
UNION
On Tour

On Tour

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ON TOUR is published monthly by Union Oil Company of California for the purpose of keeping Union Oil people informed regarding their company's plans and operations. Reader participation is invited. Address communications to ON TOUR, 617 West 7th Street, Los Angeles 14, California.

THE COVER

Illustrative of "Our Union Oil Position" is a Company service station at New Montgomery and Howard Streets, San Francisco, capably serving the petroleum needs of energetic Western America.

Poliomyelitis: A Warning

"Polio" possibly causes more than its share of fear, due largely to the publicity that has surrounded it during recent years. True, a few victims die and far too many are crippled to a varying extent. But the disease does not cause its victims great pain or suffering. Well over 90 per cent of the patients suffer no noticeable paralysis. And of those who are crippled, many are restored through therapy or surgery to normal health and usefulness.

It is wisdom to substitute alertness, not carelessness, for our fear of "polio." Symptoms of the disease are often times mild and difficult to detect. The danger usually lies in allowing the disease to progress too far without obtaining the aid of doctors and nurses who are skilled in treating it.

The months of July through November are peak "polio" months throughout the nation. In California the epidemic period commences in May or June. As you know, 1948 has been a severe "polio" year. However, the chances of its striking in your family will be lessened appreciably if you:

WATCH FOR

1. Symptoms of an ordinary cold.
2. Unexplained fever or headache.
3. Upset stomach, vomiting, bowel disturbance, constipation, diarrhea.
4. Stiff neck, stiff back.

AVOID

1. Overexertion and extreme fatigue.
2. Sudden chilling, such as a plunge into cold water on a hot day.
3. Polluted water either for drinking, wading or swimming; overcrowded beaches and pools.
4. Tonsil or adenoid operations from late spring to early fall, especially during epidemic.

OBSERVE

1. Complete cleanliness of person, water, food, milk.
2. High sanitation by proper garbage disposal, elimination of flies, mosquitoes, etc.

IF IN DOUBT, SEE YOUR DOCTOR

W. A. Morrison, M. D.
Chief Medical Director

OUR UNION OIL POSITION

Address by Reese H. Taylor, President of Union Oil Company of California, Before the New York Society of Security Analysts, June 9, 1948.

Reese H. Taylor, *President*

Early in April this year we ran an ad in our Institutional series entitled "Are Present 'High Profits' Justified?" Some of you probably saw it. The copy took rather unorthodox approach as far as traditional annual statement advertisements are concerned. For we broke our 1947 figures down into two categories: "Cost of Doing Business" and "Cost of Staying in Business." Under "Cost of Staying in Business" we listed such generally accepted expenses as "Research," "Exploration," "Interest" and so on. But we also included "Dividends," capital expenditures for expansion, and *total* capital expenditures for replacement—including the additional capital which was necessary because present high prices had made our depletion and depreciation charges inadequate.

By taking this approach to the cash requirement problem which is currently plaguing industry, we pointed out that while Union Oil showed a net profit last year of $18,910,860, we actually ended up the year by putting out some $675,000 more than we took in.

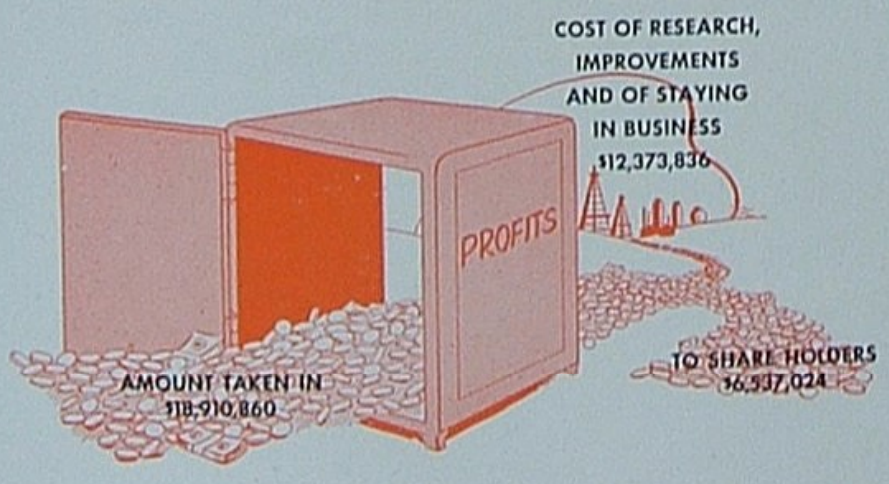
Now as most of you probably know, we carry a small box at the bottom of each of our ads inviting people to write us their comments. And believe me we got comments on this one from the accounting fraternity throughout the country.

But while we may have been wrong in trying to expound this unorthodox approach to profits *in the limited space of an ad*, we still believe that you can make as strong a case for *our* approach as you can for the *orthodox* approach.

At any rate, I cited it here because I think it exemplifies pretty well the two extremes of management philosophy. Broadly speaking, the management of a company can adopt one of two philosophies. They can operate on the principle that today's results are their primary responsibility and that tomorrow's stockholders, tomorrow's employees and tomorrow's management can worry about tomorrow. Or they can operate on the principle that the business is a going concern which they are morally obligated to hand over intact, if not improved, to the next generation to come.

Now there are things to be said for both philosophies. And I won't get into any argument about which is the "true faith." But I will say that the second philosophy is the one that's followed by our present Union Oil management.

That's why we're inclined to argue a little bit with certain accepted accounting practices. It's all well and good to say that you should amortize facilities on the historical cost basis and then borrow new capital on the



"We renovated our tanker fleet by disposing of the old ships and building seven new ones . . . at a very favorable price . . . averaging out a cost of only two million each."

open market to make up the difference if replacement costs have risen in the meantime. But we just happen to be old-fashioned enough to think that if you pursue that policy long enough, the point will come some time when you won't be able to go into debt any farther.

For the cost of physical facilities may fluctuate from cycle to cycle. But the long haul trend in those costs has been steadily up.

This same philosophy has been responsible for the things we've tried to do in Union Oil Company during the last ten years.

Union Oil, as most of you probably know, is an integrated company engaged in production, refining, transportation and marketing.

The production side of the company in 1937 was in good shape except on two counts: One, we had far more than our share of heavy crudes. Two, our development activities were almost entirely limited to California where the rate of discovery was getting increasingly lower in comparison to other areas.

And our marketing operation—considering the products we had to sell—was well up to the industry average.

But the sea-going side of our transportation department was way below average. We had 11 slow, inefficient tank ships, the youngest of which was 14 years old.

And our refining facilities, frankly, left a lot to be desired. To give you an idea, the 30 Oil Companies analyzed by Chase National Bank had, at that time, an average net investment in refining facilities of 16.6% of their total net investment. Our net investment in refining facilities was 8.3%.

You wouldn't be very wrong in saying that our refining equipment was about twice as old and half as efficient as our competitors'. We could only get a total gasoline yield of 20% (today we get 36%); and our capacity for premium gasoline was extremely limited.

As a result we were running over 13% of the Pacific Coast industry's total crude runs to refineries in order to produce about 7% of the Pacific Coast industry's total gasoline.

This meant that we were producing a good deal more than our proportionate share of the less profitable products. We were a fuel and gas oil company.

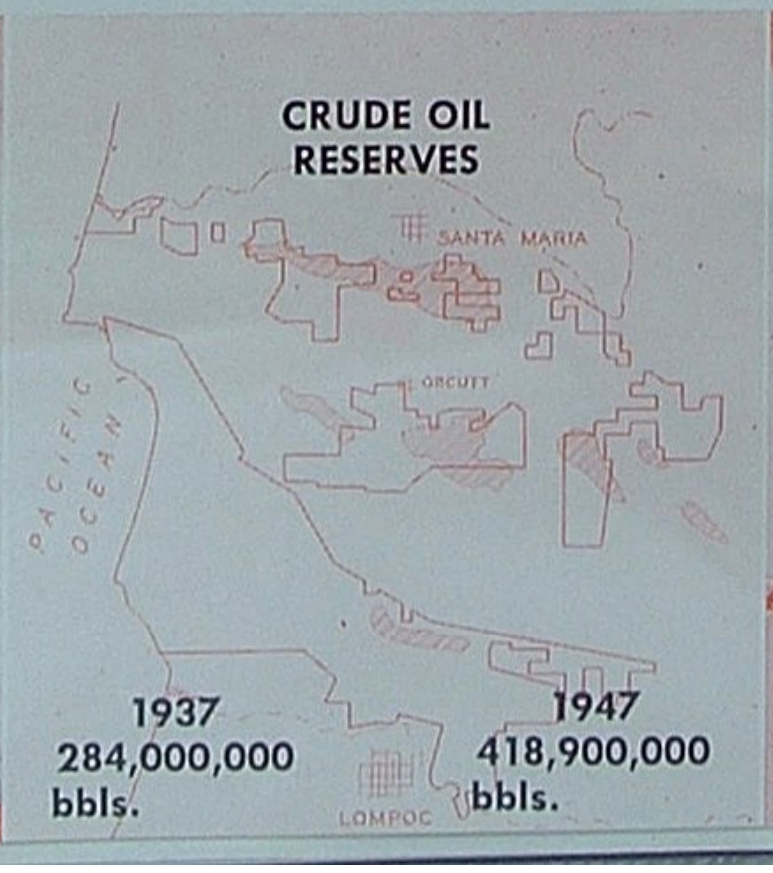
On top of this we were buying more crude oil in relation to our requirements, and had proportionately far higher inventories.

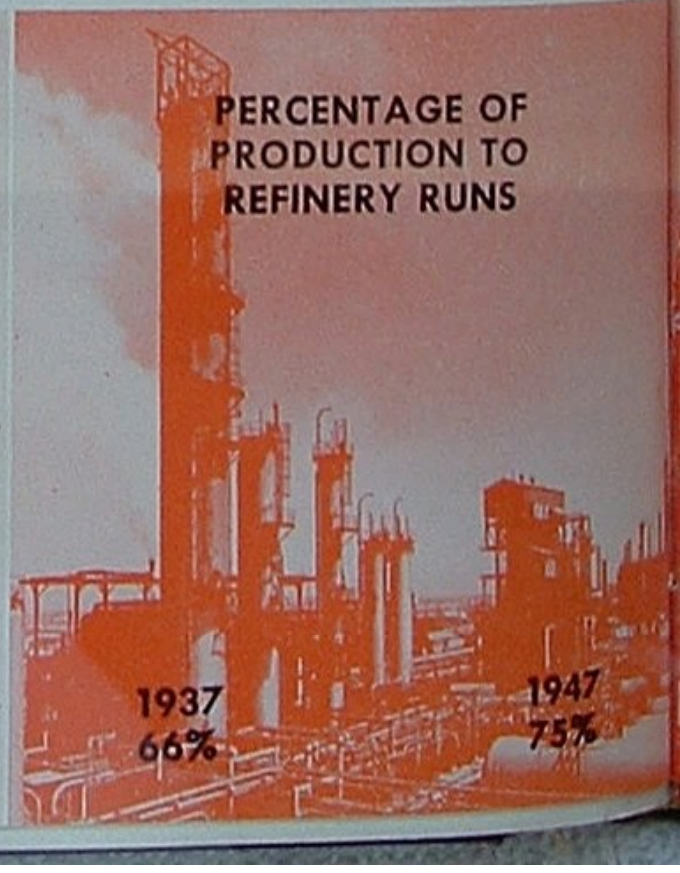
All of which added up to lower realization and lower earnings than most of our competitors'.

In spite of this, the company hadn't passed a single dividend during the entire depression. In fact during the 5 years 1931 through 1935, the company paid out 68% more in dividends than it made in earnings.

The first and most important thing we set out to do in 1938 was to modernize our refining facilities. Our goal here was to increase the over-all gasoline yield and do a better job of manufacturing more valuable products from those heavy crudes which are still an important part of our supply. This modernization program took a lot of time and a lot of money. But after spending some $73,000,000 on new refining equipment we have about as efficient a manufacturing operation as any company in the country. (I'll give you some figures on this later.)

While this was going on, we renovated our tanker fleet by disposing of the old ships and building seven new ones. And, incidentally, we started this tanker program early enough so that we got most of the new ones





at a very favorable price. They averaged out to a cost of only two million dollars each.

On the production side we attempted to establish a broader policy than the one we had previously operated under. With most of our production in California we had all our eggs in one basket, and our new policy was aimed at the objective of attaining a well *rounded* program; one that would make provision not only for our present requirements but for the requirements of the near future and the distant future as well.

This program consisted of four parts:

(1) More intensive development of our known reserves in California.

(2) An out-of-state program of exploration and development both in those areas where the proved rate of discovery was high—such as West Texas and Louisiana—and in virgin territory as well. One very important sub-head under this second program, too, was our decision to explore the possibilities of underwater areas in Louisiana and off-shore properties along the coast of Southern California.

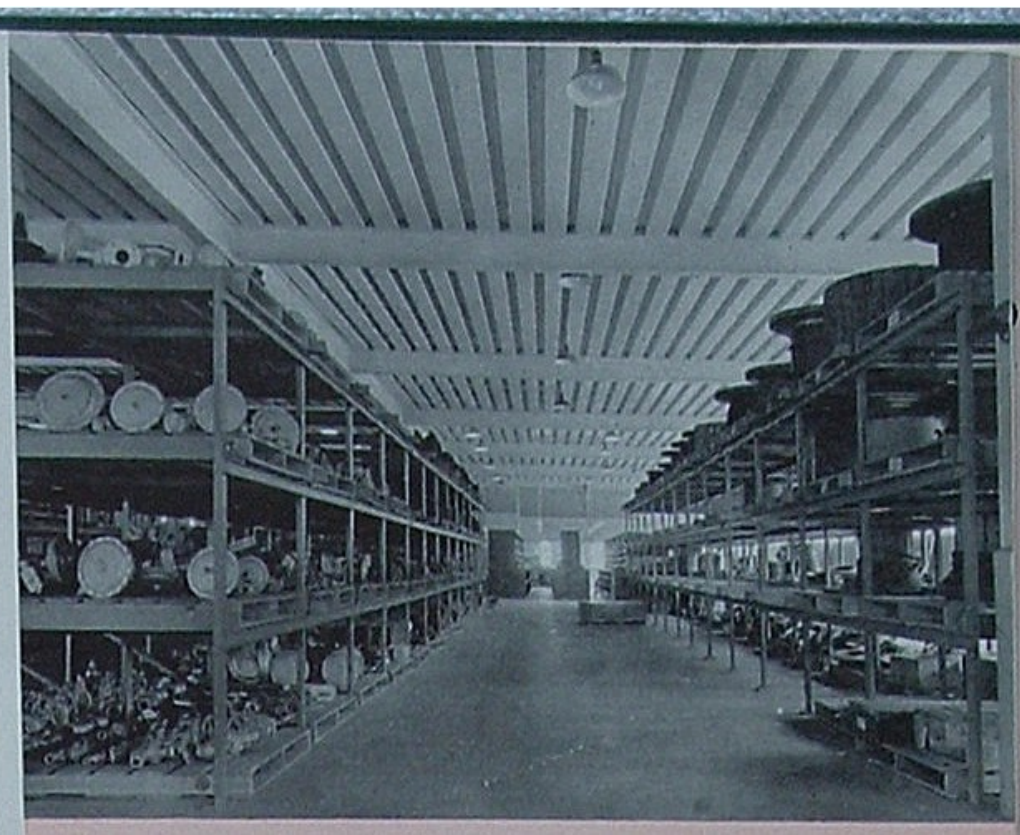
(3) Intensive investigation of secondary recovery methods for getting more oil out of our existing fields.

(4) An adequate research program on synthetics—principally tar sands and oil shale.

This four-point program was put into effect almost immediately in California, West Texas, Louisiana, Wyoming and 4 other states. Today it has grown to the point where we are carrying on parts or all of it in California, Washington, Montana, Wyoming, Utah, Colorado, New Mexico, Texas, Louisiana, Florida, Mississippi, Western Alaska, Alberta Canada and Paraguay. It has already paid substantial dividends. As one example, we have out-of-state net production (excluding royalty and partner interests) in Louisiana, Texas, Montana and Wyoming that now totals 13,240 barrels daily.

These production activities took a lot of money. During the ten years 1938 through 1947 they totalled $114,000,000.

$73,000,000 went into our refining and manufacturing facilities. $20,000,000 was put into tank ships, pipe lines and other transportation facilities; $22,000,000 into service stations, bulk plants and marketing facilities, and some $600,000 into miscellaneous improvements. The over-all total of capital expenditures from 1938 through 1947 was $229,415,000. This is as much as the company had previously invested in the 19 years prior to 1938.

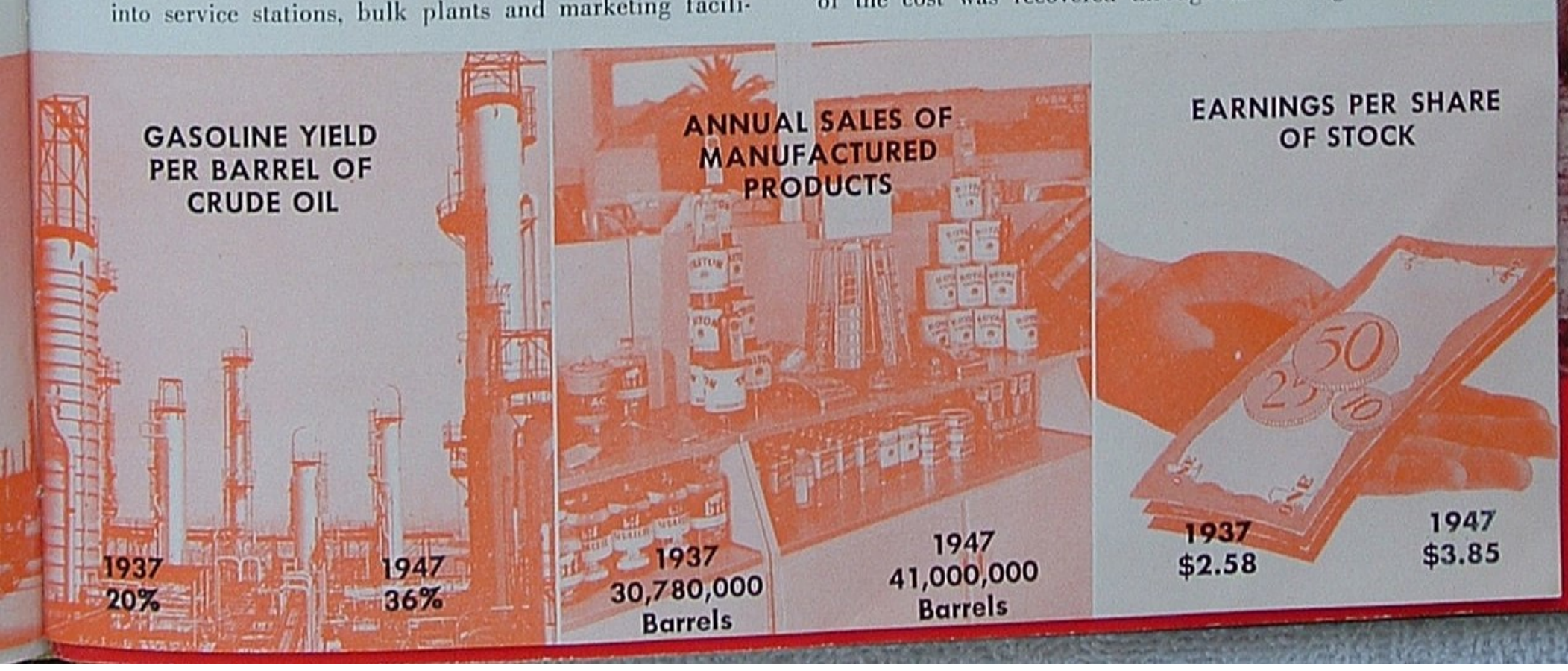


"Furthermore, we haven't stopped yet. We have started construction on a new $10,000,000 lube oil plant at Oleum to increase our manufacture of high quality lubricants."

A large proportion of these capital expenditures came out of earnings. But even so we couldn't do the whole job out of earnings. So in August 1939 we embarked on a program of new financing and re-financing which has resulted in an increase since then of $36,581,500 in our funded debt and the addition of $24,500,000 in new capital. This latter came from our Preferred Stock Issue of 250,000 shares which we sold in June of 1945.

Now what has been the result of all these measures? To begin with, I might say right off that we've been lucky. We started our whole program in a rising market that has continued to rise with only minor post-war readjustments ever since. And as far as the Coast is concerned, at least, the end of this rising market doesn't seem to be in sight yet.

Our improvements in refining facilities during the war were more than adequately depreciated and some of the cost was recovered through tax saving. Today



the net book value of *all* our refinery facilities is only 54.4% of the cost of these *additions* of the last 10 years. So despite the relatively high cost of some of the new equipment installed during the war, depreciation charges in the future will not be unusually high.

We got a break too, on our tanker program. For we were able to sell off most of our old ships when shipping was at a war induced premium. So we got half of what they cost us when they were originally built, in spite of the fact that most of them had been written off completely.

On the other side of the ledger, however, the war hampered us considerably. For product allocations to refiners in the industry were made on an historical basis. And we were stuck with a lot of fuel and gas oil quotas that we had to supply in spite of our new equipment.

But while the *size* of our results was influenced by outside circumstances, the fact is that we *got* results due to planning. And those results are now beginning to pay off in a rather substantial way.

Our net investment in refining facilities has gone from 8.3% of our total net investment to 22.4%. And our whole picture is now quite favorable in comparison with the 1947 published average for the 30 Oil Companies. For example, our net investment *in production* is 55% against the 30 Oil Companies' 52.5%; in *transportation*, 9.5% against the 30 Oil Companies' 13%; in *refining* 22.4%, as I said, against the 30 Oil Companies' average of 16.6%; in *marketing* facilities, 12.8% against the 30 Oil Companies' 16%; and in *miscellaneous*, 3% against the 30 Oil Companies' 1.9%.

The tremendous improvement in our refining facilities has made it possible for us to produce large quantities of aviation gasoline for the government and simultaneously increase our production of premium gasoline *tenfold* over 1937.

Our percentage of crude receipts now almost exactly parallels our percentage of the Pacific Coast industry's gasoline production. Whereas 10 year ago our percentage of gasoline was considerably less than our percentage of crude receipts.

We're now getting a 36% gasoline yield where before we were lucky to get 20%.

All of this has resulted in an increased realization of 50c per barrel of crude run to refineries over 1937 *after adjusting for price changes between the two periods.*

And we've accomplished this greater realization with no increase in the ratio of cost of goods sold to gross income.

To put it another way, during 1937 we sold 30,780,000 barrels of petroleum products. And 1937 was a big year in the industry. Today our sales are running at the rate of 41,000,000 barrels—an increase of 33%. Yet our dollar return—after adjusting for price changes between the two periods—has increased 61.3%. So we're not only doing a greater volume of business over-all, but we're getting a higher realization for the products we're now able to manufacture from our crude.

Furthermore, we haven't stopped yet. We have started construction on a new $10,000,000 lube oil plant at our Oleum Refinery outside of San Francisco. This plant will enable us to step up our realization even further by increasing our capacity to manufacture high quality lubricating oils and greases.

Despite those tremendous expenditures for new refining equipment, Union has been able to show substantial gains in crude oil production and crude oil reserves.

Our crude oil production has gone from 47,700 barrels a day in 1937 to a daily production of 81,000 barrels. And our percentage of production to refinery runs has risen from 66% in 1937 to 75% today.

The importance of this last increase shows up in our net income figures for the first quarter of this year. The 28 companies, who have reported so far, show an average increase in net income of 102% for the first quarter. Our net income for the first quarter is up 120%. This is partially due to our high 75-25 ratio of production to refinery runs which has given us a higher realization on the increased crude prices.

In 1937 our proved net crude oil reserves—underground—were 284,000,000 barrels. Today our net reserves total 418,900,000 barrels.

On the financial side, our earnings were $1.15 per share in 1935, $1.40 in 1936, $2.58 in 1937 and $1.47 in 1938. Today they are running at the rate of over $6.00 per share.

And finally, the total net worth of the company has increased from $138,350,000 in 1937 to $200,000,000 today. Excluding the $25,000,000 new capital represented by our preferred stock issue, this shows a net gain of $36,650,000.

But even these figures don't tell the whole story—particularly the net worth figures. For the true value of an oil company's properties is in no way represented by the book values.

In oil company accounting, as you know, an oil field is carried on the company's books at the figure the company has invested in that field. This figure has nothing to do with the true value of the *oil* in that field.

In our Texas and Louisiana properties, for example, we have actually spent about $19,175,000 for land and development. So far, we have written off or depreciated about $11,000,000 of that. So the properties are carried on our books at $8,282,000. But if we were to sell those properties tomorrow, we could get at least $50,000,000 for the proved crude oil reserves alone.

These same factors hold true throughout the company. Our total oil properties are carried on our books at only $94,634,000—the money it cost us to acquire and develop them, less depreciation and depletion.

Yet those properties contain reserves of 418,900,000 barrels of crude oil. If you want to put a value of $1.25 a barrel on those underground reserves—including the wells, pumps, facilities and so on—our total reserves are worth about $520,000,000.

This is not only 5½ times what the properties are

carried on the books for, it is enough to realize $95 per share for the common stockholder if you liquidated the company and got absolutely nothing for all our other physical assets—refineries, pipe lines, service stations, etc.

Our obligations—including our funded debt and preferred stock—total $79,100,000. The company's net assets—excluding our oil properties—are more than large enough to pay off all our obligations.

So if you buy our common stock at today's price of 32 you are, in effect, purchasing underground crude oil reserves at a price of 35.6c per barrel.

What's true of reserves is true in a different way of much of our physical equipment—largely because the factor of inflation has been faster than the factor of obsolescence.

This is the case, of course to some extent, in all companies today. But because of the high capital investment in a going oil company it is probably more pronounced in the oil industry than in most. Our service station properties, for example, are carried on our books at about $10,000,000. And incidentally, we have a service station system that is second to none on the Pacific Coast. According to conservative estimates, we could sell these properties on today's markets for at least $20,000,000.

I might add here, parenthetically, that an insurance company recently offered to buy our service stations at their book value and lease them back to us on a 25 year amortized basis. At the end of that time we would have an option to buy them back for $1.00, or renew the lease at a very low figure. We didn't take up their offer. But the incident points up an aspect of bookkeeping about which I, for one, would like to see something done.

The sale of these stations would have reduced our funded debt *on the books* by $10,000,000. And our statement would have looked just that much better. But as far as the financial health of the company was concerned, what would have happened? *Nothing.*

We would have simply substituted one form of obligation for another. Those lease obligations would have been just as binding as loans. And, as some people found a few years back, they can cause just as much difficulty as if a firm couldn't meet its other obligation.

But they wouldn't have shown up on our statement. Now I realize that you people really dig into the figures behind a financial statement more deeply. But the average investor may get a distorted picture from this kind of bookkeeping.

Since this practice of selling physical equipment has gotten pretty common lately, it seems to me that it would be a good idea to make some provision for listing those long term obligations in published financial statements.

But to get back to the Union Oil Company again and its true values, you might sum it up this way. During the last ten years we have added $36,000,000 to the funded debt of the company. But the true value, or wealth, of the company has been increased by many times that sum. Furthermore, the earning capacity of the company has been tremendously improved.

So much for the present. Now how about the future?

The two big factors in the future of the oil industry right now seem to be new sources of raw materials and the manufacture of chemicals from petroleum.

Under the first category you have new sources of natural petroleum itself and the development of synthetic products from natural gas, coal, and oil shale to supplement those natural sources.

In the search for new sources of natural petroleum we are directing our activities along three lines: (1) Deepening and extension of existing fields. (2) The search for new fields in areas not already developed such as offshore drilling and wild cat drilling in new areas. (3) Recovering greater amounts of crude from existing fields than current production methods will yield.

Under category (1) we have excellent prospects. The backbone of Union Oil's crude supply always has been and still is California. In the Counties of Los Angeles, Orange, Ventura, Santa Barbara and a few others our company owns 36,000 acres in fee simple. In addition to this we own the mineral rights to another 48,000 acres. So the oil rights in those 84,000 acres of ours are free and clear—not subject to royalty payments.

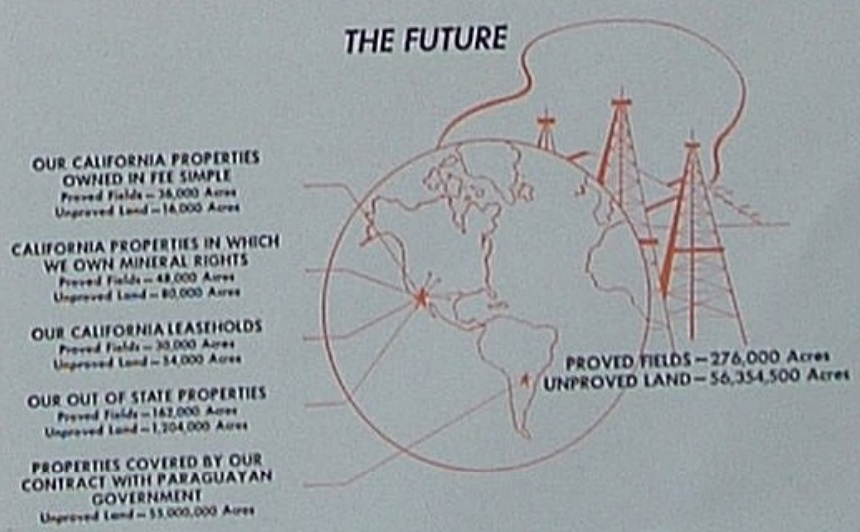
So far only 10,000 of those 84,000 acres have been intensively developed. And the remainder constitutes some of the best potential oil land in the State of California.

In addition to this, we have leaseholds in California on another 30,000 proved acres.

In our out-of-state properties of Texas, Louisiana, Montana, Colorado, Wyoming and Canada we have 162,000 producing acres under lease.

In all this proved acreage, both in and out of state, we are conducting carefully engineered programs to determine both the vertical and lateral limits of the fields.

Under category (2)—new territory—we have in California 16,000 acres of unproved land that we own in fee simple. We own the mineral rights to another 80,000 acres of unproved land. And we have leaseholds on 54,500 acres.



Our unproved properties outside the State of California—excluding Paraguay—total 1,204,000 acres, all but some 8,000 of which are leaseholds.

Our contract with the Paraguayan government covers some 55,000,000 acres—an area equivalent to ⅔rds the size of the State of California.

In all this unproved territory we are carrying on more exploration than ever before in the company's history. We have crews working in eleven states, in Canada, in Alaska and Paraguay. Prospects for new discoveries in all areas are good. But if we should discover new crude sources in either Paraguay, the State of Washington or Alaska, it would be particularly significant in view of the fact that these discoveries would open up entirely new sources of supply.

Finally, one very interesting prospect in category (2) is our off-shore seismograph work in the coastal waters of California and the Gulf of Mexico. Some authorities think this is the greatest potential source of new oil in the country.

To sum it all up, with a grand total of 276,000 proved acres to develop and 1,354,000 acres of unproved properties to explore—plus Paraguay and the Coastal waters of Louisiana, Texas and Southern California—our prospects for the future under categories (1) and (2) look very promising indeed.

Under category (3) which is roughly classified as "secondary recovery" we are making every effort to increase our recovery of crude from present known sources. When you realize that with the industry's present methods of recovery we get less than ⅓rd of the potential crude in a given field, you can see that a great potential source of crude exists right in our present producing properties.

That's why we are conducting intensive experiments with water flooding, gas drive, pressure maintenance and reservoir heating. If secondary recovery techniques can be perfected on an economic basis it may make us revise all our present-day estimates of recoverable reserves.

I might make one other point on this matter of recoverable reserves. And that's the effect of crude prices.

One of the quickest ways to increase recoverable reserves is to increase the price of crude. Just recently we took the 1946 crude prices in comparison to 1948 crude prices and analyzed their effect on the *economically recoverable* reserves in four of our fields.

We found that the crude price increases over the last two years had increased the recoverable reserves—from here on out in the life of the field—of 26% in the first field, 42% in the second, 20% in the third and 33% in the fourth. This amounted to some 64,000,000 additional barrels of crude oil that can be recovered from the four fields at today's prices—assuming those prices hold—over what would have been economically recoverable at 1946 prices.

So crude prices do have a direct effect on reserves. When authorities say that the nation has 26 billion barrels of crude oil reserves, the layman is apt to think of this figure as the total amount of oil available. But what the figure actually represents is the amount of *economically recoverable crude petroleum reserves at today's prices.*

So much for crude petroleum. From the synthetic standpoint, one of Union Oil Company's most interesting prospects for the future concerns oil shale.

The oil in shale is not petroleum. But several of the same products that are derived from petroleum—including gasoline—can be derived from oil shale.

Out in Colorado there are huge deposits of this oil shale which occurs in veins similar to coal deposits. The U. S. Bureau of Mines estimates that there is enough recoverable shale oil in those deposits to provide 200 *billion* barrels of raw material. When you realize that the total known U. S. reserves of crude petroleum today amount to only 26 billion barrels, you can get an idea of what this may mean.

Union Oil became interested in these shale oil deposits back in the early '20's. In fact Union was the first large company to do so. As a result, Union acquired some of the richest acreage in the whole state. Our own people today estimate that our properties contain in excess of 2 billion barrels of recoverable oil. That's almost 5 times our total present reserves of petroleum.

So far it hasn't been possible to recover this oil at a cost that would make it competitive with natural petroleum. And we also don't know all there is to know about refining it. But our men have been working on it quietly for a number of years. And we're making real progress. At present we not only have a small pilot plant extractor running at Wilmington but we're also building a bigger unit for installation in Colorado now. Union's research people have worked out an ingenious method of creating heat by burning the carbon on the shale residue which makes the process "self-supporting" and one that requires no great amount of water—a problem that always stymied the earlier efforts in Colorado where large supplies of water are not available.

"One of Union Oil Company's interesting prospects for the future concerns our Colorado shale properties, which may contain over 2 billion barrels of recoverable oil."

I can't give you any definite times or dates when the process will be economically feasible. Much will depend, of course, on the price of crude as well as on the efficiency of the process. But when the day does come, and most experts agree that it will, Union Oil will be in an excellent position in this respect.

Union has also made some extremely interesting progress lately in the chemical field. I won't wear you out with a lot of technical discussion because in the first place it's a little out of my field, but, as most of you probably know, natural gas is principally composed of a mixture of four basic hydrocarbons: Methane, Ethane, Propane and Butane. Now if you knock two hydrogen atoms off the Butane molecule, you get Butylene. If you knock four hydrogen atoms off, you get Butadiene. If you knock two hydrogen atoms off the Ethane molecule, you get Ethylene, and so on.

So a lot of these "relatives" of the four basic hydrocarbons can be made from natural gas. And many of them exist in refinery gases because the material has been previously cracked.

As an example, however, let's confine our discussion to Ethylene, one of the most useful of the petroleum hydro-carbon "relatives" from a chemical standpoint.

By combining Ethylene with various other things such as Chlorine, Benzene, and Sulfuric Acid, you can make rubber, resins, solvents, anti-freeze, insecticides, plastics, etc. The list is not only long but useful.

But the trick in extracting Ethylene is to separate it from all the other gases that are mixed up with it.

You can cool them down to the point where they are all liquid, and then distill them off and separate them. But this has the disadvantage of working at low temperatures, and is expensive.

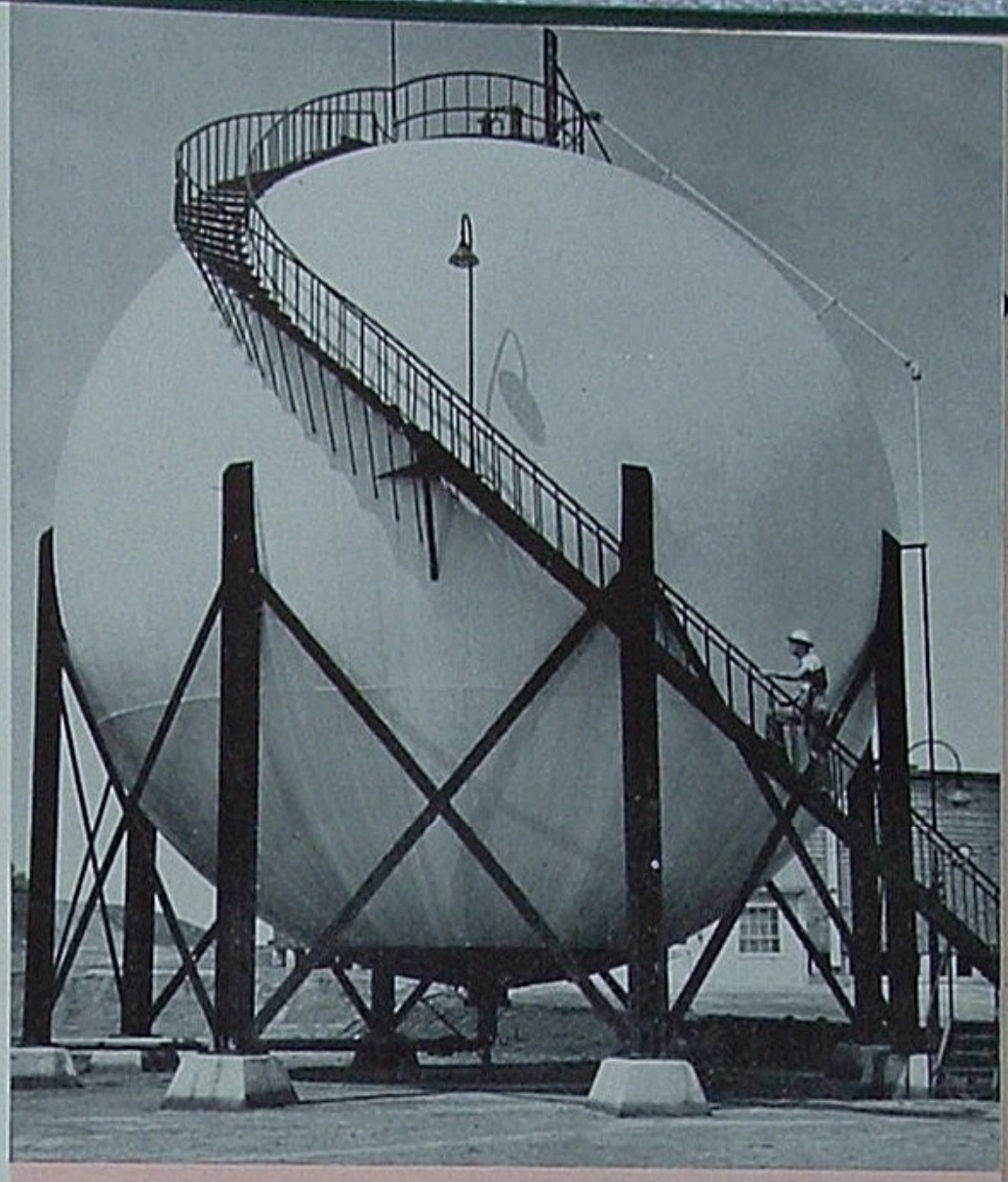
Another method is absorption. It has long been known that the absorption of a gas in charcoal is in relation to its molecular weight. In other words, if you pass a mixture of gases through a bed of charcoal, the heaviest gas will have the greatest physical affinity for the charcoal. So *it* will be absorbed while the others pass on through.

The moment you try to apply this second principle to commercial extraction, however, you run into difficulties. First of all, as the process goes on, the charcoal becomes more and more loaded up with the heavy gas it is absorbing and consequently is able to extract less and less proportionately as the gases go through. Eventually the point is reached where no more gas is being absorbed, and everything is going through.

Second; in order to extract the gas that *has* been absorbed by the charcoal, you have to shut the unit down, heat the charcoal to drive off the captured gas, cool off the charcoal afterwards and start over again.

So in trying to find a way to make a continuous, commercial process that could take advantage of this principle, our men hit on a method of passing gas through *moving* charcoal.

After a good deal of work they developed this principle into a commercial process which is called *Hypersorption*. The process has been patented by our company, and two units are already in commercial operation. They are highly efficient. For instance one operation where a mixture of gases containing only 5.7% Ethlyene is being run through one of the Hypersorption units, the recovery of Ethylene is better than 97%. And the gas—for all practical purposes—contains no contamination.



"Union has made some extremely interesting progress lately in the chemical field . . . with natural gas relatives you can make rubber, resins, solvents, plastics, etc."

As you can readily see, the application of this Hypersorption Unit has great potentialities. It's an entirely physical process—not chemical—so it can be used on any kind of gas separation.

So far we've already licensed one to the Dow Chemical Plant at Midland, Michigan, and one to Rohm and Haas in Texas, both of which are in operation. And we have several more deals pending with other chemical companies and refiners. We have a pilot unit of our own in operation at the Wilmington Refinery and are building a large commercial unit for the production of Ethylene.

To sum it all up, I think we can say this about Union Oil Company. There has probably never been a time in the history of the company when the prospects for the future looked so favorable. We're in a very exciting period—technologically. The company's activities are expanding rapidly in many directions. And I see no reason why they won't continue to expand as fast or even faster in the future.

INDUSTRIAL SUMMARY

MANUFACTURING

Further work on retorting shales is believed to have solved problems encountered with different grades of shale. Redesign of the 50 ton pilot plant retort has been completed. . . . Considerable interest continues to be displayed by the industry in our Hypersorption process. . . . Design of an ethylene unit for Wilmington is well underway and studies are being made of outlets for this product. . . . Union Oil has agreed to supply about 1500 barrels per day of the new super grade 100 octane aviation gasoline for the coming fiscal year. The gasoline is termed Grade 115/130, comparing with Grade 100/130 previously produced.

After setting a new monthly record during June by averaging a daily throughput of 61,000 barrels of crude, Oleum Refinery reports another banner month during July. Shipments of fuel oil were well over a million barrels. . . . As of July 1, the Los Angeles Refinery had completed six months of operation with only four lost-time accidents, as compared with 12 lost-time accidents during the same period last year. Their accident frequency rate has dropped to a remarkable 2.9.

SUPPLY AND DEMAND

The Pacific Coast oil industry has established new crude oil production records thus far in 1948 with refinery throughputs keeping pace. Inventories have increased 3,000,000 barrels over a year ago and the total supply of all oils has been more than sufficient to meet current demand. However, there are indications of supply shortages with respect to certain products. Demand for gas oil and diesel oil has increased approximately 24% over a year ago; refinery throughput has not kept pace and inventories have declined 1,175,000 barrels compared to a year ago. Gasoline stocks are approximately in balance with increased demand. Fuel oil stocks are up about 4,000,000 barrels from 1947, with total demand running 7% lower.

The Union Oil outlook for the next twelve months parallels that of the Pacific Coast industry generally with respect to gas oil and fuel oil. Since sales of stove and diesel oils this year have thus far exceeded programmed levels, steps have been taken to increase stove oil production 500 barrels per day and diesel availability by 1400 barrels per day. Our fuel oil supplies appear adequate. There are ample quantities of our housebrand "76" gasoline; however, "7600" motor gasoline remains in close statistical balance.

INDUSTRIAL RELATIONS

Several wage discussions were getting under way during early August with the various bargaining agencies with whom the Company deals. On August 4 an informal hearing was conducted by the National Labor Relations Board to determine what union, if any, should represent the radio operators on Company tankships . . . All employees, except marine seagoing personnel, employed on or after August 1, 1948, as a condition of their employment, must as soon as eligible become members of the Employees' Retirement Plan.

NATURAL GAS CONTRACT

Union Oil Company has entered into a contract with Trans-Continental Gas Pipe Line Company to supply for a period of 20 years a minimum of 50,000,000 cubic feet of natural gas per day from reserves in East White Lake, West White Lake, Tigre Lagoon, Vinton and Fresh Water Bayou fields in Louisiana. The Company owns full interest in leases in three of the fields and an undivided half interest in the remaining two. The 1840 mile pipe line, which will deliver gas to the Northern states, will commence operation not later than October 30, 1950.

MARKETING A 31% decline in sales of fuel oil during June brought our total sales 444,798 barrels lower than in June, 1947. However, gasoline sales increased 5,609,904 gallons due to a 6% gain in civilian domestic sales and large deliveries of Aviation gasoline to the U. S. Government.

ADVERTISING The Company has secured television rights to all League games played during the 1948 season by Los Angeles Rams professional football team. Televising begins August 25 over television station KFI in Los Angeles and ends December 12. There will be a total of 15 telecasts. Home games will be televised directly from the playing field while the away-from-home games will be filmed and later televised. Sixteen mm. sound motion picture film, showing highlights of the 1947 Rams games, will be distributed exclusively by the Company for showings by Company personnel to various groups and organizations.

MARINE A growing surplus of tonnage, resulting principally from concentration of tankers in supplying products to Company terminals with correspondingly fewer cargoes transported for others, became acute early in June when floods in the Northwest made necessary the cancellation of certain shipments scheduled for delivery in that area. Accordingly, arrangements were made to deliver a cargo of fuel oil to the U. S. Army in Japan via the S. S. LOMPOC. which sailed for Yokohama June 4 and returned July 3.

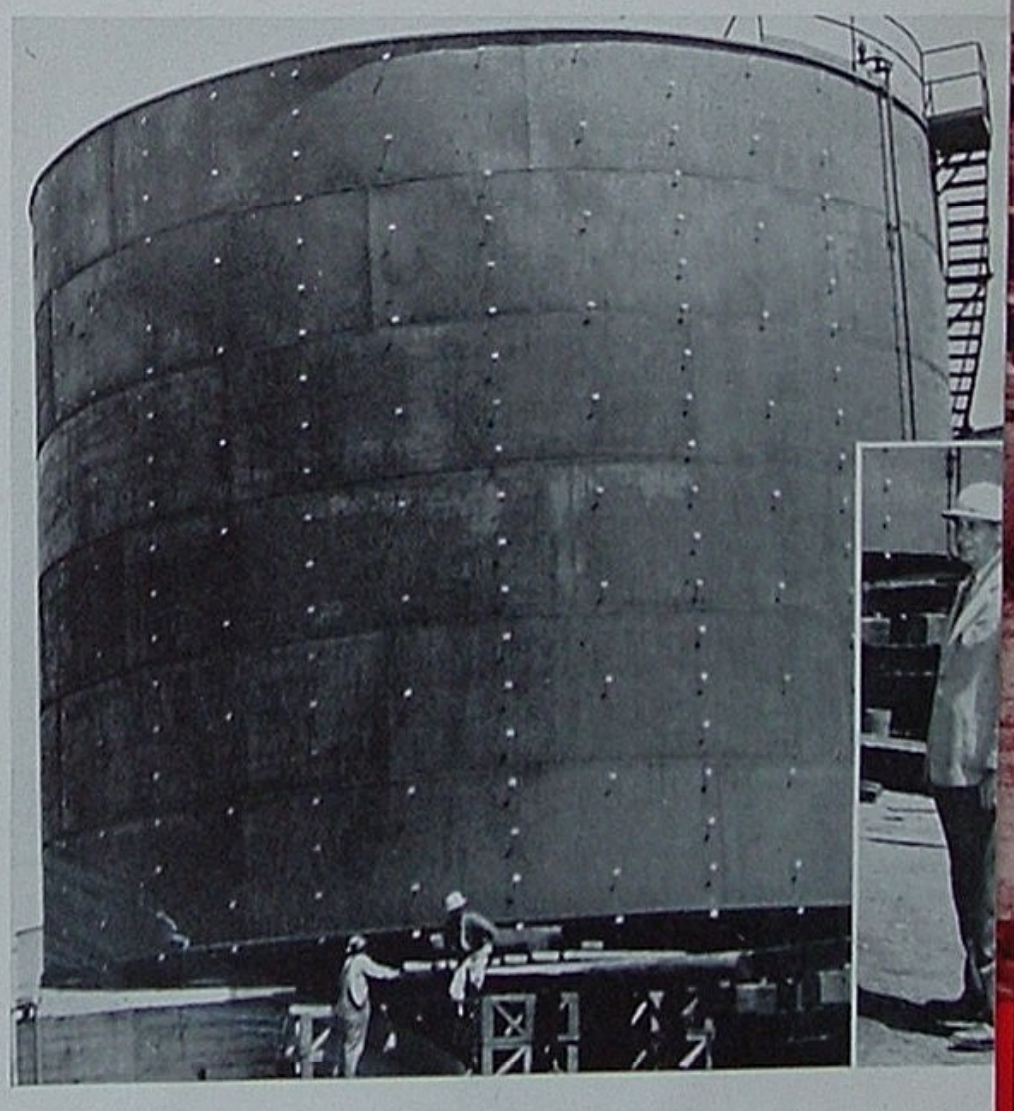
DISTRIBUTION A survey of the damage to our transportation facilities caused by Columbia River flood conditions shows that we suffered only the loss of a small river dock at Umatilla, Oregon oil terminal.

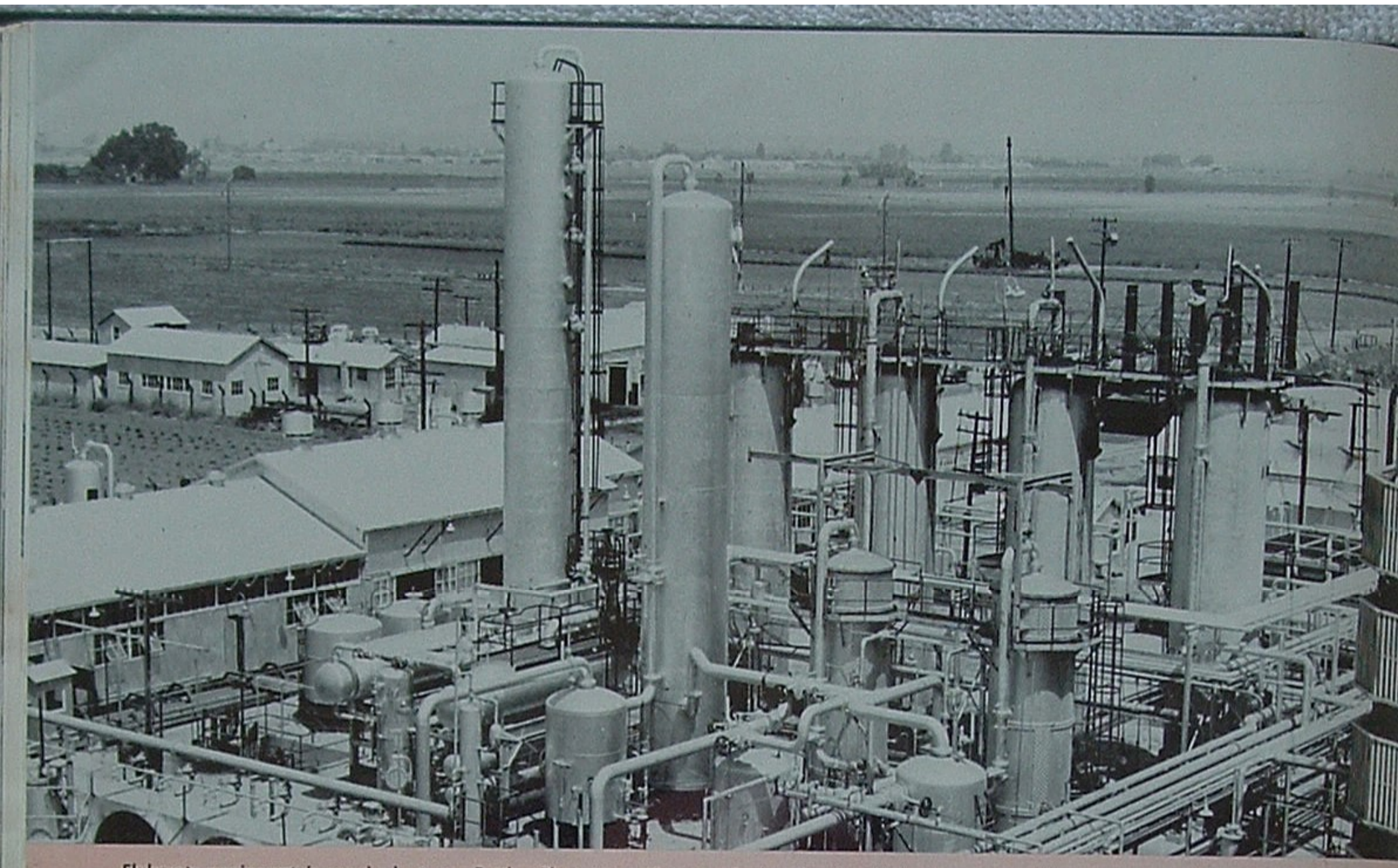
AUTOMOTIVE Deliveries of light new commercial units and automobiles continue insufficient to meet Company needs for replacement and additional purposes. New medium and heavy-duty vehicles are available in more than sufficient quantities to meet our needs. The current transport construction program provides for seven new maximum capacity tractor-tank semitrailer units for the Marketing Department, four for Central, two for Southwest and one for Northwest Territories.

PURCHASING After a lull of several months, we have again been flooded with a large number of price increases of 5% to 10%. The outstanding price adjustment was a steel company's July increase of 26.8% on oil country casing and tubing . . . Contracts are being awarded for the Oleum Triton Program totaling $1,320,000.

FIELD Union Oil Company wildcatting efforts in Washington have been accelerated with the spudding of Union-Richfield Weyerhaeuser No. 1 on the Montesano structure approximately ten miles east of Aberdeen and the same distance from the most easterly end of Grays Harbor. Northwesterly, near the mouth of the Hoh River, we are drilling a wildcat well, Milwaukee Land Company No. 1. This well has had several encouraging showings of gas. . . . The drilling of five wildcat wells simultaneously is the highlight of field operations at present in California. Present developments in these wells do not assure a discovery in any of them, but the prospects are hopeful . . . The dry ice plant at Santa Maria is rapidly nearing completion and the manufacturing of dry ice is scheduled to begin by September 1, 1948. . . . Two wildcat wells in the Gulf Coast area of Louisiana indicate to be discovery wells. At Lake Hatch casing is being run to test an oil sand at 7,900 feet and at Bay Junop, our third well on this dome has an interesting oil sand at approximately four thousand feet.

To greatly reduce shut-down time, this Oleum storage tank was first built and then moved to its service location. In charge of the moving and installation was Bill Tolhurst (Resident Construction Engineer).





Elaborate equipment is required at our Battles Plant to purify natural gas. The six tallest columns are (L-R) an amine reactivato: for removing carbon dioxide; an amine absorber for separating carbon dioxide from amine solution; and four columns in which natural gas is filtered through beds of iron oxide to remove sulphur. Our new dry ice plant is being built at this location.

Why And How We Can Produce Dry Ice

By C. D. Gard
Chief Process Engineer, Field

Normally we associate natural gas with the kitchen range, the floor furnace, the industrial oven, and such other burners that employ this petroleum product as a means of producing heat or heat energy. But now, quite in contrast to our heat producing role, Union Oil is extracting from natural gas being produced in the Santa Maria Valley commercial quantities of carbon dioxide, which in its solid form is popularly known as dry ice.

Dry ice, as you perhaps know, is made by compressing and cooling gaseous carbon dioxide (CO_2) into liquid form, then releasing the liquid from pressure in such manner as to cause its solidification into snow. When the snow is compressed into blocks of ice, it serves as an excellent refrigerant, for some purposes having many advantages over the conventional ice made from water.

Heretofore, carbon dioxide for the manufacture of dry ice has been obtained from boiler-stack gases, from fermentation vats at industrial alcohol plants, and from natural wells that produce carbon dioxide of relatively high purity.

It is believed that the Union Oil plant at Santa Maria is the first to extract carbon dioxide commercially from oil well natural gas for the manufacture of dry ice.

To understand our rather reluctant entry into the ice business, it is necessary to review a little petroleum history of the Santa Maria basin:

Although the Santa Maria Valley oil field was developed in the early 1930's, it was not until 1938 that production on a large scale was made. During the period from 1938 to 1941, the productive area of the field was rapidly extended, and gas increased to a volume that warranted its conservation and processing.

Prior to December 27, 1943, gas produced from Union Oil operated properties was compressed by a single unit

located on the Battles Lease, pumped to the Orcutt Absorption Plant for processing, and delivered to the Gas Company for domestic and industrial uses in the Valley. However, by 1943 gas production had greatly increased, making it necessary to install facilities for handling 18,000,000 cubic feet daily. At the same time Gas Company facilities were rearranged to transport increased volumes of gas out of the Santa Maria and Orcutt areas.

But now a difficulty arose. With increased production, it was found that the hydrogen sulphide (H_2S) content and carbon dioxide (CO_2) content of the gas had also increased. These two contaminats were present in a gaseous state and were considered very undesirable in the observed quantities. The H_2S in some instances caused pipe line corrosion and corrosive damage to processing equipment. And the CO_2, being noncombustible, lowered the heating value of the gas to below an acceptable minimum.

Removal of Hydrogen Sulphide

Our earlier methods of removing H_2S from the gas were effective. Natural gas was received from the oil wells at a plant intake pressure of around 20 psig (pounds per square inch gauge). Compressed to about 80 pounds, it was then brought in contact with a soda-ash solution carrying suspended iron oxide. This process removed only part of the H_2S. The gas then went to a second-stage compressor, where the pressure was increased to around 215 pounds. At this pressure, the final traces of H_2S were removed by filtering the gas through beds of iron-oxide impregnated wood shavings.

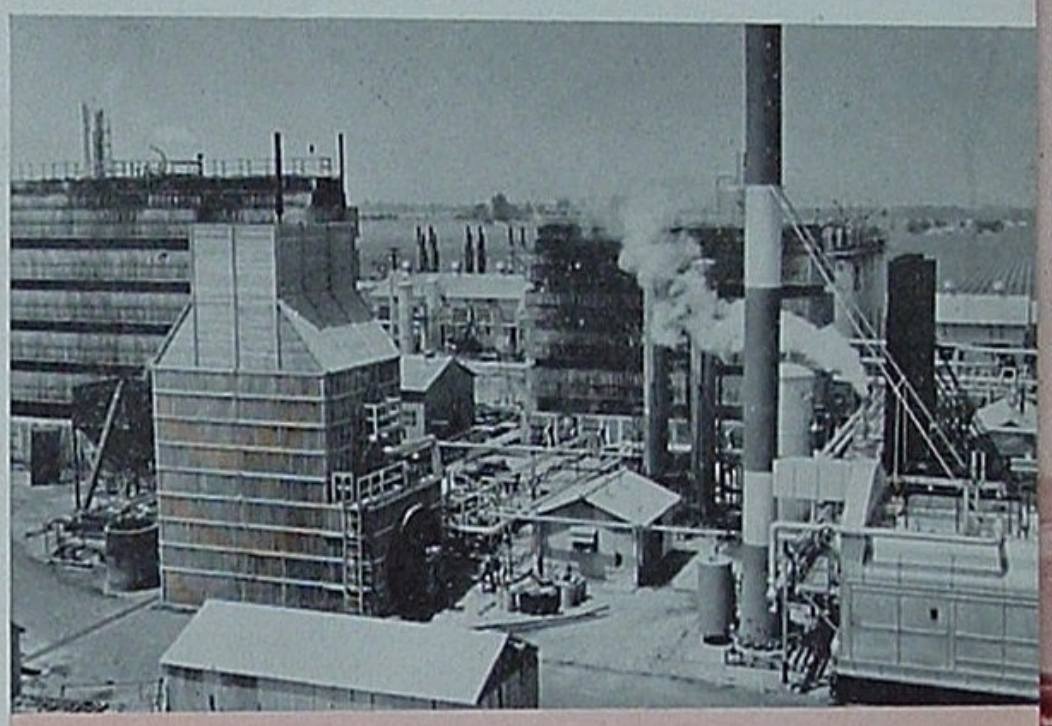
Later, our Battles facilities were augmented by the addition of an absorber and compressors that operated at or produced pressures of 450 psig. And the plant capacity was increased to handle 30,000,000 cubic feet per day. With these improvements, the H_2S problem was satisfactorily solved.

However, the CO_2 content of our natural gas was unaffected by the foregoing processes and remained an obstacle. It became apparent in 1947, during negotiations for a new sales contract, that we must either accept a very unfavorable price for the gas in conformity with its lower heating value or find some means of reducing its CO_2 content, thereby increasing its heating value to at least 1000 btu (British Thermal Units) per cubic foot. It was decided that our best solution would be the engineering of a plant capable of achieving the latter result.

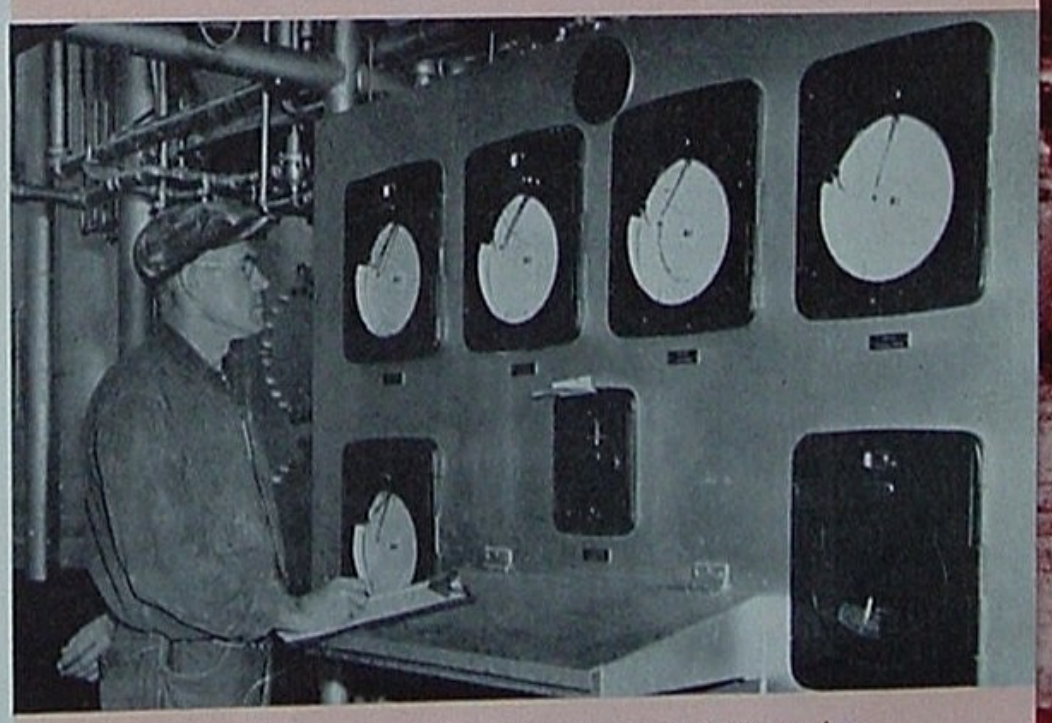
Carbon Dioxide Extraction Plant

After reviewing several proposals, we decided that the Girbotol process offered by the Girdler Corporation of Louisville, Kentucky, appeared most satisfactory. This organization was retained to engineer the features most desirable for our requirements.

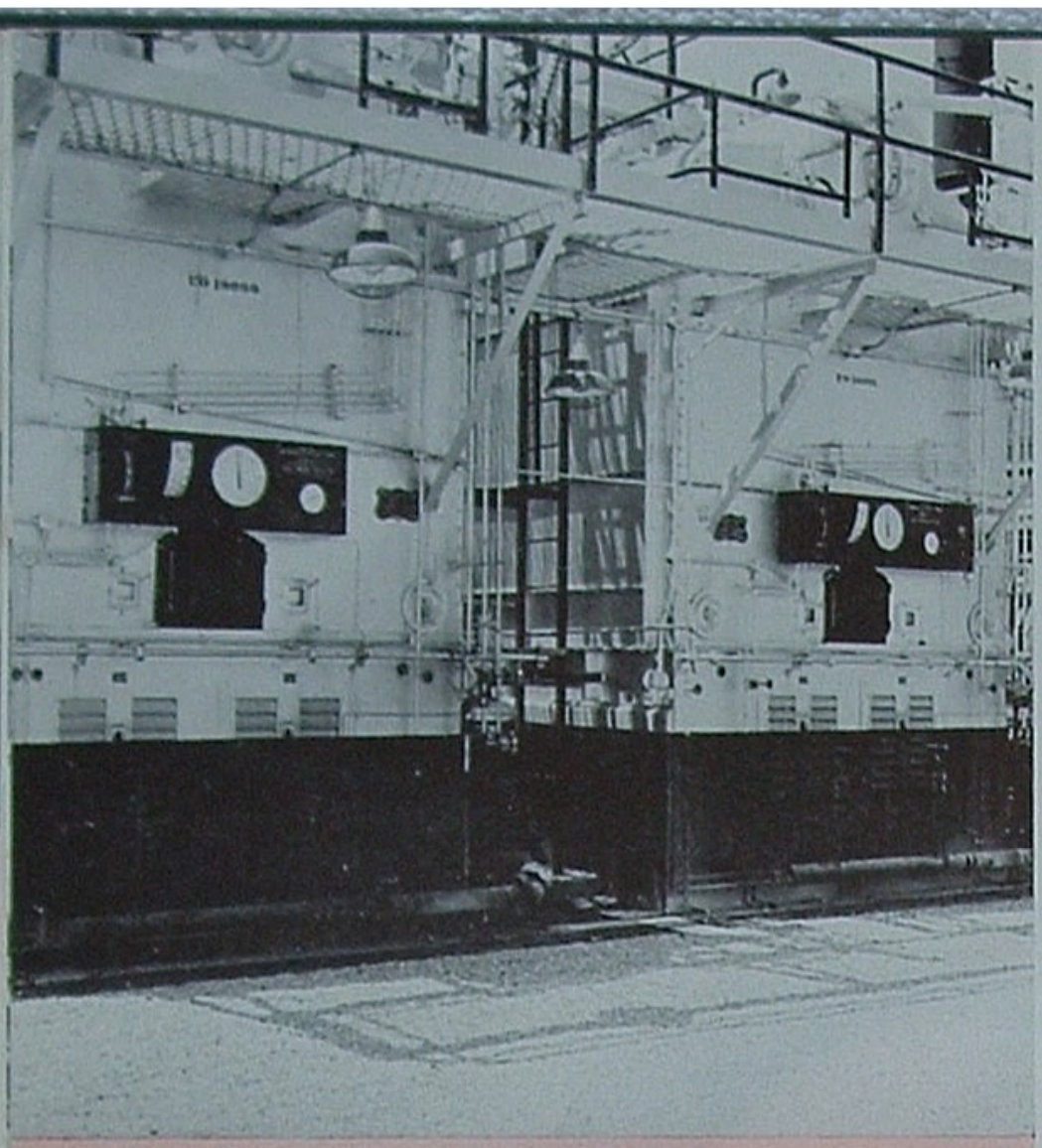
The process engineering of the plant was completed in November, 1947. The firm of Parkhill-Wade, construction contractors, was selected to make necessary construction drawings, assist in writing material and equipment specifications, and perform the construction work. It had been anticipated that the plant would be in operation by March 1, 1948. However, due to unavoidable delays in the procurement of materials and fabrication of equipment, the plant was not ready until May 6, 1948. After a short period of operation, during which the customary changes required in any new plant or process to insure proper operation were made, the plant commenced continuous operation May 20.



Two new 300 h.p. boilers (right), with their 130-foot stack, and two CO_2 purification towers (behind escaping steam) were part of equipment needed to permit our manufacture of dry ice.



All carbon dioxide extraction units are so completely mechanized that only one man (Operator T. E. Lappin) per shift is required. These instruments record and control operations.



Steam power and heat for the CO_2 extraction plant is generated by these boilers, which use natural gas for fuel, and whose stack is now the highest structure in Santa Maria Valley.

At the present time this CO_2 extraction plant is functioning in a satisfactory manner and accomplishing the purpose for which it was constructed. Although it is likely that not all expenses of the project have reached our Accounting Department, it appears that construction was completed close to the originally estimated cost of $500,000. The CO_2 content of our natural gas has been reduced from around 15% to 7.5%.

The Mechanics of CO_2 Extraction

The Girbotol process for removing carbon dioxide from natural gas employs a solution of water and a liquid known as mono-ethanolamine (hereafter referred to as amine or amine solution). It has the ability to absorb CO_2 without affecting recovery of hydrocarbon liquids.

The amine solution is pumped over the top of a multi-tray absorber and, flowing counter-current to the flow of gas being processed, absorbs most of its CO_2 content. The natural gas of lowered CO_2 content passes from the top of the absorber and back to the compressor plant. The amine solution, now enriched with CO_2, flows cold from the base of the absorber at a pressure of approximately 80 psig—through heat exchangers—then to the upper portion of an amine stripper or re-activator. Here the amine solution flows downward through a series of trays, counter-current to an upward flow of hot amine and water vapor. This action partially strips the CO_2 from the amine solution, and the CO_2 passes out the upper portion of the stripper column. The partially stripped amine then passes out the lower part of the stripper column into a steam-heated re-boiler, from where the heated vapor and liquid return separately to the stripper, this operation further stripping CO_2 from the solution. The hot stripped amine finally leaves the base of the stripper; imparts some of its heat to the cold in-coming solution via a heat exchanger; flows through air-cooled and water-cooled units; and is pumped under increased pressure back to the top of the absorber for reuse, thus completing the liquid flow cycle.

The CO_2 stripped from the amine solution, together with some water vapor, leaves the stripper in two separate streams, one stream directly off the top, the second from a lower tray position. Separation of CO_2 into these two streams was part of the plant's final design, as at that time plans were being investigated for using a portion of the waste CO_2 for making dry ice. It was anticipated that the side stream would be less contaminated with H_2S than the top stream.

While the Girbotol process can be used successfully for extracting H_2S as well as CO_2, physical and chemical characteristics of the solution are such that practically all CO_2 must be extracted before appreciable quantities of H_2S can be removed. Since we were planning on extracting only a portion of CO_2 from the natural gas stream, it was believed that the amount of H_2S extracted would be of no significant importance.

Next Step, Dry Ice

The extraction of large quantities of CO_2 in relatively pure form has naturally suggested putting this commodity to work rather than releasing it as a waste product. Accordingly, Field Department engineers spent considerable time reviewing the operations of existing dry ice plants as well as theoretical considerations. It was finally decided to employ the Girdler Corporation to design and equip such an installation, this plant to be located adjacent to our gas and oil treating facilities on the Battles Lease. It was hoped to place the plant in operation during the early part of this summer, 1948. However, delays in obtaining materials again delayed progress to the point that actual production of dry ice may not begin until fall.

From Waste Gas to Dry Ice

Although at present the nearly pure carbon dioxide is being released as a waste product, it will presently be made to serve many useful industrial functions in its solid form, dry ice.

Briefly, the process used in making dry ice involves the purification of the side cut CO_2 stream for removing such contaminates as H_2S and amine vapors. This is accomplished in two double contact towers in which an

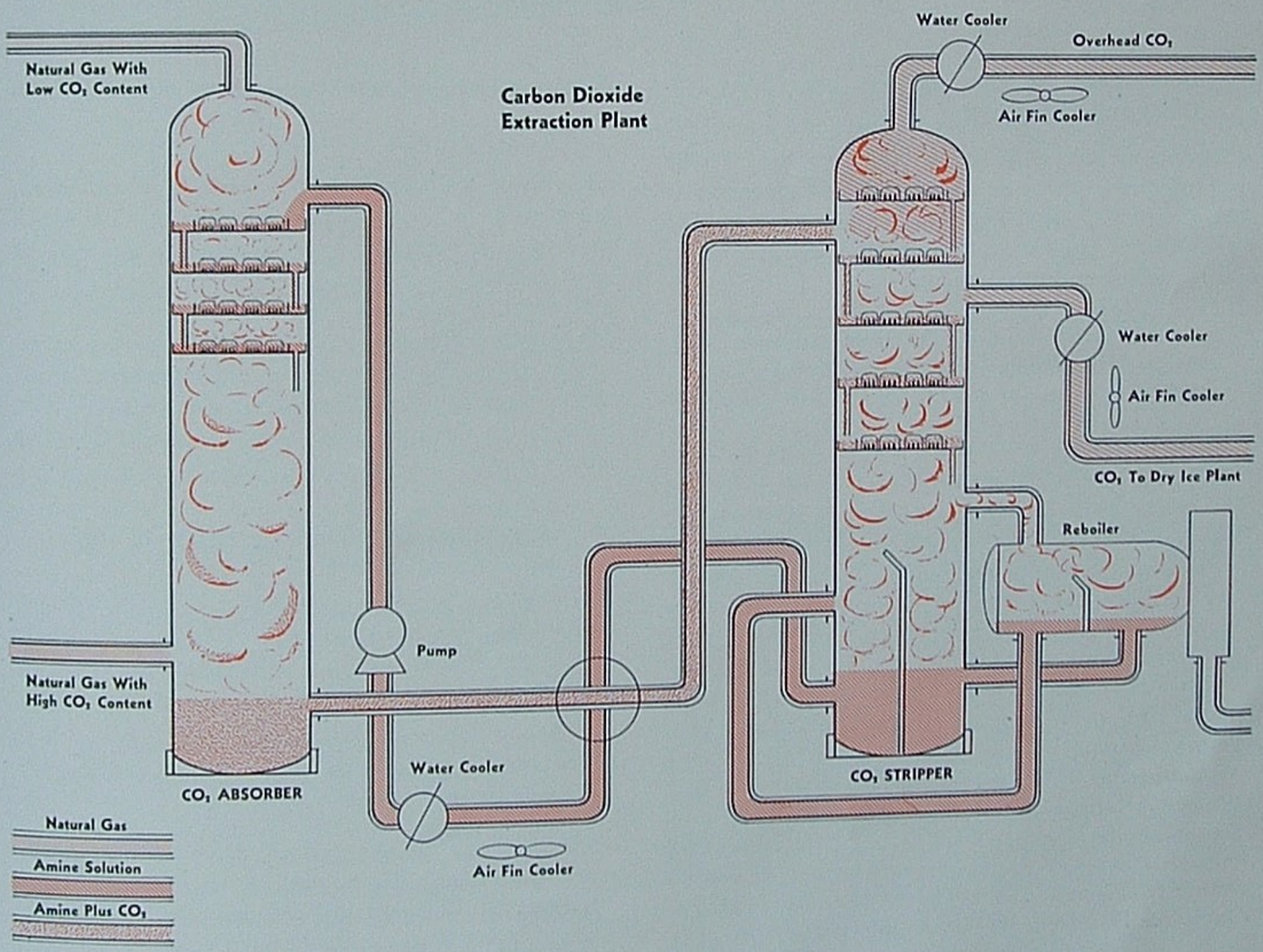
iron oxide solution is circulated through the lower half of the first column and a chromate-borax solution circulated in the upper half. The gas then passes to the second column, where it is contacted in two stages by a permanganate solution, fresh permanganate solution being circulated in the upper portion and a partially foul permanganate solution circulated in the lower column.

CO_2 gas leaves the purification plant at about 23 psig and is piped to the dry ice plant nearby. Here the gas is to be compressed and cooled in two stages to a pressure of around 500 psig. It then passes through a gas dehydrator for the removal of water vapor; goes through a final stage of compression at approximately 1100 psig; and, when cooled at this pressure to 85 degrees F., becomes liquid in form.

The final conversion of this liquid to a solid is simply a matter of releasing it through several stages from 1100 psig to atmospheric pressure. First the liquid is piped to a container at 500 psig. Here part of the liquid flashes to vapor form, in so doing requiring enough heat to lower the temperature of the remaining liquid from about 85 to 35 degrees F. The flashed vapors return for recompression and cooling; but the cooled liquid continues on to another container where pressure is lowered still further to 235 psig. Again some of the liquid flashes into vapor and the remaining liquid is cooled to minus 10 degrees F. A similar third step lowers pressure to 135 psig and cools the CO_2 liquid to minus 40 degrees F. The liquid is now at a sufficiently lowered temperature and pressure that it can be piped to the CO_2 presses. Here a predetermined volume drops to a pressure of 80 psig and a temperature of minus 70 degrees F. The flow is then shut off. At this point the press chamber is vented to atmosphere; the liquid freezes into snow; and a hydraulically operated press plunger compresses the CO_2 snow into solid cakes of dry ice.

In the near future, ON TOUR will bring you a further picture description of the new plant in operation.

Carbon Dioxide Extraction Plant



Does This Answer Your Question?

Here are management's answers to some of the questions asked by employees during recent showings of the motion picture, "Report for '47".

A service station of new design at Sepulveda and Ocean, Los Angeles.

How many service stations are now Company operated?

As of June 30, 1948 Union Oil Company had 43 employee-operated service stations, 1,777 lessee-operated stations and 2,341 retail outlets of various types handling Union Oil products, making a total of 4,161 retail outlets, exclusive of airport units.

How does Union Oil Company compare in volume of sales to other oil companies in this area?

Based on taxable gasoline sales in the States of California, Washington, Oregon, Idaho, Nevada and Arizona, Union Oil Company occupies fourth place in volume of gasoline sales. In the State of California Union Oil Company occupies third place.

In what States are Union Oil products sold?

California, Washington, Oregon, Idaho, Montana, Nevada and Arizona; portions of New Mexico and Utah; and Territories of Alaska and Hawaii.

Are the dealer stations actually independent businesses?

A service station lessee is an independent merchant purchasing petroleum products, tires, batteries and accessories on a wholesale basis for resale. Facilities are leased under a lease designed to return to Company a reasonable rental and protect Company's property or any leasehold interest which it may have acquired. The uniformity of appearance in lessee-operated stations is due to application of Company's institutional colors, on-station advertising displays, standard signs and the fact that a large number of the leased stations were either built by the Company or in accordance with Company specifications.

Are Union Oil Company products sold on the East Coast?

Yes, Unoba Grease and Aristowax to a considerable extent and Aromatic Solvents in relatively small quantities.

How does the Company compare in sales volume with such companies as Standard?

Standard Oil Company of California has approximately three times the number of retail outlets served by Union Oil Company and gasoline sales are approximately double those of Union Oil Company.

What is the purpose of the various "additives" used in the production of Triton and Royal Triton?

The compounds give Triton and Royal Triton additional performance features. They reduce or inhibit oil oxidation, protect against bearing corrosion and interior engine rusting, increase load carrying ability, and keep sludge and lacquer forming material dispersed in the oil.

How do lubricants made from Western Crude compare in quality with lubricants made from Eastern Crude?

Modern refining methods (Union Oil Company pioneered in the development of these methods) make it possible to produce high-quality lubricating oils from a wide range of stocks. With the introduction of Triton in 1934, the superior claims of Eastern refiners were nullified. In other words, refining technique and compounding rather than the crude involved are the essential factors in determining the quality of the finished lubricant.

What are "accessories" under products?

Accessories refer to tires, tubes, batteries, seat covers, and similar items sold through service stations.

What are "other products" under "products" sold by this Company?

This classification includes such products as dry gas sold to public utilities, liquefied petroleum gases, natural gasoline, crude oil produced in areas away from our refineries, petroleum coke, mercaptans and miscellaneous items not regularly classified.

What kind of pest controls were developed?

A number of agricultural pest control chemicals are being field tested under the supervision of our Research Department's Agricultural Laboratory. An example is a new control for red spiders and red scale on citrus trees. The development of such chemicals is a time-consuming project, since at least two years of field testing are required after all laboratory tests have been completed. The effect on the tree or plant must be watched carefully since many chemicals will be effective from a pest control standpoint but will also damage the plant.

How does the use of jet planes by the Armed Forces affect our present aviation gasoline production?

Jet fuels currently in use have little effect on aviation gasoline production. They are more closely related to kerosene. However, proposed fuels under consideration by the Armed Forces may change this situation materially.

What are Technical Products?

Under Technical Products, we classify those products which do not lend themselves to the usual groupings of fuels and lubricants. They are more specific in application and represent a more specialized side of the petroleum industry. Such products include: thinners, aromatic solvents, insecticides, spray oils, de-icer fluids, petrolatums and waxes.

What are the grades of lubricants produced by the Union Oil Company?

Generally speaking, we follow accepted standards, such as those established by the Society of Automotive Engineers and the American Petroleum Institute, in classifying our automotive lubricants. For industry more specialized lubricants are manufactured, such as turbine oils, compressor oils, steam cylinder oils, compounded marine lubricants, arbor oils, extreme pressure greases, tractor lubricants, heavy residual lubricants and pinion greases.

Does Motoreze contain any additives?

Motoreze does not contain any additives. It is a straight solvent refined mineral oil.

Loading operations at our Los Angeles Wholesale Plant.

Lakeview No. 1

Not Too Little and Too Late But Too Much and Too Soon!

Yes, this is all that remains of famous Lakeview No. 1—a shallow pit filled with bent pipe, rubbish and tumbleweeds. People pass by every day on the old Taft-Maricopa Road, but few recognize the spot or know what happened here forty years ago. The surrounding wall of dirt was not a gift of nature. It was placed there by hundreds of men and horses working night and day to hold back the greatest petroleum flood in United States history. That piece of tarred burlap is part of an old sandbag that was laid during the roaring storm of gas and oil. Oil filled the air and every hollow as far as you could see.

The story of Lakeview began in 1908 with four men who had no assets other than a lease, a few dollars and a strong hunch. Their names were Charles W. Off, Julius Fried, Parker Barrett and John M. Dunn. The latter two were rig builders. Perhaps their hopes were based largely on the fact that Union Oil Company had started drilling the adjoining Sage and Webster leases.

No sooner had the quartette raised a 72-foot wooden derrick and started making hole with standard tools than misfortune paid an extended visit. First, the hole persisted in turning off at a bad angle. Then one day a set of precious tools left the cable and vanished into several hundred feet of well. And finally, when borrowed fishing equipment was sent down to retrieve the drilling string, the cable again parted. Everything was swallowed—hook, line and sinker!

The partners were pushed back on their heels but not whipped. Calling on Union Oil for help, they soon received the loan of C. E. "Barney" Barnhart. Barney brought along many years of drilling experience and succeeded in recovering the lost tools. But then the worst tragedy of all happened. At exactly 1,800 feet, the well and its four sponsors ran out of money.

Sympathetic neighbors had little to offer except regrets when Barney and his four insolvent employers announced their plight. After all, Union Oil already had enough wildcats on its hands in the area, none of which was showing great promise. But in the Midway-Sunset field 1,800 feet of well was not deep enough to be conclusive and far too deep to be wasted. So, the partners finally arranged a deal whereby, for a 51 percent interest in the well, Union Oil would take over all drilling. However, it was agreed that Lakeview would be a spare-time operation, the work to be done only when crews were not needed on other jobs.

Under this arrangement, Barney Barnhart continued on as superintendent. Another Union Oiler, Charles Woods, was foreman at the time and had acquired the nickname of "Dry Hole Charlie" because of his consistent association with nonproducing wells. Charlie was almost a cinch for the Lakeview assignment.

During the evening of March 14, 1910, Union's Sage test "sanded up." So at midnight, when the graveyard tour reported for duty, they were told to get busy on

Today the world-famous well lies abandoned on the old Taft-Maricopa road. The hole is choked with bent pipe and tumbleweeds. Taft Production Foreman Harry W. Martin, below, holds a piece of oil-preserved burlap sack, one of thousands filled with earth in 1910 and placed in embankments to hold back the greatest flow of oil then known in petroleum industry history.

the spare time Lakeview job. About two hours later they pulled the baler from Lakeview's 2200 feet of hole and were astounded to see it emerge dripping with oil. Quickly the baler was ordered down for a series of tests. Each time it struck fluid at a higher level, indicating that a gusher was about to be born.

By 7 o'clock that morning of March 15, water, shale and sand began tumbling from the hole. Presently, when these heavy materials had been disgorged, there followed a roaring column of gas and oil. It shot hundreds of feet high and sent a stream of oil flowing down every adjacent ditch and gully. Rather than diminishing in force after a few hours, it grew stronger, eventually blasting out a crater so large that the derrick and drilling equipment were completely swallowed.

On coming to work that morning, "Dry Hole Charlie" solemnly commented that Lakeview must have cut an artery of the earth's great central storehouse of oil, whereas all previous wells had been merely pinpricks in the earth's thick hide.

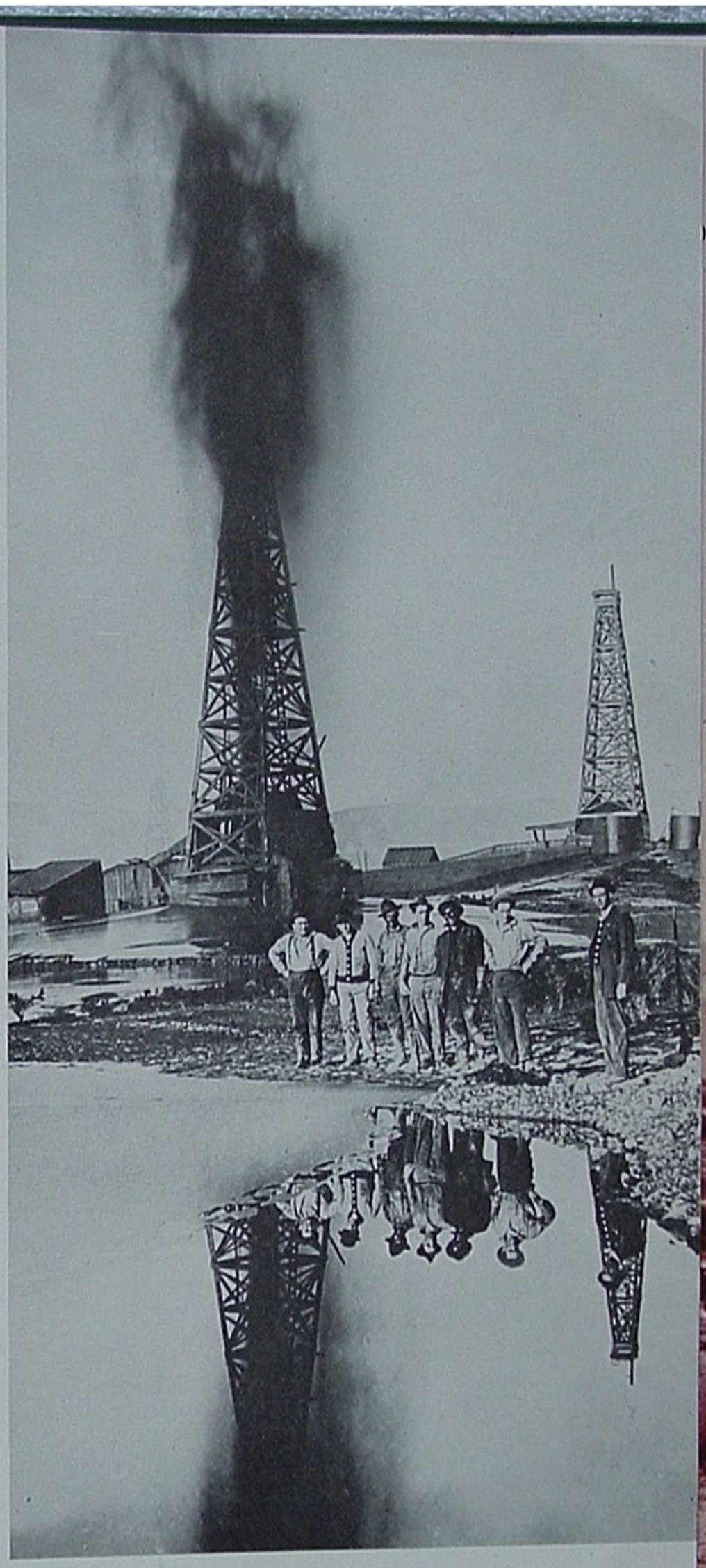
Since there was no known method of capping such a force, the Company fought to hold production with an extensive series of catch basins. Highest wages were offered to attract the hundreds of men needed. Dams were placed across all nearby gulleys and, as these filled to overflowing, new ones were constructed at lower levels or in adjacent swales. One of these earthen reservoirs covered 16 acres. A four-inch pipe line, leading to eight 55,000-barrel tanks some 2½ miles away, was installed in the amazingly short time of four hours. From these tanks, an eight-inch line carried the oil on to Port Avila.

But Lakeview seemed little discouraged by the feeble efforts of men. Its roaring and spouting began to be measured, not in days, but in months.

Besides the labor of holding the oil, there was constant anxiety and fear. Adjoining landowners sued. Workmen cursed the sticky flood and labored in fear of accidental fire. Preachers and their flocks prayed that oil might not cover the earth and bring about its flaming destruction. The entire oil industry wilted as this seemingly inexhaustible fountain brought crude prices down to 30 cents a barrel. Even Union Oil Company, with endless lawsuits, labor bills and low-priced crude on its hands, began to despair of having made the "richest" oil discovery in history.

But then on September 9, 1911, after 18 months of tempestuous living, Lakeview No. 1 suddenly quieted. It not only ceased to flow but, when the Company redrilled the well in 1913, it yielded only some 35 barrels a day to the pump.

However, in those 18 months some amazing records were established. Estimates of the first day's production ran as high as 125,000 barrels. Thirty days after the well came in, its flow was actually gauged at 90,000 barrels a day. For many months its daily production remained at a steady 50,000 barrels. Union Oil's estimate of Lakeview's total yield is nine million barrels of 32 gravity crude, of which nearly five million were saved. The remainder was lost to evaporation and seepage.



This is Lakeview No. 1 on March 15, 1910, disgorging a record first day's production of perhaps 125,000 barrels of 32 gravity crude. The great well continued to flow mightily for 18 months.

Union

ARTHUR C. STEWART Arthur C. Stewart, Union Oil Company vice president, was named chairman of the Los Angeles Community Chest campaign, Corporation Division, for the second successive year, Chest headquarters have announced.

Among the first to congratulate him, left, was Mrs. Marvin Owen, president of the 10th District Parent-Teacher Association and member of the Board of Directors of the Welfare Federation, Los Angeles Area.

The 4000 large firms in the Division which Stewart will direct contributed nearly $2,000,000 to the 1947-48 appeal, according to the general campaign chairman.

"Corporations giving to the Community Chest," said Stewart, "might well regard their contributions as evidence of faith in the welfare of the community. No corporation could be proud of operating in an area that did not provide adequate health and welfare services."

DEAN P. HUNTER The Central Territory has announced a series of appointments to key marketing posts beginning with the promotion of Dean P. Hunter as special representative in the Company's Chicago office. For the past year Hunter has served as District Sales Manager, San Jose.

JACK J. GREELY Succeeding Hunter as district sales manager at San Jose is Jack J. Greely, formerly resident manager, San Francisco. Greely has 22 years of Marketing experience, during which he served as a clerk, truck driver, and salesman before moving up to supervisory assignments.

Oilers

STIMULATING One of the most enthusiastic marketing performances reported this year hails from Gresham, Oregon. No sooner had a shipment of new "Gre-zer-ators," mechanical devices for dispensing grease from containers, come to town than our Gresham sales force went into action. Loading several of the handy gadgets and some extra pails of lubricants aboard their trucks each trip out, the drivers resolved to put a "Gre-zer-ator" in practically every rural household. By the end of May they had sold their 86th and last combination deal. When asked what they'd like as a reward, they replied, "More grease and 'Gre-zer-ators'."

The super salesmen shown below in front of their nearly empty warehouse are (L-R) Harry Clearwater, tank truck salesman, Roy Wilcox, office man, and Howard Van Vleet, tank truck salesman.

HONORED For his quick action and presence of mind in the hazardous task of moving the tanker L. P. ST. CLAIR from the path of impending disaster, First Mate William H. Thompson was named as one of 12 individuals in the United States during 1947 to merit the Bureau of Mines' Joseph A. Holmes Award. Letters of commendation were presented to Chief Engineer F. H. Howell, First Pumpman Marion Plummer, 3rd Assistant Engineers Fred Waite and W. E. Merrill, and Seamen Dave Allison, Mack Walker, John McCoy, William Brown, Clifford Layton and Stanley Hables, all members of the heroic crew.

Their valiant action took place the night of June 22, 1947, when the S. S. MARKAY exploded at a nearby Wilmington dock, killing 11 men. Thompson and his crew quickly shut down pumps, disconnected loading hoses, severed all mooring lines with axes, and moved the ST. CLAIR away from spreading gasoline flames.

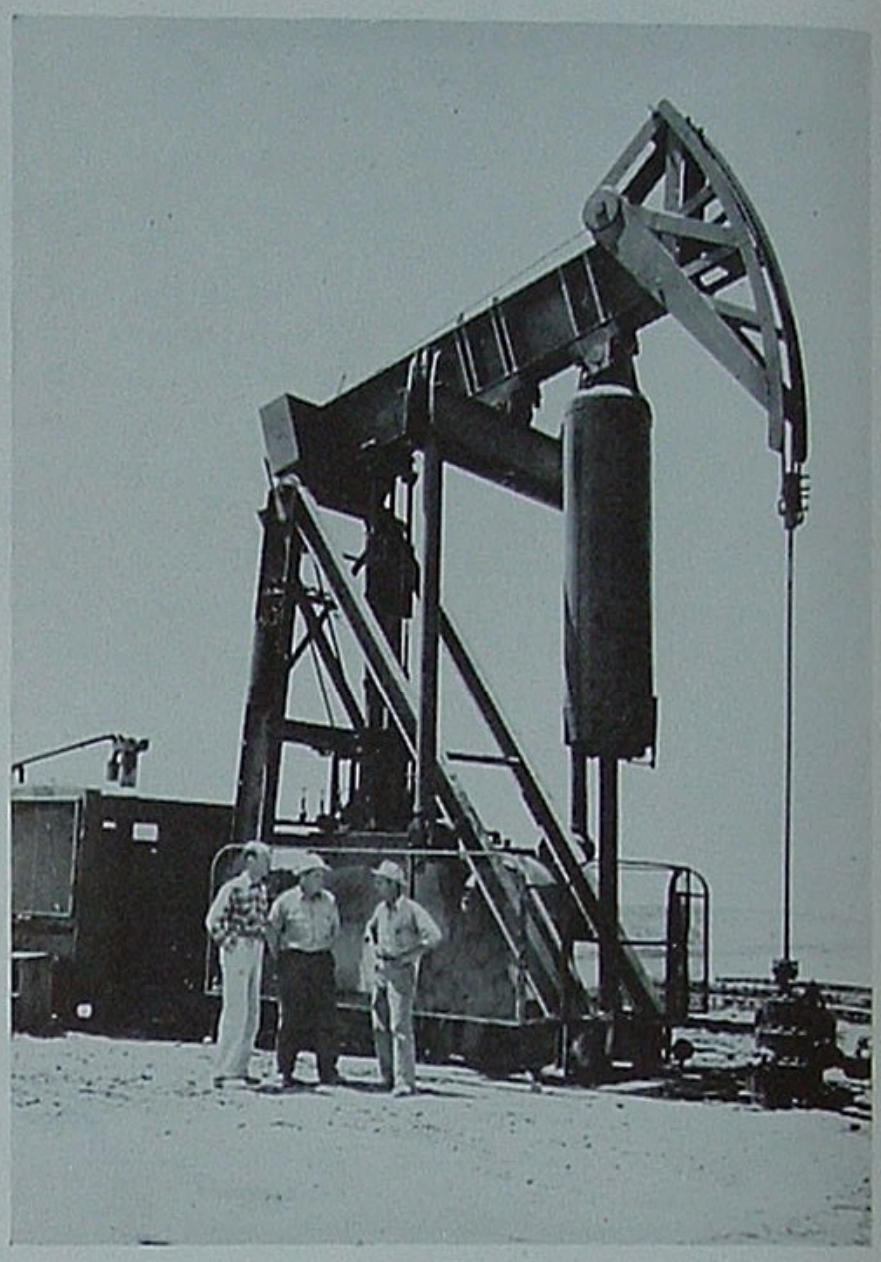
FRED C. BARR Another popular San Franciscan, Fred C. Barr, has been appointed manager of Sales Services, Central Territory. Barr, formerly personnel representative, has held many important sales and operating assignments in the Bay Area. He replaces L. E. Reark, who was recently stricken ill.

Union Oilers, Continued

FIRST MILLION The Dalles District of Oregon hit the 900,000 mark in April of this year and decided to try for their first million-unit month in May. When the 31st rolled around, adding machines began to devour some big figures and everyone took a good grip. Then on June 26th employees and consignees were summoned to The Dalles Country Club for dinner and an announcement. There District Sales Manager Paul Boyd proudly declared the goal had been reached. For the first time in its history The Dalles District had sold more than a million units (mostly gallons) of Union Oil products.

One of the many fine customers that made this sales accomplishment possible was Hudspeth Pine, Inc., part of whose equipment is shown in the two pictures below. At Prineville, Oregon, Hudspeth Pine have recently completed a $350,000 mill and planer. This is an all electric band mill with resaw and shotgun carriage. It operates three shifts daily and has a capacity to cut 75,000 feet of Grades 1 and 2 lumber per shift.

In addition to their Prineville operation, Hudspeth owns and operates two mills at Mitchell and one at Spray. They are building approximately 100 miles of logging road through some of the finest timber country in the world. Their rolling equipment at present consists of 36 trucks, 15 Caterpillar tractors, four lumber carriers and one road blade, which frequently run up a petroleum bill of more than $3,000 per month. John, Claude and Fred Hudspeth are owners of the business. Consignee Wendall Wainright serves their Prineville operation 100% with Union products.



SIX GRAVITY CRUDE At normal temperatures six gravity crude is only slightly more fluid than asphalt paving. How on earth then, you might ask, can we ever pump such crude out of the ground?

Near Santa Maria this impossible feat is being accomplished. From Bell Pump Station, crude of 22 gravity is being hauled by truck to the Olivera Canyon Field. After being heated to 140 degrees, the oil is pumped down between the casing and tubing of several heavy-crude wells to serve as a diluent. It mixes with the native six gravity product and both are then pumped to the surface in the form of 11 gravity oil. Trucks that bring the diluent from Bell Pump Station also transport the heavy crude back for transshipment by pipe line to our Port San Luis terminal, thence to Oleum Refinery.

This operation is one example of many extreme ways in which Union Oil is helping to satisfy the world's great appetite for petroleum. Seen by one of the heavy crude producers, McCroskey No. 2 (above), are (L-R) employees Charles Young, Robert Green and Walter Ellis. This pumping unit, thought to be one of the largest in existence, has a 120-inch stroke and can be slowed to one stroke a minute.

In my opinion ...

Dear Editor:

Undoubtedly there are two different points of view expressed in the attached clippings. I would appreciate an explanation in the next issue of ON TOUR.

Phillip H. Seeley
Valley Division

(*Editor's note:—Mr. Seeley enclosed a newspaper clipping, which told of an oil man who in* 1947 *had netted* $600,000 *from oil properties valued at only* $345,000. *Also enclosed was the Company's institutional ad entitled, "Are present 'high profits' justified?", in which it was explained that our so-called "high profits" for* 1947 *weren't high enough by* $675,000 *to keep Union Oil Company a going concern.*)

Dear Mr. Seeley:

The apparent earnings that any company makes from an individual oil property represent a true profit only if that company is liquidating its business. If an oil company is planning to stay in business and expand to meet the growing needs of the community, it must constantly expend large sums of money in the search for new sources of oil and the further development of existing sources.

The advertisement, "Are present 'high profits' justified?", showed the amount of money the Union Oil took in and the total amounts that had to be spent to meet costs of doing business and staying in business. Actually, Union Oil Company made $18,910,000 profit, but under the cost of staying in business we included those dollars that had to be spent in order to assure that Union Oil Company would continue to be successful and be able to provide jobs and dividends not only today but for the future as well.

We are not in a position to discuss other companies' policies and programs in this respect.

Haines Finnell
Public Relations Representative

SERVICE BIRTHDAY AWARDS

AUGUST, 1948

Thirty-Five Years

Federspiel, James, Northwest Territory
Pyle, Frank L., So. Div. Pipe Line

Thirty Years

Fitzpatrick, Thos. F., Northwest Terr.
Martin, Harry W., Valley Div. Field
Matier, Hugh A., H. O. Sales Serv.

Twenty-Five Years

Andrews, Joseph, Oleum Refinery Mfg.
Arnold, Lewis P., H. O. Land
Boede, Henry C., Oleum Refinery Mfg.
Calder, Earl C., No. Div. Pipe Line
Chowen, Richard J., L.A. Refinery Mfg.
Denio, Hugh B., No. Div. Pipe Line
Fitzpatrick, John J., Northwest Territory
Goodell, Murray C., Marine-Wilmington
Henderson, Edw. G., Central Territory
Ketteringham, Wm. M., Research-Wilm.
King, John S., Southwest Territory
Monreal, Raymond L., No. Div. Pipe Line

Twenty Years

Christensen, Fred F., Central Territory
Cole, Oyd C., L.A. Refinery Purch.
Crawford, Frank D., H. O. Exploration
Gilbert, Oren G., Central Territory
Graham, Ronold A., L.A. Refinery Mfg.
Greatwood, Henry, H. O. Foreign Sales
Hoover, Mark R., Oleum Refinery Mfg.
Johnson, Carl F., So. Div. Automotive
Luzzi, Alfred, Southwest Territory
McCutchan, Philip, Research-Wilmington
Meadows, Ralph B., Southwest Territory
Meredith, Hollis E., So. Div. Pipe Line
Nevens, Ralph A., H. O. Staff
Ockey, Roy B., Maltha Refinery Mfg.
Olding, Willard F., L.A. Refinery Mfg.
Ooley, Wm. C., Southwest Territory
Pink, Arthur F., Oleum Refinery Mfg.
Pullen, Harvey M., L.A. Refinery Mfg.
Quigley, Frank H., L.A. Refinery Mfg.
Rogers, Hubert T., L.A. Refinery Mfg.
Shannon, Fred C., L.A. Refinery Mfg.
Sutton, Wm. C., So. Div. Automotive
Tatham, Gerald L., L.A. Refinery Mfg.
Weide, Rolland R., So. Div. Field
Whitson, Otto, L.A. Refinery Mfg.
Willis, Fred B., L.A. Refinery Mfg.
Wilson, Paul A., So. Div. Field

Fifteen Years

Alvarez, Carlos, Central America
Armstrong, Clarence, Honolulu Dist.
Baldosser, Clyde C., Southwest Territory
Burkle, Ray C., Valley Div. Field
Boroff, Paul R., Coast Div. Field
Carollo, George G., Oleum Refinery Mfg.
Casey, Frank M., Oleum Refinery Mfg.
Caswell, Clarence B., Oleum Refinery Mfg.
Cooper, James S., Oleum Refinery Mfg.
Cox, John V., Honolulu Mkt.
Duncan, Chas. H., Southwest Territory
Dungan, Myron R., Southwest Territory
Fleetwood, Harland E., Comp., Seattle
Foster, Alford L., Southwest Territory
Fraser, Aubrey E., H. O. Sales Serv.
Jenkins, Wesley E., Central Territory
Johnson, Claiborne R., Southwest Terr.
Kent, Malcolm, Southwest Territory
Killeen, Thomas J., Northwest Territory
King, Norbert R., Central Territory
Ledbetter, Jerry T., So. Div. Field
Pfitzer, John, Central Territory
Powell, Chas. E., Northwest Territory
Rowe, George E., L.A. Refinery Mfg.
Skillman, Chas. L., H. O. Comptroller's
Smart, Elmer E., Oleum Refinery Mfg.
Smith, Dalice R., Central Territory
Whitaker, Walton, So. Div. Field

Ten Years

Almendral, Gilberto, Central America
Kendall, Morris L., So. Div. Field
Matelyak, Joe A., Northwest Territory
Taber, Samuel D., No. Div. Pipe Line
Weed, Chester E., Northwest Territory

How the profit system reduces waste

1. For years Santa Maria Valley, in California, has been a steady producer of natural gas. But Santa Maria gas contains a high percentage of CO_2—carbon dioxide. As any high school chemistry student knows, CO_2 will not burn. So in order to give the Santa Maria product sufficient B. T. U.'s to meet household requirements, additional propane or butane had to be added to it.

2. This was wasteful in two ways. It took propane or butane that could be used elsewhere. And it wasted CO_2 which, when extracted, has many commercial uses. (Among other things, CO_2 puts the "fizz" in soda pop and makes dry ice.) Dry ice interested us particularly because it takes large volumes of CO_2. So when the market for dry ice developed to a point where it justified some rather large plant expenditures, we went to work.

3. We built a CO_2 extraction plant at Santa Maria and we have a dry ice plant under construction. As a result we can purify the natural gas so that it needs no additional propane or butane. And we'll soon be able to turn the CO_2 into a useful sales item. This example is typical of developments that are going on continually at Union Oil.

4. Take wax, for example. Every time you strike a match, buy a loaf of bread or put up a glass of homemade jelly you come in contact with paraffin wax—a very useful by-product of the petroleum industry. Ever since the development of propane solvent refining it has been known that certain high melting point waxes were present in the residues left over from this modern lube oil refining process.

5. But until 1941 no one had perfected an economical way to extract them. After patient experimenting, Union Oil's research department finally developed a process that would do the job. Since then this process has been converting residues —which used to be run back to fuel oil— into high-quality paraffin waxes. (The two grades of this *Aristo Wax* have melting points of 143°/150° and 160°/165° F.)

6. To us, these incidents are typical examples of how our free, competitive economy constantly reduces waste and inefficiency. The profit incentive keeps each individual and each individual company continually striving for ways to increase the quality and usefulness of products. Consequently, you have the combined efforts of *millions* of people working on problems that are supposed to be solved in a planned economy by the *handful* of men who direct the State.

UNION OIL COMPANY
OF CALIFORNIA

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This series, sponsored by the people of Union Oil Company, is dedicated to a discussion of how and why American business functions. We hope you'll feel free to send in any suggestions or criticisms you have to offer. Write: The President, Union Oil Company, Union Oil Building, Los Angeles 14, California.