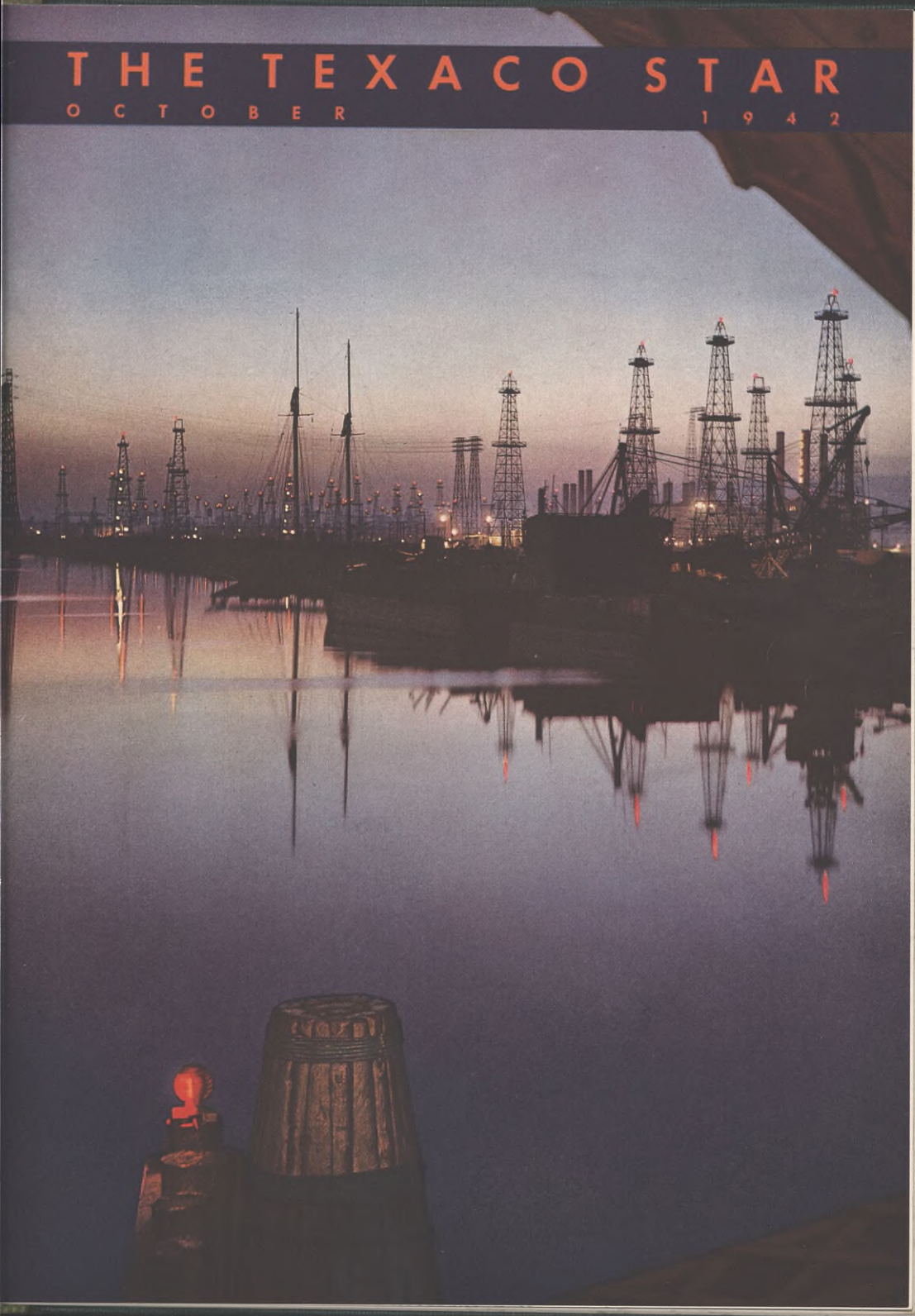
THE TEXACO STAR

OCTOBER 1942



A modified version of the B-24 "Liberator" bomber, this new type of cargo plane takes on more than 10 tons of supplies. The Texaco fuel in its tanks will help it carry this load more than 4,000 miles at 300 miles an hour

THE TEXACO STAR

October, 1942

VOLUME XXIX NUMBER 3

Cover photograph, "Coastal Oil Field," by Herbert Lyman Emerson from R. I. Nesmith

A PUBLICATION OF THE TEXAS COMPANY

For distribution to employes and stockholders

MEMBER, THE HOUSE MAGAZINE INSTITUTE,
NATIONAL COUNCIL OF INDUSTRIAL EDITORS' ASSOCIATIONS

DIRECT ALL COMMUNICATIONS TO THE EDITOR OF THE TEXACO STAR
135 EAST 42ND STREET, NEW YORK CITY

★ The average American automobile used to consume 650 gallons of gasoline a year. A United States tank division in a day's march of 100 miles uses between 10,000 and 15,000 gallons of gasoline. A battleship on convoy between the United States West Coast and Australia burns more than 1,500,000 gallons of oil during the round trip.

Brief AND TO THE POINT

★ As much power is required to carry 20 tons of four-engine bomber through the sky as is needed by a crack passenger locomotive to haul 1,000 tons of cars and tender over the rails.

★ At the start of World War I in 1914 there were only 85,600 trucks registered in the United States, according to the Automobile Manufacturers Association. America's present resources include 4,911,500 trucks.

★ Private automobiles accounted for more than six times the total passenger miles of transportation provided in the United States in 1941 by all other means of transportation combined, a recent survey declares. The railroads carried most of the freight, however.

★ Enough rayon to make 13 dozen pairs of stockings, used as packing in the recoil mechanism of a 37-mm. gun, makes it oil-tight.

★ Gasoline tax collections for June, 1942 (reflecting largely May gasoline consumption), averaged 17 per cent less than in June, 1941, according to the Public Roads Administration.

★ Not until this year were the colors and dimensions of the United States flag standardized and made subject to specification by the Government.

TEXACO HELPS TO BUILD A COTTAGE ON A HILLTOP

ADAPTED FROM AN ADVERTISEMENT OF THE TEXAS COMPANY

JOHN SMITH, American, pulls the safety pin on a hand grenade and hurls it at the enemy.

It is his personal message—a statement that America shall remain the land of free men and quiet homes.

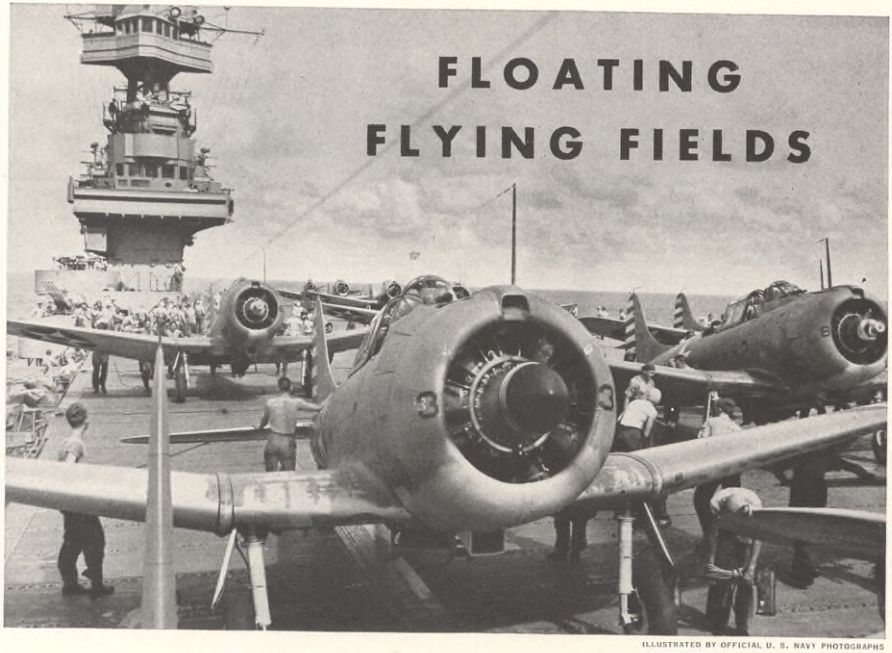
Behind John Smith are the great industries of this free America. Changed from the slow pace of peace to the quickstep of war they are sending him an unending supply of grenades, tanks, ships, and shells with which to drive his message home.

The Texas Company is one of these great industries. It is helping by making 100 octane aviation gasoline, lubricating oils, and other military products. Vast new Texaco plants will make toluene for the highly explosive TNT that John Smith, infantryman, and other Smiths and Browns and Joneses—artillerymen, bombardiers, naval gunners—will hurl at the foe.

The Texas Company will make butadiene for synthetic rubber to supply the fighting forces that require it in so many articles of warfare—and, when the war clouds roll past that cottage on the hilltop, for the civilians of a peaceful America.

Great peacetime industries make America strong in war. The research, production, and refining facilities that make Sky Chief and Fire-Chief gasolines are today speeding America's war effort. It is the only course to take so that there may be more peaceful cottages on many more hilltops in the future.

The following pages of THE TEXACO STAR give only a glimpse of the way Texaco is helping and the manner in which its business is affected during another trial of men's souls.



FLOATING FLYING FIELDS

ILLUSTRATED BY OFFICIAL U. S. NAVY PHOTOGRAPHS

Prepared by the Office of Public Relations, Navy Department

THE OFFICERS huddled in the radio room of the carrier were tense, expectant. Over the receiver, from torpedo planes out on attack, came the garbled clamor of battle—squawks and roars and crackling static, mingled with occasional unintelligible remarks between pilots. Suddenly, loud and rasping, came the excited voice of the squadron leader, "Scratch one flat top," he shouted. "Scratch one flat top." From the listeners in the radio room broke uncontrolled cheering.

The squadron leader's terse report was not only the most colorful but probably the most significant phrase of the war at sea to date. For the aircraft carrier has emerged as the most important single weapon of our Navy. Throughout naval history no type of ship has altered sea warfare so much and so quickly. The most spine-chilling words a sailor can hear in these adventurous days are, "Enemy carrier sighted."

It was only logical that the country which invented the airplane itself should also originate the aircraft carrier. In 1911, only eight years after the Wright Brothers made man's first successful flight at Kitty Hawk, another pioneer aviator, in a flimsy, kite-like plane, landed and took off from a wooden platform built over the quarterdeck of the U. S. cruiser *Pennsylvania.* The aircraft carrier was born!

Not until 1919, however, did the United States Navy finally convert the collier *Langley* into its first flush-deck carrier. It was on the *Langley* during the middle 1920s that actual fly-on and fly-off techniques were pioneered and perfected. It was Navy fliers, too, who developed dive bombing, a full decade before it was employed with such deadly effectiveness by Germany. They also invented the catapult, and per-

fected the long-range patrol bombers so important in Pacific operations today.

In 1928 the famous *Lexington*, sunk this year in the Battle of the Coral Sea, was commissioned with her sister ship, the *Saratoga*. Originally intended as battle cruisers, their design as carriers left much to be desired and modifications have been built into carriers since. But they set the example for all the other navies of the world.

In addition to Uncle Sam's carrier fleet at present, on the way is the biggest armada of carriers the world has ever seen—an armada that will carry America's airpower to all the oceans and continents of the globe.

As the months of World War II wore on, it appeared that the pattern of naval war was unchanged from 1917. Then the Battle of Taranto lifted the curtain on a new kind of warfare.

The date was November 11, 1940. A carrier force under the command of Admiral Sir Andrew Cunningham caught the Italian fleet completely asleep in the snug harbor of Taranto. Sending in torpedo planes and bombers, two British aircraft carriers sank three Italian battleships and either sank or put out of commission a number of cruisers and destroyers as well.

From then on, almost every succeeding battle proved anew the tremendous striking power of the modern carrier and its brood of planes. "Tin fish" from torpedo planes off the *Victorious* and the *Ark Royal* crippled the German battleship *Bismarck*, the mightiest man-of-war afloat, so the British fleet could close in for the kill. Carriers brought across the Pacific the swarm of Japanese planes that wrought such terrible damage at Pearl Harbor. American carriers contributed substantially to the success of the brilliantly executed raids on the Gilbert, Marshall, and Wake Islands in January, 1942. The Battle of the Coral Sea, the first major set-back for the Japs, was almost entirely a battle of carriers. At the Battle of Midway, American carrier-based planes are credited with the sinking of at least three Japanese carriers. These actions involved only a relatively few ships. With the tremendous fleet of carriers now being rushed full speed ahead in this country, what records of glory are yet to be written!

Physically speaking, the aircraft carrier must be considered from two aspects—first as a fighting ship and second as a floating airport.

As a fighting ship, it is the speediest craft afloat for its size. It is a large vessel, averaging 750 feet long by 85 feet wide, yet it can develop up to 35 knots, a speed surpassed by only the most modern destroyers. Although top-heavy in appearance, it is astonishingly maneuverable. In skilful hands it can even dodge torpedoes and aerial bombs.

The outstanding feature of the carrier, of course, is

A carrier's flight deck crew stands by to receive a message the rear seat gunner will drop as the plane dips over the bow

(Left) Silhouetted against a tropical thunderhead, a Navy dive bomber returns safely to its home on an aircraft carrier

(Right) This aircraft carrier, part of a task force, was photographed at sunset during recent war cruising in the Coral Sea

its flat top, the flight deck, where all the planes take off and land. The only break in the immense deck space is the "island"—the superstructure on the starboard side which gives it its lopsided appearance. The island includes the stacks, conning tower, bridge, heavy guns, and other necessary gear. Below the flight deck is the hangar deck where the aircraft are stored. The wings are folded to conserve space. The flight deck and the hangar deck are connected by mammoth elevators that move the planes from one to the other. Below these decks are the engine rooms, living quarters, repair shops, magazines, and other necessary elements. Because of its huge size, the carrier is capable of carrying particularly large supplies of ammunition, bombs, torpedoes, and fuel, enabling it to remain at sea for long periods.

The modern carrier is armored, but so lightly that it cannot depend on this for protection. It concentrates on anti-aircraft guns, since its greatest menace is the enemy carrier's planes. In addition, one or two main batteries of five-inch or eight-inch guns are provided. An escort of cruisers and destroyers protects it with anti-aircraft fire and forms an anti-submarine screen.

Considered as a floating airport, the carrier compares favorably with the most completely equipped airfields on land. The larger number of planes on American vessels constitutes one of their greatest advantages. One of our American aircraft carriers, the *Hornet*, for example, has a normal complement of 81 planes. By contrast, England's *Ark Royal* carried only 60, and Japan's *Syokaku* is rated at only 45. Regardless of its size, the normal complement of a carrier includes reconnaissance, scout, bombing, and torpedo planes. In addition, each ship carries disassembled reserve planes that frequently amount to several times its normal complement. Each carrier is a complete working airdrome, with machinery to effect almost any conceivable repair at sea, and a large supply of replacement parts.

Because of its dual nature, the carrier requires more personnel than any other type of warship—about 2,000 or more in all. As a huge fighting ship, it must have a large-sized crew to sail it. The commanding officer, the executive officer, and navigator of aircraft carriers are also naval aviators. Carriers must have, in addition to the regular crew, a large number of special personnel. Foremost among them comes the flying personnel—the pilots, bomber pilots, gunners, photographers, and others—the most highly trained force in the world.

(Please turn to page 19)

ANTI-KNOCK QUALITY— THE KEY TO VICTORY?

By H. A. MURRAY
Technical and Research Division,
The Texas Company

★

Gasoline with a high anti-knock rating enables a plane to climb and maneuver with great facility

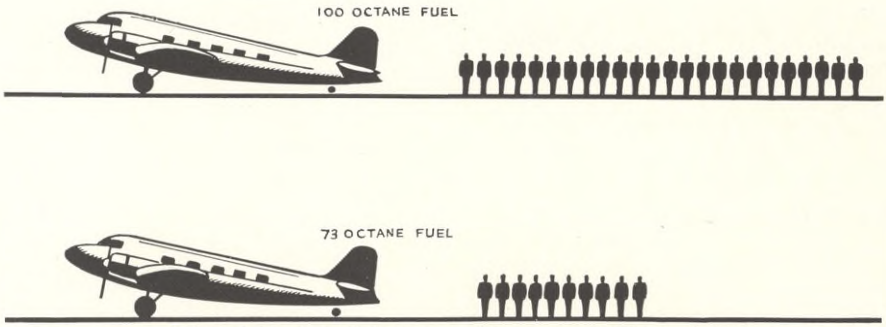
IN EVERY corner of the world aircraft are carrying out important missions for military, cargo, and civilian passenger transport. Stimulated by war production, the infant aviation industry of a few years ago has sprung up almost overnight to a giant industry.

Daily flights of bombers across every ocean and routine flights of giant clippers have become a reality not alone because of the progress made in design by airplane and engine builders. Without the contributions of the petroleum industry in discovering ways of making large quantities of high octane fuels our great network of airlines could not have been built, giant clippers could not fly the oceans, and military planes would not have such remarkable performance. The contribution of the petroleum industry is anti-knock value, commonly referred to as "octane number."

For many years in the aviation field wide variations were noticed in the tendency of different fuels to cause knocking, overheating, or damage to aircraft engines. Without a means of measuring this knocking property, or having no "yardstick" of octane number, engine designers were forced to limit the power output of their engines so that these engines could operate on the poorest fuels available without knocking or detonating. Consequently, developments in both fuels and engines were greatly retarded, and progress in airplane design was likewise affected.

As soon as a method for determining the anti-knock quality of gasoline was developed, however, the march of progress began in earnest. An octane number scale was devised so as to rate fuels with respect to one another and express the relation by means of simple numbers which reflect the anti-knock quality of each. The higher the octane number the better the fuel from the point of view of knock-free operation. Aircraft engine designers were thus enabled to build improved engines and specify the knock rating requirements of the fuel to be used, and the fuel was furnished by the petroleum refiner.

Research work on the preparation of fuels of higher octane number flourished. When the superior knock resistance of a substance called iso-octane was first recognized, this material was so costly that its use in commercial fuels was out of the question. However, its cost of approximately $25 a gallon was a challenge to petroleum chemists which was soon met. Economical methods for its manufacture were developed and other processes for making high octane fuels—such as sulfuric acid alkylation—were discovered. These methods of making higher octane fuels,



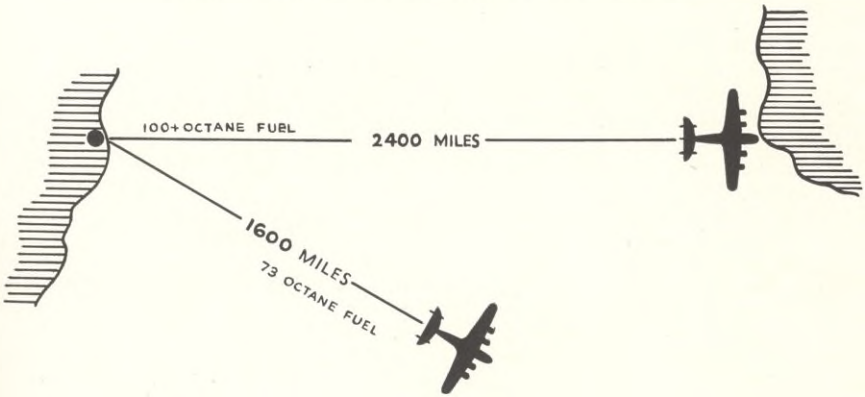
A standard airline transport plane can carry 24 passengers with 100 octane fuel and engines designed for it. Only 10 passengers can be carried with 73 octane fuel and engines, assuming horsepower, cruising radius, and speed to be alike

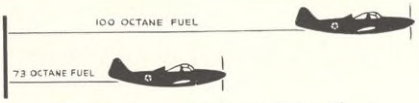
in the development of which The Texas Company has played a leading rôle, have enabled great increases in engine and airplane performance. Starting with 65 octane number fuels in the later 1920's, advances have been made to 73, 80, 87, 90, 100, and higher.

The aircraft engine companies working in close coöperation with the petroleum industry took advantage of each increase in octane rating to redesign their engines for more horsepower and lower fuel consumption. These increases in horsepower cannot be realized by the simple expedient of pouring fuels of higher octane rating into the tank. Engines must be redesigned, and the most effective method of boosting engine power is to employ a higher degree of supercharging. Increased engine speeds and higher compression ratios help somewhat to boost power of aircraft engines but are not nearly so effective as supercharging. But these methods of boosting power can not be utilized with low octane fuels because of the difficulties encountered with knocking, overheating, pre-ignition, and engine damage with such fuels. Not only have the high octane fuels permitted great increases in engine horsepower, but have indirectly resulted in a decrease in engine weight because each increase in power did not usually require a proportional increase in weight. As a result, modern engines now weigh about 50 per cent less per horsepower than earlier types using low octane fuels.

A well-known aircraft engine in 1929 developed 550 horsepower with 73 octane fuel and today develops 1,200 horsepower with 91 octane fuel. The piston displacement and basic engine dimensions have not changed during this period. As a result, the weight of this engine has dropped from one and

The Texas Company helped Pan-American Airways to develop fuel for its transatlantic Clippers. Illustration shows the increase in cruising radius with high octane fuel as compared with 73 octane fuel in a plane designed for it

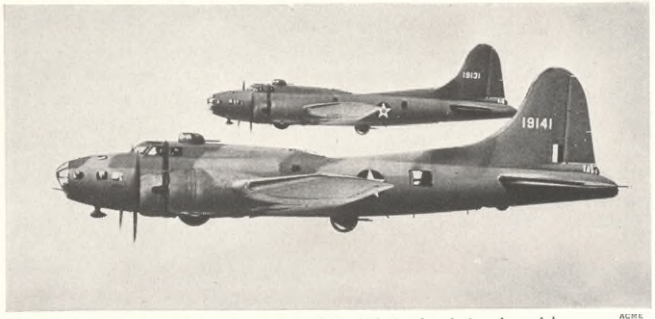




A pursuit plane designed to use high anti-knock gasoline can outstrip a plane with poorer fuel

one-half pounds per horsepower to a fraction over one pound per horsepower during this period. Other aircraft engines have also shown similar increases in horsepower and reductions in engine weight. In addition to cutting down engine weight per horsepower, the modern aircraft engine is more efficient and requires less fuel per horsepower than ever before.

Weight saving has an important relation to payload, cruising radius, and airplane performance for this reason: During take-off the airplane must be accelerated at such a rate as to reach flying speed within the limits of the airport. It must be able to climb fast enough to clear any obstructions with an ample factor of safety after take-off. Landing speeds, too, must be held within certain limits consistent with airport runway lengths. All of these factors hold the airplane designer within fairly close limits on such items as total pounds per horsepower and pounds per square foot of wing area. It then follows that every pound of weight saved in the airplane is another pound available for payload.



The Flying Fortress, one of the United Nations' mainstays in aerial warfare, uses the highest quality of fuel and has a splendid record

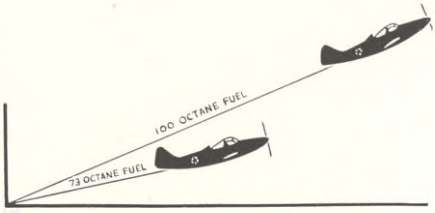
If several hundred pounds can be saved in engine weight by using more compact light-weight engines, the same weight saving can be added to the payload, fuel load, or both. High octane fuels have permitted some rather startling increases in payload. This relationship would apply if these transport planes were assumed to be bombers.

Besides increasing payloads high octane fuels have permitted increases in cruising radius. By increasing payload in the first example shown on the preceding page and increasing cruising radius in the case of the Clipper planes it follows that high octane fuels increase operating revenues or decrease operating costs.

In military aircraft substantial savings in engine weight will greatly increase the performance of pursuit planes. With bombers the saving can be utilized by a greater bomb load or by a greater cruising radius. In addition to increasing cruising radius and also speed, high octane fuels can also have an effect upon rate of climb.

The latest models having engines designed to use 100 octane fuel can outfly, outmaneuver, outfight and carry greater loads over longer distances than any of the earlier models using lower octane fuels. Even small differences in the performance of fighter aircraft could mean loss or gain of air supremacy. It should be very obvious that more and more emphasis is being placed upon raising octane ratings of aviation gasoline to permit higher and higher engine horsepower.

The Texas Company is proud of its part in the development of alkylation and other processes used to make aviation gasolines. Utilizing in part refinery gases that were formerly wasted or burned as fuel, this process is playing the major rôle in supplying the necessary quantities of 100 octane fuel to the Allied Air Forces. Catalytic cracking also can be used to provide a component of aviation fuel. The Texas Company has also taken an important part in developing this process.



Of two pursuit planes, the one using 100 octane fuel, if its engines are built for it, will outclimb and therefore outmaneuver a plane using lower-quality fuel

"THE TOUGHEST OF ALL WARS" —ON CAPITAL

READERS of THE TEXACO STAR and other magazines published by American companies for employes and stockholders receive $61,000,000,000 of the United States' $117,000,000,000 national income, estimates the United States Treasury Department. Therefore, the Treasury Department concludes, these readers must buy 52.64 per cent of all War Bonds.

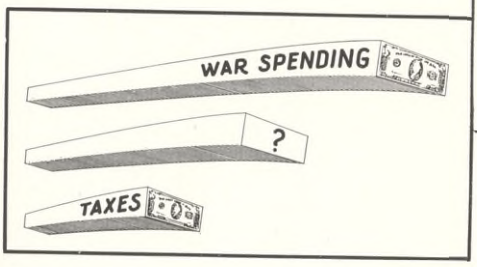
This percentage, however, seems destined to be changed by the present trend. In June, according to the Department of Labor, the weekly earnings of workers in all manufacturing industries averaged $37.99, a gain of 19.4 per cent since June, 1941. The over-all trend of salaries and wages has been up. The dividend trend is down.

July figures for income payments show that the total for non-agricultural salaries and wages in that month was $1,338,000,000 higher than in the same month in 1941, and the total for dividends was $48,000,000 lower.

Profits of corporations have "tobogganed" since 1941, and are expected to drop still further in 1942. Estimates based on the increased taxes forecast for business in the future indicate a drop in net profits —in spite of higher gross profits—from $6,250,000,000 in 1941 to $4,590,000,000 in 1942, a decrease of 26 per cent.

To win the war, we will spend nearly $35,000,000,000 this year. The Government will get only $12,500,000,000 of it back in taxes. The remainder must come from War Bonds. It looks as if it is up to the man who works, with his hands or his mind, and the person who puts his money to work for him, to buy War Bonds, each to the extent of his ability.

If stockholders as well as employes invest 10 per cent or more of their income in War Bonds, it will help to prevent inflation.



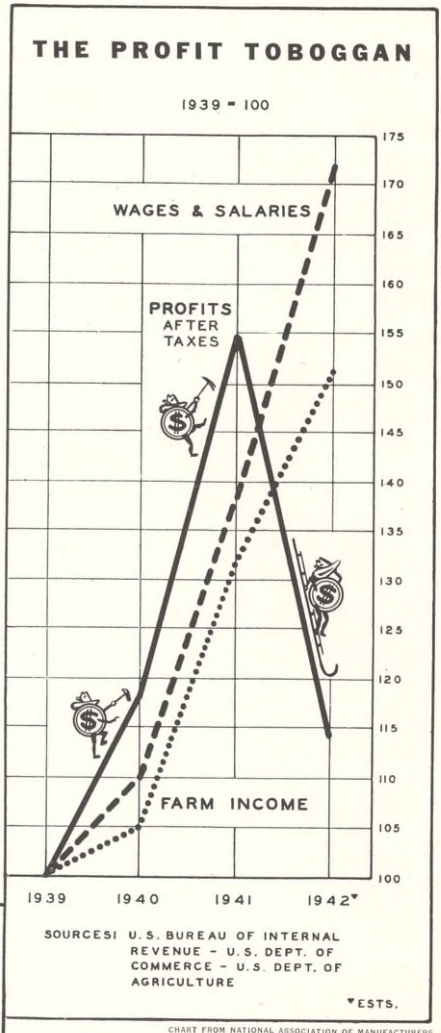


CHART FROM NATIONAL ASSOCIATION OF MANUFACTURERS

Profits of corporations have gone down since 1941 partly because of taxes, yet taxes will pay for only a portion of this year's war costs

The Importance of Saving

By LEVI P. SMITH

President, National Association of Mutual Savings Banks

© FABIAN BACHRACH

SAVING takes on new significance in the present national emergency—a significance such as it never had before. The practice of thrift always has been a fundamental principle of progress, a mark of difference between the foresighted, who save first and pay their way, as opposed to the too optimistic, who buy first and live in debt. That same economy today constitutes a principal source of funds for victory.

Every citizen is anxious to help hasten this war toward a successful end, and at the earliest possible moment. The best way for millions of the people can be pointed out simply and concisely—save. The Government needs money now, to protect all of us and assure opportunity for ". . . life, liberty and the pursuit of happiness," a right proclaimed by our Declaration of Independence, the cornerstone of America, away back in 1776.

Industry and its workers daily contribute a rising flow of billions to the war effort. We are engaged in saving on a scale unknown before—for ourselves and our families and the nation. The raising of war funds from income largely is a matter of organization. The Government's 10 per cent voluntary plan offers a model for every one to follow. In special cases 10 per cent may take too great a toll from the pay envelope. For the majority of us, however, this should be a practicable way to help preserve our present benefits and to provide for the future.

Even a straight 10 per cent diversion of national income will not meet the war bill. No one may exactly predict 1942 earnings of the American people—national income, as the term goes—but that income will perhaps reach as much as 110 to 115 billion dollars. Of this monumental sum, about two-thirds will take the form of wages. It is the first duty of every citizen to devote a part of his share of these wages to the welfare of his country. The rest of the war bill must be paid by taxation, or be "capitalized" in one form or another, by the distribution of Government securities to industry and to institutions serving as agents for savers of every kind—large and small.

Thus we see that saving is the most vital force at work in the country, and one of the least understood. In particular it has importance for the individual worker, because consistent economy remains the one sure road to personal independence for the average man or woman, and today saving is indispensable for national welfare as well.

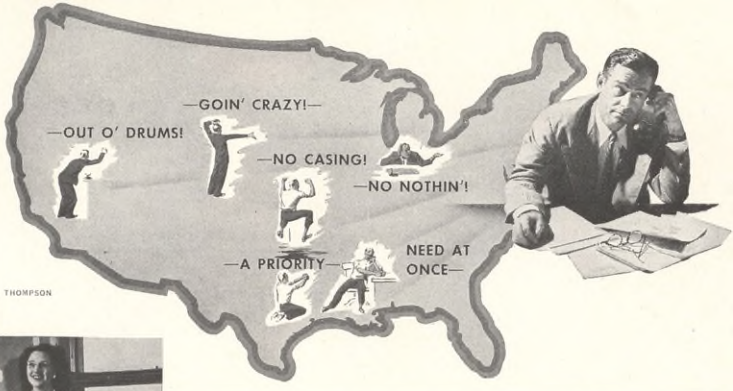
Mutual savings banks have approximately 10 and a half billion dollars upon deposit, the property of more than 15 and a half million depositors, owning about one-seventh of our American bank deposits. Savings in all other kinds of banks amount to 15 billion more, or 25 billion dollars, mostly saved in small sums. All bank deposits of the nation are around 70 billion dollars, so more than one-third of this great sum belongs to average citizens, small capitalists by their own efforts.

Every one recognizes that unlimited purchase of commodities from increased earnings would cripple the war effort. Wisely the Government has clamped on the brakes, and, with equal wisdom, the public has accepted the brakes. Here, then, is another great source of savings money, needed for war today, but available to the individual for the needs and opportunities of tomorrow. Reduction of buying has the further important effect of keeping prices within reason—a curb upon inflation and the kind of ruin it left behind after the first World War. This is the time to pay off mortgages, to invest in War Savings Bonds, to sustain savings accounts and life insurance and otherwise put away the present penny for the future dollar.

STAR CLOSE-UPS

Manager of Texaco's Purchasing Department with its 141 employes is W. F. Moore, shown at his desk with T. J. Faughnan, Assistant to Management. Another key man, G. W. Orton, Assistant to Manager, is now Director of Materials for the O. P. C. in Washington

Purchasing Agent R. M. Morrison's telephone seems to be continually connected to Texaco people everywhere who want materials



MAP BY KENNETH W. THOMPSON

THE TEXAS COMPANY'S Purchasing Department is the scene of a continual hunt for sources of supply by persons who possess an amazingly broad background, assisted by others with skilled clerical precision. It must place orders and see that the right goods are delivered when, where, and in the quantities needed. Purchasing Department employes must be combination prophets, researchers, engineers, warehousemen, chemists, physicists, geographers, and accountants. They bought $62,000,000 worth of materials for the Company in 1941, handled 122,000 requisitions, issued 166,000 purchase orders, verified 332,000 invoices, and did a quantity of "missionary" work. Three Divisional Purchasing Offices—in Houston, Chicago, and Los Angeles—share in the work.

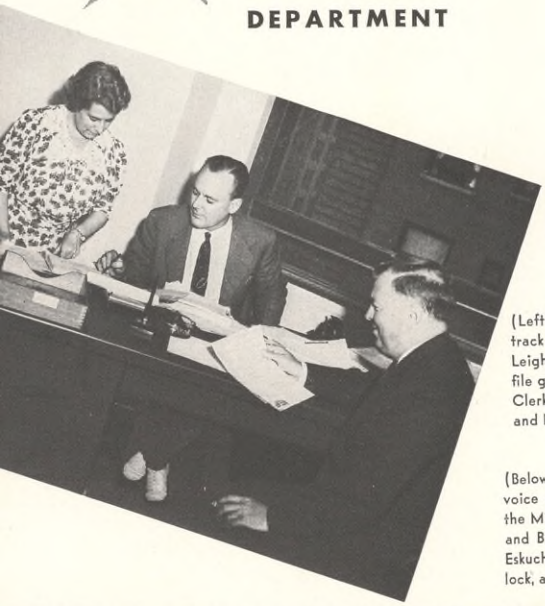
Miss Amanda K. Smith is known as one of the most cheerful receptionists in New York City. She greets 12,000 persons a year

asing
his staff
where
he ma-
d know
ip them

STAR CLOSE-UPS

They buy heavy refining equipment: Asst. Purchasing Agent F. J. O'Brien with A. R. Kinney (left)

PURCHASING DEPARTMENT



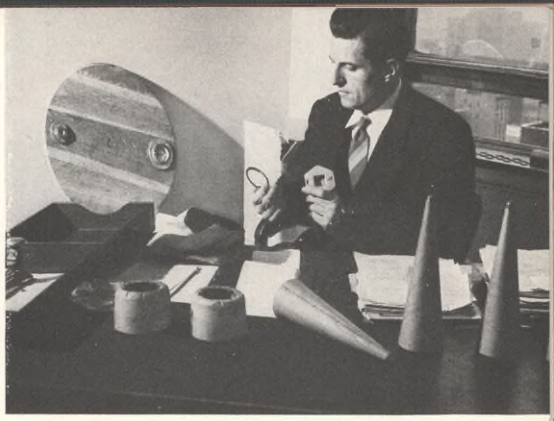
(Left) Helping keep track of it: Miss A. Leighton, head of the file group, with Chief Clerk C. L. Coleman and B. F. Nixon, Buyer

Asst. Purchasing Agent A. H. Stepney and his group buy solely for export, have troubles now with sinkings, export licenses

(Below, left) An invoice desk. Shown are the Misses A. C. Casey and B. E. Riley, W. C. Eskuche, Mrs. M. Hillock, and T. J. McGrath

(Below) With everything at her fingertips, Miss A. Hasson's job is to match open orders with incoming invoices

Asst. Purchasing Agent W. G. Taylor buys the widest variety. With him is Buyer J. C. Larsen (left)



To learn what's new is highly important. As a buyer, W. J. Heckman inspects samples

(Left) Miss Ella Martin, veteran head of the order group, and Miss L. Burderi write an order

Engineer J. L. Walker consults one of the many supply catalogs. Miss B. Emde in background

Machines such as these below punch 60,000 cards a month, sort 75,000 each month, and deliver tabulations helpful in guiding the Company's purchasing and trade relationships. Left to right, Miss R. McGuire, Miss C. McDonnell, Mrs. M. Whelan, group head, Mrs. Ann Brady

ALL PHOTOS IN STAR CLOSE-UPS BY R. I. NESMITH

R. S. Hatch, Assistant to the Manager, now devotes most of his time to priorities. With him is Miss G. Schneider

G. T. Ferguson, G. S. Kornett, and T. W. Kerr (left to right) help interpret and brief priority rules and reports

STAR CLOSE-UPS

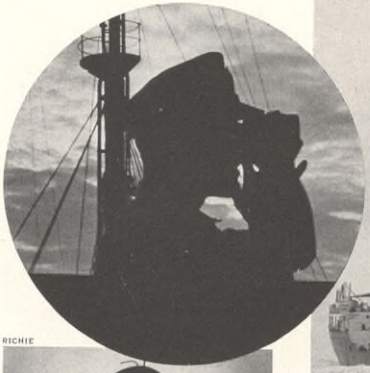
PURCHASING DEPARTMENT

Engulfed by priority reports, Miss M. C. Barbato, Stenographer, is a mainstay of the priorities section

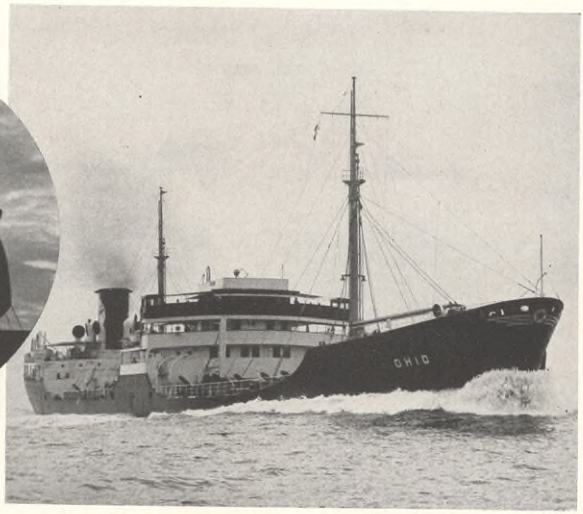
Briefed interpretations of priorities use 40,000 sheets of paper a month. R. Raum helps turn out the copies

Government controls of materials require many files. At right is Miss J. Cornely, File Clerk

A lookout on the *Ohio*'s bridge scans the horizon



RICHIE



NESMITH

The *Ohio* just after launching (left), showing how large an under-water target a tanker is

Fully loaded and in peace-time paint, the *Ohio* topped her best speed estimates

TANKER "OHIO" SURVIVES BOMBS, FIRE, TORPEDOES

THIS IS the story of a Texaco tanker that didn't sink.

The Texaco tanker *Ohio*, on war service for the British, was with the convoy to the island of Malta which the Nazis tried desperately to halt and break up in mid-August. The *Ohio* was bombed, torpedoed, and set on fire. Once a stricken enemy dive-bomber crashed upon her deck. Her powerful engines were partly wrecked and for a time she plodded along at a speed of two knots. When her engines were finally put out of action, destroyers and minesweepers took her in tow. Three times she was abandoned and re-boarded, but she eventually reached Malta with "the most important and most dangerous cargo of all."

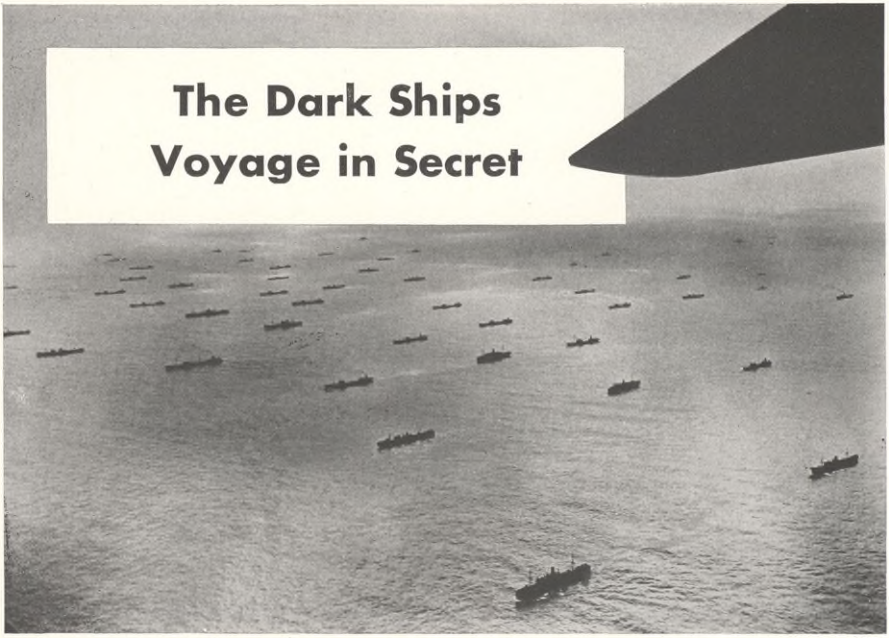
"Manned by a British crew and skippered by a very great man called Captain Mason, it was obvious that she would be a special target for the enemy," said Commander Anthony Kimmins of the British Navy. "She was very conspicuous from the air with her funnel right aft."

Less than a day after the convoy slipped through the Straits of Gibraltar, the attack began. A U-boat sank a British aircraft carrier. From that time on it was a race through a gauntlet of Italian torpedo planes and Stuka dive-bombers. When the *Ohio* was first hit by a torpedo, Admiral Burrough, in charge of the escorting cruisers and destroyers, hailed her in the darkness: "I've got to go on with the rest of the convoy. Make the shore route if you can and slip across to Malta. They need you badly." From the *Ohio's* bridge went back the reply: "Don't worry, sir; we'll do our best. Good luck."

Not long afterward, the Stuka was shot down directly on the *Ohio's* deck. The tanker became a special target for enemy planes, and for almost two days withstood continuous bombing. Even towing finally became impossible. But she got to Malta. Admiral Burrough's last signal to the *Ohio* was: "I'm proud to have met you."

The *Ohio's* exploit received considerable notice in the British press and on the British radio, and commendation came from the United States War Shipping Administration for the sturdy construction which enabled her to withstand an incredible amount of punishment.

The Dark Ships Voyage in Secret



This is a convoy of merchant ships as seen from an Atlantic patrol plane

ACME

By J. G. VAN SANTVOORD

Manager, Marine Sales Division, The Texas Company

IN THE HARBOR of an East Coast port, dark ships lie at anchor these nights as far as the eye can see in the light of a cloudy moon. Lights move aboard them—low, cautious lights because of the dimout protection against submarines.

Residents along the shore, rubbing their sleepy eyes the next morning on their way to work, can hardly tell whether the scene in the harbor is different than it was the evening before. Perhaps some ships have left; perhaps not. Maybe others have come in. All the ships' identities have been lost beneath heavy gray war paint.

This is where convoy vessels are loaded. A ship's master, his craft filled to overflowing and with war materials lashed on the deck, may get orders to sail on short notice. He may proceed to a definite point miles out in the Atlantic, and there open sealed orders. These may direct him to Iceland, to Africa, to Australia—to almost any United Nations port. Unless the type of cargo he has taken aboard has given him some hint, he may not know to what quarter of the globe he is headed. Perhaps not until long after he has read his sealed orders will he know how many other ships are in the convoy and what protection of accompanying warcraft they have.

Many of these ships are Texaco fueled or lubricated. When in port, they must be supplied with the right kind of Texaco products. In times of peace such a procedure was fairly simple: a Texaco marine engineer could find the arrival notices of ships posted in a central location, and could then call on the masters and chief engineers of the ships for which Texaco had contracts. He would get the order and would have ample time to make delivery before the ship's sailing time.

In wartime few persons know and no one will tell when a given ship is to be at a given port. When a ship is in, the fact is advertised as little as possible. The Texaco representative has to use his own ingenuity to find out when the ships that require his products are available. Even then, the master and chief engineer may not know what product, or how much of it, should be supplied. So great is the need for secrecy about ship movements that not until the

vessel is almost ready to sail are the products ordered. Then Texaco must get them aboard in double-quick time. In case of failure the ship may not sail with its convoy, or may have to sail with an insufficient stock of lubricants or with the wrong kind of lubricants for the part of the world to which it is going.

Texaco marine engineers have their own way of doing the impossible and learning what ships are in port. And if the war is to be won, there must be no failure about getting the right product aboard within the designated time. It has to be done.

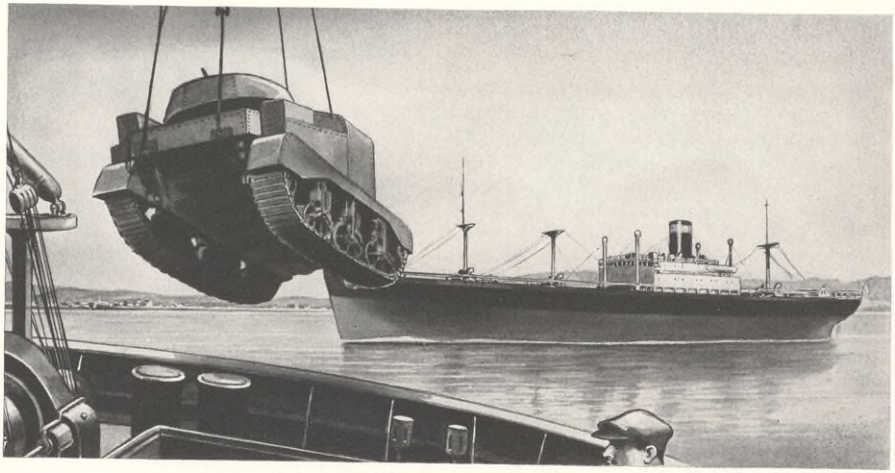
Recently an order for a large delivery of a product came to the Marine Sales Division's New York office at 4 p.m. Delivery was specified before high tide the next day to a ship lying in the Narrows in New York Harbor. The product had to be filled in drums, sent from Bayonne Terminal by lighter, and the drums loaded aboard the ship. A lighter is hard to get late in the afternoon—particularly in these days of war—but one was located. The terminal staff at Bayonne worked nearly all night filling the drums, and sent the lighter down the bay with a prayer. Drum after drum went aboard the convoy ship as dawn approached. Hardly had the last one been stowed away when the ship weighed anchor and moved down the bay to join her convoy somewhere out in the Atlantic.

On another occasion, one of the big queens of the Atlantic now on war duty appeared in New York and a hurry call came from its chief engineer to identify the type of Texaco turbine oil that had been delivered to it in a foreign port. Track had been lost of the name and specifications of this oil, and the chief engineer needed more of it. He also wanted to know if the oil then in use was in good condition. Turbine oil is constantly purified, and if an engine room crew does its job well, the oil will remain useable a long time without damage to moving parts.

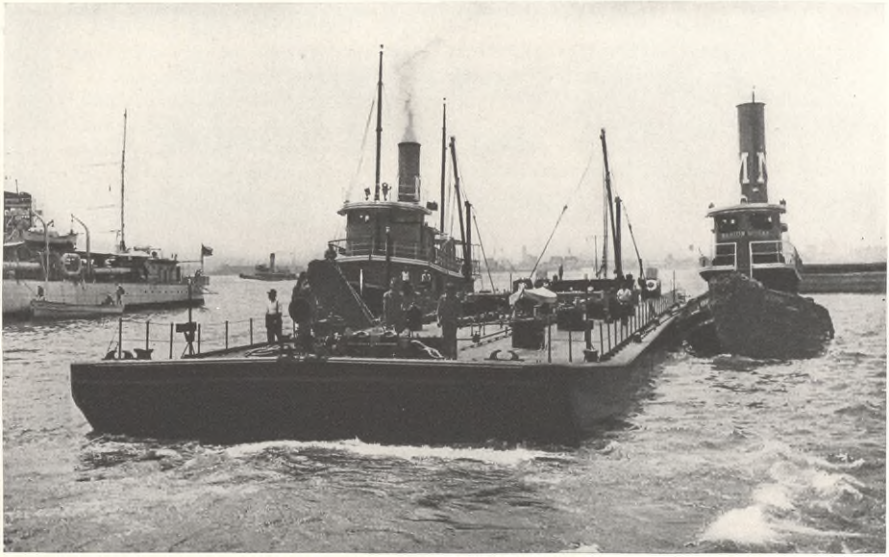
Obviously, it would not be wise in time of war to reveal the presence of the ship in New York by cabling a foreign terminal to ask what type of oil had been delivered to her there. The chief engineer sent a sample of oil from his turbines to Texaco's New York Offices along with an order for more of the same kind. He had to get it right away, as sailing orders might come at any time. And he wanted to know whether he could risk the outward voyage with the oil then in use.

The sample went three floors from the Marine Sales Division to the Technical and Research Division in quick time. Within minutes a messenger was on his way with the sample to catch the next train to Beacon, New York, where a Texaco research laboratory is located. Beacon took the used oil, put it through tests, and telephoned the analysis to New York. Delivery was made, and almost immediately the ship quietly left port.

Another ship, deserted by a foreign crew and salvaged by the United States Navy, needed 2,000 gallons of oil. This ship was to carry important supplies for both the Army and the Navy and was due to leave soon, but the Navy wouldn't tell where she was. The first job was to locate the ship. Before she was found, it was discovered that none of the particular oil she wanted was on hand. The Navy had ordered out the last drop of it, but more was in transit in tank cars. The next problem was to route



Today's ships carry fuel and lubricants for themselves, for other ships, and for their cargo



The many powerful ocean-going tugs of the Moran Towing and Transportation Company in New York are fueled and lubricated 100 per cent by The Texas Company

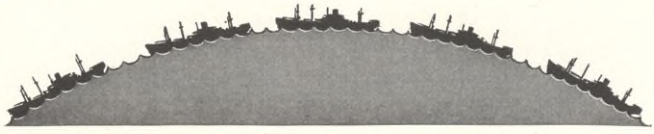
the tank cars to a still undetermined location.

The final problem was to have on hand means to transfer the oil to the ship. There was not much information about her. She might be able to take the oil directly from the tank cars by pump if she was docked in a favorable position, or it might have to be loaded aboard in drums. When the ship was found, she proved to be in a competitive oil company's terminal, and it was inadvisable for good reason to bring her close inshore. The tank cars couldn't be brought close enough to pump into her. She had no winches, and so could not lift the oil in drums. Tank trucks sent to the end of a pier would be of no value because the oil would still have to pass through several hundred feet of hose and the trucks' pumps would not be strong enough to pump this distance. But because the oil had to be got aboard somehow, a lighter was procured and the oil loaded in time.

In foreign ports, Texaco's marine representatives have the same trouble. A. S. Runacres, Sales Manager of The Texas Oil Company Limited, England, told of an amusing incident there:

"We supply lubricants to many merchant ships in this country," wrote Mr. Runacres, "and during the last few months a large number of ex-Polish, ex-Norwegian, ex-Danish vessels, and the like, have got safely into British ports and are now being managed by British ship owners.

"The other day an ex-Polish shipping company advised us that one of these vessels was in port here and required lubricants. All the ships in these days have their names painted out, but when they are in port they hang over the side a board with the ship's name on it. Our representative managed to find the steamer, took particulars of the lubricants required and then carefully copied the unpronounceable Polish name from the board overside and sent the order to us. We could not find the name of this vessel in our contract register, nor could we find it in Lloyd's Register, so we telephoned the Polish shipping company to ask whether we had contacted the right ship. The answer was, "Yes, but the name you have written, in Polish, means 'Beware of the propellers.' "



FLOATING FLYING FIELDS

(Continued from page 5)

Scout and dive bombers, tightly spotted forward on the flight deck of an aircraft carrier, are refueled and rearmed in readiness for action

On board an aircraft carrier, it is not enough for a pilot to know how to fly and fight and bomb well. He must know ships and how to live aboard them. He must know his own and enemy warships, so that he can recognize them instantly though they are only tiny dots thousands of feet below. He must know fleet organization and tactics. He must be able to navigate over vast stretches of open ocean with no landmarks to guide him, accomplish his mission, and navigate back to his tiny floating airport, which may itself have changed course and be hundreds of miles from where he left it. And when he gets back he must know how to land on its narrow plane-packed deck, which may be pitching and rolling at all angles.

Non-flying personnel are no less highly trained in their own specialties. They include crews for handling planes, fuel squads, plane directors, ordnance men, firefighting crews, service and repair men, and others. The operating efficiency of the aircraft carrier as a floating airport depends to a great degree on the ability and skill of the non-flying aviation men.

Aiming a 20-mm. Oerlikon, a carrier's weapon with a lethal sting for enemy planes

Below decks work the technicians and repair men who keep the fleet of planes in perfect working order. Many were skilled workers in civilian life; almost all have undergone intensive training in Navy schools.

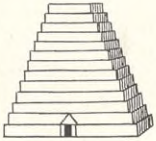
The evening before an attack is to be launched, the squadron leaders have a conference with the commanding officer or the task commander. After receiving their own instructions, they call their pilots together and describe the special plan of attack to be used.

In the eerie false dawn the next day, the planes to be used are assembled on deck and arranged, according to types, in the order of take-off.

Suddenly the ship's bugle sounds "Flight Quarters," and the great ship springs into action. Each man has his own job to do; each knows that the efficiency of the whole depends on him personally.

Over the throaty roar of scores of motors, the "bull horn," the ship's loud-speaker, booms out the order of the captain to take off. One by one, on signal, the planes speed down the deck and zoom into the air. Each squadron commander, following order by interplane phone, proceeds with his squadron to the designated objective.

History will record that in the first year of this war the United States Navy employed its relatively small fleet of excellent carriers with maximum effectiveness. The Japanese have been hit hard, and they will be hit harder. As one carrier after another hits the water and takes its place on the battle fronts, America's control of the air over all the seven seas will grow by leaps and bounds.



Early America Said It With Pictures

A HUNDRED or a thousand years from now, an archaeologist excavating on a battlefield in Australia, in the Solomon Islands—or, maybe, Tokyo—may turn up a small brass uniform button. He will know instantly, when he brushes away the encrusted soil and corrosion and reveals a spread eagle with a shield on its breast, that here a soldier of the United States Army fell. Although no lettering may indicate it, that symbol stands for the United States of America just as does Old Glory, and tells much about the country.

This is because, even before the North American colonies fought for their independence, they promoted the idea of liberty not alone with words, but also said it with pictures. Pictures are something everyone can understand, and for expressing an abstract idea they often succeed where words fail.

When the colonists were showing their disapproval of oppression, a cap on a staff above a village green indicated a meeting place for those resisting the government in power. The cap and pole have been a symbol of liberty from the very early ages of man. Its meaning in those days was much the same as today's "V-for-Victory" symbol.

The flag of the United States had already been flown in battle before the Declaration of Independence was signed, and the many stories of its origin are well known. Only a few hours after the delegates to the Continental Congress signed the Declaration, they appointed Benjamin Franklin, John Adams, and Thomas Jefferson as a committee to design a seal for the new United States of America.

This seal, which has furnished the motif for our nationalistic designs ever since, took six years to evolve, and every portion of it has an explicit meaning. It is second only to the flag as our national symbol, and was intended by the Continental Congress to pass into common use among the people as the flag has done.

The Great Seal itself, however, is strictly limited in use by law. Even the Secretary of State, its guardian, has no authority to affix it to any paper that does not bear the President's signature.

Some of the first committee, as it met and argued and drew designs on what was then the equivalent of a tablecloth, thought that the seal should bear a Biblical picture. Others had in mind a typical European coat-of-arms. The idea which the committee reported back to Congress six weeks after July 4, 1776, consisted of a shield which would bear a rose for England, a thistle for Scotland, a harp for Ireland, a fleur-de-lis for France, an imperial eagle for Germany, and a lion for Holland, thus indicating the countries from which the states were populated. The report was tabled.

For a while the new government got along without a seal, but in 1779 Silas Deane, our first political agent to France, professed himself embarrassed because his country had no seal to authenticate its official acts. In other words, it was in the same position as a man who had to sign with an X instead of his name.

A second and a third committee took up the problem, and each one contributed a small part of what finally became the legal insignia of the United States. A final committee was headed by Charles Thomson, secretary of Congress, and had as its advisor William Barton, a private citizen of Philadelphia.

The eagle, used in every pose on articles in everyday use, became an American symbol

After eliminating a multiplicity of devices suggested by Barton that savored too much of European heraldry, this committee found they had on an approved list the stars and stripes of the American flag; a bundle of 13 arrows that had been used on North Carolina paper currency in 1775 and an olive branch that had graced Maryland currency in the same year; an unfinished pyramid, the all-seeing eye of God, and a constellation of stars that had been popular on Continental currency, and an eagle surrounded by stars that had appeared on a Massachusetts cent in 1776.

They discarded the imperial eagle of Europe as a bird not to their liking, and adopted the American bald eagle, although Benjamin Franklin grumbled about this later, saying that "he is a bird of bad moral character." The eagle—our best-recognized national symbol next to the flag—is an insignia of supreme power, and signifies the Congress as used on the seal. It was felt that the eagle could bear the shield on his breast, contrary to some practices of heraldry, and that this would denote that the United States could rely on its own virtues.

In the eagle's talons—that is, in the hands of Congress—was placed the power of peace and war, indicated by the olive branch and 13 arrows. The upper portion of the shield on the eagle's breast also represents Congress, and the 13 red and white stripes, of course, the 13 original states, which are firmly united by Congress but which in turn uphold it by their union and strength. The blue on the shield signifies vigilance, perseverance, and justice; the white stripes have the meaning of purity and innocence and the red mean hardiness and valor.

Above the eagle's head was placed the radiant group of 13 stars breaking through a cloud—"a new constellation among the nations"—and in the eagle's beak a ribbon with the motto *E Pluribus Unum*—"one out of many"—words which came by a roundabout route from a poem of Virgil.

The reverse of the great seal, chiefly a combination of two designs from Continental currency which are illustrated on the opposite page, has caused considerable controversy. Much claim has been made to it by religious and semi-religious groups. Its first public use is on the reverse of the one dollar bill now current. The unfinished pyramid of 13 courses of stone represents a nation not yet at the peak of its power, and is also the emblem of strength and duration. The two Latin mottoes also were derived from Virgil, and in the full original mean "favor my daring undertaking" and "the great series of ages begins anew."

The eagle particularly won immediate favor, and in the days of growing America was blown by glassmakers into flasks, cast by brass foundries into door knockers, and carved by woodworkers on the tops of mirrors. Pewterers discontinued the lion and unicorn and the rose and crown of colonial days and substituted eagles in their touch marks. More than the flag, which did not adapt itself so well to design, the eagle became the symbol of expanding America.

The Goddess of Liberty, whose early poses show her to be more or less a counterpart of England's Britannia, appeared on the first United States coins when royalty-free Americans wanted none but a symbolic figure on their money. She has changed a great deal over the years, from a bare-headed figure accompanied by a liberty cap and pole down to our current Lady Liberty with wings added to her cap, especially symbolic of a streamlined age.

In these days, when the official seal of the United States is so much in evidence—in facsimile on the cap ornaments and buttons of the Army and in various forms on the uniforms of some of the other services—we realize that America is still promoting the idea of liberty by saying it with pictures.

The Goddess of Liberty has changed throughout the years, particularly in her headdress. The design in the center is an early emblem of colonial unity

CHAS. L. FRANCK

Structural steel must be protected from rust wherever it is exposed to the atmosphere. The Mississippi River Bridge (above) near New Orleans, carrying rail and highway traffic, is protected with Texaco Rustproof Compound

THE SILENT ENEMY

RUST MARCHES alongside every army in the field and stows away on every warship on the seas, waiting for a chance to destroy the sinews of vital metal parts. Left alone to do its silent work of destruction, rust can cripple an army or navy as effectively as shellfire, bombs, or torpedoes, or stop the machines of war industries as well. No single thing could aid the enemy more than rust if it were to sabotage our war effort through our neglect of important metal structures and implements on the home and battle fronts.

The tendency to rust, or corrode, is inherent in the element known as iron and will in all probability never be entirely overcome. Although no one knows the precise extent of the economic loss due to rust, competent authorities have estimated that two per cent of all steel manufactured is currently being destroyed by rusting. Because even a small amount of rust may consign a much greater amount of steel or other metal to the scrap heap, the loss is tremendous.

Vigilance against the inroads of rust can never be relaxed. Rust perpetually lies waiting to spread its blight upon the surface of metal and penetrate deeply until the metal's mechanical properties are seriously impaired. Stationary structures, such as metal bridges, are especially vulnerable to rust, for the red devil can creep along silently and, finding places where the paint has weathered, start eating its way into the heart of the structure.

Many means of rust prevention have resulted from studies of the effect of air, moisture, and chemical action on iron and steel. Of these methods, the use of protective coatings has been found highly effective and practical under most circumstances.

In view of the priorities presently placed on red lead and other paints containing critical materials, there is a tremendous potential market for rustproof compounds. Today, with national restrictions on many kinds of construction and with maintenance hampered by material shortages, one way to help win the war is to prevent waste by preventing rust.

Texaco is ready to aid this critical situation with a line of rustproofs which are the result of years of painstaking laboratory research plus an established

record of proven success under many types of working conditions. These rustproofing compounds fill many needs—the protection of plant structures and machinery, the protection of work in process, storage, and shipment, the protection of tools and machines in use and in storage, outside structures and machines, underground equipment, marine equipment, electrical equipment, war material in shipment and in operation, and many others.

Texaco Rustproof Compound swabbed on railroad bridge decks prevents rust. Arrow shows corrosive brine-drip

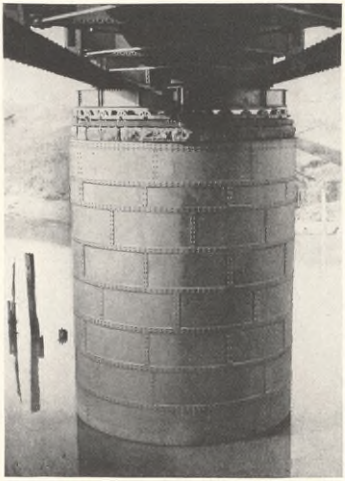
Although the complete line of Texaco rustproofs includes a large number of different items covering many requirements, three products—Texaco Rustproof Compounds L, LB, and H—have been especially developed to meet present-day wartime conditions. Applied by spray or brush, they produce a soft, self-sealing, penetrating, non-hardening film that is waterproof and, therefore, gives excellent protection against rusting. If applied to surfaces already rusting, Texaco Rustproof Compound penetrates the layer of rust and stops further rusting. It is so effective that one application is more moisture-proof than several coats of paint.

Texaco Rustproof Compounds are also playing an important part in preserving America's automobiles and trucks. Some Texaco dealers, as a part of Car-Saver Service, spray the under side of the chassis and fenders with Texaco Rustproof Compound to prevent rust and keep the car in good condition.

The need for preventing rust often is regarded casually by the average person in peacetime. But in wartime the preservation of metals is the duty of every citizen, the obligation of every industry. The old, largely hand-worked metal of years ago had extraordinary rust-resisting quality. Today, there are rust-resistant metals such as our forefathers never dreamed could be possible. However, by far the largest percentage of iron and steel in use today is extremely vulnerable to the ravages of rust. It is imperative, therefore, that rust, the "silent saboteur," be prevented from crippling our war effort.

A 35-page booklet entitled *Rust Prevention,* which describes in detail the use and application of Texaco Rustproof Compounds as well as other Texaco products with rust preventive qualities, has recently been prepared and any one of Texaco's District Offices will be glad to furnish a copy free of charge upon request.

★ ★ ★



★ ★ ★

(Above) Bridge pylon, left, before protection with Texaco Rustproof Compound against rust and corrosion and, right, same pylon after rustproofing

More than 1,000,000 pounds of scrap rubber collected at Houston, Texas, made the largest pile of any at the 2,423 bulk plants that distribute Texaco products

She Typed Texaco's First Charter

Mrs. Hattie Brashear Smith

HATTIE BRASHEAR, the stenographer employed by McKie and Autry, general counsel of the Company in its infancy, typed the original charter of The Texas Company in April, 1902. Today, Hattie Brashear is Mrs. Hattie B. Smith of Corsicana, Texas.

The home office of the Company as fixed in the charter was Corsicana, but it soon became apparent that the logical place for the Company's headquarters was Beaumont, Texas, near the Spindletop oil field, and the charter was accordingly amended to provide for this change.

Mrs. Smith, a widow, recalls that when the charter was being dictated to her by Judge James L. Autry she was cautioned to spell the "The" in the name The Texas Company with a capital "T." The capitalized "The" has been a distinguishing feature of the Company's name since The Texas Company was founded 40 years ago.

Texaco's Rubber Collections Huge

THROUGH its nation-wide dealer organization The Texas Company collected 40,912 tons of scrap rubber—more than nine per cent of the national total—in the scrap rubber drive early last Summer.

Texaco dealers paid one cent a pound to all contributors who asked for payment. The Company reimbursed the dealers and the scrap is being sold to the Rubber Reserve Corporation. The difference between what it receives from the Rubber Reserve Corporation and what the Company paid for the scrap rubber it collected will be paid, as President Roosevelt requested, to the American Red Cross, the United Service Organizations, and the Army and Navy Relief Societies.

The President has now set up a continuous national salvage program "for the duration" so that every bit of scrap of all kinds will be rounded up. Service station dealers have been asked by the Government to coöperate and many Texaco dealers have turned a portion of their stations into official salvage depots and are urging customers to turn in the scrap.

James Tanham Appointed a Mediator for N.W.L.B.

JAMES TANHAM, The Texas Company's Vice President in charge of Industrial and Public Relations, has accepted appointment as a Special Mediation Representative of the National War Labor Board and is serving as employer representative upon panels set up by the N.W.L.B. to consider labor disputes.

Mediation panels which will require Mr. Tanham's presence from time to time usually consist of three members representing the public, labor, and management. Mr. Tanham will continue to handle all his present duties in The Texas Company in addition to serving, when required, on N.W.L.B. mediation panels.

In accepting this appointment, Mr. Tanham joins many other men in important positions in The Texas Company who are serving the Government. These include not only many in civilian service but already in excess of 2,490 in the armed services.

PRINTED IN U. S. A.
THE CONDÉ NAST PRESS, GREENWICH, CONNECTICUT

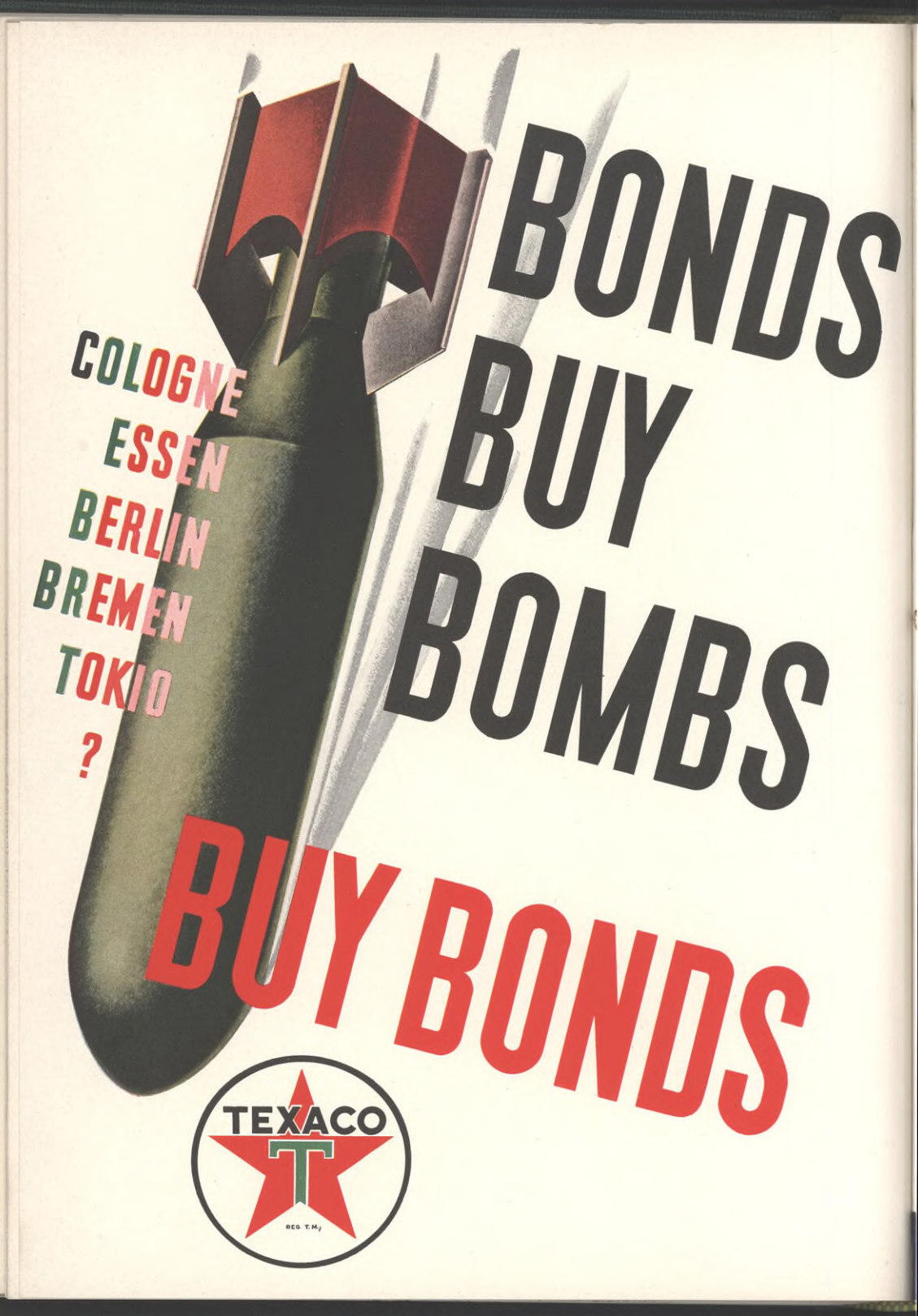
IT PROCLAIMED TWO FREEDOMS

★

THIS BELL, older but less well known than the Liberty Bell at Philadelphia, pealed forth the official announcement of the Declaration of Independence in July, 1776, by order of George Washington. It hung then in the belfry of the Middle Collegiate Church in New York City, and now hangs in New York's Collegiate Church of St. Nicholas, as perfect as when it was cast in Amsterdam, Holland, 214 years ago. It is known as "the St. Nicholas Bell."

Besides calling the congregation to worship Sunday after Sunday, its metallic throat told the town the outcome of the historic trial of John Peter Zenger, whose case established America's freedom of the press. It also rang for the inauguration of Washington as first President of the United States

KEYSTONE PHOTO


BONDS
BUY
BOMBS
COLOGNE
ESSEN
BERLIN
BREMEN
TOKIO
?
BUY BONDS
TEXACO
REG. T.M.