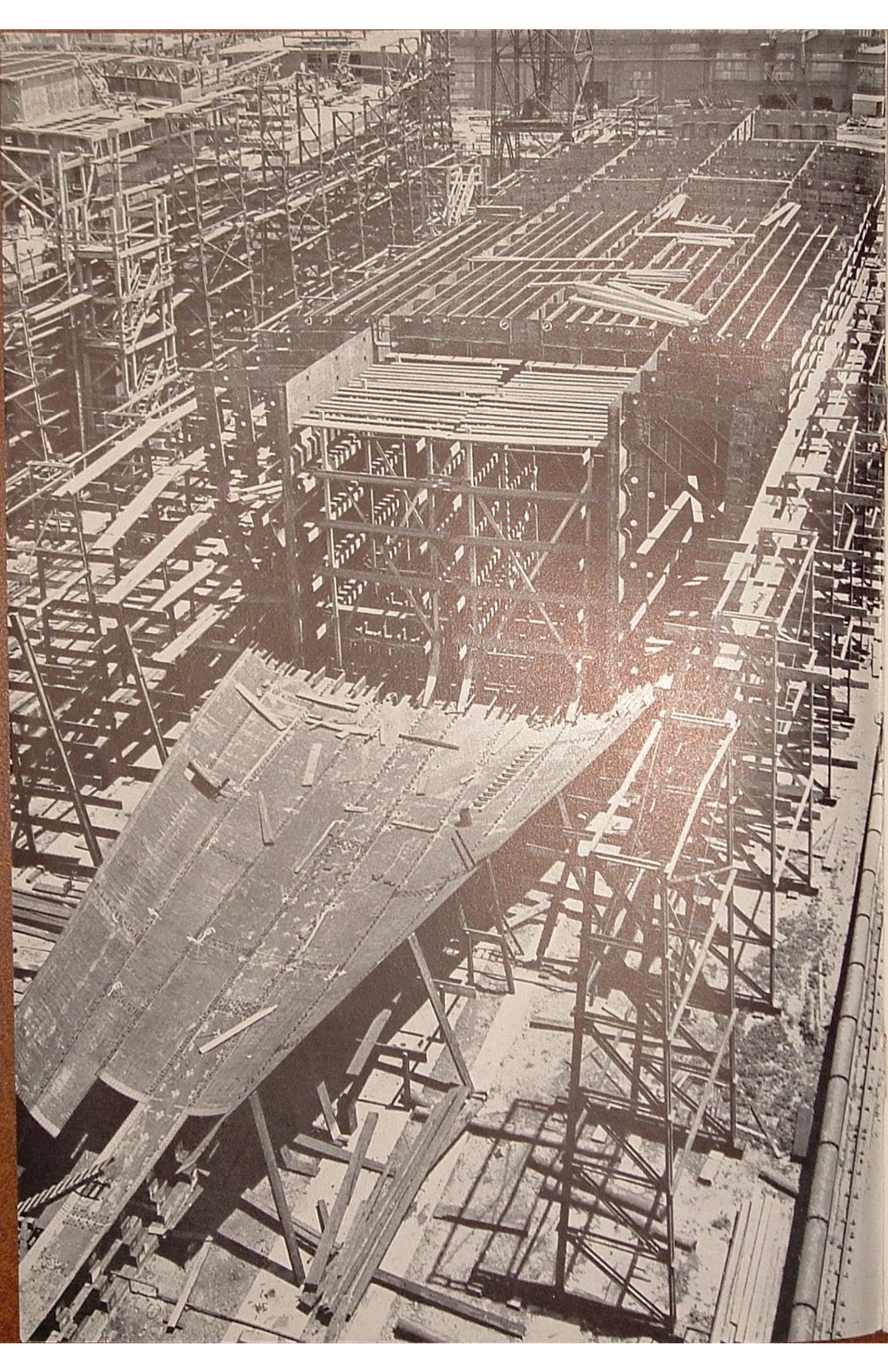


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U N I O N O I L B U L L E T I N

VOLUME TWENTY

FIRST QUARTER, 1939

NUMBER ONE

UNION'S NEW TANKSHIP

By WILLIAM GROUNDWATER
Manager Marine Operations

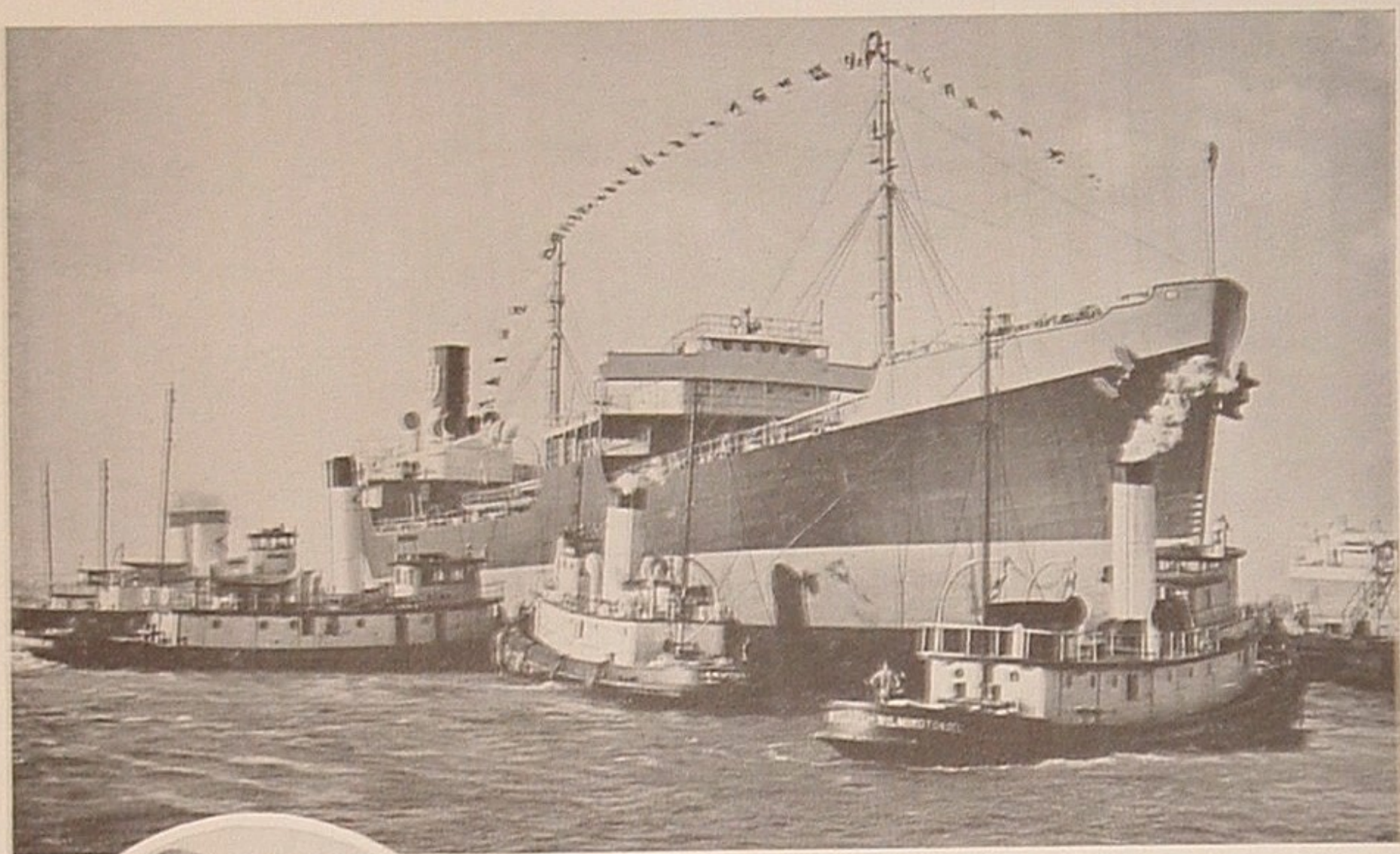
TWO years before the organization of Union Oil Company of California, the firm of Hardison and Stewart made one of the first west coast experiments on the use of oil tankers for the transportation of petroleum and petroleum products. The vessel employed was a wooden-hulled windjammer, christened the "Hardison," and had a bulk capacity of about 6500 barrels. She was only in service a year when she caught fire at Ventura and burned to the water's edge. Despite the unfortunate and early demise of this ship, however, she lasted sufficiently long to demonstrate convincingly the practicability of bulk transportation by sea, and when Union Oil Company came into being in 1890, W. L. Hardison and Lyman Stewart merely awaited a propitious moment to begin the building of a line of tankers, which has since well justified their foresight.

The first tanker to carry Union Oil Com-

pany's house flag into Pacific trade lanes was the *Santa Paula*, a full-rigged schooner. She was completed in 1900, and had a capacity of 8500 barrels.

Next came the *Fullerton* in 1902, a barkentine of approximately 16,000 barrels capacity. She was the last of the old square riggers, and ended her days as a fishing barge off the coast of Redondo Beach.

The era of the steam tanker began in 1903 with the construction of the *Whittier*, capable of carrying 11,000 barrels. She was long the pride of Union Oil Company's fleet, and demonstrated her then prodigious power by steaming to the Hawaiian Islands with the *Fullerton* and the *Santa Paula* in tow. It is interesting to note that during her construction, before the day of the air hammer, every rivet in the huge hull was driven by hand, and it may be realized readily that the business of building ships then was a formidable task.



Union's new tanker L. P. St. Clair, above, as she looked just after launching at Sparrows Point, Maryland.

Left: Mr. and Mrs. L. P. St. Clair. Mr. St. Clair is chairman of the Board and for him the ship was named.



Since that distant time Union Oil Company's tanker line has grown steadily, and many of our ships have added their quota of interesting incident and experience to the lore of the sea. They have served varying terms of usefulness, and then have been assigned to less exacting service, or have been sacrificed to Neptune's inexorable toll. In any case, the story of marine development has been one of constant modernization and replacement, in order to maintain the fleet as an effective transportation system.

One year ago the roster of vessels included 10 tank steamers, and 21 barges, motor boats, etc., having a combined carrying capacity of almost 800,000 barrels. The complete list of tankers, showing capacity, and year of construction is as follows:

<i>Name</i>	<i>Capacity</i>	<i>Constructed</i>
Cathwood	75,000 bbls.	1920
Deroche	75,000 bbls.	1919
La Brea	70,000 bbls.	1916
La Placentia	75,000 bbls.	1921
La Purisima	55,000 bbls.	1921
Los Angeles	70,000 bbls.	1916
Montebello	75,000 bbls.	1921
Santa Maria	85,000 bbls.	1922
Utacarbon	75,000 bbls.	1920
Warwick	45,000 bbls.	1921

Tankers, like all other marine equipment, wear out in time, the principal factors being the exterior exposure to salt water and air and the interior exposure to petroleum vapors either from gasoline or high gravity crude oils as well as salt water when carried as ballast. It therefore becomes necessary to plan a program of replacement when deterioration is such that the structural strength of the vessel is below the Classification requirements.

As the result of this program, plans were developed early in 1938 for the construction of a new modern vessel, and contract was

awarded on March 15, 1938, to the Shipbuilding Division of the Bethlehem Steel Company at Sparrows Point, Maryland. The keel was laid on April 19, 1938, and Mr. A. O. Pegg, the Company's Superintending Engineer, supervised the construction.

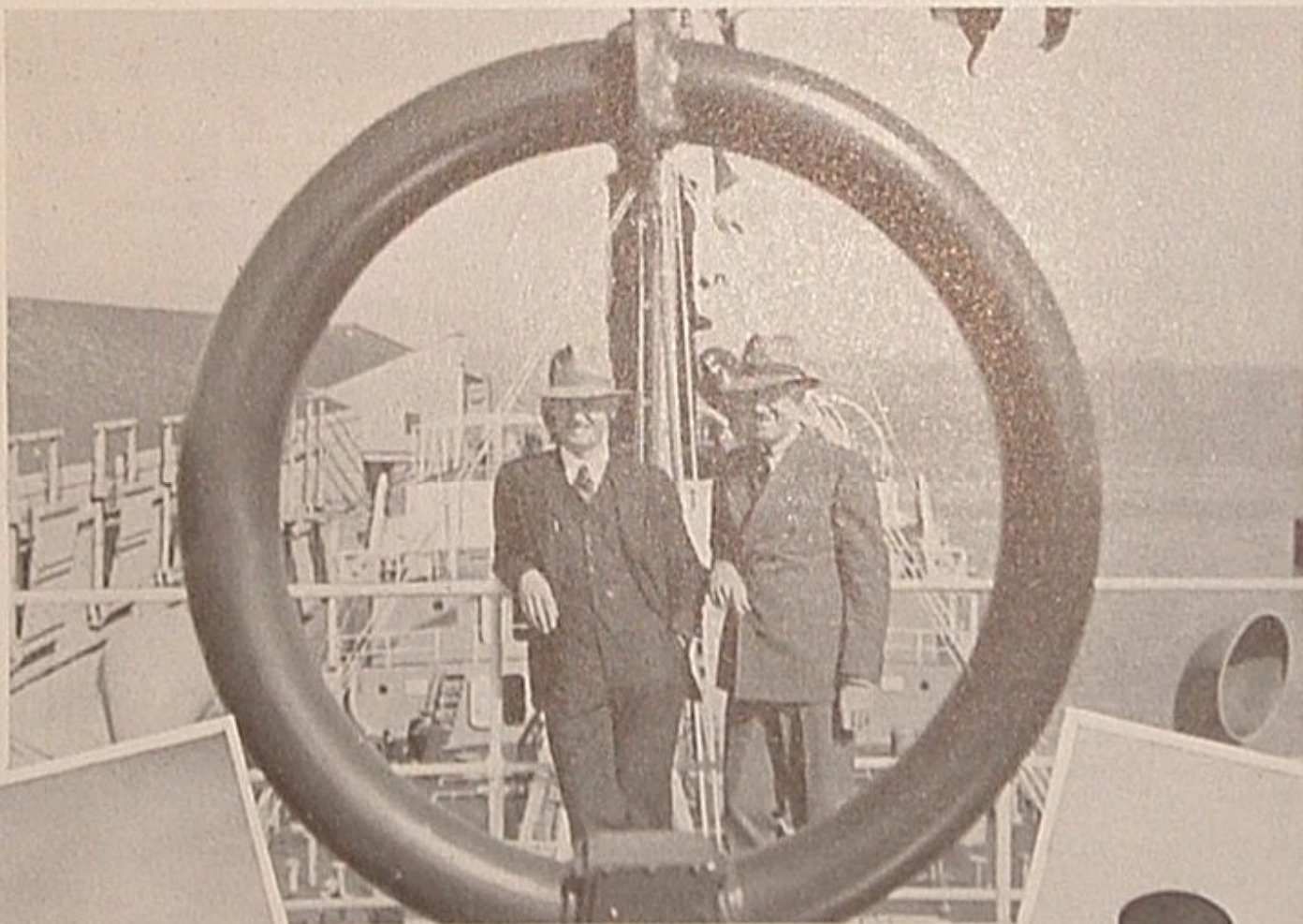
The vessel was christened and launched on December 10, 1938, and was named the "L. P. ST. CLAIR" in honor of the Chairman of the Company's Board of Directors. The ship was christened by Mrs. L. P. St. Clair at an impressive ceremony at Sparrows Point Plant. The affair was attended by Mr. and Mrs. L. P. St. Clair, Mr. A. O. Pegg, and the writer. The ceremony was witnessed by Bethlehem officials, eastern friends, press representatives and a large number of local Baltimore people.

Following the launching, the ship was obliged to remain at the plant while the superstructure and other essential features were completed, which was followed by a series of trial trips on February 14th and 15th. Delivery of the vessel was accomplished on Feb-

ruary 28, and on March 1st, she began her active career with a select crew under the able command of Captain Hans Halvorsen. She loaded up her first cargo at Bayonne, New Jersey, and made her maiden voyage successfully to Los Angeles Harbor, arriving on the morning of March 24th.

During her first day at Los Angeles Harbor, company executives, guests and members of the press inspected the ship from stem to stern, and found much to interest them in the appointments of the new vessel. The visitors were especially intrigued by the ultra-modern equipment, and fine, spacious quarters. At the conclusion of the inspection tour, Mr. L. P. St. Clair, following an old tradition of the sea, presented a handsomely framed portrait of himself to the master—Captain Halvorsen, and Mrs. St. Clair was later presented the enmeshed remnants of the champagne bottle which she had used to christen the ship at its launching in December.

The following day, 8000 employees and



Framed in the radio direction finder antenna loop are two of the San Francisco visitors; Roy Linden, Central Division manager, and S. D. Herkner, Central Division sales manager.



At left and right may be seen fore and aft sections of ship.





Above: L. P. St. Clair presents portrait to Captain Halvorsen in conformity with marine custom.



Above: Vice-presidents A. C. Rubel and W. L. Stewart, Jr., confer in the mess room.
Right: Reese H. Taylor, president; P. M. Gregg, vice-president; and executives sample cuisine.



friends swarmed aboard the new craft, and were permitted to inspect it. They clambered up and down ladders, inspected the engine room, and ferreted out all the details of this impressive new addition to the fleet. Similar opportunity was provided for employees and friends at San Francisco and Seattle, after which the *L. P. St. Clair* settled down seriously to the business of transporting petroleum products.

The new tanker constitutes a valuable addi-

tion to the existing fleet, and represents the last word in marine development. She is the largest vessel in the group, having a carrying capacity of 103,000 barrels and a dead weight of 13,000 tons. In her equipment is every conceivable device that might contribute to the safety of the crew, and the preservation of the cargo, and every scientific aid to efficient operation and navigation. In the design, particular consideration was given to the living accommodations, individual cabins being pro-

vided for the officers, and a total of 16 rooms constituting the quarters of the remaining personnel.

A special ventilating system provides fifteen changes of air every hour in the living quarters and mess rooms, and a unique distillation apparatus manufactures drinking water from the brine of the ocean, when necessary, and serves it cool to the crew. In addition to the quarters there are smoking room, hospital, laundry, cold storage facilities, and ample space for storage.

For carrying the oil cargo, there are 24 tanks, which may be completely segregated in order that a variety of products may be transported at the same time, and the pumping system has a capacity of approximately 9000 barrels an hour so that the whole cargo can be loaded or unloaded in about 12 hours. It is interesting to note also that this vessel, like others of Union Oil Company's fleet, utilizes exhaust gases, rich in carbon dioxide, to form a blanket over the commodities in the tanks, thus largely eliminating fire hazard, and at the same time reducing evaporation losses to a minimum.

Among the safety features incorporated on this ship are three independent radio commu-

nication units, consisting of one emergency set, one intermediate wave set, and a short wave set with a maximum range of two thousand miles, an automatic SOS receiver, and a radio direction finder.

For holding to a true course in any kind of weather, the ship carries, in addition to the standard compass, a complete gyro-compass assembly and a gyro-pilot or robot steering device. A depth recorder, an electric sounding machine, and a three-day course recorder are other safeguards against human frailty. The ship was built to the rigid specifications of the highest class of the American Bureau of Shipping, and conforms to the latest regulations of the Bureau of Marine Inspection and Navigation.

The vessel is propelled by Bethlehem-built steam turbines, developing 3500 shaft horse power, geared to a single screw, and steam is developed by two Foster Wheeler steam generators. She is 463 feet long, and 64 feet wide, and is of the "three island" type with raised forecastle, bridge and poopdeck. She has a raked stem, cruiser stern, and a fore-and-aft "catwalk," connecting forecastle, bridge and poopdeck.

The ship's bunker tanks are located between



More than 8,000 visitors took advantage of the opportunity to inspect the L. P. St. Clair during her brief stay at Los Angeles Harbor. Some of them, *above*, are shown on the amidships sections, where pilot-house, bridge, chart room, and captain's quarters are located.



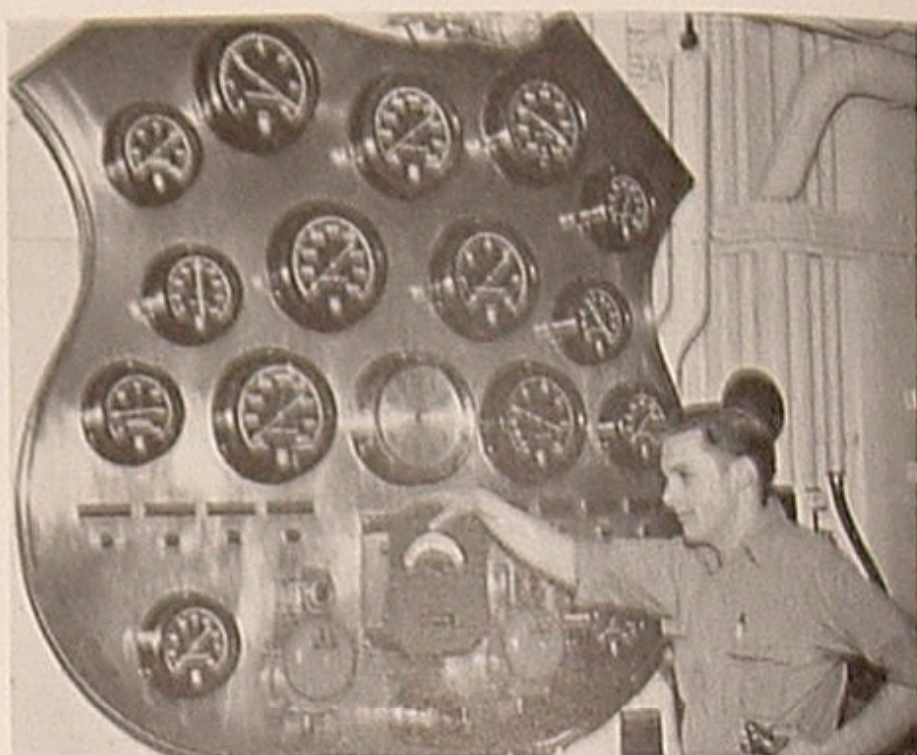
Captain Dalhoff, *above center*, explains the steering mechanism to visitors.



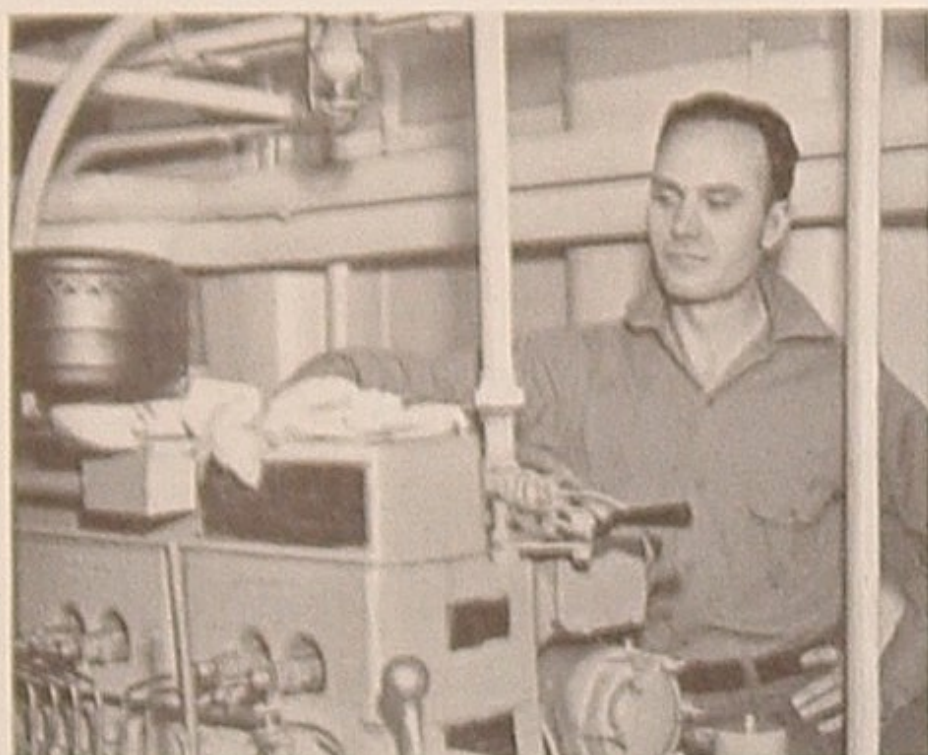
Right: Inspecting the ship was an enlightening experience for many of the visitors who had never before boarded a modern tanker.



Captain Hans Halvorsen, Master of the L. P. St. Clair.



2nd Assistant Engineer J. R. Shafer at engine-room instrument panel.



Above: Oiler Danzel Carpenter polishes an auxiliary engine.

Below: Lindley Winsor, Mackay Radio special technician.



Below: J. E. Gillen, 3rd Mate, poses at the pilot-house controls.





Above: Gauging the ship's first cargo.



Above: L. L. Carroll, second mate, demonstrates operation of one of the valves.

Right: Chief Officer L. L. Lishman, opens one of the gate valves into the oil tanks.



Below: Ship builder's test engineers who made the trial voyage to Los Angeles.

Below: Members of the crew enjoy the comfortable mess-room and good food provided.



Below: Chief Steward Velarde, at galley range, and members of his staff.



Below: Another view of crew members and the spick-and-span mess room.



the after cargo tanks and the engine room, and have a capacity of 5200 barrels. There is also 10,000 cu. ft. of dry cargo space in the forehold, which is located forward of the cargo tanks, so that the ship can carry packages and barrel commodities in addition to bulk cargo. A fore deep tank in the forward end of the vessel can be used for additional bunkers or cargo in the amount of 3850 barrels, and the tank capacity for fresh water amounts to 193 tons, including distilled water for the boilers.

The pumping arrangement permits the handling of three different commodities at one time, with a combined capacity, as already indicated, of 9000 barrels an hour, and can take care of any liquid petroleum cargo from gasoline to fuel oil. The power equipment is of the latest type, and makes the *L. P. St. Clair* one of the most efficient tankers afloat.

The living quarters for both officers and crew are constructed of fire-resisting material, and the furnishings are of art metal in ap-

propriate design. Each deck officer has his own room located amidships, and so arranged as to provide accessibility to the navigating bridge without going outside during heavy weather. In fact, the vessel in its entirety has been constructed with the specific idea of eliminating every non-essential motion, and developing the maximum of efficiency.

With the addition of the *L. P. St. Clair* to the existing fleet, Union Oil Company maintains the high standard of equipment that is necessary to carry out expeditiously and adequately the large bulk movements of petroleum and its products that have become an indispensable part of oil operation. Manned by a competent crew, the new vessel is already busily engaged in coastwise shipments, and very soon, as she is absorbed into the schedule of operations, the glamor of newness will disappear, and the *L. P. St. Clair* will be just another ship in the business of transporting oil for Union Oil Company.



CANADA'S CARIBOO TRAIL

THE long projected International Pacific Highway stretching from Buenos Aires in the Republic of Argentina to Fairbanks, Alaska, is slowly becoming a reality, and in the sections that have already been completed, none presents a more alluring prospect to the motorist than the highway that cuts its way from Vancouver, British Columbia, deep into the north of Canada's most westerly province. The Cariboo Road, as it is known, offers an opportunity for which many motorists are searching, to get completely away from every suggestion of cosmopolitan city life, and rest and relax in a virgin country, free from the noise and ballyhoo of so-called civilization. Rich with historical significance, this 840 mile stretch from Vancouver to Hazelton will some day be extended another 450 miles to the Alaskan border to meet the American highway from the north, and the dream of a century will be realized.

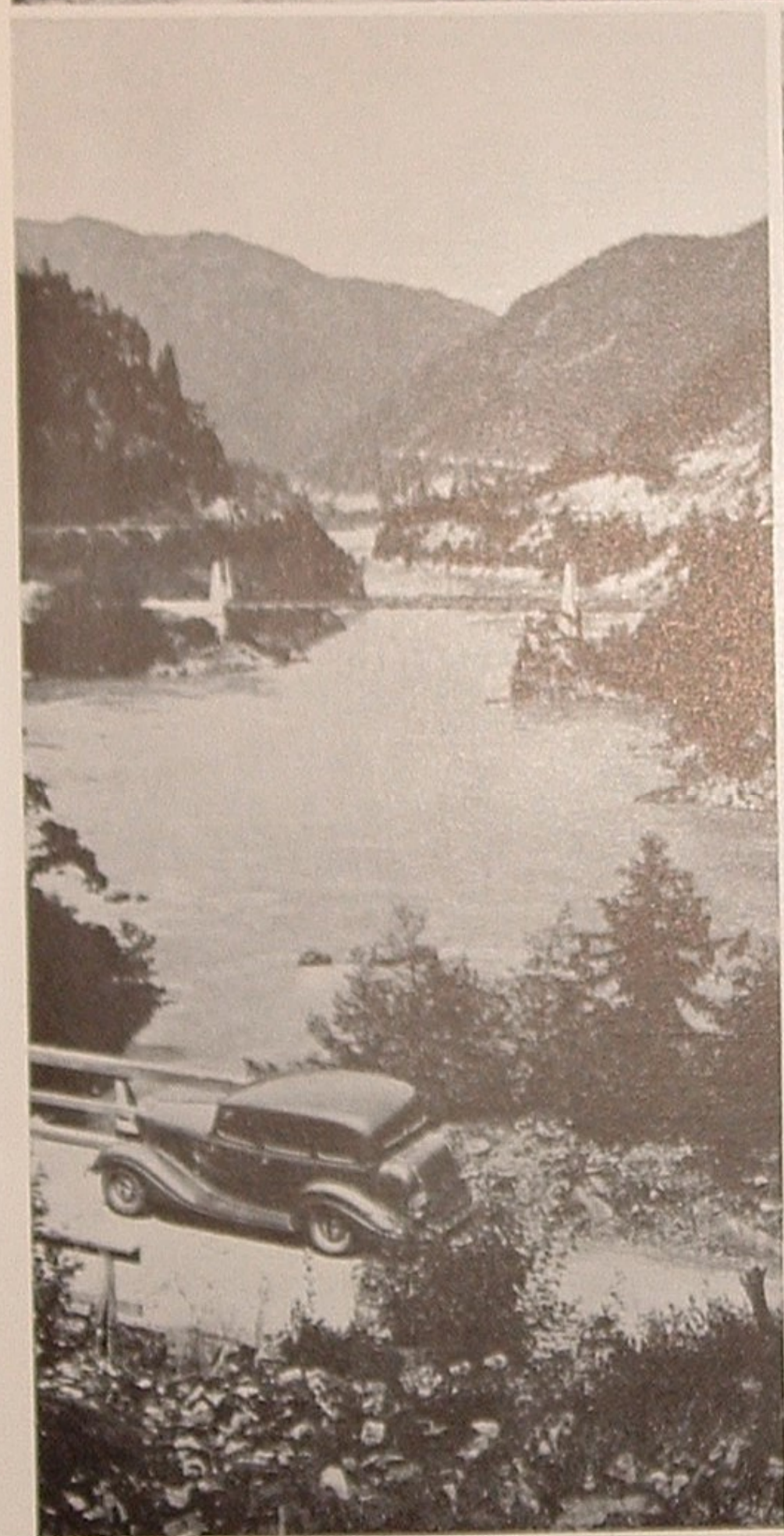
Back in 1858, when the excitement of California's gold rush had subsided, word of a gold strike in New Caledonia turned the tide of adventure to the northwest. In all manner of seagoing craft, and by every known type of transportation convenience, hordes of min-

ers surged into the new land to search the bars of the Fraser River for the precious metal. In far-off London, Queen Victoria decreed that the affairs of the Province must be conducted in a manner conforming to British law, and New Caledonia was by Royal proclamation renamed British Columbia.

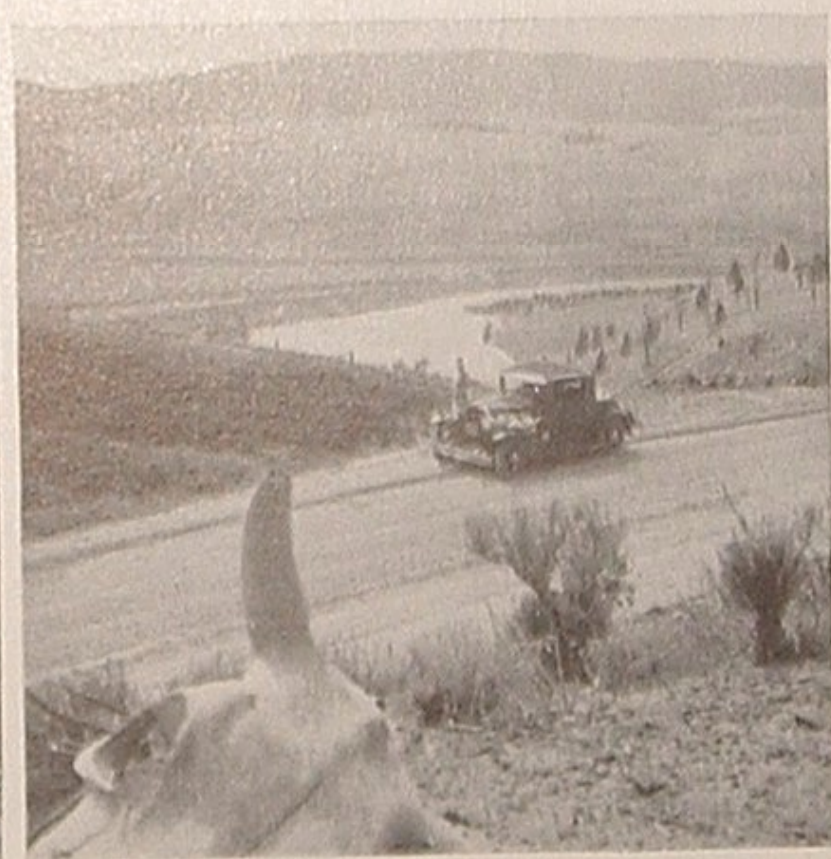
The hillside city of New Westminster, through which Americans pass when northbound to Vancouver, sprang into being during this invasion, and became the capital of British Columbia. Then, following the mining expeditions, came a corps of Royal Engineers to build that epic of engineering—the Cariboo Road. The trail was blazed at the instigation of Western Union as part of a great overland telegraph project, which was designed to connect the United States with Europe, via British Columbia, the Yukon Territory, Alaska and Siberia. The scheme had cost three million dollars when word of the successful laying of an Atlantic cable caused its abandonment. Large work parties and exploratory groups, however, had gone into the northern part of British Columbia, Alaska, and Siberia. Materials had been transported, and lines had been built, so that despite the fact that the



At left is Hudson's Bay Mountain, near Hazelton, B. C., which is the present terminus of the long-sought Alaska Highway. The road shown in foreground is a more northerly portion of the Cariboo Trail. Here the trail narrows but is still easily traversed.



Above: In the territory originally opened up by American miners in search of gold, the Cariboo Road looks like this and is well cared for by the British Columbia government.



Above: A typical section of the Cariboo Road. Left: The Alexandria Bridge in spectacular Fraser Canyon. This bridge, a part of the Cariboo Highway, is a duplicate of the original span built by Royal Engineers in 1865 when the Cariboo project was first started.

telegraph project was a failure, it was effective in establishing the possibilities of the northern areas, and in building the Cariboo Road.

Today as the State Departments of Canada and the United States review plans for completion of Pacific Highway into Alaska, the Cariboo Road assumes a new importance. Appropriately called the "Great North Road," it constitutes the completed section of a project that, it is estimated, will eventually cost \$25,000,000.

Meantime, the Cariboo Road is an inviting trail for those who seek the quiet and stark reality of unsullied nature. Just east of Vancouver the historic highway makes its first impression on the traveler. From the rolling cultivated fields of the typically English Fraser Valley, it plunges swiftly into the mountain fastnesses of the Fraser Canyon. From Yale, a quiet village that in the sixties was a roaring, roistering city of thousands, the highway follows the contour of rugged canyons, sometimes high above, and again close to the edge of the swirling river. Paved now, and safe for modern traffic, each mile in this section is an exhilarating experience. Picturesque log lodging houses conjure memories of the days when the Concord Coach was the superlative in transportation.

Beyond the Canyon section in the great Cariboo interior plateau, the country is a land of great unfenced ranges, and roads are few. British Columbia is larger than Arizona and Texas together, and its entire population of less than a million people is mostly concentrated around the cities of Vancouver and Victoria. In the northwest area there are practically no roads, and there can be no question that as this vast country is opened

up to industry, the Province of British Columbia will be immensely enriched.

Basically, the country is much the same today as it was when the Royal Engineers first laid the road to facilitate American travel. The road through the Fraser Canyon is still as exciting as ever, rising and falling tortuously between jagged walls above foam-flecked rapids, and past Hell's Gate where the angry Fraser almost turns on itself.

Yesterday it echoed to the rumble of twelve and sixteen horse freight and express wagons, to the plodding of pack-laden mules and their gold-seeking masters. Today Canada's "sky-line province," with its stilted jackpines, its sagebrush covered slopes, and its curiously formed, colorful sandstone cliffs is still unique, and is strangely at variance with the nearby cosmopolitan city of Vancouver. While the Dominion's "third city" possesses the charm and refinement of old England, bonny Scotland and modern North America, its backyard playground, the Cariboo, is rugged and western—the so-called "last frontier" popularized by the dime pulps.

The Cariboo Road ends just beyond Hazelton at Kispiox—a little hamlet over-run with weirdly grotesque totem poles. Here, in the near future, Canadian and American highway engineers will start construction of the long promised Alaska Highway—still in the drawing board stage, and still the subject of much discussion in the legislative halls at Victoria, Ottawa and Washington, D. C. Tomorrow this drawing board highway may become the greatest international artery in the world, firmly welding the destinies of Canada and the United States on the Pacific by means of a winding ribbon of concrete.

EARLY UNION STOCK REAPS RICH REWARD

How twenty-five shares of the original Union Oil Company stock grew into a fortune estimated to be \$100,000 was revealed in Superior Court last February during a probate investigation of the estate of Mrs. Kate A. Williams, Pasadena eccentric.

Believed to be destitute, Mrs. Williams had been employed by many Pasadena people. From her meager earnings she managed to buy food and clothing for 22 years. Meanwhile, it is alleged, the Union stock, bequeathed to her in 1907 by J. Q. A. Hubbard of Boston, Mass., had grown to 660 shares and had produced many thousands of dollars in revenue which her bank had reinvested for her. At one time, according to a report of the investigation, she drew out nearly \$50,000. This money was apparently given to someone in the East, lending weight to the theory that she had a daughter in Boston.

Although the fantastic tale is not yet completely unfolded, it is believed that Mrs. Williams, age 80 when she died, was once a domestic servant in the Hubbard household. No record of her marital status was made public during early stages of the investigation.



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VOLUME TWENTY

FIRST QUARTER, 1939

BULLETIN No. 1

Tankers to the Rescue

IT TAKES a pretty exclusive shipwreck to avoid the world's tankship fleet. These ubiquitous travelers on and off the shipping lanes of the Seven Seas usually are nearest to whatever decides to happen.

Since approximately every third vessel sailing the seas today is a tanker, it is quite simple to understand how a tankship was nearest to the wreck of the Bermuda-bound plane, "Cavalier." A few hours of top-speed sailing and a bit of expert navigation, plus skillful sailing by the crew, brought rescue to the "Cavalier's" survivors and resulted in another commendable entry in the log which ultimately will become the history of tankships.

Scarcely a week passes but a tankship rescues somebody or something somewhere on the globe. Not infrequently a tanker stands by a temporarily disabled ship, pumping oil overboard to transform breaking waves into comparably safe rollers. Low-lying, seaworthy craft themselves, with reasonable speed for working vessels, they ride out the storms and bring help to ships in distress.

The normal business of the tankship, however, is to transport petroleum products economically. Consequently, landlubbers have the tankers to thank not only for rescuing friends and relatives, but for making it possible for the petroleum industry to sell motor fuels and lubricants so cheaply at the corner service station.

There are approximately 2,000 vessels in the world's tankship fleet. American and British flags fly from the greater number, with Norway's emblem third. The fleet aggregates more than 10,000,000 tons, and was built at a cost of better than \$100 a ton. Some of the new high-speed tankers cost millions.

The fleet has grown rapidly since 1914, when it numbered only 320 craft. Some 500 tankships now fly the American flag, as compared with less than 50 in 1914. They represent a substantial investment by American oil companies. About 600 fly the British flag, while about 300 are under Norwegian register. The Netherlands has more than 100, but of all the other countries Italy alone approaches that number.

American tankships constitute better than 25 per cent of the American merchant marine, and their cargoes comprise about one-third of all American water-borne tonnage. From one to three of the vessels using the Panama Canal daily are tankers. Tankship traffic is especially heavy along the Atlantic and Pacific seaboards, where tankships bring crude oil to refineries, and leave with cargoes of refined products destined for many markets.

Thanks for the Books

The S O S call sounded in a recent issue of the Bulletin for books to lighten the off-duty hours of the sea-going personnel of Union Oil Company, brought a hearty response from our readers. Many books were just dropped into the Bulletin office, without any indication whence they came, so in behalf of the marine department we are taking this opportunity to thank the donors for their generosity, and to assure them once more that they have taken part in a very worthy project. Poets may rhyme the beauty and allure of the sea, but we can imagine that after two or three hundred trips over the same route, the sailor is ready for some other kind of allure. The books and magazines will furnish welcome education and diversion for which we are sure they will be genuinely grateful.



Sure-footed little cable cars like the one above have served San Franciscans for more than half a century. *In circle* are R. A. Couey, assistant general manager of the California Street Cable Railroad Company, and James W. Harris, who joined the company sixty years ago and is today its active head executive. They are comparing a present-day cable grip with an early type.

SAN FRANCISCO'S CABLE CAR SYSTEM

WHEN San Francisco opened its extravagant and colorful Golden Gate International Exposition last February, loyal citizens of the robust Bay City donned all manner of early western regalia and revived, for a few fleeting hours, the San Francisco of yesteryear. In strange contrast to the mighty and modern Bay and Golden Gate Bridges, the majestic splendor of the Exposition, with its multi-colored illumination, streamlined buildings and amazing scientific exhibits, were the quaint relics of days long gone. To marvel at the change wrought by passing years was



not solely the prerogative of the naive. At first sight, San Francisco's bridges are breathtaking, and hardly less awesome is man-made Treasure Island, which was literally scooped up from the bottom of the bay.

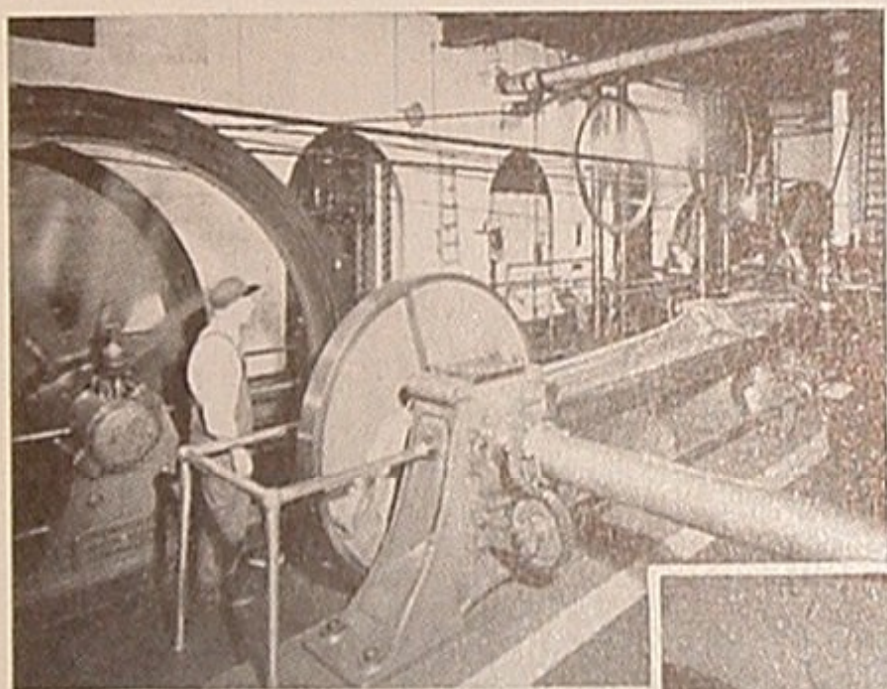
Perhaps, sixty-five years ago, Andrew J. Halliday and a small group of associates experienced the same feeling of awe as they

watched the first cable car creep slowly up Clay Street hill. Changed only in details and not outmoded is San Francisco's incongruous but effective cable car system which grew to maturity as a result of that successful trip in 1874. Because no other transportation system could traverse the hilly terrain of the city's metropolitan area so surely and safely, Andrew Halliday's little cable car has become a component part of San Francisco. Visitors are invariably amused at the quaint cars and their first ride is a novel experience. They soon learn, however, to appreciate the very real service these units perform.

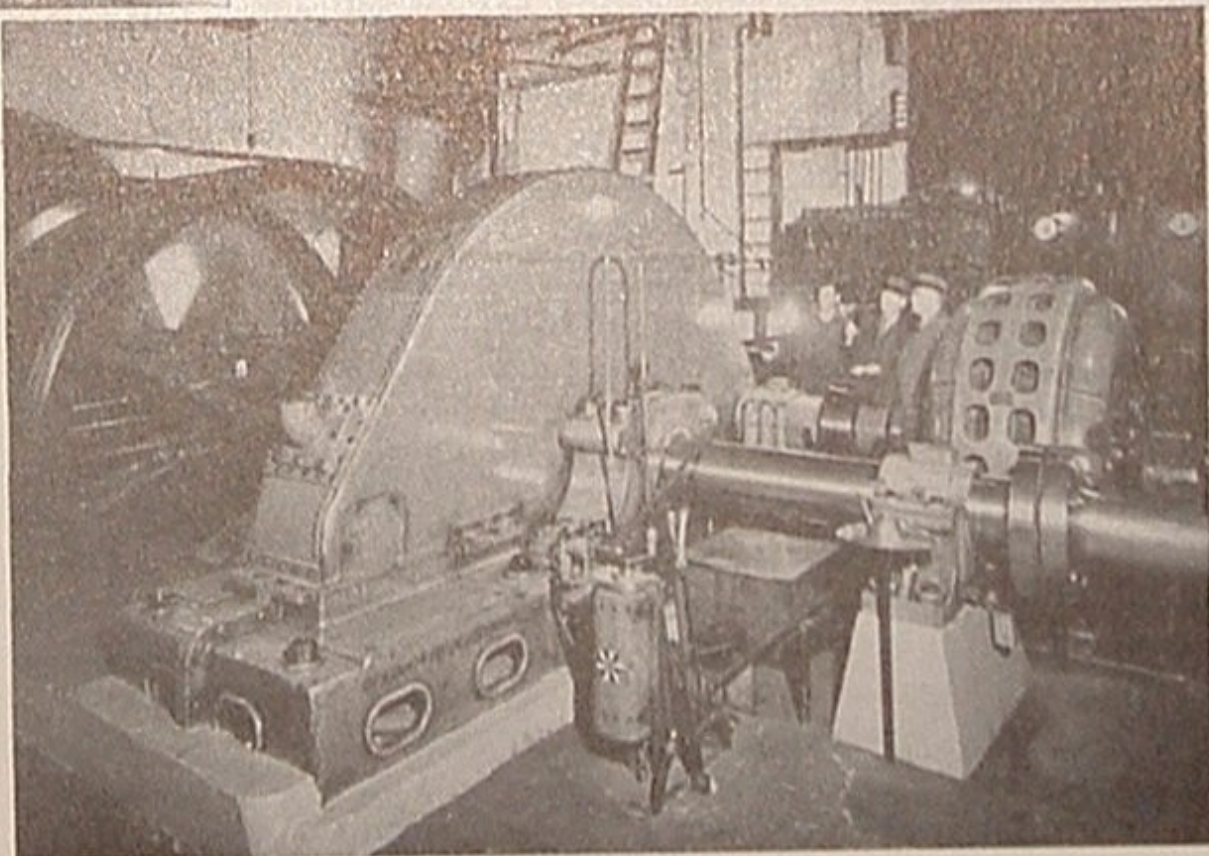
The first cable line, as we have already mentioned, scaled the Clay Street hill. Four years later, on February 15, 1878, the California Street Cable Railroad ran its first car over the California Street route from Kearney to Fillmore Streets. A year later this line was extended from Fillmore to Central (now called Presidio Avenue). Another extension to the California Street line was made on June 27, 1891, when it was lengthened to reach Drumm Street, its present eastern ter-

minus. The Hyde Street line, also owned and operated by the California Street Cable Railroad Company, was put into service in 1891. It differs from the California line in that it has three curves. The longest cable extends from Hyde to Presidio and return. It measures 18,750 feet in length. Reputedly the steepest grade traversed by any cable car in the world is on the Hyde Street line between Bay and Lombard, where the tiny cars clamber up a breath-taking 31 per cent grade.

The California Street Cable Railroad Company, which also operates the Hyde Street line, first located its offices and barns at California and Larkin Streets, but, in 1891 they were moved to California and Hyde, their present location. Mr. James W. Harris, president of the organization for the past eighteen years, is now the only living man who was with the Company in the early days when the cables were first laid. He joined the pioneering group on April 1, 1879, just one year after Halliday's initial success encouraged further development. The cable cars which today carry thousands of people up and down the city's hills were originally designed by Mr. Harris, as were the patented grips which hold them to the cables. Today Harris is ably assisted in management of the Company by R. A. Couey, assistant general manager and superintendent, L. K. Wells, secretary, and John R. Steel, master mechanic. In the capable hands of these men, the unique cable cars continue to be of inestimable service to the city's multitude—and, sturdily resisting the onslaught of time, continue to supply color to glamorous, cosmopolitan San Francisco.



Above: This is one side of the cable railway engine room, showing a part of the Hyde Street cable and winding mechanism.



Right: Another view of the engine room which shows one of the huge motors used and also, in foreground, a gear reduction case. The cables are lubricated with Union Red Line cut back cable lubricant.

WAXED PACKAGES FOR MILK

EVER since cow's milk was first recognized as a nourishing human food, it has been the subject of constant study and research. In 1856 Louis Pasteur, the great French chemist, began his fermentation experiments, and shortly thereafter was able to convince the world that heat could be employed to destroy pathogenic bacteria in milk, thus not only permitting the consumer to keep the health-giving fluid for a much longer time than formerly, but in addition largely eliminating the possibility of transferring disease through its agency.

Long after that discovery, however, the distribution of milk was in general far from being the hygienic business it is today. For many years it was carried almost directly from the cow to the consumer with very little intermediate treatment, excepting that it was first allowed to stand in wide, flat, exposed pans until the cream had separated of its own volition. Then came Dr. De Laval's invention of the centrifugal cream separator, and dairying blossomed into a business. A new interest was excited in the handling and distribution of this almost universal commodity, resulting six years later in the development of the first milk bottle by Dr. Henry D. Thatcher at Potsdam, New York. This was shortly followed by the invention of an automatic bottle filler and capper.

In 1890, two significant steps were made in the progress of the milk industry. Greater protection was provided to the consumer by the introduction of tuberculin tests of dairy herds, and the perfection of a simple milk fat test by Dr. S. M. Babcock. By 1895 pasteurizing machines were an actuality, and dairies were being conducted on a strictly hygienic and much more efficient basis.

In the interim there have been many improvements in filling and capping devices. The first automatic rotary milk filler was used in 1911, and the first tank trucks began deliveries three years later. Refrigerated cars entered the picture in 1924, and every consumer is familiar with the comparatively recent studies of vitamins, their relation to maintenance and growth, and the methods employed to increase the Vitamin D content of milk.

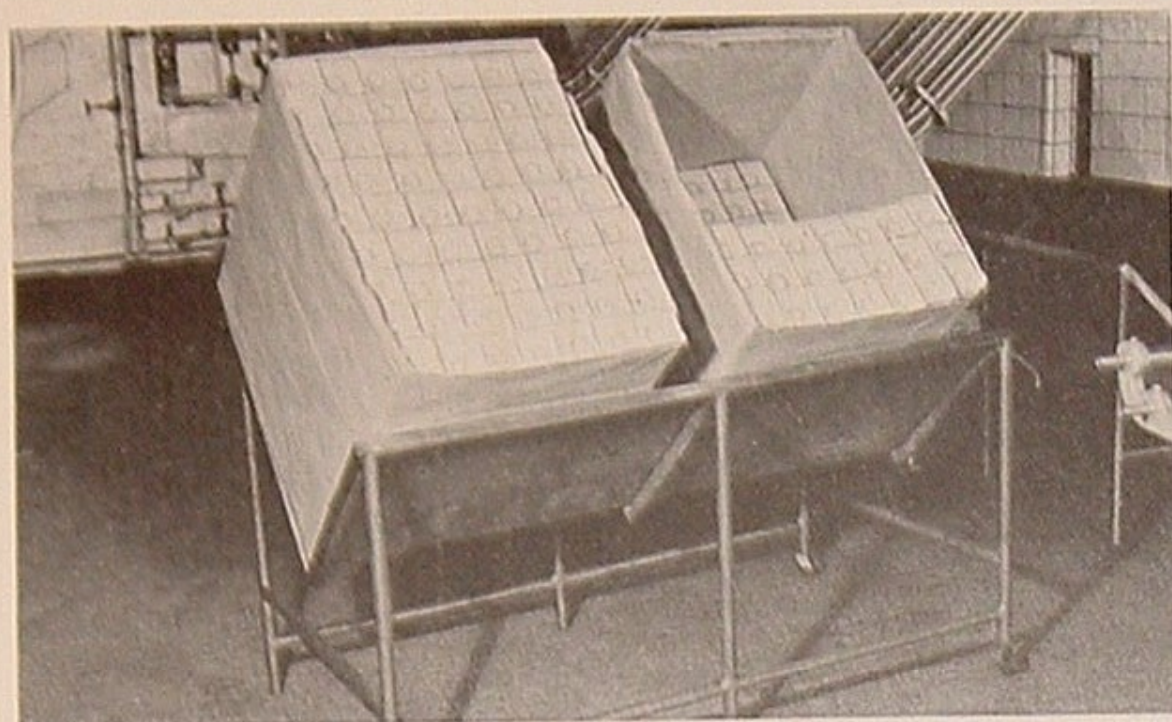
All of these improvements in the preparation of milk for human consumption, and the manner of handling before and during dis-

tribution, indicate the continuous experimentation which has been devoted to the entire industry, in order to keep abreast of pathological development. It has been the constant aim of the industry to present this dietary essential to the consumer in its most effective form, first treating it in such a manner as to preserve to the maximum its nutritional qualities, and at the same time eliminate or render inactive those elements which tend to cause fermentation and so injure stability and palatability.

The use of bottles for the distribution of milk has prevailed for many years, and it has many desirable features, but in the past decade there has been a definite tendency to swing away from glass containers, and to adopt paper packages. All of the milk companies, apparently, are not yet agreed that it is the desirable thing to do, but the movement is growing, nevertheless, and the development presents an interesting opportunity for a discussion of the paper container, and what it might be expected to accomplish in the way of economies and improvements.

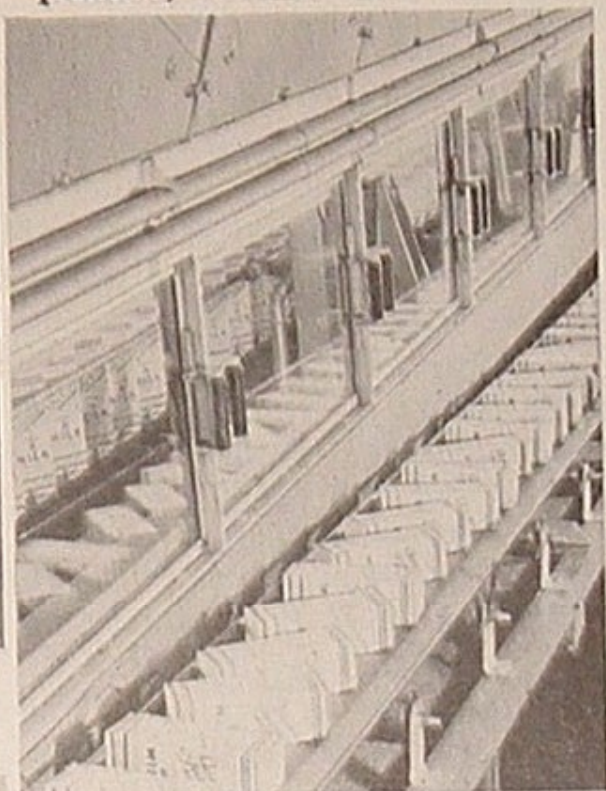
It would seem in the beginning to have a psychological value in the fact that it eliminates refilling. In spite of the elaborate precautions that are taken by users of the glass bottles to insure absolute cleanliness in the refill containers, there can obviously be no more certain way than to destroy each package when it is empty. It would seem, also, that stout boosters might be found for the new package among those women who have cut their fingers on a piece of glass during the washing process, boys who have trod on a broken bottle during the barefoot season, and motorists who have had the disheartening experience of driving a new tire over a piece of jagged glass.

These, however, are merely incidental considerations. One that is more important to the dairy is the economy in storage space. One company points out that its filled paper containers occupy only a third of the space necessary for the same quantity of fluid in bottles. Before filling, 528 collapsed paper quart containers take the place of twelve quart bottles, or in larger figures, a quarter of a million collapsed packages can be stored in a space that would only hold 6000 bottles in crates. In addition, of course, the use of paper con-

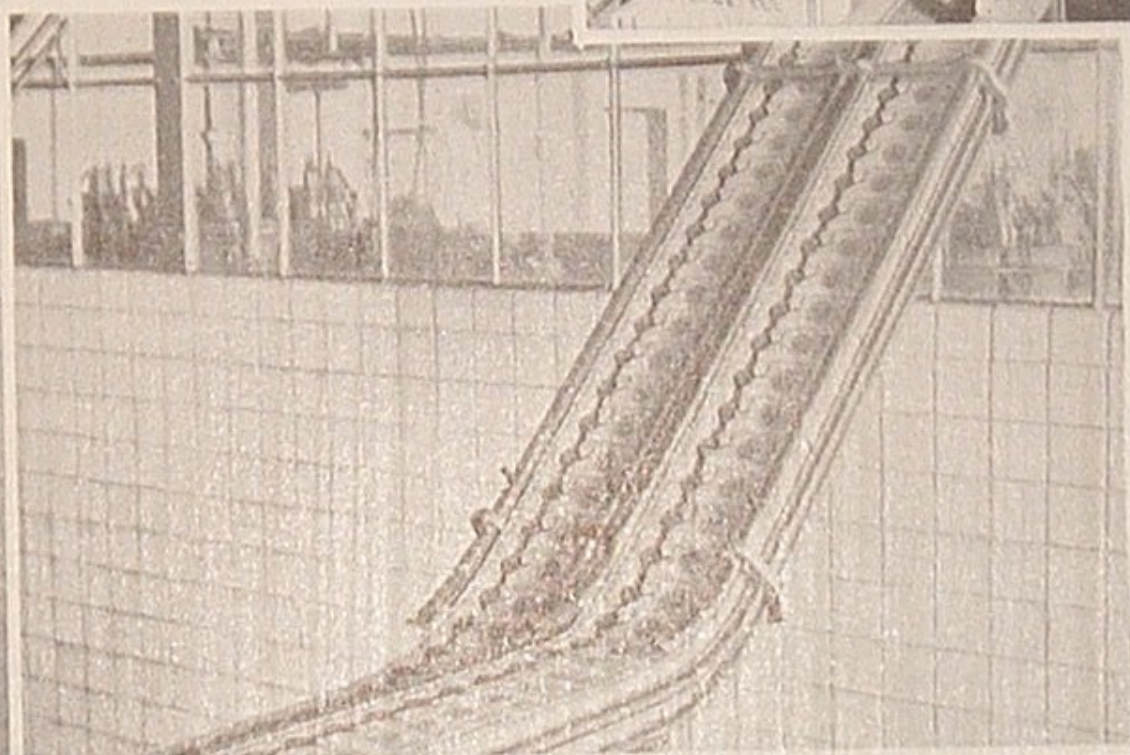


Modern Canco waxed paper milk containers, *above*, are packed in dust-proof bundles for shipment to dairy companies.

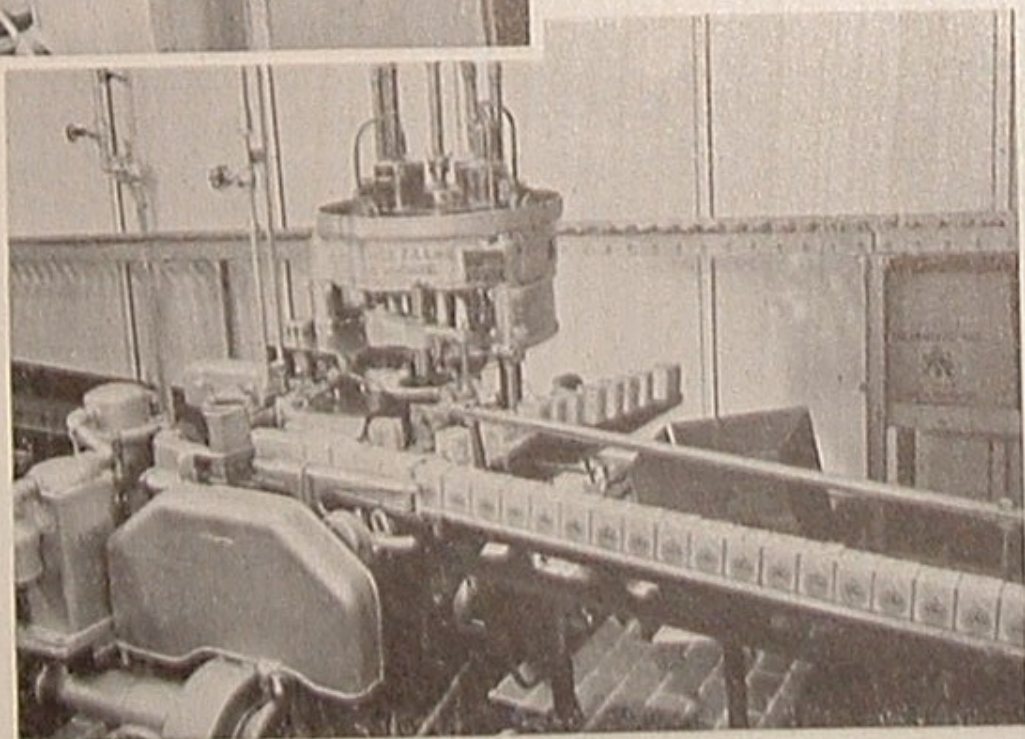
Canco Containers are here printed, formed and waxed.



Below: This American Can Company employee seals the containers for shipment.

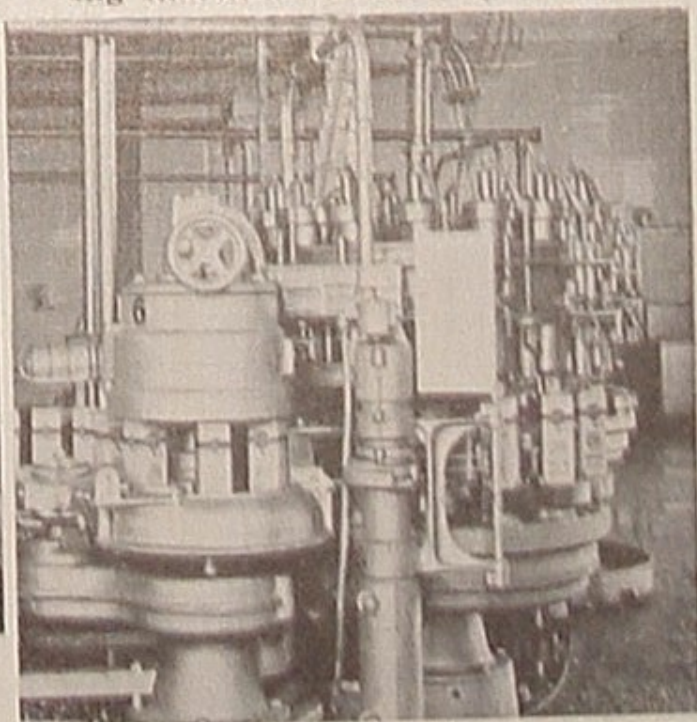


At the dairy the containers are fed through stainless steel chutes to the Canco combination filling and closing machine.



For dairies of limited output, American Can Company supplies the above filling and sealing machine.

Below: This is the larger of two filling machines offered by Canco.



tainers obviates the necessity of washing machines, and other incidental expense.

The United States Department of Agriculture, in Circular No. 469 issued early in the year, deals with the losses suffered by the milk industry annually in lost and broken bottles, and reveals the difficulties encountered by the industry in getting the bottles back and fit to use for milk again.

According to the circular: "Probably the most difficult problem with which the dealer has to contend in connection with bottle expense, is to obtain the return of bottles from the home and store trade."

"The replacement of lost and broken bottles is an item of great importance to all market-milk dealers," says the circular. "According to the Census of Manufacturers for 1935 of the United States Department of Commerce, there were manufactured in that year 305,837,712 milk bottles, valued at \$10,980,124 f.o.b. factory prices. Most of these bottles, undoubtedly, were used to replace lost or broken bottles."

There is no question that the use of the single-service, factory sealed paper container represents an advance in the efficient, economical, sanitary handling of milk.

It is manufactured from pure virgin wood pulp, which is converted into paper by procedures that destroy all pathogenic bacteria. Then it is wrapped and sealed before being taken to the various plants to be made into milk containers. After being cut to shape, and sealed, the containers are completely submerged in a hot molten paraffin bath, under sterile conditions. This wax is the same material that is ordinarily used to seal hermetically jams and jellies, and is completely odorless, tasteless, and insoluble, so that it cannot possibly affect the taste or quality of the milk. It also has a bactericidal effect, thus assuring the sterility of the container. In addition, it makes the package stronger, renders it waterproof, and provides a hermetic seal.

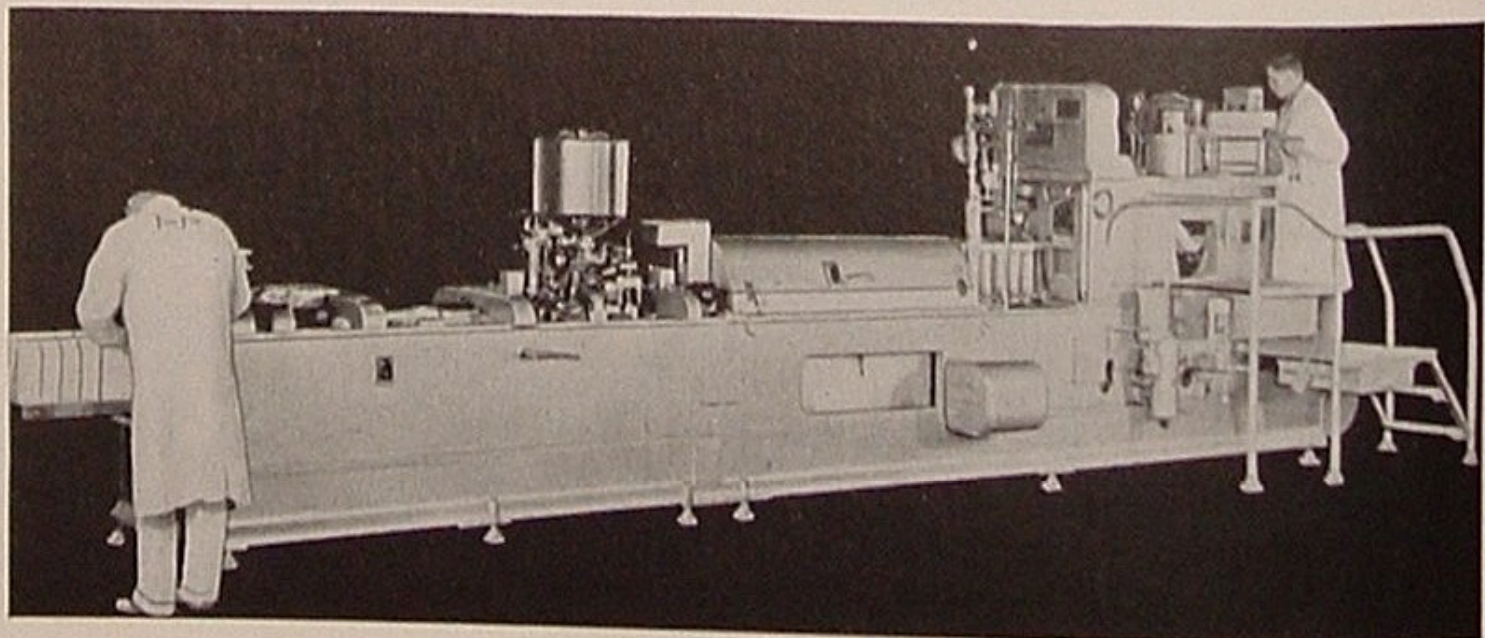
After the wax dip, the packages are enclosed and sealed in dustproof carriers for delivery to the dairy, without danger of outside contamination.

For actually filling the containers, specially designed machinery has been developed, which may be leased at nominal rental, and one concern now manufactures a single machine that forms, sterilizes, coats with paraffin, fills, seals and dates the package, all in a continuous automatic operation. Stainless steel and nickel alloys are used in the construction, and no gaskets of any kind are necessary, so that the whole process is completely sanitary. The machine is made with two cylinders, each delivering a pint, and can be changed from quarts to pints or vice versa, without stopping, by simply turning a lever. For half pints only, a short stoppage is required to adjust the piston stroke, and the conveyor level. The entire unit can be disassembled in a few minutes for cleaning, and is so constructed that there are no awkward bends or inaccessible corners to complicate the process. Significant also, is



Above: The Ex-Cell-O Corporation Pure-Pak containers.

Right: This Pure-Pak machine forms, sterilizes, paraffines, fills, seals and dates milk containers in one continuous operation.



the fact that from the beginning to the end of the operation, neither the milk nor the packages are touched by a human hand.

In the good old days when the cracker barrel stood in the middle of the store, when you took home an unwrapped loaf of bread tucked under your arm, and the butcher rolled up your beefsteak in a sheet of newspaper, we didn't concern ourselves too deeply with containers and wrappers. Since that time, however, we have become conscious of the fact that the preservation of quality is just as important as its discovery, and a great deal of

scientific research has been devoted to the economics as well as the pathologic considerations involved in wrappers and containers for foodstuffs. The paper package for milk is a normal outcome of that experimentation. It is not a fly-by-night scheme that has suddenly been thrust upon us. The idea was first patented as early as 1906, and it has been gradually and cautiously developed to its present status. Its acceptance by the trade and by the consumer grows daily, and it seems destined to become the future practice of the industry.



THE STORY OF ROPE MAKING

ONE of the nation's leading industries owes its beginning to a long-forgotten man—a man who lived thousands of years ago. He was the primitive being who first used a vine tendril to bind two objects together. Later, others discovered that by twisting or braiding several vines, a longer and stronger cord or rope could be made. As time progressed, other uses were found to which such ropes could be applied, and other materials, too, were developed from which they might be fabricated—strips of sinew, hide, hair, roots and grasses, formed the elementary strands from which man wove and wound ropes to multiply his strength, to add to his power, and to lighten his daily tasks.

Ancient lore records the use of these crude ropes in China as early as 2700 years before Christ. Stone tablets from the dim dawn of history record pictorially not only the multifarious applications of rope, but also the details of the earliest methods of manufacture, and there seems to be no doubt that it played an important part in the building of the Pyramids of Egypt almost 6000 years ago.

Down through the ages the manufacture of cordage has gradually evolved from a crude, simple process into a highly scientific modern development. Today, fibers are brought from many lands to make the great variety of ropes and twines demanded in a wide variety of industries, and for a great diversity of domestic purposes. Practically every business has need in one or another of its operations for some type of twisted fibers, and rope and

twine have become essential accessories of our everyday existence.

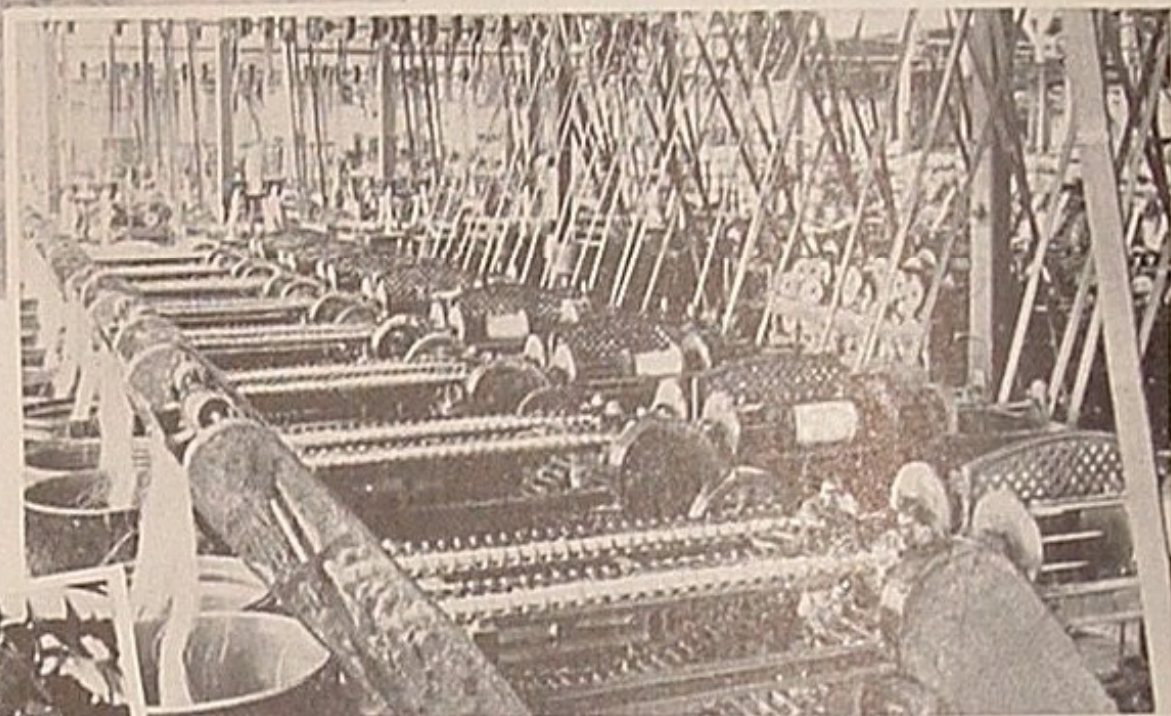
In making rope, the first important item, of course, is the fiber. Manila is the chief fiber used in the manufacture of high-grade rope, and it is grown almost exclusively in the Philippine Islands, taking its name from the largest port of shipment. The fibers are stripped from the stalk of the abacá plant, a species of the banana family, and they possess the combination of strength, resistance to wear, and elasticity to a greater extent than is to be found in any other fiber. Although there are twenty or more government-designated grades of Manila, only the better grades are imported by American manufacturers for use in the fabrication of rope.

These various grades of Manila fiber have definite characteristics that are important to the maker and to the user of rope. Some are soft, white and silky, some have superior strength, while others offer better resistance to abrasion. No single grade has all of the desirable characteristics needed, and for this reason each grade or kind of Manila rope is made from a blend of several grades of Manila fiber.

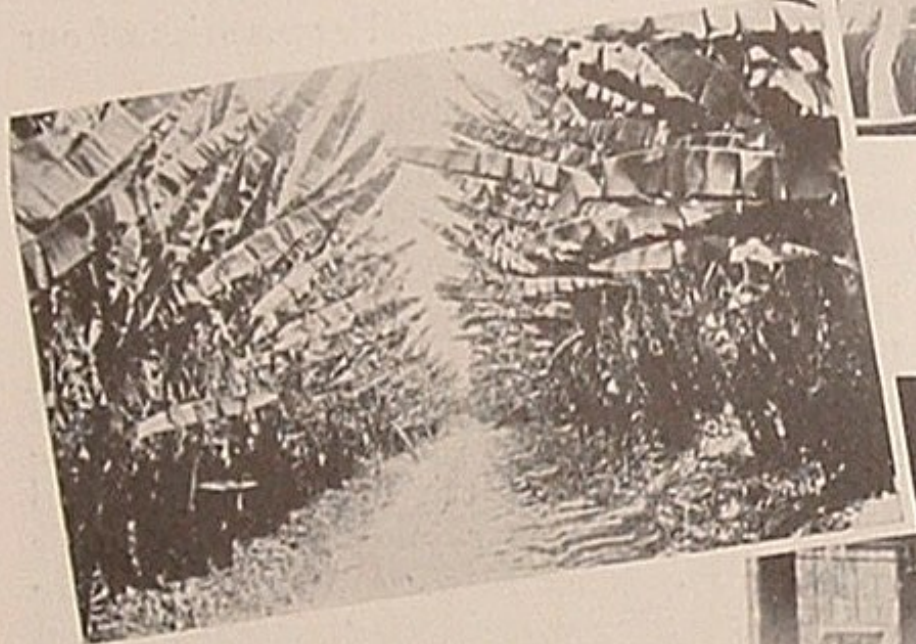
When the raw stock is brought from the warehouse to the mill, the bales are opened and the fibers for that particular run or "mix" are blended and made ready for the preparation machines. These preparation machines are, generally speaking, made up of traveling chains of pins which comb the fiber as it passes over them. As the raw fiber is fed into



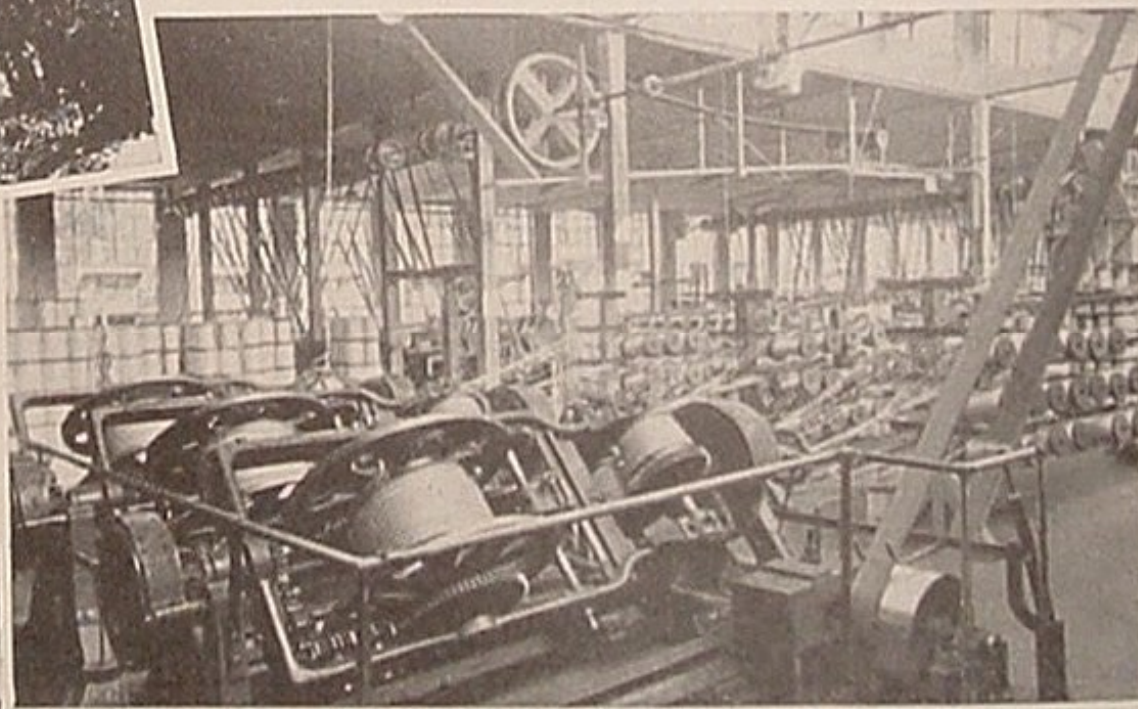
Left: A view of the preparation line at the Great Western Cordage Company plant at Los Angeles. Here the selected and treated rope fiber is made ready for spinning.



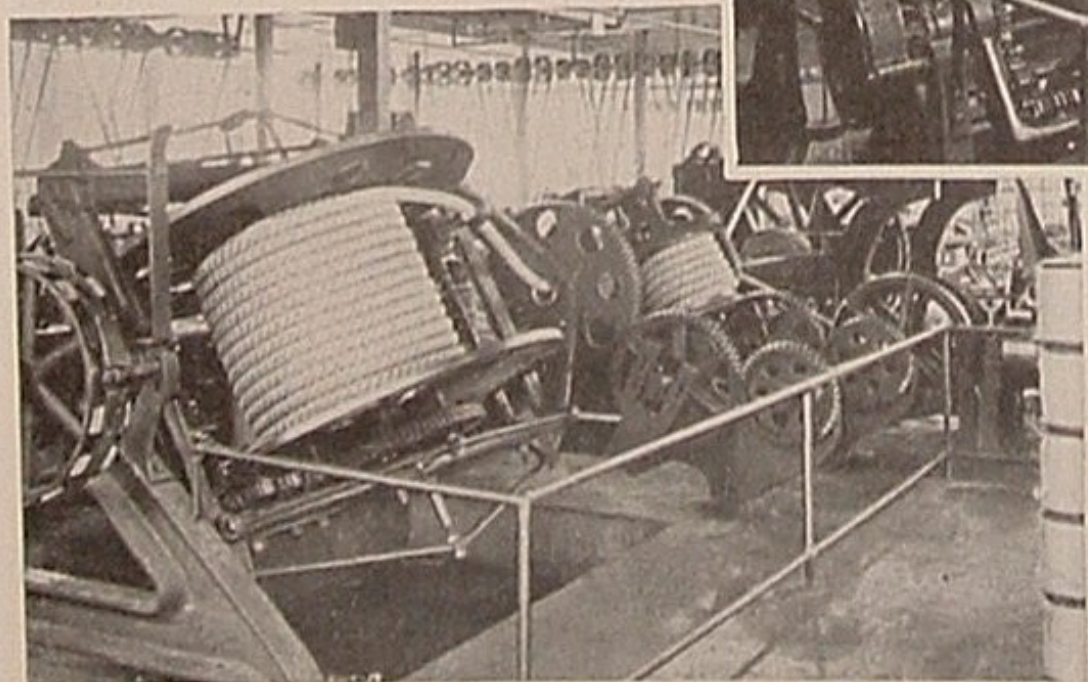
Above: On this battery of machines the sliver of Manila or abaca fiber is spun into a yarn.



Below: Mature abaca plants, the source of manila fiber, are grown in the Philippine Islands.



Below: Here heavy nine-strand rope, or cable, for use in oil field operations, is coiled on huge drums.



Above: These machines make the rope strand. Specially prepared Manila yarn from countless spools, in background of picture, are fed into the machines automatically and are wound into the strong, wear-resisting cables which serve industry in so many ways.

Story and illustrations furnished through courtesy of the Great Western Cordage Company.

the first preparation machine, or "breaker," special lubricants are automatically applied in the proper quantity and at carefully controlled temperatures. These oils penetrate and seal the fiber cells and lubricate the fibers, making a quiet, long-wearing rope, pliable under all conditions.

In addition to the combing process, in which all the fibers are laid parallel, the preparation machines perform another and equally important operation—that of gradually working the ribbon of fiber, or "sliver," down to the proper size for the first twisting operation, according to the specification of the rope being made. Both the nature of the fiber and the desired characteristics in the finished product determine the number of workings given, and the particular preparation machines over which the sliver shall be run. Throughout the run constant supervision is maintained, and frequent inspections and tests made to insure proper size of the sliver. With the preparation of the fiber being completed, it is taken to the spinners where the ribbon of sliver is spun into yarn.

The sliver, as it is delivered to the spinning machines, has no strength—it is easily pulled apart, but when it is twisted, the friction of the individual fibers against each other locks them into a strong, compact yarn, or "thread."

Although the spinners are adjusted to spin the yarn to exact size, here again frequent tests are made to check the machines and to

insure uniformity of dimension. When one of the ten-pound bobbins is filled, the machine is stopped, the bobbin removed, and the yarn is then ready to start the next step on its trip through the mill—the forming of the rope strand.

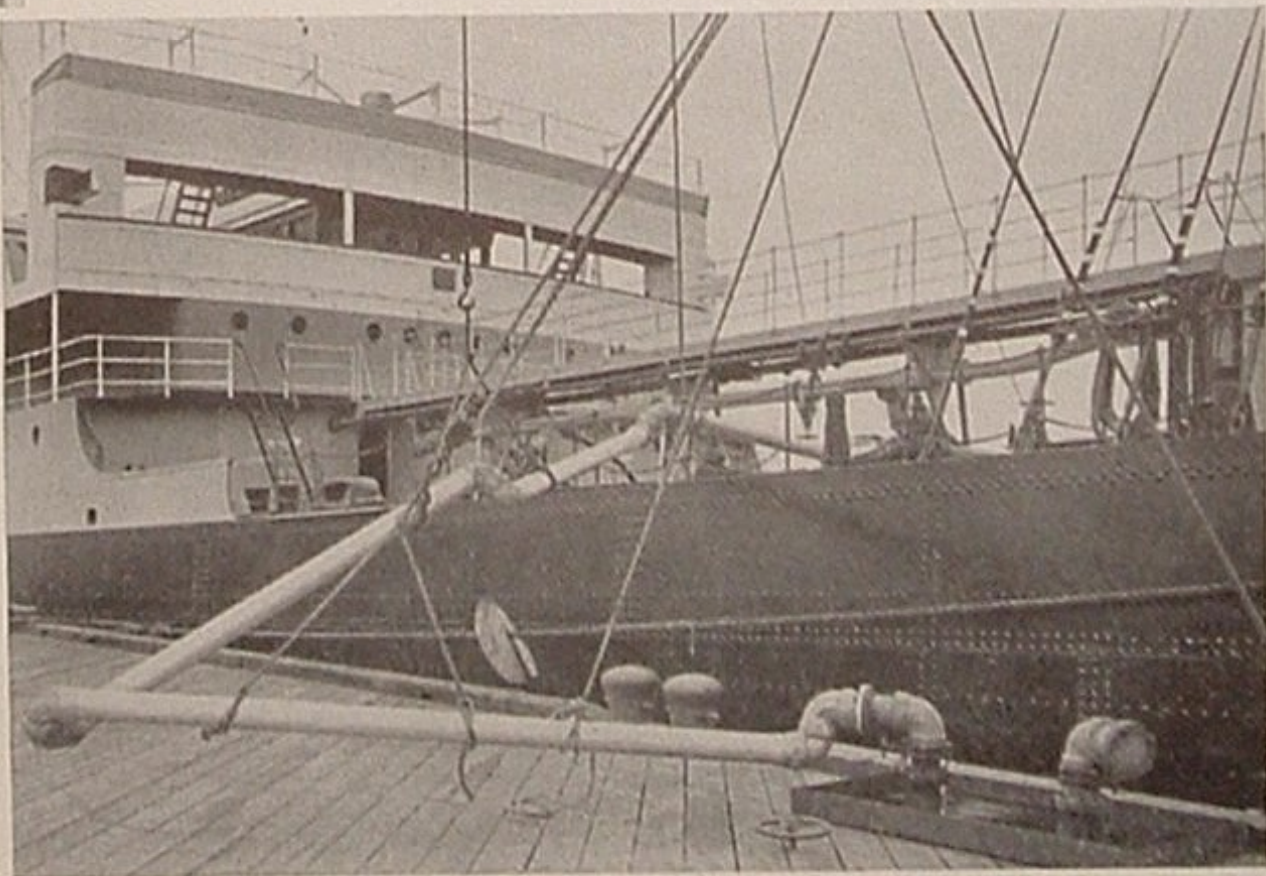
At the spinners it was explained how the twisting combined the strength of the individual fibers. In making the strand for the rope, this strength is multiplied by more twisting, but the strand is twisted in the opposite direction to that of the yarn. Here the requisite number of yarns are threaded through a plate, which indicates the position of each in the entire length of the strand. On these forming machines the strand is pulled through a metal tube, which compresses the yarns and makes the strand round and firm.

Three or four reels of strand (depending upon the number of strands the rope is to contain) are then taken from the formers to their companion laying machines, which add still another twist to the two already given. The laying operation, however, is more than merely a twisting operation—in it the original twist of the strands is maintained, and the strands are twisted against themselves, or "laid," thus locking all parts of the rope into one integral piece. This final operation compensates all stress in both yarns and strand, and eliminates the tendency the rope would otherwise have to untwist. The finished rope is firm, yet pliant, is perfectly balanced, and is not easily kinked.

In making 9-strand rope, known as cable and hawser-laid, except for the difference in



Two of the best-known industrial uses for hemp rope and cable are shown in the accompanying illustrations. Oil field and marine operations require millions of feet of rope each month, and the rope must be tough to stand up under the heavy loads.



the fiber mix and the lubrication, the processes up to the point of the finished 3-strand rope are identical to those already described. Three 3-strand ropes are then laid against each other, doubly compensating for the extra hard twist already given in the forming and first laying operation.

When the rope leaves the layers, it is in its finished state, and after being coiled, lashed and burlapped, is ready to begin its life of useful service.

To the unpracticed eye, the making of rope may seem a series of haphazard operations. Actually, it is a highly technical procedure, for the manufacture of cordage to meet the exacting specifications of strength, construction and utility required by various industries,

or to maintain sizes within almost micrometric tolerances for others, is an extremely exacting business, demanding an exceptional technique, and a fine accuracy.

Today, on land and sea, Manila rope plays an important part in almost every phase of the world's business. On ocean liners, sailing vessels and fishing fleets, in the oil fields and on the farm, in construction work and in transportation, rope is a prime essential in countless operations. In war or in peace, in good times or in bad, Manila rope continues to play an important part in the processes of industry, and the constant research and development to which it is subject, assures an adequate future supply of cordage of the requisite quality to meet every fresh need.



CHURCH IN THE VINEYARD



In the picturesque little village of Asti, on the Redwood Highway midway between Cloverdale and Healdsburg, the tourist comes upon this strange, barrel-like church, planted squarely in the center of one of Sonoma County's richest vineyards. Originally the church was a conservatory and was converted into a chapel in 1908 by the founders of the Italian Swiss Colony, Mr. and Mrs. P. C. Rossi and Mr. and Mrs. Sbarbaro. Known as "The Church of Our Lady of Mount Carmel," it is attended largely by workers of the Colony who derive their livelihood from the vineyards and wineries. Father D. Glennon officiates at the quaint chapel, which has attracted nation-wide attention.

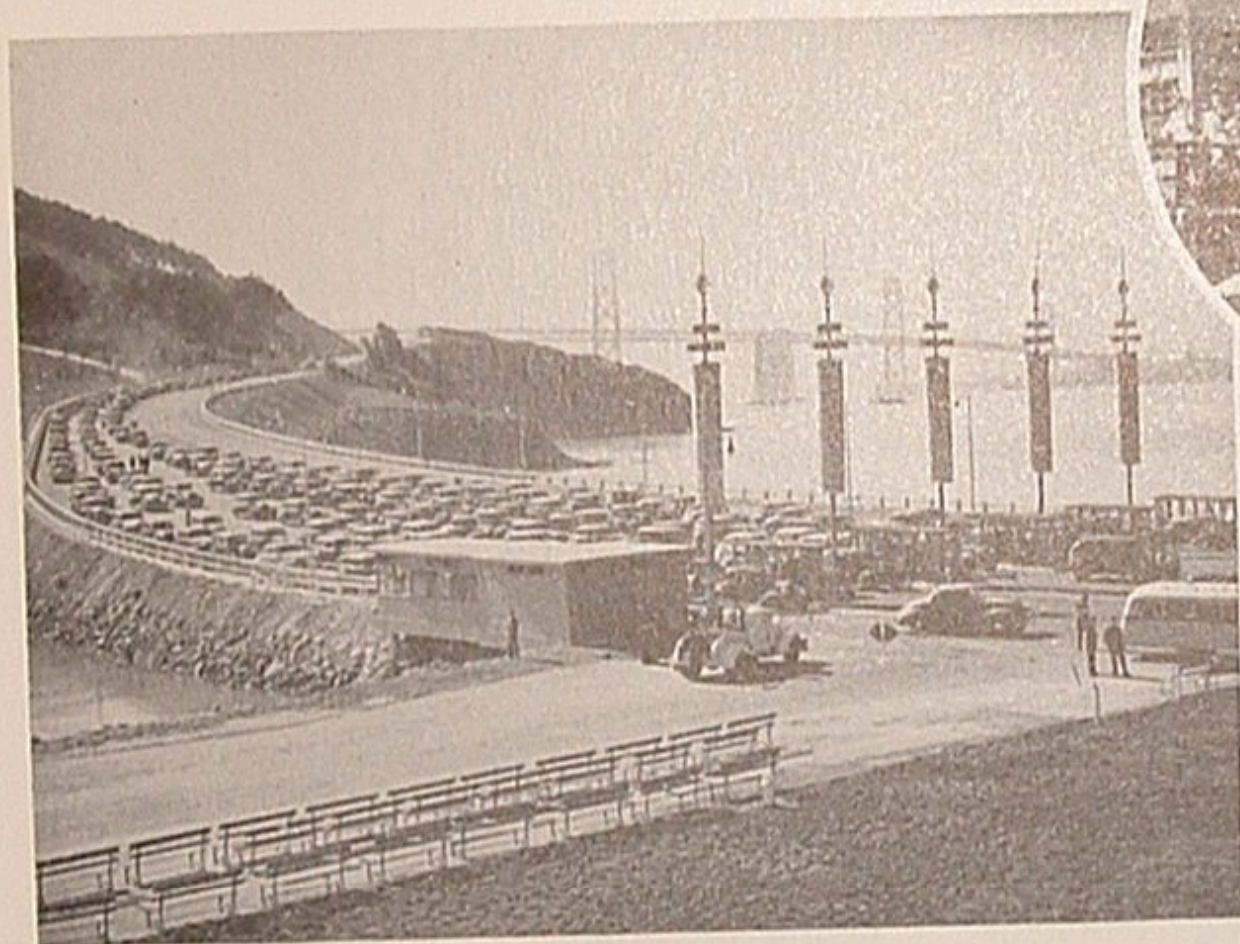
SAN FRANCISCO FAIR OPENS



Above left: Colorful ceremonies, held in the court facing the "Lake of the Nations" marked the dedication of the Philippine Pavilion at Treasure Island. *Above right:* Crowds along the Avenue of Olives which divides exhibit buildings from the Gayway.



Above: Pretty Kimoko Ogawa, dressed in a flowing ceremonial kimono, strolls through the landscaped gardens of the Japanese Pavilion.



Left: Opening day throngs arriving via the Yerba Buena Island ramp which leads motorists off the Bay Bridge.

Below: Japanese maidens fill the "Tailobashi" or red drum bridge which spans the classic garden pool of the Japanese Pavilion.

Below: The "Ike" or garden pool in front of the ornamented pavilion is of traditional design and is stocked with carp and trout.





W. W. Orcutt



R. D. Matthews



G. H. Forster

ORGANIZATION

Announcement was made recently by L. P. St. Clair, chairman of the board of directors, of the resignation of R. D. Matthews. Mr. Matthews had been an officer and director of the Company for the past 25 years, and his resignation was accepted by the board with regret after he had been tendered an expression of appreciation for his valued service.

Coming to Union Oil Company as comptroller in 1914, Mr. Matthews soon established himself as a capable executive, and in the same year with the Company was elected to the executive committee and board of directors. His elevation to the vice-presidency came in 1928, and his experience has encompassed the direction of three separate phases of Company operation—comptroller's, manufacturing, and sales. He was elected executive vice president in February, 1931, and officiated in this capacity until shortly before his resignation.

At a meeting of the board of directors held December 27, W. W. Orcutt, in charge of production, and George H. Forster, comptroller, announced their retirement, effective December 31, 1938, and so Union Oil Company loses two men who have been long identified with the organization and its progress.

Forty years and eight months is a long time to work for any one concern, but judging from Mr. Orcutt's accomplishments, reminiscences, and present attitude, long term service can be not only profitable, but a decidedly enjoyable experience.

We have so often detailed the chronological sequence of the various stages in his highly productive and colorful career, that it seems superfluous to go over it all again. It is sufficient to say that his life has been an inspiration to all who have had the privilege of his

acquaintance, and his efforts have been a decided influence in the growth of Union Oil Company from its early infancy to its present substantial proportions.

It is to be hoped that he will find time as he relinquishes at least part of his Union Oil Company activities (he is still a member of the board of directors) that he will take advantage of the opportunity to make a permanent record of the early chapters of California's oil story. His remarkable memory, his close personal connection with the growth of the industry, and his keen sense of humor, are a combination that would delight the heart of any publisher.

Always thoroughly democratic, he has become one of the most universally known and loved men in the industry, and his ready wit has long established him as an unusually entertaining after-dinner speaker. It is doubtful if anyone in the west is so thoroughly cognizant of the intimate details of petroleum development on the pacific Coast as he, and it is certain that he has more Union Oil Company history locked up in his memory than any other employee.

George H. Forster started with the Company twenty-five years ago, and was comptroller for the last nine years of his association. He has been largely responsible for shaping the accounting policies, not only of the Company, but of the industry generally, since he has taken an active part for many years on various national accounting committees, and is, indeed, at the present time still chairman of the American Petroleum Institute's committee on uniform methods of oil accounting.

With just a trifle more than forty years to his credit, F. F. Hill, special representative of the field department of Union Oil Company, last month announced his retirement.



F. F. Hill

F. F. Hill has not only watched the Company grow, but has helped it grow in a very substantial way. During his association with the oil industry, he has been credited with many worthwhile contributions to the advancement of drilling and production technique. Among other things, he introduced to the West oil well cementing, sub-surface circulation, gas lift and gas drive, many developments and refinements of tools and drilling equipment, and in later years played an important role in the development of deep drilling procedures.

Starting as a warehouse man at Santa Paula in 1899, Mr. Hill has since occupied almost every position in the drilling department from roustabout to director of production, and in doing so has discharged his various responsibilities in a sympathetic, understanding manner that has earned him the genuine friendship of a great many employees.

Since June, 1936, he has been special representative and has devoted the major part of his time to the interests of Union Oil Company in Texas, Wyoming and other out-of-state areas.

NEW COMPTROLLERS

Following the recent retirement of George H. Forster, and the resignation of A. H. Hand from the comptroller's department of Union Oil Company, the board of directors elected M. G. Kerr, comptroller, and I. J. Hancock assistant comptroller as their successors.

M. G. Kerr has progressed to his present post through a series of responsible accounting positions that have brought him into intimate contact with almost every phase of



M. G. Kerr

Company operation. He was elected assistant comptroller in December, 1934, and has since alternately had charge of operating and financial accounts. He has been an employee of Union Oil Company for almost thirty years, and has not only established himself as a thoroughly capable accounting executive, but has, in addition, bent himself earnestly and unselfishly to the education and development of the less experienced members of his department. He has attained recognition in the industry as a man well-informed in the processes of his profession, and is an active member and past president of the Petroleum Accountants' Society.



I. J. Hancock

I. J. Hancock has been with Union Oil Company for over 24 years, and began his employment as a junior clerk in the comptroller's office. He has also had a diversified experience in the various accounting departments, and at the time of his latest promotion was auditor of general accounts, a position to which he was assigned in May, 1935.



This inviting scene contains the essence of life at Arrowhead.

LAKE ARROWHEAD—A FAVORED PLAYGROUND

“OUT of the sky there fell an arrow of fire and it struck against the mountain.” Thus, in a strange admixture of faltering Spanish and the language of their fathers, the Indians who inhabited southern California a century and a half ago attempted an explanation to the white man’s query about the huge white arrowhead which gleams on the slopes of one of the San Bernardino mountains.

And though the “Mountain of the Arrowhead,” which amazed the first Franciscan padres, has been discussed in every civilized tongue, no visitor has ever offered a valid scientific explanation for the phenomena of white sage which forms the spectacular arrowhead. Indian legend, passed from father to son, speaks of warring gods and a missile sent wild to sear its mark on the tangled growth of the mountainside. How many centuries the

mysterious symbol has existed, no one ventures to say.

At the top of this famed arrowhead, cradled between mountain ridges, lies the even more famed mile-high resort known as Lake Arrowhead. This mountain playground is a land of tall pines and whispering breezes that glide through the tree-tops. It is a happy, carefree land endowed with a poetically beautiful, sky-blue lake and an invigorating atmosphere. Cinema stars, socialites, and vacationists from all the world have adopted this Redman’s province for their own, and have built there a colorful and gay resort replete with every attraction. Lodges, hotels, and cottages dot the lake shore. Congenial visitors and residents fill the little, alpine-like Lake Arrowhead Village to capacity. On the resort’s rolling, sporty golf course, on the warm sands that

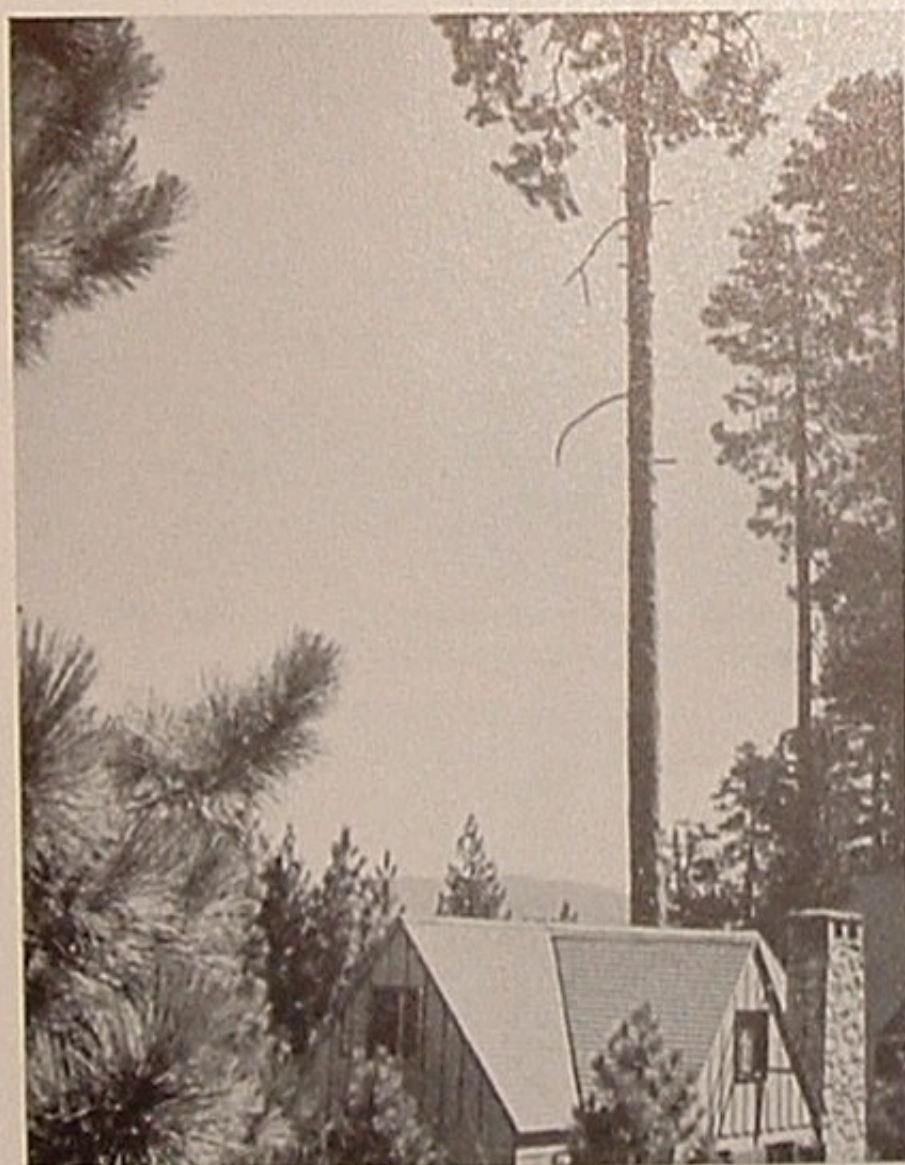
surround the lake, and skimming over the blue waters on sailboats, runabouts, aquaplane boards and aqua-skiis people disport and enjoy life to its fullest. Yet, for all its popularity, Lake Arrowhead never seems crowded for nature was generous when she created this lovely mountain valley. There is room for those who desire privacy. Silent groves, as still as the forest primeval, winding mountain trails and tiny, secluded coves offer refuge for those who seek such comforting pleasure.

Lake Arrowhead is truly a year 'round resort. In winter, a blanket of snow covers the valley, affording excellent skiing and tobogganing on the mountain slopes. The Village, too, is transformed, for snow makes it look just like a tiny hamlet high in the Swiss Alps. Snow sports attract throngs each winter, as do hiking, horseback riding, golfing, badminton, tennis, and water sports in the summer season.

But Lake Arrowhead is not solely a vacation resort. Its healthful climate and varied attractions have lured many to become permanent residents. These people delight in the changing seasons and scenery which the area affords, and they, together with semi-permanent property owners, have built hundreds of fine moun-

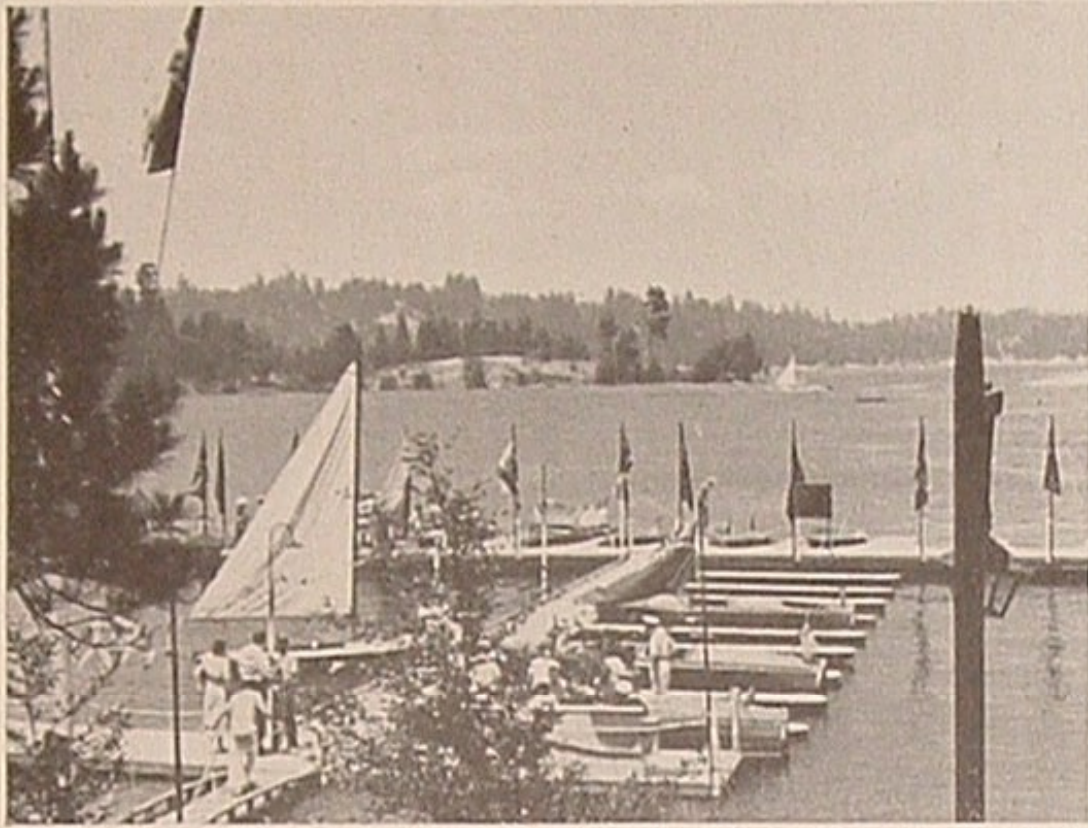
tain homes and elaborate private lodges. From the humblest cabin to the most luxurious estate, the architecture at Arrowhead is well suited to its surroundings and pleasing to the eye. It has created an atmosphere of substantiality which many lesser resorts lack. In certain sections one finds complete public utility services — gas, electricity, and fresh water piped from the depths of the lake. Telephone service is also available. Those contemplating property ownership in this Southland playground find other notable advantages. Acquiring property in what is known as Arrowhead Woods entitles them to unrestricted use of the lake for boating, bathing, pier building and moorage. The lake itself is backed up behind a modern dam and is approximately two and a half miles in length by one mile in width. Flow of water from the lake is so controlled that the shore-lines are never inundated or despoiled by receding waters. The area is under supervision of a resident forester and trees may not be cut down except with his specific permission. Furthermore, a nominal entrance fee to the area insures residents that Lake Arrowhead will not be over-run by undesirable poachers during the holiday seasons. And, while the exhilarating climate offers variety, mean temperatures from summer to winter are not severe. In the dead of winter ski enthusiasts race down snow-covered slopes under a warm southern sun. In summer the days are warm but never oppressive, the nights cool and star-studded.

The Lake Arrowhead area and other nearby mountain resorts are within easy reach of all southern California cities via a wide high-gear road known as the "Rim O' the World High-



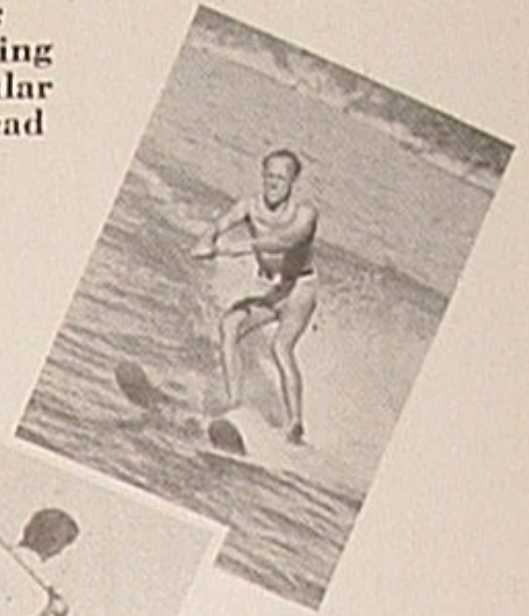
Lake Arrowhead is a land of gracious mountain homes and cabins, nestling among venerable pine trees.





Above: Adequate moorage has been provided at Arrowhead Lake for boating is an important activity.

Right: Aqua-skiing is a popular Arrowhead sport.



Left: The golfer finds his game more fun on the invigorating mile-high course.



Above: Swimming and sun-bathing take up a part of everyone's day at the resort.

Below: In a setting of characteristic beauty visitors play tennis and badminton.

All Year Club Photo



Above: Speedboating and outboard racing are popular.



way." This road, so gradual in ascent that even cars of ancient vintage sail along with ease, carries one over a route of unsurpassed scenic value. Below, as one winds up the highway, lies the fertile southland. Often, after driving a short distance through cloud-

banks, the traveler bursts into the sunlight and there below him sees a soft, billowy blanket, stretching to the very horizon. That not uncommon experience may be the start of a glamorous holiday at one of the nation's favorite playgrounds.

IMPROVING THE OUTLOOK



Max Rafferty, Union Service Station salesman, receives instructions on the correct application of the new windshield cleaner from L. E. McIntyre, manager of specialty sales. G. F. Prussing, Union's safety engineer, looks on.



Housewives have already discovered that Union Glass Cleaner is a labor-saver for windows, mirrors, and other glass surfaces.

Some years ago Union Oil Company placed on the market a glass cleaner that did exactly what it was intended to do. It enabled the service station operator to clean windshields and windows swiftly and well. It appealed to busy housewives, too, and many of them adopted it for home glass cleaning—windows, mirrors, tile, etc. Today Union Glass Cleaner is used by hundreds of thousands of home-keepers on the Pacific Coast, and its popularity is constantly increasing.

It was with justifiable pride, therefore, that Union's Research Department recently announced an improvement in this product, which makes it even more desirable as a windshield cleaner. Now it can be said that it quickly and thoroughly removes windshield film or under the wiper blade smear—that it is, therefore, the ideal cleaner for which service station men have been searching.

Windshield film has been the bane of wet or damp weather motoring for years. It is most apparent on that portion of the windshield over which the wiper blade travels. It prevents the glass from becoming wet, and creates the impression that the surface of the windshield is oily. This is particularly noticeable during night wet weather driving, as the light from the approaching cars is refracted by the film, causing a blinding glare.

Windshield film was accentuated with the advent of slanting windshields. A larger, flatter area was exposed to the atmospheric conditions (salt air, sun, road film, etc.) which cause windshield film. As a result, wet weather driving during past few years has become increasingly hazardous. The improved Union Glass Cleaner now used by all Union Service Stations and dealers will contribute to safer driving by insuring perfect wet weather vision.



Herman Phleger



Leland K. Whittier

TWO NEW DIRECTORS ELECTED

AT A meeting of the board of directors of Union Oil Company of California held in Los Angeles, January 13, 1939, Herman Phleger of San Francisco, and Leland K. Whittier of Los Angeles were elected members of the board.

Herman Phleger was graduated from the University of California in 1912 with the degree of B.S., and received his legal education at the University of California and Harvard Law School. He was admitted to the Bar of California in February, 1915, and to practice before the Supreme Court of the United States in February, 1917. In 1916-17 he was Instructor in Bankruptcy and Quasi-Contracts at the School of Jurisprudence of the University of California.

Mr. Phleger commenced law practice at San Francisco, California, with Morrison, Dunne and Brobeck, later becoming a partner in that firm. Since 1925 he has been a partner in the firm of Brobeck, Phleger and Harrison with offices in the Crocker Building, San Francisco.

He is a member of the San Francisco Bar Association, State Bar of California, and American Bar Association. He is president of the board of trustees of the Children's Hospital, trustee of Mills College, and director of American Trust Company, the Paraffine Companies, Inc., the California-Oregon Power Company, and other corporations.

Leland K. Whittier is a California native son, having been born in the city of Los Angeles, where he received his education in the local public schools and the University of Southern California. He is vice president of Midway Peerless Oil Company, and M. H. Whittier Company, Ltd., and is in active charge of the latter company's extensive oil interests, included in which are holdings in the Midway and Coalinga fields, and the Paroline Refinery, located at 8440 South Alameda Street, Los Angeles.

The Whittier family is one well known in California oil circles, and M. H. Whittier, father of Leland K., was a highly respected and thoroughly competent operator before his son became active in the business. He was, in fact, one of the earliest members of the Independent Oil Producers Association. Leland K. Whittier, however, has fully established his own right to recognition as an authority on many phases of the petroleum industry, particularly with regard to efficient drilling and production operations.

The M. H. Whittier Company has also acquired a wide diversity of other business interests, and as vice president, Leland K. Whittier has amply demonstrated the unusual business qualities that finally brought him into the directorate of Union Oil Company.

The experience and qualifications of Messrs. Phleger and Whittier should prove valuable assets in future deliberations of the Board.



Hopi Lookout, Grand Canyon.



Comely Visitor and Petrified Wood.



Hopi Indian Cooking Oven.

OLD ARIZONA

By E. E. FARNSWORTH

HOLLYWOOD once made a picture called "In Old Arizona." Perhaps if the script writers had realized that it took natural forces 150,000,000 years to build the stage and backgrounds for their movie, they might have made a travelogue instead of a "melerdramer." *Old Arizona* is no misnomer. Ice carved this fascinating country long before man arrived to sing its praises.

To the tourist Arizona is indeed a feature length travelogue, packed with romance and dramatic contrasts. The dazzling array of attractions includes the Grand Canyon, with its temperamental, turbulent Colorado River winding through a time-worn course; Painted Desert, resplendent with innumerable canyons and color effects; Meteor Mountain, formed years ago by some huge celestial visitor; Montezuma Castle, the age old cliff-dwelling of a long extinct tribe of Indians. Surely these nationally famed features entitle Arizona to a four-star billing on anybody's travel program.

To give the reader a "preview," first let us point out that many of the star attractions are located within a few miles of each other, easily accessible over fine highways. If you are a lover of the out-of-doors and down deep in your heart possess an explorer's lust for adventure, why not begin with the Petrified Forest? This forest is entered over a new highway, 19 miles east of Holbrook. Included in the area are several forests, named for geological reasons. They are: Blue Forest, First Forest, Second Forest, Third Forest, and Rain-

bow Forest, each having its own individual characteristics.

Measuring 92,000 acres, the Petrified Forest is open to the public every day in the year. A fine highway has been constructed across the National Monument, and the Rio Puerco river has been spanned by a steel and concrete bridge, forming an all-year connection between Highways 260 and 66, which border the forest on the north and south.

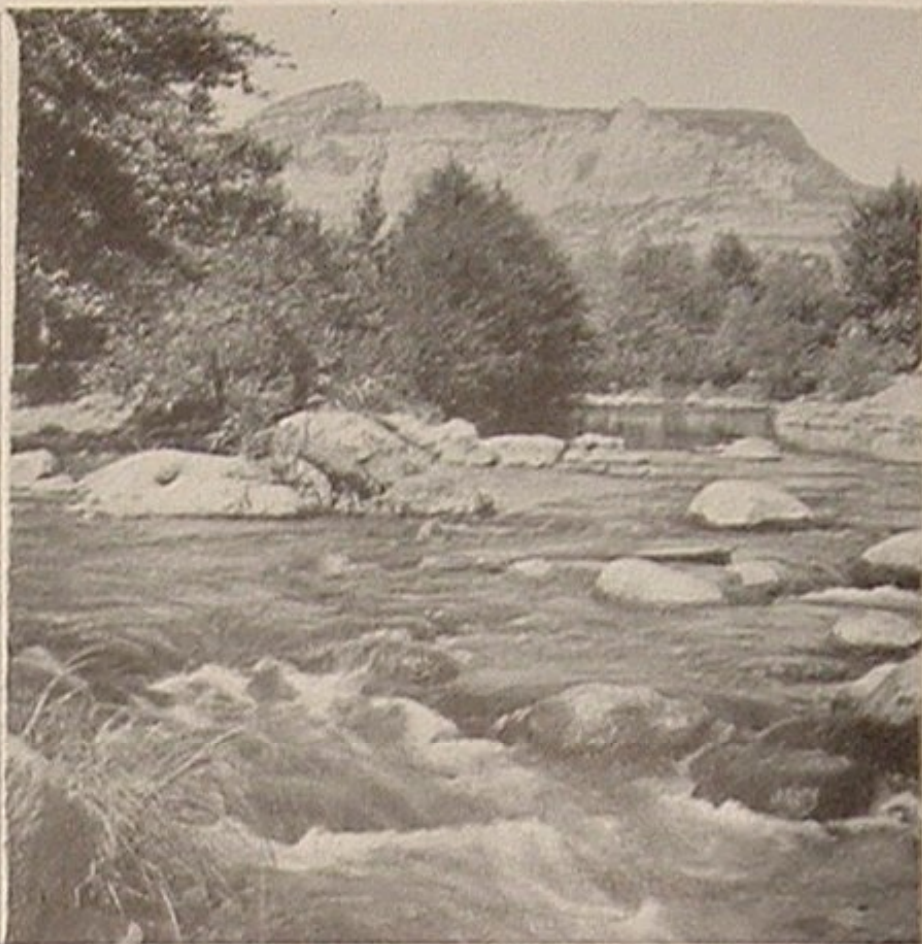
Situated in the Rainbow Forest is the largest single piece of petrified prehistoric tree. It is approximately four feet through and forty feet long. Located here you will also find a government museum housing unusual specimens of petrified wood and Indian relics of long, long ago.

Pause near the First Forest and see the "Agate Bridge" which is in a marvelous state of preservation, measuring four feet in diameter. In the millions of years that have transpired since it fell to the earth, rain, wind and other erosive influences have formed an arroyo underneath the tree, forty feet across and twenty feet deep. It is said that this bridge is the most noted piece of petrified log in the world.

Throughout the monument are ruins of the habitations of a former people, and thousands of picture writings or petroglyphs are engraved in the sandstone cliffs. The most famous of all is "Newspaper Rock," which reminds us that these primitive people were accustomed to recording important events.



Typical Petrified Forest Terrain.



Oak Creek Canyon Stream.

Little did they realize, however, that their "journalism" would be preserved throughout the centuries.

Within a distance of about fifteen miles from Petrified Forest is Painted Desert, which includes the Black Forest. Similar to the formations of the Petrified Forest, gorgeous hues add to this awe-inspiring spectacle. Here Nature wielded a reckless brush and painted the mountainsides in marvelous colorings. During a visit in this vicinity, we interviewed a cowboy who had been a resident on the edge of the desert for many years. He informed us that the desert was extremely treacherous because of the scores of canyons that crisscross its beautiful terrain. He described the desert as "bad lands" and further related that scores of travelers and prospectors had perished there, seeking to piece together the gigantic jig-saw puzzle. One can readily see how easy it would be to become lost, so with a shiver, we were content to stand at the desert's edge, just at sundown, and behold a weird sort of grandeur that held us within its spell. It is indeed a sight worth seeing.

Located about five miles south of Highway 66 and twenty-one miles west of Winslow we came upon the scene of our next "reel" . . . Meteor Mountain. It is one of Arizona's strangest phenomena and is perhaps one of the world's most unique attractions for sightseers

and scientists. Meteor Mountain was formed by the landing of some fragment from the heavens thousands of years ago, which buried itself 1500 feet in the earth, creating a vast pit 4000 feet across and 600 feet deep. Assayers have deduced from fragments scattered about the countryside that the mass is 92 per cent iron and 8 per cent nickel. Attempts to sink a shaft to it have been unsuccessful because of water and the unstable nature of the formation. Within a few months a new highway, replacing the old desert trail, will connect the crater with "66" and the new road will no doubt become a popular route with Arizona travelers.

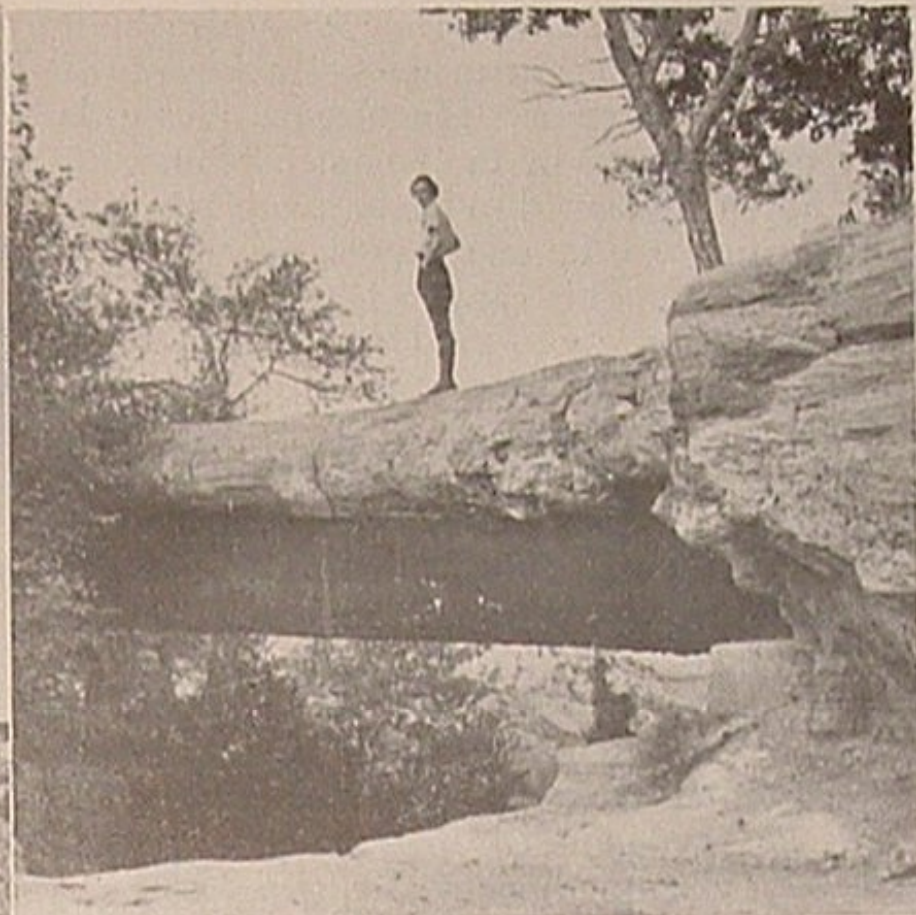
Next is Montezuma's Castle, just south of Flagstaff. Montezuma Castle National Monu-



A group of Grand Canyon visitors start on a pack-trip.



Eagle's Nest in Rainbow Forest.



Agate Bridge, a Petrified Log.

ment was created by a proclamation of the President of the United States in 1906. It is one of the finest examples of prehistoric cliff dwellings now standing in the great Southwest. It is in a good state of preservation, easily accessible to tourists, and is visited by thousands each year. A camp ground, lapped by the waters of Beaver Creek, makes a delightful place to linger awhile and dream of the days when white men were unknown and red-skinned Indians, now long departed, swarmed over this interesting area.

The castle, in true sense of the word, was not a castle, home or habitation singly owned, but a communally owned apartment house. Montezuma, ruler of the Aztecs far to the

south, probably never knew of its existence and most certainly never lived in it. The history of the castle is still a subject of scientific research. It was probably abandoned at least 500 years ago, for, had it been inhabited more recently than that, scientists would have found some evidence of contact with the Spanish civilization.

The people who inhabited the castle, of course, were Indians, for a cliff dweller was simply an Indian who built his home in the cliff for protection against raiding tribes.

There are sixteen separate apartments in the dwelling. It also boasts a penthouse where the tribal chieftan lived. From this topmost apartment, the chief had a commanding view of the entire Verde Valley. This feature was a contributing safety factor against surprise attacks. Original beams and braces still remain. Walls are covered with fingerprints which have been imbedded there since the castle was first built. The prints remain as conclusive evidence of the method employed by these early Americans in building their home.

The National Park System (founded by Stephen Tyng Mather) has done some very creditable work in preserving the history of the Southwest and of early America. They have adopted a comprehensive restoration program and have since located other cliff dwell-

National Park Museum in
Rainbow Petrified Forest.



ings in this same area. They have also built museums for the permanent enjoyment of generations to come. Montezuma Castle is only one example of the commendable work they have contributed to the arts and sciences.

Returning north, one passes through Oak Creek canyon. This canyon is said to be second only in beauty to the Grand Canyon and we were amazed and inspired by the hues the sun revealed upon the sheer rocky cliffs. Oak Creek canyon has become a popular retreat for business people, because it affords many quiet hours of peace and relaxation.

North of Williams, Arizona, lies Grand Canyon. Indescribable is this magnificent wonder. Conceive if you can the countless years it has taken the mighty Colorado to carve such a masterpiece. Countless pages could be written of its history and beauty, and when you stand at the rim, peering down into its vast depths, you cannot resist the impulse to explore the bed of the canyon or catch a closer glimpse of the restless Colorado river. The canyon at its widest point measures

seventeen miles from rim's edge to rim's edge.

Famed as a resort, here you will find one of the finest lodges in the country. The Fred Harvey system recognizes the park as one of the nation's greatest lures and has developed this playground to a point where the visitor is made to enjoy all the comforts and conveniences of home. Days and even weeks could slip by unnoticed while you explore the mysteries of the canyon, collect curios, or make photographic mementos of the delightful scenes that abound in the region. There are, in fact, so many things to see and do that one has little regard for time.

Four short reels hardly make a feature length picture of Arizona. There is more—much more. Arizona is a grand place for adventure . . . or for rest. The sportsman has not been overlooked, for he too can have his share of fun. The mountains are chock-full of game—wild turkey, pheasant, quail, deer and elk, and there are mountain streams where the exponent of Isaac Walton can get his share of the singing reel . . . and a strike.

FESTIVE SPIRIT PERVADES PANAMA



Each year Panama City stages a festive and hilarious three-day carnival. This year the event took place on February 19, 20, and 21, featured unusually beautiful floats, strange costumes and pretty señoritas. Union Oil Company entered a float plugging "Bif," the popular and potent pest-killer. This float, constructed on an army trailer, carried four small girls costumed to represent flies and moths. On the main platform were two young maids, wearing aprons and equipped with "Bif" sprayers filled with toilet water which they sprayed over spectators as the float moved down the line.

REFINED AND CRUDE

By Richard Sneddon

We have often wondered, if women are as strong for disarmament as they say they are, why they don't take off their war paint.

In this same connection, it is an actual fact that the fair sex spends more money on rouge than the oil industry spends on tank paint. It gets results, however! Whoever heard of a man going out on a date with a 10,000 barrel tank?

Continuing on the subject, mud may be all right as a beautifier, but it is our observation that it hasn't done a great deal for the turtle.

And, since the application of rouge has become a prevalent custom, there are not many girls who have the face to go without it.

Anyhow, a woman can't be expected to go wan forever.

With which few remarks we blunder on in our usual abandoned fashion to other equally insipid topics. A piscatorial expert tells us, for instance, there are fish in the sea that can travel faster than an express train. We might also mention that there are others in automobiles who just think they can.

And a nice thing about a one-way street is that you can only be bumped in the rear.

By the way, when you see a man polishing a woman's car, you may be sure they are engaged, and when you see a woman polishing a man's car, you can be equally sure they are married.

It's an established fact, also, that in industry married men are much more satisfactory than single ones. They don't get nearly so scared when you yell at them.

Postponing a marriage, incidentally, is believed to be unlucky by many people. Personally, we are of the opinion that it is all right so long as you keep on postponing it.

If you must get married on a slender salary, however, be sure to pick a girl with a small waste.

We have told you, of course, about the young, recently married couple who are now leading a fast and furious life. He's fast, and she's furious.

Which brings us around rather neatly to the two lads who were strolling in the park. Says the first one, "I think that fellow over there is about to propose to his girl. Let's whistle so we won't appear to be listening." Replies the second one, indignantly, "No, sir, nobody whistled to warn me."

And to conclude the discussion, there was the sensible young couple who had gone together for several years. She couldn't find work, and he couldn't afford a car, so they didn't get married, and lived happy ever after.

Here we again diverge atrociously to wonder why anyone should be willing to pay \$500 for monkey glands, when you can get a whole monkey for \$12.

It just shows what a premium the average individual places on health. With the high pressure of business these days, nervous troubles are exacting a terrific toll. We know a news writer who has such an advanced case of the jitters that the slightest shock will send him off into a series of asterisks.

We got word just the other day, too, that Uncle Jud is all unstrung, and so we sent him a wire.

Guess it was overwork that caused his downfall. He sells programs at coronations.

Uncle Jud's original trade was window box weeding, but that was wiped out with the advance of the machine age.

If you don't think this is the machine age, simply examine the dents on your rear fender.

One imaginative individual shows his appreciation of the new automotive era by expressing the belief that for the motorist, hell will be a long street with forty fire plugs in every block.

And after an auto trip to the beach last Sunday, we know what is meant by the school of hard knocks.

We had a wire from a friend traveling in the East recently, conveying this interesting news, "Just picked up a new car and a bad cold. Stop. Both running swell. Stop. Jim."

When Junior heard, by the way, that a new war was to be waged against Malaria, he protested, "My gosh! Why don't they leave these small countries alone!"

And now we have the astonishing report that it takes at least forty-eight rabbits to make a sealskin coat for a woman.

While we are on the subject of zoology, it is a peculiar coincidence that the lion fears no other animal except the lioness.

Saying which, we leave you to your own devices. Remember, you will never learn to swim hanging around pool rooms.



L.P. ST. CLAIR
LOS ANGELES