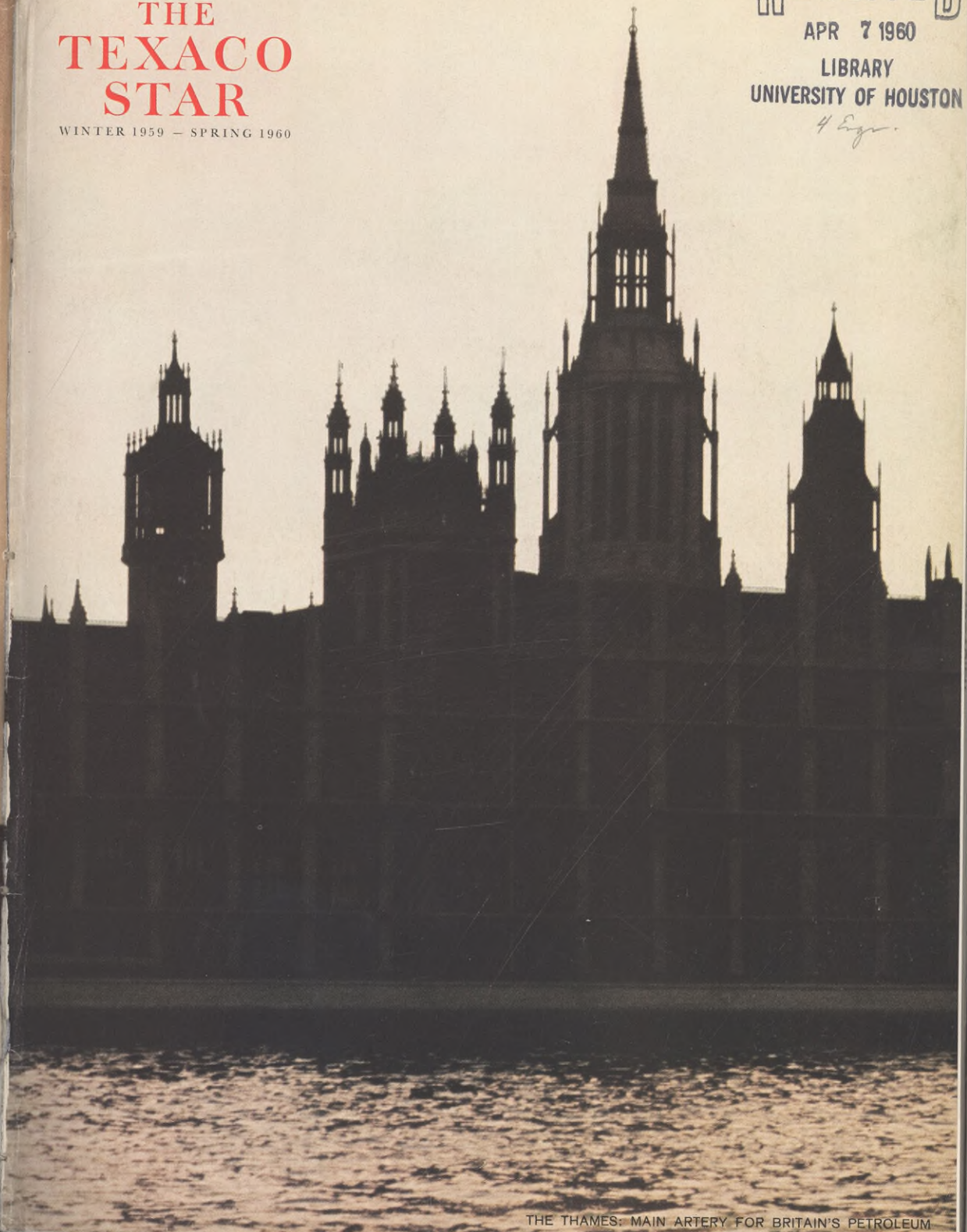
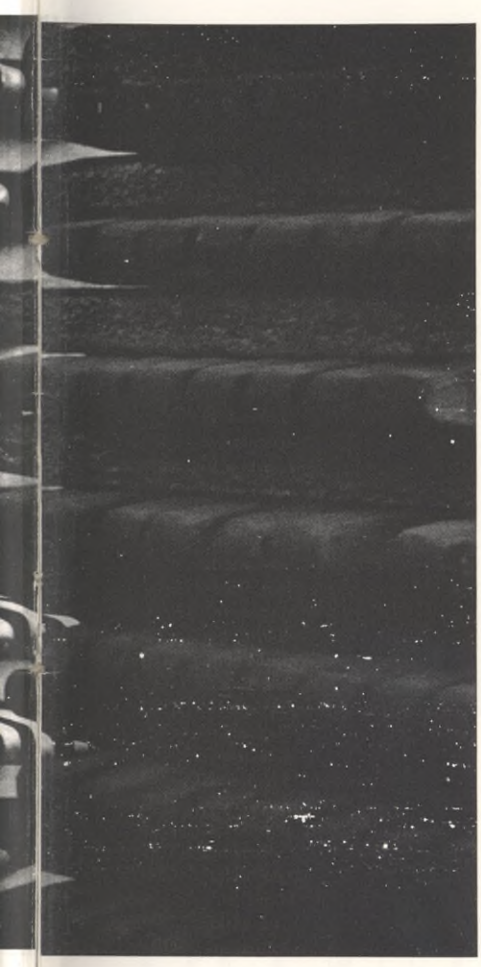
THE TEXACO STAR

WINTER 1959 — SPRING 1960



THE THAMES: MAIN ARTERY FOR BRITAIN'S PETROLEUM

In the shipping bay of a copper smelting plant, a checker makes his way through tall stacks of newly cast ingots. Shipped to users 99.9 per cent free of impurities, the versatile metal finds hundreds of applications in modern industry; its excellent heat conductivity, resistance to corrosion, and ability to transmit electrical impulses has made it a prime component material in electronics and automation design. For Texaco, the copper industry represents the Company's fifth largest industrial market—no other petroleum supplier sells as much lubricant to copper miners. "Copper Country," beginning on Page 2 of this issue, tells how the metal is mined in America's most important copper mining area—both in open pits and underground.



THE TEXACO STAR

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THE TEXACO STAR

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THE COVER PHOTO: From the deck of the *London Stone*, a diesel-powered tanker leased by Regent Oil Company Limited, Texaco's marketing affiliate in Great Britain, Simpson Kalisher's camera catches the spiny silhouette of London's Houses of Parliament along the bank of the Thames. The story of Regent's postwar growth and its current activities begins on Page 15.

THE STAR *is published by the* Employe and Public Relations Department *for Stockholders and Employes:* Thomas D. Durrance, *Director of Public Relations;* Ellis Prudden, *Manager-Publications;* Gordon Bowman, *Editor;* Ralph M. Hamaker, *Staff Writer*
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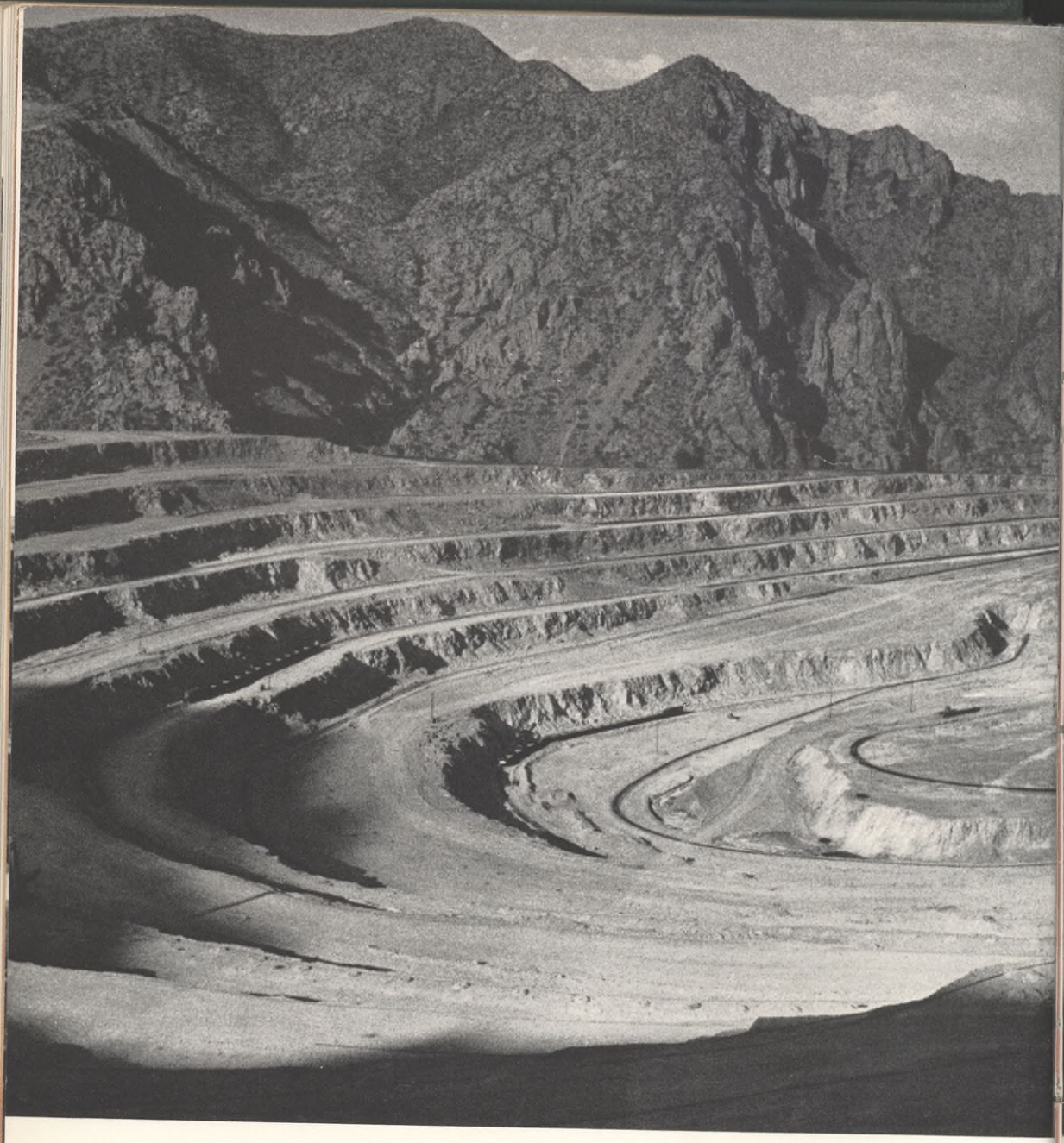
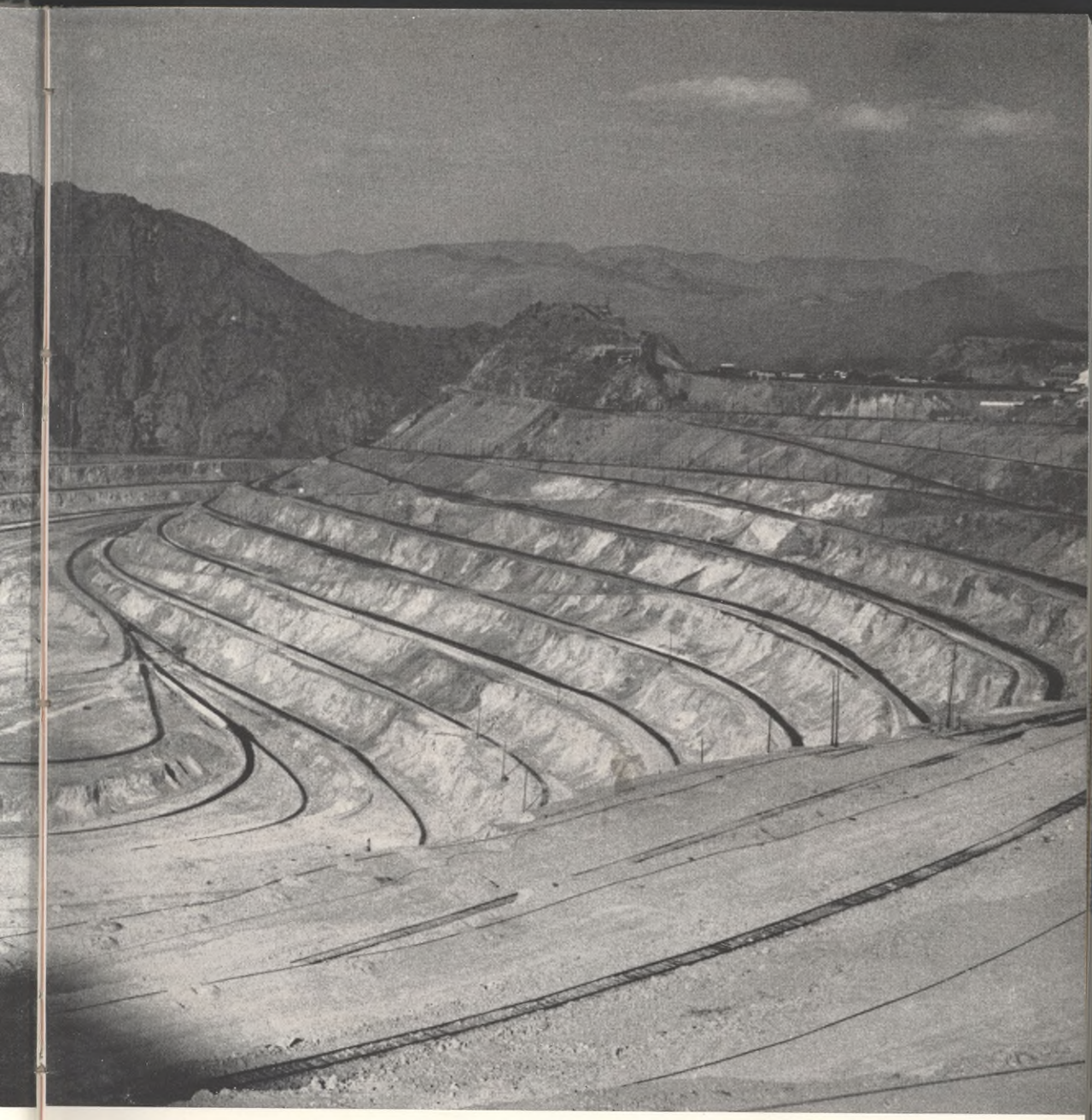


From the Rocky Mountains

COPPER COUNTRY



and the Great Basin of the Southwest comes more than four-fifths of our copper production

IN THE PHOTOGRAPH ABOVE you are standing high in the Apache hills of southeastern Arizona, on the rim of what certainly must be one of the widest and deepest holes ever dug. You are looking across what is, as a matter of record, the second largest open-pit copper mine in the world: almost a quarter of a mile deep, about a mile and a half from one side to the other at the widest point. You are in America's copper

To some, mining the mineral means a day in the open; but others go to work

country — a rocky and mountainous stretch of land that takes in Nevada, Montana, Utah, Arizona, and New Mexico and from which more than 80 per cent of the nation's copper comes.

For the last quarter-century, more copper has been mined with Texaco-lubricated equipment than with any other, and the copper mining industry has long been among Texaco's most substantial customers (in one month during 1959, the mine in the photograph required, among other Texaco products, nearly a carload of greases, more than five tankcars full of gasoline, several carloads of motor oil, nearly a dozen tankcars of diesel fuel). The relationship puts the Company squarely in the middle of one of the most interesting of all mining jobs.

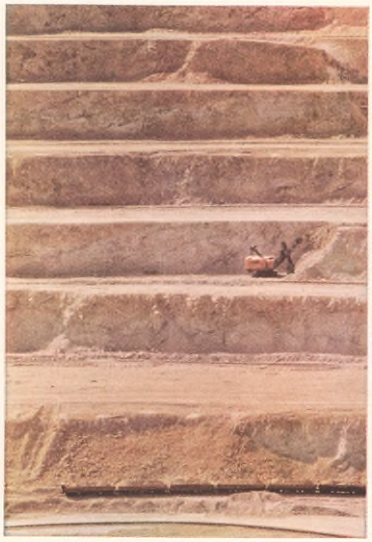
Copper, which is man's oldest metal, also is one of the most adaptable and is a key material in the most modern construction and design.

Electronics depends on copper as on no other metal. No other non-precious metal carries the electrical impulses that activate the complex parts of radio and television sets, and radar and sonar equipment, as well as it does. The concept of automation relies heavily on copper's unique ability to transmit undisturbed signals to recording instruments, control devices, and a variety of feedback circuits.

Few materials can match its remarkable combination of rust and corrosion resistance, and the metal's superb heat conductivity makes it a natural choice for radiant heating and cooling systems. Almost no other commercial metal lends itself so handily to such a variety of manufacturing operations — drawing, forming, shaping, and stamping.

The pit pictured on Pages 2 and 3 represents just one kind of copper mining. There is another, underground, method usually reserved for areas where high-grade ore is found. Mining underground is more costly than open-pit work, and before mining operators will begin an underground operation, they like to be sure they are going to be working a lode that will yield at least 0.70 per cent copper (a payout of six per cent is very high). Open-pit miners, on the other hand, are able to work deposits from which the yield may be as low as 0.40 per cent. The low-grade ores account for about four-fifths of the total copper production yearly.

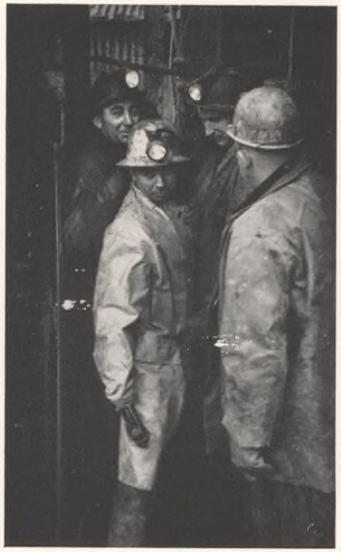
It takes days before a visitor to a major open pit grasps fully just how big an operation he is watching. One clue is the quiet: although as much as 150,000 tons of material a day are hauled out of a large pit, such as the one pictured

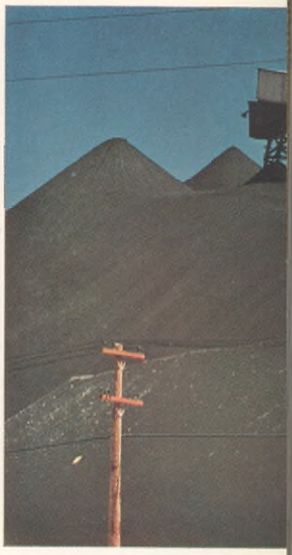


In an open pit, far left, huge sections of rock are blasted loose from 30- to 50-foot-high tiers, called "benches"; and the shattered ore body is loaded into railroad cars, which run along the tops of the benches, for hauling to the concentrating plant. At center, open-pit workers gather to pick up their day's assignments. Giant electric shovels and full-scale diesel-powered trains appear as tabletop miniatures against the terraced far wall of the world's second-largest open-pit mine. Open-pit mines present special lubrication problems, and Texaco sales engineers make regular rounds, working with field supervisors and management to solve any problems that crop up and to make sure Texaco products are performing smoothly. More copper has been mined with Texaco-lubricated equipment than with any other for the last 25 years.

deep underground, burrowing for man's oldest metal

Underground miners use pneumatic drills to prepare ore for blasting with explosives, in the photograph below. A mine "cage" hoist lowers part of a morning shift nearly a mile below the surface, center, to begin the day's work. Slag piles, right, grow near copper smelter.





on Pages 2 and 3, there is very little noise. This, one comes to realize, is because that trainload of ore crawling along on the far side of the pit is perhaps a mile away. The shovels at work down below, as you stand at the top of the pit, might be hundreds of yards distant.

From time to time, the quiet is shattered by a huge explosion. To break loose a new section of rock, the miners have buried tons of ammonium nitrate and coal dust in a series of holes along the top of a bench, and set off a blast. The color photo on Page 4 has caught the peak action of a detonation stretching over a quarter of a mile.

Shovels, able to scoop up as much as nine cubic yards of rock at a time, eat away at the blasted rubble, loading it into gondola cars built to hold 40 cubic yards of material.

In little more than half an hour, a train is loaded and starts making its way to a plant in which the ore is crushed, screened, and ground into a fine powder. In the smelting plant, impurities, some of them precious metals like gold and silver, are removed. Finally the processed concentrate is charged into a furnace and melted. From the furnace, the molten copper is hauled to the casting area and poured into forms. These are about 98 per cent pure, and a final electrolytic refining step insures that the finished metal is 99.9 per cent pure.

In the processing, smelting, and refining steps, copper is handled about the same way whether it has been blasted from an open pit or hauled from beneath the surface. But underground *mining* is about as different from open-pit work as deep-sea diving is from fishing in a rowboat.

An underground mine is a honeycombed structure connected by miles of railroad with extensive hoisting, ventilating, lighting, and fire-fighting and fire-protection systems. The work revolves around a series of shafts sunk deep into the earth. Where commercial mineral deposits occur in veins, horizontal passages are driven out from a shaft and connected by crosscuts to the ore body. Ore veins are mined in sections, with the workings extending vertically, stepwise on an incline, or horizontally in a series of rooms.

In an underground mine, compressed air drills chatter incessantly, preparing the rock for blasting; and although the blasts are smaller than those in an open pit, the concussion they produce is no less jarring.

The shattered ore may be loaded into ore cars, or, if the working faces are some distance above the tracks, chuted down to a main haulage level; hauled to a shaft; transferred to skip cars; and finally hoisted to the surface.

Both types of mining create specific lubrication needs, because of the heat and grime and dust involved. Texaco has gained its particularly strong position as a supplier to copper miners by meeting those needs successfully over the years.

Since World War I, the annual world production of copper has grown from a figure of about one million short tons to about four million, with this country producing about a third of the world total. As a leading supplier to America's copper miners, Texaco continues to play an important role in that production. •

For 25 years, Texaco has remained copper's leading supplier of lubricants

On a smelter converter floor, facing page, *a workman swings into position the massive arms that carry ladles of molten copper. An overhead crane carries the metal to nearby casting wheel,* above.

PERCENTAGE DEPLETION:

SOUND IN THEORY,

PROVED IN PRACTICE

Virtually every extractive industry has a depletion provision, based on the capital value of the mineral it produces.

A CENTURY AGO, man's energy sources were limited to his own muscles, to animal power, and to wind, water, and fire. Now, oil and natural gas account for more than two-thirds of his energy requirements — and the figure is rising constantly. Daily, it takes 9.8 million barrels of oil to keep America moving and manufacturing.

Today the petroleum industry is confronted with two very serious developments. First, new oil discoveries are harder to find; they require more exploration and deeper drilling. Second, the rising cost of finding and producing these essential energy supplies makes it difficult, increasingly, to meet expenses and at the same time make a profit.

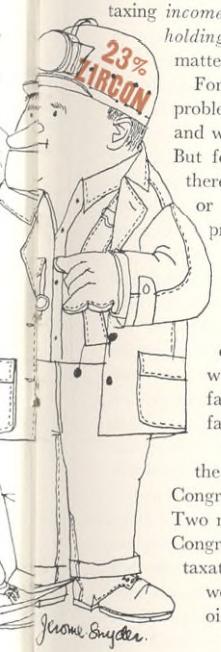
These factors pose a tremendous challenge to the oil industry, and so far the challenge has been met. The nation has been provided with an unfailing supply of petroleum, over the years.

Yet the oil industry now finds itself threatened with a fundamental change in its tax structure that would drain away its earnings and seriously endanger this country's supply of low-cost energy.

The taxing method under fire is one that has been a favorite target for years. It is the provision of our Federal income tax laws known as percentage depletion.

Very few people really understand what percentage depletion is, where it came from, how it works, or why it's important to so many people.

Depletion was born in Congress. In 1913, when the Federal income tax was first designed, Congress recognized that taxing *income* was one thing, but that taxing the *capital holdings* which produce income was quite another matter.



For most industries and individuals, there is no problem in determining what is ordinary income and what is income from the sale of capital assets. But for the oilman and other mineral producers there *is* a problem: his barrel of oil or ton of coal or uranium or bauxite is his real estate and product rolled into one.

When an oil producer sells his oil, he is selling away a part of his capital. When it's gone, he's out of business unless he's been able to find new oil to replace it. His ordinary income is taxable like anyone's. But if his capital were also taxed, it would be like taxing a manufacturer on his car sales — and taxing away his factory at the same time.

Where do you draw the line fairly between the mineral producer's capital and his income? Congress wrestled with that one for several years. Two methods it tried proved unworkable. Finally, Congress arrived at a formula for excluding from taxation an amount of an oil producer's gross that would be equivalent to the capital value of his oil and gas being produced.

This system was called "percentage depletion," and it has been in effect for 34 years. During that period, it has been examined very carefully by many sessions of Congress. After each examination it has been retained intact. Again and again, Congress has confirmed the depletion provision's soundness from a tax standpoint, and its importance to the nation's continued adequate supply of critical minerals.

How does depletion work for oil and gas? First, it applies only to production — not to refining, transportation, marketing, or anything else. This is important to remember. Depletion is calculated on the basis of individual producing properties. Moreover, it applies only to a *successful* producing property, and not to a dry hole. It's figured barrel by barrel as the oil comes out of the ground.

Second, depletion is *not* a unique special benefit for oil and gas producers, as some of its critics imply. It's an across-the-board provision applying to all but a very few minerals. The rates for different minerals vary to take into account different economic factors. Petroleum producers are permitted to deduct 27.5 per cent of their gross income before computing their tax. Sulphur, uranium, bauxite, lead, nickel, tungsten, and zinc are just some of a long list of minerals with a 23 per cent deduction. The rates are graduated all the way down to 5 per cent for such minerals as sand, clay, and gravel.

One may ask, "Why have a 27.5 per cent rate for oil and gas and lower percentages for all other minerals?" The answer is that, after careful study, Congress devised a formula to permit the property owner to recover the capital value of his minerals in the ground, which, in the case of petroleum, has over the years worked out to be about one-third of its value at the surface. The 27.5 per cent rate is simply an approximation of this value. Consequently, oil and gas receive 27.5 per cent, and other minerals, with lower values, receive lower percentages.

And how does depletion actually work out in practice for the successful producer? The average wellhead price of crude oil in 1958 was $3.01 per barrel. Add another 20 cents a barrel for natural gas and liquids produced in conjunction with the crude. This gives a value of $3.21 per barrel of crude and other products coming out of the average well.

If the owner of this average well could apply the full 27.5 per cent rate, he would qualify for a deduction of 88 cents a barrel. But percentage depletion also is limited to 50 per cent of net income. Because of this limitation the average effective rate received by the industry as a whole is not 27.5 per cent, but about 23 per cent. So this brings down the average producer's deduction to 74 cents a barrel.

Seventy-four cents a barrel isn't exactly a fortune, considering that the average well produces only about 12 barrels a day.

What Congress was trying to do when it devised the percentage depletion formula was avoid taxing the producer's capital, and at the same time encourage the search for needed minerals. Has the attempt been successful? Is a percentage depletion formula based on the 27.5 per cent rate adequate to do the job?

CONTINUED

It takes a lot of capital to look for petroleum, bring it out of the ground, and turn it into low-cost energy

Today, the value of oil in the ground is approximately $1.10 a barrel. However, the percentage depletion deduction which the producer may claim is only about 74 cents. Obviously, if a producer were to be able to recover his full capital value — as Congress intended he should — the percentage depletion rate would have to be increased.

Then why is 27.5 per cent depletion under attack? The primary reason some give for wanting to cut the 27.5 per cent rate is the claim that it would increase revenues to the Treasury. At best, this is wishful thinking. While a temporary jump in income taxes from oil producers might result, the Government would lose income over a period of time.

A substantial increase in producers' costs in the form of higher income taxes would cut income and dividends throughout the oil community, and this would reduce Government revenue from income taxes on dividends.

If taxes on producers go up, product prices must sooner or later rise, too. These increases would raise the costs — and reduce the tax liability — of other industries. Another important and more direct effect would be the increased operating costs of all state and local governments, as well as of the Federal Government (our largest consumer of petroleum products). Higher prices also could mean that the consumption of petroleum products would cease its present rate of growth or even turn downward. Excise tax collections would fall short of expectations or even decrease. In either event, both the Federal Government and the state governments would suffer badly.

The most recent scheme developed by opponents of percentage depletion is a proposal to impose a special set of rules on petroleum. While admitting the common sense of percentage depletion, this group suggests a sliding scale to correct an injustice they claim to see in the present system. But under inspection, such proposals, like the one to let small producers take the traditional 27.5 per cent deduction and cut it down to 15 per cent for big corporations, come apart at the seams.

For one thing, such a formula would result in a completely unfair discrimination with respect to the capital value of identical pools of oil simply because the producers had different gross incomes. Yet the value of each barrel of oil in each pool is obviously the same, and the recovery of that capital value cannot sensibly be made to depend on the gross income of the operator. Not if we expect to make possible the search for oil on the scale we need.

Moreover, this graduated rate proposal would penalize growing companies. It would strip them of part of their capital overnight, as their gross income passed one of the artificial measuring points. Success would be penalized rather than rewarded.

Supporters of such a move imply that their plan would protect the little fellow. Yet the large corporation whose earnings would be penalized is not an impersonal giant. It is owned by thousands upon thousands of individual stockholders—through employe stock participation plans, through individual investment, or through the combined investment of banks, insurance companies, and pension funds. A penalty against the large company simply amounts to broad-scale discrimination against large numbers of people.

What about oil industry profits? If percentage depletion were really the golden gimmick some critics claim it is, one would expect a record of swollen profits to bear out their point. Yet annual oil industry earnings over the entire 34-year period in which percentage depletion has been in effect have averaged just 9.6 per cent of net worth. This happens to be slightly *under* the average profit level for *all* manufacturing companies.

Oil is a *normally* profitable industry. Its earnings are not swollen with fictional "tax subsidies." And because the industry regularly reinvests about two-thirds of its net profits, its dividend payments to stockholders have been modest.

These facts are reflected in the prices investors are willing to pay for oil stocks. If the oil business were the sure-fire bonanza some people seem to think, no one would invest in anything else. As it happens, there are millions of people eager to put their money into automotive, electronic, chemical, and all sorts of other industries. The implication is obvious: oil has no special status.

What of the future? Can oil successfully meet the enormous challenge facing it in the next 10 or 15 years? What would happen if percentage depletion were cut back?

The first and most serious result would be a falling-off in exploration and drilling. This is a simple economic fact of life. You can't look for oil and you can't bring it up out of the ground unless you have a lot of investment capital at reasonable rates. Investors in other industries don't have to build nine factories to get a single one that is productive; but the investor in oil production has to expect that eight exploratory wells in nine will be dry—and that only about one in 49 will be a commercial success.

The supply of investment capital for oil production is closely linked to the depletion provision. This is true not only of reinvested earnings but also of loans, stock issues, and other sources of operating funds. Cutting percentage depletion would dry up many of these sources—and this would mean less drilling, fewer discoveries, and eventually less oil for homes and industry.

All this would lead straight to higher consumer prices for energy. We are using up the oil reserves found at relatively low cost years ago—using them up at the terrific rate of 8.3 million barrels a day. New reserves are harder and more expensive to find, and once they are found they are more expensive to produce. Could oil producers absorb a further sharp increase in operating costs without passing it along in the form of higher prices? Not likely. Any increase in income taxes on oil will be paid by nearly 174 million Americans whose cost of living is geared to low-cost energy. •

Along a shadow-streaked campus walk, Jim Liedtke heads for a morning class at the University of Pittsburgh. Jim has been a Texaco scholarship holder—Pittsburgh's first—since 1956.

AN INVESTMENT IN LEARNING

SINCE WORLD War II, when the economic growth of the United States has smashed more records than an All-American quarterback, the nation's 1,900 institutions of higher education have faced a set of financial problems that, in recent years, has become as much a part of the collegiate scene as football stadiums and ivied walls.

During the postwar period, rising costs of maintaining and operating our colleges and universities have taken huge bites out of their financial reserves.

Although tuition fees in 1960 will average 30 per cent higher than a decade ago (at the University of Pittsburgh where Texaco scholarship holder Arthur James Liedtke, right, is a Senior, they are in the $900 range), the cost of educating a student has risen 50 per cent during the same period. Hardest hit are the privately financed colleges and universities with no tax-supplied reserves to help offset their mounting deficits; and they are hit harder as enrollments climb.

According to a report published in the 1959 edition of *The College Blue Book*, approximately 35 per cent of our high school graduates are going on to colleges and universities. By 1975, this figure is expected to rise another 10 per cent to put total collegiate enrollment well over seven million. Since budgets already are strained by annual operating costs of more than $2 billion, higher education is in no position to supply the tremendous outlays of capital necessary to keep pace with such expansion without added help.

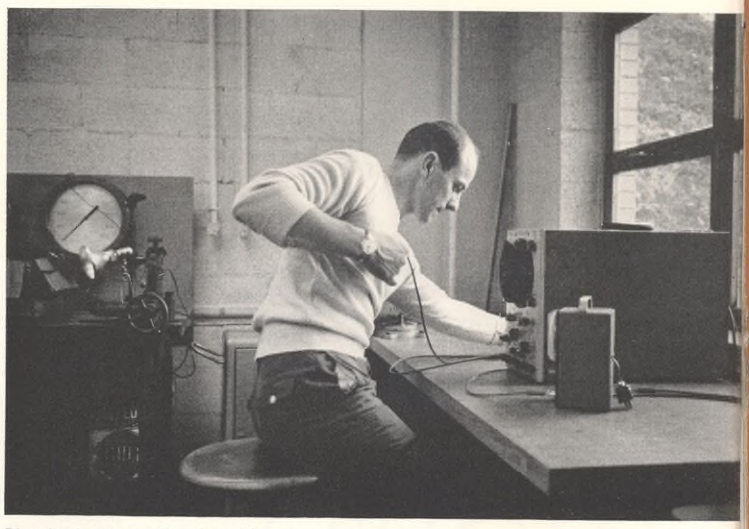
Educators and economists have discussed several ways to

SENIOR WITH SIGHTS SET

"After graduation this Spring," says James Liedtke, the first student to graduate under Texaco's scholarship program at the University of Pittsburgh, "I plan to continue my academic studies."

During periodic visits to the Pittsburgh campus, Jim's Texaco advisor, Eagle Point Works Superintendent V. K. Brandenberg, encouraged his studies in mechanical engineering to strengthen his potential for an oil industry career. Now, Jim's interests have crystallized in another area of training and he hopes to earn an additional degree.

Whether Jim will eventually join Texaco is impossible to predict; there never has been an employment obligation on his part, or the Company's. The important thing is that a young man had the opportunity to go to college, because Texaco was there to help him.



Plugging in a power line that will send an electronic blip skipping across the oscilloscope's grid screen, Jim runs through a complicated advanced engineering problem, above. *Jim's active campus life includes serving as treasurer of engineering honorary society,* right.

meet future enrollment demands (such as limiting enrollment and raising tuition fees; establishing new community colleges, state-supported universities, and technical institutes), but none of these would increase income, and income is what the colleges and universities sorely need.

More and more, colleges and universities are depending on industry for financial help; and over the past decade, numbers of companies, Texaco included, have shown a growing willingness to help get higher education in general, and private colleges and universities in particular, out of the red. (The Federal Government encourages corporate giving by allowing a business to deduct, for tax purposes, as much as five per cent of its net income under educational and philanthropic donations.)

These companies, and they are both large and small, are contributing increasingly to more liberal aid-to-education projects: scholarship programs, grant-in-aid donations, and endowments. Corporate aids to education in 1960 will be around $135 million. Texaco alone will distribute well over $600,000 to higher education in 1960 as scholarships, grants-in-aid, graduate fellowships, special project grants, and other miscellaneous awards.

For many years, Texaco awarded graduate fellowships and special project grants, with the emphasis almost wholly on technical education — and over $100,000 worth of these are still being offered. Four years ago, the Company adopted a formal aid-to-education program that included annual unrestricted grants of $1,500 at 133 colleges and universities, and scholarships at 42 institutions.

The present program now reaches over 200 colleges and universities across the country with unrestricted grants at 140 privately supported schools and some 300 scholarships and fellowships at 82 private as well as tax-supported universities. In 1960, it will provide educators with over half a million dollars in the form of unrestricted grants-in-aid to privately financed schools and as scholarships and fellowships for students who need help to get an education.

Last Fall, Texaco made revisions in the scholarship phase of its program designed to help it serve education to even better advantage. After careful study and consultation with leaders of several national educational organizations, as well as scholarship officers at a number of colleges already under the program, a number of changes were made. These were submitted to the Board of Directors, approved, and set into motion at the beginning of the 1959-60 academic year.

The revised aid-to-education scholarship program provides lump sums of money annually — for 1960 it's $245,000 — to both private and tax-supported schools for scholarship assistance, and each award varies in proportion to the school's needs and fixed fees. A tax-supported school, for example, retains $250 to defray expenses of administering the program and uses the remainder (an amount that varies according to tuition and fees) for scholarships. In the case of privately financed schools, the amount provided for scholarship assistance is accompanied by $1,500 awarded as an unrestricted grant-in-aid.

Under the original program each school received $1,500 per scholarship out of which full tuition, fees, and books were paid. The school retained any remainder as a tied-in grant. But in some cases grants to privately supported schools became inadequate. Rising costs at one Eastern university, for example, pushed the costs of tuition, fees, and books $100 *above* the Company's total donation, with nothing left over to help meet the school's deficit. Under

THE ORDEAL OF THE OHIO

a special reprint from

THE SATURDAY EVENING POST

(fold out to begin)

A TEXACO TANKER'S WARTIME ORDEAL RELIVED

Texaco's *SS Ohio*, the first American tanker to deliver cargo to the United Kingdom after the United States entered World War II, was considered one of the best—and fastest—tankers afloat in June, 1942, when the U.S. Government requisitioned her for war duty. Two months later, on lease to the British Government, the *Ohio* sailed from Gibraltar as part of a convoy carrying supplies to the heavily besieged British fortress of Malta. For six days and seven nights, the *Ohio* faced the frenzied attacks of Hitler's Luftwaffe and U-boat wolf packs. This article, which appeared in the January 9, 1960, issue of *The Saturday Evening Post*, is the story of that voyage. THE STAR presents it here for the many Texaco stockholders and employees who may recall one of the outstanding achievements in maritime history, as well as for those to whom the *Ohio's* story is new.

perate attempt to beat the August-twenty-first deadline set by Lord Gort.

Throughout the convoy's first day in the Mediterranean the enemy remained invisible. There were false alarms, sudden panics and squirts of gunfire from overtensed gunners. The second day and night passed in much the same way—testing guns, eating, keeping station and always searching for the enemy.

Dawn on the third day—August eleventh—came calm, sun-swept and deceptively serene. Like hundreds of other men throughout the convoy, Dudley Mason stiffened slightly as the faint undulating rhythm of aircraft engines reached down from above.

It happened with bewildering swiftness. He had just brought into focus the tiny, silver specks 20,000 feet above through his binocular when the air was rent by the stomach-sickening scream of falling bombs.

Astern of *Ohio* a merchant ship vanished behind a curtain of cordite, flame and spuming water; the roar of exploding bombs was joined by the urgent, crackling barrage of her guns.

Mason swiveled round in time to see the carrier cut through the smoke and spray, rear her bows skyward and list heavily to starboard. With a curious, almost indolent, writhing motion, she sank.

Mason kept *Ohio's* bows pointing at the stern of the ship ahead. A stick of bombs fell diagonally across the gap between them as the area plaster-bombing intensified. The other carriers swung into the wind to send off fighters, and the combined guns of the fleet drummed out a staccato reply to the enemy.

Two near misses to port drenched *Ohio's* bridge, and Mason had to fight back an overwhelming urge to take avoiding action. He was under orders to maintain course and speed unless the safety of his ship was directly threatened.

Shortly after one P.M. U-73, which had been trailing the convoy, fired four torpedoes at the carrier *Eagle*. All torpedoes hit and the gallant ship, that had dispatched 183 Spitfires to Malta during the past year, sank in six minutes. A majority of the 260 men who lost their lives were pilots and flight-deck crews. The squadrons of fighters ready for take-off cascaded overboard as she toppled on her side.

Seventy-one bombers delivered the first blow. As the carrier Eagle went down, fighters from another carrier, Illustrious, broke through the enemy formation to knock out three enemy planes.

Below them Italian torpedo bombers, flying at little more than 100 feet above the water, swept in to attack. Three torpedoes were aimed at the leading ship in the port column, and Dudley Mason watched appalled as it disintegrated under the impact of two hits.

Fascinated by the sheer horror of destruction, he barely heard the screamed warning from a lookout on the port side of the bridge: "Torpedo bombers coming in on starboard beam, sir."

He leaped across the bridge to see six aircraft racing in at him, while his own gunners sent a stream of tracer bullets whipping viciously across the water. Two aircraft hesitated before breaking off, but the four others flew on steadily to drop their torpedoes at little more than 2000 yards.

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The enemy's first assault had been beaten off, but not without losses. The convoy waited grimly for the next attack to develop. It came in the late afternoon.

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Dudley Mason felt the quick impact of fear. Yet if any of the crew had looked up to the bridge then to seek comfort they would have seen their grim-looking captain in outwardly calm control of his ship. None could see the faint flicker of desperation that welled up inside to haunt his dark, shadowed eyes.

He watched the Stukas break formation above *Ohio* and scream down in their almost vertical dives, devastating the eardrums. The tanker was the principal target.

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Of the total dive-bomber force, more than sixty selected *Ohio* for attacks. Miraculously she emerged from the turmoil unscathed. It was then that Mason remembered with sudden sickness the torpedo bombers. It was the chief officer who told him they had attacked, fired their torpedoes, which had been avoided during one of the anti-Stuka maneuvers, and then headed for home.

For thirty vital minutes the convoy was left in peace. Then the third attack of the day developed without warning.

One hundred Stukas, flying very high and without escort, plummeted suddenly down on the convoy. The ship ahead of *Ohio* erupted roaring flame as she folded slowly and neatly in half. Blinded by smoke, Mason conned *Ohio* around the stricken ship instinctively, then turned about to watch impotently as survivors threw screaming wounded into lifeboats.

Another cloud of dive bombers descended with devastating accuracy on the freighter opposite *Ohio* in the port column. For a brief moment she was lost to sight behind a wall of spray. Then she exploded with a huge flash, the heat of which seared Mason's face 300 yards away. She had been carrying ammunition; there would be no survivors.

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Mason was resting in his camp bed on *Ohio's* bridge when the signal from *Ashanti* was relayed through the convoy by a series of dimmed, blue lights. "U-boat sighting report intercepted. Expect wolf-pack attack during night."

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The cruisers *Nigeria* and *Cairo* were struck by torpedoes in quick succession, and Admiral Burrough transferred his flag to the destroyer *Ashanti*.

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At midnight the enemy's air forces returned to the battlefield. First came the marker planes to drop thousands of colored flares over the ships; they were followed by low-flying bombers which aimed at the flares with sticks of bombs crisscrossing the dropping area.

The Ordeal of the OHIO

Here is the remarkable true story of a brave ship that Hitler's Luftwaffe couldn't sink.

By Terence Robertson

Captain Mason in 1942. He won the George Cross for his heroic exploit.

Today Captain Mason, who is fifty-eight years old and has retired from the sea, lives with his wife in Sway, England.

Capt. Dudley Mason mustered his crew in the petty-officers' mess. Each was a hand-picked volunteer for the mission ahead. A lithe, dark and taut-faced officer with the shadows of war in his eyes, he waited for the murmur of voices to die.

"We sail this afternoon," he said quietly. "Our destination is Malta—you all know what that means." He recognized the confirmation in their sudden, grim tension. "There will be fourteen ships in the convoy and we will have the largest concentration of warships available as an escort. This in itself should explain how important it is for us to get through.

"*Ohio* is the only tanker. We shall have to fight with 13,000 tons of high-octane aviation fuel aboard. Now is the time for anyone who wants to back out to say so. I must warn you that if you choose to go ashore you will be kept in custody of the Naval Provost Marshal until the operation is over. Secrecy is essential."

He paused. There was no movement.

"Right. Here is a letter from the First Lord of the Admiralty. It says: 'Before you start on this operation the First Sea Lord and I are anxious that you should know how grateful the Board of Admiralty are to you for undertaking this difficult task. Malta has for some time been in great danger. It is imperative that she be kept supplied. These are her critical months and we cannot fail her. She has stood up to the most violent attacks from the air that have ever been made. Her courage is worthy of you. We wish you Godspeed and good luck.'"

Dudley Mason left the mess to prepare for leaving harbor. With her in the Clyde were thirteen other large, fast merchant ships assembled for this determined attempt to lift the German siege of Malta, Britain's tiny but gallant island outpost in the Mediterranean.

Escorted by aircraft carriers, cruisers and destroyers, they would make a high-speed dash from Gibraltar, at the western end of the Mediterranean, while eight more ships with an equally large escort would sail for Malta from Alexandria, in the East. It was hoped that by splitting the enemy's forces, at least a few ships from either convoy, vital to Malta's survival, would get through. The entire attempt was code-named Operation Pedestal.

The convoy formed up outside the Clyde and set course south for Gibraltar. For the next two weeks these ships would hold the key to Allied operations in Europe.

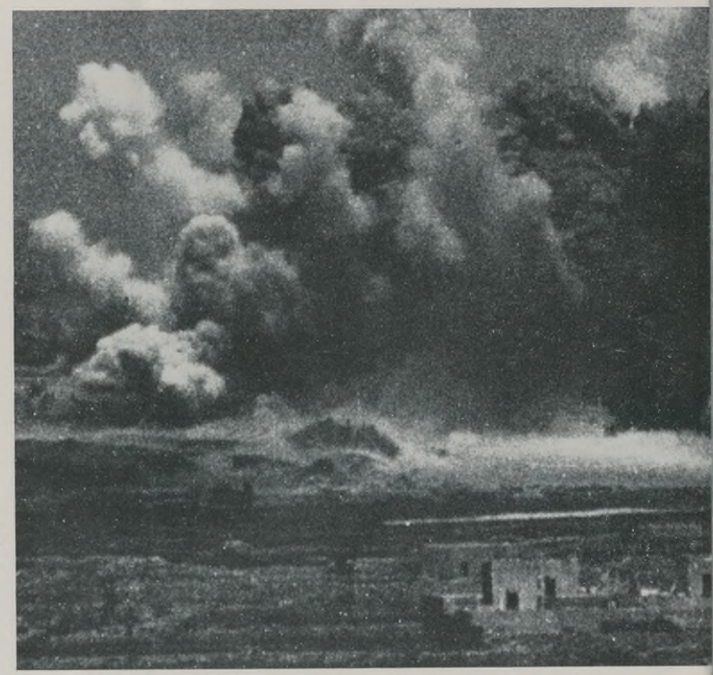
Fourth in line in the starboard column steamed the American tanker *Ohio*, with her British commander, Dudley Mason, on the bridge. He was acutely aware that by the law of averages twelve of the fourteen ships would not reach Malta. He paced the bridge, carefully avoiding the camp bed rigged for his personal use—it would be used but seldom in the days ahead.

The *Ohio* was a 14,000-ton tanker owned by the Texas Company. She had been lent to the British Government and placed under the management of the Eagle Oil and Shipping Company of London. Four weeks previously the Government had requested that she be made ready for a special convoy, and Eagle Oil had been warned that her crew, from captain downward, would have to be volunteers.

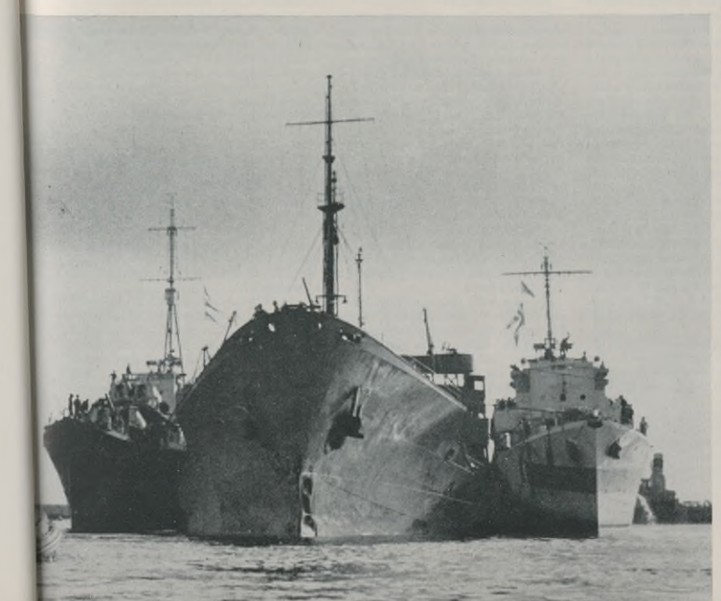
Dudley Mason was, at the age of forty, one of the company's youngest captains. Yet he was old in battle experience. Shy but firm, forceful without being arrogant, of quick and instinctive decisiveness,

Continued ►

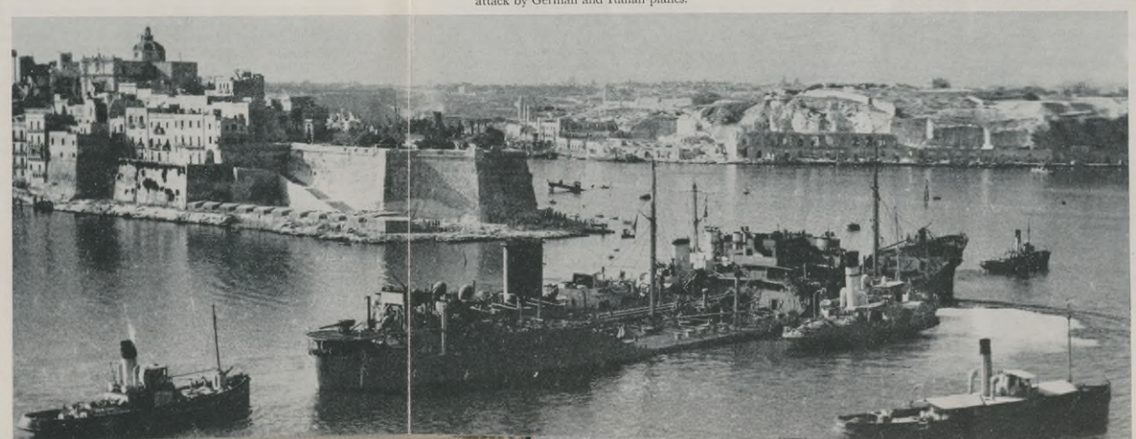
Rear Admiral Sir Harold Burrough. He commanded the convoy known as Operation Pedestal.



Air raid on beleaguered Malta: The island stubbornly refused to give in during a siege that lasted from 1940–1943.



The picture at left shows how the *Ohio*, supported on a network of wires under her keel, was kept afloat by two British destroyers on the last leg of her voyage.



Below: The battered *Ohio* making her triumphal entrance into Malta's harbor after six days and seven nights under attack by German and Italian planes.

Above: In 1946 the rusted hulk of the *Ohio* was towed out to sea and sunk with fitting ceremony in the waters that failed to claim her four years earlier.

(Continued)

he could be relied upon to fight until his ship sank beneath him.

There was every likelihood of this happening as they ran the gantlet of U-boats and Focke-Wulf bombers prowling the Bay of Biscay. Yet apart from occasional skirmishes quickly dealt with by the Royal Navy there was no serious threat to the convoy's passage.

On August 9, 1942, Pedestal wheeled from the Atlantic through the Gibraltar Strait and entered the Mediterranean. Hugging the convoy on either beam and up ahead on this warm Mediterranean dawn were nine destroyers; close astern three more destroyers worried anxiously about the aircraft carriers *Illustrious* and *Eagle*. Well ahead on the horizon steamed four rakish cruisers with attendant destroyers; far out on the port beam lurked the carriers *Indomitable* and *Victorious*, screened by five cruisers and six destroyers. Commanding this impressive display of naval might was Rear Admiral Sir Harold Burrough.

In preparation for the impending action, he signaled from his flagship, the cruiser *Nigeria:* "All ships to action stations until further notice."

On board the *Ohio* twenty-three trained gunners of the Army's Maritime Regiment raced to their antiaircraft weapons. A naval liaison officer joined Mason on the bridge. *Ohio's* high-octane fuel was of special importance; his task was to see that in any emergency it was *Ohio* that received major naval support.

For the last six months only one merchant ship in seven had crashed through the Axis blockade of Malta. For more than a year the German-Italo air forces had vainly endeavored to pommel the island into submission. In that time the garrison had never exceeded 25,000 men, thirty-eight Spitfires and Hurricanes and two flotillas of submarines. Failing to tame this meager force, the enemy had clutched the island in a tight blockade.

Malta was the hinge upon which all Allied operations in the Middle East turned. Her torpedo bombers and submarines maintained the only effective striking force against Axis supply convoys to North Africa. In the summer of 1942 only 40 per cent of Rommel's ships were reaching Tunisia.

The tremendous Axis air bombardment devoted to the destruction of Malta made impossible the transfer of air reinforcements to Rommel. This alone was to enable the Allies to achieve local air superiority first at el Alamein and later over the Anglo-American landings.

Malta had to be kept in the war. The enemy regarded it equally important to knock her out. Between March and June no ships had reached the island; each convoy attempting the relief trip had been massacred.

In July, Lord Gort, the Governor of Malta, had signaled Sir Winston Churchill: "Estimate food and petrol stocks will be exhausted by August 21 in spite of severe rationing. Hesitate to request further naval sacrifices, but cannot guarantee Malta's safety after this date without further supplies."

This signal was an understatement of Malta's plight. Nearly every building on the island had been destroyed or damaged; the civilian population lived in caves and existed on sixteen ounces of food a day. Military personnel rarely left foxholes, trenches or air-raid shelters, always ready for the long-awaited arrival of parachute and glider-borne troops.

Fighters were forbidden to taxi to and from runways in order to conserve gasoline. They were towed by jeeps. Antiaircraft batteries were limited to twenty shells or four ammunition belts a day, according to caliber. Pedestal was a desperate attempt to beat the August-twenty-first deadline set by Lord Gort.

A TEXACO TANKER'S WARTIME ORDEAL RELIVED

Texaco's *SS Ohio*, the first American tanker to deliver cargo to the United Kingdom after the United States entered World War II, was considered one of the best —and fastest—tankers afloat in June, 1942, when the U.S. Government requisitioned her for war duty. Two months later, on lease to the British Government, the *Ohio* sailed from Gibraltar as part of a convoy carrying supplies to the heavily besieged British fortress of Malta. For six days and seven nights, the *Ohio* faced the frenzied attacks of Hitler's Luftwaffe and U-boat wolf packs. This article, which appeared in the January 9, 1960, issue of *The Saturday Evening Post*, is the story of that voyage. THE STAR presents it here for the many Texaco stockholders and employees who may recall one of the outstanding achievements in maritime history, as well as for those to whom the *Ohio's* story is new.

Throughout the convoy's first day in the Mediterranean the enemy remained invisible. There were false alarms, sudden panics and squirts of gunfire from overtensed gunners. The second day and night passed in much the same way—testing guns, eating, keeping station and always searching for the enemy.

Dawn on the third day—August eleventh—came calm, sun-swept and deceptively serene. Like hundreds of other men throughout the convoy, Dudley Mason stiffened slightly as the faint undulating rhythm of aircraft engines reached down from above.

It happened with bewildering swiftness. He had just brought into focus the tiny, silver specks 20,000 feet above through his binocular when the air was rent by the stomach-sickening scream of falling bombs.

Astern of *Ohio* a merchant ship vanished behind a curtain of cordite, flame and spuming water; the roar of exploding bombs was joined by the urgent, crackling barrage of her guns.

Mason swiveled round in time to see the carrier cut through the smoke and spray, rear her bows skyward and list heavily to starboard. With a curious, almost indolent, writhing motion, she sank.

Mason kept *Ohio's* bows pointing at the stern of the ship ahead. A stick of bombs fell diagonally across the gap between them as the area plaster-bombing intensified. The other carriers swung into the wind to send off fighters, and the combined guns of the fleet drummed out a staccato reply to the enemy.

Two near misses to port drenched *Ohio's* bridge, and Mason had to fight back an overwhelming urge to take avoiding action. He was under orders to maintain course and speed unless the safety of his ship was directly threatened.

Shortly after one P.M. U-73, which had been trailing the convoy, fired four torpedoes at the carrier *Eagle*. All torpedoes hit and the gallant ship, that had dispatched 183 Spitfires to Malta during the past year, sank in six minutes. A majority of the 260 men who lost their lives were pilots and flight-deck crews. The squadrons of fighters ready for take-off cascaded overboard as she toppled on her side.

Seventy-one bombers delivered the first blow. As the carrier Eagle went down, fighters from another carrier, Illustrious, broke through the enemy formation to knock out three enemy planes.

Below them Italian torpedo bombers, flying at little more than 100 feet above the water, swept in to attack. Three torpedoes were aimed at the leading ship in the port column, and Dudley Mason watched appalled as it disintegrated under the impact of two hits.

Fascinated by the sheer horror of destruction, he barely heard the screamed warning from a lookout on the port side of the bridge: "Torpedo bombers coming in on starboard beam, sir."

He leaped across the bridge to see six aircraft racing in at him, while his own gunners sent a stream of tracer bullets whipping viciously across the water. Two aircraft hesitated before breaking off, but the four others flew on steadily to drop their torpedoes at little more than 2000 yards.

Mason knew instinctively that he had thirty seconds in which to take avoiding action. Gunners and crew tensed as the bubble tracks rushed at them. "Hard a'starboard," shouted Mason.

The quartermaster spun the wheel, and with painful slowness the cumbersome tanker began to turn. Mason gripped the bridge rail tightly as if he could hurry the turn through will power.

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The enemy's first assault had been beaten off, but not without losses. The convoy waited grimly for the next attack to develop. It came in the late afternoon.

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Dudley Mason felt the quick impact of fear. Yet if any of the crew had looked up to the bridge then to seek comfort they would have seen their grim-looking captain in outwardly calm control of his ship. None could see the faint flicker of desperation that welled up inside to haunt his dark, shadowed eyes.

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For thirty vital minutes the convoy was left in peace. Then the third attack of the day developed without warning.

One hundred Stukas, flying very high and without escort, plummeted suddenly down on the convoy. The ship ahead of *Ohio* erupted roaring flame as she folded slowly and neatly in half. Blinded by smoke, Mason conned *Ohio* around the stricken ship instinctively, then turned about to watch impotently as survivors threw screaming wounded into lifeboats.

Another cloud of dive bombers descended with devastating accuracy on the freighter opposite *Ohio* in the port column. For a brief moment she was lost to sight behind a wall of spray. Then she exploded with a huge flash, the heat of which seared Mason's face 300 yards away. She had been carrying ammunition; there would be no survivors.

Evening closed in. Against the glow of the setting sun the sky was black with bursting shells interlaced with streaming tracers from hundreds of light weapons.

Mason writhed. The destruction of the ammunition ship had been too swift to credit. *Ohio* would go the same way. The day's score card was not encouraging. The enemy had lost eight bombers, twelve torpedo bombers and twenty-six Stukas. On our side one aircraft carrier, two destroyers and three merchant ships had gone down; six Naval fighters had failed to return.

The next attack came from below the surface. U-41 lay at periscope depth four miles on the port bow of the convoy at dusk on August eleventh. She came to the surface, trimmed down to reduce silhouette and cut across the line of advance to estimate strength of escort.

Her commander made an unusual, fatal mistake. Ignoring an elementary rule for survival in the U-boat arm, he broke wireless silence to signal the convoy's position, course and speed to the wolf pack he knew to be in the vicinity. Had he been astern of the convoy and able to elude pursuit his action might have been valid. But he was ahead of the convoy and about to attack—his target, the low-slung darkened shape of an oil tanker in the starboard column.

Mason was resting in his camp bed on *Ohio's* bridge when the signal from *Ashanti* was relayed through the convoy by a series of dimmed, blue lights. "U-boat sighting report intercepted. Expect wolf-pack attack during night."

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At midnight the enemy's air forces returned to the battlefield. First came the marker planes to drop thousands of colored flares over the ships; they were followed by low-flying bombers which aimed at the flares with sticks of bombs crisscrossing the dropping area.

The aircraft carriers flew off fighters without pretence at blackouts. Above the level of the hovering flares a vast moon-lit air battle developed across the deep blue of the heavens.

Shortly before dawn it was over, and the score card showed some improvement. Four bombers had been shot down and two U-boats claimed as sunk. We had lost one merchantman. In the *Ohio*, the chief engineer reported to Mason: "Leak in port side of engine room, sir. Near miss blew in some rivets. We are shoring up now."

The fourth day of running the gantlet from Gibraltar to Malta dawned serene and calm. Eight freighters were left. Strain etched itself lividly on Mason's face, from which the bones jutted hard against gray, tightly stretched skin.

Little more than an hour later the battle resumed with the arrival of 300 bombers, Stukas and torpedo bombers from the north. The merchant ships dodged bombs and torpedoes while destroyers hunted U-boats and the carriers provided a canopy of gunfire.

Throughout it all, *Ohio* moved slowly yet majestically forward against a backdrop of near misses.

At dusk there came an unexpected pause. Sweating, blackened gunners, stripped to their underpants, collapsed at their stations. Nausea overcame the trembling men, and the stench of vomit stole wickedly through the ship.

In this moment of unbearable fatigue a patient U-boat snatched her chance. As darkness closed in, two torpedoes struck *Ohio* near the bows on the starboard side. She staggered under the double explosion while flame and water shot up above masthead height. Then she shook herself violently as she emerged from the shock with steering gear broken down and all communications between bridge and engine room severed.

A large hole gaped on the water line and part of the main deck collapsed as bulkheads caved in under the inrush of the sea. Tank lids came apart and a fire started in the main pump room. Still, Mason sighed with relief. While the engines turned there was hope.

But even this was denied. A deathlike silence reached up from the engine room, and the wrecked generators threw the ship into darkness. The convoy steamed on; there was no time to waste on the crippled.

Night fell, and the enemy pursued the convoy relentlessly while *Ohio*, drifting helplessly farther astern, was left alone. At dawn patrolling enemy aircraft sighted her, and throughout that fifth morning she was subjected to continuous dive-bombing attacks.

The army gunners maintained accurate fire that brought down twelve enemy aircraft that morning. Shortly after noon two destroyers raced toward them from the direction of the convoy up ahead. One of them was *Ashanti*, Admiral Burrough's flagship. He ranged alongside within hailing distance, while his guns joined the barrage put up from *Ohio*. Above the din his voice came thickly over the loud-speaker: "What are your chances of re-joining the convoy?"

Mason had no loud-speaker. He turned his thumbs down in an expressive, laconic reply. Burrough shouted: "Sorry about this. We wanted you to get through most of all. Now I must get back to the convoy and report your position to the rescue ships. Good luck!"

Mason watched the destroyers race away at full speed, leaving *Ohio* alone to face whatever lay ahead.

Several hundred miles away in the Eastern Mediterranean the second half of the Pedestal attempt to relieve Malta had been destroyed. Rear Adm. Sir Philip Vian's convoy of eight merchant ships from Alexandria had been forced to take violent evasive action to avoid the full might of the Italian Fleet sailing to meet them. Five freighters had been sunk by air attack, a sixth had been torpedoed and two more were so damaged they had been sent to the North African coast to be beached.

Any hope for Malta lay now with Admiral Burrough in the West; and he had seemingly lost the only ship that could keep the island's fighters in the air—*Ohio*.

Throughout that afternoon, her crew struggled to bring life back to her engines. It was about four P.M. when she began to vibrate with a familiar throb, and a broken, ragged cheer greeted the first turns of the propellers. By nightfall the hasty repairs were holding so well that Mason ordered full speed, and the listing tanker chased after the convoy at seventeen knots.

At daylight on the sixth morning of the operation, *Ohio* rejoined the convoy and resumed her station in the starboard column, welcomed by a chorus from the sirens and hooters of her fellow merchantmen and the escorts. But Mason's relief was tempered by the havoc the enemy had created with the convoy. There were only two ships in the starboard column where once there had been seven; only one survivor in the port column.

An hour later the enemy resumed his air assault. He came in countless numbers, singling out for special attack the sole tanker in the tiny fleet. Parachute block-busters fell about her, blowing in plates and springing innumerable leaks.

Then the first Stuka dropped out of the sky unannounced and aimed at *Ohio*. Her gunners sent their barrage across the line of flight, and curses turned to hysterical cheers as the flaming bullets were seen to cut through the Stuka's body.

It never recovered from that dive. With the pilot dead or dying at the controls, the dive bomber plunged into *Ohio* and exploded on her foredeck. More fires were started, and men rushed to heave the burning aircraft over the side.

A bomb fell on the afterdeck killing ten gunners, and one of the fuel-tank bulkheads began to leak high-octane fuel. The crew began playing streams of water on the overheating metal.

Two more bombs fell on either side of the tanker, lifting her completely out of the water. She dropped back on one side and for a moment threatened to capsize. By the time she had recovered and the crew were picking themselves up from the decks, the engines had gone silent again.

Once more she wallowed astern of the convoy. But through some miracle of engineering ingenuity, the engines were started again two hours later, driving her forward at four knots. It was noon when the port boiler blew up, wrecking the main deck aft of the bridge. *Ohio* stopped and Mason sagged visibly. The final blow came a little later when the starboard boiler also exploded, killing twelve engineers and six deck hands fighting fires.

Overwhelmed by the hopelessness of it all, Mason picked up a hand signal lamp and laboriously spelled out a message to the nearest ship for relaying to *Ashanti*. "Unable to proceed further," he said. "Can remain afloat for only a few hours. Can you help?"

Admiral Burrough dispatched two destroyers to take *Ohio* in tow, and for the next six hours the three ships fought off air attacks while trying to pass towlines to each other.

Enemy motor-torpedo boats arrived with dusk and synchronized their attacks with those of the bombers. Six speeding torpedo boats raced at *Ohio* for the kill, and both destroyers broke off towing operations to intercept. One ran into a torpedo intended for *Ohio*, blew up and sank in seconds. The other drove off the torpedo boats with her guns, returned to pick up the survivors of her sister ship and drew alongside *Ohio* again. Her captain shouted, "I'll stay with you and radio for more help."

Half an hour later another destroyer steamed into sight and began circling the tanker as protection against torpedo-boat attack. By now Mason had got himself under control and determined that with the help of destroyers there was a faint chance of reaching Malta. It was all he needed to throw off strain and weariness. He could foresee no greater disasters than those already experienced.

Half his crew were dead, ten more were seriously wounded. Of the twenty-three Army gunners, twelve were dead and even the wounded were helping to keep the few remaining batteries firing. His problem: How to get *Ohio* into harbor?

He was preoccupied with this when there came suddenly the high-pitched whine of a falling bomb. He went rigid with surprise and shock, knowing instinctively it would hit. A second later it fell behind the bridge, crashed through the superstructure and exploded in the engine room. The port side blew out, leaving a hole fifteen feet across, mercifully above the water line.

Throughout that long, lonely night the tanker, with her two attendant destroyers, fought off one attack after another with the darkness constantly illuminated by aircraft flares and torpedo-boat star shell. Yet they sustained no further damage, but at dawn the sorely wounded *Ohio* was limping lower in the water. Then help arrived unexpectedly.

Once the remnant of the convoy arrived safely at Malta, Admiral Burrough sent off his naval fighters to cover *Ohio*. The two destroyers shouldered alongside the tanker, one to port and the other to starboard, and passed wire hawsers to each other under her keel.

By noon on the seventh day *Ohio* no longer floated; she rested on a network of wires. In this manner the strange three-some, bound together as surely as Siamese triplets, lurched slowly toward safety. In the early afternoon Admiral Burrough's cruiser squadron steamed into sight en route back to Gibraltar and paused to watch this curious procession.

Burrough signaled:

"Only three ships got through with provisions and ammunition. They need you to survive. R.A.F. are making final sorties with exhausted fuel today and tomorrow. All Malta awaits your arrival. God bless you. I am proud to have sailed with you."

The enemy had not given up despite the tanker's nearness to Malta. *Luftwaffe* fighters swarmed overhead engaging the Fleet Air Arm umbrella, while bombers roared down on the tanker.

A near miss carried away *Ohio's* rudder and blew a hole in her stern. Water poured in and she settled lower, dragging down the destroyers under her weight.

At eight P.M. Malta came in sight, and tugs sailed out to their assistance. They were making only two knots, and another night would pass before they came under the island's guns.

Then came the desperately needed respite for which Mason had been praying. The enemy, confident that the tanker was sinking fast, called off the battle.

During that night the crews of the *Ohio* and the destroyers, helped by the tugs, worked to keep the tanker afloat, passing more wires beneath her when the strain proved too great for the existing supports to hold.

At dawn, August fifteenth, *Ohio* was but a mile outside the harbor. Thousands of civilians mingled with troops, sailors and airmen on the quaysides; they crowded the roofs of buildings and huddled on the rocky shore line on either side of the harbor entrance. They were there to witness this miracle of survival—for to them *Ohio's* survival was their own.

Over all those thousands lay a heavy silence. Not a voice was raised as the gap that separated Malta from German domination narrowed to less than a mile. It was obvious that *Ohio* was dying.

The little fleet, still lashed tightly together, was worried over that last mile by the anxious tugs. Struggling all the way, the destroyers hauled the tanker through the water. It took one hour to cover that last mile.

Then the tanker's battered bows passed between the outer moles of the harbor, and the silence was broken by a faint cheer—a cheer that was taken up by the people thronging the quays.

The cheering of the thousands drowned the guns fired in salute of a gallant ship; flags and handkerchiefs appeared magically to turn the crowds into a mass of heaving color. A military band played Tipperary, Beer-Barrel Polka, and other songs which somehow became at that moment hymns of hope.

Mason, down on deck helping to keep the fires under control, stopped work to smile weakly and then wept unashamedly. And while the stricken tanker was being nudged alongside the oil wharves, signals poured in to Mason. From Sir Winston Churchill: "Splendid work. Well done." From the British Admiralty: "Well done, *Ohio*." And from the islanders themselves, expressed by their governor, Lord Gort: "We are all so happy to see you and your fine ship safely in harbor after such an anxious and hazardous passage. You have saved Malta."

That same day, despite leaks, fires and damage, *Ohio* discharged 12,000 tons of aviation gasoline, and by evening the officer commanding R.A.F. fighters on the island reported to the governor that he could fly unlimited sorties for two months.

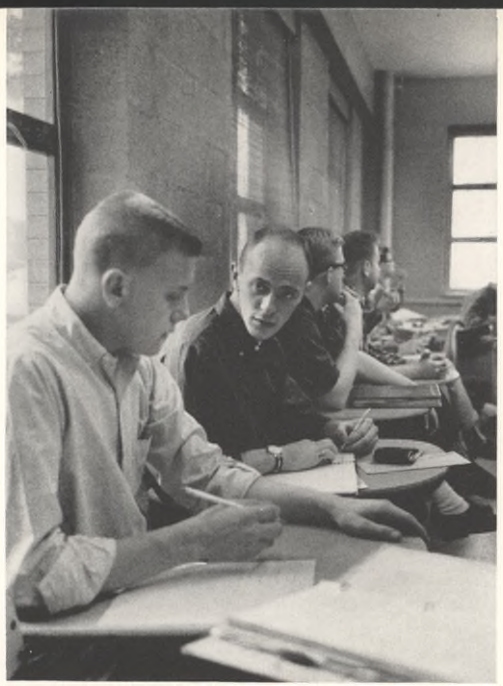
One more ship, believed lost, arrived miraculously. It was so badly damaged it sank in the harbor—but not before its cargo was unloaded, bringing the total in food and ammunition, including that of the three ships referred to by Burrough, to 32,000 tons.

In those two months, Field Marshal Kesselring, German Air Force commander in Italy, unleashed the full fury of the *Luftwaffe* against the island in a last effort to subdue it. And while the handful of R.A.F. fighters fought back with equal ferocity, the Royal Navy submarines set about destroying the sea blockade.

By the time the enemy's attack had been blunted, the way was clear to keep Malta supplied and reinforced. Only then did Dudley Mason learn to what extent Allied operations in the Middle East had depended on his tanker. On the outcome of his six days and seven nights of personal struggle through the Mediterranean, two high American officers had waited tensely in London. They were Gen. Dwight Eisenhower, Supreme Allied commander-designate of the North African invasion, and Gen. Mark Clark. If Malta had fallen, their plans would have been nullified.

In 1946 the rusting hulk that had once saved Malta was towed out of harbor to the cheering of crowds and the playing of bands. Then, while a service of remembrance for those who had died during Operation Pedestal was held, she was sunk in the waters she had once struggled bravely to defeat.

Dudley Mason received Britain's highest award for a noncombatant officer, the George Cross; twenty-three other decorations for gallantry were awarded to her crew and gunners.



the new plan, every private school is assured of a $1,500 tied-in grant — above the amount allotted for scholarship assistance — to help offset its deficit.

Now, each school determines the number of scholarships to be awarded (with at least one Senior scholarship holder each year) and the amount to be awarded to each recipient, based on the student's financial need as appraised by the school's scholarship office. By tailoring scholarship awards to the student's actual needs, the revised program's greater flexibility makes educational assistance available to many deserving students who do not need all the financial aid provided under the original scholarship plan, but do need some help, as well as to those whose financial need may exceed the full tuition, fees, and books amount.

As BEFORE, the screening of candidates, final selection, and administration of the program is entirely controlled by the individual college or university. To be eligible, a student must be enrolled in a course of study that will lead to a career in the petroleum industry. Although exceptions can be made in the case of particularly outstanding lower classmen, scholarships now are generally limited to the Junior and Senior years. This gives the school authorities a chance to evaluate a student's potential: the student himself becomes more sure of his career choice.

Aid to education is not just a philanthropic venture for Texaco. Beyond the vast technological knowledge and skill required to search out new oil reserves year after year, the Company has placed steadily increasing emphasis on scientific research, new product development, and improved drilling, refining, producing, and marketing techniques. All down the line, the trend has been toward more and more specialization. And it is higher education — aided by carefully planned scholarship programs — that helps supply industry with the highly specialized, skillfully trained, working force it needs.

This Spring, over 100 Texaco scholarship holders will complete their undergraduate education. Although it's still too early to determine what percentage of these students will come into the oil industry, it is hoped many will — thinking first, perhaps, of Texaco. Recently, THE TEXACO STAR visited the University of Pittsburgh, which has been receiving Texaco aid since 1956, and met Arthur James Liedtke, who was Pittsburgh's first scholarship recipient.

If it hadn't been for Texaco's award four years ago, and each year since, Jim (he rarely is called by his first name) would probably never have been able to obtain a college education. As things stand now, he'll graduate this Spring on the Dean's List with a degree in Mechanical Engineering and membership in two engineering honorory societies.

"There are over 8,000 undergraduate students at Pittsburgh," says Earl Fielder, director of the University's Central Scholarship Office. "And about 25 per cent of them need some sort of financial aid to stay here. Not all our scholarships can provide full tuition, fees, and books — if that's what the student needs — like those awarded by Texaco. Just last year, a local firemen's association took up a collection for a boy here. It wasn't much, but, to one student, it meant the difference between staying in school or having to quit and find a job for a few years."

In Jim Liedtke's case, Fielder points out, it was Texaco's program that meant the difference. Popular, yet reserved, Jim may joke quietly about his day-to-day college life. But he's very serious about his education and what he plans to do with it. During his vacation months last Summer, Jim accepted an offer from Texaco to work at the Company's Eagle Point Works near Philadelphia.

The job offer came from Eagle Point Works Superintendent V. K. Brandenberg, who also serves as one of Texaco's education advisors and has been in close contact with Jim during his college years. Brandenberg periodically visits several Eastern campuses to keep in touch with Texaco's scholarship holders. He also discusses the students' progress and any problems or suggestions that the school scholarship officials may offer concerning the over-all operation of the program.

Texaco's investment in learning has been made because what happens to American education will eventually happen to America. As a corporate citizen, the Company is sharing with the rest of industry the responsibility for helping make sure what happens is good. But the financial crisis confronting higher education is growing greater, and a solution is essential to the welfare and progress of our nation.

If it is to provide for the growing numbers of young people entering colleges and universities each year, higher education will need $8 billion — $4 billion for new endowments and another $4 billion for capital funds — over the next 10 years. A good part of that amount will come from industrial donors.

Economists say industry's role is to act as a catalytic agent whose contributions encourage others. And when you start talking about catalysts, Texaco is on familiar ground. •


Back Again THE BIG Mid-Day EXTRAS
EVENING STANDARD

IN BRITAIN

REGENT SERVES THEM BEST

This marketing affiliate has expanded greatly in order to meet British petroleum consumption—which has more than doubled over the past decade

IN THE CHAOTIC MONTHS following the end of World War II, England braced herself against the peril of economic depression that swept across all of Europe. The war-weakened island began an enormous task of rebuilding, with the iron will and determination that has become a British symbol as familiar as tea and cricket. But it was 1948 before the first signs of an economic upswing appeared.

Over the last 12 years, the country's economy has strengthened notably. Britain's total industrial production has risen over 40 per cent, led by vehicle manufacture, construction, shipbuilding, and electrical products.

The total number of motor vehicles in use has more than doubled—from just over three million to nearly eight million—making England's vehicular population the largest in Europe; and it's still growing. In the next five years, the total figure is expected to reach between nine and 12 million.

To handle the needs of roughly five million automobile owners alone there are approximately 30,000 service stations scattered throughout England, Scotland, and Wales. (The British motorist, by the way, drives into a station's "forecourt" where, as often as not, female attendants service his automobile.) Nearly one-sixth of these stations display the familiar red, white, and blue emblem of Regent Oil Company Limited, a Texaco affiliate and one of the three largest oil companies in the United Kingdom.

Regent products, ranging from textile industry spindle oils to heavy fuel oils, have been known and used in England since 1931. Marfak lubricants and Havoline motor oils are well-known among British industrial and commercial firms, too. The company supplies thousands of barrels of oils, greases, and motor spirit (the British trade term for gasoline) to government ministries, commercial transportation and aviation companies, and shipping firms.

Leaders in the aviation field use Regent products; so do large steamship companies. In the automotive, petrochemical, rubber, and food industries, too, Regent is an important supplier.

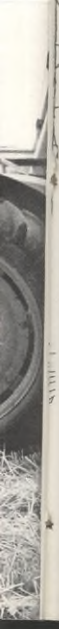
Britain's railroads, under the Modernization and Re-equipment Plan of 1955, have initiated a long-range program to revamp a 20,000-mile system by electrifying hundreds of miles of track and adding many new diesel engines. Regent is supplying them with some of the lubricants and fuel oil they need to do the job. In London, much of the city's mobile equipment runs on Regent fuels. *TEXT CONTINUED ON PAGE 18*

In a busy London street newsboy delivers fresh copies of a large London evening newspaper, a Regent customer.

Whether by train, left, to the seaside or a Scottish loch, or by family car to a Sunday picnic, right, Britishers are getting around today more than ever before. Bumper-to-bumper traffic, center, has become an increasingly familiar sight to Britons. The diesel engine shown here in a London railroad station is one of about 400 new engines now operating throughout the British railway system, replacing steam locomotives as part of a long-range development plan. As for automobiles, there are over five million of them registered now; and by 1966, the total figure probably will double.

One of London's busiest bus depots, a Regent customer, is the starting point for overland tours that may go halfway around the world. Despite the heavy traffic it handles, the depot operates with near-military precision, and takes care of about 1,500 departures daily to destinations reaching from Charing Cross to Karachi. In Summer, many sports enthusiasts drive into the countryside to watch automobile "rallys," right, a fast-growing pastime. Chances are, many of the rally entrants are Regent customers.

Over a cup of tea, left, farmers may discuss the lack of rain or, perhaps, a new tractor. England leads all Europe in mechanized farming, and Regent lubricants help meet those needs. On its delivery route, one of Regent's tank trucks, center, heads down a country lane. The company operates a fleet of over 500 tank trucks to transport petroleum products from storage depots to urban and rural customers. At right, a London apartment owner, planning to install central heating, hears a Regent salesman (dark suit), outline the advantages of fuel oil.



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TEXT CONTINUED FROM PAGE 15

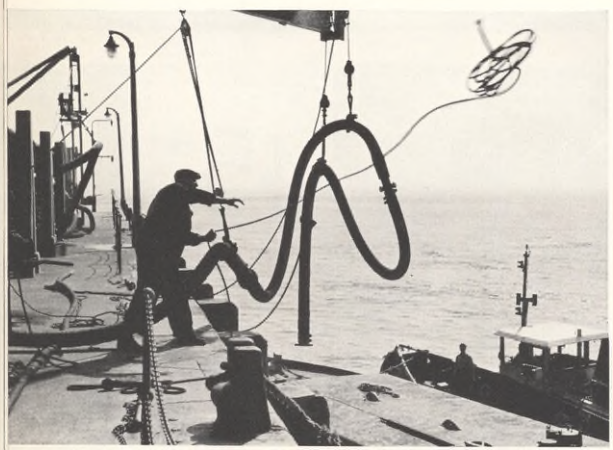
A multiple-level 1,000-car capacity garage next to one of London's largest department stores is a Regent customer; and one of the city's largest bus depots—from which coaches leave daily for Rome, Vienna, Copenhagen, and Stockholm, once a month for Moscow, and three times a year for Karachi—also is served by Regent. These coach trips may range from a couple of hours to an English seaside resort city to two months for the jaunt to Karachi. All coaches heading for Europe must first cross the Engish Channel on ferries from Dover, and they may share the trip with other motorists and the London-Paris boat train.

To meet the constant and expanding needs of these and many other customers, Regent—solely a marketing operation—must import all its petroleum products from refineries of other Texaco affiliates in the Middle East and from Texaco's Pointe-à-Pierre refinery in Trinidad. The tankers which carry these products unload at one of seven company-owned ocean terminals — Avonmouth, Canvey, Dagenham, Dingle, Immingham, Manchester, and Scotland's Grangemouth—which ring the coasts of Great Britain. Out of these terminals, products are moved inland by barge, coastal tanker, rail, and tank truck to 50 distributing depots.

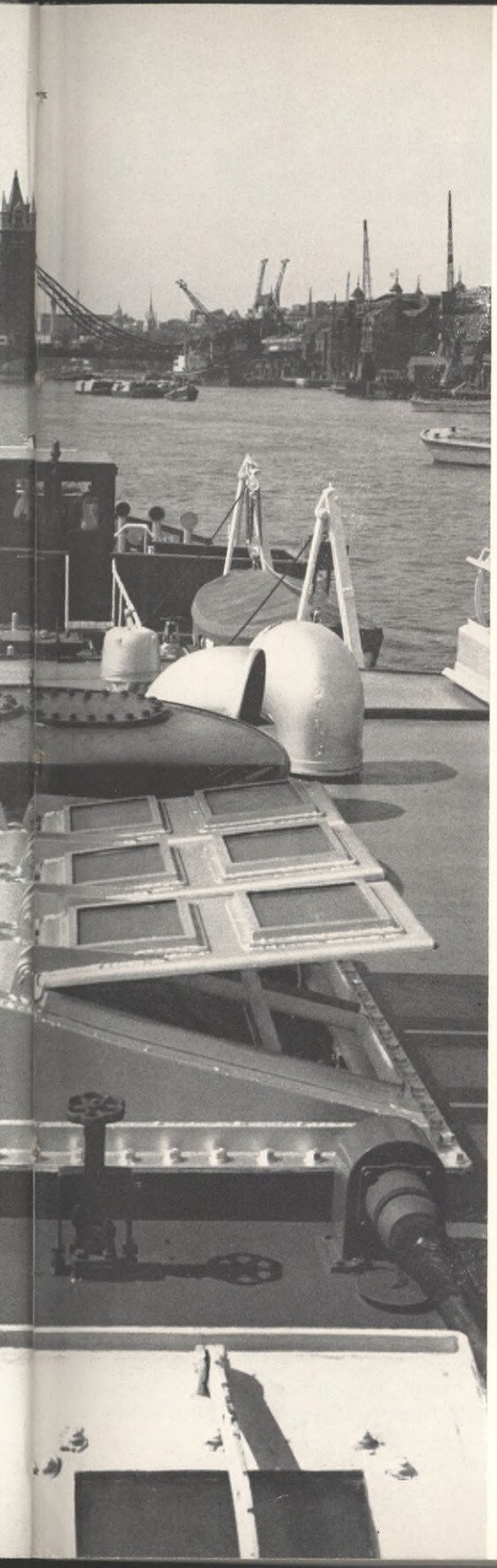
From the central office in London, Regent's organization fans out and divides the country into six geographical regions; these are split into divisions, each with its own sales force. The divisions also control the distributing depots and meet the company's different distribution requirements with 400 railroad tank cars and 540 tank trucks.

In some areas, Regent maintains its own vessels. Company-owned coastal tankers service South Wales in the Bristol Channel and a large barge fleet plows the Severn River. But the majority of coastal tankers and barges are chartered.

One of the company's newest chartered ships is a diesel-



Workers at Regent's Canvey ocean terminal transfer petroleum to the London Stone, *a company-leased diesel craft that plows up the Thames,* center, *to the storage depot in London's West End.*



powered craft, the *London Stone*, which hauls gasoline from Regent's ocean terminal jetty at Canvey up the Thames to the London depot at Wandsworth, near Chelsea in London's West End. The tanker is named for the ship's owner, whose surname happens to be Stone, and not for the historical measuring stone that dates from the time of Roman rule.

During the four-and-a-half-hour trip from Canvey, the *London Stone* journeys through some of England's richest farmlands. Chances are many of those farms are Regent customers, too; Great Britain leads all Europe in mechanized farming, and Regent supplies a large amount of the farmer's petroleum needs.

Reaching the outskirts of London, the ship churns past the great Port area itself, with its 69 miles of waterways and over 4,000 acres of dock facilities. It slips beneath the famed Tower Bridge, and the city's busy railroad bridges; goes on past Cleopatra's Needle, the Royal Festival Hall; past the Houses of Parliament and Westminster Abbey, following the serpentine path of the Thames westward to Wandsworth.

The trip must be timed closely, because at low tide the river channel is too shallow for passage; at high tide, there is not enough clearance beneath the city's many bridges.

Since the war's end, the economy of the United Kingdom has made tremendous advancements, and it continues to grow. One of the major characteristics of its postwar development has been its greater and still expanding mobility.

It takes petroleum products to make that mobility possible, and Regent has kept pace with the island's increasing petroleum needs from the very beginning. Today, it stands as one of England's leading petroleum suppliers, providing as many products to as many customers for as many uses as possible. That's why many thousands of Britons can tell you that "Regent Serves You Best." •

In the 1,000-car garage connected with a leading London department store, a Regent service station takes care of motorists' needs. Over 4,500 of Britain's service stations carry the Regent insigne.

Far East

It was in 1936 that Caltex, newly formed by Texaco and the Standard Oil Company of California, took over, together with other areas, the great Far East marketing organization built up by Texaco beginning in the early years of the century. During the period since, Caltex has not only extended its marketing activities throughout the area, but has developed important producing facilities in Indonesia and has built refineries in the Philippines, India, and Australia. In Japan, where it is the leading supplier of petroleum products, Caltex holds a 50 per cent interest in four refineries. The report which follows was prepared for THE STAR *by Dr. Howard Stephenson, educator and author, who recently traveled 25,000 miles through the Far East as an observer for the Department of Defense (he is a contributing editor of*

PACIFIC ISLANDS that drowsed in the sun for centuries now are bustling with new industry; and 90 per cent of this tremendous new production, I heard at a meeting of Manila businessmen, is tied to petroleum. It is the new availability of oil that has allowed the Far East to build factories and shipyards, create roads, and generally move out of the agrarian economy—to which it was tied before World War II—into an industrial economy of growing importance.

In travels through Japan, Taiwan (Formosa), the Philippines, Hong Kong, and elsewhere in the Far East late in 1959, I saw this new vigor reflected in people's faces, in the over-crowding of their night schools, in great adult education and training programs, but most of all in their turning to industry for solutions to economic problems.

Japan's greatest problem is a psychological one: how can the Japanese, after World War II, justify to themselves and to the rest of the world the legitimacy of their ambition to establish pleasant, honest, and credible trade relations with Southeast Asia? For trade with its neighboring countries is a do-or-die necessity, many Japanese believe.

From such a belief stems the new Japanese drive for commerce with Southeast Asia. One of the most remarkable feats that has been carried out in the trade program was the Japan Machinery Floating Fair voyage to Southeast Asian ports on a series of visits of good will.

The *SS Nissho Maru*, a freighter of about 9,000 deadweight tons capacity, was made over for the purpose. Her five holds were remodeled to accommodate 10 exhibition rooms where Japanese machinery and other goods were displayed. The ship was turned into a unique traveling trade exposition, a new venture in the history of trade fairs.

The Floating Fair visited the ports of Saigon, Bangkok, Rangoon, Colombo, Bombay, Karachi, Singapore, Djakarta, and Manila, over a three-month period. These were courageous calls, because only a dozen years earlier Japan either had occupied or had been at war with all the countries of which most of these ports are capitals. Now Japan looks to this group as one of its most promising trade sources.

Demand for petroleum in Japan has increased fivefold since prewar days, largely because of the country's swing from light to heavy industry, and currently oil is its largest import. Caltex (in which Texaco holds a 50 per cent interest) figures importantly in the Japanese petroleum picture; it markets through Nippon Oil Company, which is one of the oldest firms of its kind in Japan—dating from the 19th Century. Caltex has other interests as well, in Japan: Nippon Petroleum Refining Company, and Koa Oil Company.

Japan leads the world in shipbuilding, in fisheries, and in the production of rayon staple. It is internationally important as a producer of steel, lumber products, ceramics, and textiles. And with this change in economics, paralleling it, there has come about a transformation of the Japanese habits of living.

Milk consumption, for one thing, has multiplied yearly for the past five years. Though bread was a prewar novelty, the Japanese now are raising wheat, cheaper and in some ways considered more healthful than rice, on a large scale. More meat would be consumed if there were grazing land available (the Japanese continue to depend mostly on fish, poultry, and eggs for their proteins). Dietary experts are making a drive to change eating habits even more drastically than they already have been in the last decade.

In the Philippines, three sizable hydroelectric plants are in the last stages of construction. An engineer, looking down from the hilly site of one of them, spotted another location at a lower level. "We'll build a second generator plant right there," he announced, "using the water that spills down from the one above to run the smaller plant on the lower level."

This illustrates the fresh look peoples of the Far East are taking at their own opportunities. They want to do it themselves, and they have acquired the courage to go ahead. It is only lack of capital that prevents a much faster pace.

Plastics, electronics, furniture, food processing factories are springing up. Heavy industry includes a rolling mill for plate and structural steel, a large-scale plywood enterprise on Mindanao island, a copper-drawing plant, farm equipment assembly shops, and a new shipyard. The first cargo freighter built in the Philippines went down the ways at the National Shipbuilding Company shipyard in 1959.

The postwar construction of a major Caltex refinery has been a key factor in the Republic's availability of energy for industrial use. The majority of Filipino industry is centered in small or medium-size plants which rely on diesel fuel for power, and most railroad locomotives are powered by diesel-electric engines.

A considerable savings in dollar exchange was realized by the Philippine government when Caltex constructed a $27 million refinery and tank farm on Batangas Bay, 60 miles south of Manila. Today Caltex is a leading petroleum marketer in the Philippines.

On Taiwan, Hollington Tong, former Chinese ambassador to the United States, sat with me in the chancel of the lovely Grace Baptist Church, across the street from Taiwan University, and outlined some of the hopeful aspects he sees in Chinese industry. When I mentioned the much-touted enterprise of the mainland Chinese, the backyard blast fur-

Memo

by Dr. Howard Stephenson

Military Publishing Institute and has written for the Air Force, Navy, and Army Blue Books). Until June, 1959, Dr. Stephenson was chairman of the Public Relations faculty of Boston University. His impressions of current conditions in the Far East are presented here in the belief that they will give stockholders and employes an informative view of an area in which the Company has substantial interests.

naces that were to have been so important in the Communist "great leap forward," he smiled grimly. We had both read in the news that the iron produced was mostly worthless.

"We think we are building solidly in Free China," Dr. Tong told me. "For example, in 1960 we shall process most of the fertilizer produced and used on this island. Formerly up to 200,000 tons a year were shipped to Japan for processing. This means work for our own people, employment for our own capital, a strengthening of our economy.

"A machine has been developed to weed rice paddies. Farming methods, previously unchanged for thousands of years, are becoming modernized."

This observation later was backed up by Hsaio Cheng, chairman of the Land Bank of Taiwan, who said that a new farm implement factory would begin early in 1960 to turn out 300 power-driven tillers a month, each with an eight-horsepower motor, ideal for working the rice paddies.

Dr. Tong predicted that a new aviation gasoline plant, then nearing completion, would produce 400,000 barrels of high-octane gasoline a year, the output to be marketed by Caltex. He said the Chinese Petroleum Corporation, which will own this plant, already has the most modern catalytic cracking unit in the Far East. This refinery turned out about two million barrels of fuel oil in 1958.

The electric power picture in Taiwan is impressive. In 1946, power generation totaled only 472 million kilowatt hours, but by 1958 the output reached 2,880 million, a sixfold increase. Diesel fuel takes part of this responsibility, in the operation of thermal power units. And big power plants tell only part of the story. It is the small 100- to 250-kwh diesel-fueled installation for the individual industrial plant that permits great versatility of product and site location.

Electric power is used, among other things, for the production of such building materials as cement, brick and tile, structural steel, plywood boards, bagasse (compressed sugar-cane residue) boards, plate glass, aluminum window frames, nails, pipes, and homodurawood (an artificial woodboard). Many of these are exported: cement, for example, to Korea, the Philippines, and Hong Kong. Taiwan will make a million tons of cement in 1960.

Using bauxite imported from Malaya, Taiwan is producing aluminum ingots and finished products—8,500 tons of ingots and 4,500 tons of sheet aluminum in 1958. Much of this is exported. The rest is turned into bus bodies, furniture, window frames, containers, letter boxes, and kitchenware. A new aluminum foil mill, equipped with embossing and printing machines, is capable of turning out 600 tons of foil a year, from a thickness of 0.0004-inch up.

I stood in front of the Friends of China Club in Taipei trying to summon courage to cross the stream of hundreds of bicycles coming round the curve of a boulevard. One pedicab driver had something new. He was hitching the shafts of a rickshaw not to a bicycle but to one of those ubiquitous motor scooters such as I had seen in many other places. Finally he got a customer and whizzed away. A new era in Taipei transportation may have opened before my eyes.

In Kowloon I strolled past a Caltex service station on Nathan Road—a station designed like a Chinese pagoda. Kowloon is on the mainland. You can see the misty rim of blue hills in the distance, on the border of Communist China. The British occupy this tiny territory, across the bay from Hong Kong proper, on a 100-year lease which has 48 more years to run.

The one un-Chinese thing about the new era on the mainland, Hong Kong journalist Norman Wong told me, is the absence of laughter.

The Communist rulers, according to Wong, who is from Canton but doesn't dare return, must be infallible. When they were forced to admit, in 1959, that the "great leap forward" had fallen, to use his expression, "with its face in the muck," the Chinese outside the mainland began to laugh. It tickled their sense of the ridiculous to see those who had shouted and spouted about "paper tigers" from the West demonstrate that they, too, had human failings.

Irrepressible good spirits seemed to mark the Chinese in Hong Kong as they had in Taiwan. I saw a youngish official of The Chartered Bank throwing strings of lighted firecrackers into the street, to the delight of the sidewalk throng. He explained, with a British accent, that the bank was holding "open house" to celebrate the first day of business in the fine new building. Tea was served. Leaflets were passed out. Speeches were made. A native band played.

There is another side. In the New Territories section of Hong Kong, it was good to see bulldozers and road graders at work on highway construction. I got out of a car to chat with Dixon Lau and Lee Fui Kin, young engineers on the job for Union Construction Company. Then I glimpsed a group of old women carrying construction materials in baskets hung from a pole across their shoulders. This was a reminder of the gap of thousands of years that lie between the two ways of life one sees in the Far East.

"Because of the machinery," Mr. Lau said gently, "we can hope not to have ladies work in the future."

Farther along the road, a school bus stopped. Teachers and children got out, and began burning piles of brightly colored papers.

"We will not go nearer, please," my guide said. "They are Buddhists. Big accident was at this place one time, with many children drowned at a camp. Such a memorial they now observe each year."

For many years, before a motorbus was given to the school, children and teachers had toiled up the mountainside on their yearly pilgrimage, an hour's climb. That is the Far East today: always the picturesque, often the touching, the old ways not forgotten or abandoned, but the good in the new eagerly seized upon and adapted, not just adopted. •

In 1958 and again last Spring, for two weeks, representatives from various departments and subsidiaries within the Company met at Texaco Conferences, a series of meetings designed to give selected groups of Texaco men a broader, deeper knowledge of the Company's operations.

The Texaco Conferences aim at bridging the gap between a man's special knowledge of his own job, and his understanding of the way that job fits into the Company's exceedingly complex over-all operation.

At the initial Houston Conference in 1958, Board Chairman Augustus C. Long said, "We expect [these Conferences] to provide the Company with more highly skilled, better-trained management people, who will be able to maintain and expand our position."

The 1959 meeting was held at Texaco headquarters in Manhattan's Chrysler Building. Gathering in the Company auditorium, 40 conferees—representing a managerial cross-section of every department of the Company—heard executives from 20 departments and four subsidiaries explain the Company's global activities, briefly outline the objectives, planning, organization, and operation of their own departments, in particular. By dividing each of the 10 working days devoted to the Conferences into two three-hour periods, plenty of time was left for group discussions.

Texaco has expanded tremendously since World War II, now is one of the four largest oil companies in the world. This growth, and the increasing competition in the industry, make the need for experienced men with well-rounded Company knowledge more important than ever—a point emphasized by Texaco President James W. Foley in his address opening the New York conference.

"A lot goes on in this Company," said Mr. Foley, "and the more you can know about it, the more you can contribute to the growth and success of yourselves and of the Company as well. We are, have been, and will continue to be departmentalized. But we don't intend to have such a solid wall between departments that one can't find out what the others are doing . . . that one man can't move from one department to another."

The success of these Conferences, continued Mr. Foley, depends upon each conferee contributing knowledge on one hand and asking questions on the other; "and . . . the men with the answers are sitting next to you."

Mr. Foley himself spent nearly an hour answering questions on such subjects as how import quotas on foreign oils affect the Company, and the possible effects on sales of the increase in the Federal gasoline tax.

Conferees are introduced to such broad areas of activity as domestic and foreign producing, refining, sales, and related operations; also are given an orientation in the more specialized areas of employe and public relations, finance and economics, purchasing, supply and distribution, legal, and research and technical. All in all, they get a neatly packaged picture of why Texaco operates as it does, what its plans and its problems are.

The Texaco Conferences, which are planned, organized, and conducted by the Employe and Public Relations Department, are one of several long-range management-development programs; this May, a third Conference has been scheduled to meet in Houston. ●

SITTING NEXT TO THE ANSWERS

I. G. Morgan Elected Vice President of Sales

I. G. MORGAN

Election of I. G. Morgan as Vice President in charge of Domestic Sales was announced December 7 by Board Chairman Augustus C. Long. Formerly General Sales Manager, Pacific Coast Region, Mr. Morgan assumed his new duties on January 1.

After joining the Company in 1931, he was a Service Station Supervisor at various locations in the Southwest until 1935, when he was named Retail Representative in the Houston Division. Three years later, he became Assistant Division Manager, and subsequently held similar positions in the Dallas and Atlanta Divisions.

In 1947, Mr. Morgan was appointed Manager of the Dallas Division, and held that post until his promotion, in 1953, to Assistant General Sales Manager of the Pacific Coast Region. He was promoted to General Manager of the Sales Department at Los Angeles last Spring.

Trinidad Refinery Plans New Expansion

An $18 million expansion program, announced recently by Board Chairman Augustus C. Long, will make Texaco's refinery at Pointe-à-Pierre, Trinidad, one of the world's largest and most modern oil processing plants, and nearly double the refinery's daily crude oil capacity.

Pointe-à-Pierre, the Company's largest Caribbean refinery, has a present throughput of approximately 135,000 barrels a day; construction of new units will increase crude oil capacity to an estimated 235,000 barrels a day. These new processing units will include a 100,000 barrel-a-day topping unit, a 15,000 barrel-a-day catalytic reformer, and a 20,000 barrel-a-day hydrotreater.

In addition, new tankage, pipe lines, utilities, and jetty facilities will be added. Although the refinery is equipped with five loading berths to handle ocean-going tankers, another pier will be constructed to service Texaco's newly commissioned 46,000-ton super-tankers, the *SS Trinidad* and *SS Brighton.*

Already one of the area's major employers, Texaco Trinidad, Inc., has initiated a training program in welding and similar skills for Trinidadians, and approximately 1,000 Trinidadians are expected to be employed in various phases of the new refinery units' construction.

Texaco Grants Go To Medical Centers

A total of $400,000 in unrestricted $100,000 donations has been made by Texaco to four major medical centers in cities where the Company has principal offices. The funds have been made available with the hope of stimulating medical research, and to help provide the buildings and facilities needed to carry on this work — although their ultimate disposititon has been left entirely to the discretion of those in charge of the centers.

The four institutions selected to receive Texaco grants are The Columbia-Presbyterian Medical Center, New York City; The Baylor University College of Medicine, Houston; The Hospital of the Good Samaritan, Los Angeles; and The Children's Memorial Hospital, Chicago.

Company Announces New Jet Fuel Development

A Texaco jet fuel development that promises to increase aircraft lifting power, extend non-stop flight range and engine life, and virtually eliminate exhaust smoke on takeoff was made public in September.

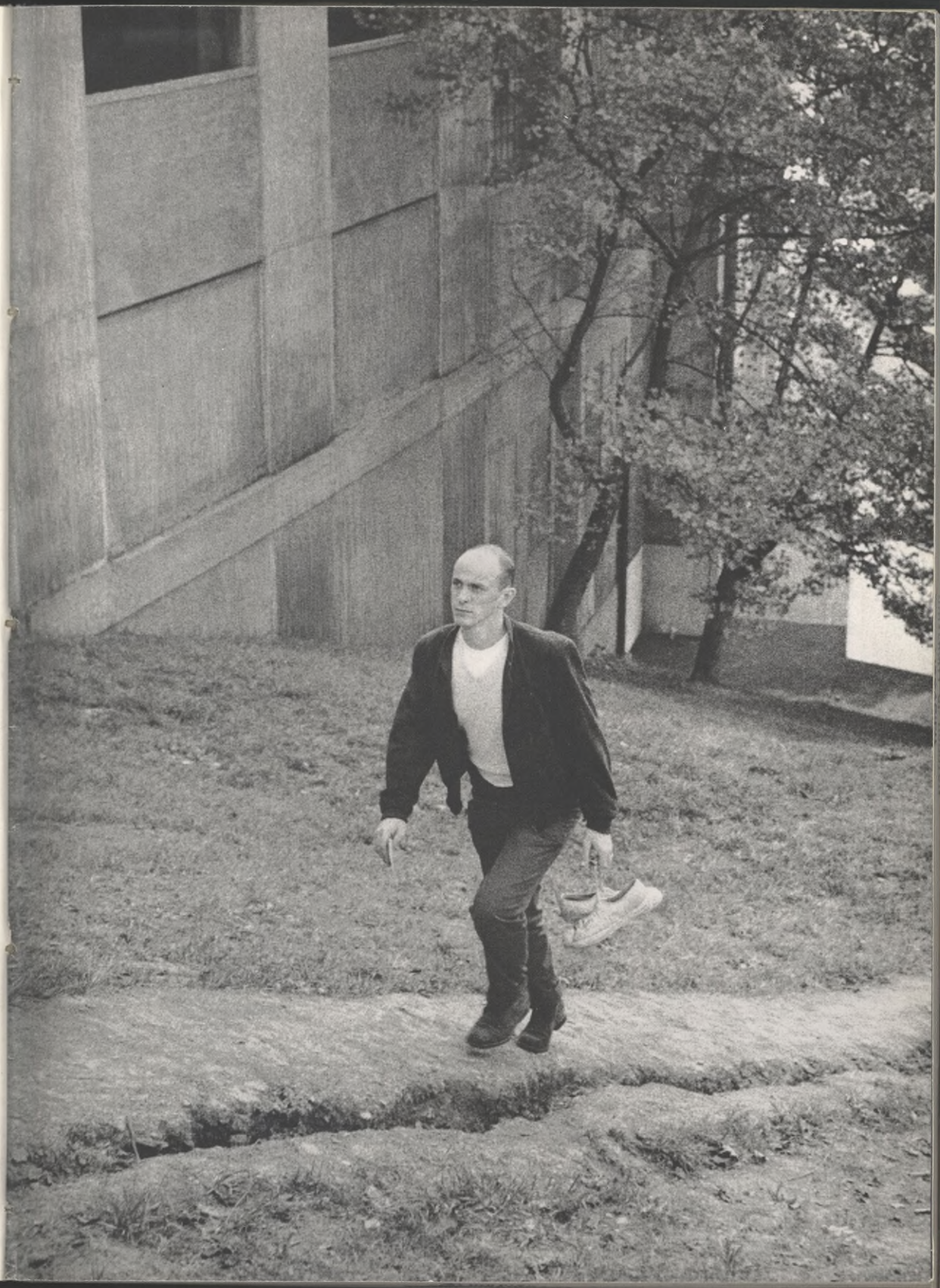
The secret of the new Texaco jet fuel lies in its extremely low "luminosity," a property only recently discovered to be a critical factor in jet aircraft fuels.

Two different fuels can burn equally hot and yet one be more "luminous" than the other. Ordinary kerosine burns with a visible, or "luminous," yellow flame; but an equally hot pure hydrogen flame cannot be seen. These luminous fragments give off radiant heat which can seriously increase metal temperatures inside a jet combustor without adding to engine power. Texaco's new low-luminosity fuel solves this problem by decreasing the amount of radiant heat.

The new fuel can be burned at higher temperatures than conventional fuels without overheating the engine. This means a jet can develop greater thrust at takeoff, increasing its lifting power; and can run cooler in the air, increasing engine life.

Jet engine tests using over a million gallons of the new Texaco fuel have already been carried out by major aircraft engine manufacturers and in Texaco's own jet engine development laboratories.

Higher education's financial needs have become almost as steep, since World War II, as the hill Texaco scholarship holder Jim Liedtke climbs to reach University of Pittsburgh's squash courts. Story of Texaco's help through aid-to-education begins on Page 11.



THE
TEXACO
STAR
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NEW YORK 17, NEW YORK

OLORFUL DIET FOR A PIPE LINE

the photograph below, a pleasant palette of colors
is been created by the seven Texaco products
hich flow through the recently opened Laurel Pipe
ne (an East Coast to Midwest line in which Texaco
lds a substantial interest). Opening of the Laurel
e means more efficient distribution of these prod-
ts throughout the areas it reaches, and the promise
higher sales volumes. Except for the kerosine, the
ls in this illustration do not come by their colors
urally. They are tinted with harmless dyes to
ke them easily identifiable during their handling,
l easily recognizable by customers. Here, from
top down, are Sky Chief gasoline; 100-octane
ation gasoline; diesel fuel; kerosine; Fire Chief
gasoline; furnace oil; 115-octane aviation gasoline.