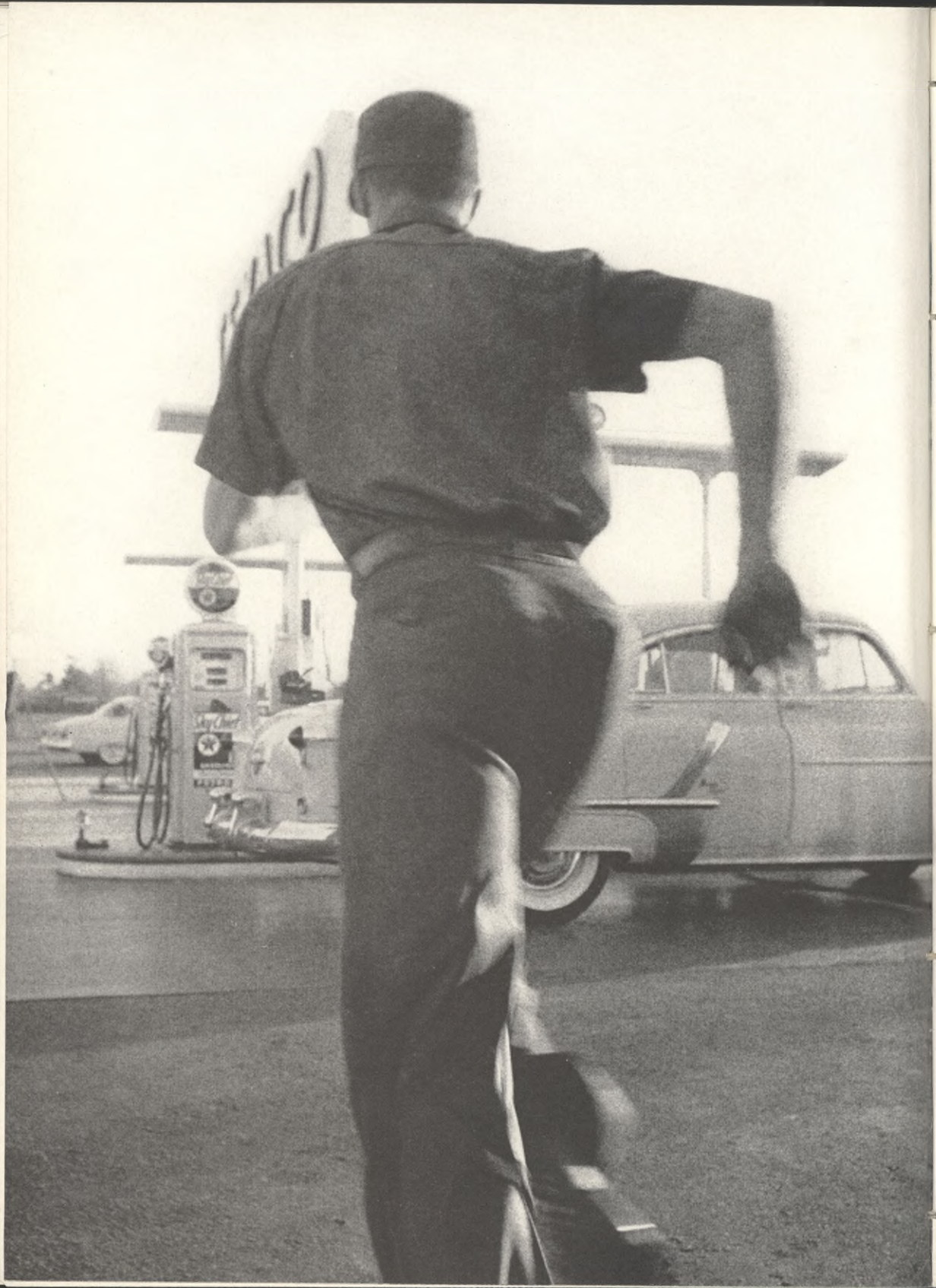
THE
EXACO
STAR

SUMMER 1962

DETROIT DELIVERS MORE TEXACO CUSTOMERS



MORE THAN A DASH OF SERVICE

The hustle to help that greets a motorist who pulls into a Texaco service station is solid evidence of the Company's accent on service, and an important ingredient in Texaco's 60-year success as a petroleum marketer. Texaco service, however, begins long before a new automobile is on the highway. In Company laboratories better automotive fuels and lubricants are persistently sought. The labs work closely with Detroit manufacturers to anticipate the driver's future needs, guard his safety, assure his comfort. In the auto plants, Texaco service representatives are valued counselors whose advice on the use of oils and greases helps keep Detroit's production machinery functioning with the speed and sureness for which it has become famous. In almost every phase of the auto industry Texaco provides important services. And has since 1902, when the automobile was just beginning to be taken seriously.

THE TEXACO STAR

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THE TEXACO STAR
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WE MUST LEAD FROM STRENGTH

IN ITS ROLE AS LEADER OF THE FREE WORLD, the United States will be confronted in the years ahead with many critical problems that will affect every stockholder and employe of Texaco. The world outside the United States is changing rapidly. New regional economic groupings such as the European Common Market will present challenges as well as opportunities to American businessmen. Developing countries are passing through a transition to modern society which is profoundly altering their social and economic structures. The aspirations of these countries to share in a better life cannot be ignored by the West. And, as in the past, the Russians will use every weapon to divide the free world and to spread communism by subversion or violent revolution.

The United States will be deeply involved in these developments for reasons of safeguarding its own interests and ensuring a free and prosperous world in which to live. In order to meet the challenges that face us, America must operate from a strong, healthy, and expanding economic base at home. No country can remain a world leader for long without such basic support. We must also realize that the United States alone cannot take on the defense of the whole free world, and that the growing economic strength of other free countries must be mobilized more effectively to help in this common effort.

In considering how we in America can grasp the opportunities inherent in the challenges of our time, the importance of certain contemporary economic problems should be held clearly in mind.

1. Sound economic growth at home requires that we keep our own house in order. This means balancing the U. S. budget in periods of strong economic expansion. The American dollar is the bulwark of international trade and of the financial resources of the whole free world. Any loss of confidence abroad—no matter how small—in this country's financial integrity as a result of inflation would weaken the dollar and precipitate another run on our gold reserves such as we had in 1960. This would have serious consequences domestically, and would also jeopardize the foreign political alliances the United States has built up to fight communism.

Furthermore, growth by inflation is an illusion. In the long run, it discourages the saving that is necessary to finance new capital expenditures, without which there can be no economic expansion or creation of more jobs. Further, there is the disproportionate burden placed on fixed-income groups through the loss of the purchasing power of the dollar. These are lessons which many foreign countries have bitterly learned and which others must now recognize.

2. The deficit in the U. S. balance of payments is one of the most critical problems the country faces. Despite

some improvement over 1960, the deficit last year totaled $2.5 billion. In 1962 it may go higher. No country can continue indefinitely to incur deficits such as we have had over the past few years without a devaluation of its currency. This must be avoided at all costs.

It is, therefore, more important than ever that we maintain domestic price stability and continue to encourage exports. But clearly other measures are also needed. Our trouble is not that we import more than we export; on the contrary, we have a large export surplus. Nor do we invest too much abroad; dividends from direct private investments annually exceed the capital outflow. The surpluses generated from these transactions, however, are not large enough to support what the U. S. Government spends abroad for military and economic aid. Such spending must be brought into line with our ability to earn foreign exchange.

The burden of foreign aid, which the United States has carried almost alone during the postwar period, must be shared more and more by our allies abroad. The fight against world communism is also their fight, and they are now economically strong enough to take on more of the load. Hopefully, the new Organization for Economic Cooperation and Development will encourage such sharing.

3. A better job can also be done in distributing whatever U.S. foreign economic aid is available. It should be realized that such aid alone cannot promote economic development. It can only act as a catalyst where the conditions are right. There must be honest and stable government, basic reforms in social structure, a balanced approach to economic development rather than emphasis on costly prestige projects, and, above all else, a desire for self-help and adoption of policies which encourage creation and investment of local and foreign private capital. All these things will involve change and adaptation to new ways. Illiteracy and lack of modern skills, so widespread in developing countries, will make this difficult. Priority should, therefore, be put on providing these peoples with basic education through the primary school.

Where those sound conditions are lacking, economic aid does not serve the purpose for which it is intended, but is simply a giveaway.

4. The role which private capital can play in economic development is not always understood either in Washington or in developing areas abroad. To broaden understanding of this role, it is necessary to give continued emphasis to certain fundamentals.

Private enterprise encourages and utilizes the initiative of individuals as the basis for economic expansion. It does this by providing incentives that place a premium on productive efficiency, private ownership, competition, and giving the consumer value for his money. Individual initiative and the competition which it stimulates provide a sounder basis for a nation's economic advance, as for example the growth in the United States, than the blueprints of a state planning commission. Private capital is also accompanied by the managerial skills and experience so urgently needed by developing countries.

Although there have been some notable instances of rapid industrial growth in planned societies, it has been at the expense of people's standards of living, basic human dignity —and even of their lives. In these countries, the initiative for any individual to do things better comes from fear, and societies using such motivation cannot continue to be successful in the long run.

Many developing countries have failed to tap the great potential for growth which private enterprise can provide. Too often their attitude is to try to get as much foreign government aid as possible without taking any action to mobilize their own resources or those of private investors. In that attitude, they received encouragement from the recent decision of the U. S. Export-Import Bank to finance exports of oil equipment from this country to foreign state oil monopolies. The use of United States and foreign government tax revenues for purposes of oil development is a waste of public funds, inasmuch as private capital is available to do the job.

There is, of course, a need and place for both private and governmental capital, but the latter should be used to provide basic facilities that will attract private capital, not repel it. And only by improving the climate for private investors can developing countries obtain the large amounts of capital they need to raise their living standards.

These problems are not new. They have been with us for some time and will continue to challenge us in the years ahead. But they are now more critical as a result of the increasing Communist threat, the new political and economic community emerging in Western Europe, and the growing material aspirations of newly independent countries. •

DETROIT Matrix o

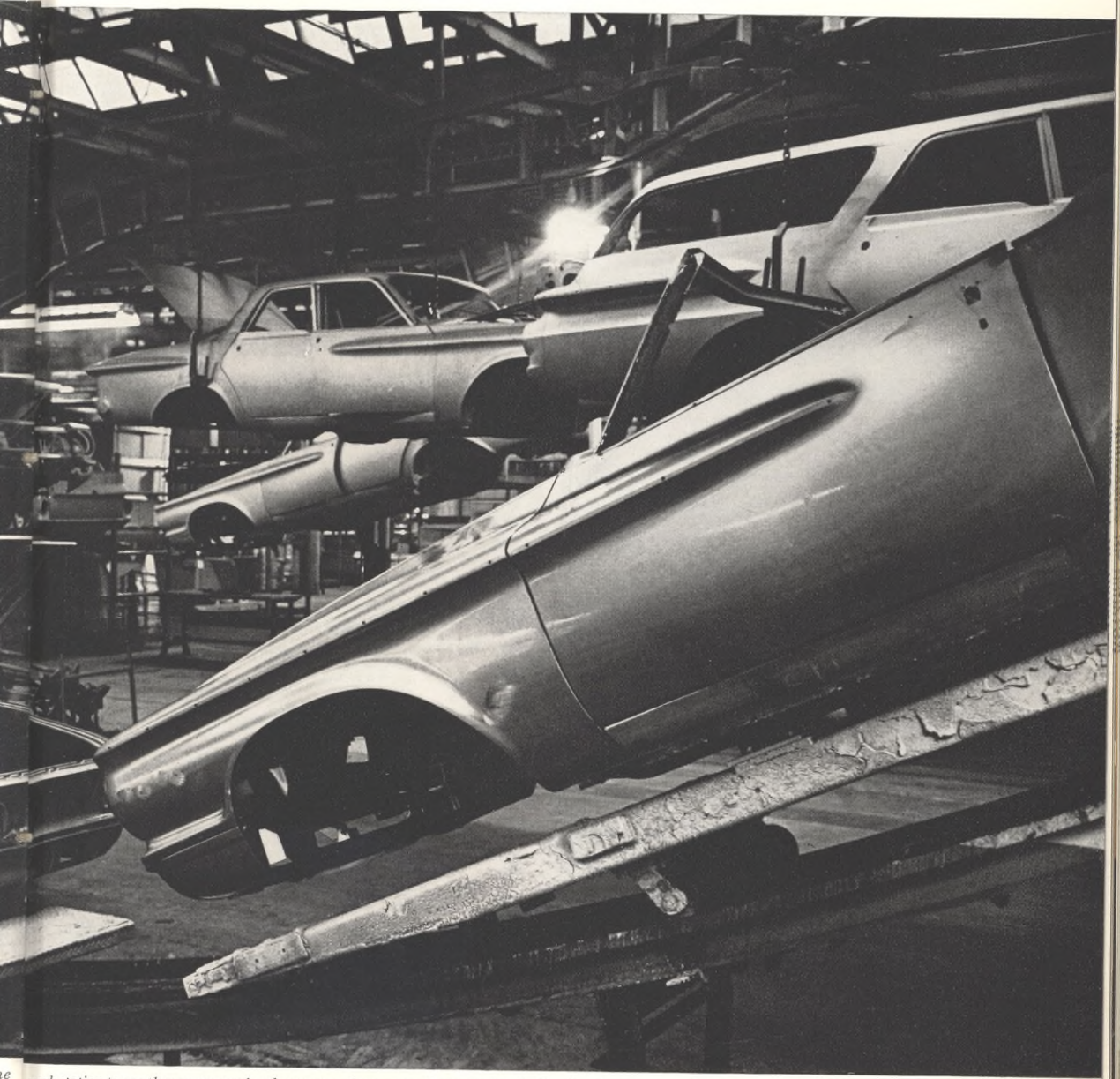
The petroleum industry switched its attention from a flickering kerosine market to the brave new world of automobiling in the early 1900's. In 1902, Texaco was founded, and the Company at once became an inseparable partner in the most sweeping development of the Machine Age. Today, after 60 years of growth and diversification, Texaco still is linked more closely with the automotive industry than with any other. The manufacture of autos has grown to such importance in this country that one out of every six American businesses now is in some way connected with it. Texaco's role has enlarged so that there now are more than 40,000 Texaco dealers and 3,500,000 Texaco credit card holders. The following article describes the development of the automobile industry to its current place as this country's largest and most influential socially. It pictures automobile manufacturing in modern Detroit, and shows how Texaco in 1962 works with Detroit's auto makers in a supporting effort that continues to be by far the Company's most important.

AMERICA BEGAN LEARNING TO DRIVE in the early 1900's, at about the same time Texaco began marketing gasoline, and in one generation the nation acquired a skill that is unmatched in history for its far-reaching social and economic effects. In succeeding generations, the American motorist has become Texaco's most important customer.

By giving up the buckboard for the dashboard, our grandparents brought to American life a whole new concept of personal freedom. Freedom of movement put a unique new construction on the American heritage. That construction has become based so solidly that today a driver's license in

On an assembly line "merry-go-round," auto bodies glide from one wo

x of our major market



work station to another on an overhead conveyor. Some auto plants use nearly 10 miles of conveyor systems.

this country is nearly as important a personal document as a birth certificate.

During the 60-odd years since it first rolled onto the American scene in numbers, the automobile has been described in many ways. One of our Presidents called it a "picture of arrogance and wealth." The Bureau of Labor Statistics considers it a necessity of life. And, most recently, a leading market research organization declared it a symbol of assertive masculinity. It has, of course, long since ceased to be a toy for the wealthy; and whether or not to own and operate an automobile carries deep psychic implications is an unresolved question likely to provide both cartoonists and psychologists with material for years. There is no question, though, that the automobile today is an almost overwhelmingly important element in our lives.

By 1970, predicts one of our best-known business management magazines, we probably will be spending over $60 billion a year on passenger cars. We have learned to depend on our automobiles to get to work, to the shopping center, to the ball game. We have learned to live on wheels, and this has made us dependent to a remarkable degree on the output and creativity of one city.

THE LINE FORMS IN DETROIT

That city, as very nearly everyone in the world knows, is Detroit—headquarters for those companies that produce 95 percent of the cars Americans drive and more than half of the entire world's automobile production. From its huge auto assembly plants, new cars roll out about one a minute.

Particularly for Americans, whose per capita car ownership is nearly twice that of any other people, Detroit means cars and cars mean Detroit. And a visit to Detroit would do nothing but strengthen the impression.

From any of the city's taller buildings, one would need only a reasonably clear day to spot most of the giant automotive plants that ring Detroit to the north and west, their insistent neon signs flashing names that have become as familiar to us as our own.

Spidery strings of triple-decked railroad carriers—a relatively new development—swing steadily through the city's outskirts weighted with their share of yesterday's production, bound for dealers in Butte, Boston, Birmingham, Buffalo.

All day long, specially built highway trailers used for shorter hauls rumble through Detroit headed for the turnpikes—their cargoes hunched like so many gulls behind and above the driver's cab. During spring and summer and into fall, great boats, decks awash in a sea of new autos shiny as patent leather, churn River Rouge on their way to Great Lakes ports.

As the products of Detroit stream out, the parts that go into those products stream into and around and through the city. Whole trainloads of frames, gasoline tanks, steering wheels, side panels, headlights, engine blocks, and transmissions pour toward assembly plants. In them a kind of reverse surgery is performed that puts steel skeleton and sinew to-

Finish polishing

Deliveries of Texaco products from Dearborn terminal, above, *and from River Rouge blending plant,* at far right, *feed almost daily into auto plants where some of the various assembly operations (color) were recently photographed.*

Steering column wiring

Upholstering

Body painting

River Rouge blending plant

gether to create an automobile for a waiting world market.

Nowhere is the size of the automotive industry more evident than at its center. Daily, through Detroit, the production from thousands of suppliers and subcontractors is funneled into a handful of assembly plants to be welded, riveted, wired, bolted, painted, and chromed—then funneled out as The American Automobile, often just a few hours later, factory-filled with gasoline, oil, and grease.

SERVICE AT THE GATES

As headquarters city for the giant automotive market, Detroit clearly deserves special attention from an oil company whose backbone products have always been gasoline and motor oils. Detroit does get special attention from Texaco, to a degree no other oil company has matched.

Since 1951, the Company's Research and Technical Department has maintained full-time representatives in Detroit. They are not salesmen; they have yet to ask for an order. Their job is one of liaison, between the automobile people and Texaco's Beacon, New York, Research and Technical Center. Through their daily contacts with Detroit's engineering men, they learn of problems in fuels and lubrication, trends in automotive design, potential trouble spots. Their counsel is valued highly: during 1961 they were invited to help solve 300 separate lubrication and fuels problems.

Texaco's men in Detroit work to find answers to Detroit's questions at expressway speeds. They have to be in a hurry—the auto makers almost always are. "If we can't give them a quick answer, they'll find it somewhere else," they say.

In the Company's Detroit office is a teletype machine with which Beacon can be reached in minutes. It is used many times nearly every day. About half the time, Detroit teletypes to request information on urgent projects or to obtain petroleum samples. And about half the time Texaco men ask for quick answers to questions such as "what is the velocity of sound in transmission fluid?" Such a query is not one Beacon would ordinarily go into, on its own; but as a service to the auto industry it finds the answer and sends it to Detroit as quickly as possible.

In a typical piece of Detroit-Beacon liaison, Texaco's technical man calls on a manufacturer's engineers and, as a result of discussion with them, suggests they try a certain lubrication oil formulation in, say, a rear axle assembly.

He teletypes Beacon, asking for a sample batch of that formulation to be sent to the manufacturer's laboratories. If it is a standard, or fairly simple, formulation it probably will be in Detroit 24 hours later. If it performs well in the auto maker's lab, a larger quantity will be requested for tests at his proving grounds. And if it works out well there, it probably will go on the manufacturer's "approved" list.

This is one of the keys to selling the automotive industry—getting a product approved—and is for practical purposes the end of the Texaco technical man's job. Once a product is approved, it is up to the Company's Sales Department to go after an order.

About once a month, a Texaco Detroit technical man visits the Beacon labs. He sits down with the Research and Technical people with a firsthand report of the latest word from the auto city, and learns of the progress of the various long-range projects Beacon's scientists and technicians are constantly working on for automotive application. Because of the unflagging fascination autos hold for the American public, much of what Detroit has on its mind is Page One news. But the Detroit man is likely to know many things only an insider *could* know.

What he knows is, naturally, hungrily sought by Beacon. Will octane requirements continue to climb? Will compact cars be big sellers next year? How soon will power-braking and -steering become standard on the medium-priced models? Because he is constantly on the scene, Texaco's Detroit representative usually has the answers. At least he has more clues than an outsider would.

Texaco was the first oil company to establish a Detroit technical representative. It is probably no coincidence that Texaco's Havoline Motor Oil currently is used in dynamometer testing by virtually every car manufacturer, that Texamatic Fluid has become the reference product for Detroit's work with new automatic transmission fluids, or that Texaco now supplies about half the industry's total purchases of transmission and steering fluid requirements. Half the total means an enormous amount. If just one teaspoonful of a given product is used per car by a given assembly plant, the sales of that product to that plant might amount to several carloads a month—and not many lubricants are used in such homeopathic doses.

A partial look at a Detroit representative's desk diary during a recent week gives one an idea of his close ties with the auto industry. The diary is Ken Hollister's. His specialty is passenger car problems.

On Monday, Manufacturer A called to ask if Texaco had a grease suitable as a permanent lubricant for wheel bearings, ball joints, and steering linkages. It had, Hollister replied. The request had been anticipated, Beacon had already been asked to compound a sample of just such a grease, and the sample could be delivered on Wednesday.

Tuesday's mail brought an invitation from Manufacturer B, asking Hollister to appear before its Automatic Transmission Committee this summer. At the meeting he will have the opportunity to tell the committee all he knows about Texaco's transmission fluids.

On Wednesday, Manufacturer C called to say he was having trouble with a competitor's oil he currently was using for "drive-away" oil. This is the lubricant your car contains when it is delivered to the dealer. Hollister listened, made some notes, teletyped Beacon. Within hours, a reply clattered back: Beacon was sending a five-gallon sample of an oil it thought should work perfectly. It would arrive early next week. The manufacturer agreed to test it.

Thursday and Friday brought more calls, more teletyped queries and answers, more requests for samples. As on the

Streaming through assembly line on a tightly controlled production schedule, new autos are turned out at a rate of one every minute.

other days, these matters were taken care of early in the morning and late in the afternoon. In between, Hollister was out of the office making the rounds of the manufacturers. In this particular week he also was busy making arrangements for a meeting of the Detroit Chapter of the Society of Automotive Engineers (he is a member of the chapter's governing board), and for a meeting of his local American Petroleum Institute chapter.

Liaison with Detroit is extremely important to Texaco's fuels development program because of the chicken-and-egg relationship between manufacturer and gasoline marketer.

The auto maker's plans are dependent to a large extent on the petroleum industry's ability to supply suitable fuels. There is no question about which comes first, for instance, when higher compression ratios are discussed. Gasoline is the egg, the engine is the chicken. The auto industry would not put a car in production for which there was not a sufficiently wide distribution of the proper fuel to propel it.

By learning of Detroit's plans at the beginning, the Company's Detroit representatives are able to alert the Company's fuels experts to possible engine developments. They also are able to learn from them whether fuels for such engines are feasible, pass on what they are told to the manufacturer—and save the manufacturer wasted effort. Doing this, they perpetuate Texaco's reputation as the oil company that knows automotive fuels best.

PROFUSION WITHOUT CONFUSION

To see Detroit's assembly plants at work is wondrous. One of these is part of a giant complex that stretches along the banks of the Rouge, occupying an area one-and-a-half miles long and more than a mile wide. The entire complex represents the largest concentration of integrated factories owned by one company in America.

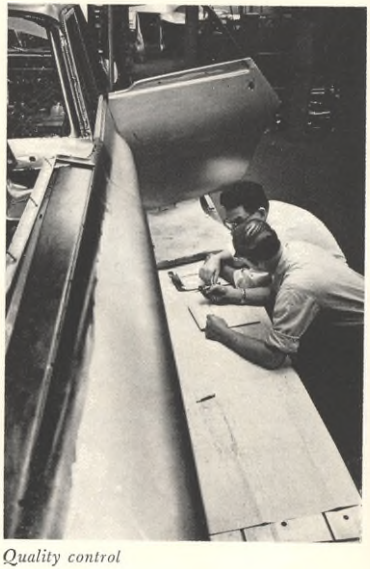
The assembly operation is just one unit of a sprawling manufacturing scheme in which raw iron ore is unloaded on docks, smelted into iron, converted into steel and, within a matter of days, transformed into engines, frames, bodies, and parts — and, finally, finished automobiles.

The overall manufacturing establishment is so vast that few of the 37,000 men and women working in it daily have an accurate idea of its magnitude. Indeed, it is unlikely that a worker in the assembly plant could know too much about what goes on 100 feet from his particular work station so special, and local, has his job been made.

Automobile assembly here has been systemized to such a degree that the delivery of parts by outside suppliers often is reckoned in hours.

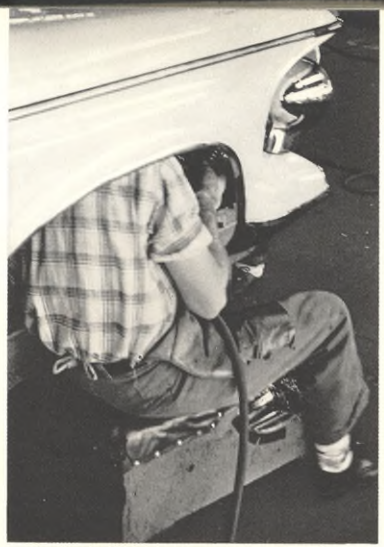
Virtually all the cars are assembled on the basis of dealers' orders. Coordination between one part of the line and another is so finely drawn that a worker whose job is, say, attaching door panels to automobile bodies as they move past can be perfectly confident that when a blue body comes by, the overhead conveyor behind him will be carrying a matching blue panel.

Trunk assembly

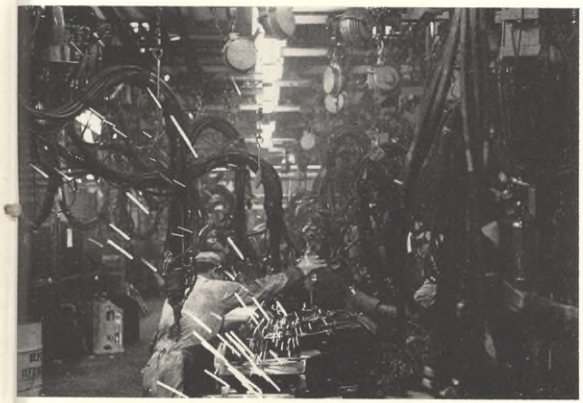


Quality control

In a modern assembly plant, each worker has one part of an auto as his specialty. People in photos above may never touch steering assemblies, clustered at right, except when they are driving in their own family autos.



Grille installation



Body welding

One of the keys to this plant's success, and to automotive assembly in general, is the maintenance of an absolute minimum inventory. If 1,000 automobiles are scheduled for production next Tuesday, not more than a handful more than 1,000 each of the parts that production will require are ordered. At changeover time, when work stops on this year's models and the plant begins getting ready for next year's, storage areas are virtually empty. There are almost no leftovers, normally.

Different departments in the assembly plant are connected by teletype so the movement of components and other daily and hourly programming can be coordinated down to the split second. Everything that could contribute to efficiency is carefully studied.

Once the visitor has overcome his original bewilderment at what seems to be a hopeless tangle of conveyors (about nine-and-a-half miles of them), automatic welding machines, forklift trucks, and the rest, he begins—slowly—to see that there is a painstaking plan behind every movement made. If he were to walk casually from the point where the car's body is "decked" onto the final assembly line to the end of the line where finished autos are filled with 10 gallons of gasoline and driven off, he would arrive at just about the same time the decked body he started with did.

The fact that Detroit's assembly plants are set up to turn out automobiles with such speed does not mean quality control has been sacrificed. Before a new model is okayed for production, prototype versions of it have been tested in laboratory cold- and hot-rooms, door assemblies have been put on automatic slamming machines and slammed thousands of times, head-on collisions have been staged to test grille and bumper strength.

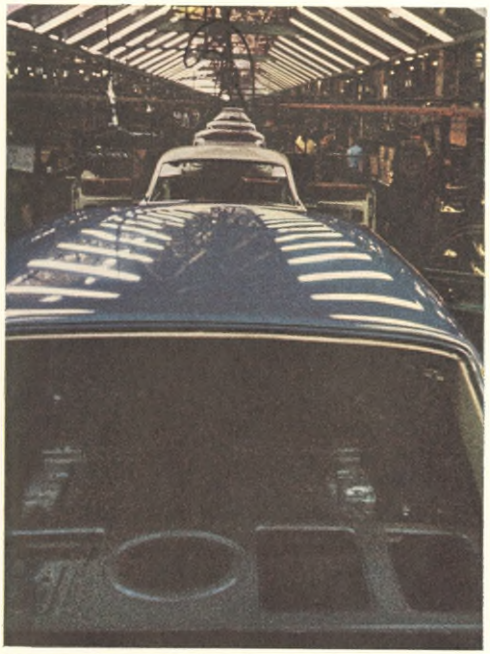
On the manufacturers' proving grounds, new models are raced at speeds up to 100 miles an hour over different kinds of surfaces, run up grades as steep as 27 degrees, plowed through water. Most manufacturers have proving grounds in the Southwest where a new model's performance in the desert is tested. Probably no other American product is handled so unkindly before it is okayed for mass production.

A model in production is constantly being checked and tested, too. Every car coming off the assembly line has its headlights aimed and tested, its engine checked for idling and acceleration performance, its braking and handling characteristics tried. At one plant, the production manager drives a new car home every night as a quality check. At another, one car every shift is completely torn down and examined for possible defects. At a third, each of the plant's supervisors drives a different new model every day as a running check of the plant's work.

SETUP FOR A DEMANDING MARKET

Auto manufacture is not just big business; it is, in the salesman's language, bid business. Economical mass production depends heavily on low unit costs, and Detroit, since its strength lies in mass production, examines the price of every

Auto plants account for two thirds of Texaco's sales in Detroit area



Efficiency of production lines depends on prompt delivery of parts and supplies. Texaco lubricants, right, *are loaded at Dearborn sales terminal at night for delivery first thing next morning.*

nut, bolt, yard of upholstery fabric, and pound of grease it buys with an icy calculation that makes the thriftiest housewife look profligate by comparison. When Detroit outmoded the horse it kept the horse trader. You will find him in any auto maker's purchasing department.

The actual purchase of a Texaco lubricant by an auto manufacturer hinges on three considerations: performance, which the Company's Detroit representative and laboratory technicians work to provide; price; delivery.

Last fall, Texaco opened the nation's first electronically controlled blending plant for the production of lubricating oils to assure the auto industry of the fastest possible deliveries at competitive prices.

The new plant, set on the Rouge River, is no more than 40 minutes truck haul from any of the city's automotive plants. It is capable of automatically mixing more than 70 different industrial and automotive specialty lubricants, usually in about half the time it would take any other supplier, and have them ready for delivery to customers on a schedule as tight as a city editor's. This is the sort of service Detroit appreciates.

The plant was built to supply Midwest manufacturers generally, but it naturally finds its biggest customer-group in the auto industry — either among those directly concerned with car manufacture, or among the hundreds of suppliers to the auto industry in the Midwest region.

To the auto plants it ships automatic transmission fluids, and gear, hydraulic, cutting, soluble, and quenching oils. It could turn out motor oils, but it is not set up to package them. Packaged products are shipped to Detroit and the Midwest from the Company's Bayonne, New Jersey, plant.

Old style, hand batching of lubricants is done in cavernous mixing kettles with a slow, sloshing agitation by paddles. In the new Texaco plant, two tiny chambers that swirl fluids at extremely high speeds are used. One of these is only 10 inches in diameter and 18 inches deep, compared to a traditional kettle perhaps 15 feet in diameter and 20 feet deep.

The new facility mixes fast *and* accurately. This is achieved through an electronic control console that enables a technician to mix, automatically, as many as six additives and base oils simultaneously and with the exactness of a pharmacist putting up a prescription.

Formerly Texaco served the region by rail with finished products from Port Arthur, Texas, and Bayonne. But the River Rouge plant, which has tankage for 320,000 barrels of base stocks, receives its shipments from a Texaco tanker. Her sole warm weather assignment is delivering to River Rouge from Texas and New Jersey via the St. Lawrence Seaway and the Great Lakes. During the winter, when the Seaway is iced in, the plant feeds on its giant reserves.

The lube plant is not directly concerned with sales any more than the technical representatives' office is, but it has an important job supporting the Company's sales efforts in the area. To the men at the Texaco sales terminal in nearby Dearborn, it is an undisguised blessing.

Deliveries that used to take anywhere from two to six weeks to get to Detroit from Port Arthur now can be made from the terminal on an overnight basis, and frequently are. The Dearborn terminal handles only packaged products and auto gasoline, and draws on the lube plant for lubricants in bulk and for fuel oils.

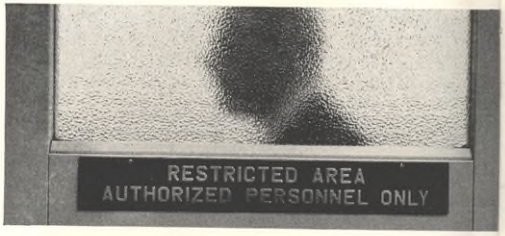
A phone call to the Rouge plant is enough to start the blenders going, and an order phoned in late in the afternoon frequently is ready to be picked up for delivery next day. From the terminal's 40,000-square-foot warehouse, orders for drum stocks are filled. Often these orders are put on the terminal's trucks during the night, and ready to roll to waiting customers first thing in the morning.

The Dearborn terminal, incidentally, is by far the biggest in the Company's Chicago Division, outside of Chicago itself. About 70 percent of the orders it fills are in some way connected with the auto industry. In a typical month its trucks will deliver as much lubricant as the eight other terminals in

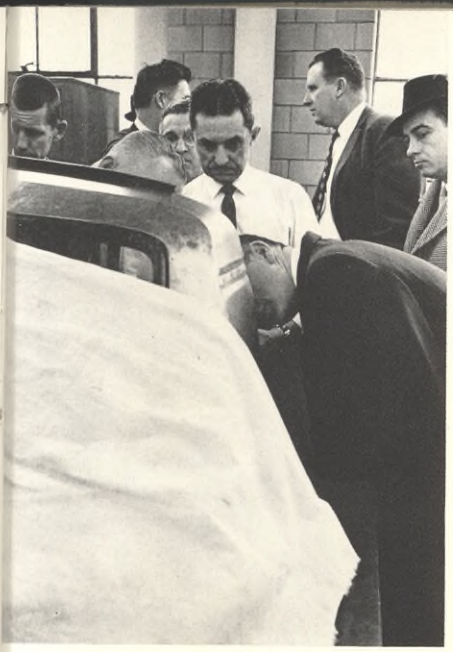
About 70 percent of orders filled by Dearborn terminal are used by auto industry.

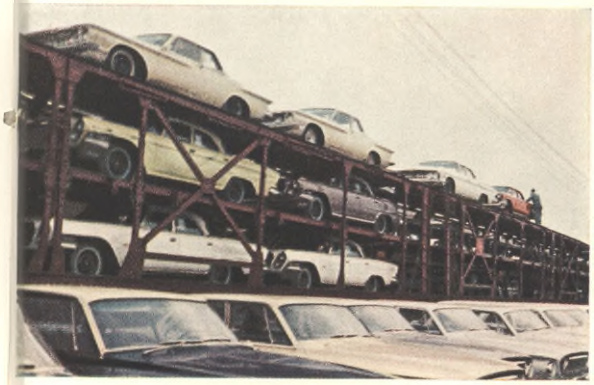

TEXACO
TEXACO
TEXACO

Texaco's technical service is full-time, year-round



Above, *a Texaco Detroit technical representative consults with auto manufacturer's chemist. "Restricted" sign,* near right, *is familiar one in auto industry. At far right, top, a group of designers huddles over shrouded model of next season's product. In center right photo, shipment of '62 autos is about to leave Detroit on tri-deck railroad carriers. Girl in far right bottom photo, a secretary in Texaco Detroit office, is sending an information request to Company research labs by teletype.*





the three-state area combined — about 35 percent of the Division's total.

Between technical representation, the country's most advanced lubricating-oil plant, and a sales terminal able to offer 24-hour delivery of virtually any product the automotive industry is at all likely to need, Texaco obviously has made sure Detroit gets the attention it deserves.

Although nearly 80 percent of American households already own cars, the market for Detroit's most famous product and for the petroleum products that keep cars running keeps growing as our population and affluence do.

Since four out of five Americans own automobiles, and the percentage among those reading this is undoubtedly higher, there seems no need to point out the variety of ways cars now are used by the American. Drive-in movies, restaurants, laundries, even banks, have become popular all over the country. But to what extent, in what numbers, autos are used, makes revealing reading. Here are some statistics compiled by the Automobile Manufacturers Association that apply to our use of motor vehicles in the 1960's:

- Motor travel amounted to 733 billion miles in 1961.
- 59.4 billion gallons of highway motor fuel were consumed in 1961.
- 84 percent of tourists entering Florida arrived by passenger car in the first nine months of 1961. In 1960, more than 25 million visitors to our National Parks got there in autos and 259 million visitors to State Parks got there the same way.
- Factory sales of station wagons in 1961 totaled 852,922, nearly six times the sales for 1950.

We are rapidly becoming a nation of two-car families. Right now, some 20 percent of all car-owning households own two or more cars. The auto manufacturers predict that by 1965 that figure will climb to between 25 and 33 percent.

In the suburbs, particularly, a "second car" has become almost standard. By 1970, according to one business magazine's prediction, there probably will be about 80 million cars on the road. The publication suggests that our car population will increase by perhaps 2,500,000 a year during this decade — or by almost as much as the population in the United States is increasing. Our affection for the automobile appears to be constantly waxing warmer.

As the only oil company in America marketing its products in all 50 states, Texaco naturally intends to help the romance along. Its more than 40,000 dealers have been doing just that for years, by providing American motorists with the finest products and friendliest service a driver can find. And at the source, in Detroit, Texaco is working more and more closely with auto manufacturers to provide both products and research assistance to an industry it has grown with, over its 60 years as a leading petroleum marketer.

Detroit provides wheels for the nation and the world; Texaco provides the power and lubricants for the wheels. For Detroit, for Texaco, and for the motoring American, the partnership has been a productive one. •

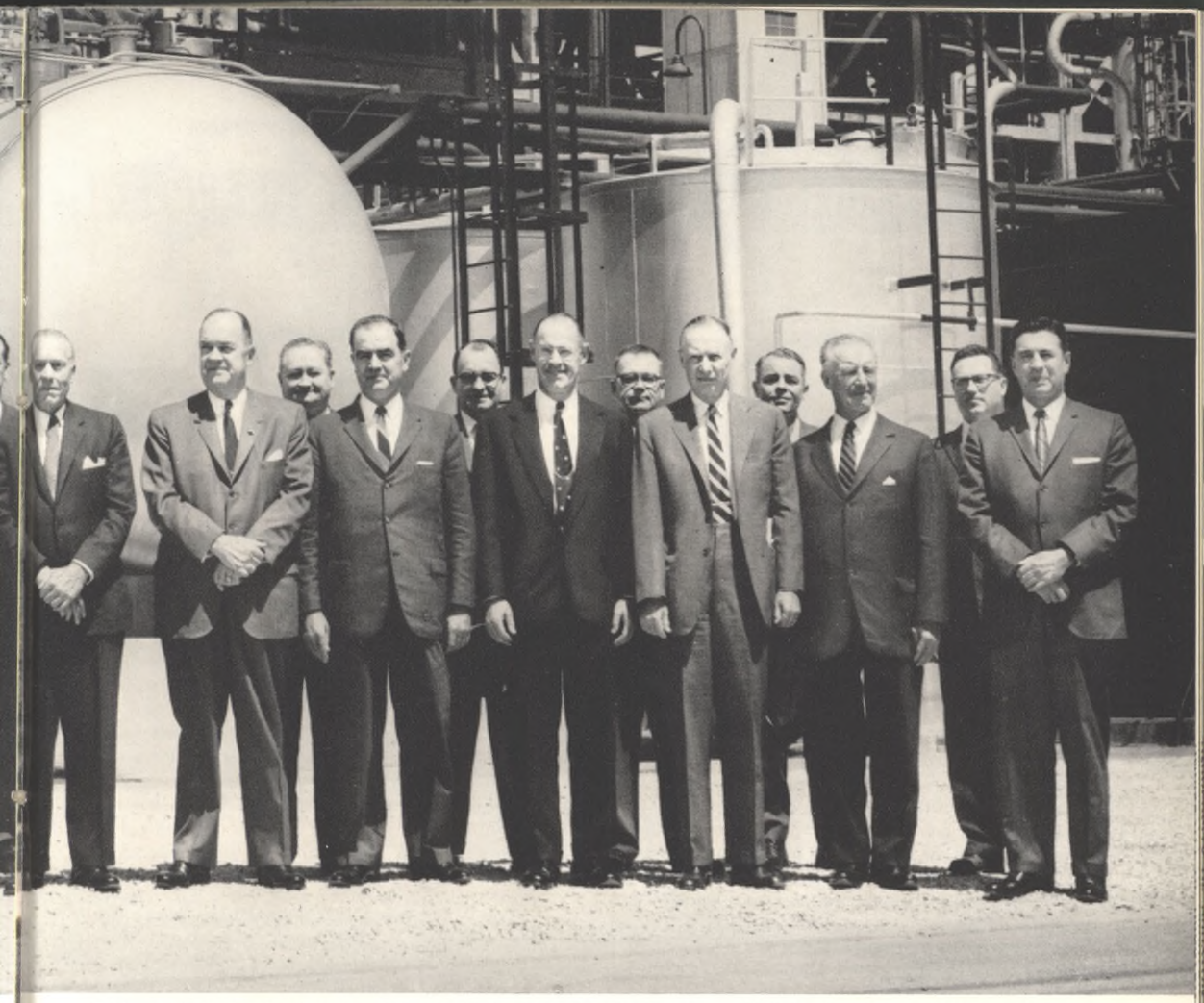
Photographed at the Company's Lawrenceville refinery in southern Illinois, from left to right, are: Theodore A. Mangelsdorf, Senior Vice President in charge of worldwide refining; Charles H. Dodson, Vice President and Chief Executive Officer at Chicago; Marion J. Epley, Jr., Executive Vice President; J. Sayles Leach, Director; George Parker, Jr., Director; Arleigh Burke, Director; Charles L. McCune, Director; Kerryn King, Vice President and Assistant to the Chairman; William H. Mitchell, Director; Augustus C. Long,

Directors Inspect Midwest Facilities

TEXACO'S DIRECTORS make a point of regularly inspecting the Company's installations throughout the nation, as one of the best means of keeping in touch with actual operating conditions. This spring, they took advantage of the Annual Meeting in Chicago on April 24, to visit Texaco facilities in that area.

The day before the Annual Meeting, the Board members were briefed on the Company's leading role in the Midwest at its regional headquarters in Chicago's McCormick Building (Texaco has occupied offices there for 50 of the Company's 60 years). They also toured Sales Department facilities, notably the Des Plaines terminal, which is supplied with petroleum products from Texaco's Lockport refinery, outside Chicago, via the affiliated Badger Products pipe line. A spur line of the Badger system is used to transport Texaco aviation products to nearby O'Hare Field.

On the day after the Annual Meeting, the Directors visited the Lawrenceville Plant in southern Illinois. This refinery has



Chairman of the Board of Directors; James H. Pipkin, Senior Vice President; James W. Foley, President and Director; Archie W. Baucum, Executive Vice President; Dwight P. Robinson, Jr., Director; Frank D. Dorr, Lawrenceville Plant Manager; Henry U. Harris, Director; Gordon P. Sprague, Indianapolis Division Sales Manager; Oscar John Dorwin, Director; Harry R. Robinson, Assistant Lawrenceville Plant Manager; and J. Howard Rambin, Jr., Senior Vice President and Chief Executive Officer at Houston.

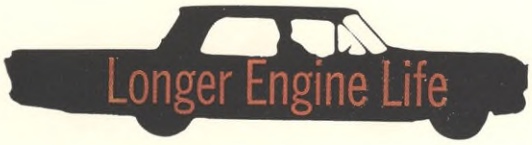
been in operation 55 years. Its up-to-date facilities for producing top-quality gasolines include catalytic reforming and alkylation units.

The Board members also made an aerial inspection of the loading terminal at Mt. Vernon, Indiana, from which Texaco barges move Company products to river terminals on the Ohio, Cumberland, Tennessee, and Mississippi. They also flew over the Salem producing field. The Salem field, discovered by Texaco in 1938, still is a substantial producer and it is an outstanding example of the conservation of oil resources through secondary recovery techniques.

As a marketing target, the Chicago area is one of the Company's most important. It is the world's busiest rail center, boasts the world's largest commercial airport in O'Hare Field. Metropolitan Chicago's contribution to the Gross National Product is approximately $26 billion. Effective this year, Texaco's Sales Divisions in the Chicago area were realigned for greater concentration of sales effort in the expanding Midwestern market.

The three-day inspection of the Chicago area was the Board's most recent field survey in a schedule that over the last several years has taken them to the West Coast, the Southwest, the Pacific Northwest, and — in inspection trips outside this country — to Canada and to Trinidad. •

NEW SKY CHIEF GASOLINE: NEAREST YET TO PERFECT



DETROIT, PLAINLY, IS THE HEART of the auto industry. Just as plainly, the engine is the heart of the automobile; and for as long as it has been linked with the American auto, Texaco has put much of its total effort into developing better automobile engine fuels. With New Sky Chief, which the Company introduced this spring, it appears to have capped a 60-year record of accomplishment.

Developments all through the petroleum industry have tumbled one after another into our lives at such a rate that it is no longer extraordinary to hear what was best yesterday is better today. That is the news about New Sky Chief. It is a greatly improved version of a product that did not seem to leave much room for fuel improvement.

When Texaco introduced Sky Chief Gasoline with Petrox in 1954, it offered the motorist a revolutionary new premium fuel with a unique additive. New Sky Chief, which the Company put on the market this spring, is considerably nearer to the perfect fuel. Texaco believes it is the nearest thing yet.

Since Petrox has been available for nearly a decade, it is easy to forget what a remarkable additive it is—just as it is easy to overlook the marvelous qualities of oil itself, in the familiarity that comes with everyday use. But Petrox is something special, and it is unique with Texaco.

In the eight years since its introduction, no competitor has been able to duplicate it. It is a blend of pure petroleum-derived ingredients, wholly organic and entirely compatible with gasoline, that forms a tough microscopic film on any metal it touches. When it was added to Sky Chief the result was an entirely new kind of motor fuel that actually prolonged the life of automobiles by sharply reducing engine wear. Sky Chief with Petrox maintained peak engine power, reduced an automobile's octane "appetite," and gave the motorist more miles to the gallon.

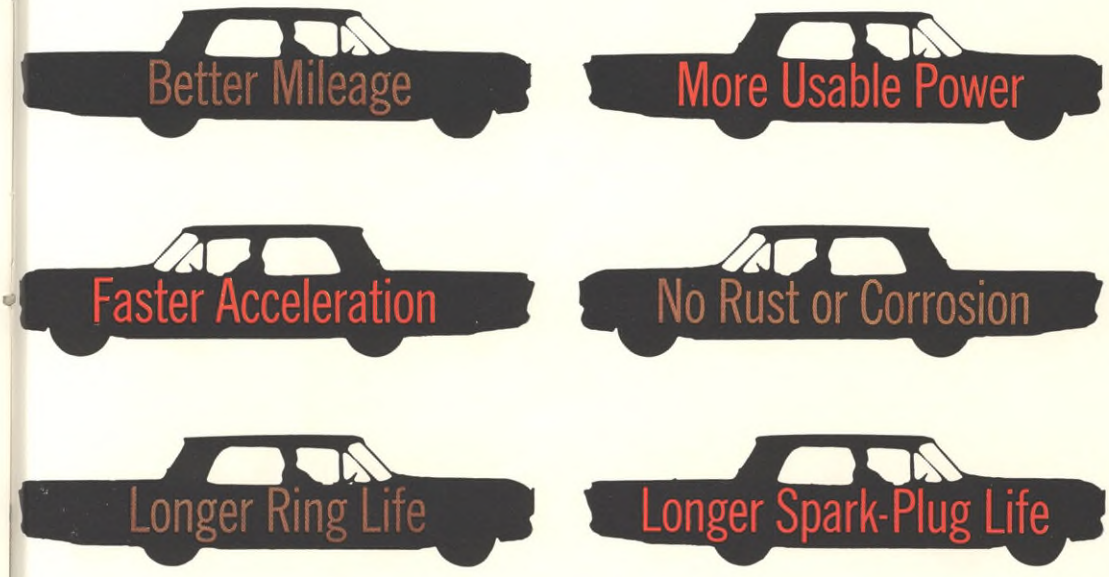
New Sky Chief contains an improved Petrox formulation, developed and tested over the last two years, that gives an even more tenacious and durable film than the original product did. It actually forms a molecular bond with the metal that it touches.

Put briefly, the new gasoline:

- Completely eliminates formation of rust or corrosion of any kind in automotive carburetor and fuel line systems. Because of present carburetor replacement and repair costs, this could mean substantial savings for motorists.
- Provides dramatic improvements in both carburetor and combustion chamber cleanliness, inhibiting octane buildup and sustaining full engine performance.
- Creates an internal coating action that results in a built-in carburetor "de-icer." The improved Petrox film sloughs off any ice formation and eliminates the common problem of stalling due to carburetor icing. This is a problem, incidentally, that crops up in late fall and early spring as well as in the winter. When the temperature is around 40 and humidity is high, stalls due to icing can occur—but not with New Sky Chief.

Texaco's research facilities are among the most advanced in the industry, and the research that has gone into Sky Chief over the last eight years has added significant new values to a product that was extraordinary from the start.

To arrive at the new formula, Company researchers recorded the findings from millions of miles of test driving, thousands of stalls and cold starts. Their notes were coded, tabulated, and fed into a computer system. In a matter of months, the equivalent of years of research work was interpreted and became the basis for the ultimate formulation



of New Sky Chief. The arithmetic necessary to develop the new gasoline simply would not have been attempted without electronic computers. It meant a massive correlation and evaluation job that would have taken years to complete without electronics.

Computers, however, are good at just one thing: performing tabulations at great speeds. They cannot think, do not speculate, have no imagination. They do not create new fuels or any other new product; they simply make it possible to accomplish the computations that may go into formulating new fuels. New Sky Chief is not a totally computer-developed fuel. It is, like other Texaco products, the result of long, dogged research and experimentation by men who use the experience, information, and equipment available to them to carry out their work. The computers represent one kind of equipment.

One of the most important improvements in New Sky Chief is a feature called Volatility Index Control. The phrase is a scientist's, not an advertising copywriter's. It means New Sky Chief will give the motorist easier starts, faster acceleration, and better warm-ups.

Here the computing equipment played an important part. Volatility Index is a complicated set of correlations used to blend New Sky Chief scientifically for the nearest-perfect performance. These relationships are based on vast quantities of information, obtained from car performance testing and weather bureau data from all parts of the country, fed into a computing system. Data used in the studies had been accumulated for 15 years. Without the help of computers, it probably would have taken another 15 years to turn the data into anything useful. More accurately, they never would have become useful without the near-speed-of-light calculating ability of the computers. Now that they are available in workable form, the new correlations provide Texaco with a complete history of weather-and-climate data as it relates to gasoline performance in cars. These data can be run through computers in hours to arrive at the ideal volatility for New Sky Chief. Result: better engine response, month in and month out, regardless of temperature or location, for the New Sky Chief user.

A second significant improvement in New Sky Chief is its ability to keep an engine's octane appetite under control.

The gasoline manufacturer has no direct control over engine construction, of course, but there is one place in the engine where his fuel can importantly affect octane requirement. That is in the combustion chamber.

The combustion of any gasoline, in stop-and-go driving, produces some deposits, and these deposits increase the octane needs of the engine. A gasoline that burns clean naturally produces few deposits. It maintains the octane requirements at a lower value. New Sky Chief is remarkably clean-burning—it keeps any engine's octane appetite down.

To test a gasoline's octane appetite, a laboratory engine is run at slow speeds for a total of 50 hours to build up an equilibrium deposit condition in the engine. The engine's octane appetite is measured at the beginning of the test, at intervals during the run, and at the end of the 50 hours. Buildup of deposits is carefully checked and recorded. In this test, New Sky Chief has been shown to reduce octane increase requirements substantially.

New Texaco Sky Chief is one more reason the motorist can trust his car to the man who wears the star, a fact he will be reminded of through Texaco's television commercials this year in the most concentrated advertising and promotion campaign the Company has used since the introduction of Petrox in 1954. •

Texaco dealers are able to offer motorists complete and expert service, backed by technical information in Company manuals like Lubrication Guide — *here being checked by engineers in final production stages.*

THE MAINTAINERS

IN THE EARLIEST DAYS of the automobile, the place at which a motorist bought gasoline was called a filling station, and with good reason. When a car pulled in, the proprietor ambled over with a can, a funnel, and a chamois-cloth filter to fill the tank, the driver paid him—and chuffed away.

The filling station owner did not have to know any more about automobiles than a space monkey knows about interplanetary navigation. He sold gasoline, usually as a sideline for the general store he ran, and that's where he stopped. If a car broke down, which wasn't exactly rare, the owner usually had to write the manufacturer for new parts and let his hometown mechanic try to install them.

It is hard to say where a modern service station dealer stops in his attention to the auto, but it certainly is not with selling gasoline. A typical Texaco dealer maintains a large inventory of automotive supplies, his knowledge of cars sometimes surprises even Detroit, and the services he offers may range all the way from brake lining to baby-sitting. One out of five Texaco dealers has had some college education. Many are leaders in their communities' business and civic groups. All are as familiar with the modern car, from grille to taillight, as the old-time filling station man was with a coffee grinder.

As a matter of fact, the service station operator these days knows his cars well enough occasionally to spot basic flaws the manufacturers themselves have overlooked.

On Long Island several years ago, a Texaco dealer was puzzled by the complaint of a customer, just back from a trip in the high-priced car he had recently bought. The car had been serviced along the way exactly as the manufacturer's manual recommended. Still, it squeaked and rattled, and rode more like a chuck wagon than the royal coach the motorist had paid for.

Checking through the manual point by point, the Texaco dealer found one suspicious entry: the amount of inflation suggested for the tires seemed inordinately high. He suggested considerably less. The owner tried that, and his problem was solved. It happened a close friend of his was a salesman for the car he was driving, and the friend wrote headquarters about the error in the manual. It was corrected promptly. He and thousands of other motorists across the country now had the luxury they expected instead of the lemons they had thought they owned.

Any motorist who has watched a Texaco dealer lubricate his car knows why the Company insists in its advertising that this basic service is done "by chart, not by chance." He should be convinced that the modern service station operator knows what he is about. Lubrication in a Texaco station is done according to the *Texaco Automobile Lubrication Guide,* issued every other year (and supplemented with up-to-date information in the even-numbered years). The *Lubrication Guide* is nearly as detailed as *Gray's Anatomy.* It shows the dealer what to lubricate, when, and with what lubricant, on

The man who wears the star lubricates by chart — not by chance.

"Check your oil?" has become a familiar offer of service, and it's just one of many a modern station makes to the motorist.

every passenger car and light truck on the market. It is as authoritative as it can be, literally.

The Chek-Chart experts who compile information for the lube guide, like the Texaco dealers who follow it, take nothing for granted. They go directly to auto factory assembly lines to make an inspection and drawing of every lube point on every new model American car, and for information on imported cars they visit distributors. They personally verify the location of thousands of lubrication points on the cars Texaco dealers service.

HAVING DONE THIS, they obtain the manufacturers' approvals of the charts they prepare for each car, and maintain monthly contact with the automobile plants to keep up with changes in lubrication recommendations for old models as well as with plans for the new ones.

Actual preparation of new charts is held off until Chek-Chart representatives can inspect new production models at the factories. This is one important reason the *Texaco Lubrication Guide* issued to dealers is even more up-to-date, sometimes, than the manufacturer's own diagram a motorist may have received with his car. Factory lubrication diagrams are based on plans for the car in its blueprint and prototype stages. By the time of actual production, changes may have been made that do not show on the maker's chart. They'll have been caught by Chek-Chart and Texaco.

During his visit to the assembly plant, the Chek-Chart man not only sketches the location of each lube point but also fits a lube gun to the point to make certain it can be serviced as indicated. If a special gun is necessary, the guide tells the Texaco dealer.

So exacting is Chek-Chart's inspection it has led, from time to time, to an auto manufacturer's change in design to correct a lubrication difficulty he had not been aware of.

The completed *Lubrication Guide* runs to nearly 200 pages. Aside from being the most accurate possible index to lubricating procedure, it contains step-by-step guidance on other service work like spark plug, cooling system, oil filter, and lighting care.

Chek-Chart's part in making up the guide is the field investigation and the preparation of the lubrication charts. Texaco's is the preparation of the recommendations for specific lubricants. The Company's Research and Technical Department does this, with great care.

One of the very valuable aspects of the *Texaco Lubrication Guide*, and one of the reasons Texaco is certain a motorist can trust his car to the man who wears the star, is that it provides an invaluable training manual for a dealer's new employes.

Most men get into service station work because they are interested in cars and know a good deal about working on them. But it just isn't humanly possible for even the most experienced mechanic to know all the lube points and all the service recommendations on all the cars that come into a dealer's lube bay. With the guide, he does not have to. The lube guide instructs the new man in the fine points of auto lubrication, and the supplements acquaint the experienced men with new models and revised recommendations. As a result, every Texaco service station man is able to approach any car with authority. And every motorist can approach any Texaco station with confidence.

That motorists will need expert lubrication service for a long time to come, despite the current speculations about "lube-less" cars, seems certain. It is true that some few new makes of cars use prepacked bearings and that some upward revisions of lubrication mileage intervals have been made by certain car manufacturers. But it is also true that (1) 95 percent of the cars on the road today have fittings and require conventional chassis lubrication at regular intervals; (2) eight of the 12 makes of 1962 compacts, which in '61 accounted for more than a third of total auto sales, have conventional fittings and need lubrication at conventional intervals. What's more, the country's best-selling standard-size car still is fully equipped with fittings. So is our best-selling compact car. Finally, even those cars with prepacked bearings have many other points that need systematic lubrication, checking, and inspection at regular intervals.

A modern service station offers much more than expert technical services, of course. The clean restrooms and lounges, free tire and oil checks, and up-to-date road information (completely marked vacation routes, for that matter) represent a concept of total service at the marketplace, backed by a policy that begins with the manufacturer, for which it would be nearly impossible to find a counterpart in any other American enterprise.

The American public in the early 1900's was a largely rural group, isolated and naïve, and it bought its gasoline expecting no more than a solemn exchange of goods for money. Not so now. Motorists have come to expect a service station operator to be fair, helpful, and a specialist in the increasingly complicated business of taking care of their cars. They are not being disappointed. •

J. Howard Rambin, Jr.

Harvey Cash

James H. Pipkin

Robert J. Derby

NEW EXECUTIVE AND MANAGERIAL POSTS ANNOUNCED

The appointment of Senior Vice President J. Howard Rambin, Jr., as Chief Executive Officer at Texaco's Southern headquarters in Houston, Texas, effective March 1, 1962, was announced in January by Board Chairman Augustus C. Long. At the same time, Mr. Long announced the election of Harvey Cash as Senior Vice President in charge of worldwide producing — also effective March 1.

Mr. Rambin had held the worldwide producing post; Mr. Cash previously was the Company's Vice President in charge of Foreign Operations-Eastern Hemisphere.

Also in January, the election of Vice President James H. Pipkin as Senior Vice President was announced. This election also became effective March 1, 1962. Mr. Pipkin's headquarters are in Washington, D.C.

The fourth executive change announced in January was the election of Robert J. Derby as the Company's General Counsel, effective February 1, 1962. Mr. Derby formerly was Texaco's Associate General Counsel.

Early in March, the appointment of Vice President C. N. Brooks as Assistant to Mr. Rambin at Houston was announced. Mr. Brooks had been serving as Vice President in charge of Foreign Operations-Eastern Hemisphere in New York.

As Senior Vice President at Houston, Mr. Rambin succeeds Claud B. Barrett, who retired effective March 1 as a Director and Senior Vice President in charge of the Company's Southern operations. Mr. Barrett had been with the Company since 1927.

Mr. Derby, in his new post, succeeds Oscar John Dorwin, who had been a Senior Vice President and General Counsel, and whose retirement became effective February 1. Mr. Dorwin continues to serve Texaco as a Director. He had been a Company employe 36 years.

At the time of the announcement of Mr. Brooks' new appointment, Edward C. Mitchell was named General Manager of Texaco's Foreign Operations-Eastern Hemisphere.

Two other managerial changes occurred when Charles W. Saville was named General Manager of the Foreign Producing Department (Western Hemisphere), and Dr. E. Madison was appointed General Manager of Finance and Economics. Mr. Saville previously was Chairman of Texaco's Executive Producing Committee, Dr. Madison was Manager of the Economics Department.

CYCLOHEXANE PLANT PLANNED FOR TRINIDAD

A new plant to supply an extra high-purity cyclohexane for worldwide chemical markets will be built by Texaco in Trinidad and go on stream by mid-1963. It will have an annual capacity of more than 10 million gallons.

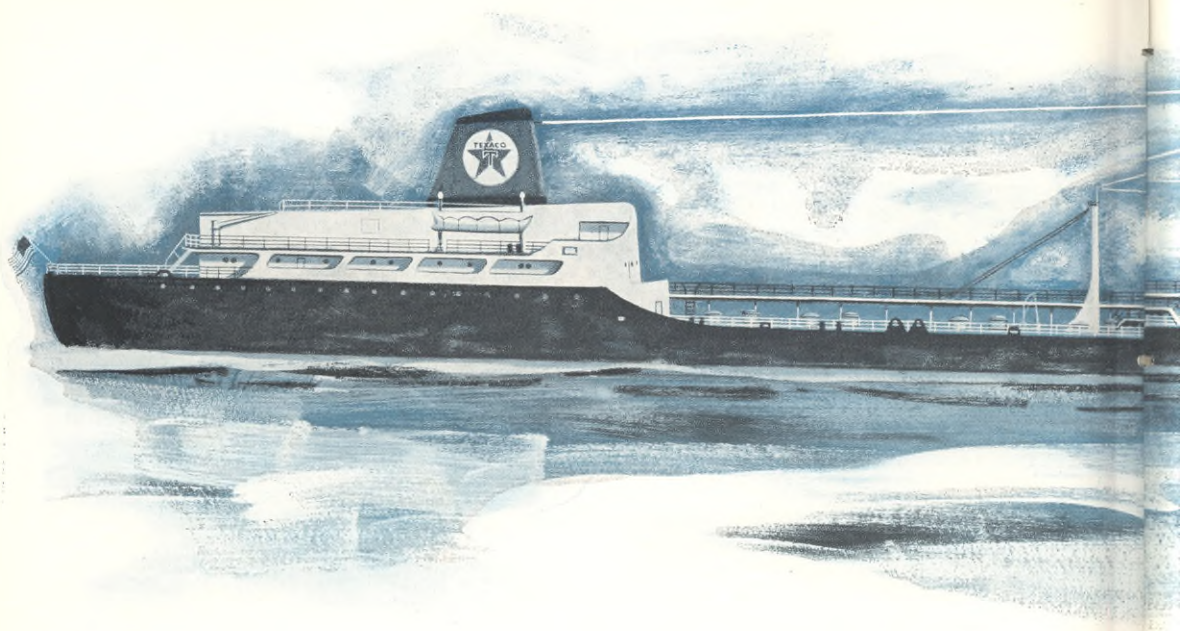
Cyclohexane has been called the "benzene of tomorrow" because of its wide range of uses and spectacular growth as a basic building block of the chemical industries. Its consumption has more than doubled since 1959.

Texaco's new plant will use a Company-developed process that produces the purest cyclohexane available in industry.

Edward C. Mitchell

Dr. E. Madison

Charles W. Saville



FIVE FOR THE FLEET

New tankers will speed East Coast deliveries

OPERATING ONE OF THE LARGEST MARINE FLEETS in the industry, Texaco moves more than a million barrels a day of crude oil and refined products across the world's waters. Most of this marine movement is by ocean tanker. At the end of 1961, the Company either owned or had under long-term charter 92 ships in its ocean tanker fleet.

As the Company grows, its fleet does, and early this year the keel was laid for the first of five new coastwise tankers in the 25,300 deadweight-ton class. The five new ships, all of which should be completed by 1965, will be used primarily to haul Texaco products from the Company's Port Arthur, Texas, refinery to East Coast ports north of Cape Hatteras.

On a rain-swept February morning at Sparrows Point, Maryland, the first keel section for Hull Number 4596, which at launching will be christened *S. S. Texaco Massachusetts,* was swung into place. By September the hull will be ready for launching. But the launching will not be the finish, any more than the keel laying was the beginning, in the construction of the new tanker. When the keel is laid, many parts of the ship, including hull and engine components, have already taken form. Layout and fabrication of the steel for the hull start three months earlier, ground assembly of the first units begins about a month later. At keel-laying, structural work on the ship is well on its way towards completion.

Actually, however, work on a Company tanker has already been under way for a long time when the first steel is cut. It starts in Texaco's Marine Department, when the fundamental decision is made that a new vessel is needed. Once that decision is reached and the Executive Committee has approved the expenditure, the department's Construction and Repairs Division "turns to" in earnest.

Consulting with the Marine Department's Operations and Chartering and Traffic people, experts in Construction and Repairs first find out what the new ship should be like. Basic considerations are capacity, cargo arrangement, speed, and living accommodations.

Next the preliminary design work is done and specifications are prepared. They will determine how the ship is to be built—including the selection of machinery and boilers, hull design, arrangement of quarters, cargo piping layout, and many other things. After these have been agreed upon, the Marine Department asks shipyards for bids. When the bids come in they are studied to determine the low bidder. A yard is chosen and final design details are worked out with it. In the five new tankers, for instance, the hull will be divided into 27 compartments arranged so five grades of products may be carried at one time. The wheelhouse will feature full-circle, 360° visibility. Wheelhouse and chart room will be combined, and will have specially designed consoles incorporating controls and navigational equipment. The engine room will have a 14-foot console with engine controls, thermometers, pressure gauges, and other equipment ordinarily scattered at remote locations in a ship's engine room.

When these refinements have been agreed on, a contract is signed. It generally takes about 10 months from the time a contract is signed to the day the keel is laid—and about 10 months more for actual delivery.

Steel begins arriving in the shipyard about three months

after the contract is let. By the time the keel is laid, 95 percent of the steel needed to complete the ship will have been ordered by the yard.

While work moves ahead on the hull, parallel work is under way on the ship's engines, auxiliary machinery, heat exchangers, and other interior components. Machinery arrangements and piping diagrams are drawn and approved. The interior of the vessel is fashioned.

Throughout the construction process, Texaco resident inspectors work with the shipyard to make sure the Company's requirements are being met. They maintain liaison between the shipbuilder and the Marine Department's New York headquarters, reporting progress to New York, relaying its directives to the builder, and making day-to-day decisions that do not call for New York's attention.

A construction schedule, prepared before the keel is laid, establishes the sequence and dates for continuing the construction from the keel plates up. This schedule shows, for example, when plates for the bow section are to be delivered to the yard, when they will be cut to size, when they will be placed in the bow assembly, and when that assembly will be built into the ship.

THE SHIP'S STRUCTURE consists of about two-thirds flat steel plates and one-third steel shapes. The plates are marked for cutting to size through a process shipbuilders call optical detailing. First the ship's plans, drawn to a reduced scale, are photographed. The negatives that result (some 600 are needed in a typical tanker) are projected full-size directly onto the plates in a darkened room. The plates are marked to correspond to the plans and carried outside for cutting to size. The shapes are made to conform to some 100 wooden templates that also have been made from projected optical detail negatives. Then both plates and shapes are moved to welding platens—large work areas covering many acres, in a major shipyard—where they are welded into assemblies weighing as much as 50 tons, moved to the shipways and hoisted into place on the ship's structure.

The keel itself is made from a group of these assemblies and the erection of the first of these keel assemblies on the shipway constitutes the keel laying.

As the keel laying approaches, shipyard carpenters place keel blocks and temporary supports for the bottom shell on the shipway. The assemblies will be erected by placing and properly aligning them on these blocks and supports. Wooden shores will be added as required to support the entire vessel as construction continues.

When the first keel assembly is eased through the air down the shipway to its proper spot on the blocks, the steel begins to take form as a ship. That is what happened with Hull Number 4596 in February, and since then work has progressed on schedule.

After launching, the ship will be towed into a fitting-out berth. There its piping systems, electrical work, equipment installation, accommodations, painting, and other finishing touches are completed. Then after preliminary testing and adjustments have been made, the tanker will be ready for sea trials. If she performs as she should during the trials, she will be turned over to Texaco to join the Company fleet.

The five new tankers will be of a three-island design (with a forecastle, bridge, and poop, like the ship in the illustration). Each will have an overall length of 605 feet, a liquid cargo capacity of more than 8,900,000 gallons, and a dry cargo capacity of about 78,000 cubic feet. All five will have living quarters for 49 persons, with single-occupancy air-cooled rooms for officers and crew members. •

THE
TEXACO
STAR
135 EAST 42ND STREET
NEW YORK 17, NEW YORK
RETURN POSTAGE GUARANTEED

SORE * POINT

* Today's motorist can reflect happily on the improvements in automobiles, fuels, and lubricants over the years since the auto joined the American family. All these have become increasingly a bargain. He has less reason to cheer about the amount of highway he gets for the taxes he pays on petroleum products. Since the start, in 1957, of the Federal program to improve and expand our interstate highway system, billions of dollars in taxes collected from motorists in Federal, state, and local levies have been diverted to non-highway use, while the Federal gasoline tax alone has been increased twice to provide more road funds. This is the one area in American motoring in which the car owner is not getting everything he pays for.