

* UNION OIL BULLETIN *



Vol. 20
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1939

UNION OIL COMPANY

of California

UNION OIL BUILDING
LOS ANGELES, CALIFORNIA

July 28, 1939

TO THE STOCKHOLDERS OF UNION OIL COMPANY OF CALIFORNIA:

The following is a summary of the results of the Company's operations for the six months ended June 30, 1939, and the financial position as of that date.

PROFITS earned from operations, less all expenses and charges (including provision for income taxes), were approximately as follows:

	1939	*Per Share	1938	*Per Share
Profit, subject to depreciation, etc.	\$7,659,714	\$1.64	\$9,650,000	\$2.07
Provision for depletion and depreciation	5,008,570	1.07	4,700,000	1.01
Profit for the six months	\$2,651,144	\$.57	\$4,950,000	\$1.06

* Calculated on 4,666,270 shares issued and outstanding at June 30th.

The net profit for the second quarter of 1939 amounted to \$1,596,509 or 34¢ per share, as compared with \$1,054,635 and 23¢ per share in the previous quarter and \$2,650,000 and 57¢ per share in the second quarter of 1938. The increased profits of the current quarter as compared with the first three months are due principally to increased sales volume. The 1939 profits, however, continue to be lower than those for 1938 due to reduced sales prices, and lower basis of inventory valuation. Furthermore, effective January 1, 1939 the Company adopted the policy of currently charging to income, as additional provision for depletion and depreciation, all losses incurred in the abandonment of unproven lands and exploratory wells. Formerly it was the practice to charge certain of these losses to reserve for depletion and depreciation.

CURRENT ASSETS, consisting of cash resources of \$13,271,148, accounts and notes receivable, oil inventories and materials and supplies, amounted to \$48,122,323, substantially the same as at December 31, 1938. Current assets at June 30th were approximately 6 to 1 of current liabilities of \$8,180,907, including dividend declared June 26th.

PRODUCTION of crude oil and natural gasoline continued to be curtailed in the second quarter, the quantity produced, subject to royalty, having been 9,311,428 barrels for the first six months of 1939 as compared to about 11,000,000 barrels in the similar period of 1938.

SALES for the six months amounted to \$35,975,922 as compared with approximately \$38,250,000 for the corresponding period last year. The quantity sold in the first half of this year was 15,257,372 barrels, a decrease of about 292,628 barrels from that sold in the six months of 1938.

CAPITAL OUTLAY of \$3,377,423 consisted mainly of new drilling in developed and prospective fields and additions and improvements to refinery and marketing facilities. Arrangements have been made for the construction of a 100,000 barrel capacity tankship, to be completed about the middle of next year, which will be virtually a sister ship of the "L. P. St. Clair" that was recently put in service.

EARNED SURPLUS at June 30, 1939, was \$18,172,089.

A CASH DIVIDEND of 25¢ per share was declared on June 26th to be distributed August 10th to stockholders of record at the close of business July 10th.

By Order of the Board of Directors,

REESE H. TAYLOR, President,
M. G. KERR, Comptroller.

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

VOLUME TWENTY

SECOND QUARTER, 1939

NUMBER TWO

UNION'S CITRUS OPERATIONS

By Hubert C. Ferry

Manager of Leases

FEW people realize that Union Oil Company owns one of the largest citrus and avocado groves in the world. In 1925 the company, as a means of providing an income from its lands in the northern part of Orange County, California, which were being held for future oil development, entered into an agreement with Mr. Gaston Bastanchury, a citrus grower, to plant them to citrus and avocado groves.

During the succeeding six years a total of 2,107 acres was planted. These orchards, added to those previously owned by Union Oil Company, make a total of 2,348 acres, containing 207,000 trees, with eighteen water wells, seven booster plants, nine reservoirs, approximately one hundred miles of pipe lines and twenty-six miles of roads.

In 1933, Mr. Bastanchury conveyed his



Behind Union Oil Company's citrus groves near Brea, California, are the Brea Canyon oil wells.

interest in these orchards to The Times-Mirror Company, which company now is operating certain of the groves under agreement with Union Oil Company. Mr. H. M. Bergen has charge of Times-Mirror's operations and Mr. Joseph D. Neuls (pronounced Joe Niles), assisted by Mr. Dean Millen, is in direct charge of Union's citrus affairs.

The planting, growing and cultural care of citrus and avocado trees, and the marketing of the fruit, has become a highly technical and specialized business. Infinite attention is required from the time the seedlings are planted in the nursery until the trees reach maturity, and thereafter during the life of the trees, which may span a period of fifty years or more.

In growing nursery stock for citrus orchards, utmost care is exercised in selecting buds from trees which have produced prolific and regular crops of the best grade and variety of fruit. These buds are budded on seedlings with sweet or sour root stock, depending upon the character of soil in which the trees will be planted. Trees with sour root stock usually are planted in heavy soil and those with sweet root stock in sandy or lighter soils. It requires three years from the time the seeds are planted until the trees are ready to be "balled out" for planting in the orchard, and usually seven more years before they reach maturity, that is, until they are old enough to produce a paying crop.

Proper fertilization and irrigation play an important part in the development of citrus

trees, which are much more sensitive than deciduous trees and accordingly will respond quickly to good treatment or react adversely to poor care, particularly with respect to irrigation. Over-irrigation, especially on heavy soils, will cause the trees to become anemic and the leaves to lose color. Good quality of water is necessary to the success of a citrus grove. Water containing in excess of two hundred parts per million of sodium chloride (salt) or in excess of one-half of one part per million of boron should not be used. Salt and boron will render the soil toxic to citrus trees. Varying soil types require different fertilizers and irrigation. Soil charts are made of every orchard, and before each irrigation the irrigator is instructed as to the proper application of water and nitrogen. After each irrigation, holes are bored in the ground at key locations in the orchard, to determine if the water penetrated to the proper depth, and a sample of the soil taken and sent to the soil laboratory to ascertain if the nitrogen and moisture content was correct. Nitrogen is supplied by introducing ammonia or ammonia compounds into the irrigation laterals. Humus and a small amount of nitrogen are obtained by an application of dairy manure. A cover crop of mustard is planted each year to prevent soil erosion and disked into the ground to provide additional humus. During the course of a year approximately 560,000 pounds of nitrates and 1,425,000 cubic feet of manure are used in fertilizing the orchards, and 10,000 pounds of

mustard seed for planting cover crops. Approximately 3,100 acre feet (102,006,928,000 gallons) of water are used during the irrigation season, which ordinarily lasts about seven months.

Another important problem in the cultural care of the orchards is pest control. Scale, particularly red scale (*Chrysomphalus auctantii*), is most difficult to control, although the red spider, a very minute insect, will cause a great deal of damage. These pests suck the juices and sap from the leaves and bark on the small branches, causing partial defoliation, and also damage the fruit. They are controlled by fumigation and spraying. Complete eradication is impossible because the scale and spiders are readily carried from one orchard to another by the wind and birds; even through the boxes which are used by packing houses to collect fruit from several orchards. Some packing houses have gone to the extent of steaming boxes after each collection of fruit to avoid spreading scale in other orchards. Fumigation is accomplished by placing tents over the trees and atomizing approximately 250 cc (or one-half of a pint) of hydrocyanic acid beneath the tents, thus forming a gas which is permitted to remain for approximately forty-five minutes. This acid, of course, is very dangerous and must be stored and handled with great care. It is the same kind of acid which forms the gas used by the State of California in its lethal chamber. Fumigation can only be undertaken in the late afternoon or during the night when there is no wind and other climatic conditions are satisfactory. Hydrocyanic acid is delivered in small drums containing about eighty pounds. Approximately 44,000 pounds are used each year.

Spraying is another means of eliminating scale. Often a heavy infestation will require a combination treatment—spraying as well as fumigating. A highly refined and unsulphonated oil, which is manufactured by Union Oil Company, is used in spraying the orchards. About a two per cent mixture of this oil, with water and a small quantity of blood albumin, fuller's earth or other spreader, is placed in a spray rig tank, agitated by means of rotating paddles, and sprayed on the trees under approximately four hundred pounds' pressure. Spraying of the trees likewise must be done when weather conditions are favorable. If the trees are sprayed during or immediately before a hot, dry spell, when the humidity is below normal, the leaves will drop and the

fruit will be scalded and discolored. In order that the grower may reduce the hazard of damage by fumigation and spraying, the United States Weather Bureau, during the spraying season, predicts weather conditions by radio two or three days in advance. Approximately 30,000 gallons of spray oil are used each year.

Natural enemies often control certain pests. For example, ladybugs will destroy mealy bugs. Ladybugs are reared by the thousands in insectaries, placed in capsules containing about a dozen each and distributed to the infested orchards for liberation. It isn't long before the mealy bug is a thing of the past.

Control of rodents, such as squirrels and gophers, is necessary; otherwise they will eat the roots and bark of the trees and the fruit. When ground squirrels become hungry enough they will climb the trees and eat the green fruit. "Gophered" trees (those which have had the roots girdled by gophers) seldom live, and must be replaced. Two or three men are kept busy most of the year trapping gophers. Squirrels are poisoned by barley saturated with strychnine or other poisons.

Pruning also is important to the development and maintenance of an orchard. Crews of men specially trained in this work are busy during most of the year.

There are many other phases of the cultural care of the orchards, such as tree doctoring to prevent and remove scaly-bark and gummosis (gum disease), eradication or removal of Johnson and Bermuda grasses, to mention only a few at this time.

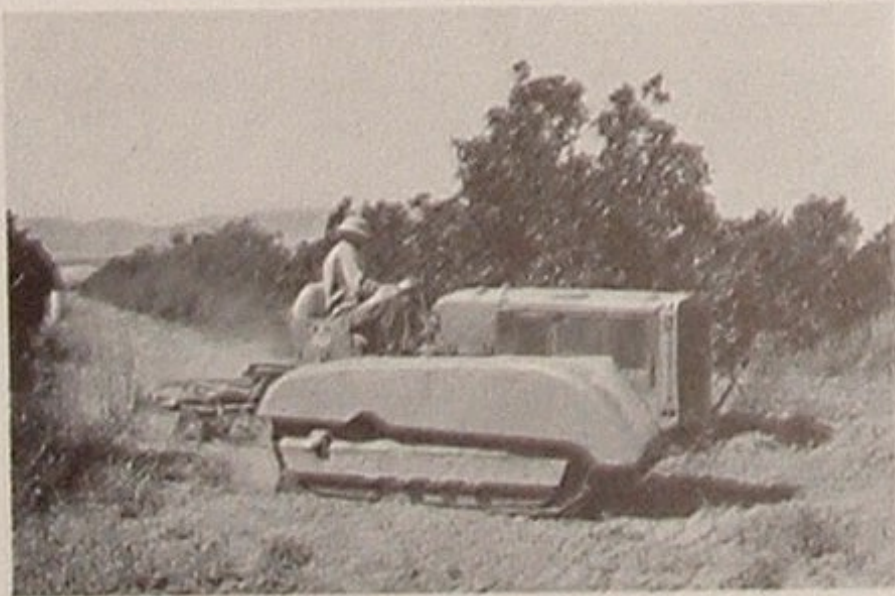
Some cold, dreary winter morning when you look out of the window and see the sky full of smoke and soot, don't bear down too hard on the citrus grower. While you have been enjoying a good night's rest in a comfortable bed the poor chap has been dragging around all night in freezing weather in the sopping-wet cover crop several feet high, trying to save his year's crop and perhaps his orchard. The weather man announces over the radio at eight o'clock in the evening that firing should begin in certain areas at eleven, twelve or one o'clock, or later, as the case may be. Out goes Mr. Grower into the night to watch his thermometer. When the temperature drops to 29° he "fires up" for his lemons, at 28° for oranges and at 27° for grapefruit. Lemons are not only more susceptible to cold but certain varieties of lemon trees do not have as much foliage as orange or grapefruit trees, and as the lemons



*Above left: Union's tree nursery.
 Above: Helper receives advice from
 Joe Neuls. Below: Picking avocados.*



*Above: Spraying ends pests.
 Below: Disking cover crop.
 Right: Irrigation is important.*



are more exposed they will freeze at a slightly higher temperature. Grapefruit grows mostly on the inside of the tree and being thus protected will stand more cold than either lemons or oranges before freezing. About fifty orchard heaters per acre (approximately one for each two trees) are required. If the grower is unable to keep the temperature from dropping below 25° for several hours, he will not be able to save his fruit from freezing. Temperatures remaining below 20° for any length of time will split the limbs and trunks of the trees and probably ruin them. Fortunately, most of Union Oil Company's orchards are in areas little affected by heavy frosts or freezing and only a few hundred orchard heaters are used.

The citrus growers in California are greatly indebted to Mr. Floyd D. Young, meteorologist, for the services he performs in broadcasting frost warnings each evening during the winter season.

Picking, hauling, storing, grading, treating, packing and marketing of citrus fruit and avocados is a business in itself. Picking crews ranging from fifty to ninety men are kept busy throughout the year.

Accurate records must be kept of the details

of expenses, production and income from each orchard to determine whether it is paying.

The citrus fruit which is grown on Union Oil Company's orchards is marketed by the California Fruit Growers Exchange through three different packing houses. The avocados are marketed by Calavo Growers. During a normal year we will produce and market approximately 510,000 boxes of citrus fruits, weighing about fifty pounds per box, and approximately 150,000 pounds of avocados.

So, if you are buying oranges, lemons, grapefruit or avocados, who knows, they may have been grown on Union orchards, and probably were if they are of extra quality. Look for the "76" sign on avocados. It's on some of them. Seriously, a small "76" sign is imprinted on some of the fruit on trees exposed to thievery, which was quite prevalent at one time, in order to trace the stolen fruit to the vendor.

In the final analysis, the grower is interested in net returns. Because of varying factors which always affect the price of citrus fruits and avocados, the returns must be averaged over a period of five or ten years.

The highest price received for a carload of lemons was in Chicago on September 15, 1927, the day of the Dempsey-Tunney fight. It was a hot day, lemons were scarce, the boys thirsty, and the fruit sold for \$24.00 a box.

All of Union Oil Company's orchards have reached maturity, and over the past few years have shown a substantial profit, notwithstanding the poor prices received for citrus fruits and avocados during the last year or two. This may be credited to the men, and their associates, who are directly in charge of the management and operation of this project.



Union Oil's oranges, grapefruit and lemons are shipped through the East Whittier Citrus Association packing plant. In photo above oranges are traveling up the conveyor and into the dryer. They have just been thoroughly washed to remove dirt and chemical spray. At right is the packing line at the plant, where the fruit is graded, wrapped and boxed.





Pebble Beach, near Avalon, is a photographer's paradise, but bathers naturally prefer the smooth sand and shady palms along Avalon's shore. The beach at Hotel St. Catherine, shown below, invites relaxation. On opposite page is the S. S. Catalina, one of two comfortable boats sailing between the coast and Avalon.



THE STORY OF SANTA CATALINA

SANTA CATALINA, second largest of the eight Channel Islands which lie off the coast of southern California, is about 22 miles by boat from Los Angeles Harbor. This resort yearly plays host to thousands of tourists from all parts of the U. S.

History tells us that Don Juan Rodriguez Cabrillo discovered Santa Catalina in the year 1542. A Portuguese navigator in the service of Spain, he was searching for the mythical Strait of Anian, which supposedly connected the Atlantic and Pacific oceans, but found instead an elongated island jutting out of the blue Pacific. He named it La Vittoria after his flagship and, having refreshed his supply of water, waved farewell to the friendly natives and sailed on in quest of a non-existent northerly passage.

Sixty years passed before another expedition visited the island. This time a flotilla of Spanish galleons under command of Don Sebastian Viscaïno anchored in the calm waters of Avalon Bay. Viscaïno was searching for a port where richly laden Spanish ships return-



ing from Manila might find refuge from pirates that infested the southern seas. As the ships neared the shoreline, the native Indians raced to meet them in many-oared canoes. That was on November 24, 1602, the eve of the feast of St. Catherine of Alexandria, and Viscaïno, a man of faith, named the island Santa Catalina in her honor. La Vittoria was forgotten, but Santa Catalina stuck.

According to Fray Torquemada, an adventurous missionary who accompanied Viscaïno, the party stayed on the island for five days and captured the hearts of the little Indian girls with gifts of "petticoats and necklaces." The Indians were sun-worshippers and on Santa Catalina Viscaïno's men found a great temple

of their sun god. Here natives of the Channel Islands congregated every year for a ceremonial affair. This temple, which Fray Torquemada referred to in his diary, later buried in a landslide, was believed to have been located near Empire Landing, ten miles northwest of Avalon.

Spain, engaged in lucrative enterprises elsewhere in the New World, displayed slight interest in Viscaino's Santa Catalina Island and until late in the eighteenth century the native Indians saw little of the white man. It was the valuable sea-otter, now practically unknown on the Pacific Coast, that brought Yankee sailors around the Horn at that time. These animals were then commonly found from California's coast to Alaska and their pelts brought fabulous prices from the Chinese merchants of Canton. During the early 1800's Captain William Shaler, master of the *Lelia Byrd* out of Boston, carried on a profitable trade in this commodity, in defiance of Spanish law which forbade foreign ships in California waters. His was the first American vessel of record to

anchor at the island, where he found the sea-otter abundant. In Russia, members of the nobility also coveted sea-otter skins and, from a colony in Alaska, Russian hunters, commanding fierce crews of Aleuts and Kodiak Indians, sailed down the Pacific Coast in quest of these animals. To these Russians many historians attribute the extinction of the Catalina Indians. The peaceful Islanders were no match for the warlike Alaskan tribes and, after an attack by a Russian vessel in 1811, Islanders who escaped destruction fled to the mainland, seeking protection of the mission fathers.

Subsequently, Santa Catalina was the scene of varied and not always lawful activities. It once served as a base for contraband trade. Captain Richard Cunningham of the American ship *Courier* built a warehouse on Avalon's shore, from which he operated until forced by Governor Encheandia to remove it. Vaqueros, too, rode the range, and sheep raising was a part of the early activities. In 1848, near the close of the Mexican War, Pio Pico, Governor of the Californias, seeing an American victory



was imminent, is said to have deeded the island to Thomas Robbins, a Santa Barbara rancher, in return for a silver-mounted saddle.

A little later, dealers in human cargo used Catalina's hidden coves to conceal Orientals, deported from California under the "China Boy" laws of 1855, until they could be smuggled back to the mainland. Smuggler's Cove takes its name from this nefarious activity. Then, in 1863, the island became the scene of a mining boom. Lead, silver, zinc, and even small quantities of gold were found and mining men flocked in from the mainland. During the Civil War, Union troops chased the miners out, suspecting them of Southern sympathies and privateering activities.

After the Civil War, ownership of Santa Catalina changed many times. William Wrigley, Jr., finally acquired it in 1919 for \$3,000,000, and that transaction marked the beginning of its development as a vacation playground. The older buildings began to disappear and streets were torn up to accommodate gas lines, water mains and other public utilities. New and much larger piers were constructed and, in 1920, the S.S. Avalon, formerly operated on the Great Lakes, was reconditioned and placed in service between Wilmington and the island. Four years later, Wrigley's gum money built and placed in service the larger S.S. Catalina and, at the same time, new and more comfortable glass bottom boats and other marine equipment were commissioned. Additional guest accommodations were added and the Hotel St. Catherine was remodeled to take care of the ever increasing influx of visitors. After Wm. Wrigley, Jr., died in 1931, the development program was carried on by his son, P. K. Wrigley.

This steady program of improvement has created the picturesque, early California atmosphere which the traveler finds at Avalon today. Santa Catalina is a resort of countless beguilements. Sportsmen span continents to catch swordfish and marlin which abound in nearby waters. From hunting lodges on the island's interior, parties go wild boar and goat hunting, all year long. Then, of course, there is swimming, aquaplaning, golf, tennis, horseback riding and the many other diversions usually found at vacation resorts. Swimming in Avalon Bay is ideal. The water is clear and there is no pounding surf to harass the inept swimmer—only tiny waves that lap at the beach. To add a tropical touch to this scene, palm trees have been imported and planted in the sand along the shore. These

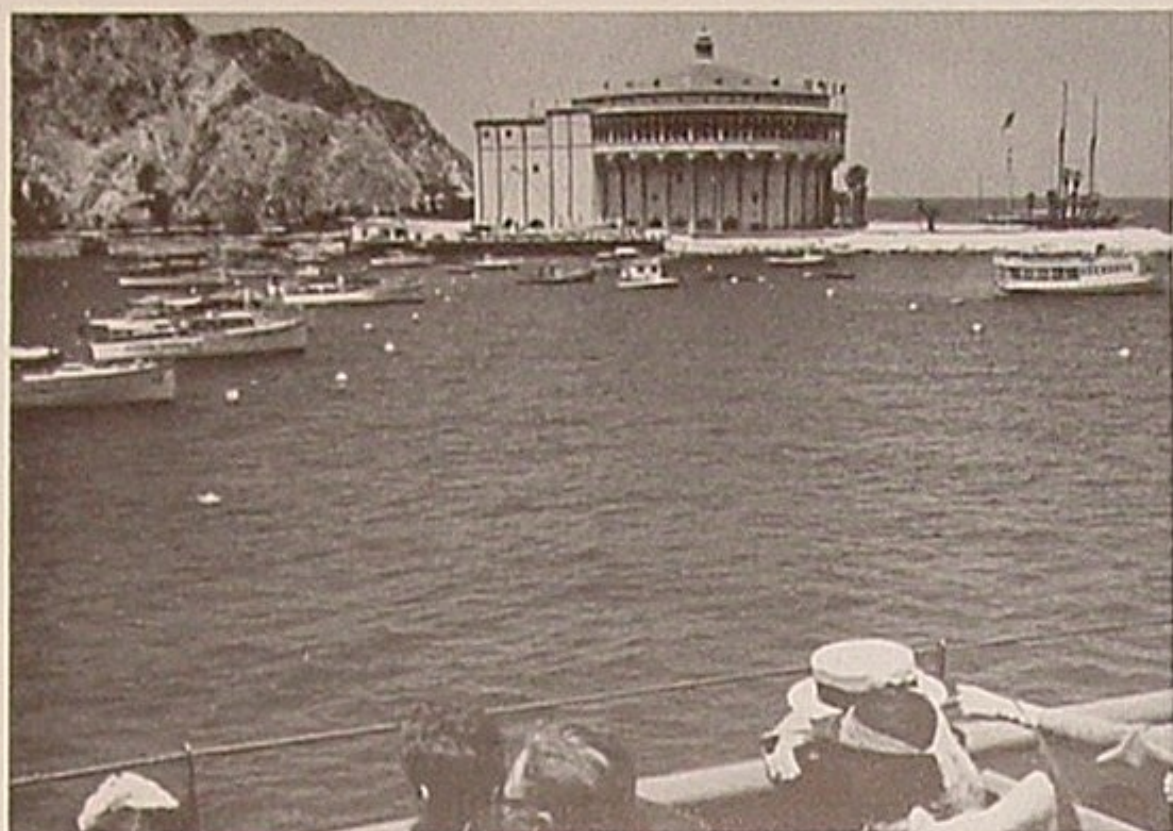
have proved a double blessing to many tender-skinned visitors because they provide shade from a sometimes too intense sun.

But by all odds the most imposing and apparent feature on the island is the famed Catalina Casino on Sugar Loaf. It is the first thing the visitor notices as the steamer nears Avalon and, since its dedication in 1929, thousands of dance devotees have flocked there each summer to thrill to the music of many of the nation's big name orchestras. Its huge circular floor, the largest in the world, accommodates two thousand people. Around this elevated floor is an outdoor promenade where dancers may stroll or watch the twinkling lights of boats anchored in the Bay. The lower floor of the huge structure is a theatre seating 1,200 persons. A new feature at the \$2,000,000 Casino is a Marine Bar, behind which is a colorful mural depicting tropical fish in full panoply. In deference to the younger generation, only soft drinks are purveyed here.

For those who prefer more sedate fun, Catalina offers the fascinating aviary where, without admission charge, the visitor may see hundreds of rare, often beautiful and sometimes amusing birds. There are also interesting flying fish excursions and glass-bottom boats which reveal lovely submarine gardens. Some habitual visitors prefer the Isthmus, a narrow strip fourteen miles northwest of Avalon. Here life is somewhat less strenuous, but very pleasant. The water is excellent for swimming and the cove provides safe anchorage for yachts and cruisers. Many motion picture companies have used this setting for south sea films and at Christian's Hut, where much of the action in *Mutiny on the Bounty* took place, vacationists enjoy gay evenings against a convincing tropical background.

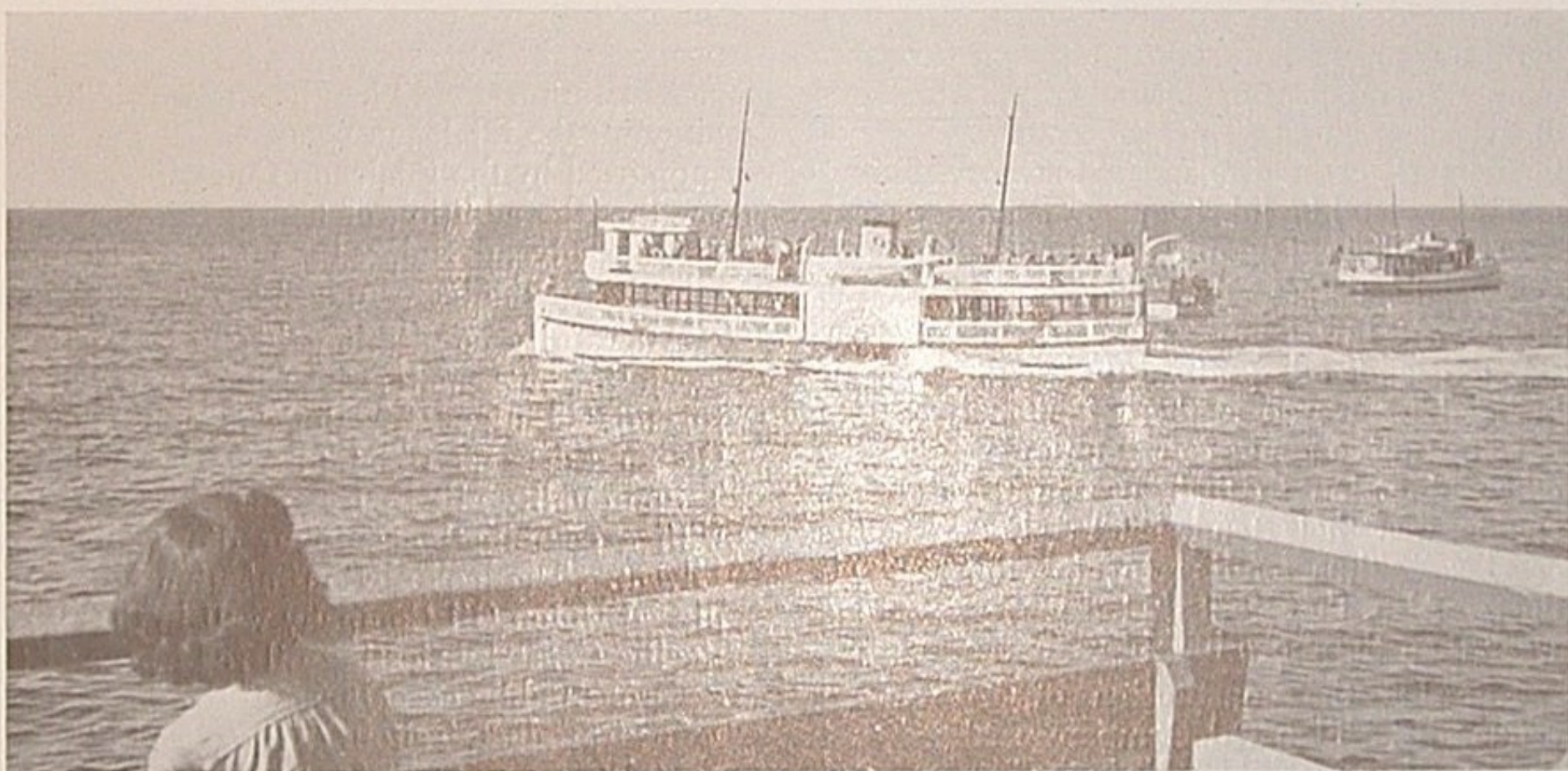
Catalina Island also boasts the World's smallest airport—really not an airport at all, but simply a very neat and completely equipped landing for the company's seaplanes. Regular company operated air service to the island was initiated in 1931, although privately owned air lines had previously made trips to the island.

With all its attractions, many of them unmentioned for lack of space, Santa Catalina has naturally become a tourist Mecca and its popularity with southlanders has never abated. It has done much to recreate the carefree atmosphere of an earlier day in California—which, after all, was what William Wrigley, Jr., envisioned when he bought it twenty years ago.



First thing excursionists see upon arrival at Catalina is the huge Catalina Casino and Avalon Bay, dotted with small boats.

Disembarking is always fun.



Above: Glass-bottom boats reveal lovely marine gardens near shore. Below: Skipping pebbles provides mild diversion.



Water-sports predominate.



NEW PHENOL SOLVENT UNIT IN OPERATION

By E. G. Ragatz

Assistant Manager Research and Development

UNION OIL COMPANY recently completed at Oleum refinery a new phenol solvent treating plant which marks a distinctive advance in the manufacture of high-grade lubricants. Behind this innovation is an interesting story that reveals a type of problem commonly presented to the refinery technologist, and demonstrates the intense effort that is necessary to its solution.

The trend in automotive design over the past decade has been continuously towards higher compression ratios, higher operating temperatures, greater piston speeds, and reduced clearances. This, of course, has coincidentally created a demand for more efficient and more stable lubricants. The older type western lubricating oils did not answer the new need satisfactorily. They were either too viscous at low temperatures to permit easy starting and adequate lubrication, or, if blended to overcome these faults, tended to develop uneconomic consumption rates. Another objection to their use in the modern engine was their tendency to sludge in the crankcase, thus tending to clog the tiny oil ducts. Also, they contributed more to engine wear than the more highly refined oils.

Knowing the constitution of its western crude oils, Union Oil Company realized that these weaknesses did not lie in the fundamental character of the stock, but in the prevailing refining practices, since western crudes contain all the essential elements of the finest lubricating oils obtainable. Improving the older type of oils was simply a question of determining how to extract these elements as completely as possible, and in the highest state of purity from the raw crude, all of which led to an intensive program of research, investigation, and experimentation, eventually resulting in the construction of the new phenol solvent treating unit.

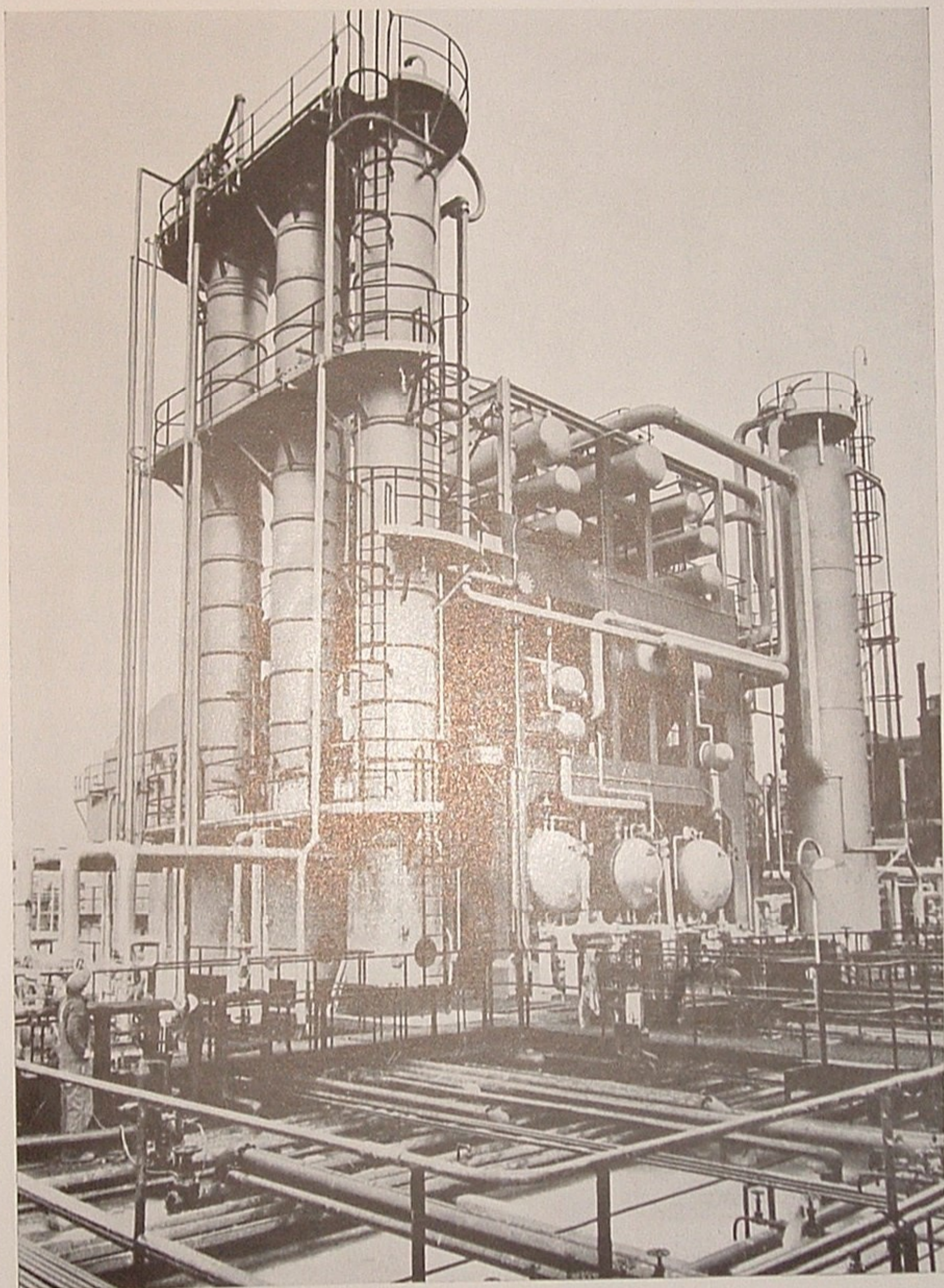
Fortunately, solvent extraction was no new thing to the Company technicians. Considerable experience had been early acquired in the operation of two Edeleanu plants utilized for solvent treating kerosene with liquid sulphur dioxide (a gas at ordinary temperatures and pressures). This experience formed an excel-

lent background for later research on lube oils, and definitely facilitated the solution of the later problem.

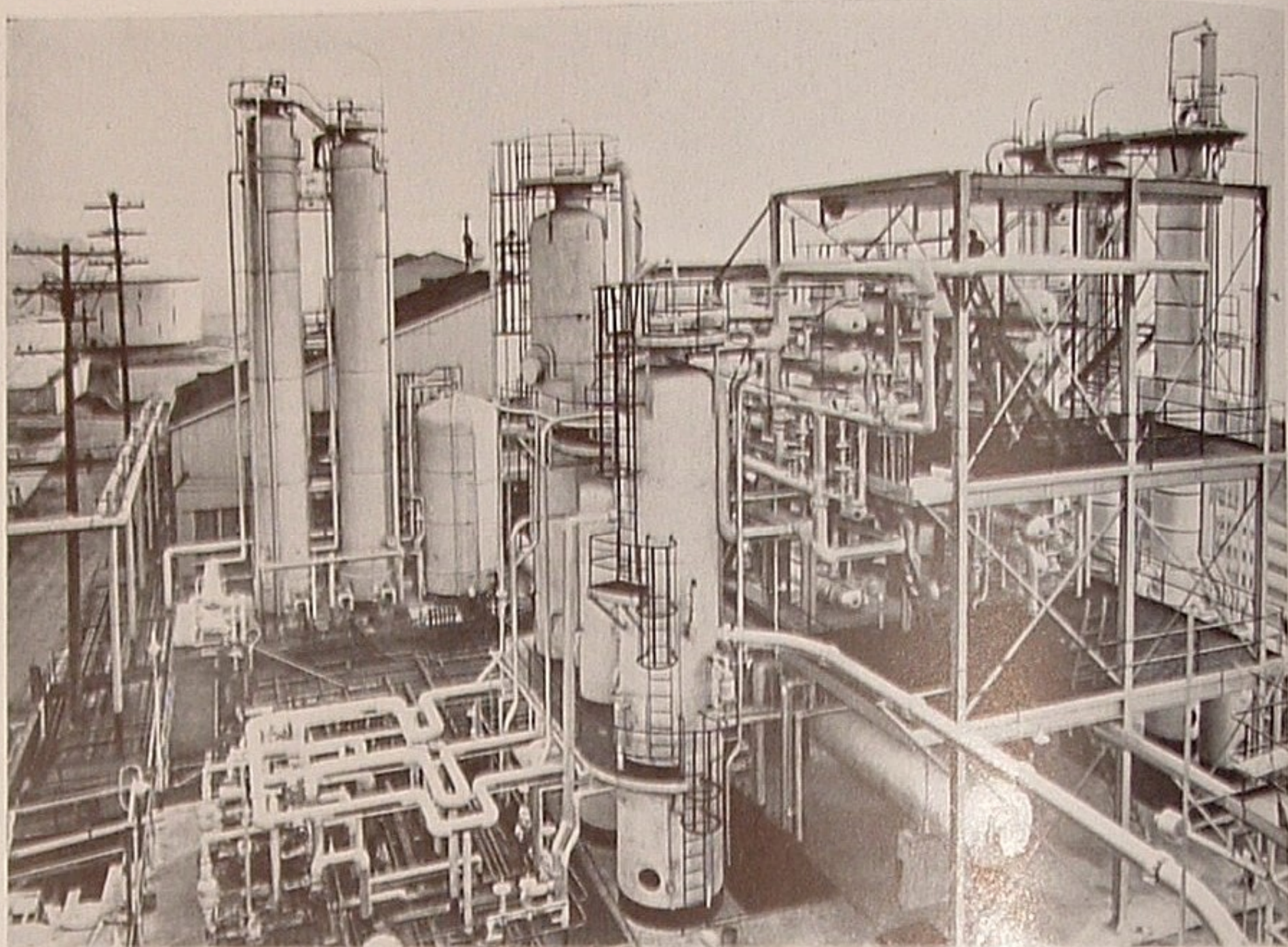
The first step in the application of solvent extraction to the manufacture of better lubricating oils involved the treatment of lubricating oil distillates with liquid sulphur dioxide, just as in the treatment of kerosene. This distinctly improved the character of the resulting product, and momentarily answered the need for an improved oil. When still greater improvement became necessary, it was logical that consideration should be given to further adaptation of the Edeleanu process. This view was supported by the Edeleanu Company's discovery that the addition of benzol to the sulphur dioxide solvent rendered the process still more selective of the better quality fractions.

After fully confirming this fact by experimentation on a small scale, Company engineers formulated plans for the conversion of the Oleum Edeleanu plant to the production of Triton quality oils by treatment of feed stocks with a combination sulphur dioxide-benzene solvent. The completion of this new unit placed Union Oil Company well in the van of Pacific Coast lubricating oil refiners, and the generous public acceptance of the new solvent refined product, Triton, soon started the technologists on a search for means of increasing its production. Two alternatives were opened—either to expand the existing Edeleanu unit, or to build a completely new plant incorporating all of the latest developments in solvent refining technique. The latter course was finally adopted, and the phenol solvent plant was the result.

Before describing the phenol plant, it might be desirable to review briefly the various stages involved in the present system of manufacturing pure paraffine base Triton oils from mixed base western crudes—that is, crude oils containing both paraffine and asphaltic constituents. This refining process involves five major steps, namely: high vacuum distillation for the removal of excessively heavy fractions; propane treatment to remove asphaltic material, gums and resins; propane evaporation to eliminate wax; phenol solvent refining (later



New phenol plant at Oleum incorporates the latest developments in lubricating oil manufacture.



Another view of the new phenol solvent unit. At right is the control room, where operation of the modern and efficient plant is conducted.

described), and a final clay treatment to add the characteristic brilliance and purity to the finished product.

Vacuum distillation provides the most effective means of separating the lubricating oil constituents from the crude oil in a series of well-defined fractions completely free from the heavy portions that are ordinarily responsible for excessive deposition of carbon in the engine cylinder. High vacuum distillation also enables the refiner to operate at temperatures sufficiently low to avoid any change in the composition of the desirable portions of the crude oil. In the process, however, waxes, resins, small traces of asphalt, and other impurities are carried over with the distillates.

The next step is to remove these impurities by propane solvent treatment. Warm propane exhibits a preferential solubility for lubricating oils and waxes in the presence of resins and asphalts. Consequently, as the first step in the propane solvent treating operation, the vacuum still distillates are diluted with warm



propane, and the resinous and asphaltic materials which remain undissolved are drawn off. The solution of lubricating oil and wax is then cooled to 40° below zero (Fahrenheit) at which temperature the wax solidifies and is separated by filtration. The propane is then recovered by distillation, and again utilized for treating further stocks, while the deresined and deasphalted oil is transferred to the phenol plant for solvent treatment.

All solvent extraction processes used in petroleum refining are based on the funda-

mental fact that when a petroleum fraction is treated with a solvent under proper conditions, the mixture divides into two layers—one containing a large proportion of solvent and a small proportion of oil, while the other contains a small proportion of solvent and a large proportion of oil. The oils in these two layers, known respectively as the extract and the raffinate, are distinctly different in composition. In certain operations the extract fraction contains the desirable material, while in others such as the lubricating oil process, with which we are now concerned, the raffinate is the desired stock.

It has been found that higher yields and more efficient separations can be obtained with the use of smaller quantities of solvent, if the treatment is conducted as a continuous counter-current operation by the aid of one or more treating columns. In this type of operation, the solvent is continuously introduced and the raffinate withdrawn from one end of the treating column, and the feed stock continuously introduced and the extract withdrawn from the other end of the column, or string of columns. The Oleum phenol solvent unit incorporates three such columns, thus providing an efficient and economical system for the production of Triton quality stocks.

After treatment, the phenol is recovered from the extract and raffinate and used over and over again in the treating unit. The price of phenol is approximately \$1.50 a gallon, so the necessity of conserving it to the utmost will be immediately obvious.

The recovery operation is a highly involved process in which water and phenol is completely removed from the extract and raffinate, with undiluted phenol being recovered for re-use at the treating columns. For these various processes a highly complex system (at least to the layman) has been devised for making the desired separations and reducing the phenol loss to inconsequential proportions.

After the last traces of phenol have been removed, higher quality lubricating oil raffinate fractions are submitted to a clay treatment to develop the lustre and brilliance for which Triton is famous, and finally blended and packaged for distribution to Union Oil Company patrons everywhere.

By the use of modern control equipment, it is possible to operate the phenol treating plant entirely from one central control board. This board has been so arranged that not only the normal operation of the plant, but emergency shut-downs can be taken care of by remote control, thus contributing markedly to the efficient and safe manipulation of the plant.

The construction of the new Oleum phenol solvent unit assures an adequate supply of solvent-treated oils to care for all of Union Oil Company's needs for a considerable time to come. Its completion is a significant step in Union's constant march towards better quality and efficient operation, and its development is an assuring indication of the ability of our Research and Development engineers to keep not only abreast, but well ahead of the general industrial trend in the petroleum industry.

Tax Collector Designs European Motor-Cars

"The tax collector is the chief engineer of motor-car design in European countries," Jean Andreau, consulting engineer of France, declared on a recent visit to the United States.

European motor-car engineers, he explained, cannot take advantage of automotive progress, but must produce cars of low horsepower and small size essential in reducing the 16 types of taxes assessed against European motor-car owners. The most advanced car in France, Mr. Andreau said, has an 11 horsepower motor, and is of the midget type.

That the tax collector is the major influence on car ownership in Europe is seen in the registration gains and losses that follow changes in taxation policies. In Belgium, in 1938, gasoline taxation was increased 16 per

cent. Motor-car sales in Belgium declined 17 per cent, despite increased sales in neighboring countries.

In 1933, Germany adopted a policy of exempting new motor vehicles from taxation for one year. New registrations jumped 60 per cent in 1934, and about 38 per cent in 1935. In more recent years registration increases in Germany have been slower, but it is expected the introduction, this fall, of "the people's car," a midget type, low in tax costs, will increase sales materially.

Taxation against the British motorist has advanced sharply to the point where motorists have adopted motorcycles and midget-type cars. Last year an increase in motorist taxation produced a decline of about 12 per cent in new registrations.



L. P. St. Clair



F. S. Baer

ORGANIZATION CHANGES

At a meeting of the Board of Directors of Union Oil Company last May, L. P. St. Clair, Chairman of the Board, tendered his resignation and retired from active participation in the management of the corporation. He continues, however, as a member of the Board. In his letter of resignation, Mr. St. Clair expressed his desire to be freed from the responsibilities of business life, and called attention to the fact that his present age exceeded that prescribed in the retirement policy of the Company.

Mr. St. Clair has been connected with the Union Oil Company for thirty years, much of that time in an executive capacity. In recognition of his long record of achievement in the oil industry, he was recently honored with a testimonial dinner by the California Oil and Gas Association's wildcat committee. Present were many prominent oil and gas executives of the Pacific Coast.

At another meeting of the Board held in Los Angeles, May 22, 1939, Francis Shaw Baer, well-known Pasadena citizen, and president of the Pacific Finance Corporation, was elected a

member of the Board. Born in Medford, Massachusetts, Mr. Baer received his education in California, graduating from Occidental College with the Class of '14. Shortly thereafter he began his business career with the National Bank of Pasadena, and following important associations with Blankenhorn Hunter Company, and Hunter Dulin and Company, eventually became a member of the Pacific Finance Corporation, of which he was made president and director in January, 1934.

Mr. Baer brings to the Board a wealth of business experience that should prove of inestimable value. He has been identified in responsible capacities with many of California's larger industries, and is at the present time president and director of Los Angeles Industries, Inc., and is also a director of Consolidated Steel Corporation.

As a resident of Pasadena he has always evinced a keen and active interest in various community enterprises, and is a trustee of Scripps College and the Hollenbeck Home for the Aged.

Good Highways Bring Better Education

The little red schoolhouse is fast disappearing from the American educational system and its place is being taken by the consolidated rural schools throughout the country. Teachers no longer are attempting to teach a half dozen grades in a single room, as was done in the scattered little school.

This improvement in the American educational system was made possible by the build-

ing of good roads and the development of motor vehicles, especially motor buses. More than 80,000 school buses now are in use in the United States. They transport 3,000,000 children to and from 34,000 schools at an average cost of less than 50 cents per week per child. The routes of these American school buses embrace more than 1,000,000 miles of road.



MINIFLIGHT MADNESS

ONCE, not so very long ago, there was a man whose young son expressed, somewhat insistently, a desire for an aeroplane. Not a real one, of course, but one that would really fly. Dad, being a doting parent, remembered one day to bring home a simple model aeroplane kit for the youngster. Now, if this fond father had been possessed of proper foresight he would have turned the whole kit and kaboodle over to Junior and dismissed the subject from his mind without further ado. Instead, he essayed the role of chief construction engineer.

With very little aid from the younger edition, he glued the frail balsa-wood wing to the fuselage and assembled the landing gear according to instructions. Even then, could he have foreseen events to come, he might have retreated to his den and left Junior to his own devices. But no. Like a lamb to slaughter, he trailed into the backyard for the test flight.

Disastrous was that first take-off. The rubber-band powerplant, wound to the breaking point, lifted the tiny craft off the ground like a skyrocket and propelled it, after a brief erratic flight, into the topmost branch of the neighbor's plum tree. There it hung, its wing askew, its flimsy fuselage buckled beyond repair. Grandpa, who had been peering over his bifocals at the event, remarked that Dad "wound the motor too durn tight," and settled back into his rocker.

But the die was cast. Dad, sheepish and apologetic, brought home a much more elaborate kit next day. Father and son assembled this second plane, grandpa kibitzed. It flew more steadily than the first, but eventually ran afoul an immovable chimney and disintegrated.

Inevitably, Junior bought one of a half-dozen miniature aeroplane magazines, showed his elders pictures of real gas-powered models and, after a surprisingly mild protest about the

price, all three were busily engaged in the production of a gas job.

Dad, Junior and Grandpa are hypothetical characters, but they might very easily be real, for by just such a sequence of events do grown men of all ages become enmeshed in the toils of the model aeroplane hobby. This popular extra-curricular activity has already burgeoned into a \$5,000,000 industry in the U. S. Last year in California alone some 20,000 of the tiny gas engines were manufactured and marketed. The hobby numbers among its victims such celebrities as Jackie Cooper, Freddie Bartholomew, Prince Michael of Roumania, Robert Montgomery, and Leslie Howard, as well as many professionally staid doctors, lawyers, and candlestick-makers. Reginald Denny, onetime matinee idol and at present a popular character actor, is in the business to the tune of many thousands of dollars. His two large manufacturing plants in Hollywood and Burbank are the end-product of an earlier attempt to help a neighbor lad repair a cracked-up rubber-band model. Today he ships motors, planes and parts to every air-minded country in the world.

Gas model enthusiasts have their own well-knit organizations throughout the Nation. The Gas Model Aeroplane Association of Southern California, organized some three years ago, meets every clear Sunday at an abandoned flying field on South Western Avenue. There, under the auspices of the National Aeronautical Association, some substantial part of the 500 members meet and stage flight contests under strict official surveillance. Accepted rules for such affairs require that the planes take-off from a standing start under their own power. After twenty seconds the power must be shut off (this is accomplished by a special timing device which breaks the ignition circuit after a predetermined interval) and the planes

At A Miniature Aero



Viewing model plane contests from the judges' stand are John Trent (Tailspin Tommy), Bob Moore, Mrs. Fred Schrott, Reginald Denny, and Fred Schrott.

Cecil Schwartz, Burbank, California, builder is proud of this tin ship.



Flight preparation at the starting line is a hectic period for mini-flyers.



During a flying meet, the field is filled with model builders, who work feverishly to get their creations ready for the contest. Last minute adjustments are always necessary on the motors.



Left: Erwin Ohlssen, midget motor manufacturer.



Fuel is usually administered by means of a small squirt-can or eye-dropper.



Above: A contest plane is weighed-in the entry desk.

Planes reflect sh

At A Miniature Aeroplane Meet

Cecil Schwartz, Burbank, California, builder is proud of this team ship.



Heart-breaking crack-ups are not infrequent, but model makers are not easily discouraged and come back for more.



Above: Elbert Weathers, San Diego lad, won the 1938 championship. His plane has an unusually large wing-spread and a special detachable landing-gear.

meet, the field is filled with who work feverishly to get their or the contest. Last minute ways necessary on the motors.

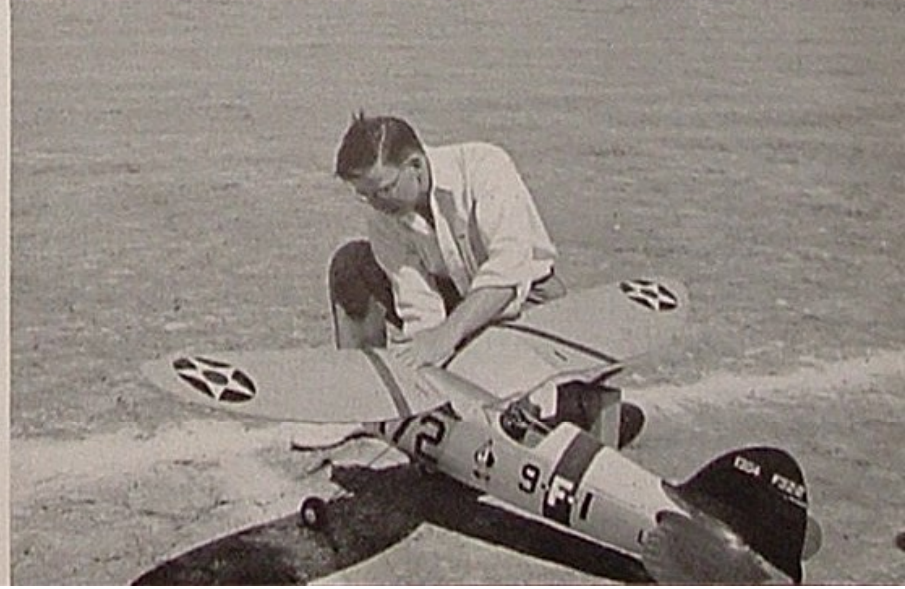


Above: A contesting plane is weighed-in at the entry desk.



usually administered ns of a small squirt-can or eye-dropper.

Planes like the one at right reflect the skillful craftsmanship of the builder.



then sometimes glide gracefully to earth again. Elapsed time in the air determines the winner. The tiny planes are actually capable of flying about ten minutes for every ounce of gas taken up, and would, if allowed full range, rapidly disappear over the distant horizon. In fact, they sometimes do just that if the operator absent-mindedly forgets his timer. Even under contest rules planes have occasionally caught convection currents and soared to altitudes as high as 7,000 feet.

The motors themselves are a most amazing achievement. No larger than a small-sized ink bottle, they are precision-built to 2/10,000ths inch clearances and cost from \$9.00 to \$25.00. In normal operation, with a thirteen-inch propeller attached, they wind up to about 6,500 r.p.m., nearly twice as fast as your automobile motor turns at 60 miles per hour. In laboratory block tests without propellers they have been checked at around 20,000 r.p.m. All but one of the thirty or more commercially manufactured engines now on the market are of the single-cylinder, two-cycle type, operating on a mixture of three parts gasoline and one part heavy lubricating oil. Experienced devotees have found results more satisfactory with gasolines such as Union's White Magic, but a few non-conformists hop their motors up with highest fuels, ether mixtures, and other mysterious elixirs. More often than not such fuels are too potent and scatter motor parts all over the flying field. Compression ratios are generally 7 to 1. Cooling surfaces are necessarily small

and the midgets run hotter than a little red wagon and a heckuvalot faster. Ignition is supplied by a flashlight battery or a tiny wet cell, through a coil and breaker. Spark plugs manufactured by Champion and A.C. are about the size of an old fashioned collar button. The tiny gasoline tanks hold two ounces of fuel. A typical motor fits comfortably in the palm of your hand, displaces 57/100 cubic inches, develops 1/4 horsepower, and sounds like a high-power racing car coming down the home stretch.

But it is in the model plane itself that the builder expresses his individuality. Ranging in wingspread from four to eight feet, they are patterned after all types of aircraft, and often incorporate unconventional designs. They cost from \$10.00 upwards and like real aeroplanes are finished with the finest Berryloid lacquers. The youngsters who today are designing and building these planes will most likely become our future aviation engineers. What started out as a toy and a hobby has mushroomed into a business of real significance. Wind tunnel tests are used to determine aerodynamic properties of new models, unnumbered thousands of boys and young men are discovering for themselves the secrets of heavier-than-air flight, and even the United States Army is experimenting with radio-controlled gas models.

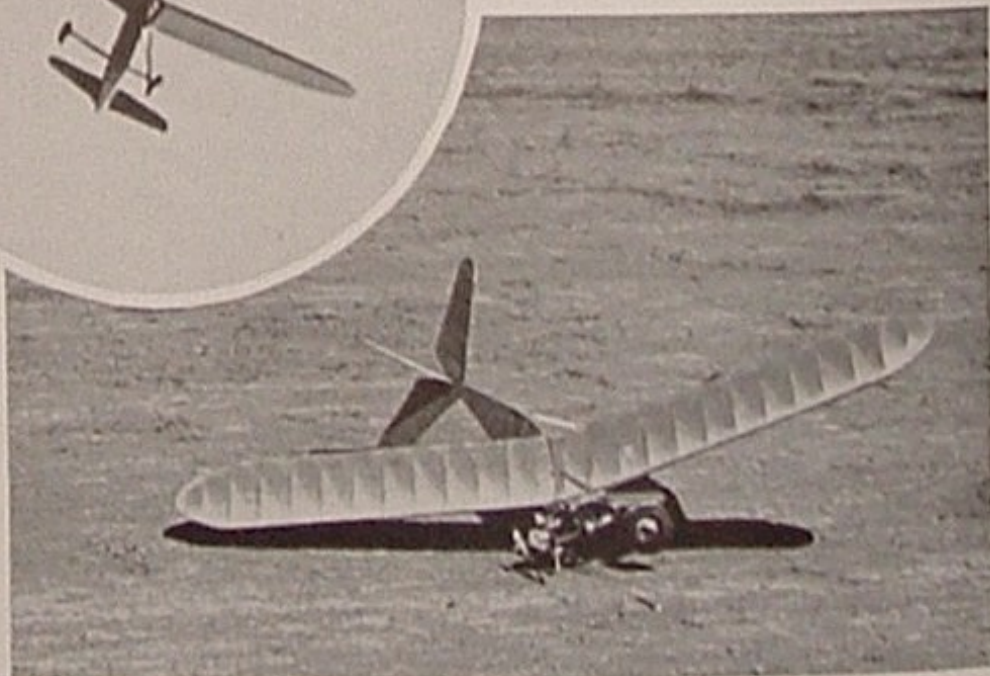
Dad, of course, is hooked—hooked plenty and glad of it. Next month he'll build a model that will carry off a pewter mug. Not for himself, you understand, but for the youngster.



The model planes are very powerful for their size and take off at a terrific clip. Once off the ground they fly gracefully until the timer shuts the motor off, then they nose down and glide toward earth.



Landings, however, are not always successful. If the tail surfaces are not properly adjusted they may come in too fast and crash.





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IT IS a somewhat amusing fact that people are constantly attempting to isolate themselves into distinctive groups, in order that they can define or determine the responsibilities of one group to the other. The most common illustration is the mental differentiation, (it can never be actual) between "we" and "the public." As industrialists "we" seek in long extended conferences to determine how "we" shall deal with the "public," apparently completely ignoring the fact that *we are the public*. The public is all inclusive, and if we drop the distinctions and agree on how we should like to be treated ourselves we shall then know how to treat the public.

The same thing applies when we begin to discuss sales methods and sales programs. We again differentiate between "buyers" and "sellers," and yet *we are all both buyers and sellers*, so that the simplest way of determining how to treat either a seller or a buyer is to determine how we ourselves would like to be treated under the circumstances.

We are divided by conventional barriers into other hazily defined categories, such as employers and employees, but when we analyse the respective situations of these two groups what do we find? We are all employed in some form of constructive endeavor, so we must all be employees. We have the same fundamental objectives in our employment, and the same fundamental desire to produce in order that we may procure. There is no escaping the joint responsibility, or the interrelationship, and there is consequently no question as to how we should deal with each other.

No matter by what devious route, or by what process of reasoning we attempt to determine relationships, either institutional or public, we arrive ultimately at the same conclusion. We are all inseparably interrelated and eternally combined in one huge joint enterprise—the business of living.

There are no separate codes of ethics for individuals or groups of individuals, regardless of affiliation. The same moral behavior that is demanded of the man is demanded of the master. The fundamental principles of decency and fair dealing are as essential in the office and the plant as they are in the schoolroom and the home. And the same humanitarian instincts that determine our social conduct should prevail in our business conduct.

The day of the shrewd, sharp dealer is gone, and industry has entered into a new co-operative era, in which the customer is not an outsider, but is the last and most important link in the business chain—a partner, in fact, without whose confidence and good will there could be no pleasure in business, without whose patronage there could be no business.

Union Oil Company is profoundly jealous of the fine relationships, internal and external, that have been developed during the past 49 years, by honest method and fair dealing. Its founders were men imbued with the spirit of public service, men possessed of sympathy and understanding, and men with vision far beyond their times. From a meager beginning, and despite almost insurmountable obstacles, they brought the institution to a position of leadership in a highly competitive industry. They established among their employees a community interest, and mutual regard, that bound the organization firmly and indissolubly into a single entity. They were industrial adventurers who searched out the hidden goodness of this sticky black fluid they called petroleum. They found endless commodities, but were never satisfied that they couldn't find better. They knew as customers what other customers wanted, and they built the highest attainable quality into their products. So they succeeded. So will Union Oil Company continue to succeed, through its continued effort to provide highest quality and honest service to its most important partner—the customer.



Buildings at California Poly are impressive and thoroughly modern. At left is the school's new Crandall Gym.

Below may be seen Jespersen Dormitory and the dining hall. These buildings are only a part of the campus facilities, which provide ample quarters for the school's 650 technical students.

TRAINING MEN FOR TOMORROW'S JOBS

SAN LUIS OBISPO is proud, and with real justification, of the State technical college, located there and known as the California Polytechnic School. Here is an institution providing the answer to an agricultural and industrial need that grows daily more acute. Housing 650 students in an imposing array of well-equipped laboratories, workshops, dormitories, and other incidental edifices, the Polytechnic specializes in the preparation of young men for the responsibilities of a wide diversity of business callings. These men are not stuffed with academic information, but are taught the vital and fundamental operations of agriculture and industry in such a thorough manner that when they have completed three-year courses in their respective vocations, they are ready to step into the working world not as neophytes, but as competent, well-qualified workers. As a matter of fact, they are definitely trained as experts in manipulation and operation in order to solve industry's crying need for men of foremanship caliber.

Too many young men are being released from colleges and educational institutions with nothing more than the capacity to think. They have learned the practice of logic, and have had their mental processes stimulated in a



highly commendable and highly effective manner. They have been educated for the professions in such numbers that now there is a dangerous shortage of skilled operators and craftsmen, men who have learned to utilize the results of thought, and operate expertly and efficiently the tools that have been invented for their comfort and convenience.

Just as there is a need to balance supply and demand in respect to the products of industry, so it is essential to balance supply and demand in respect to the training of industrial personnel. Industry has already recognized this fact, and is of its own initiative taking such steps as seem expedient to provide vocational training for its own members, so that in future there will be no sporadic shortages of essential trades and craftsmen. This, of course, eventually redounds not only to the benefit of indus-

try, but to the distinct advantage of the individual, and, in fact, the whole social system.

California Polytechnic School is the only public institution of its kind west of the Mississippi. It is neither a junior college nor a preparatory school. It has no research projects, although it applies the findings of the most modern researches in its operations. Its definite objective is to train young men for that class of employment lying between the position of the executive who can plan but cannot perform manipulative tasks, and the worker who can carry out orders or follow routine, but lacks the training, imagination or ability of an administrator.

The plan of the Polytechnic is to so combine vocational and technical skills with a background of science and economics that a graduate is immediately valuable to his employer,

and can ultimately rise above the level of the skilled worker by some prerogative other than the doubtful distinction of simply being the oldest employee.

Students at the institution range in age from 16 to 35, and hail from widely diversified areas in all parts of the country and from 49 of California's 58 counties. They are almost all at least high school graduates, who, despite prior training, have chosen to follow mechanical and agricultural pursuits. The only entrance requirement is evidence from the prospective freshman's preparatory school that he is capable of applying himself earnestly to the course he has selected, and that he is a clean, respected young man in his community. The entire routine is so ordered that no time is lost in revealing the aptitude of the pupil for his chosen vocation, and the elimination of unnecessary studies enables the average student to tackle his assignments with relish and vigor.

The freshman year at the Polytechnic differs from the freshman year at any other college in the nation, particularly in the fact that the young man launches himself on a program of technical training from the first day. If he is a social or educational misfit, he doesn't last long. Individual instruction, hard work in project operation soon eliminate the unfit, and just as quickly bring the worthy, apt student to the fore. Students are placed largely on their own responsibility. They know that they are not only to be given a proficiency certificate if successful in graduating, but will also be recommended and, in most cases, actually placed in a job if their general conduct as well as their work justifies such a recommendation.

There are more than 100 specialized fields of agricultural and industrial endeavor for which



Stock-breeding and animal husbandry are offered at California Poly, where students learn first hand the problems involved in raising livestock.

At right is the school's spick-and-span stock-yard and barns.



California Polytechnic can with its present facilities be training graduates, but its majors are limited now to about sixty-five different fields, which the students can complete in two-year or three-year courses.

In the agricultural branches, training is offered for pure-bred livestock herdsman, creamery workers, poultry and hatchery employees, landscape gardeners, agricultural inspectors in federal, state, and county positions, citri-culturists, pomologists, agricultural mechanics, livestock feeders, cow testers, and feed and equipment salesmen. In the industrial branches are prospective electrical communications technicians, switchboard and power plant operators, aircraft mechanics and construction men, air conditioning junior engineers, and petroleum industry operators and craftsmen.

Each major is built around a project—frequently self-owned and productive of profit to the operator. This project is an actual commercially productive unit. Agricultural students, for instance, may buy, feed out, and market lambs, steers, and swine—students sell about \$40,000 worth of their own produce annually. He may, if enrolled in dairy production, take over management and operative functions in the school's pure-bred herd, or he may have his own project animals. He may have a poultry project as part of the 3000 bird plant, or may take over hatching, brooding, trap-nesting or pedigree work. He may work in the college greenhouse, landscaping campus acres, public buildings, or may take over assignments for landscaping private homes. Industrial students build and repair many airplanes for resale to ready buyers. One, some years ago, was built for, and used by Amelia Earhart. The students actually operate the college power plant, and make many electrical installations, and they build air-conditioning units for homes or work on commercial installations.

The whole scheme is designed to give the young men confidence in their own ability to perform the essential operations of agriculture or industry. There is no such thing as a general course in either subject, and such studies as biology, zoology, botany and chemistry are taught not as separate, vaguely related college courses, but as a part of the job for which the student is preparing himself. The industrial student follows his mathematics through to the level which he needs in the major he is entering. He takes physics, chem-

istry, strength of materials, mechanical drafting, salesmanship, personnel direction, and industrial economics. He is given an education in oral and written English of a type valuable to him in making reports, selling, writing business letters, and reading technical instruction.

Each graduate has from several hundred to several thousand hours of experience actually doing, on a commercially productive scale, the operations he will be called on to perform in his first employment. As already intimated, the institution has no research projects. All of its diversified equipment is utilized to teach operation. Expensive and delicate gauges, and other precision tools are not kept in glass cases, but are put to daily use. The flocks and herds are managed and fed by students, not by adult herdsman. And the social amenities are by no means overlooked. The boys have their own gymnasium that becomes the scene of a popular prom on periodic occasions, and the San Luis Obispo Miss who is on the regular invitation list is not without prestige in her own bailiwick. They offer amateur entertainment of their own devising, and exhibit some real high-class talent for the diversion of the local townsfolk, and a barbecue on the Polytechnic picnic site is something closely akin to a festive occasion at West Point for glamor and social recognition.

The buildings, beautifully landscaped, thoroughly modern and convenient, would do honor to any national college institution. Members of the faculty have been selected for their practical experience, rather than academic training, and the whole atmosphere of the place suggests bustling competence, and profitable production.

The California Polytechnic occupies a unique place in the educational system of the state—a place which is often confusing. It is known as a "special" school. This is one of the peculiar aspects of our educational system—many more Americans earn their living by the type of technical skill taught at this institution, than by any other type of training. Yet, this is a "special" school, while the others are "regular."

There is no question that the average income of the man who has entered a profession or trained himself for a broad career will be greater ten years after graduation than that of the man who trains himself for the technical field of employment. On the other hand, technical employment—the training of men who

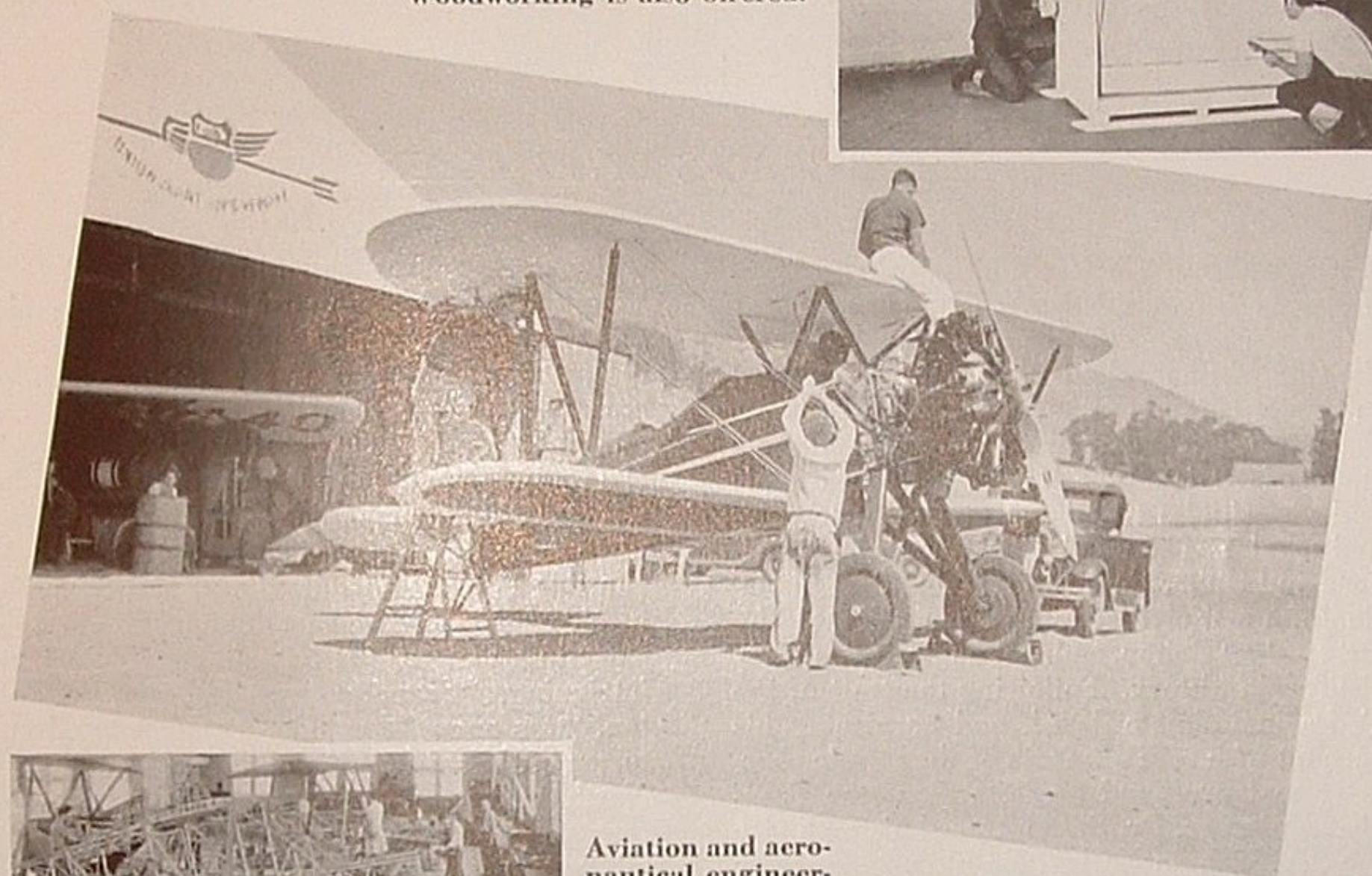


Students study the practical aspects of chemistry in this well-lighted laboratory.



Raising chickens is included.

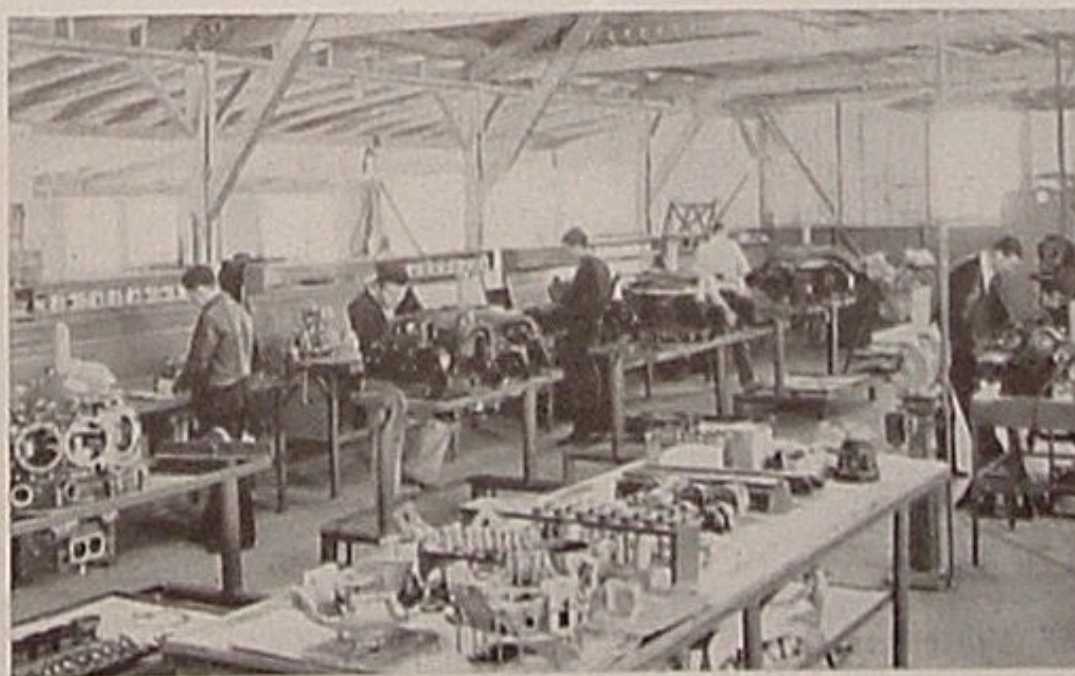
Woodworking is also offered.



Aviation and aeronautical engineering are popular study courses.

Aircraft motors are no mystery to the California Poly student.

Below: Air-conditioning classroom.



rise quickly above skilled laborers but cannot expect to be renowned engineers—presents greater employment opportunity and is deserving of the attention of at least one state college. To this field is the California Polytechnic School dedicated.

In conclusion, it might be pointed out that the Polytechnic was founded 38 years ago, is administered by the State Bureau of Agricultural Education, as a branch of the State Department of Education, and has one of the most extensive plants of any college on the Pacific

Coast. Its grounds measure approximately 1300 acres. Its horticultural branch is the \$1,000,000 Boorhis unit plant at San Dimas, California, consisting of a 7-acre campus, many beautiful buildings, and 30 acres of young citrus, avocados, walnuts, grapes, and other fruits. The two branches form a perfect setting, and are admirably equipped for the development of that particular type of industrial leadership, the lack of which industry frankly confesses at the present time.



PADRE GARCES LIVES AGAIN

COMMEMORATING the visit of Padre Francisco Garces, the first white man who ever crossed the Kern River to enter the site of the City of Bakersfield, 3000 citizens gathered in Garces Circle on Sunday, May 7, to witness the unveiling and dedication of a handsome statue of the dauntless pioneersman. The trials and vicissitudes that beset this great traveler and scholar as he wended his way through Arizona and Upper California, laying the foundation of a new civilization, were vividly told by Dr. Herbert Bolton, eminent authority on early California history. Following the trail of the Padre in intimate detail, and garnishing his account with rare glimpses of the simple character and profound earnestness of the Franciscan pioneer, Dr. Bolton traced his path into the San Joaquin Valley, his ultimate crossing of the Kern River (the Rio de San Felipe), and his final arrival in the village of the "Handsome People," now Bakersfield.

Dr. Herbert Bolton, who heads the history department of the University of California at Berkeley, has done a great deal to clarify and record accurately the early wanderings of the Padres, and it is well that we have men of this type who are sufficiently concerned to sift the ashes of antiquity, and segregate the significant factors before it is too late. For the history of the Padres, like the Missions they built, is slowly disintegrating and it becomes more difficult daily to knit the scattered facts into an understandable pattern.

Some idea of the meticulousness of Dr. Bolton's researches may be gleaned from a perusal of his paper on Padre Garces, which it is hoped

will some day be available for general consumption. Not a minute in the formerly obscure wanderings of the Padre seems to be missing in his account. The very spot at which he crossed the Kern River is located, and the day on which he crossed is equally well established. His reception by the Yaulemani Indians in the village of San Miguel is as intimate and complete as if it had taken place yesterday. Little amusing episodes of adventure, and traveling inconvenience, enliven and humanize the whole story in a manner that is both convincing and intriguing. "Francisco Garces," says Dr. Bolton, "was one of the most picturesque adventurers of the southwest and the Pacific slope of North America. . . . A man of action, he was even more an apostle of the faith. But first of all, he was a friendly mortal overflowing with the milk of human kindness. . . . Garces was conspicuous in that group of stout-hearted pioneers who in the latter years of the eighteenth century re-established the frontier of civilization in southern Arizona, founded the Spanish province of Upper California, and opened communications between west coast settlements and New Mexico.

"Among the Indians he was considered an oracle, and as a mark of affection they called him "El Viejo" (Old Man) although he was but 30 years of age. He was a pathfinder for Anza, the famous Spanish explorer on a trip from Sonora to Monterey, and it was over the trail blazed by Garces that Anza led the colony with which to found San Francisco.

"It was the trip up the Colorado that brought Garces finally to the San Joaquin Valley as

Bakersfield's new statue of Padre Francisco Garces, discoverer of the townsite, stands twenty-two feet high. It is the work of sculptor John Palo Kangas and was made possible through the combined efforts of the city, public spirited service clubs, the Federal Art Project, and commercial organizations.



Unveiling of the statue was performed by native Indians Henry Lawrence and Mary Santiago.



Shrouded in protective canvas, the statue of Padre Garces awaited unveiling on the morning of May 7th.



Garces was looking for a more northerly route to Monterey. . . . It was on this trip that Garces made the first recorded exploration between Needles and San Bernardino, and it was then he took the well trodden Indian trail along or close to the route of the present Santa Fe railroad, which was built a century later."

According to Dr. Bolton, Garces entered the San Joaquin Valley from the south to avoid hostile Indians, coming by way of either

Part of the crowd waiting patiently for the unveiling on May 7th.

Below: It was a big day for Bakersfield. Nattily attired, chrome helmeted trumpeteers heralded the event. Little Mexican señoritas entertained the spectators, and the sculptor, himself, posed beneath his creation, acclaimed by art critics as a sincere and moving piece of work.



Hughes or Elizabeth Lake, where he crossed the track of Fages, the soldier who four years previously had entered the valley by way of Cajon Pass, Palmdale, and the Grapevine Pass. His entrance took place on April 26, 1776, two months before San Francisco was founded, and his discovery of the village of "Handsome People" took place on May 7, just 163 years prior to the date of the Garces Memorial Ceremony.

The dedication was a very spectacular ceremony, preceded by a parade of colors by World War veterans and boy scouts, accompanied by uniformed school bands, a group of Franciscan choristers, a brilliantly costumed ladies' choir from the Church of Our Lady of Guadalupe, a band of native Indians, and a Spanish orchestra. Citizens turned out for the affair in large numbers, and sat, interested and attentive throughout the proceedings, despite the typical Bakersfield sun that blazed overhead.

The movement to erect a memorial to Padre Garces started in the Kern County Historical Society in January, 1937, and steps were immediately taken to raise the necessary funds. With grants from the City of Bakersfield and various public spirited citizens and organizations, and a sculptor and other aids provided by the Federal Art Project, the dream of the Society eventually became a reality. John Palo Kangas was the sculptor elected for this important undertaking and the generous expressions of art connoisseurs on the high quality of his work are ample indication that the choice was a wise one.

Roy W. Loudon of Panama, junior past president of the Kern County Historical Society, and chairman of the Garces Memorial Committee officiated as chairman at the ceremony preceding the unveiling. He introduced many church dignitaries, civic and patriotic leaders, and, incidentally, furnished an inter-



A group of clerical and civic dignitaries on the speakers' platform.

Speeches were of course a part of the proceedings. Below are seen Roy W. Loudon, chairman of the Garces Memorial Committee, Dr. Herbert Bolton, University of California historian, and Reverend Augustine Hobrecht, superior of the Santa Barbara Mission.

esting account of the successful and commendable efforts of the Garces Committee and other organizations towards the consummation of this worthy and extremely significant project.

Among the notable speakers presented during the ceremony were Reverend A. S. Donat, Reverend Augustine Hobrecht, superior of the Old Santa Barbara Mission, and Norman Thompson, of the Automobile Club of Southern California. The presentation of the statue to the City was made formally by S. McDonald Wright, state director of the Federal Art Project, and the gift was accepted by Mayor George Wilson.

A unique feature of the ceremony was the actual unveiling of the statue which was performed by Henry Lawrence (Wah Humcha) and his sister Mary Santiago (I-Hal-Yet) of the Tule Indian reservation. Introduced by F. F. Latta, ruling president of the Kern County Historical Society, they are believed to be the last full blooded descendants of the Yaulemani Indians, who helped Father Garces ford the Kern River.

Following the unveiling of the statue, Monsignor P. McGrath invoked a blessing, and all Bakersfield then crowded in to admire its new art treasure, to congratulate those who worked so faithfully to complete the historical landmark, and to examine the interesting inscriptions and drawings that may be found on the Carnelian marble base.

And so Bakersfield for the moment can relax in the knowledge that its beginning is for all time perpetuated in this handsome monument, standing 22 feet high in the center of a most attractive location, where thousands of travelers who now drive swiftly and comfortably over the trail blazed by Padre Francisco Garces, will be reminded of the debt we owe our pioneers.



REDWOOD—A CALIFORNIA INDUSTRY

EIGHTY-EIGHT years ago William Carson, patriarch of California's redwood lumber industry, cut the first redwood tree felled for sawlog in Humboldt County.

Still revered—for he was a forthright man—William Carson was friend alike to the whistlepunk in his logging camp and to the most intimate associate in his own office. His men knew instinctively that he was an industrial genius with a heart, a builder who never lost his humanitarian touch. This policy has persisted, is today a main pillar of Dolbeer and Carson Company's relationship with its employees, many of whom have service records of more than twenty-five years.

This organization, over which J. M. Carson, son of the founder, now presides as President and General Manager, annually distributes in Eureka a payroll roughly estimated at a quarter of a million dollars. It covers approximately thirty acres along the city's waterfront, providing shipping facilities by water and rail over which lumber goes to the far ends of the earth, finding its way into industrial plants and private buildings. The Dolbeer and Carson mill is as modern as tomorrow, operating entirely by electricity. Strangely enough it was

originally built that way—no part having been converted from steam.

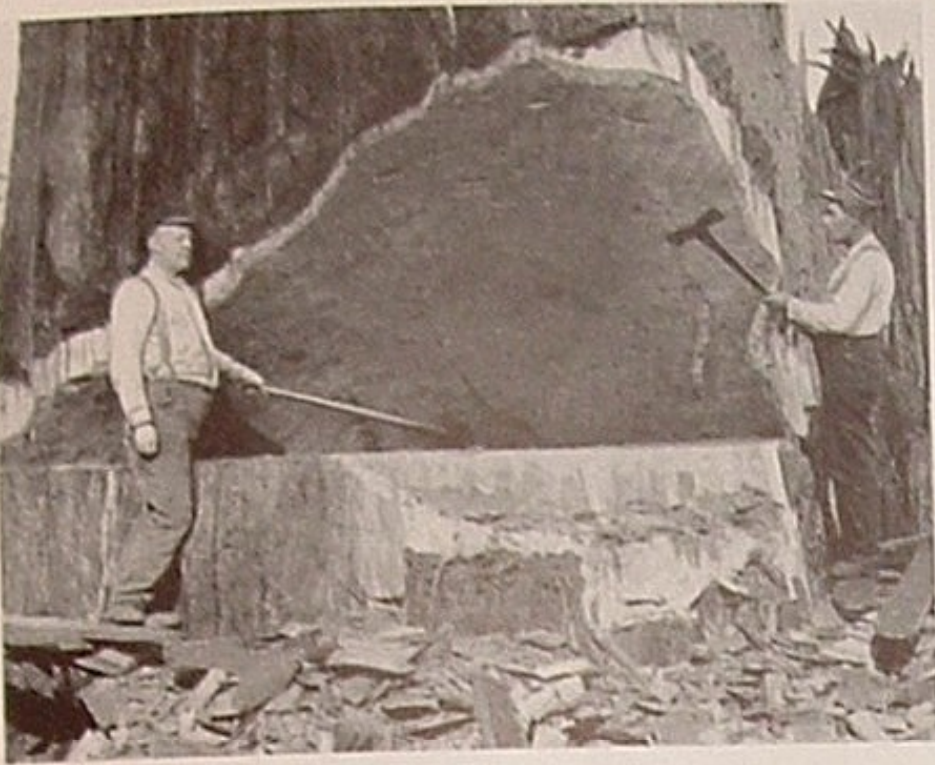
The Dolbeer and Carson lumber camp is located about fifteen miles south of Eureka on the North fork of the Elk River. Here one can see spectacular logging operations, with choppers felling the giant trees, crosscutters dividing them into sections, peelers paring the thick redwood bark, and steam donkeys lifting sections onto flat cars for transportation to the mill ponds. Here, among the primeval monarchs of the forest, lumbering is done on a grand scale. Each man has a definite job to perform and must know his part well, for an error in judgment or execution might prove disastrous. The accompanying illustrations tell the story of the logging operations more concisely than words possibly could. From the colossal size of the trees, one can understand that the men who fell and saw them must possess great physical strength and stamina.

The Carson family has sizable holdings in Union Oil Company, too. Most of this stock was assigned to William Carson in payment for lumber used to build oil derricks when Union Oil Company was first beginning. Union Oil lubricants and gasolines are used in the lumber camp as well as in the mill, where machines have been operating under heavy stress for many years. Dolbeer and Carson, as a matter of fact, is one of Union Oil's oldest accounts in the northern part of the State.



Redwood lumber is durable, long lasting, and almost fire-proof. In the Dolbeer & Carson yards it is piled in huge stacks. Because exposure will not cause deterioration, sheds are not required for unfinished lumber. At right is the residence of J. M. Carson. Still sound, it was built from redwood in 1884.

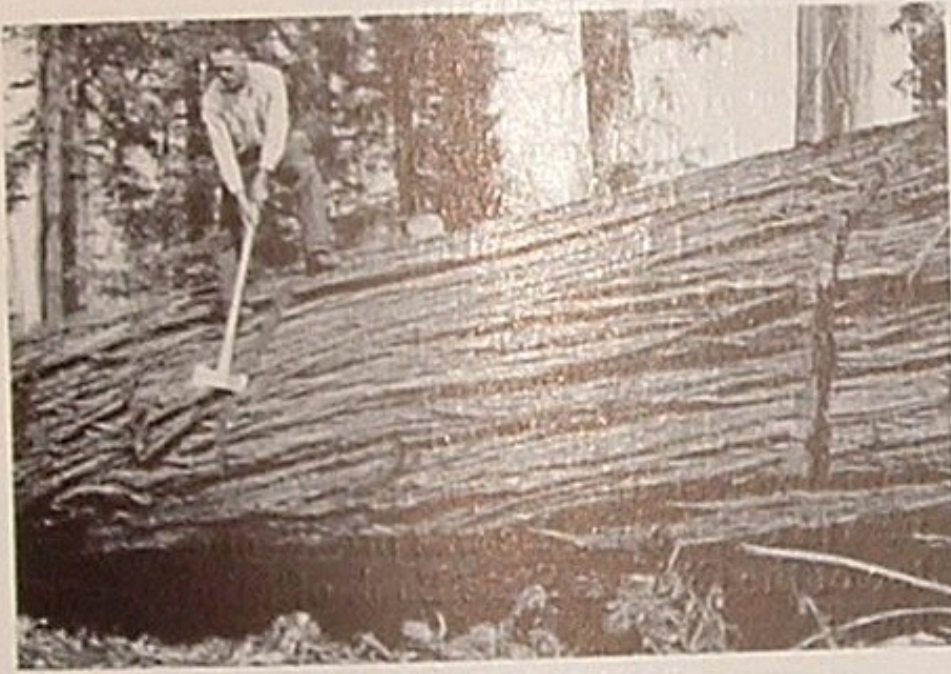




First step in the felling of a giant redwood tree is to chop the under-cut with double-edged axes.



Lumber-jacks then use huge saws to make the back-cut. Under-cut and back-cut must be accurately planned, to insure crew's safety.



After the redwood is felled, its thick fire-resistant bark must be ringed before the tree is sawed.



Once ringed, peelers quickly strip off the bark with long peeling-irons like those shown below.

Before the redwood can be shipped to the yard, it must be sawed, the toughest job of all.



Finally the monarch leaves the forest, reduced into sections and loaded onto small flat cars.





J. M. Rust



H. W. Sanders

NEW TREASURER ELECTED

RECENTLY announced was the election of H. W. Sanders as treasurer, succeeding J. M. Rust, whose resignation from active participation in Company affairs becomes effective on August 1.

Mr. Rust, the retiring treasurer, particularly deserves, at this time, a note of praise for his fine service record . . . 33 successful years with the Company. Starting in the accounting department, his first major promotion came in 1911 when he was elevated to the post of credit manager. Five years later, when the credit division was made a unit of the treasury department, he was promoted to general credit manager. In 1923, he was elected to the office of assistant treasurer, becoming treasurer of the Company eight years later. Mr. Rust's congenial personality and sincere attitude toward people and business matters have won him innumerable friends and high repute in the Pacific Coast petroleum industry.

Born in Marcy, New York, Sanders, the new treasurer, first came to Los Angeles in 1909, where he received his preliminary education. After studying business administration and economics at Cornell University, he served as assistant to L. L. Nunn, president and general manager of a utility chain in the Rocky Mountain district and founder of the Telluride Association. In 1916 he was elected a delegate to the National Conservation Congress at Washington, D. C.

Enlisting in the United States army during the war, Sanders spent a year and a half in France and England, and on his discharge became interested in the grain and livestock business in Oklahoma. He was president and director of the Citizens State Bank of Minco, Oklahoma.

He first became associated with Union Oil Company in April, 1926, and was elected an assistant treasurer on August 27, 1934.

PETROLEUM EXHIBIT DRAWS FAIR VISITORS

WITH increasing attendance figures now indicating that the Golden Gate International Exposition is the magnet for greatly increased travel this year on the Pacific Coast, the most perplexing problem for the casual World's Fair visitor is what to see during a visit to Treasure Island.

Almost unanimous are the favorable expressions from those who have viewed the enlarged and remodeled display of the oil industry for the Petroleum Exhibit in the Vacationland Building is daily attracting huge crowds. This impressive exhibit, which graphically portrays the importance of the oil industry to

the State of California, has just been enlarged at a cost of \$50,000. Today it is a most complete presentation of the absorbing story of a vital industry.

The exhibit occupies 36,000 square feet of floor space in the Vacationland Building. Entering from the North, two attractive archways through a newly installed ornamental wall bring the visitor into immediate contact with the diversified features of the impressive display.

The first attraction to command attention is the model oil refinery, which occupies the central portion of the display space at the



The Petroleum Exhibits at Treasure Island are both handsome and instructive. Murals adorn the walls and a comfortable little theatre invites visitors.



north end of the exhibit. Here courteous uniformed attendants, by means of a newly installed loudspeaker system, conduct visitors around the compact display which clearly reveals all operations of a typical refinery. Built to scale, one inch to the foot, the model oil refinery gives the layman an idea of the numerous complex steps of refining oil to produce the many products so familiar to motorists.

The installation of a colored canopy, which now entirely covers the heavy beamed ceiling of the building, lends added beauty to the exhibit and accentuates the chromium derrick which forms the central theme of the exhibit.

The puppet show, which has now given more than 1200 consecutive performances before capacity crowds, continues to be one of

the outstanding features of the exhibit. In order to better serve the interests of summer crowds, an added cast of puppeteers has doubled the frequency of performances. The underlying theme of the puppet show stresses "Fifteen Years in Fifteen Minutes," tracing the growth of the petroleum industry and revealing the increasingly large share of the consumer's dollar which goes to taxes.

Of particular interest to motorists is the complete Motor Laboratory. Here testing, development and proving of products for use in modern automobiles is demonstrated with the latest in scientific equipment. Knock-tests for gasolines and oil testing have proved of interest to crowds viewing the display.

Petroleum in the Home offers a glimpse into the products found in daily use in the average home in which petroleum plays an important role.

Newly installed displays include a complete exhibit of drilling wells together with an exhibit of the various types of drilling bits and equipment. The Kettleman Hills North Dome Oil field peg model is attracting considerable attention. A compact display of various equipment used in the petroleum in-

dustry in accident prevention work stresses the safety factor and shows to what extent the petroleum industry goes to protect its workers in the fields.

Two impressive maps adorn the interior of the north wall of the exhibit. One represents the oil fields of the United States and shows at a glance the sources from which petroleum is being produced. The other is of interest to motorists, for an enlarged highway map of the eleven western states focuses attention on the National Parks of the West.

Two huge Treasure Wells at the south end

of the exhibit afford all visitors an opportunity to register guesses on tax figures in both gasoline and lubricating oil for the eleven western states. Monthly cash prizes are awarded those with guesses closest to the official figures.

While the Petroleum Exhibit offers much that is educational, it likewise affords entertainment features which appeal to all members of the family and is one of the outstanding major displays at the Golden Gate International Exposition which the visitor should include on any must see list.

COVER ILLUSTRATIONS

Our covers this month are from photographs by Gabriel Moulin. On the front cover is the majestic crown of Oregon's Mt. Hood, which rises 11,225 feet above sea-level. In the foreground is the winding Hood River Highway. The picture on the back of the Bulletin recalls a scene familiar to many Californians.

It was taken along the Roosevelt, or Coast Highway south of San Luis Obispo. What appears in the photograph as wildflowers is really a sort of succulent commonly known as "ice-plant." Such highways as these will this year carry millions of motorists to play spots in every section of the West.



Here's something new in high-speed water-taxis. Operated between Redondo Beach and offshore fishing-barges by the Monstad Sport Fishing Company, the *Streamline* is the only boat of all-steel construction weighing less than 15,000 tons, which has been licensed under State and Federal permits. It is 57 feet long, seats 113 people, and is virtually unsinkable because of ten water-tight compartments. It is powered by twin Cummings Diesels developing 150 h.p. each.

REFINED AND CRUDE

By Richard Sneddon

There are two periods in the life of an oil man when he becomes extremely dissatisfied with his lot—before he enters the oil business, and after he enters the oil business.

And all the absent-minded individuals are not college professors, as witness this episode which occurred at Santa Fe Springs recently: Coming down the steps from a loft in the warehouse, with a load of hardware, an employee missed his footing and fell to the bottom, creating a ferocious clatter as he scattered his jangling collection. Jumping to his feet, he cupped his ear, and in a startled voice exclaimed, "What the heck was all that noise?"

Which, for no particular reason, recalls the case of the foreman on the well shooting job. Says he, "Fellow, I guess you know this is a pretty dangerous business. Lower the shot as carefully as possible, and as soon as it gets down to the right level, run away from the rig as fast as you can. I'm a bit lame, so I'll start now."

Proving, of course, the adage that discretion is the better part of valor, and bringing us neatly to the well-known story of Herbert McMunch:

A nervous old chap called McMunch
Climbed a derrick one day on a hunch
Sixty feet from the ground
He took one look around
And it cost him a sixty cent lunch.

Changing the subject at this point, we recount an actual conversation between two Irish rousties that if not clear, is at least refreshing: "Who lives in that big house on the corner?" enquired number one, and his buddy answered, "Bill Smith's widow, and she's dead." "Well, well," says the first one all over again, "When did she die?" "Lemme see," pondered number two, "If she had lived till next Sunday, she would have been dead a year."

The son of a well-known oil worker, a lad of very refined taste, so detested bad language that every time he heard a naughty word it made the cold chills run down his spine. He was frozen to death last week when his father mashed a finger in the car door.

And after looking at the wall paper in Junior's room, we have decided to make him a fingerprint expert.

It has been estimated that a man's hand travels 4768 miles in the killing of a single fly.

Also, while there is no question that a motorist should take an active interest in the building of good roads, it is not at all necessary that he dive through the windshield and smooth them down with the back of his neck.

Although in the long run there is nothing like a good automobile accident to make you forget your other troubles.

And when a person who hasn't read a book says he has, you may be sure it's a classic.

Junior, by the way, says he has almost finished *Gone With the Wind*. He has just a few pages in the middle to read.

On the same subject, says the first book worm, "It must have taken Daniel Webster a long time to compile the dictionary." Says the second, "You mean Noah, don't you?" "Aw you're crazy," continues the first, "Noah was the one that built the ark."

Now comes a report that the pastor of a local church recently preached a sermon from St. Paul, and two birds from Minneapolis immediately arose and left the place in high dudgeon.

A preacher being defined as a man who talks in other men's sleep.

And our favorite parable is the one about the guy who leafs and fishes.

A local man is very proud of the fact that two cities claim the distinction of being his birthplace. San Francisco claims it was Los Angeles, and Los Angeles claims it was San Francisco.

Wherewith we pause to repeat another cute jingle:

There was an oil worker named Strauss
Who went on a terrible sauss
He had the right key
In the keyhole, you see
But the keyhole was in the wrong hauss.

"Bathing alone will not preserve one's health," says a well-known physician. Nevertheless, we shall continue to bathe alone.

You have heard, of course, about the prodigal who knew he was back in his old home, because the bathtub had a familiar ring.

And now returning to the main topic; the city fellow's ancient chariot was misbehaving away out on a little-traveled lane, and he was definitely discouraged. As he tinkered with the so-called mechanism, a farm boy watched the proceedings, open-mouthed, and finally in exasperation the motorist barked, "Is this the first automobile you ever saw?" "No," replied the country boy, ruminatingly, "but it looks a lot like it."

With which few remarks we conclude. Don't forget to ask for 76. It's a declaration of independence.

