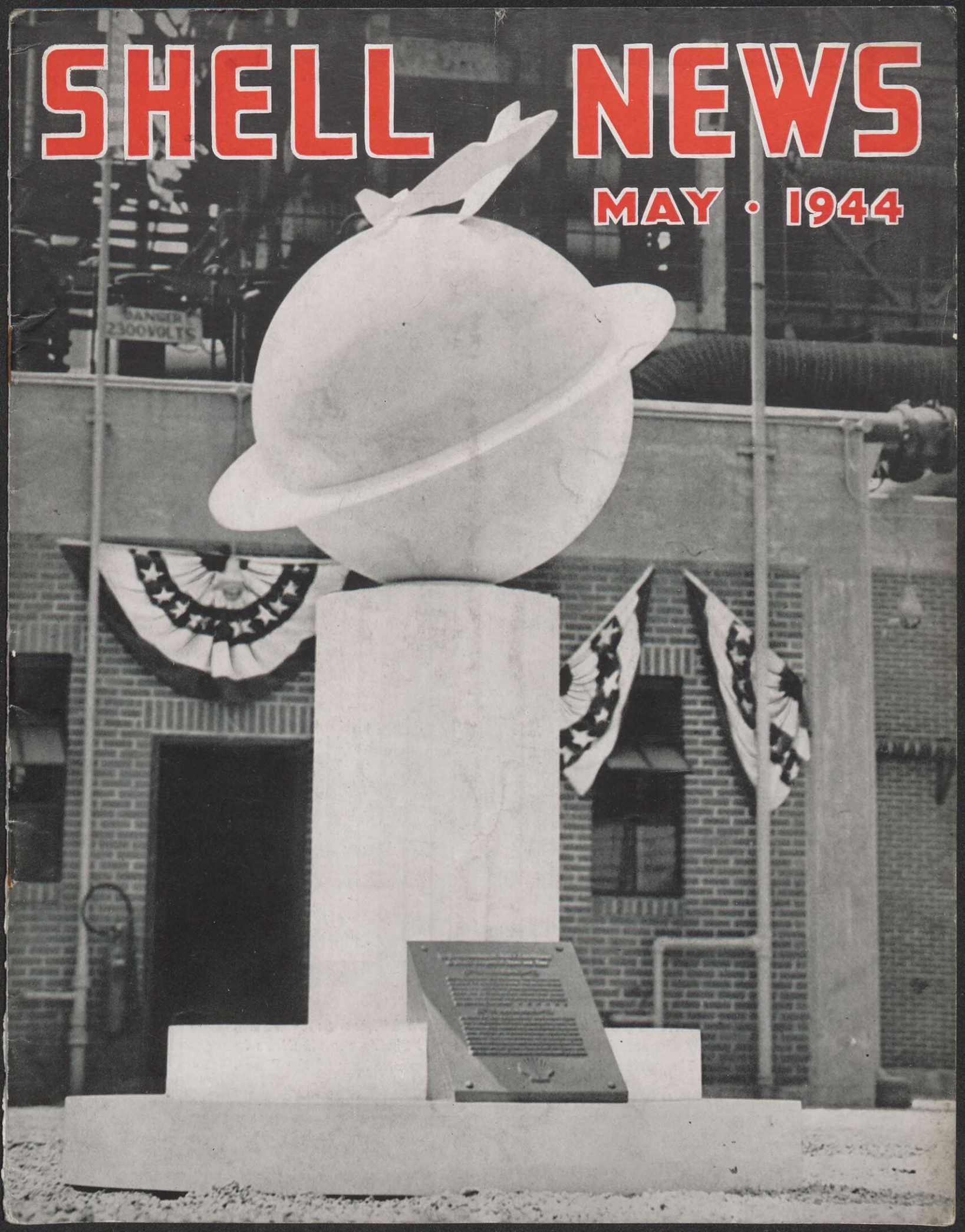


# SHELL NEWS

MAY • 1944





# The New York Times.

SUNDAY, APRIL 30, 1944.

## ANNIVERSARY OF POWER

Ten years ago today, 1,000 gallons of 100-octane gasoline, the first ever to be produced in commercial quantities, was delivered by the Shell Oil Company to the Army Air Corps at Wright Field. The company commemorates that anniversary by opening its new twin catalytic cracking plant for the manufacture of high-octane gasoline at Wood River, Ill., and the Petroleum Administrator for War, the Army and the Navy will inaugurate tomorrow the national celebration of 100-Octane Week. There can be little question that fuel of 100-octane or better rating, set down in huge quantities for our Air Force and Navy fliers around the world, has been one of the vital underlying factors in our superiority over the enemy. The margin in speed and performance provided by such gasoline has heavily weighted the odds in our favor and saved hundreds of lives.

Many details of the wartime advances in petroleum technology, especially in relation to high-octane, must still remain on the confidential list, but it is a matter of record and a tribute to the petroleum industry that constant improvement in quality and reduction in price have accompanied the development. The first 1,000-gallon shipment delivered from California to Ohio ten years ago cost \$2.40 a gallon. Today the price to the air services in bulk is less than the motorist pays for his day-by-day fuel at the roadside pump. Many companies and individuals have shared in the achievement represented by our dominance in high-octane fuel. It should not be forgotten, however, that among the many debts which American airpower owes to Lieutenant General Doolittle is his insistence a decade ago, when, as a civilian, he was in charge of the aviation development of Shell, that his company carry on energetically research in 100-octane gasoline.

*One of America's great newspapers, the New York Times, on April 30th, editorially discussed 100-octane gasoline and Shell's contributions to the field. The editorial is reprinted through the courtesy of the Times.*



# SHELL NEWS

Dedicated to the principle that the interests of  
employee and employer are mutual and inseparable

MAY • 1944

Vol. 12 • No. 5

Sunday, the thirtieth of April, was an important day for Shell and for the nation. It was a day of double celebration . . . for the opening of the new giant twin catalytic crackers which will increase tremendously the production of 100-octane gasoline at Wood River Refinery . . . and for the tenth anniversary of the first delivery of 100-octane to the Army Air Corps . . . made by Shell.

That it was no ordinary day is testified to by the editorial in the New York Times, by hundreds of columns of space given in newspapers throughout the country, and by the broadcast which was heard all over the world. If you were one of the thousands who attended the celebration you know what a thrilling day it was. If you were one of the millions who heard the broadcast you were able to capture some of the excitement of the day. In this issue we have attempted to re-create some of the events . . . pictures of the cere-

monies, of the twin "cat"-crackers; what General Doolittle, Secretary Patterson, and other celebrities had to say . . . in fact everything that made April thirtieth a milestone in Shell's history.

The cover of SHELL NEWS shows the monument over the time-capsule dedicated during the ceremonies . . . but for more information about the day turn to pages 2, 3, and 4; pages 5 to 7 describe the twin "cat"-crackers; and pages 8 to 12 tell of 100-Octane's Birthday Party.

Other articles tell of the ingenuity of three men in the Albany Division, "Don't Waste a Drop" shows how countless gallons of gasoline are being saved each month; another in the series of Victory Garden articles informs you of methods to protect your garden from insects and blight; "Now It Can Be Told" continues with previously unmentioned military secrets. This month's article on Avaro is the first ever printed on this subject in any magazine.

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# WOOD RIVER'S CELEBRATION

APRIL 30, 1944



Mrs. Jimmy Doolittle, wife of the General, unveils the 100-octane monument. Under-Secretary of War Patterson, and Mr. Fraser are on Mrs. Doolittle's left.

THE ceremonies at the unveiling of the 100-octane monument were attended by the visiting celebrities and Shell officials. The afternoon celebration saw thousands of employees, their families and friends, crowd the huge tents to listen to the many speakers. Among those who spoke were Under-Secretary of War Patterson, Rear Admiral Hipp, Major Craig, Acting Governor Cross of Illinois, R. C. Roberts, and Alexander Fraser. Other celebrities were introduced to the audience, including Senator Clyde M. Reed, Kansas.

Mr. Fraser's speech was one of the highlights of the occasion. After commenting on the progress made by all of American industry, he said, "These last ten years have witnessed a terrific struggle between the forces of good and evil. The American system, the system in which management and labor have judiciously used the collective capital of millions of investors, has not only survived these years of economic upheaval and the mortal peril of

war, but has gone on to prove that this tri-partite group working together can literally accomplish miracles. The future holds a thrilling challenge . . . I venture to submit an industry platform in these terms:

1. To provide its employees with job security and good wages, and the opportunity to advance.
2. To further the interests of the community through actions that promote community welfare in peace and war.
3. To give the public better values and new and better products.
4. To give the investor a fair return on his investment.

With the assurance of the preservation of our American way of life and a determination by industry to achieve these objectives, we can look forward to the future with brave heart and resolute confidence."





Mr. Fraser introduces Secretary Patterson to R. C. Roberts, Wood River Refinery manager.



Mr. Fraser, Mrs. Doolittle and Secretary Patterson place the formula, a scroll commemorating the event, and a sample of the original 100-octane gasoline in the time capsule.



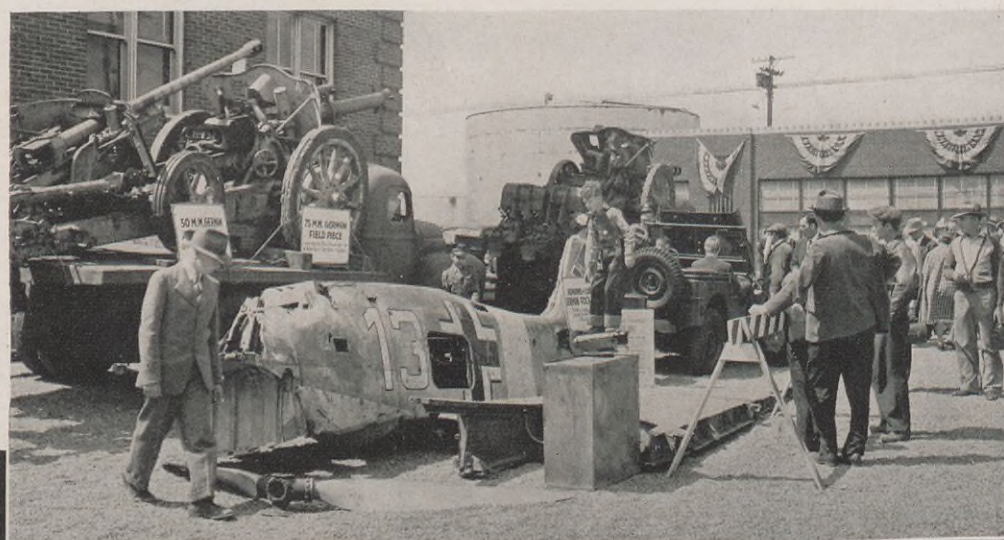
Among the other speakers were Lt. Governor Cross of Illinois (left) Admiral Hipp (right) and Major Craig (above). The major is the author of "Danger Is My Business" and is head of the Air Forces Camera Corps.







Over 7,000 persons heard the speeches, saw captured German equipment, and thrilled to a P-47 which stunted overhead.

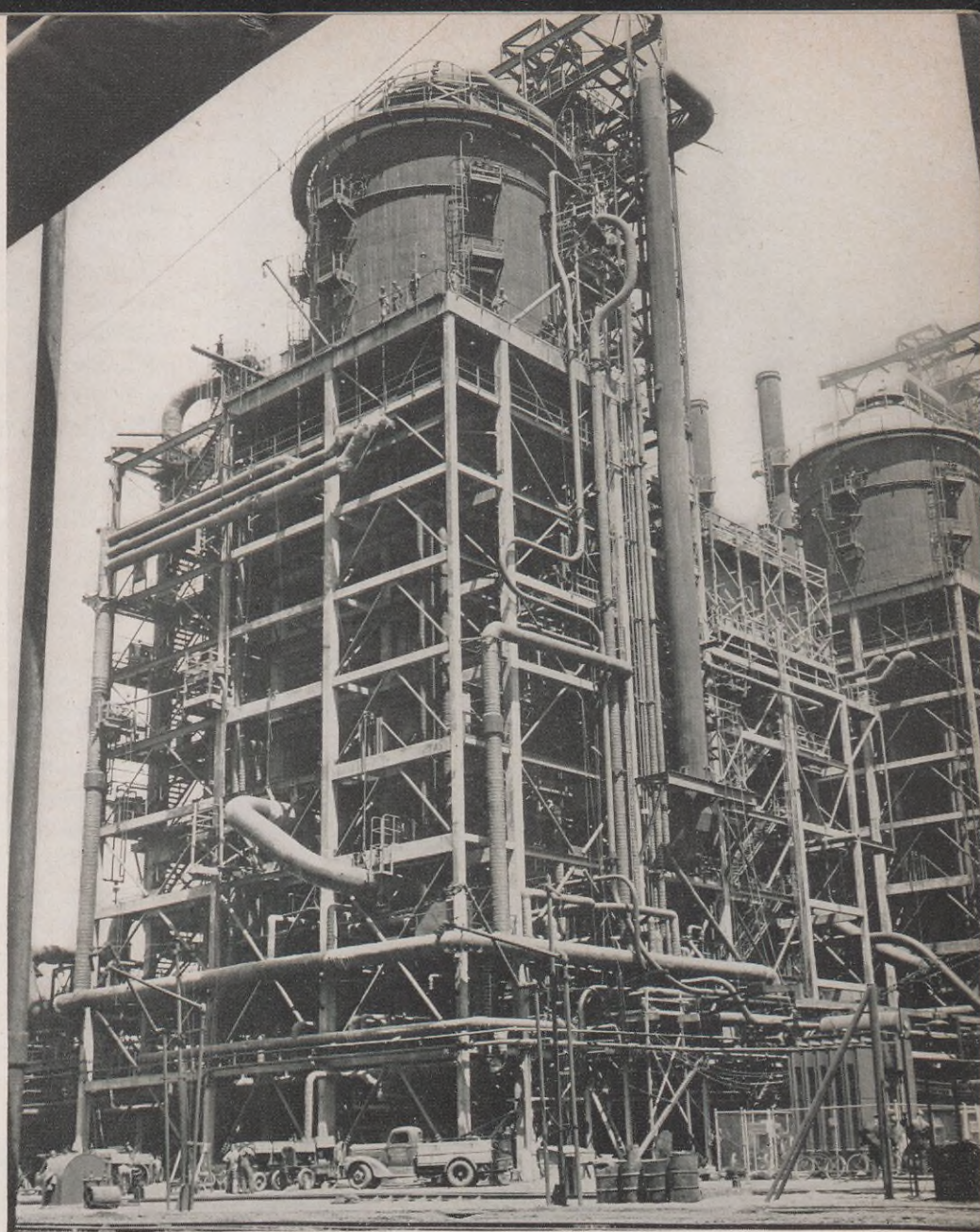


The captured equipment aroused considerable interest among old and young, civilians, and military men, alike.



# WOOD RIVER'S TWIN "CAT" CRACKERS

by  
*Herbert  
Squires*



In the foreground the newest of the "twins" and in the background its brother cracker.

**Y**OU'VE undoubtedly read a great deal about catalytic crackers, and the probability is that in the future you will read considerably more. As the Wood River Refinery dedicated its new twin catalytic crackers on Sunday, April 30th, it appeared that the invasion of fortress Europe was a matter of weeks at the most. With the invasion imminent, the importance of the two units took on added lustre, for Shell's new twins are indeed big "babies."

The "cats" stand almost 200 feet high, with fractionating columns 16 feet in diameter. They occupy over one hundred thousand square feet, and the total weight of materials which went into their construction was over twenty-five million pounds.

But impressive as those figures are they cannot com-

pare with figures which show that Wood River's total output of aviation gasoline, the result of "cat" cracking, will be enough to send more than 400 bombers each day over the longest bombing missions in Europe. This represents about 40% of the average number of bombers participating in the greatest raids of the aerial offensive . . . and this is from only one refinery of one oil company in one state in the nation.

These crackers increase the yield of high octane aviation gasoline to as much as 50% of the total intake, and give an additional base-stock yield of about 25%. But that isn't all the crackers do; on the contrary they produce fuels of higher quality which require less processing to put them in usable form. The yield of gases with catalytic cracking is far greater than with the hitherto used process





Welders put the finishing touches on one of the "cat" crackers.

of thermal cracking. Catalytic crackers produce aviation base stocks not possible to produce with thermal crackers, and in addition, yield about twice as much butylenes.

In "cat" crackers the oil enters a reaction chamber (commonly called a reactor) and is heated by direct contact with the fluid hot catalyst to a point where the oil becomes a vapor. As this chemical reaction takes place, the molecules of oil are literally cracked apart. As a result of this reaction coke is formed in the catalyst.

The coke-coated particles then pass to the regenerator where the coke is burned off under controlled-air conditions. This burning furnishes the heat required to heat-up, vaporize, and crack the oil continuously. The air required for combustion is supplied by two blowers driven by 1700 horsepower turbines which make the air flow at the rate of forty-five thousand cubic feet per minute.

Flue gases, products of the combustion in the regenerators, pass through the waste heat steam boilers which produce a million and a half pounds of steam a day. The cracking units thus furnish a large part of the steam necessary for the operation of their turbines and pumps, and for processing later on.

These flue gases contain large numbers of small particles, including the valuable catalyst. The gases are passed through electrostatic precipitators which recover the catalyst and return it to the system. Upon completion of the catalytic reaction the cracked materials pass over to a fractionating column where the aviation gasoline is distilled off and condensed.



The control room for one of the crackers . . . heart of the big structure.

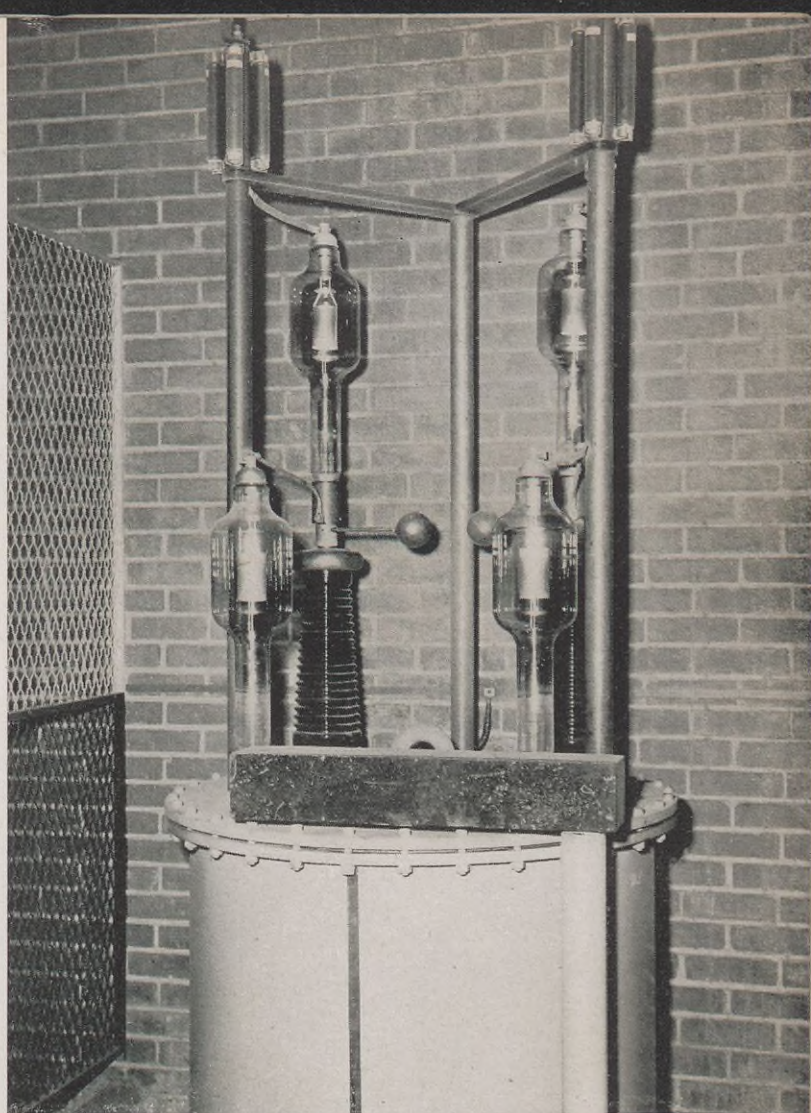


The gasoline then requires a further processing before it can be blended into the final 100-octane aviation gasoline. Light and heavy gas oils which formed in the reactors are used for domestic heating purposes. The isobutane and butylene gases which are also formed are condensed and further purified after which they are passed on to the alkylation units. The uncondensed gases are sent to compressors and thence to absorbers, for further separation into individual components.

In building the "cat" crackers, construction was hastened and thousands of dollars' worth of critical materials were saved by adapting out-of-date refinery equipment from unused plants for use in the new units. Of the 12,500 tons of material which went into the construction of the twin units, over 2500 tons was salvaged material.

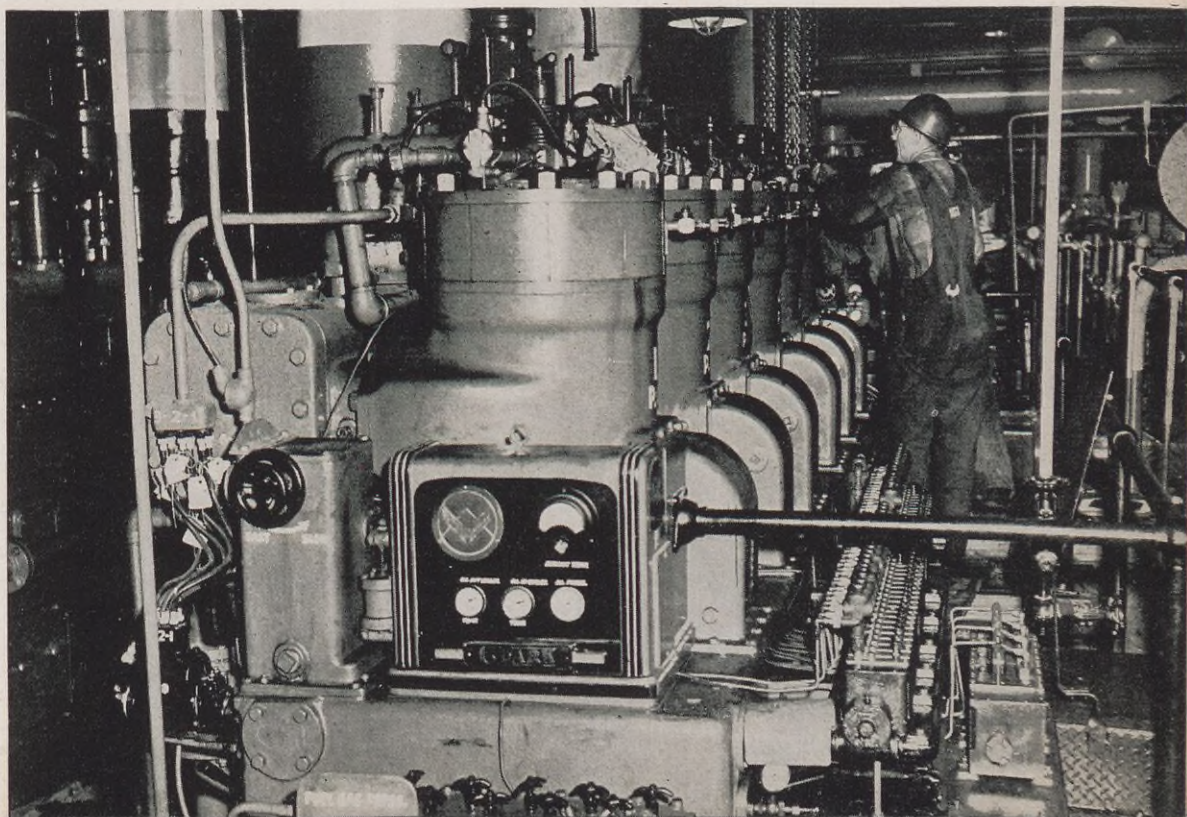
Each of the twin crackers circulates about a railroad car of catalyst each minute, every minute of the day. Catalyst is a valuable material costing 22 cents a pound. Each unit keeps from 410 to 420 tons of it in constant circulation. Despite efficient recovery methods about four tons a day are lost. The catalyst is a finely-ground powder slightly coarser in consistency than talcum powder. When it is charged with air it takes on some of the characteristics of a liquid, including the ease and fluidity of flow. Thus does the cracker earn the name of "fluid catalyst."

The twin crackers are now on-stream, busy operating throughout the day to turn out more aviation gasoline . . . working now to make the day of Victory that much closer.



Steel cages protect workers from this seemingly harmless affair. But a sign outside says 75,000 volts, beware; it helps power one cracker.

Valves must be checked twenty-four hours a day to see that everything is working smoothly.







Secretary Patterson had a press conference shortly before the broadcast. Newspapermen from all over the country attended.

# 100-OCTANE HAS A BIRTHDAY

*by Alan Miles*

TEN years ago Shell received the United States Army Air Corps' order for a fuel "not less than 95-octane." Shortly thereafter, Wright Field, Ohio was the scene of the first delivery of 100-octane gasoline.

There was no doubt in the minds of those in the Air Corps and those at Shell that a memorable scientific achievement had been accomplished. But at the time of delivery no one could have forecast how great a day it really was in the history of those countries which were destined to become the United Nations. No one could have predicted that this fuel would have been credited with saving the very existence of these United Nations.

In late 1940, when the tide had turned in the Battle

of Britain, the Honorable Geoffrey Lloyd, Member of Parliament and Petroleum Secretary of Great Britain, spoke to a cheering assemblage and said, "I think we would not have won the Battle of Britain without 100-octane—but we did have 100-octane. The RAF had 13 points higher octane than did the Nazi. Those 13 points won the Battle of Britain and helped end the threat of Nazi invasion of England."

To celebrate the 10th anniversary of the delivery of 100-octane an Army Hour broadcast was made directly from the Wood River Refinery on April 30th.

For those who were unable to hear this broadcast SHELL News is printing some of its high-lights:



ARMY HOUR: 100-OCTANE SPOT--Sunday, 30 April, 1944-1530-1630 EWT  
FROM NEW YORK

ANNC: Today . . . on the 10th anniversary of the delivery of 100-octane aviation gasoline to our Air Forces . . . the Army Hour microphones take you to the official dedication and opening of the new twin catalytic cracking plants at the Shell Oil Co. Refinery in Wood River, Illinois.

SWITCH TO WOOD RIVER

SOUND: STEAM HISSING, ETC.

ANNC: Here on the outskirts of St. Louis more than five thousand employees of this big Shell refinery, and their families, are gathered for the official exercises. These huge, new twin catalytic cracking units rise 20 stories into the air. They will turn out millions of gallons of 100-octane . . . that fuel which carries our bombers and fighters deep into the heart of enemy territory, to sow destruction and ruin on the war producing plants of the Axis. There are many men working at this refinery who were in the experimental lab and refineries ten years ago and earlier. They were here when this plant, typical of the scores of such refineries in the country, was turning out but a fraction of the present aviation gasoline output. 100-octane is pretty mysterious to most people, so let's start out by getting the story from the men who make it. Here's Wayman Baker, who has been at Wood River where they have been making 100-octane since its discovery. Mr. Baker, has this place changed much since the war?

BAKER: Yes, plenty. We now have 200-foot towers. And I remember when the original towers of the pilot plant, 10 years ago, were 30 and 40 feet high. Listen to these cat crackers at work.

SOUND: ROAR AND HISS.

ANNC: That really sounds busy. Were you fellows pretty much excited about the development of this new gasoline 10 years ago when you were working on it?

Announcer Bill Kephart of N.B.C. (left) at the microphone with Andy Harper and Wayman Baker (right) of the Wood River Refinery.





BAKER: Oh, sure. But little did we think they'd pour it into bombers and fighters flying three hundred miles an hour and better. Now, if you want more on the subject, talk to Andy Harper, one of our foremen.

ANNC: Mr. Harper, is 100-octane expensive?

HARPER: In the early days it was \$25 a gallon to make. And by 1934, when we sold the first batch to the Army fliers, we got it down to \$2.40 a gallon.

ANNC: What is the price now?

HARPER: It's about the same as a motorist pays for ordinary gasoline.

ANNC: That's really a reduction from the early days, isn't it Mr. Harper?

HARPER: There has been a lot of progress in research and refining technique since then--quality and production has improved plenty, and we've got to turn out more and more 100-octane. You know, people really don't realize why the government keeps after them to pool rides, stop pleasure driving and all that.

ANNC: I'm sure they realize.

HARPER: Yes, but they'd realize more if they knew the 100-octane facts we know here.

ANNC: Such as . . . ?

HARPER: Well, to train one pilot requires 12,500 gallons of aviation gasoline.

ANNC: Whew!

HARPER: And if 1000 bombers flying to an objective 1000 miles away use 100-octane instead of 91-octane, they can carry an extra load of five million pounds of bombs.

ANNC: Know any more?

BAKER: Sure. In the 15 crucial days of the Tunisian campaign General Jimmy Doolittle's Air Force used 16½ million gallons of high octane. Enough to keep 28,000 automobiles on the road for one year.

ANNC: Say, how do you remember all these facts?

BAKER: Well, for one, Jimmy Doolittle worked with us in the early days of the high octane experiments right in this refinery.

ANNC: Well, thank you for those interesting facts, Mr. Baker and Mr. Harper.. Just a few minutes ago, to commemorate the tenth birthday of 100-octane, a time capsule . . . about the size of a steel tube, 36 inches high and 6 inches in diameter, was buried in a concrete vault five feet underground here at the Wood River refinery. This time capsule contains a single gallon of the original 100-octane fuel, a formula showing how that gasoline was made, and a copy of the contract for this super-fuel





Secretary Patterson at the mike, broadcasting to an estimated 30,000,000 people all over the world. The "studio" was a conference room in the refinery's Main Office.



Attending the broadcast were, from left to right, (Front Row) J. R. Madigan, (Ass't to Sec'y Patterson), Senator Clyde Reed, Gen. Danielson, Admiral Taylor. (Rear) Col. Lingle, Col. Olson, Col. Heard, Admiral Hipp.

when it was purchased by the AAF ten years ago today. This capsule is deposited here as a monument in the history of our aviation. The guest of honor at this ceremony was a gentleman vitally concerned with 100-octane production. Ladies and Gentlemen, the Honorable Robert P. Patterson, Under-Secretary of War!

PATTERSON: My voice is coming to you from a spot in America where there is a healthy evidence of the spirit that must see us through this war to the finish.

We're here in Wood River in Illinois to dedicate the Shell Oil Company's new addition to our power to wipe Nazi and Jap tyranny off the face of the earth forever.

Towering more than two hundred feet above us, this mass of machinery is producing the 100-octane airplane gasoline that is powering our air punches in Europe and the Pacific. Just ten years ago this company delivered its first thousand gallons of 100-octane fuel to the Army. Today as we dedicate this new cracking plant this company, this nation, and its army can take great pride in what we have accomplished in the face of difficulties.

The petroleum industry in this country can also take pride in the fact that by its mighty effort the production of 100-octane gasoline by the United Nations has now been lifted to the total of 400,000 barrels a day.

You can see what this volume means when I say that production three years ago was 40,000 barrels a day. That is a great record, a great contribution to the men who fly our fighting planes.



We will now hear a report on that striking power today from a man who can speak with full authority at the receiving end of this supply line. There they know what to do with the fuel you send them.

From England you next will hear General Jimmie Doolittle, Commanding General of the Eighth Air Force. Come in England.

(SWITCH TO ENGLAND)

DOOLITTLE: I am happy to have this opportunity of expressing in behalf of the Eighth Air Force our appreciation to the folks back home. 100-octane is virtually the life blood of our bombers and fighters. It is through the use of 100-octane fuel, rather than the next lower grade, that the speed of our fighters is increased about fifty miles per hour and the bomb load of each bomber is increased about one ton. This improvement in performance means the difference between success and failure in combat, between life and death for our pilots and our crews. Our requirements of 100-octane gas are tremendous, and as the pace of air war steps up we shall require gasoline in ever greater quantities. On our deep penetration into Germany we consume in our bomber and fighter escorts about three tons or 1,000 gallons of gasoline for each ton of bombs dropped. During April the Eighth Air Force dropped more than 24,000 tons of bombs. While carrying out these operations more than 800 enemy planes were destroyed in air combat, and more than 500 on the ground by our fighters and bombers. This is substantially more than the entire German aircraft production for the month of April. In addition to the 1300 we destroyed there was a large number of German planes destroyed by the Russians, Royal Air Force, and the Ninth, Twelfth and Fifteenth American air forces. It is obvious that the existence of the German air force itself is being greatly depleted coincident with Allied strategic operations. Among the targets in Germany hit in April were 28 factories producing aircraft or aircraft parts. Incomplete photographic reconnaissance, incomplete because of unfavorable weather for air photography, indicates that six of these were almost completely demolished and fifteen more were damaged to an extent which seriously curtailed or stopped them. This month we lost 358 bombers and 144 fighters. Many of the crews of those bombers and fighters will be retrieved. Nearly one-half of these fighters were lost while strafing German air fields. I am proud for our fighter pilots and bomber crews. Their magnificent performance of duty, and their heroism, will forever be a tradition to the American Air Forces. You who provide them with the means, when you produce gasoline, equipment or food, or buy war bonds, have reason to be proud of them too.

FROM LONDON: We return you to the Army Hour in New York.

And thus came to a close the international broadcast.

Those attending the ceremonies were given a booklet which told the story of 100-octane from the experimental laboratory to the fighting planes. The booklet closes with the thought expressed by all who were, in any way, connected with the development of 100-octane, "At the present writing, the original yardstick of perfec-

tion, the 100-octane scale, has already been surpassed. The engineers, flyers, airplane manufacturers, oil men who have worked together to achieve this miracle, continue their progressive partnership in the interests of aviation advance. It is their work that has made possible Allied air supremacy today. It is their work that will widen the horizons for a new Age of Flight tomorrow."





Railroad tank cars come in to the siding at the Terminal; here the fuels are drained from the tanks, ready to be shipped to dealers in the Albany Marketing Division.

## ... DON'T WASTE A DROP

*by Martin Edman*

**T**HE beauty of the Hudson River acts as a backdrop for the Rensselaer (New York) Terminal of the Albany Marketing Division. Barges from the Sewaren Terminal in nearby New Jersey, or from upstate Buffalo, pull in and unload their cargoes. Tank cars come in on the railroad sidings. Trucks pull up to the racks to receive their loads . . . then go off on nearby highways to distribute products to Shell dealers.

In peacetime numerous tankers docked at the Terminal; today when these same tankers are busy carrying petroleum products overseas most deliveries are made by the aforementioned barges or railroad tank cars. But, as one of the men at the Terminal said, "These days they must be taking tank cars from junkyards." That isn't too much of an exaggeration. Some of the cars which pull into the yards have arrived only through a miracle. In total war, however, you must often depend on miracles . . . the

important job is getting the petroleum products through to their destination.

But old cars present new problems. In peacetime there was very little trouble with the average tank car which came into the Terminal. Today, with relics of the past in common use, there are many cars arriving with broken or frozen valves. In the "good old days" it wasn't of vital importance if a valve rod broke. A little gasoline would be spilled, some time spent in trying to fix the valve so that the cap at the bottom of the car could be opened . . . but there was plenty more gasoline where that came from. A few drops more or less didn't matter. But today, when the watchword of the entire industry is "Gasoline powers the attack . . . don't waste a drop," it is a matter of the utmost importance that there be no loss of this indispensable weapon of war.

Three men working at the Rensselaer Terminal were





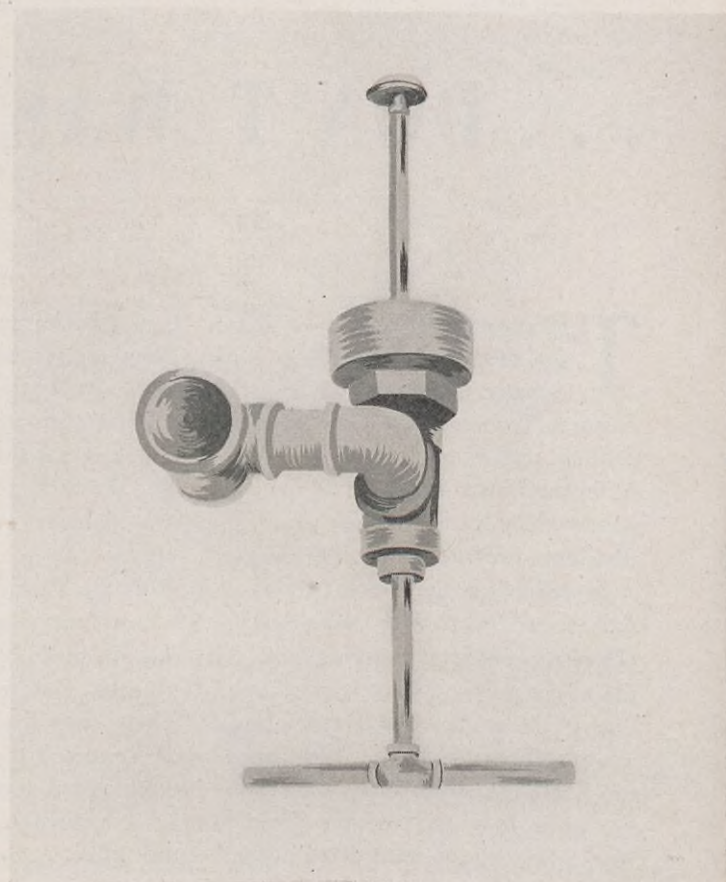
The inventors . . . (l. to r.)  
W. A. Duncan, G. D. Stewart,  
H. Carveth.

surprised at the number of defective cars which came through their yards. This was back in the summer of 1942. The war had been on for many months . . . for how many more was anybody's guess. It was obvious that these hitherto discarded tank cars would come in ever-increasing numbers during the months or years to come.

In most states tank cars are unloaded from the bottom. From a safety standpoint this is preferable to unloading from the top of the car. Frequently, because of rods which have been sheared off or because of frozen valves, the men who do the unloading are faced with a difficult task. Someone must climb to the top of the car and actually fish through the man hole until the sheared rod or frozen valve is tapped. Opening the cap at the bottom was impossible unless it was broken off . . . with the resultant spillage of a large amount of valuable product.

These three Shell men had an idea that they might be able to do something about it. George Stewart, W. A. "Dunc" Duncan, and Harry Carveth were veterans at the Terminal. In their combined fifty years of work there, they had seen countless cars come in, unload, and pull out. But they had never seen a gadget which would solve this particular problem. Stewart, Duncan and Carveth weren't

A closeup of the trio's invention. The handle turns counter-clockwise and pushes the upright rod into the cap of the tank car.





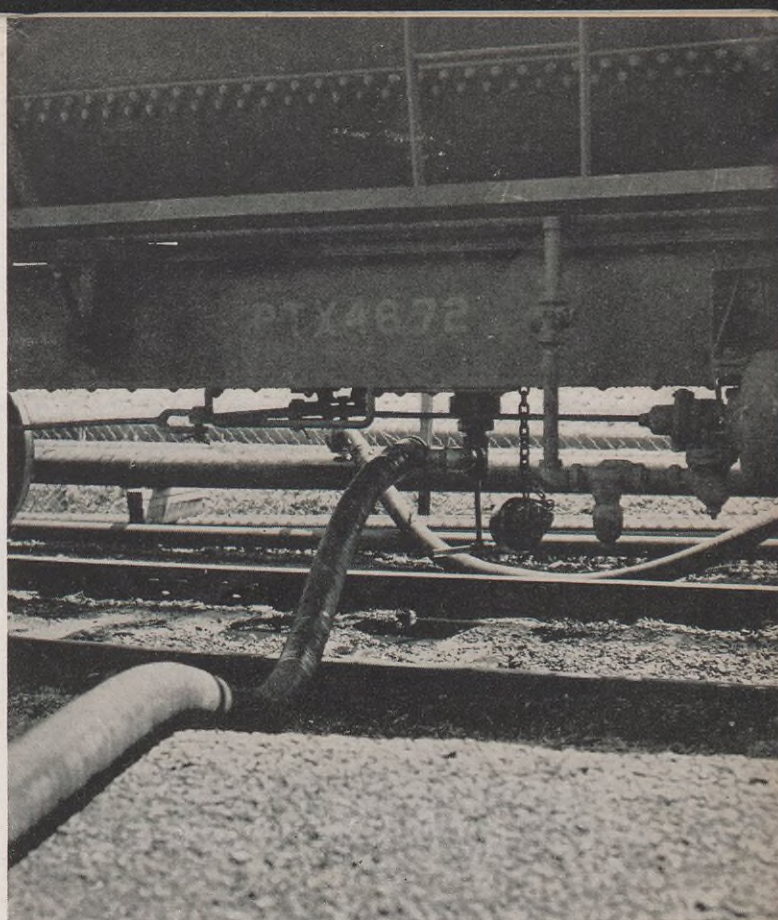
inventors. They liked to tinker around the house, build chicken coops, repair the roof, fix a busted radio or an electric iron which had gone wrong . . . but they had never put their talents to invention.

They talked the situation over . . . in their spare time, and on the job. Whenever they saw a busted valve it was brought home to them with additional emphasis. And they were continually hearing how precious oil was. *OIL IS AMMUNITION . . . USE IT WISELY*. Here was ammunition going to waste . . . valuable man-hours being lost while fishing in a tank car for a broken rod.

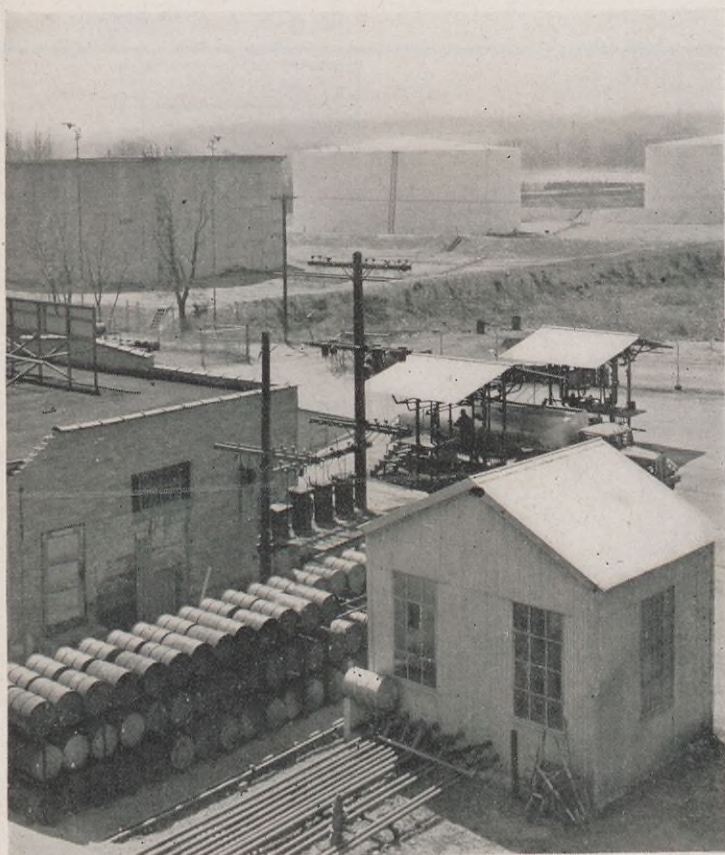
Suddenly the ideas clarified into something workable. To this day each of them insists that one of the others thought of it. But they put their collective heads together and on the morning of October 2, 1942, called a few of the boys together and explained what they had in mind. There was the usual skepticism but the skeptics were silenced when the demonstration was concluded.

Stewart, Duncan and Carveth had perfected a mechanical arrangement which preserved all of the safety features inherent in the practice of bottom unloading and at the same time avoided any waste through spillage or drainage during the attempted unseating of frozen tank car valves.

If you look at the drawing on page 14 you can see for



As it appears actually screwed into the tank car cap. The fuel flows through the tube into pipelines.



yourselves how simple it is to operate. The tank car cap is so fitted as to replace the regular tank car cap during the unloading operation. The rod is screwed upward until the valve is unseated. The contents of the tank car then flow out, in normal fashion, through the side to which the unloading hose has been attached. Simple? Yes . . . but no one else had thought of it before.

The inventive trio promptly built many of them, with idle material lying about. Soon the word spread . . . here was a practical, simple, and at the same time inexpensive method of saving valuable oil and precious time. Albany Division men told those in other depots and terminals; drawings were made and distributed. Soon it came into wide use. Seward heard about it and the men there were enthusiastic. Other companies heard the good word and inquired. Messrs. Duncan, Stewart and Carveth decided that since their discovery had such a wide demand there was no reason why it couldn't be used by anyone wishing it.

Interest is now reaching a peak. The trio say "The industry is welcome to use our method, for gasoline *does* power the attack, and here is another way not to waste a drop."

Some of the storage tanks at the Rensselaer Depot. In the foreground are drums of oil ready to be shipped.



# ORGANIZATION CHART

TREAS



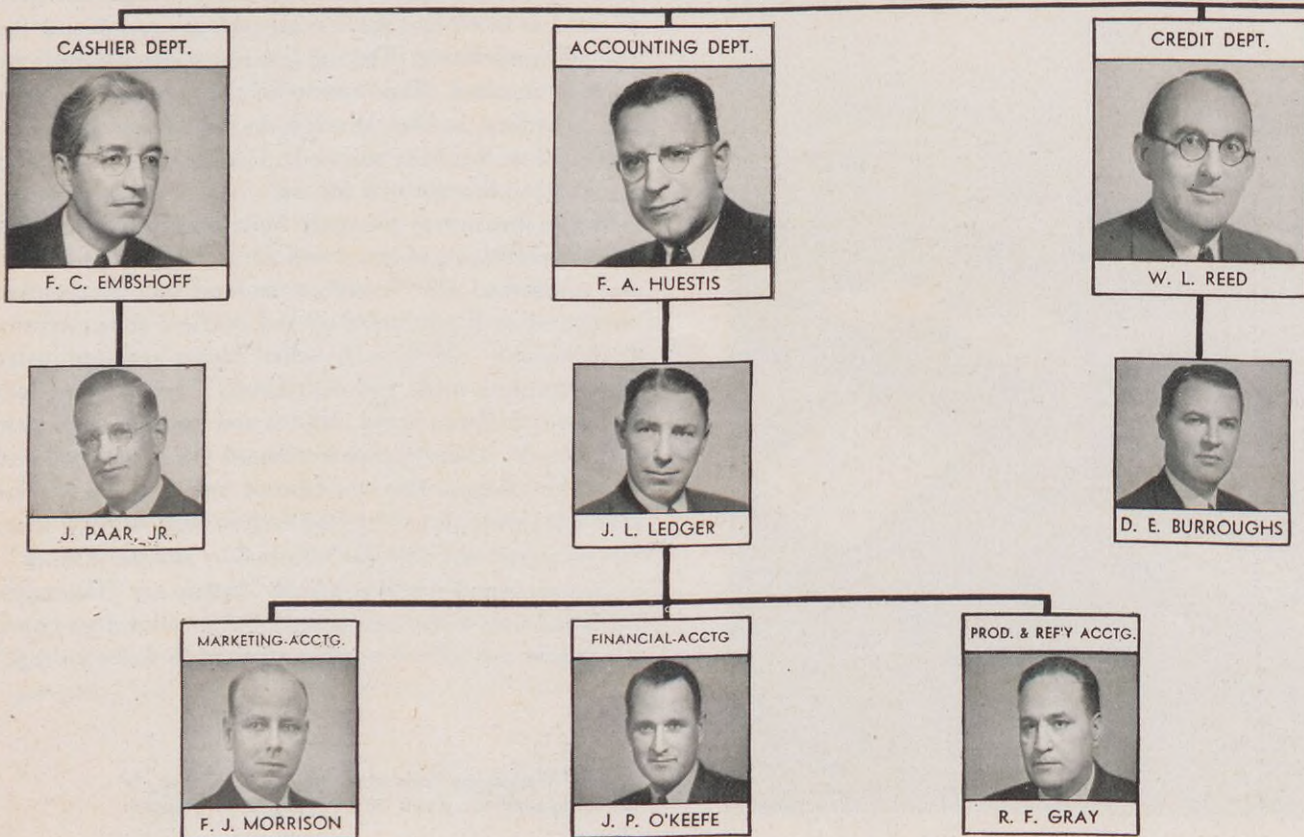
J. W. WA

ASSISTANT TR



E. C. PE

MANAGERS AND





REASURER



J. WATSON

TREASURER



C. PEET

# TREASURY DEPT.

ASSISTANTS

INSURANCE DEPT.



H. N. ENGLANDER

AUDITING DEPT.



W. H. GARBADE

FINANCIAL TAX DEPT.



R. V. MILLER



C. F. CURTIN



A. A. BUZZI



E. L. HELM



E. R. MUELLER

SERVICE SECTIONS

LIBRARY



ISABEL VAN RHEIN

MAIL



J. C. MEYERHOLZ

TELEPHONE



BERNICE FLOESCHER

PHOTO. & BLUE.



S. C. SKIFF

STENO. & DUP.



JANE DOLEN

CABLE



W. D. YOUNG





Mrs. Charles Martin, Shell Pipe Line Corp., was the winner of the Texas-Gulf Area's canning contests. Mrs. Martin canned 752 pints of food, 40 different varieties.

# PROTECTING YOUR GARDEN

*By Herbert Squires*

“**C**UTWORMS got my tomatoes” is a frequent complaint of Victory gardeners. Anyone who has had a garden knows the many difficulties which arise after seeds are planted in the ground. Every garden is attacked by pests and diseases which must be fought. Insects are common, but there are also many parasitic growths and diseases that attack and often destroy vegetables.

Curiosity is one of the first steps in combating any plant ailment. Walk through your garden every day. Know the signs of trouble and observe all the changes in your plants. Lift the leaves and look at the stems. Don't let insects and

plant diseases become firmly established in your garden before you start counter-attacking.

Prevention is the best control. In fact, there are some plant diseases for which no cures are known, but most can be prevented by selecting resistant varieties of plants, by treating seeds, or by applying suitable sprays or dusts *before* the fungus spore or other infective matter has had time to begin its growth.

## PLANT DISEASES

Three kinds of diseases attack our crops. Fungus diseases are represented by mildews, scabs, some blights and



leaf-spots and a variety of other ailments. They are caused by mold-like organisms—low types of plant life which are unable to manufacture their own food and, therefore, obtain it from other plants. These organisms, or fungi, reproduce by means of spores, rather than seeds.

Bacterial diseases such as various blights, leaf-spots and wilts are caused by these parasites which, like the fungi, are unable to manufacture their own food. Usually it is the poisons or toxins, which the bacteria produce as a part of their living processes, that interfere with the growth of tomatoes, beans and other garden plants.

The third group are known as filterable viruses, because they are small enough to pass through a porcelain filter and still retain their power to infect and often destroy plants. Mosaics, blights, leaf-spots, mottled leaves and dwarfed leaves are frequently evidence of the presence of these viruses, so small that they can only be seen with electron microscopes.

Still other causes of unhealthiness in plants are soil conditions—excesses or deficiencies of minerals, too much acid or alkali, or too much or too little water.

Fortunately it isn't necessary to be able to diagnose all of these conditions precisely in order to be a successful gardener, though of course the more knowledge you have,

the better. Disease-resistant plants of varieties known to grow well in your particular locality are the best start. Buy seed which has been treated to kill disease spores or bacteria, or treat it yourself with materials which your seedsman can recommend.

Spraying or dusting probably will be necessary to control some of the diseases. Sulphur and copper are the old reliables in this field. Bordeaux mixture is the most commonly used copper spray. Again, your garden supply dealer is a good source of advice on what to use to meet your problem.

## INSECTS

Insects usually are classified by their manner of taking food . . . for instance, "worms," beetles and grasshoppers are chewers; they eat chunks out of leaves or nibble at stems, while others, such as plant lice, scale insects and squash bugs, suck juices from the plant. Sucking insects do not make holes in the leaves, bite off the stems or burrow inside the plant, but their presence is indicated by withering, discoloration or an unhealthy look. Sometimes they carry diseases from plant to plant.

Birds are natural enemies of insects and feed on many of the bugs and worms which infest the garden. But birds alone cannot kill the pests. You must help kill bugs if you want a garden. There are three methods of getting rid of them . . . hand picking, poisoning their food, and spraying their bodies with a contact insecticide such as nicotine.

The green hornworm which appears on tomatoes can be picked off and dumped into a pan containing a little kerosene. Cabbage worms and potato "bugs" can be removed the same way. Or, if you want to play a game which requires skill, try batting the cabbage-worm butterfly with a fly-swatter before she has a chance to lay her eggs.

## STOMACH POISONS

Caterpillars, potato bugs and beetles gnaw at vegetable leaves. That's the clue to their disposal—a stomach poison sprinkled on the plant. When the insects nibble the leaves they will eat enough poison to kill them. Arsenic used to be the chief destroyer of these insects. Although Paris green or other arsenical mixtures can be washed from the plant it is wiser to use a substance not harmful to human beings. Rotenone, an insecticide extracted from the roots of certain tropical plants, will kill insects by contact or by



Hand sprayers can be very effective; make sure both sides of the leaves are well sprayed.





The Detroit Marketing Division employees got a head start on the season . . . the first day of Spring saw them at a downtown Detroit store purchasing everything they needed.

entering their stomachs; for this reason and because it is not poisonous to humans it is very popular with gardeners. However, it is an imported material and supplies are rather limited. Cryolite, a fluorine compound, is easier to get and is also effective. It is obtainable as a natural material or as a synthetic . . . either of which is satisfactory. In most cases cryolite is a fine substitute for the arsenicals and is less harmful to plants. It is poisonous to human beings, but not as violently so as lead arsenate.

The cutworm, a smooth gray or brown caterpillar which cuts off plants at the surface or slightly below ground, can be destroyed by a poison bait. You can make your own poison bran mash of four ounces of Paris green combined with five pounds of bran and enough water to make the mixture moist. If you scatter it about the bases of plants

be sure it does not come in contact with them. It should be scattered in the evening and cultivated under in the morning, for it will kill birds or chickens.

Cutworms and squash bugs may be trapped beneath pieces of board. During the day the worms seek shelter and may attach themselves to the board; the bugs hide at night. Pick up the boards carefully in early morning; both may be caught then, as cutworms retire at dawn and squash bugs sleep late.

#### CHEMICALS

Sucking insects must be fought with chemicals known as contact insecticides, which act through their skins or enter their bodies through the breathing apparatus rather than through the stomach. Typical preparations are nico-



tine and rotenone, some of which are used as liquids, a few as dusts and others in both forms.

Dusts are less messy than liquids. If you do not use them immediately before a rain, or in windy weather, they can be very effective. Inexpensive puffers, small versions of mechanical blowers, provide the easiest means of application.

### BE THOROUGH

In all steps to prevent or combat plant destruction, be thorough. Treat all seeds if there is even a suspicion that they may carry disease. Before you accept plants which have been started in a greenhouse look them over carefully and be sure they are healthy.

Regularity of spraying after plants begin to grow is important. You may waste some material by spraying every week, but constant attention promotes successful gardens. A fine mist of liquid or dust blown at the under sides of the leaves is most effective, since many diseases and bugs start work there. When the spray is aimed upward the excess will fall on the leaf tops. For small gardens many "all-purpose" liquids and dusts are available. They contain stomach poisons for the chewers, contact poisons for the sucking insects and fungicides for plant diseases. While they may not work as well as separate sprays they are satisfactory and easy to use.

Vigorous plants resist the damages of plant diseases and insect pests. To promote vigor, watering and cultivation are of major importance. Light sprinkling or lack of digging causes hardening of ground surfaces. This, in turn,



Don't spare the water; soak the ground quite thoroughly.

restricts passage of air to the plant roots and results in stunted growth. Do not water the garden until it really needs it . . . then soak it. Sandy loams require a great deal



Make sure you treat the leaves *before* the bugs get to them . . . it may be too late to stop the damage once the bugs have begun their work.

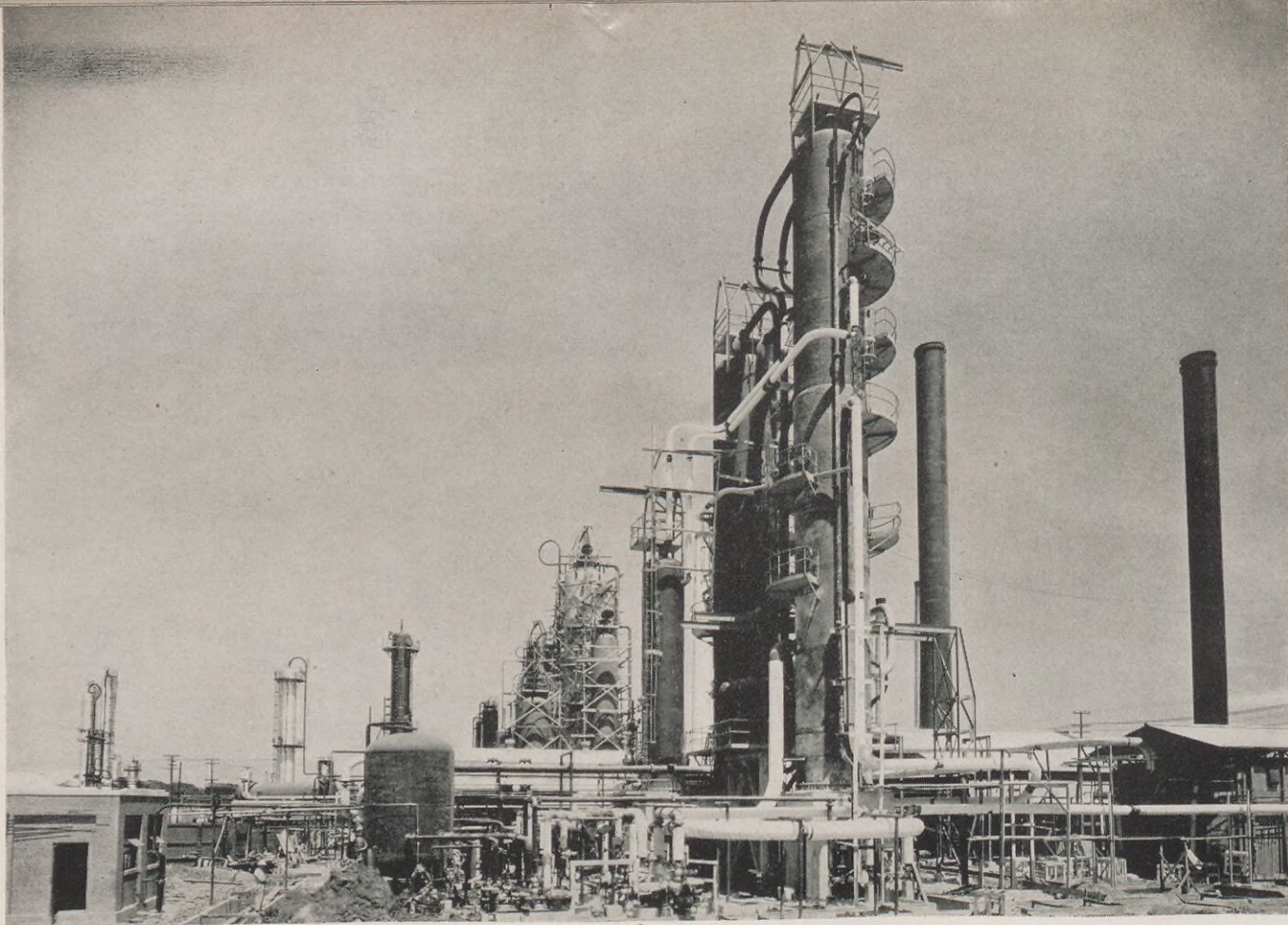
of water, but clay soils turn sour if they get too much. The best time to wet the garden is evening; the moisture then will be able to penetrate to the roots before the sun evaporates it.

Dig, though, when the ground is rather dry. Only when the wet look has disappeared can you break the soil into fine pieces which form a protective layer and prevent sun-baking. This keeps moisture in the ground and slows the run-off of surface water when rain falls. The first cultivation should be deep; after that dig very carefully and lightly, or you may injure the roots. Weeds, of course, should be removed promptly. One of the most important reasons for keeping weeds down is to prevent their taking moisture from the soil.

Destroy at once plants affected by diseases which cannot be cured. Burn them immediately; don't allow them to lie on the ground where the disease may be carried over to cause trouble next year. Then, if you water the garden when it needs moisture, and spray your healthy plants regularly, you will have good vegetables for your table and to preserve for non-growing seasons.

Consult your local Shell Victory Garden Club for further information. Members of the Company garden committee will answer your questions or direct you to others who can solve your food-growing problems.





Houston Refinery's Dubbs 9—where Avaro is manufactured.

# NOW IT CAN BE TOLD

## —AVARO—

**T**HE story of Avaro is the second in a series of articles about recent developments in petroleum technology which have hitherto been banned from print because of military restrictions. Avaro, like cumene (Shell News, April) has played an important part in the aviation gasoline program.

Today one of the problems faced by the petroleum industry is the demand for more and better fuels to keep up with the increased tempo of the bombing raids over enemy territory. Petroleum scientists are bending every effort to meet these demands and the results of their experimentation are familiar to military experts the world over. But the experimentation of today is based, in part, on much of the work of the last few years.

Long before war broke out in Europe, long before the great demands of this global war became known, foresighted scientists here and abroad were making plans for obtaining additional supplies of high quality fuels for any eventuality. Much of the experimentation was nat-

urally along known and successful lines. But there were those who were always trying the "impossible." At Curacao, in a refinery operated by a member of the Shell group, scientists were attempting to produce high quality fuels from materials which were ordinarily considered highly unsuitable for aviation gasoline.

Modern fighting aircraft fuels must contain aromatics, the hydrocarbons which vastly improve gasoline performance in supercharged engines. At Curacao the petroleum scientists believed that they had discovered a new way to produce aviation blending stocks rich in aromatics . . . from materials which previously had been considered unusable.

In late 1940 a representative of the Research and Development division of Shell's New York Manufacturing Department made a special trip to Curacao to study the method. His report bore out their enthusiastic claims. They were successfully manufacturing a new aviation blending stock from a heavy naphtha fraction of



crude. They had named it Avaro . . . from the first syllables of "aviation" and "aromatics."

War had not yet come to the United States but the demand for higher quality aviation fuels, nevertheless, was increasing considerably. Shell made plans to manufacture Avaro at Houston and Wood River Refineries. But almost before any constructive action could be taken the nation was suddenly plunged into war. Now the problem became even more complex. It was no longer a case of merely making things work which previously had not been considered . . . it was necessary to perform the task without building new plants and without using as raw material any portion of the crude oil from which other war products were being manufactured. Obviously this was no simple matter.

Petroleum is made up of four classes of hydrocarbons, and gasolines are mixtures of them. In almost all oil refineries there are thermal cracking plants in which the petroleum fractions are exposed to high temperature and pressure to break them down into particles of different types and properties. The so-called "cracked gasolines" made by this process, while of high value for motor fuel, were not suitable for modern aircraft engines. These "cracked gasolines" contained too many unsaturated hydrocarbons which were unsatisfactory since they tended to form gums when used in aircraft engines.

As gasoline rationing went into effect and civilian consumption of gasoline was cut to a bare minimum the prospect was that much of the thermal cracking equipment would be left idle and hence play a comparatively minor role, if any, in the war effort.

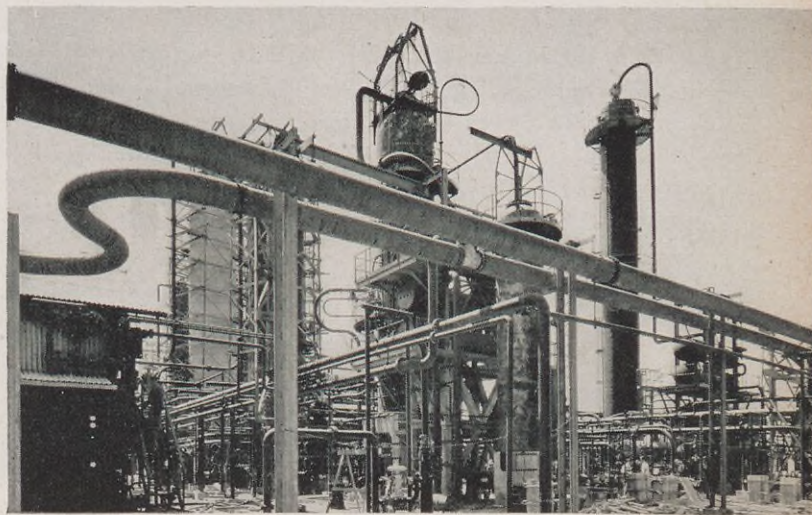
Here then, on one hand was idle equipment; on the other, an important process . . . new and proved: the problem was to fit the two together without drastic changes in the thermal cracking units. This was a challenge to Shell's engineers who drew on their wide experi-

ence and worked out a method whereby the Avaro process could be put into operation in the Houston Refinery. This was a triumph of engineering ingenuity for they were able to produce a "cracked gasoline" low in unsaturated hydrocarbons and extremely high in the much desired aromatics without, in any way, hindering other war work at the refinery.

The engineers had produced a unique arrangement of the coils and columns of the cracking and fractionating units which made it possible to separate cracked and uncracked materials in a closely controlled process. Petroleum fractions ordinarily unsuitable were charged to this apparatus to yield a highly aromatic product, which, after chemical treatment, was completely satisfactory for use as an aviation base stock. The Avaro process had, too, removed all undesirable materials.

Approval for the minor changes in existing refinery equipment was quickly obtained from the Petroleum Administration for War, and from the War Production Board. The process was successfully introduced to this country a few months later. Shell is, at present, the only major oil company now manufacturing Avaro, but the process has been made available to the industry through the Technical Advisory Committee of the Petroleum Industry War Council.

Today the demands of war make it impossible to rest on previously earned laurels. Now, the problem is to improve continually on all processes and Avaro, new as it is, is by no means an exception. Recent developments have made changes which have further increased the supply. Other changes are continually being made by the men in the Manufacturing Department and at the Shell Development Research Laboratories in an effort to bring about a significant increase in Avaro and thereby raising the production of aviation gasoline.



Two more views of the Avaro units.





Clendenning finds a muskrat in the trap.

# MR. CLENDENNING SETS A TRAP

*by Norman Walters*

**B**Y day Emerson "Tim" Clendenning is a driver-salesman for the Boston Marketing Division. But when work is over Clendenning's time is spent as a trapper. Each night he hikes from the Bangor, Maine, office to his thirty traps . . . all within eight miles of the office. Clendenning has been trapping muskrats for many years now and selling their skins. But as he explains it isn't just a case of setting a trap and then going out the next morning, to see what you've captured.

The law in Maine requires every trap to be visited at least once every twenty-four hours, to free any pet cats or dogs that may have wandered unwittingly into them. The weather cannot be a hindrance, the traps must be visited in snow or rain or sleet. He visits them before work in the morning and at night.

Clendenning's number one trap is less than one mile from Shell's office. It is typical of the other twenty-nine . . . set on the edge of water, sometimes on a floating log; it is covered with dead leaves or grass. For bait he uses carrots that have been put through a food chopper and sprinkled about the trap but not on it.

Attached to the trap is a chain three or four feet long, it in turn is fastened to something permanent in the vicinity such as a stake or a strong tree. When the muskrat jumps into the trap he is forced under water . . . his death from drowning preserves the skin.

Clendenning receives approximately three dollars for each of his skins and figures that this spring's trapping season should bring in over a hundred muskrats.





He resets the trap using ground carrots which he sprinkles as bait. The muskrat steps into the trap, jumps into the water and drowns.



Clendenning skins the muskrat and puts it on a stretcher to dry.



The results of just one week's work.





178 St. Louis Marketing Division employees with ten or more years of service were honored recently at a dinner at the Hotel De Soto. Wives or mothers of employees in the armed forces who ordinarily would have been present were invited to receive the service emblems. Retired employees were also among those present. From left to right are, (front row) Mrs. Groos, mother of Captain C. W. Groos, Assistant Manager Marketing Service; Mrs. E. J. Stein, wife of Private E. J. Stein, Marketing Service Clerk; Mrs. I. O. Schaub, wife of I. O. Schaub, C.S.F., Seabees, Maintenance Supervisor; directly in back of them is P. C. Thomas, Division Manager, who made the presentation of the service emblems; while seated at the table (l. to r.) are N. M. Bassett, retired Special Representative; R. C. Mueller, Assistant Division Manager; C. E. Gerteis, retired Operations Manager; and E. R. Page, Operations Manager.



Past and present officers of the Wood River Service Club gather to meet and talk over old times. From left to right, standing, O. A. Kleinert, Secretary; William Keller, first President; William McAnany, William Redd, and Clarence J. Wilson, former Presidents; Paul Ufert, former Treasurer; and J. G. Cuddy, present Treasurer. Seated are H. D. Chappell, former Director; Clinton Pierson, and H. W. Porter, Directors; L. B. Booth, new President; Harry Shewmake, Vice President; and H. R. Helvie, Director.



Every Friday night at the Milwaukee, Wisconsin, railroad station, soldiers, sailors, and marines are keeping Stella Melius (Minneapolis Marketing Division's Credit Department) busy. Above the noise, confusion and droning of the announcer, Miss Melius helps servicemen with their immediate problems. In this category comes every imaginable request: helping with telephone calls; locating lost wives, or children; mailing letters; and even advancing necessary funds.





Ilye Anderson (left), and Jessie Wheeler are two of the several Minneapolis Marketing Division employees who spend their spare hours at a Red Cross Canteen. Miss Wheeler has been working there for two years and has over 700 hours to her credit. Miss Anderson, a comparative newcomer, has over 100 hours in less than six months. While all men in uniform are welcome, they extend a particular invitation to all Shell men who pass through Minneapolis.



Wood River Refinery's Basketball team won the Alton City Basketball League Championship. They were undefeated in twelve games. G. G. Lamb, Captain of the team (standing, left) is receiving the trophy from Dave Hewitt, Alton Recreation Department. Seated (left) is C. A. "Bill" Nicolet, Manager of the team.



The Minneapolis Marketing Division Girl Bowlers had a successful winter season in league competition. From left to right (standing) Misses: Wheeler, Morin, Olson, Gimbert, Barnum, and Rosen; (seated) Misses: Barthel, Anderson, Erickson, Arvidson, Harper.



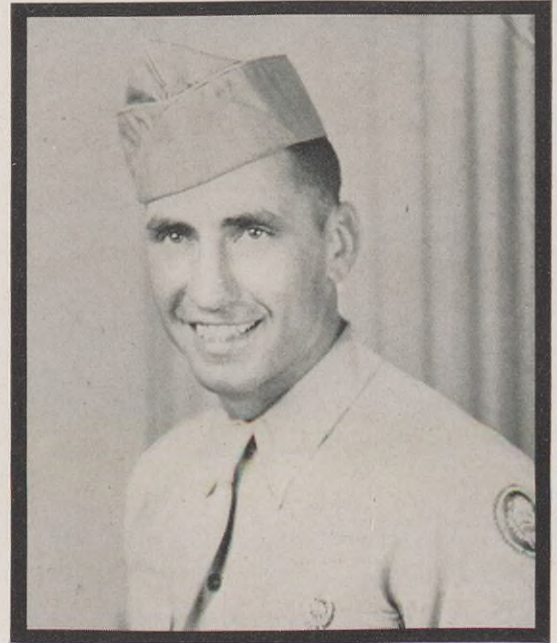
# WITH THE

**ENSIGN K. W. BAKER, WOOD RIVER  
KILLED IN AIRPLANE CRASH**



Ensign K. W. Baker, employed in the Control Laboratory at Wood River Refinery was killed in a plane crash at sea while in the performance of his duty. Ensign Baker enlisted in the Navy in July, 1942, received his basic training at Iowa Pre-Flight School and advanced training at Corpus Christi. He was assigned to shore patrol on the east coast.

**PRIVATE J. C. BREITWEISER, WOOD  
RIVER, KILLED AT ANZIO BEACHHEAD**



Private First Class John C. Breitweiser, Automotive Department truck driver at Wood River Refinery, has been reported killed in action. According to information received by his parents, Pfc Breitweiser was killed in the landings at Anzio as the first beachheads were established. He entered military service in March, 1943, and received his basic and advanced training at Fort Jackson, South Carolina.



**MAJOR H. L. MILLS, MID-CONTINENT  
FLIER, IS MISSING IN AIR ACTION**

Major Henry L. Mills, production trainee in the Mid-Continent Area, has been reported missing over Germany. Major Mills was the subject of "Thunderbolt Over Germany" in the January issue of Shell News. The article told of his success in downing German planes and was accompanied by actual photographs of a Focke-Wulf hit by Mills. The Associated Press reports that he failed to make it back to his base in England after a mission in which his fighter group escorted bombers to Berlin. Before going down, however, he destroyed a German fighter. Later, seeing he must crash, he said over the radio to his group leader: "Tell Jim (Major James A. Clark, Westbury, L. I.) to write my wife and kid. . . ." Major Mills had been awarded the Distinguished Flying Cross and several Oak Leaf Clusters. He had shot down six planes, had two probables, and at least one damaged.



# COLORS

## **T/SGT. MAYER, SEWAREN, AWARDED DISTINGUISHED FLYING CROSS**



T/Sgt. Zoltan S. Mayer, Shipping Clerk at the Seward Terminal Compounding Plant, has been awarded the Distinguished Flying Cross for gallantry in action, and the Air Medal for completion of a number of successful missions. Sgt. Mayer, who entered the service in July, 1942, was cited for "flying from island to island under fire of Japanese fighters, landing under heavy bombardment, and successfully transporting food and equipment under particularly trying conditions."

## **LT. KING, NEW YORK MARKETING DIVISION, SEES TRUK ATTACK BY MISTAKE**

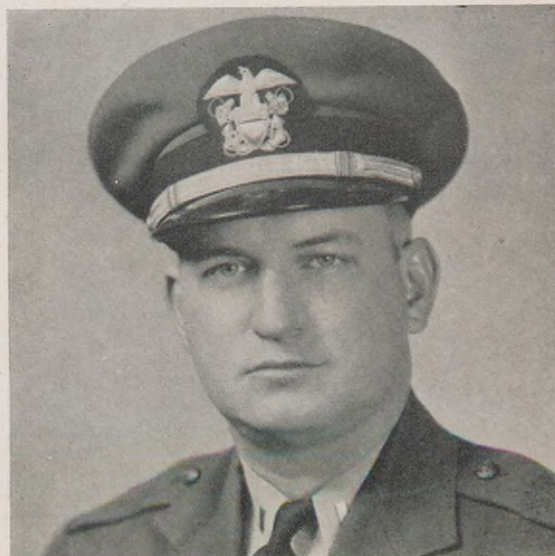
1st Lt. Joseph H. King, Chief Clerk at the New York Division's Newtown Creek Depot, was the surprised hero of an unusual adventure, according to the United Press. In a dispatch to the New York Times they reported that three Army artillerymen, through no fault of their own, were among the few soldiers in this war who have seen our fleet in full action. Lt. King and two fellow officers, normally attached to Seventh Division Headquarters, were assigned to Navy cruisers so they could obtain rides in scout observation planes and "spot" American artillery fire during the initial landings on Kwajalein.

When the battle ended their services were no longer needed. They waited for orders to return to headquarters but the orders never came. The ship pulled out with the three soldiers still aboard.

They then received a Navy-conducted "Cook's Tour" of the enemy's western Pacific strongholds . . . first when the Japanese Naval base at Truk was attacked, and later in the attacks on the Marianas.

Lt. King told the United Press that his greatest thrill came off Truk when his ship was the target for a torpedo which just missed.

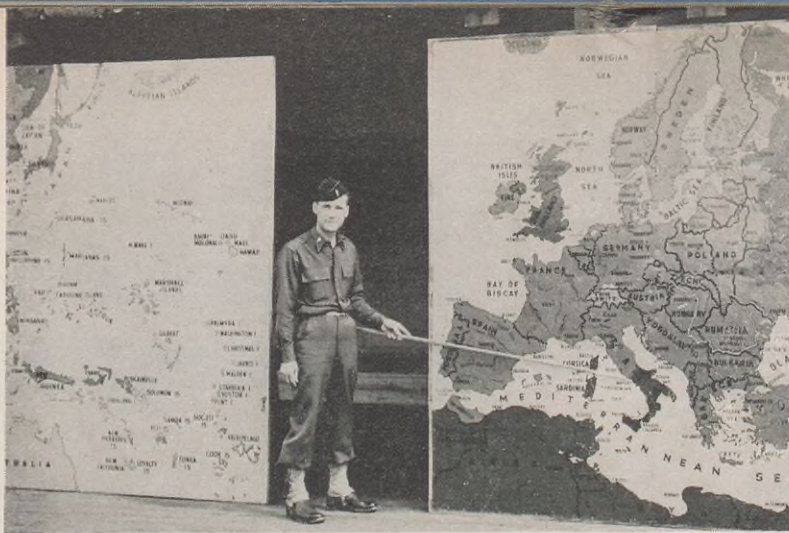
## **NEWSPAPER PRAISES LT. J. W. HAMMOND, ATLANTA MARKETING DIVISION EMPLOYEE**



The Atlanta (Georgia) Journal tells of "a remarkable demonstration of expert salesmanship" on the part of Lt. (j.g.) James W. Hammond, former Atlanta Division Area Sales Supervisor. Lt. Hammond attached to the Cadet Selection Board, went to an Atlanta high-school to tell the senior class about the advantages of the V-5 program. The seniors listened intently as he unfolded details of the program with an ease of manner that immediately made friends of his listeners. When Lt. Hammond asked for a show of hands from all who wanted to take the examination practically every boy raised a hand. The Journal says it was a "fine tribute to Lt. Hammond's grasp of the subject and his intelligence."







1st Lt. Michael M. Buck, Minneapolis Marketing Division Treasury Department, is shown with two area maps, which as Regimental Orientation Officer at Fort Benning, Georgia, he uses as aids in instruction. The maps are eight feet square, with different colors to indicate enemy-held or allied territory.



Lt. (j.g.) E. C. Grab, Detroit Marketing Division Accounting Department, received a furlough after a year in the South Pacific. Lt. Grab expects to be stationed at the University of Illinois.



Lt. John N. Heroy, Head Office Technical Products Department, has been on convoy duty for the past eighteen months. During this time he has made trips to Murmansk, Russia; Australia, Ceylon, and India. Lt. Heroy has now been assigned to Rio de Janeiro, Brazil, as an Area Petroleum Officer.

Two Shell Pipe Line Corporation employees are together again . . . this time in the Navy. They are (left) Clyde C. Boyles, chief electrician's mate, and W. J. Ladd, same rank, who are on the job with the Seabees at Camp Peary, Virginia. (Official U. S. Navy photo.)



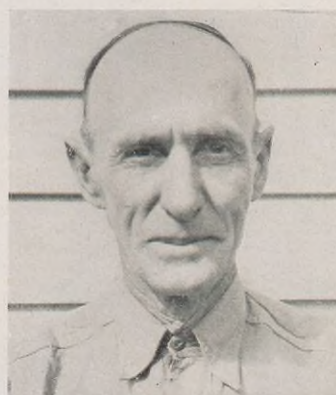


# SERVICE BIRTHDAYS

## ... TWENTY-FIVE YEARS ...



E. G. SIMON  
Norco Refinery  
Boiler House



E. GOURGES  
Norco Refinery  
Dispatching

### T W E N T Y Y E A R S



W. R. LEEVER  
Wood River Refinery  
Engineering



H. R. LENHARDT  
Wood River Refinery  
Operations



D. E. COLEMAN, JR.  
Wood River Refinery  
Main Office



W. E. KUEHNE  
Minneapolis  
Marketing (Mil Leave)



S. L. MOREHEAD  
Wood River Refinery  
Car



C. A. NEVLIN  
Wood River Refinery  
Stores



O. W. HOLLINGSWORTH  
Mid-Continent Area  
Production



E. COTNER  
Wood River Refinery  
Engineering



R. G. LEE  
Wood River Refinery  
Engineering



H. E. McCARTHY  
Wood River Refinery  
Operations



J. E. MIDDLETON  
Mid-Continent Area  
Treasury



MISS N. CHAPPELL  
Mid-Continent Area  
Treasury



H. E. McNORTON  
Head Office  
Trans. and Supplies



J. P. FRIEDMAN  
Atlanta Division  
Marketing



G. C. CUNNINGHAM  
Head Office  
Manufacturing



H. F. ZIEGLER  
Texas-Gulf Area  
Tax Claims (March)



C. D. LEE  
Mid-Continent Area  
Production



J. R. NEWSOM  
Mid-Continent Area  
Production



E. W. JOHNSON  
Wood River Refinery  
Engineering



# FIFTEEN YEARS

J. S. BABIN . . . . . NORCO REFINERY  
Gas  
H. J. BAILEY . . . . . CHICAGO DIVISION  
Marketing  
C. J. BARBER . . . . . WOOD RIVER REFINERY  
Operations  
W. J. BENSINGER . . . . . HEAD OFFICE  
Treasury  
W. D. BERRY . . . . . WEST TEXAS  
Shell Pipe Line Corp.  
J. BYRDSON . . . . . TEXAS-GULF AREA  
Shell Pipe Line Corp.  
H. H. BIRD . . . . . BALTIMORE DIVISION  
Marketing  
N. M. CALHOON . . . . . WOOD RIVER REFINERY  
Engineering  
B. R. CARTER . . . . . WOOD RIVER REFINERY  
Laboratory  
G. CAUDLE . . . . . WOOD RIVER REFINERY  
Engineering  
W. R. CHAPPELL . . . . . MID-CONTINENT  
Production  
C. E. CHASE . . . . . NEW YORK DIVISION  
Marketing  
R. L. CUMMINGS . . . . . WOOD RIVER REFINERY  
Engineering  
W. E. DENHART . . . . . HOUSTON REFINERY  
Cracking  
C. E. DEY . . . . . WOOD RIVER REFINERY  
Operations (Military Leave)  
R. L. DILLARD . . . . . HOUSTON REFINERY  
Engineering Field  
JANE I. DOLEN . . . . . HEAD OFFICE  
Treasury  
A. J. ENGLISH . . . . . HOUSTON REFINERY  
Engineering Field  
A. T. FIELD . . . . . BOSTON DIVISION  
Treasury  
M. M. GRAY . . . . . WOOD RIVER REFINERY  
Engineering  
A. W. GOBLE . . . . . BAYOU PIPE LINE  
Shell Pipe Line Corp.  
J. T. GRIFFIN . . . . . BOSTON DIVISION  
Marketing

G. GUERRI . . . . . BOSTON DIVISION  
Marketing  
S. H. HALL . . . . . HOUSTON REFINERY  
Topping  
W. E. HARRINGTON . . . . . HEAD OFFICE  
Marketing  
E. M. HEEREN . . . . . WOOD RIVER REFINERY  
Operations  
O. C. HEAP . . . . . EAST CHICAGO  
Products Pipe Line (Military Leave)  
N. S. HINE . . . . . TEXAS-GULF AREA  
Shell Pipe Line Corp.  
J. HOWARD . . . . . MID-CONTINENT  
Production  
A. W. JAHNS . . . . . MID-CONTINENT  
Treasury  
W. C. A. JOHNSON . . . . . WOOD RIVER REFINERY  
Engineering  
W. B. JOHNSON . . . . . WOOD RIVER REFINERY  
Engineering  
V. J. JONES . . . . . MID-CONTINENT  
Shell Pipe Line Corp.  
B. KECK . . . . . MID-CONTINENT  
Production  
K. L. KEELEY . . . . . HOUSTON REFINERY  
Topping  
J. M. KELLY . . . . . HOUSTON REFINERY  
Engineering Field  
F. O. KENNEDY . . . . . MID-CONTINENT  
Shell Pipe Line Corp.  
A. J. LANDRY . . . . . ATLANTA DIVISION  
Marketing (Military Leave)  
W. F. LAUGEL . . . . . NEW YORK DIVISION  
Marketing (Military Leave)  
W. H. LEINDECKER . . . . . WOOD RIVER REFINERY  
Engineering  
K. L. LITTLE . . . . . WOOD RIVER REFINERY  
Engineering  
C. M. MAGNESS . . . . . HOUSTON REFINERY  
Cracking  
H. A. MATTHEWS . . . . . NORCO REFINERY  
Stores  
G. H. MILLER . . . . . BAYOU PIPE LINE  
Shell Pipe Line Corp.

S. W. MCCARTHY . . . . . BOSTON DIVISION  
Marketing  
J. H. McELROY . . . . . INDIANAPOLIS DIVISION  
Marketing  
F. A. NELSON . . . . . TEXAS-GULF AREA  
Exploration  
E. M. ODEN . . . . . WOOD RIVER REFINERY  
Engineering  
A. C. PACHECO . . . . . BOSTON DIVISION  
Marketing  
R. E. PENDLETON . . . . . HOUSTON REFINERY  
Engineering Field  
E. J. PETIT . . . . . NORCO REFINERY  
Engineering  
A. J. PFAFFLIN . . . . . WOOD RIVER REFINERY  
Lube  
H. E. RANKIN . . . . . MID-CONTINENT  
Exploration  
J. RODRIGUE . . . . . NORCO REFINERY  
Car  
K. J. SCHMAELZE . . . . . NEW YORK DIVISION  
Marketing  
J. SILVIA . . . . . BOSTON DIVISION  
Marketing  
J. H. SIMONEAUX . . . . . HOUSTON REFINERY  
Main Office  
L. H. SMITH . . . . . EAST CHICAGO  
Products Pipe Line  
J. J. SONNIER . . . . . (MILITARY LEAVE)  
Shell Pipe Line Corp.  
L. M. SUTHERLAND . . . . . TEXAS-GULF AREA  
Shell Pipe Line Corp.  
J. B. TALLEY . . . . . TEXAS-GULF AREA  
Shell Pipe Line Corp.  
F. B. TRAW . . . . . MID-CONTINENT  
Shell Pipe Line Corp.  
M. W. WALSH . . . . . NORCO REFINERY  
Cracking (Military Leave)  
C. P. WOODWARD . . . . . CHICAGO DIVISION  
Marketing  
H. YAHR . . . . . HOUSTON REFINERY  
Chemical Division

# TEN YEARS

K. J. ARCHER . . . . . WOOD RIVER REFINERY  
Operations  
P. BARRACO . . . . . NORCO REFINERY  
Engineering  
R. W. BASHE . . . . . MID-CONTINENT  
Production  
E. E. BENECKE . . . . . WOOD RIVER REFINERY  
Engineering  
C. B. BOYINGTON . . . . . MID-CONTINENT  
Production  
R. C. BRUNSON . . . . . (MILITARY LEAVE)  
Shell Pipe Line Corp.  
T. A. BURT . . . . . TEXAS GULF AREA  
Shell Pipe Line Corp.  
D. CARTER . . . . . MID-CONTINENT  
Production  
W. K. CASKEY . . . . . TEXAS GULF AREA  
Shell Pipe Line Corp.  
J. M. CROUCH . . . . . WOOD RIVER REFINERY  
Operations  
C. H. DRAPER . . . . . WOOD RIVER REFINERY  
Engineering  
F. DUGGAN . . . . . TREASURY  
Shell Pipe Line Corp.  
W. E. ESPY . . . . . ST. LOUIS DIVISION  
Marketing  
G. D. FIELDS . . . . . MID-CONTINENT  
Shell Pipe Line Corp.  
MARY I. FOSTER . . . . . SHELL AMERICAN  
Office  
R. H. GWINNER . . . . . MID-CONTINENT  
Production  
E. B. GYER . . . . . MID-CONTINENT  
Production  
J. A. HAMILTON . . . . . WEST TEXAS  
Shell Pipe Line Corp.

J. M. HANLON . . . . . ALBANY DIVISION  
Marketing  
R. I. HARDAGE . . . . . TEXAS-GULF AREA  
Shell Pipe Line Corp.  
J. A. HARDY . . . . . ATLANTA DIVISION  
Marketing  
R. W. HARDY . . . . . NORTH LINE  
Products Pipe Line  
J. L. HARRIS . . . . . WOOD RIVER REFINERY  
Engineering Department  
C. J. HUDSON . . . . . WOOD RIVER REFINERY  
Engineering Department  
L. J. HUDSON . . . . . WOOD RIVER REFINERY  
Operations  
A. B. JONES . . . . . ST. LOUIS DIVISION  
Marketing  
E. B. JONES . . . . . (MILITARY LEAVE)  
Shell Pipe Line Corp.  
H. L. KAYS . . . . . WOOD RIVER REFINERY  
(Military Leave)  
W. J. LASCOE . . . . . WOOD RIVER REFINERY  
Engineering Department  
J. W. LEAVELL . . . . . WOOD RIVER REFINERY  
Operations  
R. M. LOWRY . . . . . NORCO REFINERY  
Gas  
H. L. MARTIN . . . . . SHELL AMERICAN PET. CORP.  
Transport Driver  
R. R. McDONALD . . . . . ALBANY DIVISION  
Marketing  
ED McKEE . . . . . (MILITARY LEAVE)  
Shell Pipe Line Corp.  
D. C. McLAIN . . . . . WOOD RIVER REFINERY  
Operator

F. J. MEYERS . . . . . WOOD RIVER REFINERY  
Engineering Department  
C. M. MILNER . . . . . MID-CONTINENT  
Production  
T. B. MORRISON . . . . . WEST TEXAS  
Shell Pipe Line Corp.  
J. W. MYERS . . . . . TEXAS GULF AREA  
Shell Pipe Line Corp.  
F. E. PATTEN . . . . . BOSTON DIVISION  
Marketing  
P. S. PENDER, SR. . . . . WOOD RIVER REFINERY  
Pumper  
G. R. REED . . . . . TEXAS GULF AREA  
Shell Pipe Line Corp.  
R. H. RICKETTS . . . . . MID-CONTINENT  
Production  
C. B. SHULZ . . . . . MINNEAPOLIS DIVISION  
Marketing  
R. L. SHULTZ . . . . . WOOD RIVER REFINERY  
Engineering Department  
P. M. SMITH . . . . . (MILITARY LEAVE)  
Shell Pipe Line Corp.  
C. H. TUTKIN . . . . . WOOD RIVER REFINERY  
Operating  
E. K. TUTHILL . . . . . (MILITARY LEAVE)  
Shell Pipe Line Corp.  
L. P. VAGUESPACK . . . . . NORCO REFINERY  
(Military Leave)  
R. E. WEAVER . . . . . WOOD RIVER REFINERY  
Engineering Department  
C. J. WENGER . . . . . WOOD RIVER REFINERY  
Engineering Department  
V. J. WYNN . . . . . WOOD RIVER REFINERY  
Engineering Department  
C. G. YOWELL . . . . . MID-CONTINENT  
Production



# SHELL WAR BOND CHART

APRIL, 1944

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

[illegible]

PERCENTAGE  
OF EMPLOYEES  
INVESTING

### PERCENTAGE OF EMPLOYEES PAYROLL



**AVERAGE OF PAYROLL SUBSCRIPTION OF ABOVE AFFILIATED SHELL COMPANIES**



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New York, N. Y.

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# In a Nutshell...

AMERICA is now refining more crude oil  
than ever before —

BUT...The war must have more and more  
gasoline — *4 times as much in 1944 as in '42*

ALSO ... Essential home-front gasoline use  
(trucks, farms, buses, industry) has gone up  
20% since 1942

SO... Civilian cars in '44 can have less  
than  $\frac{3}{4}$  of the gasoline they used in '42...

YOU'VE GOT TO CUT DOWN ON  
GASOLINE WASTE...OR SLOW DOWN  
THE WAR!

GASOLINE POWERS THE ATTACK —  
DON'T WASTE A DROP!

