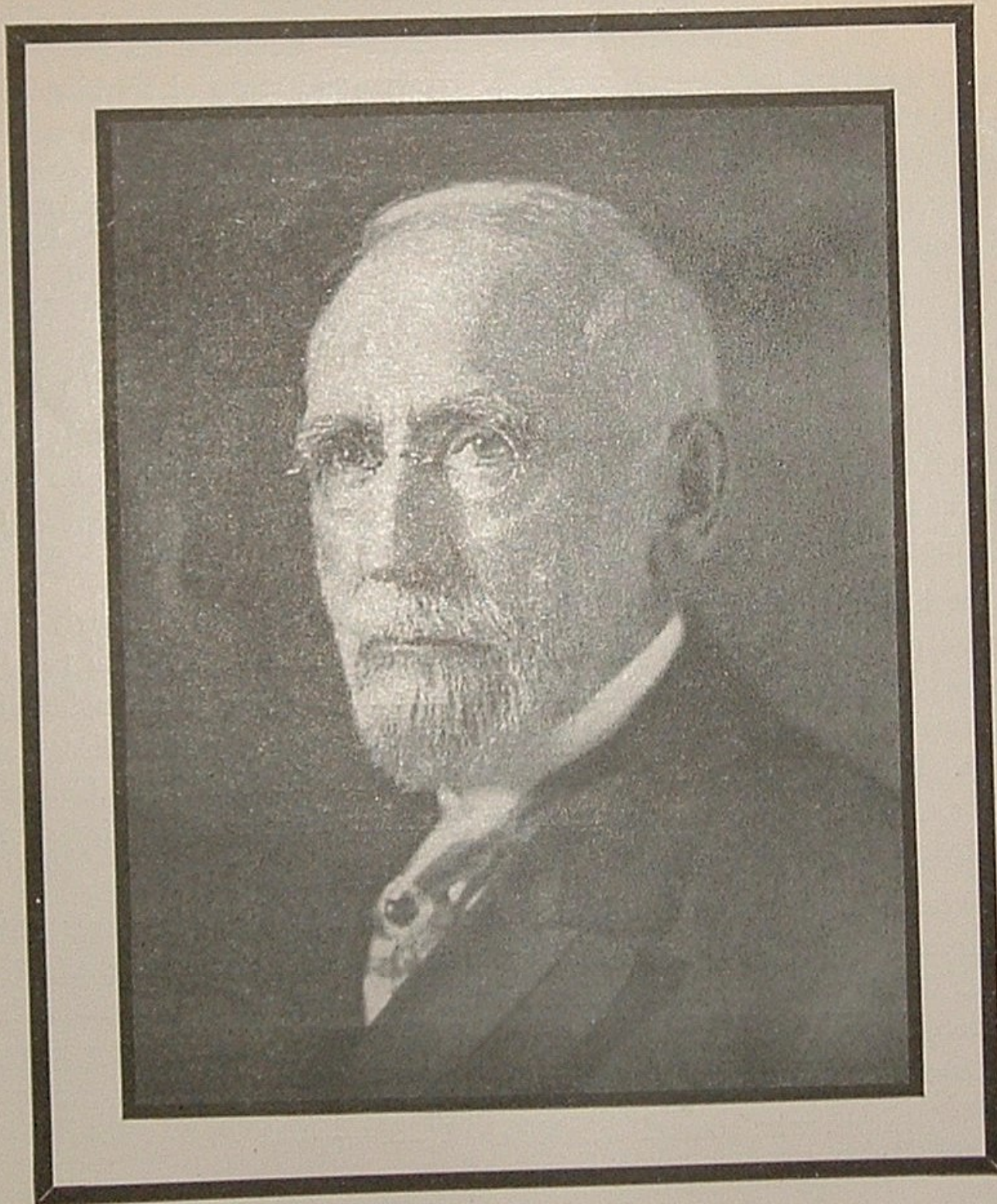
E. W. CLARK, *Executive Vice-President*
W. W. ORCUTT - - - *Vice-President*
L. P. ST. CLAIR - - - *Vice-President*
R. D. MATTHEWS - - - *Comptroller*
JOHN McPEAK - - - - *Secretary*

R. J. KEOWN - - - - - *Treasurer*
PAUL M. GREGG - - - - - *General Counsel*
C. W. BROWN - - *Director, Exploration and Production*
E. I. DYER - - - - - *Technical Director*
C. W. RALPH - - - - *Director, Sales and Transportation*

VOLUME 3

OCTOBER, 1923

BULLETIN No. 32



Lyman Stewart

The passing of Lyman Stewart, Chairman of the Board of Directors, Union Oil Company of California, has deprived the organization of one of its ablest executives, the community of a splendid citizen, and the petroleum industry of a great friend and leader. Eulogies of great men who have passed beyond are as common as death itself — *De mortuis nil nisi bonum*. Yet a eulogy of Lyman Stewart as one of Nature's noblemen would be only the simple truth. He was a man of great simplicity and deep sentiment, yet not without unusual force. He faced his problems directly with an unflinching sense of honor, and with extraordinary optimism. He had no sympathy with one-sided engagements, however favorable to his company. His commercial labors were dedicated to the development of the petroleum industry; his religious labors to the betterment of mankind. His charities and works of mercy were many, and make eloquent the summing up of a fine and useful life. He was in all respects a man.

His philanthropy was at once intelligent and generous. The deep vitality of his religious convictions directed his benevolences along such lines as were outwardly indicated by the splendid Bible Institute — doubtless his greatest enterprise for God and men — although the volume and scope of his gifts for such purposes chiefly remained a secret between himself and his God, who was to him the greatest of all realities. He considered his life and his wealth given him in trust for service to others, and both were consecrated to the Christly spirit of brotherhood.

In the history of his life there are many glimpses of the human side of the man. You can visualize his thrifty boyhood when he made his first investment in oil, and just when he was on the threshold of success, came the Civil War. You can imagine the inevitable struggle. On one side were youth and money, the flush of success and the vision of the future. On the other side was duty — often no bright and easy thing. His was the right choice — duty; and the record of it brings more honor to his memory.

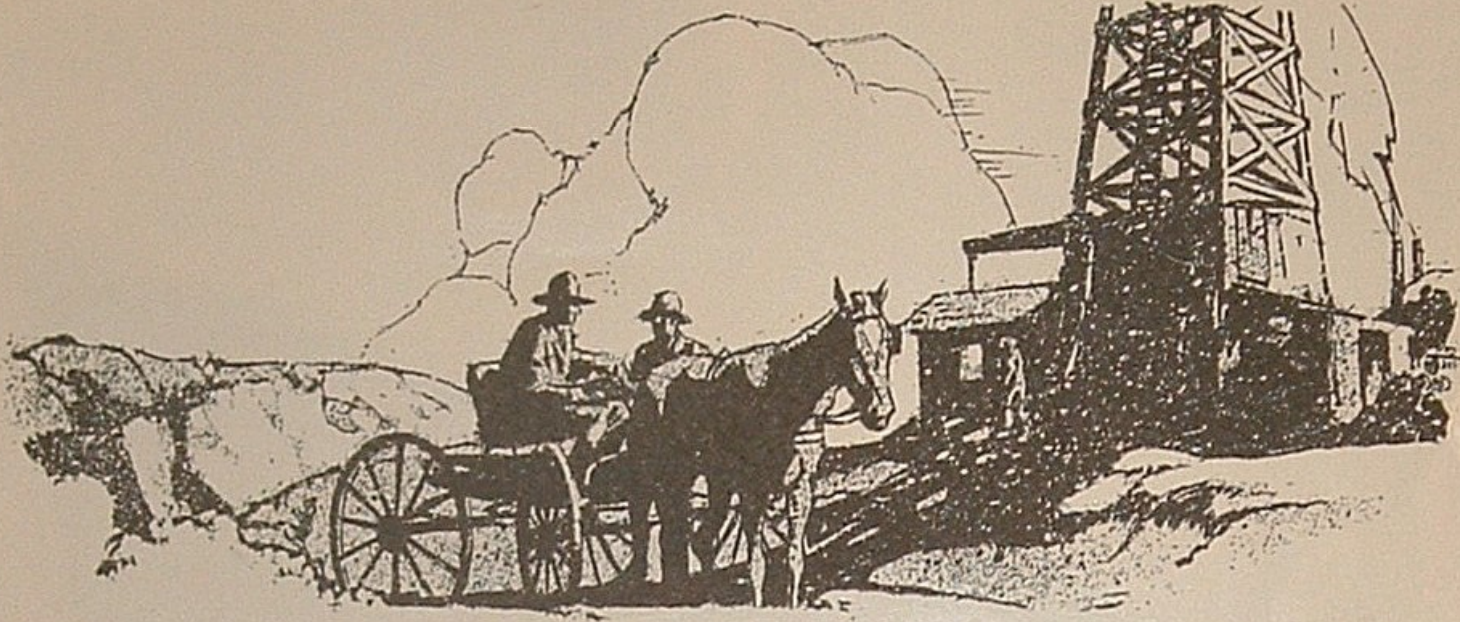
He helped to blaze the trail in unproven California in the early eighties, when oil production in the state was little more than a dream. He faced difficulties with stoicism and optimism, and played a mighty part in the upbuilding of California's oil industry with which he was constructively identified from its infancy. To his counsel, advice, and leadership, does the Union Oil Company of California largely owe its commanding position in the oil business of the West today.

These monuments of his life's work have been left us as a heritage. Revered and esteemed gentleman, having lived the fullness of life, that was marked by unselfish devotion to the welfare of mankind, he has passed on; but the influence of his considerate regard, loving kindness, true friendship, far seeing policies, and Christian philanthropy will live after him.

Good friend, wise counsellor, able chief, — farewell.

Early Oil Development in California

By W. W. ORCUTT



CALIFORNIA has always been a land of romance. The events of its history are like the acts of a drama. Even before its definite discovery, it so stirred the imagination of men, that in his novel, published in Madrid in 1510, Ordonez de Montalvo gave the name "California" to a mythical island in the Pacific lying "to the right of the Indies and



very near the quarter of the terrestrial Paradise." Therefore, in 1542, when the hardy conquistadores, under Cabrillo, turned their prows to the Northwest, they were searching for this prophesied El Dorado, this "Land of Heart's Desire."

Following Cabrillo, whose bones still moulder in one of our Channel Islands, came the Padres under Junipero Serra. The story of their devotion to the cause of Christ in a heathen land is written in California's noblest heritage, the Missions, which, like a string of jewels, lie along the State from San Diego to San Francisco.

The glamour of romance still lingers in the later settlement of California by the Spanish Dons, which culminated in the "Splendid Idle Forties." Then came the

dramatic discovery of gold at Marshall's Mill in 1848, which so excited the cupidity of men of every nation and clime, that by ship, by oxcart and on foot, they crowded to search for this hidden treasure.

In this connection, it is interesting to note that as early as 1833, Don Abel Stearns, a pioneer of Los Angeles County, whose name is perpetuated in the "Stearns Lease" of the Union Oil Company of California, made a discovery of gold in the hills near Newhall. The gold discovered was sent to the mint at Philadelphia where it was coined and then returned to the discoverer.

With the waning of the gold excitement and the exhaustion of the mines, the treasure seekers were on the lookout for other forms of wealth in this "Land of Promise."

About this time Colonel Drake had drilled his first well in Pennsylvania and found oil, "the black gold of commerce," in paying quantities. Once more the imagination of the adventurous within her borders was aroused by the hope that California should again prove the bountiful mother and be "oil bearing" as well as "gold bearing." There was a reason for this hope because the number and extent of the oil seepages and brea beds in Ventura and Los Angeles Counties had become a matter of common knowledge.



EARLY REFINERY SITES

Located about a mile back of Newhall stands the old original still, built in 1875 by Scott and Baker, seen on the right. Old still was hauled by teams to this refinery from Pico canyon. On the left is the site of the first refinery built and operated in California. Nothing now remains except a few pieces of lumber, some bolts, and nails. W. W. Orcutt, vice-president, Union Oil Company, is the interested party in the background.

The California Indians knew well the location and extent of the brea beds and oil seepages. Hard asphalt was used by them in mending mortars and pestles, and for cementing basket work on top of shallow mortars to increase their capacity. It was also used in fastening the arrow and spear heads to their wooden shafts, and for making impervious to moisture the jars used for water and the large baskets utilized as granaries for the storage of food and seed.

When the Portola Expedition left San Diego on their march over land to San Francisco, at a point a few miles below Santa Barbara, they found Indians making wooden boats, "pitching them within and without" with asphalt. This place Portoia named "Carpinteria," which means in Spanish "the carpenter's shop."

The Indians used the light oil from the seepages for coughs and colds, and for cuts and burns. This oil was highly prized, and was an article of commerce between the Coast tribes and the Indians of the interior, who were remote from the source of supply.

Likewise, the early Spanish Dons of California, the Padres and their vaqueros and Indians, knew of the existence and location of these same oil seepages and brea beds. There is a legend from the San Fernando Mission to the effect that in 1855 General Andreas Pico and his nephew, Romulo Pico, took oil for experimental and refining purposes from the seepages and hand-dug pits in the canyon near Newhall which bears their name. This is the first reference in the history of California where an attempt was made to utilize crude petroleum.

It is, however, a fact that in the early '60s a merchant in the town of Ventura, by the name of Gilbert, had a small refinery in the Ojai Valley. The oil he used came from hand-dug pits and from natural seepages that abound in the vicinity of Sulphur Mountain. In the early part of 1864, Professor Silliman of Philadelphia, while traveling on the Pacific Coast, met Mr. Gilbert and was much impressed with the oil possibilities of Ventura County. Professor Silliman was so enthusiastic over the prospects, that he immediately wrote a letter



WHERE THEY TUNNELED FOR OIL

Sulphur Mountain and the mouth of one of the thirty odd tunnels that were driven into the mountain to tap the oil reserves. Cave-ins have closed up the majority of these tunnels, although a limited flow of oil is still coming from a few of them, by means of pipe lines which penetrate the debris. These tunnels, when first constructed, were large enough to accommodate a man standing erect.

to Thomas Scott of Philadelphia, a man of ability and considerable means who was then associated with the Pennsylvania Railway System. An extract from Professor Siliman's letter, referring to the Ojai Ranch, reads as follows:

"The property covers an area of 18,000 acres of land in one body, on which there are twenty natural oil wells, some of them of the very largest size. The oil is struggling to the surface at every available point and is running away down the rivers for miles. Artesian wells will be fruitful along a double line of thirteen miles, say for about twenty-five miles in linear extent. The ranch in an old Spanish grant of four leagues of land, lately confirmed and of perfect title. It has, as I stated, 18,000 acres of the finest land, watered by four rivers, and measures, in a straight line, in all, nearly thirteen miles. But its great value is in its almost fabulous wealth in the best oil."

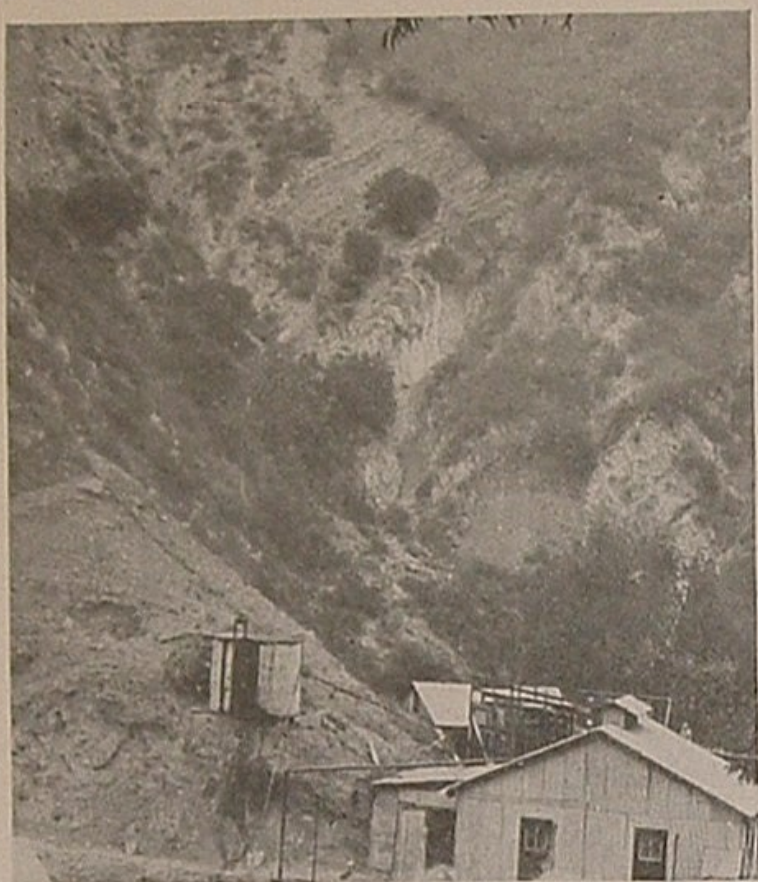
Thomas Scott soon succeeded in interesting some of his friends, and a syndicate was formed which purchased the Ojai Ranch and other properties in Ventura County. In the early part of 1865 they secured in New York City the first drilling equipment ever sent to California. This consisted of three boilers, three engines, casing and drilling tools, a refining fur-

nace, retort and wooden barrels in which to handle the oil. A barrel of oil in those days meant just that: a wooden container having a capacity of forty-two gallons.

Thomas Scott had two young nephews, Thomas R. Bard and D. C. Scott, whom he sent to California to look after his interests. This was the introduction to California of Thomas R. Bard, who was later so great a factor in the development of the State, and for whom the town of Bardsdale, in Ventura County, was named. Mr. Bard was for a long time President of the Union Oil Company of California, and was a large landholder. He also represented California at Washington as United States Senator.

Scott's syndicate selected a location for its first well near the tar beds, on the east bank of San Antonio Creek (Ventura River), about five miles from the town of Ventura, which well was completed in 1866 at a depth of 500 feet. Some tarry oil, which formed the brea bed, was encountered, but the well was not a success. No. 2 was located five miles farther up the creek. It was drilled to 520 feet and found

some oil, though in small quantities. No. 3 was drilled twenty miles from Ventura on Sisar Creek, near the outcrop of the oil measures. It was intended to drill this well to a depth of 1500 feet, but upon the advice of Jackson and Torrey, two celebrated chemists of New York, the well was abandoned at a depth of 320 feet, as



EXPOSED STRATA IN PICO WILEY ANTICLINE
Illustrated in the formation is the peculiar right-angle fold caused by the severe movement that created this great anticline.

was also No. 4, located near No. 3, at a depth of 300 feet. Upon the advice of Jackson and Torrey, No. 5 was located on a big seepage in the same locality. This well was drilled with a spring pole. Between 80 feet and 100 feet oil was struck which filled six of the wooden barrels daily by pumping. No. 6 was drilled near by with the machinery from New York, and was the best well of all. It was 550 feet deep and produced daily from 15 to 20 barrels of good grade oil. This well was a consistent producer for many years. The property was later named the "Silver Thread."

This development took four years time and an expenditure of \$200,000 in money, which was considered lost, because, although success has been attained in finding oil, there was only a very limited market, and it would take many years to repay, from profits, the large sum of money expended to that date.

Simultaneously with the drilling of Ojai No. 1, Leland Stanford, in furtherance of his railroad project with Huntington and Crocker, was attracted by the seepages and brea beds in Ventura County, and, miner like, decided to drill a tunnel in the south slope of Sulphur Mountain, so located as to intercept the steep dipping oil sands outcropping at its base, which oil sands created a line of seepages some 16 miles in length. The tunnel was completed in 1866. It was 80 feet in length, with the floor so inclined to the mouth that the oil flowed by gravity into tanks just a little lower in elevation. This tunnel showed the practicability of this method of producing oil, and for 25 years tunneling for oil was carried on intermittently. In all, 31 tunnels were drilled into the face of Sulphur Mountain, ranging in length from 80 feet to 1600 feet, with production ranging from one to twenty barrels per day of good oil.

The first oil well in Pico Canyon was drilled in 1875 with a spring pole by C. A. Mentre. This well was located on the very



IN THE PICO CANYON

Showing the first producing well that was drilled by Lyman Stewart. The derrick is still in good condition, and the well is still flowing.

axis of a steeply dipping anticline, and showed two barrels of 32 gravity oil at 30 feet. This well was deepened to 75 feet, where it produced five or six barrels per



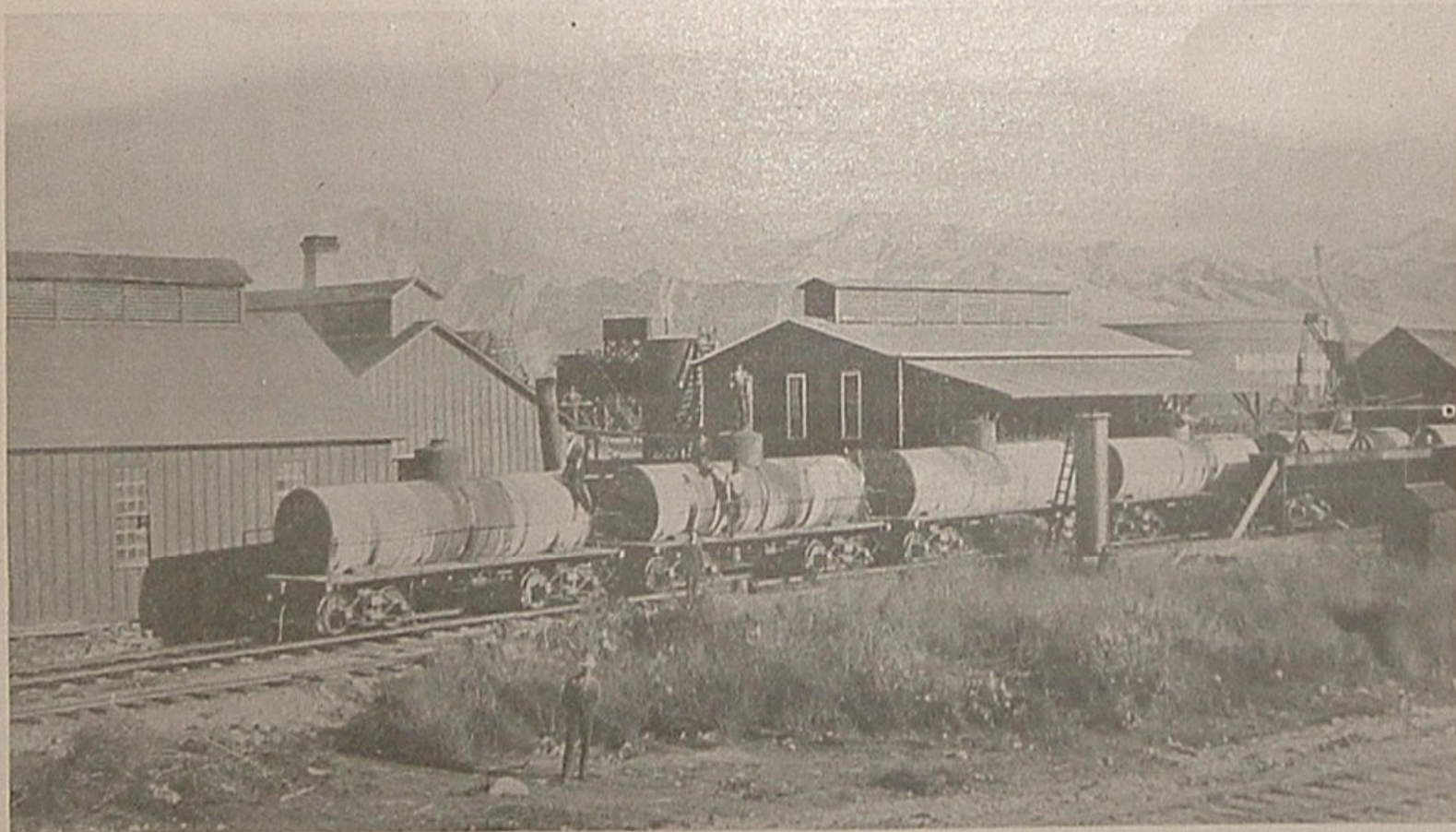
SANTA PAULA IN 1888

To those who have seen the busy oil town of Santa Paula of today, the change from the sleepy little village of 1888 will be very marked. On the left of the picture may be seen the plant of the Mission Transportation Co.

day. No. 2 was also drilled with a spring pole, with about the same production; but No. 3 was a dry hole. No. 4 produced 150 barrels at a depth of 600 feet.

The showings in these three wells soon attracted attention, and in 1875 Ex-Mayor Bryant of San Francisco became interested in the field. In 1876 Messrs. Bryant and

Scotfield organized the California Star Oil Company, and Mr. Mentre assigned his lease to this corporation. In 1879 Mr. McPherson and C. M. Felton came into the field, and in that year organized the Pacific Coast Oil Company, which some years ago was absorbed by the Standard Oil Company of California, and be-



PLANT OF THE MISSION TRANSPORTATION COMPANY, SANTA PAULA, 1888

This company was one of the pioneers in the carrying of crude produced in the vicinity to San Francisco Bay for refining. The site was later acquired by Union Oil Company of California for its Santa Paula refinery.



AN INTERESTING DOCUMENT

Certificate of stock for 10 shares of the Los Angeles Pioneer Oil Co. issued to C. Ducommun in October, 1865.

came the nucleus of the Standard's holdings in California.

In 1883, Lyman Stewart and W. L. Hardison, who had already been identified with the oil industry in Pennsylvania, arrived in California and drilled four wells on Christian Hill, just east of Pico Canyon. These wells were all "dry holes." A fifth well, which was a good producer, was drilled to the west of Pico Canyon. This well was sold to the Pacific Coast Oil Company for enough money to reimburse Messrs. Stewart and Hardison for their previous drilling losses on Christian Hill, and is still producing after forty years. Messrs. Stewart and Hardison then moved to Santa Paula, Ventura County, and soon after expanded their operations, which were successful, making that county the principal center of the industry. The characteristic perseverance and faith of these two oil pioneers, which led them to drill a fifth well after four failures, later laid the foundation of our great corporation, the Union Oil Company of California.

During the twenty years that this development of oil was taking place some attempts were made to refine the crude oil obtained. However, it was not until 1876 that the first practical refinery was built at

Newhall by D. C. Scott and a Mr. Wood. This refinery was located near the old cemetery, one mile east of the town on the present Highway. The capacity of the refinery was 20 barrels per day, and the oil was put in wooden barrels and hauled by teams from the wells. The layout of this plant can be recognized from the roads, grades and the position of the stills as located by the remains of the old bricks.

In 1879 a new and up-to-date refinery was built by J. A. Scott and Mr. Morrison near the present Southern Pacific Railroad, one-half mile east of Newhall. This plant is still standing, and shows very clearly the arrangement and method of refining.

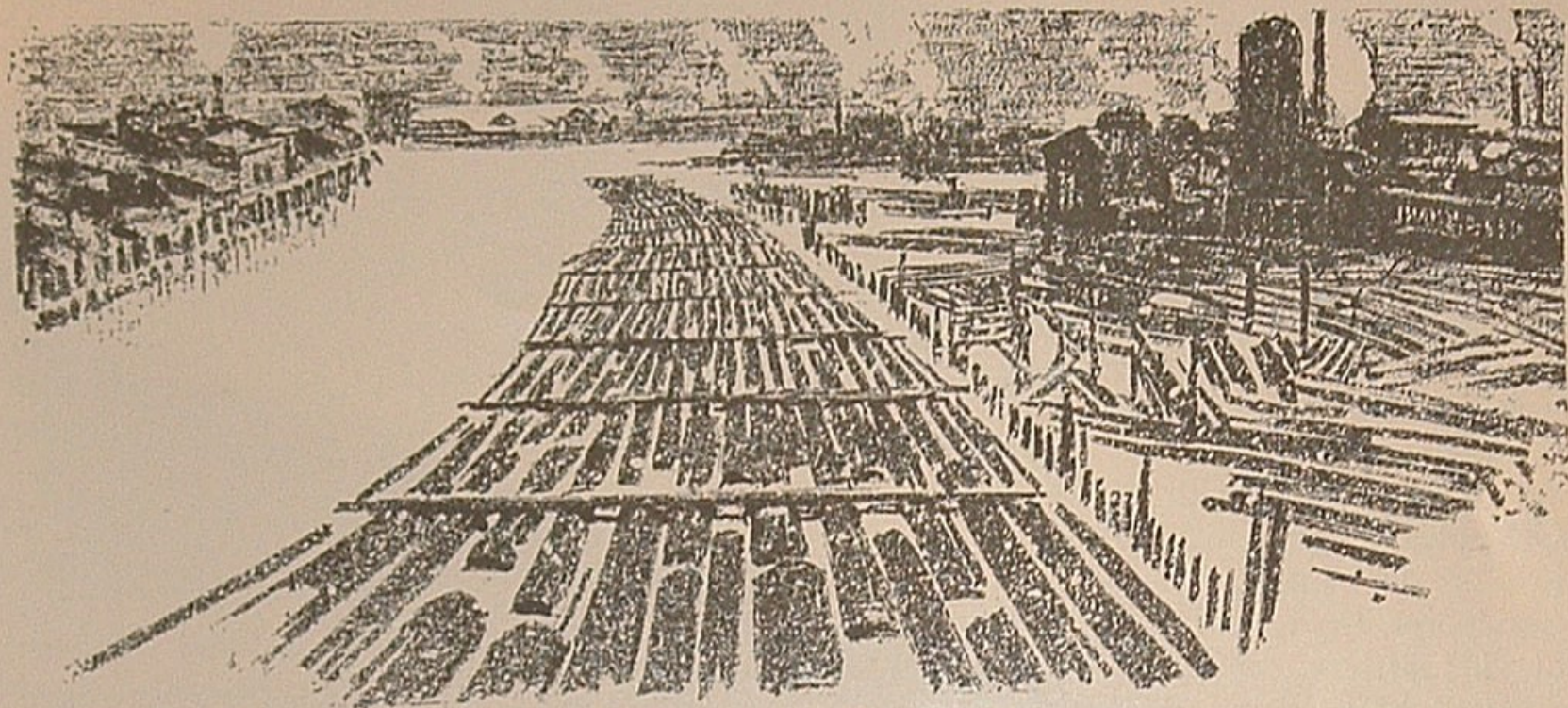
In 1878 E. A. Edwards built a refinery, with a daily capacity of 20 barrels, at the mouth of the Little Sespe, in Ventura County. He sold his kerosene in Los Angeles, and the lubricating oil to A. C. Dietz of San Francisco, and to Allen & White, who were connected with Leland Stanford of the Southern Pacific Railroad Company.

Thus, little by little, the oil business progressed. The records at the Port of Wilmington show that 97 barrels of crude oil were exported for the year 1873. Today this harbor is the largest oil export port in the world.

Lumbering in British Columbia

By R. J. KENMUIR

Special Agent, Union Oil Company of Canada



THE hopeful geologist skips some fifty million years—or perhaps five hundred million, the unprejudiced alternative being

that of H. G. Wells — from the time when this earth spun round hot and lifeless, and brings us to the age of rudimentary sea animals. Sometime in that indistinct period, a crisis occurred in the earth's history. The interior

of the earth, due perhaps to loss of heat, shrank in size. The world shaped into wrinkles. Creation's method of taking up the slack was to form mountains. In certain parts of the earth's crust, the operation of this major uplift force caused the accumulation of oil deposits. In others the convulsion formed great areas, some of which have become densely wooded. In either case the workings of a same mysterious nature have produced widely different results. In Southern California the result has been oil, that magic old codger that visits the just and unjust alike; in British Columbia it is lumber, and in each case the industries go much beyond the mere economic value of the trade, or of the production. Both are national assets of incalculable value.



What the oil industry is to Southern California, so the lumber industry is to British Columbia. We find that the existence of the forest wealth of British Columbia has been responsible for the development of probably the majority of the industries we have today. It has also been the power behind the making of the harbor of Vancouver, the "lion guarded" gateway to this province of timber and minerals. It is of record that the earliest commercial use of Vancouver harbor was in connection with the lumber industry, and that in a period of ten years after the establishment of the first mill on the north shore of Burrard Inlet in 1865, lumber clearances approximated 30 million feet.

Lest the reader be inclined to find fault with the foregoing analogy, let me propound a well-defined correlation between the industries of oildom and lumberdom.

Before the rig builder can buy the timbers he wants, before the driller has his bull wheel in place or can get new cants or arms, somebody, far back, has to help him out.

Just as the lumberjack down in West Virginia, in Kentucky or Tennessee, plays with his life felling big trees to get the oak and hemlock, so, in British Columbia, his buddy is flirting with death in the log jam of a swirling river, getting out the

Douglas fir and cedar. In British Columbia the big logs are carried down lumber flumes from the woods to the sawmill or railroad. Eventually the wood is shaped into oil field wood parts. All along the line, these men, seldom thought of by the oil men, are on the job helping in the oil industry.

Among the provinces comprising the Dominion of Canada, British Columbia ranks third from an industrial standpoint, the number of industries, capital invested, and the value of the products being excelled only by the very much older provinces of Ontario and Quebec. The latest official figures available show that there are in British Columbia 2673 industries with a capital investment of \$225,000,000. These industries give employment to over 40,000 workers, turning out products valued at \$250,000,000. This development has practically all taken place in the last 20 years during which time the establishment of many what might be called "auxiliary" industries, supplementary to the four basics of timber, minerals, agriculture and fish, has been brought about.

Of the four basic sources of natural wealth in British Columbia, timber ranks first in importance. The latest estimate places the stand at approximately 400 billion feet board measure, which is over one-half of the total of all Canada. It is estimated that the annual reproduction is as high as 5 billion feet, and at no time has the annual cut exceeded 2 billion feet.

The once popular and very much over-worked conception of the lumberman as a slave to greed, cutting down everything in his path, has been exploded. The greatest

Friendship

*You do not need a score of men to laugh and sing with you;
You can be rich in comradeship with just a friend or two.
You do not need a monarch's smile to light your way along;
Through weal or woe a friend or two will fill your days with song.*

*So let the many go their way, and let the throng pass by;
The crowd is but a fickle thing which hears not when you sigh.
The multitude is quick to run in search of favorites new,
And all that man can hold for grief is just a friend or two.*

*When winds of failure start to blow, you'll find the throng has gone—
The splendor of a brighter flame will always lure them on;
But with the ashes of your dreams, and all you hoped to do,
You'll find that all you really need is just a friend or two.*

*You cannot know the multitude, however hard you try;
It cannot sit about your hearth; it cannot hear you sigh;
It cannot read the heart of you, or know the hurts you bear;
Its cheers are all for happy men and not for those in care.*

*So let the throng go on its way and let the crowd depart;
But one or two will keep the faith when you are sick at heart;
And rich you'll be, and comforted, when gray skies hide the blue,
If you can turn and share your grief with just a friend or two.*

—Edgar A. Guest

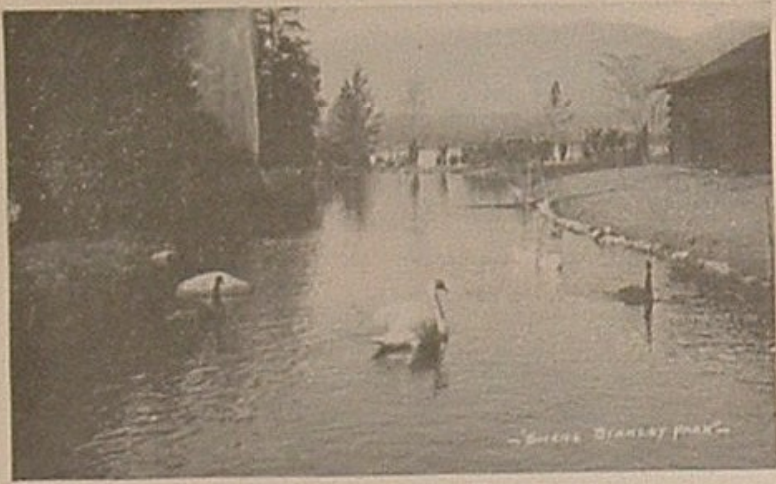
care is now exercised by lumber interests to the end that only mature timber fall before the axe; the young and growing timber is severely left alone.

Eventually — although that time would seem far distant for Western Canada at least — the denuded areas will have to be replanted. Forests will then exist as the result of man's providence; their volume will be measured by the forester's calipers and staff, and the romance and charm, adventures and heroism connected with their present-day exploitation will have passed on. For there is plenty of the romantic in the woodman's life. The forest itself is in the highest degree poetic. Life in the forest is the antithesis of life in the city. The toiler in the woods is akin in freedom to the

beasts and birds that inhabit it. He feels an independence and a self-dependence he would not experience in a crowded city. For this reason the physical appeals to him more than the mental, and the natural result is the production of men mighty in form and spirit.

We may feel, some of us, that we know a good deal about lumbering. We may not know the whys and the wherefores of the various operations, or their exact relation to the industry, but, thanks to the inspirational writer, we have learned to speak familiarly of the log driver and the woodsman; and though we may not know the difference between a chopper and a swamper, though we may never even have heard of such a personage as a log burler, the lumberjack is a personal friend of ours, and we have sung his praises.

Who among us has watched the log burler as he deftly spins the logs in the water with his feet, without experiencing a thrill of admiration? Who will gainsay that the topper from his lofty and perilous position on the tree trunk, as he wields his axe that sends the branches earthwards,



HOME OF THE SWANS

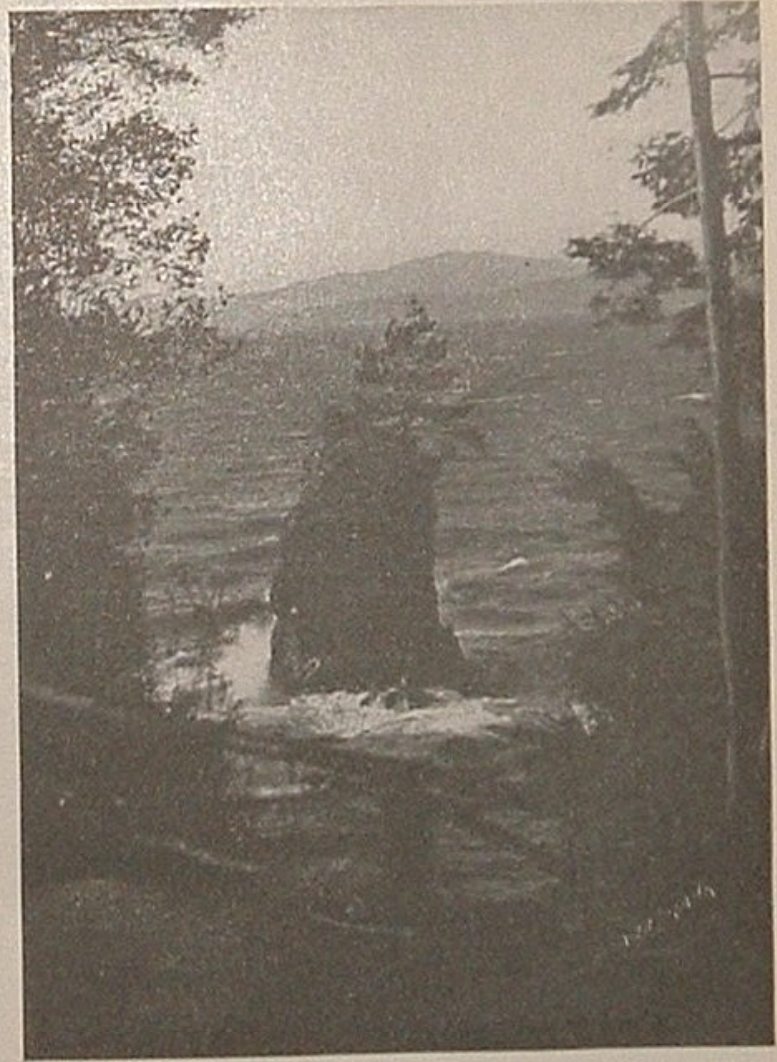
In beautiful Stanley Park. Looking towards the mountains from the upper end of the pond. In the pool just below, the pelicans hold forth.

does not succeed in quickening the pulse beats? Who among us has watched the thrilling and dangerous work of driving and jam breaking, without giving a sympathetic thought to these men of nerve, inspired by the prosaic motive of making a living, at risk of life and health, bring tree to mill, lumber to market, and make possible, comfort to millions? Who has not seen the proud majesty of some venerable and stately tree crushed to earth, without experiencing a thrill and, perhaps, a feeling that nature is being outraged? There would be some justification for the latter sentiment from one who has found in the magnificent primeval forest, "a cleanness and virginity, an exquisite loneliness, and the feeling of having caught nature unawares at her work," were it not that reforestation is keeping pace with the cut.

The forests of British Columbia are composed almost entirely of soft wood (that is, coniferous or evergreen) species, the few hardwoods rarely occurring in commercial quantities. This fact is an added advantage, inasmuch as soft wood lumber, on account of its lightness, strength and ease of working, is the most useful for general purposes, and comprises over three-quarters of the world's wood consumption today.

The most important trees are the Douglas fir, western hemlock, western red cedar, Sitka spruce, western white pine, western larch, western mountain pine, redwood, and sugar pine. All these species, excepting redwood and sugar pine, reach prime development in British Columbia. There are in addition a dozen or more species of lesser importance.

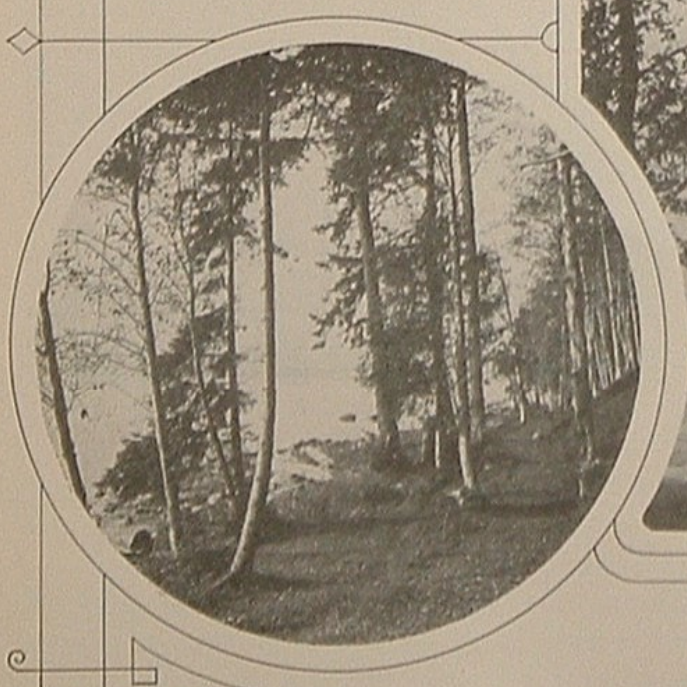
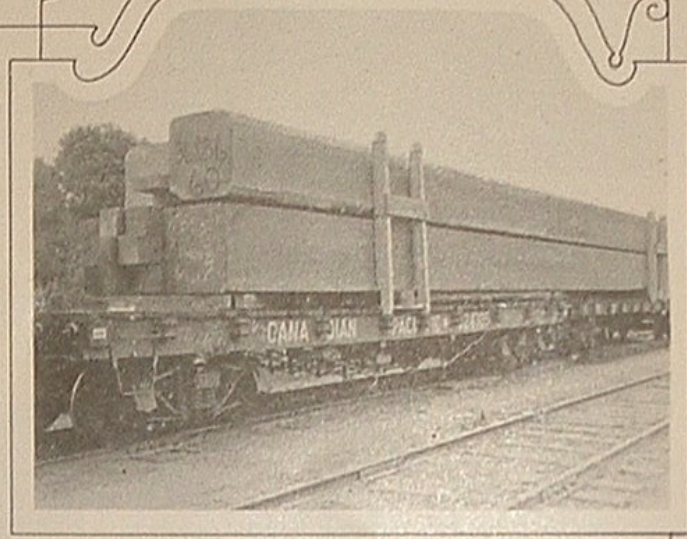
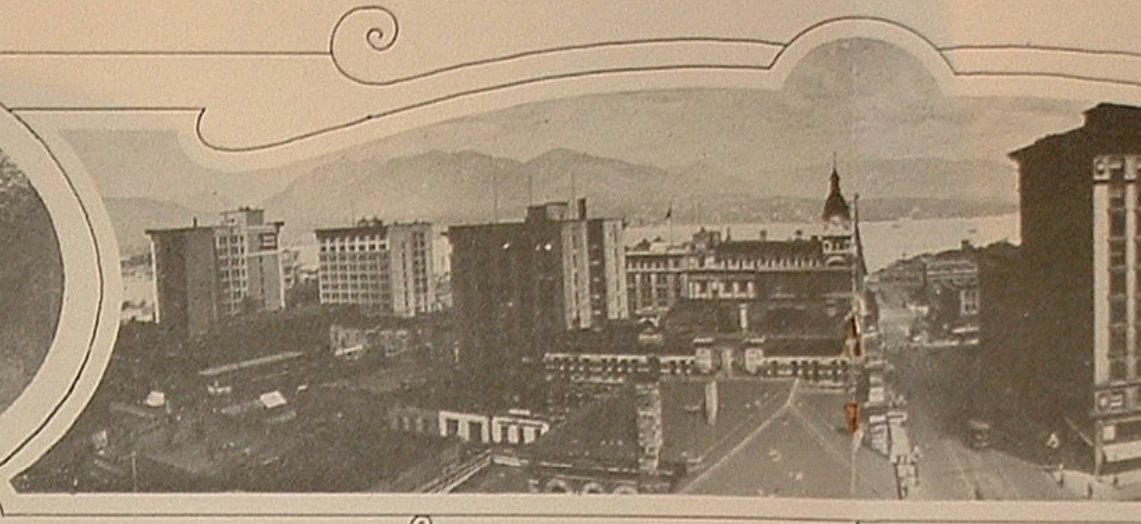
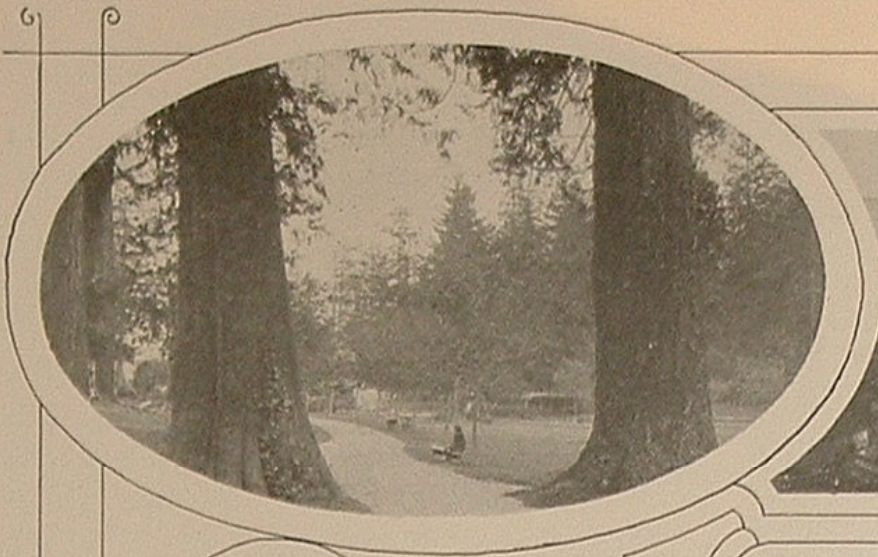
Geographically, British Columbia occupies an advantageous position for supplying the overseas lumber market. There are numerous easily navigable inlets and channels indenting the coast and separating the many islands, which make the coast timber reserves very accessible. Travel inland up the courses of the swiftly flowing rivers, and note the number of water flumes which carry the logs from the forests to the river or railroad. Even here the foreign market is not far removed. I am speaking now not in a geographical sense, but in the sense of accessibility. In fact, that very accessi-



SIWASH ROCK

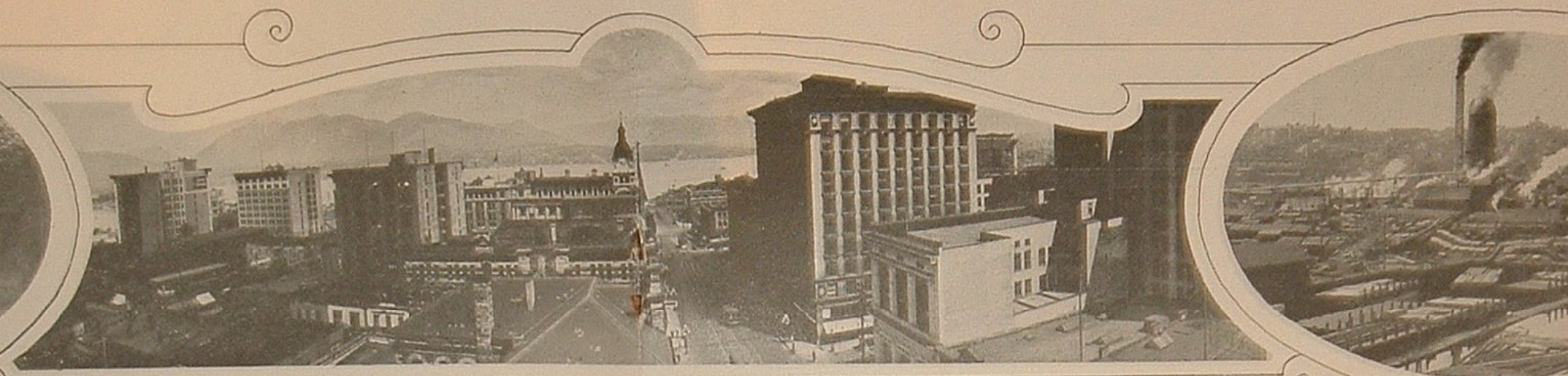
So named because the ashes of the Indian Princess and poetess, Pauline Johnson, are buried there. It is located on the Stanley Park side of the Narrows entering Vancouver Harbor.

bility to river and railroad takes precedence over immensity as a factor in placing lumber far in the lead in the basic sources



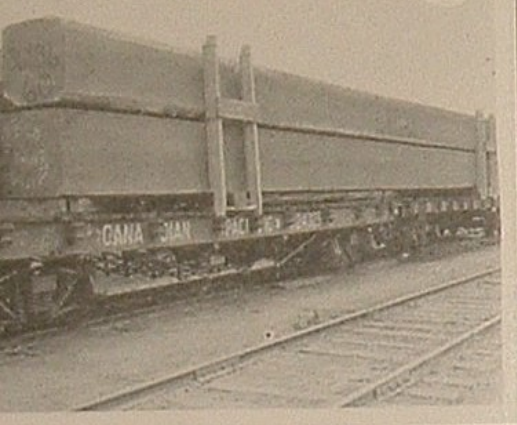
ROUND ABOUT VANCOUVER

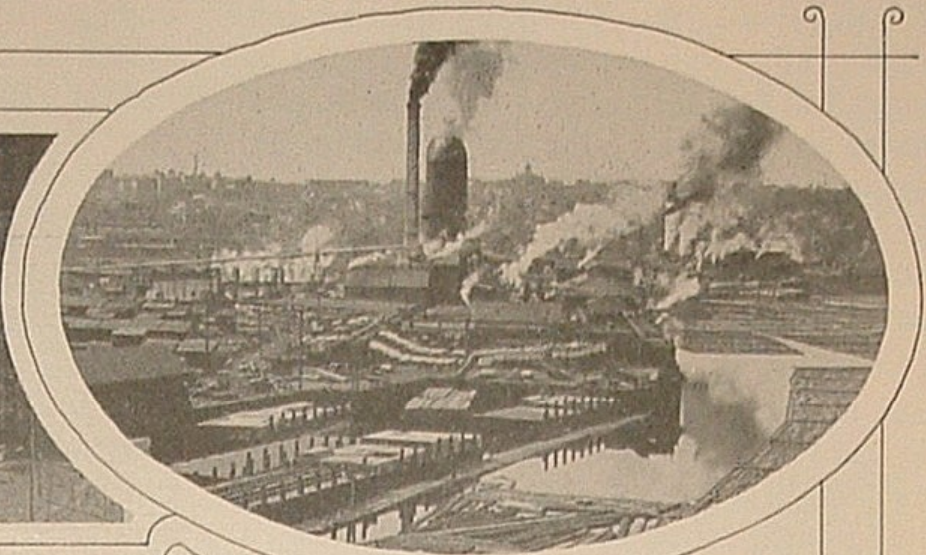
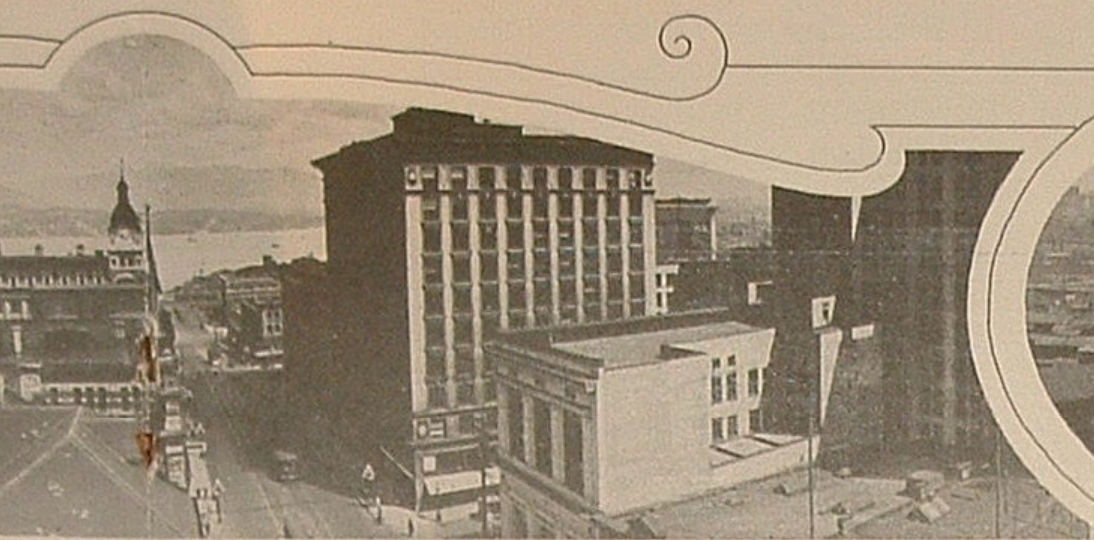
Intimate glimpses of the fourth city of Canada, and the industry that has contributed much towards its development. Lumbering is a prime factor in the industrial life of Western Canada. Top row, reading left to right, a driveway through the giants in Stanley Park; business section of Vancouver; one of the many sawmills that are to be seen in Vancouver. Second row, a fallen tree hitting the water on its way to the mill; some big sticks en route; boom of logs at the mill, and a topper at work. Bottom row shows two views of the famous Stanley Park; a log jam; a river of timber, and moonlight, English Bay.



ROUND ABOUT VANCOUVER

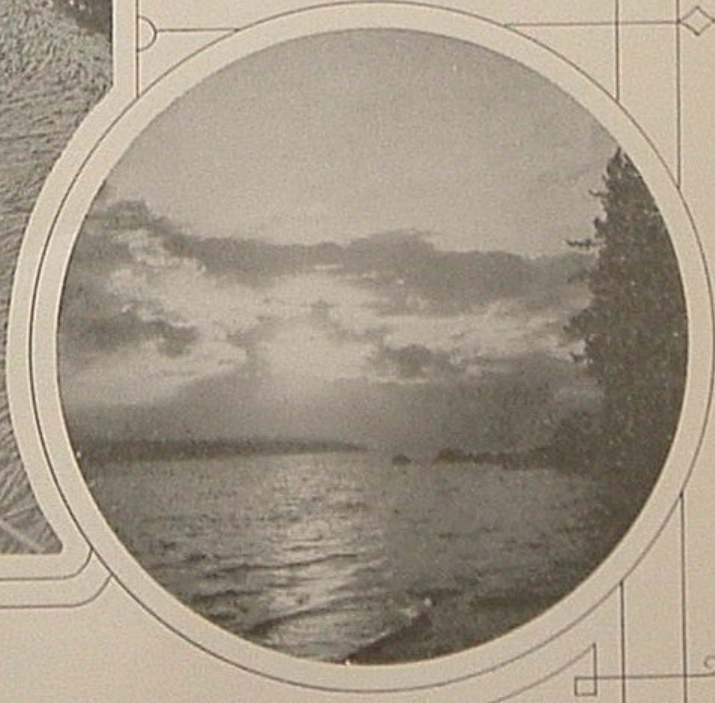
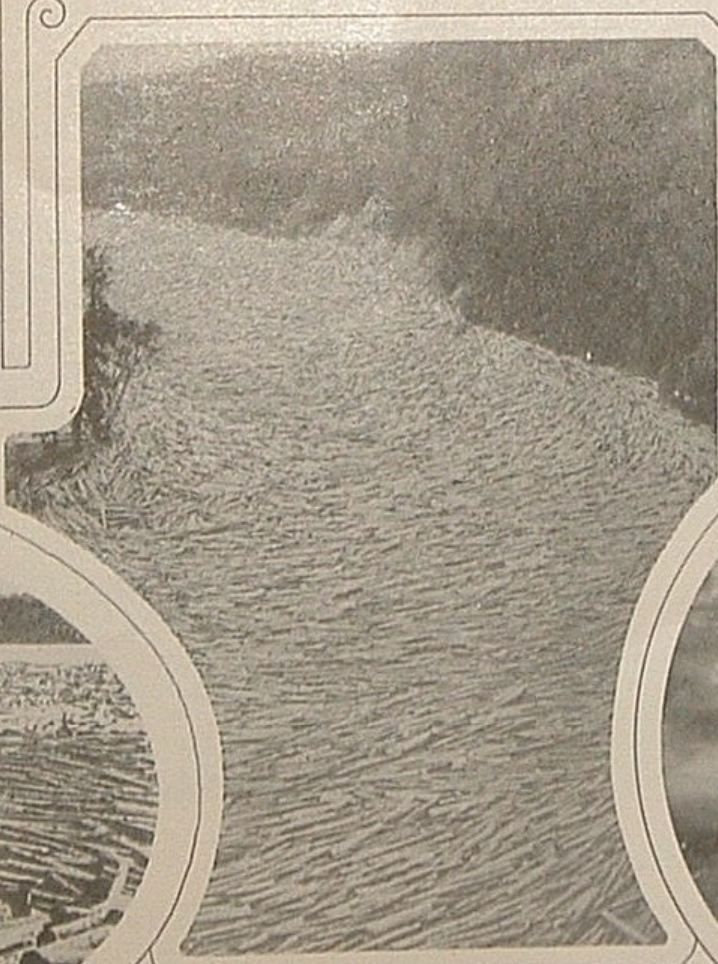
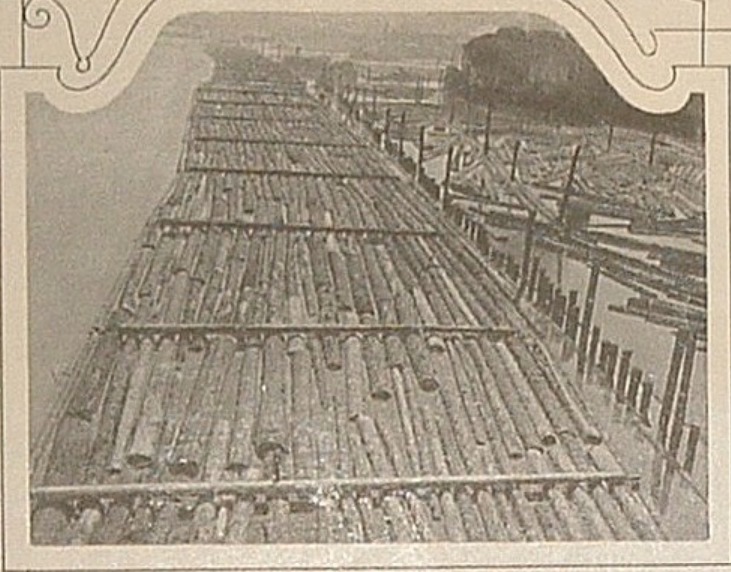
Intimate glimpses of the fourth city of Canada, and the industry that has contributed much towards its development. Lumbering is a prime factor in the industrial life of Western Canada. Top row, reading left to right, a driveway through the giants in Stanley Park; business section of Vancouver; one of the many sawmills that are to be seen in Vancouver. Second row, a fallen tree hitting the water on its way to the mill; some big sticks en route; boom of logs at the mill, and a topper at work. Bottom row shows two views of the famous Stanley Park; a log jam; a river of timber, and moonlight, English Bay.





AND ABOUT VANCOUVER

glimpses of the fourth city of
and the industry that has
ted much towards its develop-
Lumbering is a prime factor
Industrial life of Western Can-
top row, reading left to right,
away through the giants in
Park; business section of Van-
one of the many sawmills that
be seen in Vancouver. Second
fallen tree hitting the water on
to the mill; some big sticks
; boom of logs at the mill, and
r at work. Bottom row shows
vs of the famous Stanley Park;
am; a river of timber, and
moonlight, English Bay.



of natural wealth. The long haulage over steep grades and the consequent use of the dangerous snub-line are practically eliminated by the use of the water flumes. All logging centers, camps, and landings, almost without exception, are on the mainland coast of British Columbia, or on the eastern coast of Vancouver Island.

The visitor who goes to see the woodsman at his work, may be assured of a continuous round of interest, as the developments take place in rapid succession from the moment when the tree is felled till the log is eventually carried down into the well-known booms and log rafts and to the marketing entrepôts, where the big mills are located. The scientific progress in the method of logging during recent years would be an eye-opener to the initiate.

I have referred to the development of auxiliary industries, and a particularly apt illustration is that of box manufacturing. Today, there are over a score of these establishments, which, in 1922, consumed 70 million feet of lumber. Another important development is the production of pulp and paper. There are now five large mills

engaged in this industry. These industries, which at their inception depended upon domestic requirements, are now penetrating the world markets with satisfactory results.

Last year the total cut of lumber was 846 million feet, as compared with 947 million feet in 1921, and 1228 million feet in 1920, a startling reduction. This decline in the main industry has been reflected in general business to a marked degree. It must be considered, however, that these are figures of years which will go down in history as "blue" years, years of extreme depression. At present the lumber industry of British Columbia is running along on a flat wheel. It is likely that 1923 will be a year of slow recovery and convalescence. For, in the opinion of business men, who are not in the throes of unregulated imagination running loose in all directions, the worst part of the storm has been weathered. It is true that there has not yet been a complete price readjustment, and until there is, the lumber industry and business in general cannot become normal.

FACING THE FLASHLIGHT

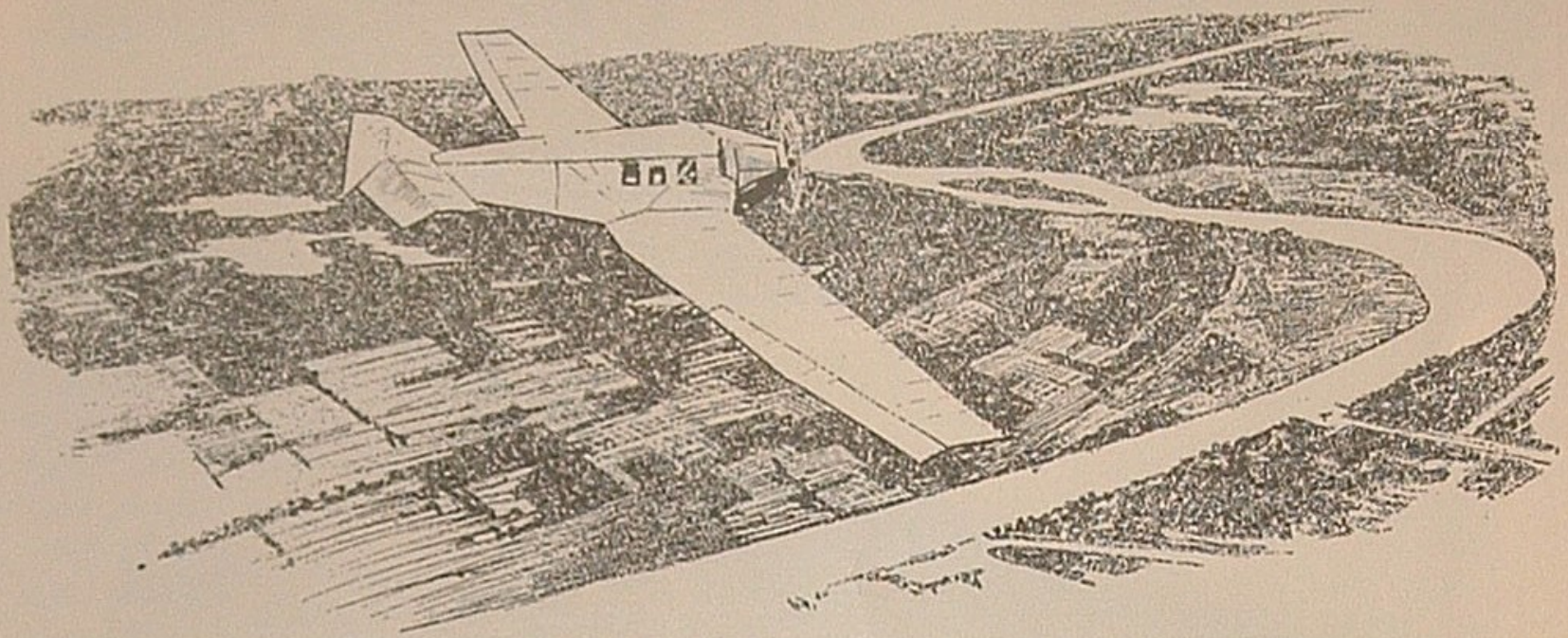


FIELD MEN IN CONFERENCE

A conference of Union Oil Company of California field superintendents and their assistants was held late last month in the Los Angeles Athletic Club, and was attended by E. W. Clark, vice-president and general manager; C. W. Brown, director of exploration and production; Paul Gregg, general counsel; A. E. Fowks, assistant to Mr. Brown; F. F. Hill, manager of field operations; C. R. McCollom, chief geologist; Roderick Burnham, manager of lands; M. F. Robertson, supervisor of field offices. Representatives from the various districts in attendance were: H. E. Becker, A. H. Brown, K. A. Hoxie, E. L. Caldwell and L. S. Conover, Orange district; George Kammerer, W. H. Ellwanger, F. C. Boyd, E. Whitten, E. P. Wieman and H. C. McMasters, Santa Fe Springs; E. C. Critchlow, T. R. Travers and L. A. Rodgers, Orcutt division; and Chas. L. Woods, W. E. Brown, W. H. Hennage and H. C. Sargent from the Valley division. The meeting was for the purpose of an exchange of ideas to the end that uniform methods of handling field business be established. This is the second conference of this character to be held, the previous meeting taking place late in June.

Geologic Reconnaissance by Hydroplane

By F. O. MARTIN



GEOLOGICAL reconnaissance always imposes certain hardships that are measured by the character of the country, racial and geographic. Exploration work in districts that are beyond where the rail ends and the trail begins, imposes additional obstacles on those men who are engaged in the continual hunt for new sources of oil supply.

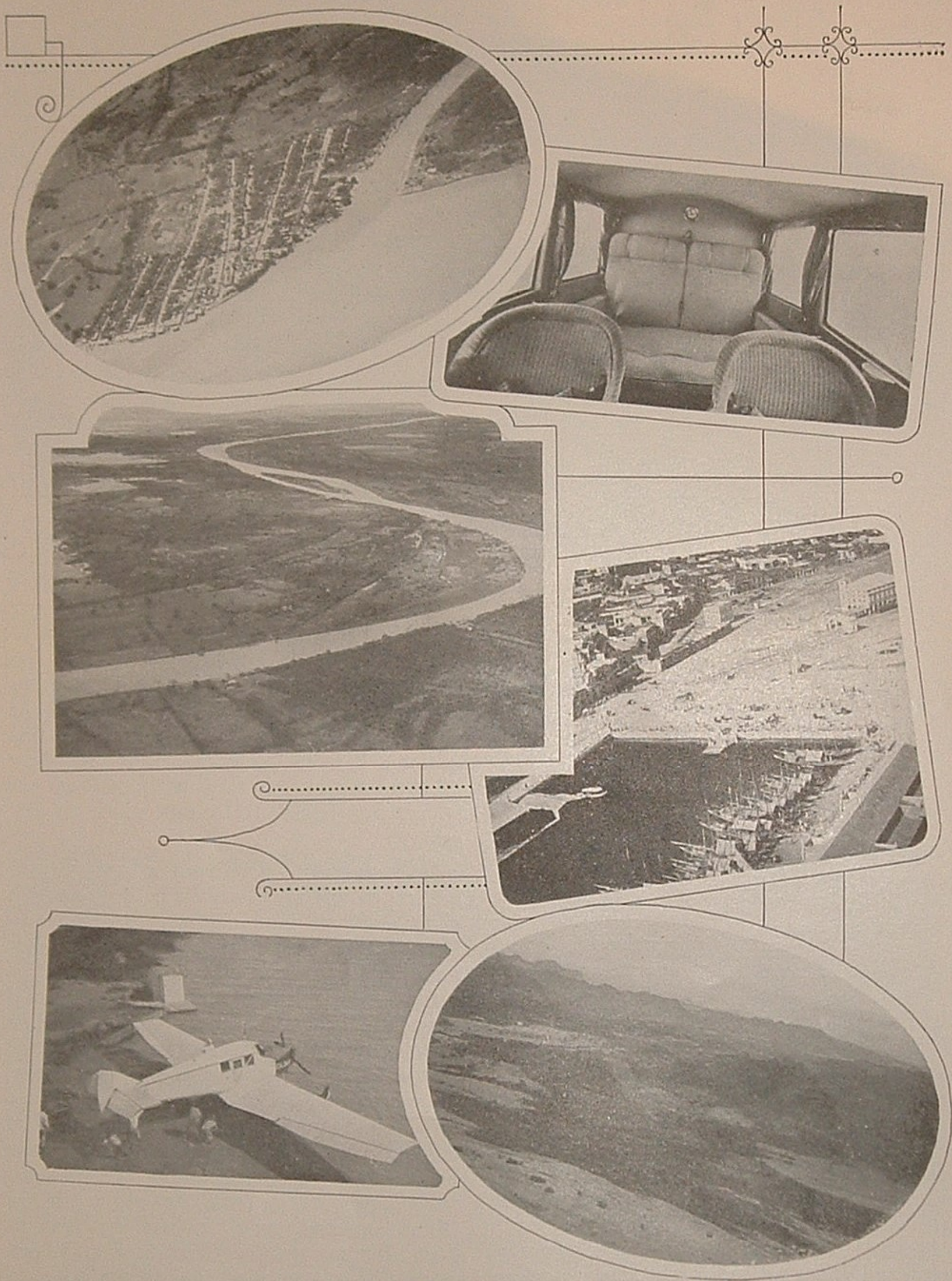


In Colombia, South America, there is a serious lack of transportation facilities; yet, paradoxical though it may seem, for the purposes of geologic reconnaissance, the facilities are at once the most crude and the most advanced. This is due to the introduction of the hydroplane to reach the vast hinterland beyond the virgin forests and lofty peaks which render ingress on foot laborious and slow.

As far as their use for geological examinations is concerned, I might say that they take the place of automobiles in California, and as a matter of fact they are superior to them in some ways, as a hydroplane is

not only much faster, but one can also take photographic maps from above of the country traversed. Of course, the real geological work anywhere must be done afoot; but time is saved with hydroplanes in getting faster from one place to another.

The use of hydroplanes inland is limited to countries which have large enough rivers or bays to make safe landings. In Colombia regular bi-weekly service is maintained between Barranquilla and Girardot, a distance of 1000 kilometres; and between Barranquilla and Cartagena, a distance of 150 kilometres; weekly service is maintained between Girardot and Neiva, a distance of 120 kilometres. The average speed maintained by the hydroplane is 100 miles per hour. This service is given by the Sociedad Colombo-Alemana de Transportes Aereos, a company organized in Colombia, and partly owned by Colombians, but managed by Austrians and Germans. Regular use of the hydroplanes between these points is made by passengers, and for carrying mail. Formerly a letter or passenger would take two weeks and more from Bogota to Girardot, while by hydroplane it takes but eight hours including stopping time at intermediate stations.



HYDROPLANE AS AN AID TO THE GEOLOGIST

Aerial photography is a development of the last few years, but its use in geologic reconnaissance is of comparatively recent date, and so far has only been applied as an aid to the geologist on foot in countries where natural obstacles impede his path. In the South American oil fields the hydroplane has proven of great value in this respect. Photos show type of machine used and views from the air.

The minimum charge for a letter is thirty cents from Barranquilla to Girardot, and fifteen cents from Girardot to Nieva or from Barranquilla to Cartagena. The passenger rates are \$250 from Bogota to Girardot, and \$150 from Girardot to Bogota, and corresponding prices for intermediate points, and with extra payments if the weight of the passenger and baggage exceeds sixty-five kilos.

Besides these regular flights the Scadta (abbreviation for this company) has undertaken other flights, the most remarkable ones being one made from Girardot to Cali and return, and one from Barranquilla to Cali and return. On the former flight the aviator had to cross over the Cordillera Central at an altitude of over twenty thousand feet. Flights have also been made from Girardot to Bogota, the capital of Colombia, which is at an altitude of 8,700 feet. Landings from Bogota are made in a lake near the city. For some time the Scadta has made flights into the interior of Colombia to Bucaramanga, and at the time of my departure from Colombia in June of this year, the company had selected a sort of hybrid between an aeroplane and a hydroplane which will enable the aviator to land either on land or on water.

For the first time in history a hydroplane was used in connection with an official determination of the boundary line between two countries. In May of this year the Swiss Engineering Commission which acts as an arbitrator to determine the boundary line between Colombia and Venezuela, engaged the Scadta to fly over and make photographs of an area south-southwest of Lake Maracaibo, which area could only have been crossed afoot by cutting a trocha for the entire distance. During one of these flights an interesting discovery from the air of a Motilone Indian village was made, its location heretofore being unknown. These Motilone Indians are not exactly friendly to the invading white oil explorers, and when shot arrows were found in the trees near the tents, it was thought wise by the exploring parties to return closer to civilization.

It is, of course, extremely difficult to locate these Indian villages in the midst of the jungle when one is afoot, as there are no trails leading to them.

If the above boundary work had not been under way, and the supply of hydroplanes, aviators and air-photographers were not still somewhat limited, the writer would have been in a position to act as a pilot in a planned trip by air over the lands of the Union Oil Company of California. We intended to start from Neiva and ascend at least five thousand metres in order to clear the Cordillera Oriental, and be in a position, if it became necessary, to glide either back into the Rio Magdalena, or else into one of the rivers on the other side of the Cordillera Oriental, flowing through our lands. As these rivers are not mapped nor known in their entirety, nor known to any other white man, a pilot becomes necessary in order to pick out safe landings on the water. The photographic work done on these flights is shown in some of the pictures submitted with this article. To discuss how the maps are made from the hydroplane would lead too far for this article. It is sufficient to say that methods have been discovered which result in great accuracy. The aerial photography is supplemented by triangulation on the ground, which, if carried far enough, enables one to make topographical contours as well. However, the main object of the aerial photographs is to secure preliminary maps showing rivers and drainage, or to use a common term, the lay of the land. How important this is can only be realized by the explorer who is shut in by tropical foliage for months at a time, when he often cannot see even the sun above. It will avoid the survey of many tortuous rivers, because a view from above would indicate at once where connections between rivers might be made by cutting a short trail.

The advantage of hydroplanes for preliminary exploration has already become recognized by at least one large oil company in Colombia, which used hydroplanes to some extent in locating pipe-lines of about four hundred kilos in length. It will be but a short time when these same hydroplanes will be used in accurate mapping of the shore lines of Lake Maracaibo in Venezuela, and the flat countries between it and the encircling mountain ranges.

News of the Month



NINE MONTHS' BUSINESS

Despite chaotic conditions in the oil industry, the report issued early this month by Union Oil Company of California reflects a favorable showing. Sales for the nine months approximated \$55,100,000, an increase in value of \$11,000,000, or about 25 per cent. The volume of crude and fuel oil business increased 154 per cent, and refined and lubricating business 22 per cent.

Production of crude oil by the Union Oil Company and subsidiaries totalled 13,300,000 barrels, representing a gain over the same period of 1922 of 4,025,000 barrels. Present daily production in California from the Company's wells is about 68,000 barrels, excluding 10,000 barrels per day shut in.

Net profits for the nine months' period were \$7,200,000, or the equivalent to \$8.00 a share on the outstanding capital stock, after allowing for the ordinary expense of taxes, interest and employees' share of profits and provident fund.

A SWEET CARGO

Following the lead of the Union Oil Company's tanker Montebello, the tanker Coalinga recently returned from Honolulu with a 5000 tons cargo of molasses. The unusual cargo for a tanker was loaded at Kahului, and 3500 tons were discharged at Portland, the balance being landed at Oakland.

MEXICAN OIL EXPORTS

Oil exports from Mexico during September are estimated at 11,318,000 barrels, against 12,744,000 in August, average daily shipments declining from 411,000 barrels to 377,000.

NEW SERVICE STATIONS

Twelve new service stations were opened for business during September by the Union Oil Company of California. They are: 5th Ave. and Slauson, Los Angeles; Locust and Tower, Centralia; Jackson and Broadway, Glendale, Calif.; Providencia and San Fernando, Burbank; Silverado and Girard, La Jolla; Moneta and Santa Barbara, Los Angeles; First and Ellsworth, Albany, Ore.; King and Kalakaua, Honolulu; Beretania and Keeaumoku, Honolulu; 16th and G, Sacramento; Plant Site, Sedro-Woolley, Wash.; King Street and Oahu R. R. Depot, Honolulu.

INSPECTS MID-WESTERN PROPERTIES

Roderick Burnham, manager of lands, Union Oil Company of California, recently returned from a trip of inspection of the Company's properties in Wyoming and Colorado, and radiates optimism on the oil prospects. The Fort Collins well on the Wellington dome, 18 miles north of Fort Collins, is still drilling above the Wall Creek sands, a fishing job having delayed progress. In Circle Ridge and Maverick Springs fields in Wyoming the Union has thirteen producers, eleven of which are shut in.

QUARTERLY DIVIDEND DECLARED

At a meeting of the Board of Directors, Union Oil Company of California, held in Los Angeles, October 8, a quarterly dividend of \$1.80 a share was declared, payable October 27th to stockholders of record October 10th. The books of the Company were not closed.

The directors of the Union Oil Associates in session October 8th also declared a quarterly dividend of \$3.24, payable on the same date.

NORMAN ELLIS TRANSFERRED

Norman Ellis, who has been chief clerk in the general sales for the past four years, has been transferred to the position of junior traveling auditor, effective October 1. He carries the best wishes of his former associates, who presented him with a leather suit-case.

PIPE LINE DECREASE

September receipts of the Los Angeles pipeline system of the Union Oil Company of California showed a slight decrease over the previous month's figures. Contract limitations have been discontinued, and all oil now being offered is being accepted. Gradual decline in yield of producing wells, and the comparative small initial yield of new wells, are the contributing factors in the falling off of pipeline receipts.

ATTENDS CHICAGO CONVENTION

C. W. Ralph, director of sales and transportation, attended the convention of the American Oil Men's Association, which was held in Chicago during the month.

CRUDE PRICES CUT

Prices for crude oil at the well in Southern California suffered a sharp decline during the month. The reductions were based upon the specific gravity and ranged from 2 cents to 28 cents, the greater cut being for oils of light gravity. In this respect Santa Fe Springs district was the greatest sufferer. The older valley fields with their heavy oils were practically unaffected. The cut in price was made by the Standard Oil Company on October 9 and was met by the Union Oil Company of California and other operators the same day.

Following is the schedule

GRAVITY—	New price	Old price
16 to 19.9 degrees.....	.60	.60
20 to 20.9 degrees.....	.61	.61
21 to 21.9 degrees.....	.62	.62
22 to 22.9 degrees.....	.63	.65
23 to 23.9 degrees.....	.64	.68
24 to 24.9 degrees.....	.65	.71
25 to 25.9 degrees.....	.66	.74
26 to 26.9 degrees.....	.67	.77
27 to 27.9 degrees.....	.68	.80
28 to 28.9 degrees.....	.69	.83
29 to 29.9 degrees.....	.70	.86
30 to 30.9 degrees.....	.71	.89
31 to 31.9 degrees.....	.72	.92
32 to 32.9 degrees.....	.73	.95
33 to 33.9 degrees.....	.74	.98
34 to 34.9 degrees.....	.75	1.01
35 degrees and over.....	.76	1.04

AUGUST CRUDE YIELD

The total production of crude oil in California for August amounted to 26,440,005 barrels, an average of 852,903 barrels per day. This is an increase of 37,997 barrels per day over July production.

Stocks increased during the month 4,468,231 barrels. The total stocks at the end of the month were 83,123,835 barrels. The total stock increase for 1923, up to August 31, was 21,938,907 barrels. Indicated consumption for August was 21,971,774 barrels, an average of 708,767 barrels per day. This is an increase of 88,005 barrels per day over July consumption.

Sixty-one wells were completed during the month with an initial daily production of 118,433 barrels, compared with 90 wells completed during July, with an initial daily production of 161,599 barrels.

Complete details of production and development by fields for August will be found on page 23.

SECOND ANNIVERSARY OF BELL NO. 1

Two years ago on the 21st of this month, the world's greatest oil field was born through the discovery of Union Oil Company's well, Bell No. 1, at Santa Fe Springs, which entered the production lists with an initial daily yield of 4400 barrels of 34 gravity oil. Two years previously Meyer No. 3, the actual discovery



well, had been put on production, but because of its small flow of 100 barrels, it aroused little comment, and has always been overshadowed by Bell No. 1, which has put into its tanks over 1,500,000 barrels of oil, and although at present shut in is capable of producing approximately 400 barrels daily.

STATE OIL SUPERVISOR RESIGNS

R. E. Collom has resigned from the position of state oil and gas supervisor, effective October 1st, 1923. He has been identified with the work of the department of Petroleum and Gas in various capacities since 1915, and has held his position as supervisor since 1921. He leaves the state service to engage in the work of consulting petroleum engineer with headquarters in San Francisco. He is succeeded by Reed Rush.

THIS MONTH'S COVER

Lumbering is the major industry in British Columbia, where the estimated stand is approximately 400 billion feet board measure, or over one-half of the total of all Canada. J. D. Johnsen, Bulletin artist, in the front and back covers of this issue, takes us to the lumber camp, where the big timbers crush to earth and later into the water flume to be carried to the mill. One can readily visualize the dangers and hazards of log burling, and jam breaking from the artist's study.

BETTER DAYS FOR SAN JOAQUIN VALLEY

With the generally accepted belief that the peak of production has been reached and will soon pass in the three major producing fields, attention is being diverted to the San Joaquin Valley, where old fields are being revived, deep wells seek new strata, and test wells are being drilled just beyond the edges of existing production.

FIELD SUPERINTENDENT RETIRES

Ill health has caused E. E. Chamberlain, superintendent of the Ventura pipe-line and field superintendent, Ventura District, for the Union Oil Company of California, to tender his resignation, effective October 1. Mr. Chamberlain is one of the old-timers in the service of the Company, having started as a tool dresser and driller in the Ventura fields in May, 1887, under the Hardison-Stewart interests. After serving in various capacities for a period of seven years, he severed connections with these interests to enter business for himself. Returning to California eighteen years later, he again entered the service of the Company, this time in the position of district foreman at Santa Paula. In 1914 he became district superintendent, and in addition was appointed pipe-line superintendent, which positions he has since held.

In the retirement of Mr. Chamberlain the Company has lost a valued employee, a man who has ever striven to give the best that was in him. He carries the best wishes of his former associates in his retirement, and the hopes of all employees for a speedy return to good health.

George W. Gosline, who has been acting superintendent for the past three months while Mr. Chamberlain was on leave of absence, will continue in this capacity for the present.

DECREASE IN NEW PRODUCTION

During the month of September the Union Oil Company of California placed on production eleven wells with an initial daily yield of approximately 19,700 barrels. This is a slight decrease under the Company's new production for August. Santa Fe Springs again leads, with seven of the ten wells, Huntington Beach being credited with three, and the new Compton field with the eleventh. The new producers are: Bell 5, 800 barrels; Alexander 6, 5560 barrels; Howard 2, 80 barrels; Howard 4, 4668 barrels; Howard 5, 6160 barrels; Meyers 7, 55 barrels; Meyers 13, 900 barrels, all in Santa Fe Springs field; Copeland 14, 121 barrels; Copeland 17, 100 barrels, and Brooks 8, 250 barrels, in Huntington Beach; Callender 1. Compton field, 1300 barrels.

GASOLINE TAX IN EFFECT

The 2 cent tax on gasoline in California became effective October 1st, and as a result the price of gasoline was increased 2 cents at all filling stations in the state on that date.

COAST TO COAST SHIPMENTS

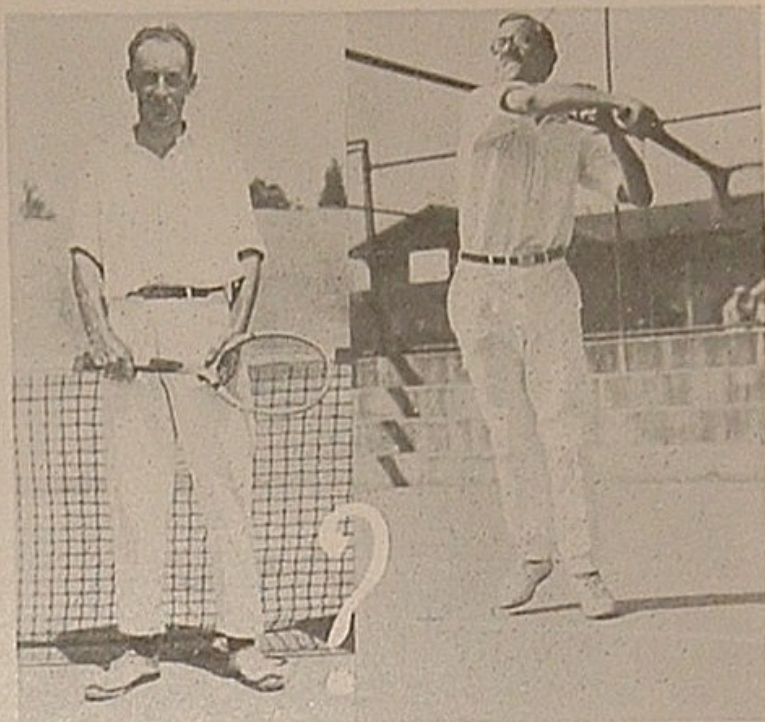
Receipts of California oil (crude and refined oils) at Atlantic and Gulf Coast ports for the week ended Sept. 29, totalled 1,964,000 barrels, a daily average of 280,571 barrels, against 889,000 barrels, a daily average of 127,000 barrels for the week ended September 22. For the nine months of 1923, 84,140,000 barrels of oil has been shipped from Los Angeles harbor through the Panama Canal. Last year's total shipment is estimated at 50,000,000 barrels.

U. S. CRUDE OIL PRODUCTION

The American Petroleum Institute estimates that the daily average gross crude oil production in the United States for the week ended

October 6 was 2,157,400 barrels, as compared with 2,220,250 barrels for the preceding week, a decrease of 62,850 barrels. California's daily production for this period averaged 834,000 barrels, as compared with 854,000 barrels, a decrease of 20,000 barrels.

CAN YOU PICK THE WINNER?



Which will it be? Hornidge or Reinke? Here you see the finalists in the tournament for the president's cup, which was postponed on account of the death of Lyman Stewart, chairman of the board of directors, and which will probably be played sometime in November. The finalists are head office men, and they reached the coveted position only after the stiffest kind of opposition. Both are rated as finished artists with the racket, and their meeting should certainly result in many scintillating plays.

MILE DOWN AND NO SHOWINGS

After drilling Francis No. 2 well to a depth of approximately 5400 feet, Union Oil Company of California drillers ran into schist, a highly impermeable formation, and are now plugging back to the 5100 foot level, where a showing of oil was found. At this depth a test of the well will be made to determine whether the sands are capable of producing a high gravity oil. Producers in the vicinity are yielding a heavy oil, and the test is the object of considerable speculation by operators. Francis No. 2 is located in the northwest corner of the Torrance field.

HARBOR BOARD GRANTS APPLICATION

Permission to the Union Oil Company of California to maintain pipe lines along Flood Control Channel at Nigger Slough, Los Angeles harbor, was granted by the Board of Harbor Commissioners at a meeting this month.

FRESNO OFFICE BASEBALL TEAM

The district sales office of the Union Oil Company of California at Fresno has organized a baseball team, and has been accepted into a semi-pro league playing games in that locality.

Current Petroleum Literature Abstracts

Prepared by *ELIZABETH H. BURROUGHS*
Research and Development Department.



79

All articles abstracted are on file at the library of the research laboratory, Wilmington.

GENERAL

HUNTLEY, L. G. Venezuela will not repeat performance of Mexico, but has big future. *Nat. Petroleum News*, vol. 15, Sept. 19, 1923, pp. 51-52, 55, 56, 59-60, 62-63. A review of activities in the Venezuelan fields by American and English companies, and discussion of the present status and future prospects of the industry in that country.

NELSON, B. Solid bitumens of Leyte. *Philippine Jour. Sci.*, vol. 22, 1923, pp. 617-628. *Chem. and Ind.*, vol. 42, Aug. 31, 1923, pp. 815 A. Description of the two kinds of bitumens occurring in Leyte Province in the form of pure bitumens and bitumen-impregnated rocks. N. B.—*Chem. and Ind.* only on file.

ANONYMOUS. The story of oil. *Sci. Am.*, vol. 129, Oct., 1923, pp. 256-257. Tells how "23 billion gallons of crude oil annually are piped, refined and distributed to the consumer." Gives pipe-line map of the United States.

DEVELOPMENT AND PRODUCTION

HESS, K. F. The diamond drill in the oil fields. *Oil Age*, vol. 20, Sept. 1923, pp. 48-52. Gives uses, advantages, costs, etc., of diamond drills.

POLLARD, J. A. Conservation of California's oil and gas reserves. *Oil Age*, vol. 20, Sept., 1923, pp. 7-8. States that conservation, like charity, begins at home with the operators, and that practical conservation methods must be applied, suggesting as an example of such an operation placing the "bean" at the bottom of the well and showing how this will work advantageously.

ANONYMOUS. Fire protection measures on California wells. *Nat. Petroleum News*, vol. 15, Sept. 5, 1923, p. 62. Brief illustrated description of two types of protection for flowing wells.

TRANSPORTATION AND STORAGE

DEACON, W. T. How color reduces the evaporation of oil. *Oil News*, vol. 11, Sept. 5, 1923, pp. 13-14. On the effect of color and quality of paint used on storage tanks.

MATHESON, E. E. Handling hot oils a real refiner problem. *Refiner*, vol. 2, Sept., 1923, pp. 11-12. Tells results of study of causes of failure of ordinary valves on hot oil lines around refineries and the development of improved apparatus for that service.

ANONYMOUS. Storing surplus California oil. *Min. and Oil Bull.*, vol. 9, Sept., 1923, pp. 752-775. Illustrated description of new oil storage facilities in Southern California.

CHEMISTRY

BACON, R. F. Research for the petroleum industry. *Ind. and Eng. Chem.*, vol. 15, Sept. 1923, pp. 888-890. Reviews some of the problems in petroleum research which may be solved satisfactorily with sufficient study, and others which are less clear. Among the former are the study of the unknown hydrocarbons of petroleum, the use of electrical means in cracking, problems of lubrication, and

utilization of natural gas, while in the latter class are the manufacture of resins from petroleum, the preparation of drying oils from petroleum, and the manufacture of acids from the higher petroleum hydrocarbons.

BREWER, A. F. Lubrication problems and their correction. *Ind. Management*, vol. 66, Sept., 1923, pp. 134-139. Tells "what lubricant to use, where, and why."

DE HAUTPICK, E. The search for oil in Australia. "Coorongite"—A petroleum product. *Petroleum Times*, vol. 10, Sept. 1, 1923, pp. 309-311. Describes occurrence, properties and composition of a material found in the Coorong district of South Australia which is similar to the "paraffin dirt" of the Texas and Louisiana fields, and to "N'hangelite" of Portuguese East Africa. See also, *Petroleum World (London)*, vol. 20, Sept., 1923, p. 384.

HELDT, P. M. Laws of bearing and dry friction similar when loads are high. *Auto. Ind.*, vol. 49, Sept. 20, 1923, pp. 573-575. First of a series of articles analyzing recent developments in lubrication theory and practice. This article reviews and discusses recent experiments made in England by which T. E. Stanton claims to have established the existence of "boundary lubrication." See article by Stanton, *Engineering*, vol. 135, June 29, 1923, pp. 678-680.

LANGHAM, M. G. Fuel oil and viscosity. *Power*, vol. 58, Sept. 11, 1923, pp. 423-424. On the importance of knowing viscosity-temperature relations of fuel oils rather than merely their gravity for classifying and using them efficiently.

NUGEY, A. L. Requirements of transformer and switch oils. *Oil News*, vol. 11, Sept. 5, 1923, p. 24. Describes common types of transformers and tells requisite properties of oils used with them.

SHATWELL, H. G. Hydrogenation of mineral oils. *Univ. of Birmingham Mining Soc. Tech. Mag.*, June, 1923, pp. 48-57. *Chem. and Ind.*, vol. 42, Aug. 17, 1923, p. 757A. Describes experiments on hydrogenation by the Bergius method of an Anglo-Persian gas oil. N. B.—*Chem. and Ind.* only on file.

REFINING

BAKER, E. M. Basic principles underlying gas absorption. *Chem. and Met. Eng.*, vol. 29, Sept. 10, 1923, pp. 500-502. Reviews industrial problems that may be solved by absorption, including natural gas gasoline manufacture. Includes brief review of the literature of absorption.

BURRELL, G. A. Gasoline from natural gas. *Chem. and Met. Eng.*, vol. 29, Sept. 17, 1923, pp. 544-545. On absorption by charcoal.

CLARK, L. H. Is there a centrifugal solution for your production problem? *Chem. and Met. Eng.*, vol. 29, Sept. 10, 1923, pp. 459-464. Tells how substituting centrifugal force for gravity has improved existing processes, and reviews some of its applications in modern industries, including the clarifying and cleaning of oils, separating emulsions, etc.

MORRELL, J. C., and EGLOFF, GUSTAV. The various methods of petroleum refining. Refiner, vol. 2, Sept., 1923, pp. 5, 7-10, 16, 18, 20, 36. Reviews methods which do not use H₂SO₄ (Sulphuric acid refining was discussed in a previous paper by the authors, in Refiner, July, 1923, p. 5). Includes (1) absorption or colloidal methods, using fuller's earths and clays, silica gel, etc.; (2) solvent refining or refining by selective solubility; (3) distillation with various chemicals and treatment for desulphurization. Gives numerous references to the literature and patents covering various processes.

UNDERWOOD, H. W. Why should you bother about the mechanism of catalysis? Chem. and Met. Eng., vol. 29, Sept. 24, 1923, pp. 584-587. An account of present status of knowledge as to how catalysts work, with especial emphasis on the industrial significance of the subject. Includes mention of application of the principle to petroleum refining.

ANONYMOUS. Some don'ts to be remembered in treating oil. Oil News, vol. 11, Sept. 5, 1923, pp. 25-26. On the fire hazards in and around refineries and precautions to be taken.

UTILIZATION

FIELDNER, A. C., and JONES, G. W. Benzol as a motor fuel. Chem. and Met. Eng., vol. 29, Sept. 17, 1923, p. 543. From Bureau of Mines Reports of Investigations. Comparative engine tests with crude, acid-refined and silica-gel refined motor benzol.

HELDT, P. M. Substitute automotive fuels obtained from lignite and peat. Auto. Ind., vol. 49, Sept. 13, 1923, pp. 536-537. On the possibilities of these two sources of motor fuel in the United States.

PATTERSON, I. W. The uses of asphalt in highway construction. Good Roads, vol. 65, Sept. 5, 1923, pp. 73-79, 81. Abstract of paper before the Canadian Good Roads Association on selection of types and construction and maintenance of surfaces.

RICARDO, H. R. How one British laboratory conducts tests of automotive engines. Auto. Ind., vol. 49, Sept. 13, 1923, pp. 527-531. Condensed from paper before

the British Institution of Automobile Engineers. Enumerates principal weaknesses and sources of loss in modern high-speed engines, describes suitable apparatus for measuring these losses, including standard test engines, and gives results of such tests.

SCHULTZ, A. A. Industrial gas service. Gas Industry, vol. 17, Sept., 1923, pp. 295-297. Discusses types of burners and systems used to obtain correct gas and air ratios for combustion.

SNUYFF, S. Keeping the water out of Holland with oil engine pumps back of the dikes. Oil Engine Power, vol. 1, Oct., 1923, pp. 482-488. Tells of use in the Dutch polder land of modern oil engines, 200 being now in use and the number increasing.

WILLIAMS, A. W. Does fire menace you? Petroleum Age, vol. 12, Sept. 15, 1923, p. 66. On the importance of extinguishers as part of the equipment of every filling station.

ANONYMOUS. Anti-knock gasoline now a commodity of commerce. Chem. and Met. Eng., vol. 29, Sept. 24, 1923, p. 597. Summary of statement by Thomas Midgley before the American Chemical Society on tetra-ethyl lead and gasoline which is now being marketed in Ohio under the name of "ethyl gas," with an apparatus called an "Ethylizer" for adding the compound to the gasoline in proper proportion.

ANONYMOUS. Plant resources for motor fuel. Jour. Franklin Inst., vol. 196, Sept., 1923, pp. 418-419. From International Review of Science and Practice of Agriculture, 1923. "Collects results of study of nine articles that have recently appeared giving data on the practicability of the manufacture of alcohol for motor purposes."

ANONYMOUS. Leviathan now an oil burner. The Lamp, vol. 6, Aug., 1923, pp. 7-8. Facts and figures about the recent conversion to liquid fuel burning of the Leviathan.

STATISTICS

ANONYMOUS. The world's oil bunkering ports. Oil Eng. and Finance, vol. 4, Aug. 25, 1923, pp. 237-244. Gives list of ports, with names of companies handling the products.

RESIDENTIAL SECTION OF AN OIL FIELD CAMP



UNION OIL COMPANY OF CALIFORNIA FIELD FOREMEN'S HOUSES AT SANTA FE SPRINGS

When the Company approved plans for the residences of its field foremen at Santa Fe Springs and other districts, it had in mind structures that would not only be a credit to the communities immediately affected, but would furnish every comfort to its workers. Here we have a few of these comfortable homes; view them and decide for yourself as to their merits. These houses are constructed by and at the expense of the Company, and are furnished certain employees at a nominal rental. To those who have pictured the lot of the field oil worker as one of hardships, living under squalid housing conditions, this picture will prove a pleasant surprise.

HOURS THAT ARE LOST

Time is the one thing that can never be retrieved. One may lose and regain a friend; one may lose and regain money; opportunity once spurned may come again; but the hours that are lost in idleness can never be brought back to be used in gainful pursuits. Most careers are made or marred in the evening hours.

California Oil Statistics—August, 1923

(Figures for Production and Stocks are in barrels of 42 gals.)

DISTRICT—	Barrels Per Month	DAILY AVERAGE		
		Aug., 1923	July, 1923	Aug., 1922
Kern River.....	600,899	19,384	19,499	19,627
McKittrick.....	184,305	5,945	5,988	6,248
Midway-Sunset.....	2,296,565	74,083	73,177	76,079
Elk Hills.....	686,195	22,135	23,715	29,102
Lost Hills-Belridge.....	115,575	3,728	3,778	6,726
Coalinga.....	446,586	14,406	13,211	15,521
Wheeler Ridge.....	13,009	420	282	.....
Watsonville.....	1,783	58	57	61
Santa Maria.....	266,679	8,603	8,363	8,651
Summerland.....	4,516	146	146	150
Ventura-Newhall.....	319,096	10,293	10,632	8,527
Los Angeles-Salt Lake.....	100,906	3,255	3,195	3,399
Whittier.....	52,653	1,698	1,716	1,918
Fullerton.....	359,921	11,610	11,149	11,439
Coyote.....	67,881	2,190	2,456	18,090
Santa Fe Springs.....	9,998,169	322,522	297,830	31,750
Montebello.....	332,268	10,718	10,411	19,319
Richfield.....	508,509	16,404	16,517	21,907
Huntington Beach.....	3,242,053	104,582	110,228	27,430
Long Beach.....	6,659,351	214,818	198,041	76,091
Torrance (Redondo).....	183,086	5,906	4,515	186
TOTAL.....	26,440,005	852,903	814,906	382,221
July.....	25,262,082	814,906	.....	.....
Increase.....	1,177,913	37,997	.....	.....

FIELD, REFINERY, PIPE LINE AND TANK FARM STOCKS OF CRUDE, RESIDUUM AND TOPS

	Aug. 31, 1923	July 31, 1923	Aug. Stock Increases	Aug. 31, 1922
Heavy Crude, heavier than 20° A.P.I., including Residuum.....	43,696,865	41,669,822	2,027,043	39,124,761
Refinable Crude, 20° A.P.I., and lighter.....	29,029,198	27,576,263	1,452,935	15,147,433*
Tops.....	10,397,772	9,409,519	988,253	.....
TOTAL.....	83,123,835	78,655,604	4,468,231	54,272,194

* Includes Tops.

	Aug. 31, 1923	July 31, 1923	Aug. 31, 1922
Total quantity of above products held at refineries.....	21,953,777	20,254,683	9,194,678
Total quantity of above products held in Fields, Pipe Lines and Tank Farms.....	61,170,058	58,400,921	45,077,516
Total Stocks, as above.....	83,123,835	78,655,604	54,272,194

DEVELOPMENT

DISTRICT	New Rigs Up	Active Drilling	Completed	Daily Initial Output	Active Producing	Abandoned
Kern River.....	1	1	.....	.....	2,189	.....
McKittrick.....	.....	3	.....	.....	279	.....
Midway-Sunset.....	8	44	11	1,040	2,130	3
Elk Hills.....	1	9	.....	.....	84	.....
Lost Hills-Belridge.....	1	2	.....	.....	251	.....
Coalinga.....	.....	12	.....	.....	681	2
Wheeler Ridge.....	2	7	2	275	4	.....
Watsonville.....	.....	.....	.....	.....	6	.....
Santa Maria.....	.....	3	.....	.....	327	2
Summerland.....	.....	.....	.....	.....	135	.....
Ventura-Newhall.....	.....	34	1	500	539	2
Los Angeles-Salt Lake.....	.....	.....	.....	.....	635	.....
Whittier.....	.....	.....	.....	.....	175	.....
Fullerton.....	.....	5	.....	.....	384	.....
Coyote.....	.....	4	.....	.....	103	1
Santa Fe Springs.....	16	196	21	64,578	193	3
Montebello.....	.....	7	.....	.....	123	.....
Richfield.....	1	10	1	100	177	.....
Huntington Beach.....	3	96	7	6,197	212	.....
Long Beach.....	11	264	18	45,743	227	2
Torrance (Redondo).....	20	35	.....	.....	28	.....
Compton.....	5	7	.....	.....	.....	.....
Miscellaneous Drilling.....	6	64	.....	.....	.....	1
August.....	75	803	61	118,433	8,882	16
July.....	121	812	95	161,599	8,808	29
Decrease.....	46	9	34	43,166	74**	13
Average for Year 1922.....	115	605	67	43,700	9,410	17
Average for Year 1921.....	90	536	57	15,631	9,425	14
Average for Year 1920.....	77	403	49	14,125	9,299	13
Average for Year 1919.....	58	340	47	9,572	8,774	18
Average for Year 1918.....	50	362	50	10,577	8,210	13

** Increase.

Refined *and* Crude



Teacher: Who was the man who never told a lie?

Pupil: Ah! Who, indeed?

"Mamma," said a little boy, who had been sent to dry a towel before the fire, "is it done when it is brown?"

It is getting so that in order to succeed these days a fellow must keep his nose to the grindstone, and a girl, hers to the powder puff.

Where there is no hope there can be no endeavour.

By agreement shall small things grow, by discord the greatest go to pieces.

Truth lies at the bottom of oil wells. Promoters lie at the top.

To win over a customer is more useful than putting over a sale.

Nothing is so hard for those who abound in riches as to conceive others who can be in want.

Success comes in cans. Failure comes in can'ts.

Knowledge is an accumulation of facts; wisdom is an accumulation of sore spots.

No effort was ever lost. One gains power in everything he attempts with courage.

Results always count, excuses never. That is because results always cost, but excuses are as cheap as the air.

McPherson: (During a heavy thunderstorm) Pit yon candle oot, Mary. Ye shouldna waste guid lightning.

"Why do you object to playing on the public golf course?"

"I shrink from buying balls for people I do not know."

"Tommy, can you tell me why Labor Day comes the first week in September?"

"Because that's the week school begins."

Willie (pouring laboriously over his arithmetic lesson): "Father, I can't find the common divisor."

Father: "For goodness sake, haven't they found that yet? They were looking for it when I went to school."

He had visited America, and had smoked Lucky Strike cigarettes. Returning to London he called on his tobacconist. "I say, old chap, I found in America a deucedly fine cigarette; let me have a package, will you? It's, ah, oh yes, I have it, 'Fortunate Blow'."

At a recent wedding the bridegroom was refused admission to the church, because it was overcrowded; but one of the congregation, seeing him, informed the verger. Some people never can mind their own business.

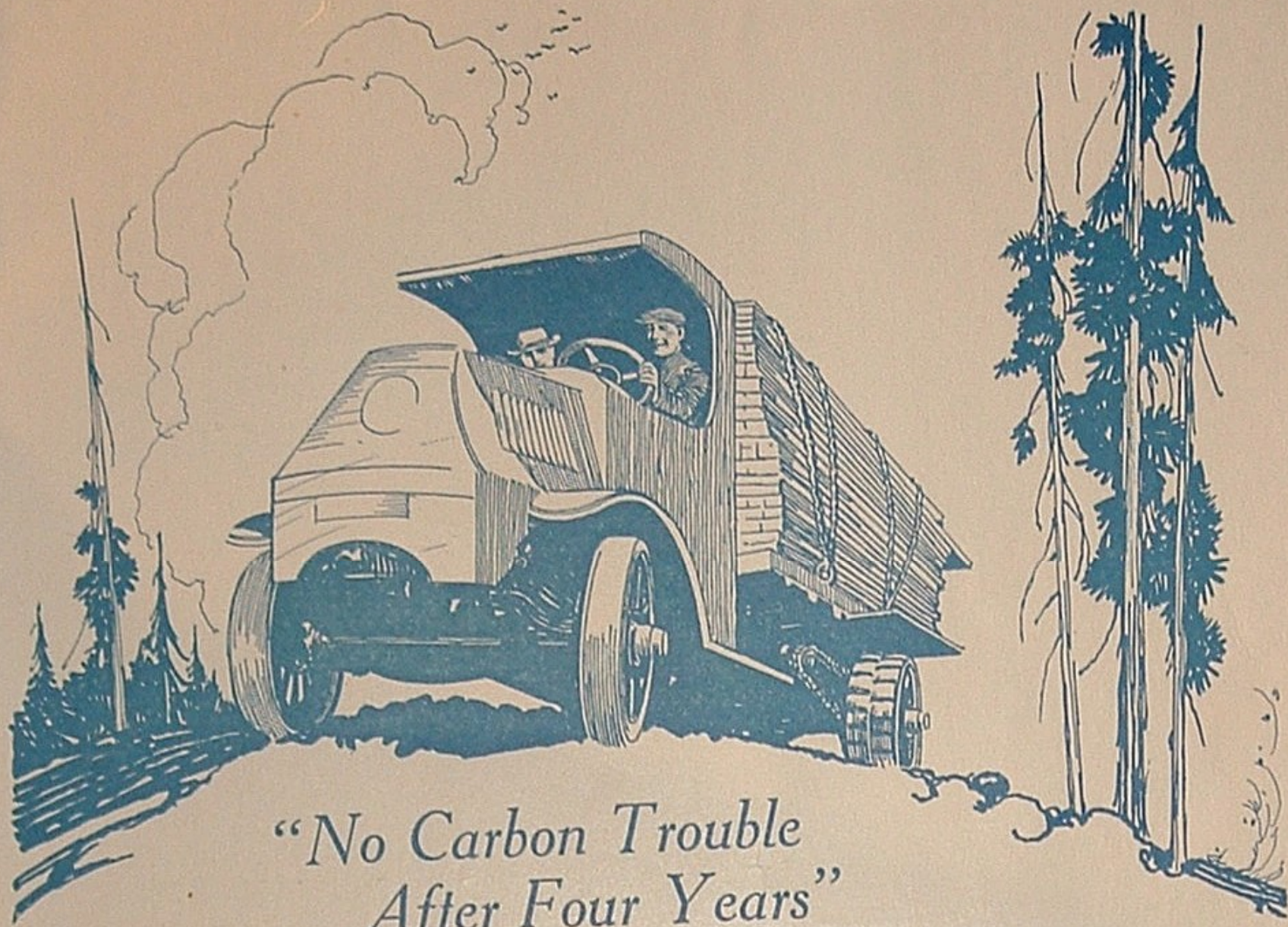
Willie: Do they call Sunday a day of rest?

Mother: Yes, dear.

Willie: Where?

Mr. Jackson: "What you-all tote sech a big watch fo'?"

Mr. Johnson: "'Cause I'se an important man an' my time is valuable."



*"No Carbon Trouble
After Four Years"*

A True Story to Tell

Mr. Alex Ross, Manager of the Albany Lumber Company, Albany, Oregon, recently sent a letter to Mr. C. C. Ireland, Portland, in which the following paragraph was included:

"I cannot help but drop you a few lines. Well, the other day, after four years hauling, we took down our engine in our truck to grind valves and put in new rings. Talk about a nice cylinder and pistons, it would do you good to look at them, but this is what I am getting at. For your information, there was very little carbon and we just soaked a rag in kerosene and wiped it clean and bright as new. We had never used anything else but *Aristo Heavy* in summer and *Medium* in winter. The carbon was just the consistency of soft putty. Remember this truck had hauled something over 14 million feet of lumber without anything being done to it, so it speaks well of your oil. I have been using *Motoreze* in my car but believe me *Aristo* for me after this."

Our customers, you see, tell us experiences with our products which excel anything we would think of claiming for them ourselves. But stories like this are convincing. Tell this one and win more *Aristo* users.

PUT IT ACROSS CLUB



Johnson